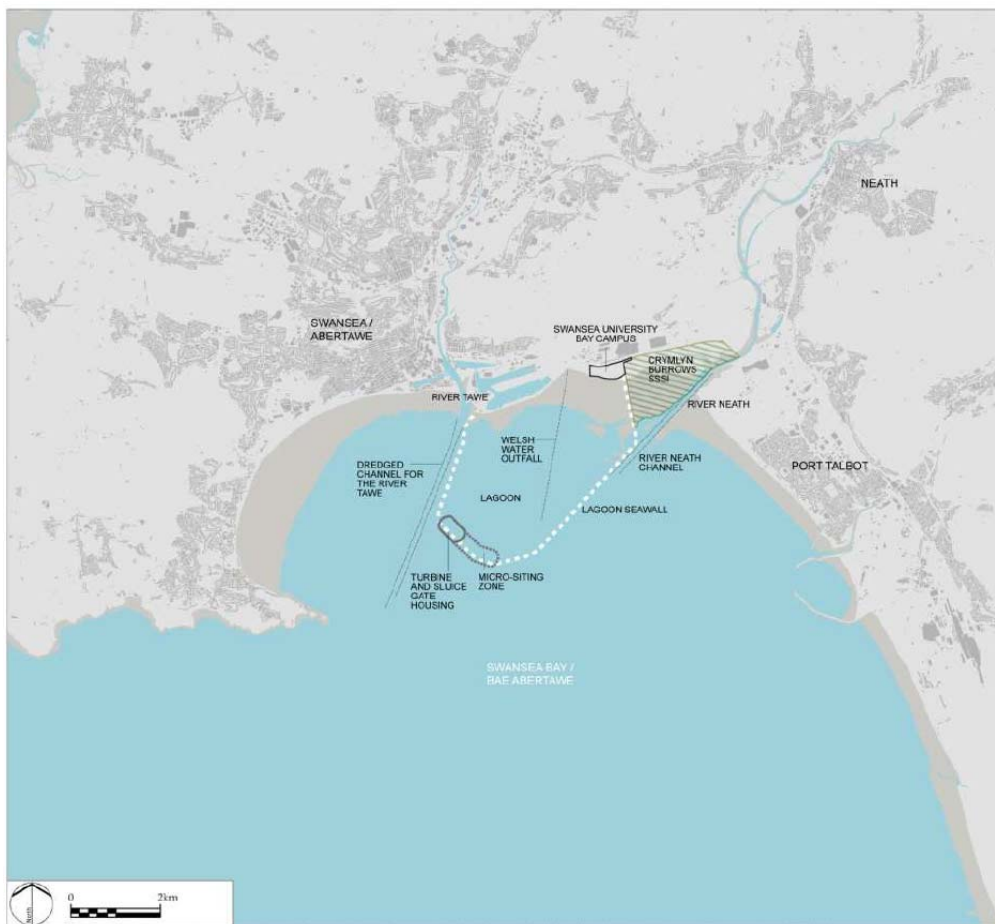


1.0 Detailed Description of the Proposed Scheme

- 1.1 Tidal Lagoon Swansea Bay Ltd proposes to design, construct and operate a tidal lagoon for the purpose of generating renewable energy. This will be achieved by harnessing the power of the high tidal range in Swansea Bay (where the maximum Spring tidal range reaches over 10m).
- 1.2 As illustrated below, the lagoon created as part of the project would enclose part of the seabed and the foreshore of Swansea Bay. The associated seawalls would be approximately 9.5km in length and extend in a distorted U-shape from the eastern side of the River Tawe to the eastern edge of the new Swansea University Bay Campus.



- 1.3 The new seawalls of the lagoon would extend approximately 1.5km directly offshore from the eastern landfall at the Bay Campus (the eastern landfall), adjacent to Crmlyn Burrows SSSI. The seawalls would then extend in a south-westerly direction for approximately 4.3km. A turbine and sluice gate housing structure would be located in the south west of the lagoon, at an oblique angle to the dredged channel of the River Tawe. The seawall would then extend towards Swansea Port for approximately 2.5km, close to the mouth of the River Tawe parallel to the dredged channel for the River Tawe to rejoin the land (the western landfall).

- 1.4 The seawalls would enclose an area of approximately 11.5km² of seabed and foreshore to create the lagoon. The hydro turbines used for the project would be bi-directional, meaning they are able to generate power with flows of water in both directions (i.e. on both incoming and outgoing tides). At high water a “head” of water (a difference in water level between the inside and outside of the Lagoon) would be held within the Lagoon using sluice gates located within the turbine and sluice gate housing. About 2.5 hours after high water, the water held within the Lagoon would be released, and power would be generated when the resulting flow is channelled through the turbines on the outgoing tide. This process would be repeated on the flood tide for bi-directional generation. The project would therefore generate electricity four times per day (on each of two ebb and flood tides) totalling, on average, 14 hours of generation every day.
- 1.5 The electricity generated would be fed into the National Electricity Transmission System (NETS) via National Grid's substation in Baglan by way of an underground cable connection from the generating station. It is anticipated that the Project will produce some 400 GWh net of electricity on an annual basis, which is enough to power around 121,000 homes.
- 1.6 It is stated that the project will also offer additional benefits to the Swansea Bay area and the wider population, promoting educational, sport, recreational art and cultural activities for public use.
- 1.7 The offshore works during the construction and operation phases would comprise the following:
- Turbines and sluice gates, their housing structure, gantry crane and other facilities, such as generators and switchgear;
 - Temporary cofferdam to facilitate the construction of the turbine and sluice gate housing structure;
 - Temporary rock storage areas; seawalls and associated dredging works;
 - Dredging to create boating area; access road on the seawalls including public realm works, lighting structures and shelters;
 - Offshore Building incorporating operation and maintenance (O&M) facilities, with integral visitor centre, leisure facilities and public realm;
 - Emergency facilities; works to Swansea Port Channel; demolition of existing eastern breakwater wall at the entrance to the Port of Swansea;
 - Works to Neath Harbour Channel including the widening of the entrance to the channel and replacement of its training wall; water quality enhancement works (if required or implemented);
 - Navigation facilities including lighting; reef habitat creation works, provision of oyster spatting ponds, herring mitigation and Sabellaria habitat works.

1.8 The onshore works would comprise:

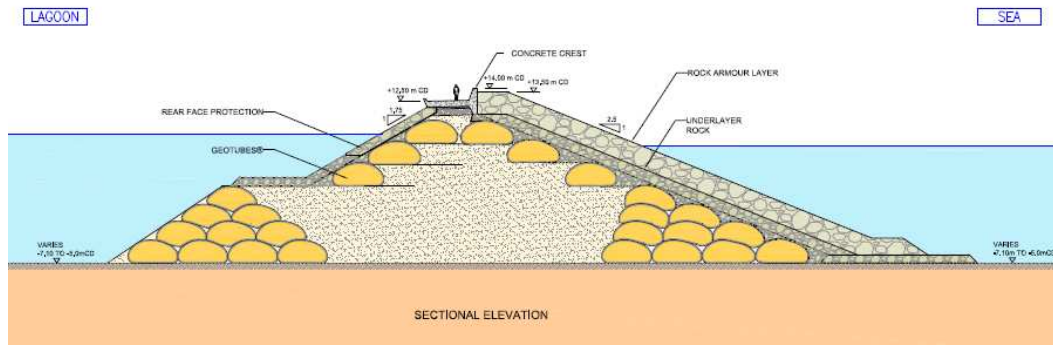
- Provision of construction support sites including access routes for construction traffic and permanent access routes to the project, decontamination/land remediation works, installation of drainage and services, material handling facilities for deliveries by sea or rail, land creation works, including lay-down areas and temporary rock stockpile areas;
- Western Landfall Building incorporating O&M facilities including visitor orientation, recreational boating facilities, laboratory/hatchery building at the western landfall with slipways; vehicle parking; manoeuvring areas, public realm and lagoon side public open space;
- Site of Special Scientific Interest (SSSI) information facility at the eastern landfall;
- Water quality enhancement works;
- Habitat creation works/mitigation, including beach/dune and saltmarsh creation within the lagoon;
- Access works to the lagoon, including new highway access via the controlled junction on Fabian Way with associated alterations to the Swansea Port road network;
- Necessary services; improvements and additions to River Tawe water shuttle pontoon;
- Pedestrian and cycle routes.

1.9 The cable connecting the turbines to the NETS would run along the western seawall to the western landfall and then follow a route through Swansea Port, past the Bay Campus, extending through the Crymlyn Burrows SSSI, and across the River Neath by use of existing ducts or by constructing new ducts.

Seawalls

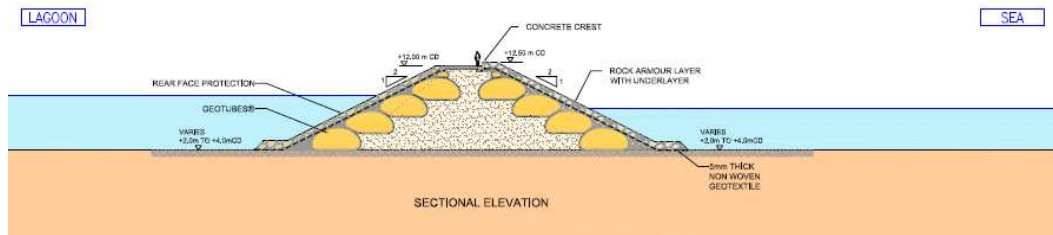
1.10 The seawalls will form the enclosure of the lagoon, controlling the water to allow a difference in water level to be created between the lagoon and the sea outside. It is proposed to construct the seawalls with a sediment core held in position with either sediment filled geotextile tubes, known as Geotubes® or by more conventional methods, where the sediment core is encased in gravel/quarry run. Layers of rock and rock armour would then be placed on the outside of the structure for protection; the thickness and quantity of these layers will vary depending on location.

1.11 At the most exposed locations, typically furthest offshore, adjacent to the turbine and sluice gate housing structure, the construction of the seawall would be as illustrated below.



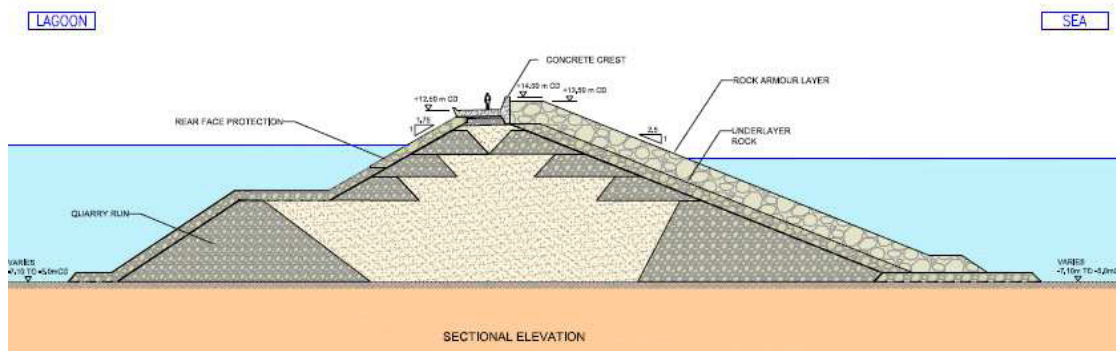
1.12 The Geotubes® on the more exposed seaward side of the seawall would be covered with a 1 to 1.5m thick layer of under-layer rock. A 2 to 2.5m thick layer of armour rock, varying in weight between 3 and 10t, will be placed over the top to create a slope of approximately 1 in 2.5. The lagoon side of the seawall is subject to smaller, locally-generated waves, and therefore less protection is required. This would be in the form of a 0.5 to 1m layer of rear face armour. A 10m-wide level berm is required on the Lagoon side to provide geotechnical stability to the seawall due to the steeper 1 in 1.5 and 1 in 1.75 slopes.

1.13 In less exposed locations, closer to the existing shore, the structure required to achieve the necessary stability, has a less complex construction, as shown below.

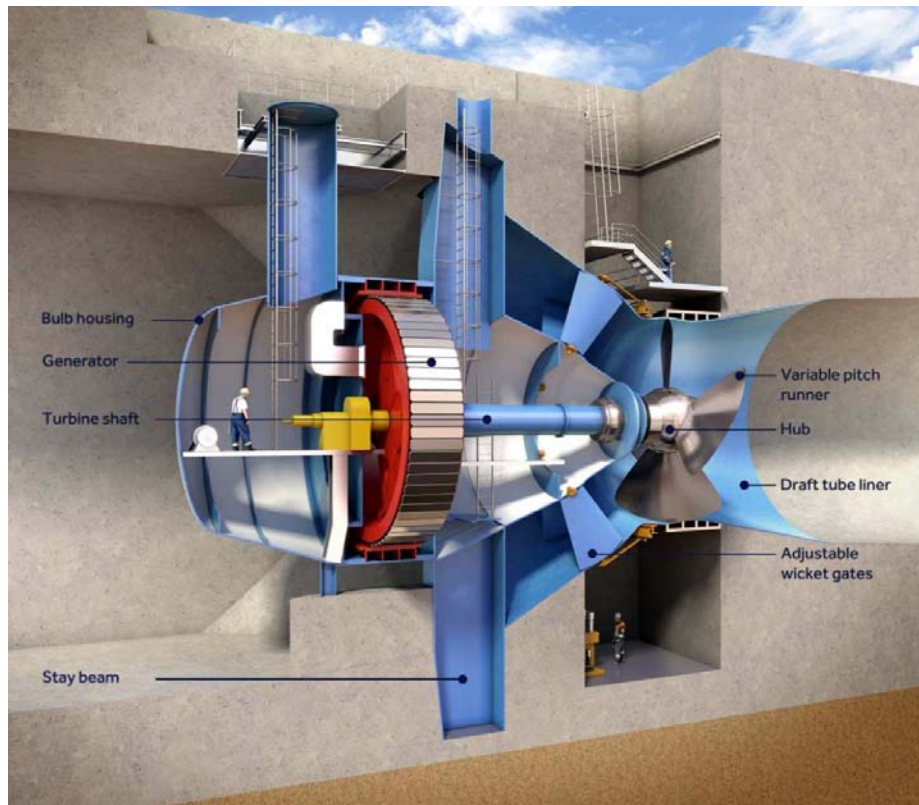


1.14 The Geotubes®/sediment will be covered, on both the sea and Lagoon side of the seawall, in a of rocks up to 1.5m thick. Both sides would have a finished slope angle of 1 in 2 or 1 in 2.5 depending on the position of the wall within the overall lagoon.

1.15 An alternative more conventional construction design of the seawall is also being considered. This method does not incorporate Geotubes® and is shown below.

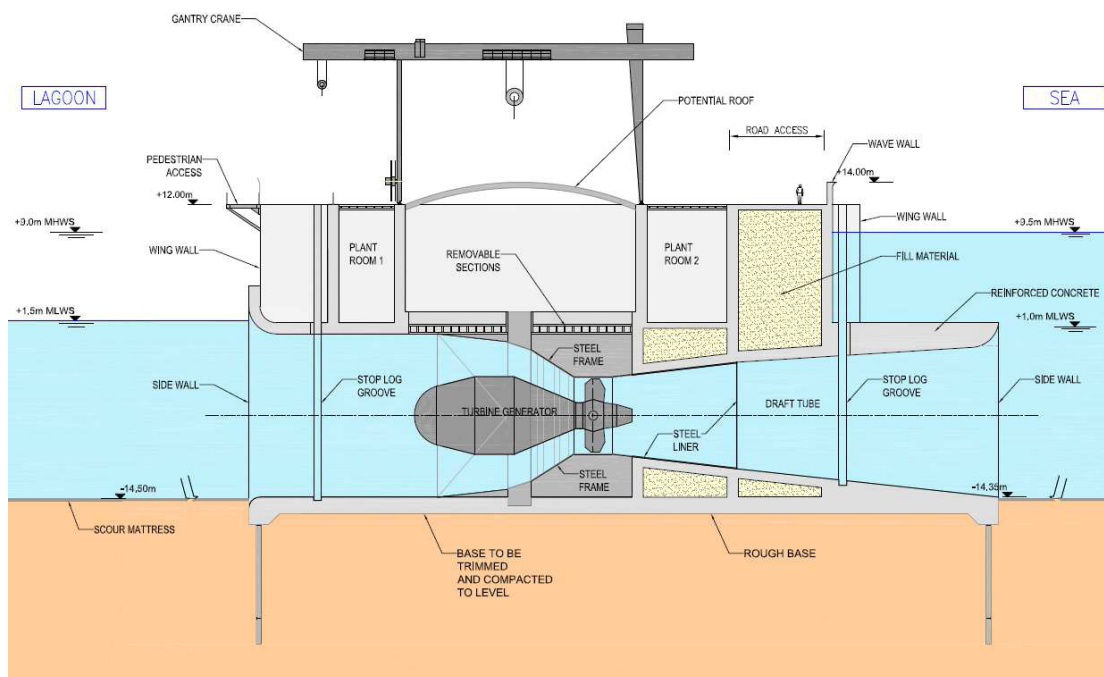


- 1.16 As with the Geotubes® technique, the seawall has a sediment core, but in this case it would be held in position by large piles of gravel. This gravel would either comprise dredged material from within the Lagoon footprint or quarry run imported by sea. Quarry run is stone material typically between 0 to 0.5t in weight which is left over after the blasting for rock armour. The footprint and angle of the slopes would remain largely unchanged from the design incorporating Geotubes®. The angle of the rock armour that forms the slope of seawalls gives stability to the structure and also reduces reflection of waves.
- 1.17 The seawall would be a maximum of 107m wide at the base of the deepest section, adjacent to the turbine and sluice gate housing and would narrow as it extends towards the landfalls to a minimum width of 40m.
- 1.18 The crest of the seawall will generally be 13m across, with the exception of the location of the Offshore Building where the seawall would be widened to accommodate the building and/or create additional recreational space. The seawall would also include local widened sections to accommodate sculptural elements. At the western landfall, in the south west corner of Queens Dock, the seawall crest extends to approximately 152m in width and is proposed to accommodate recreational areas including a beach and spectators areas.
- 1.19 The visible height of the seawalls above the water level measured at the highest point would be approximately 4m at high tide (MHWS) and 12.5m at low tide (MLWS).
- 1.20 In order to allow access along the seawall, a road would to be constructed along its entire length. The road would be 0.5 to 1.5m below the crest of the outer rock armour, to provide protection for the road and those using it. The road would generally be 4.5m wide.
- 1.21 The western seawall would incorporate an additional 3.1m wide cycle track/passing place. The road would form the access route along the seawall to the turbine and sluice gate housing structure for operational staff, emergency access and the public. The public would be permitted to access the road on foot and by bicycle, which forms part of a circular route around the perimeter of the lagoon. The road would be closed in extreme weather conditions and during hours of darkness, except for key O&M access.
- 1.22 It is proposed that the sediment used within the core of the seawall and the Geotubes® would be taken from the seabed within the footprint of the lagoon. It has been calculated that approximately 8.1 million cubic metres (Mm³) of sediment will be dredged for the project as a whole. A licence to dredge is currently being sought from Natural Resources Wales (NRW), Marine Licensing Team (MLT).
- 1.23 It is proposed to install between 13 and 16 bi-directional turbines of 7m diameter in the turbine and sluice gate housing structure. Because the turbines are bi-directional, they are able to generate power with water flow entering the lagoon on the flood tide and leaving the lagoon on the ebb tide.

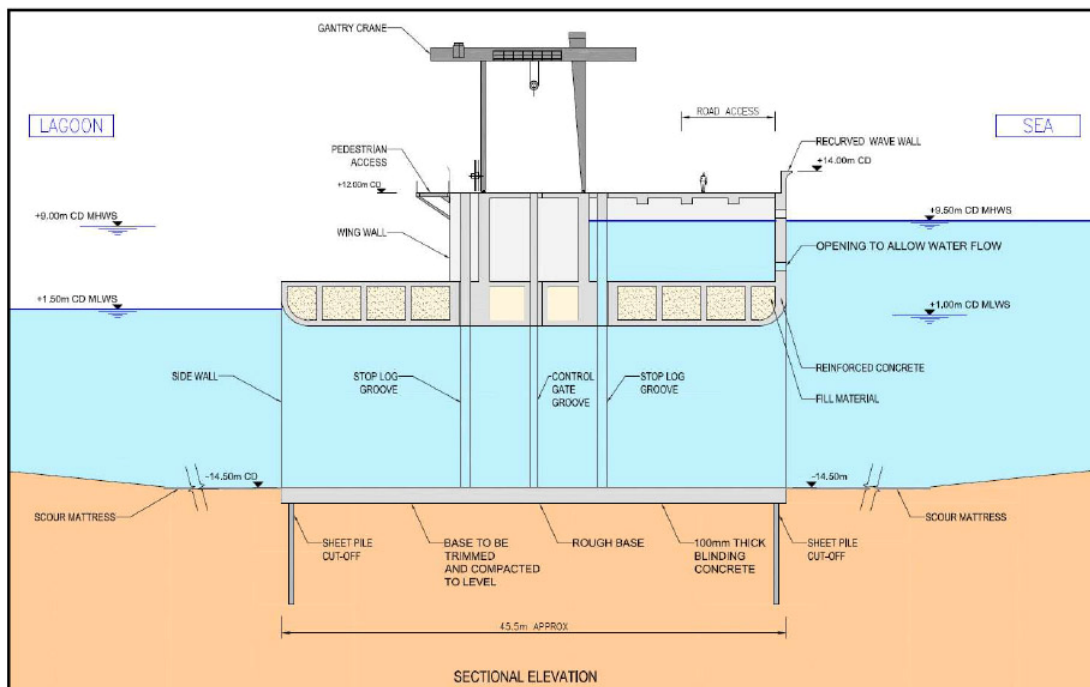


- 1.24 Between six and ten vertical lift metal sluice gates would be located in the turbine and sluice gate housing structure. The sluice gates are an additional mechanism (as well as the turbines) to control the water entering and leaving the lagoon. The gates remain closed until towards the end of each cycle when they are then opened to allow the water levels in and outside the lagoon to be equalised as much and as quickly as possible.
- 1.25 As indicated, the exact configuration of the sluice gates and turbines is also yet to be resolved, however, a layout shown in the Environmental Statement of 16 turbines, 7m in diameter, 8 sluice gates and a dividing structure incorporating a maintenance area, would give an overall structure of approximately 410m in length. It would be 67.5m wide in the vicinity of the turbines, 45.5m wide in the vicinity of the sluice gates and 137m wide at the widest point of the dividing structure. At seabed level, -14.35m CD, a scour protection mattress would be constructed, which will extend in the order of 50m on either side of the housing structure.
- 1.26 The dividing structure would be a large concrete structure which assures efficient hydraulic flows into the turbines and sluice gates and would extend to the depth of the housing structure. It would be a platform from which large items can be accessed using on gantry crane for maintenance or repair. This would be located on top of the turbine and sluice gate and would have an overall height of 18.65m above the top of the turbine housing. It would be permanent feature on top of the turbine and sluice gate structure and would traverse the same as required and have a normal 'home' position where it will be placed when not in use.

- 1.27 In order to function efficiently, the turbines and sluice gates have to be submerged at all states of the tide. To achieve this, the seabed would be gradually deepened, at a 1 in 10 slope on either side of the turbine and sluice gate structure, to create a gently-sloping bowl up to 165m wide across the base where it meets the scour protection mattress (50m either side of the turbine housings). It is stated that the angle of the slope will ensure that it remains stable and will minimise scour and erosion.
- 1.28 The housing unit for each 7m-diameter fixed speed turbine would be approximately 15m wide, 67.5m long and a total of 26.5m in height from deepened seabed level to the apron level. A small wave wall, 1.5m in height, would sit on top of the apron.
- 1.29 An indicative cross-section of a 7m diameter, fixed speed turbine housing unit with turbine is shown below. (The final design of the gantry crane is subject to review.)



- 1.30 Each individual sluice gate housing unit would be approximately 16m wide, 45.5m long and will be a total of 26.5m in height from the deepened seabed to the top of the concrete apron. A cross-section of an individual sluice gate housing unit is shown below.



- 1.31 Each of the turbines would be capable of generating up to 20MW of electricity at 9kV, which would be stepped up to 33kV by a transformer adjacent to, and linked to, pairs of turbines. The electricity would be stepped up again to 275kV by a larger transformer at the power house, located in, or adjacent to, the turbine and sluice gate structure.
- 1.32 The combined electrical output from all turbines will then be transferred to the nearest National Grid substation. This has been identified as Baglan Bay substation to the east of the River Neath. The electricity would be transferred via cables laid underground, commencing at the turbine and sluice gate housing structure and then extending within the western seawall through a single trench from the lagoon and onwards running to the south of Fabian Way and underneath the River Neath. The precise connection at Baglan Bay substation would in due course be promoted separately by National Grid.
- 1.33 It is stated that whilst the principal function of the project is as an electricity generating station, it would however provide enhanced recreation and educational facilities to the benefit the local and wider community.
- 1.34 It is anticipated that the Project would attract some 70,000-100,000 visitors a year. Sporting events are anticipated to range from sailing competitions and training for a variety of classes of boat, to triathlon, swimming or running events once or twice a year, with between 2,000 and 8,000 visitors attending individual events.
- 1.35 As highlighted below, three focal areas are proposed to support the operation of the project.

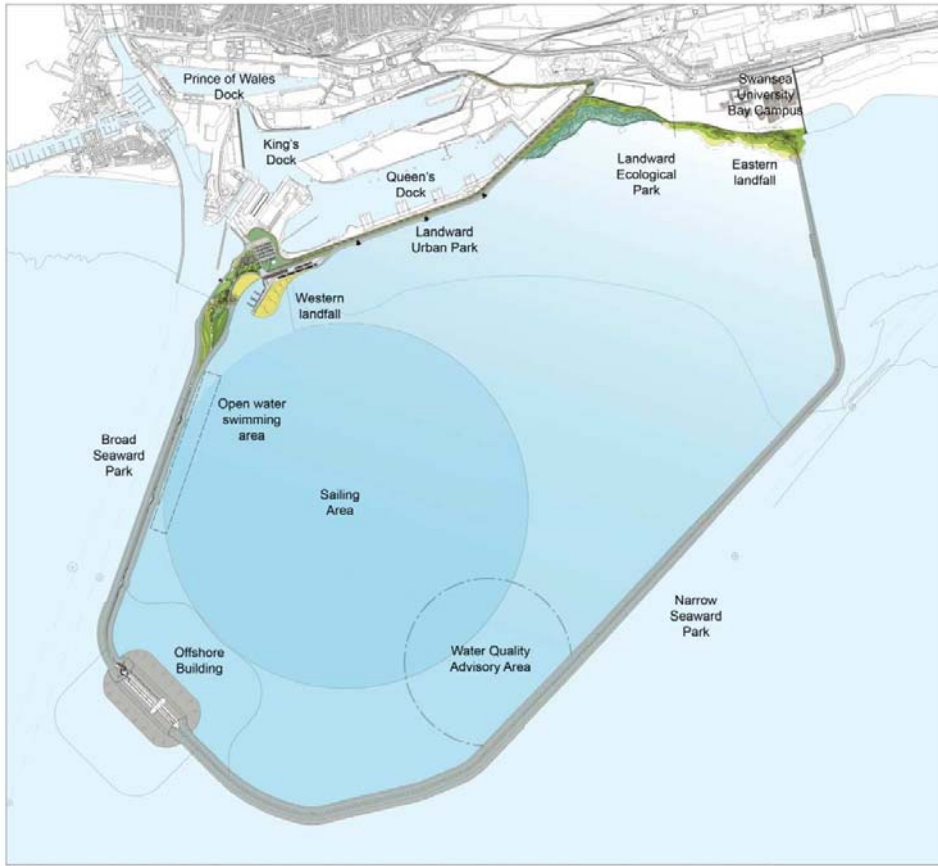


1.36 These and comprise:

- i. Offshore Building;
- ii. Western landfall; and
- iii. Eastern landfall.

1.37 A supporting masterplan aims to link these three focal areas and the seawalls of the Lagoon to the land while capturing the existing waterside environments associated with Swansea Port, the Bay Campus and existing brownfield land. It is stated that the public realm of the Project has been designed as a “marine park” with four offshore and onshore character areas, namely, the Broad Seaward Park, Narrow Seaward Park, Landward Urban Park and Landward Ecological Park.

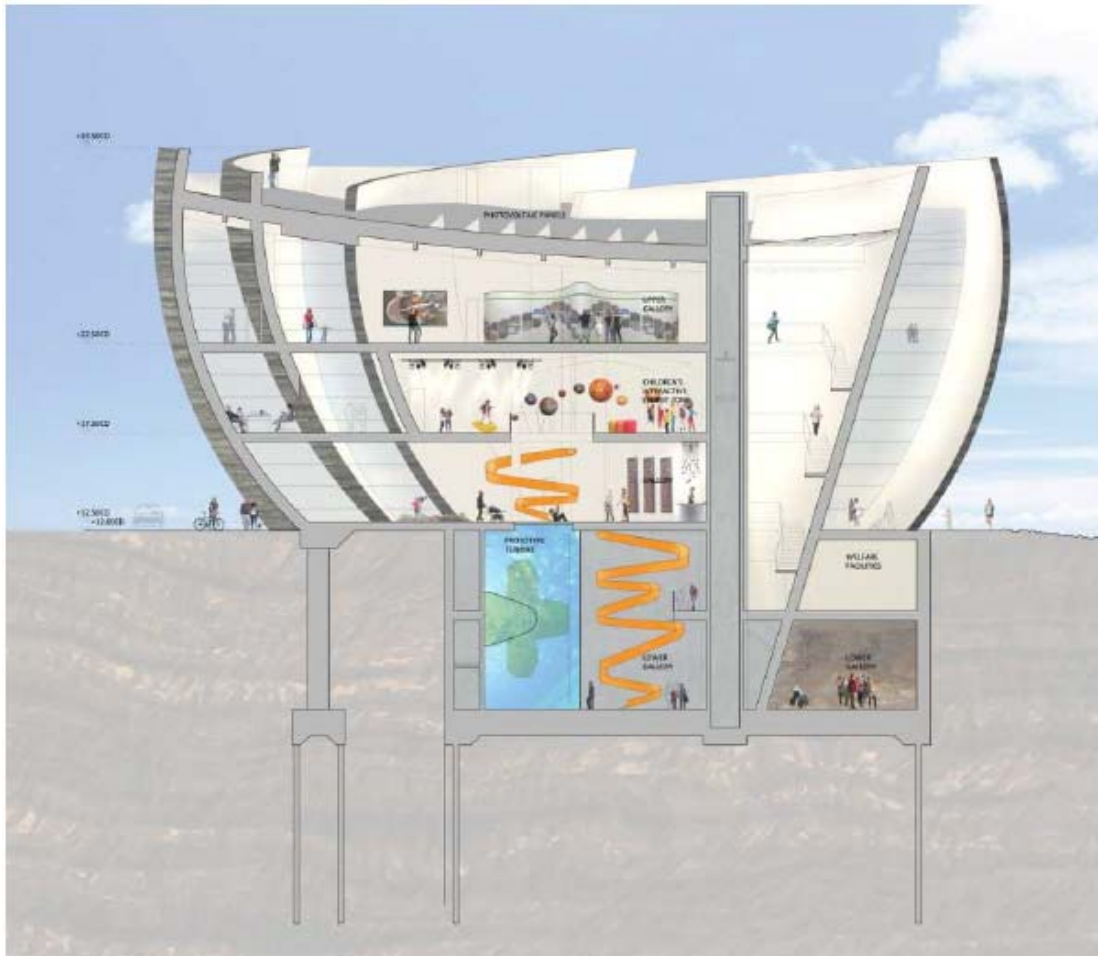
1.38 Overall the masterplan encompasses O&M requirements associated with the operation of the energy generation facility and related recreational opportunities, as illustrated below.



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1.39 The offshore building would be located on the north west side of the turbine and sluice gate housing structure and would comprise a three-storey structure, with a maximum envelope of 57m by 51m by 25.5m high, and with a ground floor area of approximately 35m by 47m. The design of the building is shown below along with an illustrated cross section.





- 1.40 The building would be up-lit and lighting of the immediate external area would be provided. Amenity lighting of the public realm would extend along the western seawall to the western landfall and at a lower intensity towards the eastern landfall.
- 1.41 The offshore building will provide O&M facilities associated with the turbines and sluices, and recreational facilities for visitors, including galleries and multi-functional exhibition space; turbine viewing gallery and viewing terraces; education facilities; restaurant/café/ kitchens; and visitor facilities, including composting toilets.
- 1.42 The western landfall area is intended to form a destination location and gateway to the western seawall, which, it is stated extends as an attractive public realm towards the offshore building. It is anticipated that there will be an electric bus that can transport those visitors not wishing or able to walk between the western landfall and the Offshore Building.
- 1.43 The western landfall would also include access control measures that permit the seawall to be closed during the hours of darkness and during extreme weather conditions.



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- 1.44 It is stated that the water of the lagoon provides opportunities for a water sports venue capable of providing a permanent body of water for local, regional and national events, with spectator areas along the lagoon seawall.
- 1.45 The Western Landfall Building would comprise a three-storey structure with a ground floor area approximately 120m by 18m with a total height of 13.5m. The design of the building, which would be up-lit during hours of darkness, is illustrated below, whilst its location is shown above.



- 1.46 The building would provide functional space associated with the O&M requirements of the project, including controlled access to the western end of the lagoon seawall and provision of space for recreational uses, including:
- Gateway facilities such as visitor orientation, exhibition space, visitor shop and offices;
 - Boating/water sports centre including entrance area, changing facilities, dry training/wet briefing areas, workshops/storage, cafe/bar/social space and viewing terrace, classrooms and staff facilities and medical room; and
 - Public toilet facilities.
- 1.47 External facilities would include:
- Access control to lagoon seawall;
 - Up to 300 car parking spaces and associated overspill space;
 - Six coach parking spaces;
 - Bus and heavy vehicle turning facilities;
 - Electric bus turning and set down area;
 - Slipway access to the lagoon;
 - Boat storage area;
 - Hard standing areas, soft landscaping, public realm and recreational space; and
 - Lighting of external areas and amenity way-finding lighting to the public realm.
- 1.48 The design of the eastern landfall facility comprises an information wall and viewing platform stepped into the proposed dune and coastal grassland area. The final design is anticipated to be coordinated with the University as a combined facility providing information on the project as well as Crymlyn Burrows SSSI.
- 1.49 The eastern landfall area including the adjacent Landward Ecological Park, would be secured with a locked gate thereby limiting unauthorised vehicular access and controlling public access.
- 1.50 As shown on the above Masterplan the three focal areas are proposed to be interconnected with four character areas or Parks, namely:
1. The Broad Seaward Park;
 2. Narrow Seaward Park;
 3. Landward Urban Park and
 4. Landward Ecological Park.
- 1.51 At the Western Landfall, the Broad Seaward Park is intended to invite visitors offshore to the Offshore Building. At its landward and widest extent it would comprise a beach area with recreational space overlooking the Western Landfall Building and associated facilities. An intertwining network of paths would lead visitors across a wide sweeping walkway offshore and onto the main lagoon wall. Positioned along this section would be stopping off places such as viewing areas and sculptures.

- 1.52 It is envisaged that the new rock armour of the lagoon seawall would provide good opportunities for habitat creation at and below water level. In addition, formal fishing locations, and informal opportunities for walkers, runners and cyclists would be provided.
- 1.53 A shuttle bus is proposed linking the existing Park & Ride facility on Fabian Way, the western landfall, and the Offshore Building, subject to investigation of its viability. Facilities are also proposed on the western seawall to support a potential 'lagoon water shuttle' service linking the existing pontoon on the west bank of the Tawe to the Lagoon facilities. These proposals are intended to support access to the Project from Fabian Way and Swansea Maritime Quarter respectively.
- 1.54 Beyond the Offshore Building the Narrow Marine Park would lead visitors back onshore to the Eastern Landfall. Again, this would incorporate stopping off places, fishing platforms and sculptures dotted along the route.
- 1.55 The Landward Ecological Park and the Landward Urban Park would connect the Eastern Landfall to the Western Landfall area. The landward Ecological Park, shown below aims to provide a buffer between the Project users and the Crymlyn Burrows SSSI.

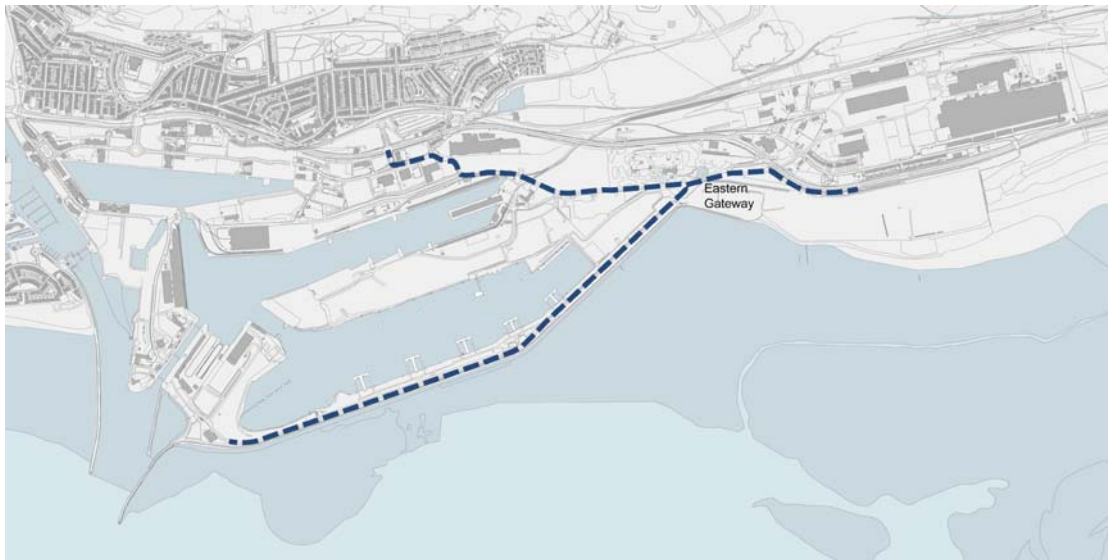


- 1.56 The Landward Ecological Park would comprise areas of saltmarsh (5ha), coastal maritime grassland (3ha) and dunes (5.5ha). These areas would be formed part in mitigation for lost habitat but also as enhancement proposals thereby adding ecological connectivity and value to the area.

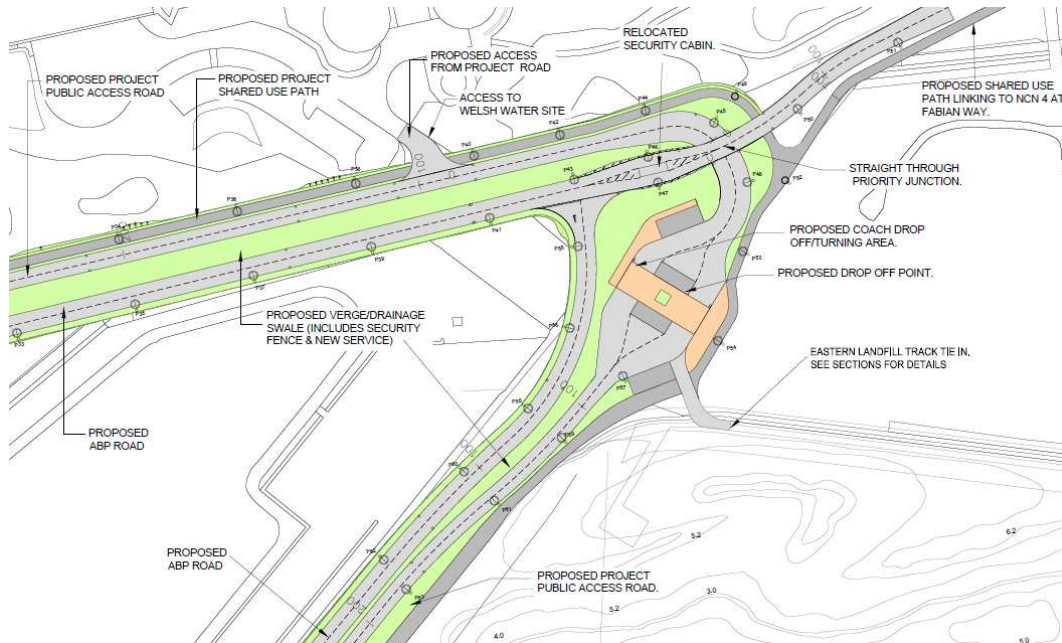
- 1.57 The Landward Ecological Park would lead into the Urban Park. This area extends along the existing Queen's Dock waterfront as an enhanced public realm and access road environment benefiting from the removal of the existing concrete seawall (where possible) opening up views across the lagoon. The proposal establishes a new waterfront road, lagoon-side public realm and recreation areas at a level above the high tides with limited lagoon-side parking and pedestrian access to intertidal areas at low tide. Public realm, landscape and habitat creation proposals at either end of this route are intended to integrate the western and eastern landfall points of the seawall into its environment before extending into the Bay.
- 1.58 Overall the circular route around the lagoon is provided for O&M and recreational purposes but the masterplan also makes provision for sculptural elements of various heights, which form a trail around the length of the seawall. This trail would also include large, lit pearls.

Access infrastructure

- 1.59 Access to the project would be provided via a new access road with combined footpath and Cycleway starting from Langdon Road, as shown, with vehicles leaving Fabian Way at the existing traffic signal controlled junction by McDonald's restaurant, turning left at the existing roundabout (which extends to link with the SA1 development) and then turning right to join the new road, close to Bevan's Row.

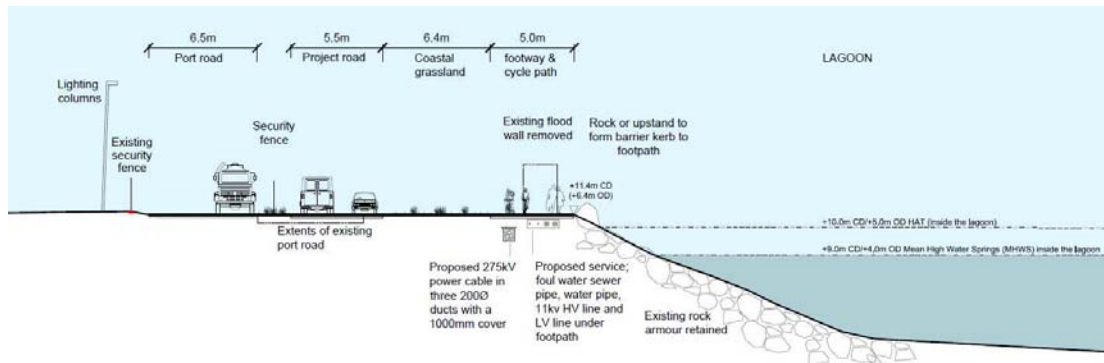


- 1.60 A new footpath/cycleway would be created south of Langdon Road to link the existing footpath from SA1 to the start of the Project access road.
- 1.61 The new access road would run along the north side of the existing Port Road, separated by a verge and swale (potentially lined), up to the boundary of the Welsh Water Treatment Works (WWTW), as shown below.



- 1.62 Here the Port Road would be moved south and the proposed Project access road would continue past the entrance to the WWTW. At approximately 50m past the entrance of the WWTW, the proposed access road would turn, cross the Port Road, and extend west along the south of Queen's Dock. A new Port security entrance would be created with the existing security gatehouse relocated to the west of the proposed Lagoon access road. Access to the Port would remain from Baldwin's Bridge junction.
- 1.63 There would be a new combined footpath/cycleway that will run along the length of the new access road, it will be 3m wide from Langdon Road to where the road turns to head west along in front of the WWTW. At this point the combined footpath/cycleway would join the route that runs around the perimeter of the Lagoon and widens to 5m as it follows the route to the western landfall.
- 1.64 Once the Project road has crossed the Port Road there would be a drop off point and turning area allowing pedestrians and cyclists to join the footpath and cycleway to the eastern landfall.
- 1.65 The Queen's Dock waterfront currently comprises an existing port road with wide grass and stoned verges. On the seaward side is rock armour seawall protection surmounted by a 2m high concrete wall with some gaps. The area is currently privately controlled with access for Port operations only.

- 1.66 The proposed project road would extend along the south side of the Queen's Dock and utilise the alignment of the existing Port road. The majority of the existing 2m high concrete flood wall would be removed to open up views to the lagoon, as shown below.



- 1.67 Where there are existing World War II features, such as pill boxes, these structures would be retained, along with a 3m section of wall either side. A new Port road would be constructed immediately north of the Project road, separated by a secure fence line. The Project road would be in the order of 5.5m wide with an adjacent 5m wide footpath and cycleway.
- 1.68 It is explained that a potential link from the project to the west bank of the River Tawe and central Swansea would be facilitated by the provision of a new pontoon and landing point at the western landfall to support a water shuttle service that will run between the western landfall and the existing pontoon on the western bank of the River Tawe. It is stated that the existing eastern breakwater of the Port of Swansea would be removed as part of the project and that this would create a suitable access point.

Water quality enhancement works

- 1.69 The long sea outfall from WWTW, owned by DCWW, terminates within the proposed lagoon area. The outfall discharges a high quality tertiary treated UV disinfected final effluent.
- 1.70 In order to maintain an appropriate standard of water quality all year round for water contact sports within the lagoon, it is proposed to extend the existing long sea outfall beyond the seawall of the lagoon.

Other works to support the Project

- 1.71 There are additional permanent works that need to be carried out to support the construction of the project. These comprise the demolition of the Eastern Breakwater at the entrance to the River Tawe and the realignment of the eastern training wall at the entrance to the River Neath estuary.

Sequence of Construction

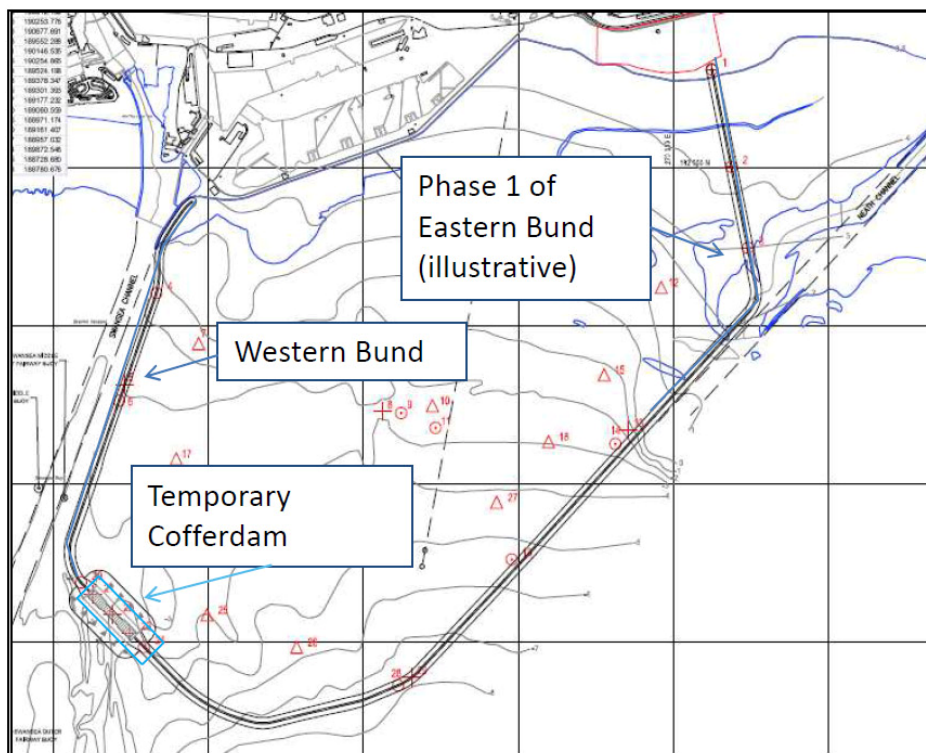
1.72 The construction of the project would commence following the grant of development consent and the Marine Licence and discharge of any relevant requirements or conditions precedent to construction. This is envisaged to be in 2015.

1.73 The construction period would be split into four main phases. (The phases and extent of work will be subject to review and alteration where necessary and as such is indicative only.) The key elements of the four phases are described below.

Phase 1: Mobilisation, western seawall and start of eastern seawall

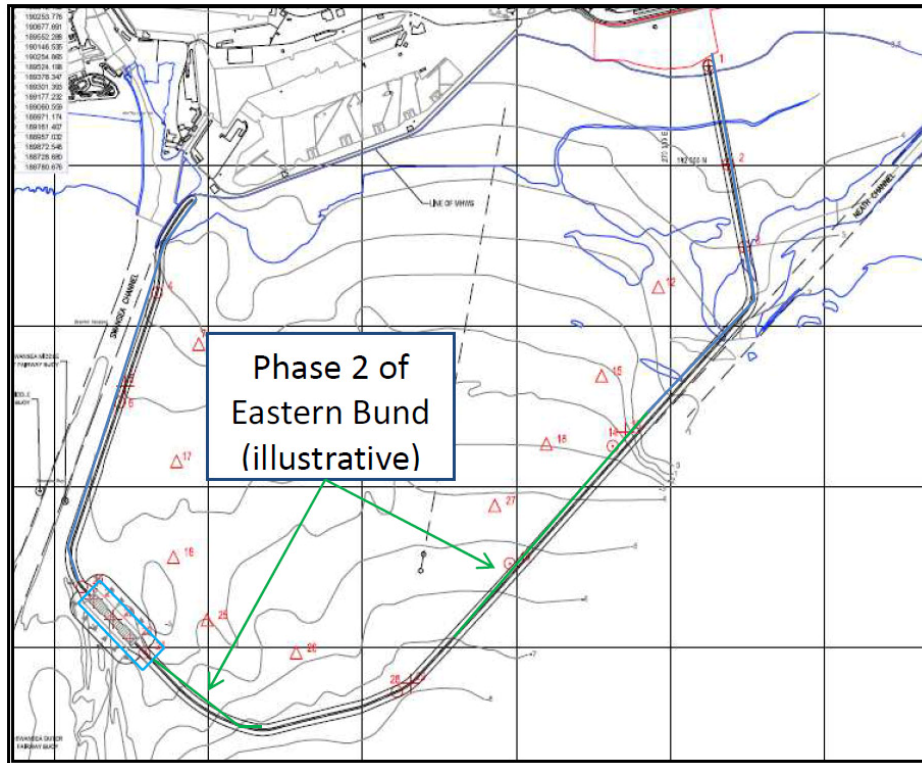
1.74 The landside set up of the construction support site.

1. Construction access routes.
2. Seawall – western arm.
3. Temporary cofferdam around construction area for the turbine and sluice gate housing structure.
4. Lagoon seawall – eastern arm phase 1 (see Figure 4.41 below for explanation of phasing).
5. Water quality enhancement works option 3 - outfall extension.
6. Connection to power supply and utilities for construction phase.
7. Demolition of structures within construction compound areas, removal of Swansea Port eastern breakwater and removal of existing wall along the length of Queens Dock.



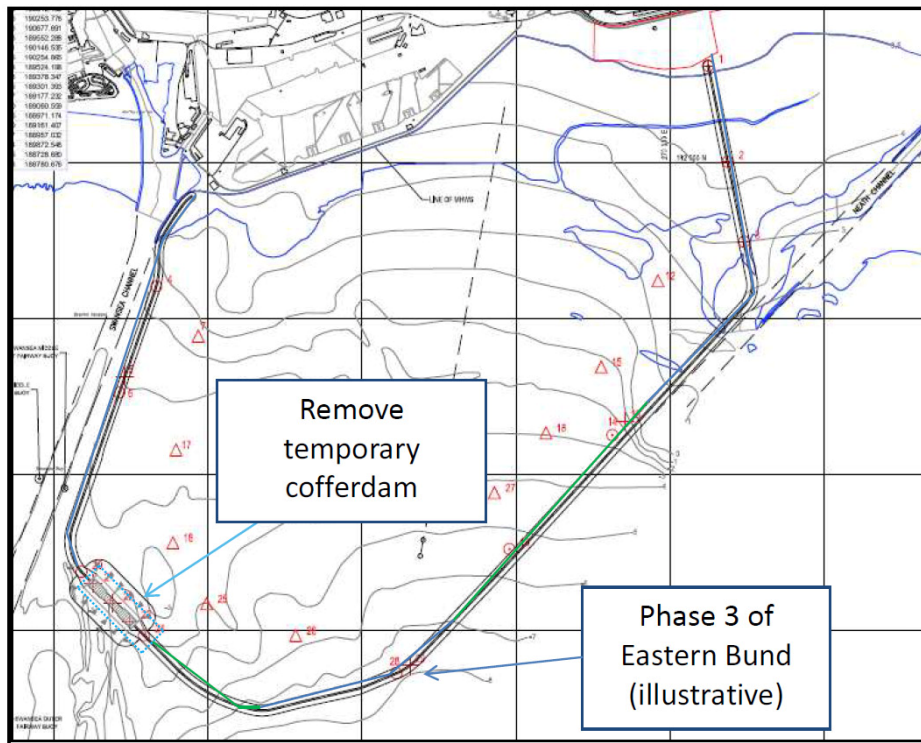
1.75 *Phase 2: Turbine and sluice gate structure construction, continue eastern seawall.*

1. Construction of the turbine and sluice gate housing structure.
2. Water quality enhancement works (option 2 - UV disinfection of storm water).
3. The installation of the turbines and sluice gates.
4. Dry commissioning of the turbines and sluice gates.
5. Connection to NETS.
6. O&M facilities.
7. Seawall - eastern arm phase 2.



1.76 *Phase 3: Lagoon Closure and Commissioning*

1. Removal of the temporary cofferdam wall.
2. Seawall - eastern arm (closure) (see Figure 4.43 below for explanation of phasing).
3. Wet commissioning of the turbines and sluice gates.
4. Commencement of finishings and offshore building works.



1.77 Phase 4: Finishing's

1. Seawall finishing.
2. Completion of construction of the Offshore Building.
3. Removal of the construction support sites.
4. Emergency facilities and slipways.

Other Works

- 1.78 There are also other works that sit outside the four main phases that continue throughout the duration of construction.
1. Construction of onshore building and sporting public realm.
 2. Road and pedestrian infrastructure.
 3. Visitor facilities, public realm including access and parking.
 4. Pedestrian and cycle route links.

Programme

- 1.79 The construction phase of the project is planned to commence in spring 2015. It is stated that in general, dredging should usually take place in the period from April to October, such that there is less potential chance of delay as a result of bad weather and fewer/smaller environmental impacts. As such, it is intended that the seawalls will be constructed during the summers of 2015, 2016 and 2017, the closure of the eastern arm of the seawall is expected to take place in early 2018. The temporary cofferdam for the turbine and sluice gate structure is planned to be installed in 2015, with the construction of the turbine and sluice gate structure programmed for between Spring 2016 and Autumn 2017.

- 1.80 Following commencement of generation during the summer of 2018, the supporting infrastructure elements of the project are planned to be completed during 2018 and the beginning of 2019.
- 1.81 It is stated that the project would be entirely privately funded. The development phase is funded by private individuals and green entrepreneurs, as well as a public share offer held in June 2013. The construction phase will be funded by major institutional investors and a further public share offer.

Decommissioning

- 1.82 At the end of the operational lifetime of the Project (anticipated to be some 120 years), it is the view of the applicant that the total removal of the Lagoon would cause significant detrimental effects to the rocky reef and sand ecosystems which will by then be well-established and would also result in complete loss of the recreational tourism facilities forming part of the project. For these reasons two potential options for decommissioning are being considered, which are:
1. Replace, upgrade and extend life of the generating station; and
 2. Remove turbines, sluice gates and M&E equipment and continue leisure use of the Lagoon water area.