

Margam J38 Flood Consequence Assessment

Version 3

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**Sandvik Osprey Ltd
Red Jacket Works
Milland Road
Neath
SA11 1NJ**

JBA Project Manager

Hannah Booth
Kings Chambers
7-8 High Street
NEWPORT
South Wales
UNITED KINGDOM
NP20 1FQ

Revision History

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January 2022	Version 3- Update to the site plan	Sandvik Osprey Ltd

Contract

This report describes work commissioned by Stephen Gibbs, on behalf of Sandvik Osprey Ltd, by an email dated 23rd July 2021. Christopher Goodwin and Hannah Booth of JBA Consulting carried out this work.

Prepared by Christopher Goodwin BSC (Hons), MSc, MSc,
PGDip

Flood Risk Analyst

..... Hannah Booth BSc

Flood Risk Analyst

..... Erica Skinner BSc Hons AIEMA

Assistant Analyst

Reviewed by George Baker BEng AIEMA CEnv IEng MCIWEM
C.WEM

Technical Director

Purpose

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Contents

1	Introduction	1
1.1	Terms of Reference	1
1.2	FCA requirements	1
2	Site description	2
2.1	Site summary	2
2.2	Site topography	3
2.3	Soils and geology	4
2.4	Watercourses	5
2.5	Development proposals	5
3	Planning Policy and Flood Risk	7
3.1	Planning Context	7
3.2	Current TAN-15	7
3.2.1	Vulnerability classification	7
3.2.2	Development Advice Map Classification	7
3.3	Updated TAN-15 (Expected release 2023)	8
3.3.1	Vulnerability classification	8
3.3.2	Flood Map for Planning classification	9
4	Review of existing flood risk data	13
4.1	Summary of existing flood risk data	13
4.2	Historical flooding	13
4.3	Flood Risk from Rivers	13
4.4	Flood Risk from the Sea	14
4.5	Flood Risk from Surface Water and Small Watercourses	15
4.6	Flood Risk from Groundwater	16
4.7	Flood Risk from Reservoirs	16
4.8	Flood Risk from Sewers	17
5	Detailed Assessment of Tidal Flood Risk	18
5.1	Extreme Sea Level Estimates	18
5.2	Tidal Projection Modelling	19
5.3	Flood risk for the lifetime of the development	19
5.3.1	0.5% AEP Event (2100)	19
5.3.2	0.1% AEP Event (2100)	20
5.4	Residual tidal risks	22
5.5	Flood Risk Summary	22
6	Assessment of Acceptability Criteria	24
7	Conclusions and recommendations	26
A	Topographic Survey	I
B	Development proposals	II

List of Figures

Figure 2-1 Site location	2
Figure 2-2 Site topography, NRW 1m LiDAR Digital Terrain Model (DTM)	3
Figure 2-3 Comparison between the LiDAR levels and the topographic survey levels	4
Figure 2-4 Nearby watercourses	5
Figure 2-5 Development proposals	6
Figure 3-1 Development Advice Map	8
Figure 3-1 Flood Map for Planning- Rivers	10
Figure 3-2 Flood Map for Planning- Sea	11
Figure 3-3 Flood Map for Planning- Surface Water and Small Watercourses	12
Figure 4-1 Risk of flooding from rivers	14
Figure 4-2 Risk of flooding from the sea	15
Figure 4-3 Risk of flooding from surface water and small watercourses	16
Figure 4-4 Risk of flooding from reservoirs	17
Figure 5-1: 2100 0.5% AEP tidal flood event flood depths	20
Figure 5-2: 2100 0.1% AEP tidal flood event flood depths	21
Figure 5-3: 2100 0.1% AEP tidal flood event flood depths- Flow path of flood water to the site.	22

List of Tables

Table 2-1 Site summary	2
Table 3-1 Development categories defined by TAN-15	7
Table 3-1 Development categories defined by TAN-15	9
Table 4-1 Existing Flood Risk Data for the Site	13
Table 5-1 Extreme Sea Level Estimates (present day)	18
Table 5-2 Cumulative Sea Level Rise	18
Table 5-3 Predicted tidal flood levels, with climate change (2100)	19
Table 6-1: Acceptability Criteria for TAN-15	24

1 Introduction

1.1 Terms of Reference

JBA Consulting (JBA) were commissioned by Sandvik Osprey Ltd to undertake a Flood Consequence Assessment (FCA) for a new Metal Processing Facility, comprising manufacturing, warehousing and office space, located at J38 of the M4 at Margam.

1.2 FCA requirements

This FCA follows Welsh Government guidance on development and flood risk set out in the Technical Advice Note 15: Development and Flood Risk (TAN15). Where appropriate, the following aspects of flood risk should be addressed in all planning applications over their expected lifetime:

- The likely mechanisms of flooding
- The likely source of flooding
- The depths of flooding through the site
- The speed of inundation of the site
- The rate of rise of flood water through the site
- Velocities of flood water across the site
- Overland flow routes
- The effect of access and egress and infrastructure, for example, public sewer outfalls, combined sewer outflows, surface water sewers and effluent discharge pipes from wastewater treatment works
- The impacts of the development in terms of flood risk on neighbouring properties and elsewhere on the floodplain

2 Site description

2.1 Site summary

The proposed development site is adjacent to J38 of the M4, approximately 0.65km south-east of Margam. The development site comprises a plot of greenfield land. The site is bounded by the A48 Margam Road to the east, Hoel Cae'r Bont road to the south, an unnamed road serving the Margam Green and Western Wood energy plants to the west, and a roundabout to the north. Table 2-1 summarises the key characteristics of the site. The site location is shown in Figure 2-1.

Table 2-1 Site summary

Site name	J38 of the M4, Margam
Site area	Approximately 7.9ha
Existing land use	Greenfield
Purpose of development	Industrial development
OS NGR	SS 79329 86319
Local Planning Authorities	Neath Port Talbot Council
Lead Local Flood Authority	Neath Port Talbot Council

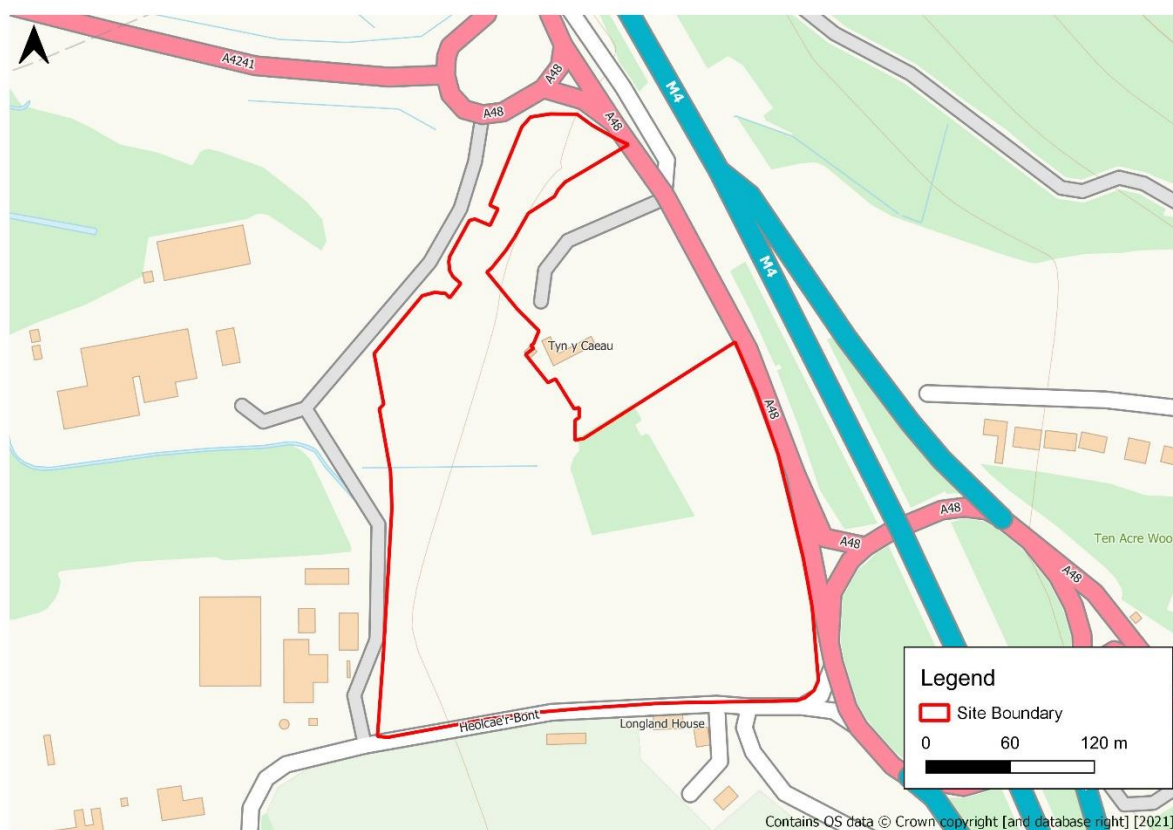


Figure 2-1 Site location

2.2 Site topography

A topographic survey of the site undertaken by John Vincent Surveys Ltd, on behalf of Sandvik Osprey Ltd, dated April 2021. The topographic survey is contained in Appendix A. Furthermore, Figure 2-2 shows Natural Resources Wales' (NRW) Open Source 1m Light Detection and Ranging (LiDAR) data¹, which provides an alternative illustration of the site topography.

The topographic survey indicates that ground levels slope from of between approximately 10.27mAOD and 15.25mAOD on the eastern boundary of the site to between approximately 8.25mAOD and 9.8mAOD along the western boundary of the site.

A comparison of the LiDAR and the topographic survey indicates that the LiDAR along the access road to the site is not representative of the ground levels in this area. The LiDAR for this area was last flown in 2014, prior to the construction of the Margam Green Energy Plant and its access road (which was constructed in 2016). A comparison between the LiDAR levels in this area and the access road is shown below in Figure 2-3.

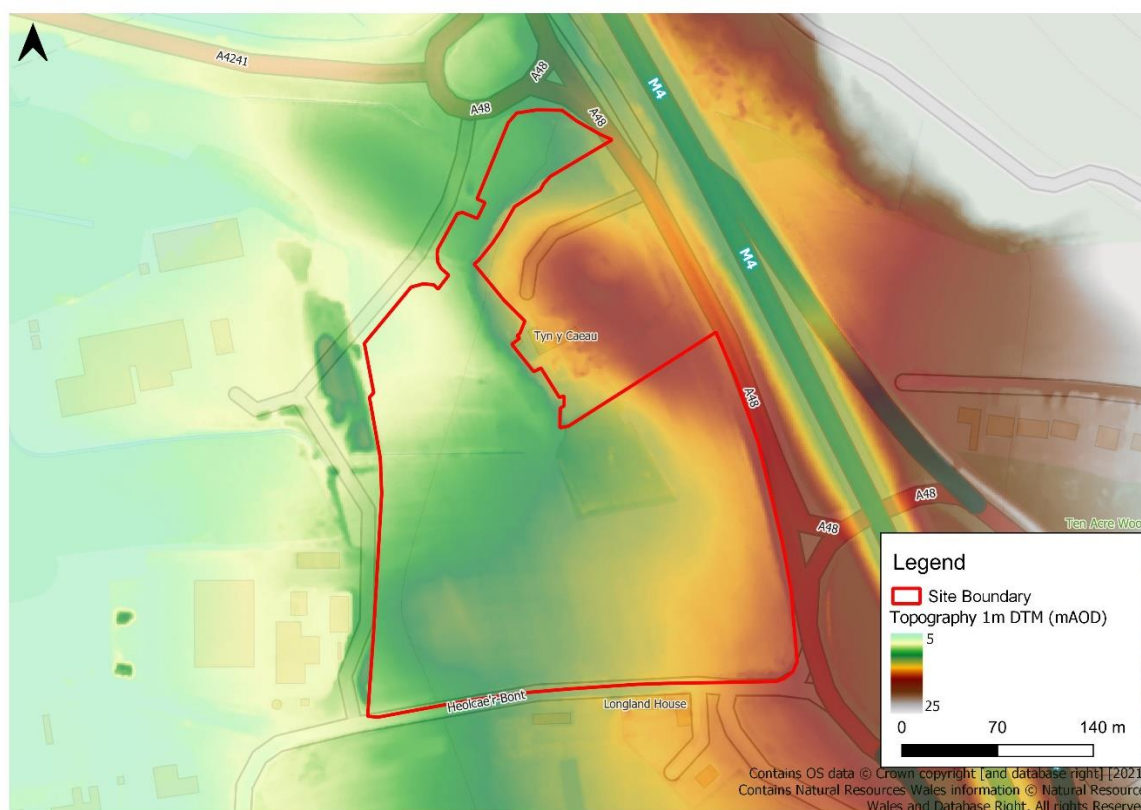


Figure 2-2 Site topography, NRW 1m LiDAR Digital Terrain Model (DTM)

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

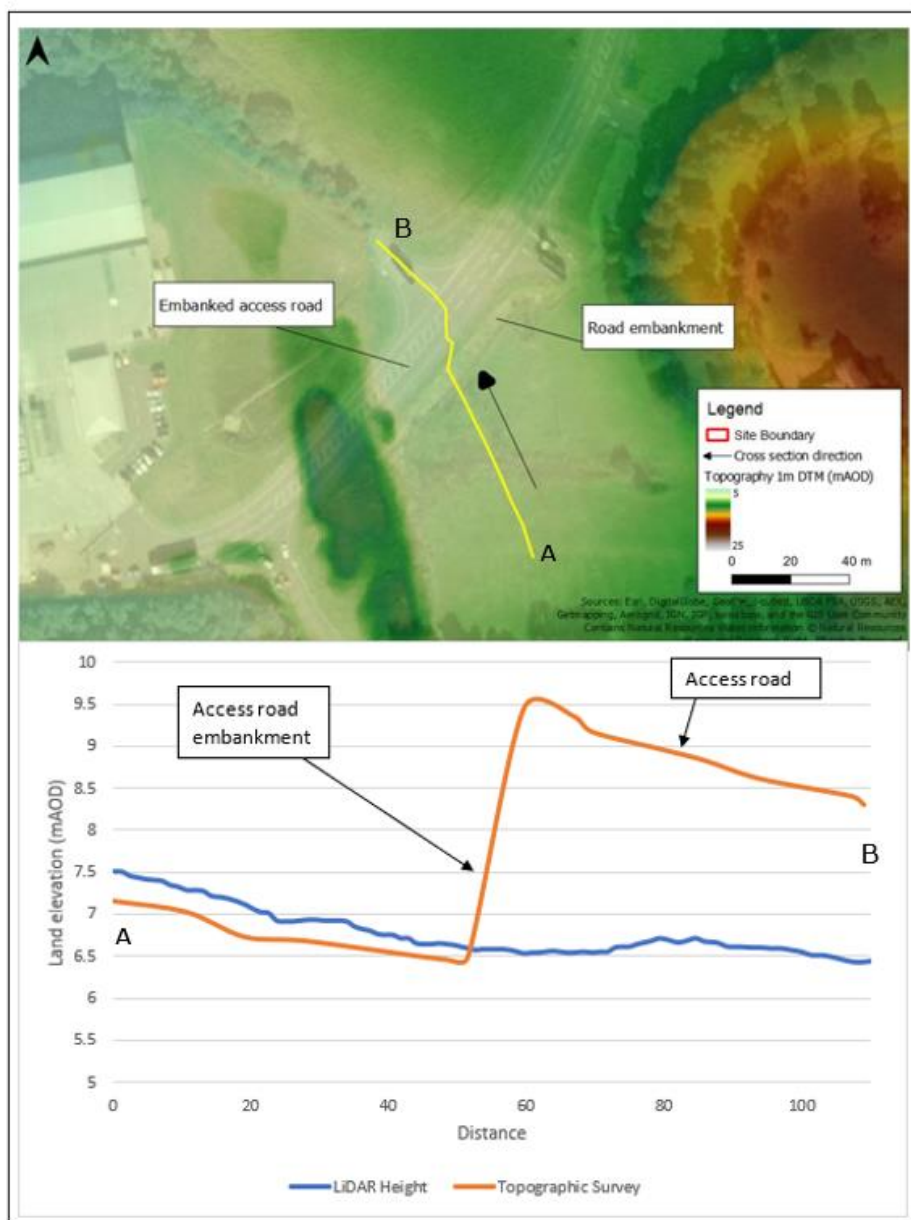


Figure 2-3 Comparison between the LiDAR levels and the topographic survey levels

2.3 Soils and geology

According to the British Geological Survey (BGS) Geology of Britain Viewer² the area's geology consists of a bedrock of South Wales Middle Coal Measures Formation, which is comprised of mudstone, siltstone and sandstone. This bedrock is overlain by superficial glaciofluvial deposits of sand and gravel.

The Cranfield University Soilscape viewer³ describes the site's soil as freely draining slightly acid loamy soils.

2 Geology of Britain Viewer. <http://mapapps.bgs.ac.uk/geologyofbritain/home.html>

3 Cranfield Soil Scapes Viewer. <http://www.landis.org.uk/soilscales/>

2.4 Watercourses

The Efglwys Nunydd Reservoir is located approximately 0.45km to the south of the site. The nearest NRW main river, the Nant Cwm Philip, is located approximately 1.1km to the south east of the site. Ordnance Survey mapping indicates a small unnamed watercourse/drain runs east to west across the centre of the development site and may link to the wider network of smaller watercourses and drainage ditches to the west of the site.

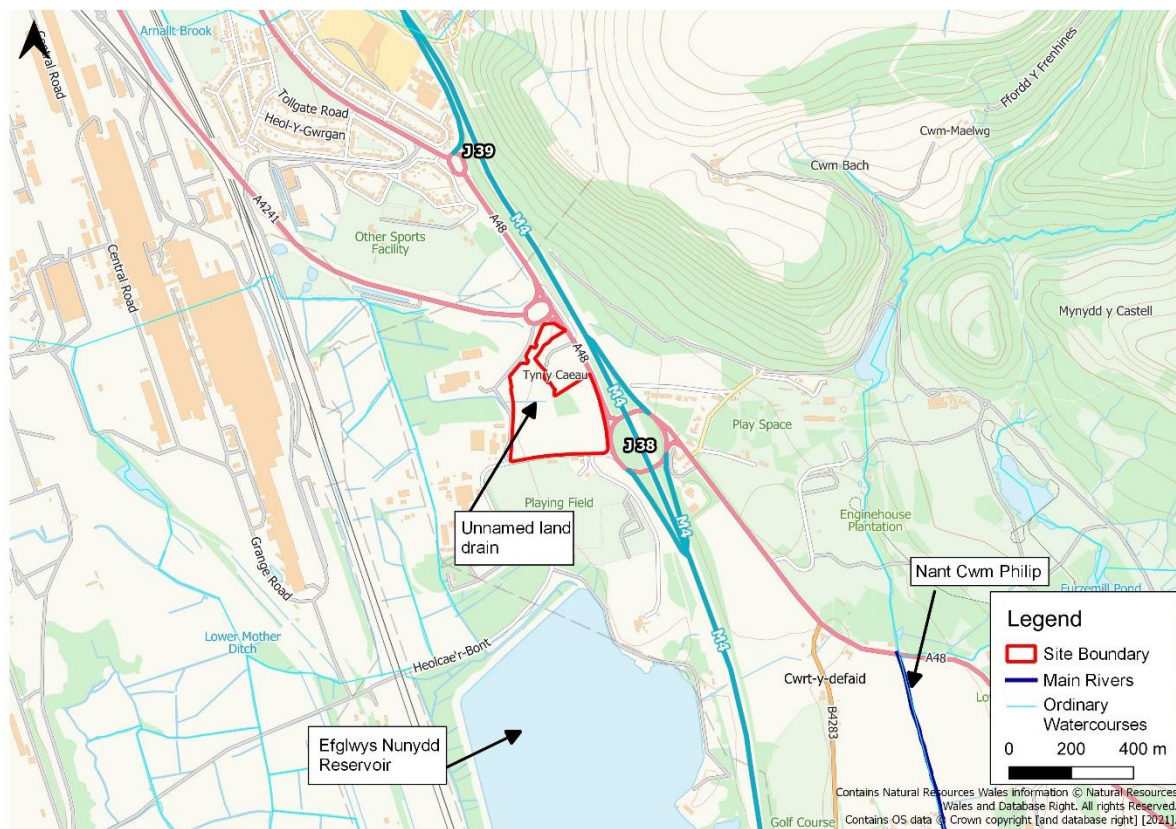


Figure 2-4 Nearby watercourses

2.5 Development proposals

Development proposals for the site are to construct a new Metal Processing Facility, comprising manufacturing, warehousing and office space. The site will consist of an operational building, administration and amenity buildings, parking spaces and other associated works. A development layout can be seen in Figure 2-5 and is also contained in Appendix B.

Access to the site will be available from the unnamed road along the northern boundary of the site. In order to connect the proposed access road to the existing access road junctions, it is anticipated that the client will raise the level of the site.

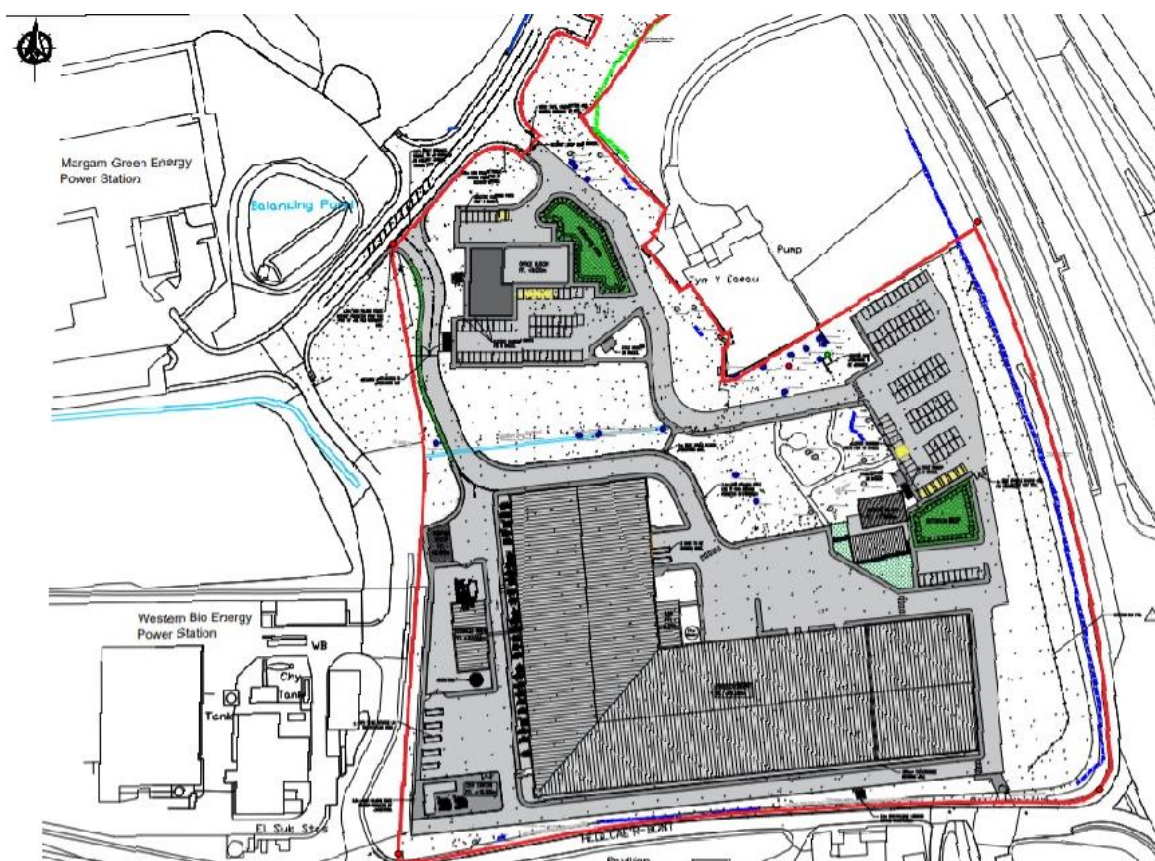


Figure 2-5 Development proposals

3 Planning Policy and Flood Risk

3.1 Planning Context

Planning Policy Wales (PPW) sets out the core planning policies required by the Welsh Government. These policies have the aim that all development in Wales is sustainable and improve the social, economic, environmental, and cultural wellbeing of Wales as set out in the Wellbeing of Future Generations Act 2015. PPW uses a series of Technical Advice Notes to provide more guidance on areas of planning and development in Wales. Technical Advice Note 15 (TAN-15), introduced by the Welsh Government in 2004 and provides technical guidance relating to development planning and flood risk in Wales.

A major update to TAN15 is expected to be released on the 1st of June 2023. Section 3.3 recognises the published draft Flood Map for Planning.

The initial requirements of TAN-15 are to identify the vulnerability classification(s) and flood zones relevant to the proposed development, and to apply this information to the application of the Justification Tests.

3.2 Current TAN-15

3.2.1 Vulnerability classification

TAN-15 assigns one of three flood risk vulnerability classifications to a development, as shown in Table 3-1. The proposed development is classed as industrial development. Consequently, the development is classified as Less Vulnerable.

Table 3-1 Development categories defined by TAN-15

Development category	Types
Emergency services	Hospitals, ambulance stations, fire stations, police stations, coastguard stations, command centres, emergency depots and buildings used to provide emergency shelter in time of flood.
Highly vulnerable development	All residential premises (including hotels and caravan parks), public buildings, (e.g. schools, libraries, leisure centres), especially vulnerable industrial development (e.g. power stations, chemical plants, incinerators), and waste disposal sites.
Less vulnerable development	General industrial , employment, commercial and retail development, transport and utilities infrastructure, car parks, mineral extraction sites and associated processing facilities, excluding waste disposal sites.

3.2.2 Development Advice Map Classification

As shown in Figure 3-1, the majority of the development site is located in Zone A and is considered to be at little or no risk of fluvial or tidal flooding. A small part of the proposed development site is located within Zone B and Zone C2 of the Development Advice Map (DAM). Zone B represents areas known to have been flooded in the past evidenced by sedimentary deposits. Zone C2 represents areas of the floodplain without significant flood defence infrastructure.

The DAM is used to trigger different planning actions based on a precautionary assessment of flood risk. Less vulnerable development can take place within Zone B providing the occupiers are aware of the flood risk and there is no increase in flooding elsewhere. In Zone

C2, development can take place subject to the acceptability of the flood consequences and the application of the Justification Test.

Paragraph 11.1 of TAN15 states that “Where a site falls partially within zone C it will be a matter for the planning authority to judge whether to apply section 6 [Justification Test], although it is probable that an assessment in accordance with section 7 and appendix 1 will be required.”

A small part of the access road is located in the very limited areas of DAM Zone C2. Furthermore, the site is an allocated strategic employment site. **Consequently, although ultimately it will be for the Planning Authority to judge whether to apply the Justification Test, this FCA has assumed that the Justification Tests will not apply to this development. However, the acceptability criteria of Section 7 and Appendix 1 have still been carefully considered through this assessment.**

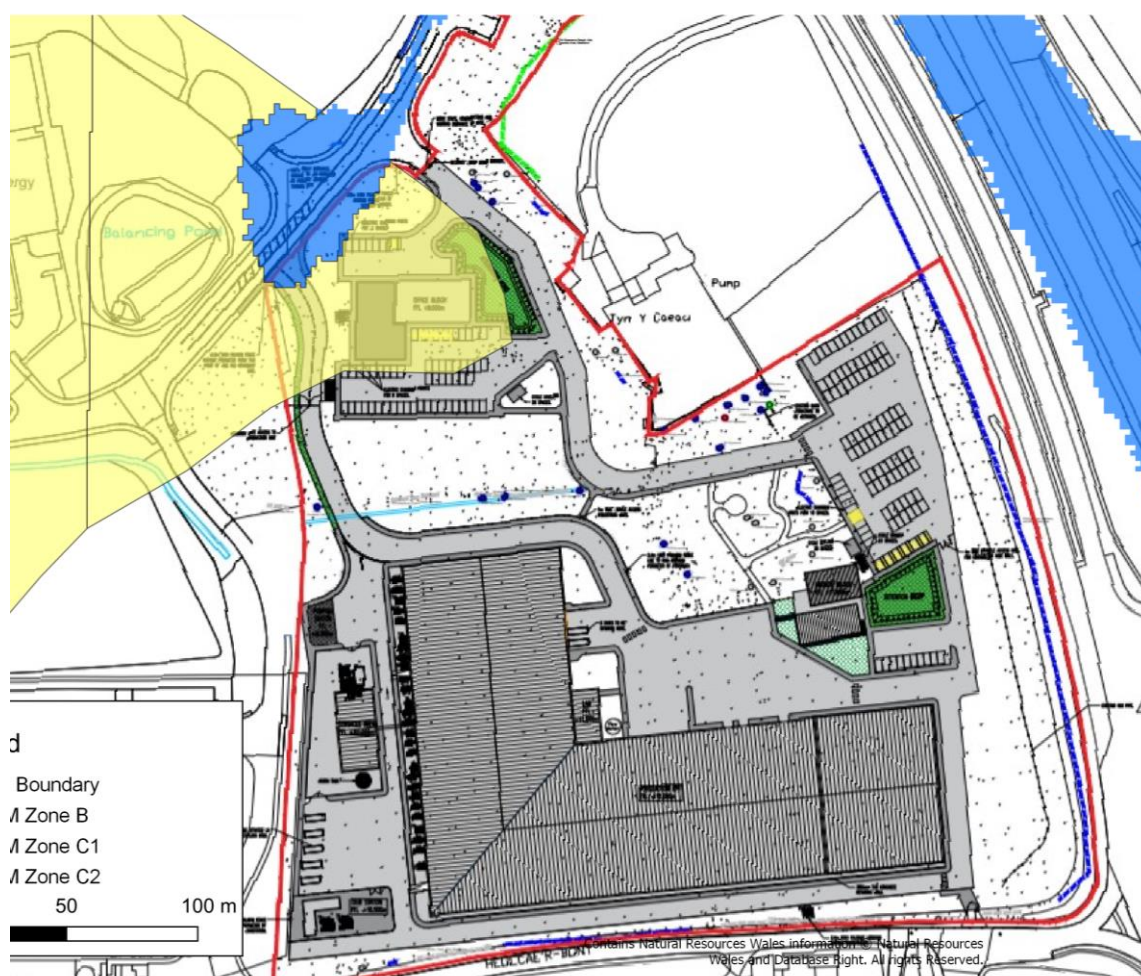


Figure 3-1 Development Advice Map

3.3 Updated TAN-15 (Expected release 2023)

3.3.1 Vulnerability classification

TAN-15 assigns one of three flood risk vulnerability classifications to a development, as shown in Table 3-1. The proposed development is classed as industrial development, incorporating car parking. Consequently, the development is classified as **Less Vulnerable**.

Table 3-2 Development categories defined by TAN-15

Development category	Types
Highly vulnerable development	All residential premises (including hotels, Gypsy and Traveller sites and 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	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 emergency shelters). Places of worship. Cemeteries. Equipped play areas. Renewable energy generation facilities (excluding hydro generation).
Water compatible development	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.

3.3.2 Flood Map for Planning classification

The Flood Map for Planning is used to trigger different planning actions based on a precautionary assessment of flood risk. Less vulnerable development can take place within Zone 2 and Flood Zone 3 providing the flood consequences are deemed acceptable and the development passes the Justification Test.

Flood Map for Planning- Rivers

As shown in Figure 3-1, the majority of the development site is located in Flood Zone 1 and is considered to be at little or no risk of fluvial flooding. A small part of the proposed development site is located within Flood Zone 2 of the Flood Map for Planning for Rivers. Flood Zone 2 represents areas which have less than 1 in 100 (1%) but greater than 1 in 1000

(0.1%) chance of flooding in a given year, including climate change. However, as shown in Figure 3-2, the majority of the site is located in Flood Zone 1. A small part of the access road in the north west of the site is located in Flood Zone 2.

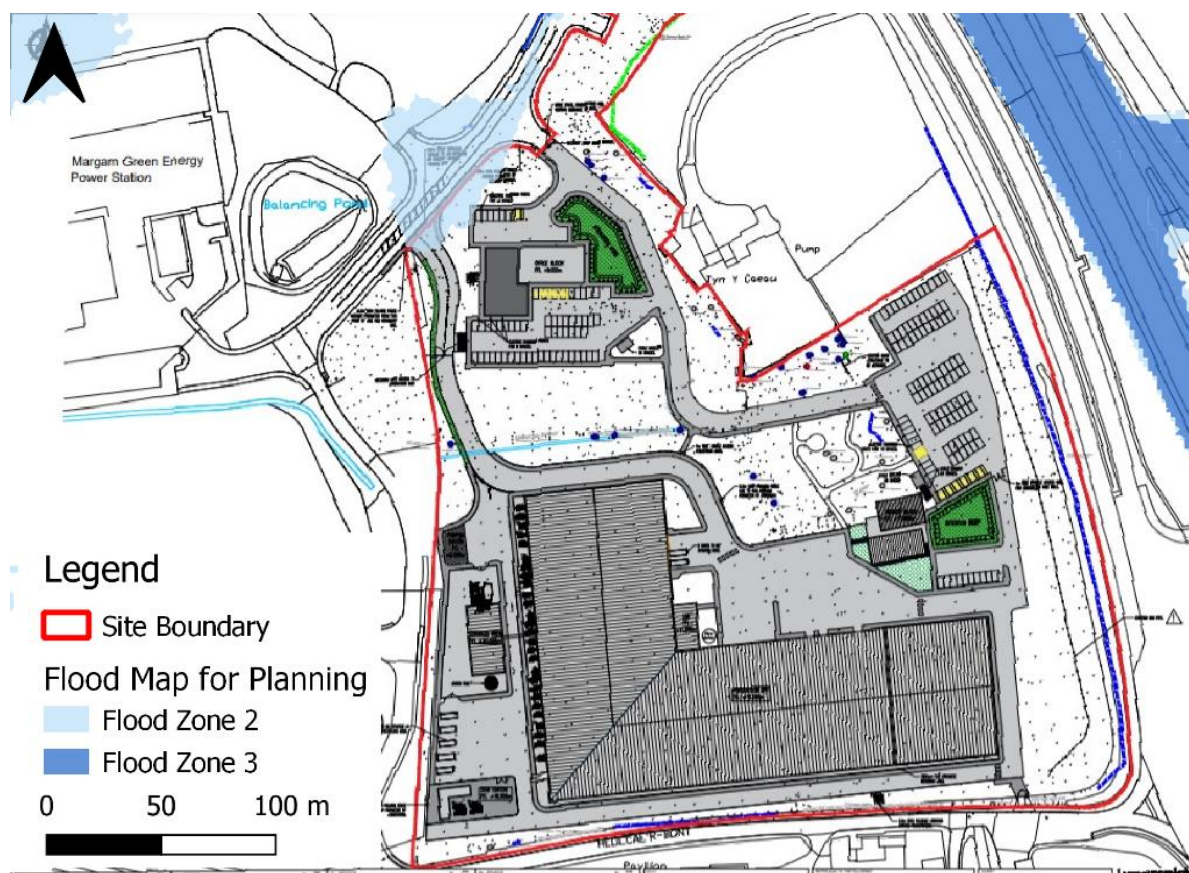


Figure 3-2 Flood Map for Planning- Rivers

Flood Map for Planning- Sea

As shown in Figure 3-3, the majority of the development site is located in Flood Zone 1 and is considered to be at little or no risk of tidal flooding. The car park and the north western access road is located within Flood Zone 2 and Flood Zone 3 of the Flood Map for Planning for the Sea. Flood Zone 2 represents areas which have 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. Flood Zone 3 represents an area greater than 1 in 200 (0.5%) chance of flooding in a given year, including climate change.

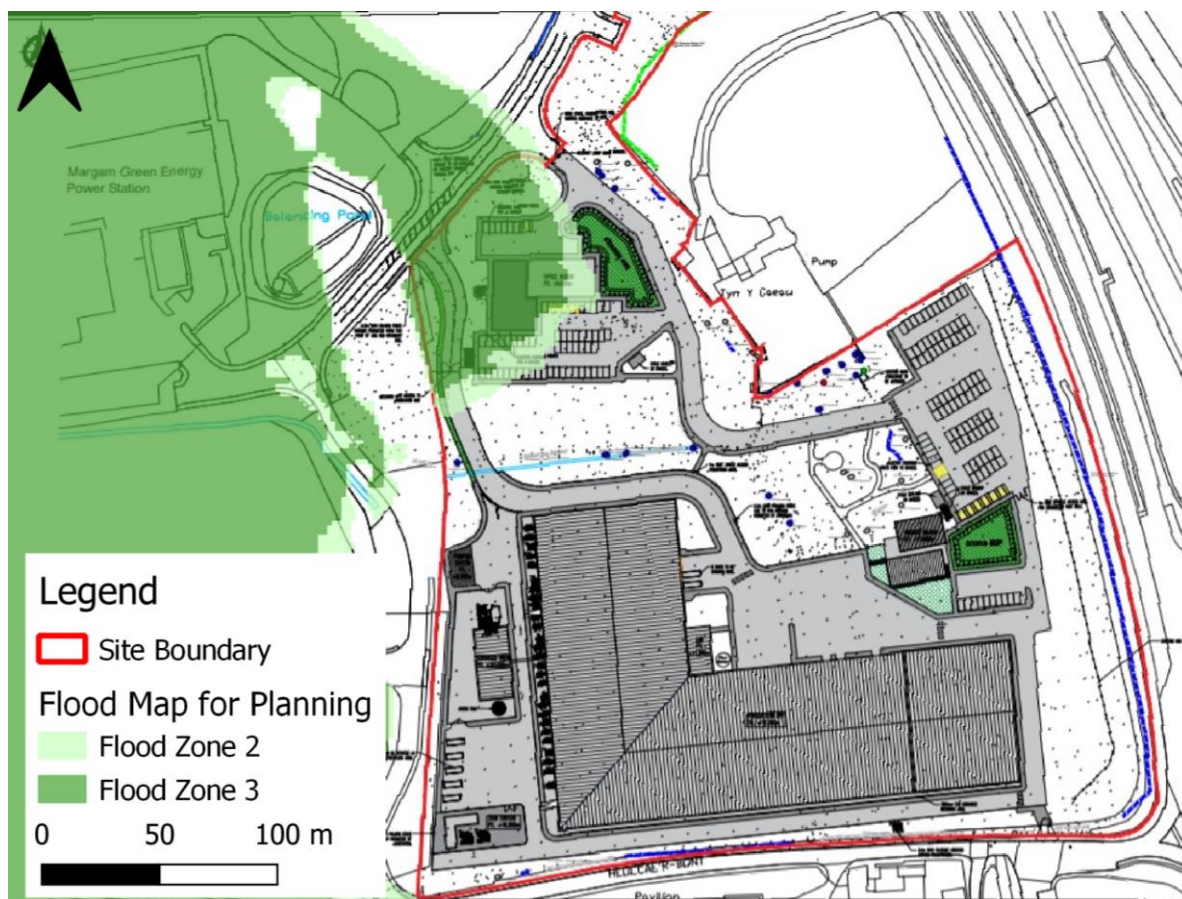


Figure 3-3 Flood Map for Planning- Sea

Flood Map for Planning- Surface Water and Small Watercourses

The majority of the proposed development site is located in Flood Zone 1 of the Flood Map for Planning for the Surface Water and Small Watercourses and is considered to be at little or no risk of surface water flooding, as shown in Figure 3-4. A small part of the north western access road is located in Flood Zone 2 and Flood Zone 3 of the Flood Map for Planning for the Surface Water and Small Watercourses. Flood Zone 2 represents areas which have less than 1 in 100 (1%) but greater than 1 in 1000 (0.1%) chance of flooding in a given year, including climate change. Flood Zone 3 represents an area greater than 1 in 100 (1%) chance of flooding in a given year, including climate change.

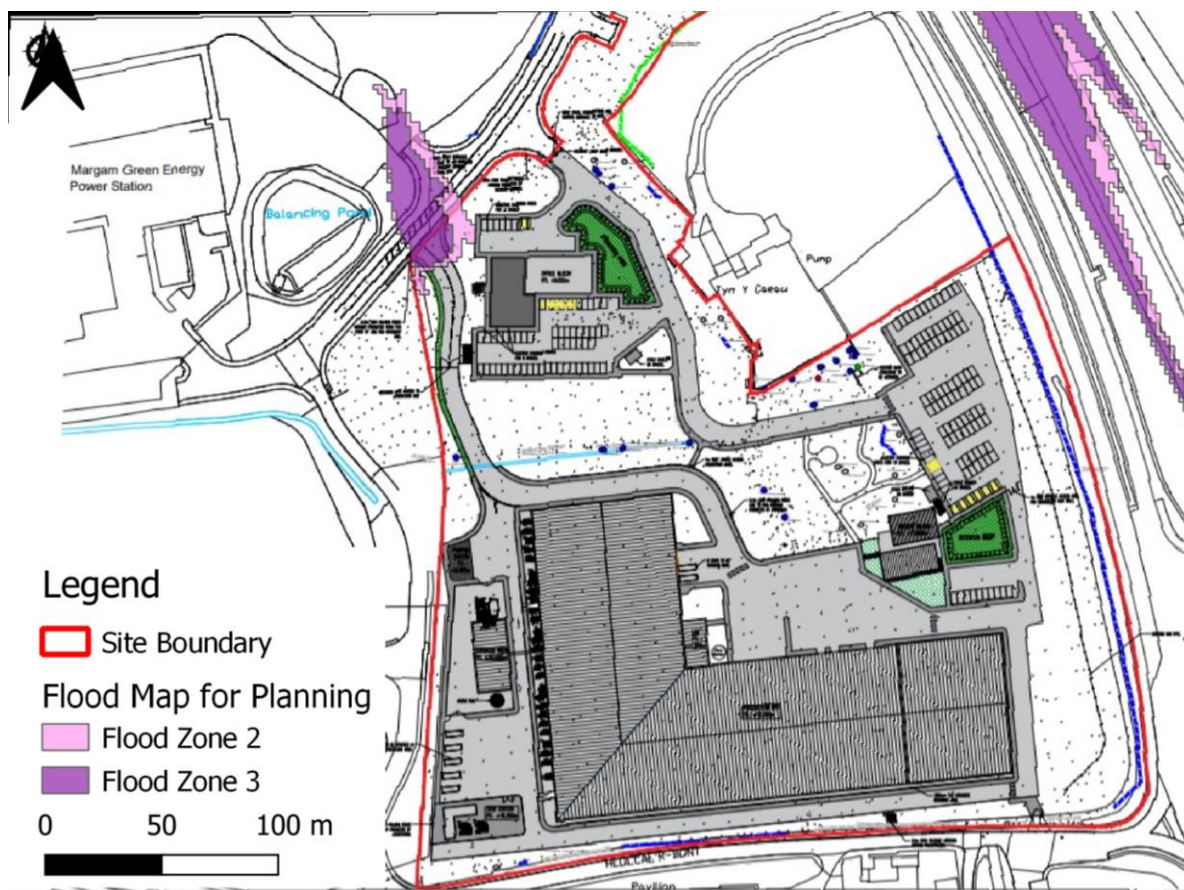


Figure 3-4 Flood Map for Planning- Surface Water and Small Watercourses

4 Review of existing flood risk data

This section assesses the risk to the proposed development from all sources of flooding, the risk of increased flooding to others, and how flood risks can be managed. As a Level 1 FCA, the flood risk assessment is based solely on a desk-based analysis of existing flood risk data.

4.1 Summary of existing flood risk data

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

Table 4-1 Existing Flood Risk Data for the Site

Source of Flooding	Onsite Presence	Description
Flood Risk from Rivers	✓	The site is in an area at risk of river flooding.
Flood Risk from the Sea	✗	The site is not at risk of tidal flooding. Further assessment of the potential impacts of climate change on tidal flood risk has been completed in Section 5.
Flood Risk from Surface Water and Small Watercourses	✓	The site is at low risk of surface water flooding.
Flood Risk from Groundwater	✗	The site is at very low risk of flooding from groundwater.
Flood Risk from Reservoirs	✗	The site is not considered to be at risk of flooding from reservoirs.
Flood Risk from Sewers	✗	There is no evidence to suggest that the site is at risk of flooding from sewers.

4.2 Historical flooding

NRW's map of recorded flood extents does not show any evidence of historic flooding on the site. No other historic flooding records were identified at the site in the Neath and Port Talbot Flood Risk Management Plan⁴ and Preliminary Flood Risk Assessment⁵.

4.3 Flood Risk from Rivers

NRW's Flood Risk Assessment Wales (FRAW) Map indicates that the majority of the site is located within a **very low risk** area for flooding from rivers, as shown in Figure 4-1. Very low means that each year, this area has a chance of flooding of less than 1 in 1000 (0.1%).

A small part of the northern boundary has a high and medium risk of fluvial flooding. High risk indicates that the site will have a chance of flooding of greater than 1 in 30 (3.3%) and

4 Neath and Port Talbot Council (2015) Flood Risk Plan. Retrieved from: <https://www.npt.gov.uk/6789>

5 Neath and Port Talbot Council (2017) Preliminary Flood Risk Assessment. Retrieved from: <https://www.npt.gov.uk/2389>

medium risk indicates that each year, this area has a chance of flooding of between 1 in 100 (1% AEP) and 1 in 30 (3.3% AEP).

Two small areas along the north western corner of the site has a low risk of fluvial flooding. Low risk indicates that each year, the site has a chance of flooding of between 1 in 1,000 (0.1% AEP) and 1 in 100 (1% AEP), as shown in Figure 4-1.

Current proposals for the site demonstrate that all the buildings proposed as part of the development will be at **very low risk** of flooding from rivers. Part of the access road to the north is shown to be at high to low risk of flooding as well as the north western access road which is shown to be at low risk of flooding.

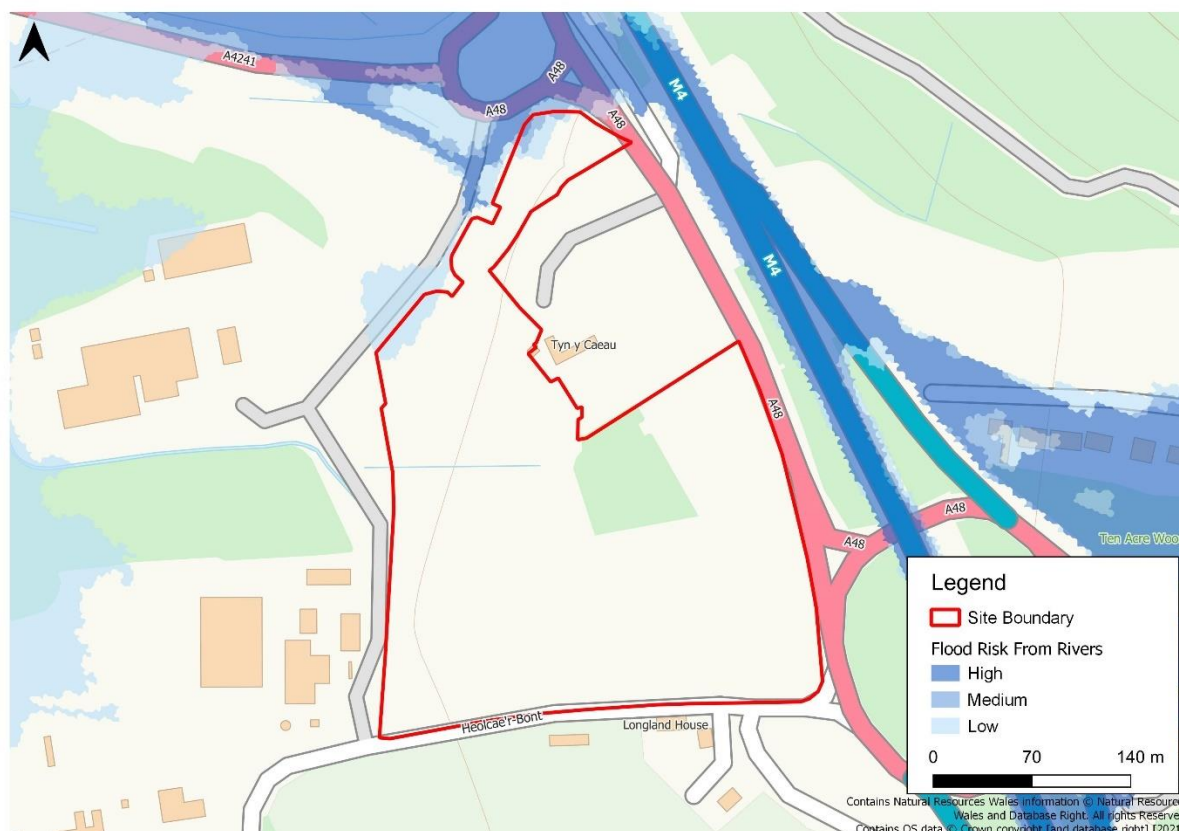


Figure 4-1 Risk of flooding from rivers

4.4 Flood Risk from the Sea

The NRW FRAW Flood Risk from the Sea map shows that the site is **not at risk of tidal flooding**. To better understand the increased risk of tidal flooding as a result of climate change, further assessment has been carried out and discussed in Section 5.

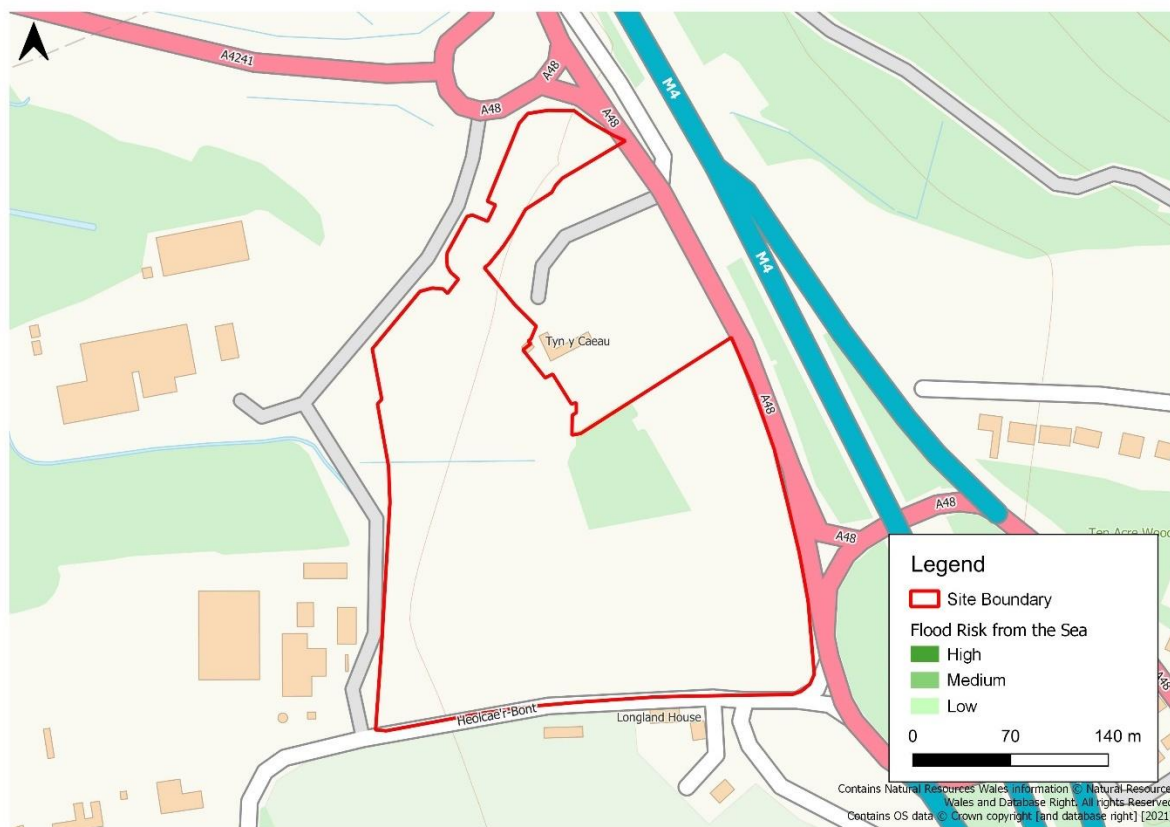


Figure 4-2 Risk of flooding from the sea

4.5 Flood Risk from Surface Water and Small Watercourses

The NRW FRAW Surface Water and Small Watercourses map shows that the majority of the site is at **very low risk of flooding** from surface water and small watercourses. This means that the majority of the site has less than a 1 in 1,000 (0.1% AEP) chance of flooding from this source, as shown in Figure 4-2.

A small, localised area in the south of the site has a high (greater than 1 in 30 (3.3%)) chance of flooding. This area of surface water ponding is currently predicted to impact a small part of the proposed car park and the north western access road. This is due to the dip in topographic levels in this location, resulting in surface water ponding. This area should be re-levelled as part of the site design to ensure that surface water ponding does not occur in this area.

A drainage strategy should be used to demonstrate that the development will not increase the risk of surface water flooding.

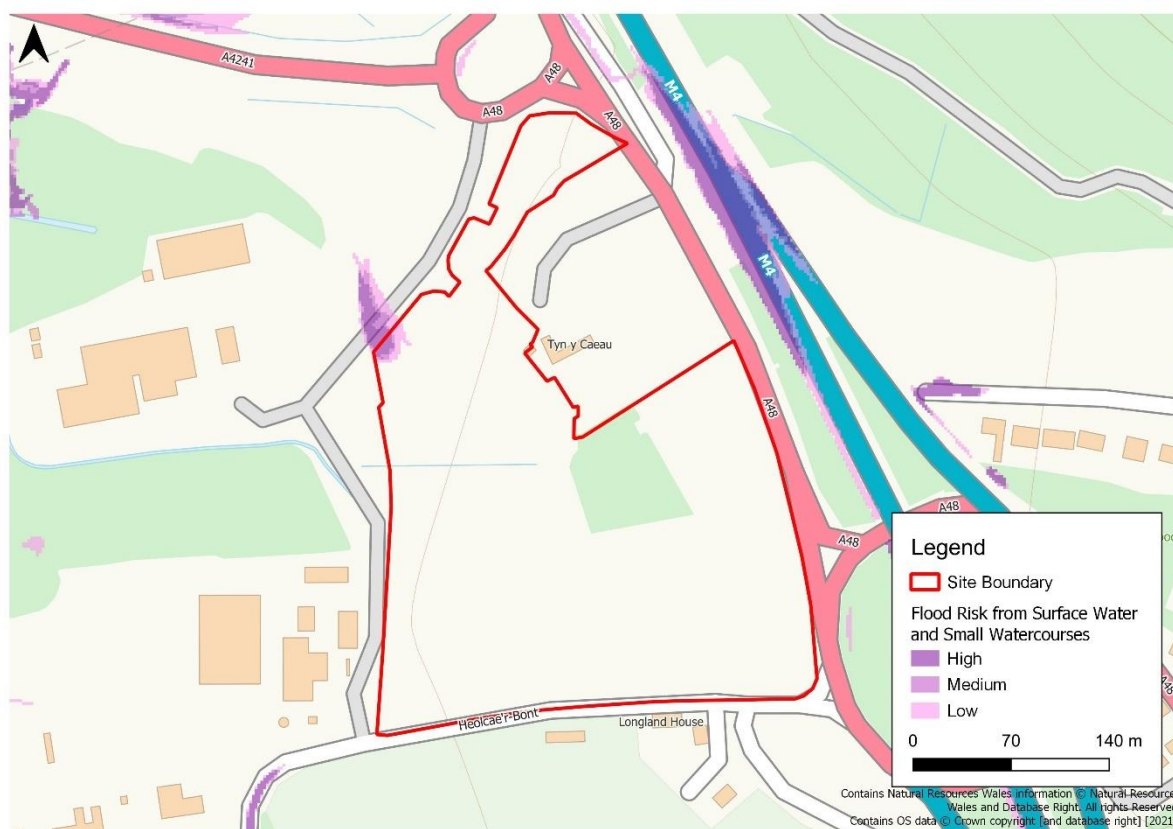


Figure 4-3 Risk of flooding from surface water and small watercourses

4.6 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 Neath Port Talbot County Borough Council Flood Risk Management Plan⁵, states that 'there are no specific areas of historical groundwater flooding recorded in the Neath and Port Talbot area'. It can therefore be concluded that the risk of groundwater flooding at the site is **very low**.

4.7 Flood Risk from Reservoirs

NRW flood maps indicate that the proposed development site is not at risk of flooding due to reservoir failure, as shown in Figure 4-4. It can therefore be concluded that there is no risk of reservoir flooding at the site.

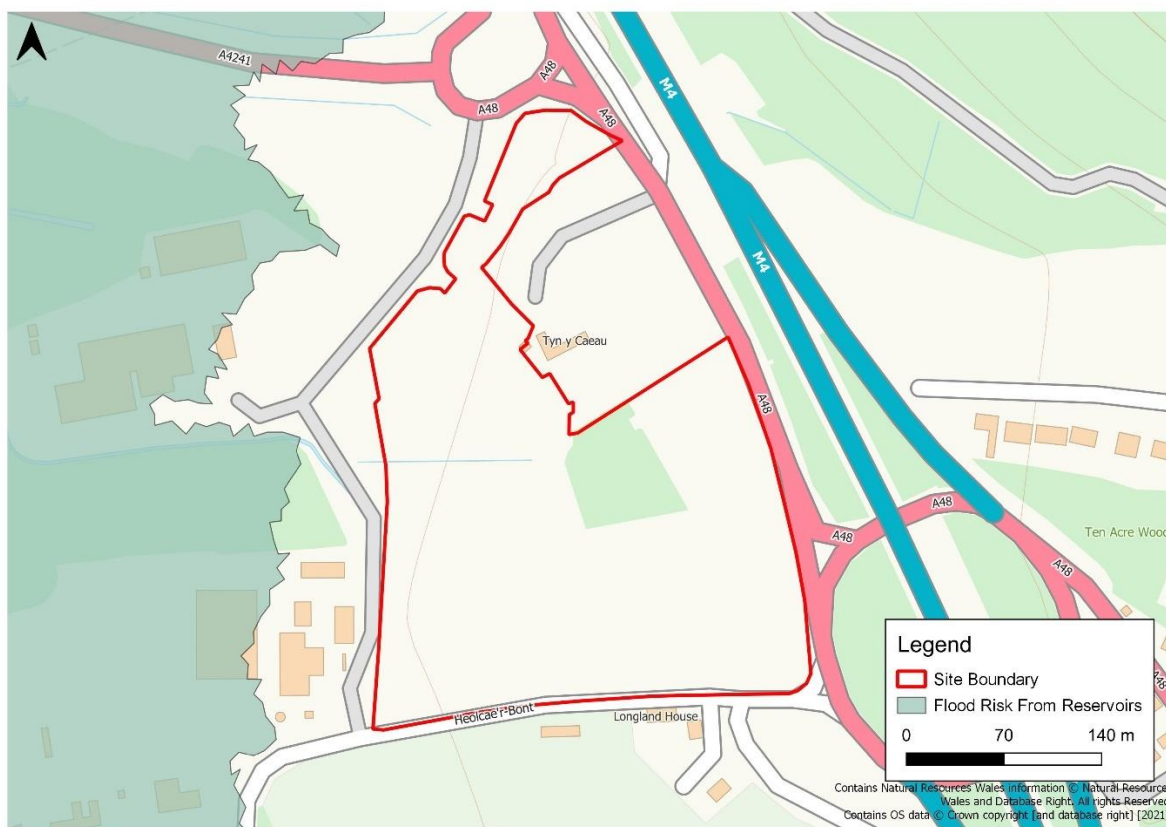


Figure 4-4 Risk of flooding from reservoirs

4.8 Flood Risk from Sewers

The Neath Port Talbot County Borough Council Flood Risk Management Plan does not show any evidence of historic sewer flooding on or close to the site. It can therefore be concluded that the risk of sewer flooding at the site is **very low**.

5 Detailed Assessment of Tidal Flood Risk

5.1 Extreme Sea Level Estimates

Extreme sea level estimates have been taken from the Environment Agency Coastal Flood Boundary Conditions for UK Mainland and Islands; Design Sea Levels (ref. SC060064). Extreme estuary sea level predictions are provided at node locations at approximately 2km spacing along the coastline.

For this assessment the close extreme sea level node is Node 474 located to the west of the Margam coastline approximately 4.1km from the site. The extreme sea level estimates for this node are shown in Table 5-1:

Table 5-1 Extreme Sea Level Estimates (present day)

Event	Predicted sea level (mAOD)
0.5% AEP (1 in 200)	6.38
0.1% AEP (1 in 1000)	6.71

For all coastal locations, future sea level rise is a major consideration and should be applied to the extreme sea level estimates. In accordance with Welsh Government Guidance⁶ extreme sea levels have been uplifted for a 75-year lifetime of development (2100). The climate change uplifts applied to the extreme sea level estimate are shown in Table 5-2.

Table 5-2 Cumulative Sea Level Rise

Allowance (percentile)	Mean sea level rise (metres) by 2100
70 th	0.84
95 th	1.11

Using the extreme sea level estimates and climate change uplifts, the projected still water levels for the 2100 epoch have been calculated for both the 0.5% AEP and 0.1% AEP events, as provided in Table 5-3.

Welsh Government guidance is that as a minimum, development proposals should be assessed against the relevant regional 70th percentile to inform design levels. Furthermore, an assessment should also be made against the 95th percentile to inform mitigation measures, access and egress routes and emergency evacuation plans.

⁶ Welsh Government Guidance on Climate Change Allowances for Planning Purposes:
https://gov.wales/sites/default/files/publications/2021-09/climate-change-allowances-and-flood-consequence-assessments_0.pdf

Table 5-3 Predicted tidal flood levels, with climate change (2100)

Return Period	Still Water Level (mAOD) 70th percentile	Still Water Level (mAOD) 95th percentile
0.5% AEP Event	7.22	7.49
0.1% AEP Event	7.55	7.82

5.2 Tidal Projection Modelling

Depth grids, using 2m LiDAR Digital Terrain Model (DTM) data and the predicted still water levels, were created to determine the predicted depth and extent of flooding at the proposed development site for the events in Table 5-1 and Table 5-3.

This method of predicting tidal flood risk does not truly represent the hydraulic connectivity of areas to tidal water, but rather assumes the same water levels is maintained across all areas irrespective of the distance from the coast for intervening landform features for structures. Therefore, tidal projection modelling is conservative by nature, and in this case likely to be highly conservative for the reasons discussed later in this chapter.

As noted in section 2.2, a comparison of the LiDAR and the topographic survey indicates that the LiDAR ground model along the access road to the site is not representative of the ground levels in this area. This has been considered in the assessment of risk to this area in the below sections.

5.3 Flood risk for the lifetime of the development

The Welsh Government Guidance on Climate Change Allowances for Planning Purposes advises that a development lifetime of 75 years should be assumed for industrial development. As such, the flood levels for the 2100 epoch are described in the following sections. These results are based on the 70th Percentile estimate of sea level rise. The residual risk of more extreme climate change allowances (ie. 95% percentile values) is discussed in Section 5.4.

5.3.1 0.5% AEP Event (2100)

Figure 5-1 shows that the site is predominantly flood free in the 2100 0.5% AEP event. A small part of the north western boundary is shown to flood to a depth of up to 0.9m. The rest of the development site remains flood free.

The topographic survey indicates that road levels are over 8mAOD along the area of access road shown to be at risk. The still water level for this event is approximately 7.22mAOD. As such, any flood water will be restricted behind the site access road and will not result in the flooding of the site or the access road.

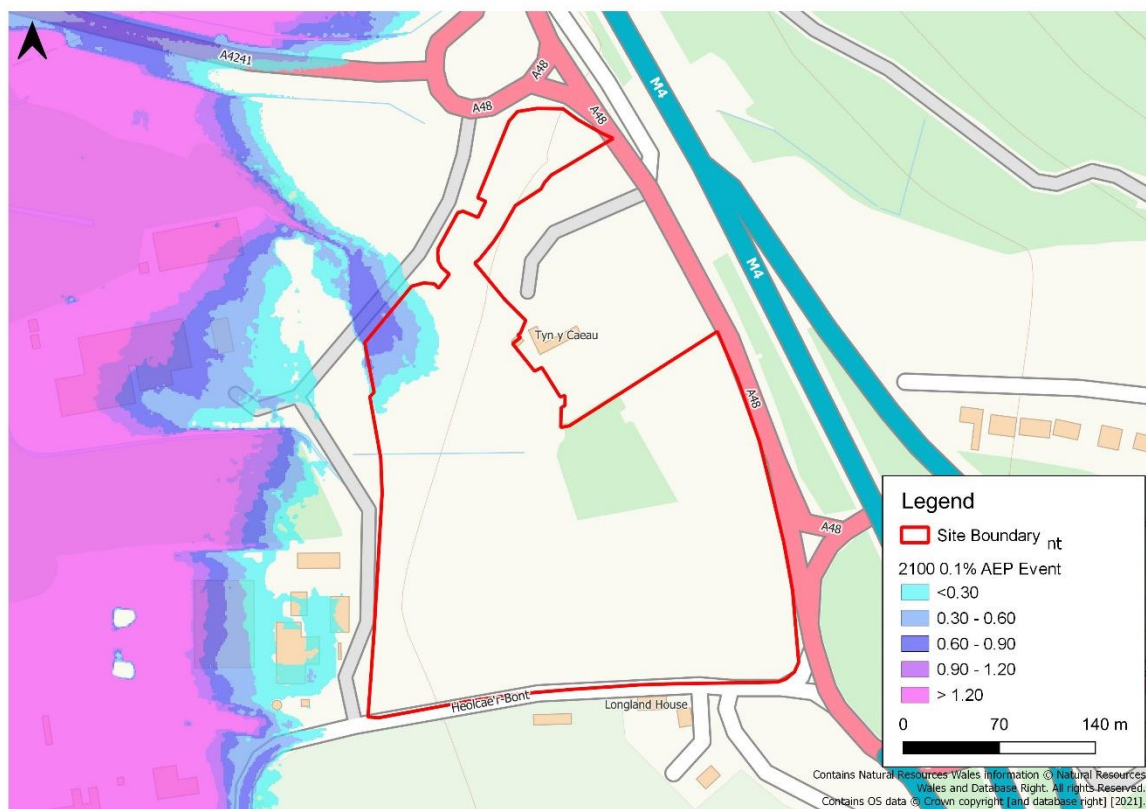


Figure 5-1: 2100 0.5% AEP tidal flood event flood depths

5.3.2 0.1% AEP Event (2100)

Figure 5-2 shows that the site is predominantly flood free in the 2100 0.1% AEP event. The north western part of the site is shown to flood to a depth of up to 1.2m. The rest of the development site remains flood free.

The topographic survey indicates that road levels are over 8mAOD along the area of access road shown to be at risk. The still water level for this event is approximately 7.55mAOD. As such, any flood water will be restricted behind the site access road and will not result in the flooding of the site or the access road.

Further to this, Figure 5-3 shows the flow path for water to reach the site is extensive and it is highly unlikely that tidal flooding would be able to propagate to the site during the limited time afforded by high tide.

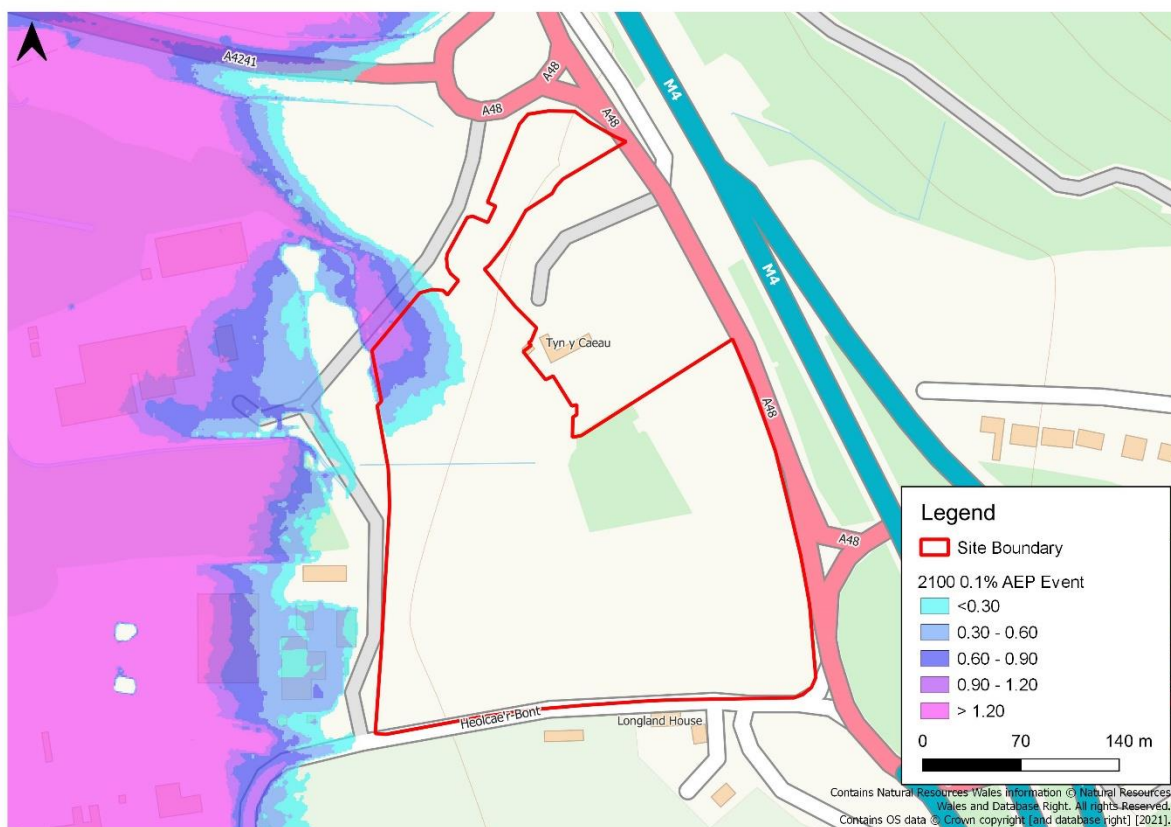


Figure 5-2: 2100 0.1% AEP tidal flood event flood depths

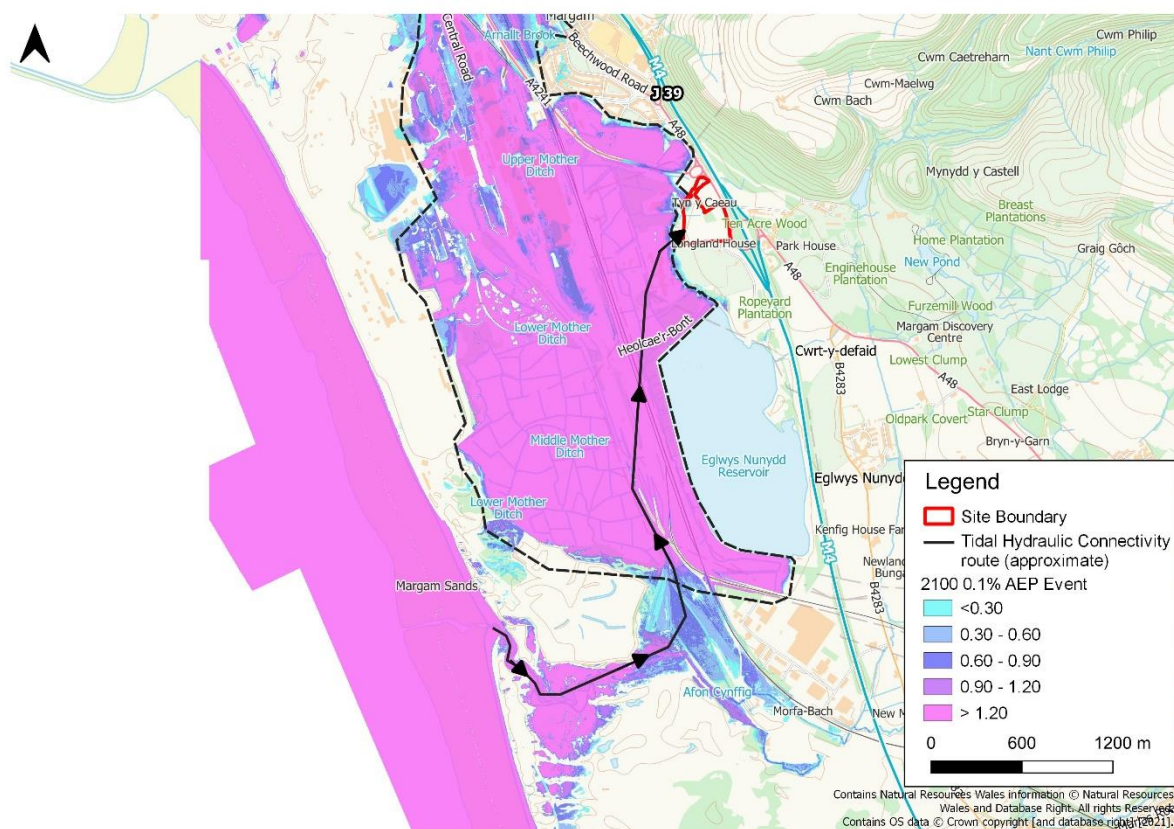


Figure 5-3: 2100 0.1% AEP tidal flood event flood depths- Flow path of flood water to the site.

5.4 Residual tidal risks

Welsh Government guidance is that as a minimum, development proposals should be assessed against the relevant regional 70th percentile to inform design levels.

However, Welsh Government guidance also recommends that an assessment should be made against the 95th percentile to inform mitigation measures, access and egress routes and emergency evacuation plans. This captures the residual risk that climate change effects are greater than otherwise allowed for.

The 95th percentile flood levels for the 2100 0.5% AEP and 0.1% AEP flood events are 7.49m AOD and 7.82mAOD respectively. Consequently, in both events the access road would still be higher than the tidal flood level and would therefore restrict any flood water. As noted in 5.3.2, the flow path for water to reach the site is extensive and it is highly unlikely that tidal flooding would be able to propagate to the site during the limited time afforded by high tide.

5.5 Flood Risk Summary

As stated in the sections above, the proposed development has shown to be flood free during for both the 70th percentile and 90th percentile 2100 0.5% AEP and 0.1% AEP flood events. The proposed development site is a significant distance from the sea and therefore it is highly unlikely that tidal flood water would be able to reach the site.

The NRW DAM indicates that the proposed development is within Zone C2 and the NRW Flood Map for Planning for the Sea indicates that the site is located within Flood Zones 2 and 3. As noted in the assessment above, the LiDAR data for this area does not accurately represent the land levels at the site, as it does not incorporate the access road which runs along the northern boundary of the site.

The proposed development has been assessed against the 70th percentile and 90th percentile 2100 0.5% AEP and 0.1% AEP flood events and has shown to be flood free, therefore it has been concluded that the classification of this area in Zone C2 and as Flood Zones 2 and 3 is incorrect.

6 Assessment of Acceptability Criteria

TAN-15 states that for less vulnerable development to be considered within Zone C2, the proposed development must meet the requirements set out within the Justification Test including the Acceptability Criteria. An assessment of the Acceptability Criteria is summarised in Table 6-1 below. These criteria must be satisfied for the proposed development to comply with TAN-15.

Table 6-1: Acceptability Criteria for TAN-15

TAN-15 Acceptability Criteria	Comments	Assessment
Flood defences must be shown by the developer to be structurally adequate particularly under extreme overtopping conditions (i.e. that flood with a probability of occurrence of 0.1%)	There are currently no flood defences which benefit the site.	N/A
The cost of future maintenance for all new/approved flood mitigation measures, including defences must be accepted by the developer and agreed with NRW.	No flood defences are required for the development. The site is predicted to be flood free during all scenarios.	✓
The developer must ensure that future occupiers of development are aware of the flooding risks and consequences	Upon sale or transfer of the land to new occupiers, the developer should inform them of the flood risk at the site.	✓
Effective flood warnings are provided at the site	The site is not located within an NRW Flood Warning or Flood Alert Area due to the present level of flood risk.	✓
Escape/evacuation routes are shown by the developer to be operational under all conditions	The access roads to the site are shown to be flood free during all scenarios.	✓
Flood emergency plans and procedures produced by the developer must be in place	The site is predicted to be flood free during all tidal flood events therefore an emergency flood plan is not required.	✓
The development is designed by the developer to allow the occupier the facility for rapid movement of goods/possessions to areas away from the floodwaters	The site is predicted to be flood free during all tidal flood events therefore rapid movement of goods is not required.	✓
Development is designed to minimise structural damage during a flooding event and is flood proofed to enable it to be	The site is predicted to be flood free during all tidal flood events therefore no structural damage should occur.	N/A

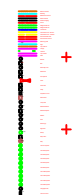
returned to its prime use quickly in the aftermath of the flood		
No flooding elsewhere	The site is predicted to be flood free during all tidal flood events therefore flood water displacement will not occur.	✓
The development should be designed to be flood free during the 0.5% tidal flood	The proposed development is predicted to be flood free during a 2021 and 2100 0.5% AEP events.	✓
The development should be designed so that in an extreme (1 in 1000 chance) event there would be less than 1000mm of water on access roads and within the property	The proposed development is predicted to be flood free during a 2021 and 2100 0.1% AEP events.	✓

7 Conclusions and recommendations

- JBA Consulting were commissioned by Sandvik Osprey Ltd, to prepare a Level 1 Flood Consequence Assessment (FCA) in support of a planning application for a new Metal Processing Facility at J38 of the M4 at Margam.
- The proposal is to develop the site for a new Metal Processing Facility, comprising manufacturing, warehousing and office space. The site will consist of an operational building, administration and amenity buildings, parking spaces and other associated works.
- The proposed development site falls within Zone C2 and Zone B of NRW's Development Advice Maps. Zone C2 is described as "areas of the floodplain without significant flood defence infrastructure". In Zone C2, development can take place subject to the application of a Justification Test, and the acceptability of flood consequences.
- Paragraph 11.1 of TAN15 states that "Where a site falls partially within zone C it will be a matter for the planning authority to judge whether to apply section 6 [Justification Test], although it is probable that an assessment in accordance with section 7 and Appendix 1 will be required." No development is proposed in the very limited areas of DAM Zone C2. Furthermore, the site is an allocated strategic employment site. Consequently, although ultimately it will be for the Planning Authority to judge whether to apply the Justification Test, this FCA has assumed that the Justification Tests will not apply to this development.
- The proposed development site falls within Flood Zone 2 and Flood Zone 3 of NRW's Flood Map for Planning- Sea, Rivers and Surface Water and Small Watercourses. No built development is proposed within the Surface Water and Small Watercourses Flood Zones 2 or 3. A small part of the north western access road is within Flood Zone 2 of the Flood Map for Planning for Rivers. Part of the car park and north western access road is proposed within Flood Zones 2 and 3 of the Flood Map for Planning for the Sea. In Flood Zones 2 and 3, development can take place subject to the application of the Justification Tests, and the acceptability of flood consequences.
- A small part of the site is shown to be at risk of flooding from fluvial and surface water and small watercourses flood risk sources according to the National Resources Wales Flood Risk Assessment Wales Maps.
- Flood risk from groundwater, sewers and reservoirs is considered to be low.
- Detailed assessment of tidal flood risk shows that the proposed development site and its access roads are predicted to be flood free during the 2021 0.5% AEP and 0.1% AEP events. In addition, the development is shown to be flood free during the 2100 0.5% AEP and 0.1% AEP flood events.
- The proposed development satisfies all requirements of TAN15 and complies with the development and flood risk aims of Planning Policy Wales.

Appendices

A Topographic Survey



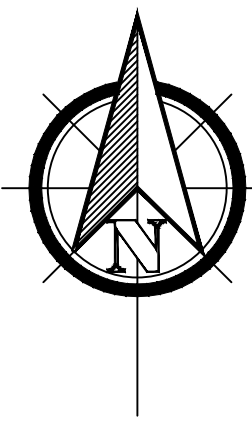
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B Development proposals



Margam Green Energy
Power Station

Balancing Pond

Western Bio Energy
Power Station

W.B

Chy
Tank

Tank

El Sub Stas

HOV'S ONLY ENTRANCE.
SIGNAGE TO BE INSTALLED
TO PROHIBIT LORRIES
TURNING LEFT

2.8m HIGH PALISADE FENCE
AROUND PERIMETER OF
SECURITY BARRIER

ELECTRIC CHARGING PORTS
FOR 2 SPACES

OFFICE BLOCK
FFL +9.000m

ELECTRIC CHARGING PORTS
FOR 6 SPACES

CYCLE SHELTER
28 SPACES

Pump

Tyn Y Caeu

EXISTING BARN
STRUCTURE TO
BE RETAINED

ELECTRIC CHARGING
PORTS FOR 10 SPACES

CYCLE SHELTER
28 SPACES

CYCLE STANDS
24 SPACES

AMENITY BLOCK
FFL +11.600m

DETENTION BASIN

4m WIDE DOUBLE ACCESS GATE
FOR CONTRACTOR USE ONLY

EXISTING GAS PIPE

PUMPING STATION
FFL +9.500m

SERVICES AREA
FFL +10.000m

ARGON TANK

SUB STATION
FFL +10.500m

LAB
FFL +11.000m

PRODUCTION UNIT
FFL +11.000m

2.4m HIGH PALISADE FENCING
AROUND TRANSFORMER

KEY

SITE BOUNDARY LINE

NEW FENCING LINE

CATEGORY A TREE (HIGH)
(HIGHLY DESIRABLE FOR RETENTION)

CATEGORY B TREE (MODERATE)
(DESIRABLE FOR RETENTION)

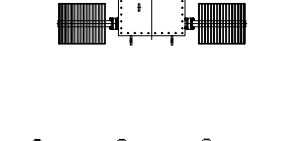
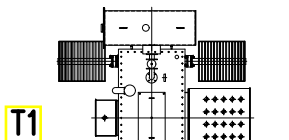
CATEGORY C TREE (LOW)
(OPTIONAL FOR RETENTION)

CATEGORY U TREE (POOR)
(UNSUITABLE FOR RETENTION)

PROPOSED SUDS FEATURES

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