

Report No. BC/MB/06.26.04.Rev 1.

Flood Consequence Assessment: Land at the Former Tirbach Washery, Ystalyfera.

Prepared on behalf of:

Mr Robert Maggs.

By:



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Flood Consequence Assessment: Land at Former Tirbach Washery.

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Flood Consequence Assessment: Land at Former Tirbach Washery, Ystalyfera.

1 Introduction

This report has been prepared on behalf of our client:

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and relates to a tract of land adjacent to Tirbach Road in Ystalyfera; the site of the former Tirbach Washery, (Grid ref. 277150E 209410N). The report supports a planning application for a housing development on the Site. The hydrological assessment was carried out by Dr Paul Webster BSc MSc DIC PhD FCIWEM C.WEM, Senior Hydrologist, for Corylus Planning & Environmental Ltd.

The following sources of data were used in the compilation of this report:

- i) LiDAR data downloaded from NRW site;*
- ii) Topographic survey dated January 2019 (Drawing ASP1758-01 by Atlas Surveys LLP);*
- iii) Indicative development proposals provided by client (Drawing 1016_02K, dated 17th March 2026 by Prime Architecture)*
- iv) Research of published geological information and*
- v) Information on various internet sites.*

The findings of this report are necessarily based upon the data used in its compilation and may be amended in the future in light of additional material information. The report must only be used in its entirety for its stated purpose.

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2 Brief Description of the Site

The parcel of land which is the subject of this report ('the Site') is situated in Ystalyfera in the Swansea Valley at its confluence with the valley of the Afon Twrch. It lies approximately 23km north-east of Swansea, and 1.7 km south-west of the centre of Ystradgynlais (see Figure 1 and *General Location Plan, drawing no. BC/MB/06.26.04.01*). The Site is located between the built-up areas of Ystalyfera and Lower Cwmtwrch. The A 4067, Swansea to Brecon Road, runs along the south-eastern corner of the Site and the Afon Twrch forms the eastern boundary, a partially concreted track forms the southern and western boundaries, a forested area is present beyond the western boundary.

Figure 1
Aerial View of Site and Immediately Surrounding Area



The Site generally slopes south-eastwards at various gradients that reflect the former uses of the Site as a colliery and as a washery. Slopes within the Site are largely man-made and there are several remains of buildings and foundations on the Site. The Site rises steeply along its

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western boundary above a public footpath. The Site proposed for housing occupies an area of approximately 6.21 hectares. Elevations on the Site vary from approximately 80m aod to approximately 130m aod.

Figure 2
Relics of Former Coal Mining Operations on the Site



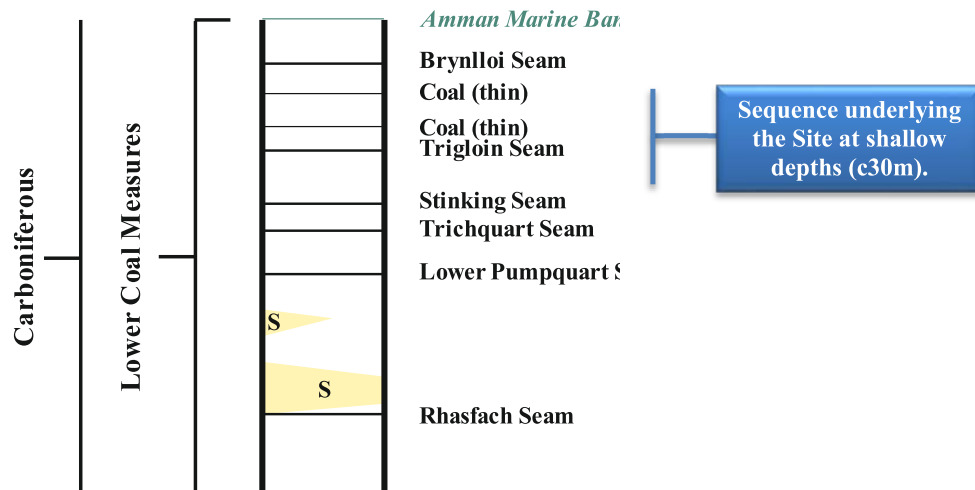
3 Geology of the Site

The Site is situated to the northern margins of the former South Wales Coalfield and is underlain at shallow depths by strata assigned to the Lower Coal Measures. The most recently published geological sheet (SN 70 NE at 1:10,560 scale) shows the Site to lie close within an area of disturbed geology resulting from the presence of large faults, including the Palleg Fault. The Coal seams likely to be underlying the Site at relatively shallow depths east of the Palleg Fault are the Trigloin, Stinking, Triquart and Pumpquart Seams. The outcrop of the Four Feet

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Vein is shown to be present at the western margins of the Site, west of the Palleg Fault (see *Geology Plan, drawing no. BC/MB/06.26.04.02*).

Figure 2
Indicative Stratigraphic Column
(after BGS SN 70 NE)



The published geological sheet for this area shows the measures to be covered with locally derived soils across much of the Site and with River Afon alluvium along its eastern margins. The mining history of the Site has resulted in Made Ground, comprised of colliery spoil, being present across several areas of the Site.

The published geological sheet shows that the Site is not affected by landslip, and the geological provenance of the Site is such that landslip conditions would not develop there.

4 Flood Consequence Assessment

The findings are presented in this report and are supported by the Appendices. Appendix A is in the form of an FCA template in which we have reviewed all major aspects of the development that will be required by either NRW or Lead Local Flood Authority. Appendix B provides checklists for Acceptability and Technical Requirements.

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The main findings of this assessment are as follows:

-  The proposed development Site lies in Flood Zone 1 (rivers and sea) and is at very low risk of fluvial flooding. However, parts of the Site are in Flood Zones 2 and 3 (Surface Water) reflecting flow paths through the Site and retention of water in a pond adjacent to the eastern margin.
-  Under TAN15, and being Previously Developed Land (PDL), the development proposals are acceptable “in principle”. However, consideration is needed in respect of the parts of the Site shown to be in the (surface water) flood zones 2 and 3.
-  The NRW Surface Water Flood Risk maps show some areas of low, medium and high risk within the Site. Some of these are associated with the existing pond on the eastern margin. This pond will be landscaped to create an attenuation pond for mitigating the increase in Site runoff from the development Site. This in turn will provide an opportunity to deal with the associated surface water flood risk. Other areas at risk of surface water flooding are due to runoff from the hillslope that drains down to the Site being conveyed through the Site. These are to be mitigated by providing interceptor drains along the western margin and which will outfall to channels/swales to convey excess runoff through the Site and into the attenuation pond. Their design will be incorporated into the SuDS Drainage Strategy Report (see below).
-  No specific flood protection measures are proposed for the Site; however, it is recommended that the FFL for all properties be a minimum of 300 mm above the adjacent ground level to cover the residual risk from surface water flooding.
-  Potential off-site impacts are to be addressed in a SuDS Drainage Strategy Report which makes provision for mitigating runoff including a 40% allowance for climate change. As noted above, this includes an attenuation pond which will be based on the existing pond on the eastern margin of the Site.

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In summary, the risks to the proposed development are low provided that the measures recommended in this FCA are implemented. It would thus be in accordance with the requirements of TAN15.

P Webster

**Dr Paul Webster,
Senior Hydrologist.**



**Dr Malcolm Blandford,
Consultant Geologist.**

Report Date 9th July 2026.

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References

British Geological Survey, Geological Sheet SN 70 NE, 1973.

CIRIA 2015 The SUDS Manual – CIRIA Report C753.

Neath Port Talbot County Borough Council March 2011 Preliminary Flood Risk Assessment Report.

Neath Port Talbot County Borough Council June 2013 Local Flood Risk Management Strategy.

Welsh Assembly 2004 Technical Advice Note 15. Development and Flood Risk, July 2004.

Welsh Assembly 2025 Planning Policy, Wales - Technical Advice Note 15. Development, flooding and coastal erosion, 2025.

PLANS



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Study on Land at
Former Tirbach Washery Site, Ystalyfera.

General Location Plan.

Plan Scale: 1:50,000.

Key to Symbols:



Approximate Position of Site.

Note:

North is at top of plan.

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Study on Land at
Former Tirbach Washery Site, Ystalyfera.

Geology Plan.

Plan Scale: 1:10,560.

Key to Symbols:

- Approximate Site Boundary.
- Other Land in Client's Control.

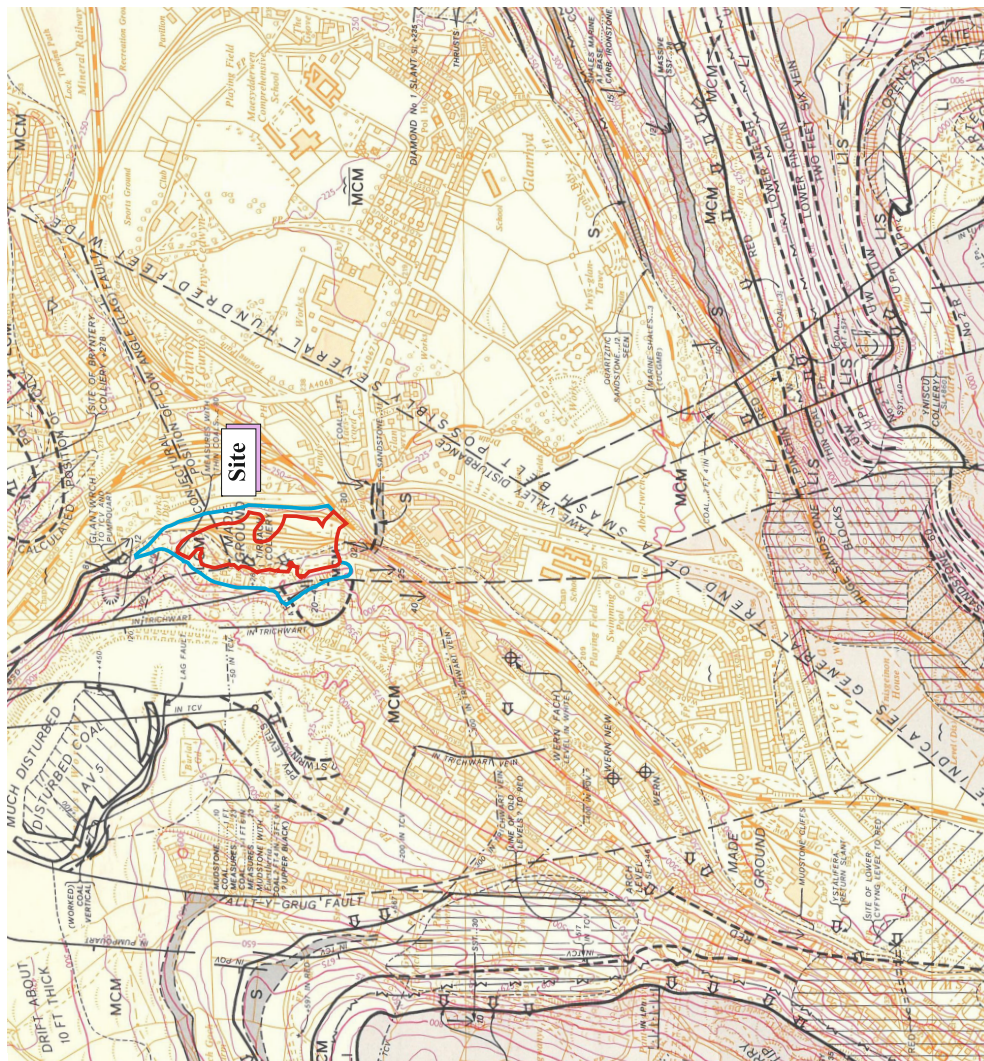
Note: North is at top of plan.

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Detailed Location Plan.

Plan Scale: 1:2,500.

Key to Symbols:

- Approximate Site Boundary.
- Other Land in Client's Control.

Note:

North is at top of plan.

*Drawing extracted from drawing 1016/01A
prepared by Prime Architects Ltd.*

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APPENDIX A

SITE-SPECIFIC FLOOD CONSEQUENCE ASSESSMENT TEMPLATE.



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Appendix A Site-Specific Flood Consequences Assessment Template

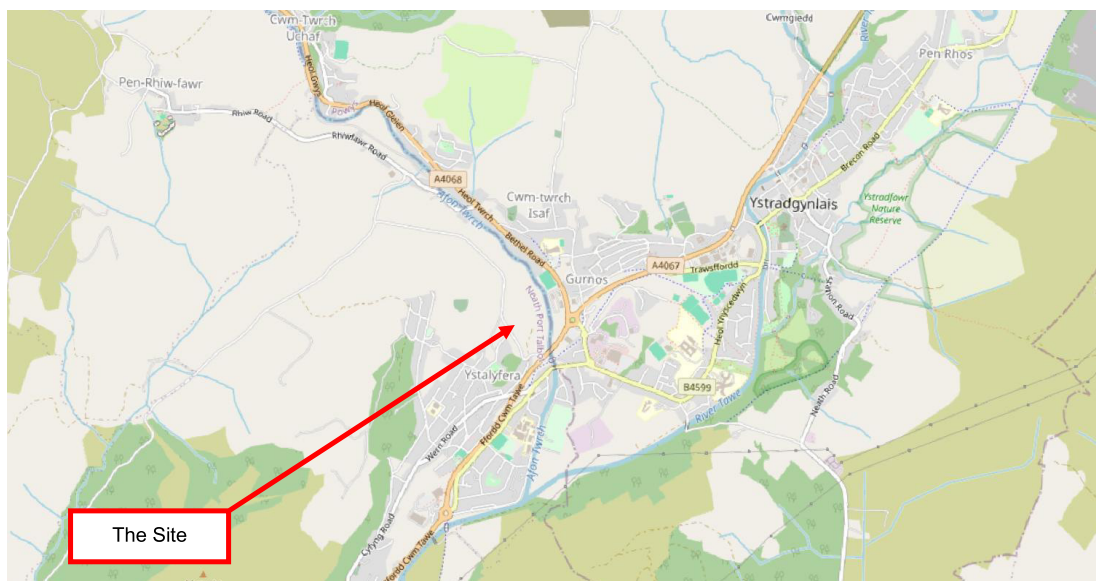
1 Development description and location

1a. What type of development is proposed and where will it be located?

- A location plan should be provided at an appropriate scale.

The Site is at Land Off Tirbach Road, Ystalyfera, as shown in Figure 1 and has an area of 3.54 ha. The approximate National Grid Reference for the site is E277159 N209374. An aerial view of the Site is shown in Figure 2. The site is a former coal mine and washery and the surface has been significantly reprofiled. It satisfies the definition of previously developed land (PDL).

Figure 1: General location of the Site



(From Open Street Map and Google Satellite)

Figure 2: Aerial views of Site

(a) Northern part

(b) Southern part



1b. What is its development category?

- Development categories are provided in Figure 4 of TAN15

The proposed usage is for residential development which is classed as “Highly Vulnerable Development (HVD)”.

1c. Is the proposed development consistent with the Local Development Documents?

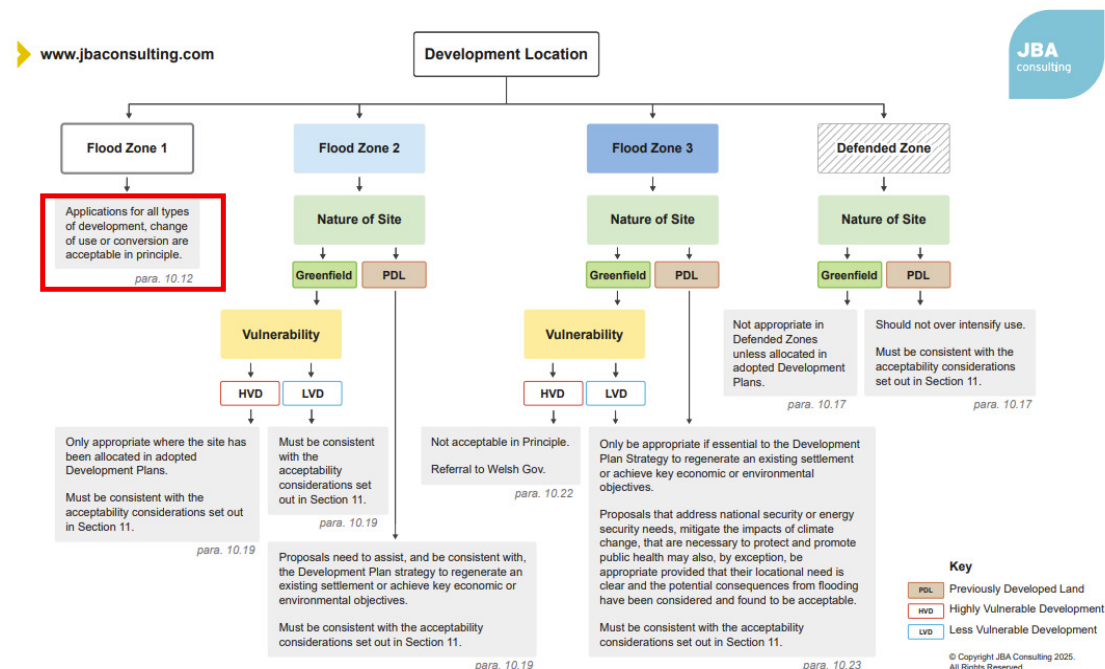
The site forms part of Housing Allocation H1/31 in Neath Port Talbot County Borough Council’s Local Development Plan and, therefore, the principle of residential development at this location is established.

1d. Please provide evidence that it is consistent with the Acceptability criteria?

- Supporting evidence is required that the development is acceptable, as outlined in Section 11 of TAN15.

The quick reference guide for TAN15 developed by JBA confirms that since the Site is in Flood Zone 1 (Figure 3) and is Previously Developed Land (PDL), then it should be acceptable in principle.

Figure 3: JBA’s TAN15 Quick Reference Guide¹



Footnotes:

- Defended Zone requirements supplant Flood Zone 2 and 3 requirements.
- Water Compatible Development is acceptable in all flood zones. (Section 10.25)
- The decision tree is for Planning Applications and NOT Local Development Plan allocations.
- The decision tree is applicable to flood risk from rivers and the sea flood zones only. We understand that it does not apply to surface water and small watercourse flood risk.
- Whilst every effort has been made to ensure the accuracy of this diagram, JBA Consulting cannot guarantee how TAN15 will be interpreted by others. Opinions may differ.

2. Definition of the flood hazard

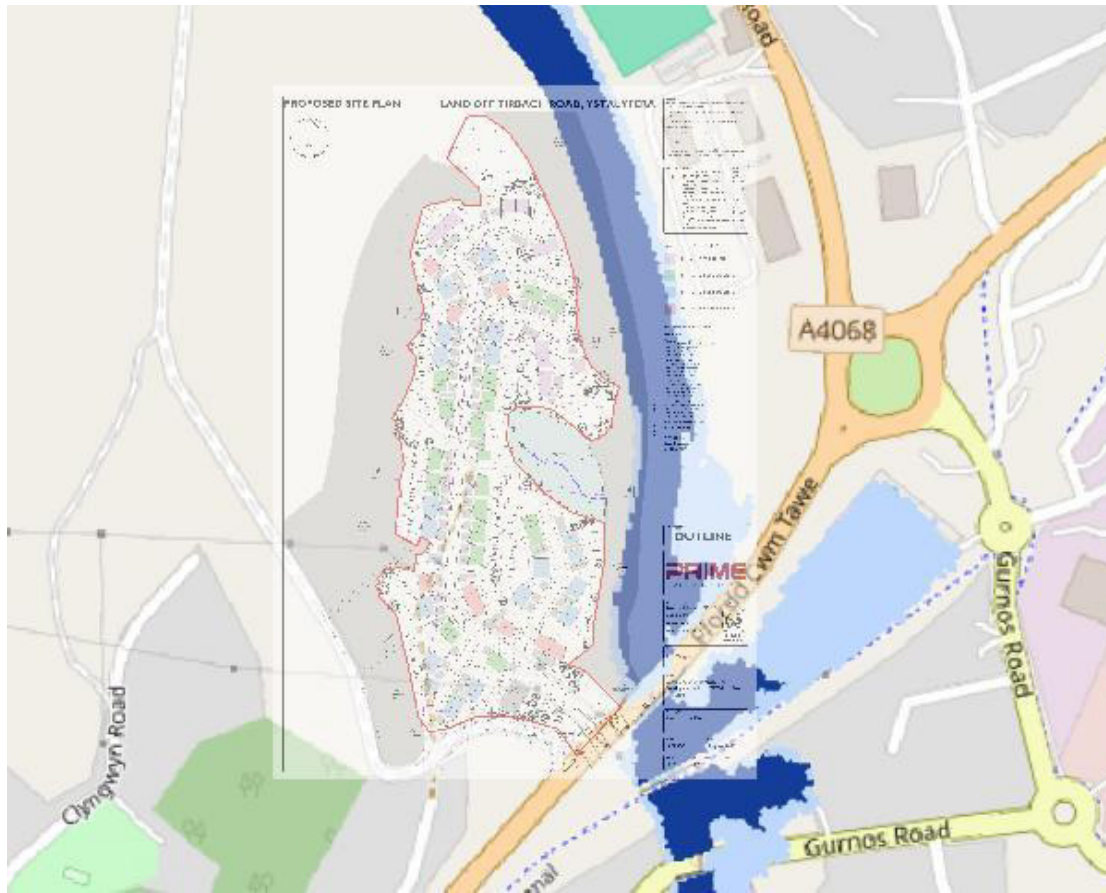
2a. What sources of flooding could affect the site? (see Section 3 of TAN15).

- This may include hazards such as the sea, reservoirs or canals, which are remote from the site itself, but which have the potential to affect flood risk.

The new Flood Zone Map for Rivers and Sea is shown in Figure 4 and confirms that the Site lies entirely in Flood Zone 1 for rivers and sea.

¹ <https://www.jbaconsulting.com/wp-content/uploads/2025/06/TAN15-Quick-Reference-Guide-v1.1.pdf.pdf>

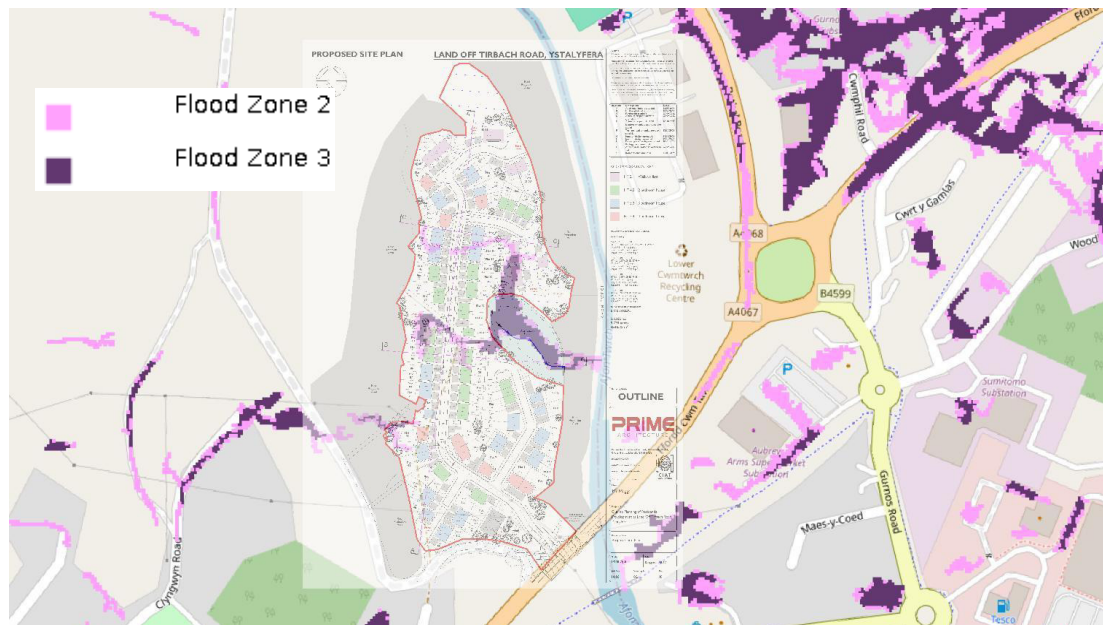
Figure 4: The Flood Zone Map for Rivers and Sea



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The NRW map for Surface water flooding (Figure 5) shows that the majority of the Site is in Flood Zone 1 at very low risk of flooding (lower than 1 in 1,000 annual probability). However, some parts of the proposed development are shown as located within flood zones 2 and 3. These are reviewed in the next Section.

Figure 5: NRW Surface Water Flood Risk map



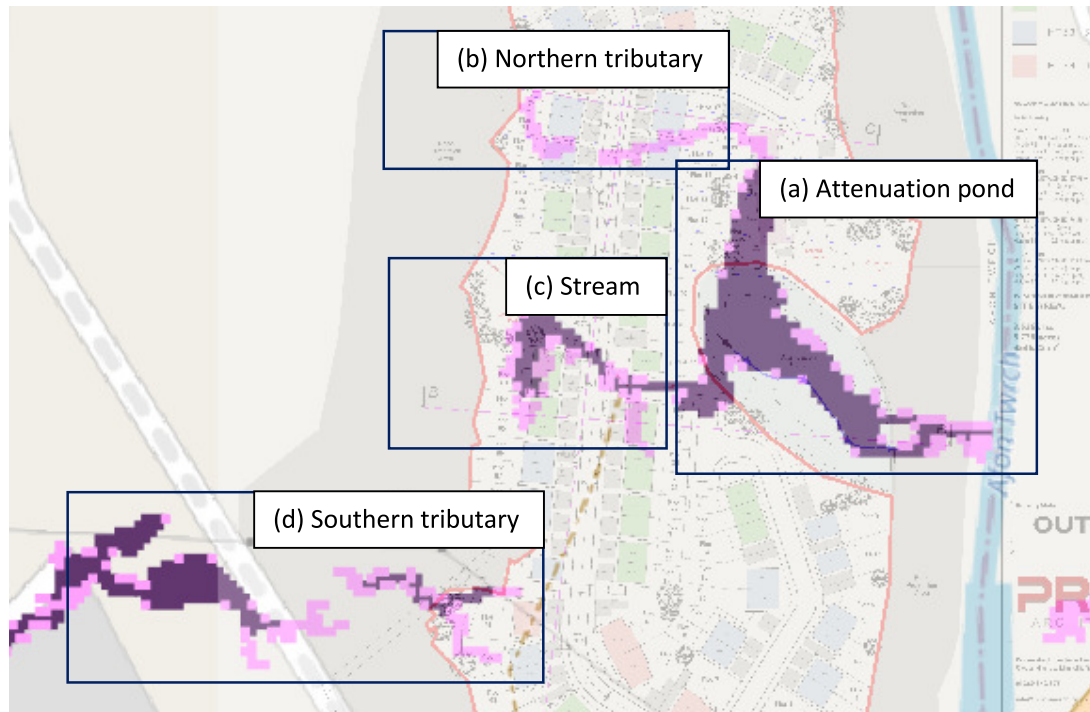
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2b. For each identified source, describe how flooding would occur, with reference to any historic records wherever these are available.

- An appraisal of each identified source, the mechanisms that could lead to a flood occurring and the pathways that flood water would take to, and across, the site.
- Inundation plans, and textual commentary, for historic flood events showing any information available on the mechanisms responsible for flooding, the depth to which the site was inundated, the velocity of the flood water, the routes taken by the flood water and the rate at which flooding occurred.

The Surface Water flood risk is noted in four locations as shown in Figure 6 being at the proposed location of the attenuation pond (a), where a tributary enters the pond from the north (b), an existing ditch/watercourse flows towards the pond (c) and a further tributary near the southern boundary (d). These are largely legacy flow paths and will be subject to change as a result of the planned development and associated landscaping. These locations are reviewed briefly in this Section.

Figure 6: NRW Surface Water Flood Risk map - detail



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(a) Attenuation Pond

In the area where an attenuation pond is proposed, the surface water flood maps show an extensive area at high risk of surface water flooding. Detailed review of the topography using LiDAR data shows that the boundary of the area at high risk has a consistent elevation of around 76.8 mAOD. Furthermore, there is a restricted outlet with crest of around 76.4 mAOD, based on surveyed topography and the observed water level in January 2019 (Figure 7).

Under the development proposals, the existing "pond" and low-lying area will be landscaped to create an attenuation pond for mitigating the runoff from the impermeable surfaces on the proposed development. This will include hydraulic design of the outlet which will attenuate runoff to greenfield rate with allowance for climate change. The associated modelling work will provide an opportunity to address flood concerns for properties around the "pond" through landscaping. Such work may be undertaken in response to a suitably worded planning condition.

(b) Northern tributary

For the northern tributary, it is envisaged that a new swale/channel will be created in order to convey excess water through the Site and into the attenuation pond. This will be fed by interceptors along the western margin.

(c) Stream

The stream exploits an existing channel ditch through the Site. This will be retained and will be fed from the upslope catchment as well as interceptor drains along the western margin.

Figure 1 is a map of the study area, showing the location of the pond and the water level measurement point. The map displays a large body of water (the pond) and a smaller body of water (the lake) connected by a narrow channel. A red line indicates the water level measurement point. The map includes a legend for water level ranges and a scale bar.

Legend:

- <= 75.2
- 75.2 - 75.4
- 75.4 - 75.6
- 75.6 - 75.8
- 75.8 - 76.0
- 76.0 - 76.2
- 76.2 - 76.4
- 76.4 - 76.6
- 76.6 - 76.8
- > 76.8

Scale bar: 0 100 200 m

Water level measurement point: water level = 76.40 30/01/2019

The NRW maps shows how the surface water flood zones extend into the Site where they cease. Provision should be made for a flow route through the Site as a channel/swale and outfalling to the Attenuation Pond.

- Details of any existing surface water management measures already in place, such as sewers and drains

3. Probability

- The flood zones are defined in Figure 1 of TAN15.

- The planning authority can advise on the existence and status of the SFRA.

3c What is the probability of the site flooding taking account of the contents of the SFRA and of any further site-specific assessment?

This may need to include • a description of how any existing flood risk management measures affect the probability of a flood occurring at the site FRA Pro-forma • supporting evidence and calculations for the derivation of flood levels for events with a range of annual probability • inundation plans of, and cross sections through, the existing site showing flood extents and levels associated with events with a range of annual probability • a plan and description of any structures which may influence the probability of a flood occurring at the site. This may include bridges, pipes/ducts crossing a watercourse, culverts, screens, embankments or walls, overgrown or collapsing channels and their likelihood to choke with debris. • details of any modelling studies completed to define the exiting degree of flood risk (Ref Chapter 3 of the PG)
<i>See Section 3a.</i>
3d What are the existing rates and volumes of run-off generated by the site? • This should generally be accompanied by calculations of run-off rates and volumes from the existing site for a range of annual probability events (see Section 7 of TAN15).
<i>These will be evaluated as part of the SuDS report that will be submitted as part of the detailed design for the Site.</i>
4. Climate change
4a How is flood risk at the site likely to be affected by climate change? • Sections 4, 6 and 8 of TAN15 provide guidance on how to assess the impacts of climate change.
<i>Climate change may impact the intensity of storm rainfall and the resultant flood depths. Provision for increases in rainfall will be made within the SuDS Drainage Strategy Report.</i>
5. Detailed development proposals
5a Please provide details of the development layout, referring to the relevant drawings. • Reference should be made to Figure 4 of TAN15.
<i>The current proposal is described in Section 1 and illustrated in Figure 8. This is an indicative layout and will be subject to change at detailed design stage for a combination of reasons. One of these will be the need to provide flow routes “through” the Site for mitigating excess runoff from the hillslope to the west of the Site as outlined in Section 2b, Section 6a and Figure 9.</i>

Figure 8: Indicative development proposals

PROPOSED SITE PLAN

LAND OFF TIRBACH ROAD, YSTALYFERA

Revisions

Revision	Description	Date
1	Additional description added	16.08.2023
2	Further plan added	22.08.2023
3	Additional plan added	23.08.2023
4	Additional plan added	24.08.2023
5	Additional plan added	25.08.2023
6	Additional plan added	26.08.2023
7	Additional plan added	27.08.2023
8	Additional plan added	28.08.2023
9	Additional plan added	29.08.2023
10	Additional plan added	30.08.2023
11	Additional plan added	31.08.2023
12	Additional plan added	01.09.2023
13	Additional plan added	02.09.2023
14	Additional plan added	03.09.2023
15	Additional plan added	04.09.2023
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92	Additional plan added	20.11.2023
93	Additional plan added	21.11.2023
94	Additional plan added	22.11.2023
95	Additional plan added	23.11.2023
96	Additional plan	

5b Where appropriate, demonstrate how land-uses most sensitive to flood damage have been placed in areas within the site that are at least risk of flooding.

All development is in flood zone 1 (rivers and sea). Where development is planned in flood zones 2 and 3 (surface water), as has been described in Section 2b, mitigation is to be provided as shown in Figure 9.

6. Flood risk management measures

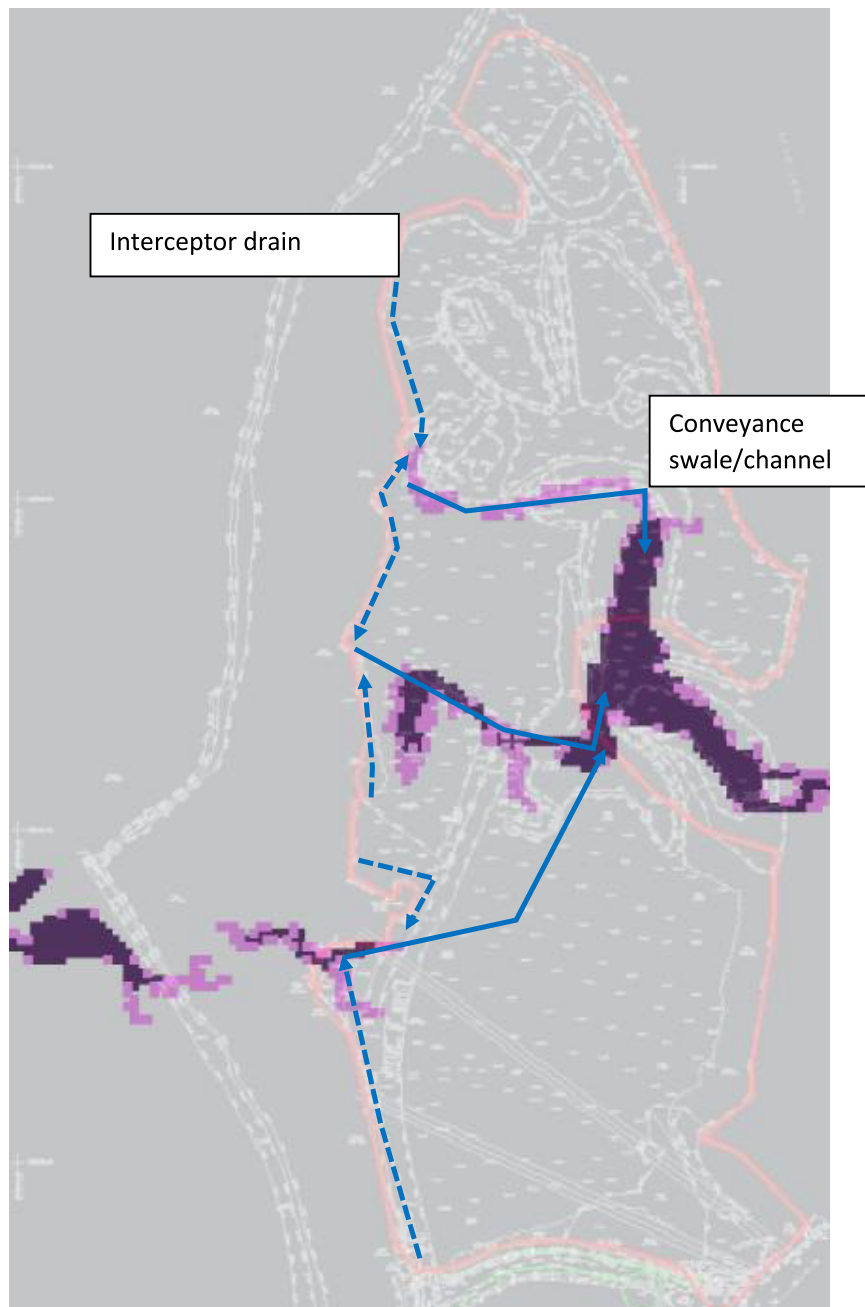
6a. How will the site be protected from flooding, including the potential impacts of climate change, over the development's lifetime?

- This should include details of any proposed flood defences, access/egress arrangements, site drainage systems (including what consideration has been given to the use of SUDS) and how these will be accessed, inspected, operated and maintained over the lifetime of the development. This may need to include details of any modelling work undertaken in order to derive design flood levels for the development taking into account the presence of any new infrastructure proposed

Through the following measures:

- *Construction of interceptor drains and conveyance channels as shown in Figure 9 in order to mitigate for flood risk from hillslope to west of Site;*
- *Setting the FFL for properties to be a minimum of 0.3 m above the adjacent ground level; and*
- *Implementation of the SuDS Drainage Strategy Report and maintenance through its lifetime.*

Figure 9: Indicative mitigation for runoff from hillslope to west of Site



7. Off site impacts

7a How will you ensure that your proposed development and the measures to protect your site from flooding will not increase flood risk elsewhere?

This should be over the lifetime of the development taking climate change into account. The assessment may need to include:

- ☐ Details of the design basis for any mitigation measures (for example trash screens, compensatory flood storage works and measures to improve flood conveyance).
- A description of how the design quality of these measures will be assured and of how the access, operation, inspection and maintenance issues will be managed over the lifetime of the development.
- ☐ Evidence that the mitigation measures will work, generally in the form of a hydrological and hydraulic modelling report.

An assessment of the potential impact of the development on the river, estuary or sea environment and fluvial/coastal geomorphology. A description of how any impacts will be mitigated and of the likely longer-term sustainability of the proposals.
<i>Mitigation for off-site impacts is to be described in the SuDS Drainage Strategy Report.</i>
7b How will you prevent run-off from the completed development causing an impact elsewhere? Evidence should be provided that drainage of the site will not result in an increase in the peak rate or in the volumes of run-off generated by the site prior to the development proceeding.
<i>See above.</i>
8. Residual risks
8a What flood-related risks will remain after you have implemented the measures to protect the site from flooding? Designing for event exceedance on site drainage systems is covered in Chapter 4 of the Practice Guide. Guidance on other residual risks is provided in Chapter 6.
<i>Residual risks are reckoned to be low in view of the freeboard that has been provided in the SuDS Drainage Strategy Report.</i>
8b How, and by whom, will these risks be managed over the lifetime of the development? Reference should be made to flood warning and evacuation procedures, where appropriate, and to likely above ground flow routes should sewers or other conveyance systems become blocked or overloaded. This may need to include a description of the potential economic, social and environmental consequences of a flood event occurring which exceeds the design standard of the flood risk management infrastructure proposed and of how the design has sought to minimize these – including an appraisal of health and safety issues.
<i>Site Owner/Operator.</i>

APPENDIX B

SITE-SPECIFIC FLOOD CONSEQUENCE ASSESSMENT CHECKLIST.



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Appendix B Site Specific Flood Consequences Assessment Checklists

Table B-1: Conditions of Acceptability Criteria (Section 11.4 of TAN15)

No	Condition	Response
1	No increase in flooding elsewhere	<i>Through implementation of SuDS Drainage Strategy Report.</i>
2	Occupiers aware of flood risk	<i>Site layout and design to ensure that all properties at low risk of flooding. More general flood warnings available from NRW.</i>
3	Escape/evacuation routes present	<i>None needed.</i>
4	Flood emergency plans and procedures agreed and in place	<i>None needed.</i>
5	Flood resistant and resilient design	<i>The FFL of all properties to be a minimum of 0.3 m above adjacent ground level.</i>
6	Acceptable consequences for type of use (see 11.9 to 11.15 of TAN15)	<i>No flooding within the Site, other than in watercourses and the proposed SuDS so acceptable consequences for the type of use.</i>

Table B-2: Avoidance and Mitigation Measures (Section 11.5 of TAN15)

No	Condition	Response
1	Minimal risk to life	<i>Yes</i>
2	Minimal disruption to people living and working in the area	<i>Yes</i>
3	Minimal potential damage to property	<i>Yes, through setting of FFL a minimum of 0.3 m above adjacent ground level.</i>
4	Minimal impact of the proposed development on flood risk generally	<i>Through implementation of SuDS Drainage Strategy Report.</i>
5	Minimal disruption to the sustainable management of natural resources	<i>Yes</i>

Table B-3: Technical Requirements Checklist (Section 6/Fig 2 of TAN15)

Nr	Description	Cross Reference
1	A location plan identifying all possible sources of flooding including overtopping and/or breach of existing defences and any in-channel structures that may be prone to blockage.	<i>The flood risks are reviewed in Section 2. The highest risk is from surface water flooding, the mitigation for which is described in Section 2b.</i>
2	A plan of the site showing existing and proposed levels related to Ordnance Datum.	<i>Pre-development topographic survey is available. Post-development topography must reflect the requirement for the drainage measures shown in Figure 9.</i>
3	A plan identifying any flood alleviation measures already in place.	<i>None present.</i>
4	An assessment of all sources of potential flooding including, but not confined to rivers, tidal, coastal, groundwater, surface flow or any combination of these.	<i>Section 2.</i>
5	Existing and proposed cross-sections of the site showing proposed development and site levels relative to the source of flooding, and to anticipated water levels and associated probabilities.	<i>To be provided with the SuDS Drainage Strategy Report.</i>
6	An assessment of peak flood depth and velocities at which various parts of the site might flood, the likely duration of flood events and impacts of flooding.	<i>To be provided as part of the SuDS Drainage Strategy Report.</i>
7	Information regarding the extent and depth of past flood events and future predictions.	<i>Climate change allowances will be incorporated based on Welsh Government Guidance.</i>
8	A plan of the area to show overland flow routes and appropriate access/evacuation routes from the proposed development site that are operational under all conditions.	<i>To be provided as part of the SuDS Drainage Strategy Report.</i>
9	A plan and description of any structures which may influence local hydraulics, including bridges, pipes/ducts crossing the watercourse, culverts, screens, embankments or walls, overgrown or collapsing channels.	<i>To be provided as part of the SuDS Drainage Strategy Report.</i>
10	An assessment of the implications of any drains or sewers, existing or proposed, on the site during flood events.	<i>To be provided as part of the SuDS Drainage Strategy Report.</i>

11	An assessment of the flood storage volume that would be lost and/or displaced from the site.	<i>There is no loss of floodplain storage.</i>
12	An assessment of the run-off likely to be generated from the development.	<i>To be provided as part of the SuDS Drainage Strategy Report.</i>
13	Details of flood avoidance, mitigation and resilience measures to be implemented.	<i>The principal mitigation measures will be the provision of attenuation pond to mitigate the runoff from the impermeable areas within the Site. Provision will also be made to route surplus surface water through the Site from hillslopes above the Site</i> <i>Within the Site, the FFL for all dwellings are to be set at a minimum of 300 mm above the local ground level.</i>
14	Details to demonstrate that the development will not cause or exacerbate the nature and frequency of flood risk elsewhere.	<i>To be provided as part of the SuDS Drainage Strategy Report.</i>
15	An assessment of the risks after the construction of any necessary mitigation measures.	<i>To be provided as part of the SuDS Drainage Strategy Report.</i>
16	A clear and comprehensive summary of the assessment describing the outcomes and recommendations.	<i>Covering letter for this Report.</i>



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