

FloodSmart Plus



Flood Consequence Assessment

Site Address

66 Forge Road
Port Talbot
SA13 1PF

Date

10/01/2025

Report Status

FINAL

Grid Reference

276839, 190084

Site Area

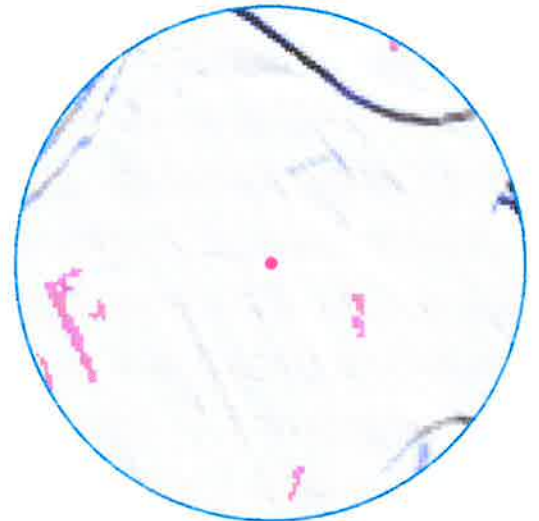
168 m²

Report Prepared for

Tarsen Singh

Report Reference

84202R1



RISK - Very Low to Moderate

The Site is mapped within the NRW's fluvial Flood Zone 2 (Medium probability) from the River Afan. According to the NRW's Development Advice Map the Site is located in Zone C1.

The risk of flooding from rivers and sea is Low, taking the above and flood defences into account.

Surface water (pluvial) flood risks are Very Low, groundwater flood risks are Moderate and flooding risks from artificial sources (i.e. canals, reservoirs and sewers) are Very Low.

Mitigation measures are recommended in this report to reduce the risks to an acceptable level over the lifetime of the development.

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1. Executive summary

The Planning Policy Wales (PPW) 12th edition (2024) and Technical Advice Note 15 (TAN 15) (2004) requires Flood Consequence Assessments (FCA) to review flooding from all potential sources. A review has been undertaken of national environmental data sets to assess the potential flood risk to the Site. The review is provided within this concise interpretative report written by an experienced GeoSmart consultant.

It should be noted that the TAN15 (2004) was planned to be updated in June 2023, however, at the time of writing it is understood that this deadline is no longer applicable and a revised TAN is in consultation with the date of publication unknown. The Flood Map for Planning will supersede the NRW's Development Advice Map (DAM) and the conclusions of this report may change as a result. However, this is yet to be implemented and this report is based upon TAN15 (2004) and the DAM.

Site analysis

Source of Flood Risk	Baseline*	After Mitigation**
River (fluvial) flooding	Low	Very Low
Sea (coastal/tidal) flooding	Very Low	N/A
Surface water (pluvial) flooding	Very Low	N/A
Groundwater flooding	Moderate	Negligible
Other flood risk factors present	No	No
Is any other further work recommended?	No	No (see below)

*BASELINE risks have been calculated for the whole Site, using national risk maps, including the benefit of NRW flood defences. **FINAL RISK RATING Includes a detailed analyses of flooding risks over the lifetime of the proposed development, including allowances for climate change AND assumes recommended mitigation measures are implemented. N/A indicates where mitigation is not required.

Summary of existing and proposed development

The Site is currently used within a commercial capacity as a dental practice. Development proposals comprise the conversion of the building into a residential dwelling. Site plans are included within Appendix A.

Summary of flood risks

The flood risks from all sources have been assessed as part of this report and are as follows:

River (fluvial) and Sea (Estuarine/Coastal) flooding

According to NRW's Flood Map for Planning, the Site is located within fluvial Flood Zone 2. The NRW's Development Advice Map (DAM) confirms the Site is located within a DAM Zone C1.

According to the NRW's Flood Risk Assessment Wales (FRAW) map, which considers the type, condition and crest height of flood defences, the Site has a Low risk of flooding from the nearby watercourse, the River Afan.

Modelled flood data obtained from the NRW has been analysed in line with the most up to date guidance on climate change to confirm a maximum "design" flood level at the Site.

- The Site is modelled to remain flood free in the 1 in 20 year, 1 in 75 year and 1 in 100 year and 2116 1 in 100 year fluvial flooding events. A flood level of 11.54 mAOD is modelled at the Site in the 1 in 1000 year fluvial flooding event.
- During the 1 in 1000 year fluvial flooding event, a maximum flood depth of 0.21 m is anticipated at the Site. Flood mitigation measures are included in the next section.

Emergency evacuation routes are available to the east. In the event of a flood, safe refuge can be taken on the 1st floor levels and above.

Surface water (pluvial) flooding

According to NRW's Flood Risk Assessment Wales (FRAW) mapping, the Site has a Very Low risk of flooding from surface water and small watercourses.

Groundwater flooding

Groundwater Flood Risk screening data indicates there is a Moderate potential risk of groundwater flooding at the surface in the vicinity of the Site during a 1 in 100 year event.

- Groundwater levels may rise in the bedrock and superficial aquifer in response to high river events due to the potential hydraulic continuity with the nearby River Afan. It is noted groundwater flooding may occur in response to prolonged high water levels, by-passing flood defences even if overtopping does not occur

Artificial sources of flooding

The risk of flooding from artificial (man-made) sources such as reservoirs, sewers and canals has been assessed:

- The NRW's Risk of Flooding from Reservoir map confirms the Site is not at risk of reservoir flooding.
- Ordnance Survey (OS) data confirms there are no canals near to the Site.
- Table 1-2 of the Strategic Flood Consequence Assessment (SFCA) (JBA, 2022) confirms 8 incidents of sewer flooding in Port Talbot between 1990 and 2021.

The risk of flooding from artificial sources is considered to be Very Low.

The risk to the development has been assessed over its expected 100 year lifetime, including appropriate allowances for the impacts of climate change which could increase the flood risk to the Site. Risks identified include increases in river flooding and the increased potential for surface water and appropriate mitigation measures are proposed.

According to TAN15 (2004), Highly Vulnerable development in DAM Zone C1 are acceptable, subject to completion of the Justification Criteria. This can be found within Section 5.

Recommendations

Recommendations for flood mitigation are provided below, based upon the proposed development and the flood risk identified at the Site.

- As the development proposals are comprised of a change of use, the raising of Finished Floor Levels (FFL) is unlikely to be a feasible method of flood mitigation. Finished floor levels should be raised as high as feasibly possible and set no lower than the existing building. Standard flood resilient design measures should be incorporated.
- As there is a risk of flooding from groundwater sources at the surface, specific groundwater flood mitigation measures should be considered such as: standard flood resilient design, non-return valves on the sewer inlet, French drains and/or pumping systems may also be considered.
- Occupants of the Site should also be signed up to receive NRW Flood Alerts and Flood Warnings.
- The ongoing management and maintenance of existing and any proposed drainage networks, under the riparian ownership of the developer, should be undertaken in perpetuity with the development.

GeoSmart recommend the mitigation measures discussed within this report are considered as part of the proposed development where possible and evidence of this is provided to the Local Planning Authority as part of the planning application.

2. Introduction



Background and purpose

A site-specific flood consequence assessment has been undertaken, to assess the flood risk to and from the development Site. This assessment has been undertaken by firstly compiling information concerning the Site and the surrounding area. The information gathered was then used to construct a 'conceptual site model', including an understanding of the appropriateness of the development, as defined in the PPW (2024), and the source(s) of any flood risk present. Finally, a preliminary assessment of the steps that can be taken to manage flood risk to the development was undertaken.

This report has been prepared with reference to the Technical Advice Note (TAN) 15 (2004) which supplements the PPW (2024).

The general approach of PPW, supported by TAN15, is to advise caution in respect of new development in areas at high risk of flooding by setting out a precautionary framework to guide planning decisions. The overarching aim of the precautionary framework is, in order of preference, to:

- Direct new development away from those areas which are at high risk of flooding; and
- Where development is considered to be in high-risk areas (Zone C) only those developments which can be justified on the basis of the tests outlined in Section 6 and Section 7 are located within such areas.

The purpose of this report is to provide clear and pragmatic advice regarding the nature and potential significance of flood hazards which may be present at the Site.

Report scope

A thorough review of a commercially available flood risk report and NRW supplied data has been undertaken, indicating potential sources of flood risk to the Site from rivers and tidal sources, surface run-off (pluvial), groundwater and reservoirs, including historical flood information and modelled flood extent. Appropriate measures are recommended to manage and mitigate the flood risk to the property.

Information obtained from NRW and a review of the South West Wales - Stage 1 Strategic Flood Consequence Assessment (JBA, 2022) is used to ascertain local flooding issues and, where appropriate, identify information to support a Justification test and Assessment of Flood Consequences required as part of the PPW (2024).

The existing and future flood risk to and from the Site from all flood sources is assessed in line with current best practice using the best available data. The risk to the development has been assessed over its expected lifetime, including appropriate allowances for the impacts of climate change. Residual risks that remain after the flood risk management and mitigation measures are implemented, are considered with an explanation of how these risks can be managed to keep the users of the development safe over its lifetime.

An indication of whether the Site will potentially increase flood risk elsewhere is provided, including where the proposed development increases the building footprint at the Site. A drainage strategy to control runoff can be commissioned separately if identified as a requirement within this report.

Report limitations

It is noted that the findings presented in this report are based on a desk study of information supplied by third parties. Whilst we assume that all information is representative of past and present conditions, we can offer no guarantee as to its validity and a proportionate programme of site investigations would be required to fully verify these findings.

The basemap used is the OS Street View 1:10,000 scale; however, the Site boundary has been drawn using BlueSky aerial imagery to ensure the correct extent and proportion of the Site is analysed.

This report excludes consideration of potential hazards arising from any activities at the Site other than normal use and occupancy for the intended land uses. Hazards associated with any other activities have not been assessed and must be subject to a specific risk assessment by the parties responsible for those activities.

Datasets

The following table shows the sources of information that have been consulted as part of this report:

Table 1. Datasets consulted to obtain confirmation of sources of flooding and risk

Source of flooding	Datasets consulted			
	Commercial Flood Maps	Local Policy & Guidance Documents*	Natural Resources Wales (Appendix B)	OS Data
Historical	X	X	X	
River (fluvial) / Sea (tidal/coastal)	X	X	X	
Surface water (pluvial)	X	X	X	

Source of flooding	Datasets consulted			
	Commercial Flood Maps	Local Policy & Guidance Documents*	Natural Resources Wales (Appendix B)	OS Data
Groundwater	X	X		
Sewer		X		
Culvert/bridges		X		X
Reservoir		X	X	

*Local guidance and policy, referenced below, has been consulted to determine local flood conditions and requirements for flood mitigation measures.

Local policy and guidance

Neath Port Talbot County Borough Council Local Development Plan (2011-2026)

3.0.2 SP1 Climate Change

In relation to the consequences of climate change:

- 1) Likely increased flood risk will be taken into account and addressed by ensuring that there is greater resilience by avoiding development on land that is at risk from flooding in the first instance in accordance with the sequential approach set out in the national guidance or in locations that could increase the risk of flooding elsewhere.

New developments will be expected to avoid unnecessary flood risk and to meet the requirements of TAN 15: Development and Flood Risk. No highly vulnerable development will be permitted within Development Advice Map (DAM) Zone C2(8) and development will only be considered in areas at risk of flooding where it can be demonstrated that the site can comply with the justification and assessment requirements set out in the TAN.

Port Talbot Shoreline Management Plan

Sker Point to Swansea Docks

This frontage comprises the eastern half of Swansea Bay. Prior to development the shoreline would have been characterised by large areas of saltmarsh and brackish marsh, fronted by sand dune barriers. Little of this original landscape remains since the shoreline of Port Talbot 44 and the Neath Estuary has been heavily modified by industrial development and the construction of various defences and port structures. Coastal and natural processes have therefore been significantly altered. The Port Talbot steelworks revetment, Port of Port Talbot breakwaters and navigation channel, Aberavon revetment, River Neath training walls and navigation channel and Swansea Docks breakwaters, Queens Dock seawall/ revetment and navigation channel continue to have a significant impact on sediment transport.

The frontage also includes more natural landscapes which remain from the original extensive dune fields. Kenfig and Margam Burrows, an extensive dune field fronted by a wide sand beach, bounded by Sker Point and the Kenfig River and designated as a SAC, SSSI and a National Nature Reserve (NNR). Baglan Burrows, a small area of dunes on the eastern bank of the river Neath. Crymlyn Burrows, to the west of the River Neath, is a smaller dune system backed by the low-lying barrier area of Crymlyn Bog.

The future management and evolution of this entire frontage relies heavily on the future strategies for Port Talbot steelworks, the Port of Port Talbot and the Neath Estuary. The policy for the majority of the shoreline is to hold the line through maintenance and upgrading of existing defences to reduce the risk of coastal erosion and flooding to industrial assets and residential properties and to prevent the erosion of potentially contamination material into Swansea Bay, subject to the future availability of public funding for coastal erosion and flood risk management. A policy of managed realignment for the dune systems will allow them to continue to evolve naturally, whilst enabling dune management as required, for example to restore blow outs or to build secondary defences to reduce the risk of erosion or flooding to the developed hinterland at Baglan Burrows. A long term policy of hold the line has been recommended at the former BP tank farm site, to the west of Crymlyn Burrows, which is currently being decontaminated in advance of the proposed Bay Science and Innovation Campus development, which will involve the construction of new defences, subject to obtaining the necessary consents, licences and approvals. Without development it is unlikely that construction of defences along the former BP tank farm frontage would attract public coastal erosion and flood risk management funding.

3. Site analysis



Site information

The Site is located in Port Talbot in a setting of residential land use at National Grid Reference SS 76839 90084.

Figure 1. Aerial imagery of the Site (Bluesky, 2025)

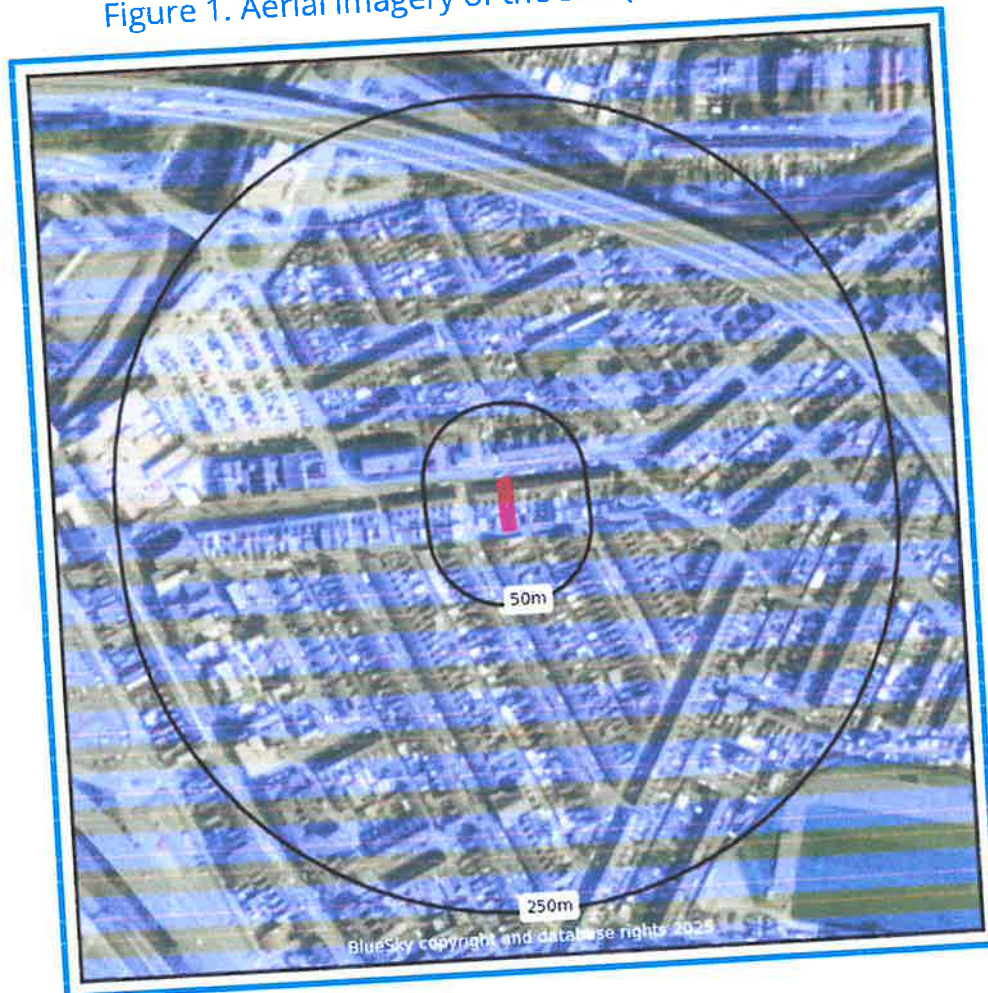
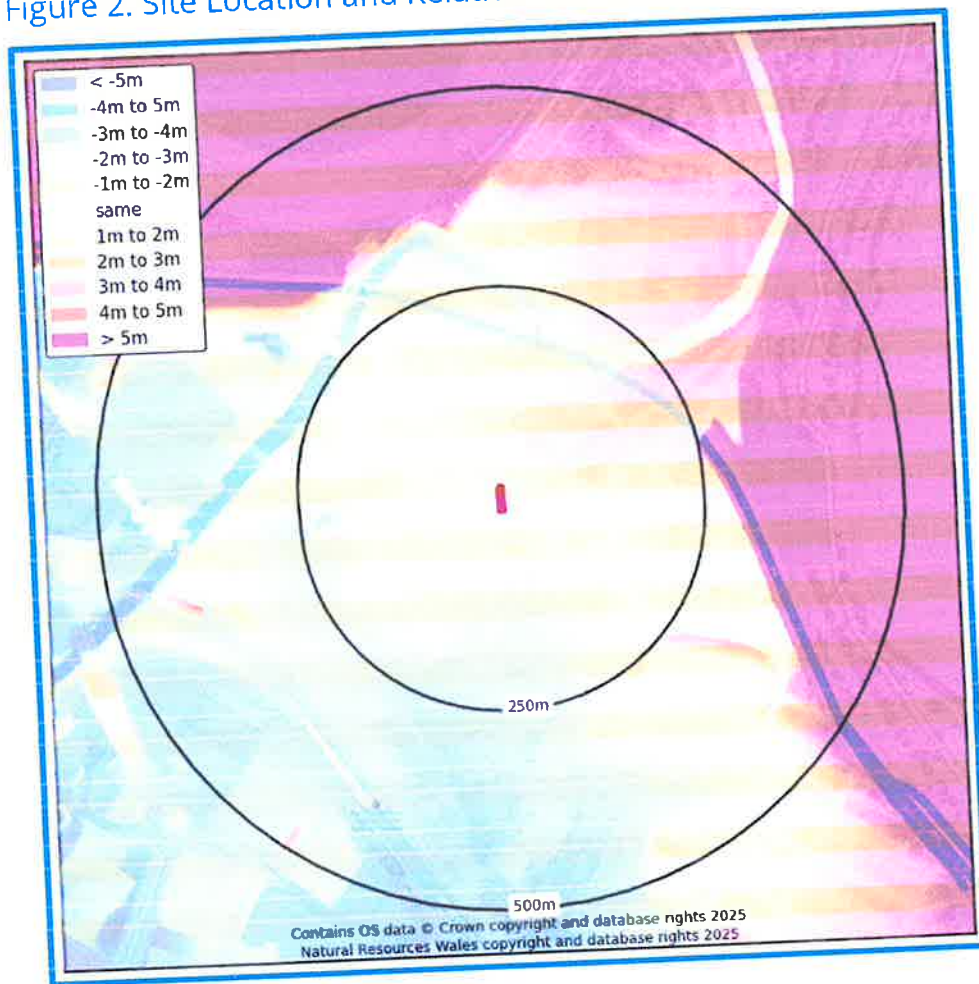


Figure 2 (overleaf) indicates ground levels within 500m of the Site fall in a south-westerly direction, towards the Port Talbot docks.

The general ground levels on the Site are between 10.74 and 11.57 mAOD with the Site falling gradually in a northerly direction. This is based on NRW elevation data obtained for the Site to a 1 m resolution with a vertical accuracy of ± 0.15 m (Appendix C).

Figure 2. Site Location and Relative Elevations (GeoSmart, 2025)



Development

The Site is currently used within a commercial capacity as a dental practice. Development proposals comprise the conversion of the building into a residential dwelling. Site plans are included within Appendix A.

The development is classed as Highly Vulnerable according to Figure 2 in TAN 15 (2004). The effect of the overall development will result in an increase in the number of occupants and/or users of the Site and will result in the change of use, nature or times of occupation. The estimated lifespan of the development is 100 years.

Hydrological features

According to Ordnance Survey (OS) mapping (Figure 3), a single surface water feature is located within 500 m of the Site.

- The River Afan is located approximately 200 m north-east of the Site at its closest point.
- The Port Talbot Docks are located approximately 750 m south of the Site.
- The sea (the Bristol Channel) is located approximately 2.5 km south-west of the Site.

Figure 3. Surface water features (OS, 2025)



Proximity to relevant infrastructure

Infrastructure has been identified within 500 m of the Site which could influence the risks of flooding to existing or future occupants. These include:

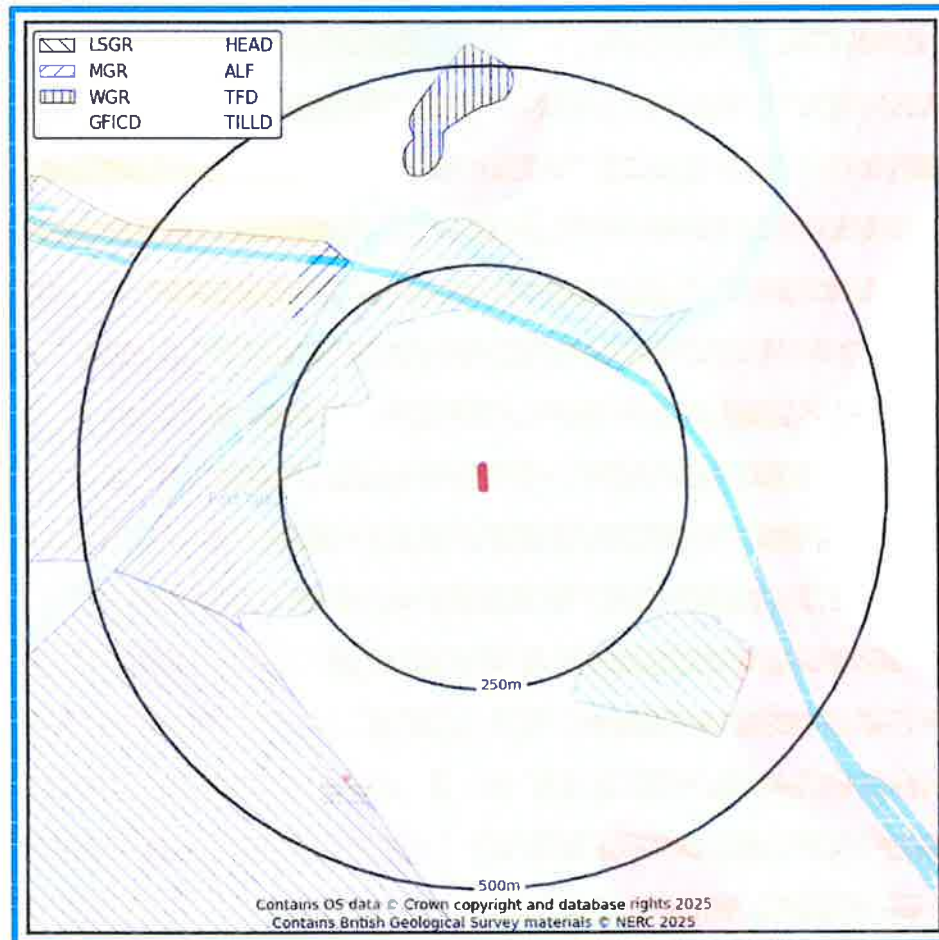
- Multiple bridges cross the River Afan, with the closest being approximately 200 m north-east of the Site.
- The M4 is located approximately 180 m north-east of the Site.

- The South Wales Main Line is located approximately 350 m south-west of the Site.

Hydrogeological features

British Geological Survey (BGS) mapping indicates the underlying superficial geology (Figure 4) consists of Alluvial fan deposits- sand and gravel (ALF), which is classified as a Secondary (A) Aquifer (BGS, 2025).

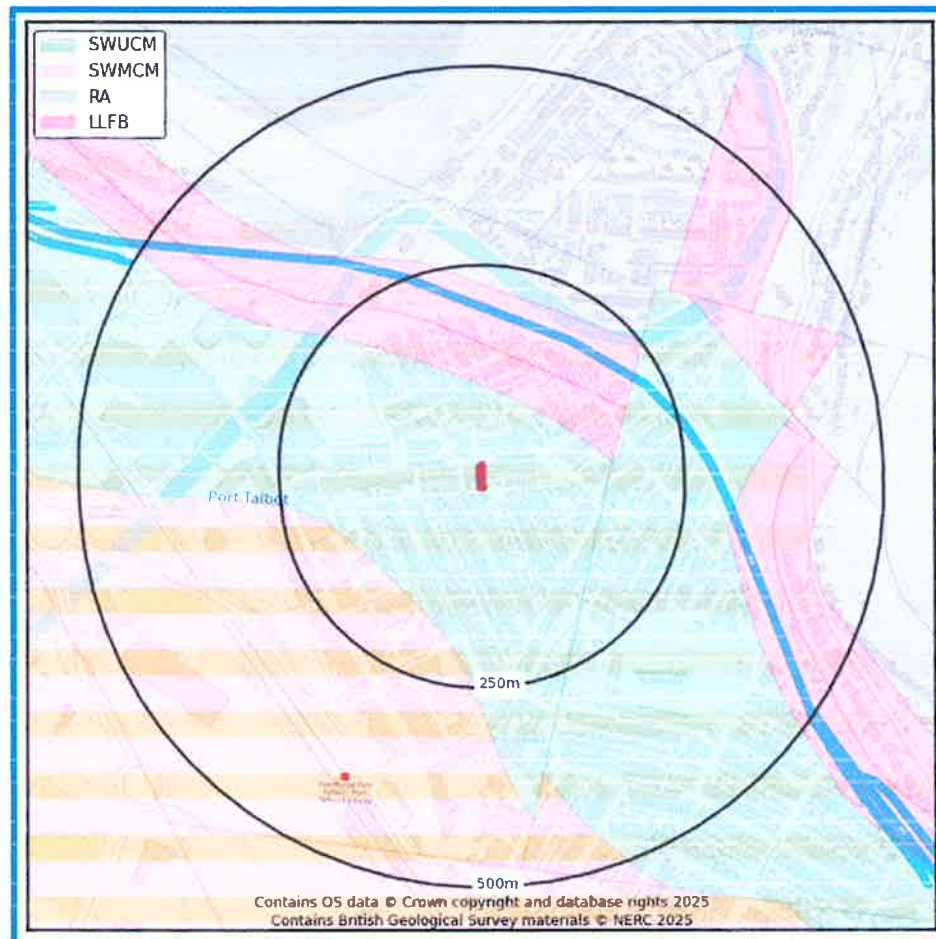
Figure 4. Superficial Geology (BGS, 2025)



BGS mapping indicates the underlying bedrock geology (Figure 5) consists of the South Wales Upper Coal Measures Formation-mudstone, siltstone and sandstone (SWUCM), which is classified as a Secondary (A) Aquifer (BGS, 2025).

South Wales Middle Coal Measures Formation (SWMCM), Llynfi Member (LLFB) and Rhondda Member (RA) are all located within 250 m of the Site.

Figure 5. Bedrock Geology (BGS, 2025)



Geological conditions

A review of the BGS borehole database (BGS, 2025) indicates the nearest and most relevant borehole to the Site (ref: SS79SE16) is located 190 m to the north-east of the Site boundary at an elevation of 13.16 mAOD.

The borehole record indicates the underlying geology to consist of topsoil to a depth of 0.46m below ground level (bgl), overlying firm brown silty clay and cobbles to a depth of 1.07m bgl, compact brown silty sand and boulders to a depth of 4.34m bgl, firm brown sandy silty clay and boulders to a depth of 6.63m bgl and bedrock to a depth of 7.16m bgl, where the borehole was terminated.

Groundwater

Groundwater levels were not encountered in the above borehole (ref: SS79SE16). Another borehole (ref: SS79SE477), located 255 to the north-west of the Site, encountered groundwater at 3.20m bgl on 13/11/1968, subject to seasonal variation and distance from the Site.

It should be noted that this borehole is located only 5 m from the River Afan, potentially resulting in higher groundwater levels than what may be present beneath the Site due to the hydraulic continuity.

4. Flood risk to the development

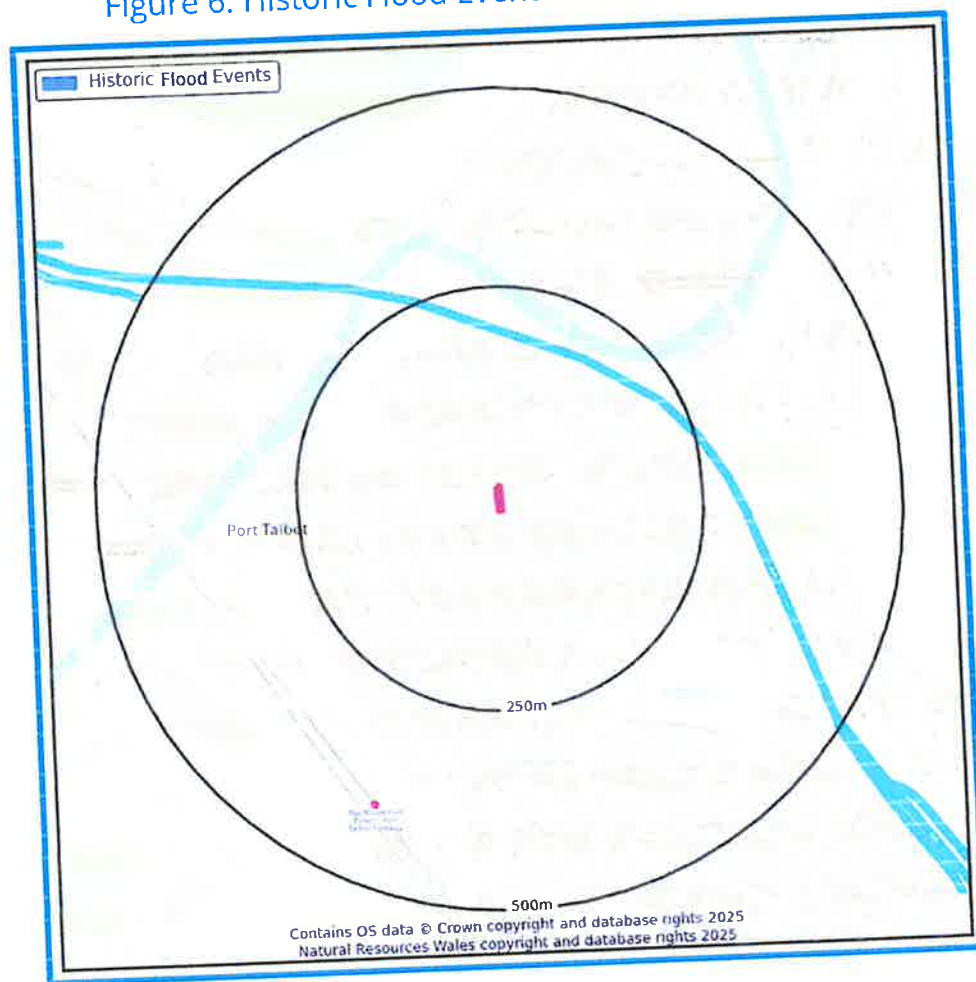


Historical flood events

According to the NRW's Recorded Flood Extents Map (Figure 6) and the SFCA (JBA, 2022), no historical flood events have been recorded at the Site (NRW, 2025).

The purpose of historical flood data is to provide information on where and why flooding may have occurred in the past. The absence of any recorded events does not mean flooding has never occurred on-Site or that flooding will never occur at the Site.

Figure 6. Historic Flood Event Outline (NRW, 2025)



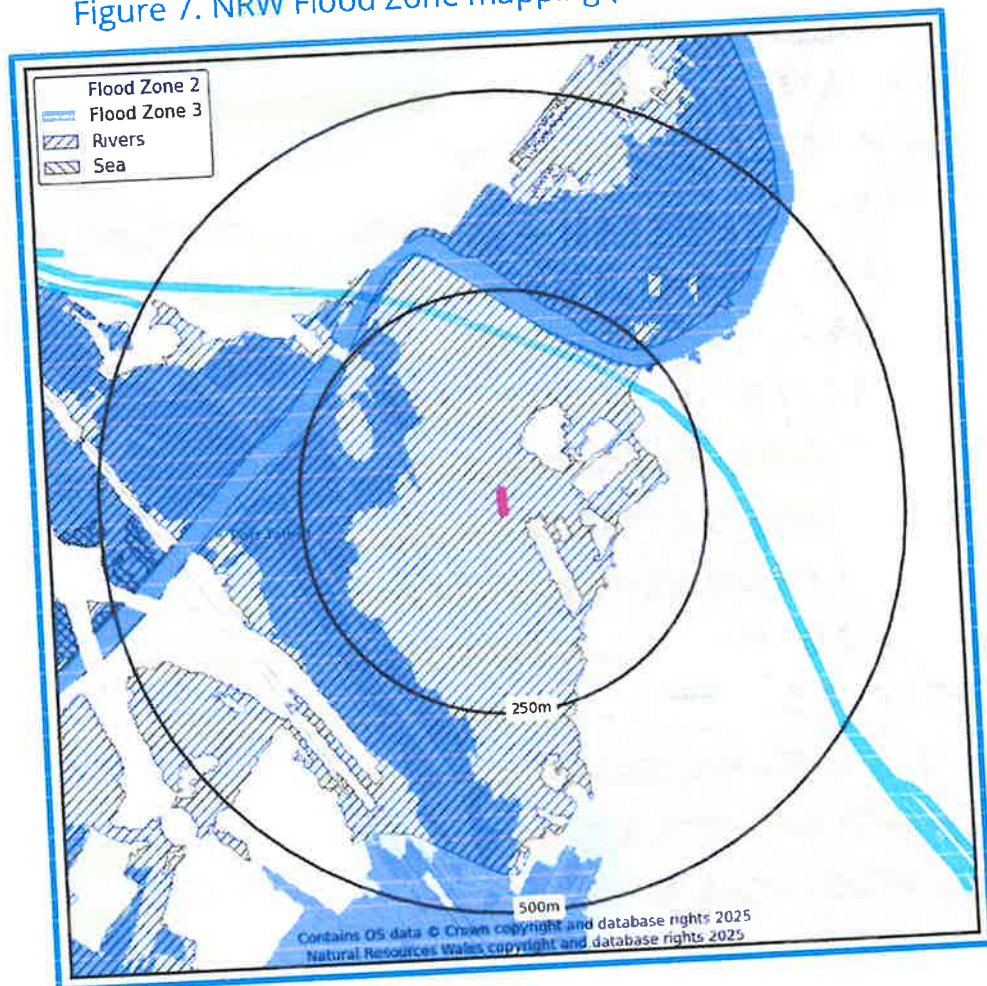
Rivers (fluvial) / Sea (coastal) / Estuarine (tidal) flooding

The predominant risk at the Site is from flooding from rivers, termed as fluvial flooding. The Site is located in an inland location and the risk of flooding from coastal and tidal processes are therefore considered to be Negligible.

Flood Zones Map

According to the NRW's Flood Map for Planning (Figure 7), the Site is located within a fluvial and tidal Flood Zone 2 and is therefore classified as having a Medium probability of fluvial flooding from the River Afan.

Figure 7. NRW Flood Zone mapping (NRW, 2025)



Please note these Flood Zones are not presently used for planning purposes, but instead provide an indicative extent for the 1 in 100 year / 1 in 200 year and 1 in 1000 year fluvial and tidal events, respectively.

The above Flood Zones will become live once the revised version of TAN15 is published. The Development Advice Map (DAM) is currently the most up to date mapping for planning purposes in line with TAN15 (2004).

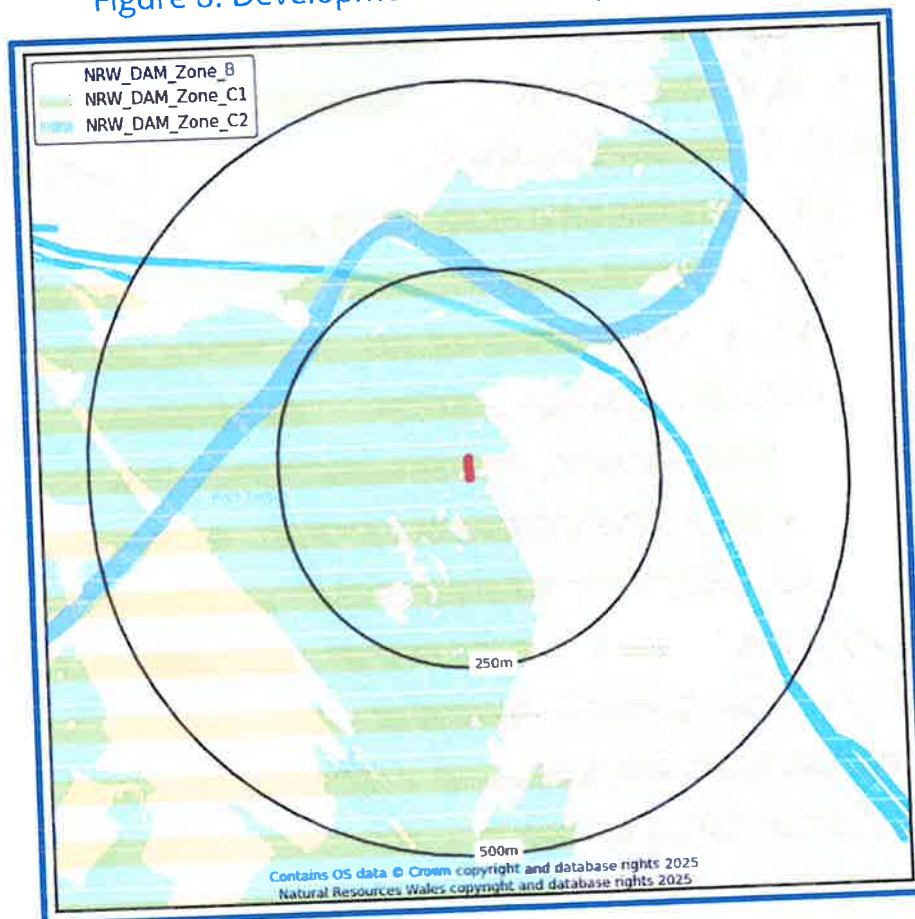
Development Advice Map

The NRW's Development Advice Map (DAM) confirms the Site is located within DAM Zone C1 (TAN15, 2004).

Table 1. Development Advice Map Classification

Description of Zone	Zone
Considered to be at little or no risk of fluvial or tidal/coastal flooding.	A
Areas known to have been flooded in the past evidenced by sedimentary deposits.	B
Areas of the floodplain which are developed and served by significant infrastructure, including flood defences.	C1
Areas of the floodplain without significant flood defence infrastructure.	C2

Figure 8. Development Advice Map (NRW, 2025)



Flood defences

Guidance

Sites that are located close to flood defences are likely to be zones where rapid inundation will occur in the event of the flood defences being overtopped or breached. A Site located close to flood defences (within 250 m) may require a more detailed FCA subject to local topography.

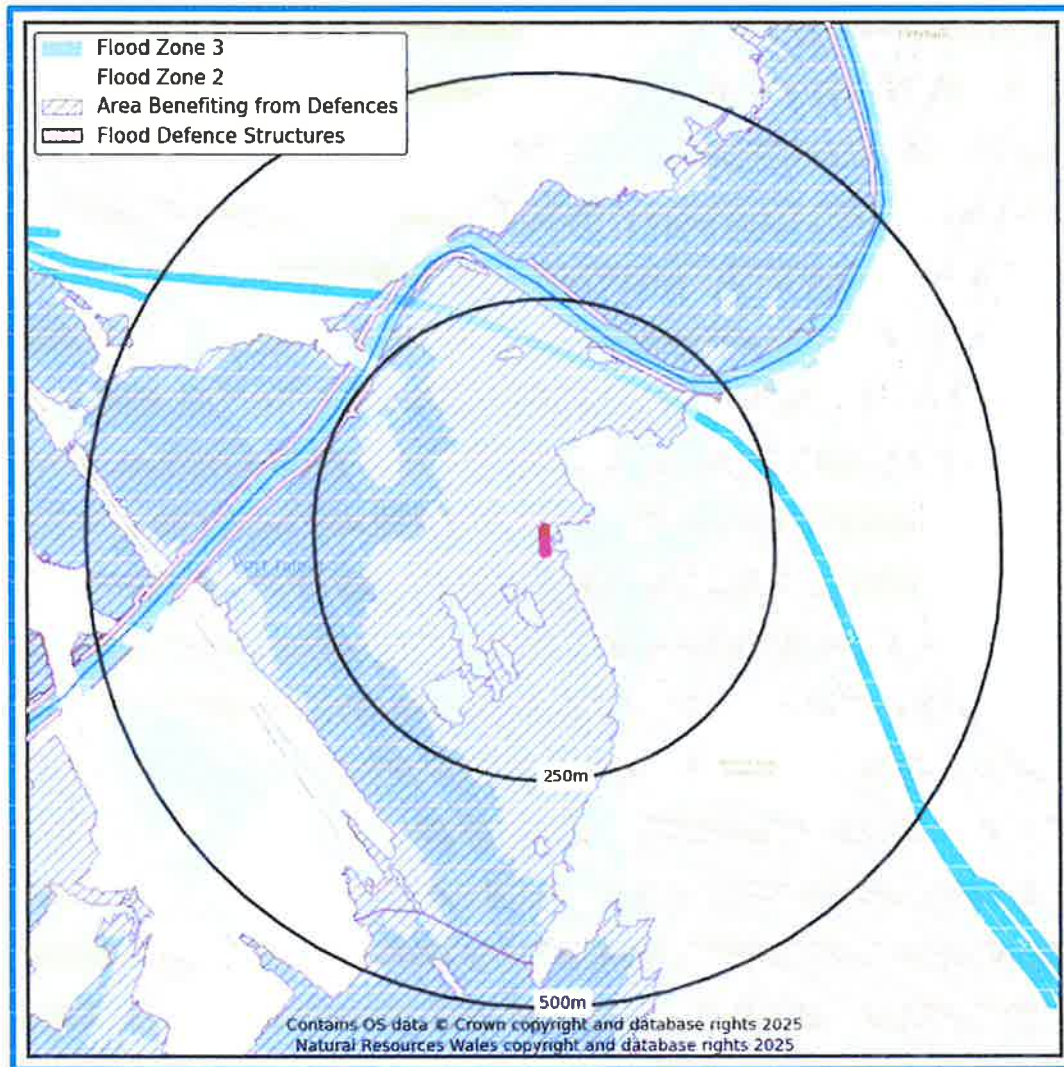
Existing flood defences

The NRW's Asset Information Management Systems (AIMS) dataset (2025) identifies the following assets within the vicinity of the Site:

- A flood defence wall (Asset ID: WALL1500863) is located approximately 250m to the north of the Site along the banks of the River Afan with an effective crest level of up to 1.80 mAOD, designed to provide protection for up to a 1 in 100 year event. As per the NRW's last inspection the condition grade is classified as "Good (Condition Grade: 2)".

The Shoreline Management Plan (SMP) 20 - Lavernock Point to St Ann's Head confirms the policy for defences over the next 100 years is to hold the line (Halcrow, 2024).

Figure 9. Location of flood defences mapping (NRW, 2025)



Flood Risk including the benefit of defences

The Flood Risk Assessment Wales (FRAW) maps were published in the Summer of 2020.

The FRAW mapping includes consideration of flood defences that have been built to protect against flooding from rivers and the sea. The defences shown provide different levels of flood protection and this is recognised in the risk classification shown in the Flood Risk Assessment Wales (FRAW) map.

The FRAW maps indicate:

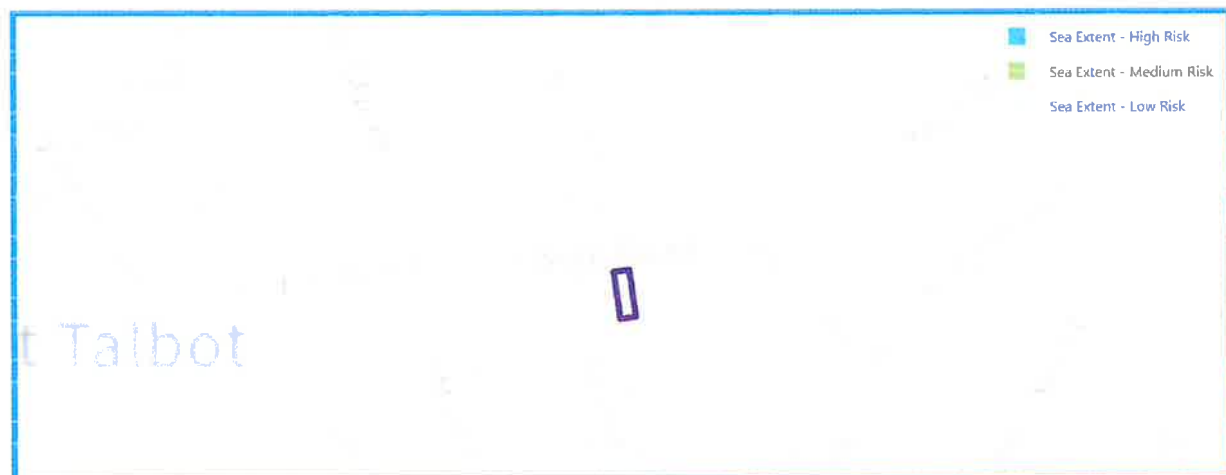
- The risk from Rivers is Low.
- The risk from the Sea is Very Low.
- The risk from Surface Water and Small Watercourses is Very Low.

Figure 10. Rivers – FRAW Risk Map (NRW 2025)



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Figure 11. Sea – FRAW Risk Map (NRW 2025)



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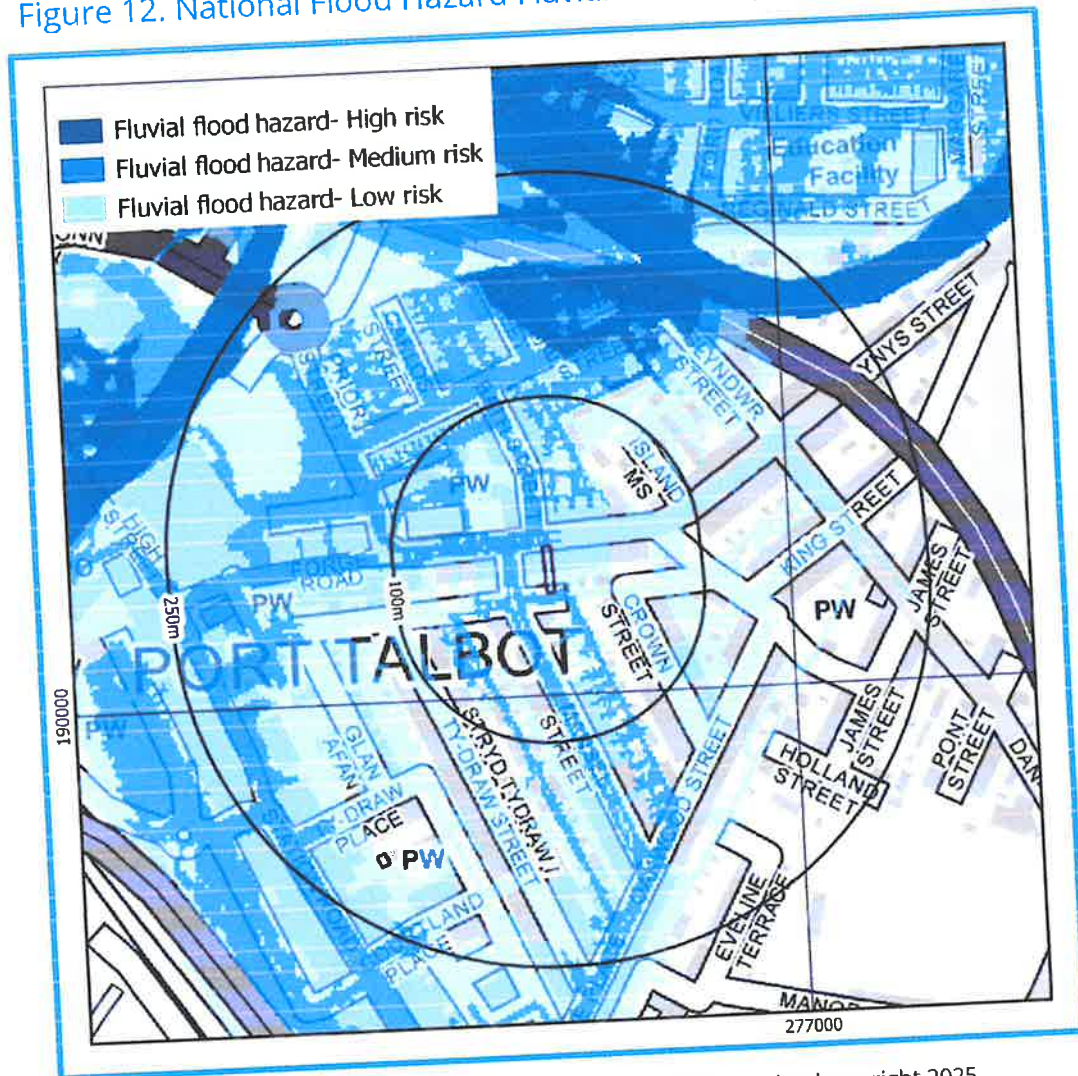
National Flood Hazard Maps

The National Flood Hazard (NFH) maps were published in the Summer of 2020, these show results for an undefended scenario which means the modelling and mapping process explicitly excluded any flood defences.

NFH maps have been included in order to understand the risk of flooding in a worst-case undefended scenario. However, as the Site benefits from defences, the risk shown by the NFH maps is considered unlikely.

National Flood Hazard – Fluvial Flood Risk

Figure 12. National Flood Hazard Fluvial flood mapping (NRW, 2025)

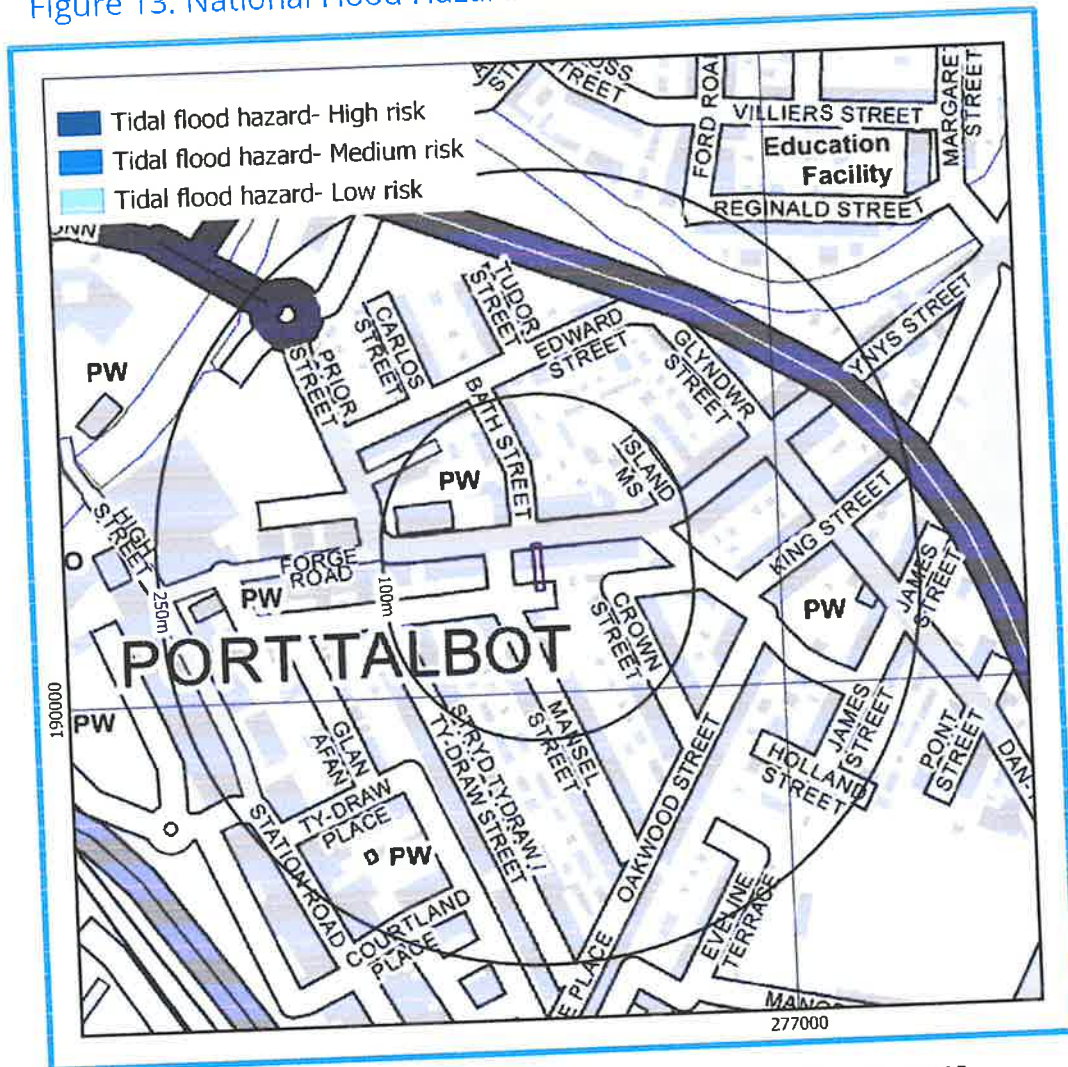


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The fluvial flood risk maps demonstrate that the Site would be affected by flooding from the 1 in 100 year and 1 in 1000 year events.

National Flood Hazard – Tidal Flood Risk

Figure 13. National Flood Hazard Tidal flood mapping (NRW, 2025)



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The tidal flood risk maps demonstrate that the Site would not be affected by tidal flooding.

Model data (Fluvial)

As the Site is located within the NRW's fluvial floodplain, modelled flood elevation data was obtained from NRW and has been used to assess flood risk and to provide recommendations for mitigation for the proposed development.

Defended modelled data from the Port Talbot Harbourside Hydraulic Model (JBA, 2022) has been extracted from the 2D floodplain data provided in the vicinity of the Site.¹ The data is provided in the table below and is included within Appendix B.

Table 2. EA present day modelled flood data

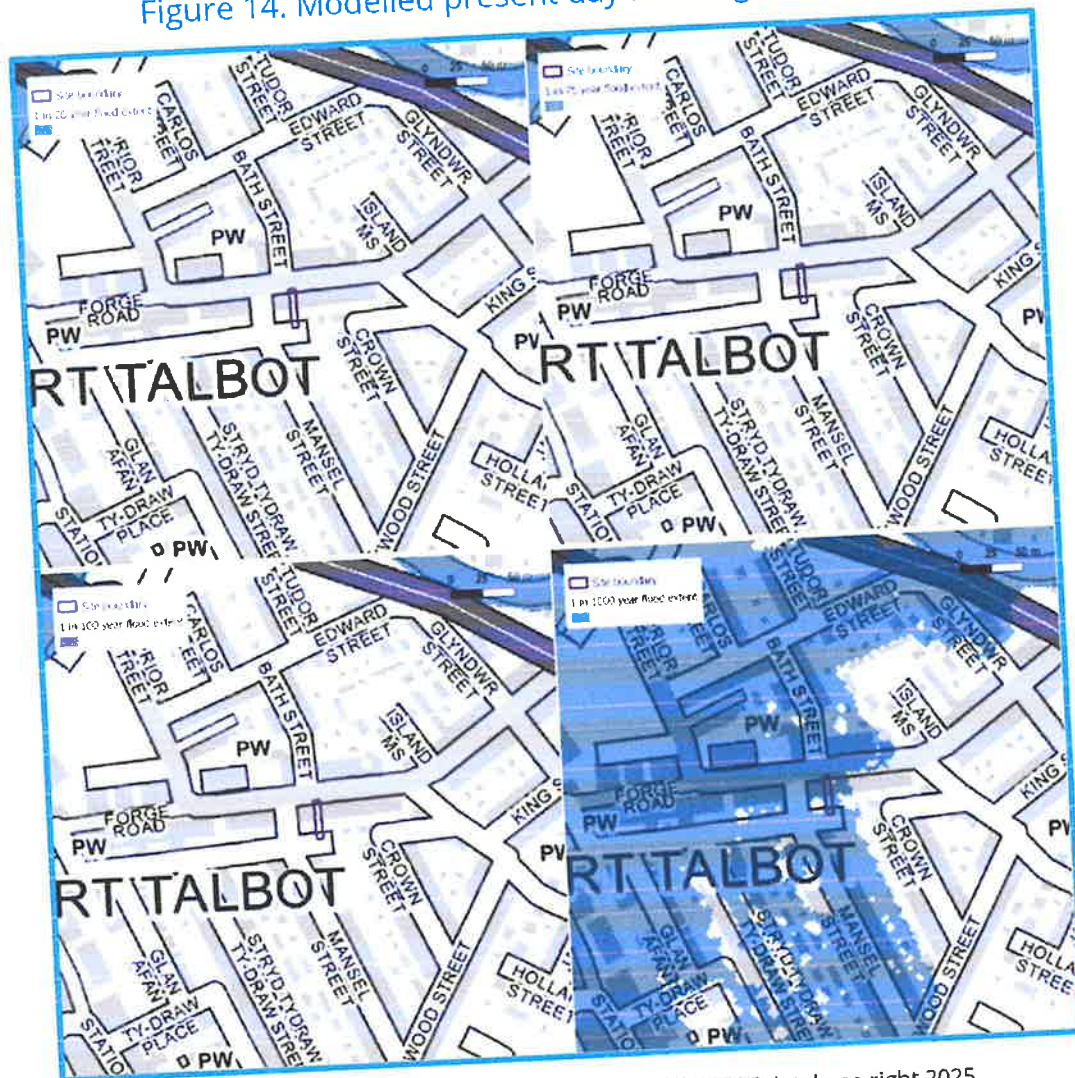
Ground levels on-Site (mAOD)	Modelled Flood Levels (mAOD)			
	1 in 20 year	1 in 75 year	1 in 100 year	1 in 1000 year
10.74 to 11.57	Flood extent does not reach the Site.			11.54
Flood depths (m)	No flooding anticipated.			0.21

*The maximum flood depth anticipated at the Site, derived from the difference between LiDAR ground levels at the Site and the modelled flood levels (JBA, 2022).

Figure 14 (overleaf) confirms the flood extent associated with overtopping of the flood defences in the present day flooding scenarios.

¹ The accuracy of the modelled flood levels are not known. These are dependent on the accuracy of input datasets such as LiDAR data, used to model the impacts of flooding within the 2D domain. Confirmation of the accuracy of the modelled flood data can be obtained separately from Natural Resources Wales.

Figure 14. Modelled present day flooding scenarios



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Climate change factors

In accordance with the Welsh Government's Climate Flood Consequences Assessments: Climate change allowances guidance (2021), allowances should be made for the impact of increased river and sea levels and flows to the proposed development.

Due to recent changes in guidance on the allowances for climate change, the 20% increase in river flows should no longer to be used for development design purposes, unless the guidance stipulates this is the correct allowance to use (depending on the river basin and development proposals).

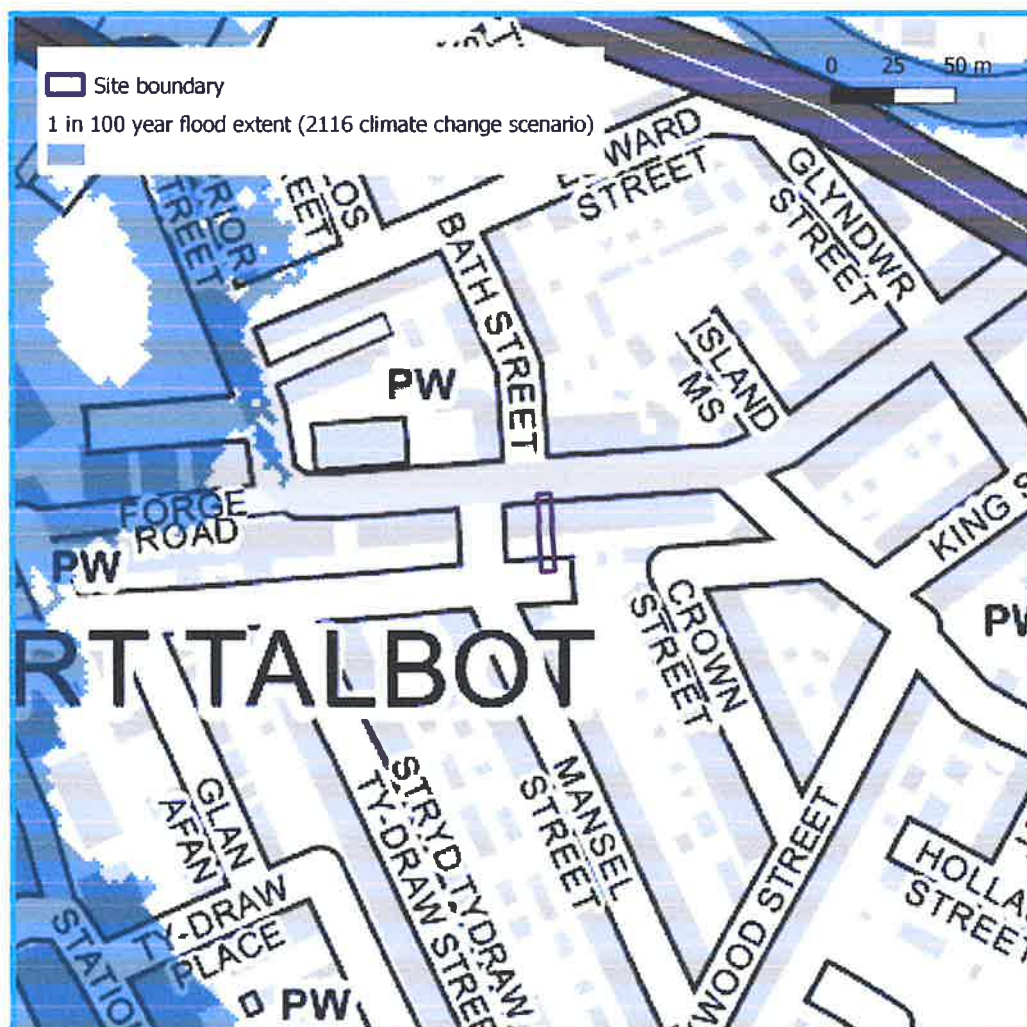
As the Site is located within the Western Wales River Basin and the proposed development is classed as More Vulnerable, where the proposed lifespan is 100 years, the Central (30%) allowances have been used to determine a suitable climate change factor to apply to river data.

In the Port Talbot Harbourside Hydraulic Model (JBA, 2022), the 1 in 100 year fluvial flooding event with a 30% increase for climate change is presented as the 2116 1 in 100 year fluvial flooding event.

Table 1. Flood levels plus climate change allowances

Ground levels on-Site (mAOD)	Modelled Flood Levels (mAOD)
	1 in 100 year plus 30% 2050 central allowance for climate change flood level (mAOD)
10.74 to 11.57	Flood extent does not reach the Site.
Flood depths (m)	No flooding anticipated.

Figure 15. 2116 1 in 100 year flood extent



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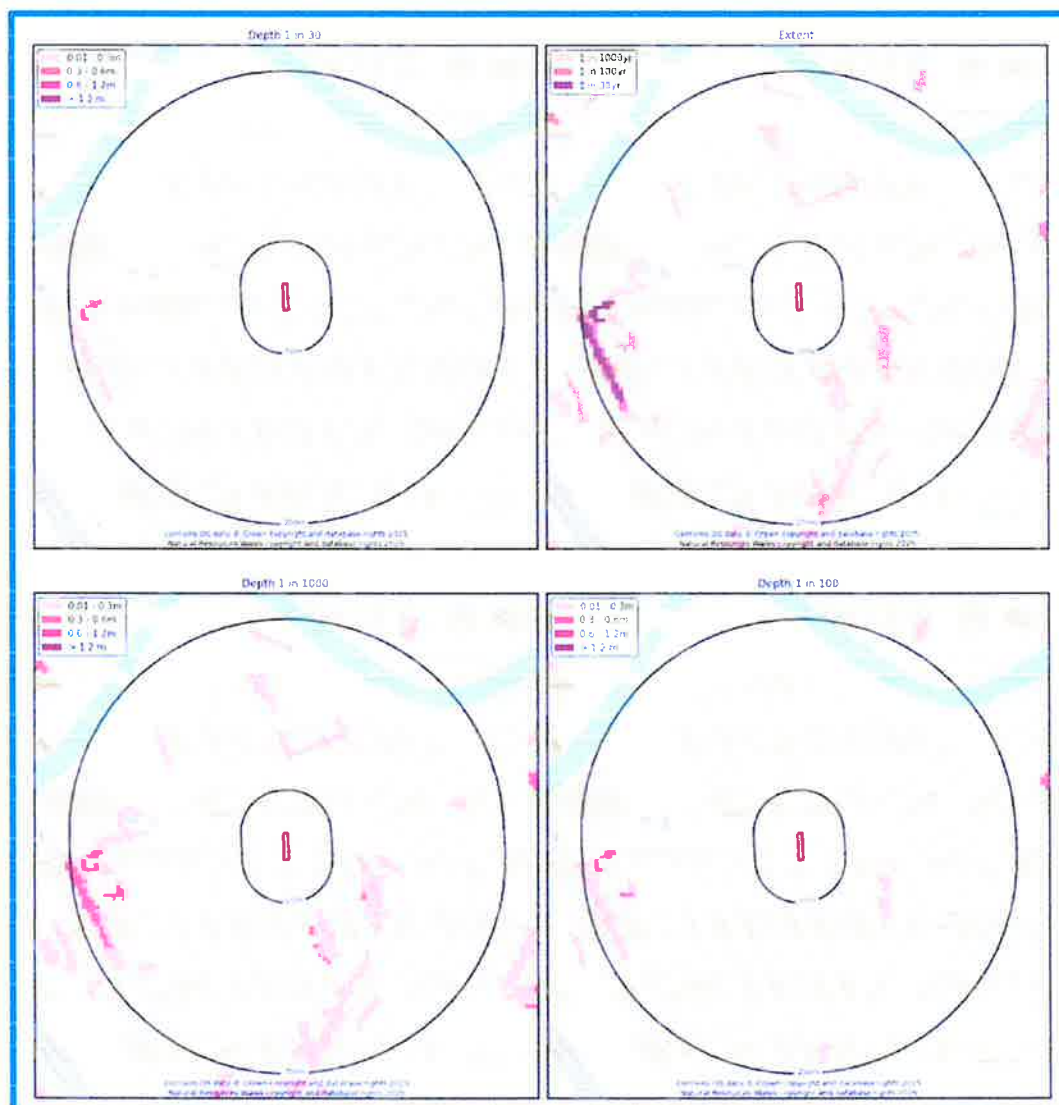
Surface water (pluvial) flooding

Surface water flooding occurs when intense rainfall exceeds the infiltration capacity of the ground and overwhelms the drainage systems. It can occur in most locations even at higher elevations and at significant distances from river and tidal floodplains.

The SFCA does not discuss reported incidents of historical surface water flooding within 100 m of the Site (JBA, 2022).

- According to the National Flood Hazard Map's Flood Risk from Surface Water and Small Watercourses flood mapping (Figure 16), the Site has a Very Low risk of pluvial flooding.

Figure 16. NRW Low surface water risk Hazard map (NRW, 2025)



According to NRW's surface water flood risk map the Site is at:

- Very Low risk - chance of flooding of less than 1 in 1000 (0.1%).

Figure 16 confirms the extent and depth of flooding in multiple modelled flood scenarios. Pluvial flooding will not impact the area proposed for development.

Climate change may lead to an increase in rainfall intensity which affects river levels, land and urban drainage systems. Rainfall intensity for small and urban catchments may increase from 5 to 20% (central estimate) or 10 to 40% (upper estimate) over the period to 2115 (NRW, 2025).

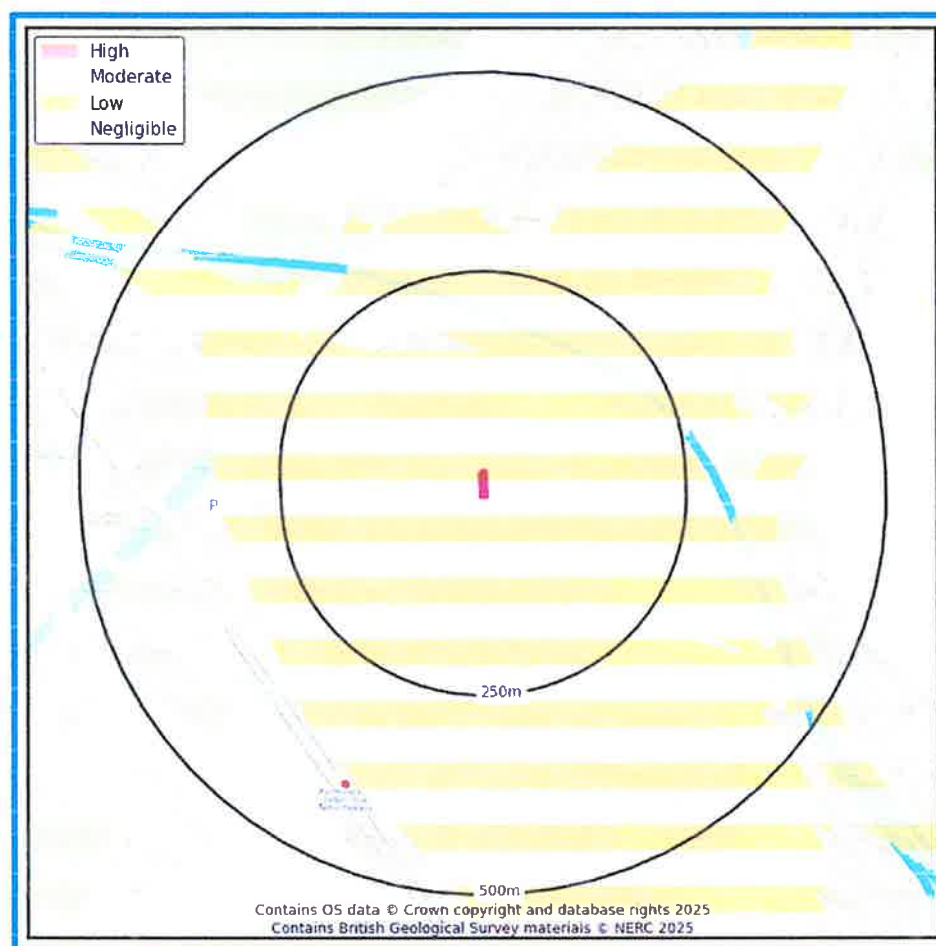
Any existing and proposed on-Site surface water drainage systems should be designed and maintained appropriately to manage the run-off over the lifetime of the proposed development.

Groundwater flooding

Groundwater flooding occurs when sub-surface water emerges from the ground at the surface or into Made Ground and structures. This may be as a result of persistent rainfall that recharges aquifers until they are full; or may be as a result of high river levels, or tides, driving water through near-surface deposits. Flooding may last a long time compared to surface water flooding, from weeks to months. Hence the amount of damage that is caused to property may be substantially higher.

Groundwater Flood Risk screening data (Figure 17, overleaf) indicates there is a Moderate risk of groundwater flooding at surface in the vicinity from permeable bedrock and superficial deposits during a 1 in 100 year event.

Figure 17. GeoSmart GW5 Groundwater Flood Risk Map (GeoSmart, 2025)



Mapped classes within the screening map combine likelihood, possible severity and the uncertainty associated with predicting the subsurface system. The map is a national scale screening tool to prompt site-specific assessment where the impact of groundwater flooding would have significant adverse consequences. Mapping limitations and a number of local factors may reduce groundwater flood risk to land and property even where it lies within mapped groundwater flood risk zones, which do not mean that groundwater floods will occur across the whole of the risk area.

A site-specific assessment has been undertaken to refine the groundwater risk screening information on the basis of site-specific datasets (see Section 3) including BGS borehole data and the NRW's fluvial and tidal floodplain data (where available) to develop a conceptual groundwater model. The risk rating is refined further using the vulnerability of receptors including occupants and the existing and proposed Site layout, including the presence of basements and buried infrastructure. The presence of any nearby or on-Site surface water features such as drainage ditches, which could intercept groundwater have also been considered.

- It is understood there are no existing basements and a basement is not proposed as part of the development.

- According to a review of the hydrogeology (Section 3), the Site is underlain by permeable superficial deposits above permeable bedrock. Groundwater levels may rise in the bedrock and superficial aquifers in a seasonal response to prolonged rainfall recharge which may cause an unusually high peak in groundwater levels during some years.
- Groundwater levels may also rise in the superficial aquifer in response to high river events due to the potential hydraulic continuity with the nearby River Afan. It is noted groundwater flooding may occur in response to prolonged high water levels, by-passing flood defences even if overtopping does not occur
- According to a review of the hydrogeology (Section 3), the nearby borehole (ref: SS79SE477), located 255 to the north-west of the Site, encountered groundwater at 3.20m bgl, subject to seasonal variation and distance from the Site.
- Spring lines have not been identified in close proximity to the Site.

The hydrogeological characteristics suggest there is potential for a groundwater table beneath the Site.

Guidance

Moderate Risk - There will be a significant possibility that incidence of groundwater flooding could lead to damage to property or harm to other sensitive receptors at, or near, this location.

Climate change predictions suggest an increase in the frequency and intensity of extremes in groundwater levels. The impact of climate change on groundwater levels beneath the Site is linked to the predicted risk in peak river levels and the variation in rainfall recharge which is uncertain.

- Rainfall recharge patterns will vary regionally resulting in changes to average groundwater levels.
- A rise in peak river levels will lead to a response of increased groundwater levels in adjacent aquifers subject to the predicted climate change increases in peak river level for the local catchment.

Flooding from artificial sources

Artificial sources of flood risk include waterbodies or watercourses that have been amended by means of human intervention rather than natural processes. Examples include reservoirs (and associated water supply infrastructure), docks, sewers and canals. The flooding mechanism associated with flood risk from artificial sources is primarily related to breach or failure of structures (reservoir, lake, sewer, canal, flood storage areas, etc.)

Sewer flooding

Table 1-2 of the Strategic Flood Consequence Assessment (SFCA) (JBA, 2022) confirms 8 incidents of sewer flooding in Port Talbot between 1990 and 2021.

Properties classified as "at risk" are those that have suffered, or are likely to suffer, internal flooding from public foul, combined or surface water sewers due to overloading of the sewerage system either once or twice in the ten year reference period. Records held by the sewage utility company provide information relating to reported incidents, the absence of any records does not mean that the Site is not at risk of flooding.

Canal failure

According to Ordnance Survey (OS) mapping, there are no canals within 500 m of the Site.

Water supply infrastructure

Water supply infrastructure is comprised of a piped network to distribute water to private houses or industrial, commercial or institution establishments and other usage points. In urban areas, this represents a particular risk of flooding due to the large amount of water supply infrastructure, its condition and the density of buildings. The risks of flooding to properties from burst water mains cannot be readily assessed.

If more information regarding the condition and history of the water supply infrastructure within the vicinity of the Site is required, then it is advisable to contact the local water supplier (Dwr Cymru (Welsh Water)).

Culverts and bridges

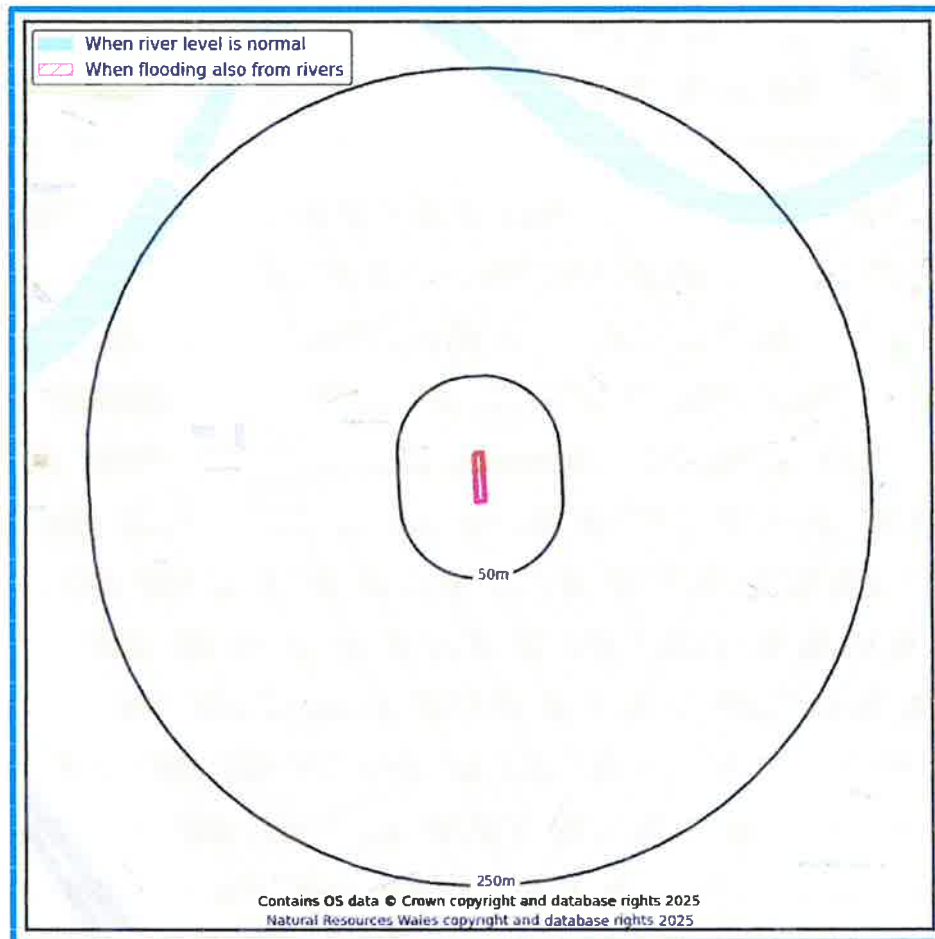
The blockage of watercourses or structures by debris (that is, any material moved by a flowing stream including vegetation, sediment and man-made materials or refuse) reduces flow capacity and raises water levels, potentially increasing the risk of flooding. High water levels can cause saturation, seepage and percolation leading to failure of earth embankments or other structures. Debris accumulations can change flow patterns, leading to scour, sedimentation or structural failure.

Culverts and bridges have not been identified within the vicinity of the Site and therefore the risk is considered to be Negligible.

Reservoir flooding

According to the NRW's Flood Risk from Reservoirs mapping the Site is not at risk of flooding from reservoirs (Figure 18, overleaf) (NRW, 2025).

Figure 18. NRW Flood Risk from Reservoirs Flooding (NRW, 2025)



Guidance

The risk of reservoir flooding is related to the failure of a large reservoir (holding over 25,000 m³ of water) and is based on the worst-case scenario. Reservoir flooding is extremely unlikely to occur (NRW, 2025).

5. Flood risk from the development



Floodplain storage

Where flood storage from any source of flooding is to be lost as a result of development, on-site level-for-level compensatory storage, accounting for the predicted impacts of climate change over the lifetime of the development, should be provided. Where it is not possible to provide compensatory storage on site, it may be acceptable to provide it off-site if it is hydraulically and hydrologically linked.

The loss of floodplain storage is less likely to be a concern in areas benefitting from appropriate flood risk management infrastructure or where the source of flood risk is solely tidal.

The development is located within a fluvial Flood Zone 2, but does not involve an increase in building footprint. Therefore, there would be no displacement of flood water and compensatory flood storage is not required.

Drainage and run-off

The development proposals are for a change of use and will not involve the alteration of any external features (or any changes to existing impermeable and permeable areas), an estimation of surface water runoff is not considered to be required.

Any changes to the existing drainage system will be undertaken in accordance with best practice and care will be taken to ensure the new development does not overload/block any existing drainage or flow pathways to/from the Site.

6. Suitability of the proposed development



The information below outlines the suitability of proposed development in relation to national and local planning policy.

National policy and guidance

The aims of the national planning policies TAN15 (2004) and PPW (2024) are achieved through application of the Justification Test and by assessing Flood Consequences. The key requirements of these are outlined below:

Guidance

Justification Test: New developments should be directed away from Zone C and towards suitable land in Zone A, or Zone B where river or coastal flooding will be less of an issue. In Zone C the tests outlined in sections 6 and 7 of TAN15 will be applied, recognizing, however, that highly vulnerable development and Emergency Services in Zone C2 should not be permitted. All other new development should only be permitted within Zones C1 and C2 if determined by the planning authority to be justified in that location.

Assessing Flood Consequences: If a development proposal in Zone C1 or in C2, and if it is defined as being of low vulnerability, it would meet the test outlines in section 6. However, it should be noted that those developments would be more likely to flood and appropriate mitigation would need to be planned accordingly. This section applies to Zone C, and those parts of Zone B where flooding has been identified as a material consideration to allow for localised problems.

Assessing whether a development should proceed or not will depend upon whether the consequences of flooding of that development can be managed and reduced to a level which is acceptable for the nature/type of proposed development, including its effects on existing development.

The proposed Site use is residential and is classified as "Highly Vulnerable" development. The Site is located with the Development Advice Map (DAM) Zone C1.

Table 2. Flood risk vulnerability and flood zone compatibility (taken from TAN15, 2004)

DAM Zone	Development Type	Planning Requirements	Acceptability Criteria	Development Advice
A	Emergency Services, highly vulnerable development, less vulnerable	- Justification test not applicable - Refer to surface water requirements	No increase in flooding elsewhere	No constraints relating to river or coastal flooding, other than to avoid

	development, other			increasing risk elsewhere
B	Emergency services & Highly vulnerable development	- If site levels are greater than the flood levels used to define adjacent extreme flood outline there is no need to consider flood risk further - Refer to surface water requirements	- Acceptable consequences for nature of use - Occupiers aware of flood risk - Escape/Evacuation routes present - Effective flood warning provided - Flood emergency plans and procedures - Flood resistant design - No increase in flooding elsewhere	Generally suitable for most forms of development. Assessments where required, are unlikely to identify consequences that cannot be overcome or managed to an acceptable level. It is unlikely, therefore, that these would result in a refusal of planning consent on the grounds of flooding.
	Less vulnerable development		- Occupiers aware of flood risk - No increase in flooding elsewhere	
	Other	Refer to surface water requirements	No increase in flooding elsewhere	
C1	Emergency services, highly vulnerable development, less vulnerable development	- Application of justification test including acceptability of consequences - Refer to surface water requirements	- Acceptable consequences for nature of use - Flood defences adequate - Agreement for construction and maintenance costs secured - Occupiers aware of flood risk - Escape/evacuation routes present - Effective flood warning provided - Flood emergency plans and procedures - Flood resistant design - No increase in flooding elsewhere	Plan allocations and applications for all development can only proceed subject to justification in accordance to section 6 of TAN 15 and acceptability of consequences in accordance to section 7 and Appendix 1 of TAN 15

	Other	• Application of acceptability of consequences (TAN 15 section 7 and Appendix 1) • Refer to surface water requirements	• Acceptable consequences for nature of use • Occupiers aware of flood risk • Desirable if effective flood warning and evacuation routes/procedure provided depending on nature of proposal • No increase in flooding elsewhere	Plan allocations and applications for development should only be made if considered acceptable in accordance with section 7 and Appendix 1 of TAN 15
C2	Emergency services, highly vulnerable development	The flooding consequences associated with Emergency Services and highly vulnerable developments are not considered to be acceptable. Plan allocations should not be made for such developments and planning applications not proposed		
	Less vulnerable development	• Application of justification test (section 6 of TAN 15), including acceptability of consequences (section 7 and Appendix 1 of TAN 15) • Refer to surface water requirements	• Acceptable consequences for nature of use • Flood defences adequate • Agreement for construction and maintenance costs secured • Occupiers aware of flood risk • Escape/evacuation routes present • Effective flood warning provided • Flood emergency plans and procedures	Plan allocations or applications for less vulnerable development can only proceed subject to justification in accordance with section 6 of TAN 15 and acceptability of consequences in accordance with section 7 and Appendix 1 of TAN 15
	Other	• Application of acceptability of consequences (section 7 and Appendix 1 of TAN 15) • Refer to surface water requirements	• Flood resistant design • No increase in flooding elsewhere • Acceptable consequences for nature of use • Occupiers aware of flood risk • Effective flood warning provided	Plan allocations and applications for development should only be made if considered acceptable in accordance with section 7 and

			No increase in flooding elsewhere	Appendix 1 of TAN 15.
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Justification Criteria:

- 1) Should be located only in an area of flood risk which is developed and served by significant infrastructure, including flood defences (Zone C1 of the DAM). **The Site is located within DAM Zone C1 and is protected by flood defences on the River Afan.**
- 2) Its location is necessary to assist a local authority regeneration initiative or Strategy, or contribute to key employment objectives, necessary to sustain an existing settlement or region. **The residential accommodation provided by the development would contribute to employment objectives during its lifespan.**
- 3) The site meets the definition of previously developed land (i.e. it is not a Greenfield site) and concurs with the aims of Planning Policy Wales (i.e. the presumption in favour of sustainable development). **The existing Site is located within a setting of existing development and therefore not considered greenfield**
- 4) A Flood Consequence Assessment has been produced to demonstrate that the potential consequences of a flood event up to the extreme flood event (1 in 1000 chance of occurring in any year) have been considered and meet the criteria below in order to be considered acceptable. **This FCA confirms the potential consequences of a flood event can be reduced through flood mitigation measures.**

Acceptability Criteria (has to meet all):

Q. Flood defences must be shown by the developer to be structurally adequate particularly under extreme overtopping conditions (i.e. that flood with a 1 in 1000 chance of occurring in any year).

A. The formal flood defences are shown to be structurally adequate as the Risk of Flooding from Rivers and the Sea map, which considers their type and condition rating, confirms the risk to the Site is Very Low to Low from tidal, fluvial and pluvial sources.

Q. The cost of future maintenance for all new/approved flood mitigation measures, including defences must be accepted by the developer and agreed with the Environment Agency (now Natural Resources Wales).

A. Cost of flood defences is not relevant in this instance, as none are proposed. Recommended flood resilience measures should be maintained as part of the building structure and ongoing by the owner.

Q. The developer must ensure that future occupiers of the development are aware of the flooding risks and consequences.

A. It is assumed the developer will make the future on-Site users aware of flood risks and consequences.

Q. Effective flood warnings are provided at the site.

A. It is assumed the developer will make the future on-Site users aware of flood risks and consequences. A flood warning and evacuation plan is discussed in Section 7 of this report.

Q. Escape/evacuation routes are shown by the developer to be operational under all conditions.

A. Escape and evacuation routes are discussed within Section 7 of this report. Evacuation should be undertaken prior to flooding at the Site and routes of safe access and egress should be available at all times.

Q. Flood emergency plans and procedures produced by the developer must be in place.

A. Flood emergency plans are recommended as part of this report and can be conditioned as part of the approval.

Q. The development is designed by the developer to allow the occupier the facility for rapid movement of goods/possessions to areas away from floodwaters.

A. FFL's of the dwelling are proposed to be raised as high as feasibly possible however it is understood that opportunities for this are likely to be constrained. Flood resilience measures are proposed to minimise structural damage in a flooding event.

Q. Development is designed to minimise structural damage during a flooding event and is flood proofed to enable it to be returned to its prime use quickly in the aftermath of the flood.

A. The mitigation measures in Section 7 of this report should be considered to minimise structural damage in a flooding event.

Q. No flooding elsewhere.

A. Development proposals of the built footprint are outside of all modelled flooding extents and therefore there will be no displacement of flood waters and as such no increase in risk to off-Site recipients.

Q. Developer is required to demonstrate that the site is designed to be flood free for the lifetime (A1.5) of development for either a 1 in 100 chance (fluvial) flood event, or a 1 in 200 chance (tidal) flood event including an allowance for climate change (depending on the type of flood risk present) in accordance with table A1.14.

A. As the model data in Section 4 highlights, the Site will remain flood free in the 1 in 100 year fluvial flood event including climate change.

Q. In respect of the residual risk to the development it should be designed so that over its lifetime (A1.5) in an extreme (1 in 1000 chance) event there would be less than 600mm of water on access roads and within properties, the velocity of any water flowing across the development would be less than 0.3 m/second on access roads and 0.15m/second in properties, and the maximum rate of rise of floodwater would not exceed 0.1m/hour (see table A1.15).

A. The existing Site is located within previously developed land. Given the access roads to the Site will undergo no change as a result of the development additional mitigation measures are not considered appropriate. Analysis of the

Site does demonstrate that the access roads will have flood depths of less than 600 mm in the 1 in 1000 year event.

Environment Agency Flood Risk Standing Advice for Sites located in Flood Zones 2 or 3²

For all relevant vulnerable developments (i.e. more vulnerable, less vulnerable and water compatible), advice on the points should be followed:

- Surface water management;
- Access and evacuation; and
- Floor levels.

Surface water management

Plans for the management of surface water need to meet the requirements set out in either the local authority's:

- Surface water management plan where available; OR
- Strategic flood consequence assessment.

They also need to meet the requirements of the approved building regulations Part H: drainage and water disposal. Read section H3 rainwater drainage.

Planning permission is required to use a material that can't absorb water (e.g. impermeable concrete) in a front garden larger than 5 square metres.

Access and evacuation

Details of emergency escape plans should be provided for any parts of a building that are below the estimated flood level:

Plans should show:

- Single storey buildings or ground floors that don't have access to higher floors can access a space above the estimated flood level, e.g. higher ground nearby;
- Basement rooms have clear internal access to an upper level, e.g. a staircase; and
- Occupants can leave the building if there's a flood and there's enough time for them to leave after flood warnings.

Floor levels

The following should be provided:

² Please note in the absence of NRW FRSA the EA guidance (2022) has been used in lieu providing a clear framework for Flood Risk assessment and mitigation strategies and deemed sufficiently applicable

- Average ground level of the building; and
- Finished floor level of the lowest habitable room in the building.

Ground floor levels should be a minimum of whichever is higher of:

- 300 millimetres (mm) above the general ground level of the site; OR
- At least 600 mm above the estimated river or sea flood level.

7. Resilience and mitigation



Based on the flood risk identified at the Site, the national and local policies and guidance and proposed development, the mitigation measures outlined within this section of the report are likely to help protect the development from flooding.

Sea (coastal/tidal) flood mitigation measures

As the Site is not identified as being at risk of flooding from the sea, mitigation measures are not required.

Rivers (fluvial) flood mitigation measures

The Site is located within an area which is affected by flooding from rivers, the following table confirms the flood depths associated with the Site.

Table 3. EA present day and future climate change modelled flood data

Ground levels on-Site (mAOD)	Maximum Modelled Flood Levels (mAOD)	
	2116 1 in 100 year event (climate change)	1 in 1000 year event
10.74 to 11.57	Flood extent does not reach the Site.	11.54
Flood depths (m)	No flooding anticipated.	0.21

Alternative Mitigation

As the proposed development is for a change of use it may not be feasible to raise minimum finished floor levels to the recommended elevation. If so, finished floor levels should be raised as high as feasible and adopt a water exclusion strategy for flood depths up to 0.3 m in line with the NRW's Standing Advice. A water exclusion strategy, using avoidance and resistance measures, is appropriate where floods are expected to last for short durations. Potential water exclusion strategies include:

- Passive flood door systems;
- Temporary flood barriers;
- Air brick covers (manual or automatic closing);

- Non-return flap valves on sewer outfalls.

Avoidance and resistance measures are unlikely to completely prevent floodwater entering a property, particularly during longer duration flood events. Therefore, it is recommended that the following flood resilience measures are also considered.

- Flood resilient materials and designs:
 - Use of low permeability building materials up to 0.3 m such as engineering bricks (Classes A and B) or facing bricks;
 - Hard flooring and flood resilient metal staircases;
 - The use of internal lime plaster/render or where plasterboards are used these should be fitted horizontally instead of vertically and/or using moisture resistant plasterboard at lower levels;
 - Water, electricity and gas meters and electrical sockets should be located above the predicted flood level;
 - Communications wiring: wiring for telephone, TV, Internet and other services should be protected by suitable insulation in the distribution ducts to prevent damage.

Surface water (pluvial) flood mitigation measures

As the Site is not identified as being at risk of pluvial flooding, mitigation measures are not required.

Groundwater flood mitigation measures

It is likely the flood mitigation measures recommended for the fluvial flood risk will reduce the groundwater flood risk at the development. However specific groundwater measures that may also be considered for the Moderate risk identified include:

- Interceptor drains;
- Automatic sump to extract flood water; and
- Non-return flap valves on the foul and surface water sewer lines.

Reservoir flood mitigation measures

The Site is not a risk of flooding from reservoirs; therefore, mitigation measures are not required.

Other flood risk mitigation measures

As the Site is not identified as at risk from other sources, mitigation measures are not required.

Residual flood risk mitigation measures

The risk to the Site has been assessed from all sources of flooding and appropriate mitigation and management measures proposed to keep the users of the development safe over its lifetime. There is however a residual risk of flooding associated with the potential for failure of mitigation measures if regular maintenance and upkeep isn't undertaken. If mitigation measures are not implemented or maintained, the risk to the development will remain as the baseline risk.

Further flood mitigation information

More information on flood resistance, resilience and water entry can be found here: http://www.planningportal.gov.uk/uploads/br/flood_performance.pdf

www.knowyourfloodrisk.co.uk

Emergency evacuation - safe access / egress and safe refuge

Emergency evacuation to land outside of the floodplain should be provided if feasible. Where this is not possible, 'highly vulnerable' developments and, where possible, development in general, should have internal stair access to an area of safe refuge within the building to a level higher than the maximum likely water level. An area of safe refuge should be sufficient in size for all potential users and be reasonably accessible to the emergency services.

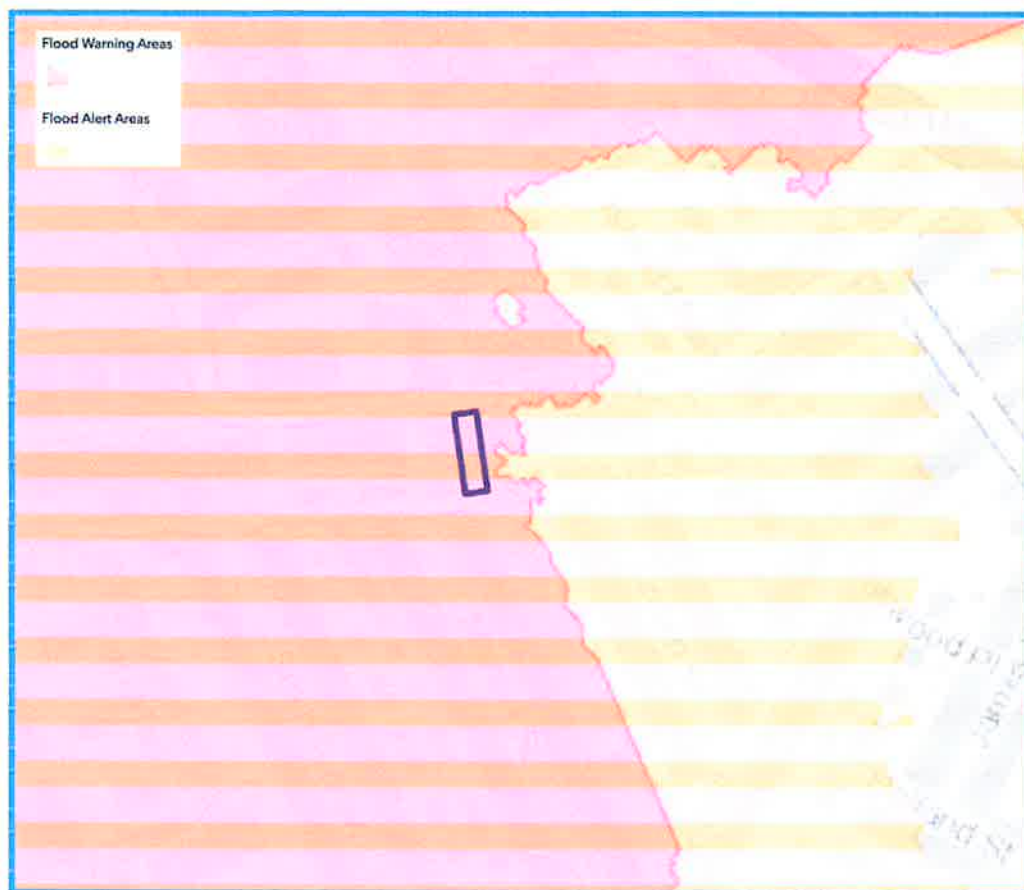
Emergency evacuation from the development and the Site should only be undertaken in strict accordance with any evacuation plans produced for the Site, with an understanding of the flood risks at the Site including available mitigation, the vulnerability of occupants and preferred evacuation routes.

Flood warnings

The NRW operates a flood warning service in all areas at risk of flooding; this is available on their website: <https://naturalresources.wales/flooding?lang=en>. The Site is located within an NRW Flood Alerts/Warning coverage area so is able to receive alerts and warnings (Figure 19, overleaf). All warnings are also available through NRW's 24 hour Floodline Service (0345 988 1188).

- **Flood Alert:** River Afan and Kenfig; Quick Dial code: 503025
- **Flood Warning:** River Afan at Port Talbot; Quick Dial code: 603053

Figure 19. NRW Flood Alerts/Warning coverage area



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The NRW aims to issue Flood Warnings 2 hours in advance of a flood event. Flood Warnings can provide adequate time to enable protection of property and evacuation from a Site, reducing risk to life and property.

Emergency evacuation

Where possible, a safe access and egress route with a 'very low' hazard rating from areas within the floodplain to an area wholly outside the 1 in 100 year flood event including an allowance for climate change should be demonstrated.

Based on NRW's Flood Zone Map the closest dry evacuation area within Flood Zone 1 is along Ynys Street (c. 150 m north east – direct measurement). It is advised that evacuation from the premises would be the preferred option in a flood event if safe to do so. It is recommended that residents prepare to evacuate as soon as an NRW Flood Warning is issued in order to completely avoid flood waters.

On-Site refuge

Evacuation should be the primary action in preference, however safe refuge could be sought at first floor level in a worst-case scenario as the residential areas of the development are situated on the first floor.

Other relevant information

It is recommended that main communication lines required for contacting the emergency services, electricity sockets/meters, water supply and first aid stations and supplies are not compromised by flood waters. Where possible these should all be raised above the extreme flood level.

8. Conclusions and recommendations



Table 4. Risk ratings following Site analysis

Source of Flood Risk	Baseline ¹	After analysis ²	After Mitigation ³
River (fluvial) flooding	Low		Very Low
Sea (coastal/tidal) flooding	Very Low		N/A
Surface water (pluvial) flooding	Very Low		N/A
Groundwater flooding	Moderate		Low
Other flood risk factors present	No		No
Is any other further work recommended?	Yes (see below)		

1 BASELINE risks assigned for the whole Site, using national risk maps, including the benefit of NRW flood defences.

2 AFTER ANALYSIS modification of risk assessment based on detailed site specific analysis including some or all of the following: flood model data, high resolution mapping, building location, access routes, topographic and CCTV surveys. Reasons for the change in classification are provided in the text.

3 AFTER MITIGATION risks include risks to the proposed development / asset and occupants if mitigation measures recommended in this report are implemented, including the impacts of climate change.

*N/A indicates where mitigation is not required.

The table below provides a summary of where the responses to key questions are discussed in this report. Providing the recommended mitigation measures are put in place it is likely that flood risk to this Site will be reduced to an acceptable level.

The Site is located in DAM Zone C1 and the development is classed as Highly Vulnerable which will require review and discussion of mitigation measures with the Local Authority.

Table 5. Summary of responses to key questions in the report

Key sources of flood risks identified	Fluvial and groundwater (see Section 4).
Are standard mitigation measures likely to provide protection from flooding to/from the Site?	Yes (see Section 7).
Is any further work recommended?	Yes (See exec summary and section 7).

9. References and glossary



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Glossary

General terms

BGS	British Geological Survey
NRW	National Resource Wales
GeoSmart groundwater flood risk model	GeoSmart's national groundwater flood risk model takes advantage of all the available data and provides a preliminary indication of groundwater flood risk on a 50m grid covering England and Wales. The model indicates the risk of the water table coming within 1 m of the ground surface for an indicative 1 in 100 year return period scenario.
Dry-Island	An area considered at low risk of flooding (e.g. In a Flood Zone 1) that is entirely surrounded by areas at higher risk of flooding (e.g. Flood Zone 2 and 3)
Flood resilience	Flood resilience or wet-proofing accepts that water will enter the building, but through careful design will minimise damage and allow the re-occupancy of the building quickly. Mitigation measures that reduce the damage to a property caused by flooding can include water entry strategies, raising electrical sockets off the floor, hard flooring.
Flood resistance	Flood resistance, or dry-proofing, stops water entering a building. Mitigation measures that prevent or reduce the likelihood of water entering a property can include raising flood levels or installation of sandbags.
Flood Zone 1	This zone has less than a 0.1% annual probability of river flooding
Flood Zone 2	This zone has between 0.1 and 1% annual probability of river flooding and between 0.1% and 0.5 % annual probability sea flooding
Flood Zone 3	This zone has more than a 1% annual probability of river flooding and 0.5% annual probability of sea flooding
Functional Flood Plain	An area of land where water has to flow or be stored in times of flood.
Hydrologic model	A computer model that simulates surface run-off or fluvial flow. The typical accuracy of hydrologic models such as this is $\pm 0.25\text{m}$ for estimating flood levels at particular locations.
OS	Ordnance Survey
Residual Flood Risk	The flood risk remaining after taking mitigating actions.
SFCA	Strategic Flood Consequence Assessment. This is a brief flood risk assessment provided by the local council

SuDS

A Sustainable drainage system (SuDS) is designed to replicate, as closely as possible, the natural drainage from the Site (before development) to ensure that the flood risk downstream of the Site does not increase as a result of the land being developed. SuDS also significantly improve the quality of water leaving the Site and can also improve the amenity and biodiversity that a Site has to offer. There are a range of SuDS options available to provide effective surface water management that intercept and store excess run-off. Sites over 1 Ha will usually require a sustainable drainage assessment if planning permission is required. The current proposal is that from April 2014 for more than a single dwelling the drainage system will require approval from the SuDS Approval Board (SABs).

Aquifer Types

Principal aquifer	These are layers of rock or drift deposits that have high intergranular and/or fracture permeability - meaning they usually provide a high level of water storage. They may support water supply and/or river base flow on a strategic scale.
Secondary A aquifer	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers.
Secondary B aquifer	Predominantly lower permeability layers which may store and yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering.
Secondary undifferentiated	Has been assigned in cases where it has not been possible to attribute either category A or B to a rock type due to the variable characteristics of the rock type.
Unproductive Strata	These are rock layers or drift deposits with low permeability that has negligible significance for water supply or river base flow.

Data Sources

Aerial Photography	Contains Ordnance Survey data © Crown copyright and database right 2025 BlueSky copyright and database rights 2025
Bedrock & Superficial Geology	Contains British Geological Survey materials © NERC 2025 Ordnance Survey data © Crown copyright and database right 2025
Flood Risk (Flood Zone/RoFRS/Historic Flooding/Pluvial/Surface Water	Natural Resource Wales copyright and database rights 2025

Features/Reservoir/ Flood Alert & Warning)	Ordnance Survey data © Crown copyright and database right 2025
Flood Risk (Groundwater)	GeoSmart, BGS & OS GW5 (v2.4) Map (GeoSmart, 2025) Contains British Geological Survey materials © NERC 2025 Ordnance Survey data © Crown copyright and database right 2025
Location Plan	Contains Ordnance Survey data © Crown copyright and database right 2025
Topographic Data	OS LiDAR/EA Contains Ordnance Survey data © Crown copyright and database right 2025 Natural Resource Wales copyright and database rights 2025

10. Appendices



Appendix A



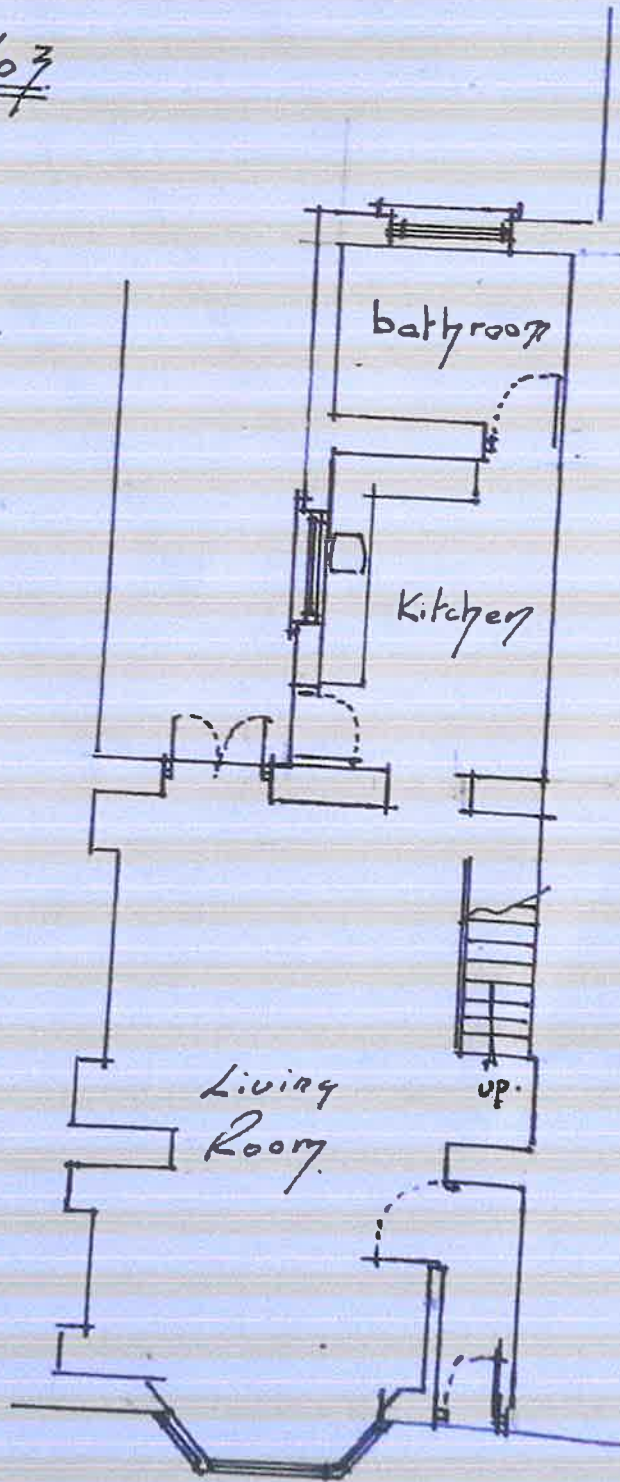
Site plans

Project Change of Use No 66 Forge
Pr talbot.

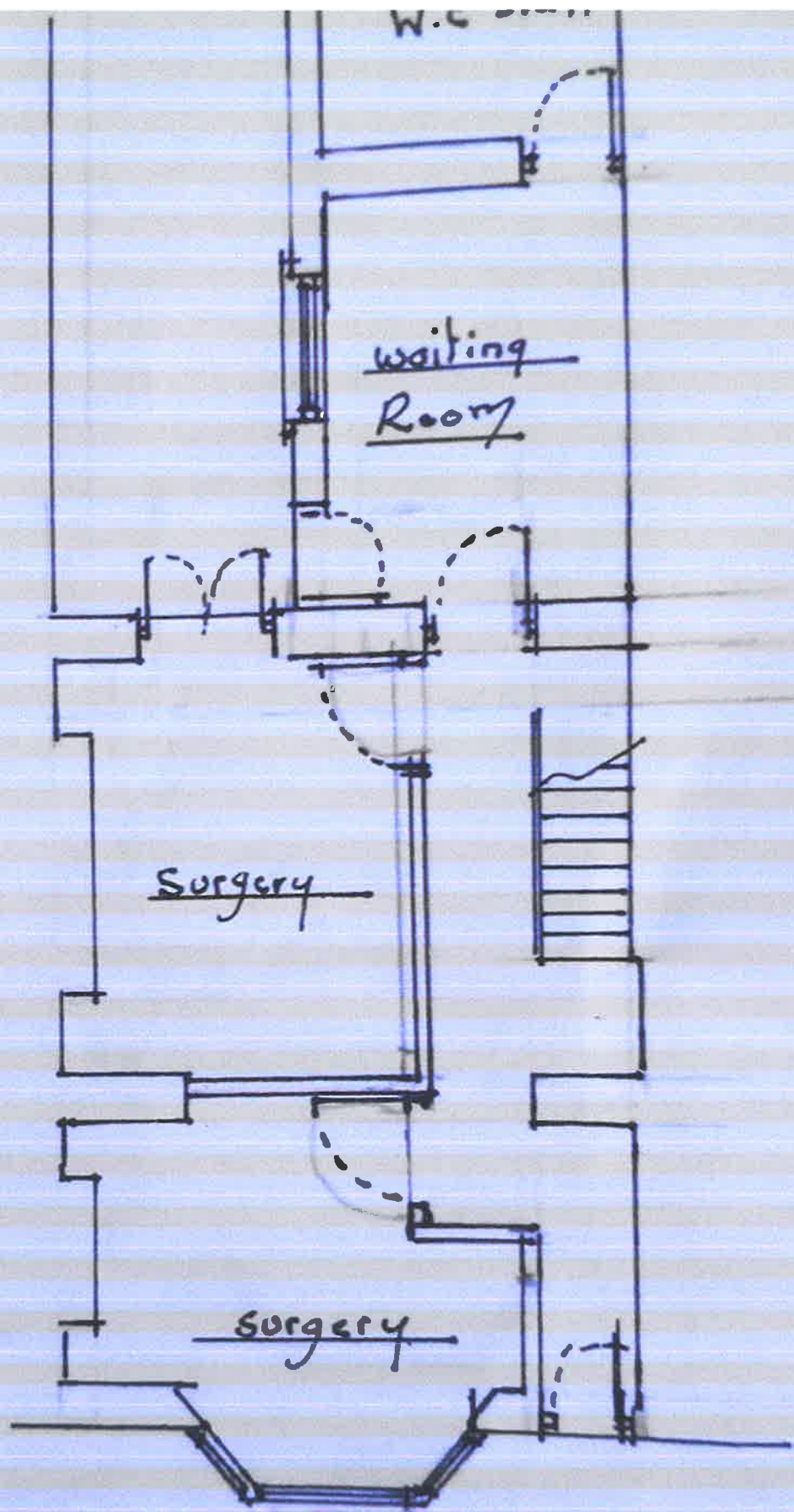
from dentist to dwelling house

drawing No 3

Scale 1:10

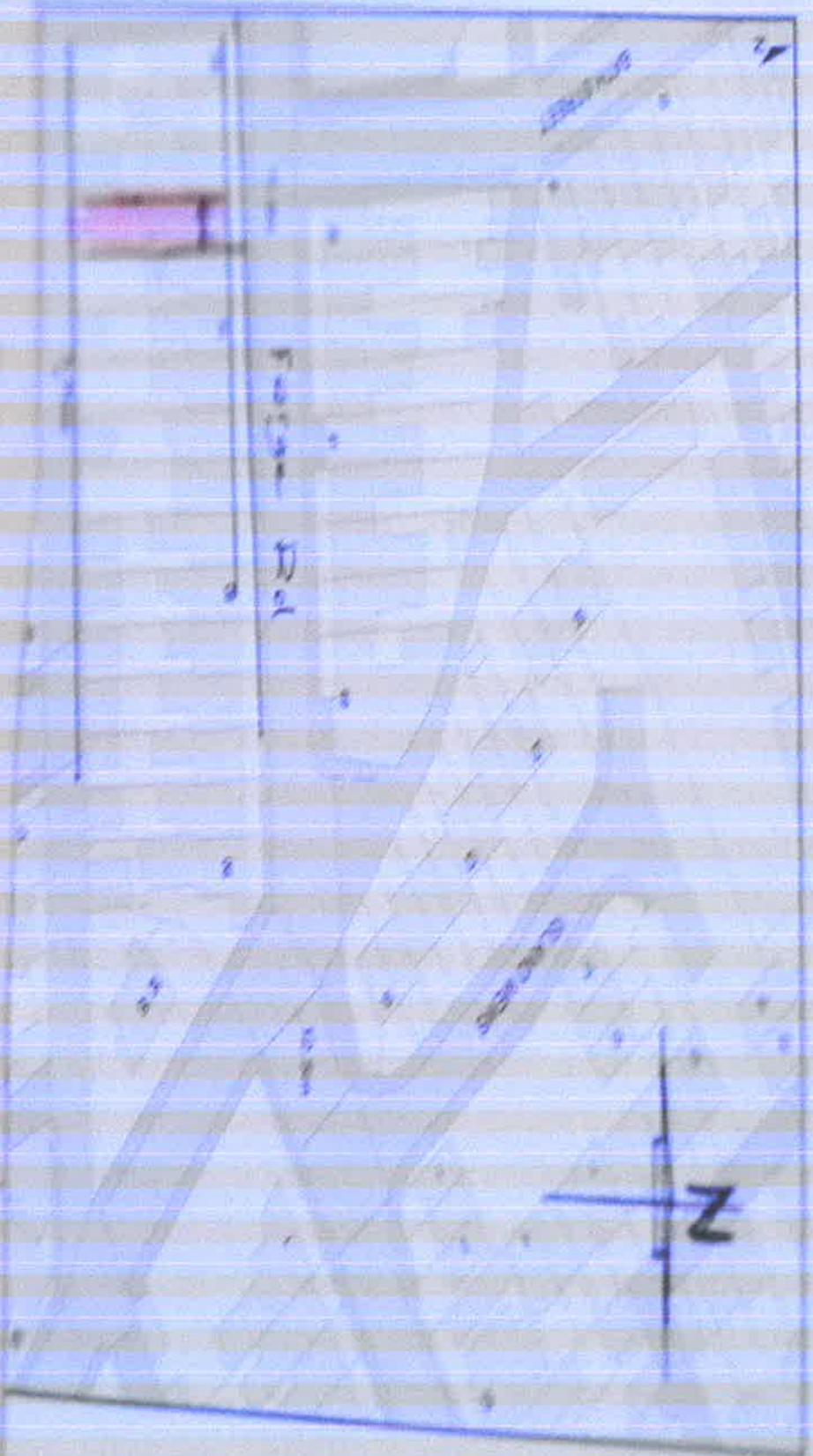


Ground floor proposed



Ground Floor Existing

Forge Road, Fort Talbot, North Fort Talbot, SA13 1RS



Appendix B



Natural Resource Wales data

Port Talbot Harbourside PAR Project Report

May 2016



1 Introduction

JBA Consulting has been commissioned by Neath Port Talbot County Borough Council (NPTCBC) to assess flood risk in Port Talbot using hydraulic modelling with the aim to support a Project Appraisal Report for the Harbourside Strategic Regeneration Area and Baglan Energy Park. The project also aims to provide a unified detailed flood model of Port Talbot to support NPTCBC wider consideration of flood risk management.

The project has been undertaken with the full support of Natural Resources Wales (NRW) who have provided the original Port Talbot flood model, survey data and extensive technical support.

Some of the work of the project incorporates and builds upon recently work completed by JBA Consulting for the Glan Afan School Flood Consequence Assessment (FCA).

1.1 Study Scope

The agreed study scope of the study is as follows:

- Start-up meeting and site walkover.
- Undertake new hydrology flood estimates for Ffwrdd Wyllt and Baglan Brook in accordance with the latest guidance. Also, incorporate new hydrological estimates for the River Afan based on the Glan Afan FCA.
- Undertake a full review of the existing model and undertake any necessary updates so that the model uses the latest best practice and technical guidance.
- Construct a new 1D-2D model of Ffwrdd Wyllt using the latest channel survey data.
- Construct a new 1D-2D model of Baglan Brook using new channel survey data.
- Update the flood model of the town centre with new survey data.
- Undertake a full suite of tidal and fluvial runs.
- Prepare detailed model reporting, producing a Model User Report and Project Report.

1.2 Available Data

- Afon Afan and Ffwrdd Wyllt channel survey (Environment Agency Wales, 2009)
- Topographic survey of selected locations on Afon Afan and Ffwrdd Wyllt as well as in floodplain (NRW, 2016)
- Baglan Brook channel survey (Storm, 2016)
- Hydraulic model for Port Talbot (NRW, 2013)
- 1D-2D hydraulic Model for Afon Afan (JBA Consulting, 2016)
- 1D ISIS model for the Baglan Brook (Edenvale Young, 2013)
- As built drawings of Port Talbot Peripheral Distributor Road (PDR) culvert and relief channel (Arup, 2014)
- Latest OS Mastermap data (NRW, 2016)
- Latest LiDAR DTM data (NRW, 2016)
- Operation of Seaway Parade pumping station in Baglan (Welsh Water, 2017)

1.3 Previous studies

1.3.1 Natural Resources Wales model

Basis for this project was NRW's Afon Afan 1D-2D ESTRY-TUFLOW model developed in 2013. This model in turn was based on a Hyder Consulting (2010) model and has been continuously amended since. The model domain extends from the River Neath in the north-west to the Tata Steel works in the south-east and includes the watercourses Afon Afan and Ffwrdd Wyllt. Tidal and fluvial scenarios were simulated using different model schematisations with the model domain being smaller for fluvial scenarios. In general, NRW and NPTCBC had concerns over the quality of the modelling.

1.3.2 Afon Afan model

In 2016, JBA Consulting used the original Afon Afan modelling and updated it for the purpose of assessing flood risk around the Glanafan School in Port Talbot. At the time, the Ffrwd Wylt was excluded from the study as no risk was posed to the site this watercourse. Main changes included revised hydrology, new survey data, and using a recently introduced bridge modelling approach bridge losses are calculated automatically by TUFLOW.

1.3.3 Baglan Brook model

A 1D ISIS model developed by Edenvale Young Consulting in 2013 was provided for the Baglan Brook. The model domain extends from the River Neath in the north-west to Baglan Moors in the south-east. However, following a review it was found that the cross-section data was poor and of unknown source. Further, the definition of the Seaway Parade pumping station in Baglan dates back to information sourced in the early 2000s and its province/accuracy is unknown. JBA and NRW both expressed significant concerns with this model and it was decided that it would not be directly used in the new Port Talbot model.

2 Methodology

2.1 Overview

The project has the aim of developing a robust hydraulic model which can be used for both tidal and fluvial scenarios and allows the assessment of flood risk in Port Talbot. Hence, the modelling must include the three watercourses Afon Afan, Ffrwd Wyllt and Baglan Brook as well as tidal conditions to additionally account for potential interactions.

To achieve the aim, the following modelling objectives were set:

- Review of previous modelling - A series of hydraulic models for Port Talbot have been developed over the last ten years, by a range of organisations and for a variety of uses. Whilst efforts have been made to build upon these previous studies, it is important that best available data, latest guidance and modelling best practice is followed to achieve an appropriate model accuracy/performance.
- Ensure consistent modelling approach - Given the history and patchwork of past flood modelling a range of software and modelling techniques have been adopted. For this study, data from all models is to be merged into a single comprehensive model developed to ensure consistency throughout.
- Incorporate best available data - Since the previous study additional and revised data such as topographic information, improved hydrology and changed tidal conditions have become available. Integration of best data is an important component of this modelling study.
- Assess model performance - With any large flood modelling study care is required to ensure adequate performance of the hydraulic model. This is achieved through thorough model review processes, ground truthing and validation against historical records.

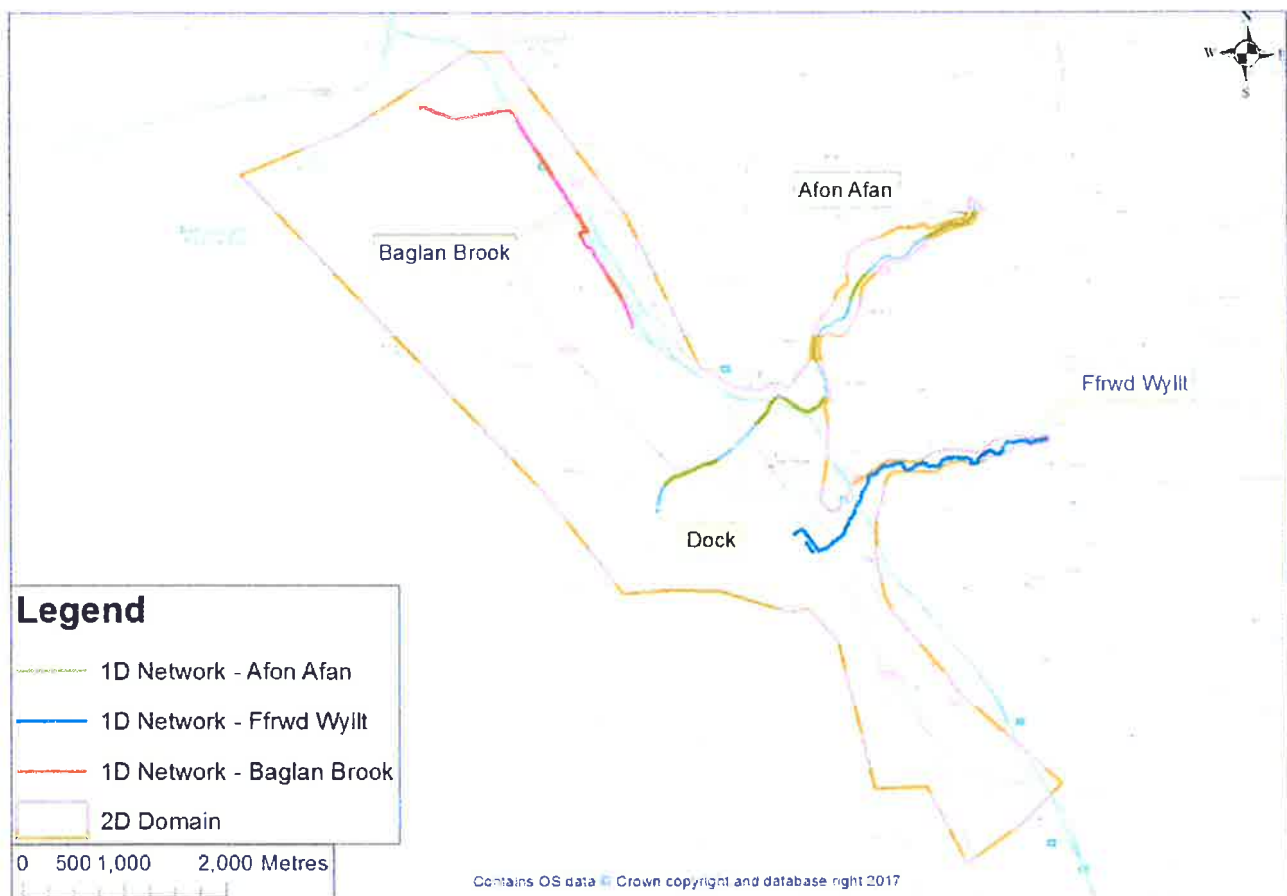
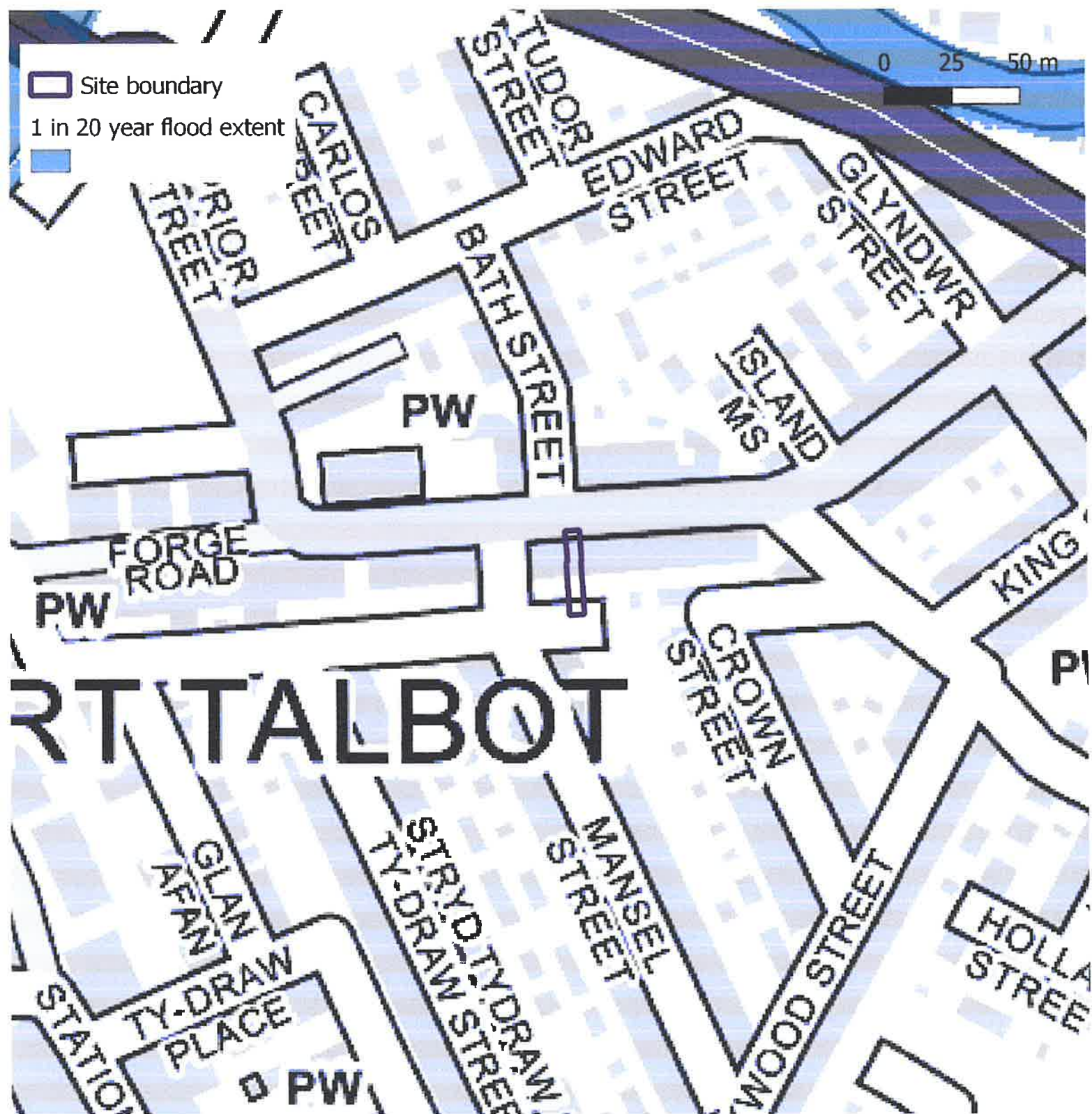
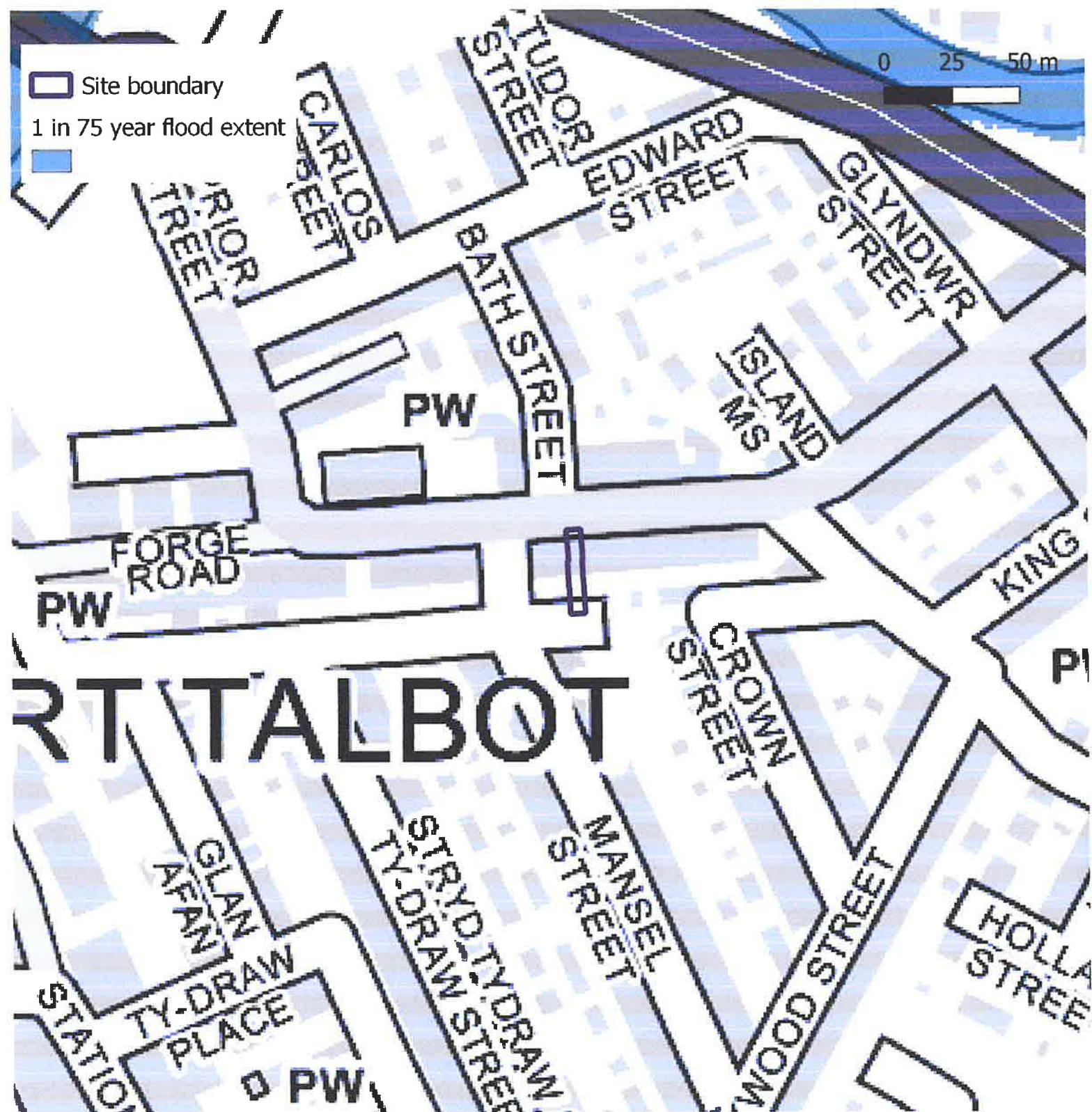
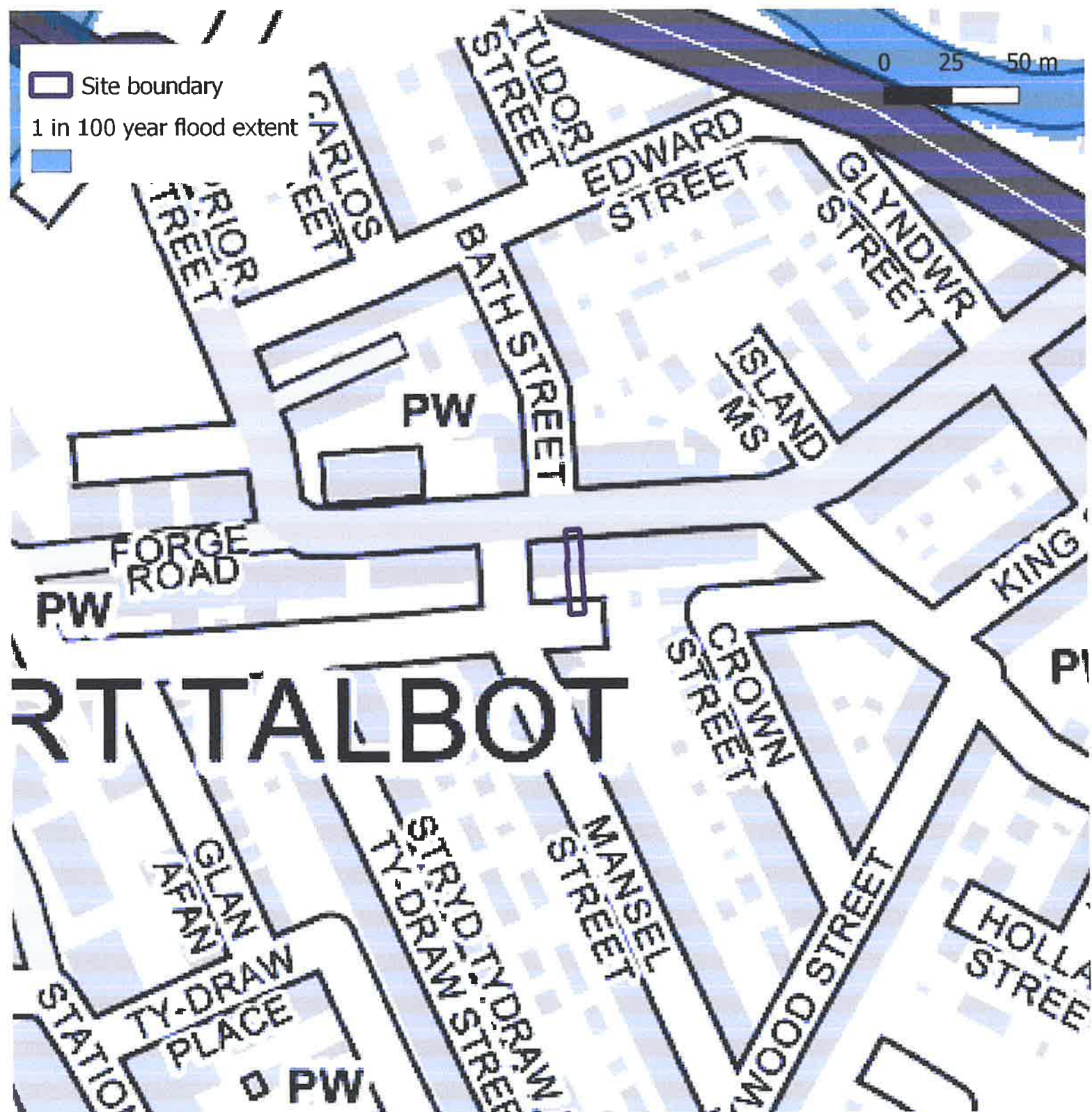
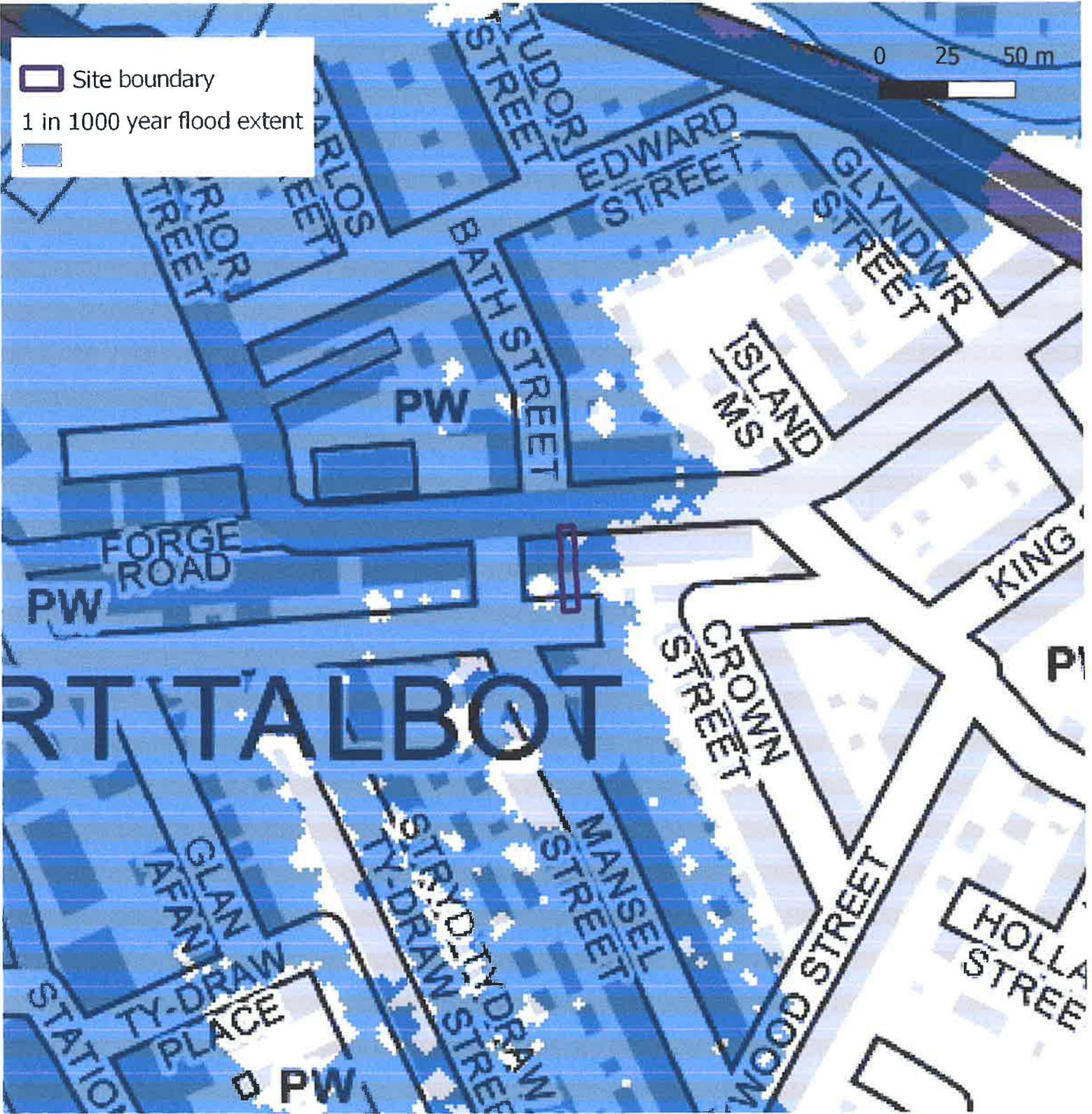


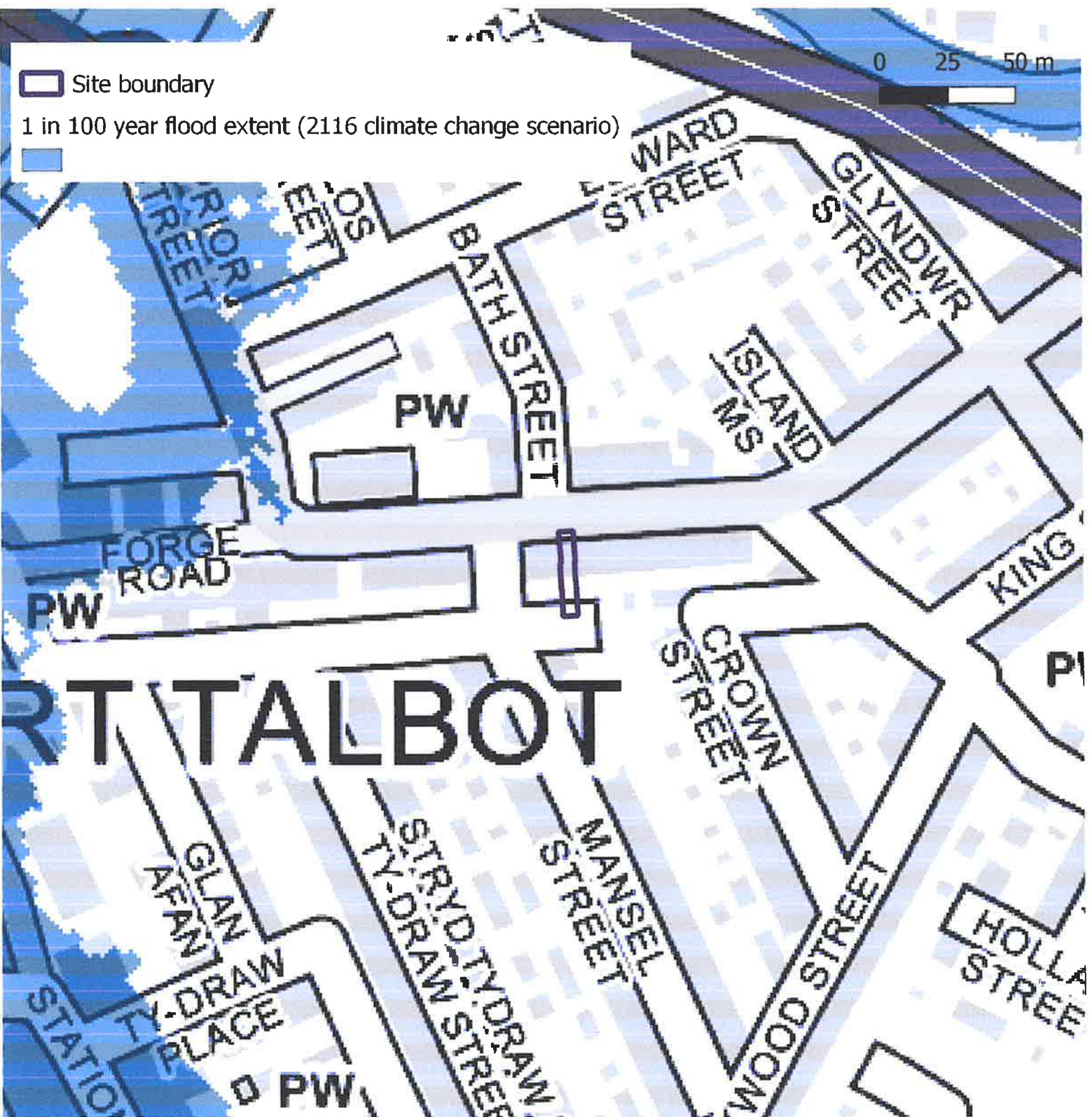
Figure 2-1 Modelled extent of watercourses in this commission







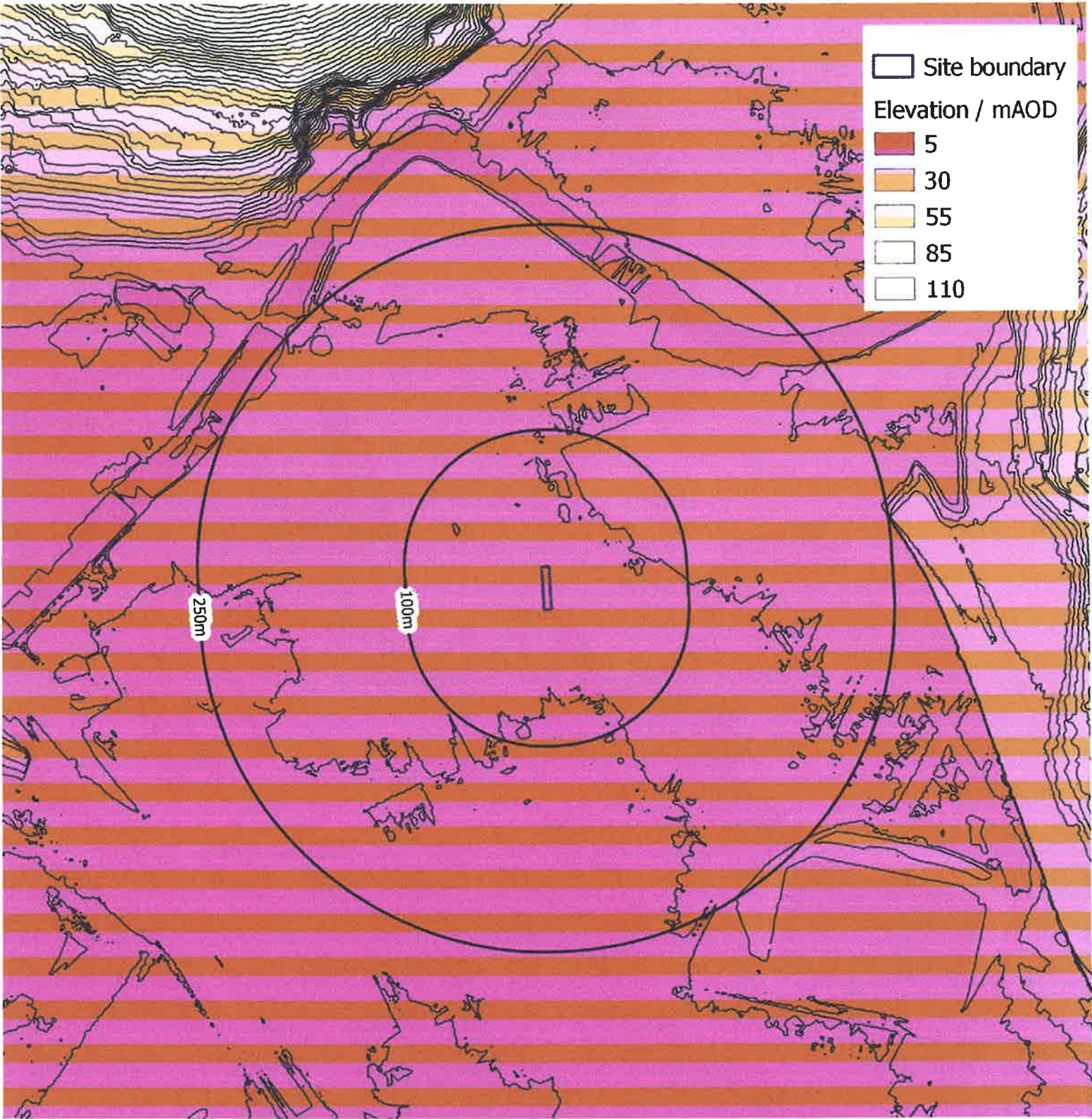




Appendix C



Natural Resource Wales LiDAR ground elevation data



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Salisbury
Wiltshire SP1 2BP
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Fax: 01722 332296
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