

5 Varteg Row Flood Consequence Assessment

Version 1

May 2021

www.jbaconsulting.com

**Danielle Redmore and Robert Thomas
19 George Street
PORT TALBOT
SA13 1ES**

JBA Project Manager

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

Revision History

Revision Ref/Date	Amendments	Issued to
Version 1 May 2021	First Issue	Danielle Redmore and Robert Thomas

Contract

This report describes work commissioned by Danielle Redmore and Robert Thomas by an email dated 9th April 2021. Hannah Booth of JBA Consulting carried out this work.

Prepared by Hannah Booth BSc

Flood Risk Analyst

Reviewed by Faye Tomalin BSc (Hons) MSc MCIWEM C.WEM

Chartered Senior Analyst

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

Technical Director

Purpose

This document has been prepared for Danielle Redmore and Robert Thomas. JBA Consulting accepts no responsibility or liability for any use that is made of this document other than by the Client for the purposes for which it was originally commissioned and prepared.

JBA Consulting has no liability regarding the use of this report except to Danielle Redmore and Robert Thomas.

Copyright

© Jeremy Benn Associates Limited 2021.

Contents

1	Introduction	1
1.1	Terms of reference	1
1.2	FCA requirements	1
2	Site description	2
2.1	Site Topography	3
2.2	Soils, geology and watercourses	4
2.3	Development proposal	5
3	Planning Policy and flood risk	7
3.1	Planning context	7
3.2	Vulnerability classification	7
3.3	Development Advice Map Zoning	7
3.4	Local Development Plan	8
3.5	Justification test	8
4	Flood Risk Assessment	10
4.1	Review of existing flood risk data	10
4.2	Historical flooding	10
4.3	Flood Risk from Rivers	10
4.4	Flood Risk from the Sea	12
4.5	Flood Risk from Surface Water and Small Watercourses	12
4.6	Flood Risk from Groundwater	13
4.7	Flood Risk from Reservoirs	13
4.8	Flood Risk from Sewers	13
5	Assessment of Acceptability Criteria	14
5.1	Acceptability Assessment	14
6	Conclusions	16
A	Proposed Development plan	17

List of Figures

Figure 2-1 Proposed Development Site	2
Figure 2-2 Proposed development site (Source: Google Street View 2021)	3
Figure 2-3 LiDAR Topographic data from NRW (1m resolution)	4
Figure 2-4 Watercourses around the site	5
Figure 2-5 Proposed development works	6
Figure 3-1 Development Advice Map	8
Figure 4-1 FRAW map- Risk of Flooding from Rivers	11
Figure 4-2 FRAW map- Risk of Flooding from Rivers-Source of floodwater	12
Figure 4-3 FRAW map- Risk of Flooding from Surface Water and Small Watercourses	13

List of Tables

Table 2-1 Site summary	2
Table 3-1 Development categories defined by TAN-15	7
Table 3-2 Justification Test applied to the proposed development	9
Table 4-1 Summary of flood risk	10
Table 5-1 Assessment of accessibility criteria	14

1 Introduction

1.1 Terms of reference

JBA Consulting was commissioned by Danielle Redmore and Robert Thomas in April 2021 to prepare a Level 1 Flood Consequence Assessment (FCA) in support of a planning application for the change of use from a hall to residential development, within the grounds of 5 Varteg Row. This FCA demonstrates the suitability of the proposed development and describes the flood mitigation measures recommended to manage flood risk at the site.

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 (TAN-15). Where appropriate, the following aspects of flood risk will be addressed in all planning applications over its expected lifetime in flood risk areas:

- 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

The site is located in the grounds of 5 Varteg Row in Bryn, Port Talbot as shown in Figure 2-1. The proposed development site is 0.04 hectares in size and is comprised of a disused hall, previously used by St. John Ambulance.

The development site is located within the land ownership boundary of 5 Varteg Row, and therefore the bungalow and associated gardens, boundary wall and driveway of 5 Varteg Row form the southern, western and eastern boundaries of the proposed development site, respectively. The site is bounded to the north by Varteg Row highway. Access to the site is currently available from steps to the east of the building entrance, as shown in Figure 2-2.

Table 2-1 Site summary

Site name	5 Varteg Row
Site area	0.04ha
Existing land use	Disused Hall
Purpose of development	Residential
OS NGR	SS 81817 92089
Local Planning Authorities	Neath and Port Talbot Council
Lead Local Flood Authority	Neath and Port Talbot Council



Figure 2-1 Proposed Development Site



Figure 2-2 Proposed development site (Source: Google Street View 2021)

2.1 Site Topography

Natural Resources Wales (NRW) Open Source 1m Light Detection and Ranging (LiDAR)¹ data has been used to analyse existing ground levels across the site and within the surrounding area, as shown in Figure 2-3.

NRW LiDAR data demonstrates that ground levels at the site are predominantly flat, across the majority of the site. Ground levels across most of the site slope from 134.1mAOD along the site's southern boundary to 133.8mAOD along the northern edge of the existing building. To the north of the existing building, ground levels slope steeply downwards towards the road, falling from 133.8mAOD to approximately 132.7mAOD. Ground levels on Varteg Row are an average of 134.4mAOD. Imagery taken from Google Street View is presented in Figure 2-2 and illustrates the fall in land levels from the existing building to the road.

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

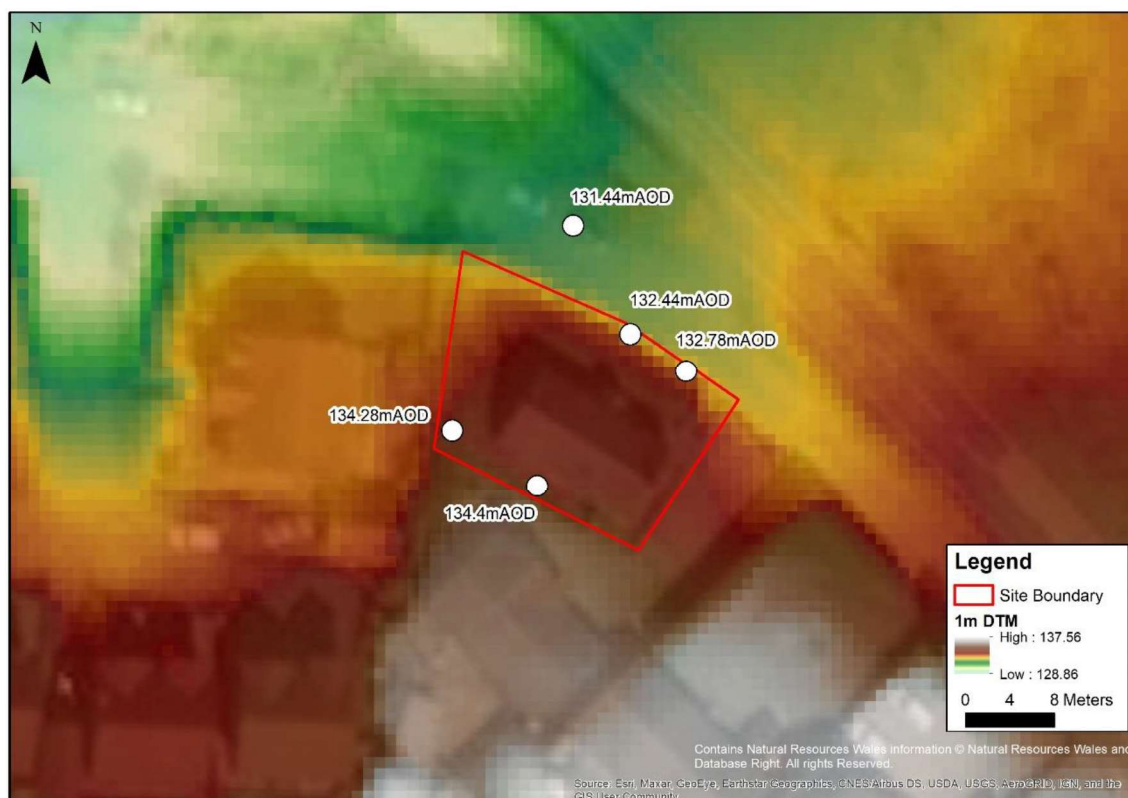


Figure 2-3 LiDAR Topographic data from NRW (1m resolution)

2.2 Soils, geology and watercourses

The Cranfield University Soilscape² viewer describes the underlying strata as 'slowly permeable wet very acidic upland soils with a peaty surface'. Soils are reported to drain to the stream network.

According to the British Geological Survey (BGS) Geology of Britain Viewer³, bedrock at the site is described as South Wales Middle Coal Measures Formation, comprised of Mudstone, Siltstone and Sandstone. The superficial deposits are identified as Till, Devensian - Diamicton.

A complicated series of culverted watercourses are present to the east of the site. The Nant Cwmfarteg flows in a westerly direction in an open channel, 200m to the south-east of the site, prior to being culverted under Maesteg Road and through to its confluence with the Ffwrdd Wyllt (an NRW main river), 180m west of the site.

Two unnamed ordinary watercourses are located to the north and north-east of the site. These watercourses flow in a southerly and westerly direction to their confluence with the Nant Cwmfarteg. The location of these watercourses is shown in Figure 2-4.

It should be noted that the location of the Nant Cwmfarteg culvert is indicative and may not fully represent the layout of the culverts.

2 Cranfield University Soilscape: <http://www.landis.org.uk/soilscape/>

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

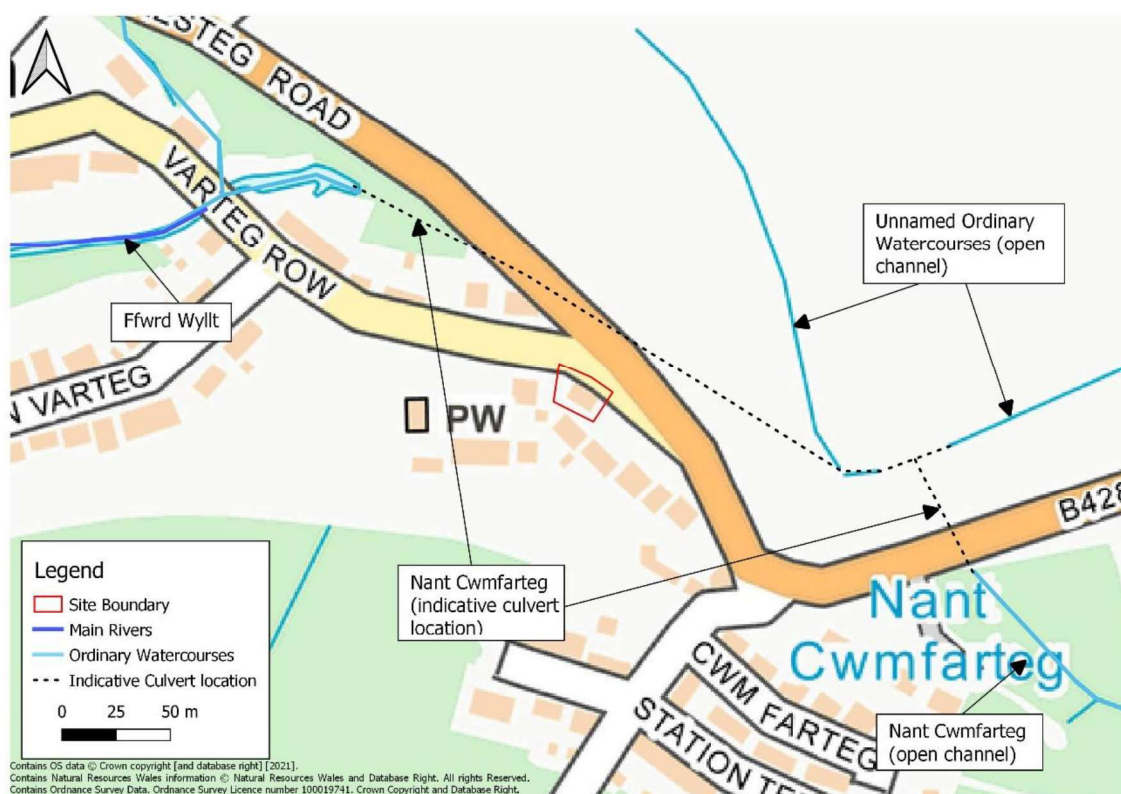
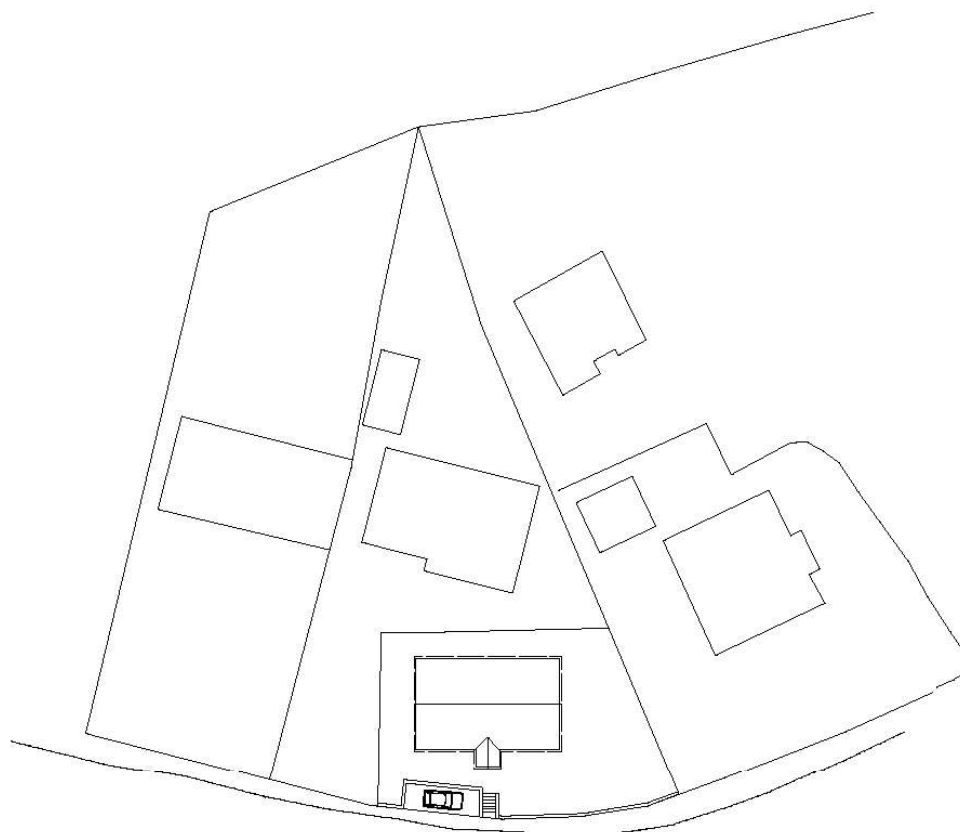


Figure 2-4 Watercourses around the site

2.3 Development proposal

The development proposal is to convert the existing building for residential use. The proposals include forming a new parking bay on the south-western edge of the site along with a new set of steps to access the site. An extract of the proposed site plan is contained in Figure 2-5 and the full drawing is contained in Appendix A.



Form new steps, parking bay and drop kerb
with retaining designed by engineer

Figure 2-5 Proposed development works

3 Planning Policy and flood risk

3.1 Planning context

TAN-15 was introduced in 2004 by the Welsh Assembly Government. It is technical guidance related to development planning and flood risk using a sequential characterisation of risk based on the Welsh Government's Development and Flood Risk Advice Map (DAM). Its initial requirement is to identify the flood zones and vulnerability classification relevant to the proposed development, based on an assessment of current and future conditions.

3.2 Vulnerability classification

TAN-15 assigns one of three flood risk vulnerability classifications to development, as shown in Table 3-1. Development proposals for the site are to redevelop the existing hall building for residential use. Consequently, the development is classified as a highly vulnerable development.

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.

3.3 Development Advice Map Zoning

Figure 3-1 shows that the proposed development site is partially located in Zone C2 of the DAM. The DAM zone classification is used to trigger different planning actions based on a precautionary assessment of flood risk. Zone C2 is described as areas of the floodplain without significant flood defence infrastructure.

New highly vulnerable development is not typically considered acceptable in Zone C2. However, TAN-15 does not provide guidance as to whether redevelopment or change of use can be considered within Zone C2.

As identified in Section 2.1, the sites topographic levels are significantly higher than those of the road below. Zone C2 is shown to be confined to Varteg Row and Maesteg Road. As a result, it is highly unlikely that C2 encroaches onto the site. The extent of C2 extending onto the site is likely due to limitations in the resolution of the broadscale modelling used to derive the DAM mapping.

The DAM maps are based on NRW extreme flood outlines (Zone C) and the British Geological Survey 10k Superficial Geology data (Zone B). Zone C was updated quarterly by NRW to align with Flood Map Zone 2 updates. However, all DAM updates were halted approximately

18 months ago due to the anticipated release of an updated TAN-15 and new Flood Map for Planning.

NRW have now abolished their Flood Map product which previously informed the DAM and released several new flood map products. These new flood map products have been used to assess the risk of flooding to the site in Section 4 of this report, and weight should be given to the evidence presented in this assessment.

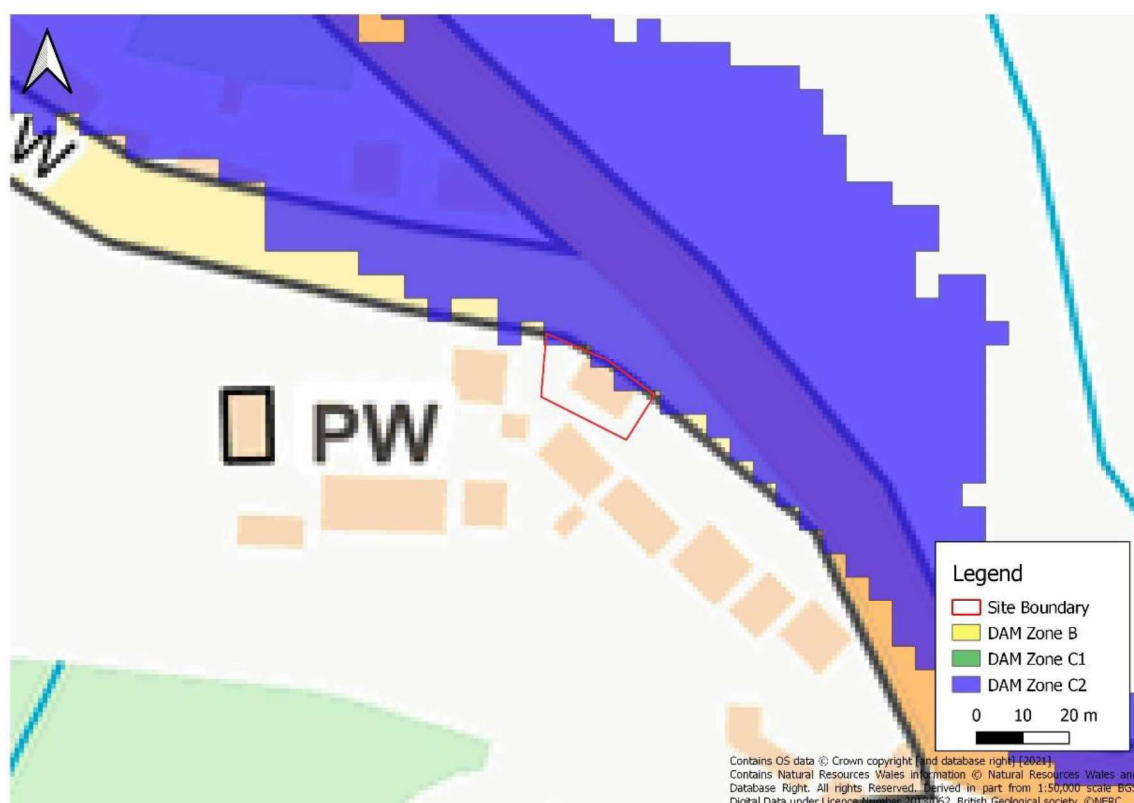


Figure 3-1 Development Advice Map

3.4 Local Development Plan

The Local Development Plan (LDP) is a land-use document in which the County Borough Council sets out its land use development over a 15-year period. The current LDP, entitled 'Neath Port Talbot County Borough Council Local Development Plan (2011-2026)',⁴ was adopted by Neath Port Talbot County Borough Council in January 2016.

The strategy identifies that large areas of the County Borough are brownfield land (formerly developed land). These areas should be prioritised through regeneration schemes to prevent the unnecessary loss of greenfield land. The following policies in the LDP require that the development of brownfield land is prioritised over greenfield sites.

- Policy SP16
- Policy BE1-C

3.5 Justification test

TAN-15 states that "new development" will be justified if it can be demonstrated that:

⁴ Neath and Port Talbot County Borough Council (2016) Neath Port Talbot County Borough Council Local Development Plan, Retrieved from: https://www.npt.gov.uk/media/7321/ldp_written_statement_jan16.pdf?v=20170727124344

Its location in zone C is necessary to assist, or be part of, a local authority regeneration initiative or a local authority strategy required to sustain an existing settlement;

or

Its location in zone C is necessary to contribute to key employment objectives supported by the local authority, and other key partners, to sustain an existing settlement or region.

and

It concurs with the aims of Planning Policy Wales and meets the definition of previously developed land.

and,

The potential consequences of a flooding event for the particular type of development have been considered and found to be acceptable.

TAN-15 does not specifically explain how the justification test should be applied to a change of use application. The proposed redevelopment has been assessed against the requirements of the Justification Test, with the results summarised in Table 3-2. All the criteria have been satisfied with regards to the proposed development.

Table 3-2 Justification Test applied to the proposed development

TAN 15 Justification Criteria	Comments	Achieved
Its location is necessary to assist a local authority regeneration initiative or strategy, or contribute to key employment objectives necessary to sustain an existing settlement or region	The Neath Port Talbot County Borough Council Local Development Plan (LDP) 2011 – 2026 notes that the site also supports Strategic Policy SP16 and BE 1-(C) by using an existing building and not developing greenfield land.	✓
The site meets the definition of previously developed land (i.e. it is not a Greenfield site) and concurs with the aims of Planning Policy Wales (i.e. the presumption in favour of sustainable development)	This site is currently developed, thus meeting the definition of previously developed land.	✓
A Flood Consequence Assessment has been produced to demonstrate that the potential consequences of a flood event up to the extreme flood event (1 in 1000 chance of occurring in any year) have been considered and meet the [Acceptability Criteria] in order to be considered acceptable	An assessment of the flood risk at the site has been undertaken to demonstrate the proposed development's acceptability. See Section 4 and Section 5.	✓

4 Flood Risk Assessment

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

4.1 Review of existing flood risk data

The latest available information of flood risk at the site, published by NRW, is summarised in Table 4-1.

Table 4-1 Summary of flood risk

Source of Flooding	Onsite Presence	Description
Flood Risk from Rivers	×	The site is at very low risk of fluvial flooding.
Flood Risk from the Sea	×	The site is located outside of the area at risk of tidal flooding.
Flood Risk from Surface Water and Small Watercourses	×	The site is at very low risk of surface water and small watercourse flooding.
Flood Risk from Groundwater	×	The site is at very low risk of flooding from groundwater.
Flood Risk from Reservoirs	×	The site is at very low risk of flooding from reservoirs.
Flood Risk from Sewers	×	The site is at very low risk of flooding from sewers.

4.2 Historical flooding

NRW's map of recorded flood extents do not show any evidence of historic flooding on the site. No historic flooding records were identified in the Neath Port Talbot County Borough Council Flood Risk Management Plan⁵ and Preliminary Flood Risk Assessment (PFRA)⁶.

4.3 Flood Risk from Rivers

No detailed flood modelling was available from NRW for the site. Therefore, the NRW Flood Risk Assessment Wales (FRAW) data has been utilised to assess fluvial flood risk to the proposed development site.

The FRAW map shows that the site is at very low risk of fluvial flooding, as shown in Figure 4-1. In the Low-risk scenario (between 1 in 1,000 (0.1%) and 1 in 100 (1%)), floodwater is present to the north of the site on Varteg Row.

The source of floodwater during this flood event has been assumed to be from the exceedance of the culvert to the north of Maesteg Road, which channels the Nant Cwmfarteg watercourse, as shown in Figure 4-2. Flood water exceeds the culvert and follows the topographic depressions of the surrounding area to flow west along Maesteg Road and Varteg Row.

According to NRW's National Flood Hazard mapping, flood depths are predicted to be shallow at less than 0.1m and should therefore not affect access to and from the site.

5 Neath and Port Talbot Council, (2015), Flood Risk Management Plan. Retrieved from: <https://www.npt.gov.uk/media/5399/floodriskmanagementplan15.pdf?v=20170627002320>

6 Neath and Port Talbot Council, Preliminary Flood Risk Assessment, (2011), Retrieved from: https://www.npt.gov.uk/media/4629/pfra_report_2011.pdf?v=20171123145433

As noted in Section 2.1, the site is significantly higher than the road below and therefore results in the proposed development site being flood free during this flood event.

The risk of fluvial flooding to the proposed development site is therefore considered to be very low and need not be considered further.



Figure 4-1 FRAW map- Risk of Flooding from Rivers

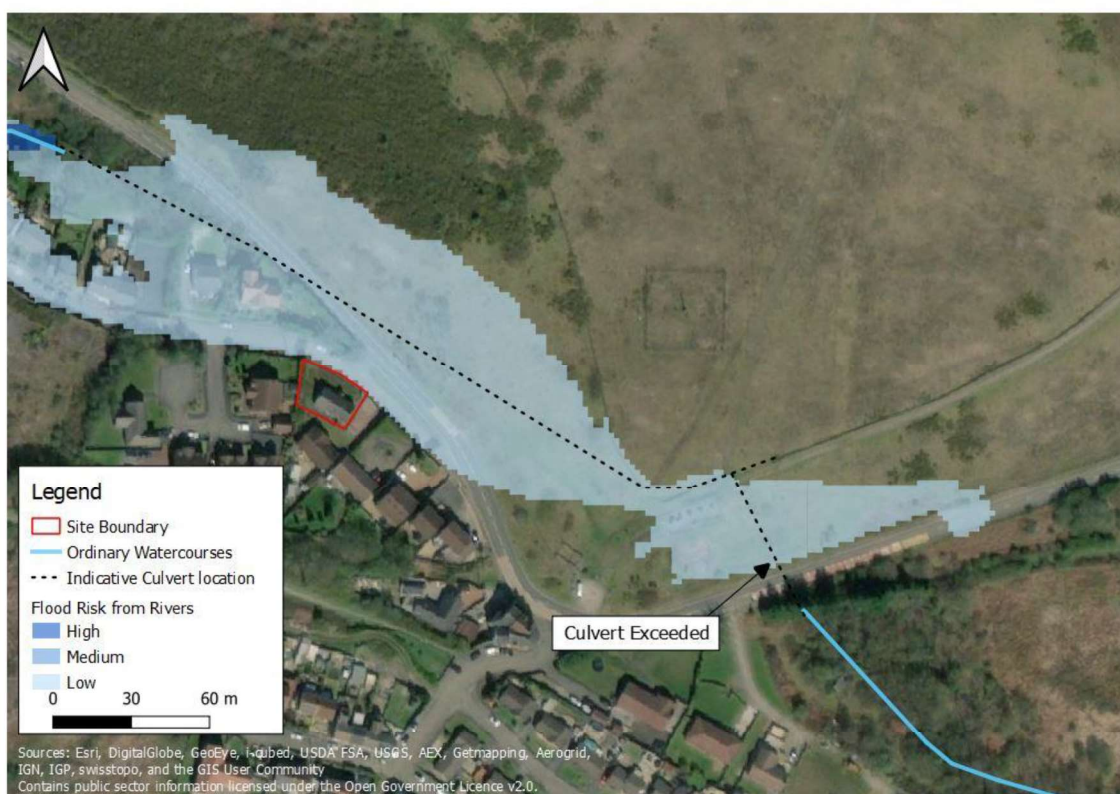


Figure 4-2 FRAW map- Risk of Flooding from Rivers-Source of floodwater

4.4 Flood Risk from the Sea

The NRW FRAW Risk of Flooding from the Sea map shows that the site is not at risk of tidal flooding.

4.5 Flood Risk from Surface Water and Small Watercourses

The NRW FRAW Surface Water and Small Watercourses map shows that the site is not at risk of flooding from this source, as shown in Figure 4-3.



Figure 4-3 FRAW map- 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 Plan, 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

The NRW FRAW Risk of flooding from Reservoirs map indicate that the proposed development site is not at risk of flooding due to reservoir failure. It can therefore be concluded that there is no risk of reservoir flooding at the site.

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 Assessment of Acceptability Criteria

5.1 Acceptability Assessment

Table 5-1 assesses the proposed redevelopment against the acceptability requirements required to be met for the Development Zone.

Table 5-1 Assessment of accessibility criteria

TAN 15 Justification Criteria	Comments	Achieved
The developer is required to demonstrate that the site is designed to be flood free for the lifetime [Ref: TAN-15 A1.5] of development for a 1 in 100 (1%) chance (fluvial) flood event, including an allowance for climate change in accordance with TAN-15 Table A1.14.	The NRW FRAW Risk of Flooding from Rivers map shows that the site is flood-free during all return periods, including the 0.1% AEP event.	Yes
The development should be designed so that in an extreme (1 in 1000 chance) event, there would be less than 600mm of water on access roads and within the property.	The site is shown to be flood free during the 0.1% AEP flood risk scenario.	Yes
No flooding elsewhere.	As detailed in Section 4, the site is not shown to be at risk of flooding during the 0.1% AEP and will therefore not displace floodwater.	Yes
Flood defences must be shown by the developer to be structurally adequate particularly under extreme overtopping conditions (i.e. that flood with a 1 in 1000 chance of occurring in any given year).	Not applicable. The proposed development is not served by flood defences.	Yes
The developer must ensure that future occupiers of development are aware of the flooding risks and consequences	The developer should ensure future occupiers are aware of the risk of flooding to Varteg Row.	Yes
Effective flood warnings are provided at the site	The site is not included in an NRW Flood Warning or Flood Alert Area. This is not deemed significant due to the very low risk of flooding to the development site	Yes

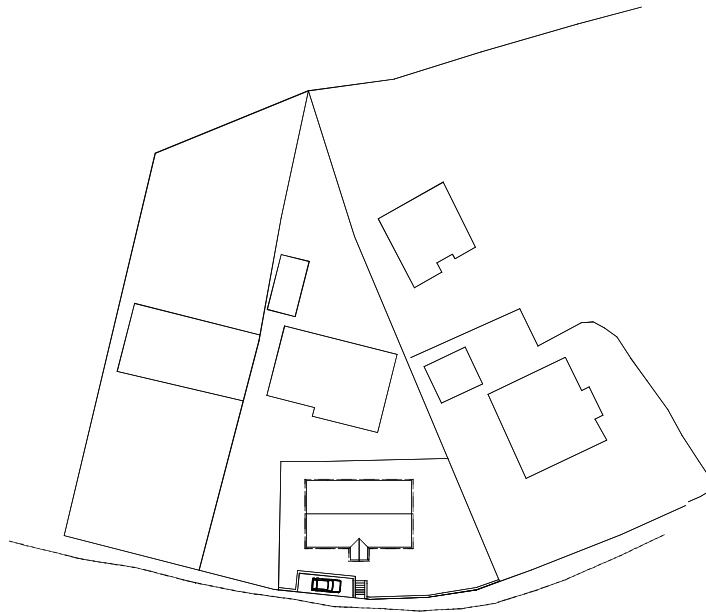
Escape/evacuation routes are shown by the developer to be operational under all conditions.	Flood depths on Varteg Row are predicted to be less than 100mm in depth and therefore will not restrict access to and from the site.	Yes
The development is designed by the developer to allow the occupier of the facility for rapid movement of goods/possessions to areas away from floodwaters.	The site is shown to be flood-free for the lifetime of the development; therefore, goods and possessions should not need to be moved away from any areas at risk of flooding.	Yes
Development is designed to minimise structural damage during a flooding event. It is floodproofed to enable it to be returned to its prime use quickly in the aftermath of the flood.	The site is shown to be flood free for the lifetime of the development. Therefore structural damage is very unlikely and further floodproofing not justified in these circumstances.	Yes

6 Conclusions

- JBA Consulting were commissioned in April 2021 to prepare a Flood Consequence Assessment (FCA) to support a planning application for the redevelopment of the existing building in the grounds of 5 Varteg Row.
- The site is 0.04 hectares in size and is comprised of a disused hall. The site is considered a highly vulnerable development by TAN-15.
- The site borders the edge of Zone C2, as categorised by NRW's Development Advice Maps. Zone C2 is described as areas of the floodplain without significant flood defence infrastructure. Highly vulnerable development is not typically considered to be acceptable in Zone C2.
- Updates of the DAM were halted approximately 18 months ago due to the anticipated release of an updated TAN-15 and new Flood Map for Planning. NRW have abolished their Flood Map product, which previously informed the DAM Map, and have released several new flood map products that have informed this assessment.
- The NRW FRAW mapping shows that the site has a very low risk of flooding from Rivers, the Sea, or Surface Water and Small Watercourses.
- The site is at little or no risk of groundwater, sewer or reservoir flooding.
- The site satisfies all the requirements of the Justification Test and Acceptability Criteria.
- It is concluded that on the grounds of flood risk, the proposed development site is compliant with the aims and objectives of Planning Policy Wales and TAN-15.

Appendices

A Proposed Development plan



Form new steps, parking bay and drop kerb
with retaining designed by engineer

CONVERSION AMBULANCE HALL to BUNGALOW
5 VARTIG RD, BRYN, PORT TALBOT, SA13 2RF.
Mr and Mrs Stuart John 07842 138538.

DRAWING TITLE

BLOCK PLAN - PLANNING ISSUE

SCALE	Date	DRAWING No.
1 to 500 @ A3	October 2020.	2020/12

DO NOT SCALE DRAWING. FIGURED DIMENSIONS ONLY TO BE USED.
DISCREPANCIES TO BE REPORTED IMMEDIATELY.

Offices at

Coleshill
Doncaster
Dublin
Edinburgh
Exeter
Haywards Heath
Isle of Man
Limerick
Newcastle upon Tyne
Newport
Peterborough
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:  

Jeremy Benn Associates Limited

Registered in England 3246693

JBA Group Ltd is certified to:
ISO 9001:2015
ISO 14001:2015
ISO 27001:2013
ISO 45001:2018

