7 Ten Acre Wood, Margam - Flood Consequences Assessment

Version 1

September 2023

Prepared for:
Andrew Hall

www.jbaconsulting.com

Document Status

Issue date	September 2023
Issued to	Andrew Hall
BIM reference	JLE - JBAU-XX-XX-RP-Z-0001-Ten_Acre_FCA
Revision	S3-P01
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Contract

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Abbreviations

AEP	Annual Exceedance Probability
AONB	Area of Outstanding Natural Beauty
BGS	British Geological Survey
FCA	Flood Consequence Assessment
FEH	Flood Estimation Handbook
FMfP	Flood Map For Planning
FRMP	Flood Risk Management Plan
LDP	Local Development Plan
LiDAR	Light Detection And Ranging
NGR	National Grid Reference
NRW	Natural Resources for Wales
OS	Ordnance Survey
OS NGR	Ordnance Survey National Grid Reference
PFRA	Preliminary Flood Risk Assessment
QMED	Median Annual Flood (with return period 2 years)

1 Introduction

1.1 Terms of Reference

JBA Consulting (JBA) were commissioned by Andrew Hall to undertake a Flood Consequences Assessment (FCA) to support a planning application for the redevelopment of a single dwelling at 7 Ten Acre Wood, Margam.

1.2 FCA Requirements

This FCA follows Welsh Government guidance on development and flood risk set out in Technical Advice Note 15: Development and Flood Risk (TAN-15). 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 redevelopment site is located at 7 Ten Acre Wood, Margam, as shown below in Figure 2-1. The redevelopment site comprises an existing single residential dwelling and garden, which covers approximately 0.2ha.The redevelopment site is bound by neighbouring private land and is accessed via the A48 from junction 3B off the M4 motorway. Table 2-1 summarises the key characteristics of the site.

Table 2-1 Site Summary

Parameter	Description
Site Name	7 Ten Acre Wood
Site area	0.2ha
Existing land use	Residential premises
Purpose of development	Residential development
OS NGR	SS 79742 86270
Local Planning Authorities	Neath Port Talbot County Borough Council
Lead Local Flood Authority	Neath Port Talbot County Borough Council

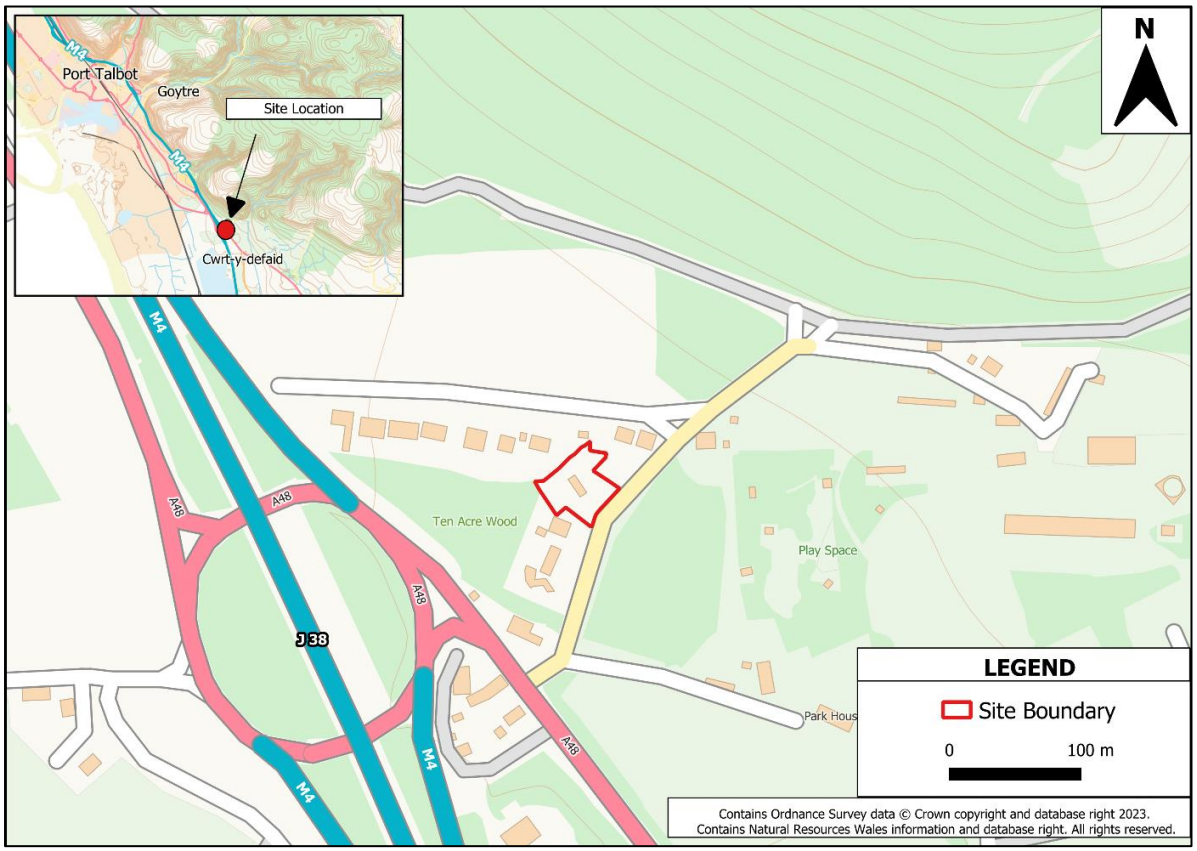


Figure 2-1 Site Location

2.2 Site Topography

A topographic survey of the site was undertaken by Senior Surveys Land Survey Consultants in June 2022 and is contained in Appendix A. Furthermore, Natural Resources Wales (NRW) 1m LiDAR has been used to provide an alternative illustration of the topography of the site, as shown in Figure 2-2.

The topographic survey shows that the site is shown to have a gentle incline from the south-east to the northwest. The lowest ground level is located on the south-eastern boundary of the site with an approximate level of 22.59mAOD. The highest level is located at the north-western corner of the site with an approximate level of 24.69mAOD. A retaining wall is present to the south of the existing building and has a level of 23.71 to 23.81mAOD. The current finished floor level (FFL) of the existing building is 23.79mAOD

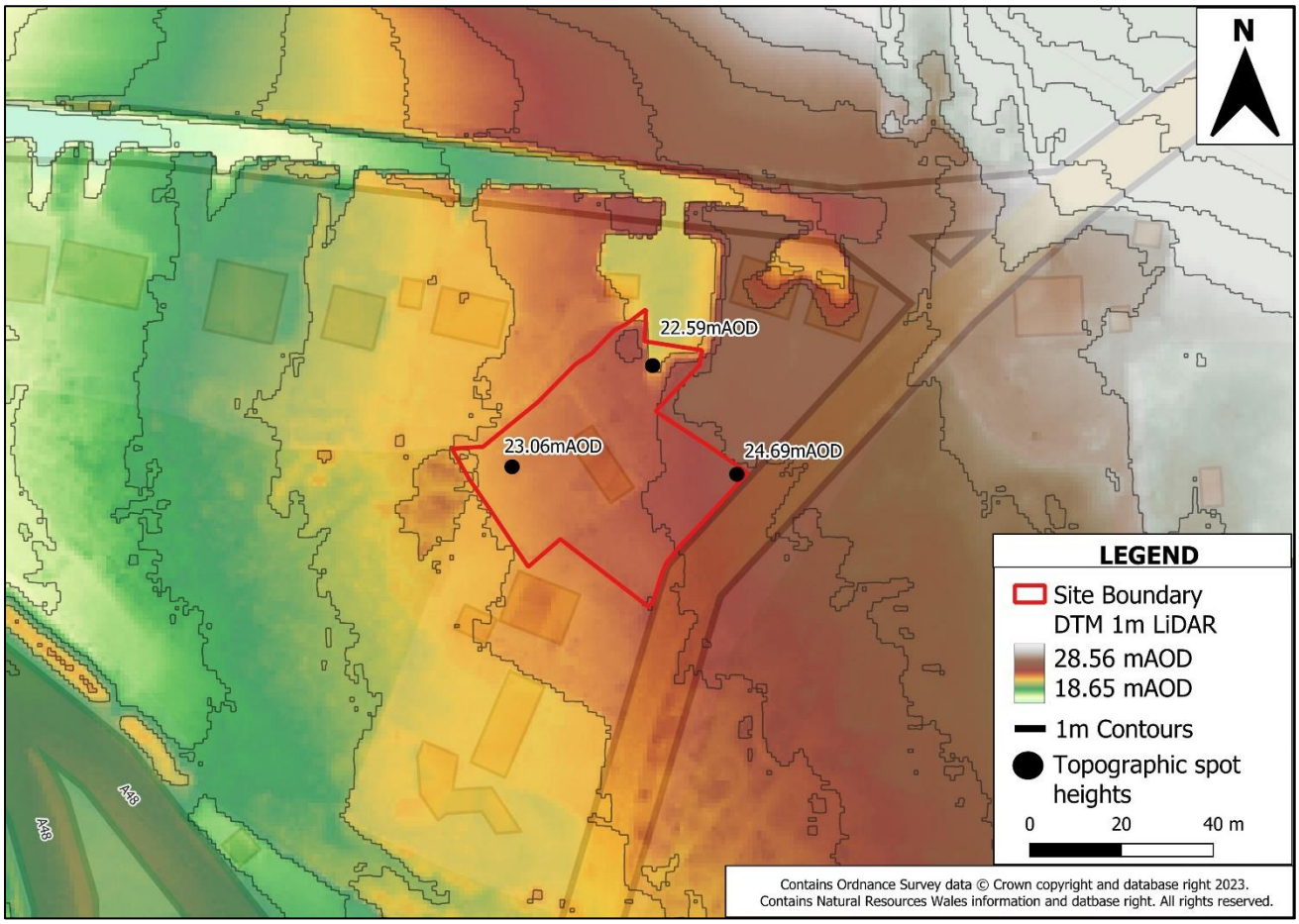


Figure 2-2 LiDAR Topographic data from NRW (1m resolution) with point measurements from the topographic survey

2.3 Soils and Geology

The geology of the site has been assessed using the British Geological Survey (BGS) Geology of Britain Viewer[1]. The bedrock is shown to be South Wales Middle Coal

1 https://www.bgs.ac.uk/map-viewers/geoindex-onshore/

comprised of mudstone, siltstone and sandstone. The superficial geology is formed of Devensian Glaciofluvial Sheet Deposits, comprised of sand and gravel.

The soils on site have been assessed on the Cranfield University Soilscape viewer[2] and are shown to be freely draining slightly acid loamy soils.

2.4 Watercourses

The site is not crossed by any watercourses. To the east of the site the River Nant Cwm Philip, which is designated as an ordinary watercourse. This watercourse flows in a southerly direction through Fuzemill Pond, approximately 500m from the site. The Upper Mother Ditch, another ordinary watercourse, is located approximately 900m west of the site, although at a significantly lower elevation. The Eglwys Nunydd Reservoir is located 657m west from the site, as shown in Figure 2-3, again this feature is well below the level of the site.

The site is not protected by any flood defences.

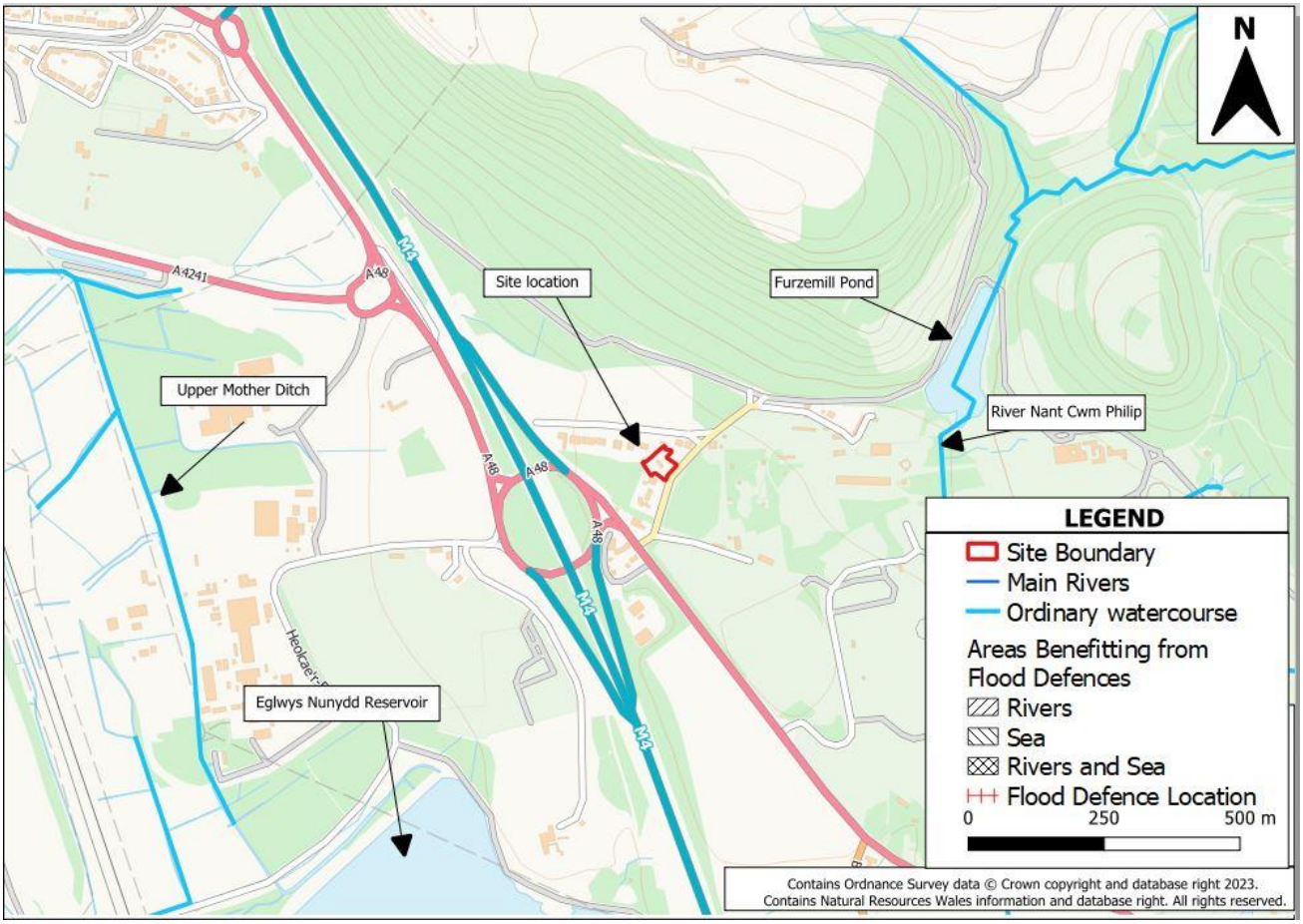


Figure 2-3 Nearby Watercourse and Flood Defence

2 https://www.landis.org.uk/soilscapes/index.cfm

2.5 Development Proposal

Development proposals are to demolish the existing dwelling and to rebuild a replacement residential property on a similar footprint. The new residential property comprises of a ground floor including an entrance hall, living room, playroom, kitchen with pantry and utility room, office, cloak room and toilet. The first floor has 5 bedrooms. Surrounding the development is a large garden with driveway and parking area. The proposed development plan is shown in Figure 2-4, and contained in full within Appendix B.

The Finished Floor Level (FFL) of the building will be a minimum of 24.24mAOD.

Figure 2-4 Development Proposals (Extract from Appendix B)

3 Planning Policy and Flood Risk

3.1 Planning Context

Planning Policy Wales (PPW) sets out the land use planning policies of the Welsh Government. It is supplemented by a series of Technical Advice Notes (TANs), Welsh Government Circulars, and policy clarification letters, which together with PPW provide the national planning policy framework for Wales. 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.

Technical Advice Note 15 (TAN-15), introduced by the Welsh Government in 2004, provides technical guidance relating to development planning and flood risk in Wales. 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.

An update for TAN-15 was released in October 2021 and was due to come into force on the 1st December 2021. However, Welsh Government subsequently suspended the implementation of the new TAN-15 until further notice. Although the new TAN-15 is not a material consideration, Welsh Government and NRW advise that some consideration is given to the draft Flood Map for Planning (FMfP) as best available information. Therefore, where a site is located in a FMfP flood risk zone it is recommended that an FCA is carried out.

As a result of the above, both the DAM and the FMfP are considered as part of this FCA.

3.2 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 for a residential development and is consequently classified as **'Highly Vulnerable**' development. However, it is noteworthy that the proposals are for a replacement dwelling and therefore there will be no change in development vulnerability or intensification of 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 and waste disposal sites.
Less vulnerable development	General industrial, employment, commercial and retail development, transport and utilities infrastructure, car

Development category	Types
	parks, mineral extraction sites and associated processing facilities, excluding waste disposal sites.

3.3 Development Advice Map Classification

The Development Advice Map (DAM) is used to trigger different planning actions based on a precautionary assessment of flood risk.

Figure 3-1 shows that the entire site is located within DAM Zone C2, which is described as "areas of the floodplain without significant flood defence infrastructure".

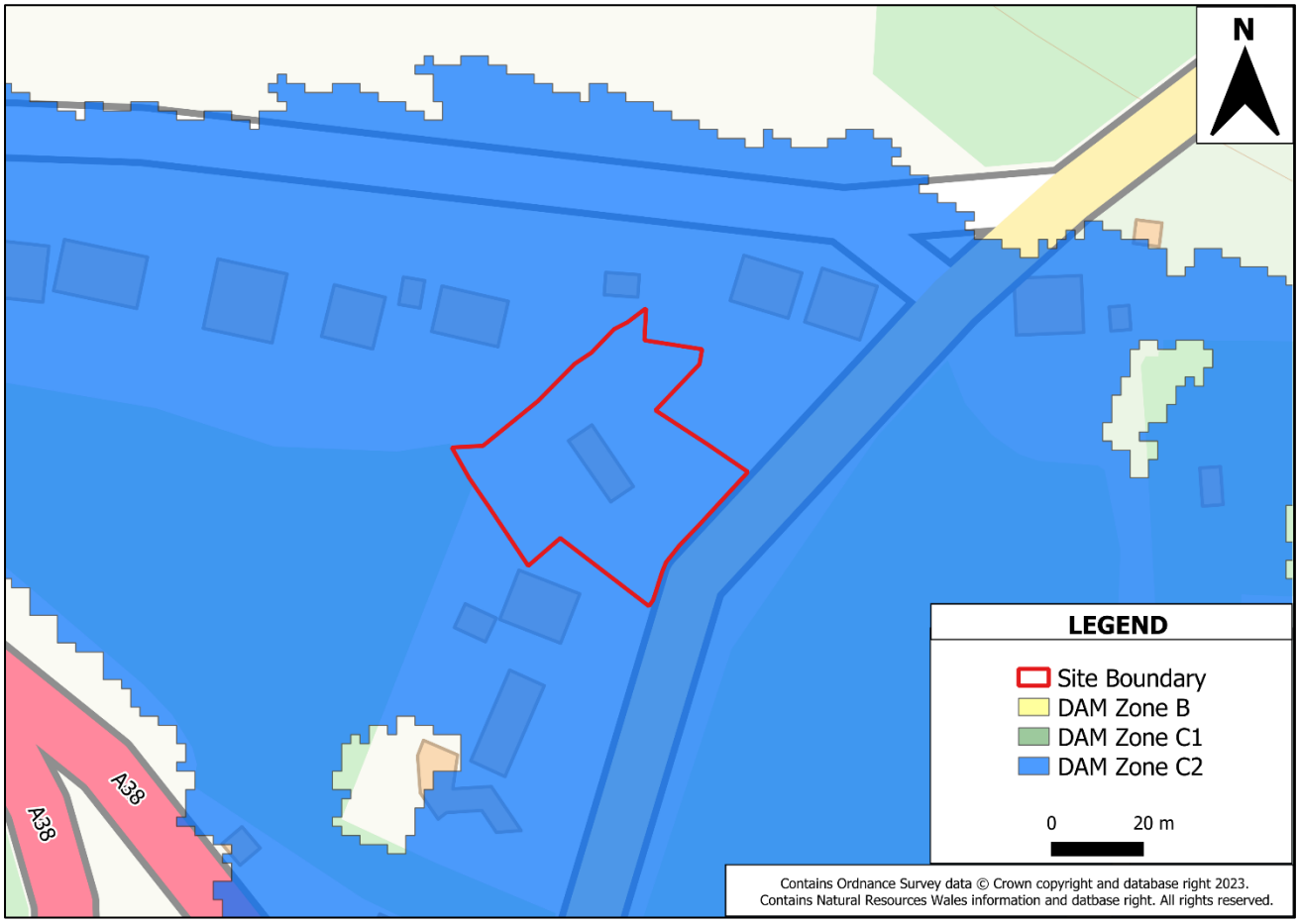


Figure 3-1 Development Advice Map

Section 6.2 of TAN-15 states that "new development should be directed away from Zone C and towards suitable land in Zone A, otherwise to Zone B, where river and coastal flooding will be less of an issue. In Zone C the tests outlined in sections 6 and 7 will be applied, recognising, however, that highly vulnerable development and Emergency Services in Zone C2 should not be permitted."

The proposals involve the redevelopment of an existing building in Zone C2, using a similar footprint to that which currently exists. It therefore follows that in terms of the drafting of

TAN15 6.2, the proposals should not be regarded as ‘new development’ and the Justification Test does not apply. The proposals will not result in an intensification of the development or vulnerability classification but are intended to replace the property with one that is more sustainable and resilient to flooding and climate change.

TAN-15 provides no clear guidance on how such redevelopments should be assessed, although it is clearly reasonable for properties owners to manage their exposure to flood risk and the effects of climate change.

The draft update to TAN-15 (2023), which is expected to be implemented in early 2024, states that in regards to the redevelopment of existing buildings in a flood risk area, planning authorities may be sympathetic to changes which bring clear benefits to the area and building. Whilst this is not a material consideration until implemented, it does illustrate the current policy thinking of Welsh Government.

Therefore, although we conclude that the Justification Tests should not be applied to this proposal, it is appropriate to apply the Acceptability Criteria of TAN15 to the scheme, as detailed in this report.

3.4 Flood Map for Planning Classifications

The new TAN-15 will replace the DAM with the Flood Map for Planning (FMfP), which shall define the appropriate planning actions under the new TAN-15 when it comes into effect in 2024. Whilst the new TAN-15 is not a material consideration until implemented, it does illustrate the current policy thinking of Welsh Government and in some cases the FMfP may constitute best available information. Consequently, information on the FMfP is provided for information only.

3.4.1 Flood Map for Planning - Rivers

As shown in Figure 3-2, the site is located within Flood Zone 3 for the Flood Map for Planning for Rivers, representing areas which have greater than a 1 in 100 (>1% AEP chance of flooding in a given year, including climate change.

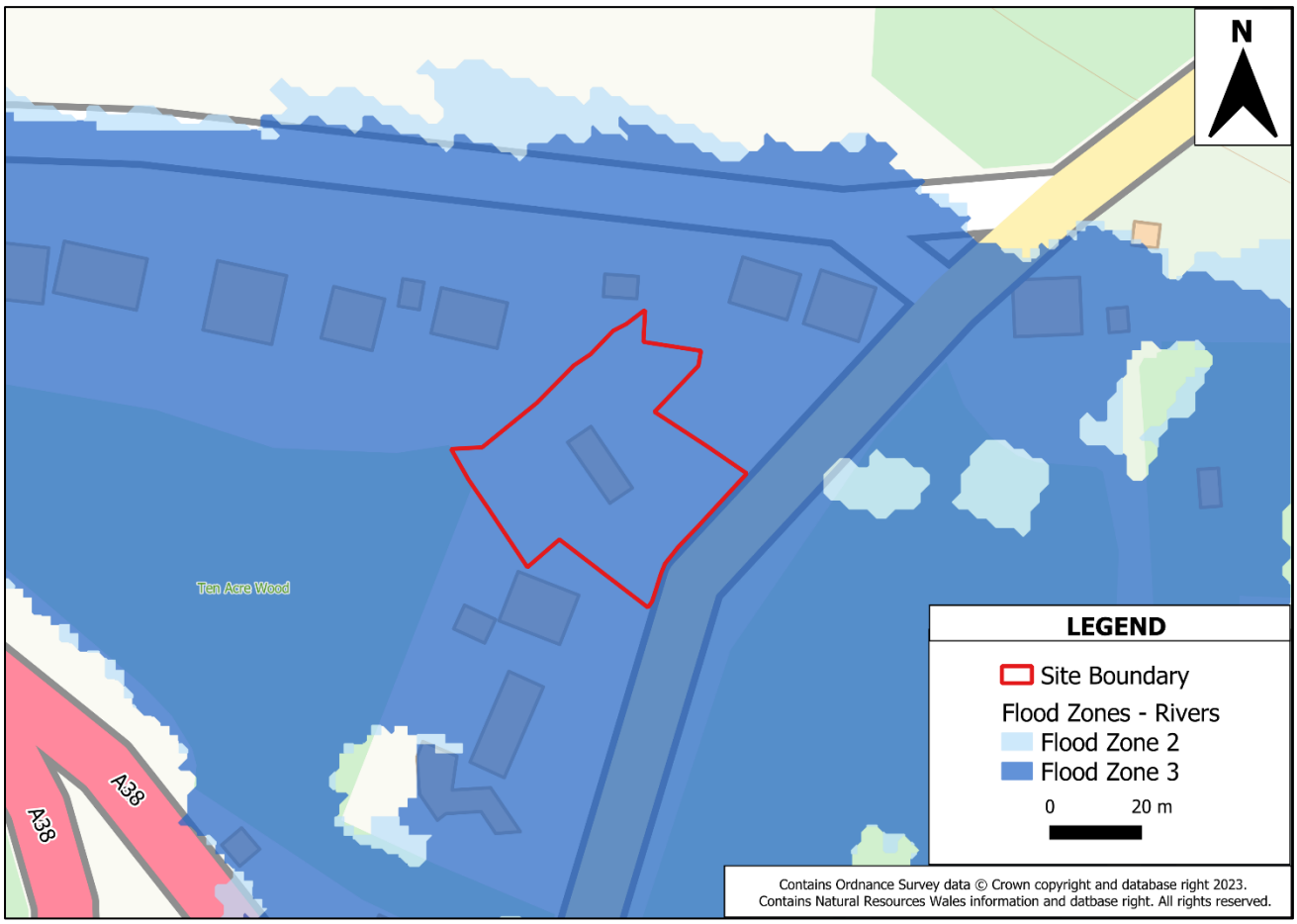


Figure 3-2 Flood Map for Planning – Rivers

3.4.2 Flood Map for Planning - Sea

As shown in Figure 3-3, the proposed development site is located within Flood Zone 1 of the Flood Map for Planning for the Sea. Flood Zone 1 represents areas which have less than a 1 in 1000 (<0.1% AEP) chance of flooding in a given year, including climate change.

Therefore, the site is at little or no risk of flooding from the sea and fluvial flooding is the main risk to the proposed development site.

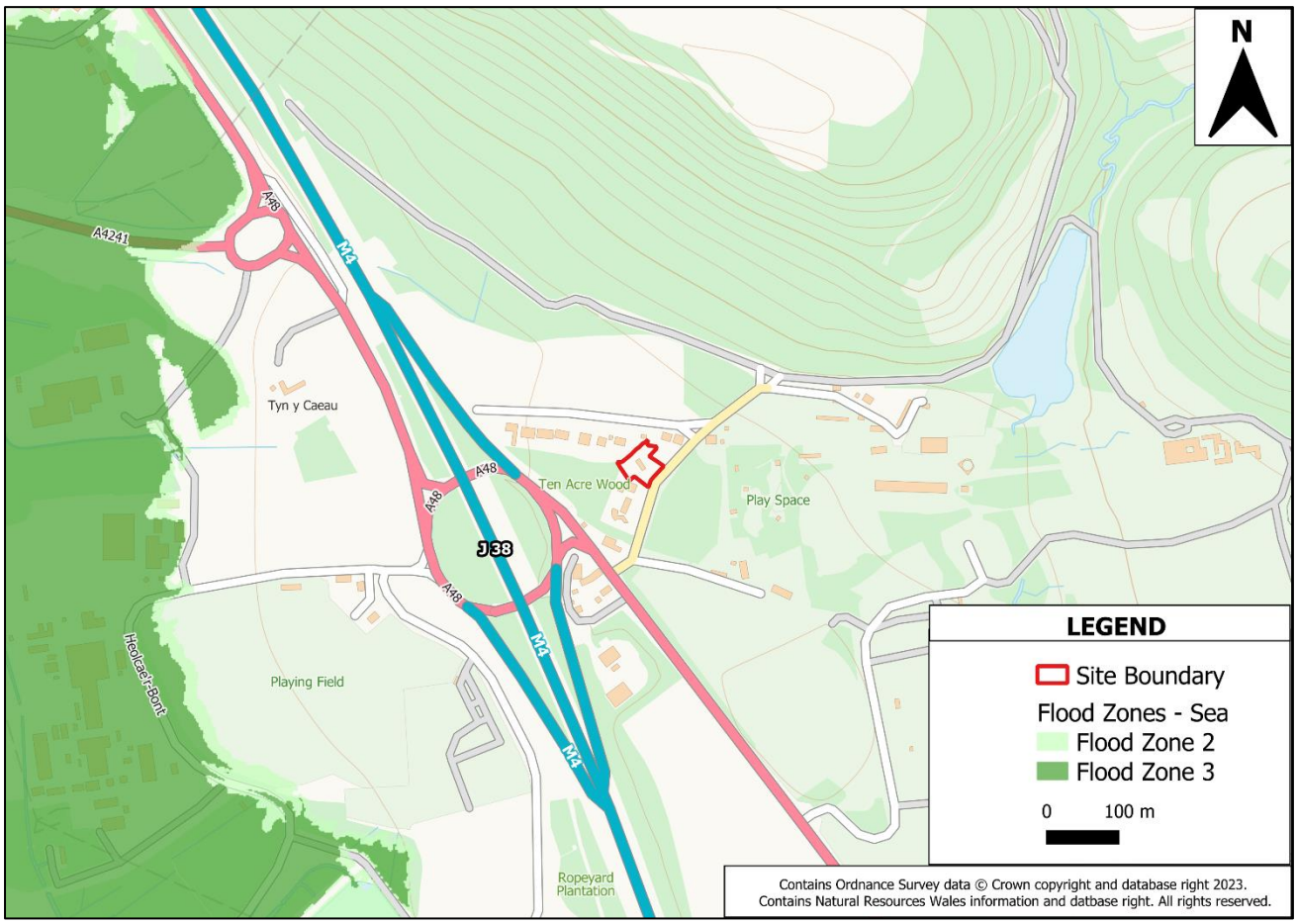


Figure 3-3 Flood Map for Planning – Sea

4 Flood Risk Assessment

This section assesses the risk to the proposed development site from all sources of flooding using publicly available data.

4.1 Review of Existing Flood Risk Data

A summary of the latest available information on flood risk at the site, published by Natural Resources Wales (NRW) is summarised in Table 4-1 below.

Table 4-1 Summary of Flood Risk

Source of Flooding	Onsite Presence	Description
Flood Risk from Rivers	✓	The site is at high risk of river flooding.
Flood Risk from the Sea	×	The site is at very low risk of tidal flooding.
Flood Risk from Surface Water and Small Watercourses	×	The site is at very low risk of surface water flooding.
Flood Risk from Groundwater	×	The site is at 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 low 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. Neath Port Talbott County Borough Council's Preliminary Flood Risk Assessment[3] (PFRA), Local Flood Risk Management Strategy[4] (LFRMS) and Flood Risk Management Plan (FRMP)[5] identified no records of historic flooding at the site.

3 https://www.npt.gov.uk/media/4629/pfra_report_2011.pdf?v=20171123145433

4 https://www.npt.gov.uk/media/4930/lfrms_npt_local_flood_risk_management_strategy.pdf?v=20170627002244

5 https://www.npt.gov.uk/media/5399/floodriskmanagementplan15.pdf?v=20170627002320

4.3 Flood Risk from Rivers

NRW's Flood Risk Assessment Wales (FRAW) flood mapping indicates that the site is located within an area at **high risk** of flooding in the Flood Risk from Rivers mapping, as shown in Figure 4-1. Areas at high risk of flooding have a greater than 1 in 30 (>3.3% AEP) chance of flooding in any given year.

To better understand the risk of flooding posed by fluvial flooding sources and the implications of climate change on the flood risk to the proposed development, further assessment using detailed flood modelling data was undertaken and is discussed in Section 5.

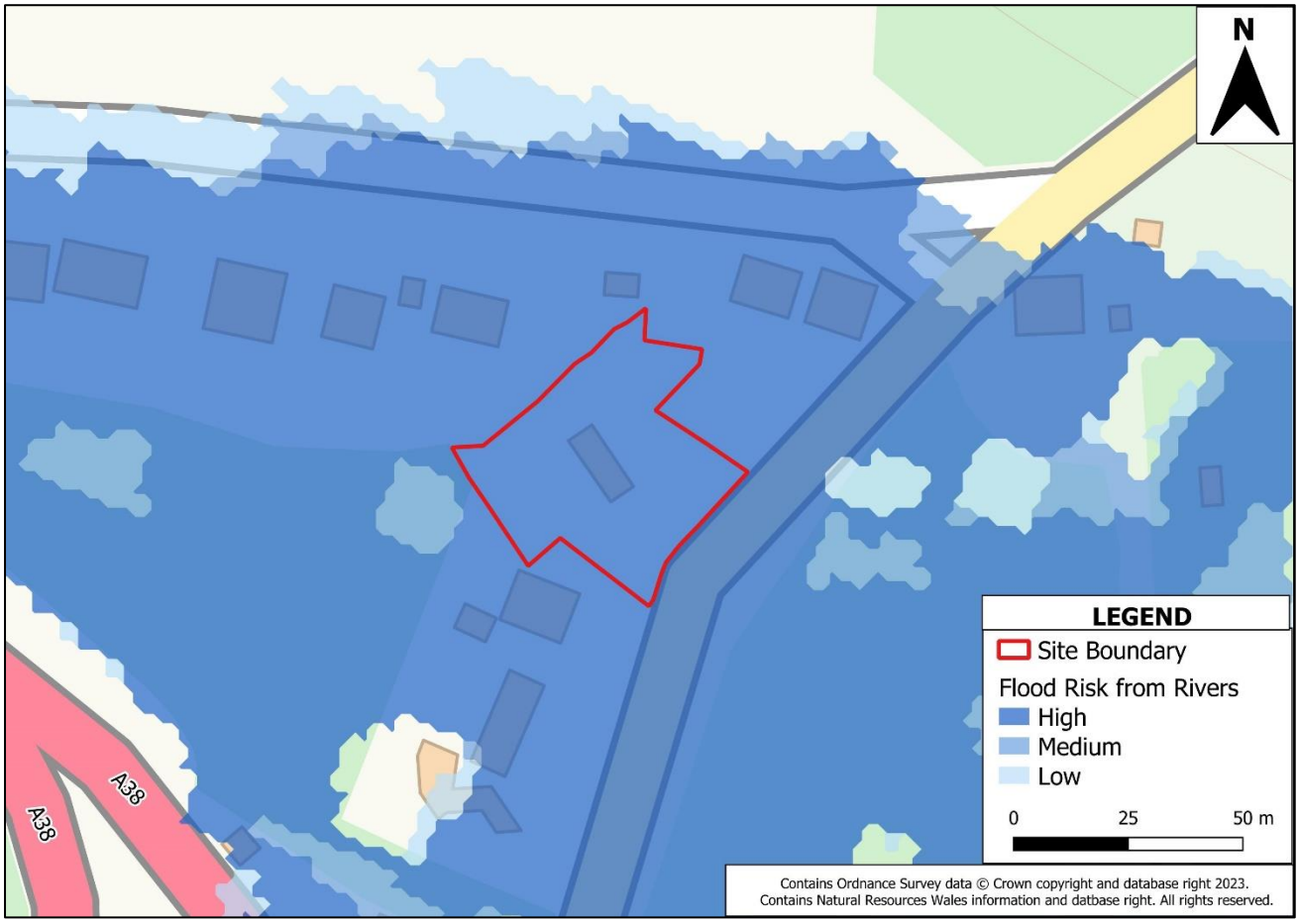


Figure 4-1 FRAW map – Risk of flooding from Rivers

4.4 Flood Risk from the Sea

Due to the site's location inland, the site is located within an area at **very low risk** of tidal flooding. Areas at very low risk have less than 1 in 1000 (<0.1% AEP) chance of flooding in a given year. The NRW FRAW Flood Risk from Seas map confirms that the site is not at risk of tidal flooding and is therefore not presented graphically.

4.5 Flood Risk from Surface Water and Small Watercourses

The NRW FRAW Surface Water and Small Watercourses map shows that the site is at **very low risk** of flooding from surface water and small watercourses. Therefore, the site predominantly has a less than 1 in 1000 (<0.1% AEP) in a given year chance of flooding from this source, as shown in Figure 4-2.

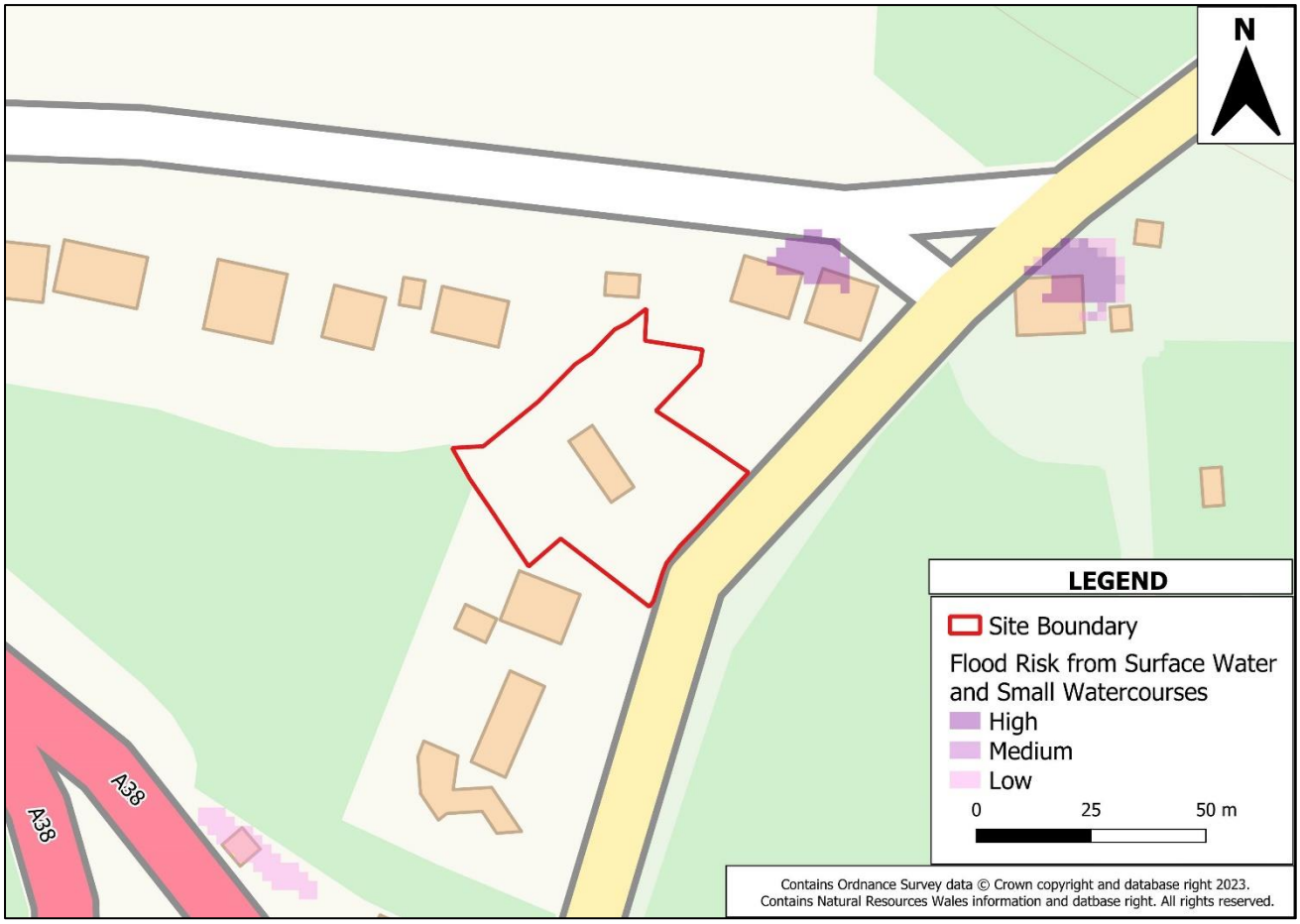


Figure 4-2 FRAW map - Risk of flooding from Surface Water and Small Watercourses

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.

Neath Port Talbot County Borough Council's Flood Risk Management Plan[5] states that 'There is however no specific areas of historical groundwater flooding recorded in the Neath Port Talbot area'. It can therefore be concluded that the risk of groundwater flooding at the site is **low**.

4.7 Flood Risk from Reservoirs

The Eglwys Nunydd Reservoir is located 657m from the site however NRW flood maps indicate that the proposed development site is not located within an area at risk of reservoir flooding, as shown in Figure 4-3. Therefore, the risk of reservoir flooding is considered to be **very low**.

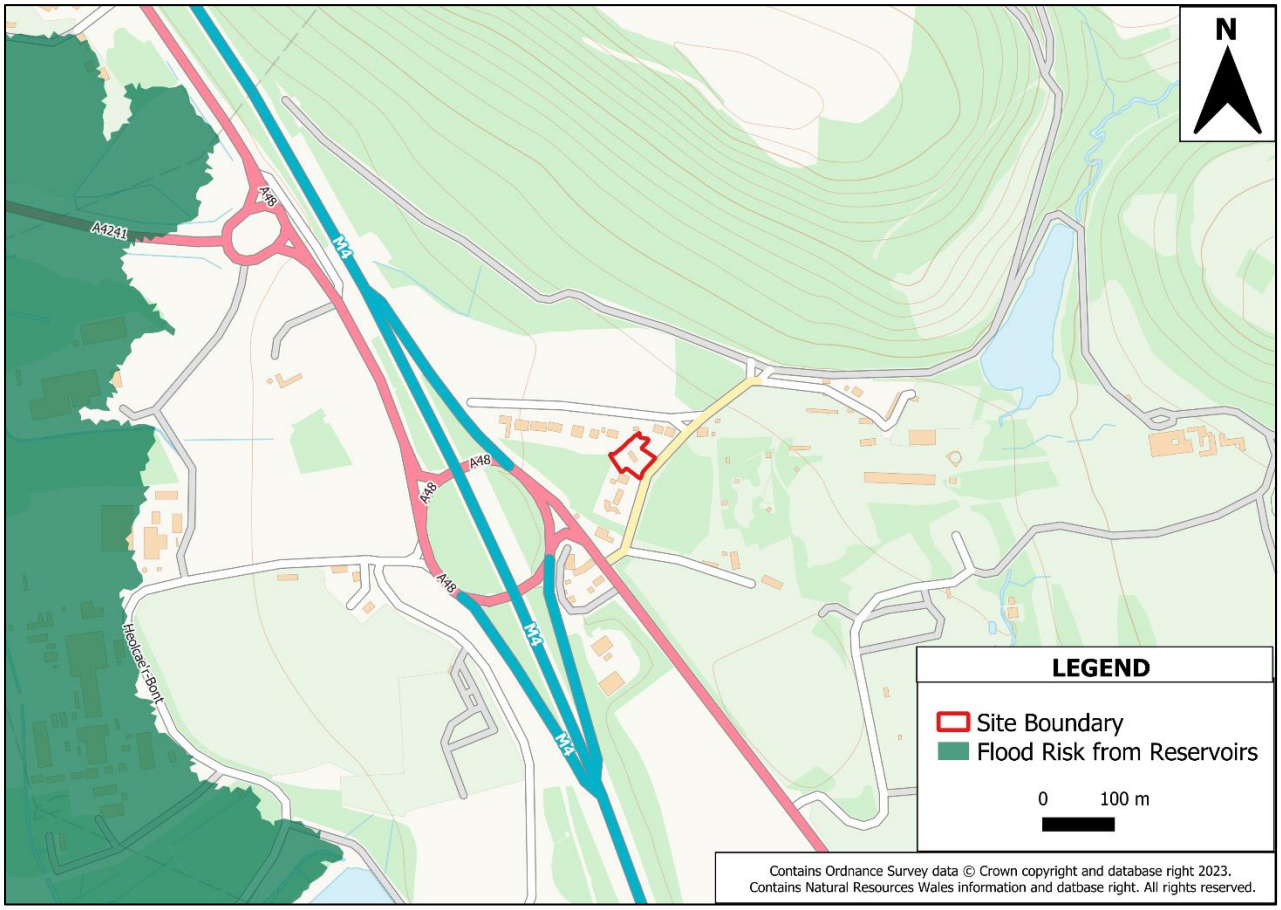


Figure 4-3 Risk of reservoir flooding

4.8 Flood Risk from Sewers

Neath Port Talbot County Borough Council's Flood Risk Management Plan[5] suggests there is no evidence of historic sewer flooding at the site. The FRMP concluded that flooding from sewers does not have significant consequences at a strategic scale, so it can be concluded that the risk of sewer flooding at the site is **low**.

5 Detailed Assessment of Flood Risk

As identified in Section 0, the site is potentially at risk of fluvial flooding. To better understand this potential across the lifetime of the development, further assessment using results from the latest flood model are discussed below.

5.1 Hydraulic Modelling

5.1.1 Model Availability

Detailed fluvial flood risk modelling data for has been taken from the Flood Map Challenge (FMC) undertaken by JBA in 2023. This FMC was accepted by NRW in September 2023 and is due to be implemented in the next scheduled update of the Flood Map for Planning in November 2023.

The FMC was based on NRW's 2015 1D/2D linked ESTRY-TUFLOW hydraulic model of Margam to provide an improved understanding of fluvial flood risk from the Afon Cynffig and Ty Du watercourse as well as assessing the impact of tidal flooding from the Bristol channel. A summary of the updates made to the model for the FMC are listed below:

- Utilise the latest TUFLOW executable.
- Reduce the 1D timestep.
- Update the bridge structures to use the ESTRY 'BB' bridge unit.
- Update the schematisation of the culvert structures that could impact floodplain conveyance.
- Update the inflow boundaries with a new hydrological assessment.
- Update the tidal boundary conditions.
- Update the tidal climate change allowances.
- Update the Ty Du reservoir schematisation.
- Update the base LIDAR data.
- Update 2D Materials layer.

The 1% AEP plus climate change and 0.1% AEP results from this study have been used for this assessment. No further updates have been made to the model as part of this FCA.

NRW and JBA share concerns that the previous 2015 modelling and the new updated Margam flood model both predicted flooding from the Furzemill Pond onto the M4 on a regular basis (QMED). 7 Ten Acre Wood is on this flood flow path. There is no evidence to suggest that such flooding has ever occurred in the past and therefore it is reasonable to believe that the flood modelling is overestimating the flood risk in the area. However, despite various investigations it has not been possible to resolve this suspected over estimation in flood risk. It is however relevant to considering the context of flood risk in the area.

5.2 Baseline Flood Depth Modelling

5.2.1 1% AEP plus climate change event

As shown in Figure 5-1, the proposed development site is predicted to flood to very shallow depths in the 1% AEP plus Climate Change event. Flooding occurs from the Furzemill Pond and flows in a westerly direction towards the proposed development site, as shown in Figure 5-2.

Flood depths across the site are very shallow and are an average of 0.07m with flood depths on the footprint of the proposed building reaching a maximum of 0.25m. The maximum flood level at the proposed building location in this event is 23.93mAOD.

As noted in Section 2.5, the finished floor level of the replacement building will be a minimum of 24.24mAOD, 0.31m higher than the predicted flood level in this event.

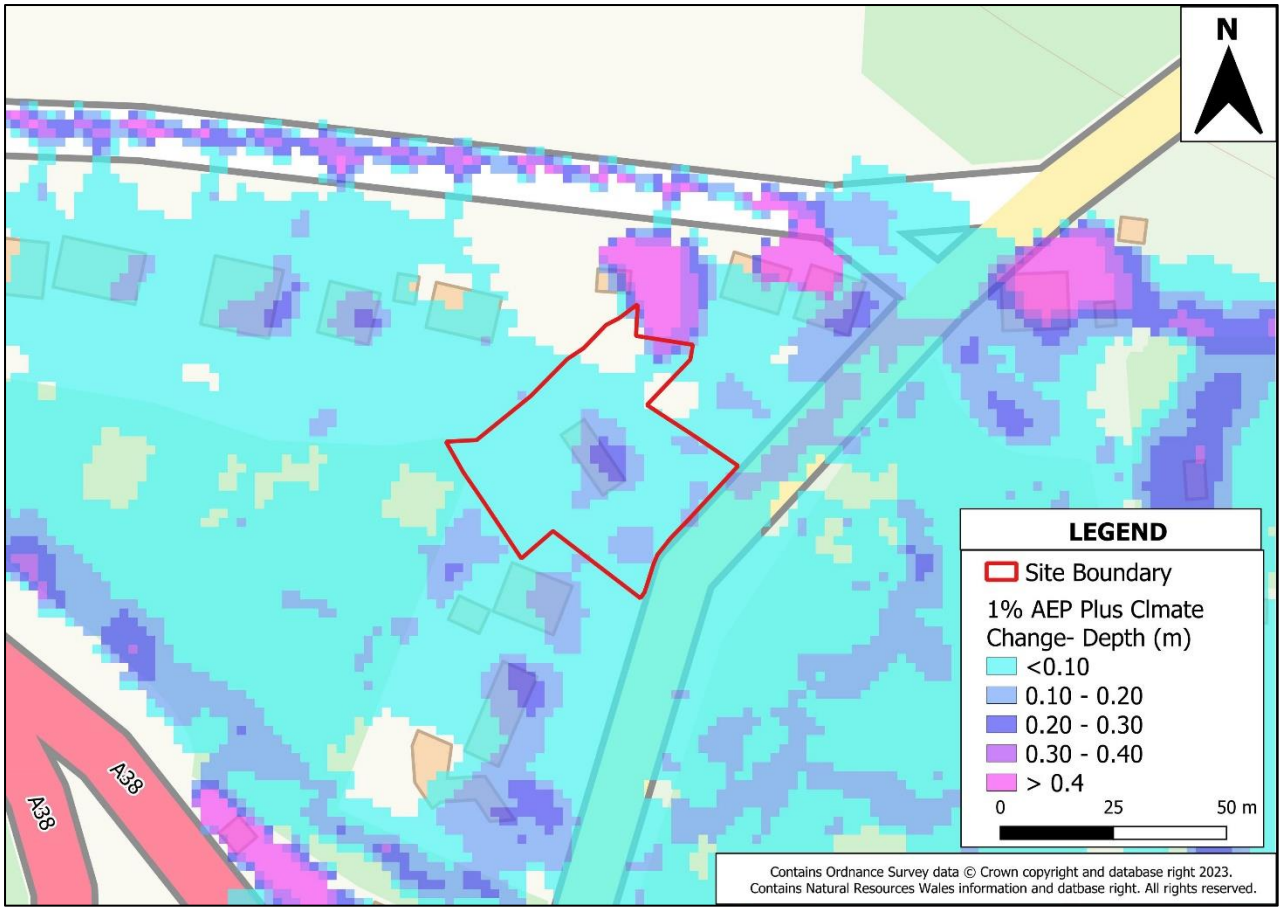


Figure 5-1 1% AEP plus Climate Change flood depths (m)

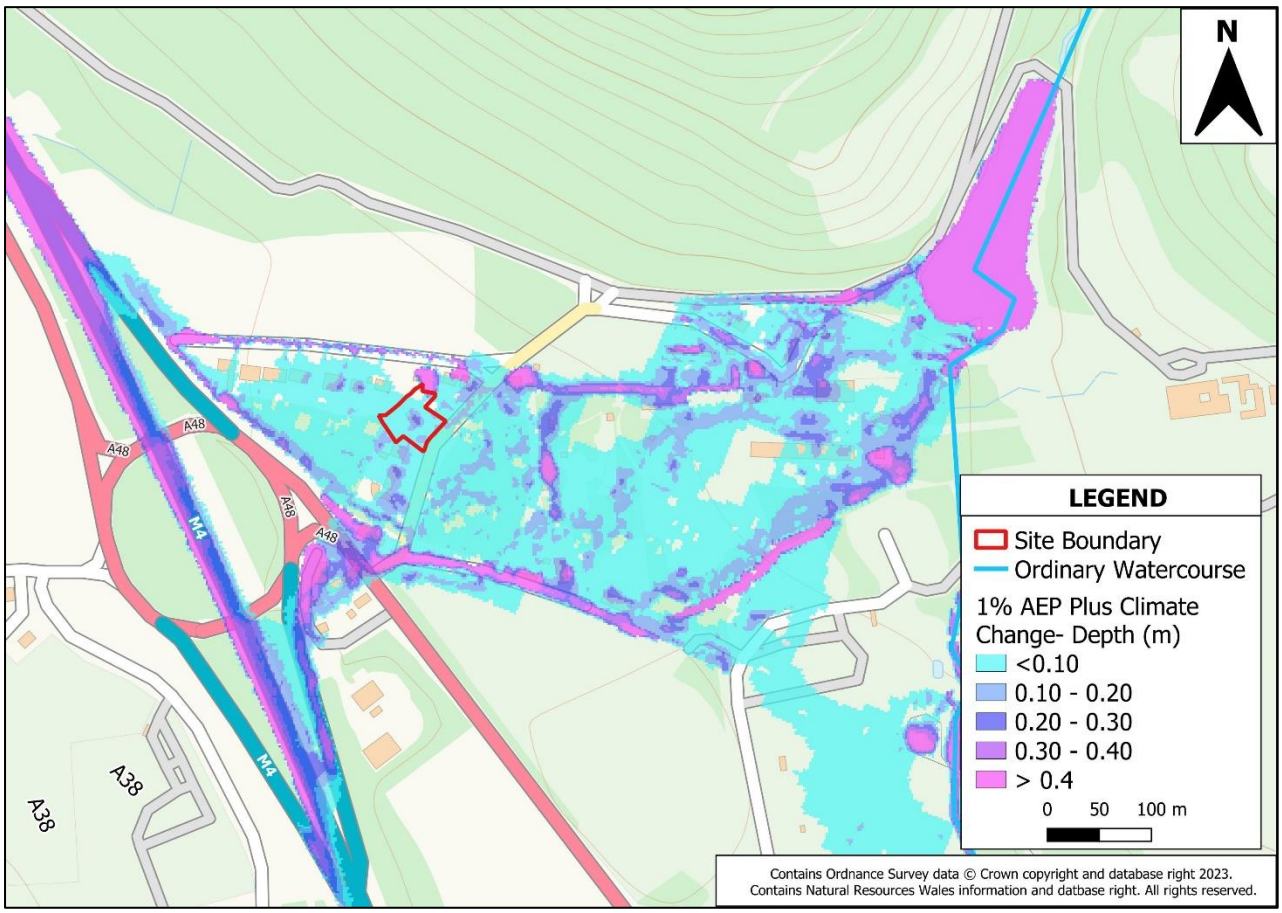


Figure 5-2 1% AEP plus Climate Change flood depths (m) - Wider view

5.2.2 0.1% AEP event

As shown in Figure 5-3, the proposed development site is predicted to flood to very shallow depths in the 0.1% AEP event. Flooding occurs from the Furzemill Pond and flows in a westerly direction towards the proposed development site, as shown in Figure 5-4.

Flood depths across the site are very shallow and are an average of 0.08m with flood depths by the proposed building a maximum of 0.26m. The maximum flood level at the proposed building location in this event is 23.94mAOD. These flood depths and levels are almost identical to the 1% AEP plus climate change event, suggesting that there is limited sensitivity to the flood return period.

As noted in Section 2.5, the finished floor level of the replacement building will be a minimum of 24.24mAOD, 0.3m higher than the predicted flood level in this event.

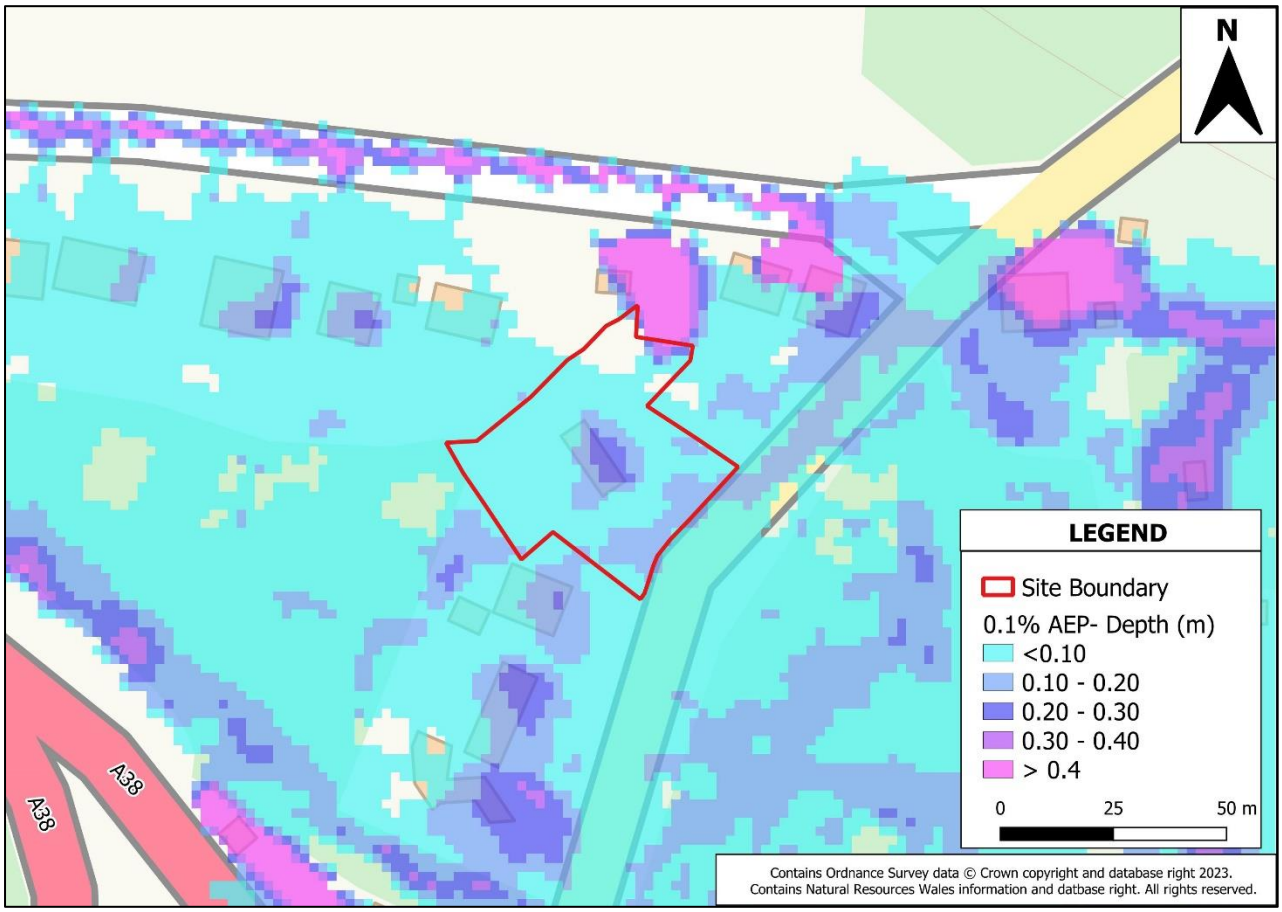


Figure 5-3 0.1% AEP flood depths (m)

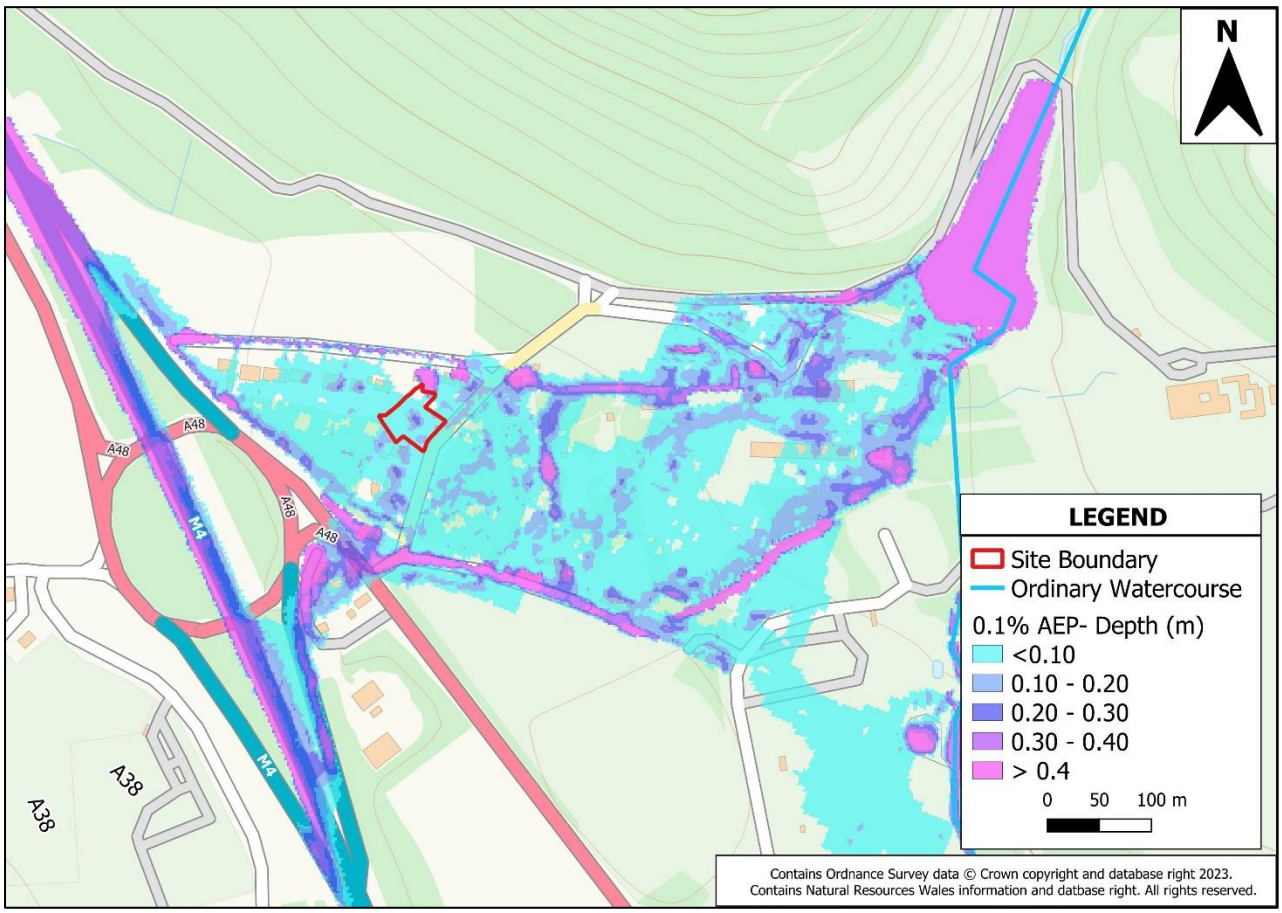


Figure 5-4 0.1% AEP flood depths (m)- Wider view

5.2.3 Summary of flood risk compliance with TAN-15

In the 1% AEP plus climate change event, the site is predicted to flood to shallow depths. However, the proposed building will be raised above the 1% AEP plus climate change flood level. Therefore development proposals are compliant with A1.14 of TAN-15 which requires development to be flood free in this scenario. The redevelopment of the building will result in the site being more resilient than the existing building due to the raised floor levels.

In the 0.1% AEP event, the site is predicted to flood to shallow depths. Although, the proposed building will be raised above the 0.1% AEP flood level and will therefore not flood. Consequently, the development proposals are compliant with A1.15 of TAN.

The resulting building will be more flood resilient than the existing building due to the raised floor levels.

TAN-15 requires that new development does not have an adverse impact on the flood risk to any third-party. Development proposals are very modest and are only marginally bigger than those of the current building. The change in footprint is no different than would results from a modest extension to the property, which would not require an FCA.

If redevelopment did not take place the existing building would be prevented from flooding by simple property flood resilience (PFR) measures, such as door barriers. This would result in similar potential displacement effects.

As flood depths are very shallow any displaced effects shall be negligible. This is supported by the nominal 1cm change in flood depth and levels at the site between the 1% AEP plus climate change event and the 0.1% AEP event, which suggests that flooding is insensitive to changes in flows and volumes.

Consequently, we concluded that the development will not have an adverse impact on flood risk elsewhere, and that detailed flood modelling to demonstrate this would be disproportionate.

6 Acceptability Criteria

In summary, Table 6-1 assesses the proposed development against the acceptability requirements required by TAN-15.

Table 6-1 Assessment of accessibility criteria

TAN 15 Justification Criteria	Comments	Achieved
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) and 1 in 200 (0.5%) chance (tidal) flood event including an allowance for climate change in accordance with TAN-15 table A1.14.	The proposed building will be raised above the 1% AEP plus climate change flood level and will therefore be flood free.	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 proposed building will be raised above the 0.1% AEP flood level and will therefore be flood free. Access to and from the proposed development site will remain unchanged from the current conditions	Yes
No flooding elsewhere.	Given the scale and nature of the proposal and flood risk it is concluded that the proposal will have negligible impact on flooding elsewhere.	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 shall provide purchasers with information on the flood risk in the form of this report.	Yes
Effective flood warnings are provided at the site.	The site is in the Rivers Afan and Kenfig Flood Alert Area.	Yes
Escape/evacuation routes are shown by the developer to be operational under all conditions.	The escape and evacuation routes will remain unchanged from those currently used. These routes are predicted to flood to shallow depths	Yes

TAN 15 Justification Criteria	Comments	Achieved
	and will remain accessible.	
The development is designed by the developer to allow the occupier of the facility for rapid movement of goods/possessions to areas away from flood waters.	It is recommended that the occupier signs up to the NRW flood warning service so that they are aware of the potential for any flooding.	Yes
Development is designed to minimise structural damage during a flooding event and is flood proofed to enable it to be returned to its prime use quickly in the aftermath of the flood.	Not applicable – the proposed building will be raised above predicted flood level.	Yes

7 Conclusions and Recommendations

JBA Consulting (JBA) were commissioned by Andrew Hall to undertake a Level 1 Flood Consequence Assessment (FCA) to support a planning application for the redevelopment of a single dwelling.

The proposed development site is located at 7 Ten Acre Wood in Margam. The redevelopment site comprises of an existing single dwelling and attached land, which covers approximately 0.2ha. It is accessed via the A48 from junction 3B off the M4 motorway.

The development proposals for the site are to demolish the existing residential property and construct a new single replacement dwelling of a similar footprint. The property is intended to be significantly more flood resilient, with a Finished Floor Level of 24.24mAOD.

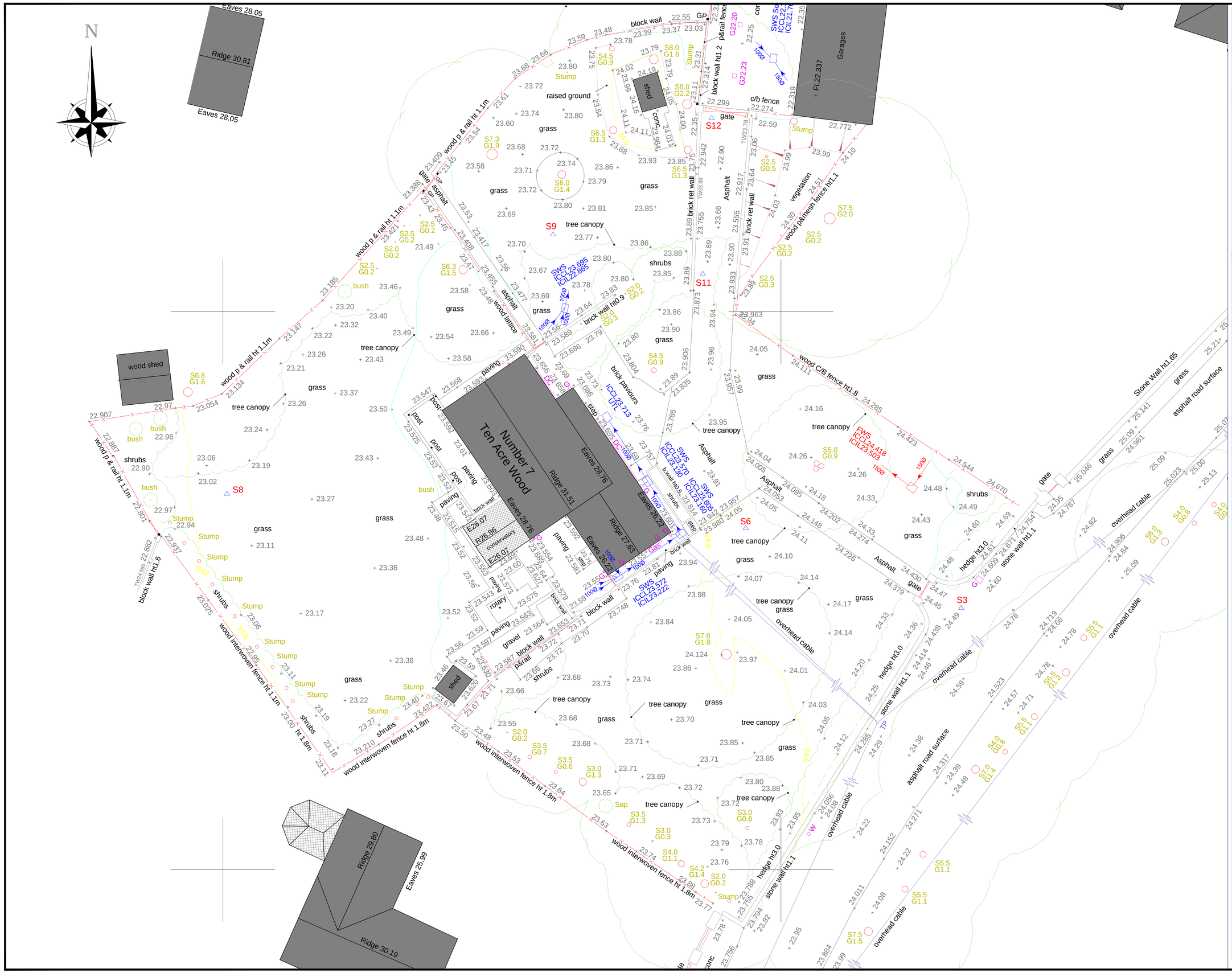
The site is located within Zone C2, as categorised by NRW's Development Advice Maps. Zone C2 is described as areas of the floodplain without significant flood defence infrastructure.

Section 6.2 of TAN-15 states that "new development should be directed away from Zone C" and "that highly vulnerable development and Emergency Services in Zone C2 should not be permitted." The proposed development involves the redevelopment of an existing building in Zone C2, using a similar footprint to that which currently exists. It therefore follows that in terms of the drafting of TAN15 6.2, the proposals should not be regarded as 'new development'. The proposals will not result in an intensification of the development or vulnerability classification. However, they do provide an opportunity to substantially reduce the flood risk to the property. Consequently, the Justification Tests have not been applied, although all aspects of the Acceptability Criteria have been carefully accounted for by this FCA.

The site is at very low risk of tidal, reservoir and surface water flooding and at low risk of reservoir and groundwater flooding.

Detailed hydraulic modelling results were used to assess the risk of fluvial flooding to the site. This demonstrated that the proposed building will be flood free in all scenarios.

In conclusion, all aspects of the Acceptability Criteria set out in TAN-15 have been assessed and shown to be satisfied. Consequently, on the grounds of flood risk, the proposed development meets the requirements set out in TAN-15 and the aims of Planning Policy Wales.



SITE SURVEY

7 Ten Acre Wood Margam

Notes:

Survey Grid:
Grid related to O/S Grid at survey point S2
279825.702mE, 186311.816mN, 26.531m

Survey Datum:
Related to O/S Grid at Survey Point S2
Value 26.531m

Sheet 1 of 1	Surveyed By: P.M.S.
Datum	Drawn By: P.M.S.
See Notes Above for Datum North Point Approximate	Date of Survey: June 2022
	Scale: 1:100
Client: Andrew Hall	Survey Job No. SS-1236_2D

Revisions:

A

B

C

Legend:

AV	AIR VALVE	PGM	PERMANENT GROUND MARKER
B	BOLLARD	PRF	POST & RAIL FENCE
BL	BED LEVEL	PS	PAVING SLABS
BT	BRITISH TELECOM IC	PWF	POST & WIRE FENCE
BW	BRICK WALL	RE	RODDING EYE
BWF	BARBED WIRE FENCE	RL	RIDGE LEVEL
CATV	CABLE TV IC	RP	REFLECTOR POST
CBF	CLOSE BOARDED FENCE	RS	ROAD SIGN
CL	COVER LEVEL	RSJ	ROLLED STEEL JOIST
CLF	CHAIN LINK FENCE	RW	RETAINING WALL
CM	CABLE MARKER	RWP	RAIN WATER PIPE
CONC.	CONCRETE	SAP.	SAPLING
CP	CATCH PIT	SFL	SOFFIT LEVEL
CPF	CHESTNUT PALING FENCE	SL	SILT LEVEL
CSL	COVER SLAB LEVEL	SMH	SURFACE MANHOLE
(dilap)	DILAPIDATED	SNP	STREET NAME PLATE
(dis)	DISUSED	SP	SIGN POST
DK	DROP KERB	ST	STAY(S)
DPC	DAMP PROOF COURSE	STCH.	STANCHION
DSW	DWARF STONE WALL	SV	STOP VALVE
EL	EAVES LEVEL	SVP	SOIL & VENT PIPE
ELEC.	ELECTRICITY	SW	STONE WALL
EP	ELECTRICITY POLE	TCB	TELEPHONE CALL BOX
FB	FLOWER BED	TEL	TELEPHONE
FFL	FINISHED FLOOR LEVEL	TL	TRAFFIC LIGHTS
FH	FIRE HYDRANT	TM	TARMAC
FL	FLOOR LEVEL	TP	TELEGRAPH POLE
FMH	FOUL MAN HOLE	TR	TRANSFORMER
FP	FLAG POLE	U/S	UNDERSIDE
G	GULLY	UTL	UNABLE TO LIFT
GV	GAS VALVE	VP	VENT PIPE
HR	HAND RAIL	WM	WATER METER
IC	INSPECTION COVER	WO	WASH OUT
IL	INVERT LEVEL	WT	WATER TAP
IRF	IRON RAIL FENCE	WV	WATER VALVE
KO	KERB OUTLET		
LB	LETTER BOX		TREE WITH SPREAD & GIRTH
LP	LAMP POST		
MH	MAN HOLE		
O/H	OVERHEAD		EMBANKMENT
P	POST/POLE		
PF	PANEL FENCE		
	PEG/MARKER	STN 2	SURVEY STATION
12.34	SPOT LEVEL	1.50	CONTOUR VALUE

Survey Station Schedule

Station	Easting	Northing	Level
S1	279754.311	186227.463	23.697
S2	279825.702	186311.816	26.531
S3	279772.920	186258.749	24.551
S6	279757.475	186264.466	24.120
S7	279741.662	186258.550	23.588
S8	279720.297	186266.929	23.140
S9	279743.670	186285.514	23.773
S10	279753.488	186273.743	23.909
S11	279754.390	186282.700	23.913
S12	279755.023	186293.858	22.384
S13	279757.514	186314.182	22.295
S14	279762.694	186330.842	22.416
S15	279750.368	186331.345	22.050

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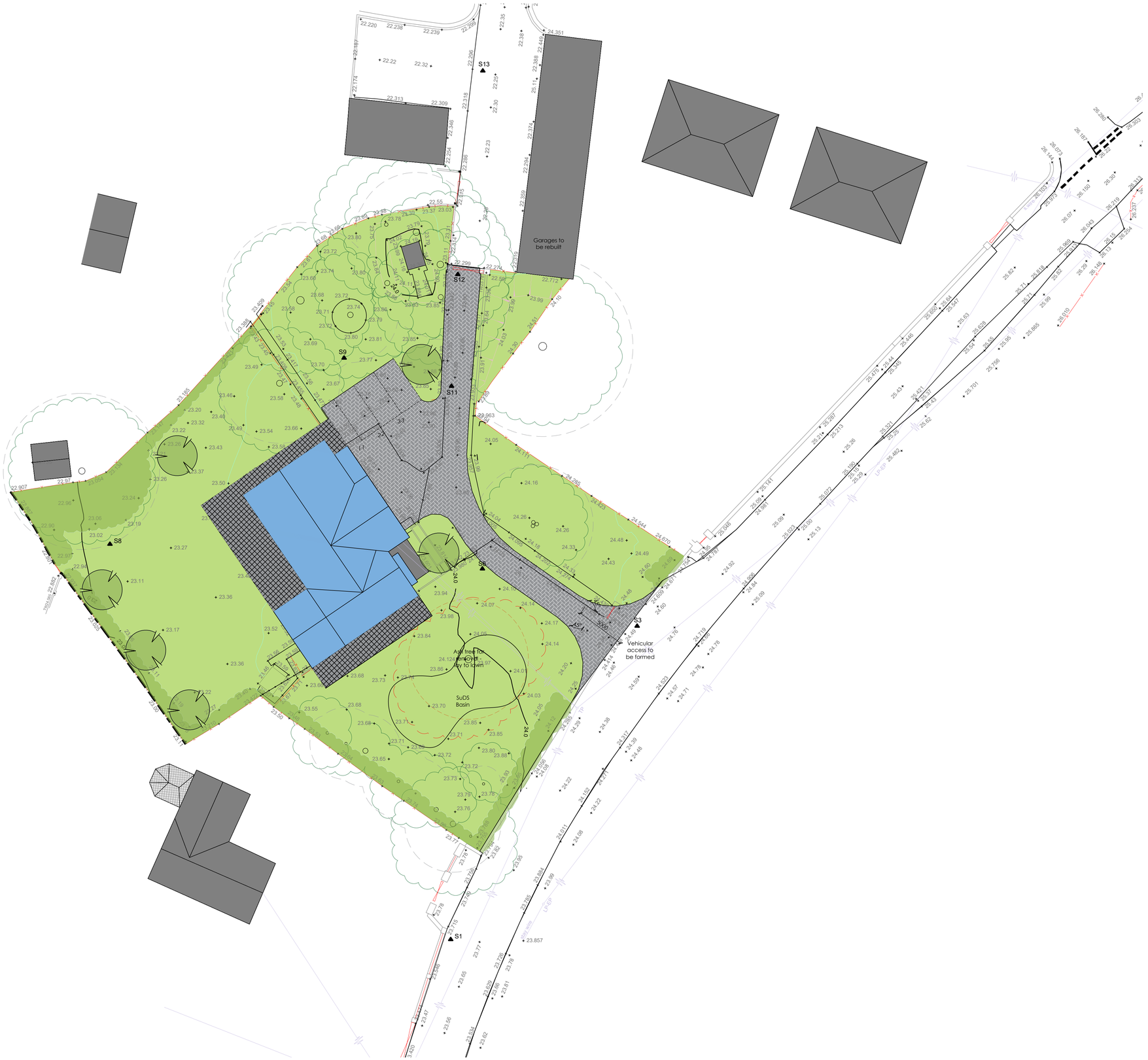
Appendices

A Topographic Survey

B Development Proposals



SITE LANDSCAPE PRINCIPLES

- Driveway - permeable surface
- Patio - permeable surface
- SuDs - planting for biodiversity enhancement
- Hedgerow - existing for retention
- Trees & RPAs - existing for retention
- Trees & RPAs - for removal
- Trees - proposed for biodiversity enhancement
- 1.80m timber fence - proposed for screening

N.B. Category C & U trees shown removed. Refer to Tirlun Design Tree Constraints Plan for schedule of existing trees.

A1
Original sheet size

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Rev	Date	By	CHK	Description

Client:	Project:	Drawing Title:
Andrew Hall	7 Ten Acre Wood Replacement Dwelling	Site Layout

Drawing Status:	Date:	Drawn By:	Checked:	Director:	Scale:	Job No:	Drawing No.	Rev.
CONCEPT DESIGN	01.08.2023	CL		CW	1:200 @ A1	2658	(03)101	-

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A3
Original sheet size

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Rev	Date	By	CHK	Description

Client:	Project:	Drawing Title:
Andrew Hall	7 Acre Wood	Site Plan

Drawing Status:	Date:	Drawn By:	Checked:	Director:	Scale:	Job No:	Drawing No.	Rev.
CONCEPT DESIGN	25-07-23	BG		CW	1:200 @ A3	2658	(02) 102	-

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