

SWANSEA MUMBLES ROAD DEVELOPMENT

PHASE 1 PRELIMINARY STUDY

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Fundamentals of Construction Technology

1. SITE DETAILS

1.1 Purpose and Scope

A proposal has been submitted to redevelop the existing Tesco superstore and car park site. The plan involves the construction of a five-story building that will house a hotel, a bar, a restaurant, and a conference centre.

Before the Tesco store was built, the land was occupied by a gas works that stopped operations in 1949. To find the potential impact of this past use, a preliminary environmental investigation has been conducted. This investigation included a desk study to review historical records and a site walkover to visually inspect the property. The investigation also involved drilling boreholes to collect soil samples for analysis.

1.2 Proposed Development

It is understood that the development will comprise a hotel and pleasure complex, built using traditional load-bearing masonry methods, though details of site layout, etc, have yet to be determined at the time of reporting.

1.3 Location



<https://maps.app.goo.gl/2NhmdR7kUqgXATeT7>

The proposed development site lies opposite the existing LC2 complex, to the north of Oyster mouth road. Approximately 0.1km west of the centre of Swansea. Figure 1 refers.

1.4 Access

The proposed development site is situated adjoining Oystermouth Road, a major road with heavy traffic flow in both directions. Oystermouth Road connects to Fabian Way, another significant route, which ultimately leads to the M4 motorway.

It is important to note that the Copr Bay Bridge, which extends over Oystermouth Road at an elevation of approximately 7.5 meters, may present a potential obstruction for certain types of vehicles accessing the site. A detailed analysis of this bridge and its potential impact on the development will be necessary. Figure 2 refers.



[https://i2-](https://i2-prod.walesonline.co.uk/incoming/article26375204.ece/ALTERNATES/s1200b/0_WML_070321_Golden_Bridge_49JPG.jpg)

[prod.walesonline.co.uk/incoming/article26375204.ece/ALTERNATES/s1200b/0_WML_070321_Golden_Bridge_49JPG.jpg](https://i2-prod.walesonline.co.uk/incoming/article26375204.ece/ALTERNATES/s1200b/0_WML_070321_Golden_Bridge_49JPG.jpg)

2 HISTORICAL APPRAISAL

2.1 RECENT HISTORY



The site previously hosted a gas works to supply the local docks and surrounding area, therefore leaving the ground highly contaminated. This closed in 1949 and was relocated shortly after. See Figure 3.

[https://earth.google.com/web/search/Swansea/@51.61707307,-](https://earth.google.com/web/search/Swansea/@51.61707307,-3.94471977,7.69905695a,701.83815126d,35.00001698y,0.00014625h,0t,0r/data=Cj4iJgokCd0Nq04ewTZAEdwNq04ewTbAGXXtywzNPkZAlft7zwyrYU7AKhAlARIKMTk0NS0xMi0zMRgBQgIIAToDCgEwQgIIAEoNCP_____wEQAA)

[3.94471977,7.69905695a,701.83815126d,35.00001698y,0.00014625h,0t,0r/data=Cj4iJgokCd0Nq04ewTZAEdwNq04ewTbAGXXtywzNPkZAlft7zwyrYU7AKhAlARIKMTk0NS0xMi0zMRgBQgIIAToDCgEwQgIIAEoNCP_____wEQAA](https://earth.google.com/web/search/Swansea/@51.61707307,-3.94471977,7.69905695a,701.83815126d,35.00001698y,0.00014625h,0t,0r/data=Cj4iJgokCd0Nq04ewTZAEdwNq04ewTbAGXXtywzNPkZAlft7zwyrYU7AKhAlARIKMTk0NS0xMi0zMRgBQgIIAToDCgEwQgIIAEoNCP_____wEQAA)



<https://www.walesonline.co.uk/lifestyle/nostalgia/what-before-giant-swansea-supermarkets-18275878.amp>

Figure 4 – shows the structure of the gas holders still in place in July 1989.

The previous gasworks structures were demolished and cleared when purchased by a local development contractor for the proposed construction of a Tesco superstore in 1998. Figure 5 refers.



https://i2-prod.walesonline.co.uk/incoming/article18276486.ece/ALTERNATES/s615b/17232276_2002-11-21_mark_Tesco_mark_-construction_.jpg

The TESCO Store constructed in 1998/99 remains on site.



Pictures Taken of TESCO Superstore and carpark during site Walk shown in figures 6 and 7

3 GEOLOGICAL APPRAISAL

3.1 GEOLOGICAL RECORDS

A review of the sites geology has been undertaken. The Geology Viewer website confirms the geology of the are as follows:

Mudstone, siltstone and sandstone. Sedimentary bedrock formed between 318 and 309.5 million years ago during the Carboniferous period. With this lies superficial deposits of Blown Sand - Sand. Sedimentary superficial deposit formed between 2.588 million years ago and the present during the Quaternary period. *(Text Taken from Geology Viewer 2024)*

3.2 FURTHER INVESTIGATIONS / INFORMATION AVAILABLE

A full Geotechnical Investigation will be required for the site which should include on site trial pitting and boreholes along with chemical analyses.

We have been provided with a single borehole log (Figure 8)for the site which confirms the following:

Borehole Details		Borehole Level		Borehole / Log Reference		Borehole Position	
Description: 200mm dia. to 15.0m "Open hole" rotary drilling from 15.0m to 21.0m		+ 0.18m O.D.		SS 65309228		2	
Driller: "Investigator"		Orientation: Vertical		Site: PROPOSED NEW COUNTY HALL FAXTON STREET SWANSEA			
SON. SAMPLES Depth and Thresh.	Drillings Tool Progress	Drillings Tool Type	R.O.D.	LOG NUMBER % AND MTR	DESCRIPTION OF STRATA		P.O. LEVEL
			8.9.23	2222			
					MADE GROUND consisting of silt.		0.00
1.00 F N=8					MADE GROUND consisting of loose, light grey fine-medium sand.		1.00
1.50 F N=6					MADE GROUND consisting of grey sand with layers of soft sandy clay		1.05
					MADE GROUND consisting of soft, red-brown sand clay with brick waste.		0.95
5.00 F N=9					MADE GROUND consisting of dark brick, sand and clay.		1.45
4.00 F N=14 for 100mm					Very dense brown sandy gravel with trace of sandy clay		2.05
5.00 F N=102 for 122mm					Very dense brown SAND with some gravel.		0.85
6.00 F N=73 for 100mm					Soft grey-brown gravelly SOILIER CLAY		1.25
7.00 F N=77							3.05
8.00 F N=36							
9.00 F N=27							

The provided borehole log offers insights into the subsurface conditions at the site. It reveals that the upper 4.95 meters consists of made ground, a layer of man - filled material composed of sand, clay, brick shale, and traces of dense bricks and ashes.

Below the made ground, at a depth of 4.59 meters, the borehole hit natural ground. This layer, extending to a depth of 7 meters, is made up of dense brown sandy gravel with traces of sandy clay. From 7 to 7.95 meters, the borehole penetrated a layer of dense brown sand containing some gravel.

At a depth of 7.95 meters, the soil profile transitioned to stiff grey/brown gravelly boulder clay. This material was found to a depth of 11 meters, where it gave way to a layer of very stiff grey gravelly boulder clay. Finally, at a depth of 18 meters, the borehole encountered grey mudstone, which continued to the bottom of the borehole at a depth of 22 meters.

3.2 MINING

There is no evidence that any mining took place in the area and local surrounding area of the site.

3.3 FOUNDATIONS

A Geotechnical Investigation will be a crucial step in determining the most suitable foundation type for the new proposed hotel. This investigation will involve a thorough assessment of the soil conditions at the site, including the depth and composition of the various soil layers.

Given the presence of a significant layer of made ground, which consists of artificially filled material, and the underlying sand layer, it is high possibility that the geotechnical engineers will recommend the use of deep foundations such as piles or a raft foundation. These foundation types are designed to transfer the structural loads from the building to stable, deeper soil strata, ensuring the stability and integrity of the structure.

4 ENVIRONMENTAL APPRAISAL

4.1 CONTAMINATION / POLLUTION

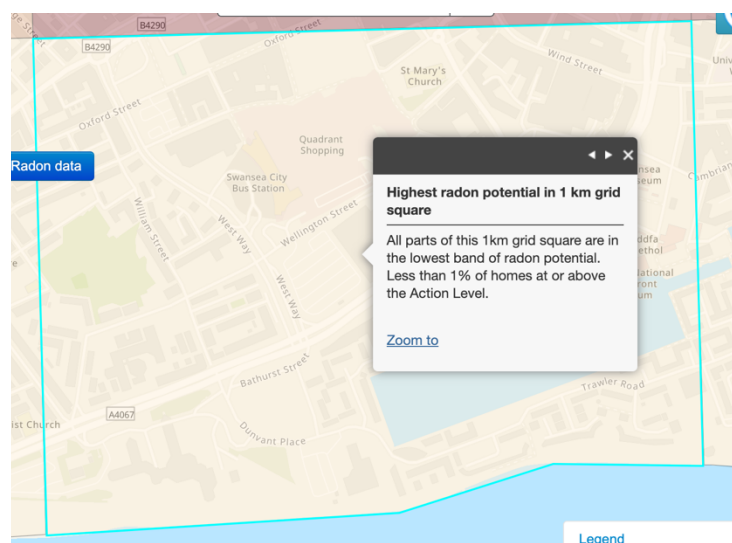
A comprehensive contamination assessment and investigation will be needed for this site. Given the site's previous use as a gas works and the presence of a significant depth of made ground, approximately 5 meters, there is a high chance of finding contamination in the soil and potentially groundwater.

This assessment will involve a involved approach, including a series of site investigations to collect soil and groundwater samples. These samples will then have laboratory testing to identify the types contaminants present. Ongoing monitoring will be crucial to track potential spread of contamination.

To ensure no remediation of any contamination encountered, the involvement of specialized environmental experts will be essential. These experts will provide valuable assistance on appropriate techniques with all relevant environmental regulations in place.

4.2 RADON GAS

RPW Radon Wales confirm that there is Less than 1% of homes at or above the Action Level within the 1km squared area shown in figure 9.



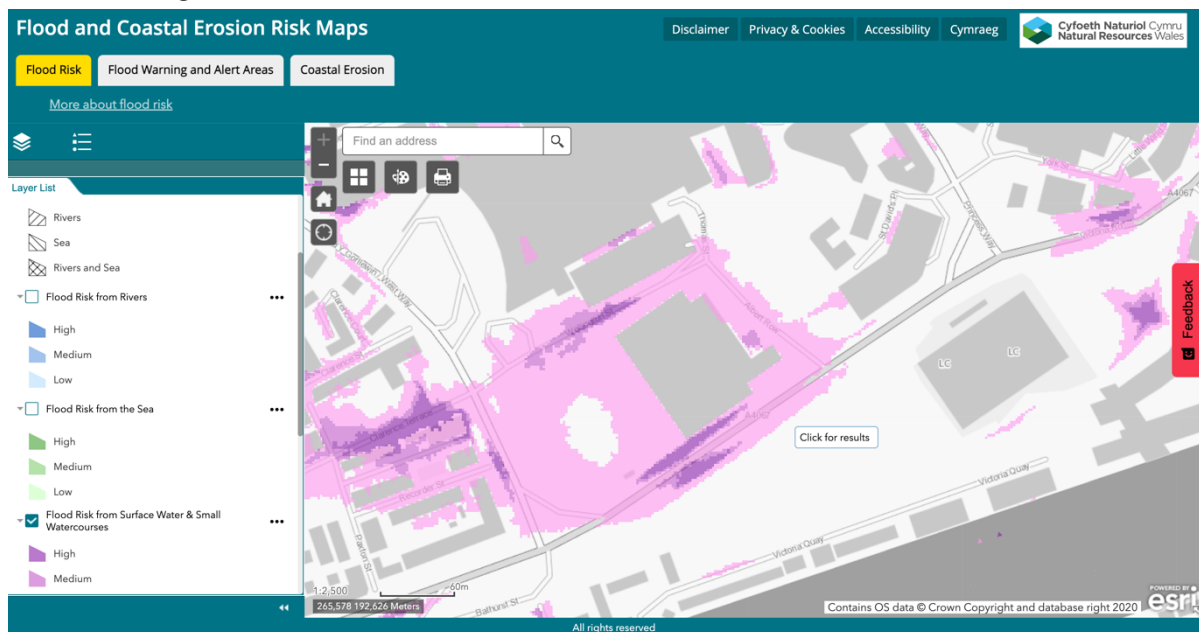
<https://www.rpwradonwales.com/what-is-radon/uk-radon-level-map/>

However a specific and detailed assessment of the RADON risk will be required for the site.

4.3 HYDROGEOLOGY AND HYDROLOGY

An assessment of flood risk was conducted using the Flood and Coastal Erosion Risk Map published by Natural Resources Wales (NRW). This analysis shows that portions of the site are classified as being at medium to high risk of flooding. These raised flood risks range from potential flood by surface water runoff and overflow from nearby small watercourses during periods of heavy rainfall.

See figures 10 and 11 below:



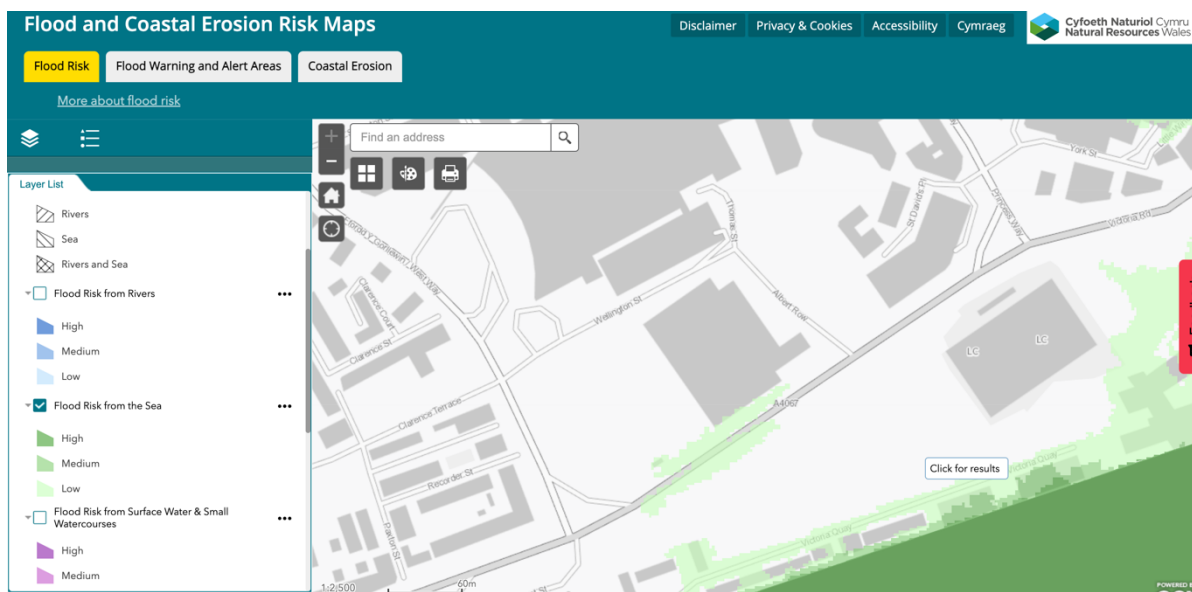
<https://flood-risk-maps.naturalresources.wales/?locale=en>

The site is approximately 350m from the sea at high tide and approximately 732 meters from the nearest point of the river Tawe.

The flood and Coastal Erosion Risk Map, published by Natural Resources Wales also confirms that sections of the site are at Medium and low risk of flooding from the sea.

<https://flood-risk-maps.naturalresources.wales/?locale=en>

See figures 12 and 13 below:



The NRW Flood risk map confirms that the site is not at risk from flooding from rivers.

A full Flood Risk assessment will be required for the site which will include recommendations on how to mitigate the risk from flooding.

5. ARCHAEOLOGY APPRAISAL

5.1 COFLEIN records

A review of the COFLEIN database, a comprehensive online record of archaeological information in Wales, was conducted through their official website (<https://coflein.gov.uk/en/>). This search found no archaeological records concerning to the site under investigation.

5.2 CADW records

A review of the CADW website (<https://cadw.gov.wales/>), which serves as a primary record for archaeological information in Wales, was conducted to determine if any existing records connected to the site were available. This search found no results, indicating that CADW currently holds no archaeological records specifically relating to this site.

5.3 Miscellaneous Archaeological Records

A comprehensive review of numerous online resources was conducted to increase a better understanding of the site's historical land use. This research involved exploring a range of websites, including historical maps, aerial imagery, and local historical databases. The findings from this online research delivered valuable insights into the site's past uses, which will be further examined as part of the overall valuation.

5.3 Archaeology – Recommendation

To ensure a detailed understanding of the potential archaeological findings on the site, it is recommended that further investigations be carried out under the control of a qualified archaeologist registered with the Chartered Institute for Archaeologists. This process typically involves the development of a written

scheme, which outlines the proposed scope and practise of the archaeological work.

Depending on the findings in the preliminary assessment, further investigations will be necessary. This would comprise of archaeological excavations or the attendance of a 'watching brief' during the demolition and excavation phases of the project. The purpose of a watching brief is to monitor the ground disturbance and identify any archaeological that may be faced during the process.

6. CONCEPTUAL GROUND MODEL

6.1 Potential Ground Related Hazards

6.1.1 Contamination / Pollution / Radon

Please refer to Section 4 above.

6.1.2 Unexploded Ordnance (UXO)

The presence of potential unexploded ordnance (UXO) should be considered as a risk factor for this site. While UXO surveys carried out by qualified companies are available for a fee, it is important to note that historical records indicate that Swansea, and more specifically the area near the Prince of Wales Docks, was a subject to significant bombing during World War II.

Given this context, a preventive approach is recommended. A preliminary UXO risk assessment should be undertaken to evaluate the likelihood of UXO present on the site. This assessment should include factors such as the intensity of bombing in the area, the nature of the site's previous uses, and the depth of potential buried material. If the risk assessment indicates a potential UXO hazard, further investigations, such as geophysical surveys or invasive ground investigations, will be necessary to confirm or rule out the presence of UXO.

6.1.3 BURIED SERVICES

A thorough assessment of all underground and overhead services crossing the site is essential. This assessment will require the review of records from relevant service providers, including Dwr Cymru Welsh Water, Western Power Distribution, BT, and British Gas. These records will provide valuable information about the location and depth of existing services.

To further enhance the understanding of the site's service infrastructure, it is highly recommended that a dedicated services survey is to be conducted. This survey should involve the use of geophysical techniques to locate and map the positions and depths of all the underground services. The findings of this survey should then be documented on the topographical survey drawing for future reference and planning purposes.

SITE SUMMARY

Based on the information and findings presented, it is recommended that the following assessments and investigations are to be conducted to further update the development planning process.

- Full geotechnical investigation
- Contamination assessment
- Radon monitoring assessment
- Full flood risk assessment
- Archaeological dig with watching brief
- UXO investigation
- Services survey

Referencing

https://geologyviewer.bgs.ac.uk/?_ga=2.76272789.1459197303.1735914367-1133677540.1735914367

<https://maps.app.goo.gl/2NhmdR7kUqqXATeT7>

https://i2-prod.walesonline.co.uk/incoming/article26375204.ece/ALTERNATES/s1200b/0_WML_070321_Golden_Bridge_49JPG.jpg

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<https://www.rpwradonwales.com/what-is-radon/uk-radon-level-map/>

<https://flood-risk-maps.naturalresources.wales/?locale=en>

<https://earth.google.com/web/search/Swansea/@51.61707307,-3.94471977,7.69905695a,701.83815126d,35.00001698y,0.00014625h,0t,0r/data=Cj4iJgokCd0Nq04ewTZAEdwNq04ewTbAGXXtywzNPkZAIft7zwyrYU7AKhAIARIKMTk0NS0xMi0zMRgBQgIIAToDCgEwQgIIAEoNCPwEQAA>