2685 - Bedwlwyn, Ystrad Mynach

Residential Development

Wales & West Housing

Drainage Strategy

&

Flood Consequences Assessment

December 2025

107 Cowbridge Road East

CARDIFF, CF11 9AG

t: 029 2030 2521

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DOCUMENT CONTROL

Project Number	2685
Project Title	Bedwlwyn, Ystrad Mynach
Client	Wales & West Housing
Document Title	Flood Consequences Assessment and Drainage Strategy

Prepared by	Checked by	Verified by	Approved by
Pat Obermajer Civil Engineer	Tony Owens-Redwood Director	Tony Owens-Redwood Director	Stephen Davis Director

Issue History

Issue	Issue date	Details	Authorized by	Position
1st	11 December 2025	First Issue	Pat Obermajer	Civil Engineer

Contents

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Definitions and Abbreviations

TAN15 (Technical Advice Note 15) - Development and Flood Risk (2004): Technical Advice Note 15 (2004). Welsh Government guidance document on development and flood risk. Superseded in March 2025.

New TAN15 - Technical Advice Note 15: Development, Flooding, and Coastal Erosion (2025): the latest up to date version of the Welsh Government guidance document. TAN15 provides technical guidance which supplements the policies set out in Planning Policy Wales and Future Wales in relation to flooding and coastal erosion.

NRW: Natural Resources Wales. The governing body responsible for environmental regulation in Wales.

DAM: Development Advice Map. A map produced by NRW as part of TAN15 guidance, outlining flood zones across Wales to accompany TAN15 (2004). Superseded by FMfP.

FMfP: Flood Map for Planning. A map used for planning purposes, showing areas at risk of flooding to accompany the New TAN15 (2025).

AEP: Annual Exceedance Probability. The probability of a flood of a certain size or larger occurring in any given year.

FFL: Finished Floor Level.

CC: Climate Change. Used in the context of assessing the impact of climate change on flood risk models.

Flood Zone 3 (FMfP): displays the extent of flooding from:

> Rivers with a 1% (1 in 100) chance or greater of happening in any given year, including an allowance for climate change.
>
> the sea with a 0.5% (1 in 200) chance or greater of happening in any given year, including an allowance for climate change.
>
> Surface water & small watercourses with a 1% (1 in 100) chance or greater of happening in any given year, including an allowance for climate change.

Flood Zone 2 (FMfP): displays the extent of flooding from:

> Rivers with less than 1% (1 in 100) but greater than or equal to 0.1% (1 in 1,000) chance of happening in any given year, including an allowance for climate change.

the Sea with less than 0.5% (1 in 200) but greater than or equal to 0.1% (1 in 1,000) chance of flooding in any given year, including an allowance for climate change.

Surface water & small watercourses with less than 1% (1 in 100) but greater than or equal to 0.1% (1 in 1,000) chance of happening in any given year, including an allowance for climate change.

Flood Zone 1 (FMfP): Less than 0.1% chance of flooding in a given year plus climate change.

TAN15 Defended Zones (FMfP): shows areas that benefit from risk management authority owned flood defence infrastructure, that have a minimum, Present Day level of protection of:

1% AEP for rivers, or

0.5% AEP for the sea.

1 Introduction

PHG Consulting have been commissioned by Wales & West Housing to undertake a Flood Consequences Assessment and Drainage Strategy in support of a planning application for a proposed residential development in Bedwlwyn, Ystrad Mynach.

The purpose of the report is to identify existing flood risk at the site and ensure that surface and foul water drainage can be managed without affecting the downstream catchments detrimentally.

The report demonstrates how surface runoff from the development will be managed to prevent increased flood risk elsewhere. The FCA is compliant with Technical Advice Note 15 Development, flooding and coastal erosion, last updated on 31 March 2025. The Flood Map for Planning has been reviewed and, due to the positioning of the site within Zone 2 (rivers), model outputs will be obtained from NRW for detailed assessment. This detailed assessment will be undertaken upon receipt of the NRW model outputs and will be included in V2 of the report.

Existing Site

The existing site is previously developed land (brownfield) covering 0.134 ha, located on Bedwlwyn Road, Ystrad Mynach, at the National Grid reference ST 14658 94469. The site lies within a residential area, surrounded by housing. Site location is shown in Figure 1 below.

Figure 1. Site Location Plan.

Geology and Hydrogeology

The Winter Rain Acceptance Potential (WRAP) map identifies the site as WRAP Class 3, indicating that the underlying soils likely provide a limited degree of permeability, as shown in Figure 2 below.

An intrusive Site Investigation is yet to be carried out.

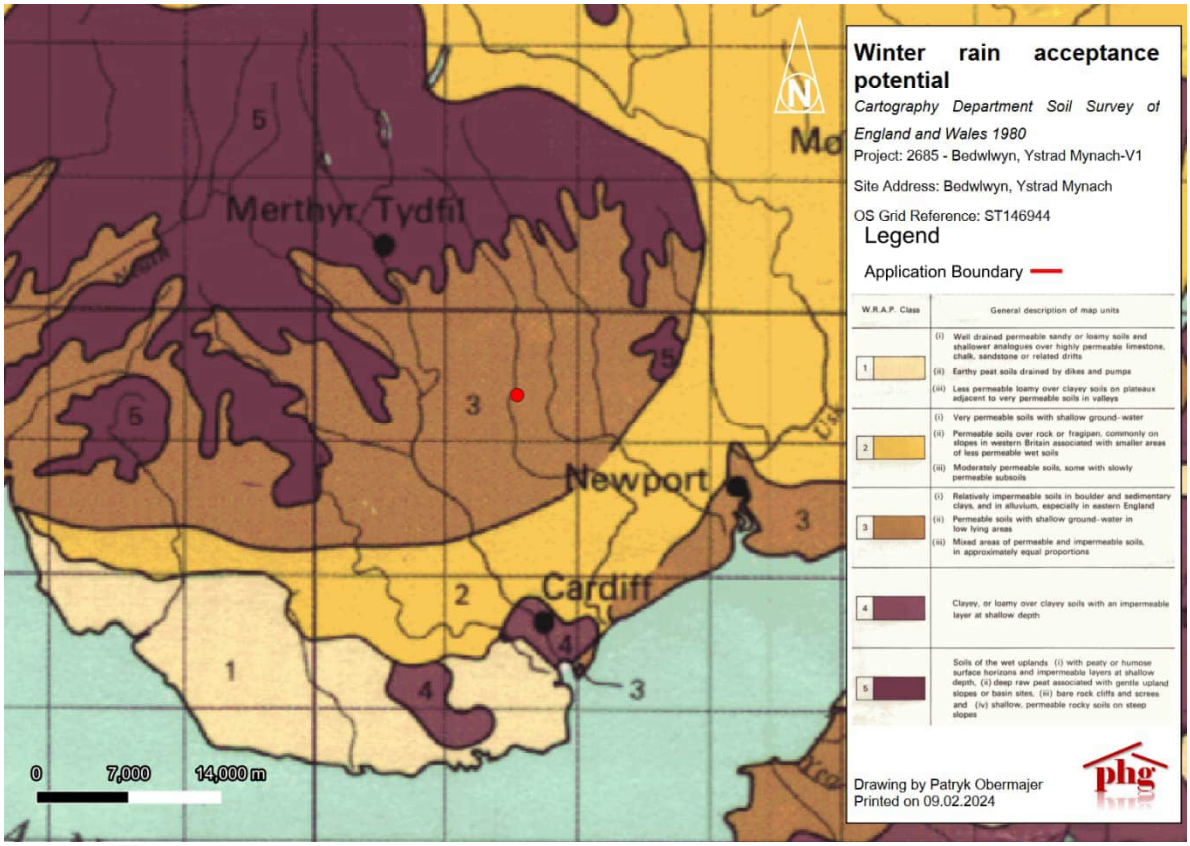

Figure 2. WRAP Map

Development Proposals

The proposed residential development comprises two apartment blocks containing in total 24 apartments, along with associated infrastructure and SuDS system. The proposal constitutes redevelopment in accordance with paragraph 8.3 of Technical Advice Note (TAN) 15.

Development proposals are included in Appendix A.

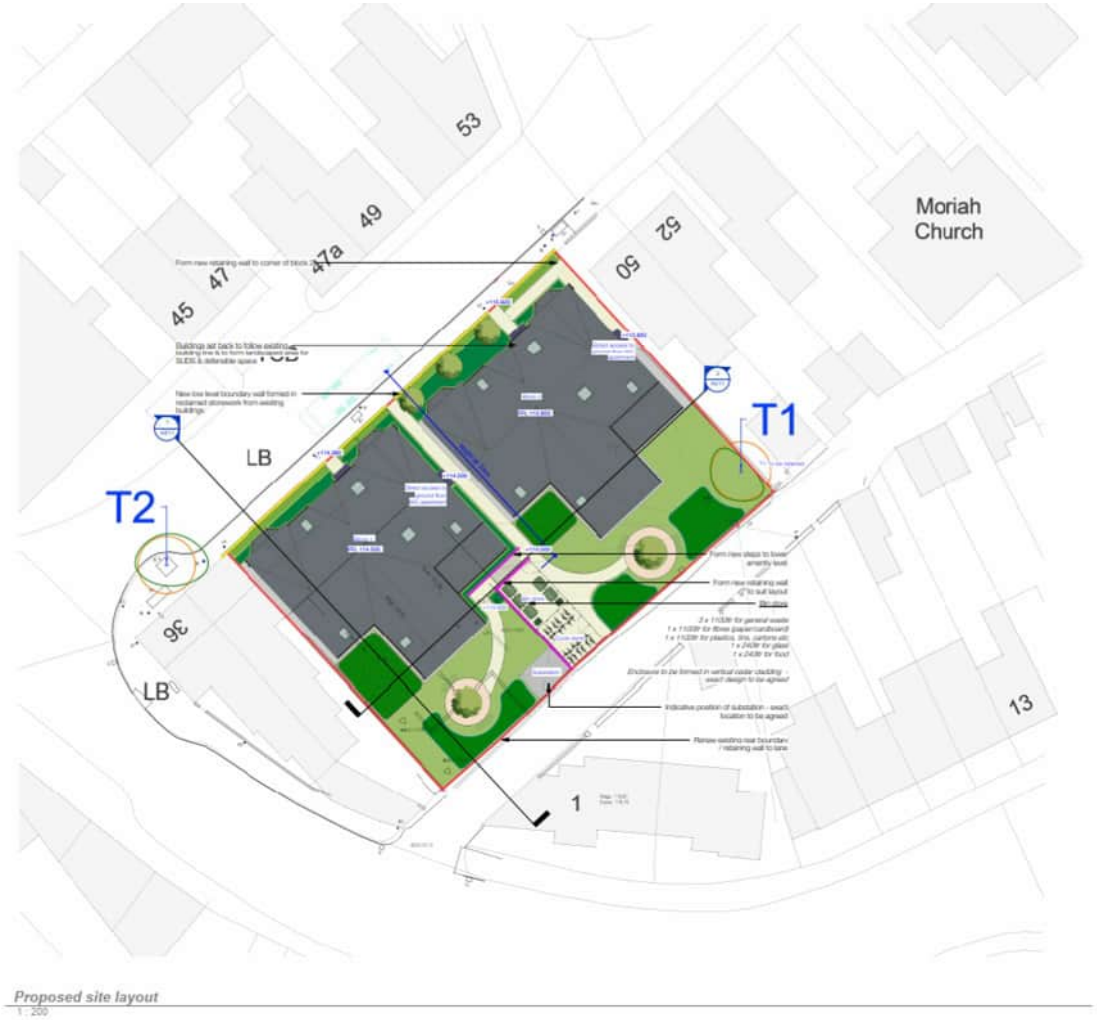

Figure 3. Proposed Site Plan - A003 Proposed Site Layout

2 Flood Consequences Assessment

This assessment has been prepared to examine all potential sources of flooding pertaining to the site and the immediate vicinity, determine the risk (flood frequency) and the effects (flood consequences) of flooding. In Wales, planning policy relating to flooding is governed by Technical Advice Note (TAN) 15: development and flood risk.

This assessment has been prepared in accordance with the New TAN15, which came into force in March 2025. The flood events in the report include climate change allowances as per the latest advice.

Development Category – Flood Zones Compatibility to Flood Map for Planning

The development site is classified as *Highly vulnerable development*[1] and its design life is 100 years[2]. The Flood Map for Planning (FMfP) maps, which fully supersede Development Advice Map (which accompanied the previous version of TAN15), have been included in the assessment. Extract of FMfP including Surface Water and Small Watercourses, Fluvial Flooding, and Tidal is shown in Figure 4 below.

[1] Technical Advice Note15 (2025): Figure 4- Development vulnerability categories

[2] Guidance on Climate Change Allowances for Planning Purposes, CL-03-16, Welsh Government

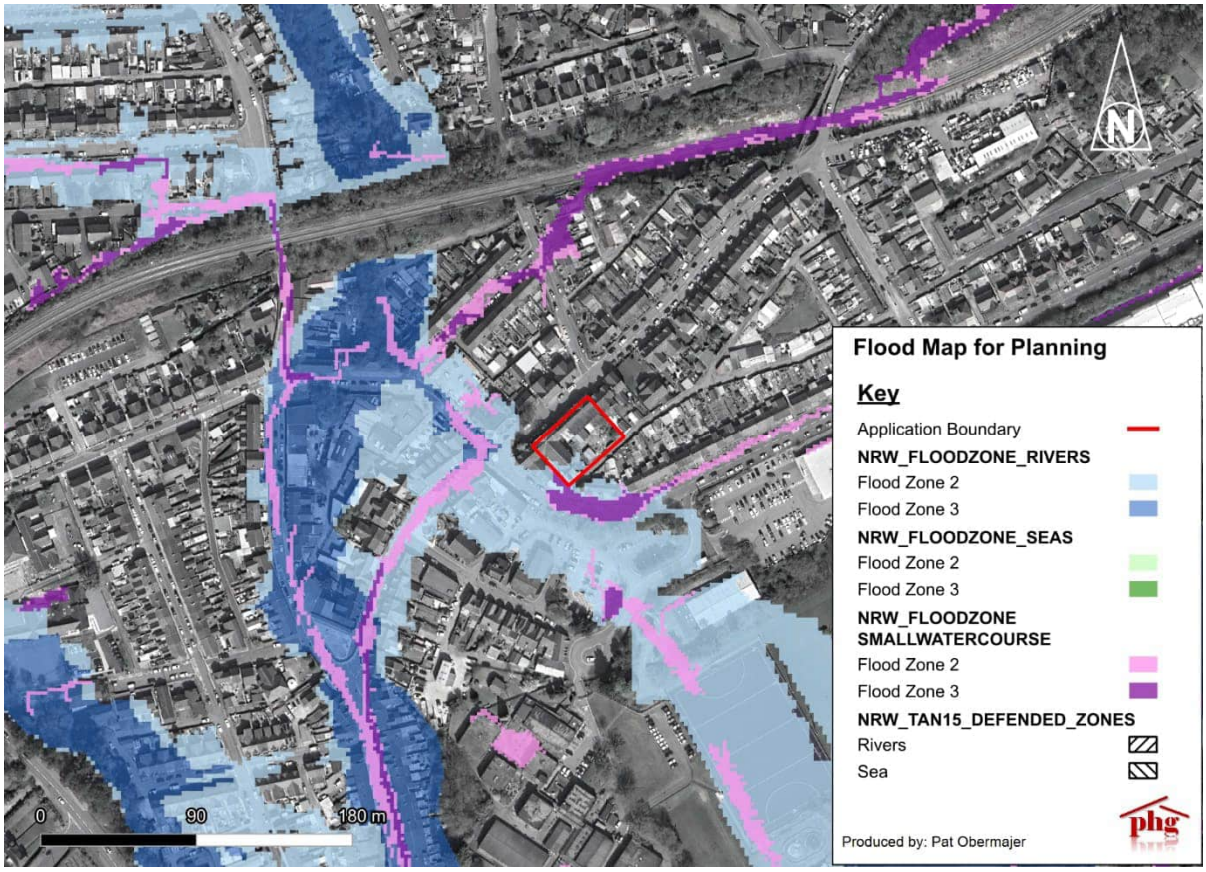

Figure 4. Flood Map for Planning

Flood Map for Planning - Rivers

The site is located partially within Flood Zone 2 (rivers). The extents of Zone 2 flooding run along the perimeter of the proposed Block 1. Given the site's position within the Flood Zone, further assessment of model outputs in the context of frequency thresholds and tolerable conditions (TAN15) is required. A request to NRW for their hydraulic model outputs has been made.

Figure 5. FMfP- Rivers

Flood Map for Planning - Seas

The site is located in Zone 1, outside the flood risk area from the sea.

Flood Map for Planning - Surface Water and Small Water Courses

The site is located in close proximity to Flood Zone 2 and Flood Zone 3 (surface water and small watercourses). Flood Zone 3 partially intersects the site boundary around the south-western corner. Proposed changes to site topography post-development are unlikely to exacerbate the existing flood risk from surface water and small watercourses.

The site and the proposed property are considered not to be at risk of flooding from surface water or small watercourses, and no further assessment is deemed necessary.

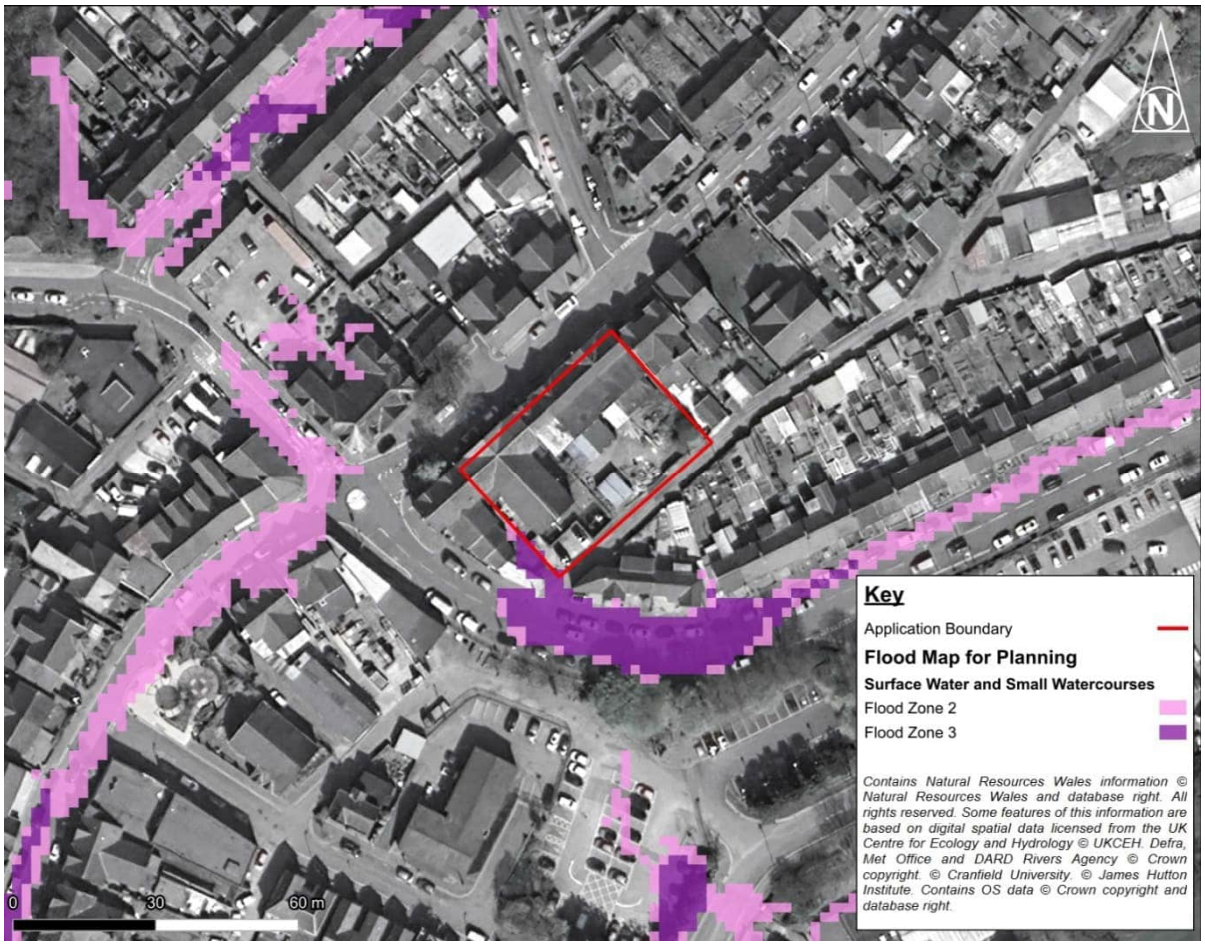

Figure 6. NRW – Flood Map for Planning - Surface Water and Small Watercourses

Impact on flooding elsewhere

In line with TAN15 the development must ensure no increase in flooding elsewhere.

Given the modest scale of the development, the use of SuDS and infiltration as a means of surface water runoff disposal, it is concluded that the development will result in no impact of flooding elsewhere.

3 Drainage Strategy

Surface Water Features

The site is located approximately 330m north-west of the Rhymney. There are no watercourses within the site boundary.

Figure 7. Watercourses near the site.

Existing Sewers

There is an existing combined sewer run running across the site. There are no surface water sewers in the immediate vicinity of the site. There is an existing highway drain within Bedwlwyn Road, which currently conveys the rooftop surface water runoff from the existing building, as confirmed by a CCTV survey (refer to Appendix G).

DCWW sewer records are shown in Figure 8.

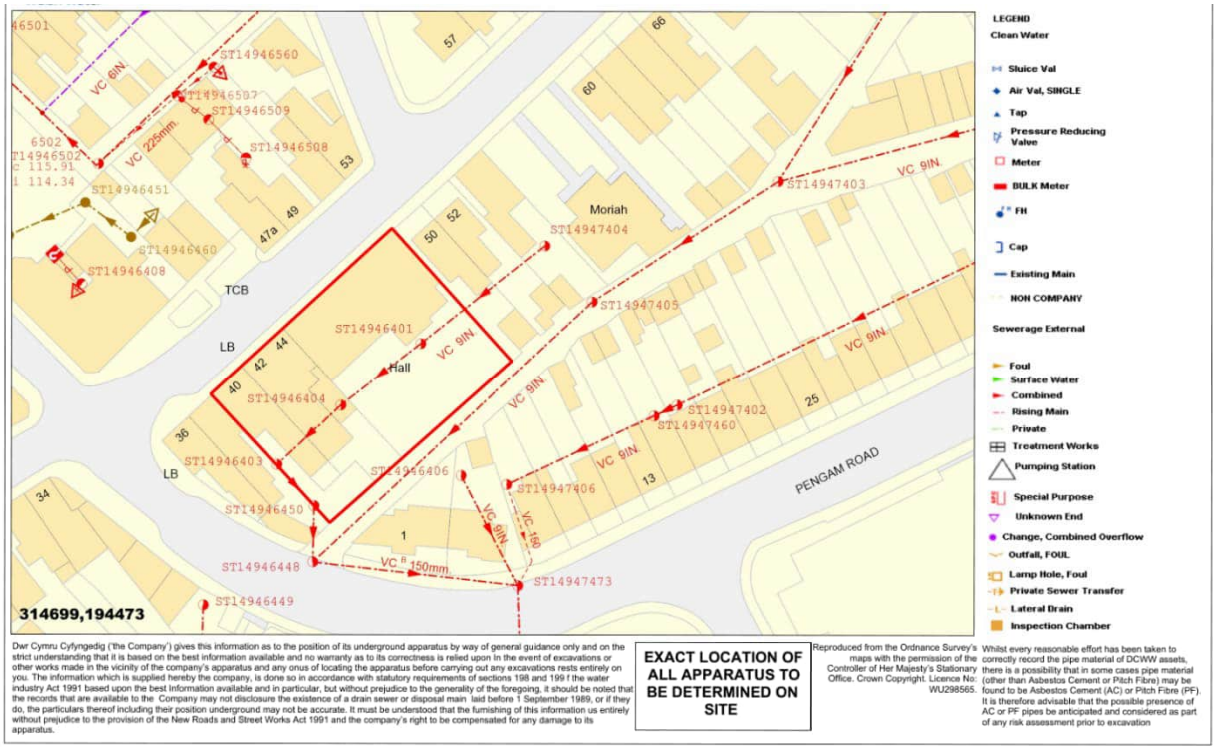

Figure 8. DCWW- Sewer Records

Foul Drainage

Foul flows from the proposed development are intended to discharge to the existing public combined system running through the site by gravity, with no pumping required. The connection to the public system will be subject to the Section 104 application, which will be made to DCWW.

A Pre-planning Advice enquiry has been made to DCWW.

Surface Water Drainage

The site is located in the area of Caerphilly County Borough Council which is the Lead Local Flood Authority (LLFA) and the Sustainable Drainage Approval Body (SAB).

The Drainage Strategy has been undertaken in accordance with the SuDS Standards[3]. A Full SAB application will be submitted for the approval of surface water drainage system. The design of the SuDS features and the assessment of their efficiency to satisfy the SuDS Standards is undertaken by following the SuDS Manual[4] and national guidance.

[3] Sustainable Drainage (SuDS) Statutory Guidance, Welsh Government 2019

[4] The SuDS Manual. CIRIA 753, 2015

Standard S1, regarding the surface water destination has five levels of priority as shown in Table 1.

Table 1. S1 Surface Water Runoff Destination

Priority Level	Surface Water Destination	Acceptability / Selection
Level 1	Surface water runoff is collected for use	Collection for use has been considered and has been found impractical on the grounds of lack of demand and viability/cost effectiveness.
Level 2	Surface water runoff is infiltrated to ground	Site investigation is yet to be carried out. Given the brownfield nature of the site and presence of made ground, managing runoff by infiltration is unlikely to be feasible. Infiltration potential to be confirmed by SI.
Level 3	Surface water runoff is discharged to a surface water body	There are no suitable receptors in the proximity of the site.
Level 4	Surface water runoff is discharged to a surface water sewer etc.	Proposed surface water system to discharge to highway drain as per the existing arrangement, as confirmed by a CCTV survey (Appendix G).
Level 5	Surface water runoff is discharged to a combined sewer	N/A

Runoff Destination

The surface water runoff from roof areas and hard surfacing will be managed via SuDS features. The attenuation required will be provided in the broader SuDS system. The network will be designed to accommodate a 1-in-100-year rainfall event, with an additional 30% allowance for increased rainfall intensity due to the effects of climate change.

Engineering Layout showing proposed drainage is included in Appendix C and the supporting calculations are attached in Appendix D.

The SuDS design was developed with the goal of meeting the interception criteria. This will be achieved by managing the surface water via suitably sized open bioretention area which will ensure sufficient evapotranspiration.

4 Conclusions

- The development is partially located in Flood Zone 2 from Rivers. Additional NRW model outputs assessment is required and will be provided in V2 of this report upon receipt of the NRW model outputs data.

- The site is located in Zone 1 from Sea, i.e., is considered to be at very low risk of tidal flooding. The site is located in Zone 1 of Surface Water and Small Watercourses.

- The development is classified as Highly Vulnerable and is permissible on the grounds of flooding subject to meeting acceptability considerations set out in section 11 of TAN15. An additional assessment is therefore required.

- The development is not increasing flooding elsewhere as the onsite drainage system will be designed to manage storm events up to and including the 1 in 100-year plus 30% allowance for increase in rainfall intensity due to climate change.

- Site Investigation is yet to be carried out to confirm infiltration potential, and the proposed surface water runoff is to be managed by infiltration. The surface water system will comprise a number of small-scale SuDS components.

- Foul connection to the existing combined network running through the site will be made in coordination with DCWW. Pre-planning advice has been sought from DCWW. The surface water network will discharge at reduced rates to the nearest highway network as per the existing arrangement, as confirmed by a CCTV survey.

Appendix A Proposed Site Layout

Proposed site layout

1 : 200

Revisions

A	11.12.2025	Landscape info added

Hard & Soft landscpaing key

- Indicates Cedar colour 'Tobermore Hydropave tegula 240' permeable block paving
- Indicates permeable resin bound aggregate
- Indicates clean grey gravel
- Indicates grassed areas - Provide topsoil and turfing as section Q30 and D20
- Proposed hedgerow / shrub planting
- Proposed wildflower habitat
- Indicates areas of bio-retention planting as per SUDs strategy (See engineering & landscape layout for full details)
- Indicates proposed trees

See TDA landscaping layout for detail of all planting / species

New boundary treatments

- Retaining walls surmounted with 1100mm Metal railings - for protection from falls
- 900mm High dwarf wall formed in reclaimed stone

Refer to engineers layout for locations of retaining walls. Retaining walls to be formed using facing brickwork with brick on edge coping (subject to wall thickness)

Schedule of accommodation

Block 1
11no. 1b2p Apartments @ min 47.5m²
1no. 1b2p WC Apartment @ 74.5m²

Block 2
11no. 1b2p Apartments @ min 47.5m²
1no. 1b2p WC Apartment @ 74.5m²

Total 24no. Homes

North

2 0 2 4 6 8 10 m

1:200

Notes

Do not scale from this drawing. Use figured dimensions only, which are displayed in millimeters unless stated otherwise. The contractor is requested to check all dimensions before work is put in hand. Any discrepancies within the drawing should be reported prior to commencement of works.

CHAMBERLAIN MOSS KING
architecture

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Project	Bedwlwyn Road
Project number	N559 / P
Client	WWHA
Title	Proposed site layout
Drawing number	A003
Scale	1 : 200 at A1
Revision	A
Status	PAC
Drawn	MM
Date	15.11.2025

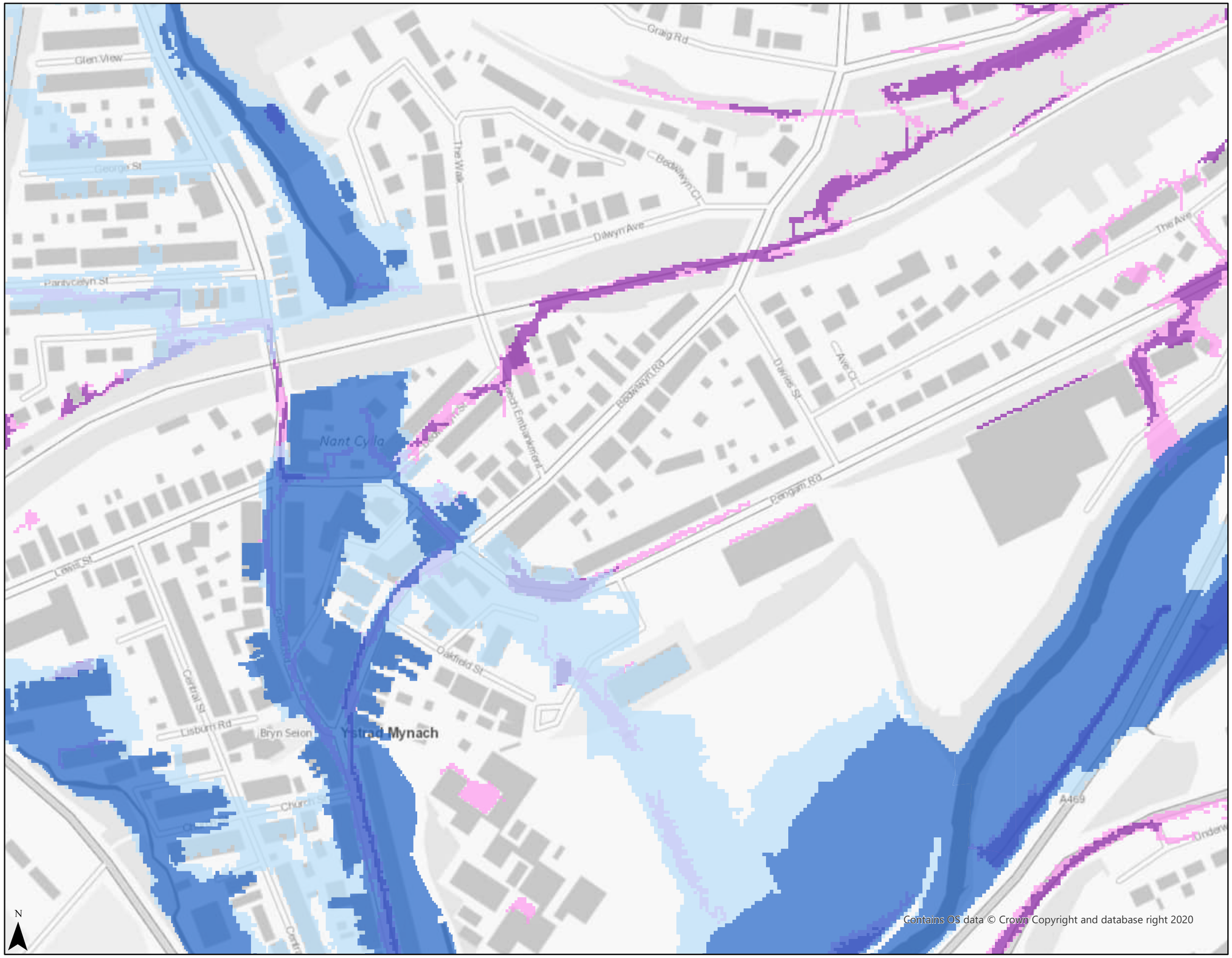
Appendix B NRW Flood Maps

Flood Map for Planning

Cyfoeth Naturiol Cymru
Natural Resources Wales

Flood Map for Planning - Basic

Enter title (max 35 characters)



Legend

TAN15 Defended Zones

- Rivers
- Sea
- Rivers and Sea

Rivers and Sea

- Flood Zone 3
- Flood Zone 2

Surface Water and Small Watercourses

- Flood Zone 3
- Flood Zone 2

Scale at A3: 1:2,500

Date: 21/11/2024

0.1 0.05 0 0.1

km

British National Grid

Disclaimer

https://naturalresources.wales/flooding/disclaimer-for-our-flood-and-coastal-erosion-risk-maps/?lang=en

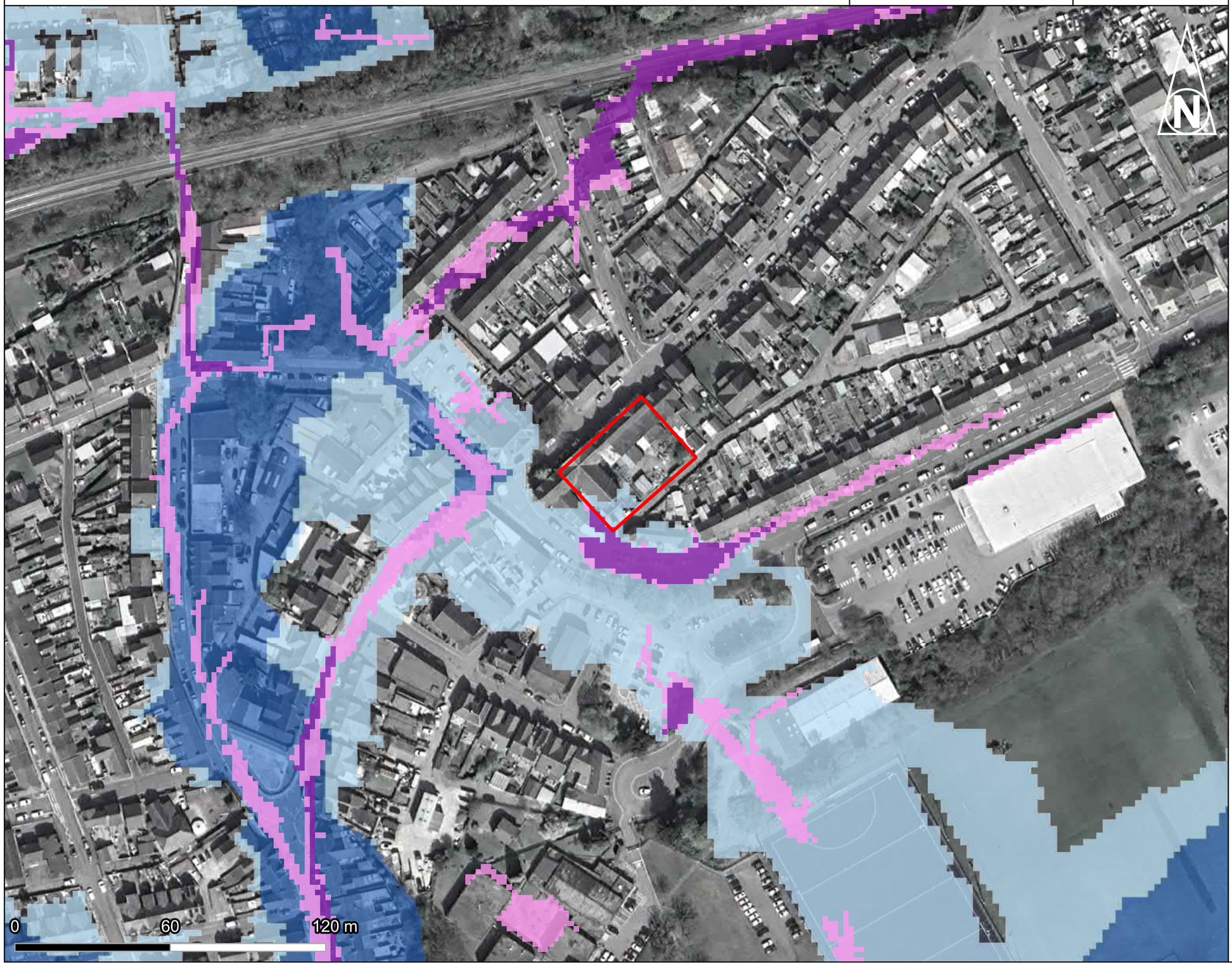
Flood Map for Planning

Project: 2685 - Bedwlwyn, Ystrad Mynach-V1
Author: Pat Obermajer
Date: 08.12.2025

Address: Bedwlwyn, Ystrad Mynach
OS Grid Reference: ST146944

1 in 1500 @ A3

PHG Consulting
107 Cowbridge Rd East,
Cardiff
CF11 9AG



Key

Application Boundary

Flood Map for Planning

Rivers
Flood Zone 2
Flood Zone 3

Seas
Flood Zone 2
Flood Zone 3

Surface Water and Small Watercourses
Flood Zone 2
Flood Zone 3

TAN15 Defended Zones
Rivers
Sea

Flood Zone 3 displays the extent of flooding from:
- rivers with a 1% (1 in 100) chance or greater of happening in any given year, including an allowance for climate change.
- the sea with a 0.5% (1 in 200) chance or greater of happening in any given year, including an allowance for climate change.
- Surface water & small watercourses with a 1% (1 in 100) chance or greater of happening in any given year, including an allowance for climate change.

Flood Zone 2 displays the extent of flooding from:
- Rivers with less than 1% (1 in 100) but greater than or equal to 0.1% (1 in 1,000) chance of happening in any given year, including an allowance for climate change.
- the Sea with less than 0.5% (1 in 200) but greater than or equal to 0.1% (1 in 1,000) chance of flooding in any given year, including an allowance for climate change.
- Surface water & small watercourses with less than 1% (1 in 100) but greater than or equal to 0.1% (1 in 1,000) chance of happening in any given year, including an allowance for climate change.

Appendix C Engineering Layout

Engineering Layout

T1

T2

ExMH
ST14947404

ExMH
ST14946401

ExMH
ST14946404

ExMH
ST14946403

ExMH
ST14946450

CWS 225mmØ

225mmØ

115.85

114.50

114.38

115.00

20% INTERCEPTION REQUIRED FOR SAB - EQUATES TO 65m² RAINGARDEN AREA PER UNIT. BASIC AREAS SHOWN SUBJECT TO LANDSCAPE DESIGN

20% INTERCEPTION REQUIRED FOR SAB - EQUATES TO 65m² RAINGARDEN AREA PER UNIT. BASIC AREAS SHOWN SUBJECT TO LANDSCAPE DESIGN

Legend

- Existing Welsh Water Combined Sewer
- Adoptable Diverted Combined Sewer & Manhole (To be adopted under Section 185 Agreement)
- Adoptable foul lateral drain (100Ø unless shown otherwise) (SFA7th)
- Adoptable foul inspection chamber <3.0m deep with restricted access depths over 1.2m (Refer to lateral schedule - SFA7th).
- Adoptable surface water lateral drain (100Ø unless shown otherwise) (SFA7th)
- Adoptable surface water inspection chamber <3.0m deep with restricted access depths over 1.2m (Refer to lateral schedule - SFA7th).
- Private foul access chamber, depth to invert 700 mm, (225Ø)
- Foul inspection chamber <3.0m deep with restricted access depths over 1.2m.
- Private surface water drain (100Ø unless shown otherwise)
- Private surface water inspection chamber <3.0m deep with restricted access depths over 1.2m.
- Rodding eye (450mm deep unless noted otherwise)
- Drive Gully
- Channel / Aco drain or similar approved
- FFL Level
- Proposed spot level
- Proposed fall and gradient
- Underbuild
- Retaining Wall
- Overland flow/flood exceedance route
- Steps (maximum rise 150mm minimum going 300mm, maximum of 12 steps per flight)
- Building Regulations Part M level landing (to be 900 X 1200 where head on and 1200 x 1200 where not head on, to be be graded away from threshold at 1:60)
- Drainage grip (300mm wide 700mm deep filled with 550mm wrapped pea shingle and topped with 150mm top soil)
- Raintaina Filter Chamber. or similar approved
- Rainwater Butt (with overflow)
- SuDS planter - SuDSPod by GreenBlue Urban, or similar approved
- Rainwater Pipe
- Bioretention Area

Rev.	Date.	Details.	By.	Chk.
A	11.12.25	Initial issue for Planning.	SJD	TOR
/	05.12.25	First Issue.	SJD	TOR

Amendments

Client:

Tai Wales & West Housing

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E : enquiries@phg-consulting.com
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@PHG_consulting
www.linkedin.com/company/phg-consulting-engineers

Project:

Bedwlwyn Road
Ystrad Mynach

Drawing title:

Engineering Layout

Drawn:	Chk:	Status:	Scale at A2:
SJD	TOR	Preliminary	1:250

Date:	Job no.	Drg. no.	Rev.
Dec 2025	2685	100	A

Appendix D Hydraulic Calculations

ICP SUDS Mean Annual Flood

Input

Return Period (years)	100	Soil	0.400
Area (ha)	0.180	Urban	0.750
SAAR (mm)	1391	Region Number	Region 9

Results l/s

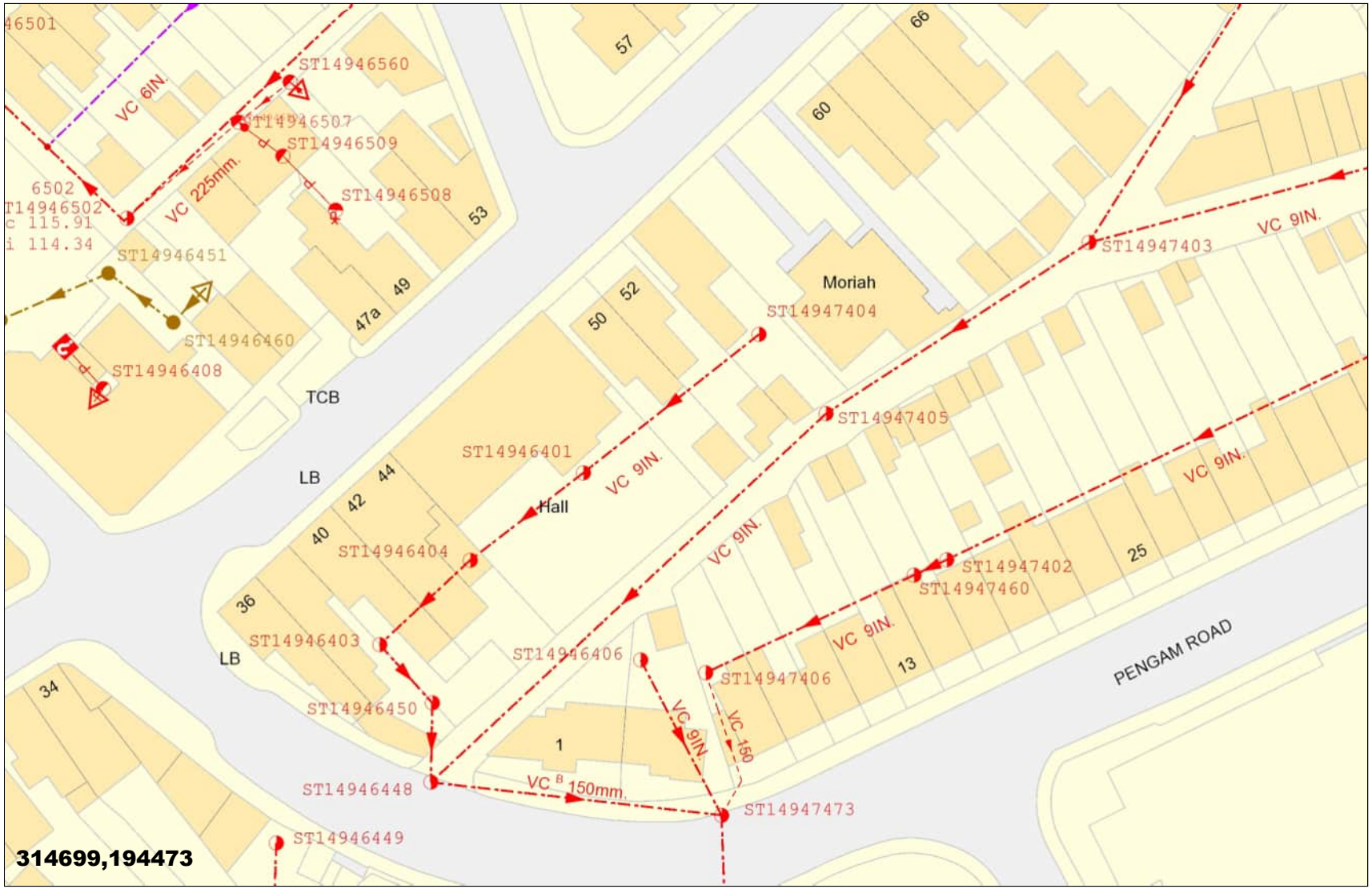
QBAR Rural	1.4
QBAR Urban	3.2
Q100 years	5.2
Q1 year	2.8
Q30 years	4.8
Q100 years	5.2

Appendix E DCWW Records

Dŵr Cymru
Welsh Water

21/11/2024

Scale: 1: 750



LEGEND

Clean Water

- Sluice Val
- Air Val, SINGLE
- Tap
- Pressure Reducing Valve
- Meter
- BULK Meter
- FH
- Cap
- Existing Main
- NON COMPANY

Sewerage External

- Foul
- Surface Water
- Combined
- Rising Main
- Private
- Treatment Works
- Pumping Station
- Special Purpose
- Unknown End
- Change, Combined Overflow
- Outfall, FOUL
- Lamp Hole, Foul
- Private Sewer Transfer
- Lateral Drain
- Inspection Chamber

Dwr Cymru Cyfyngedig ('the Company') gives this information as to the position of its underground apparatus by way of general guidance only and on the strict understanding that it is based on the best information available and no warranty as to its correctness is relied upon In the event of excavations or other works made in the vicinity of the company's apparatus and any onus of locating the apparatus before carrying out any excavations rests entirely on you. The information which is supplied hereby the company, is done so in accordance with statutory requirements of sections 198 and 199 f the water industry Act 1991 based upon the best Information available and in particular, but without prejudice to the generality of the foregoing, it should be noted that the records that are available to the Company may not disclosure the existence of a drain sewer or disposal main laid before 1 September 1989, or if they do, the particulars thereof including their position underground may not be accurate. It must be understood that the furnishing of this information us entirely without prejudice to the provision of the New Roads and Street Works Act 1991 and the company's right to be compensated for any damage to its apparatus.

EXACT LOCATION OF ALL APPARATUS TO BE DETERMINED ON SITE

Whilst every reasonable effort has been taken to correctly record the pipe material of DCWW assets, there is a possibility that in some cases pipe material (other than Asbestos Cement or Pitch Fibre) may be found to be Asbestos Cement (AC) or Pitch Fibre (PF). It is therefore advisable that the possible presence of AC or PF pipes be anticipated and considered as part of any risk assessment prior to excavation

Appendix F CCTV Survey Extract

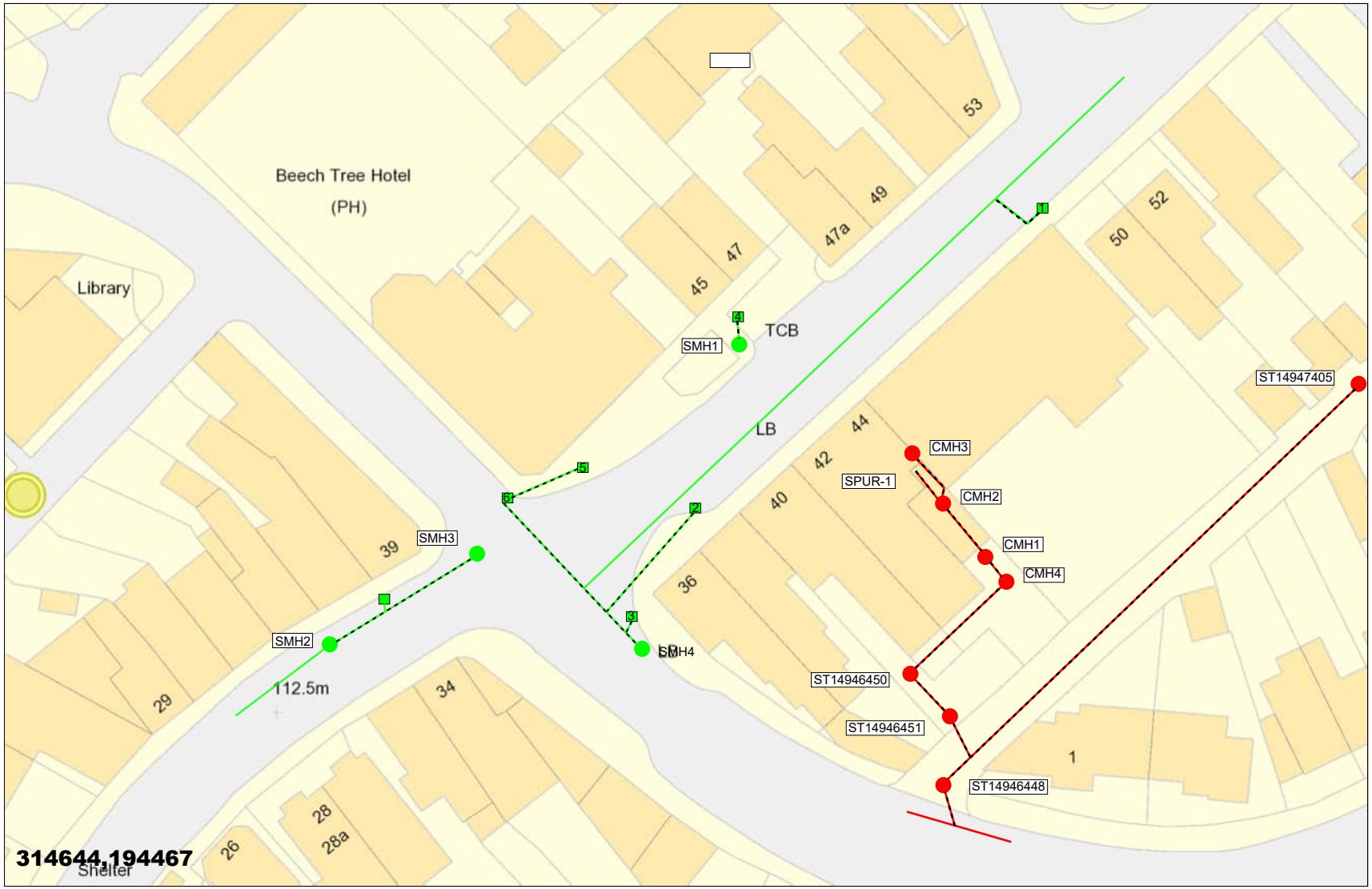
Dŵr Cymru
Welsh Water

DRAINTECH
Cleaning • Surveys • Lining • Civils

Job/Plan ref: 20382 - 01 - 001

09/06/2025

Scale: 1: 611



LEGEND

Clean Water

- Sluice Val
- Air Val, SINGLE
- Tap
- Pressure Reducing Valve
- Meter
- BULK Meter
- FH
- Cap
- Existing Main
- NON COMPANY

Sewerage External

- Foul
- Surface Water
- Combined
- Rising Main
- Private
- Treatment Works
- Pumping Station
- Special Purpose
- Unknown End
- Change, Combined Overflow
- Outfall, FOUL
- Lamp Hole, Foul
- Private Sewer Transfer
- Lateral Drain
- Inspection Chamber

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