

Flood Consequences Assessment (FCA) For:

Conversion / Change of use at
32 High Street,
Merthyr Tydfil,
CF47 8DE

Prepared for:

Mr Humza Zaman

REF: N1220 – FCA - 1

DATE: August 2021



Vale Consultancy
CONSULTING CIVIL & STRUCTURAL ENGINEERS

Document Control

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Client	Mr Humza Zaman
Vale Consultancy Ref:	N1220

Document Checking:

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1 LIMITATIONS

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Except as otherwise requested by the client, Vale Consultancy is not obliged to and disclaims any obligation to update the report for events taking place after: -

The date on which this assessment was undertaken, and the date on which the final report is delivered.

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All the Natural Resources Wales (NRW) mapping data used is under special license. Data is current as of the issue date of this report and is subject to change.

The information presented and conclusions drawn are based on statistical data and are for guidance purposes only. The study provides no guarantee against flooding of the study site or elsewhere, nor of the absolute accuracy of water levels, flow rates and associated probabilities.

1.1 Purpose of the Report

The purpose of this report is to outline the potential flood risk to the site, the impact of the proposed development on flood risk elsewhere, and the proposed measures which could be incorporated to mitigate the identified flood risk. The report has been prepared in accordance with the guidance contained in Planning Policy Wales (PPW) and Technical Advice Note 15 (TAN15): Development and Flood Risk. This report has been prepared in consultation with Natural Resources Wales (NRW).

1.2 Relevant Documents

The FCA has been informed by the following documents:

- Planning Policy Wales Technical Advice Note 15: DEVELOPMENT AND FLOOD RISK
- Merthyr Tydfil Strategic Flood Consequences Assessment (SFCA) June 2018
- Merthyr Tydfil County Borough Council Preliminary Flood Risk Assessment Report (PFRA) April 2011

2 INTRODUCTION

Vale Consultancy has been instructed by The Client to undertake a Flood Consequences Assessment (FCA) for the proposed development at 32 High Street, Merthyr Tydfil, CF47 8DE (**304945E, 205949N**).

The existing site comprises a two-storey building occupied by a commercial shop and a disused shop on the ground floor and flats in the storey above.

Refer to Existing Site Plan, Appendix A.

The purpose of this report is to outline the potential flood risk to the site, the impact of the proposed development on flood risk elsewhere, and the proposed measures which could be incorporated to mitigate the identified flood risk. The report has been prepared in accordance with the guidance contained in Planning Policy Wales (PPW) and Technical Advice Note (TAN15): Development and Flood Risk. This report has been prepared in consultation with Natural Resources Wales (NRW).

2.1 Site Location

The site is located at 32 High Street which is situated on the junction between Swan St / Masonic St and High St. **Refer to Figure 1.**



Figure 1: Site Location Satellite Plan

2.2 Proposed Development

The proposal is for the re-configuration and conversion of the first and second floor to provide three one-bedroom self-contained flats with part refurbishment of the ground floor to provide an A3 takeaway use. The proposal includes external works.

The proposed development is considered to be a change of use albeit in a like-for-like fashion. For instance; The existing plans illustrate a shop and disused shop on the ground floor and disused flats on the first floor. The proposed plans show a takeaway unit on the ground floor along with a barber shop with self-contained flats on the first floor.

Refer to Appendix A.

2.3 Existing Topography

As no topographical survey is available and based on the information identified on the OS maps (166.8m within Swan Street) and following a site visit to appraise the site it was evident that there is a step-up (*approximately 150mm*) leading up to the building, this would set the FFL of the property at a minimum of **166.95m AOD**.

Refer to OS Site Location Plan, Appendix A.

2.4 Existing Ground Conditions

Reference to the British Geological Survey (BGS) online mapping (1:50,000 scale) indicates that the site is underlain by Superficial deposits defined as Alluvium comprising clay, silt, sand and gravel. Bedrock geology is recorded as South Wales Lower Coal Measures Formation comprising sandstone. The Cranfield Soilscales online mapping tool indicates slowly permeable seasonally wet acid loamy and clayey soils.

2.5 Existing Site Drainage

Public sewer records have not been obtained from DCWW. Gullies and manhole covers within the High Street indicate the site is served by formal drainage infrastructure.

3 FLOOD ZONE CATEGORY AND POLICY CONTEXT

3.1 Flood Zone Category

The Welsh Government Development Advice Map (DAM) has been developed for land use planning purposes. It is based on Natural Resource Wales' extreme flood outlines and the British Geological Survey drift data. The DAM should be used alongside Planning Policy Wales and Technical Advice Note (TAN) 15 to direct new development with respect to flood risk. Together, they form a precautionary framework to guide planning applications.

In addition to the DAM, the Flood Risk Assessment Wales map indicates long term risk of flooding from Rivers, the Sea, Surface Water and Small Watercourses or Reservoirs.

The DAM excerpt for the site (See **Appendix B**) shows that the site falls within Zone C2 which is defined by TAN15 as an area of floodplain without significant flood defence infrastructure, with a less than 0.1% annual probability of flooding.

The NRW Flood Risk Maps included in **Appendix B** show that the site is at *low* risk of flooding from both rivers and the sea.

3.2 Development Vulnerability Classification

The proposed development is of mixed-use and includes both 'less vulnerable development' (ground floor) and 'highly vulnerable development' (first floor) in accordance with Figure 2 of the Welsh Government's TAN15. This mirrors the existing vulnerability classification of the site.

Figure 2 of TAN15 describes Zone C2 as:

"Used to indicate that only less vulnerable development should be considered subject to application of justification test, including acceptability of consequences. Emergency services and highly vulnerable development should not be considered"

Paragraph 6.2 of TAN 15 states that highly vulnerable development should not be permitted in Flood Zone C2:

6.2 New development should be directed away from zone C and towards suitable land in zone A, otherwise to zone B, where river or 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. All other new development should only be permitted within zones C1 and C2 if determined by the planning authority to be justified in that location. Development, including transport infrastructure, will only be justified if it can be demonstrated that: -

- i. 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,*
- ii. 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,

- i. It concurs with the aims of PPW and meets the definition of previously developed land (PPW fig 2.1); and,*

- ii. *The potential consequences of a flooding event for the particular type of development have been considered, and in terms of the criteria contained in sections 5 and 7 and appendix 1 found to be acceptable.*

Local Policy

Local Planning Context

The Merthyr Tydfil Local Development Plan 2006-2021 sets out the Council's priorities for the development and use of land in the County Borough and the policies to implement them up until 2021. New development allocations have avoided floodplain areas (zones C1 and C2) within Merthyr Tydfil County Borough and an appropriate policy (BW8: Development and the Water Environment) has been incorporated into the plan which continues to direct new development away from zone C and towards suitable land in zone A and zone B.

Policy BW8 states: *Proposals for built development will only be permitted where:-*

- *1 - They avoid identified river flood plains in order that these areas continue to fulfil their flood flow and water storage functions.*
- *2 - They do not have an adverse effect on the quality and / or quantity of surface waters or groundwater resources, and where opportunities exist, they incorporate measures to improve existing water quality.*
- *3 - Adequate water and sewerage systems exist, or are reasonably accessible, or are capable of being provided prior to the development becoming operational without placing unacceptable pressure on existing capacity or causing unacceptable environmental harm. In addition, development proposals will be required to avoid exacerbating flood risk locally and elsewhere within the river catchment by incorporating sustainable drainage systems (SuDS) for the disposal of surface water. Alternative methods of surface water disposal will only be considered where a developer demonstrates that the incorporation of SuDS is inappropriate for practical or environmental reasons. As The Strategy is implemented through the Plans it may become evident that there is a potential conflict between the LDP and the Strategy. Areas of land identified within the LDP as being suitable for development may be deemed unsuitable when the detailed Plans are produced. The LDP cannot be altered until the next review but the Planning Department would be made aware of the potential conflict and at the next review the LDP will be amended to take the Plans into account.*

3.3 Consultation

NRW have confirmed that there is no Product 4, 5 or 6 data available for the site. Therefore, a detailed quantitative analysis and assessment of the potential flood risk to the site is not possible at this stage or until flood modelled data outputs become available.

4 SOURCES OF FLOODING AND PROBABILITY

4.1 Fluvial

The nearest watercourse is The River Taff which is located approximately 200m west from the site, flowing from north to south. There are no other surface water features within the vicinity.

The candidate site falls within Zone C2 on the Welsh Government DAM.

The NRW Flood Risk Map confirms that the site is at low risk (1% to 0.1%) of fluvial and tidal flooding.

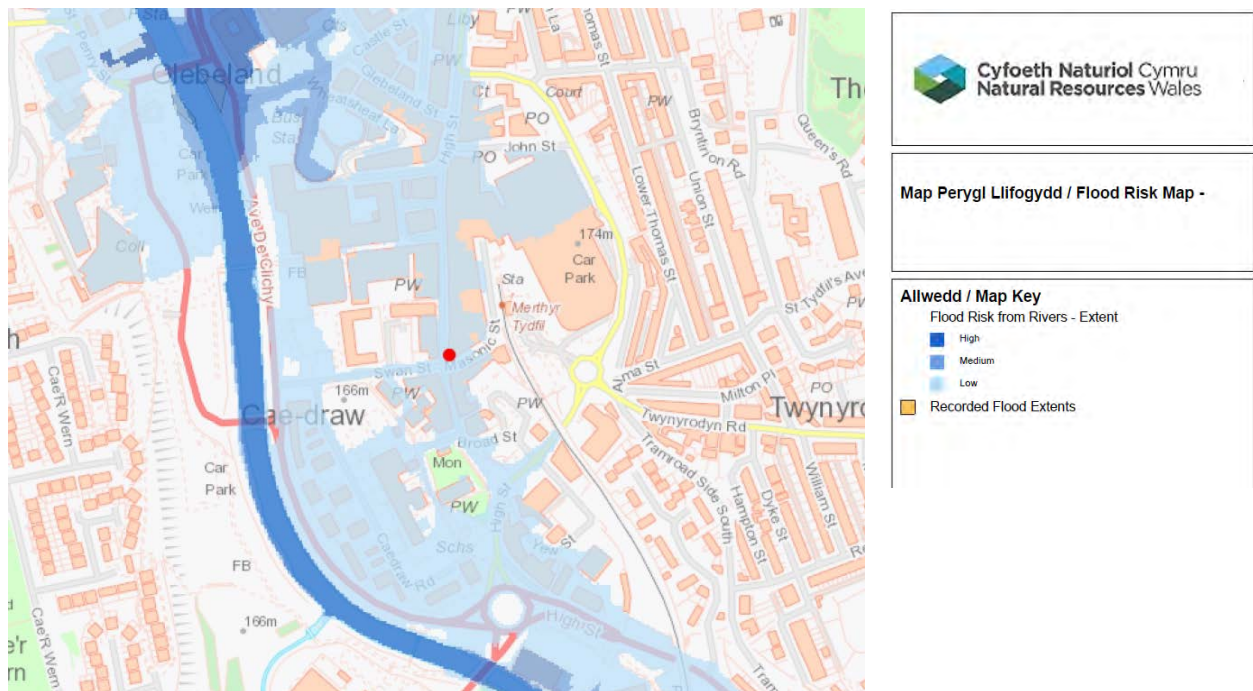


Figure 2: Extract of NRW sea and river flood risk map

Following a review of the Merthyr Tydfil PFRA, SFRA and NRW Flood Maps; there are no records of historic flooding / recorded flood events at the site.

Following a review of the Merthyr Tydfil SFCA which uses a hydraulic model for the River Taff and Nant Morlais (Capita 2011); the site is shown to partially flood during the 1% AEP fluvial event. From inspection of the property entrance from the highway it can be seen that the FFL is raised above the external level by approximately 150mm. Therefore, it can be determined that all habitable spaces (first floor) will be completely flood free, which is also shown to be the situation to the east of the property.

The site is shown to flood during the 1% AEP plus 25% climate change (CC) and also the 0.1% AEP fluvial events. However, flood depths are shown *not* to exceed 0.25m.

Refer to **Appendix D** from Merthyr Tydfil Strategic Flood Consequence Assessment extracts.



Figure 3: Street view of 32 High Street with FFL shown above road level.

Refer to Appendix B.

Therefore, the site is considered to be at low risk from fluvial flooding.

4.2 Tidal

The site is significantly inland (in excess of 30km) and elevated (approximately 167m AOD) and therefore is considered not at risk of tidal flooding.

The NRW Flood Maps confirm the site is not at risk of tidal flooding.

4.3 Surface Water

Surface water flooding occurs when rainwater does not drain away through the normal drainage system or soak into the ground. It is usually associated with high intensity rainfall events but can also occur with lower intensity rainfall or melting snow where the ground is saturated, frozen or developed, resulting in overland flow and ponding in depressions in topography. Surface water flooding can occur anywhere without warning. However, flow paths can be determined by consideration of contours and relative levels.

The NRW 'Risk of Flooding from Surface Water' map (**Appendix D**) indicates the extent of flood risk from surface water and small watercourses. An extracted is provided below / overleaf.

The flood map shows that the proposed development site is outside the flood extent and therefore is at very low risk of surface water flooding, meaning it has a less than 0.1% annual probability of flooding.

The High Street is shown to be at risk of surface water flooding with a distinct flow route through the street.

There are no historic or recorded pluvial flooding events at the site.



Figure 4: Extract of NRW surface water and small watercourses flood risk map

It can be concluded that the risk of surface water flooding to the proposed development is low. Refer to the recommendations and mitigations outlined later in section 6 of the report.

4.4 Sewer Flooding

Flooding from sewers can occur when a sewer is overwhelmed by heavy rainfall, becomes blocked, is damaged, or is of inadequate capacity.

There are no known records of notable flooding from sewers at the site or in the near vicinity.

It can be concluded that the risk of sewer flooding is low.

4.5 Groundwater Flooding

Groundwater flooding occurs when water levels underneath the ground rise above normal levels. Prolonged heavy rainfall soaks into the ground and can cause the ground to become saturated. This results in rising groundwater levels which leads to flooding above ground.

The Merthyr Tydfil SFCA and PFRA indicate that there is no information on historic groundwater flooding which suggests the risk of groundwater flooding is low in the area.

There are no known records of groundwater flooding incidents at or near to the site. Furthermore, the site (and wider area) are currently overlain by 100% hardstanding which would prevent the ingress of groundwater to the surface.

It can be concluded that the risk of groundwater flooding is low.

4.6 Artificial Sources of Flooding

There are no canals within the immediate vicinity of the site or surrounding area.

The NRW 'Risk of Flooding from Reservoirs' map (**Appendix B**) shows that the site at risk of flooding from reservoirs. However, the risk of flooding from reservoirs is extremely unlikely to happen. The closest reservoir to the site is the Pontsticill Reservoir which is over 6km away (north east).

All large reservoirs must be inspected and supervised by a reservoir panel engineer, as the enforcement agency the NRW ensure that reservoirs are inspected regularly, and essential safety work carried out.

It can be concluded that the probability of flooding from artificial sources is low.

4.7 Summary of Potential Flooding

It can be concluded that fluvial flooding is the main potential source of flood risk to the site. Following a review of the Merthyr Tydfil SFCA which uses a hydraulic model for the River Taff and Nant Morlais (Capita 2011); the site is shown to partially flood during the 1% AEP fluvial event. From inspection of the property entrance from the highway it can be seen that the FFL is raised above the external level by approximately 150mm. Therefore, it can be determined that all habitable spaces (first floor) will be completely flood free, which is also shown to be the situation to the east of the property. Therefore, the development will remain flood free during the 1 in 100-year event; and thus compliance with TAN15 A1.14.

In the unlikely event that the River Taff breaches its banks, the site could be flooded by up to (maximum) 250mm during the 1 in 100-year event + CC and also the 1 in 1000-year extreme event.

The site is indicated as being in Zone C2 on the Welsh Government DAM.

All other potential sources of flooding have been assessed and are concluded to be low.

The risk of flooding to the development proposals has been addressed and a balanced judgement has been applied in recognising the important benefits of using previously developed land in realising the development expectations.

5 TAN15 ASSESSMENT

5.1 Justifying the Location

TAN15 advises that all new developments should only be permitted within Zones C1 and C2 if determined by the planning authority to be justified in the relevant location. Development, including transport infrastructure, should only be considered justified if it can be demonstrated that:

- Its location in Zone C is necessary to assist, or be part of the local authority regeneration initiative or a local authority strategy required to sustain an existing settlement or region; 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 2002 and meets the definition of previously developed land; and
- The potential consequences of a flooding event for the development have been considered, and found to be acceptable.

In both these instances it is necessary that the development concurs with PPW and meets the definition of previously developed land. The potential consequences of a flooding event must be considered, and in terms of criteria identified in TAN 15 found to be acceptable.

The development site is deemed necessary to contribute to key employment objectives supported by the local authority; particularly to renovate and sustain what is a currently dilapidated existing development and therefore satisfies the justification test outlined in Section 6 of TAN15.

The current property requires work / re-configuration which supports the notion for the proposed development. It should be stressed that no habitable rooms are located on the ground floor i.e., all bedrooms are located on the upper floors. This will provide both important employment and economic opportunities and residential accommodation at a site which is currently partly disused and therefore somewhat wasted.

It is concluded that the development concurs with the aims of PPW and meets the definition of previously developed land.

TAN15 states that;

Advice to planning authorities suggests that residential development should be designed to be flood free during the 1% fluvial flood (i.e. that fluvial flood with a 100 to 1 chance of occurring in any year).

The proposed development is deemed to comply with this.

Furthermore, the site is deemed to be compliant with A1.15 of TAN15 as the residential aspect (habitable rooms) will be completely flood free in all events up to and including the 0.1% AEP event and the maximum depth of flooding based on the hydraulic modelling utilised by the SFCA for the less vulnerable aspect of the development is <0.6m.

The potential consequences of flooding, to satisfy the latter part of these conditions, are assessed in terms of the requirements of TAN 15 in the following sections of the report.

6 MITIGATION & RECOMENDATIONS

Mitigation measures should be installed as a precautionary measure in case the property should flood during extreme events and/or a breach of flood defences.

The mitigation measures will ensure that the development is compliant with Sections A1.14 and A1.15 of TAN15.

Additional internal alterations that should be introduced where practically possible to the development include:

- Raised electronic control units and sockets
- Install smart air bricks or air brick covers
- Provide low level flood guards on all access points
- Use plastic and stainless-steel fixtures and fittings and avoid wooden alternatives
- Use solid flooring (tiled, resin, concrete) at lower ground level, where possible
- Ensure that with the time afforded by advance warning, evacuation of property via safe egress and removal of valuables from the building can be implemented
- Clearance of the existing surface water drainage system to improve drainage of the site and follow necessary maintenance procedures (to new & existing SW drainage) to ensure that the system functions to optimum capacity
- The predicted depths, rise, speed of inundation and velocities are likely to satisfy the TAN 15 suggested tolerable conditions for more extreme events
- Use robust flood resistant construction techniques as detailed the RIBA publication -

"Improving the Flood Performance of New Buildings, Flood Resilient Construction" (May 2007).

Flood Alerts and Flood Warnings cover this area (**Refer to Appendix B**). Site owners should register to receive flood alerts and where possible, Flood Warnings. Flood Warnings Direct is a free service that provides prior warnings of a fluvial flood event. Areas at risk of flooding from rivers (fluvial) and the sea (tidal) are warned, which relies on direct measurements of rainfall, river levels, tide levels, in-house predictive models, rainfall data and information from the Met Office. This service operates 24 hours / day 365 days a year. If flooding is forecast, warnings are issued using a set of easily recognisable codes.

Appropriate documentation should be displayed to inform any users of the site of the potential risk. Documentation will be displayed at an appropriate position in the building. The documentation will indicate the risk of flooding and contain information on how prior warnings will be sent to the building. Further information on the documentation will comprise of the Floodline Warnings Direct telephone number, emergency services numbers and exit plans and egress directions from the hall, as identified in the evacuation procedure for the site.

The site owner should draw up an evacuation procedure for implementation during an extreme event. This should be done in conjunction with the appropriate professional bodies. An evacuation procedure should be drawn up after the developer has completed an action plan. The action plan is carried out and based on an assessment of the consequences of an extreme flood on the building. The extent of 'dry proofing' measures incorporated is determined by the assessment of the social and economic impact of a flood.

The evacuation procedure should be a written document which should outline the course of action to site users during a flood.

The evacuation procedure should be a written document which should outline the course of action to hall occupants during a flood. The evacuation procedure should address the following topics:

- A list of important contacts, building services, suppliers and evacuation contacts for officers and users;
- A description or plan showing locations of key property, protective materials and service shut-off points;
- Basic strategies for protecting property and assisting recovery;
- Checklist of procedures that can be quickly accessed by users during a flood;
- Safe exit-plan (building and site);
- Safe exit route to higher ground outside the flood risk area (building and site), kept and displayed on site.

Flood proofing measures should be incorporated as far as is practically possible.

It is proposed that the new building will be constructed with materials with inherently good wet proofing performance. Wet proofing is the use of more flood resistant building materials in the floors, walls and doors, i.e., concrete ground slab and masonry wall construction in this case.

6.1 Access and Egress

Safe access / egress is provided by Masonic Street (east) which is located outside of the flood extent. **Refer to Flood Evacuation / Safe Egress Route, Appendix C.** Alternatively, and in the event site users do not have sufficient time to evacuate; safe refuge on the first floor which is significantly above the flood level for events up to and including the 0.1% AEP event is an option as outlined below.

6.2 Safe Refuge Area and Flood Procedure

In the highly unlikely event that the site floods the competent warning authority is the NRW and a lead time of several hours in advance of flooding is provided, excluding potential breaches of defences. When a flood is expected Merthyr Tydfil County Borough Council, and the local emergency services will be responsible for public care and safety. In the event of a flood, the occupants should seek refuge in the first floor until flood waters have dispersed and it is safe to leave the building.

7 CONCLUSIONS

The proposal is for the re-configuration and conversion of the first and second floor to provide three one-bedroom self-contained flats with part refurbishment of the ground floor to provide an A3 takeaway use.

The site is within Zone C2 as defined in TAN15. Under TAN 15 the development is classified as both 'less vulnerable' and 'highly vulnerable' and is therefore required to undergo a justification test, which includes an acceptability of consequences assessment. A technical assessment of the consequences of flooding of the site has been carried out in accordance with the requirements of TAN15. In respect of the criteria outlined in this document the findings are as follows:

The development site is deemed necessary to contribute to key employment objectives supported by the local authority; particularly to renovate and sustain what is a currently dilapidated existing development and therefore satisfies the justification test outlined in Section 6 of TAN15.

The current property requires work / re-configuration which supports the notion for the proposed development. It should be stressed that no habitable rooms are located on the ground floor i.e., all bedrooms are located on the upper floors. This will provide both important employment and economic opportunities and residential accommodation at a site which is currently partly disused and therefore somewhat wasted. The main source of flood risk to the site is fluvial, though this risk can be considered low.

The recommendations regarding flood risk mitigation outlined within this document should be addressed as part of the proposed development.

It can be concluded that fluvial flooding is the main potential source of flood risk to the site. Following a review of the Merthyr Tydfil SFCA which uses a hydraulic model for the River Taff and Nant Morlais (Capita 2011); the site is shown to partially flood during the 1% AEP fluvial event. From inspection of the property entrance from the highway it can be seen that the FFL is raised above the external level by approximately 150mm. Therefore, it can be determined that all habitable spaces (first floor) will be completely flood free, which is also shown to be the situation to the east of the property. Therefore, the development will remain flood free during the 1 in 100-year event; and thus, compliance with TAN15 A1.14.

In the unlikely event that the River Taff breaches its banks, the site could be flooded by up to (maximum) 250mm during the 1 in 100-year event + CC and also the 1 in 1000-year extreme event.

The proposal meets TAN15 threshold tolerance for a residential and commercial / retail scheme.

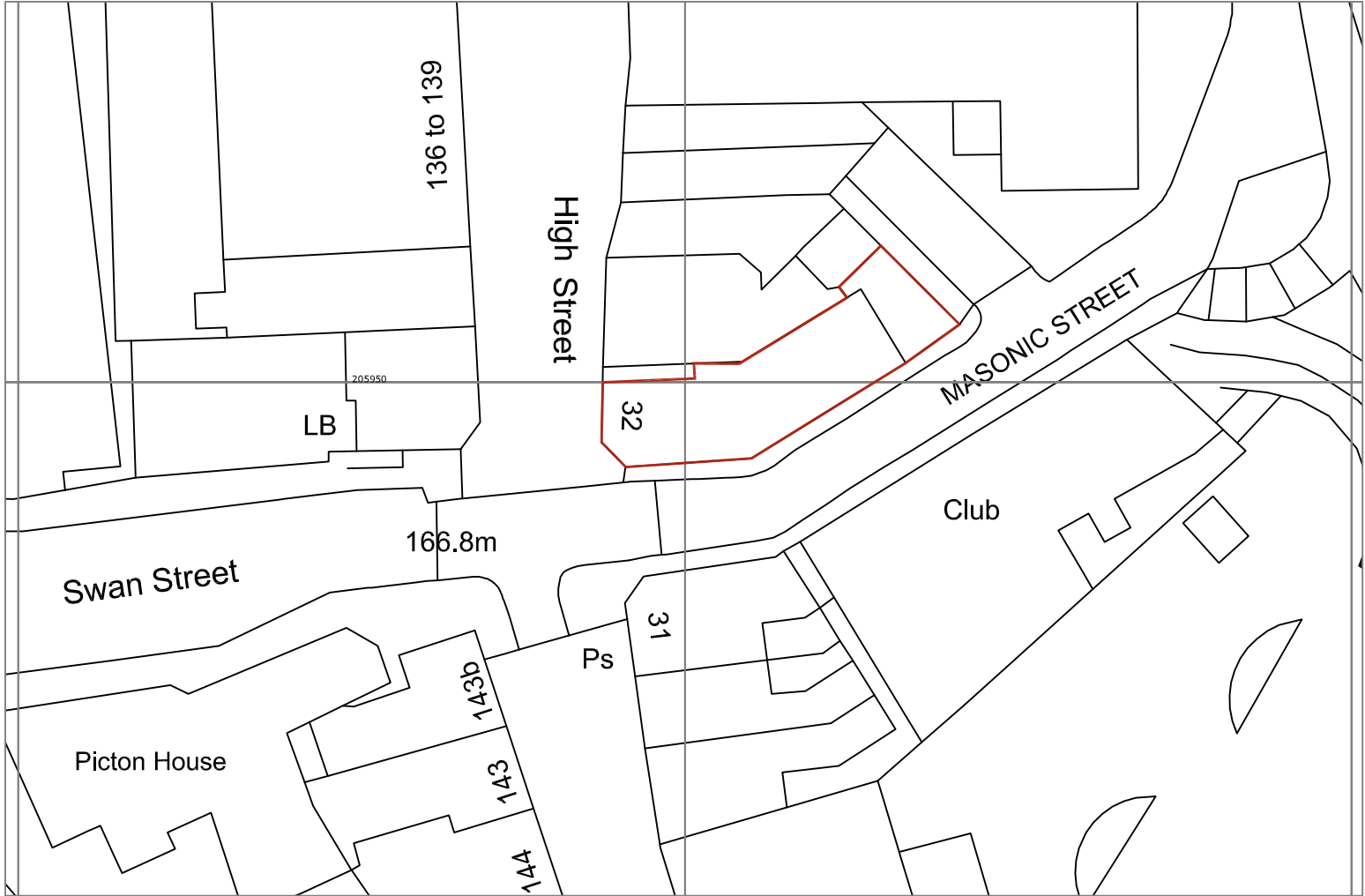
Units on the first floor to act as 'safe havens' during flooding event, with evacuation of the site also possible east along Masonic Street.

All residents/site users are to be signed up to the NRW 'Floodline Warnings Direct' scheme.

Surface water drainage to be suitably designed in line with local and national requirements.

Therefore, based on the findings of the FCA, it is considered that the principal objectives of TAN15 have been satisfied and that the development proposals are acceptable in terms of flood risk.

APPENDIX A: Existing Site Plan and Proposed Development Plans



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NORTH

Issue

21.05.21

Planning Submission

WA

Westfield Architects

Job: 32 High Street, Conversion to apartments and retail units.

Date: 20.04.21

Location: 32 High Street, Merthyr Tydfil. CF47 8DE

Scale: 1:500@A3

Title: Site Location Plan

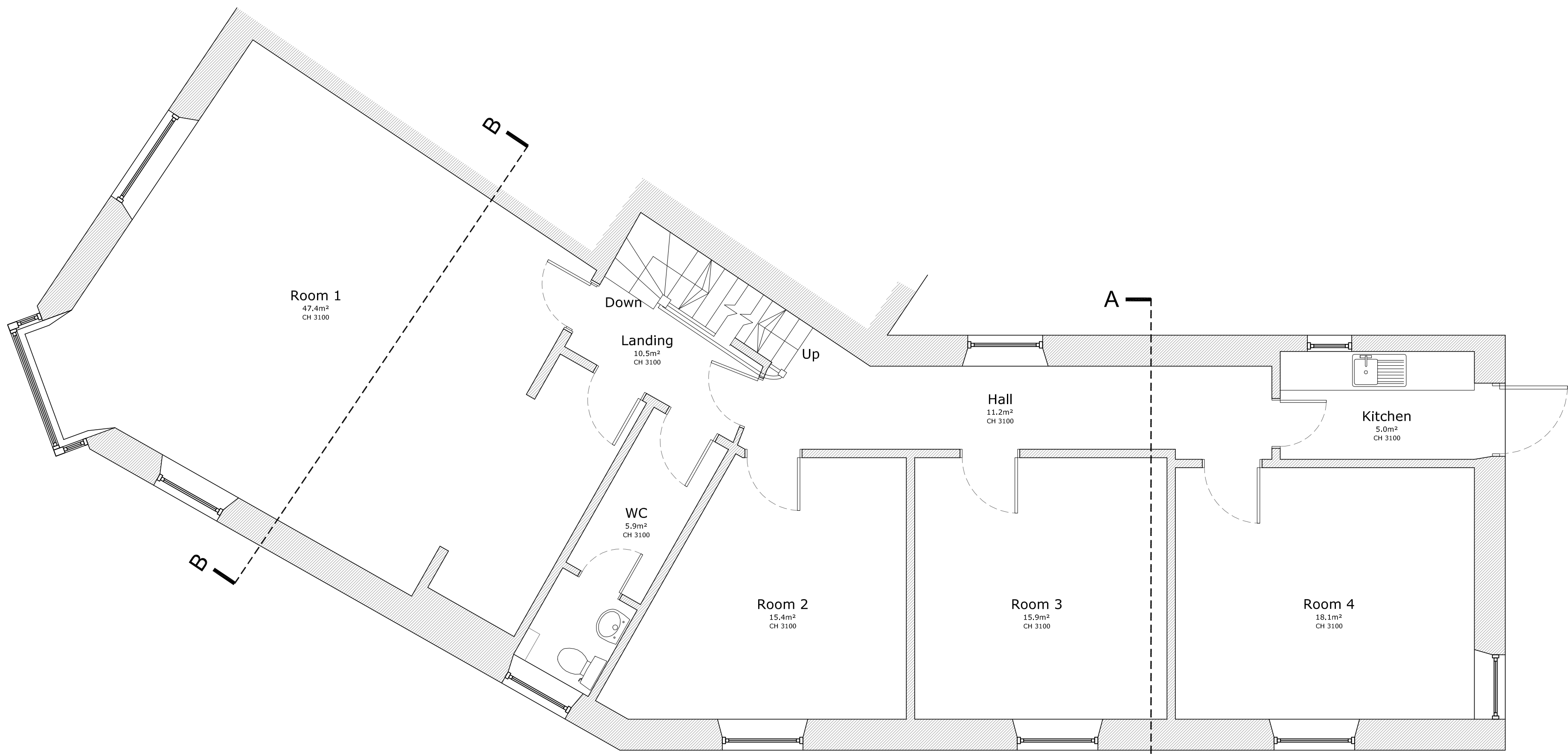
Drg No: 302 - AL(90)00

TEL - 07846 126350, E-MAIL - sam@westfieldarchitects.co.uk
2 Alexander Gate, Ffordd Pengam, Cardiff. CF24 2SA.

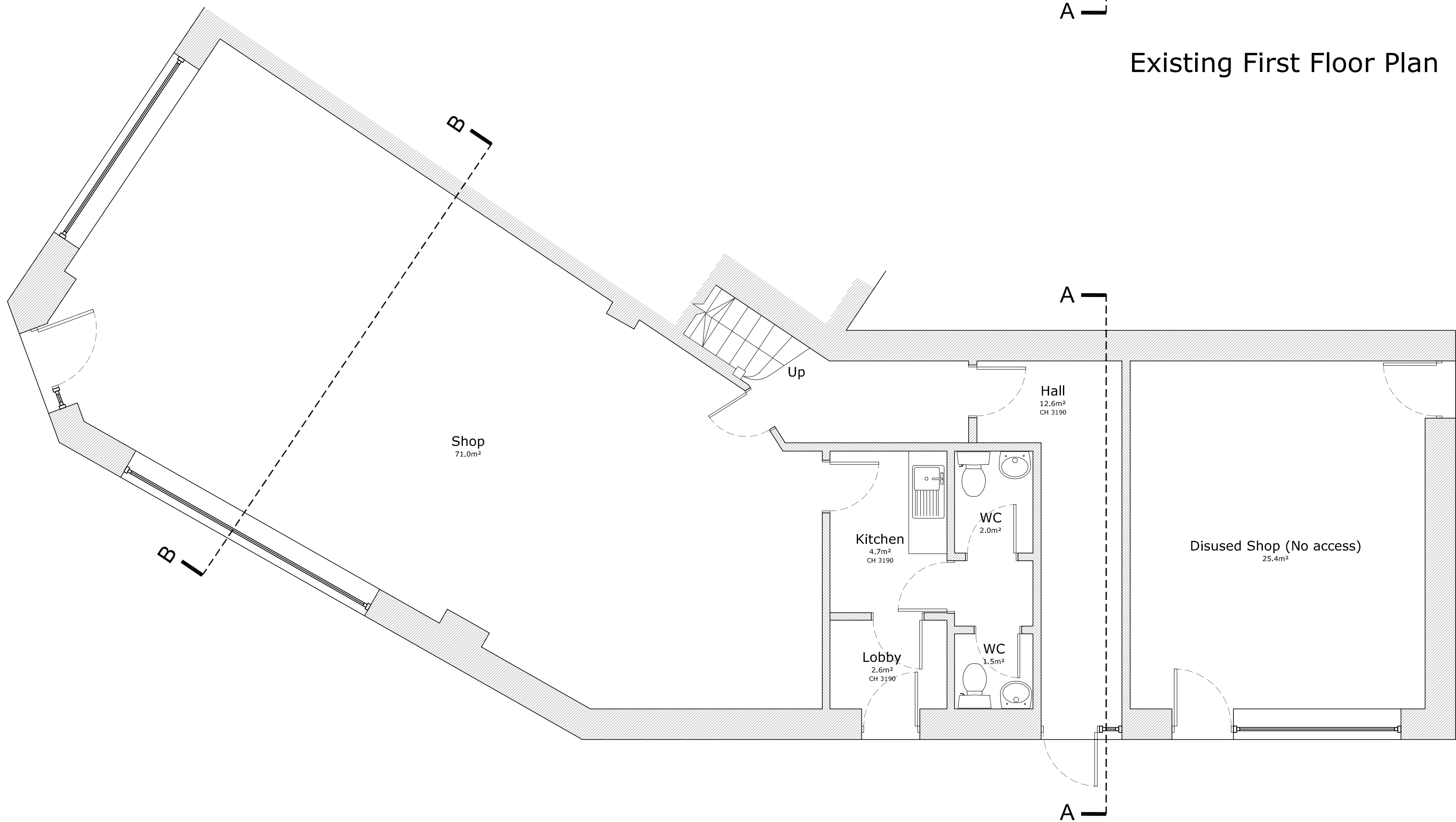
0102030

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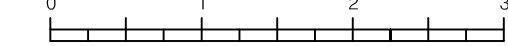
0102030



Existing First Floor Plan



Existing Ground Floor Plan

Issue	21.05.21	Planning Submission	
 Westfield Architects			
	Job:	32 High Street, Conversion to apartments and retail unit.	Date: 20.04.21
	Location:	32 High Street, Merthyr Tydfil, CF47 8DE	Scale: 1:50@A1
	Title:	Existing Ground and First Floor Plan	Dwg No: 302 - AL/99/01
TEL: +07846 126350, E-MAIL: +sam@westfieldarchitects.co.uk 2 Alexander Gate, Florio Pengam, Cardiff, CF24 2SA			



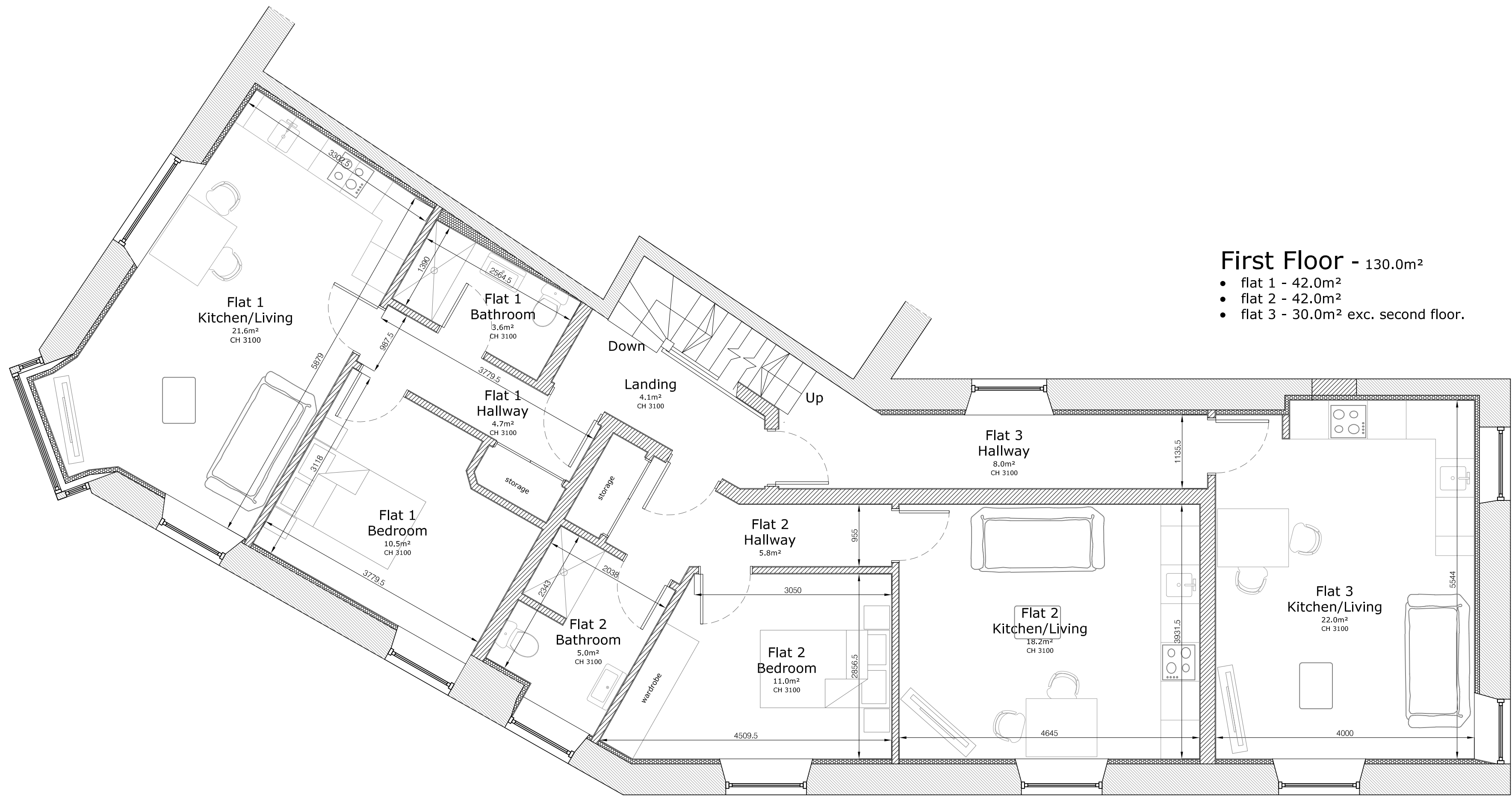
Existing Side Elevation



Existing Front Elevation

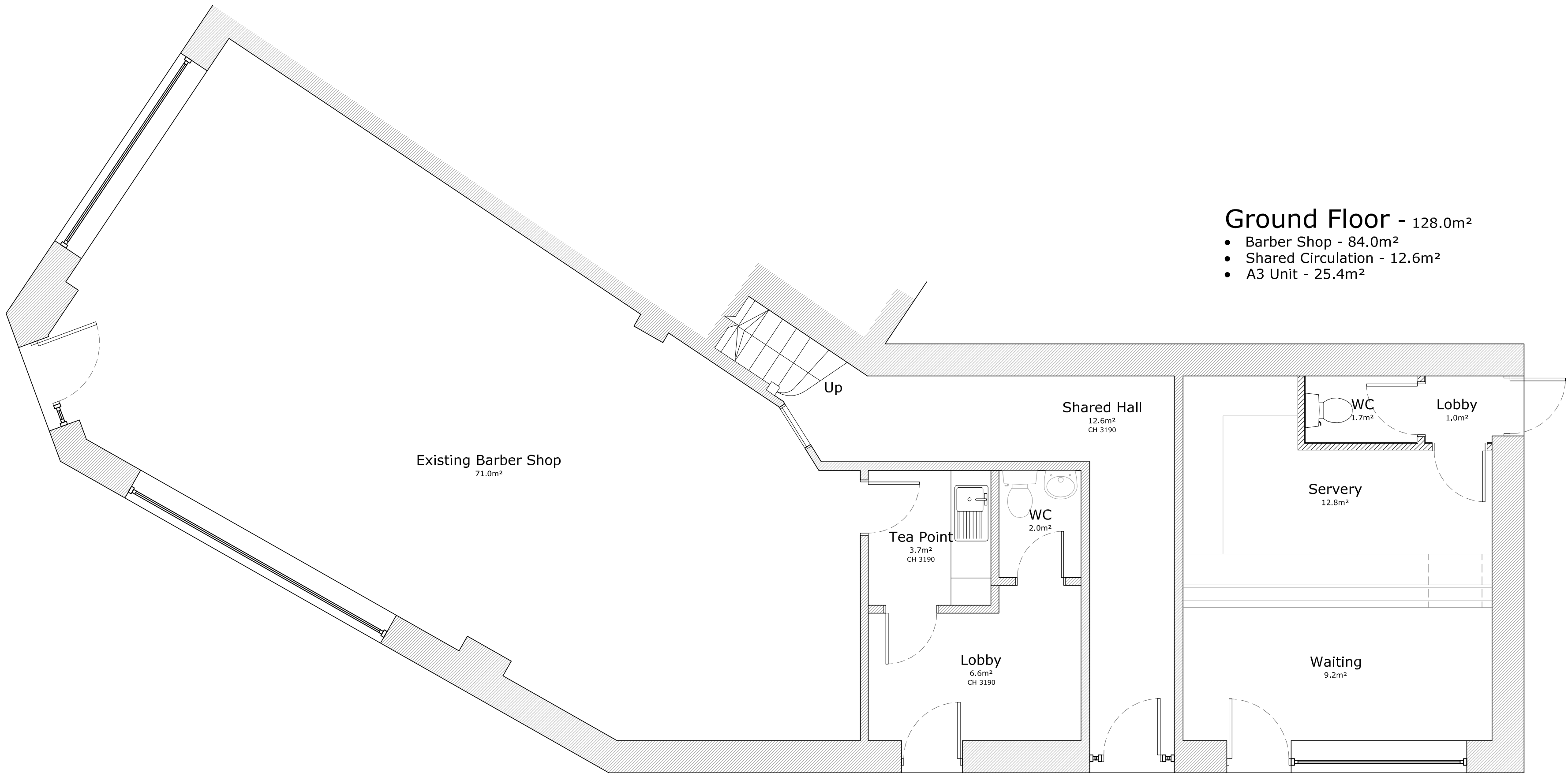


Existing Rear Elevation



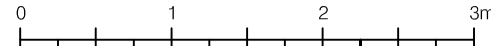
First Floor - 130.0m²

- flat 1 - 42.0m²
- flat 2 - 42.0m²
- flat 3 - 30.0m² exc. second floor.



Ground Floor - 128.0m²

- Barber Shop - 84.0m²
- Shared Circulation - 12.6m²
- A3 Unit - 25.4m²

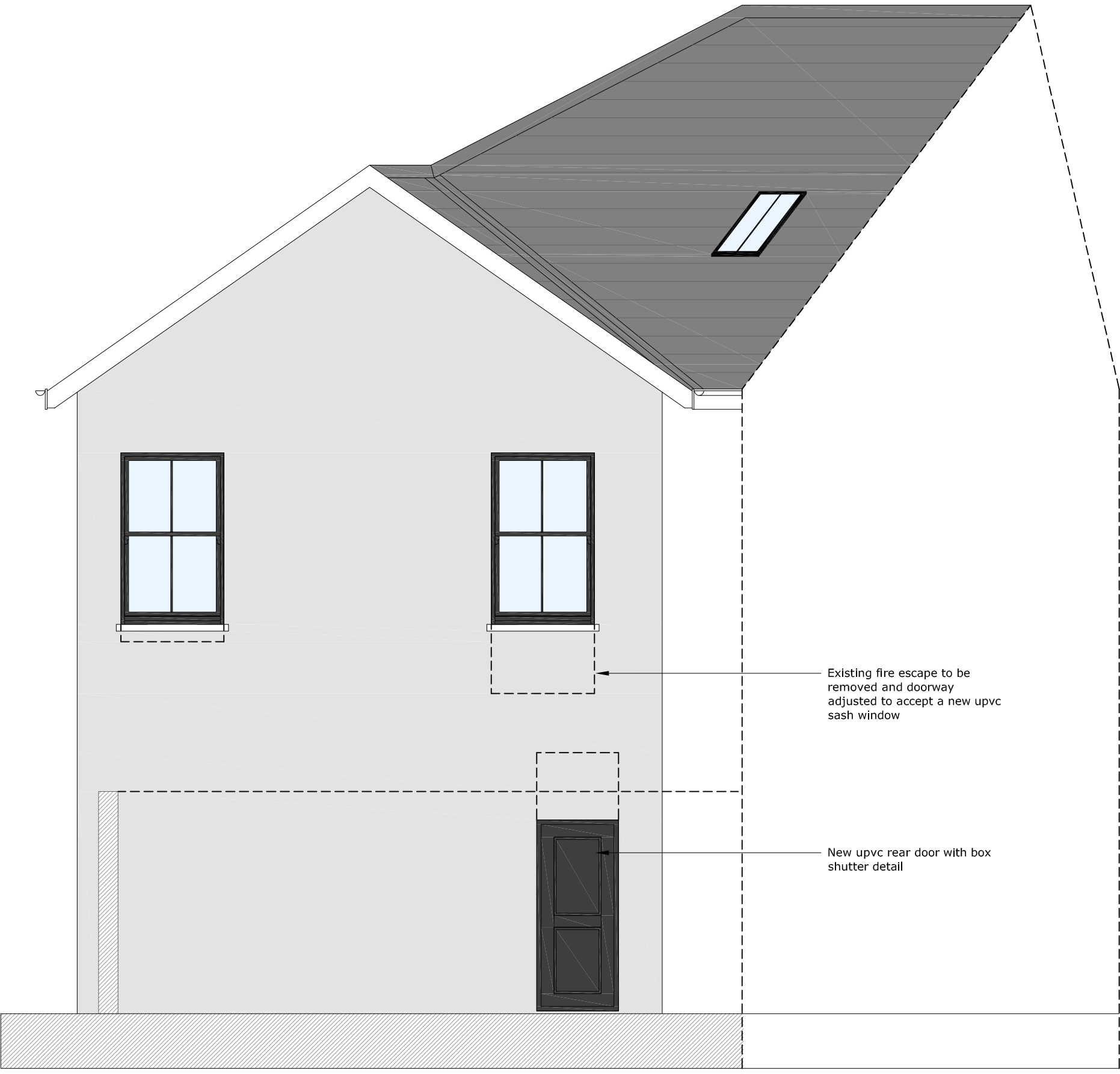
Issue	21.05.21	Planning Submission	
 Westfield Architects			
	Job:	32 High Street, Conversion to apartments and retail units.	Date: 20.04.21
	Location:	32 High Street, Merthyr Tydfil, CF47 8DE	Scale: 1:50@A1
	Title:	Proposed Ground and First Floor Plans	Eng No: 302 - AL/99/04
TEL - 07848 126350, E-MAIL - sam@westfieldarchitects.co.uk 2 Alexander Gate, Ffordd Pengam, Cardiff, CF24 2SA.			



Side Elevation

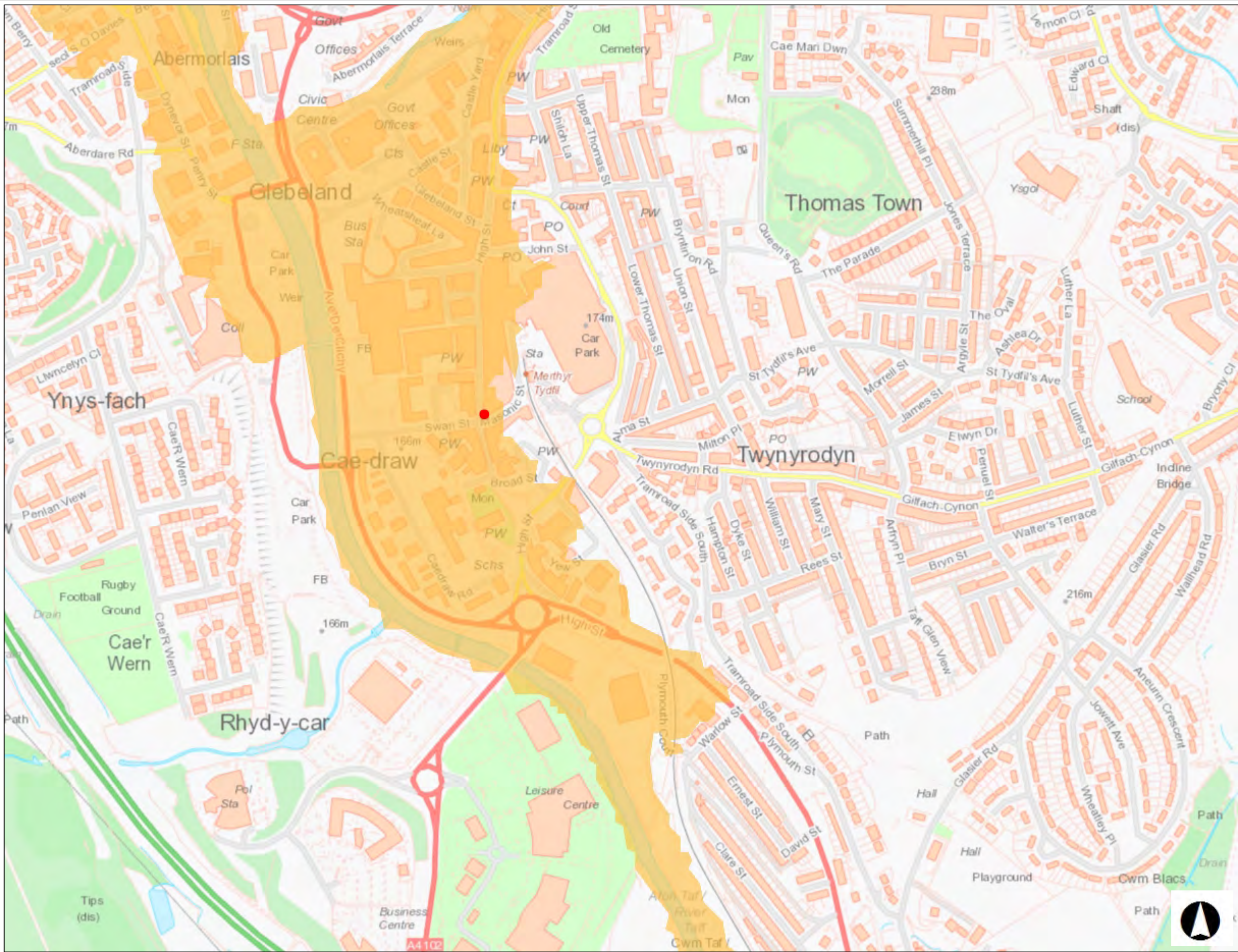


Front Elevation



Rear Elevation

APPENDIX B: NRW Flood Maps and Flood Data



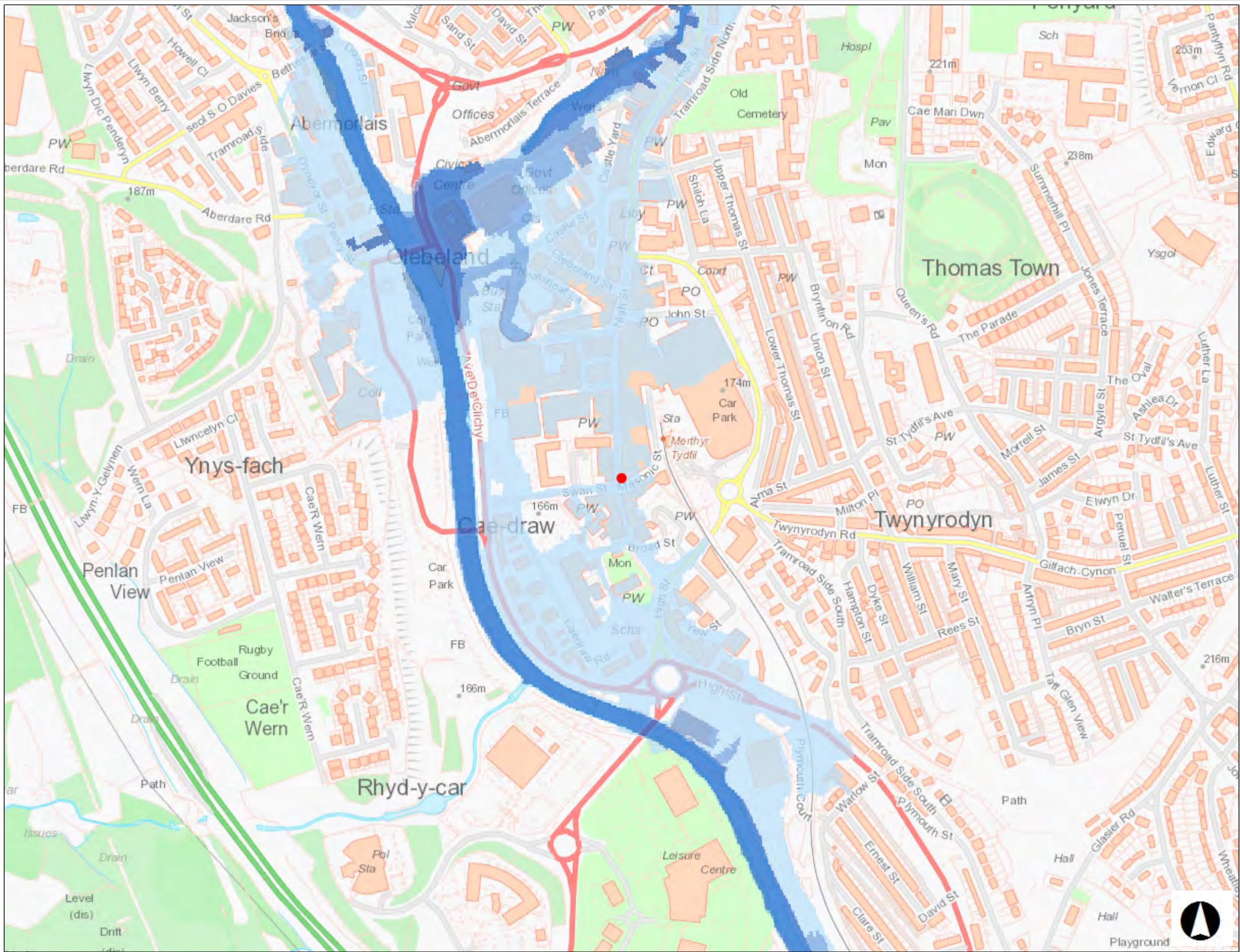
Map Perygl Llifogydd / Flood Risk Map -

Allwedd / Map Key

Flood Alert Area

Graddfa / Scale at A3 1: 5,000

Dyddiad / Date
20/08/2021



Map Perygl Llifogydd / Flood Risk Map -

Allwedd / Map Key

Flood Risk from Rivers - Extent

- High
- Medium
- Low

Recorded Flood Extents

Graddfa / Scale at A3 1: 5,000

Dyddiad / Date
20/08/2021

0.3 0 0.13 0.3
British_National_Grid Kilometers

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Map Perygl Llifogydd / Flood Risk Map -

Allwedd / Map Key

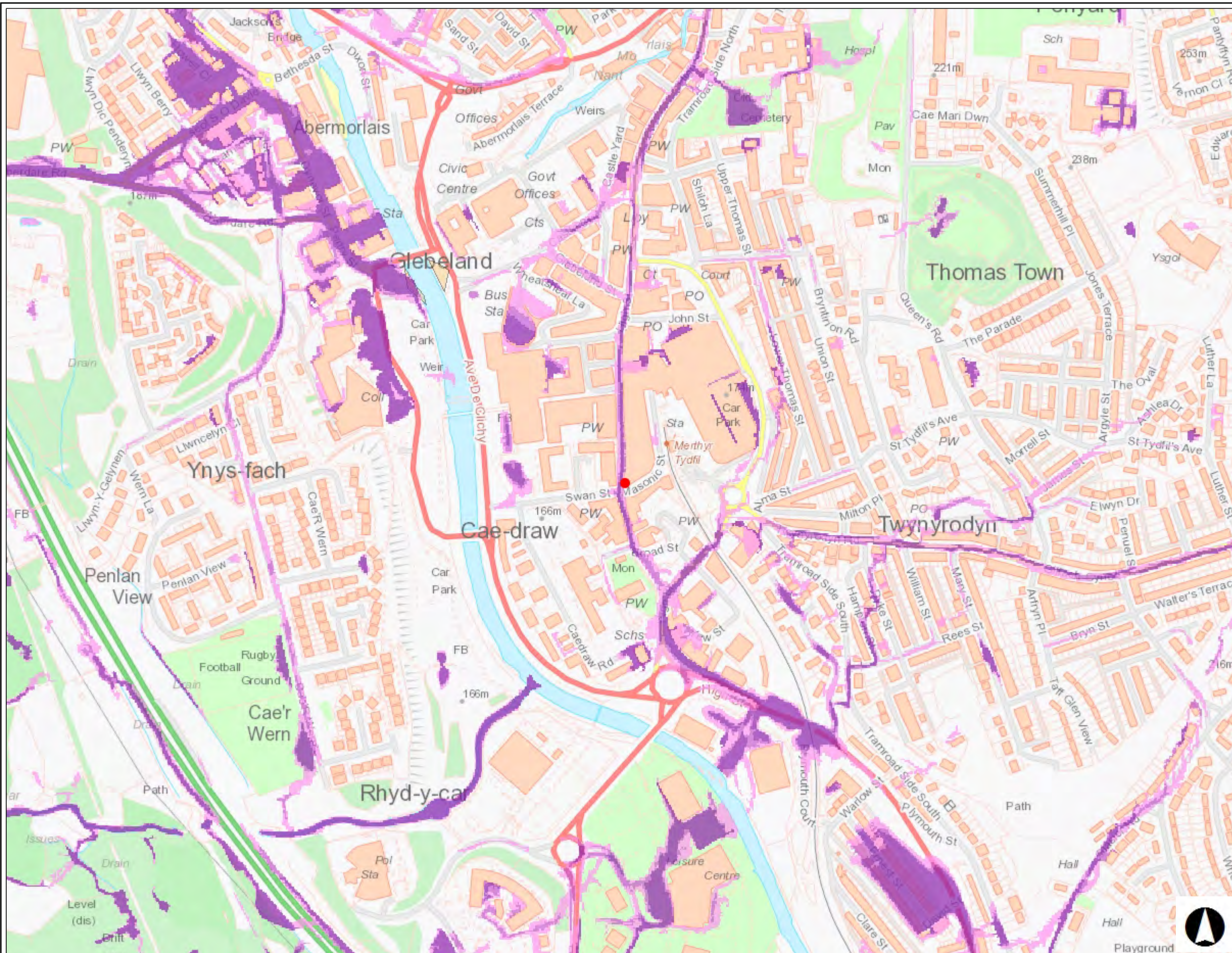
Flood Risk from Surface Water & Small Watercourses - Extent

- High
- Medium
- Low

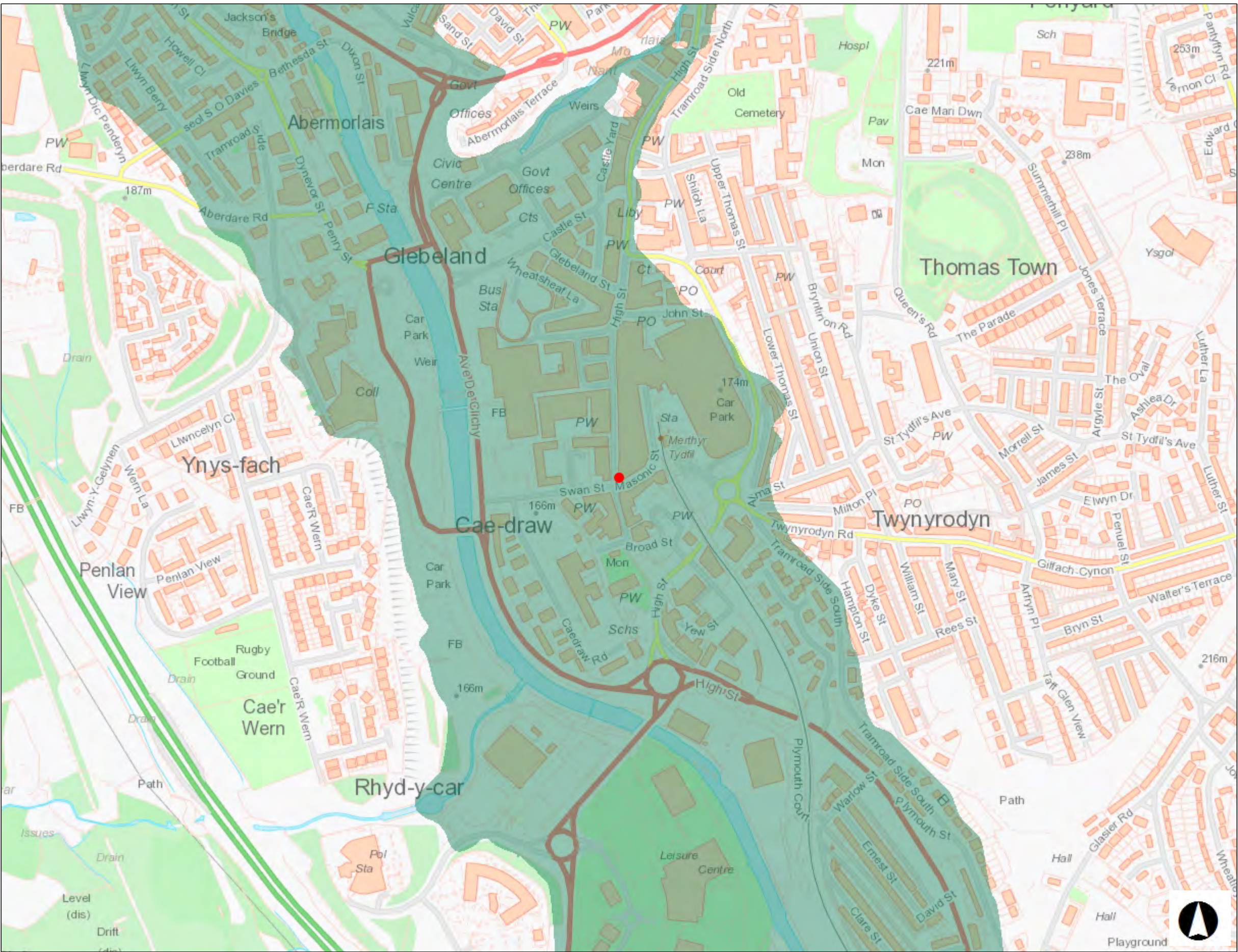
 Recorded Flood Extents

Graddfa / Scale at A3 1: 5,000

Dyddiad / Date
20/08/2021



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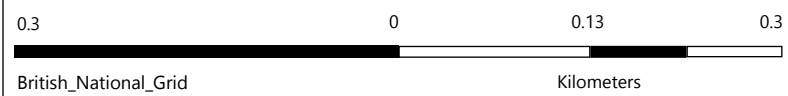
Map Perygl Llifogydd / Flood Risk Map -

Allwedd / Map Key

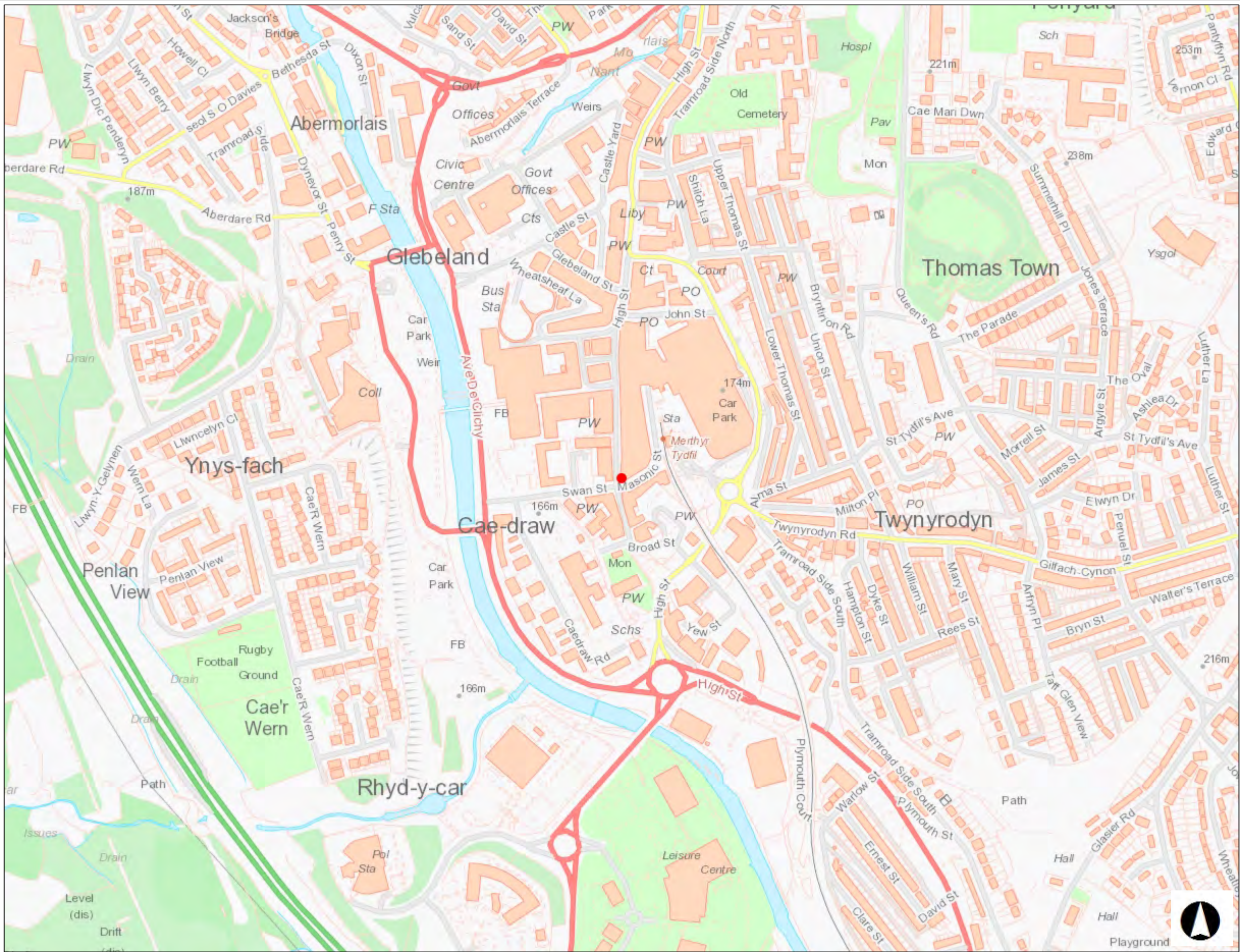
-  Flood Risk from Reservoirs

Graddfa / Scale at A3 1: 5,000

Dyddiad / Date
20/08/2021



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Map Perygl Llifogydd / Flood Risk Map -

Allwedd / Map Key

Flood Risk from the Sea

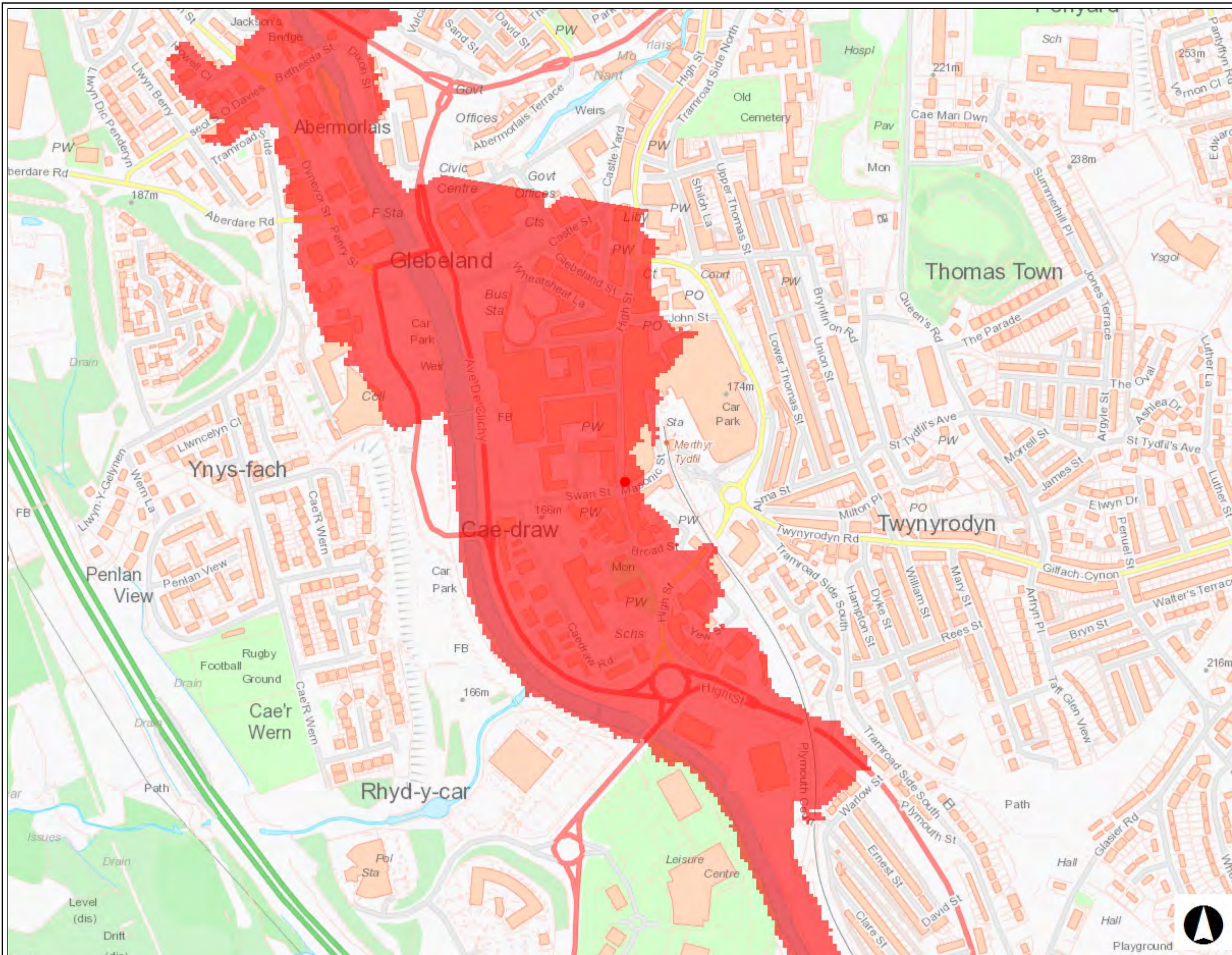
- High
- Medium
- Low

Graddfa / Scale at A3 1: 5,000

Dyddiad / Date
20/08/2021

0.3 0 0.13 0.3
British_National_Grid Kilometers

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Map Perygl Llifogydd / Flood Risk Map -

Allwedd / Map Key

 Flood Warning Area

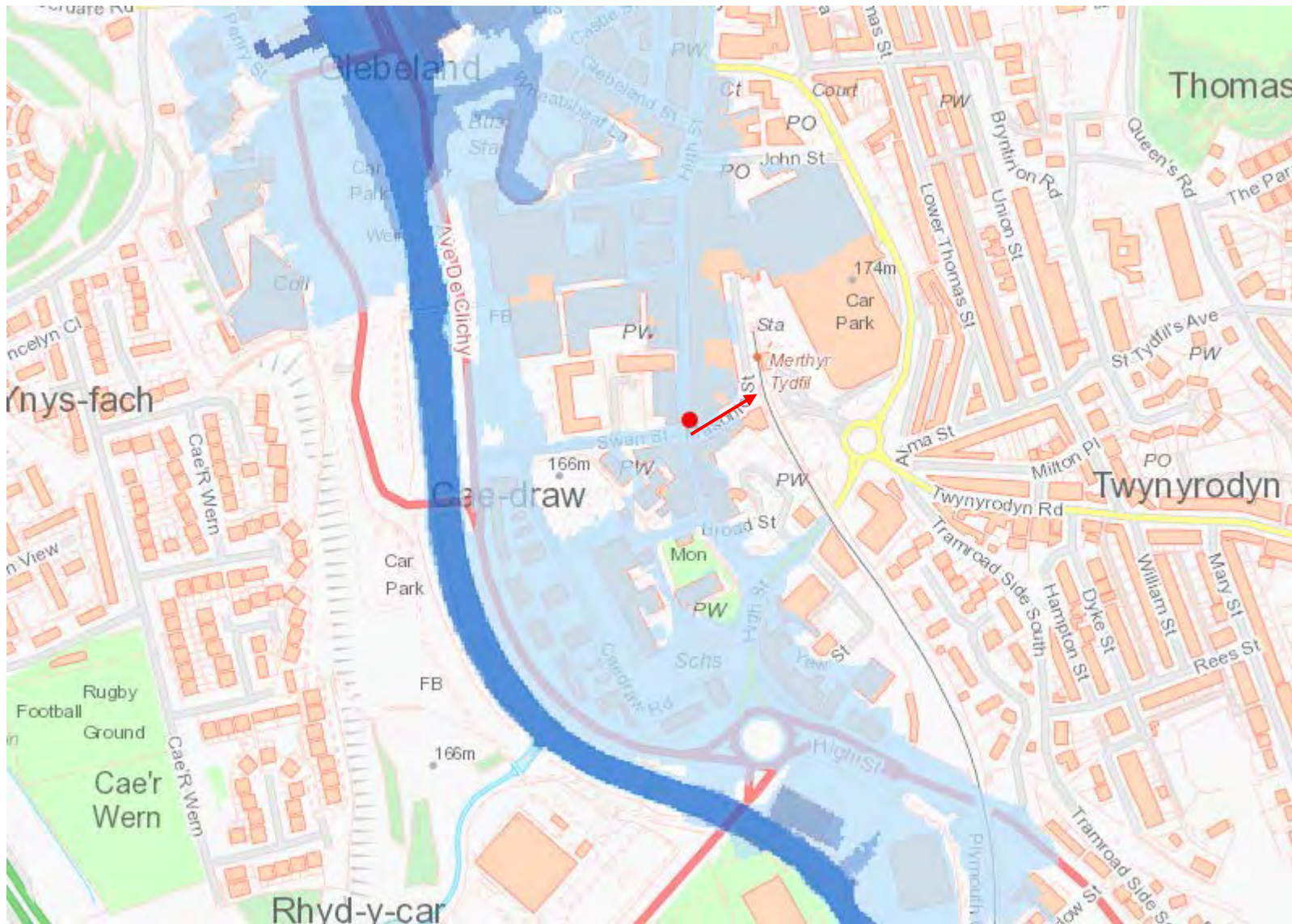
Graddfa / Scale at A3 1: 5,000

Dyddiad / Date
20/08/2021

0.3 0 0.13 0.3
British_National_Grid Kilometers

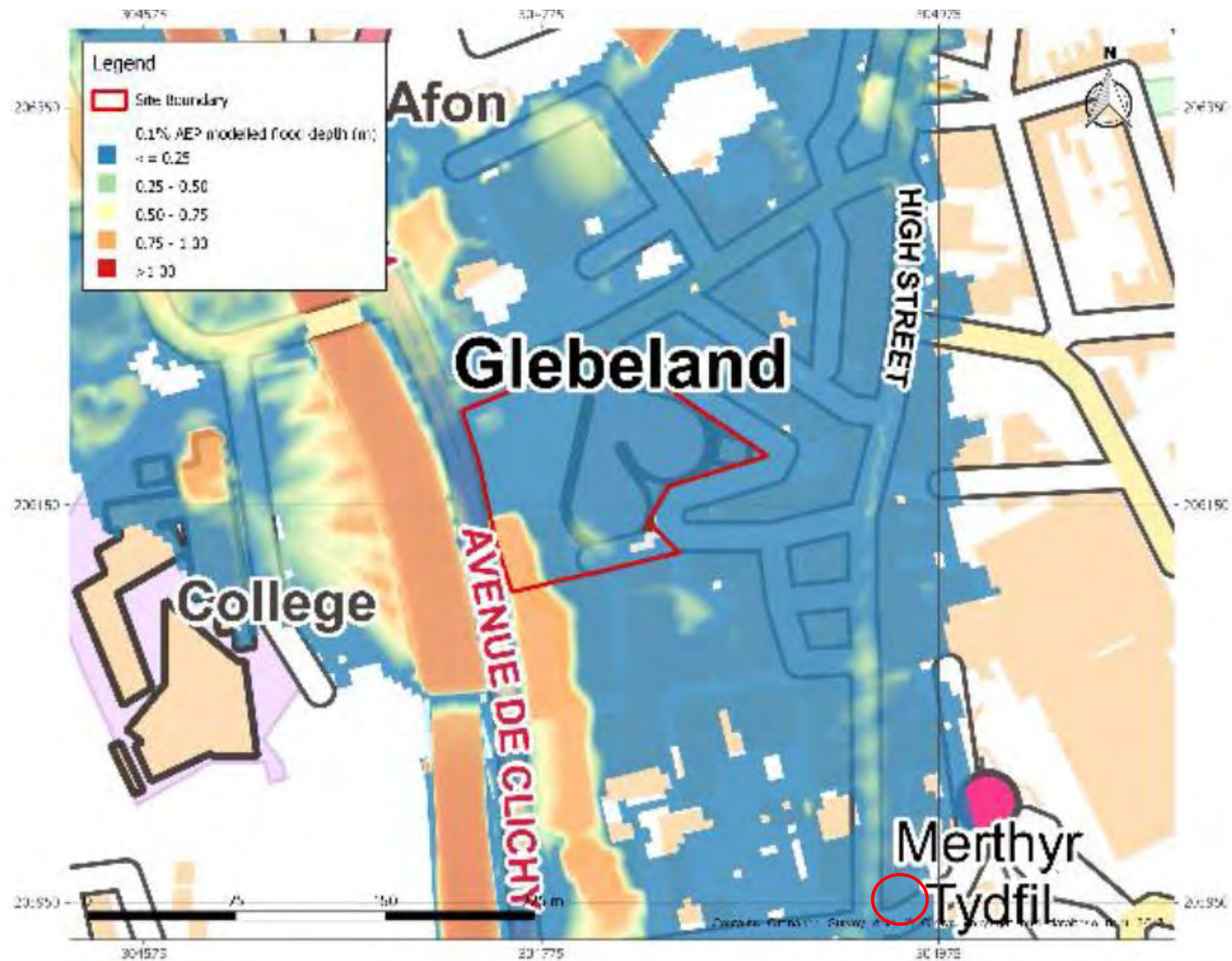
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APPENDIX C: Flood Evacuation / Safe Access Route

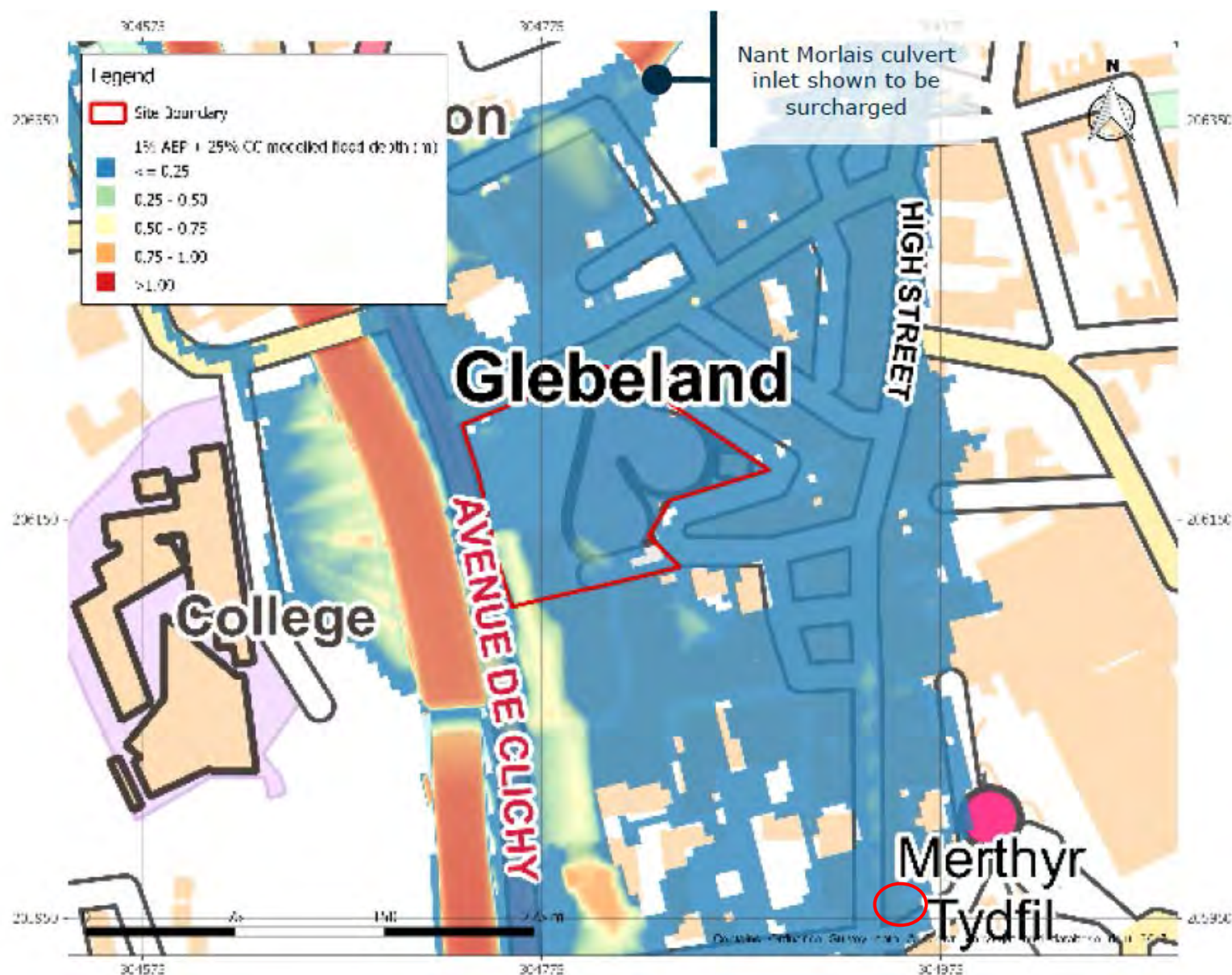


Flood Evacuation / Safe Egress Route

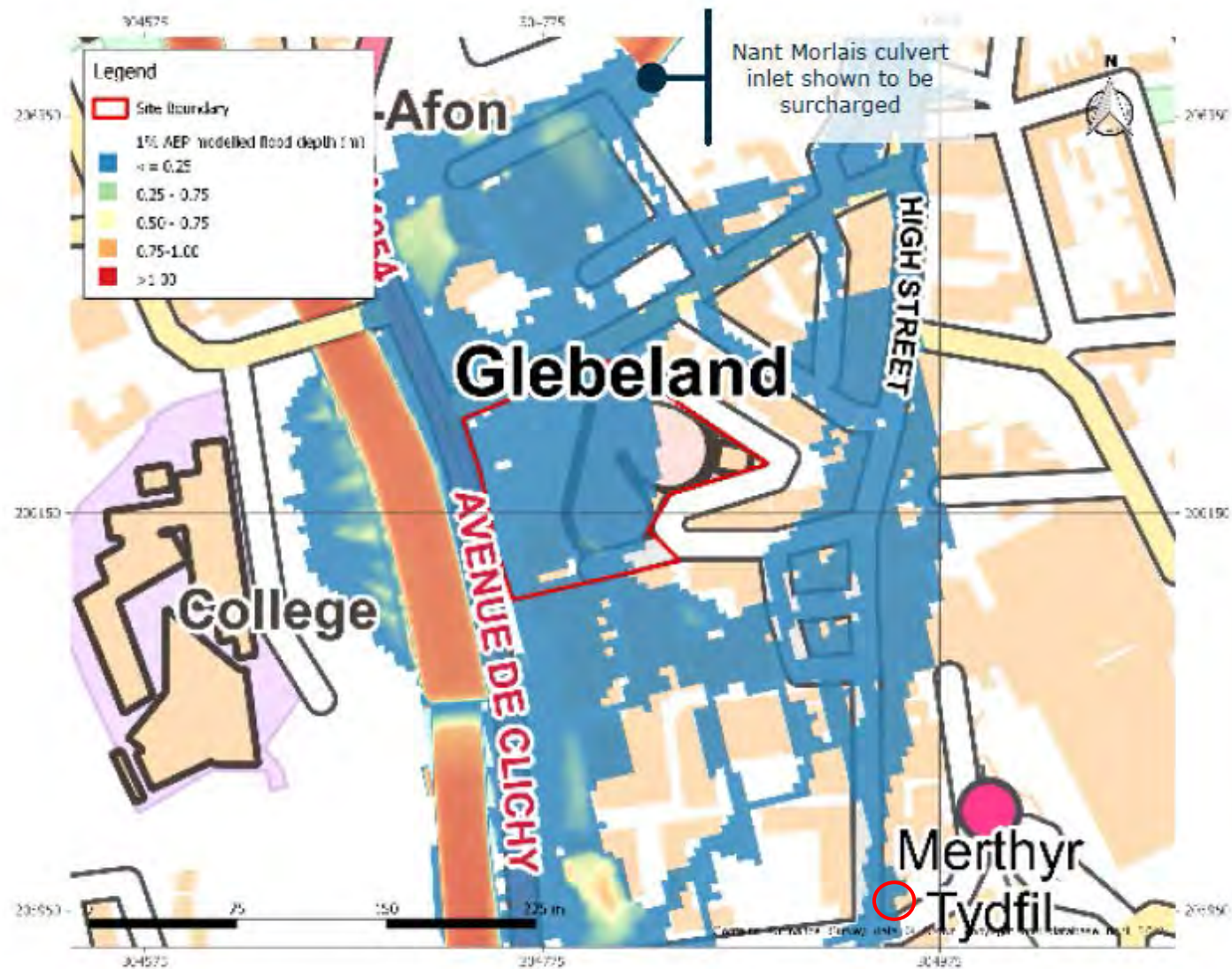
APPENDIX C: Merthyr Tydfil Strategic Flood Consequence Assessment (June 2018)



0.1% AEP Fluvial Flood depths from the River Taff and Nant Morlais (Capita 2011 Hydraulic Modelling)



1% AEP plus CC Fluvial Flood depths from the River Taff and Nant Morlais (Capita 2011 Hydraulic Modelling)



1% AEP Fluvial Flood depths from the River Taff and Nant Morlais (Capita 2011 Hydraulic Modelling)