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Swansea Foreshore Restaurant & Ice-cream Parlour

HND Building Surveying

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Swansea Foreshore Ice-cream Parlour

1.0 Site Location

The project build is a three-storey building comprising of retail outlet in the form of a restaurant, café/ice-cream parlour complete with kitchen and public convenience & food store at ground level with a gross internal area of 300m². First floor comprises of store rooms, training room and staff welfare facilities, with the third floor occupying a self-contained apartment for the manager. Combined space for the first and second floor is 300m², therefore 150m² GIA for 1st and 2nd floor. The site location is on Swansea foreshore between the Marriot hotel and Swansea Council Civic buildings. The building will face SSW to ensure the best views whilst protecting the front of the building from the South facing sea winds. *(appendix 9.1 map showing orientation of building on site).*

2.0 History of Site

History of the site, gained from historical data and maps, confirms the site has had several uses over the last 200 years that will have contributed to the site being contaminated. In the 1800's Swansea Hospital for Contagious Diseases occupied the site and it is not known if there were any burials carried out within the grounds during the time the hospital was in operation. *(appendix 9.2 historical map 1884 showing site).* In 1921 the use of the site had changed and the hospital demolished in favour of the Mumbles railway line. The site was dominated by railway lines and engine sheds. *(appendix 9.3 historical map 1921 & 1947 showing railway).* There is also information on the maps that show limekilns were on the site, as the use of lime was still being widely used at this time. It is suggested in reports produced by NORA (NERC Open Research Archive), in relation to urban geology of South Wales, that due to the industrial development including mineral extraction in the South Wales and Swansea area, these industries have left a legacy of contaminated ground & watercourses throughout the area.

3.0 Desk Top Study

A desk top study was carried out to ascertain basic information about the site intended for construction. Information was gathered from various sources including historical data, maps, any previous investigations carried out on the site, geological survey's including mining, aquifers, Radon & flooding. Further up-to-date information regarding planning, building regulations and Swansea city council development plan was also sourced to establish if any restrictions would be in place that could delay the project.

4.0 Site Walk Over

On the day of the site walk over, Thursday 29 November 2018, weather conditions were poor with very high winds coming off the sea along with intermittent heavy rain. Weather conditions confirmed how exposed the site was which would help determine the orientation of the building along with possible materials and structural type. The site itself is easily accessed from the main road running through Swansea along the coast. However, the main road through Swansea town centre can get very busy especially during holiday periods as it's the main road through to the Mumbles area, so consideration should be given to the delivery of heavy plant, materials or other larger vehicles that might cause further congestion on the roads. Roads are sufficiently wide on approach to the site but access to the car parks at the existing building for the Marriot hotel and the Council Buildings are via winding, narrow, roads, not suitable for heavy plant machinery being delivered to site. Initial observations would suggest a direct access be made to the site to minimise difficulty with larger vehicles. The best route for direct access would be to use the car park exit from the Marriot hotel. *(Appendix 10.0 Photo schedule site present day).* This would enable the site to be fully enclosed from the public, minimising health and safety risk to the general public. In order for this access to be used solely for the site, patrons of the hotel would need to enter and exit the current car park at the same location. This would require new road markings and signage at the entrance to the car park to show it is new and now two-way traffic.

Within the site identified there is a public pathway giving pedestrians direct access between the Marriot Hotel and Council building car parks to the esplanade (which is

well used at all times of year). In order to further protect the general public from on site risk, the footpath would need to be re-routed for the duration of the construction. Access to the esplanade could still be gained at the current location but routed round the boundary of the site enclosure, clearly marked and with appropriate lighting. As the proposed site for the build currently encroaches on both the Marriot hotel and Council car parks some work on re-marking the car parks will be required prior to the site perimeter fencing being installed. Both the Marriott Hotel and the Council building will have a loss of accessible car parking spaces for the duration of the build, some could be lost permanently. Further parking is available across the road from the site.

Consideration should be made as to the type of site fencing as both Marriot hotel and the council buildings cater for wedding parties. Therefore, OSB will be used for the perimeter fencing, fully secured, with appropriately themed spray-painting decoration, with a local competition run via schools.

Further in-depth investigations of the site will be necessary to establish several factors prior to construction starting.

4.1 Further Investigation of Site

- 1. Bore hole and trial pits** – to determine the ground composite and strata, which in turn will help with the appropriate choice of foundations to be used on site. There is information already available in previous bore hole investigations around the area and to what depth the bore holes reached. Due to extensive building works around the docks area many bore holes have been dug, however the information on this is restricted. Attached (*appendix 9.4*) is a map of the site area showing the locations of the trial pits and bore holes to be tested. Also attached (*appendix 9.4a*), historical data of bore hole sampling, showing the make up of the ground on the site.
- 2. Ground contamination** – Soil sampling to confirm what contaminants are present, this will further confirm choice of foundation and provide vital information if pile foundations are to be used. Certain chemicals/contaminants can act aggressively with concrete therefore, if a 'pile' foundation is to be used,

material may have to be sheathed to protect the concrete or a suitable material used that will not react with ground contaminants such as salts. Remediation of any ground from the site will be carried out in accordance with the Local Authorities responsibility toward the *Environmental Protection Act 1990 (Part 11A)* and *Contaminated land (Wales) Regulations 2001*. Appendix 5 shows the trial pit location to be used for the soil sampling. *(UK Legislation, 1990)*

3. **Water table** – to further determine the foundation type and materials used on construction. Data relating to aquifers confirmed positioning of these and where and in what directions they run. Further confirmation sought on the level of current water table. As the site is coastal salt water will be present in the ground that will determine the materials used for foundations.
4. **Mining survey** – This will confirm if there are any coal seams, shafts or potential obstacles present should pile foundations be used for the construction. *(appendix 9.5 shows map with existing mining data)*. Data within the map referred to confirms there are no mining obstructions on or around the intended site.
5. **Radon Survey** – Standard practice to establish the level of Radon in the ground around a public building. The information on Radon level must be purchased from BGS (British Geological Survey), therefore confirmation of current levels is not included, however a map from geographical survey website is included. *(appendix 9.6 map showing geological strata in area)*
6. **Natura 2000 (areas of nature protection within the European Union) preservation of wildlife** – As the site location is coastal, some indigenous wildlife will already inhabit the area, should this be the case further work to make and establish a new breeding ground close to the site should be a consideration. The possible use of a green roof might be a consideration to help preserve local wildlife habitat. Confirmation from Natura will be sought. *(Natura.org, 2018)*
7. **Land survey** - Establish extent of site and exact perimeter, ground levels/levelling required prior to construction starting.
8. **Services** –
 - Welsh Water- drinking water and sewerage, application sent with site coordinates for further investigation into existing water and sewerage, any redundant water or sewerage pipes that might cause obstruction when piling on or close to site. Also cost for the new connection of water

and sewerage for new build. Response will be in the form of a scaled plan 1:2500 complete with required detailing.

- Electricity – Western Utilities, request for information in relation to any redundant electrical cables at site. A request for new connection costs and timescale at site. This will include excavation, traffic management, installation and meters.
- Request sent Wales and West Utilities, to establish if any redundant gas pipes are on the site, that could create obstacles when bore hole testing or inserting pile foundations. Cost request for new connection to the nearest main gas pipe to the site. Developers pack available.

This work to be scheduled at the same time as the initial ground preparation of the site.

9. **SUDS (sustainable drainage systems)** – Appraisal of the site to establish if run off water can be harnessed and used to enhance an ecological/green approach to the build via a green roof being installed above the main roof housing restaurant, ice-cream parlour, kitchen and dining area. The current site and surrounding area have already large areas of car parks, roads and pathways that can retain surface water during the wetter months of the year. By introducing permeable paved areas for external dining & pathways round the perimeter of the building and car park, this will help with the run off in the immediate area. A green roof system that will help blend the building in with the shoreline and create a natural habitat for wildlife with the use of sea grasses and indigenous coastal plants will help soften the construction helping it to blend into the existing flora and fauna. Rain water should be harnessed for use with plant watering and any external fabric cleaning, whilst installing a grey water recovery system would service the toilets.
10. **Tree preservation orders** - Ensure vulnerable trees on site are not protected by a tree preservation order (TPO). There are a number of trees and shrubs within the site perimeter that might be disturbed. Every effort will be made to move these wherever possible in accordance with current Local Authority planning policies. Where it is not possible the flora and fauna will be replaced during the landscaping phase at the end of the construction, before the site is signed off and handed over.

11. Flood risk – Further investigation into the likelihood of flood and its frequency.

Swansea and its city centre are coastal, sitting at the bottom of a number of mountains that can create a huge volume of water during heavy rain. The run off into Swansea's main river Tawe could quickly result in the area being flooded. The site would suggest it could be vulnerable to flooding from Sea water and from the river Tawe, the areas of Sketty, Uplands and St Thomas all flank the site area and are identified as high-risk flood areas. The Flood and Water Management Act (2010) introduced in England and Wales outlines responsibilities for reducing the risk of flooding. While Natural Resource Wales (NRW) are responsible for all water basins, rivers and Sea that might cause flooding to communities, the local authority is responsible for all other flood related issues. Lead local flood authorities (LLFA) were tasked with introducing a management strategy for the management of flood risk. *(Ref 1 City and County of Swansea Flood Risk Management Plan 2015).*

A scaled map of the site area is available to all contractors involved in further investigation/appraisal of the site. The map should be used when providing feedback with exact locations of services. For the wider investigations the whole site area should be covered to the full extent of the site perimeter. *(appendix 9.7)*

5.0 Foundations

Following the in-depth site investigations, sampling and analysis, along with historical data on the site ground conditions and its proximity to the foreshore and flood risk. The choice of the foundations to be used for the construction of the building are end bearing pile foundations. Detailed appraisal of the site confirms the site has several metres of made up ground to approximately 3m, before giving way to several layers of sand, cobbles and silt to a depth of 6m. As the bore hole exploration confirmed the first layer of stiff brown boulder clay is at a depth of 8.5m. The bore holes were dug to a depth of 24m for this site investigation. The water table is around the 4m, with the further risk of flooding in the area. End bearing piles of concrete material, treated to counter act any aggressive corrosion caused by existing ground contamination and salt water are to be installed. The piles will be fixed onto a concrete ring beam, with an insulated

structural T-beam floor with concrete screed. (*appendix 9.8 sketch of end baring pile and concrete ring beam*).

6.0 Building Frame-Material

The main fabric of the building will be made up of dense concrete block cavity wall, built within a steel frame. Exterior finish will be timber cladding, overlapped Silver Birch at gable walls. The front of the building will consist wholly of double glazed, full height folding doors, to maximise view. All other external wall finish will be smooth lime render. The internal frame of the building will be steel, this will allow the ground floor, housing the restaurant, café, kitchen and WC facilities to remain mainly open. The central core of the building will be concrete block and steel, providing the kitchen and food storage area, wc facilities including disabled toilet and baby changing area on the ground floor. Offices, additional storage and staff welfare facilities on the first floor and management accommodation on the second floor. Within the central core of the building a fully enclosed staircase will be fitted to the rear of the building. Insulation will be installed throughout the central core blockwork to the outside layer providing a decorative finish, with dot and dab plasterboard and plaster skim to finish interior.

The restaurant, café/ice-cream parlour dining area will be housed within a wrap around structure, mainly of steel and glass to maximise on the versatility of open-air dining, harnessing the natural sunlight and creating a light and airy environment. The restaurant, café and ice-cream parlour will be divided by decorative internal fittings to reduce noise transference and allow some degree of privacy.

6.1 Roof Structure & Eco Green Roof

The roof of the ground floor will be a flat roof system with a minimum pitch of 2 degrees, but not more than 10, in accordance with BS 6229 & BS8217, and prepared for an eco-green roof installation. The roof structure is made up from an open web steel joist with a metal deck on top with two layers of ridged insulation before a fully adhered membrane. On top of that will be a geotextile root resistant membrane followed by a layer of stone chips. A thin layer of sedum, around 20mm, indigenous coastal plants

and grasses to finish promoting sustainability through good design (Planning policy Wales, 2002 Welsh Assembly Government). The green roof will also provide additional insulation to the building helping with the heating and cooling. The green roof also does its job in collecting air pollution and trapping the carbon dioxide in its leaves. Grey water recovery system to be installed to reduce the cost of water and promote the sustainability of the green approach. The roof at central core of the building will match that of the eco green roof in so much as a mono pitch finished with natural slate.

6.2 Windows, Doors & Cladding

To ensure the building is aesthetically pleasing and goes some way to promoting an eco-friendly system, natural material will be used where possible. Timber windows, doors and frames and the cladding finish to the gable walls using Silver birch. The Bifold doors will be aluminium/steel frame to help reduce the overall weight of the system.

6.3 External Hardstanding & Landscaping

Natural materials are to be used for the external finish, smooth lime render finished with a lime paint to blend in with the coastal colours. Hard standing areas are to be finished with permeable materials to walkways and external dining areas and the finished ground throughout the car park. As the site is in a high-risk flood area from both tidal and river water, the permeability of the surrounding hard standing is of great importance.

7.0 Sketch Drawings

- Ground floor construction detailing and junctions to external walls (*appendix 9.9*)
- External wall, window and door intersection to Ice-cream parlour. (*appendix 9.10&10a*)
- Roof weathering and structure of restaurant and kitchen area. (*appendix 9.11*)

(hand drawn sketches are supplied in hard copy submission)

8.0 Site Set up & Plant

The site is situated on the shorefront, accessed via the old exit from the Marriot hotel car park. The site is fully boarded around its perimeter with vehicle access only from the Duvant Place. Access to site is from the left so vehicles will turn right into the site which is unencumbered, although extra-long or larger vehicles might require some additional manoeuvres. There isn't enough room within the site for larger vehicles to manoeuvre so they will require to reverse into the site when delivering plant. Larger plant arriving on a flat-bed articulated lorry would be off loaded after the carrying vehicle has reversed into the site. Alternatively, if plant permits, drop off can be at the access road/site entrance and plant driven within the site boundary. Listed below is the main plant and bulk deliveries to site. Each delivery to site would be discussed and risk assessed as to the most appropriate method of delivery day and time.

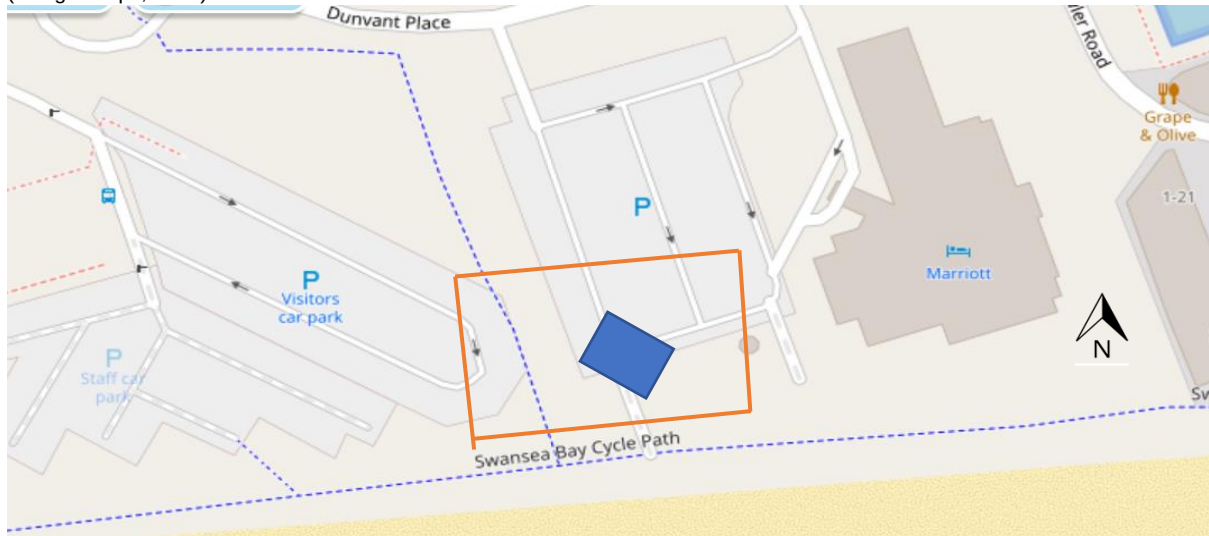
- JCB – removing top soil/ground cover.
- Mobile building – site office/welfare facilities.
- Additional portable toilet if required.
- Piling machine – to drive piles into ground.
- Crane – for lifting into place larger building materials (i.e. steel frame work).
- Skips – for the collection of rubbish and waste materials.
- Concrete mixer – Delivery of ready-mix concrete to form ring beam & ground floor. Alternatively, a silo for use with pouring each stage of the concrete work.
- Scaffolding.
- Forklift truck - to move palletised materials around the site.
- Generator
- Water storage
- Secure storage for materials left on site

9.0 Appendices

- 1 Map showing orientation of building on site.
- 2 Historical map of site 1884.
- 3&3a Historical map 1921 & 1947 showing change of use at site.
- 4&4a Map showing specific area to be used for borehole exploration and trial pits.
- 5 Map showing geological strata within site area.
- 6 Map with existing mining data.
- 7 Map of site for recording specific site for Water, Sewerage, Gas & Electrical connections.
- 8 Sketch of end baring pile and caps.
- 9 Ground floor construction detailing and junctions to external walls.
- 10 &10a External wall, window and door intersection to Ice-cream parlour.
- 11 Roof weathering and structure of restaurant and kitchen area.

Appendix 9.1: Site 2019 Showing Orientation of Building

(Google Maps, 2019)



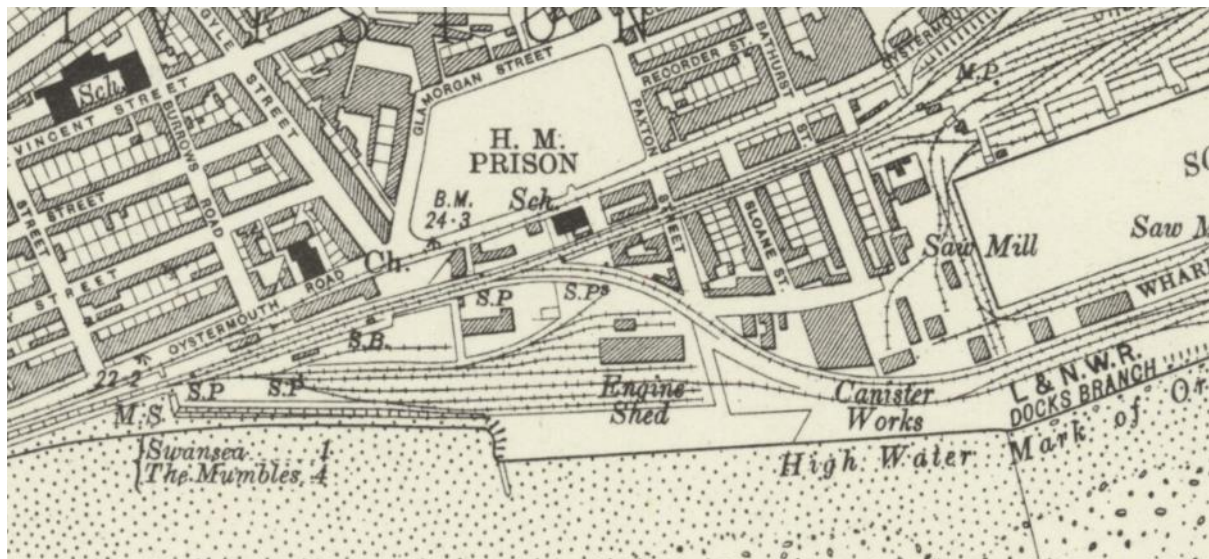
(Google Maps, 2019)

Appendix 9.2: Historical map of Site 1884: Showing hospital for contagious diseases



(<https://www.old-maps.co.uk/>), 2019)

Appendix 9.3: Site 1921 showing the site had changed to accommodate the railway and engine sheds



(<https://www.old-maps.co.uk/>), 2019)

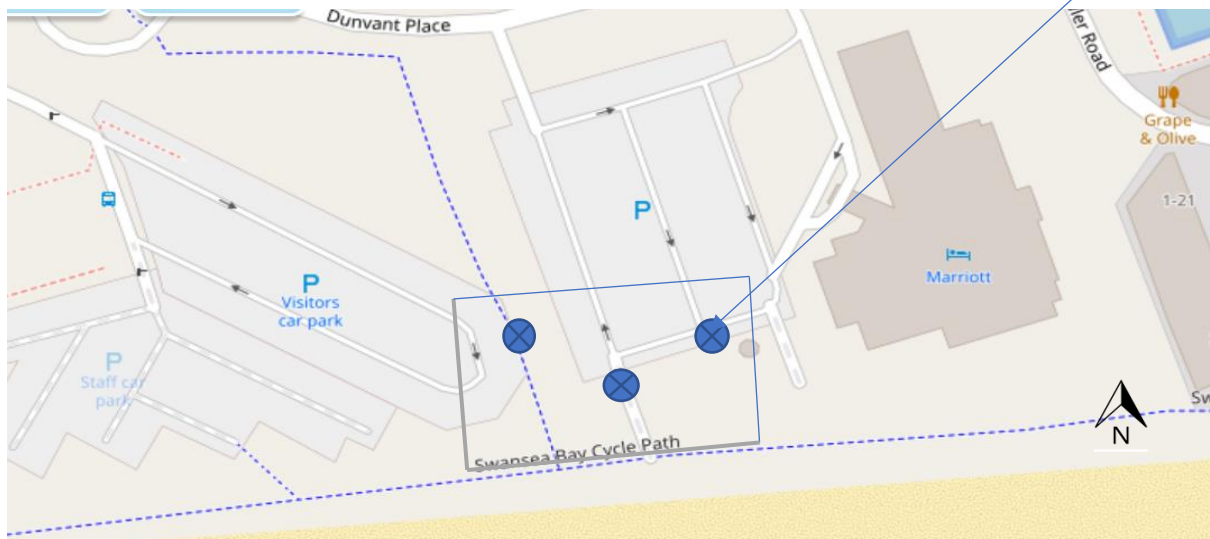
Appendix 9.3a: Site 1947 showing the use of the site to be the same as 1921



(<https://www.old-maps.co.uk/>), 2019)

Appendix 9.4: Borehole exploration

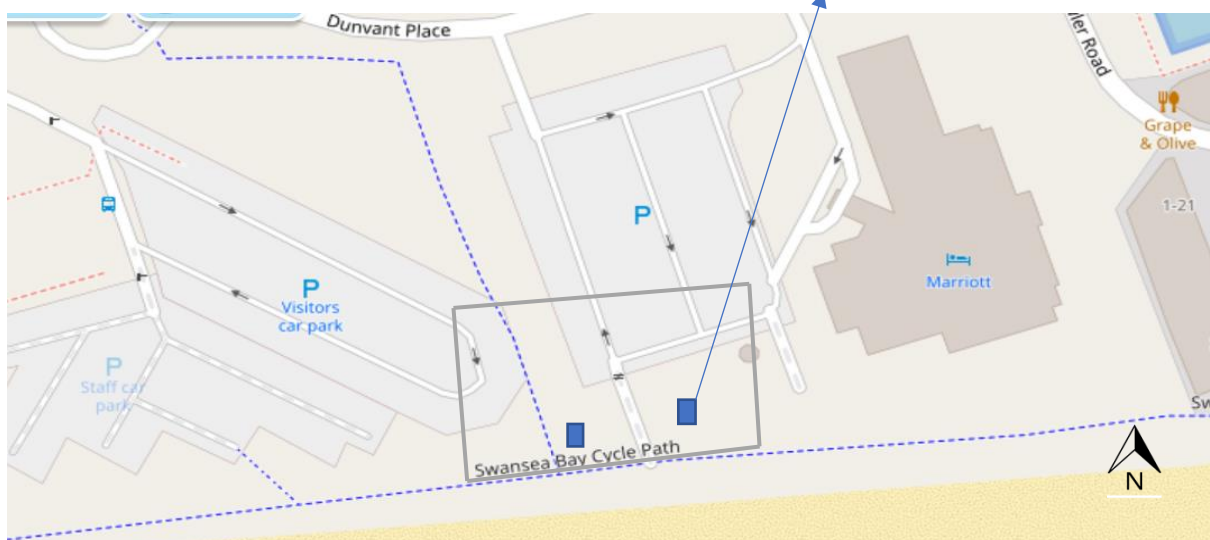
Locations for Borehole exploration



(Google Maps, 2019)

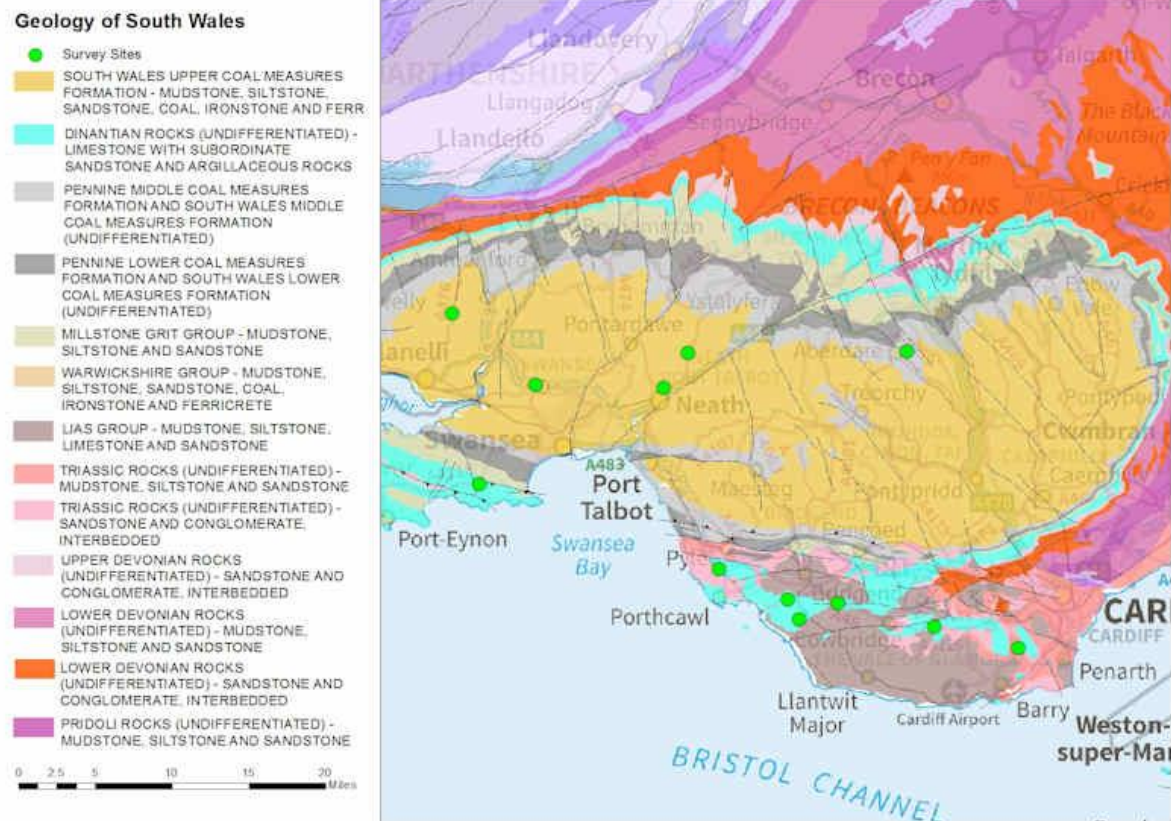
Appendix 9.4a: Trial pits for soil sampling

Trial pit for soil sampling



(Google Maps, 2019)

Appendix 9.5: Geological Strata Swansea & surrounding area



(www.bgs.ac.uk, 2019)

Appendix 9.6: Local Mining Data – showing coal seams, mine entrances or shafts in site area



(www.bgs.ac.uk, 2019)

Appendix 9.7: Site details for further investigations (Coordinates included)



(Google Maps, 2019)

10.0 PHOTO SCHEDULE OF SITE PRESENT DAY

	Approach to the site on Dunvant Place from Oystermouth Road
	Exit to the Marriot hotel car park. This would be the only site entrance
	Small roundabout just beyond proposed site entrance
	Exit from the Marriot hotel car park. Access is a good width. Large car park opposite across the road
	Marriot car park current exit. Car park would be reduced in size with line markings changed to reflect the change of priority. Entrance and Exit would be changed.

	Public footpath from Dunvant Place with direct access to the esplanade. Path runs between two car parks to the Marriot to the left Council building to the right as you look South
	Public footpath from Esplanade to Dunvant Place
	View from the foot path at the Esplanade. As footpath is currently right through the site this will need to be re-routed round the site boundary boarding.
	Marriot car park that will be within the site boundary
	Council building car park that will be within the site boundary

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View from the Foreshore Restaurant & Ice-cream parlour if orientation is to point SW

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