VALE OF GLAMORGAN

REPLACEMENT LOCAL DEVELOPMENT PLAN 2021 - 2036

FLOODING

November 2025

BACKGROUND PAPER - BP21A

RLDP CDLN

VALE of GLAMORGAN BRO MORGANNWG

@VOGCouncil Vale of Glamorgan Council LDP@valeofglamorgan.gov.uk 01446 704681 www.valeofglamorgan.gov.uk

Executive Summary

i. This background paper is one of a series produced by the Vale of Glamorgan Council and forms part of the evidence base used to inform the policies and site allocations in the Deposit Replacement Local Development Plan (RLDP). Each background paper can be read in isolation or together with other background papers to gain a wider understanding of the land use issues facing the Vale of Glamorgan.

ii. This paper sets out the Council's response to the policy requirements for flooding as contained within Technical Advice Note (TAN) 15 Development and Flood Risk (March 2025) and outlines how the Council has considered flood risk in relation to the consideration of flood risk in respect of housing and employment allocations contained within the Deposit Replacement Local Development Plan.

iii. It provides an overview of the Stage 1 Strategic Consequences Assessment (SFCA) undertaken for the Vale of Glamorgan Council to inform the development of the spatial options for the RLDP and explains how flooding has been a major determinant in the assessment of and selection of candidate sites.

iv. Finally, the paper provides an overview of site allocations within the Deposit RLDP in terms of how flooding is being addressed on sites proposed for allocation where risk exists of flooding has been identified.

Contents

1 Introduction

1.1 The purpose of this Paper is to set out how the Vale of Glamorgan has considered flooding as a constraint through the development of the Replacement Local Development Plan (RLDP). First, it identifies the key findings from a Strategic Flood Consequences Assessment (Background Paper BP21). Next it explains how the Council, through its assessment of candidate sites, has considered flooding as required by national planning policy. Finally, it identifies how flooding is being addressed on sites proposed for allocation where risk exists.

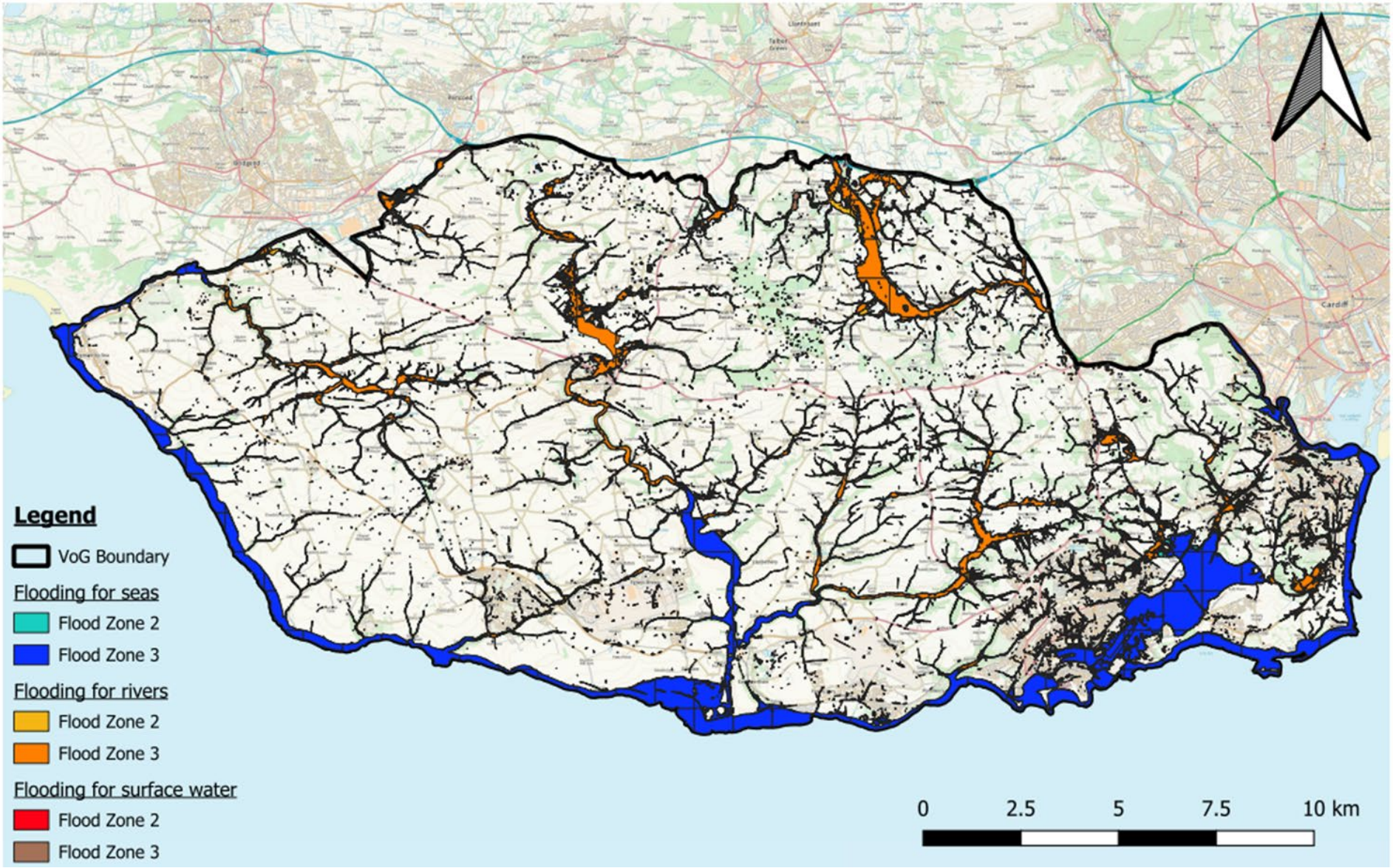
1.2 Flooding is a key consideration in determining where new development should be located due to its devastating impacts. This is especially the case given the implications of flooding are projected to worsen as the climate warms. Therefore, ensuring that development is directed away from areas that are identified as at risk of flooding has been integral to site selection. Significant consideration has had been given where areas of flooding do exist on site to ensure that no unsuitable development, and especially homes, are at risk of flooding.

1.3 Figure 1 illustrate the extent of flood risk areas within the Vale of Glamorgan and is taken from the National Flood Map for Planning produced by Natural Resources Wales[1]. The map uses flood zones to indicate the degree to which land is at risk of flooding from rivers, the sea, surface water and small watercourses.

1.4 For the Vale, the Map identifies sources of flood risk from the River Ely in the north east, the River Cadoxton and its tributaries in the east and the River Thaw in the centre of the Vale. Flood risk from the sea is present along the coast, particularly at Aberthaw and surrounding Barry, including within Barry Docks. Throughout the Vale there are also pockets of surface water and small watercourse flooding. In terms of flood defences, areas of Barry Docks are defended from flooding from the sea and areas of Cowbridge are defended from the River Thaw.

[1] The Wales Flood Map, including the Flood Map for Planning, can be viewed on NRWs website Natural Resources Wales / Check your flood risk on a map (Flood Risk Assessment Wales Map).

Figure 1: Vale of Glamorgan National Flood Map for Planning Flood Zones



2 Policy Context

National Context

Future Wales: The National Plan 2040 (2021)

2.1 Future Wales is the national development plan and sets a spatial context for development in Wales. With regard to flooding, Policy 8 sets the national context. Notably, it states that *'Flood risk management that enables and supports sustainable strategic growth and regeneration in National and Regional Growth Areas will be supported.'* It goes on to promote nature-based solutions as a priority and identify that flood risk management infrastructure should not adversely impact statutory designated sites and should maximise social, economic and environmental benefits.

Planning Policy Wales (Edition 12) (2024)

2.2 Planning Policy Wales (Edition 12) provides the Welsh national planning policy framework. Section 6.6 relates to Water and Flood Risk and paragraph 6.6.22 is of relevance, states the following:

'The climate emergency is likely to increase the risk of flooding as a result of sea-level rises, increased storminess and more intense rainfall. Flooding as a hazard involves the consideration of the potential consequences of flooding, as well as the likelihood of an event occurring. Planning authorities should adopt a precautionary approach of positive avoidance of development in areas of flooding from the sea or from rivers. Surface water flooding will affect choice of location and the layout and design of schemes, and these factors should be considered at an early stage in formulating development proposals.'

Technical Advice Note 15 Development, Flooding and Coastal Erosion (TAN 15 2025)

2.3 TAN 15 Development, flooding and coastal erosion (TAN 15 2025) sets out the national planning policy requirements for local planning authorities when preparing local development plans and is a material consideration in the determination of planning applications.

2.4 The TAN provides technical guidance that supplements national policy set out in PPW and Future Wales in relation to flooding risk and coastal erosion. It provides a framework within which the flood risks arising from rivers, the sea and surface water, and the risk of coastal erosion can be assessed. The TAN also highlights the need risks associated with Climate Change providing advice on the consequences of the risks and adapting to and living with flood risk.

2.5 The TAN contains guidance in respect of the use of the National Flooding Maps for Planning, highlighting that this map should be the starting point for the

consideration of flooding within the planning system, and outlines the actions that should be taken when considering development in the different flood zones. Figure 1 sets out the definition of the main zones. Zone 1, and Zones 2, 3 and the TAN 15 Defended Zones are collectively referred to as 'flood risk areas' (Figure 2)

Figure 2 - Definition of Flood Map for Planning flood zones

Zone	Flooding from rivers	Flooding from the sea	Flooding from surface water and small watercourses
1	Less than 1 in 1000 (0.1%) (plus climate change) chance of flooding in a given year		
2	Less than 1 in 100 (1%) but greater than 1 in 1000 (0.1%) chance of flooding in a given year, including climate change.	Less than 1 in 200 (0.5%) but greater than 1 in 1000 (0.1%) chance of flooding in a given year, including climate change.	Less than 1 in 100 (1%) but greater than 1 in 1000 (0.1%) chance of flooding in a given year, including climate change.
3	A greater than 1 in 100 (1%) chance of flooding in a given year, including climate change.	A greater than 1 in 200 (0.5%) chance of flooding in a given year, including climate change.	A greater than 1 in 100 (1%) chance of flooding in a given year, including climate change.
TAN 15 Defended Zones	Areas where flood risk management infrastructure provides a minimum standard of protection against flooding from rivers of 1:100 (plus climate change and freeboard[2])	Areas where flood risk management infrastructure provides a minimum standard of protection against flooding from the sea of 1:200 (plus climate change and freeboard).	Not applicable.

[2] Climate change and freeboard allowances are required on any flood defence scheme planned and constructed since 2016. Freeboard refers to the uncertainty allowance applied within the design and implementation of flood risk management schemes, such as flood walls and earth embankments.

2.6 Section 9 of TAN 15 categorises forms of development that may be permissible within each of the flood zones, based on its vulnerability to flooding, distinguishing development in terms of “Highly vulnerable development", "Less and "Water compatible development" (Figure 3).

Figure 3- Development vulnerability categories

Vulnerability category	Types
Highly vulnerable development: Development where the ability of occupants to decide on whether they wish to accept the risks to life and property associated with flooding or be able to manage the consequences of such a risk, is limited. It also includes those industrial uses where there would be an attendant risk to the public and the water environment should the site be inundated. Emergency services and local authority command centres need to be operational and accessible at all times and are therefore also considered highly vulnerable.	All residential premises (including hotels, Gypsy and Traveller sites, caravan parks and camping sites). Schools and childcare establishments, colleges and universities. Hospitals and GP surgeries. Especially vulnerable industrial development (e.g. power generating and distribution elements of power stations, transformers, chemical plants, incinerators), and waste disposal sites. Emergency services, including ambulance stations, fire stations, police stations, command centres, emergency depots. Buildings used to provide emergency shelter in time of flood.
Less vulnerable development: Less vulnerable development is development where the ability of occupants to decide if risks and consequences are acceptable is greater than that in the highly vulnerable category	General industrial, employment, commercial and retail development. Transport and utilities infrastructure. Car parks. Mineral extraction sites and associated processing facilities (excluding waste disposal sites). Public buildings including libraries, community centres and leisure centres (excluding those identified as in Highly Vulnerable category and emergency shelters). Places of worship. Cemeteries.

	Equipped play areas. Renewable energy generation facilities (excluding hydro generation).
Water compatible development: Developments which are required to be located near water by virtue of their nature, and developments which are resilient to the effects of occasional flooding	Boatyards, marinas and essential works required at mooring basins. Development associated with canals. Flood defences and management infrastructure. Open spaces (excluding equipped play areas). Hydro renewable energy generation.

2.7 The TAN emphasises the need for planning authorities to exercise caution when allocating sites for new development and considering applications where the Flood Map for Planning clearly shows areas at risk. The level of caution increases with the level of vulnerability and likelihood. The fundamental principle of the TAN is to restrict new development in Zone 3 subject to the limited exceptions.

2.8 Local Authorities wishing to promote redevelopment schemes, on land in zones 2 and 3, ahead of the adoption of an LDP must consider the flood risks associated with the redevelopment and identify appropriate flood mitigation measures which would provide protection sufficient to move it into the Defended zone. The provision of flood mitigation measures should take place ahead of, or at the same time as the redevelopment proposals. Local authorities who permit schemes before the flood mitigation infrastructure is in place have decided that the risk of flooding is acceptable and will be publicly accountable for their decisions.

2.9 Section 11 of the TAN15 includes tests that need to be met if a site with flood constraints is to be developed. In all cases where flood risk is present, the progression of a site must be underpinned by the submission of a Flood Consequences Assessment that displays that the consequences of flooding can be safely managed.

National Strategy for Flood and Coastal Erosion Risk Management in Wales

2.10 The National Strategy for FCERM was published in October 2020 and sets out how the Welsh Government intends to manage flood and coastal erosion risks in Wales over the next ten years. The Strategy has been produced with a longer-term, strategic view, recognising the nature of flood and coastal erosion risk with respect to the challenges of climate change. It will work alongside other strategic plans for shoreline management, infrastructure and development planning.

Regional Context

Shoreline Management Plans

2.11 The Severn Estuary Coastal group (Shoreline Management Plan 19 – Anchor Head to Lavernock Point) and South Wales Coastal Group (Shoreline Management Plan 20 – Lavernock Point to St Anne's Head) are relevant to the coastline in the Vale of Glamorgan, in respect of coastal flooding and erosion risk. They aim to reduce the risks in relation to coastal flooding and erosion to people, the developed, historic and natural environments over the next century. They set out where the coastline in the Vale will continue to be defended or where it can be allowed to evolve naturally to changing environmental conditions. In the Vale, Table 1 displays the policy approaches (formatted differently in the two separate Shoreline Management Plans) to be taken along the Vale's coastline.

TABLE 1: Shoreline Management Plan Policies Relevant to the Vale of Glamorgan				
Severn Estuary Coastal group (Shoreline Management Plan 19 – Anchor Head to Lavernock Point)				
Policy Unit	Location	Short-term Policy (0-20 years)	Medium-term Policy (20-50 years)	Long-term Policy (50-100 years)
PEN 1	Lavernock Point to the shore south of Forest Road	No active intervention	No active intervention	No active intervention
PEN 2	The shore south of Forest Road to Penarth Head	Hold the line – Local activity only, with the overall intention to be a natural shoreline	Hold the line – Local activity only, with the overall intention to be a natural shoreline	Hold the line – Local activity only, with the overall intention to be a natural shoreline
South Wales Coastal Group (Shoreline Management Plan 20 – Lavernock Point to St Anne's Head)				
Policy Unit	Location	Action		
PU1/1 to PU1/5	Lavernock Point to Bendrick Rock	Long term vision is to continue to allow natural erosion of the undefended coastline. In Swanbridge, it is recommended that best use is made of the existing defences by maintaining them as long as possible.		
PU2/1 to PU2/6	Barry Island and Docks	Policies within this area vary. Along undefended frontages natural erosion will be allowed to continue. Along defended frontages, a policy of hold the line is recommended through maintenance and upgrading of existing defences.		
PU3/1 to PU3/3	The Knap to Watch House Beach	The policy in this unit is to allow the undefended coastline to continue eroding naturally. At the Knap, the promenade will be maintained for as long as possible, followed by a policy of managed realignment in the medium and long term.		
PU4/1	Aberthaw	This policy is hold the line to reduce the risk of coastal erosion and flooding to the power station.		
PU5/1 to PU5/3	Limpet Bay to Nash Point	The policy in this area is to allow erosion of the undefended coastline to continue. At Cwm Col-huw (Llantwit Major) beach whilst there is a policy of hold the line in the short term, it is recommended that the defences and assets to the west of the river are also set back as soon as possible.		
PU6/1 to PU6/2	Nash Point to Porthcawl	The policy in this area is for no active intervention to allow coastal erosion of the undefended coastline to continue		

NRW South Central Area Statement

2.12 The NRW Area Statements outline the key challenges facing particular localities, what can be done by all to meet those challenges, and how to better manage our natural resources for the benefit of future generations.

2.13 The South Central Area Statement has the following key themes:

- Building resilient ecosystems
- Connecting people with nature
- Working with water
- Improving our health
- Improving our air quality

2.14 The Working with water theme is relevant to this Paper and identified 'Reducing the risk of flooding' as a challenge. Under this challenge it sets out the following:

'In order to reduce flood risk in South Central Wales, we know that catchment restoration alone will not be enough to help our communities adapt to the effects of climate change. Success would be for catchment restoration interventions to work alongside our physical flood defences, reducing the peaks in flow and, where possible, the need for additional or larger more expensive physical flood defences, together with preparing for the increased risk of flooding.'

Local Context

Vale of Glamorgan Flood Risk Strategy (2013)

2.15 The Flood and Water Management Act 2010 (FWMA) places a responsibility upon Local Authorities, as Lead Local Flood Authorities (LLFAs), to develop, maintain, apply and monitor a strategy for local flood risk management.

2.16 The Vale of Glamorgan Flood Risk Strategy considers how various activities can assist in managing flood risk, including better planning policy to ensure new development does not increase flood risk for its neighbours, the efficient management of surrounding landscape to reduce flooding at source and to ensure that emergency responses are targeted where flood risk is greatest.

2.17 This Strategy focuses on 'local flood risk', defined as flooding caused by surface runoff, groundwater and ordinary watercourses (streams, ditches etc). This type of flooding was the cause of most of the damage of the local floods of 1998, 2000 and 2007 and need to be taken as seriously as flooding from main rivers or the coast. The Strategy sets out how Council we will work collaboratively with other key stakeholders to input into the management of all sources of flood risk and ensure that investment decisions are made according to levels of risk.

3 Preparation of the Vale of Glamorgan Replacement LDP

Strategic Flood Consequences Assessment

3.1 In accordance with national planning policy, the Council has undertaken a Strategic Consequences Assessment (SFCA) to inform its RLDP, specifically in respect of the Spatial Strategy.

3.2 Local A Stage 1 SFCA was conducted in 2022 for eleven Local Planning Authorities in south east Wales by JBA Consulting. The SFCA was carried out to provide Local Authorities with a robust evidence-base to inform Local Development Plans and will inform the development of LDP policies and land allocation decisions.

3.3 The SFCA is to be used as a starting point for planners, developers and the public to initially consider development and flood risk and whether more detailed, site specific assessments of flood risk, such as an FCA, are required.

3.4 The SFCA is a desk-based study which collates existing information to undertake a broad assessment of potential flood risks across the study area, including the Vale of Glamorgan, from all sources of flooding. The study identifies areas at potential high risk from flooding, provides details of historical flood events, and detail of any flood risk management structures or procedures present. The SFCA also provides information on the opportunities to slow and store water as part of natural flood management schemes, as well as guidance on implementing TAN-15 and managing flood risk in a development site.

3.5 The SFCA was conducted in accordance with the Welsh Government's development planning guidance, Planning Policy Wales (PPW), Technical Advice Note 15: Development, flooding and coastal erosion (TAN-15) and associated Welsh Government Chief Planning Officers letters and Welsh Government FCA Climate Change allowances.

3.6 The SFCA included 10 objectives, as follows:

- To inform development regarding the management of flood risk within the Councils individual Local Development Plans.
- To understand flood risk from all sources and to investigate and identify the extent and severity of flood risk throughout the Stage 1 study area. This assessment will enable the Council to steer development away from those areas where flood risk is considered greatest, ensuring that areas allocated for development can be developed in a safe, cost effective and sustainable manner.
- To evaluate and consider flood risk from fluvial, tidal and surface water sources, using Natural Resources Wales' recently published Flood Map for Planning (FMfP). Other sources of flooding including groundwater and artificial sources such as reservoirs and sewers are also considered.

- To enable the Councils to meet their obligations under PPW and Technical Advice Note 15: Development, flooding and coastal erosion (TAN-15).
- Considers the role and integrity of coastal defences and provides an understanding of the risks posed by coastal flooding and erosion, making reference to Shoreline Management Plan (SMP) policies and the Welsh National Marine Plan.
- To supplement current policy guidelines and to provide a straightforward risk-based approach to development management in the area. This is aimed at Councillors, Local Planning Authority officers, the public and developers.
- To provide a reference document to which all parties involved in development planning and flood risk can reliably turn to for initial advice and guidance.
- To develop a report that forms the basis of an informed development management process that also provides guidance on the potential risk of flooding associated with future planning applications and the basis for site specific Flood Consequence Assessments (FCAs) where necessary.
- To assist the Councils in identifying specific areas where further and more detailed flood risk data and assessment work may be required.
- To provide an update to the councils previous SFCA's (where applicable) using new and updated flood risk information to summarise flood risks to each Local Authority area to inform the councils individual Local Development Plans.

3.7 The SFCA 1 provides a detailed flood risk review of the Vale of Glamorgan, which is included in Appendix 1 of the SFCA report (Appendix J1 of the SFCA). In summary, this review identifies that the Vale has a history of recorded flood events caused by multiple sources of flooding, with the majority of this being river flooding. Flooding events dating back to 1981 are identified.

3.8 The review goes on to identify the rivers within the Vale of Glamorgan and Council managed flood defences, namely, the Coldbrook Scheme, Barry and the B4265 culvert enhancement, Boverton. Flood risk from rivers, the sea, surface water and smaller watercourses, groundwater, sewer flooding and artificial flooding is also discussed.

3.9 The review concludes by identifying where Flood and Coastal Erosion Risk Management investments may be made, identifying Llanmaes and Dinas Powys, and where updates to the FMFP are likely to come forward. Those in the Cadoxton River and Barry Docks have been made in the time since the SFCA was published.

3.10 Separate from the review, the SFCA identifies priority areas for natural flood management. In this regard, the SFCA (Section 9.3.6.10) identifies small areas across the Vale that are suitable for runoff attenuation and large portions of the Vale that are suitable for wider catchment woodland planting. It identifies areas suitable for riparian woodland planting along the Ely and its tributaries in the north east of the Vale. These are also identified around the River Cadoxton and River Thaw. Floodplain woodland planting potential is found in the upper stages of the River Thaw, in and around the River Ely and on tributaries of the River Kenson.

RLDP Candidate Sites- Site Assessment Methodology and Flood Risk

3.11 In line with the Development Plan Manual, a call for candidate sites was conducted in order to identify land for allocation within the RLDP. A first call took place from June to September 2022, and a second call took place during the consultation on the Preferred Strategy, between December 2023 and February 2024.

3.12 In accordance with the Council's Candidate Site Assessment Methodology[3] consideration of the potential of flood risk to sites submitted from both rivers and seas and surface water was undertaken as detailed below:

Figure 3: Assessment Criteria for Flooding from Rivers and Seas, as shown in Candidate Site Methodology

Flood Risk Zones	**Green**	The site is identified as being within Flood Zone 1 area or in a TAN 15 Defended Area where the proposal meets the justification test and acceptability of consequences set out in TAN 15
	Amber	The site is within a Flood Zone 2 or Zone 3 area **AND** meets the justification test and acceptability of consequences section 10 and 11 out in TAN 15 **OR** meets the definition of a water compatible development.
	Red	The site is within either a TAN 15 Defended Area, or Flood Zone 2 or 3 area and does not meet the justification test and acceptability of consequences section 10 and 11 set out in TAN 15.

Figure 4: Assessment Criteria for Surface Water Flooding, as shown in Candidate Site Methodology

[3] BP16 Candidate Site Assessment Methodology.pdf (oc2.uk)

Flood Risk Zones	**Green**	The site is identified as being within Flood Zone 1 area or in a TAN 15 Defended Area where the proposal meets the justification test and acceptability of consequences set out in TAN 15
	Amber	The site is within a Flood Zone 2 or Zone 3 area **AND** meets the justification test and acceptability of consequences section 10 and 11 out in TAN 15 **OR** meets the definition of a water compatible development.
	Red	The site is within either a TAN 15 Defended Area, or Flood Zone 2 or 3 area and does not meet the justification test and acceptability of consequences section 10 and 11 set out in TAN 15.

3.13 It should be noted that at the time of the assessment of sites, Draft TAN 15 (2021) was in place and as such the consideration of flood risk was assessed within the parameters set out within the 2021 draft guidance. Notwithstanding this the approach adopted by the Council within its assessment methodology was to for flood risk to be given the strongest possible weighting when being assessed as it was a matter of critical importance, and in this respect, sites identified to fall within areas of flood risk were discounted from further consideration by the Council.

3.14 Notwithstanding this, new sites allocated within the RLDP or those without planning permission where flood risk has been identified as a significant constraint, have been the subject of site specific SFCAs which reflect the latest national planning guidance as published TAN 15 published by the Welsh Government on March 31st 2025.

4 Deposit RLDP Allocated Sites

4.1 Following the assessment of sites against the candidate site methodology the Council identified those sites which it considered are complimentary to RLDP Strategy. For these sites where flood risk was identified the Council undertook Stage 2 SFCA. Table 2 below provides a summary of the sites allocated within the RLDP and the extent of flood risk identified and summarised the key findings of the SFCA where these were required**.**

4.2 Appendices 2-5 contain the SFCAs undertaken for those sites where significant areas flood risk has been identified. On other sites where there are areas of flood risk identified within the site boundary but the proposed built developable area is outside of this, the need for an FCA at planning application is clearly referenced within Appendix 2 of the Deposit Plan.

TABLE 2: Strategic Flood Risk Allocated Deposit Replacement Local Development Plan Sites

Site name	Development Type	Flood Risk	Comment
KS1 Land at North West Barry	Residential	No risk from river or sea flooding. Central part of the site affected by surface water and small watercourses flooding (Zones 2 and 3) – less than 10% of site area.	A preliminary drainage strategy has been provided by the site promoters for the proposed housing development at north West Barry. This drainage strategy confirms the NRW Flood Map for Planning (FMfP) which shows a band of Flood Zone 2 and 3 surface water and ordinary watercourse fully intersecting the site from east to west. Flood Zone 2 covers areas with 0.1% to 1% (1 in 1000 to 1 in 100) chance of flooding from surface water and/or small watercourses in a given year, including the effects of climate change. Flood Zone 3 covers areas with more than 1% (1 in 100) chance of flooding from surface water and/or small watercourses in a given year, including the effects of climate change. It is accepted that a significant proportion of the proposed site is not identified at significant risk of flooding. Following a review of the drainage strategy by the Council's drainage engineers, the site promoters have been advised that a detailed Flood Consequence Assessment be undertaken in line with national planning policy. This FCA should identify the location of appropriate SUDS design measure to address the presence of both surface water and water course. Additionally, Natural Resources Wales has advised that there will be a requirement to incorporate a 10m ecological buffer from the watercourse to mitigate for any potential pollution and protection for the river corridor in relation to this development. This buffer would also provide contingency should the watercourse move in future.

Site name	Development Type	Flood Risk	Comment
			Given the extent of green spaces proposed within the initial master plan, the Council's engineers are of the opinion that the site offers opportunities to integrate sustainable drainage systems (SuDS), biodiversity enhancements, and climate resilience measures within a refined masterplan' with existing watercourses and natural topography presenting a chance to create attractive green infrastructure and restore natural floodplains, improving both ecological value and long-term resilience. Consequently, the Council's drainage engineers have offered no objection to the site's inclusion within the RLDP on the provision that additional work in respect of a full FCA, revised layout to accommodate flood zones and buffer requirements, detailed SuDS design with SAB approval, and consideration of rainwater reuse aligned with climate resilience objectives. Officers have also has advised that clarification will be required in respect of the ownership and future maintenance responsibilities of the existing culvert inlet for which the existing watercourse drains into. Appendix 2 of the Deposit RLDP states that a Flood Consequences Assessment will be required to support a planning application.
KS2 North of Dinas Powys, off Cardiff Road	Residential	Small area <5% affected by river flooding (Zone 2/3) Small part of the site affected by surface	No build development is proposed within the flood risk areas. Preliminary Flood Risk Assessment and Drainage Strategy for the site identifies that the watercourses within the site and a small pond have the opportunity to

Site name	Development Type	Flood Risk	Comment
		water and small watercourses flooding (Zones 2/3) – less than 10% of site area.	form integral parts of the biodiversity net benefits and amenity value of the site. Appendix 2 of the Deposit RLDP states that a Flood Consequences Assessment will be required to support a planning application.
KS3 Land at Readers Way	Residential	No risk from river or sea flooding. 0.04% of site area affected by surface water and small watercourses flooding (Zone 2).	A negligible amount of the site is identified as at risk from surface water flooding. It is considered that this can be addressed through a suitable SuDS scheme to be agreed with the SAB. JBA conclusion in sites screening – no significant flood risk considerations to allocation
KS4 Land at Church Farm	Residential	No risk from river or sea flooding. 0.56% of site affected by surface water and small watercourses flooding (Zones 2/3).	A negligible amount of the site is identified as at risk from surface water flooding. It is considered that this can be addressed through a suitable SuDS scheme to be agreed with the SAB. JBA conclusion in sites screening – no significant flood risk considerations to allocation
KS5 Land to the West of St Athan	Residential	No risk from river or sea flooding. 0.19% of site affected by surface water and small watercourses flooding (Zones 2/3).	A negligible amount of the site is identified as at risk from surface water flooding. It is considered that this can be addressed through a suitable SuDS scheme to be agreed with the SAB. JBA conclusion in sites screening – no significant flood risk considerations to allocation
HG1 (1) Land to the west of Pencoedtre Lane	Residential	No risk from river or sea flooding.	A negligible amount of the site is identified as at risk from surface water flooding. It is considered that this can be addressed through a suitable SuDS scheme to be agreed with the SAB.

Site name	Development Type	Flood Risk	Comment
		0.05% of site affected by surface water and small watercourses flooding (Zone 2).	JBA conclusion in sites screening – no significant flood risk considerations to allocation
HG1 (2) Land at the Mole	Residential	Part of the site affected by sea flooding. Peripheral surface water and small watercourses flooding (Zones 2/3).	Planning application 2023/00051/HYB is supported by an FCA, which detailed proposals to raise the existing site to a level of 9mAOD to form a development plateau which will mitigate the risk of flooding within the proposed development site. NRW have advised that the proposed increase in site levels to 9mAOD is 0.44 metres above the predicted 0.5% (1 in 200-year) event (plus climate change) tidal flood level. The site is therefore designed to be flood free and complies with Section A1.14 of TAN15. It is also 0.10 metres above the predicted 0.1% (1 in 1000-year) event (plus climate change) and is therefore A1.15 compliant. NRW concludes that the FCA therefore shows that the risks and consequences of flooding can be managed to an acceptable level.
HG1 (3) Land at Hayes Lane	Residential	No risk from river or sea flooding. 0.92% of site affected by surface water and small watercourses flooding (Zones 2/3).	A negligible amount of the site is identified as at risk from surface water flooding. It is considered that this can be addressed through a suitable SuDS scheme to be agreed with the SAB. JBA conclusion in sites screening – no significant flood risk considerations to allocation.
HG1 (4) Land at Neptune Road	Residential	No risk from river or sea flooding.	A negligible amount of the site is identified as at risk from surface water flooding. It is considered that this can be addressed through a suitable SuDS scheme to be agreed with the SAB.

Site name	Development Type	Flood Risk	Comment
		3.3% of site affected by surface water and small watercourses flooding (Zones 2/3).	JBA conclusion in sites screening – no significant flood risk considerations to allocation.
HG1 (5) Land between the Northern Access Road and Eglwys Brewis Road (Site C - Central Parcel)	Residential	Part of the site (18%) affected by river flooding (Zones 2/3). 0.27% of site affected by surface water and small watercourses flooding (Zones 2/3).	An SFCA has been undertaken **(See Appendix 2)** This identifies that fluvial flood risk is confined to the southern boundary of the site, with flood zones associated with the Boverton Brook which flows through the site. The SCFA concludes that the site is generally of low flood risk, with associated flood risk from fluvial sources. Surface water flood risk within the site is minimal as a result of localised ground depressions and is likely to be managed adequately through good SuDS design.
HG1 (6) Land adjoining St Athan Road, Cowbridge	Residential	No risk from river or sea flooding. 4.4% of site affected by surface water and small watercourses flooding (Zones 2/3).	Approximately 4% of the site is at risk of flooding from surface water, which is considered to be a negligible amount that can be suitably mitigated through an appropriate SuDS scheme. Furthermore, planning application reference 2022/00958/FUL is currently being assessed for the development of the site, and this includes a Flood Risk and Drainage Strategy Report. This concludes that the site is not at risk of flooding and details a SuDS strategy to mitigate the minor risk. JBA conclusion in sites screening – no significant flood risk considerations to allocation.
HG1 (7) Former Stadium Site, adjacent to Burley Place	Residential	No risk from river or sea flooding. No risk from surface water and small watercourse flooding.	Not assessed by JBA – rolled forward site

Site name	Development Type	Flood Risk	Comment
HG1 (8) Clive Road, St Athan	Residential	No risk from river or sea flooding. No risk from surface water and small watercourse flooding.	JBA conclusion in sites screening – no significant flood risk considerations to allocation.
HG1 (9) Land north of the Railway Line (East)	Residential	No risk from river or sea flooding. 2.5% of site affected by surface water and small watercourses flooding (Zones 2/3).	Flood risk is considered to be a negligible amount that can be suitably mitigated through an appropriate SuDS scheme. Planning application under consideration. JBA conclusion in sites screening – no significant flood risk considerations to allocation.
HG2 (1) Land at Upper Cosmeston Farm	Residential	No risk from river or sea flooding. 5.8% of site affected by surface water and small watercourses flooding (Zones 2/3).	The site benefits from outline planning permission ref. 2020/01170/OUT (subject to S106 agreement). Permission granted subject to S106 agreement flooding implications at the site were considered acceptable. JBA conclusion in sites screening – no significant flood risk considerations to allocation.
HG2 (2) Land between the Northern Access Road and Eglwys Brewis Road (Site A - Western Parcel)	Residential	Periphery of site affected by river flooding. No risk from surface water and small watercourse flooding.	The site benefits from outline planning permission ref. 2020/00351/OUT (subject to S106 agreement) and in resolving to grant permission flooding implications at the site were considered acceptable.
HG2 (3) Land between the Northern Access Road and Eglwys Brewis Road	Residential	Periphery of site affected by river flooding. Eastern extent of site affected by surface	The site benefits from outline planning permission ref. 2020/00352/OUT (subject to S106 agreement) and in resolving to grant permission flooding implications at the site were considered acceptable.

Site name	Development Type	Flood Risk	Comment
		water and small watercourse flooding.	
HG2 (4) Land south of Llandough Hill / Penarth Road	Residential	No risk from river or sea flooding. 4% of site affected by surface water and small watercourses flooding (Zones 2/3).	This, the site benefits from outline planning permission ref. 2020/01590/HYB and in resolving to grant permission flooding implications at the site were considered acceptable. JBA conclusion in sites screening – no significant flood risk considerations to allocation.
HG2 (5) Land West of Swanbridge Road (Phase 2)	Residential	No risk from river or sea flooding. 2% of site affected by surface water and small watercourses flooding (Zones 2/3).	This, the site benefits from outline planning permission and in resolving to grant permission flooding implications at the site were considered acceptable.
HG4 (1) Land to the East of Colwinston	Residential	No risk from river or sea flooding. No risk from surface water and small watercourse flooding.	JBA conclusion in sites screening – no significant flood risk considerations to allocation.
HG4 (2) Land west of Maendy Road, Aberthin	Residential	Small area of southern part of site affected by river flooding (Zones 2/3) No risk from surface water and small watercourse flooding.	SFCA has been undertaken **(See Appendix 5)** The SFCA concluded that the indicative site layout submitted by the sites promoters indicate that the development proposal has been designed sequentially with residential units located entirely within Flood Zone 1. A proposed SuDS detention basin is located to the south of the site and is within Flood Zone 2. As per the advice of the CIRA SuDS Manual, SuDS should not be located within an area at a greater than 1% AEP chance of flooding, which aligns to Flood Zone 3 of the

Site name	Development Type	Flood Risk	Comment
			NRW FMfP - Flood Risk from Rivers. The proposed detention basin is located within areas of Flood Zone 2 within the site. Therefore, subject to SAB approval, the proposed location of the SuDS features is in keeping with current guidance.
HG4 (3) Land at Heol Fain, Wick	Residential	No risk from river or sea flooding. 0.04% of site affected by surface water and small watercourses flooding (Zone 2).	A negligible amount of the site is identified as at risk from surface water flooding. It is considered that this can be addressed through a suitable SuDS scheme to be agreed with the SAB. JBA conclusion in sites screening – no significant flood risk considerations to allocation.
HG4 (4) Land north of West Winds Business Park	Residential	No risk from river or sea flooding. No risk from surface water and small watercourse flooding.	JBA conclusion in sites screening – no significant flood risk considerations to allocation.
SP14.1 Land east of Cardiff Airport, Rhoose	Employment	No risk from river or sea flooding. Small areas of surface water and small watercourse flooding (Zone 2/3)	There are small areas of flood risk from surface water / small watercourses throughout the site, but these are negligible when considering the scale of the site and can be managed through an appropriate SuDS scheme.
SP14.2 Land south of Port Road (Model Farm), Rhoose	Employment	No risk from river or sea flooding.	There are small areas of flood risk from surface water / small watercourses throughout the site, but these are negligible when considering the scale of the site and

Site name	Development Type	Flood Risk	Comment
		Small areas of surface water and small watercourse flooding (Zone 2/3)	can be managed through an appropriate SuDS scheme.
SP14.3 Bro Tathan Aerospace and Business Park	Employment	No risk from river or sea flooding. Small areas of surface water and small watercourse flooding (Zone 2/3)	There are small areas of flood risk from surface water / small watercourses throughout the site, but these are negligible when considering the scale of the site and can be managed through an appropriate SuDS scheme.
SP14.4 Land to the South of Junction 34 of the M4, Hensol	Employment	Part of the site affected by river flooding (Zone 2/3) Part of the site affected by surface water and small watercourse flooding (Zone 2/3)	Planning application 2021/00899/EAO supported by a flood consequences assessment (FCA). The FCA identifies that the built form at the site is to be as best as possible located outside of flood zones and diverting a small watercourse and its floodplain. NRW have agreed that the approach set out in the FCA is acceptable.
SP14.5 Atlantic Trading Estate, Barry (Plot A)	Employment	Part of the site affected by tidal flooding (TAN 15 Defended Zone) Part of the site affected by surface water and small watercourse flooding (Zone 2/3)	**SFCA undertaken (Appendix 3)** The site is shown to be within a TAN-15 Defended Zone, with a standard of protection of up to the present-day 1 in 200-year event provided. The SFCA concludes that the extent and severity of flooding from surface water within the site is minimal and is likely to be adequately managed through further assessment and good SuDS design. It considered that this site is likely to satisfy the requirements of TAN-15 subject to incorporation of suitable mitigating measures.
SP14.5 Atlantic Trading Estate, Barry (Plot B)	Employment	Part of the site affected by tidal flooding (TAN 15 Defended Zone)	**SFCA undertaken (Appendix 4)** This concludes that site is generally of low flood risk, with associated flood risk from tidal and groundwater sources. A detailed assessment of the flood risk at the

Site name	Development Type	Flood Risk	Comment
		No risk from surface water and small watercourse flooding.	site using NRW's 2023 Barry Docks flood modelling, shows the site to be flood free in all design events.
SP14.6 Windmill Park, Hayes Road, Barry	Employment	Part of the site affected by tidal flooding (TAN 15 Defended Zone) No risk from surface water and small watercourse flooding.	Planning permission ref. 2023/01147/FUL was granted on this site and concluded that 'subject to conditions requiring works to be undertaken in accordance with the [submitted] FCA, the finished slab levels are set no lower than 7.7 metres (AOD) and requiring further details of flood warning mitigation the proposal is considered acceptable and could be appropriately managed in terms of flooding.'
SP14.7 Vale Business Park, Llandow	Employment	No risk from river or sea flooding. Less than 5% risk from surface water and small watercourse flooding.	There are small areas of flood risk from surface water / small watercourses throughout the site, but these are negligible when considering the scale of the site and can be managed through an appropriate SuDS scheme.
SP14.8 Land at Llandow Trading Estate	Employment	No risk from river or sea flooding. No risk from surface water and small watercourse flooding.	
EMP1.1 Former Aberthaw Power Station	Employment	46% of the site is affected by tidal flooding (Zone 2/3) and 5% by river flooding 4% of site affected by surface water and	Significant portions of the Aberthaw site are at risk from flooding from the sea, particularly in the west of the site, where the majority of the built development at the site (to be demolished), currently exists. Flood risk from the sea and River Thaw also exists elsewhere within the site. The River Thaw runs through the site and there are also several other natural and artificial small watercourses within the site with associated flood risk.

Site name	Development Type	Flood Risk	Comment
		small watercourse flooding.	To unlock the site for development, the site will need to be removed from Flood Zone 3. Modelling has been undertaken for the 0.1%AEP (1 in 1000-year event) with 100 years of climate change added. It is recommended that areas which are to be developed are raised to a minimum finished level of 9.1m AOD. This allows for freeboard from the 0.1%AEP 2099 and also the 0.1%AEP 2124 event. Further consideration of this measure would need to be agreed with NRW as part of the consultation process for the planning application. It is anticipated that the required flood mitigation measures shall be phased over the redevelopment of the site which shall be undertaken in four phases between 2028 to 2036.
EMP1.2 Land at the Port of Barry	Employment	Most of the site is within a TAN 15 defended zone. Significant parts of the site are affected by surface water and small watercourse flooding.	The vast majority of the No.2 Port, Barry Docks, is located within a flood zone, with much of the site area taken up by the existing docks. The central and eastern areas of the site are also located in a TAN15 defended zone (sea). The eastern part of the site is also in FZ3 for risk of flooding from rivers, being the Cadoxton River. The site is previously developed land.

5 Conclusions

5.1 This paper highlights how the Council has considered the requirements of TAN15 in the selection of sites for inclusion in the Deposit RLDP. It also explains how flooding information has been considered through the Candidate Site assessment process and how consultations have been undertaken with NRW and the Council's Engineers. In the Council's view, this work has enabled the Council to successfully allocate sites in the Deposit RLDP in areas that are either not affected by flood risk or are in the low flood risk areas of the Vale of Glamorgan, and/or where the impacts of flooding can be acceptably managed.

5.2 Although a small number of sites within areas of potential flood risk are being progressed in the Deposit RLDP, these are restricted to sites that have previously been granted planning permission and NRW has indicated that a FCA has been undertaken to its satisfaction; or where sites are only partially within an identified flood zone these largely relate to areas that are characterised by established uses or where development would not impact on such areas. In addition, such allocations have only been made where they are in accordance with the RLDP Strategy in so far as they are necessary to sustain existing settlements.

Appendices - Site Specific Strategic Flood Consequence Assessments

- **Appendix 1: Flood Risk Mitigation at Aberthaw Power Station**
- **Appendix 2: Land between the Northern Access Road and Eglwys Brewis Road (Millands Farm)**
- **Appendix 3: Atlantic Trading Estate, Barry (Plot A)**
- **Appendix 4: Atlantic Trading Estate, Barry (Plot B)**
- **Appendix 5: Land West of Maendy Road, Aberthin**

APPENDIX 1

Flood Risk Mitigation at Aberthaw Power Station

A Remediation Technical Advisory note has been prepared by Arup on behalf of CCR Energy as part of initial work on an Infrastructure Strategy. This note is draft and may be subject to change following more detailed site investigation. However, it sets out the initial position on how the issue of flood risk could be addressed on the site.

Aberthaw Power Station is a decommissioned coal fired power station located in Aberthaw, Vale of Glamorgan on the south coast of Wales ("Site"). The Site comprises buildings and other features associated with the Aberthaw B coal-fired power station. It was constructed in the late 1960's and opened in 1971, operating alongside Aberthaw A which was officially 'opened' in 1963. Aberthaw A operated until 1995 and was demolished by 1998, whilst Aberthaw B closed in March 2020. The contract for demolition of Aberthaw Power Station has been awarded and works commenced. It is anticipated that the demolition works will take up to four years.

The Aberthaw Power Station Site extends to over 489 acres and covers a considerable area of biodiversity land (including a Site of Special Scientific Interest), the River Thaw, existing railhead, two National Grid owned Sub-Stations and associated infrastructure, coastline and caisson (positioned circa. 500 meters off the shoreline) and the remaining power station cooling water infrastructure, consisting of reinforced concrete holding tanks, deep water sumps (40m) and outfall system. CCR Energy seeks to bring the site forward for future employment, energy development (production, storage and distribution) and commercial opportunities (including hydrogen, tidal etc.) to exploit the asset rich development site.

A significant proportion of the site was previously used for coal power generation and therefore the site is likely to be contaminated as a legacy of the former land use. Additionally, the site still retains the existing PFA stockpile (circa. 18 million tonnes) which could have considerable commercial value (subject to agreement from NRW and the Vale of Glamorgan).

Whilst the demolition and site clearance takes place, CCR Energy is progressing with plans for the remediation and preparation of the site for commercial development. This will include readiness for the removal of the existing Pulverised Fuel Ash (PFA) mound, preparation of a remediation strategy (to include a flood consequences assessment/report and delivery solution), a planning authority approved planning strategy, infrastructure strategy (to include utilities and future energy strategy options) and commercial strategy.

The extents of these are shown below in **Figure 1**:

Figure 1 - Site areas

Flood Risk

As the flood risk applies to the majority of the site, this is considered below for the whole site. The commentary below discusses tidal flood risk as this is considered to be the worst-case flooding for the site. As part of the Flood Consequences for the site, other types of flooding, including fluvial, surface water and groundwater will need to be considered, however these are not examined further within this document.

Since the previously published studies on flood risk were issued, TAN15 2021 has been implemented within Wales. The Flood Map for Planning provided by Natural Resources Wales is shown in Figure 2.

The majority of the site is within Flood Zone 3 for tidal flooding, which means that the site is not protected in the 1 in 200-year event with climate change. This is a significant constraint for development, as most types of development are not permitted within Flood Zone 3. Developments within Flood Zone 3 can normally only consist of Flood Defence and management infrastructure and open spaces. Other elements such as tidal generation are also permitted.

Figure 2 – Flood Map for Planning

In order to unlock the site for development, the site will need to be removed from Flood Zone 3. JBA have undertaken modelling for the site for the 0.1% AEP (1 in 1000-year event) with 100 years of climate change added. The results of this are shown in **Figure 3**.

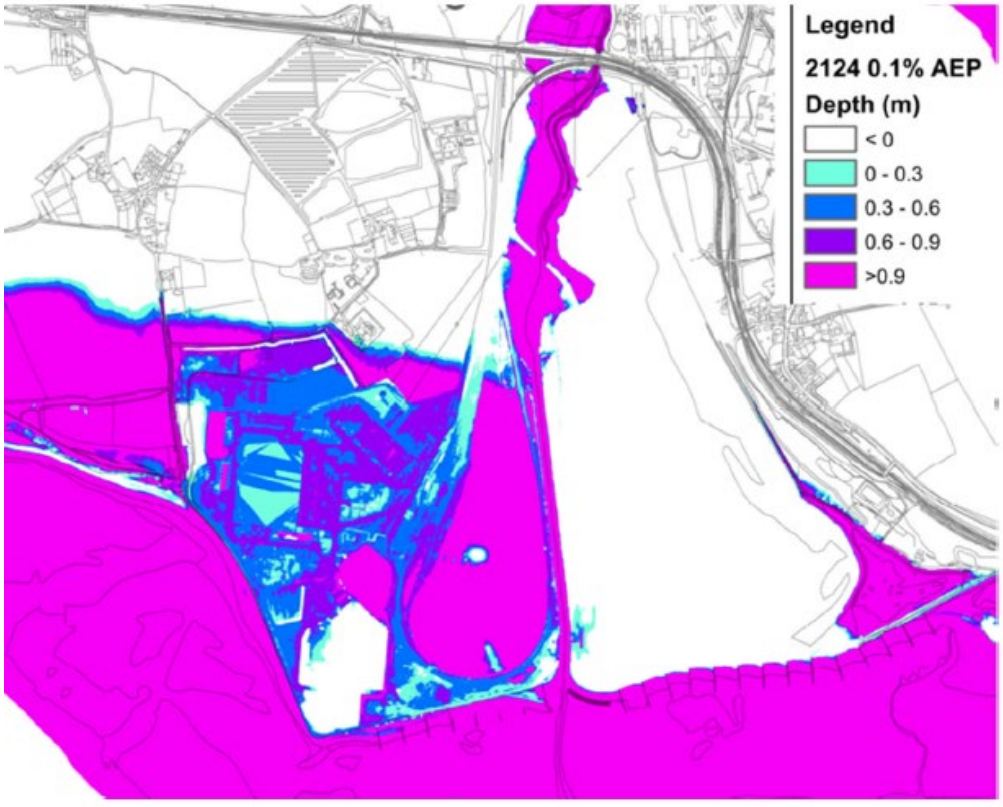


Figure 3 – Tidal flooding in the 0.1% AEP 2124 flood event

The depth of flooding for a range of different return period tidal events is shown in **Table 1** below:

Uplifted Projections:				
	2024	2074	2099	2124
MHWS	5.246	5.796	6.208	6.657
T5	6.796	7.346	7.758	8.207
T10	6.886	7.436	7.848	8.297
T20	6.976	7.526	7.938	8.387
T50	7.086	7.636	8.048	8.497
T100	7.176	7.726	8.138	8.587
T200	7.276	7.826	8.238	8.687
T1000	7.526	8.076	8.488	8.937

Table 1 – Flood depths at Mean High Water Spring Tides in 5 year to 1000 year events

This table shows that the maximum flooding level for the 0.1%AEP 2124 event is 8.937mAOD. If the development falls into the less vulnerable category, then it may be possible to use the 2099 level for climate change of 8.488m. The less vulnerable category includes general employment, transport and utilities, and renewable energy. However, at this stage of the process there remains a degree of uncertainty about some usages, such as power generators at power station and data centres. The classification of the site will need to be confirmed through consultation with Natural Resources Wales (NRW).

In order to remove the site from Flood Zone 3, it is recommended that areas which are to be developed are raised to a minimum finished level of 9.1m AOD. This allows for freeboard from the 0.1%AEP 2099 and also the 0.1%AEP 2124 event. This level would need to be agreed with NRW as part of the consultation process for the planning application.

In order to allow the site to be developed, the following process is proposed:

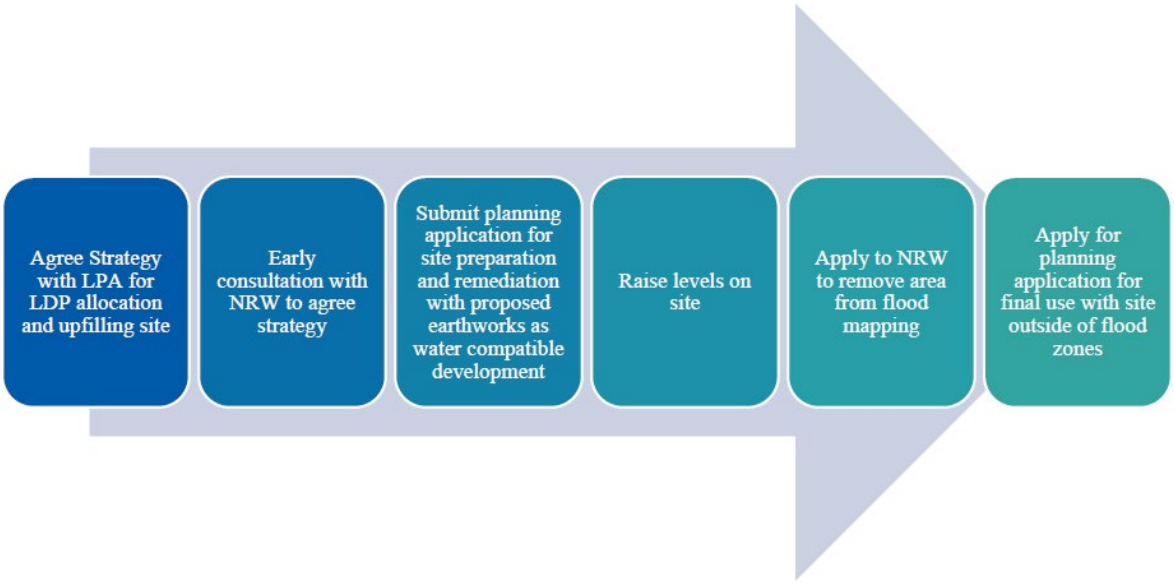


Figure 4 – Proposed strategy to address flood risk

It is proposed that the upfilling to address flood risk is undertaken in a sequential manner as developments on the site come forward, as:

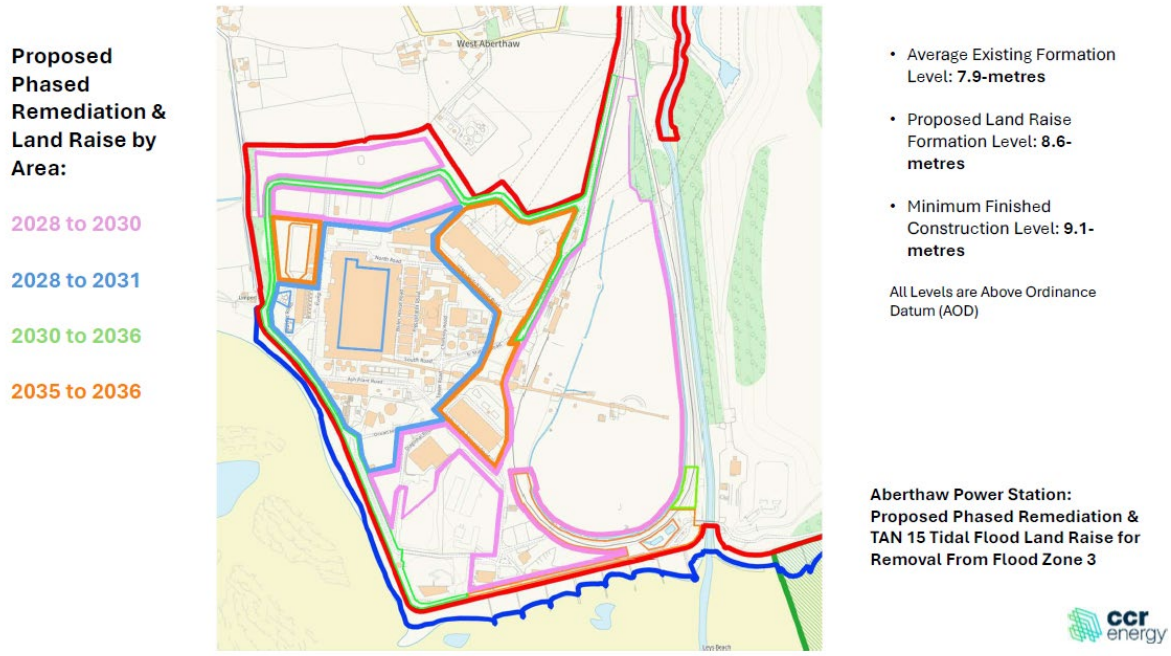


Figure 5 - Phasing

Earthworks and Upfilling of site

In order to allow for the upfill of the site an earthworks level of 8.6m AOD has been set for the site. This allows for a minimum of 500mm of construction finishes to be added to the site once the earthworks are complete. However, it will be necessary to establish from NRW whether this would be acceptable or whether the earthworks

would be required to be 9.1m AOD. This process would require additional fill material, this will be consulted on with NRW**.**

Within Gateway South the upfilling is only partially required due to the existing Aberthaw A power station being mostly located above the 9.1m AOD level. The amount of material required for Gateway East is significantly higher due to the low-lying nature of the ground within this area and the greater footprint.

It is necessary to demonstrate where the upfilling material will come from. The options for this are either to use the existing PFA mound on the site or to import fill. Table 2 (below) provides approximate volume of fill required for Gateway South and East upfilling. A similar exercise for earthworks upfilling has not yet been completed for the rest of the site, this will be undertaken at in the future to allow for a full understanding of the earthworks required.

Site Access

It is recommended that the main access point to the site remains as currently, from the B4265. This is due to the access point being sufficiently sized to accommodate large vehicles, as demonstrated by the successful operation of the site. Junction alterations and/or off-site highway works may be necessary subject to confirmation of the masterplan development schedule, transport assessment and an associated modelling. Consideration of abnormal load to the site will require monitoring alongside emerging land uses.

As part of the initial Gateway East land raising, investigations will be undertaken to assess if the primary access would continue along the eastern edge of the current alignment of the existing rail sidings. This would allow the route to be above the 9.1m AOD level to allow emergency vehicles to enter the site in an extreme flood event for evacuation purposes. Access to Gateway South could similarly be considered by ~~continuing~~ the primary access route south through Gateway East, adjacent to the existing rail sidings, tying into the existing site access road to the north-east of the ACE2 building. This would provide a main spine road though Gateway East & South allowing access to these areas. At the appropriate point in time continuation of this primary access south will need to be above the 9.1m AOD level to provide emergency access to Gateway South during extreme flood events.

Existing Sea Wall

The existing seawall is a private asset which is owned by the site and does not form part of the Natural Resources Wales flood defences. The existing protection provided by the sea wall does not form a defence which protects the site from the 0.1%AEP event with climate change which is required to be considered for future development of the site in accordance with TAN15 requirements.

Rather than pursuing upgrades to the existing sea wall, future development of the site will adopt upfilling and the raising of site levels as the preferred strategy to achieve compliance with TAN 15. Arup has assessed that the Sea Wall has no significant defects that would cause a significant failure of the wall in its capacity to

act as a defence against high still water levels. CCR Energy are nonetheless in the process of undertaken maintenance of the wall to ensure the wall continues to deflect wave overtopping and ensure integrity.

Whilst fair in condition, the current sea will not entirely provide an adequate standard of flood defence for future development, the proposed earthworks will ensure that flood risk requirements are met through appropriate site level management. The existing sea will continue to serve a supplementary function in mitigating potential coastal erosion and wave overtopping.

As part of consultation with the Lead Local Flood Authority (LLFA), the LLFA have stated that in order to protect the proposed development for the site, CCR Energy should commit to the maintenance and upkeep of the existing sea defences as part of a ‘hold the line’ approach.

Appendix 2

www.jbaconsulting.com

Vale of Glamorgan Strategic Flood Consequences Assessment - Land at Millands Farm, Llantwit Major (352)

Version 1

Prepared for	Date
Vale of Glamorgan Council	September 2025

Document Status

Issue date	September 2025
Issued to	Vale of Glamorgan Council
BIM reference	QFB-JBAU-XX-XX-RP-Z-0001-S3-P01-Land_at_Millands_Farm_Llantwit Major_(352)
Revision	Version 1
Prepared by	[redacted] Analyst
Reviewed by	[redacted] Principal Analyst
Authorised by	[redacted] Project Director

Carbon Footprint

The format of this report is optimised for reading digitally in pdf format. Paper consumption produces substantial carbon emissions and other environmental impacts through the extraction, production and transportation of paper. Printing also generates emissions and impacts from the manufacture of printers and inks and from the energy used to power a printer. Please consider the environment before printing.

Accessibility

JBA aims to align with governmental guidelines on accessible documents and WGAG 2.2 AA standards, so that most people can read this document without having to employ special adaptation measures. This document is also optimised for use with assistive technology, such as screen reading software.

Contract

JBA Project Manager	[redacted]
Address	7-8 High Street, Kings Chambers, Newport, South Wales, NP20 1FQ
JBA Project Code	2025s0982

This report describes work commissioned by the Vale of Glamorgan Council, by an instruction dated 29 May 2025. The Client's representative for the contract was Victoria Morgan of the Vale of Glamorgan Council. Charlotte Lickman of JBA Consulting carried out this work.

Purpose and Disclaimer

Jeremy Benn Associates Limited ("JBA") has prepared this Report for the sole use of the Vale of Glamorgan Council its appointed agents in accordance with the Agreement under which our services were performed.

JBA has no liability for any use that is made of this Report except to for the purposes for which it was originally commissioned and prepared.

No other warranty, expressed or implied, is made as to the professional advice included in this Report or any other services provided by JBA. This Report cannot be relied upon by any other party without the prior and express written agreement of JBA.

JBA disclaims any undertaking or obligation to advise any person of any change in any matter affecting the Report, which may come or be brought to JBA's attention after the date of the Report.

The methodology adopted and the sources of information used by JBA in providing its services are outlined in this Report. The work described in this Report was undertaken between the 6th of August 2025 and the 12th of September 2025 and is based on the conditions encountered and the information available during the said period. The scope of this Report and the services are accordingly factually limited by these circumstances.

The conclusions and recommendations contained in this Report are based upon information provided by others and upon the assumption that all relevant information has been provided by those parties from whom it has been requested and that such information is accurate. Information obtained by JBA has not been independently verified by JBA, unless otherwise stated in the Report.

Copyright

Contents

List of Figures

List of Tables

1 Introduction

JBA Consulting has been commissioned by the Vale of Glamorgan Council to prepare an independent Flood Risk Appraisal as part of a Stage 2 Strategic Flood Consequences Assessment (SFCA) to support site allocation assessments within its Replacement Local Development Plan (LDP).

This assessment will evaluate the risk of flooding from all sources to Land at Millands Farm, Llantwit Major, which is the proposed development site, as well as the appropriateness of development at the site in accordance with Welsh Government Policy, as outlined in Technical Advice Note 15: Development, flooding and coastal erosion (TAN-15). Furthermore, recommendations will be provided to mitigate the risk of flooding at the proposed development site as well as recommendations for further works.

2 Site Description

The key characteristics of the site are summarised in Table 2-1 and the location and site boundary are shown in Figure 2-1 below.

The site is bound to the north by Northern Access Road beyond which is Millands Caravan park and predominantly greenfield land. The south of the site is bound by Eglwys Brewis Road, and further beyond is the village of Eglwys Brewis and MOD St Athan. An unnamed road bounds the east of the site, which can be accessed via Eglwys Brewis Road, and the west is immediately bound by greenfield land. The town of Llantwit Major is located further to the east of the site.

Table 2-1 Site Summary

Site Name	Land at Millands Farm, Llantwit Major
Site ID	352
Site area	7.54 ha
Existing land use	Greenfield
Purpose of development	Housing / mixed use
OS NGR	SS 98814 68964
Access location	Access most viable via the north via Northern Access Road

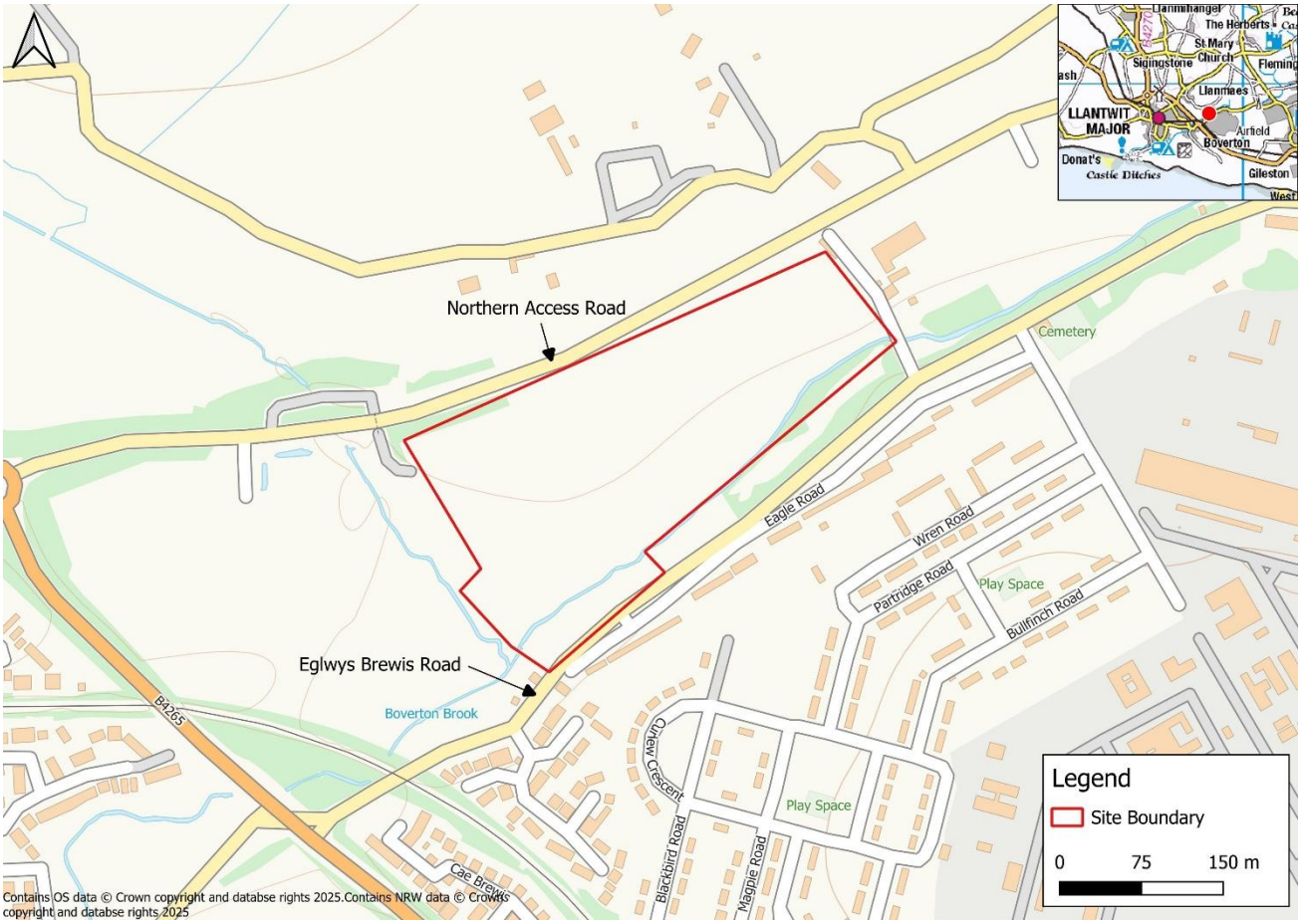


Figure 2-1 Site Location

2.1 Development Proposals

Development proposals are for residential or mixed-use purposes, on greenfield land. No indicative site layout is available for this assessment.

2.2 Watercourses and Flood Defences

Figure 2-2 shows that the Boverton Brook, an NRW Main River, flows south-westerly through the southern vicinity of the site. Llanmaes Brook, an NRW Main River, flows south-easterly within close proximity to the site's western boundary, and converges with Boverton Brook near to the south-western corner of the site.

The Boverton Brook then flows in a general south westerly direction, before converging with the Afon Col-huw approximately 2KM to the south west of the site.

The development site is not within an area that benefits from flood defences.

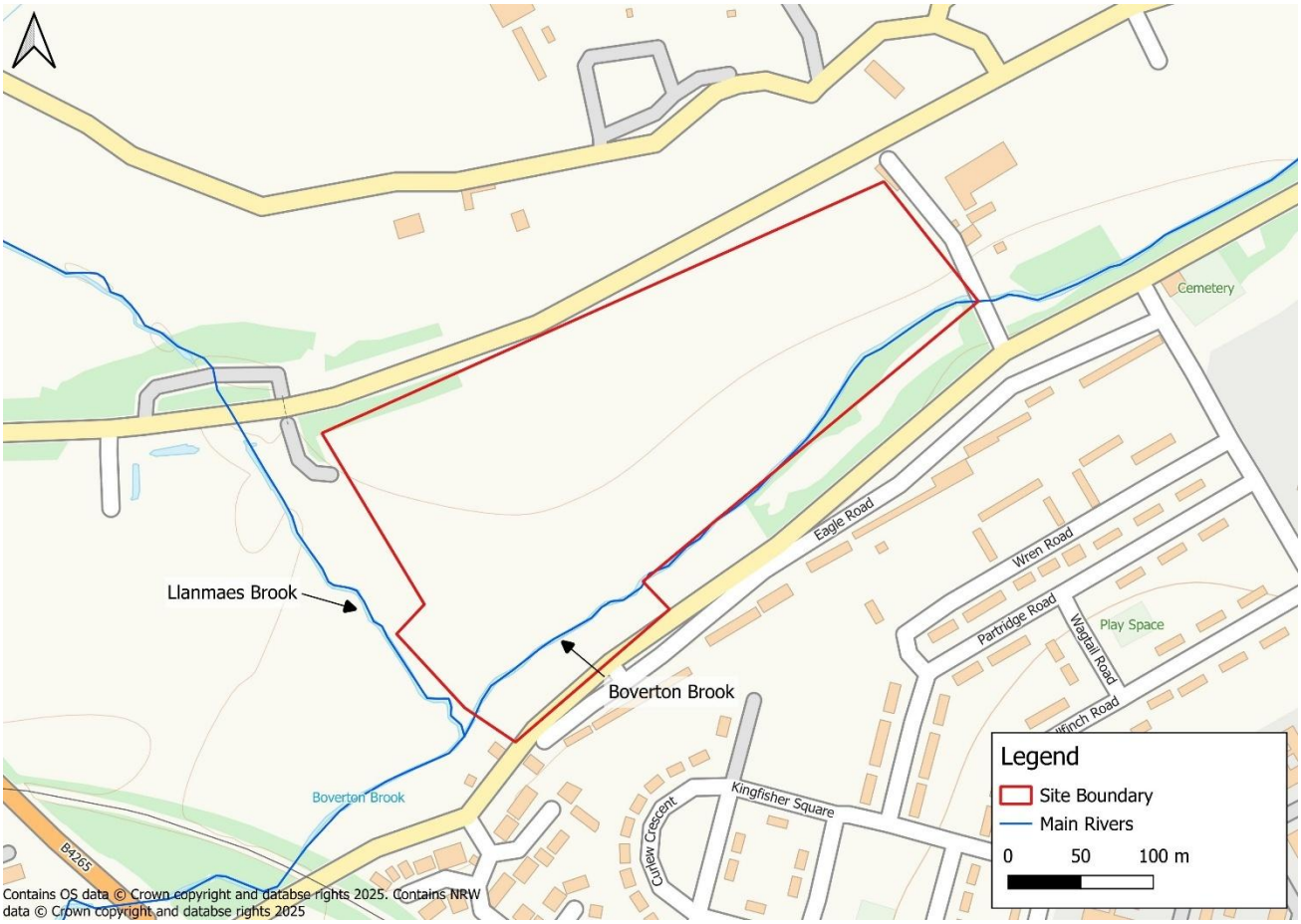


Figure 2-2 Watercourses and Defences

2.3 Topography

The Natural Resources Wales (NRW) Open Source 1m Light Detection and Ranging (LiDAR) data across the site has been reviewed and is shown in Figure 2-3.

Ground levels across the site fall in a general southerly direction, with highest levels along the northern boundary at approximately 43.77mAOD. Lowest ground levels are located in the south western area of the site, near to Boverton Brook, at approximately 34.77mAOD.

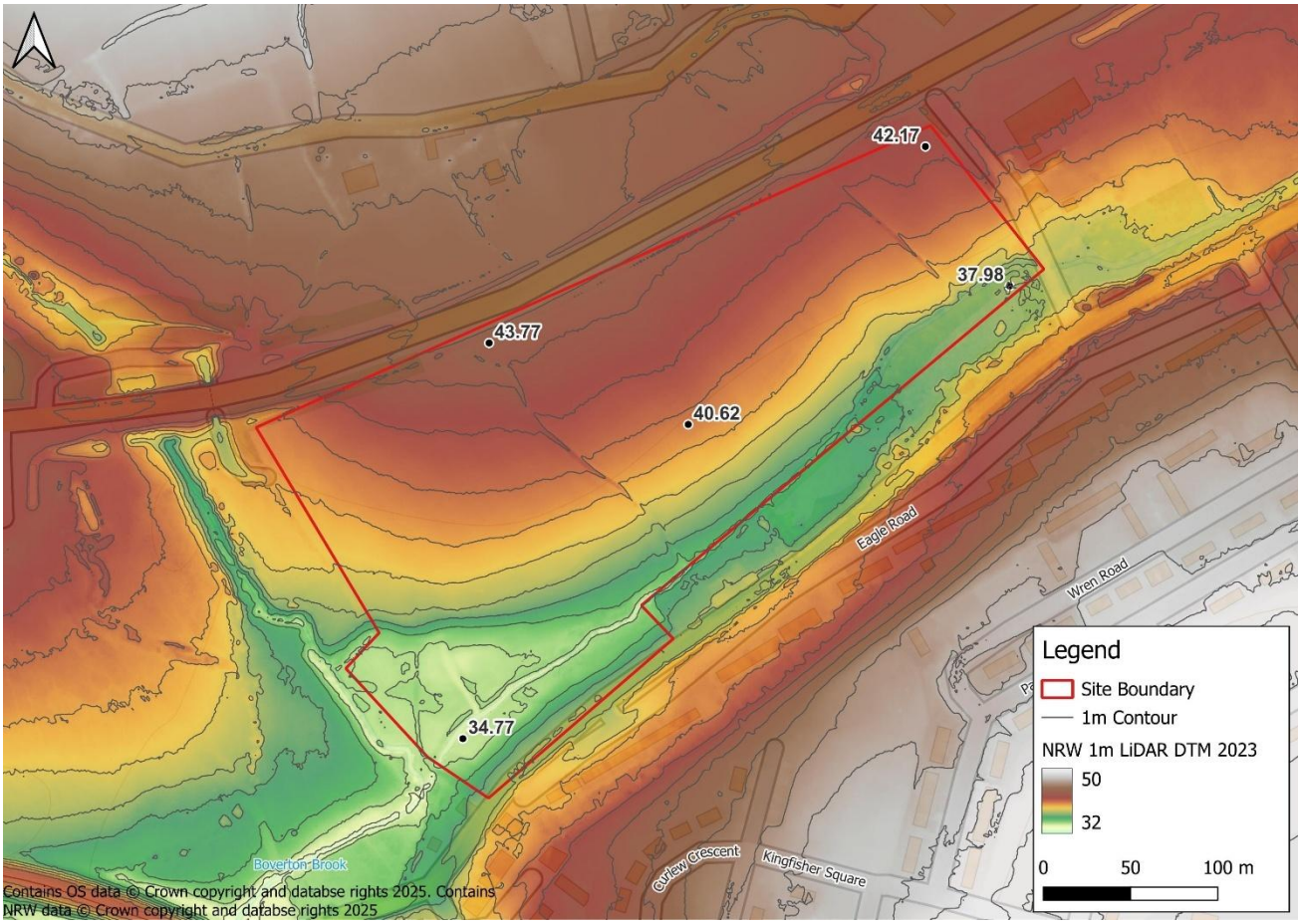


Figure 2-3 NRW 1m DTM LiDAR

3 Planning Policy and Flood Risk

TAN-15 provides a framework within which flood risk arising from rivers, the sea, and surface water, as well as the risk of coastal erosion, can be assessed. TAN-15 adopts a risk-based approach, which emphasises the ability to avoid or minimise risk depending on the type of development proposed.

The following table identifies the form of development and vulnerability classification (as defined in TAN-15) for the proposed development site.

Table 3-1 TAN-15 Development Classification Summary

TAN-15 classification	Classification
Development Proposal	Housing / Mixed-use
Form of Development	New Development
Vulnerability Classification	Highly Vulnerable: Residential and educational facilities Less vulnerable: general industrial, employment, commercial and retail development.
Flood Map for Planning- Rivers	Flood Zones 2 and 3 (Figure 3-1)
Flood Map for Planning- Sea	Flood Zone 1
Flood Map for Planning- Surface Water and Small Watercourses	Flood Zone 1 and 2 (Figure 3-2)

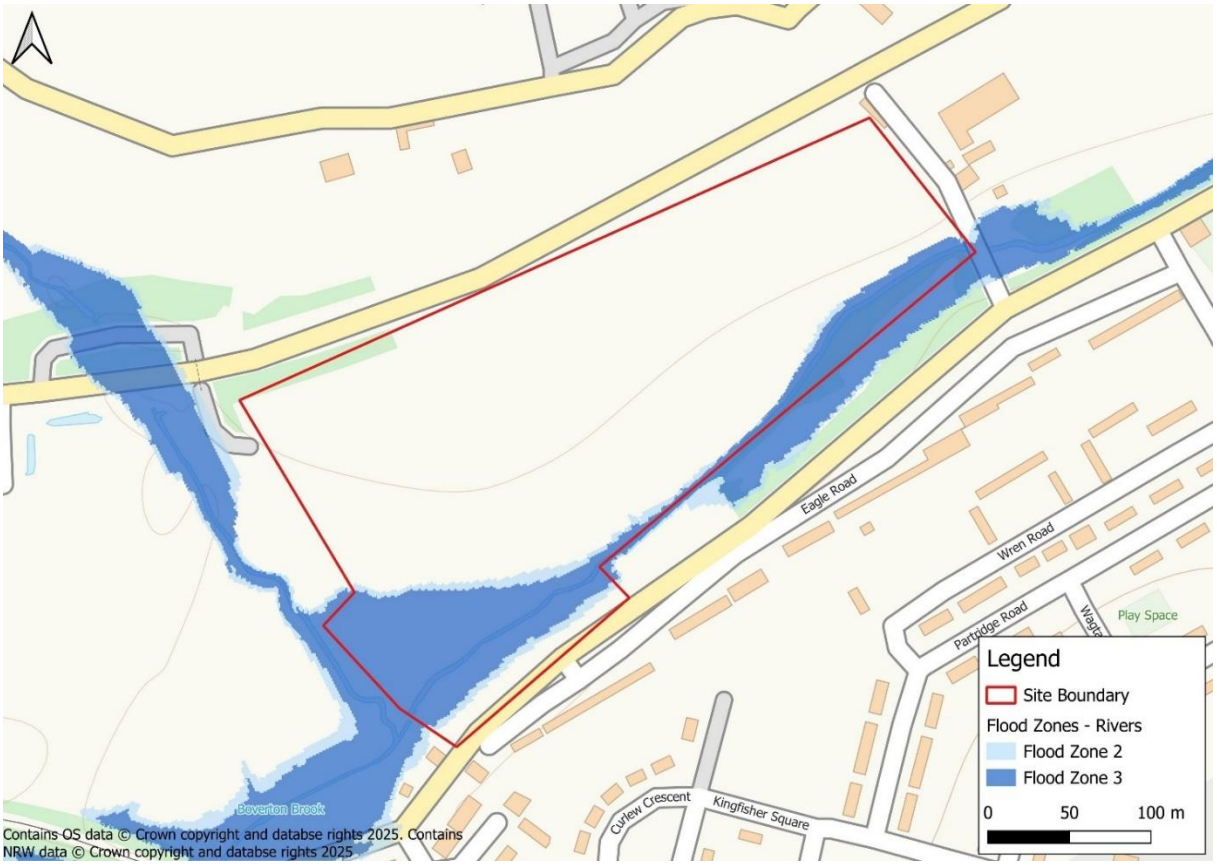


Figure 3-1 Flood Map for Planning - Rivers

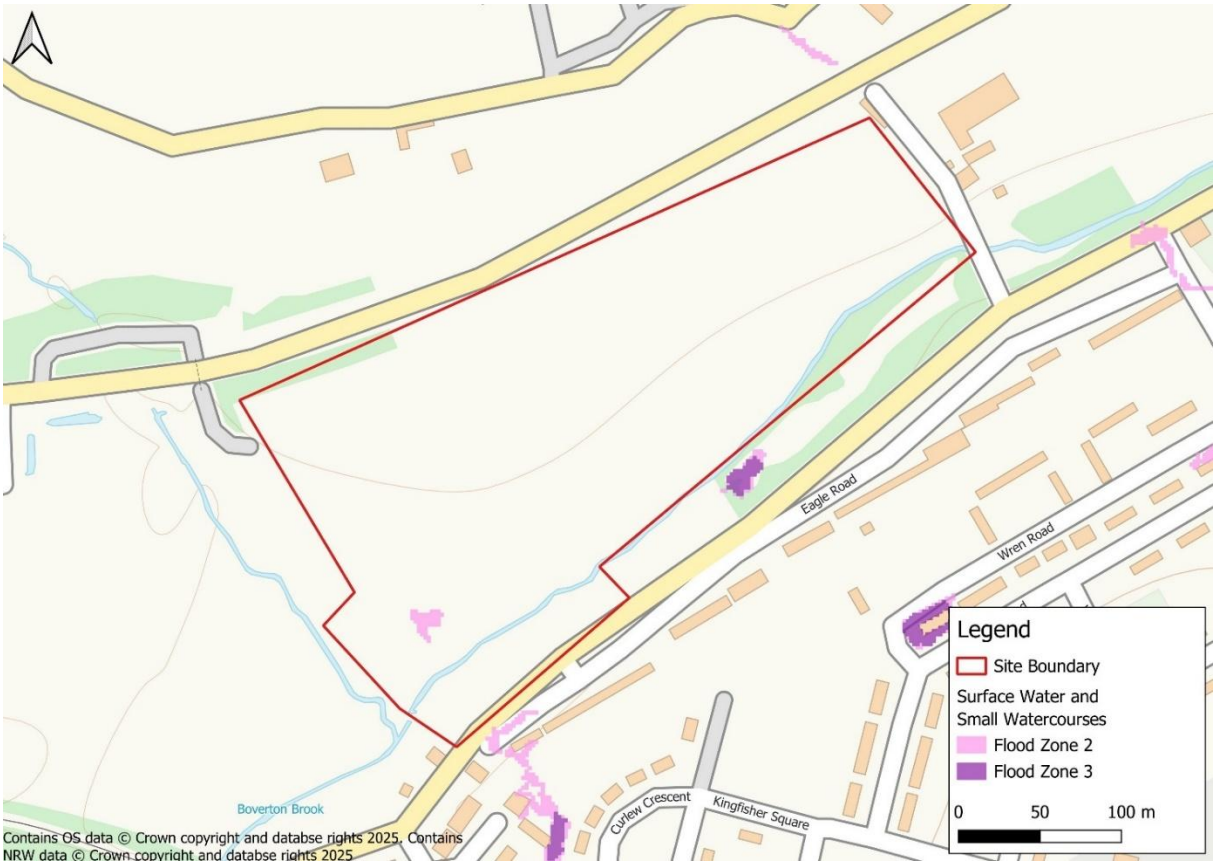


Figure 3-2 Flood Map for Planning - Surface Water and Small Watercourses

4 Assessment of Flood Risk

The latest available information on flood risk at the site, published by Natural Resources Wales (NRW) and datasets used in the SFCA is summarised in Table 4-1 below.

Table 4-1 Summary of Flood Risk

Source of Flooding	Onsite Presence	Description
Flood Risk from Rivers	✓	The site's location within Flood Zones 2 and 3 of the FMfP indicates that the site is at **moderate** risk of fluvial flooding. **Further assessment contained in Section 4.1.1.**
Flood Risk from the Sea	×	The site is located within Flood Zone 1 of the FMfP and therefore is at **very low** risk of tidal flooding.
Flood Risk from Surface Water and Small Watercourses	✓	The site is almost entirely located within Flood Zone 1 of the FMfP, indicating a very low risk of surface water flooding. There is one localised area of the site which is shown to be located within Flood Zone 2. It is deemed that this presents a **very low** risk of flooding from surface water. **Further assessment contained in Section 4.1.2.**
Flood Risk from Groundwater	×	The South East Wales Stage 1 SFCA includes JBA's Groundwater Risk of Emergence map as part of the assessment and shows the site to be in an area of 'low' risk. There have been no recorded incidents of groundwater flooding in this area mentioned in the SFCA. Therefore, it is concluded that the risk of flooding is **low**.
Flood Risk from Reservoirs	×	The NRW Flood Risk Assessment Wales (FRAW) map shows that the site is not located in an area at risk of reservoir flooding. Therefore, it is concluded that the risk of flooding is **very low**.

Source of Flooding	Onsite Presence	Description
Flood Risk from Sewers	×	There is no evidence to suggest that the site is at risk of sewer flooding. The site is greenfield in nature and unlikely to have any sewerage infrastructure which could overflow and cause sewer flooding. Therefore, it is concluded that the risk of flooding is **very low**.

4.1.1 Flood Risk from Rivers

The Flood Map for Planning flood risk from Rivers indicates that most of the site is located within Flood Zone 1 and therefore shall remain flood free in the 0.1% AEP fluvial event, including an allowance for climate change. However, the southern boundary of the site, within proximity of Boverton Brook which crosses the site, is shown to be located within Flood Zones 2 and 3 of the FMfP.

Due to the unavailability of detailed hydraulic modelling at the time of writing, the NRW National Flood Hazard Mapping (NFHM) has been used to provide further assessment of fluvial flood risk.

Figure 4-1 shows peak flood depths for the 1% AEP plus climate change event. In the eastern extent of the site, flood depths are confined to the southern side of the Boverton Brook, and generally remain less than 100mm. In the south west of the site, flooding is shown to occur where ground levels within the site are lowest, as a result of water levels exceeding the channel of Boverton Brook. The maximum in channel depth of the Boverton Brook is predicted to be 0.9m. Flood depths in the south west of the site (on developable land) typically remain less than 0.3m. However, depths of up to 0.5m are indicated where a localised depression in ground levels is present.

Figure 4-2 shows the peak flood depths predicted within the 0.1% AEP plus climate change event. In the eastern extent of the site, flooding is predominantly confined to the southern side of the watercourse and remains typically less than 200mm in depth. Flooding in the south western corner of the site is predicted, up to a maximum depth of 1.08mAOD in a small localised area. This is associated with a localised depression and is identified within the flood map for flood risk for surface water. Generally, flood depths are predicted to be 0.6-0.9m in this area of the site, with some shallower flooding of 0.3-0.6m where existing ground levels are shown to be slightly higher. The maximum water depth within the channel of the Boverton Brook is predicted to be 1.29m.

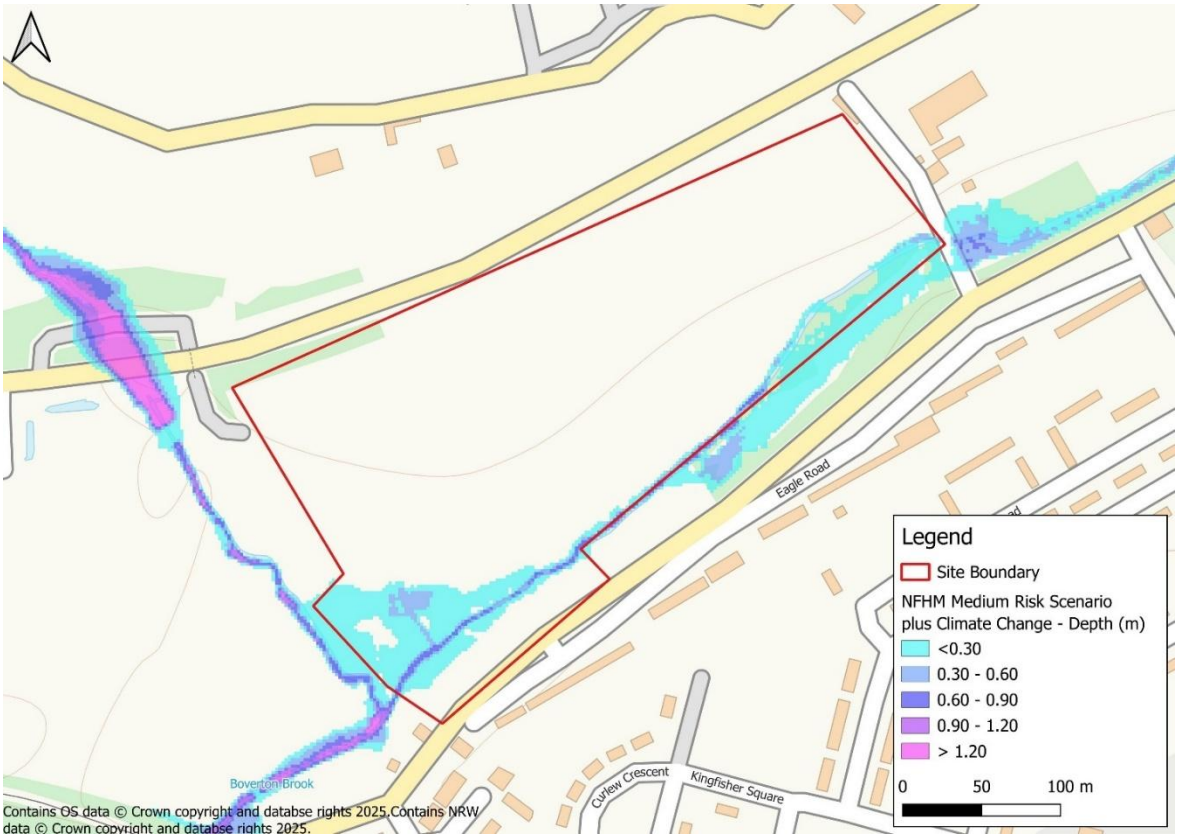


Figure 4-1 NFHM Risk from Rivers - 1.0% AEP +CC (Medium Risk)

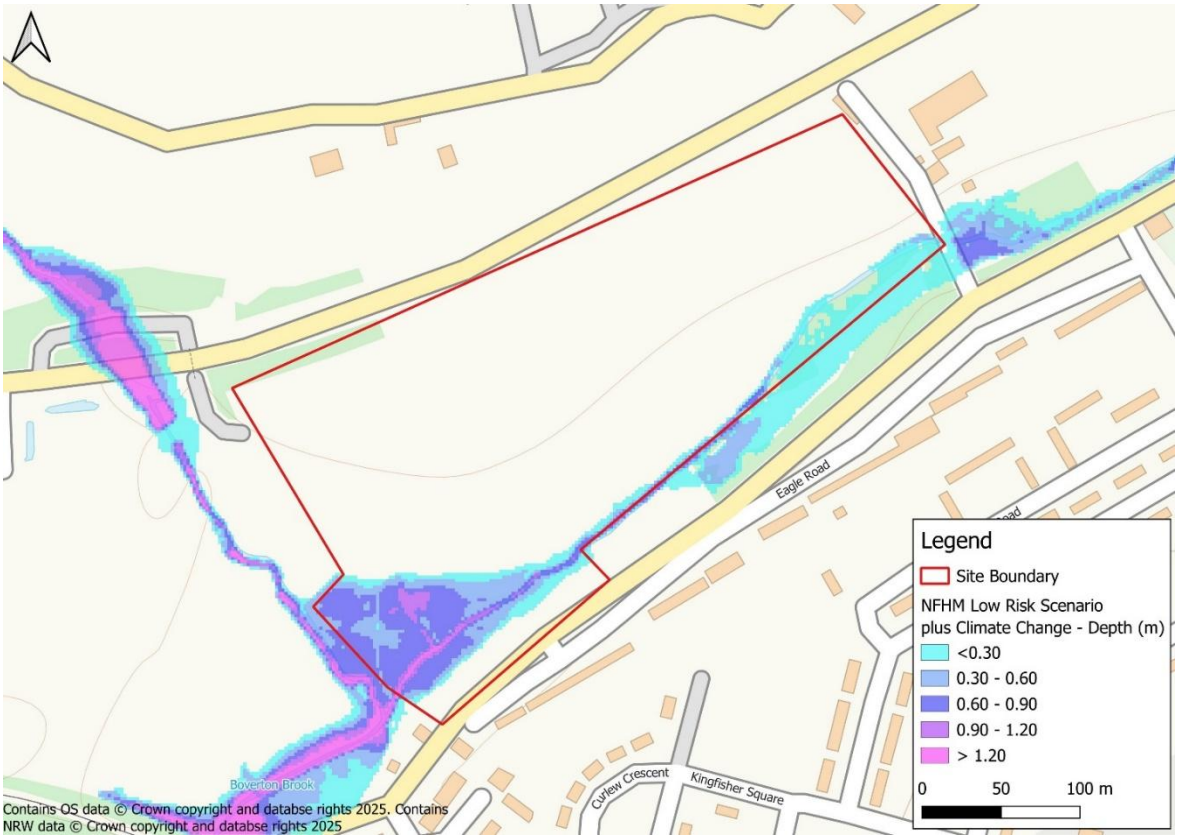


Figure 4-2 NFHM Risk from Rivers - 0.1% AEP +CC (Low Risk)

4.1.2 Flood Risk from Surface Water and Small Watercourses

Surface water flooding occurs when rain falling on saturated ground flows overland, following the local topography. Surface water flooding and subsequent overland flow can therefore pose a risk to both the development site and the surrounding land. The overland flow may originate from the site itself or adjoining land at a higher elevation, from which the flow migrates onto the development.

The FMfP for surface water and small watercourses indicates that there is a small, localised area in the south west of the site which is predicted to flood as a consequence of surface water ponding. This location correlates with a localised topographic depression, resulting in surface water ponding and surface water being unable to drain away from this area. In some places, ground levels in this area are approximately 500mm lower than surrounding ground.

The NRW National Flood Hazard Mapping (NFHM) has been used to provide a further assessment of surface water flooding. During the 1% AEP plus climate change event, the site is shown to remain flood free and therefore no figure is provided. In the 0.1% AEP plus climate change event, a small area of ponding is indicated, with flood depths ranging from 150mm to 310mm, as shown in Figure 4-3.

It is envisaged that this source of flooding can be easily managed through the use of SuDS techniques associated with a comprehensive surface water drainage strategy for the site.

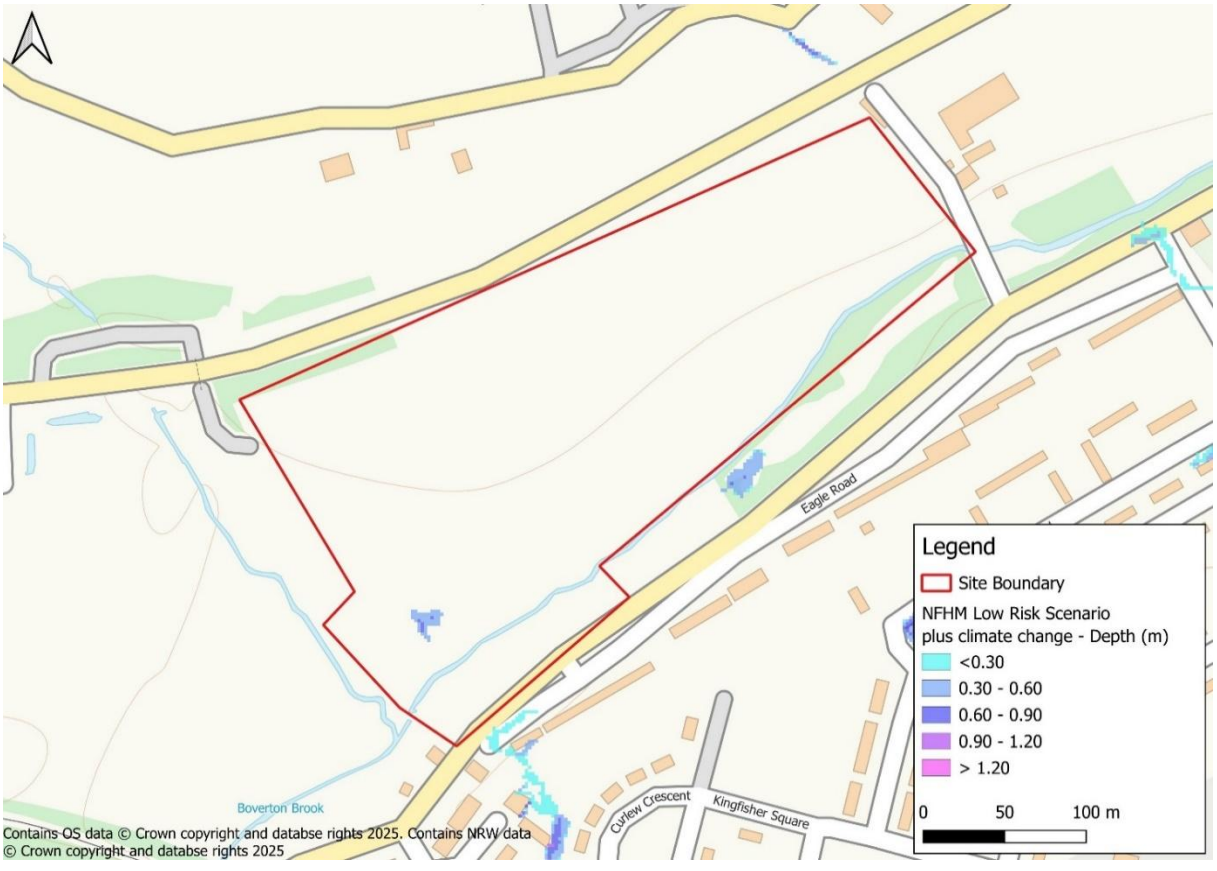


Figure 4-3 NFHM Surface Water and Small Watercourses Risk - 0.1% AEP +CC (Low Risk)

5 Application of Flood Zones to Development Management Decisions

When considering a site for development, Sections 10 and 11 of TAN-15 outline the requirements for the type of development permitted in any given flood zone. The following sections outline how the proposed development site may comply with TAN-15 as a consequence of the determined flood risk.

5.1 Flood Risk from Rivers

The site is predominantly located within Flood Zone 1, within which all forms of development are acceptable in principle.

Areas of Flood Zones 2 and 3 are located along the southern boundary, associated with the Boverton Brook watercourse corridor. It is recommended that all built development is located within Flood Zone 1, with water compatible uses, such as open space and SuDS assets, located within the flood zones, if required.

The sequential approach to development is supported within Section 15.5 of TAN-15:

> Where a site falls in two or more flood zones the planning authority must make an assessment of the proposal, taking into account each of its proposed land uses, against each of the flood zones to which it applies, in accordance with the criteria requirements of this TAN.

Only a minor area of the site is located within Flood Zone 2. For completeness, in Flood Zone 2, planning applications require careful consideration and must be consistent with the acceptability considerations set out in Section 11 of TAN-15. For highly vulnerable development (e.g. residential) on greenfield land, proposals must assist, and be consistent with, the Development Plan strategy to regenerate an existing settlement or achieve key economic or environmental objectives.

In Flood Zone 3, no new highly vulnerable development on greenfield land is permitted. Other (e.g. less vulnerable) proposals are only deemed appropriate if they are essential to the Development Plan strategy to regenerate an existing settlement or to achieve key environmental objectives.

Proposals in both Flood Zones 2 and 3 must also be consistent with the acceptability considerations as outlined in Section 11 of TAN-15.

Access and egress will be possible during all design events via the north of the site using Northern Acc Road.

It is recognised that the Welsh Government notification direction requires applications for Highly Vulnerable Development where the whole or part of the site is within Flood Zone 3 on a greenfield site to be referred to the Welsh Ministers. Any development proposals for the site which include residential use are therefore likely to be required to be notified to Welsh Government. However, it is understood that should development proposals take a

sequential approach to site masterplanning to manage flood risk in line with the requirements and principles set out within TAN-15, Ministers are unlikely to refuse such an application.

5.2 Flood Risk from Surface Water

It is understood that Sections 10 and 11 of TAN-15 do not strictly apply to the surface water and small watercourse zone which is present at the proposed development site.

Surface water and small watercourse flood risk is minimal across the site and the presence of Flood Zone 2 of the FMfP is a direct result of a localised depression in ground levels. A review of the National Flood Hazard Mapping supports this, indicating the site to be flood free during the 1% AEP plus climate change scenario, and minimal ponding during the 0.1% AEP plus climate change event is predicted.

Due to the localised depression in ground levels, it is anticipated that as part of the development proposals, SuDS techniques can be implemented to appropriately manage the predicted surface water flood risk.

Given the negligible risk of surface water flooding to the site, it is unlikely that a full FCA is required to demonstrate compliance of TAN15 in terms of surface water. It is likely that a comprehensive Drainage Statement which demonstrates how surface water will be managed in accordance with the Statutory Standards for SuDS in Wales, shall be sufficient to satisfy the requirements of TAN-15 and the LLFA.

6 Summary and Recommendations

The site is generally of low flood risk, with associated flood risk from fluvial sources. Surface water flood risk within the site is minimal as a result of localised ground depressions, and is likely to be managed adequately through good SuDS design.

Fluvial flood risk is confined to the southern boundary of the site, with flood zones associated with the Boverton Brook which flows through the site.

It is advisable that a sequential approach to masterplanning is applied, with areas of the site located within Flood Zone 3 forming open space, and therefore water compatible development. It is advisable that all built form development should be retained within Flood Zone 1. A minor area of the site is shown to be located within Flood Zone 2. Any development that encroaches into this extent should incorporate appropriate flood resilient design measures.

It is therefore considered that the site is likely to satisfy the requirements of TAN-15, subject to the following recommendations:

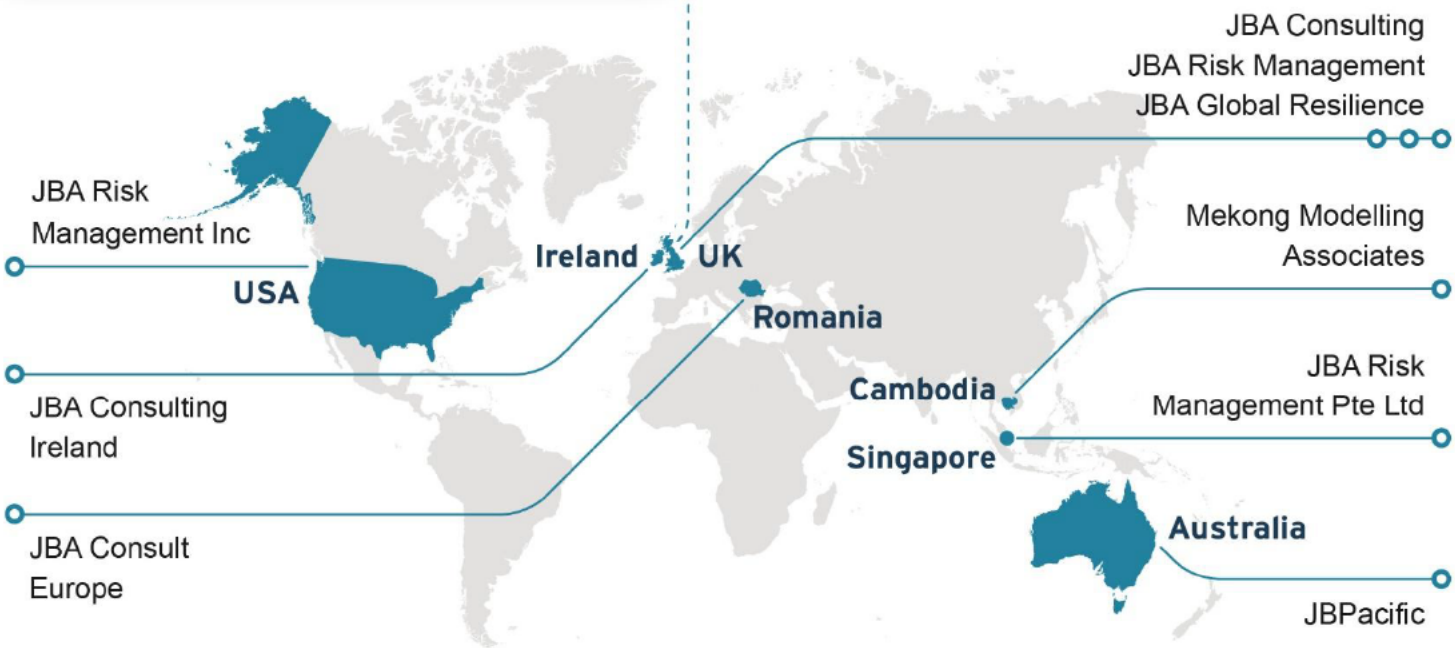
- Utilise a sequential approach to masterplanning to locate the most vulnerable elements of the site within Flood Zone 1.

- Any planning application for the site should be accompanied by an FCA which demonstrates how the proposals meet the requirements of TAN-15.
- Any planning application for the site should be accompanied by a Drainage Statement which demonstrates how SuDS are proposed to be integrated into the scheme in line with the Statutory Standards for SuDS in Wales.
- It is encouraged that opportunities are explored to enhance the existing watercourse corridor through the implementation of Blue Green infrastructure.

www.jbaconsulting.com

Our Offices

Bristol
Coleshill
Cork
Doncaster
Dublin
Edinburgh
Exeter
Glasgow
Haywards Heath
Leeds
Limerick
Newcastle
Newport
Peterborough
Portsmouth
Saltaire
Skipton
Tadcaster
Thirsk
Wallingford
Warrington



Registered Office
1 Broughton Park
Old Lane North
Broughton
SKIPTON
North Yorkshire
BD23 3FD
United Kingdom

+44(0) 1756 799919
info@jbaconsulting.com
www.jbaconsulting.com

Follow us on

Jeremy Benn Associates Limited
Registered in England
3246693

JBA Group Ltd is certified to
ISO 9001:2015
ISO 14001:2015
ISO 27001:2022
ISO 45001:2018

Appendix 3

www.jbaconsulting.com

Vale of Glamorgan Strategic Flood Consequences Assessment - Plot A, Atlantic Trading Estate

Version 1

Prepared for

Vale of Glamorgan Council

Date

September 2025

Document Status

Issue date	September 2025
Issued to	Victoria Morgan
BIM reference	QFB-JBA-XX-XX-RP-Z-0003-S3-P01-Plot_A_Atlantic_Trading_Estate
Revision	Version 1
Prepared by	[redacted] Analyst
Reviewed by	[redacted] Principal Analyst
Authorised by	[redacted] [redacted]

Carbon Footprint

The format of this report is optimised for reading digitally in pdf format. Paper consumption produces substantial carbon emissions and other environmental impacts through the extraction, production and transportation of paper. Printing also generates emissions and impacts from the manufacture of printers and inks and from the energy used to power a printer. Please consider the environment before printing.

Accessibility

JBA aims to align with governmental guidelines on accessible documents and WGAG 2.2 AA standards, so that most people can read this document without having to employ special adaptation measures. This document is also optimised for use with assistive technology, such as screen reading software.

Contract

JBA Project Manager	[redacted]
Address	7-8 High Street, Kings Chambers, Newport, South Wales, NP20 1FQ
JBA Project Code	2025s0982

This report describes work commissioned by the Vale of Glamorgan Council, by an instruction dated 29 May 2025. The Client's representative for the contract was Victoria Morgan of the Vale of Glamorgan Council. George Williams of JBA Consulting carried out this work.

Purpose and Disclaimer

Jeremy Benn Associates Limited ("JBA") has prepared this Report for the sole use of and Vale of Glamorgan Council and its appointed agents in accordance with the Agreement under which our services were performed.

JBA has no liability for any use that is made of this Report except to for the purposes for which it was originally commissioned and prepared.

No other warranty, expressed or implied, is made as to the professional advice included in this Report or any other services provided by JBA. This Report cannot be relied upon by any other party without the prior and express written agreement of JBA.

JBA disclaims any undertaking or obligation to advise any person of any change in any matter affecting the Report, which may come or be brought to JBA's attention after the date of the Report.

The methodology adopted and the sources of information used by JBA in providing its services are outlined in this Report. The work described in this Report was undertaken between 6th August 2025 and 12th September 2025 and is based on the conditions encountered and the information available during the said period. The scope of this Report and the services are accordingly factually limited by these circumstances.

The conclusions and recommendations contained in this Report are based upon information provided by others and upon the assumption that all relevant information has been provided by those parties from whom it has been requested and that such information is accurate. Information obtained by JBA has not been independently verified by JBA, unless otherwise stated in the Report.

Contents

List of Figures

In accordance with TAN-15, it is recommended that the risk of groundwater flooding is

List of Tables

1 Introduction

JBA Consulting has been commissioned by the Vale of Glamorgan Council to prepare an independent Flood Risk Appraisal as part of a Stage 2 Strategic Flood Consequences Assessment (SFCA) for sites considered for allocation in its replacement Local Development Plan (LDP).

This assessment will evaluate the risk of flooding from all sources to Plot A, Atlantic Trading Estate, which is the proposed development site, as well as the appropriateness of development at the site in accordance with Welsh Government policy, as outlined in Technical Advice Note 15: Development, Flooding and Coastal Erosion (TAN-15). Furthermore, recommendations will be provided to mitigate the risk of flooding at the proposed development site as well as recommendations for further works, where required.

2 Site Description

The key characteristics of the site are summarised in Table 2-1, and the location and site boundary are shown in Figure 2-1 below.

The site is located within the Atlantic Trading estate to the southeast of Barry Docks, Barry. The site is bound by existing employment/ industrial space to the north and west, and vacant brownfield land to the south and east. The northern extent of the site is adjacent to Wimborne Road. Atlantic Crescent is located close to the southeast extent of the site.

Table 2-1 Site Summary

Site name	Plot A Atlantic Trading Estate
Site ID	Plot A Atlantic Trading Estate
Site area	4.56ha
Existing land use	Vacant Brownfield Land
Purpose of development	Employment Land
OS NGR	ST 13196 67613
Access location	Via an unnamed access road connecting Atlantic Crescent and Wimborne Road.

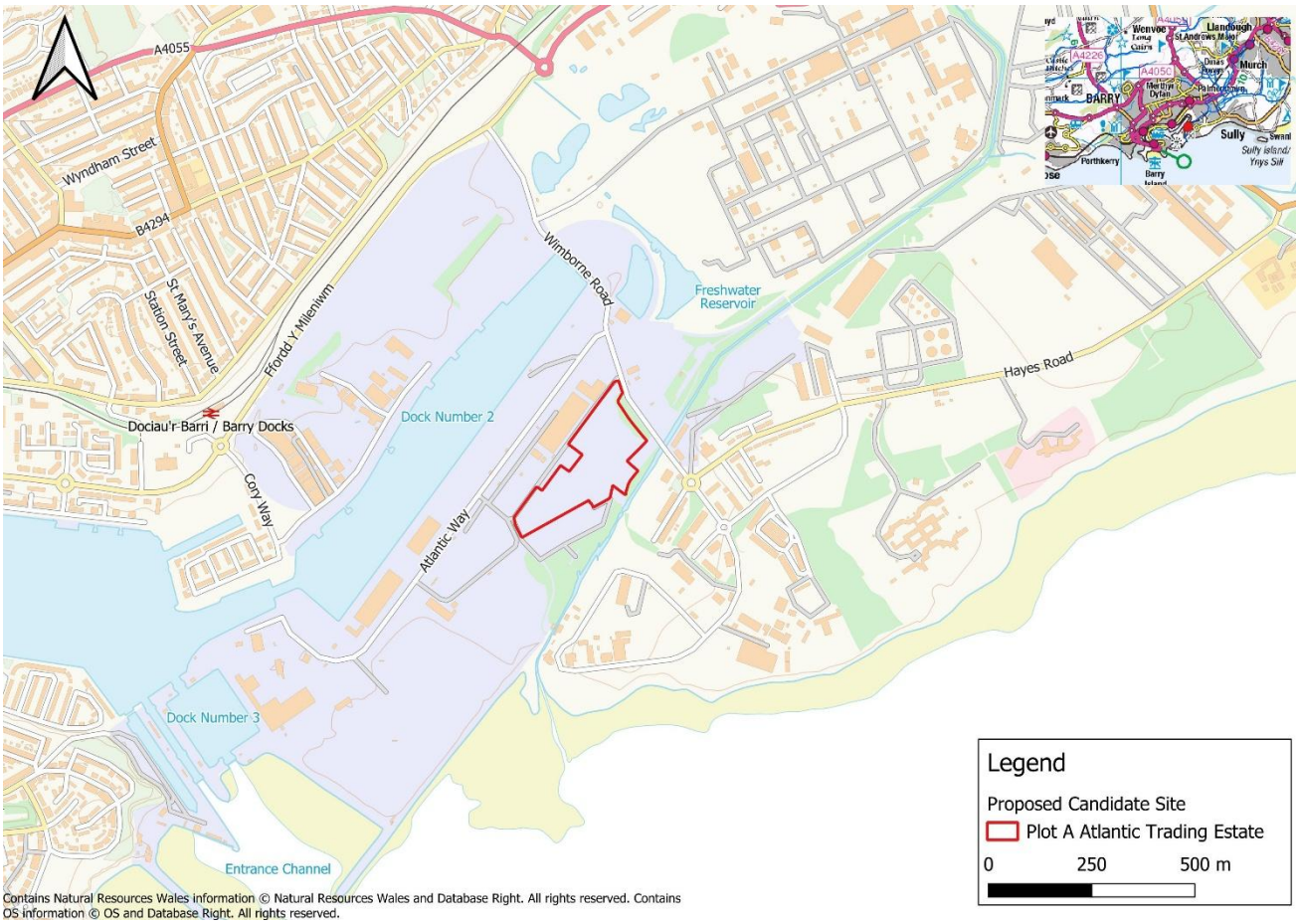


Figure 2-1 Site Overview

2.1 Development Proposals

The proposed development at this site is for Employment use on Brownfield land. No indicative site layout has been made available for this assessment.

2.2 Watercourses and Flood Defences

Figure 2-2 shows the location of the nearest Natural Resources Wales (NRW) Main Rivers and ordinary watercourses, as well as the closest NRW-managed flood defences.

The Cadoxton River, an NRW-designated Main River, is located approximately 10m to the east of the site at its closest point. The River Cadoxton runs in a southerly direction before outfalling into the Severn Estuary approximately 500m downstream of the site.

An NRW-designated flood defence is located approximately 250m to the southeast of the site. The 17m flood wall is owned and maintained by NRW. Whilst the flood wall is in the vicinity of the site, the main defence to the site is the modification to the tidal outfall and tide gates, which mitigate flood risk to the area. The tide gate has been designed with a penstock as a redundancy measure, should the tide gate asset fail.

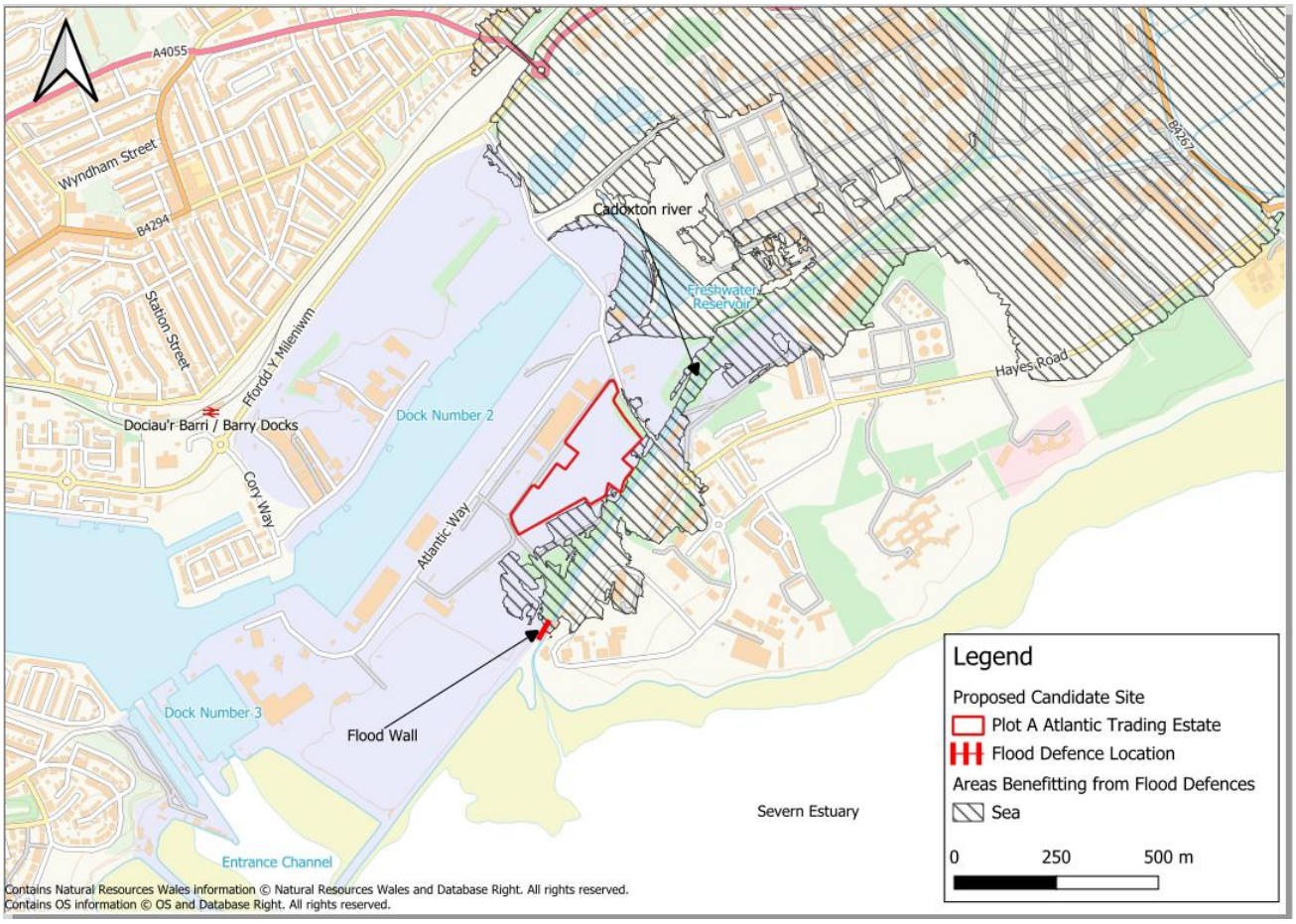


Figure 2-2 Watercourses and Defences

2.3 Topography

The Natural Resources Wales (NRW) Open Source 1m Light Detection and Ranging (LiDAR) data[1] across the site has been reviewed and is shown in Figure 2-3.

Levels across the site are generally flat with no overall fall direction, but with elevations tending to be greater in the far north and north west of the site, with a localised area of higher elevations also found to the southeast of the site Typically, site levels are around 8.0mAOD across much of the site.

The greatest elevation of 11.45mAOD is found in the southeast of the site, with a low of 7.78mAOD located in the southwest. The highest elevation appears to be associated with piles of spoil-like material following decommissioning of the site from its previous use.

1 LLE Geoportal for Wales: http://lle.gov.wales/catalogue/item/LidarCompositeDataset/?lang=en

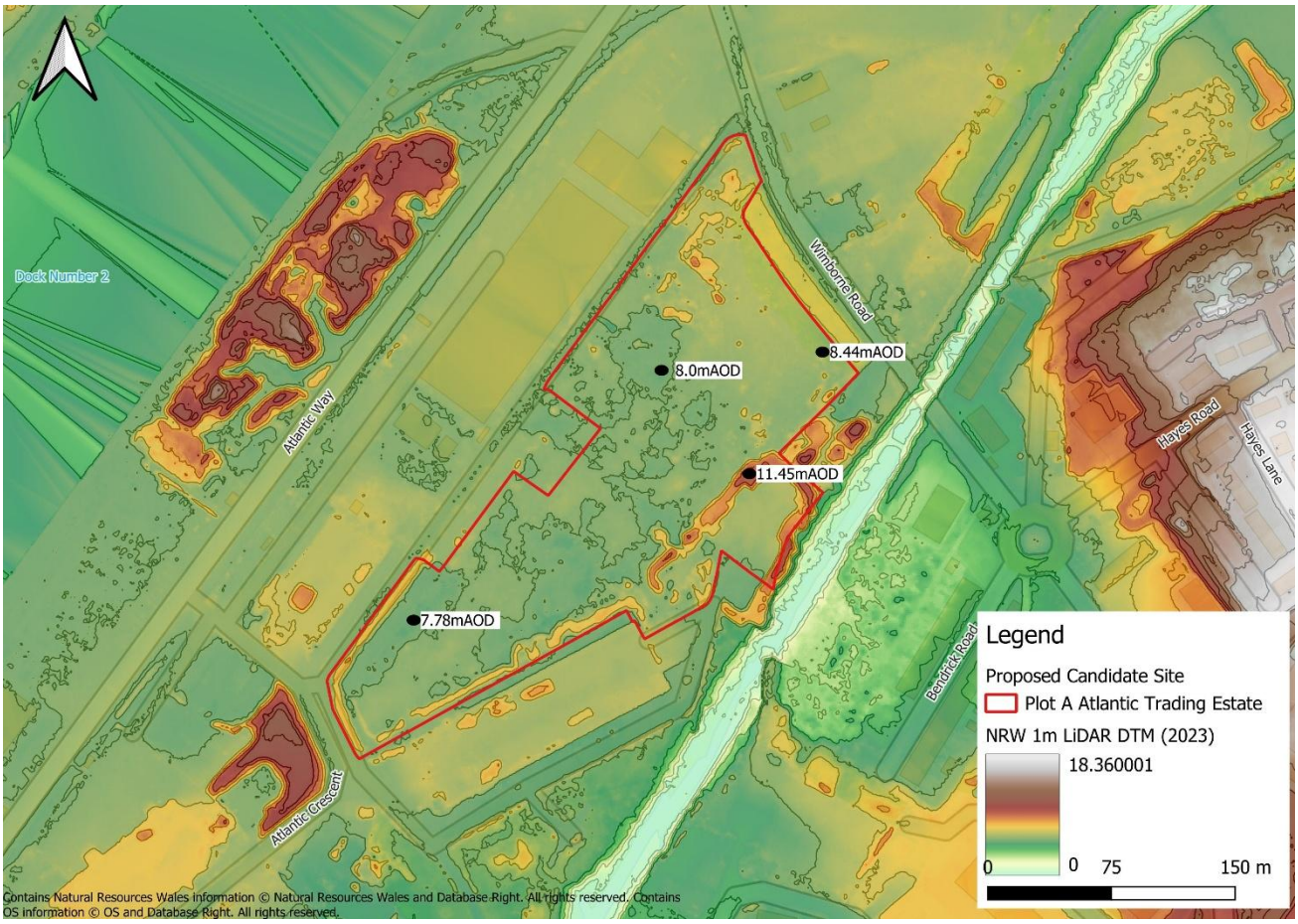


Figure 2-3 NRW 1m DTM LiDAR

3 Planning Policy and Flood Risk

TAN-15 provides a framework within which flood risks arising from rivers, the sea, and surface water, as well as the risk of coastal erosion, can be assessed. TAN-15 adopts a risk-based approach, which emphasises the ability to avoid or minimise risk depending on the type of development proposed.

The following table identifies the form of development, vulnerability classification and Flood Map for Planning classification (as defined in TAN-15) for the proposed development site.

Table 3-1 TAN-15 Development Classification Summary

TAN15 classification	Classification
Development Proposal	Employment Development
Form of Development	Redevelopment
Vulnerability Classification	Less Vulnerable
Flood Map for Planning- Rivers	Flood Zone 1
Flood Map for Planning- Sea	TAN-15 Defended Zone, as seen in Figure 3-1.
Flood Map for Planning- Surface Water and Small Watercourses	Flood Zone 2 and Flood Zone 3, as seen in Figure 3-2

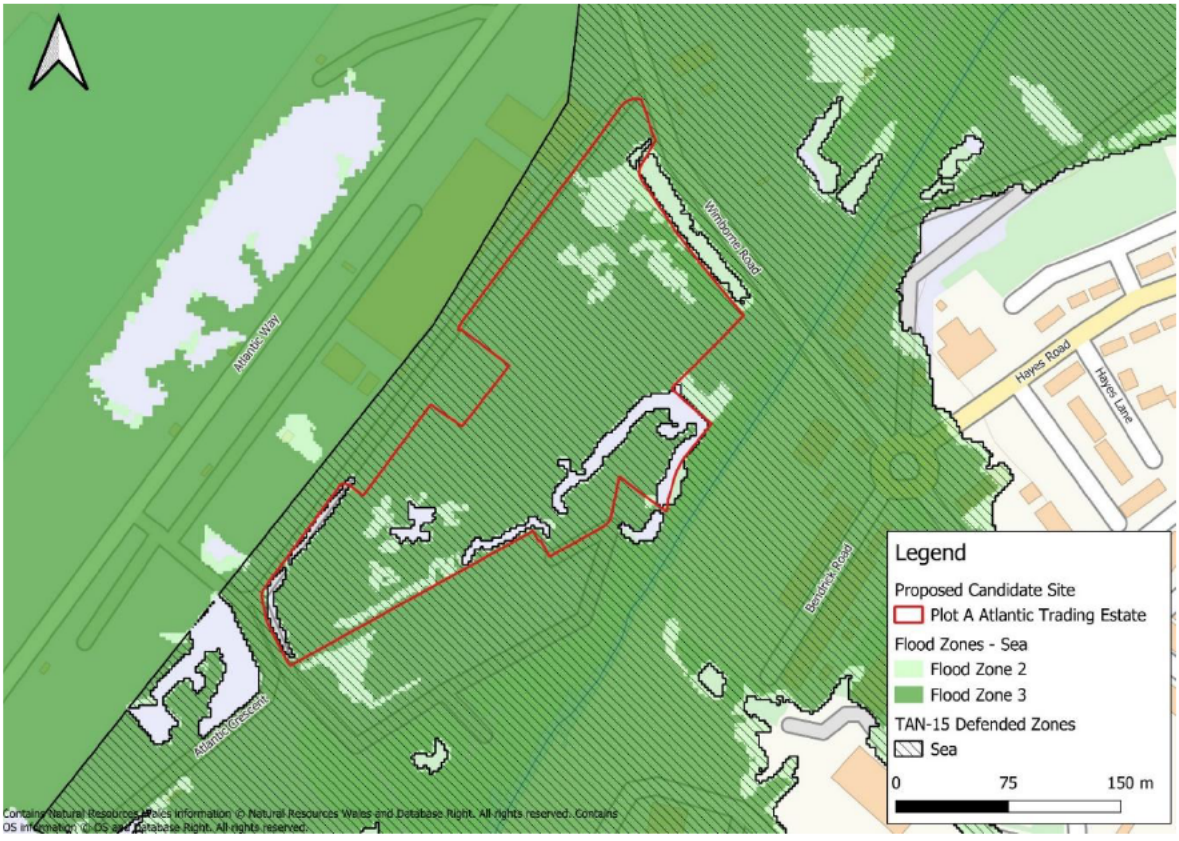


Figure 3-1 NRW FMfP - Flood Risk from the Sea

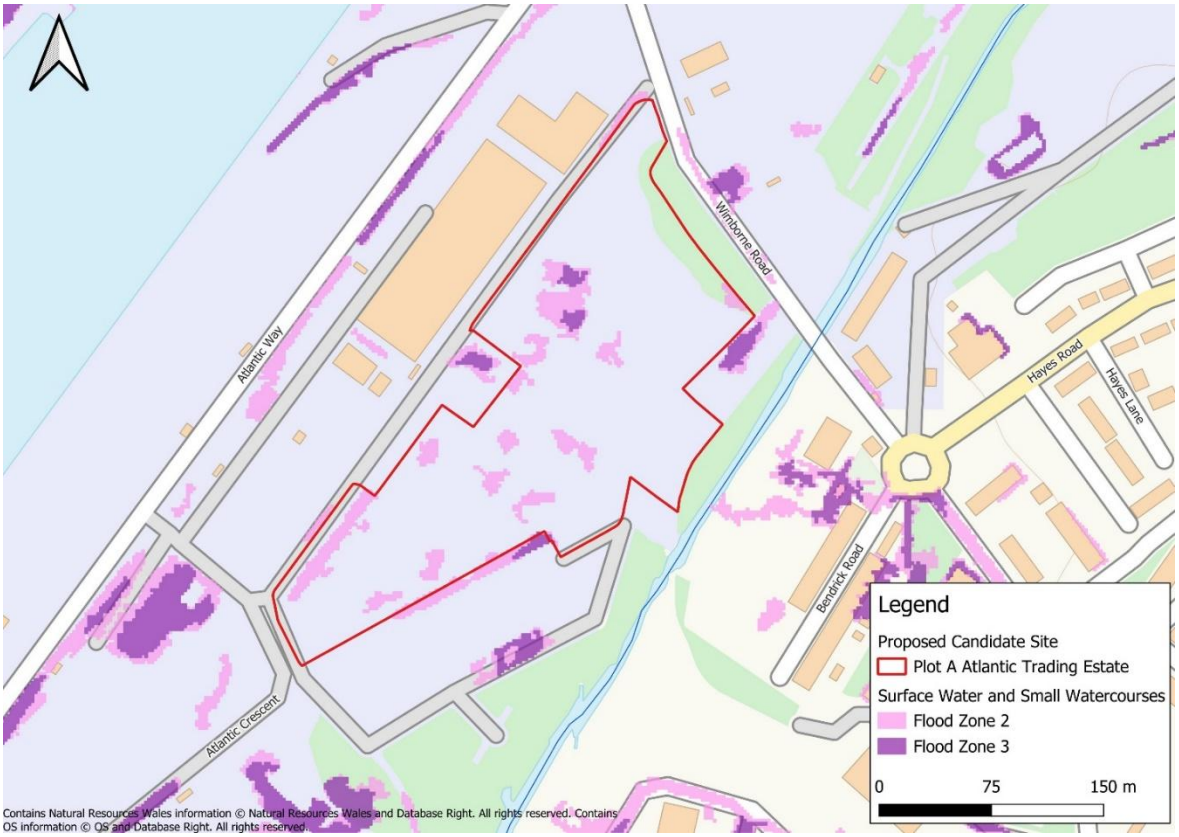


Figure 3-2 NRW FMfP - Flood Risk from Surface Water and Small Watercourses

4 Assessment of Flood Risk

The latest available information on flood risk at the site, published by Natural Resources Wales (NRW) and datasets used in the SFCA is summarised in Table 4-1 below.

Table 4-1 Summary of Flood Risk

Source of Flooding	Onsite Presence	Description
Flood Risk from Rivers	×	The site's location within Flood Zone 1 of the FMfP for Rivers indicates that the site is at **very low** risk of fluvial flooding.
Flood Risk from the Sea	✓	The site is located within a TAN-15 Defended Zone, meaning the site currently benefits from the presence of defences with a minimum standard of protection for the 0.5% AEP (1 in 200 year) event with an allowance for climate change if built post 2016). If the defences were constructed prior to 2016 they may not include an allowance for climate change, but will offer a good standard of protection for present day events. **Further assessment has been undertaken in Section 4.1.1**
Flood Risk from Surface Water and Small Watercourses	✓	The site is predominantly located within Flood Zone 1 of the FMfP indicating a very low risk of surface water flooding. However, localised areas of the site are located within Flood Zones 2 and 3 indicating a Low to Moderate risk of flooding from surface water. **Further assessed in Section 0**
Flood Risk from Groundwater	×	The South East Wales Stage 1 SFCA includes the JBA Groundwater risk of emergence map as part of the assessment. The data set shows the southern extent of the site to be within at **'medium to high risk'** from groundwater emergence. **Further assessed in Section 03**
Flood Risk from Reservoirs	×	The NRW Flood Risk Assessment Wales map (FRAW) shows that the site is not located in an area at risk of reservoir flooding. Therefore, it is concluded that the risk of flooding is **very low.**

Source of Flooding	Onsite Presence	Description
Flood Risk from Sewers	×	The South East Wales, Stage 1 SFCA has not identified there to be any historic flood incidents within Barry. Therefore, it is concluded that the risk of sewer flooding at this site is **very low**.

4.1.1 Flood Risk from the Sea

The Flood Map for Planning - Flood Risk from the Sea indicates that Flood Zone 3 extends across the site, with some small isolated areas in Flood Zones 2 and 1. Areas outside of the Flood Zones are thought to be associated with artificially elevated areas following decommissioning of the previous site use. The site is also located within the TAN-15 Defended Zone, resulting from nearby flood defences affording a standard of protection of 0.5% AEP (1 in 200) event (present day).

To fully understand the flood risk posed to the site from coastal mechanisms a further assessment has been undertaken using the most recent available hydraulic model for the area, the 2023 NRW Barry Docks model.

The model, produced by JBA in 2020, is a 1D-2D-TUFLOW tidal inundation model for the Barry Docks area of Barry. The model was produced as part of a Flood Map Challenge in the area and included updates to the tidal boundary and extreme sea level rise estimates alongside TUFLOW software updates. The model was accepted by NRW in 2020, but in March 2023 was further updated to include an updated NRW LiDAR dataset and further tidal boundary amendments to reflect additional climate change allowances. Only model runs for the 100-year lifetime of development have been made available for the 0.5% AEP (1 in 100 year) and 0.1% AEP (1 in 1000) events, resulting in an assessment for the 2121 epoch. Typically, for employment sites 75-year lifetime of development is considered. This site appraisal therefore takes a conservative approach to flood risk assessment.

During the 2121 0.5% AEP event, as shown in Figure 4-1, the predicted flood extent shows the site to be predominantly flood free. The flood extent is focused on the central areas of the site with flood depths typically around 160mm - 200mm. Maximum depths on site are located in the southern central extent of site with depths of up to 440mm predicted. The maximum flood level in this event is 8.06mAOD

During the 2121 0.1% AEP event ,as shown in Figure 4-2, the predicted flood extent extends across the site. The flood extent is focused on the central and southern areas, with isolated areas to the far north and east of the site predicted to remain flood free. Flood depths are predicted to be typically around 700mm. Maximum depths on site are located in the southern central extent of site with depths of up to 1060mm predicted during this event. The maximum flood level is 8.67mAOD.

It is likely that such flood risk can be mitigated via ground raising. Given the tidal nature of flood risk to the site, such mitigation works are unlikely to result in detriment to third parties.

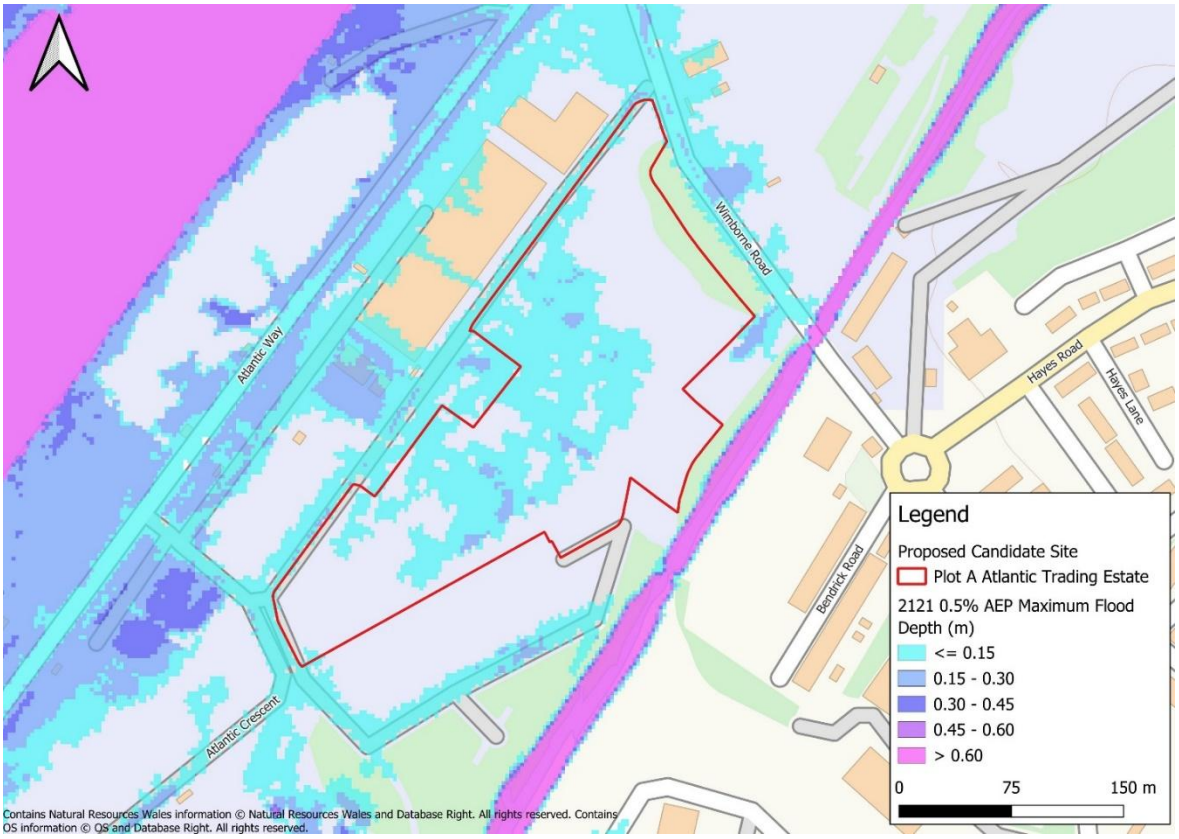


Figure 4-1 2121 0.5% AEP Event Maximum Flood Depths

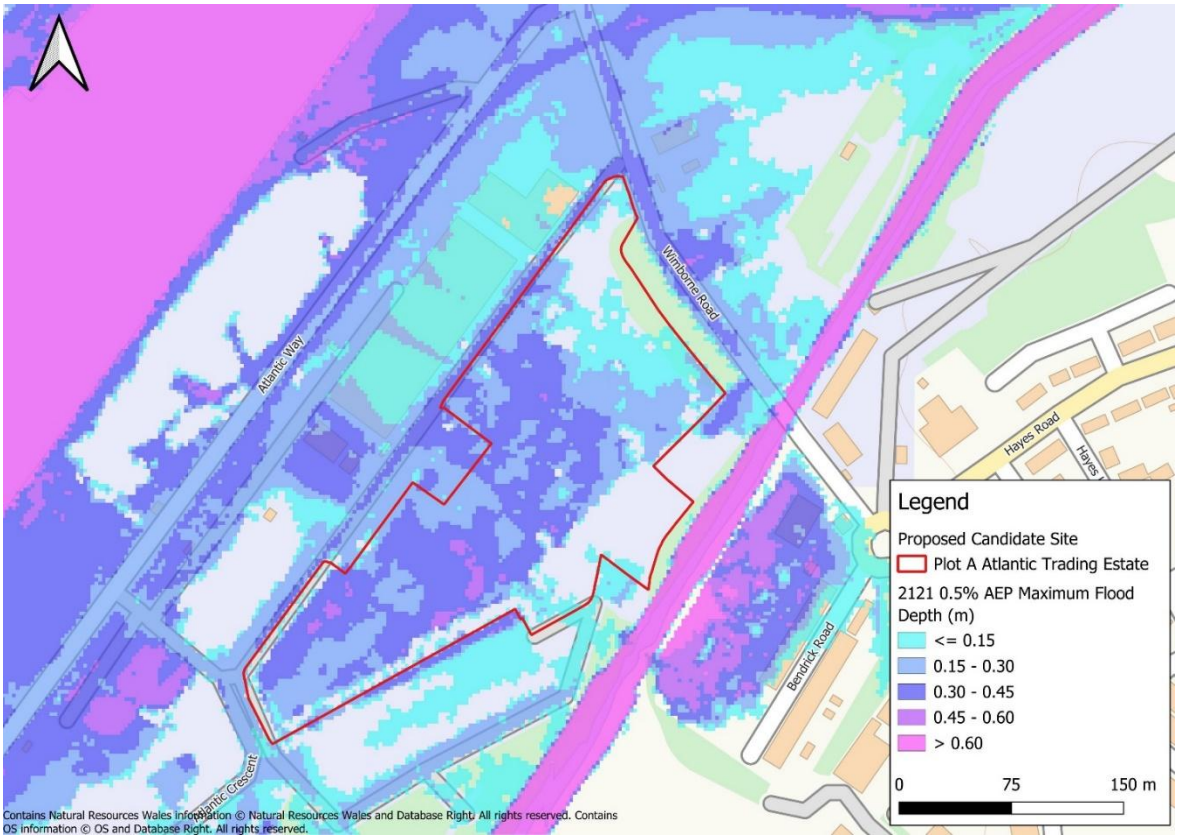


Figure 4-2 2121 0.1% AEP Event Maximum Flood Depths

Breach, Overtopping and Asset Failure

The existence of flood defences does not mean development should be allowed without further consideration of flood risks. Flood defences reduce the risk of flooding but do not eliminate it. The consequences of flooding can be particularly severe in the event of defences being overtopped or breached. Land protected by defences can be extremely vulnerable in the event of overtopping, breach and asset failure because of the speed of flooding in such circumstances.

Where appropriate, proposed developments should demonstrate that in the event of overtopping, breach or blockage the consequences of flooding can be managed to an acceptable level. This will be needed for sites that benefit from the type of defences that can be breached or blocked, including flood embankments, sea walls and culverts.

It is understood that the tide gate structure which provides flood mitigation to the area is supported by a penstock to provide redundancy in the event of initial asset failure. To determine any requirements for an assessment of breach/asset failure, it is recommended that the developer consult with NRW at the earliest opportunity.

4.1.2 Flood Risk from Surface Water and Small Watercourses

Surface water flooding occurs when rain falling on saturated ground flows overland, following the local topography. Surface water flooding and subsequent overland flow can therefore pose a risk to both the development site and the surrounding land. The overland flow may originate from the site itself or adjoining land at a higher elevation, from which the flow migrates onto the development.

The Flood Map for Planning - Surface Water and Small Watercourses indicates that a small number of localised areas across the site are predicted to flood as a result of ponding. The highest density was found within the central and southern extents of the site. These locations correspond with localised topographic depressions, resulting in surface water ponding and surface water being unable to drain away. The relatively flat topography, with some areas within the LiDAR showing slightly raised ground levels, prevents surface water from discharging freely, and creates a localised low point where runoff becomes trapped during rainfall events. Currently, there is no known drainage system at this location to manage surface water.

The NRW National Flood Hazard Mapping (NFHM) has been used to provide a further assessment of surface water flooding. During the 1% AEP plus climate change event (Medium), flood depths of up to 270mm are identified close to the northwestern boundary of the site, as shown in Figure 4-3.

In the 0.1% AEP plus climate change event (Low Risk), flood depths of up to 600mm can be found close to the northwestern boundary, as seen in Figure 4-4. Typically, flood depths do not exceed 200mm in depth.

It is envisaged that this source of flooding shall be easily managed by the use of SuDS techniques associated with a comprehensive surface water drainage strategy for the site.

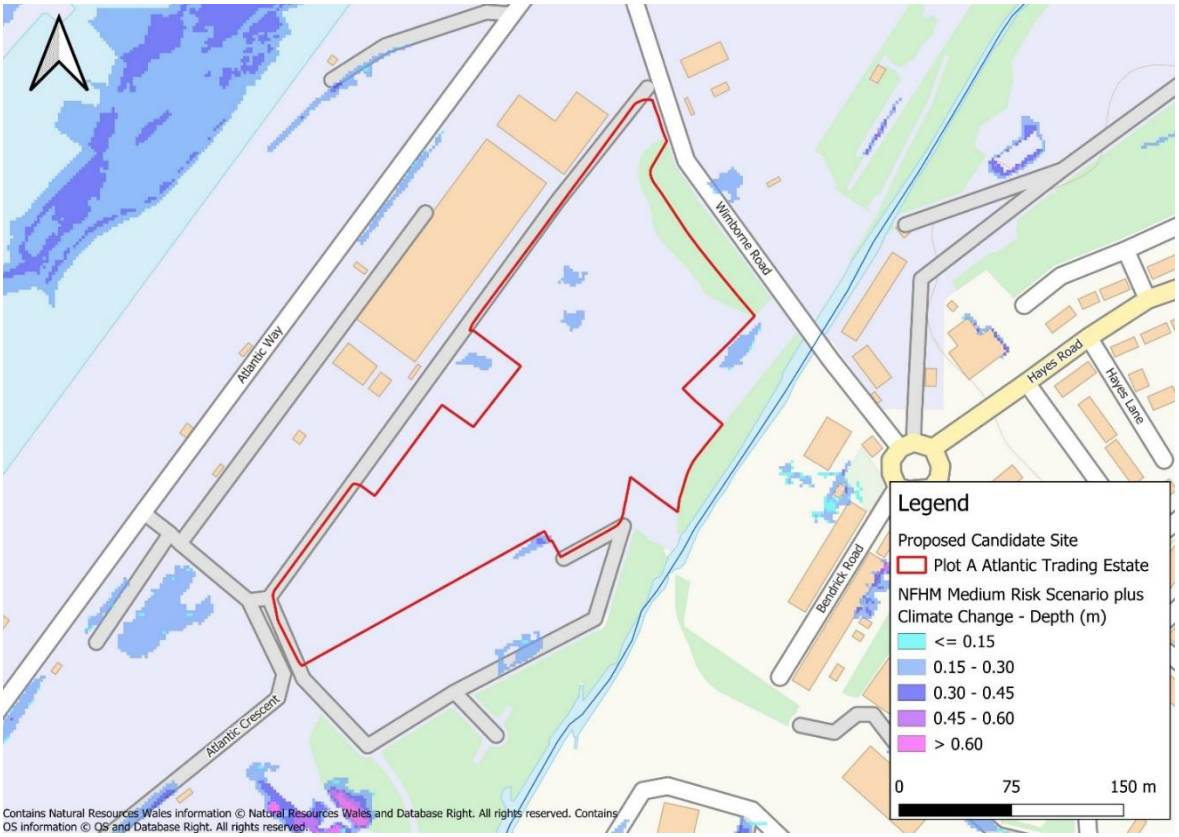


Figure 4-3 NFHM Surface Water and Small Watercourses Risk - 1% AEP +CC (Medium Risk)

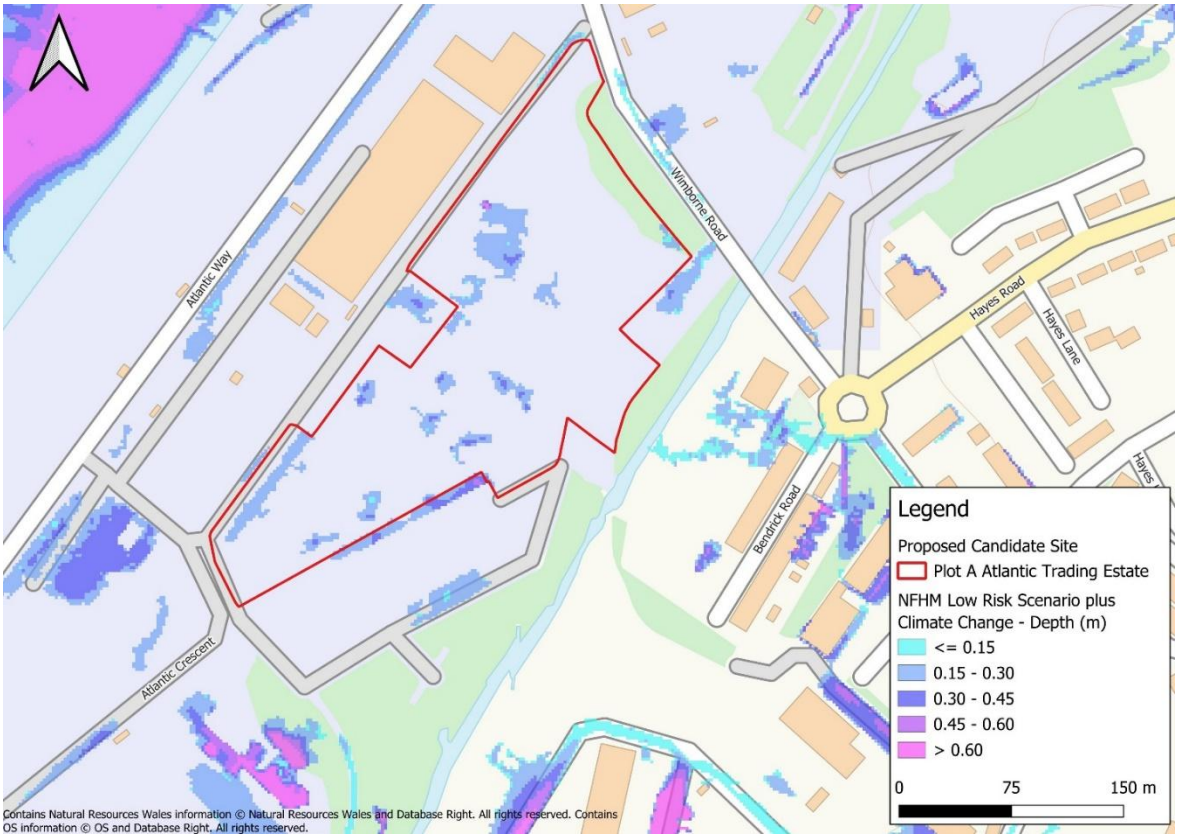


Figure 4-4 NFHM Surface Water and Small Watercourses Risk - 0.1% AEP +CC (Low Risk)

4.1.3 Flood Risk from Groundwater

Groundwater flooding is caused by unusually high groundwater levels. It occurs as excess water emerges at the ground surface or within manmade structures such as basements. Groundwater flooding tends to be more persistent than surface water flooding, in some cases lasting for weeks or months, and can result in damage to property. This risk of groundwater flooding depends on the nature of the geological strata underlying the site and the local topography.

The British Geological Survey (BGS) Geoindex[2] shows that Site has a high vulnerability to groundwater flooding based on the underlying geology and superficial deposits. The BGS data indicates that the Site is underlain a conglomerate of the Mercia Mudstone Group. Mudstone tends to have low porosity and permeability, whilst limestone is regarded as more permeable and allows for the storage and movement of groundwater. As a result, upward percolation of groundwater and subsequent flooding should be considered.

The JBA Groundwater Emergence Map contained within the South East Wales Stage 1 SFCA shows that the Site is at high risk of groundwater flooding, with areas with groundwater levels either at or very near (within 0.025m of) the ground surface. However, there are no recorded incidents of groundwater flooding in Barry mentioned in the Vale of Glamorgan Flood Risk Management Strategy[3] or other publicly available sources. It can therefore be concluded that the risk of groundwater flooding at the Site is **moderate.**

It is recommended that any site-specific assessment considers the potential for groundwater emergence across the Site. This assessment should be informed by a programme of groundwater monitoring, ideally conducted over a 12-month period to capture seasonal variations, as well as detailed site-specific ground investigations. It is also advised that the development proposals do not include groundwater-sensitive elements, such as the construction of basements.

In accordance with TAN-15, it is recommended that the risk of groundwater flooding is considered as part of an FCA.

2 The British Geological Survey (BGS) Geoindex GeoIndex (onshore) - British Geological Survey

3 https://www.valeofglamorgan.gov.uk/Documents/Living/Environment/Flood-and-coastal-erosion-risk/VoGC-LFRMS.pdf

5 Application of Flood Zones to Development Management Decisions

5.1 Flood Risk from the Sea

When considering a site for development, Sections 10 and 11 of TAN-15 outline the requirements for the type of development permitted in any given flood zone.

The proposed development is located within a TAN-15 Defended Zone of the Flood Map for Planning. It is located on brownfield land and is therefore considered as redevelopment. Furthermore, the proposed site is for employment land and thus a Less Vulnerable development.

Section 10.15 of TAN-15 states that;

'As a general principle, LDPs should seek to avoid intensification of uses in Defended Zones and replacement buildings or redevelopment schemes should be broadly the same scale as existing uses.'

As the development proposals are for a proposed employment use within an existing industrial and trading estate, the proposed development use is considered proportionate to the surrounding land-use context, subject to agreement by the LPA.

As detailed in Section 4.1.1, the site is predicted to flood in all design events. TAN-15 sets out the frequency thresholds and tolerable conditions for developments, affording a degree of flexibility to redevelopment sites.

Flood resilience measures can be incorporated into the proposed development site. The most effective solutions will combine both site-level and property-level resilience measures and should be considered in line with the Ciria Code of Practice, as set out in Section 13 of TAN15. Any mitigation measures, such as ground raising, shall need to be supported by an assessment with a supporting FCA.

5.2 Flood Risk from Surface Water

It is understood that Sections 10 and 11 of TAN-15 do not strictly apply to the surface water and small watercourse zone which is present at the proposed development site. However, when a site is developed in areas at risk or near a risk, it will potentially change the expected flow of water during a flood. It is important that planning authorities are provided with a clear assessment of how a development will affect surface water risks, and these sources can be managed or mitigated; these measures must not increase the flood risk elsewhere.

Surface water and small watercourse flood risk is minimal across the site and the presence of Flood Zones 2 and 3 of the FMfP is a direct result of a localised depression in ground levels. The presence of a localised raised area associated with debris and spoil piles appears to be influencing the mapped flood extent.

Due to the localised depression in ground levels, it is anticipated that as part of the development proposals, SuDS techniques can be implemented to appropriately manage the predicted surface water flood risk.

Given the negligible risk of surface water flooding to the site, it is unlikely that a full FCA is required to demonstrate compliance of TAN15 in terms of surface water. It is likely that a comprehensive Drainage Statement which demonstrates how surface water will be managed in accordance with the Statutory Standards for SuDS in Wales, shall be sufficient to satisfy the requirements of TAN-15 and the LLFA.

6 Summary and Recommendations

The site is generally of low flood risk, with associated flood risk from tidal, groundwater and surface water sources. The extent and severity of flooding from surface water within the site is minimal and is likely to be adequately managed through further assessment and good SuDS design.

The site is shown to be within a TAN-15 Defended Zone, with a standard of protection of up to the present-day 1 in 200-year event provided. A detailed assessment of the flood risk at the site using NRW's 2023 Barry Docks flood modelling, shows the site to flood during the 2121 0.5% AEP and the 2121 0.1% AEP events. Flood depths are focused on the central and southern areas of the site, with maximum flood depths of 440mm and 1060mm in the 0.5% AEP event and 0.1% AEP event, respectively.

It is advised that any future development incorporates flood mitigation and flood resilient design measures before construction. Flood mitigation could be in form of ground raising, and any such mitigation shall need to be supported by an assessment with a supporting FCA.

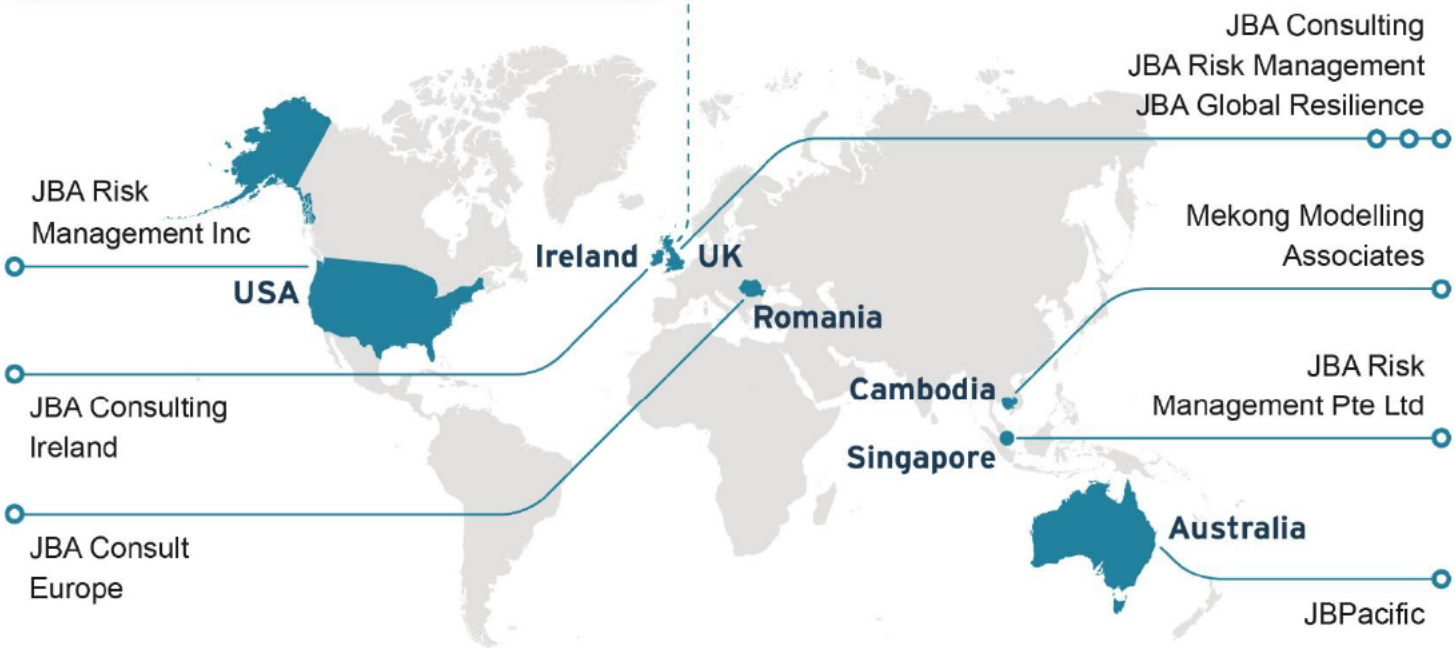
It is therefore considered that this site is likely to satisfy the requirements of TAN-15, subject to the following recommendations:

- Any planning application for the site should be accompanied by an FCA which demonstrates how the proposals meet the requirements of TAN-15.
- The FCA should include details of resilience and resistance measures incorporated into the site to mitigate the impact of flood risk. Mitigation measures shall need to be supported by an assessment of the impact of such measures on third parties.
- Any planning application for the site should be accompanied by a Drainage Statement which demonstrates how SuDS are proposed to be integrated into the scheme in line with the Statutory Standards for SuDS in Wales.
- The risk of groundwater emergence on the Site should be managed by a programme of groundwater monitoring, ideally conducted over a 12-month period to capture seasonal variations, as well as detailed site-specific ground investigations.

www.jbaconsulting.com

Our Offices

Bristol
Coleshill
Cork
Doncaster
Dublin
Edinburgh
Exeter
Glasgow
Haywards Heath
Leeds
Limerick
Newcastle
Newport
Peterborough
Portsmouth
Saltaire
Skipton
Tadcaster
Thirsk
Wallingford
Warrington



Registered Office
1 Broughton Park
Old Lane North
Broughton
SKIPTON
North Yorkshire
BD23 3FD
United Kingdom

+44(0) 1756 799919
info@jbaconsulting.com
www.jbaconsulting.com

Follow us on

Jeremy Benn Associates Limited
Registered in England
3246693

JBA Group Ltd is certified to
ISO 9001:2015
ISO 14001:2015
ISO 27001:2022
ISO 45001:2018

Appendix 4

www.jbaconsulting.com

Vale of Glamorgan Strategic Flood Consequences Assessment - Plot B, Atlantic Trading Estate

Version 1

Prepared for
Vale of Glamorgan Council

Date
September 2025

Document Status

Issue date	September 2025
Issued to	[redacted]
BIM reference	QFB-JBA-XX-XX-RP-Z-0004-S3-P01-Plot_B_Atlantic_Trading_Estate
Revision	Version 1
Prepared by	[redacted]
Reviewed by	[redacted]
[redacted]	[redacted]

Carbon Footprint

The format of this report is optimised for reading digitally in pdf format. Paper consumption produces substantial carbon emissions and other environmental impacts through the extraction, production and transportation of paper. Printing also generates emissions and impacts from the manufacture of printers and inks and from the energy used to power a printer. Please consider the environment before printing.

Accessibility

JBA aims to align with governmental guidelines on accessible documents and WGAG 2.2 AA standards, so that most people can read this document without having to employ special adaptation measures. This document is also optimised for use with assistive technology, such as screen reading software.

Contract

JBA Project Manager	[redacted]
Address	7-8 High Street, Kings Chambers, Newport, South Wales, NP20 1FQ
JBA Project Code	2025s0982

This report describes work commissioned by the Vale of Glamorgan Council, by an instruction dated 29 May 2025. The Client's representative for the contract was Victoria Morgan of the Vale of Glamorgan Council. George Williams of JBA Consulting carried out this work.

Purpose and Disclaimer

Jeremy Benn Associates Limited ("JBA") has prepared this Report for the sole use of and Vale of Glamorgan Council and its appointed agents in accordance with the Agreement under which our services were performed.

JBA has no liability for any use that is made of this Report except to for the purposes for which it was originally commissioned and prepared.

No other warranty, expressed or implied, is made as to the professional advice included in this Report or any other services provided by JBA. This Report cannot be relied upon by any other party without the prior and express written agreement of JBA.

JBA disclaims any undertaking or obligation to advise any person of any change in any matter affecting the Report, which may come or be brought to JBA's attention after the date of the Report.

The methodology adopted and the sources of information used by JBA in providing its services are outlined in this Report. The work described in this Report was undertaken between 6th of August 2025 and 12th of September 2025 and is based on the conditions encountered and the information available during the said period. The scope of this Report and the services are accordingly factually limited by these circumstances.

The conclusions and recommendations contained in this Report are based upon information provided by others and upon the assumption that all relevant information has been provided by those parties from whom it has been requested and that such information is accurate. Information obtained by JBA has not been independently verified by JBA, unless otherwise stated in the Report.

Copyright

Contents

List of Figures

List of Tables

1 Introduction

JBA Consulting has been commissioned by the Vale of Glamorgan Council to prepare an independent Flood Risk Appraisal as part of a Stage 2 Strategic Flood Consequences Assessment (SFCA) for sites considered for allocation in its replacement Local Development Plan (LDP).

This assessment will evaluate the risk of flooding from all sources to Plot B, Atlantic Trading Estate, which is the proposed development site, as well as the appropriateness of development at the site in accordance with Welsh Government policy, as outlined in Technical Advice Note 15: Development, Flooding and Coastal Erosion (TAN-15). Furthermore, recommendations will be provided to mitigate the risk of flooding at the proposed development site as well as recommendations for further works, where required.

2 Site Description

The key characteristics of the site are summarised in Table 2-1, and the location and site boundary are shown in Figure 2-1 below.

The site is located within the Atlantic Trading estate to the southeast of Barry Docks, Barry. The site is bounded by existing employment/ industrial space to the north, south and east. The western boundary is bounded by vacant brownfield land, to the east of the site there is an area of existing hardstanding and material left over from the previous site use. The Cadoxton River is located to the west. The southern part of the site is adjacent to the existing access road that serves the Atlantic Trading estate.

Table 2-1 Site Summary

Site Name	Site Plot B Atlantic Trading Estate
Site ID	Plot B Atlantic Trading Estate
Site area	0.68ha
Existing land use	Vacant Brownfield Land
Purpose of development	Employment Land
OS NGR	ST 13350 67431
Access location	Access will be provided by an existing access road that is present on the Atlantic Trading Estate.

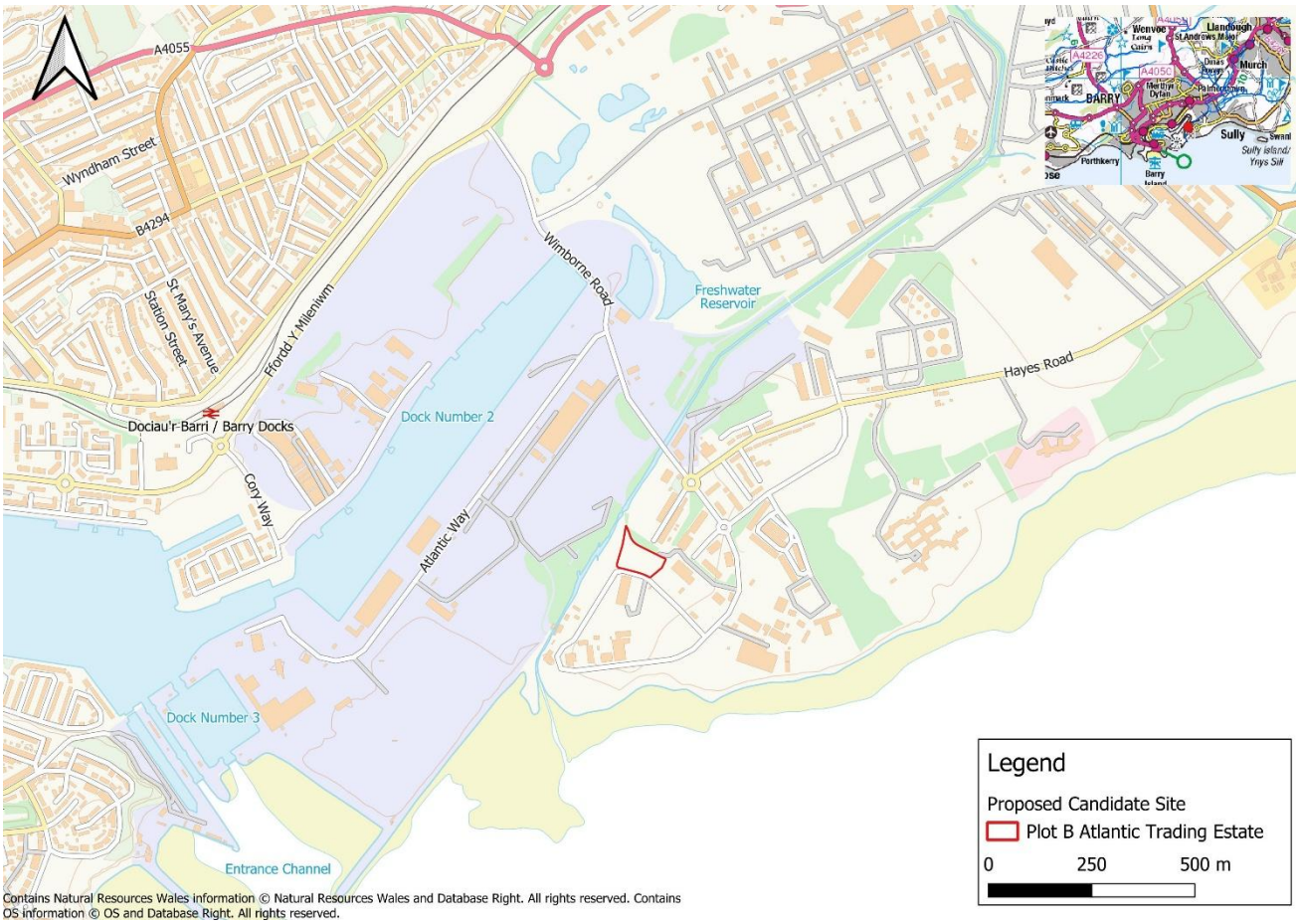


Figure 2-1 Site Overview

2.1 Development proposals

The proposed development at this site is for Employment use on Brownfield land. No indicative site layout has been made available for this assessment.

2.2 Watercourses and Flood Defences

Figure 2-2 shows the location of the nearest NRW Main Rivers and ordinary watercourses, as well as the closest NRW-managed flood defences.

The Cadoxton River an NRW-designated main river, is located approximately 19m to the west of the site at its closest point. The Cadoxton runs in a southerly direction before out out falling into the Severn Estuary approximately 500m downstream of the site.

An NRW-designated flood defence is located approximately 230m to the southwest of the site. The 17m flood wall/ tidal outfall is owned and maintained by NRW. Whilst the flood wall is in the vicinity of the site, the main defence to the site is the modification to the tidal outfall and tide gates, which mitigate flood risk to the area. The tide gate has been designed with a penstock as a redundancy measure, should the tide gate asset fail.

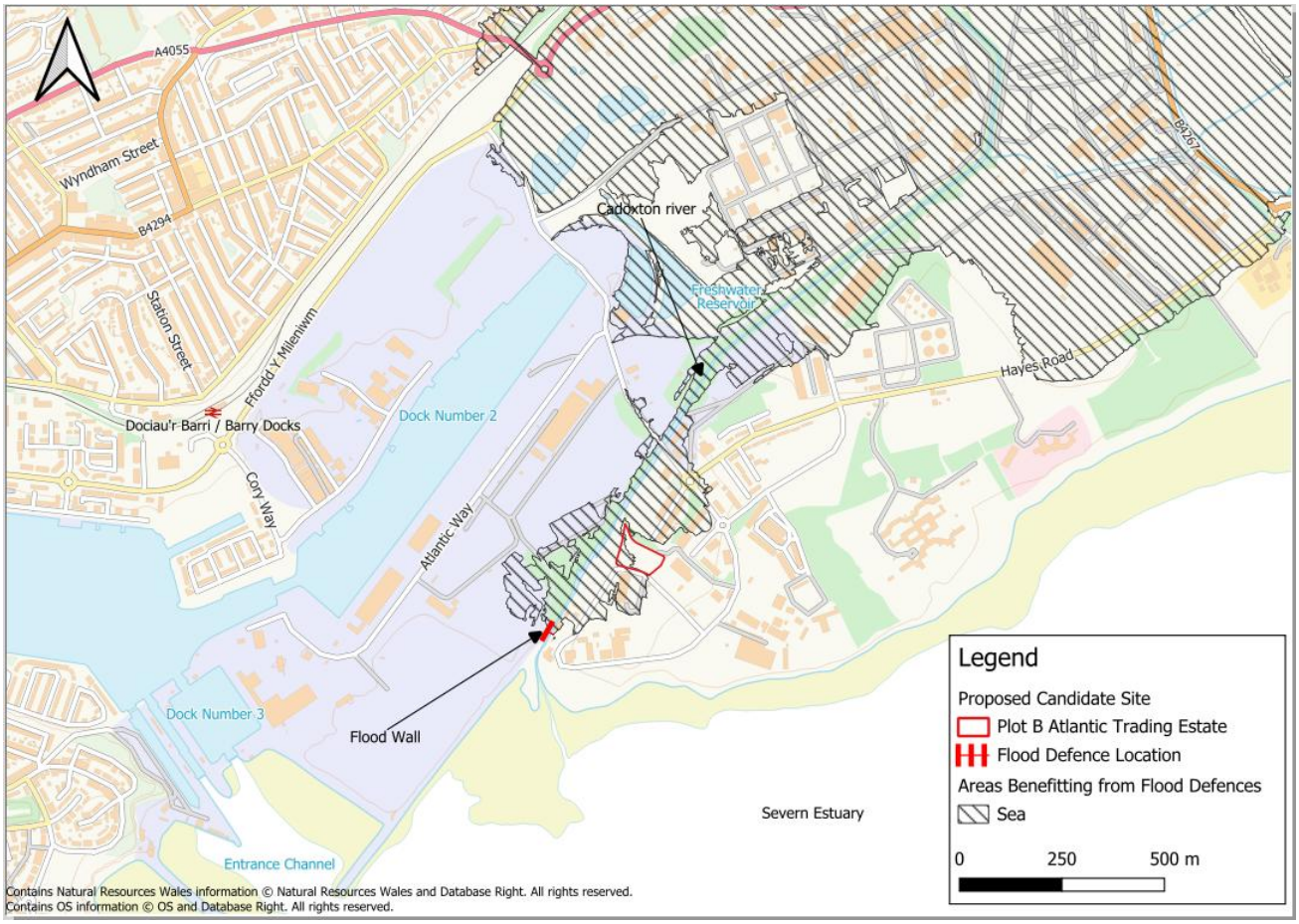


Figure 2-2 Watercourses and Defences

2.3 Topography

The Natural Resources Wales (NRW) Open Source 1m Light Detection and Ranging (LiDAR) data[1] across the site has been reviewed and is shown in Figure 2-3.

Levels across the site are generally flat. Typically, site levels are around 7.0mAOD in the southeast and around 8.5mAOD in the northwest.

The greatest elevation of 10.3mAOD is found in the northeast of the site, with a low of 7.36mAOD located in the southwest. The highest elevation appears to be associated with a small ridge associated with a boundary between an area of existing hardstanding in the east and vacant land to the west.

1 LLE Geoportal for Wales: http://lle.gov.wales/catalogue/item/LidarCompositeDataset/?lang=en

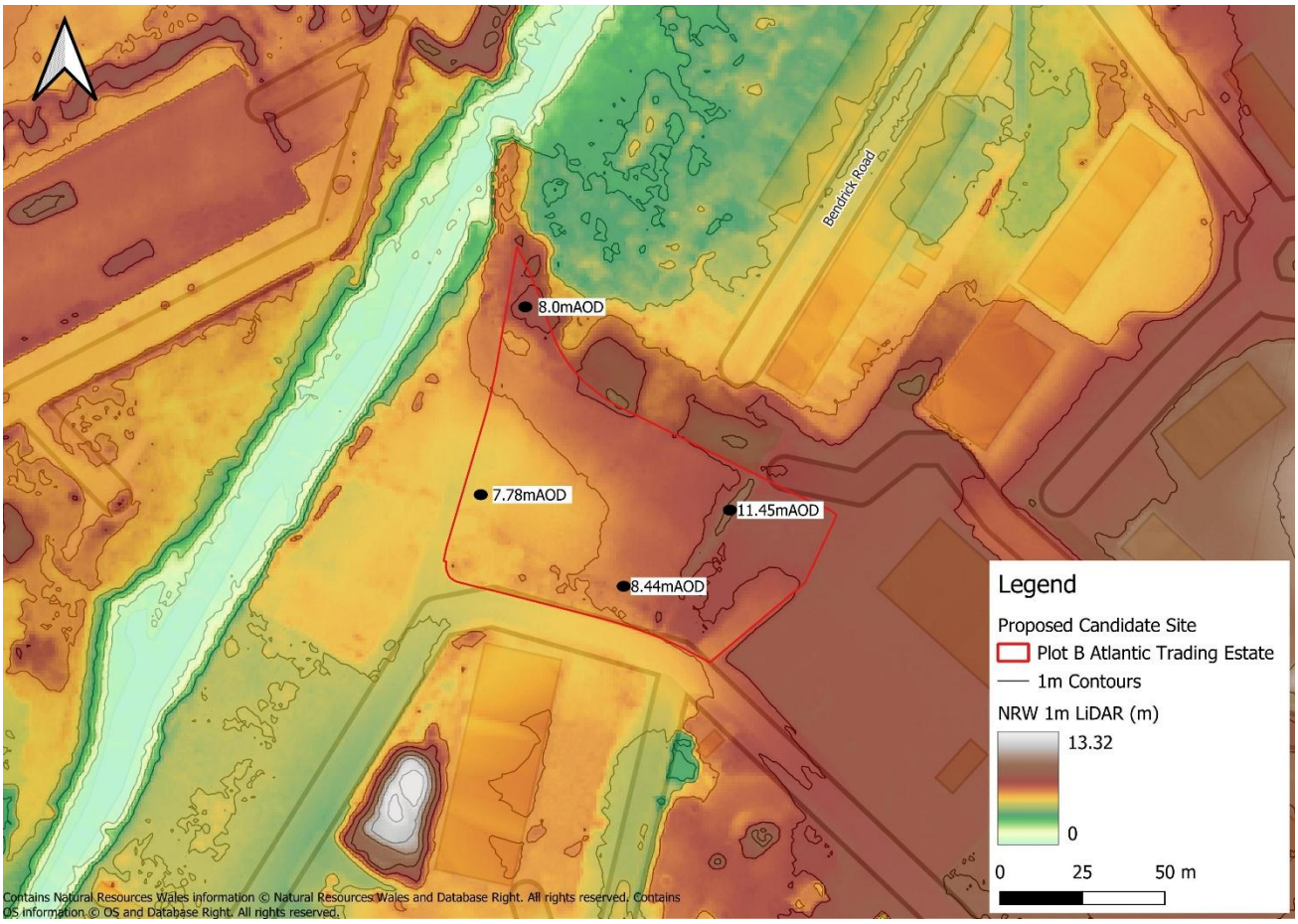


Figure 2-3 NRW 1m DTM LiDAR

3 Planning Policy and Flood Risk

TAN-15 provides a framework within which flood risks arising from rivers, the sea, and surface water, as well as the risk of coastal erosion, can be assessed. TAN-15 adopts a risk-based approach, which emphasises the ability to avoid or minimise risk depending on the type of development proposed.

The following table identifies the form of development, vulnerability classification and Flood Map for Planning classification (as defined in TAN-15) for the proposed development site.

Table 3-1 TAN-15 Development Classification Summary

TAN-15 classification	Classification
Development Proposal	Employment Development
Form of Development	Redevelopment
Vulnerability Classification	Less Vulnerable
Flood Map for Planning- Rivers	Flood Zone 1
Flood Map for Planning- Sea	TAN-15 Defended Zone, as seen in Figure 3-1.
Flood Map for Planning- Surface Water and Small Watercourses	Flood Zone 1

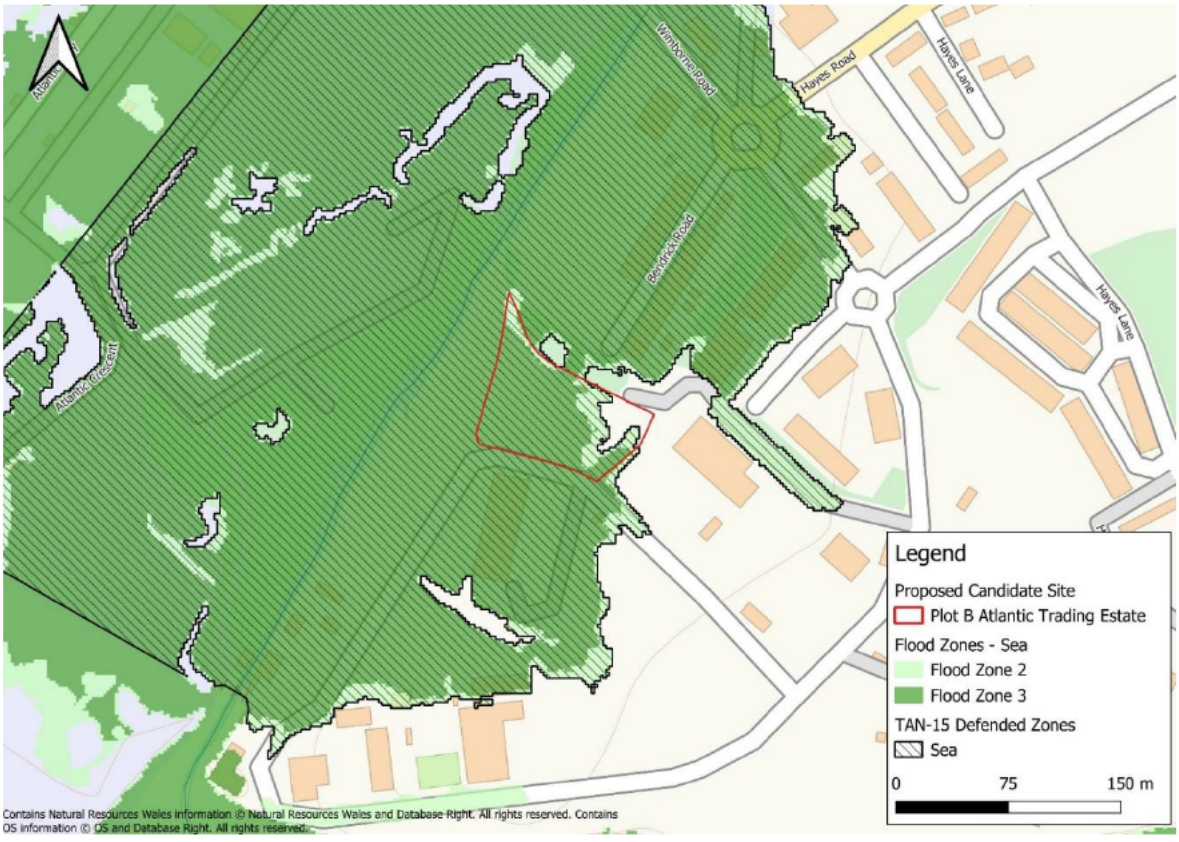


Figure 3-1 NRW FMfP - Flood Risk from the Sea

4 Assessment of Flood Risk

The latest available information on flood risk at the site, published by Natural Resources Wales (NRW) and datasets used in the SFCA is summarised in Table 4-1 below.

Table 4-1 Summary of Flood Risk

Source of Flooding	Onsite Presence	Description
Flood Risk from Rivers	×	The site's location within Flood Zone 1 of the FMfP for Rivers indicates that the site is at **very low** risk of fluvial flooding.
Flood Risk from the Sea	✓	The site is located within a TAN-15 Defended Zone, meaning the site currently benefits from the presence of defences with a minimum standard of protection for the 0.5% AEP (1 in 200 year) event with an allowance for climate change (if built post 2016). If the defences were constructed prior to 2016 they may not include an allowance for climate change but will offer a good standard of protection for present day events. **Further assessment has been undertaken in Section 4.1.1**
Flood Risk from Surface Water and Small Watercourses	×	The site is located within Flood Zone 1 of the FMfP, indicating a **very low** risk of surface water flooding.
Flood Risk from Groundwater	×	The South East Wales Stage 1 SFCA includes JBAs Groundwater depth map as part of the assessment. The data set shows the southern area of the site to be within a **'medium to high risk'** from groundwater emergence. **Further assessed in Section 4.1.3**
Flood Risk from Reservoirs	×	The NRW Flood Risk Assessment Wales map (FRAW) shows that the site is not located in an area at risk of reservoir flooding. Therefore, it is concluded that the risk of flooding is **very low.**

Source of Flooding	Onsite Presence	Description
Flood Risk from Sewers	×	The South East Wales, Stage 1 SFCA has not identified there to be any historic flood incidents within Barry. Therefore, it is concluded that the risk of sewer flooding at this site is **very low**.

4.1.1 Flood Risk from the Sea

The Flood Map for Planning - Flood Risk from the Sea indicates that the site is predominantly located within the TAN-15 Defended Zone, defended from risks associated with tidal flooding. Areas outside of the flood zones are thought to be associated with artificially elevated areas from previous site use.

To fully understand the flood risk posed to the site from coastal mechanisms, an assessment has been undertaken using the most recent available hydraulic model for the area, the 2023 NRW Barry Docks model.

The model, produced by JBA in 2020, is a 1D-2D-TUFLOW tidal inundation model for the Barry Docks area of Barry. The model was produced as part of a Flood Map Challenge in the area and included updates to the tidal boundary and extreme sea level rise estimates alongside TUFLOW software updates. The model was accepted by NRW in 2020, but in March 2023 was further updated to include an updated NRW LiDAR dataset and further tidal boundary amendments to reflect additional climate change allowances. Only model runs for the 100-year lifetime of development have been made available for the 0.5% AEP (1 in 100 year) and 0.1% AEP (1 in 1000) events, resulting in an assessment for the 2121 epoch. Typically, for employment sites 75-year lifetime of development is considered. This site appraisal therefore takes a conservative approach to flood risk assessment.

During the 2121 0.5% AEP event, and the 2121 0.1% AEP event, as shown in Figures 4-1 and 4-2, the site is shown to be flood free.

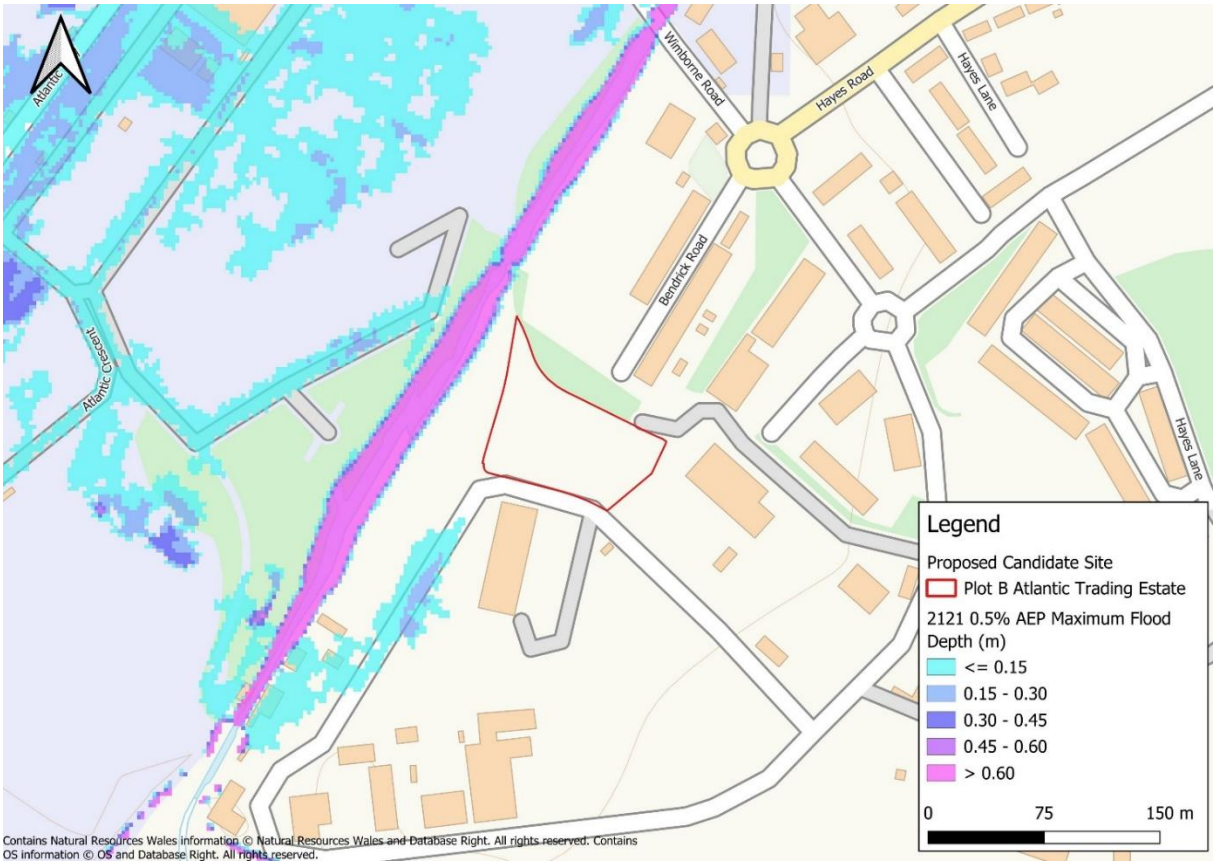


Figure 4-1 2121 0.5% AEP Event Maximum Flood Depths

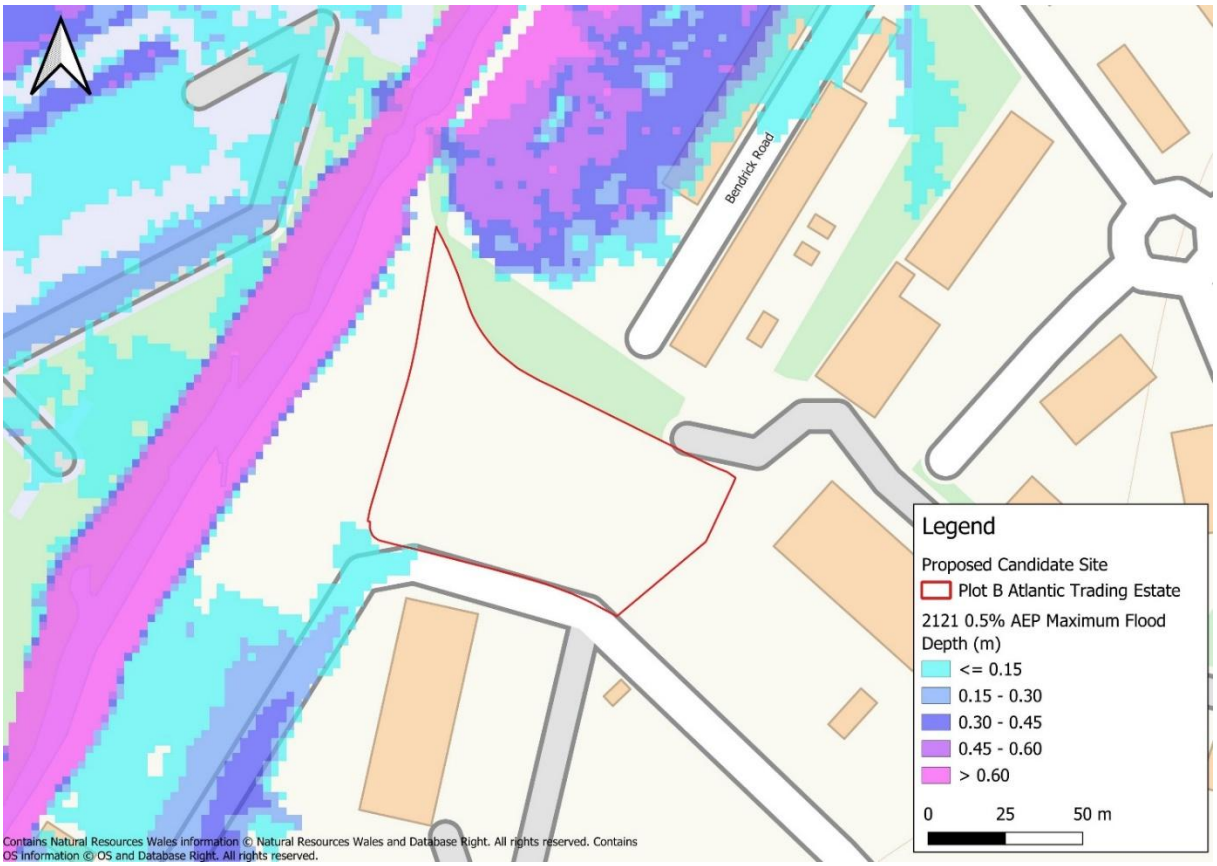


Figure 4-2 2121 0.1% AEP Event Maximum Flood Depths

4.1.2 Breach, Overtopping and Asset Failure

The existence of flood defences does not mean development should be allowed without further consideration of flood risks. Flood defences reduce the risk of flooding but do not eliminate it. The consequences of flooding can be particularly severe in the event of defences being overtopped or breached. Land protected by defences can be extremely vulnerable in the event of overtopping, breach and asset failure because of the speed of flooding in such circumstances.

Where appropriate, proposed developments should demonstrate that in the event of overtopping, breach or blockage the consequences of flooding can be managed to an acceptable level. This will be needed for sites that benefit from the type of defences that can be breached or blocked, including flood embankments, sea walls and culverts.

It is understood that the tide gate structure which provides flood mitigation to the area is supported by a penstock to provide redundancy in the event of initial asset failure. To determine any requirements for an assessment of breach/asset failure, it is recommended that the developer consult with NRW at the earliest opportunity.

4.1.3 Flood Risk from Groundwater

Groundwater flooding is caused by unusually high groundwater levels. It occurs as excess water emerges at the ground surface or within manmade structures such as basements. Groundwater flooding tends to be more persistent than surface water flooding, in some cases lasting for weeks or months, and can result in damage to property. This risk of groundwater flooding depends on the nature of the geological strata underlying the site and the local topography.

The British Geological Survey (BGS) Geoindex[2] shows that the Site has high vulnerability to groundwater flooding based on the underlying geology and superficial deposits. The BGS data indicates that the Site is underlain a conglomerate of the Mercia Mudstone Group. Mudstone tends to have low porosity and permeability, whilst limestone is regarded as more permeable and allows for the storage and movement of groundwater. As a result, upward percolation of groundwater and subsequent flooding should be considered.

The JBA Groundwater Emergence Map contained within the South East Wales Stage 1 SFCA shows that the Site is at high risk of groundwater flooding, with areas with groundwater levels either at or very near (within 0.025m of) the ground surface. However, there are no recorded incidents of groundwater flooding in Barry mentioned in the Vale of Glamorgan Flood Risk Management Strategy[3] or other publicly available sources. It can therefore be concluded that the risk of groundwater flooding at the Site is **moderate.**

It is recommended that any site-specific assessment consider the potential for groundwater emergence across the Site. This assessment should be informed by a programme of

2 The British Geological Survey (BGS) Geoindex GeoIndex (onshore) - British Geological Survey

3 https://www.valeofglamorgan.gov.uk/Documents/Living/Environment/Flood-and-coastal-erosion-risk/VoGC-LFRMS.pdf

groundwater monitoring, ideally conducted over a 12-month period to capture seasonal variations, as well as detailed site-specific ground investigations.

In accordance with TAN-15, it is recommended that the risk of groundwater flooding is considered as part of an FCA

5 Application of Flood Zones to Development Management Decisions

5.1 Flood Risk from the Sea

When considering a site for development, Sections 10 and 11 of TAN-15 outline the requirements for the type of development permitted in any given flood zone.

The proposed development is located within a TAN-15 Defended Zone of the Flood Map for Planning. It is located on brownfield land and is therefore considered as redevelopment. Furthermore, the proposed site is for employment land and thus a Less Vulnerable development.

Section 10.15 of TAN-15 states that;

'As a general principle, LDPs should seek to avoid intensification of uses in Defended Zones and replacement buildings or redevelopment schemes should be broadly the same scale as existing uses.'

As the development proposals are for a proposed employment use within an existing industrial and trading estate, the proposed development use is considered proportionate to the surrounding land-use context, subject to agreement by the LPA.

Sites within the TAN-15 Defended Zone should also meet the acceptability criteria, as set out in Section 11 of TAN-15, with redevelopment sites afforded some degree of flexibility.

6 Summary and recommendations

The site is generally of low flood risk, with associated flood risk from tidal and groundwater sources.

The site is shown to be within a TAN-15 Defended Zone, with a standard of protection of up to the present-day 1 in 200-year event provided. A detailed assessment of the flood risk at the site using NRW's 2023 Barry Docks flood modelling, shows the site to be flood free in all design events.

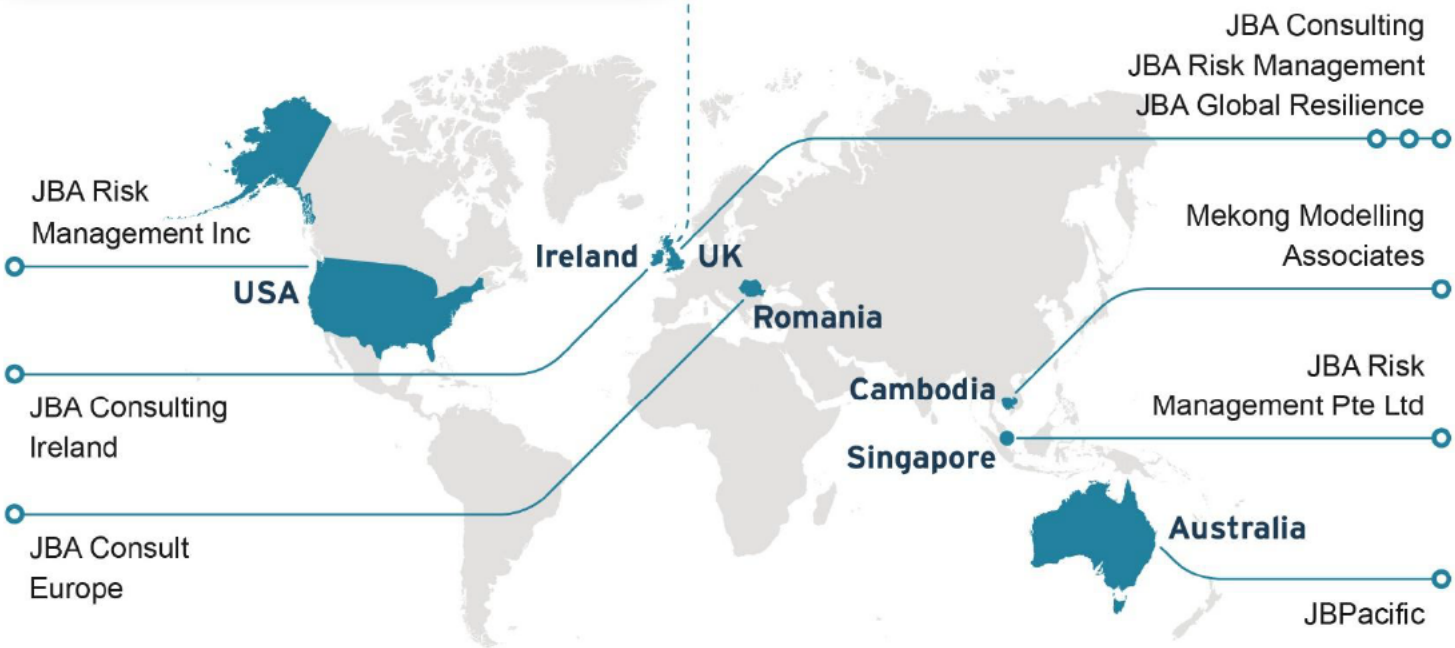
It is therefore considered that this site is likely to satisfy the requirements of TAN-15, subject to the following recommendations:

- Any planning application for the site should be accompanied by an FCA which demonstrates how the proposals meet the requirements of TAN-15.
- The risk of groundwater emergence on the Site should be managed by a programme of groundwater monitoring, ideally conducted over a 12-month period to capture seasonal variations, as well as detailed site-specific ground investigations.

www.jbaconsulting.com

Our Offices

Bristol
Coleshill
Cork
Doncaster
Dublin
Edinburgh
Exeter
Glasgow
Haywards Heath
Leeds
Limerick
Newcastle
Newport
Peterborough
Portsmouth
Saltaire
Skipton
Tadcaster
Thirsk
Wallingford
Warrington



Registered Office
1 Broughton Park
Old Lane North
Broughton
SKIPTON
North Yorkshire
BD23 3FD
United Kingdom

+44(0) 1756 799919
info@jbaconsulting.com
www.jbaconsulting.com

Follow us on

Jeremy Benn Associates Limited
Registered in England
3246693

JBA Group Ltd is certified to
ISO 9001:2015
ISO 14001:2015
ISO 27001:2022
ISO 45001:2018

Appendix 5

www.jbaconsulting.com

Vale of Glamorgan Strategic Flood Consequences Assessment - Land West of Maendy Road, Aberthin (2299)

Version 1

Prepared for

Vale of Glamorgan Council

Date

September 2025

Document Status

Issue date	September 2025
Issued to	Vale of Glamorgan Council
BIM reference	QFB-JBAU-XX-XX-RP-Z-0002-S3-P02-Land_west_of_Maendy_Road_Aberthin_(2299)
Revision	Version 1
Prepared by	[redacted]
Reviewed by	[redacted]
Authorised by	[redacted]

[redacted]

Carbon Footprint

The format of this report is optimised for reading digitally in pdf format. Paper consumption produces substantial carbon emissions and other environmental impacts through the extraction, production and transportation of paper. Printing also generates emissions and impacts from the manufacture of printers and inks and from the energy used to power a printer. Please consider the environment before printing.

Accessibility

JBA aims to align with governmental guidelines on accessible documents and WGAG 2.2 AA standards, so that most people can read this document without having to employ special adaptation measures. This document is also optimised for use with assistive technology, such as screen reading software.

Contract

JBA Project Manager	[redacted]
Address	7-8 High Street, Kings Chambers, Newport, South Wales, NP20 1FQ
JBA Project Code	2025s0982

This report describes work commissioned by the Vale of Glamorgan Council, by an instruction dated 29 May 2025. The Client's representative for the contract was Victoria Morgan of the Vale of Glamorgan Council. Bethany Adams of JBA Consulting carried out this work.

Purpose and Disclaimer

Jeremy Benn Associates Limited ("JBA") has prepared this Report for the sole use of Vale of Glamorgan Council its appointed agents in accordance with the Agreement under which our services were performed.

JBA has no liability for any use that is made of this Report except to for the purposes for which it was originally commissioned and prepared.

No other warranty, expressed or implied, is made as to the professional advice included in this Report or any other services provided by JBA. This Report cannot be relied upon by any other party without the prior and express written agreement of JBA.

JBA disclaims any undertaking or obligation to advise any person of any change in any matter affecting the Report, which may come or be brought to JBA's attention after the date of the Report.

The methodology adopted and the sources of information used by JBA in providing its services are outlined in this Report. The work described in this Report was undertaken between the 6th of August 2025 and the 12th of September 2025 and is based on the conditions encountered and the information available during the said period. The scope of this Report and the services are accordingly factually limited by these circumstances.

The conclusions and recommendations contained in this Report are based upon information provided by others and upon the assumption that all relevant information has been provided by those parties from whom it has been requested and that such information is accurate. Information obtained by JBA has not been independently verified by JBA, unless otherwise stated in the Report.

Copyright

Contents

List of Figures

List of Tables

1 Introduction

JBA Consulting has been commissioned by the Vale of Glamorgan Council to prepare an independent Flood Risk Appraisal as part of a Stage 2 Strategic Flood Consequences Assessment (SFCA) for sites considered for allocation in its replacement Local Development Plan (LDP).

This assessment will evaluate the risk of flooding from all sources to Land west of Maendy Road, which is the proposed development site, as well as the appropriateness of development at the Site in accordance with Welsh Government policy, as outlined in Technical Advice Note 15: Development, Flooding and Coastal Erosion (TAN-15). Furthermore, recommendations will be provided to mitigate the risk of flooding at the proposed development site as well as recommendations for further works, where required.

2 Site Description

The Site is approximately 1.81 ha in size and is located on greenfield land, west of Maendy Road, Aberthin. The main access and egress route is via Maes Lloi to the south of the Site, connected to Maendy Road (A4222). The Site is bounded to the north, west and north-east by greenfield land and to the south-east by residential development.

Further information on the Site is provided in Table 2-1 and the site location is presented in Figure 2-1.

Table 2-1 Site Summary

Site name	Land west of Maendy Road, Aberthin
Site ID	2299
Site area	1.81ha
Existing land use	Greenfield land
Purpose of development	Residential / mixed-use development
OS NGR	ST 00728 75400
Access location	Via Maes Lloi to the south of the Site, connected to Maendy Road (A4222)

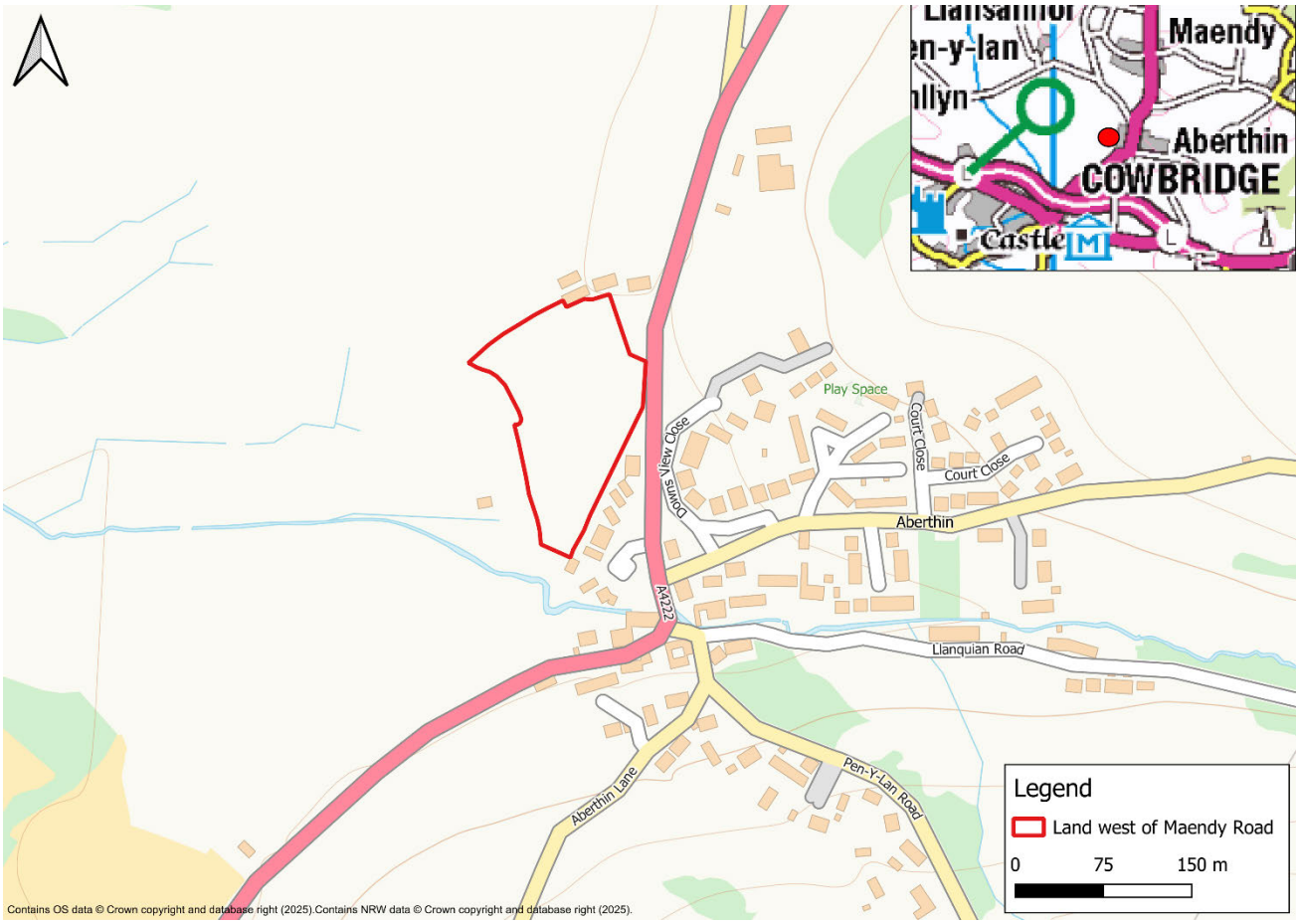


Figure 2-1: Site Location

2.1 Development proposals

The proposals at the Site are for residential development and is classified therefore classified as Highly Vulnerable. A draft development proposal has been submitted to inform this assessment and is included in Figure 2-2 below.

Figure 2-2 Proposed Site Layout

2.2 Watercourses and Flood Defences

The Natural Resources Wales (NRW) Main Rivers and ordinary watercourses in the vicinity of the Site are shown in Figure 2-3. The Nant Aberthin is located approximately 27m to the south of the Site and is designated as 'Main River' by NRW. The Nant Aberthin flows in a westerly direction and joins the River Thaw approximately 900m downstream of the Site. Two unnamed ordinary watercourses are located 32m and 130m to the west of the Site.

These ordinary watercourses flow in a westerly direction, before discharging into the Nant Aberthin.

An NRW flood defence is located approximately 90m downstream of the River Thaw from its confluence with the Nant Aberthin. The 393m reservoir embankment does not provide any flood risk benefit to the Site. Therefore, the Site does not benefit from the presence of any flood defences.

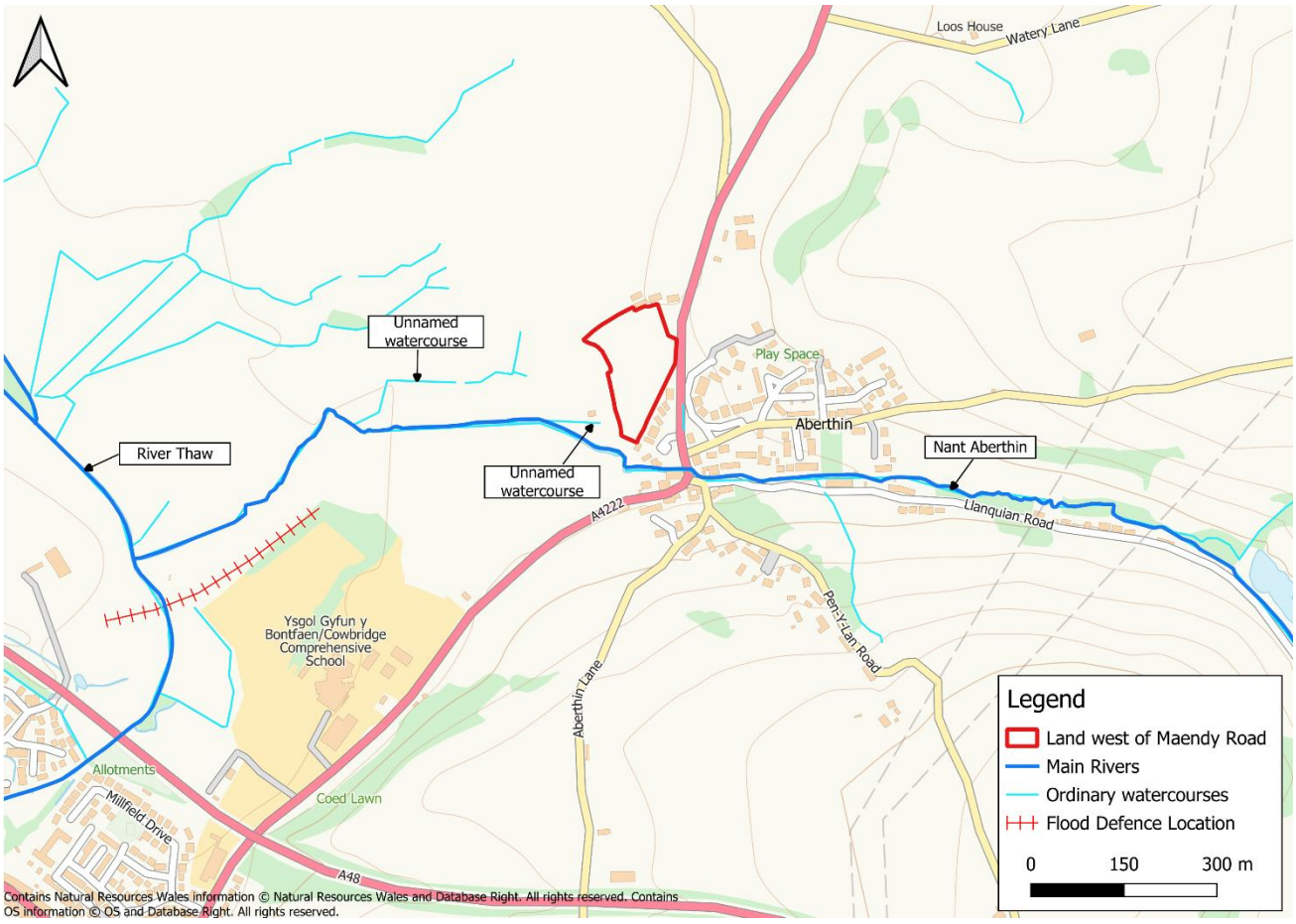


Figure 2-3 Watercourses and Defences

2.3 Topography

Natural Resources Wales (NRW) Open Source 1m Light Detection and Ranging data has been used to provide the general elevation of the Site, as shown in Figure 2-4. A topographic survey was not available at the time of writing.

The topography is gently sloping across the Site and falls from north to south. The highest ground level is located along the northern boundary at an elevation of 40.2mAOD. The lowest ground level is in the southern part of the Site at 35.4mAOD. Along the Maes Lloi access road, ground levels fall from 36.6mAOD at the junction with the A4222 road to 35.9mAOD at the Site entrance.

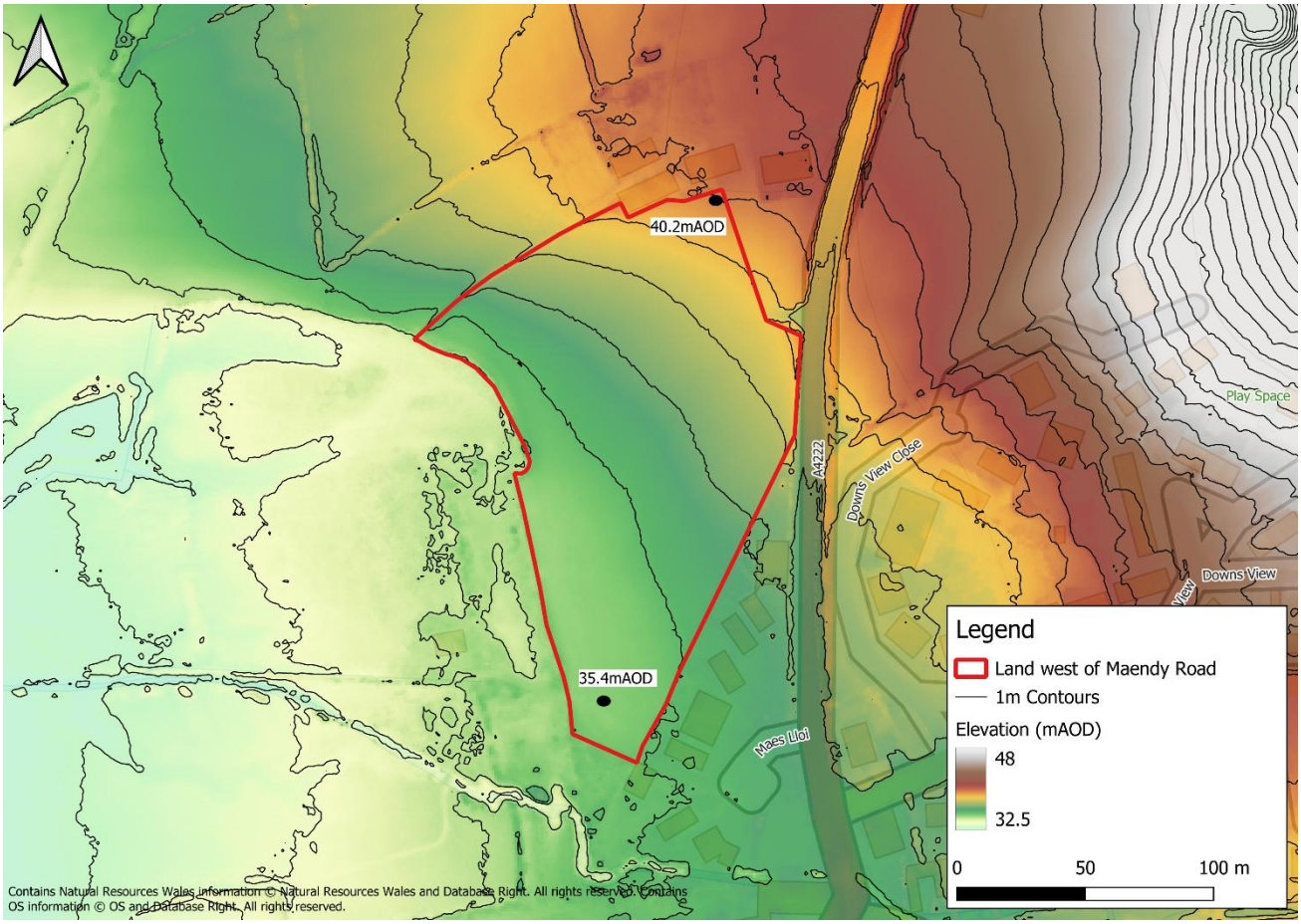


Figure 2-4 NRW 1m DTM LiDAR

3 Planning Policy and Flood Risk

TAN-15 provides a framework within which flood risks arising from rivers, the sea, and surface water, as well as the risk of coastal erosion, can be assessed. TAN-15 adopts a risk-based approach, which emphasises the ability to avoid or minimise risk depending on the type of development proposed.

The following table identifies the form of development, vulnerability classification and Flood Map for Planning classification (as defined in TAN-15) for the proposed development site.

Table 3-1 TAN-15 Development Classification Summary

TAN-15 classification	Classification
Development Proposal	Residential and mixed-use development
Form of Development	New Development
Vulnerability Classification	Residential: Highly Vulnerable Mixed-use: Less vulnerable
Flood Map for Planning- Rivers	Flood Zone 2 and 3 (Figure 3-1)
Flood Map for Planning- Sea	Flood Zone 1
Flood Map for Planning- Surface Water and Small Watercourses	Flood Zone 1

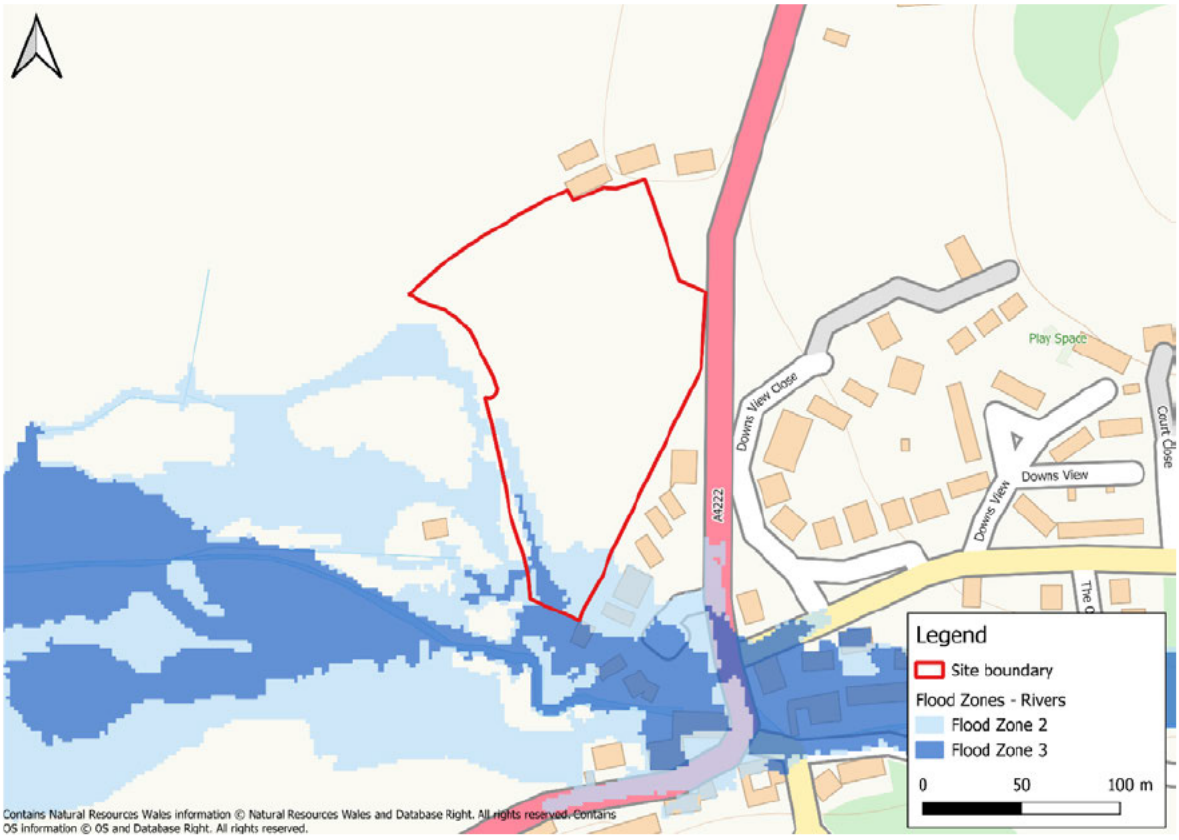


Figure 3-1: Flood Map for Planning - Rivers

4 Assessment of Flood Risk

The latest available information on flood risk at the Site, published by Natural Resources Wales (NRW) and datasets used in the SFCA is summarised in Table 4-1 below.

Table 4-1 Summary of Flood Risk

Source of Flooding	Onsite Presence	Description
Flood Risk from Rivers	✓	The Site is partly located within Flood Zone 2 and 3 of the Flood Map for Planning and is at **moderate** risk of fluvial flooding. Further assessment is contained in Section 4.1.1.
Flood Risk from the Sea	×	The Site's location within Flood Zone 1 of the FMfP for the Sea indicates that the Site is at **very low** risk of tidal flooding.
Flood Risk from Surface Water and Small Watercourses	×	The Site is at **very low** risk of surface water flooding.
Flood Risk from Groundwater	✓	The area has high vulnerability to groundwater flooding based on the underlying geology and superficial deposits. The JBA Groundwater Risk of Emergence map (contained in the South East Wales Stage 1 SFCA) shows that the Site is at 'high' risk of groundwater emergence. There have been no recorded incidents of groundwater flooding in the Aberthin electoral ward. Therefore, it is concluded that the risk of flooding is **moderate**.
Flood Risk from Reservoirs	×	The NRW Flood Risk Assessment Wales (FRAW) map shows that the Site is at **very low** risk of reservoir flooding.
Flood Risk from Sewers	×	There is no evidence to suggest that the Site is at risk of sewer flooding. The Site is greenfield and is unlikely to have any sewerage infrastructure which could surcharge and cause sewer flooding. Therefore, it is concluded that the risk of flooding is **very low.**

4.1.1 Flood Risk from Rivers

Natural Resources Wales' Flood Map for Planning shows that the Site is predominantly located within Flood Zone 1. Flood Zone 1 represents areas that have less than 0.1% chance of flooding in a given year.

The southern extent of the Site is partially located within Flood Zones 2 and 3 of the FMfP for Rivers. Flood Zone 2 indicates areas which have a 0.1% - 1% AEP chance of flooding from fluvial sources within a given year, including an allowance for climate change. Flood Zone 3 means that parts of the Site are predicted to have greater than a 1% AEP chance of flooding from fluvial sources within a given year, including an allowance for climate change.

No detailed model is available of the Nant Aberthin. To better understand the risk of flooding posed to the Site and the potential implications of climate change, the NRW National Flood Hazard Mapping (NFHM) dataset has been used to provide a further assessment of flooding. This dataset contains predicted flood extents, depths and velocities for both the present day and climate change scenarios and has been used to identify the predicted flood extents and depths for both the 1% AEP plus climate change (medium risk), and 0.1% AEP plus climate change (low risk) flood events at the proposed redevelopment site.

During the 1% AEP plus climate change event, very shallow flooding of up to 30mm is predicted to occur to a small area of the southern extent of the Site, as shown in Figure 4-1. This is associated with out-of-bank flooding from the Nant Aberthin, which flows into the area of the lowest ground elevation. The proposed location of residential units as indicated by the indicative site out, will remain flood free in this event. The proposed SuDS detention basin is also shown to be flood free.

The main access and egress route along Maes Lloi is shown to flood by up to 17mm. Flooding is also predicted on the A4222, with shallow depths less than 300mm predicted. Predominantly, depths to Maes Lloi and the A4222 are below 300mm and are therefore viable for access for high-sided vehicles.

Figure 4-2 demonstrates that the southern extent of the Site is predicted to flood during the 0.1% AEP plus climate change event. Generally, flood depths are predicted to be below 50mm, with a localised maximum of 173mm where ground levels are lowest. The proposed location of residential units, as indicated by the indicative site out, will remain flood free in this event. The location of the proposed SuDS detention basin is shown to flood during this event. However, flood depths are shallow with a maximum depth of 40mm indicated. Typically, depths are between 10 and 12mm across much of the proposed basin area.

The Site access road along Maes Lloi is shown to flood by up to 130mm in the 0.1% AEP plus climate change event. Flood depths of up to 429mm are shown along the A4222, though depths are predominantly less than 300mm. Flood-free access and egress is available via the A4222 to the north.

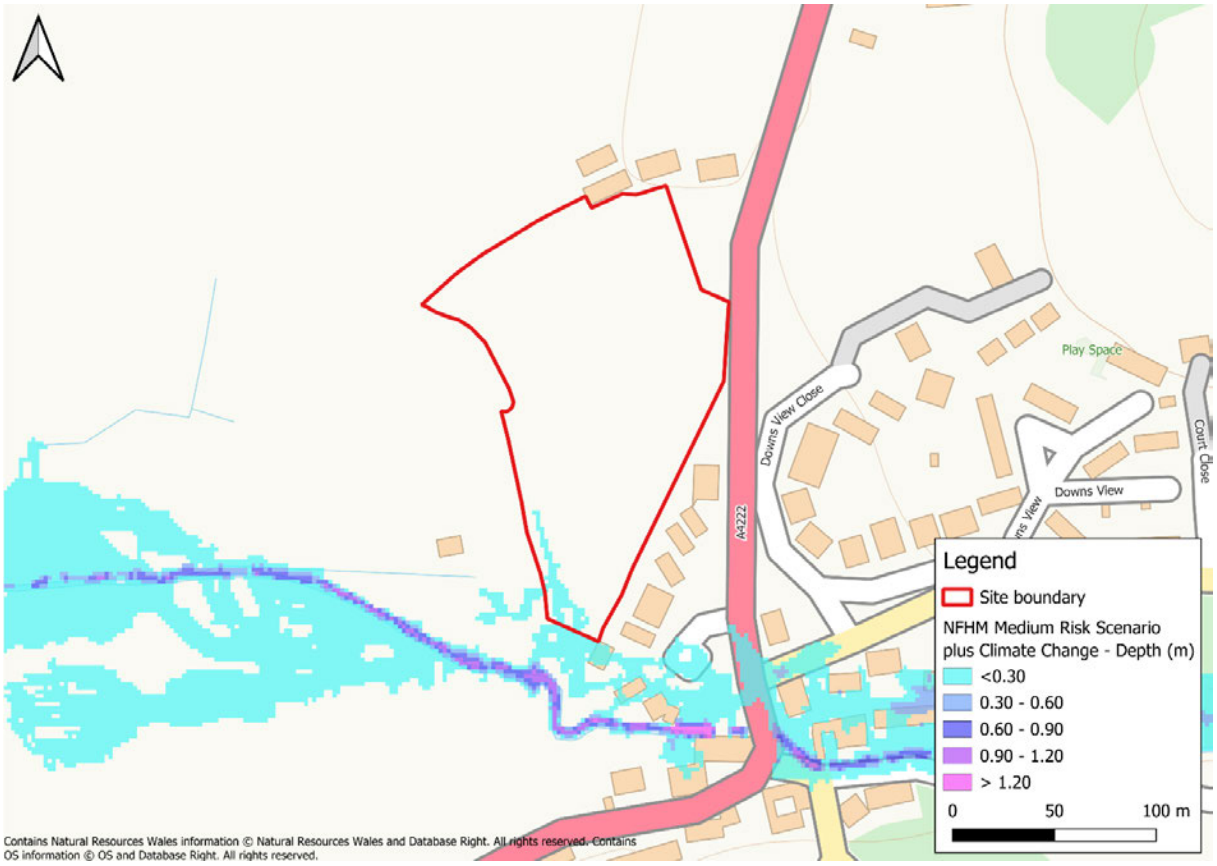


Figure 4-1: Flood Risk from Rivers - Medium Risk + Climate Change - Flood depths.

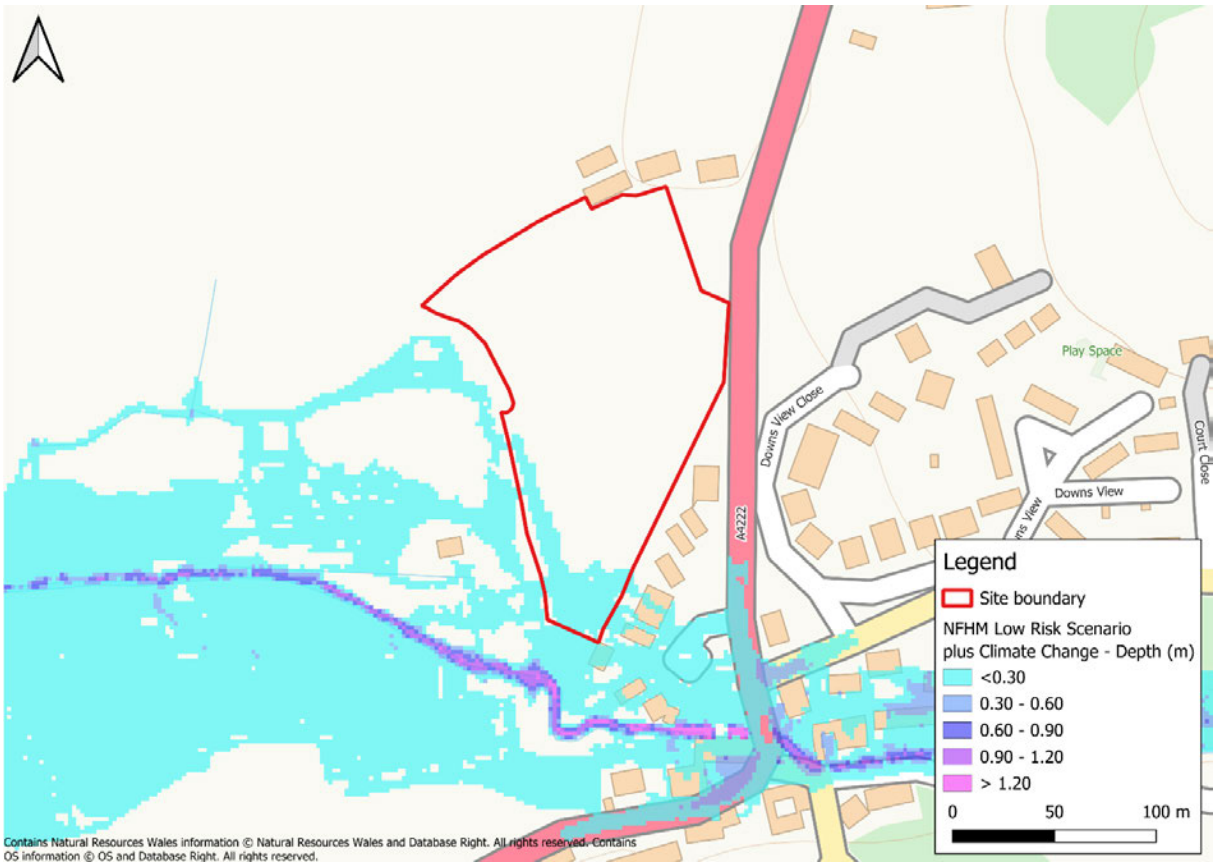


Figure 4-2: Flood Risk from Rivers - Low Risk + Climate Change - Flood Depths

4.1.2 Flood Risk from Groundwater

Groundwater flooding is caused by unusually high groundwater levels. It occurs as excess water emerges at the ground surface or within manmade structures such as basements. Groundwater flooding tends to be more persistent than surface water flooding, in some cases lasting for weeks or months, and can result in damage to property. This risk of groundwater flooding depends on the nature of the geological strata underlying the site and the local topography.

The British Geological Survey (BGS) Geoindex[1] shows that Site has high vulnerability to groundwater flooding based on the underlying geology and superficial deposits. The BGS data indicates that the Site is underlain by limestone and mudstone as part of the Blue Lias formation group. Mudstone tends to have low porosity and permeability whilst limestone is regarded as more permeable and allows for the storage and movement of groundwater. As a result, upward percolation of groundwater and subsequent flooding should be considered.

The JBA Groundwater Emergence Map contained within the South East Wales Stage 1 SFCA shows that the Site is at high risk of groundwater flooding, with levels either at or very near (within 0.025m of) the ground surface. However, there are no recorded incidents of groundwater flooding in Aberthin mentioned in the Vale of Glamorgan Flood Risk Management Strategy[2] or other publicly available sources. It can therefore be concluded that the risk of groundwater flooding at the Site is **moderate.**

It is recommended that any site-specific assessment considers the potential for groundwater emergence across the Site. This assessment should be informed by a programme of groundwater monitoring, ideally conducted over a 12-month period to capture seasonal variations, as well as detailed site-specific ground investigations. It is also advised that the development proposals do not include groundwater-sensitive elements, such as the construction of basements.

In accordance with TAN-15, it is recommended that the risk of groundwater flooding is considered as part of an FCA.

1 The British Geological Survey (BGS) Geoindex GeoIndex (onshore) - British Geological Survey

2 https://www.valeofglamorgan.gov.uk/Documents/Living/Environment/Flood-and-coastal-erosion-risk/VoGC-LFRMS.pdf

5 Application of Flood Zones to Development Management Decisions

When considering a site for development, Sections 10 and 11 of TAN-15 outline the requirements for the type of development permitted in any given flood zone.

5.1 Flood Risk from Rivers

The proposed development is located on greenfield land and comprises both high and low vulnerable development.

The Site is predominantly located within Flood Zone 1 of the Flood Map for Planning for Rivers, in which all forms of development are acceptable in principle. The southern extent of the proposed development site is partially located within Flood Zones 2 and 3.

Section 10.18 of TAN-15 states that it is possible to allocate sites within Flood Zone 2 where the proposals assist the implementation of the strategy of the LDP to regenerate or revitalise existing settlements or to achieve key economic or environmental objectives.

For a proposed development site within Flood Zones 3 of the Flood Map for Planning for Rivers, Section 10.22 of TAN-15 states that highly vulnerable development on greenfield land is not permitted. Section 10.23 of TAN-15 states that other development proposals are acceptable if they are essential to the LDP.

It is recommended that a sequential approach to master planning is adopted, locating all built development within Flood Zone 1, and water compatible uses such as open space located within the flood zones, if required. This sequential approach to development is supported within Section 15.5 of TAN-15:

"Where a site falls into two or more flood zones the planning authority must make an assessment of the proposal, taking into account each of its proposed land uses, against each of the flood zones to which it applies, in accordance with the criteria requirements of this TAN".

Proposals in both Flood Zones 2 and 3 must also be consistent with the acceptability considerations as outlined in Section 11 of TAN-15.

Access and egress will be possible during all design events via the A4222 to the north.

It is recognised that the Welsh Government notification direction requires applications for Highly Vulnerable Development where the whole or part of the site is within Flood Zone 3 on a Greenfield site to be referred to the Welsh Ministers. Any development proposals for this site which include residential use are therefore likely to be required to be notified to the Welsh Government. However, it is understood that as development proposals take a sequential approach to site master planning to manage flood risk in line with the requirements and principles set out within TAN-15, Ministers are unlikely to refuse such an application.

5.2 Review Against Proposed Development Plans

As part of the site appraisal, the Vale of Glamorgan Council has provided a proposed development layout which can be seen in Figure 2-2. The indicative layout shows that the development proposal has been designed sequentially with residential units located entirely within Flood Zone 1. A proposed SuDS detention basin is located to the south of the site and is within Flood Zone 2.

As per the advice of the CIRA SuDS Manual, SuDS should not be located within an area at a greater than 1% AEP chance of flooding, which aligns to Flood Zone 3 of the NRW FMfP - Flood Risk from Rivers. The proposed detention basin is located within areas of Flood Zone 2 within the site. Therefore, subject to SAB approval, the proposed location of the SuDS features is in keeping with current guidance.

6 Summary and recommendations

The Site is generally of low flood risk, with associated flood risk from fluvial and groundwater sources. Fluvial flooding is predicted in the southern extent of the Site during the 1% and 0.1% AEP plus climate change events. As the Site is situated within Flood Zones 2 and 3 of the FMfP - Rivers, it triggers the requirements for an FCA to be undertaken. Through further assessment and design, the extent and severity of flooding is likely to be manageable.

An indicative site layout provided indicates that a sequential approach to master planning has been applied, with Flood Zones 2 and 3 forming water-compatible development, such as open space. All proposed residential units have been located within Flood Zone 1. Proposed SuDS features have been located within Flood Zone 2, which, subject to SAB approval is deemed an acceptable location.

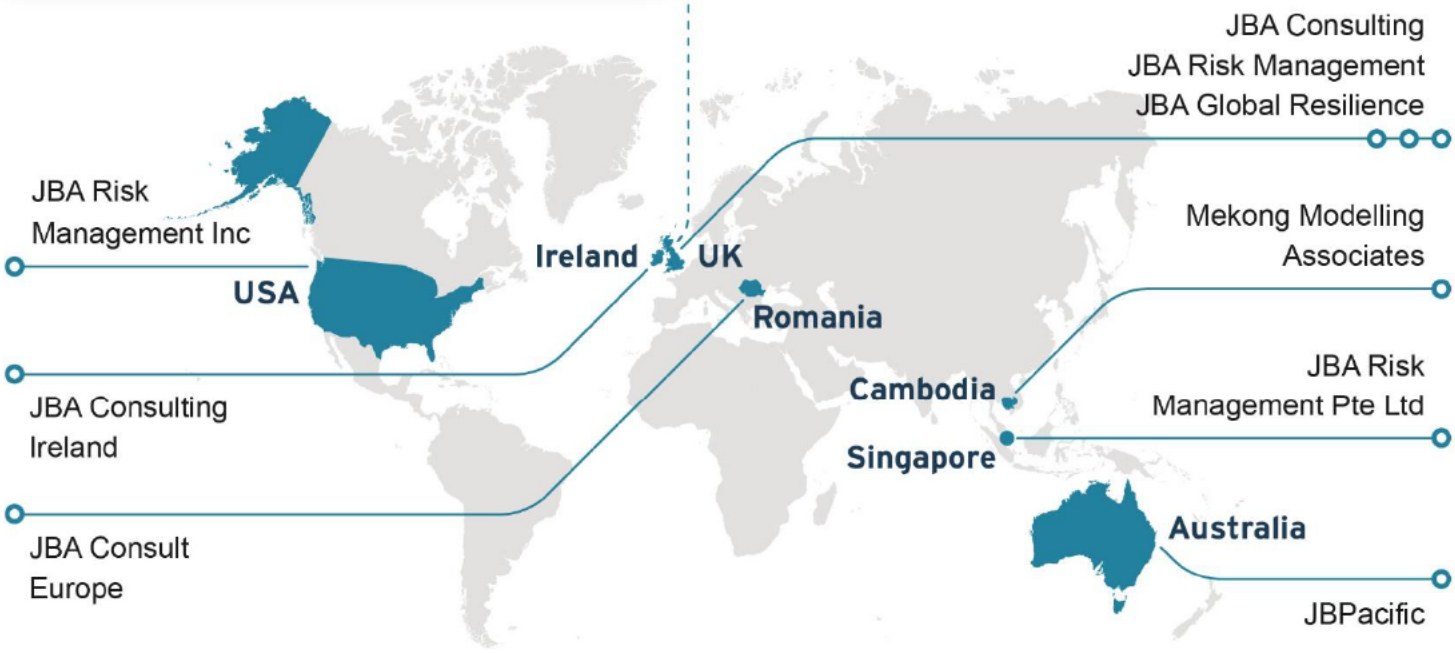
It is therefore considered that this Site is likely to satisfy the requirements of TAN-15, subject to the following recommendations:

- Any planning application for the Site should be accompanied by an FCA which demonstrates how the proposals meet the requirements of TAN-15.
- A sequential approach to master planning should be adopted to locate highly vulnerable development in Flood Zone 1, as proposed within the indicative site layout.
- The risk of groundwater emergence on the Site should be managed by a programme of groundwater monitoring, ideally conducted over a 12-month period to capture seasonal variations, as well as detailed site-specific ground investigations.

www.jbaconsulting.com

Our Offices

Bristol
Coleshill
Cork
Doncaster
Dublin
Edinburgh
Exeter
Glasgow
Haywards Heath
Leeds
Limerick
Newcastle
Newport
Peterborough
Portsmouth
Saltaire
Skipton
Tadcaster
Thirsk
Wallingford
Warrington



Registered Office
1 Broughton Park
Old Lane North
Broughton
SKIPTON
North Yorkshire
BD23 3FD
United Kingdom

+44(0) 1756 799919
info@jbaconsulting.com
www.jbaconsulting.com

Follow us on

Jeremy Benn Associates Limited
Registered in England
3246693

JBA Group Ltd is certified to
ISO 9001:2015
ISO 14001:2015
ISO 27001:2022
ISO 45001:2018

RLDP CDLN

The Vale of Glamorgan Council
Directorate of Place
Civic Office
Holton Road
Barry CF63 4RU

LDP@valeofglamorgan.gov.uk
www.valeofglamorgan.gov.uk