



Environmental Statement Chapter 2. EIA Process and Assessment of Significance



Contents

2.0 EIA Process and Assessment of Significance

2.1	Introduction	1
2.2	Legislative framework and Environmental Statement requirements	1
2.3	Overview of the EIA process	4
2.3.1	Screening, scoping and consultation	5
2.4	Anticipated programme.....	7
2.5	Assessment process.....	7
2.5.1	Introduction	7
2.5.2	Assessment of effects	8
2.5.3	Rochdale Envelope	8
2.5.4	Assessment of effects	9
2.5.5	Mitigation measures, residual impacts and monitoring.....	10
2.5.6	Cumulative/in-combination effects, interrelationships and transboundary effects.....	11
2.6	Assumptions and limitations	17
2.7	Habitats Regulations Assessment and Water Framework Directive	18
2.7.1	Habitats Regulation Assessment	18
2.7.2	Water Framework Directive	18
2.8	References	19



2.0 EIA Process and Assessment of Significance

2.1 Introduction

- 2.1.0.1 This Chapter outlines the key stages of the Environmental Impact Assessment (EIA) process, together with an overview of the consultation undertaken as part of and of particularly relevant to the EIA process. A fuller exposition of the consultation undertaken in respect of the proposed application for the Project is presented in the Consultation Report accompanying and forming part of the application for development consent for the Project.
- 2.1.0.2 This Chapter describes the approach used to identify the existing environmental baseline and to assess the potential effects upon the natural and built environment as a result of the principal phases of the Project (construction, operation and decommissioning), together with details of how the level of significance of those effects have been determined and described. An explanation of how inter-relationships and cumulative effects have been considered and described is also provided. For certain environmental topics (e.g. landscape), specific assessment guidelines have been adopted and, where this is the case, further details are provided within the appropriate chapters of this Environmental Statement (ES).

2.2 Legislative framework and Environmental Statement requirements

- 2.2.0.1 The EIA process has been undertaken in accordance with the requirements of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2009 (the 'EIA Regulations') and the Marine Works (Environmental Impact Assessment) Regulations 2007 (the 'Marine Regulations'). These Regulations, together with the Planning Act 2008 (PA 2008), give effect to the European Council Directive 85/337/EEC (as amended by Council Directive 97/11/EC and Council Directive 2003/35/EC of the European Parliament and Council).
- 2.2.0.2 As outlined in Chapter 1, TLSB considers that the Project requires an EIA because it comprises a project that falls within Schedule 1 Regulation 15 (Dams and other installations designed for the holding back or permanent storage of water exceeding 10 million cubic metres) of the EIA Regulations. Schedule 2 Regulation 3(h) of the EIA Regulations (installations for hydroelectric energy production) is also engaged. The purpose of the development as a generating station is dependent on its character as an installation designed for the holding back of water. Therefore it is considered that the Project constitutes Schedule 1 development for which an EIA and ES will be required automatically.
- 2.2.0.3 Schedule 4, Part 1, of the EIA Regulations identifies the information required for inclusion in an ES appropriate to the Project. Table 2.1 below details these requirements and also presents details of where the information requirements are addressed within this ES.

**Table 2.1 Requirements of Schedule 4 of the EIA Regulations**

Schedule 4 Requirements	Signposting
Description of the environment, including in particular: • A description of the physical characteristics of the whole development and land use requirements during the construction and operational phases. • A description of the main characteristics of the production processes, for instance, nature and quantities of the materials used. • An estimate, by type and quantity, of expected residues and emissions (water, air and soil pollution, noise, vibration, light, heat, radiation etc.) resulting from the operation of the proposed development	Chapter 4: Project Description, and Chapters 6 to 22
An outline of the main alternatives studied by the applicant and an indication of the main reasons for the applicant's choice, taking into account the environmental effects.	Chapter 3: Site Selection and Option Appraisal
A description of the aspects of the environment likely to be significantly affected by the development, including, in particular, population, fauna, flora, soil, water, air, climatic factors, material assets, including the architectural and archaeological heritage, landscape and the inter-relationship between the above factors.	Chapters 6 to 22 and Chapter 24: Interrelationships
A description of the likely significant effects of the development on the environment, which should cover the direct effects and any indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, positive and negative effects of the development, resulting from: (a) the existence of the development; (b) the use of natural resources; and (c) the emission of pollutants, the creation of nuisances and the elimination of waste. The description by the applicant of the forecasting methods used to assess the effects on the environment.	Chapters 6 to 22
A description of the measures envisaged to prevent, reduce and where possible offset any significant adverse effects on the environment.	Chapters 6 to 22 and Chapter 23: Mitigation and monitoring
A Non-Technical Summary (NTS) of the information provided under paragraphs 1 to 5 of this part.	The NTS is provided as a separate document
An indication of any difficulties (technical deficiencies or lack of know-how) encountered by the applicant in compiling the required information.	Chapter 2: EIA Process and Assessment of Significance, and Chapters 6 to 22

Welsh Office Circular 11/99: Environmental Impact Assessment (EIA)

- 2.2.0.4 The Welsh Office Circular (1999) gives guidance on the Town and Country Planning EIA Regulations. Although not directly relevant to the Project under the Planning Act 2008, the Welsh Office Circular provides general guidance on EIA, and functions as an important and relevant matter for the decision maker to consider.
- 2.2.0.5 The Town and Country Planning EIA Regulations implement Council Directive No.85/337 EEC on the assessment of the effects of certain projects on the environment (the EIA Directive). The main aim of the EIA Directive is to ensure that when making a decision on a particular project, the authority giving primary consent makes the decision in the knowledge of any likely significant effects on the environment.
- 2.2.0.6 EIA draws together an assessment of a project's likely significant environmental effects, and helps ensure that the importance of the predicted effects, and the scope for reducing them, are properly understood by the public and the relevant authority before it makes its decision to give development consent.



2.2.0.7 Where EIA is required, there are three broad stages to the procedure:

- i. *The developer must compile detailed information about the likely main environmental effects. To help the developer, public authorities must make available any relevant environmental information in their possession. The developer can ask the 'competent authority' for their opinion on what information needs to be included. The information finally compiled by the developer is known as an 'Environmental Statement' ES).*
- ii. *The ES (and the application to which it relates) must be publicised. Public authorities with relevant environmental responsibilities and the public must be given an opportunity to give their views about the project and ES.*
- iii. *The ES, together with any other information, comments and representations made on it, must be taken into account by the competent authority in deciding whether or not to give consent for the development. The public must be informed of the decision and main reason for it.*

2.2.0.8 As explained under the 'The Regulations' section of the Circular, only a small proportion of developments require an EIA. However, if significant effects on the environment are likely as a result of the project an EIA is required.

2.2.0.9 Where an EIA is undertaken and adverse impacts on the environment as a result of the project have been revealed, it does not follow that planning permission must be refused. The local planning authority (or in the case of the development consent, the Secretary of State) '*must judge each planning application on its merits within the context of the Development Plan taking account of all material considerations, including the environmental impacts.*'

2.2.0.10 The Circular highlights that for developers, EIA can help to identify the likely effects of a particular project at an early stage. Alternative approaches can be considered, and improvements can be made in the planning and design of the development, which can result in a final proposal that is more environmentally acceptable, and can form the basis for a more robust application.

2.2.0.11 The Circular provides guidance on the preparation and content of an Environmental Statement. Some of the general requirements of an EIA are summarised below:

- i. Whilst every ES should provide a full factual description of the development, the emphasis should be on the 'main' or 'significant' environmental effects likely to occur as a result of the development. Other impacts may be of little or no significance for the particular development in question and will need only very brief treatment to indicate that their possible relevance has been considered. While each ES must comply with the requirements of the Regulations, it is important that they should be prepared on a realistic basis and without unnecessary elaboration.
- ii. The nature of certain developments and their location may make the consideration of alternative sites a material consideration. In such cases, the ES must record this consideration of alternative sites.



- iii. As well as the direct effects of a development, the ES should also cover indirect, secondary, cumulative, short, medium and long-term, permanent and temporary effects, and require full and detailed assessment.
- iv. The information in the ES must be summarised in a non-technical summary (NTS). The NTS is particularly important for ensuring that the public can comment fully on the ES.

2.3 Overview of the EIA process

2.3.0.1 The objective of the EIA for the Project is to:

- I. Collate data on the baseline environment and to identify environmental constraints and opportunities associated with the area of the Project;
- II. Identify and assess the potential effects that may result from the Project during the construction, operation and decommissioning phases: the direct effects arising from the Project and also the indirect impacts, cumulative effects, short, medium and long term impacts, those that are both permanent and temporary and those impacts that are beneficial or adverse in nature; and
- III. Identify measures and/or design criteria through an iterative process that will be implemented to mitigate, where possible, any likely significant effects on any environmental receptors resulting from the Project.

2.3.0.2 Key stages of the EIA process undertaken (and yet to take place) for this Project are outlined below:

- a) Defining the Project;
- b) Defining the need for the Project;
- c) Examining alternative options;
- d) Data review, to anticipate the existing and future baseline conditions;
- e) Baseline surveys to evaluate the existing baseline conditions;
- f) Identifying potential environmental issues associated with the Project;
- g) Scoping stage: production of Scoping Document and request for Scoping Opinion from the Planning Inspectorate;
- h) Production of a Preliminary Environmental Impact Report (PEIR) describing the baseline environment and providing an initial assessment of potential impacts;
- i) Formal consultation on the PEIR;
- j) Design refinement and assessment of effects – comprising assessment of the likely significant effects of the Project, incorporating feedback to allow iterative modification of the Project where possible, and identification of mitigation/enhancement measures to prevent, reduce and, where possible, offset any significant adverse effects of the Project on the environment;
- k) Assessment of the design of the Project that is the subject of the application for development consent (including any flexibility required or allowed for within that design and controls on that flexibility) and identification of any likely residual effects;



- l) Production of an ES and accompanying reports to document findings of the EIA process and summarised in a Non-Technical Summary (NTS);
- m) Consideration, by the Examining Authority of the application and environmental information contained within the ES, the responses from statutory consultees and representations from interested parties;
- n) Decision of the Secretary of State to refuse or grant consent; and
- o) Implementation and monitoring.

2.3.0.3 The environment is considered to include both physical, ecological and socio-economic components as well as the linkages between different aspects of these components.

2.3.1 Screening, scoping and consultation

2.3.1.1 In 2012, in accordance with Regulation 6 (1) (b) of the EIA Regulations, TLSB notified the Planning Inspectorate that the Project is an EIA development and that an ES would accompany the DCO Application¹. As part of this process, a scoping opinion was sought from the Planning Inspectorate. The Scoping Document² (TLSB, dated October 2012) submitted to the Planning Inspectorate and the resultant Scoping Opinion³ (Planning Inspectorate, dated November 2012), are both available online (infrastructure.planningportal.gov.uk).

2.3.1.2 Consultation is a core part of the planning process for the Project, and is a statutory requirement under the PA 2008 (s42 to 47). Under s42, consultation is required with local authorities, persons with an interest in the land or who may have the right to make a relevant claim, and bodies prescribed in Schedule 1 of The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009. Section 47 requires consultation with the local community, including local authorities and people living 'in the vicinity of the land'. The EIA Regulations also require formal pre-application consultation with the relevant local authorities and statutory bodies during the preparation of the application for development consent.

2.3.1.3 TLSB is committed to widespread consultation, viewing it as an essential part of the development process to secure the best possible project outcome, and the proper responsibility of a good neighbour and corporate citizen. Consequently, TLSB aimed to meet and exceed the consultation requirements of relevant legislation, and to follow local and national best practice guidance in all respects. TLSB believes in exceeding its statutory obligations and sees consultation as a continuous process extending over many months, rather than a single event.

¹<http://infrastructure.planningportal.gov.uk/wp-content/ipc/uploads/projects/EN010049/1.%20Pre-Submission/Correspondence/General%20Correspondence/Incoming/Section%2046%20Notice.pdf>

²http://infrastructure.planningportal.gov.uk/wp-content/ipc/uploads/projects/EN010049/1.%20Pre-Submission/EIA/Scoping/Scoping%20Request/EN010049_Tidal%20Power%20Swansea%20Bay%20Scoping%20Document%20Final%20reduced%20size.pdf

³http://infrastructure.planningportal.gov.uk/wp-content/ipc/uploads/projects/EN010049/1.%20Pre-Submission/EIA/Scoping/Scoping%20Opinion/121121_EN010049_Scoping%20Opinion_Tidal%20Lagoon%20Swansea%20Bay.doc.pdf

- 2.3.1.4 The Department for Communities and Local Government's Guidance on the Pre-application Process (January 2013) for NSIPs says:
- 2.3.1.5 *"To manage the tension between consulting early, but also having project proposals that are firm enough to enable consultees to comment, applicants are encouraged to consider an iterative, phased consultation consisting of two (or more) stages... For example, applicants might wish to consider undertaking informal early consultation at a stage where options are still being considered. This will be helpful in informing proposals and assisting the applicant in establishing a preferred option on which to undertake formal statutory public consultation."*
- 2.3.1.6 The two-phased approach taken by TLSB follows this guidance. TLSB first undertook informal, non-statutory, consultation on "issues and options" associated with the Project from March 2011 until June 2013, meeting statutory and non-statutory consultees and engaging the public. Formal, statutory, consultation (as specifically required under PA 2008) commenced in July 2013 with the publication of the PEIR and a "preferred option" for the Project design. The PEIR reported environmental information assembled up to that date, and described further investigations to be conducted during the on-going EIA process. The PEIR in respect of the preferred option was sent to all statutory consultees, multiple non-statutory bodies, and presented to the local community at a series of consultation events around the Bay area. A list of key consultees for the PEIR is included in Appendix 2.1, including those which are prescribed and other non-statutory bodies.
- 2.3.1.7 As part of the process of continuous engagement, meetings have been held regularly with statutory and non-statutory consultees and the public has been engaged/consulted throughout the development process, as required under s42 and 47 of the PA 2008.
- 2.3.1.8 Furthermore, on 17 October 2013, TLSB held a non-statutory presentation event on the findings of the EIA to that date, providing details of the results of the assessments undertaken as part of the EIA process, and setting out how consultation had influenced the work undertaken. All stakeholders consulted up to that point, and the general public at large, were invited to attend the event. In November 2013, draft ES chapters were released for comment to a number of key consultees, including the primary regulator Natural Resources Wales (NRW), local authorities and major landowners.
- 2.3.1.9 Responses to the PEIR and from the on-going consultation exercise are included within a separate Consultation Report that forms part of and accompanies the DCO application. All comments received on the environmental information and assessments have influenced the final form of the Project, and further contributed to the EIA process. Chapters 6 to 22 of this ES take into consideration particular consultation responses that have influenced the assessment process within specific environmental topics.
- 2.3.1.10 Therefore, the EIA has been carried out having regard to the Scoping Opinion and further consultation that took place with statutory and non-statutory consultees, as well as local interest groups. The full results of the EIA are presented in this ES with a summary presented in the NTS. Chapter 1: Introduction of this ES sets out its structure and the content of each chapter.

2.4 Anticipated programme

2.4.0.1 The following diagram presents the phases through which the Project has progressed to date and the anticipated timescale to when the Project becomes operational generating electricity. Further details of the construction programme are given in Chapter 4 Project Description.

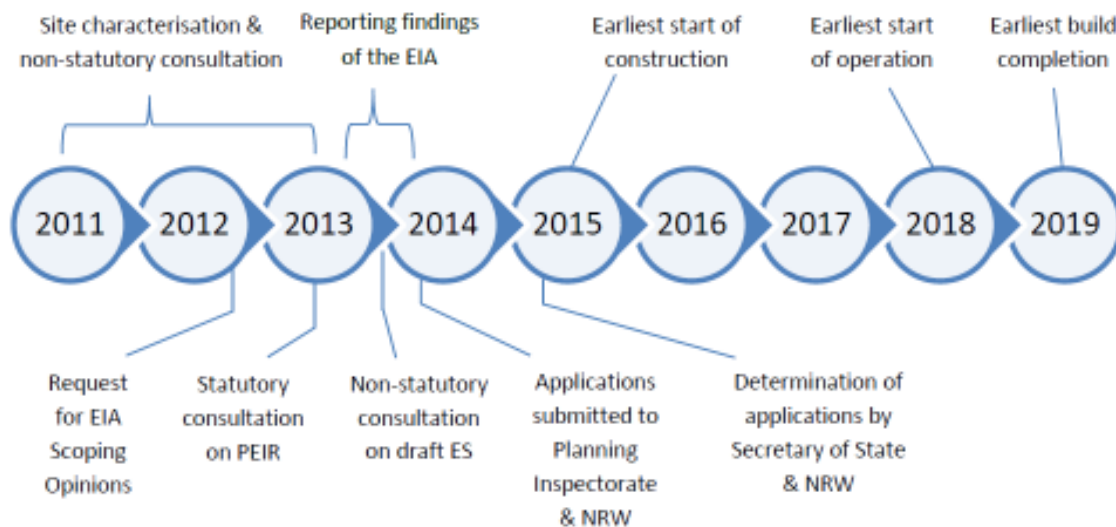


Figure 2.1 Outline Project programme

2.5 Assessment process

2.5.1 Introduction

2.5.1.1 Each assessment chapter (Chapters 6 to 22, see Table 1.2, Chapter 1: Introduction) sets the baseline environmental conditions for the relevant subject area. The chapter then evaluates the potential effects that may occur as a result of the construction, operation and decommissioning phases of the Project. It should be noted that the identification and assessment of environmental effects has been an iterative process and has been carried out alongside the design of the Project. Where possible, the design has been adjusted and mitigation measures embedded within it, thereby minimising by design likely adverse effects that have been identified during the EIA process.

2.5.1.2 The EIA has considered the impacts on the environment for the three stages of the Project which are:

- I. Construction Phase: covers all onshore and offshore construction and installation works associated with the Project. It is anticipated that this will commence in spring 2015 and extend to the beginning of 2019, with the first power generated by the Project expected to be exported during the summer of 2018 (see Chapter 4).
- II. Operational Phase: this phase commences after the construction and installation phase has reached completion and covers the design lifetime of the Project which is estimated to be 120 years.



III. Decommissioning Phase: considers proposals for the Project after the anticipated design lifetime of the Project.

2.5.1.3 In this Environmental Statement, the possibility of alternative construction and operation commencement has been considered. The assessments proceed on the basis of the outline construction programme detailed in Chapter 4 Project Description, which anticipates the main construction phase starting in spring 2015 and lasting about three years, with the first power generated anticipated to be in the summer of 2018. Finishing works will continue to the beginning of 2019, such that all works are complete. The assessments are not materially sensitive to works commencing within the anticipated validity of the DCO, which is five years, or to an extension of (say) a further year-or-so.

2.5.1.4 There is some variation between Chapters as appropriate to the topic described, but the general structure of each is as follows:

- a) Overview of Chapter and relevant policy and/or legislation;
- b) Assessment methodology and consultation;
- c) Description of baseline conditions including findings of any site-specific surveys;
- d) Detailed assessment of the effects of construction and operation, including an overview of anticipated decommissioning effects;
- e) Mitigation, enhancement measures and monitoring;
- f) Residual effects;
- g) Cumulative effects;
- h) Conclusion presenting significant aspects, both positive and negative; and
- i) References.

2.5.1.5 Appropriate study areas have been described for each specific environmental topic, to ensure that potentially significant effects are identified and assessed in accordance with relevant standards and guidance. As a consequence of this, study areas are different for each topic, because the geographic extent of likely direct and indirect impacts differs in each case.

2.5.2 Assessment of effects

2.5.2.1 The EIA Regulations require that the EIA considers the likely significant effects of the Project on the environment. The decision-making process to identify whether or not a Project is likely to significantly impact on the environment is central to the EIA process. The EIA Regulations do not provide a specific definition of 'significance', but the methods used to identify and assess effects should be transparent and verifiable.

2.5.3 Rochdale Envelope

2.5.3.1 As outlined in Chapter 1: Introduction, "*the 'Rochdale Envelope' is an acknowledged way of dealing with an application comprising EIA development where details of a project have not been resolved at the time when the application is submitted*" (Planning Inspectorate, Advice Note 9, 2012).



2.5.3.2 In line with the Planning Inspectorate's Advice Note 9 (2012), the EIA process undertaken for this Project has ensured that all the realistic and likely worst case variations of the Project (described in Chapter 4: Project Description) have been properly considered and the findings clearly presented in this ES. Thus, the likely significant impacts have been adequately assessed. In particular, where "details have not been resolved" and flexibility is allowed in the draft DCO, for instance by means of a power of deviation, this has been considered by the relevant chapter authors in their assessments.

2.5.4 Assessment of effects

2.5.4.1 To assess the impacts of the Project, appropriate professional or institutional guidelines for specific environmental subject areas have been followed. Where no specific guidelines are available, a generic method for determining significance criteria levels has been employed based on guidance from the Institute for Ecology and Environmental Management Guidelines for Marine Impact Assessment (IEEM, 2010) and the Ecological Impact Assessment (EcIA) guidance set out by the Institute of Ecology and Environmental Management (IEEM, 2006). The generic method is outlined briefly below and how it has been applied to the specific environmental topics is described in the relevant chapters. In adapting these guidelines, independent specialists employed expert interpretation and value judgements in order that the significance of any given effect can be established.

2.5.4.2 The first stage of the assessment is to identify activities resulting from the Project that are likely to cause significant impacts and to identify the features of interest (receptors) that are likely to be affected and the means by which that might occur (which are together referred to as the impact pathway). The value of the feature of interest will also be determined.

2.5.4.3 The second stage involves understanding the nature of the environmental changes to provide a benchmark against which the changes and levels of exposure (combination of magnitude and probability of occurrence) can be compared. The scale of the impacts via the impact pathways will depend upon a range of factors, including the following (in no particular order):

- a) The baseline conditions of the system;
- b) Existing long-term trends and natural variability.
- c) The importance of the receptor (e.g. designated habitats; protected species; internationally, nationally or locally protected features);
- d) The sensitivity of the receptor – intolerance of a receptor to an environmental change and considering its resistance, adaptability and recoverability;
- e) Magnitude;
 - i) Spatial extent (small/large scale);
 - ii) Duration (temporary/short/intermediate/long-term);
 - iii) Timing and frequency (routine/intermittent/occasional/rare).
- f) The margins by which set values are exceeded (e.g. water quality standards);
- g) Probability of occurrence;
- h) Reversibility; and



i) Confidence, or certainty, in the impact prediction.

2.5.4.4 Following from this, the level of impact and its significance is assessed based on the evaluation of the likelihood of a feature being vulnerable to an impact pathway. Vulnerability will depend on the sensitivity of a feature and its exposure to change. Sensitivity can be described as intolerance of a feature to an environmental change and essentially considers the response characteristic of the feature. The level of significance, which could either be beneficial or adverse, is determined from the importance of the feature and its vulnerability. The importance of a feature is based on its value and rarity such as the level of protection. The key significance levels for either beneficial or adverse impacts are described as follows:

- A. **Neutral:** No impact.
- B. **Insignificant/Negligible:** Insignificant change not having a discernible effect.
- C. **Minor:** Effects tending to be discernible but tolerable.
- D. **Moderate:** Where these changes are adverse they may require mitigation.
- E. **Major:** Effects are highest in magnitude and reflect the high vulnerability and importance of a receptor (e.g. to nature conservation, noise). Where these changes are adverse they will require mitigation.

2.5.4.5 Impacts that are 'moderate' or 'major' are regarded as being significant for the purposes of the EIA Regulations and the Marine Regulations.

2.5.5 Mitigation measures, residual impacts and monitoring

2.5.5.1 Mitigation is an iterative process of avoiding, reducing, ameliorating or compensating for significant potential effects upon receptors, and the wider environment, resulting from the Project during the EIA process. This process has the status of a hierarchy, with avoidance being most preferred and compensating being least preferred.

2.5.5.2 As outlined previously, the development of the design of the Project has been running in parallel with the EIA. As a result, the design has aimed to avoid key areas (by changes to layout or location) or by including features that will minimise effects on specific receptors. These measures can be referred to as being "embedded" within the design. Such measures include the route proposed for the seawall, the location of the turbines, and the location of access routes. In addition, a number of best practice construction methodologies that form part of the Construction Environmental Management Plan (CEMP) are considered to be embedded mitigation measures. An Operational Environmental Management Plan (OEMP) will also be prepared for the operational phase of the Project. Chapter 4 describes the CEMP and OEMP in more detail.

2.5.5.3 Additional mitigation measures were developed during the EIA process once potential effects on key environmental receptors were identified. Details of these mitigation measures are outlined within each topic Chapter and discussed in Chapter 23 Mitigation and Monitoring.

2.5.5.4 Within each environmental Chapter, significant effects that remain after mitigation measures have been considered and incorporated are identified - i.e. these are the residual effects of the Project. The residual effects are considered and weighed by the



Examining Authority and the Secretary of State as part of the decision-making process of the application for development consent. Therefore, assessment of the significance of the residual effects after mitigation is a key outcome of the EIA process.

- 2.5.5.5 To confirm the findings of the EIA process, a monitoring programme has been proposed and will be implemented during the pre-construction, construction and operational phases of the Project. Further details of the monitoring programme are presented in Chapter 23 Mitigation and Monitoring.

2.5.6 Cumulative/in-combination effects, interrelationships and transboundary effects

- 2.5.6.1 In accordance with Schedule 4, Part 1 of the EIA Regulations, 'cumulative/in-combination effects' have been considered for the Project. By convention, "in-combination" effects are generally considered to result from the interaction of different types of effect of the Project itself. The term "cumulative" is usually applied to the interaction between the effects of different projects/developments.
- 2.5.6.2 The cumulative/in-combination assessment needs to take account of the total effects of all pressures acting upon all relevant receptors in seeking to assess the overall cumulative/in-combination significance. Consideration is given to activities and plans or projects that exist, that are approved but uncompleted, or the applications for which are under consideration, where spatial/physical overlaps of the impacts are likely to occur. Additionally, consideration is given to any other activities and plans or projects, including any impacts that do not directly overlap spatially, but may indirectly result in a cumulative/in-combination impact. The cumulative and in-combination effects that the Project may have on the existing and reasonably foreseeable environment are considered in the appropriate technical chapters.
- 2.5.6.3 Based on consultation, a number of projects have been identified which potentially require assessment in terms of cumulative effects. These are listed in Table 2.2 below. An initial screening exercise was carried out with all specialists involved in the EIA process (Chapter 1: Introduction, Table 1.3) to identify those projects which were to be assessed further. Table 2.2 also highlights which Chapters have further considered the cumulative and in-combination effects of the developments in relation to the Project. It is normal in an EIA for a project to consider cumulative environmental effects of the Project itself and other projects. Projects that are assessed cumulatively are limited to those which are either: in existence; under construction; for which a consent has been granted; or which are subject to an application for consents for their construction.
- 2.5.6.4 In order to assess the environmental effects of the Project as a whole, interrelationships between aspects of the Project on receptors have been considered, as required under Schedule 4 of the EIA Regulations. The interrelationships between specialist topics have been examined as appropriate, within each of the Chapters, with mitigation measures recommended and residual effects identified. Chapter 24 Interrelationships provides an overview of the interrelationships examined within each of the individual chapters.
- 2.5.6.5 Under Regulation 24 of the EIA Regulations, an assessment of transboundary effects should be carried out if a development, which is subject to an EIA application in England, Wales or Scotland, is likely to have significant effects on the environment in another European Economic Area (EEA) State or another EEA State likely to be significantly affected by such development requests an assessment. The Project does not meet either of these criteria and thus, no assessment of transboundary effects was considered



necessary. This was confirmed in correspondence between TLSB and the Planning Inspectorate in 2012 which is presented in Appendix 2.2. The Planning Inspectorate (2 January 2012) confirmed that:

- 2.5.6.6 *'Under Regulation 24 of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2009 (as amended) (the EIA Regulations) and on the basis of the current information available from the Developer, the Secretary of State is of the view that the proposed development is not likely to have a significant effect on the environment in another EEA State.*
- 2.5.6.7 *In reaching this view the Secretary of State has applied the precautionary approach (as explained in the Planning Inspectorate's Advice Note 12: Transboundary Impacts Consultation); and taken into account the information currently supplied by the Developer.*
- 2.5.6.8 **Action:** *No further action required at this stage.'*
- 2.5.6.9 It was proposed that the Severn Barrage should be considered in the cumulative impact assessment for the Project as part of this EIA at the time this EIA was scoped. However, the Severn Barrage does not constitute a project within any of the categories for consideration set out above. The Severn Barrage project has been considered by the Parliamentary Energy and Climate Change Select Committee, which has commented, "Hafren Power has not overcome the serious environmental concerns that have been raised. Further research, data and modelling are needed before environmental impacts can accurately be assessed – especially regarding fluvial flood risk, intertidal habitats and impact to fish. The need for compensatory habitat on an unprecedented scale casts doubt on whether the project could achieve compliance with the EU Habitats Directive." In light of the uncertainty over the Severn Barrage project and its effects, as well as its timing, it is not appropriate to assess it cumulatively with the Project. Should a Severn Barrage be brought forward subsequently, then its promoter would assess its effects cumulatively with the Project. There is no reason to believe at this stage that the Project and a Severn barrage are environmentally incompatible.

Table 2.2 Cumulative and in-combination assessment projects (status confirmed January 2014)

Project and location	Current Status	Considered/ screened out
Swansea University Bay Campus, adjacent to Crymlyn Burrows	Construction Feb 2013 – Sept 2015	Considered in: Chapter 11 Coastal Birds; Chapter 12 Terrestrial Ecology; Chapter 13 Seascape and Landscape Visual Impact Assessment; Chapter 15 Onshore Transport; Chapter 16 Air Quality; Chapter 17 Hydrology and Flood Risk; Chapter 18 Land Quality and Hydrogeology; Chapter 22 Economy, Tourism and recreation.
St Modwens land development - east of Swansea Docks, to west of Neath estuary.	Remediation of land, and potential future developments – no details available	Considered in: Chapter 19 Noise
Mumbles pier, foreshore and coastal strip redevelopment	Due to be completed by the end of 2013	Considered in: Chapter 9 Fish, including Commercial and Recreational Fisheries; Chapter 13 Seascape and Landscape Visual Impact Assessment; Chapter 22 Economy, Tourism and Recreation.
Construction of new RNLI Lifeboat Station, Mumbles	Expected completion 2014	Considered in: Chapter 8 Intertidal and Subtidal Benthic Ecology; Chapter 9 Fish including Commercial and Recreational Fisheries; Chapter 10 Marine Mammals; Chapter 13 Seascape and Landscape Visual Impact Assessment.
SA1 development, Swansea.	Development currently taking place, completion date unknown.	Considered in: Chapter 12 Terrestrial Ecology, Chapter 13 Seascape and Landscape Visual Impact Assessment; Chapter 15 Onshore Transport, Chapter 16, Air Quality; Chapter 19 Noise; Chapter 22 Economy, Tourism and Transport
Construction of the southern access road to Coed Darcy Urban Village, crossing nearby Crymlyn Bog	Yet to commence.	Considered in: Chapter 12, Terrestrial Ecology; Chapter 13, Seascape and Landscape Visual Impact Assessment; Chapter 15, Onshore Transport; Chapter 16, Air Quality
Swansea Boulevard project – work between Princess Way and The Strand, and the River Tawe bridges and The Strand.	Phase 1 to be complete in November 2013. Phase 2 to start 2014.	Considered in: Chapter 15 Onshore Transport.
Wind turbine – on Welsh Water site on Fabian Way	Application – Unsuccessful 25/10/2013	Not Considered since the project application was unsuccessful.
Five wind turbines – at Mynydd Marchywel between Rhos and Cilfrew Neath	Submitted Jan 2012. Consultation finished Jan 2013. Still in planning.	Considered in: Chapter 13 Seascape and Landscape Visual Impact Assessment
Sixteen wind turbines – at Mynydd Y Gwair, Swansea	Approved – unknown construction timetable	Screened out of all chapters. Screened out of Chapters assessing the marine environment as these are onshore works. Project outside study area for Seascape and Landscape Visual Impact Assessment. No cumulative effect anticipated for other terrestrial chapters. Distant and no cumulative effect anticipated elsewhere.



Project and location	Current Status	Considered/ screened out
Five wind turbines – on land at Mynydd Brompton Farm, Margam Port Talbot	Submitted June 2012, still in planning. Consultation finishes April 2013	Considered in: Chapter 13 Seascape and Landscape Visual Impact Assessment
Atlantic Array Wind Farm – off North Devon Coast approx 35km distant	DCO application submitted but withdrawn in November 2013.	Not Considered since the project is not proceeding.
Seventy six turbine Pen y Cymoedd windfarm near Neath.	Planning approved – construction 2014	Screened out of all chapters. Screened out of Chapters assessing the marine environment as these are onshore works. Project outside study area for Seascape and Landscape Visual Impact Assessment. No cumulative effect anticipated for other terrestrial chapters. Distant and no cumulative effect anticipated elsewhere.
Llynfi Afan Renewable Energy Park - fifteen turbine windfarm – on land 500m southwest of Cynnonville Port Talbot	Planning permission refused. Application was allowed on appeal on 27/08/2013.	Screened out of all chapters. Screened out of Chapters assessing the marine environment as these are onshore works. Project outside study area for Seascape and Landscape Visual Impact Assessment. No cumulative effect anticipated for other terrestrial chapters. Distant and no cumulative effect anticipated elsewhere.
Mynydd y Betws- 15 turbine windfarm located on land to the east of Ammanford in Carmarthenshire	Granted planning consent 2009. Started operating April 2013.	Screened out of all chapters. Screened out of Chapters assessing the marine environment as these are onshore works. Project outside study area for Seascape and Landscape Visual Impact Assessment. No cumulative effect anticipated for other terrestrial chapters. Distant and no cumulative effect anticipated elsewhere.
Mynydd y Gwrhyd - windfarm in the Upper Amman and Swansea valleys	Approved on appeal 07/05/2009	Screened out of all chapters. Screened out of Chapters assessing the marine environment as these are onshore works. Project outside study area Seascape and Landscape Visual Impact Assessment. No cumulative effect anticipated for other terrestrial chapters. Distant and no cumulative effect anticipated elsewhere.
Swansea Port single wind turbine,	Operational	Considered in: Chapter 13 Seascape and Landscape Visual Impact Assessment
Newlands Farm, single wind turbine- Margam	Application submitted January 2013	Considered in: Chapter 13 Seascape and Landscape Visual Impact Assessment.
Kenfig Industrial Estate single wind turbine	Application submitted. Expected decision by Feb 2014	Considered in: Chapter 12 Terrestrial Ecology; Chapter 13, Seascape and Landscape Visual Impact Assessment
Port Talbot Harbour redevelopment	Potential future activities/development. Status unknown.	Considered in: Chapter 9 Fish, including Commercial and Recreational Fisheries; Chapter 12, Terrestrial Ecology; Chapter 17 Hydrology and Flood Risk; Chapter 14 Navigation and Marine Transport
Upgrading of the existing coastal defence of Aberavon West Promenade, Sandfields, Port Talbot	Completed August 2013	Not Considered: Project completed August 2013 and hence forms part of the environmental baseline.



Project and location	Current Status	Considered/ screened out
Porthcawl regeneration scheme includes Porthcawl Marina project and 19th century lighthouse restoration.	Approved by BCBC – timescale unknown.	Considered in: Chapter 6, Coastal Processes; Chapter 12 Terrestrial Ecology; Chapter 22, Economy, Tourism and Recreation.
Tata Steel works- Internal power generation enhancement for Port Talbot steel works- installation of two new boilers and two new turbines housed in new power station building.	Application expected to be submitted 2014.	Considered in: Chapter 9 Fish, including Commercial and Recreational Fisheries.
Underground coal gasification under Swansea Bay	License potentially to be extended.	Considered in: Chapter 9 Fish, including Commercial and Recreational Fisheries; Terrestrial Ecology. However, no further information currently available, so cumulative assessment cannot be fully undertaken at this stage.
Underground coal gasification under Llanelli	Conditional Licence issued	Screened out of all Chapters: Work distant and not anticipated in the foreseeable future. No cumulative impact anticipated.
Maintenance (navigational) dredging along the Swansea (Tawe), Neath and Port Talbot Channels.	On-going	Considered in: Chapter 6 Coastal Processes; Chapter 8 Intertidal and Subtidal Benthic Ecology; Chapter 9 Fish, including Commercial and Recreational Fisheries; Chapter 10, Marine Mammals and Turtles; Chapter 14 Navigation and Marine Transport Assessment.
Marine dredging- Monkston cruising and sailing club and Swansea Marina	On-going maintenance as required	Considered in: Chapter 6 Coastal Processes, Chapter 8 Intertidal and Subtidal Benthic Ecology; Chapter 10, Marine Mammals and Turtles; Chapter 14 Navigation and Marine Transport Assessment.
Mumbles Oyster project: Plan to put 10,000 oysters on seabed off the village of Oystermouth	Permission granted September 2013.	Considered in: Chapter 9 Fish, including Commercial and Recreational Fisheries; Chapter 8, Intertidal and Subtidal Benthic Ecology; Chapter 22, Economy, Tourism and Transport
Severn Barrage	Not within foreseeable future.	Not Considered. See note below table.
Swansea Barrage	Operational	Considered in: Chapter 9 Fish, including Commercial and Recreational Fisheries.
Cardiff Barrage	Operational	Considered in: Chapter 9 Fish, including Commercial and Recreational Fisheries.



Tidal Lagoon Swansea Bay plc

Project and location	Current Status	Considered/ screened out
Baglan Power station	Operational	Considered in: Chapter 9 Fish, including Commercial and Recreational Fisheries. Chapter 7: Marine Water Quality
Prenergy Biomass Power Station, Port Talbot - 350MW wood chip fuelled thermal generating station	Granted condition approval by BERR on the 20 November 2007. While large scale construction has not been begun, a lawful start of development has occurred and as such the planning permission remains extant.	Considered in: Seascape and Landscape Visual Impact Assessment
Abernedd Power Station was granted conditional approval by DECC on the 23 February 2011 for construction of a 870MW gas fired combined cycle gas turbine power plant	No lawful start has yet been made to this development.	Considered in: Seascape and Landscape Visual Impact Assessment
Nobel banks aggregate extraction site	Ongoing	Considered in: Chapter 10 Marine Mammals and Turtle
The Swansea Bay (Thomas Shellfish Limited) Mussel Fishery Order	Ongoing	Considered in: Chapter 10 Marine Mammals and Turtles; Chapter 8 Intertidal and Subtidal Benthic Ecology
Ro-Ro Ferry – Swansea Port	Currently not operational	Not Considered: Ferry not anticipated to recommence in the foreseeable future. No cumulative assessment undertaken. However, use of Port of Swansea generally is considered in Chapter 14, Navigation.
Rhiannon Offshore Windfarm	Pre-application stage.	Considered in: Chapter 10 Marine Mammals and Turtles
Burbo Bank Offshore Windfarm extension	Existing and extension sought 2013.	Considered in: Chapter 10 Marine Mammals and Turtles
Tidal Energy Ltd Deltastream Installation Ramsey Sound	Consent secured. Installation 2014.	Considered in: Chapter 10 Marine Mammals and Turtles
Seagen Skerries Tidal Stream Array	Consent secured. Installation 2014.	Considered in: Chapter 10 Marine Mammals and Turtles
Tidal Stream Energy Demonstration Array St David's Head, Pembrokeshire	Construction is planned to commence in 2017	Considered in: Chapter 10 Marine Mammals and Turtles



2.6 Assumptions and limitations

2.6.0.1 As required in Schedule 4 of the EIA Regulations, the ES must provide an indication of any difficulties (technical deficiencies or lack of know-how) encountered in compiling the required information for the ES. This section examines these limitations and also outlines the assumptions which have been made during the EIA process. Assumptions relevant to all environmental topic areas are set out below, while those appropriate for the individual subject area are included within the relevant chapter of this ES.

- A. The construction, operation and decommissioning details provided in Chapter 4: Project Description, form the basis of the environmental assessments undertaken for each environmental topic.
- B. At the time of publication, information provided by third parties, including publicly available information, is correct.

2.6.0.2 A number of technical limitations apply to all environmental topic areas as detailed below. Limitations for specific topic areas are covered in the relevant Chapters.

- a) The baseline conditions have been assumed as accurate at the time of the physical surveys but due to the dynamic nature of the environment, conditions may change during construction, operation and decommissioning phases.
- b) The design of the Project is at the Front End Engineering Design stage (FEED). Consequently, further technical information or advances in the engineering design will be undertaken in the intervening period before the Project is implemented. As discussed above, in order to ensure that the EIA presented in this ES is robust, a likely worst case scenario (or scenarios), within a "Rochdale Envelope" framework has been applied. Further details of the envelope applied to the Project and assessed can be found in Chapter 4. In addition, where potential design routes have been identified which will improve or enhance the engineering performance of the Project or minimise environmental effects, these have also been identified in Chapter 4. Further discussion has then been undertaken within the relevant EIA Chapters as to how design iteration will affect the assessment findings.
- c) Tidal range energy generation projects are either few or in early stages of development. Therefore, there is limited operational information - e.g. prototype turbines – and limited monitoring data for operational sites in the specific context of tidal range generation. However, there is good knowledge of the effects of turbines in other contexts and good evidence of the effects of impoundment and the effectiveness of the types of mitigation described in this ES. As such, this uncertainty is not material in the assessment. Where it does have an influence, this is set out in the relevant part of the ES.
- d) As the operational lifetime of the Project is anticipated to be in the region of 120 years, it is difficult to determine the precise nature and extent of the decommissioning works associated with the Project. The assessments are therefore based on current knowledge of environmental best practice and construction techniques.



2.7 Habitats Regulations Assessment and Water Framework Directive

2.7.1 Habitats Regulation Assessment

- 2.7.1.1 Under Article 6 of the EC Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (the "Habitats Directive"), an assessment is required where a plan or project may give rise to significant effects upon a Natura 2000 site (otherwise referred to as a European site). European sites include Special Areas of Conservation ("SAC"), designated under the Habitats Directive, and Special Protection Areas ("SPA") designated under the Conservation of Wild Birds Directive for rare, vulnerable and regularly occurring migratory bird species and internationally important wetlands (EC Directive 2009/147/EC).
- 2.7.1.2 The requirements of the Habitats Directive are transposed into UK law through the Conservation of Habitats and Species (Amendment) Regulations 2010 (as amended) (the "Habitats Regulations"). In addition, it is a matter of UK Government policy that sites designated under the 1971 Ramsar Convention for their internationally important wetlands (known as Ramsar sites) are also considered in this process.
- 2.7.1.3 Under the Habitats Regulations, a competent authority, which is deciding whether a plan or project should proceed, must consider whether the plan or project has the potential to have an adverse effect on the integrity and features of a Natura 2000 site. Under Regulation 61, Appropriate Assessment (AA) is required for a plan or project, which either alone, or in combination with other plans or projects, is likely to have a significant effect on a European site and is not directly connected with or necessary for the management of the site.
- 2.7.1.4 In this case, competent authorities in respect of the Project are considered to include the Secretary of State for Energy and Climate Change in relation to the application for development consent. For the application for a Marine Licence, the competent authority is expected to comprise the Welsh Government acting by its executive agency, Natural Resources Wales (NRW).
- 2.7.1.5 Whilst the Project is not located within, nor is it adjacent to, any internationally designated site(s), the potential presence of mobile qualifying species within the application site and study area, such as fish and birds, and the possible effects from changes in coastal processes on nearby European sites, such as Kenfig SAC, means that it is appropriate for the potential for effects on such sites to be considered. In order to facilitate this assessment, a stand-alone report to inform an AA has been prepared as part of the EIA process and accompanies the application for development consent (TLSB, 2014b).

2.7.2 Water Framework Directive

- 2.7.2.1 The Water Framework Directive (2000/60/EC) (WFD) was given effect in the UK by the Water Environment (Water Framework Directive) (England and Wales) Regulations 2003. The WFD has important implications for planning works that may affect relevant waterbodies. It has the effect of controlling development such that it does not cause deterioration in waterbody status (ideally, such development should improve the status of the affected waterbodies). The WFD provides that, in the event that a proposed development would result in an adverse effect on a waterbody, which could cause a deterioration in its WFD status or could prevent actions which are required to raise the



WFD status of the waterbody, then the proposed development must be assessed and justified, in the context of the actions proposed to mitigate the adverse impact on the status of the waterbody³.

- 2.7.2.2 During pre-application consultation, NRW indicated that a WFD Screening Assessment was required to form part of the EIA for the Project. A WFD Screening Assessment determines whether a proposed development is compliant with the objectives of the WFD, or if further assessment is required. A stand-alone Screening Assessment report to assess the Project and its component elements against the WFD has been prepared as part of the EIA process (TLSB, 2014c).

2.8 References

Department for Communities and Local Government (2013) Planning Act 2008: guidance on the pre-application process.

(https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/49468/Planning_Act_2008_pre-applications.pdf)

IEEM (2006). *Guidelines for Ecological Impact Assessment in the United Kingdom*.

Institute of Ecology and Environmental Management, Winchester.

(<http://www.ieem.net/ecia-guidelines-terrestrial-freshwater-and-coastal->).

Institute for Ecology and Environmental Management (2010) Guidelines for Marine Impact Assessment.

Planning Inspectorate ((November 2012) Scoping Opinion Proposed Tidal Lagoon Swansea Bay (http://infrastructure.planningportal.gov.uk/wp-content/ipc/uploads/projects/EN010049/1.%20Pre-Submission/EIA/Scoping/Scoping%20Opinion/121121_EN010049_Scoping%20Opinion_Tidal%20Lagoon%20Swansea%20Bay.doc.pdf)

Planning Inspectorate (2012) Advice Note 9: Use of the 'Rochdale Envelope, Version 2

TLSB (2012) Proposed Tidal Lagoon Development in Swansea Bay, South Wales, Environmental Impact Assessment Scoping Document

(http://infrastructure.planningportal.gov.uk/wp-content/ipc/uploads/projects/EN010049/1.%20Pre-Submission/EIA/Scoping/Scoping%20Request/EN010049_Tidal%20Power%20Swansea%20Bay%20Scoping%20Document%20Final%20reduced%20size.pdf)

TLSB (2013) Preliminary Environmental Information Report

TLSB (2014a) Habitats Regulations Assessment Report to inform Appropriate Assessment

TLSB (2014b) Water Framework Directive Assessment

Legislation

Council Directive of 27 June 1985 on the assessment of the effects of certain public and private projects on the environment 85/337/EEC, Official Journal NO. L 175, 05/07/1985 P. 0040 - 0048



Council Directive 97/11/EC of 3 March 1997 amending Directive 85/337/EEC on the assessment of the effects of certain public and private projects on the environment. Official Journal No. L 073, 14/03/1997 P. 0005

Council Directive 2003/35/EC of the European Parliament and of the Council (May 2003) providing for public participation in respect of the drawing up of certain plans and programmes relating to the environment and amending with regard to public participation and access to justice. Council Directives 85/337/EEC and 96/61/EC

Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora

Council Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy

Council Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds
Ramsar Convention (1971)

2003 No. 3242 Water Environment (Water Framework Directive) (England and Wales) Regulations 2003

2008 Ch 29, Planning Act 2008 (http://infrastructure.independent.gov.uk/wp-content/uploads/2009/08/ukpga_20080029_en.pdf)

2009 No. 2263, Infrastructure Planning (Environmental Impact Assessment) Regulations 2009 (http://infrastructure.independent.gov.uk/wp-content/uploads/2009/08/uksi_20092263_en.pdf)

2007 No. 1518, The Marine Works (Environmental Impact Assessment) Regulations 2007 (www.legislation.gov.uk/uksi/2007/1518/contents/made)

2010 No. 490, Conservation of Habitats and Species (Amendment) Regulations 2010 (<http://www.legislation.gov.uk/uksi/2010/490/introduction/made>)