



Flood Consequence Assessment

AEG03298_CF48_Aberfan_01



Site Address: Former Mount View Surgery
Bridge Street
Aberfan
Merthyr Tydfil,
CF48 4RB

**UK Experts in Flood Modelling, Flood Risk
Assessments, and Surface Water Drainage
Strategies**



Document Issue Record

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Prepared for: James Howe

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Summary

Development Description	Existing	Proposed
Development Type	Vacant building. Previously used as GP Surgery	Change of use to a 2no. residential flats
NRW Vulnerability Classification	No classification. Previous uses would be considered Highly Vulnerable	Highly Vulnerable
Ground Floor Level	N/A ²	Threshold or FFL raised 300mm above 1 in 100 year plus 25% climate change event – set no lower than 129.79m AOD
Level of Sleeping Accommodation	No sleeping	First floor
Impermeable Surface Area	N/A ²	Change of use – no change in built footprint
Surface Water Drainage	N/A ¹	Change of use – discharge surface water runoff as per the existing surface water drainage infrastructure. SAB approval not needed. However, recommended small scale SuDS devices (such as water butts) are installed.
Site Size	Approx.540 m ²	No change
Risk to Development	Summary	Comment
NRW Advice Zone	C1	Area that benefits from flood defence infrastructure
Flood Source	Fluvial	
PFRA Available	Merthyr Tydfil County Borough Council Strategic Flood Consequence Assessment Report (2018)	
Management Measures	Summary	Comment
Ground floor level above extreme flood levels	Yes	Threshold or FFL raised 300mm above 1 in 100 year plus 25% climate change event – set no lower than 129.79m AOD
Safe Access/Egress Route	Yes	Bridge Street is shown to remain unaffected by flooding during the 1 in 100 year plus climate change scenario
Flood Resilient Design	Yes	In accordance with the DCLG Report 'Improving the Flood Performance of New Buildings - Flood Resilient Construction' (2007).

Site Drainage Plan	Yes	Change of use – discharge surface water runoff as per the existing surface water drainage infrastructure. SAB approval not needed. However, recommended small scale SuDS devices (such as water butts) are installed.
Flood Warning & Evacuation Plan	Yes	'River Taff on at Aberfan' NRW Flood Warning Area
Offsite Impacts	Summary	Comment
Displacement of floodwater	No	No change in built footprint - discharge surface water runoff as per the existing surface water drainage infrastructure
Increase in surface run-off generation	No	No change in built footprint
Impact on hydraulic performance of channels	No	Does not affect channel

¹ not required for this assessment

² data not available.

1. Introduction

- 1.1. Aegaea were commissioned by Geoff Thomas to undertake a Flood Consequence Assessment (FCA) to facilitate a full planning application for the proposed development. This FCA has been prepared in accordance with the requirements set out in the Technical Advice Note 15 (TAN15).
- 1.2. This FCA is intended to support a full planning application and as such the level of detail included is commensurate and subject to the nature of the proposals.

Site Overview

- 1.3. The site of the proposed development is Former Mount View Surgery, Bridge Street, Aberfan, Merthyr Tydfil, CF48 4RB (Figure 1).

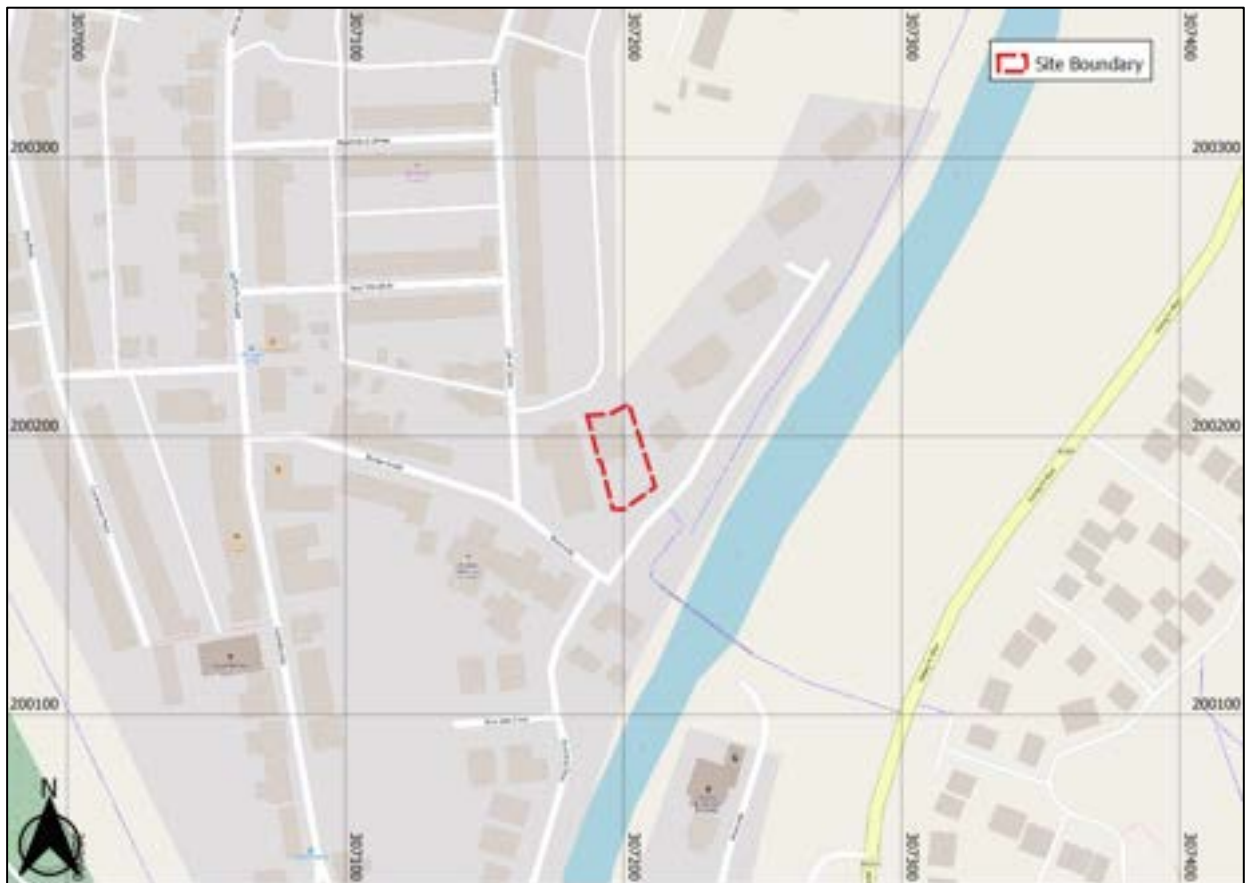


Figure 1: Site Location (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors).

- 1.4. The existing site currently consists of a vacant building following its closure as a GP surgery. It is understood that the proposed development is for the conversion of the vacant property to 2no. self-contained residential units with off street parking.
- 1.5. A topographic survey was undertaken by ALT Surveying in January 2023 (Appendix B). Upon review of the topographic survey, the site is shown to be relatively flat with levels varying between approximately 129.34m AOD and 129.97m AOD. The existing finished floor level is 129.61m AOD. Figure 2 provides a visual representation of the topography on site using Natural Resource Wales Light Detection and Ranging (LiDAR) data Digital Terrain Model (2m resolution).

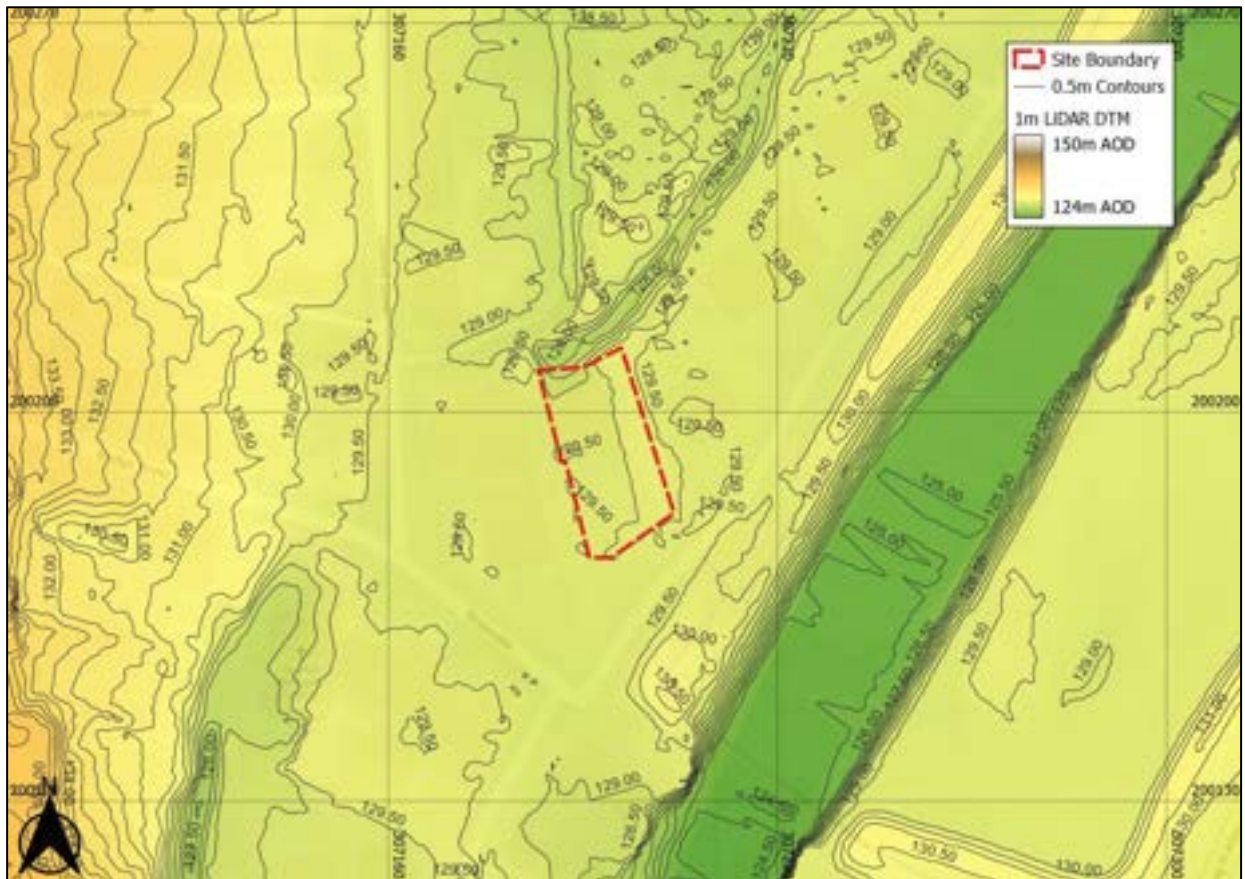


Figure 2: Site Topography derived from 2m LiDAR (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors. Contains public sector information licensed under the Open Government Licence v3.0)

- 1.6. Merthyr Tydfil County Borough Council is the Local Planning Authority (LPA) for the site, the designated Lead Local Flood Authority (LLFA) and Sustainable Drainage Approving Body (SAB). The site sits within the NRW South Wales Central region.

Planning Policy and Guidance

- 1.7. Technical Advice Note 15 (TAN15), in conjunction with Planning Policy Wales (PPW) and any local planning documentation forms the basis for assessment of flood risk in Wales and its risk mitigation and development control.
- 1.8. For an application to be acceptable, it must pass both a Flood Risk justification test and the assessment/acceptability of flooding consequences tests. As per paragraph 3 of TAN, the overall aim is as follows:

The general approach of PPW, supported by the TAN, is to advise caution in respect of new development in areas at high risk of flooding by setting out a precautionary framework to guide planning decisions. The overarching aim of the precautionary framework is, in order of preference, to:-

- *Direct new development away from those areas which are at high risk of flooding.*
- *Where development has to be considered in high-risk areas (zone C) only those developments which can be justified on the basis of the tests outlined in section 6 and section 7 are located within such areas. 3.2*

The operation of the precautionary framework is governed by:-

- *A development advice map containing three zones (A, B and C with subdivision into C1 and C2) which should be used to trigger the appropriate planning tests in relation to sections 6 and 7 and appendix 1.*
- *Definitions of vulnerable development and advice on permissible uses in relation to the location of development and the consequences of flooding.*

The precautionary framework should be used for both forward planning and development control purposes.

- 1.9. The Flood Risk justification test is undertaken against both the development advice maps (DAM) and the Land Use Vulnerability Classification, provided within TAN15.
- 1.10. The DAM contains 3 zones – A, B and C, with C further subdivided into C1 and C2, summarised in Table 1.

Table 1: Development Advice Map Zone Classifications

Description of Zone	Zone	Use within the precautionary framework
Considered to be at little or no risk of fluvial or tidal/coastal flooding.	A	Used to indicate that justification test is not applicable and no need to consider flood risk further.
Areas known to have been flooded in the past evidenced by sedimentary deposits.	B	Used as part of a precautionary approach to indicate where site levels should be checked against the extreme (0.1%) flood level. If site levels are greater than the flood levels used to define adjacent extreme flood outline there is no need to consider flood risk further
Based on Environment Agency extreme flood outline, equal to or greater than 0.1% (river, tidal or coastal)	C	Used to indicate that flooding issues should be considered as an integral part of decision making by the application of the justification test including assessment of consequences.
Areas of the floodplain which are developed and served by significant infrastructure, including flood defences.	C1	Used to indicate that development can take place subject to application of justification test, including acceptability of consequences.
Areas of the floodplain without significant flood defence infrastructure.	C2	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.

1.11. The land use vulnerability classifications are presented in Table 2.

Table 2: TAN15 Vulnerability Classifications

Development Category	Type
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

1.12. Paragraph 6.2 of TAN15 states:

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,

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

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

- 1.13. With regards to Paragraph 6.2 of the TAN15, the proposal seeks to convert the existing vacant property to a 2no. residential flats, and thus seeks to contribute to regeneration of the area and housing targets in an existing settlement with employment opportunities, adhering to the first part (ii) of the justification test. The site is also brownfield and therefore meets the definition of the second part (iii) of the justification test. The report sets out the risk of flooding to the site and appropriate mitigation measures; the proposed development would be considered 'Highly Vulnerable' (residential use) with appropriate mitigation measures recommended throughout this report, therefore also meeting the second part (iv) of the justification test.

Assessment/Acceptability of Flooding Consequences Test

- 1.14. If a development is to be located within Zone C1, or in Zone C2 (if defined as low vulnerability), and passes the initial Flood Risk Justification Test, then an assessment of flooding consequences will be required. This assessment will assess all potential flood mechanisms which could impact the development and establish if the consequences of flooding can be managed appropriately for the type of development being proposed.

Surface Water Run-Off from New Development

- 1.15. TAN15 states that flooding from all new development, in all zones, should not increase the risk of flooding elsewhere, via the creation of additional run-off when compared with the undeveloped situation.
- 1.16. The Welsh Sustainable Drainage (SuDS) Statutory Guidance (2019) requires that Sustainable Drainage Systems (SuDS) should be included in all new development proposals, irrespective of which zone they are to be located. Developments with an overall construction area of 100m² or more, or more than 1 dwelling, will require SuDS.
- 1.17. However, the proposals are for a conversion of an existing building and therefore will be no change in impermeable surfacing or built footprint. Total and peak surface water runoff rates

and volumes will remain as existing. As such, there will not be an increase to the risk of flooding elsewhere.

Summary

- 1.18. This Flood Consequence Assessment has been prepared with due consideration to the above local and national policy. The Flood Risk justification test concludes that the situation of the proposed development should be acceptable.

2. Consultation and Review

Sources of Information

Consultation

- 2.1. Aegaea have been provided with a Product 5 and 6 dataset from NRW from the Merthyr Tydfil to Merthyr Vale - Depth and Velocity study, completed in September 2010. Aegaea have used these outputs including flood level grids for a range of return periods and scenarios to inform this FCA.
- 2.2. A previous planning application was submitted for the conversion of the building to 2no. flats in 2022 under planning ref P/22/0285. An NRW objection dated 16/03/2023 stated the reasons for refusal of the FCA submitted by FPS Environmental/Ashfield Solutions Group included insufficient information has been provided regarding the design flood levels and finished floor levels. A full copy of the NRW letter can be found in Appendix C of this report.

Documents

- 2.3. Local Governments and Lead Local Flood Authorities provide documents which contain data and policies on flood risk and new development in their areas. These documents are introduced and briefly summarised below. For the purposes of this FCA, these documents have been reviewed for relevant information and any relevant data is discussed within the appropriate sub heading of this report.
- 2.4. The following sources of information have been reviewed for this assessment:
 - The Interactive Flood Risk Mapping available on the Natural Resources Wales website¹.
 - The Technical Advice Note 15² (TAN15) (2004).

1 Natural Resource Wales, Flood Map, <https://naturalresources.wales/flooding/check-your-flood-risk-on-a-map-flood-risk-assessment-wales-map/?lang=en>

2 <https://gov.wales/sites/default/files/publications/2018-09/tan15-development-flood-risk.pdf>

- British Geological Survey - Geology of Britain Viewer (British Geological Society, 2017).
- The Adopted Merthyr Tydfil Replacement Local Development Plan 2016 – 2031 (2020)³
- Merthyr Tydfil County Borough Council Preliminary Flood Risk Assessment Report (2011)⁴
- Merthyr Tydfil County Borough Council Local Flood Risk Management Strategy (2013)⁵
- Merthyr Tydfil County Borough Council Strategic Flood Consequence Assessment Report (2018)⁶
- Merthyr Tydfil County Borough Council Flood Risk Management Plan (2015)⁷

Preliminary Flood Risk Assessment (PFRA)

- 2.5. The PFRA, published in 2009, is a high-level appraisal of flood risk across Lead Local Flood Authority Merthyr Tydfil County Borough Council. The flood risk from all sources, including fluvial, surface water, groundwater and surcharged sewers is evaluated. It is the basis upon which the Local Flood Risk Management Strategy (described below) is produced.
- 2.6. The preliminary flood risk assessment (PFRA) for Merthyr Tydfil County Borough Council was reviewed during 2017, using all relevant current flood risk data and information. The update to the original PFRA report was agreed with Natural Resources Wales on 22 December 2017.
- 2.7. The PFRA summarises historical flood incidents in Merthyr Tydfil County Borough Council. The site is not recorded as having been affected by any flood event.

3 <https://www.merthyr.gov.uk/resident/planning-and-building-control/planning-policy/>

4 <https://www.merthyr.gov.uk/media/1470/mtcbc-preliminary-flood-risk-assessment-report-pfra.pdf>

5 <https://www.merthyr.gov.uk/media/1472/mtcbc-local-flood-risk-management-strategy-lfrms.pdf>

6 <https://www.merthyr.gov.uk/media/4444/sd37-merthyr-tydfil-strategic-flood-consequence-assessment-sfca-june-2018.pdf>

7 <https://www.merthyr.gov.uk/media/7721/flood-risk-management-plan-june-2015.pdf>

Local Flood Risk Management Strategy (LFRMS)

- 2.8. Merthyr Tydfil County Borough Council is a designated Lead Local Flood Authority (LLFA) under the Flood and Water Management Act (FWMA) 2010 and is therefore required to produce a Local Flood Risk Management Strategy (LFRMS). The strategy scope covers flood risk arising from surface water, groundwater and ordinary watercourses. Addressing flood risk arising from main rivers, sea and reservoirs in Merthyr Tydfil County Borough Council is the responsibility of Natural Resources Wales (NRW) and is therefore not included within the LFRMS.
- 2.9. The LFRMS identifies the Risk Management Authorities in Merthyr Tydfil County Borough Council, the key requirements and contents of the LFRMS, and outlines the high-level objectives and measures for implementing the LFRMS. In addition, it identifies the potential sources which could fund the implementation of the LFRMS and discusses the context within which the strategy is required to achieve wider environmental benefits.

Flood Risk Management Plan (FRMP)

- 2.10. Flood risk management planning allows Risk Management Authorities (RMAs) to develop a better understanding of risk from all sources of flooding and agree priorities to manage that risk. The Flood Risk Management Plan (FRMP) sets out how Merthyr Tydfil County Borough Council will manage flooding over the next six years, so that the communities and environment at highest risk benefit the most. In doing so, this Flood Risk Management Plan takes forward the objectives and measures set out in the Local Flood Risk Management Strategy (LFRMS), published in January 2013.
- 2.11. This Flood Risk Management Plan also aims to achieve some of the objectives set out in the Welsh Government's National Flood and Coastal Erosion Risk Management Strategy (FCERM) which provides the national framework for flood and coastal erosion risk management in Wales.

3. Sources of Flood Risk

Watercourses

- 3.1. Flooding from watercourses arises when flows exceed the capacity of the channel, or where a restrictive structure is encountered, resulting in water overtopping the banks into the floodplain.

Main Rivers

- 3.2. The nearest main river is the River Taff (or Afon Taf) which is approximately 30m east of the site at its closest proximity. The River Taff flows from north to south, is fluvially influenced at this location and drains into the Severn Estuary to the south.
- 3.3. The site is located within Zone C1 as defined on the NRW Development Advice Maps (Figure 3). Zone C1 is defined as areas of the floodplain served by significant infrastructure, including flood defences.



Figure 3: NRW Development Advice Map (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA).
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Tidal

- 3.4. The NRW Flood Risk Assessment Wales Flood Risk from Rivers dataset indicates that the site is not within an area shown to be at risk from the sea. Therefore, the site has a less than 1:1000 (0.1% AEP) chance of flooding annually from tidal sources.
- 3.5. The risk of flooding from tidal sources is therefore considered to be relatively low.

Fluvial

- 3.6. The NRW Flood Risk Assessment Wales Flood Risk from Rivers dataset (Figure 4) indicates that the site is at a 'low' (between 0.1% and 1.0% in any year) risk of flooding from rivers (fluvial sources).

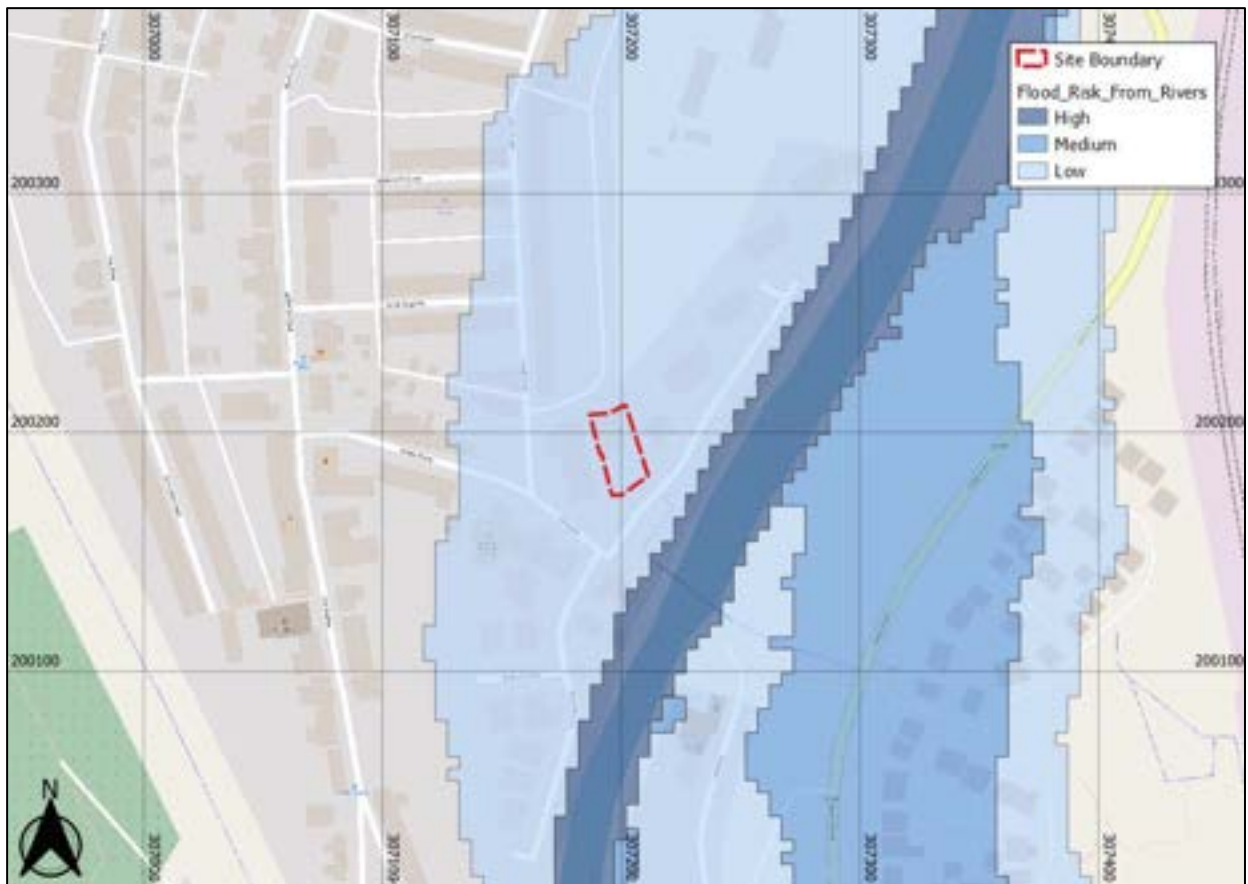


Figure 4 NRW Flood Risk Assessment Wales Flood Risk from Rivers Map (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors and Natural Resources Wales information © Natural Resources Wales and database right)

- 3.7. The NRW flood defence infrastructure dataset indicates that the flood defences along the River Taff are design with a standard of protection of at least 70 years – consisting of an embankment with a crest height of 132.00m AOD.
- 3.8. The NRW Recorded Flood Extents dataset shows that the site is within the extents of an event that occurred in December 1979 as a result of channel capacity exceeded (no raised defences). However, it should be noted that the surrounding area and catchment has undergone significant changes including new flood defences since 1979. No flooding has been recorded on site more recently, based on this dataset.

Merthyr Tydfil to Merthyr Vale Model (2010)

- 3.9. NRW have provided the model outputs from the Merthyr Tydfil to Merthyr Vale - Depth and Velocity model including flood level grids for a range of return periods for undefended and defended scenarios.
- 3.10. The data provided indicates that the site will remain unaffected in the present day modelled 1 in 100 year (1% AEP) fluvial extent – which appears to generally remain in channel/ within the confines of the defence embankment or spill out on the right bank of the watercourse, where no flood defences are located (Figure 5).
- 3.11. The flood level on the right bank associated with the 1 in 100 year (1% AEP) event is 129.45m AOD, which is considerably less than the 132.00m AOD flood defence crest level.
- 3.12. Analysis of the modelled 1 in 1000 year (0.1% AEP) fluvial flood event shows that the site may be affected. However, no data has been provided in the Product 6 for the defended 1 in 1000 (0.1% AEP) event. Therefore, the undefended flood grids have been utilised to provide an approximate flood level. Analysis of the undefended (shown in Figure 5) 1 in 1000 year scenario shows a flood level of 130.70m AOD. Comparison with the existing finished floor level of 129.61m AOD shows potential flood depths of 1.09m. It should be reiterated that this flood level represents a worst case undefended scenario.

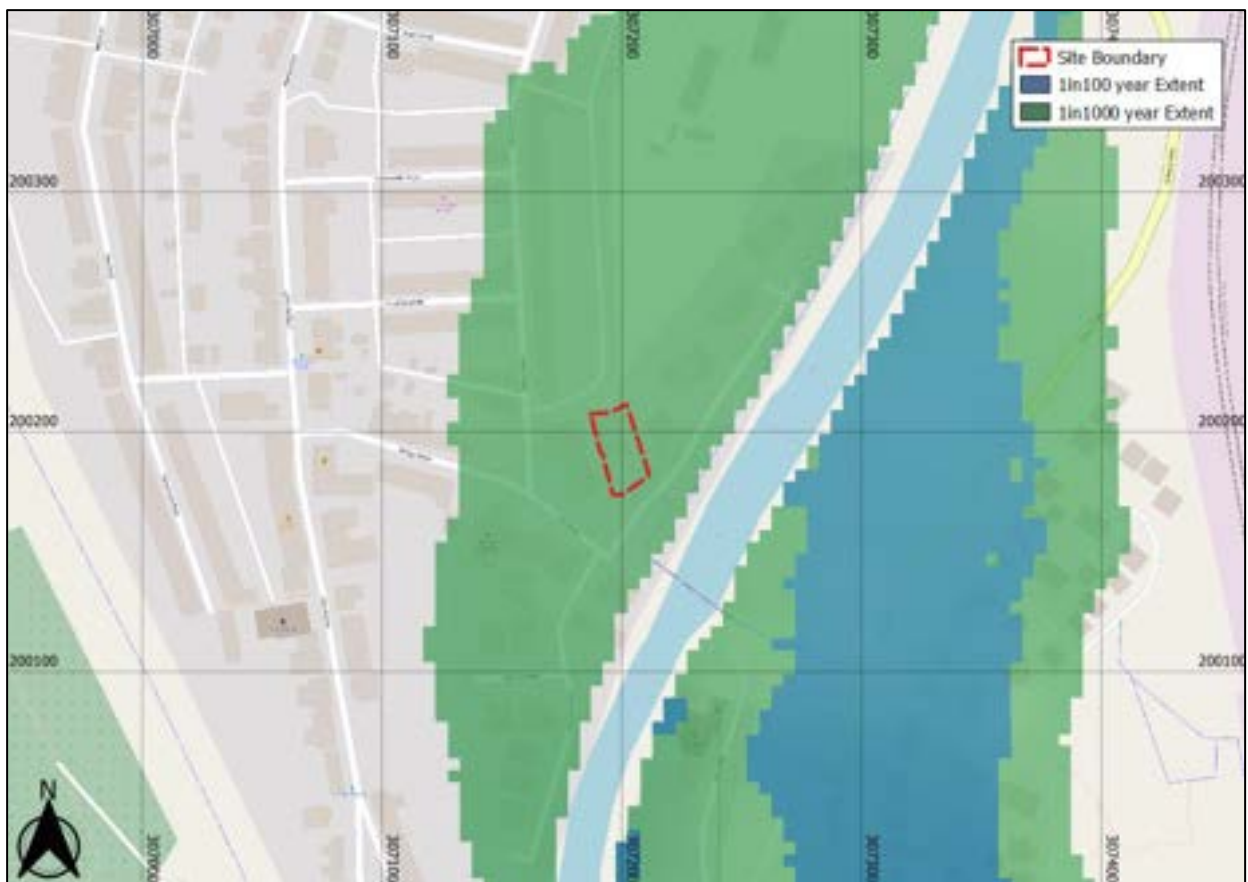


Figure 5: Present Day Flood Extent Map – Merthyr Tydfil to Merthyr Vale Model (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors and Natural Resources Wales information © Natural Resources Wales and database right)

- 3.13. The present-day risk of flooding from fluvial sources is be considered low when considering the impact of nearby flood defences.

Climate Change

- 3.14. NRW have provided climate change outputs as part of the Merthyr Tydfil to Merthyr Vale Model. The 1:100 year defended scenario was simulated with a +20% allowance. As of December 2021, NRW updated peak river flow allowances for Wales based on three river basin districts.
- 3.15. The site is located within the 'Severn' river basin district. The 'Flood Consequences Assessments: Climate change allowances' document states that it is recommended the central estimate, or change factor, for the 2080s for the relevant river basin district is used to assess the potential impact of climate change as part of a flood consequence assessment (FCA) and to inform design levels.

- 3.16. Given the lifetime of residential development, the appropriate climate change allowance is +25%.

Table 3: NRW Peak River Flow Allowances for the Severn River Basin District (Source: Flood Consequences Assessments: Climate change allowances, September 2021)

Allowance	Total potential change anticipated by the 2020s	Total potential change anticipated by the 2050s	Total potential change anticipated by the 2080s
Upper end estimate	25%	40%	70%
Change factor/ central estimate	10%	20%	25%
Lower end estimate	0%	5%	5%

- 3.17. Merthyr Tydfil to Merthyr Vale Model (2010) does not account for the most recent climate change policy update. Therefore, the 1 in 100 year +20% allowance outputs have been used in analysed in the report and the 1 in 100 year +25% allowances have been calculated.
- 3.18. Analysis of the modelled 1 in 100 year plus climate change (+20%CC) fluvial flood event (Figure 6) shows that the site would remain unaffected. It appears to generally remain in channel/ within the confines of the defence embankment or spill out on the right bank of the watercourse, where no flood defences are located (Figure 5).
- 3.19. The flood level on the right bank associated with the 1 in 100 year+CC (+20%CC) event is 129.45m AOD, which is considerably less than the 132.00m AOD flood defence crest level.
- 3.20. To calculate a 1:100 year +CC (25%) flood level associated with the right bank, the difference between the 1:100 year (129.45m AOD) and the 1:100 year +CC (20%) (129.48m AOD) flood levels (0.03m) can be interpolated to account for an additional 5% increase in flow. This results in a 1:100 year +CC (25%) calculated flood level of 129.49m AOD; which is 0.12m below the existing finished floor level.

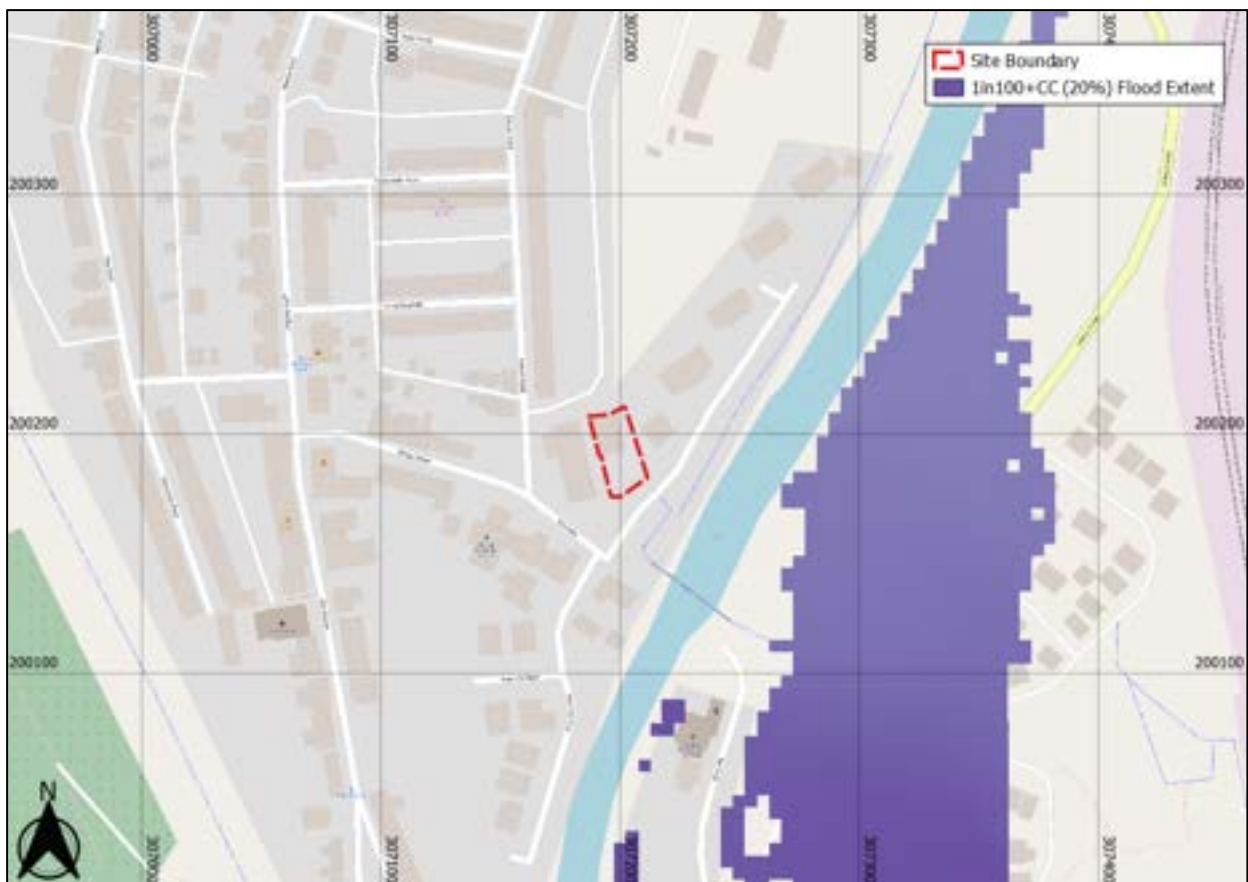


Figure 6: Climate Change 1% AEP Flood Extent Map – Afon Cynon Model (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors and Natural Resources Wales information © Natural Resources Wales and database right)

- 3.21. As such, it could be considered that without improvements to the existing flood defences, the risk of fluvial flooding to the development over its lifetime would increase, as a result of climate change. Furthermore, upgrades to the nearby defences may be carried out which may maintain a low risk of flooding.
- 3.22. The site is located within Zone C1 as defined on the NRW Development Advice Map (Figure 3). Zone C1 is defined as areas of the floodplain served by significant infrastructure, including flood defences. However, NRW have not provided any data regarding flood defence failure or breach.
- 3.23. It is acknowledged that funding for future flood defence upgrades is not guaranteed. Therefore, mitigation measures and flood resilience measures have been detailed in section 4 of this report. Overall, the risk of flooding from fluvial sources to the site can be considered low to moderate. It is anticipated that the right bank of the watercourse (where no defences are located) is more likely flood than the left bank of the watercourse.

Canals

- 3.24. There are no canals in the vicinity of the site and therefore the risk of flooding from canals is considered low.

Pluvial

- 3.25. Pluvial flooding can occur during prolonged or intense storm events when the infiltration potential of soils, or the capacity of drainage infrastructure is overwhelmed leading to the accumulation of surface water and the generation of overland flow routes.
- 3.26. Examination of NRW Flood Risk Assessment Wales map – Flood Risk from Surface Water and Small Watercourses shows the site to be at a very low risk of flooding from surface water (Figure 7). There are some areas nearby the site with higher flood risk; for example, Bridge Street is shown to be at medium and high risk of flooding.

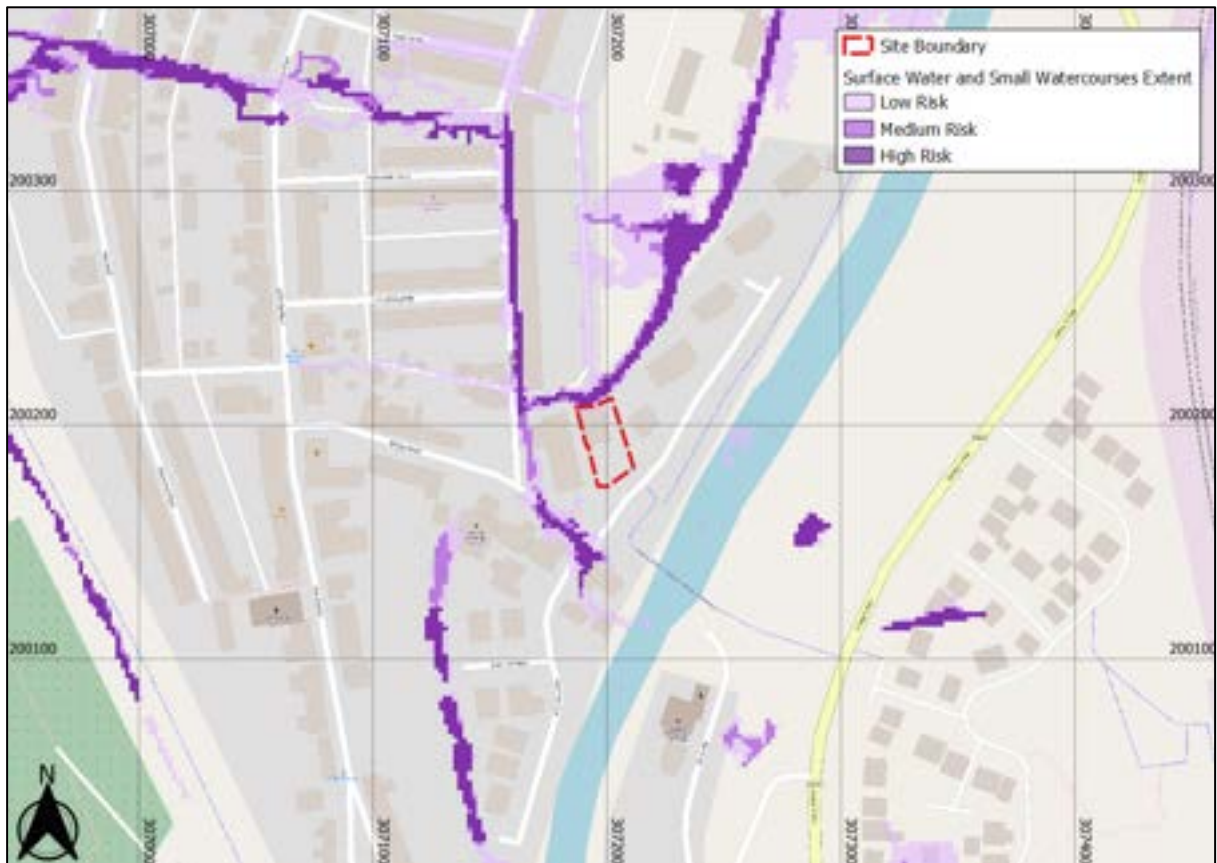


Figure 7: NRW Surface Water Flood Risk Mapping (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors and Natural Resources Wales information © Natural Resources Wales and database right)

3.27. As such, the risk of flooding from this source can be considered to be relatively low.

Reservoirs

- 3.28. Flooding can occur from large waterbodies or reservoirs if they are impounded above the surrounding ground levels or are used to retain water in times of flood. Although unlikely, reservoirs and large waterbodies could overtop or breach leading to rapid inundation of the downstream floodplain.
- 3.29. The Risk of Flooding from Reservoirs map shows that the site could be affected in the event of failure of the nearest reservoir. The nearest reservoirs are the Taf Fechan located approximately 11km to the north-east and the Llywyn-onn Reservoir which is located approximately 12km north-west of the site.
- 3.30. Natural Resources Wales is the enforcement authority for the Reservoirs Act 1975 in Wales and undertake regular inspections on all reservoirs. Therefore, the risk of flooding from reservoirs is considered to be low.

Groundwater

- 3.31. Groundwater flooding occurs in areas where underlying geology is permeable and water can rise within the strata sufficiently to breach the surface.
- 3.32. The British Geological Survey's (BGS) mapping shows the bedrock geology beneath the site to comprise of Rhondda Member consisting of mudstone, siltstone and sandstone. This is classified by NRW as a 'Secondary A' aquifer which are permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers.
- 3.33. Superficial deposits at the site are classified as Alluvium - clay, silt, sand and gravel which is also designated as a Secondary A aquifer.
- 3.34. The Merthyr Tydfil SFCA (2018) states that the Merthyr Vale and Aberfan area is mostly covered with freely draining soils, with a localised area to the east containing a wet, peaty topsoil. The geology in this area according to BGS data indicates moderate permeability, as the area is underlain by Rhondda Sandstone, mudstone and siltstone. The existing SFCA refers to the topography of the study area increasing its susceptibility to groundwater flooding as it is lower

than surrounding land. Therefore, in light of this information, the risk of groundwater flooding is concluded to be moderate.

- 3.35. Both the Merthyr Tydfil Local Flood Risk Management Plan and The Merthyr Tydfil SFCA also state that there is little documented evidence of groundwater flooding in the catchment and therefore the risk of flooding from this source is considered small, particularly at the catchment scale in comparison to other sources. Therefore, groundwater is unlikely to be a dominant source of flooding within the area and overall groundwater is not considered to be an issue.
- 3.36. As the development proposals do not include any proposed basements, the risk from groundwater to the development is considered to be low.

Sewer Flooding

- 3.37. Sewers can be a cause of flooding where the drainage network has become overwhelmed, either by blockage or due to local development beyond the designed capabilities of the drainage system.
- 3.38. The SFCA (2018) indicated that according to Welsh Water, there have been no reported incidents of sewer flooding within close proximity to the site. The PFRA and other council documents have also been reviewed with no reported incidents of sewer flooding identified.
- 3.39. The development is therefore considered to be at low risk of flooding from sewers. Any new sewer connection from the site should be agreed with the local sewer provider and fitted with non-return valves to minimise the risk of flooding from sewer sources.

4. Flood Risk Mitigation

Fluvial

- 4.1. The site is located within Zone C1 as defined on the NRW Development Advice Maps. Zone C1 is defined as areas of the floodplain served by significant infrastructure, including flood defences. The proposed development would be considered 'Highly Vulnerable' (residential development), 'Highly Vulnerable' developments are considered appropriate in Zone C1.
- 4.2. TAN15 requires the developer to demonstrate that the site is designed to be flood free for the lifetime (A1.5) of development for a 1 in 100 chance (fluvial) flood event including an allowance for climate change. Analysis within this report has indicated that the site is expected to remain unaffected in the modelled 1 in 100 year present day defended fluvial event and also remain unaffected for the modelled 1 in 100 year plus 20% and plus 25% climate change scenario. The existing finished floor level is 0.12m above the maximum flood level during the 1 in 100+25%CC (on the right bank).
- 4.3. It is anticipated that the right bank of the watercourse (where no defences are located) is more likely flood than the left bank of the watercourse.
- 4.4. Furthermore, in respect of the residual risk to the development it should be designed so that over its lifetime (A1.5) in an extreme (1 in 1000 chance) event there would be less than 600mm of water on access roads and within properties. Analysis of the modelled 1 in 1000 year (0.1% AEP) fluvial flood event shows that the site may be affected. However, no data has been provided in the Product 6 for the defended 1 in 1000 (0.1% AEP) event. Therefore, the undefended flood grids have been utilised to provide an approximate flood level. Analysis of the undefended (shown in Figure 5) 1 in 1000 year scenario shows a flood level of 130.70m AOD. Comparison with the existing finished floor level of 129.61m AOD shows potential flood depths of 1.09m. It should be reiterated that this flood level represents a worst case undefended scenario.
- 4.5. The defended 1000 year flood levels have not been provided as part of the product 6 outputs, however are anticipated to be significantly lower. The undefended 1000 year flood level (130.70m AOD) is considerably less than the 132.00m AOD flood defence crest level.

4.6. The proposed conversion should be retrofit in a flood resilient manner, in accordance with the DCLG Report 'Improving the Flood Performance of New Buildings - Flood Resilient Construction' (2007). Standards for the installation and retrofit of resistance measures are available in British Standard 851188-1:2019+A1:2021). The following mitigation measures are recommended to be incorporated into the proposed development, where possible:

- *Threshold level or ground floor finished floor levels should be raised 300mm above the 1 in 100 year plus climate change scenario (129.49m AOD), to be set no lower than 129.79m AOD.*
- *No bedrooms or sleeping accommodation should be located on the ground floor.*
- *Internal access to upper floors should be maintained for the lifetime of the development.*
- *Exterior ventilation outlets, utility points and air bricks to be fitted with removable waterproof covers.*
- *Ground floor to be solid (i.e. concrete floors), with waterproof membrane/screed*
- *External doors may be susceptible to ingress of flood water. Any PVC window/door sills should be adequately sealed.*
- *Raised wiring and power outlets at ground level.*
- *Cavity insulation should preferably incorporate rigid closed cell materials as these retain integrity and have low moisture take-up.*
- *Residents to sign up to NRW Flood Warning/Alerts and formalise a flood plan.*

Sewers

4.7. Merthyr Tydfil County Borough Council do not see *flooding from sewer sources as having significant consequences at a strategic scale*'. The risk of flooding from this source is generally considered low, however the following mitigation measures are Recommended:

- *Non-return valves should be fitted to any new sewer connections to minimise the risk of internal sewer flooding.*

Pluvial, Reservoirs and Groundwater

- 4.8. Flood risk from other sources is considered to be low, therefore mitigation is not required.

Increase to Flood Risk Elsewhere

- 4.9. The site is shown to be located in an area that benefits from the presence of flood defences. The proposals include the conversion of the existing building to residential use with no change to the ground floor-built footprint.
- 4.10. As such, there is likely to be no change in flood risk elsewhere as a result of the development.

EA Flood Warning Service

- 4.11. The site is located within the NRW 'River Taff at Aberfan' flood warning area. Therefore, as a further precaution and risk reduction, the owner of the site (or residents) should sign up the NRW flood warning service. This service allows site owners to register an address, which is at risk of flooding, along with contact details so that in the event of a flood being forecast, the site owner will be sent an alert directly to their chosen method of contact.
- 4.12. Flood warnings/alerts can be enforced at any time of the day or night. Signing up for this service provides site owners some notice before a flood event. The amount of time afforded before a flood occurs depends on the site-specific location (e.g. proximity to the source of flooding, topography of the surrounding area) and the flood mechanism (e.g. bank over topping versus a breach event). Flood alerts and warnings provide site managers with time to take necessary action, e.g. communication of the risk of flooding to occupants/employees etc, evacuation of occupants offsite or to a safe level, removal of valuable items out of reach of flooding and the mounting of site specific flood defences.

5. Conclusions

- 5.1. This FCA has been undertaken with reference to the requirements of TAN15 with respect to the development at Former Mount View Surgery, Bridge Street, Aberfan, Merthyr Tydfil, CF48 4RB. It has been written to support a full planning application and has been prepared with due consideration to the nature of the proposed development to provide the appropriate level of detail.
- 5.2. The FCA supports the full planning application and demonstrates that there is an acceptable level of flood risk to the site if the mitigation strategies recommended are implemented in the scheme. The development does not increase flood risk off site or to the wider area.

Source of Flooding	Flood Risk Summary
Fluvial	The site is located in Zone C1 (an area that benefits from the presence of flood defence infrastructure). NRW Modelling demonstrates that the site is located outside of the modelled present day modelled 1 in 100-year scenario. The site may be affected by the modelled 1 in 1000-year scenario, however no flood level grids have been provided for the defended 1000-year scenario. The undefended 1000-year level is 130.70m AOD. NRW have provided data for a 1 in 100 year with 20% climate change scenario which shows the site would remain unaffected. The calculated 1 in 100-year with 25% climate change scenario (using flood levels from the opposite right bank) is 129.49m AOD. It is proposed to raise the ground floor finished level to 129.79m AOD, 300mm above the 1 in 100-year plus 25% climate change flood level. However, the defence crest level is 132.00m AOD and therefore, the site is likely to remain unaffected by flooding during the defended 1 in 100+25%CC scenario. Any flooding would occur on the opposite right bank which does not have any formalised flood defence infrastructure defences. Overall, the present-day flood risk to the site is considered to be relatively low, given the presence of flood defences. The risk of flooding accounting for climate change could also be considered low.
Sewers	Welsh Water records indicate that surrounding areas may have experienced sewer flooding in the past. Generally, the flood risk from this source is considered low.

	However, any new sewer connection from the site should be agreed with the local sewer provider and fitted with non-return valves to minimise the risk of flooding from sewer sources.
Tidal Pluvial Reservoirs Groundwater	The site is considered to be at low risk from other sources.

5.3. The following conclusions can be drawn from this level 1 FCA:

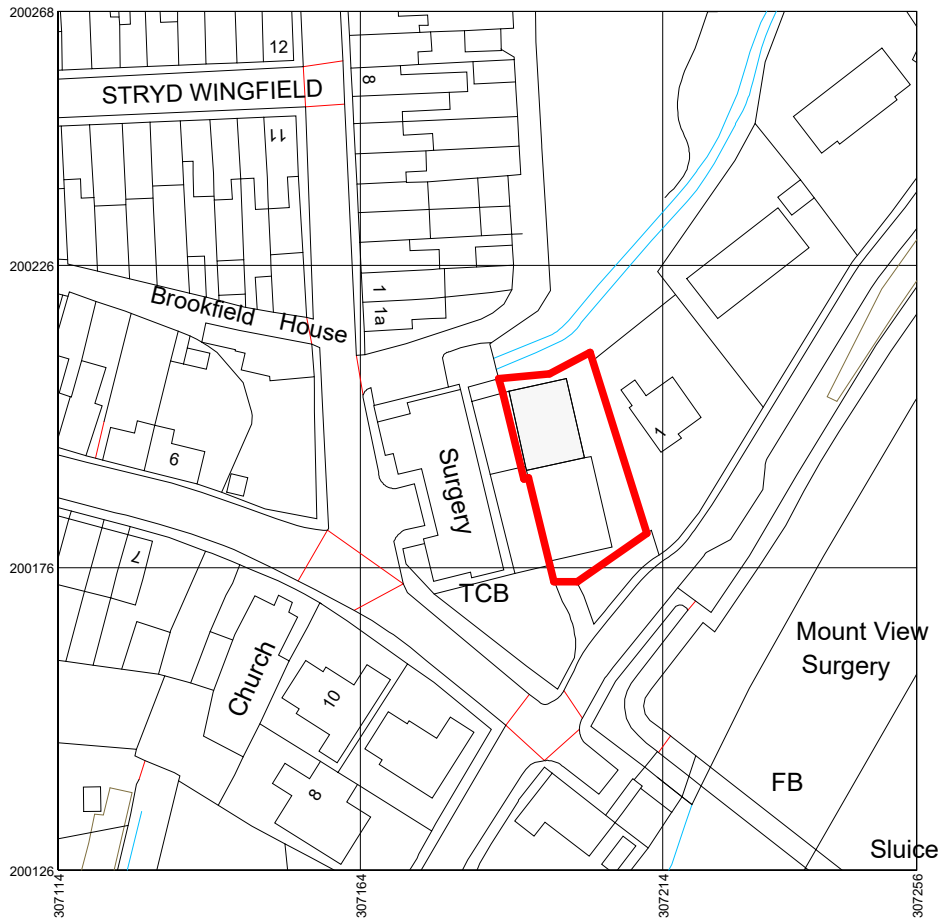
- This FCA has identified no prohibitive constraints in developing the proposed site for the proposed usage.
- The site is located in Zone C1 (an area that benefits from the presence of flood defence infrastructure).
- The proposed development is for the conversion of the existing vacant building to residential use, so will be classified as 'Highly Vulnerable' post-development.
- TAN15 requires the developer to demonstrate that the site is designed to be flood free for the lifetime (A1.5) of development for a 1 in 100 chance (fluvial) flood event including an allowance for climate change. Analysis within this report has indicated that the site could remain unaffected in the modelled 1 in 100 year present day defended fluvial event and also remain unaffected for the modelled 1 in 100 year plus 20% and plus 25% climate change scenario shows. The existing finished floor (129.61m AOD) level is 0.12m above the maximum 1 in 100 plus 25% climate change flood level.
- Furthermore, in respect of the residual risk to the development it should be designed so that over its lifetime (A1.5) in an extreme (1 in 1000 chance) event there would be less than 600mm of water on access roads and within properties. Analysis of the modelled 1 in 1000 year (0.1% AEP) fluvial flood event shows that the site may be affected. However, no data has been provided in the Product 6 for the defended 1 in 1000 (0.1% AEP) event. Therefore, the undefended flood grids have been utilised to provide an approximate flood level. Analysis of the undefended (shown in Figure 5) 1 in 1000 year scenario shows a flood level of 130.70m AOD. Comparison with the existing finished floor level of 129.61m AOD shows potential flood depths of 1.09m. It should be reiterated that this flood level represents a worst case undefended scenario.
- The defended 1000 year flood levels have not been provided as part of the product 6 outputs, however are anticipated to be significantly lower. The undefended 1000 year

flood level (130.70m AOD) is considerably less than the 132.00m AOD flood defence crest level.

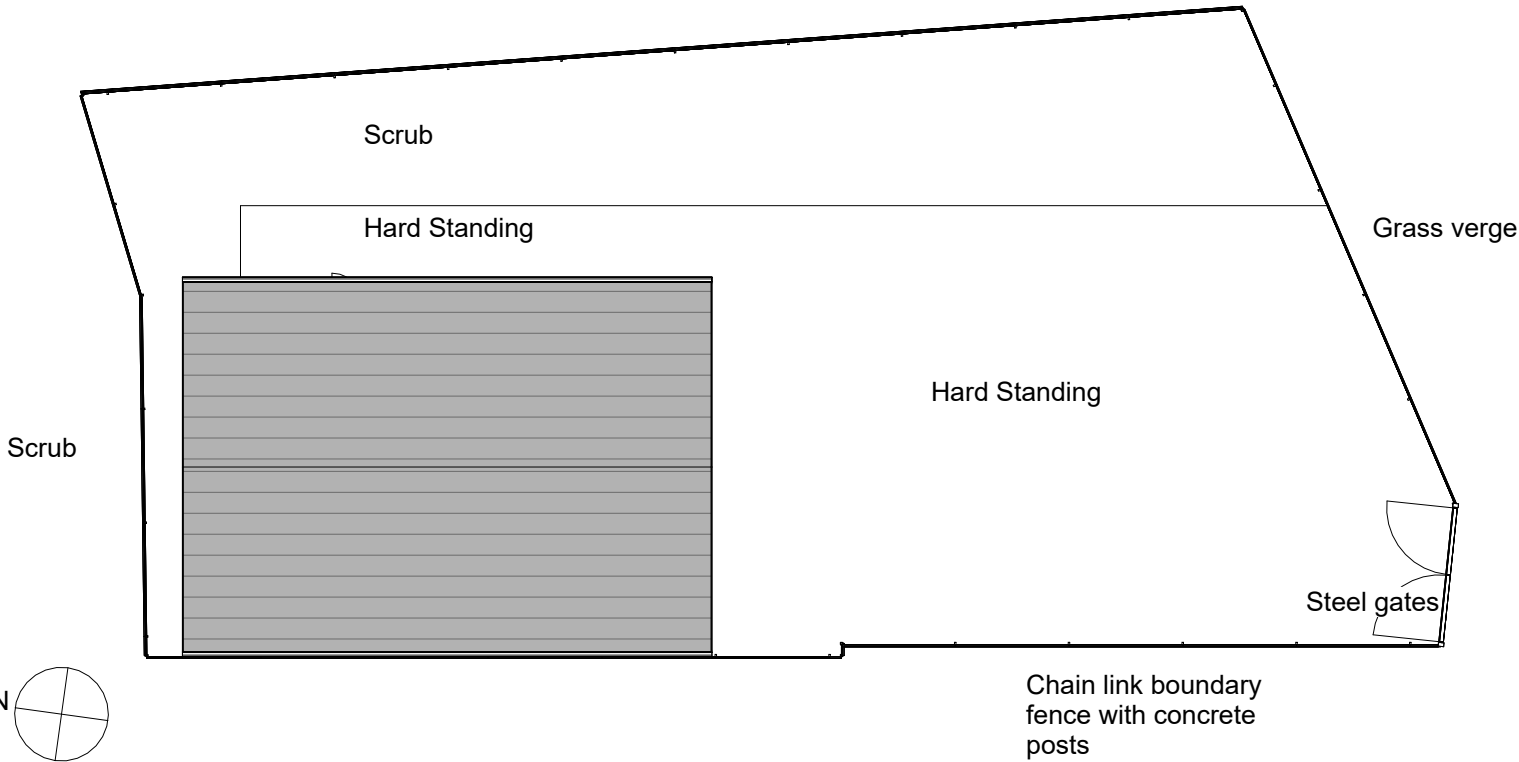
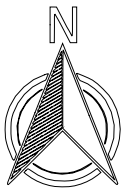
- The proposed conversion should be retrofit in a flood resilient manner, in accordance with CLG Report *Improving the Flood Performance of New Buildings Flood Resilient Construction (2007)*. Standards for the installation and retrofit of resistance measures are available in British Standard 851188-1:2019+A1:2021). As a minimum, external thresholds or ground floor finished floor levels are to be raised 300mm above the 1 in 100 year plus climate change flood level – to a minimum of 129.79m AOD.
- As the fabric of the existing building is to be retained and not altered (building footprint is to remain the same) the proposed development is not expected to cause any increase in flood risk either onsite or elsewhere over the lifetime of the development.
- Site owner/residents should sign up to the NRW Flood Warning Service and formalise a flood plan/evacuation procedures.

5.4. This Flood Consequence Assessment should be submitted as part of the planning application to satisfy the requirements under TAN15.

Appendix A – Development Proposals



Site Location Plan
(1 : 1250)



Site Plan
(1 : 200)

Purpose of Drawing:

PLANNING

Stanwell Architects

Project **Bridge Street, Aberfan**

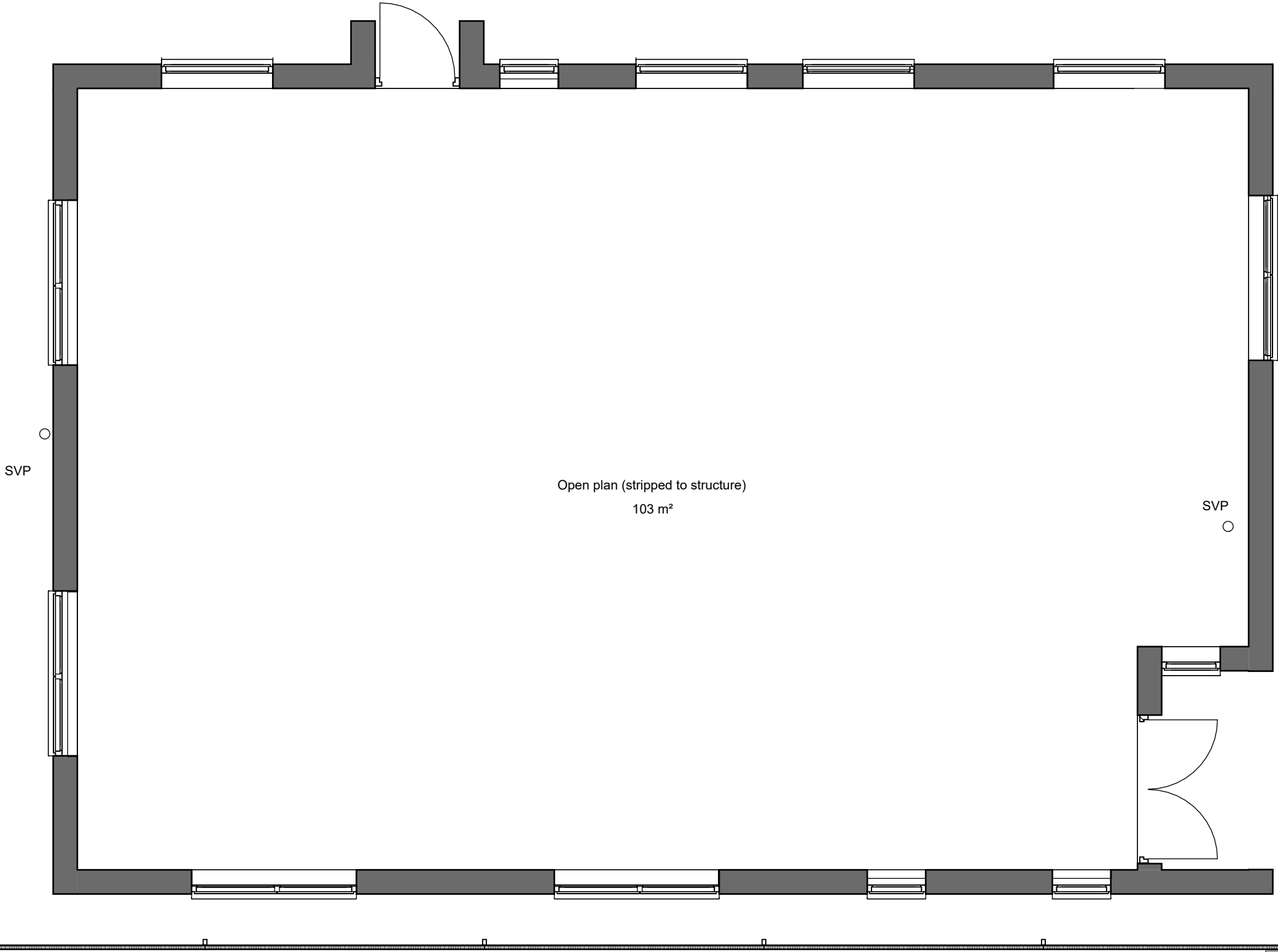
Date November 23	Drawing No. A101	Drawn by GCP	Scale (@ A3) As indicated
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Client J Howe	Drawing Name Site Location Plan	REV
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gary@stanwellarchitects.co.uk Tel: 07980 865879

Company No: 13506844 Reg address: 7 Herbert Terrace, Penarth, CF64 2AH

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Purpose of Drawing: **PLANNING**

Stanwell Architects

Project
Bridge Street, Aberfan

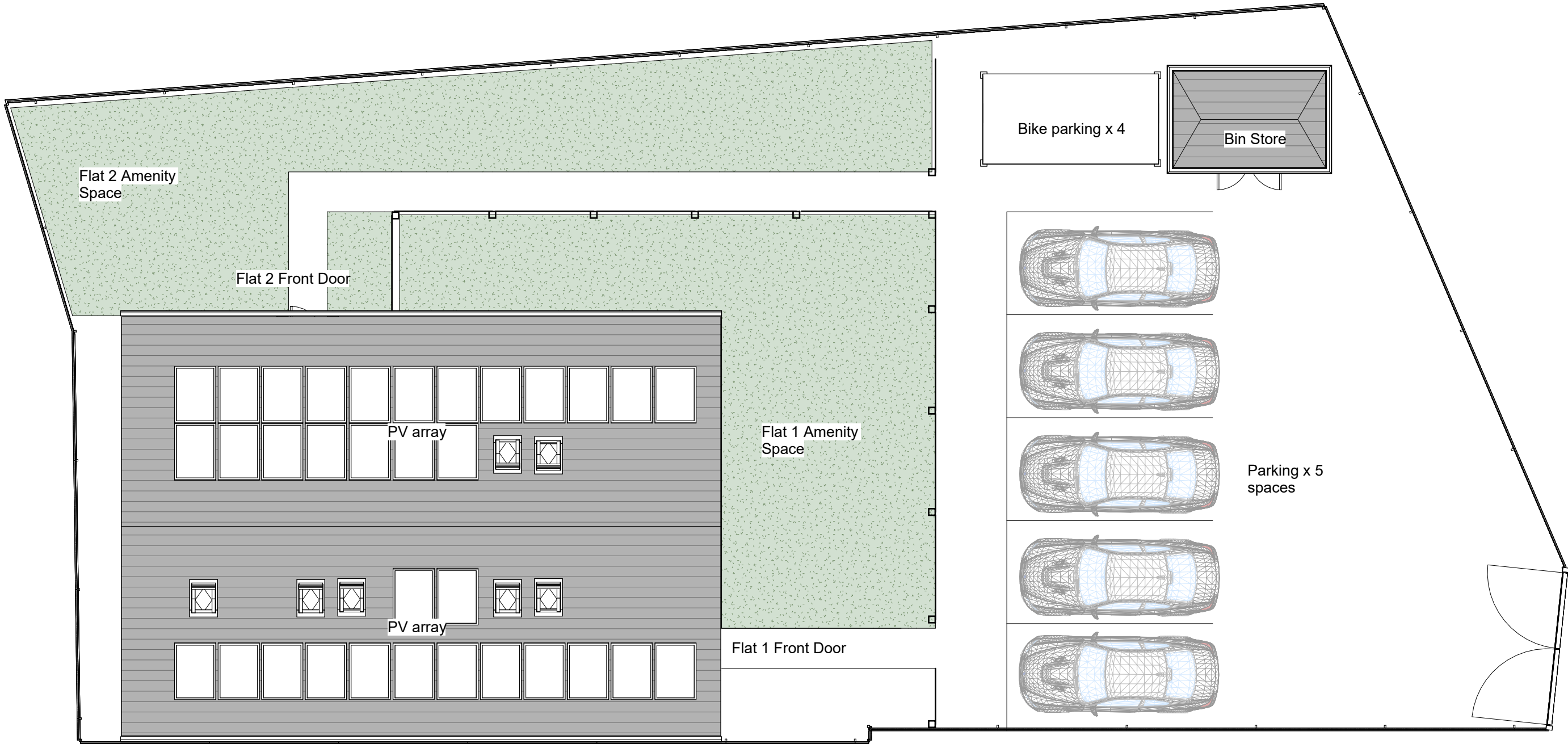
Date November 23	Drawing No. A102	Drawn by GCP	Scale (@ A3) 1 : 50
Client J Howe	Drawing Name Existing Ground Floor Plan		REV

gary@stanwellarchitects.co.uk

Tel: 07980 865879

Company No: 13506844 Reg address: 7 Herbert Terrace, Penarth, CF64 2AH

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Purpose of Drawing: **PLANNING**

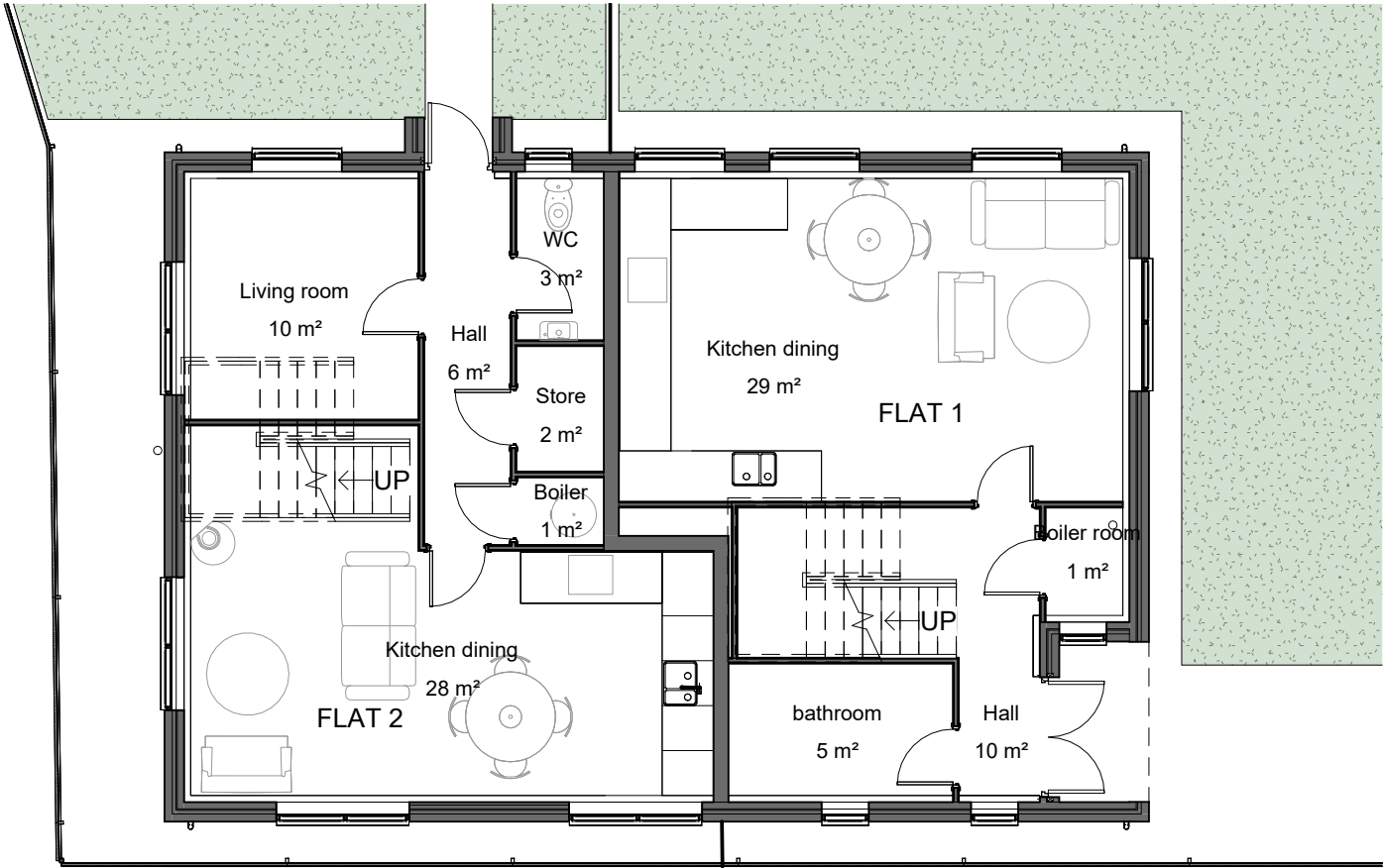
Stanwell Architects

Project **Bridge Street, Aberfan**

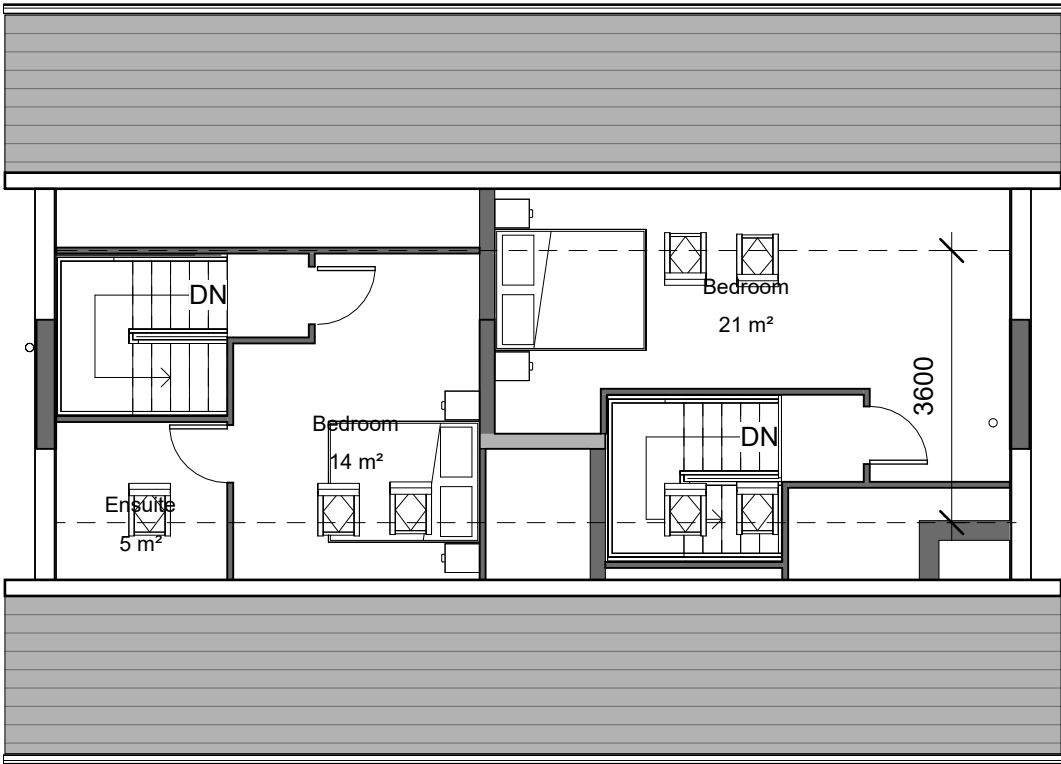
Date November 23	Drawing No. A105	Drawn by GCP	Scale (@ A3) 1 : 100
Client J Howe	Drawing Name Proposed Site Plan		REV

gary@stanwellarchitects.co.uk Tel: 07980 865879

Company No: 13506844 Reg address: 7 Herbert Terrace, Penarth, CF64 2AH



Ground Floor Proposed
(1 : 100)



Proposed First Floor
(1 : 100)

Purpose of Drawing: **PLANNING**

Stanwell Architects

Project

Bridge Street, Aberfan

Date	November 23	Drawing No.	A106	Drawn by	GCP	Scale (@ A3)	1 : 100
Client	J Howe	Drawing Name				Proposed Plan	REV

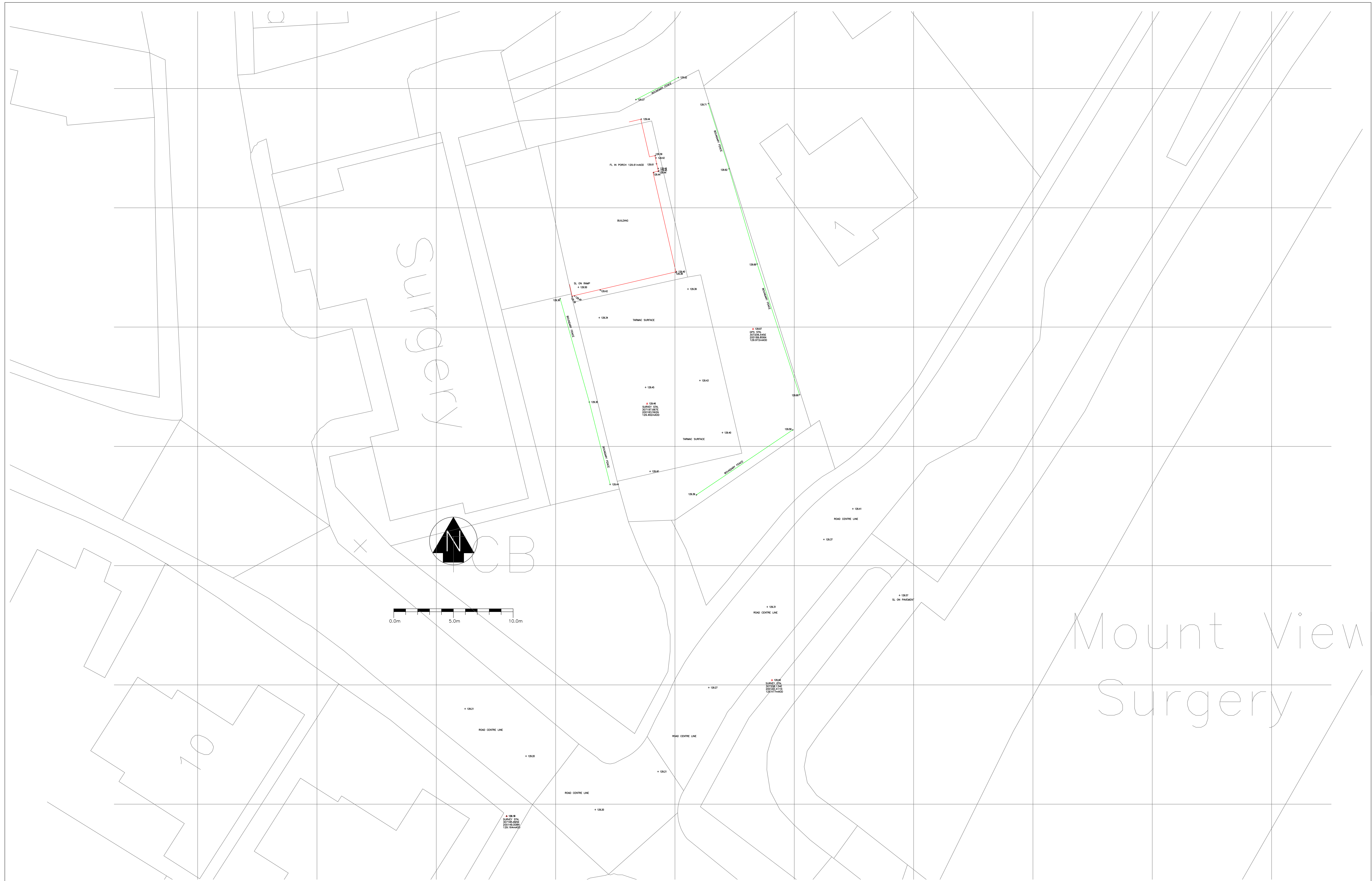
gary@stanwellarchitects.co.uk

Tel: 07980 865879

Company No: 13506844

Reg address: 7 Herbert Terrace, Penarth, CF64 2AH

Appendix B – Topographic Survey

[illegible]

Appendix C – NRW Objection

Rivers House,
St Mellons Business Park,
St Mellons,
Cardiff,
CF3 0EY

Merthyr Tydfil County Borough
Council,
Unit 5 Triangle Business Park,
Pentrebach,
Merthyr Tydfil,
CF48 4TQ

ebost/email:
southeastplanning@cyfoethnaturiolcymru.gov.uk

16/03/2023

Annwyl Syr/Madam / Dear Sir/Madam,

BWRIAD / PROPOSAL: CONVERSION OF BUILDING TO TWO FLATS WITH ASSOCIATED EXTERNAL WORKS.

LLEOLIAD / LOCATION: FORMER MOUNT VIEW SURGERY, BRIDGE STREET, ABERFAN, MERTHYR TYDFIL.

Thank you for re-consulting Cyfoeth Naturiol Cymru / Natural Resources Wales about the above, which we received on 7 March 2023.

We continue to have concerns with the application as submitted because inadequate information has been provided in support of the proposal. To overcome these concerns, you should seek further information from the applicant regarding flood risk. If this information is not provided, we would object to this planning application. Further details are provided below.

Flood Risk

The planning application proposes highly vulnerable development (housing). Our Flood Risk Map confirms the site to be within Zone C1 of the Development Advice Map (DAM) as contained in TAN15 and the Flood Map for Planning (FMfP) identifies the application site to be at risk of flooding and falls into Flood Zone 3 (Rivers).

Section 6 of TAN15 requires the Local Planning Authority to determine whether the development at this location is justified. Therefore, we refer you to the tests set out in section 6.2 of TAN15. If you consider the proposal meets the tests set out in criteria (i) to (iii), then the final test (iv) is for the applicant to demonstrate, through the submission of a flood consequences assessment (FCA), that the potential consequences of flooding can be managed to an acceptable level.

We have reviewed the FCA undertaken by Ashfield Solutions Group Limited, dated 02/02/2023, reference 166623-F01. Our advice to you is that the FCA fails to demonstrate

that the risks and consequences of flooding can be managed over the lifetime of development to an acceptable level for the reasons explained below.

A1.14 Criteria

During a 1% (1 in 100 year) plus 20% for climate change annual probability fluvial flood event the 'Executive Summary' states that the finished floor level of the building is located above the flood level during this event. The topographic survey indicates a finished floor level of 129.61m AOD however this has not been compared to the design flood level as one has not been specified in the FCA. Furthermore, a lower climate change allowance of 20% has been used. Welsh Government's Climate Change Allowances and Flood Consequences [guidance](#) states residential development should be assessed with a 25% climate change allowance for fluvial flood events.

Without this information as specified above, we are unable to confirm whether the development is A1.14 compliant.

A1.15 Criteria

There has been no assessment of the requirements of A1.15 criteria within the FCA. The section entitled 'NRW Flood Model Data' confirms the site is at risk of flooding during a 0.1% (1 in 1000 year) annual probability fluvial flood event, but flood depths and levels were not provided. For completeness, we recommend these flood depths are provided and an assessment against A1.15 criteria be included with any subsequent FCA.

Without this information as specified above, we are unable to confirm whether the development is A1.15 compliant.

A1.12 Criteria

We note the FCA has not acknowledged the presence of the existing flood defences upstream of the site and, whether these are structurally adequate to withstand the 0.1% (1 in 1000 year) annual probability fluvial flood event. We recommend this information be included with any subsequent FCA to ascertain whether the development is compliant with A1.12 criteria.

In consideration of the above, a revised FCA is required which demonstrates the risks and consequences of flooding can be managed to an acceptable level in accordance with TAN15.

We would request you inform us, in accordance with paragraph 11.7 of TAN15, if they are minded to grant permission for the application contrary to our advice.

Further Advice

As it is for your Authority to determine whether the risks and consequences of flooding can be managed in accordance with TAN15. We cannot advise them on matters such as emergency plans, procedures and measures to address structural damage that may result from flooding. Please note, we do not normally comment on or grant the adequacy of flood emergency response plans and procedures accompanying development proposals, as we

do not carry out these roles during a flood. Our involvement during a flood emergency would be limited to delivering flood warnings to occupants/users.

Advice for Applicant

Please note the NRW Flood Risk Assessment Wales (FRAW) data has no relevant to planning and should be omitted from the FCA or caveated accordingly.

Section 1.10 of the FCA notes the site has flooded from the River Taff during October 1998 from an overland flood flow route. However, the FCA indicates that no flooding of the proposed development has occurred since 1979, we recommend the FCA is updated accordingly.

Section 4 'Conclusion' states "*The development is unlikely to place additional persons at risk of flooding.*" We consider there will be additional people put at risk as the former surgery is now vacant and is proposed for residential purposes. We recommend the FCA is updated to reflect this.

Other Matters

Our comments above only relate specifically to matters included on our checklist, *Development Planning Advisory Service: Consultation Topics* (September 2018), which is published on our [website](#). We have not considered potential effects on other matters and do not rule out the potential for the proposed development to affect other interests.

We advise the applicant that, in addition to planning permission, it is their responsibility to ensure they secure all other permits/consents/licences relevant to their development. Please refer to our [website](#) for further details.

If you have any queries on the above, please do not hesitate to contact us.

Yn gywir / Yours faithfully

Paige Minahan

Cynghorydd - Cynllunio Datblygu / Advisor - Development Planning
Cyfoeth Naturiol Cymru / Natural Resources Wales