

Flood Consequence Assessment & Drainage Strategy Report

May 2026

1 INTRODUCTION

- 1.1 This document has been prepared on behalf of Tai Tarian Ltd in support of a planning application for a proposed development of 4 no. dwellings at Menai Avenue, Croeserw.
- 1.2 This document provides a summary of the proposed drainage strategy associated with the proposed development along with an assessment of potential flood risk.

2 EXISTING SITE

- 2.1 The location of the site and surrounding area is shown in Figure 2.1 below.



Figure 2.1 – Site Location

- 2.2 The application site is Greenfield and has an approximate area of 0.236 hectares. It is bound by Pen Y Bryn to the north, existing adopted highway to the east, Menai Avenue to the south and existing dwellings to the west.
- 2.3 A Topographical Survey has been produced and confirms the site generally falls north-west to south-east at an average gradient of 1 in 50.

3 EXISTING DRAINAGE

- 3.1 There is an existing DCWW combined sewer crossing the south-western corner of the site although this will not be impacted by the development proposals.
- 3.2 An existing 300mm diameter highway drain runs west to east in Menai Avenue to the south of the site.
- 3.3 DCWW sewer records and CCTV drainage information is included at **Appendix A**.

4 EXISTING GROUND CONDITIONS

- 4.1 Site investigation works consisting of trial pits and infiltration testing were undertaken by Integral Geotechnique in September & October 2025. The trial pit logs and test results are included at **Appendix B**.
- 4.2 Integral Geotechnique undertook 2 no. trial pits within the application site. These showed made ground to varying depths underlain by gravel and thinly bedded mudstone.
- 4.3 Infiltration testing was undertaken in trial pits SA6 and SA7. Significant water ingress was encountered at SA6, whilst an infiltration design rate of 3.9×10^{-5} m/s has been recommended for SA7.

5 GREENFIELD RUNOFF

- 5.1 Greenfield run off rates have been calculated using HR Wallingford's 'Greenfield Runoff Rate Estimation Tool' using the FEH statistical (2025) method. The runoff calculations are included at **Appendix C** and are summarised in Table 2.1 below.

Table 2.1 – Greenfield Runoff Rates

Return Period	Runoff Rate (l/s/ha)
Q2 Year	26.8
QBar	28.8
Q30 Years	51.2
Q100 Years	62.7

6 FLOOD RISK

- 6.1 Natural Resources Wales' Flood Map for Planning confirms the application sites have no risk of flooding from rivers and sea.
- 6.2 The Flood Map for Planning does however identify some localised areas of adjacent land and highway as being within Flood Zones 2 & 3 Surface Water and Small Watercourse Flood Zones, as shown in Figure 2.2 below.

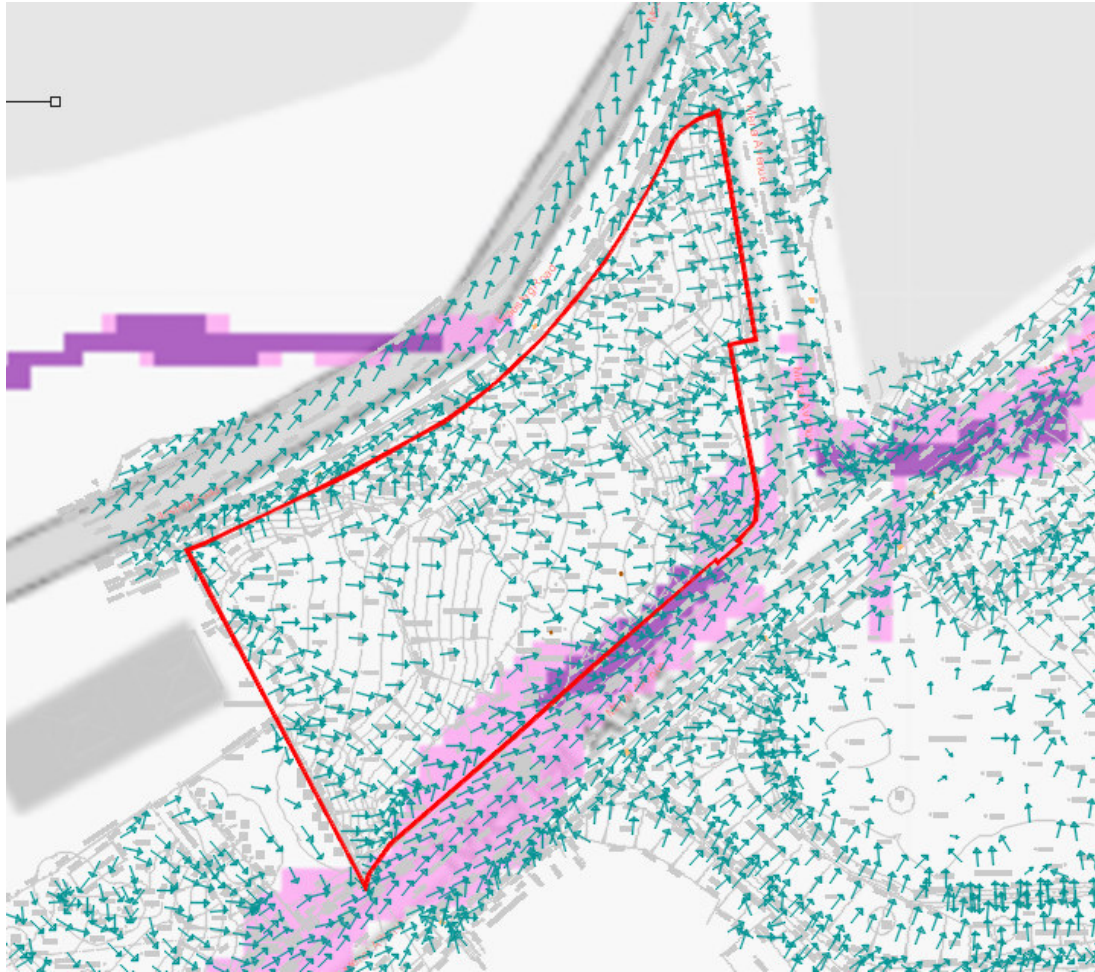


Figure 2.2 – Surface Water & Small Watercourse Flood Map

6.3 It can be observed from Figure 2.2 that some surface water flooding is identified along Menai Avenue fronting the proposed development. Menai Avenue falls away to the east at a significant gradient therefore any risk of site flooding from highway runoff would be negligible.

6.4 Flood exceedance overland flow routes for the proposed development have been assessed. As proposed site development levels generally fall toward Menai Avenue, any on-site flooding would be conveyed to these areas and away from the proposed dwellings.

7 DEVELOPMENT PROPOSALS

7.1 The planning application is for the development of 4 new affordable dwellings and associated parking.

7.2 The proposed Site layout and drainage proposals are shown on the proposed Engineering Appraisal Plan included at **Appendix D**.

- 7.3 Based on the proposed site layout, the post-development impermeable area for the development, including proposed roof, yard and access areas would be approximately 0.031 ha.

8 SURFACE WATER DRAINAGE

- 8.1 The proposed drainage strategy is indicated on the Engineering Appraisal Plan included at **Appendix D**.
- 8.2 As set out in Section 4.3, soakaway/infiltration is considered suitable at the eastern end of the site (SA7). It is therefore proposed to discharge as much surface water runoff as possible to ground in this area. The infiltration feature is to comprise a bioretention system underlain by cellular storage tanks.
- 8.3 Any residual runoff is proposed to be discharged to the existing 300mm highway drain in Menai Avenue, with discharge rates restricted to Greenfield Runoff Rates (QBar). Attenuation is to be provided using open graded sub-base below permeable paving parking areas.

9 WATER QUALITY

- 9.1 As part of the surface water strategy for the development, it is proposed to utilise various SuDS methods including permeable paving, rain gardens and infiltration where appropriate.
- 9.2 As shown in Table 5.3 below, guidance set out in SuDS Manual Chapter 26: *Water Quality*, indicates the pollution hazard level for the proposed development is considered to be 'low' to 'Very Low'.

Table 5.3 – Pollution hazard indices for Residential land use

Land Use	Pollution Hazard Level	Total Suspended Solids (TSS)	Metals	Hydrocarbons
Residential roofs	Very Low	0.2	0.2	0.05
Driveways, low traffic roads	Low	0.5	0.4	0.4

- 9.3 As shown in Table 5.4 below, the SuDS mitigation indicates suggest the proposed use of an online detention basin will ensure the surface water runoff is sufficient treated prior to being discharged to the relevant outfalls.

Table 5.4 – SuDS mitigation indices for discharge to surface waters

Type of SuDS component	Mitigation Indices		
	TSS	Metals	Hydrocarbons
Porous Pavement	0.7	0.6	0.7
Rain Garden	0.8	0.8	0.8

9.4 It is therefore considered the proposed development will not have an adverse impact on water quality in the receiving watercourse.

10 MAINTENANCE

10.1 A suggested maintenance regime will be provided at detailed design stage. However, it is assumed that responsibility for maintenance of all ‘domestic’ SuDS features associated with the residential development would remain with the Housing Authority in perpetuity.

10.2 Full details of the proposed surface water proposals for the development will be submitted to Neath Port Talbot SAB for formal SAB approval in due course.

11 FOUL DRAINAGE

11.1 The proposed foul drainage strategy is shown on the Engineering Appraisal Plan included at **Appendix D**.

11.2 As shown, it is proposed to discharge foul flows from the proposed development to the existing 225mm Combined Sewer in Menai Avenue.

11.3 The new foul water sewer network will be adopted by DCWW under a Section 104 Agreement where appropriate.

12 CONCLUSION

12.1 It is concluded that a suitable surface water and foul drainage strategy can be achieved with no adverse impact on the receiving watercourse, storm or foul water networks.

Appendix A

DCWW Sewer Records & CCTV Plans



LEGEND

Clean Water

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

Sewerage External

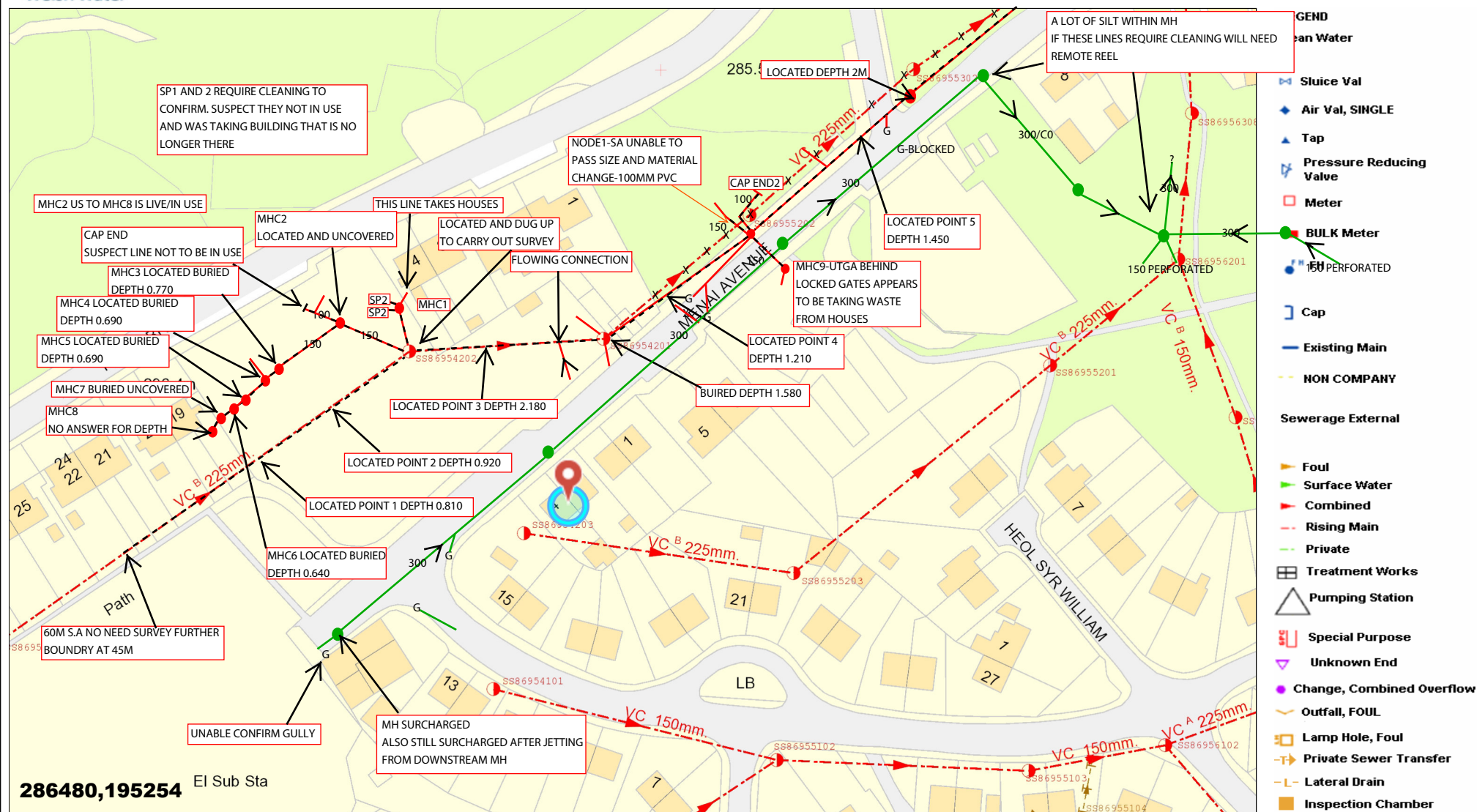
-  Foul
-  Surface Water
-  Combined
-  Rising Main
-  Private
-  Treatment Works
-  Pumping Station
-  Special Purpose
-  Unknown End
-  Change, Combined Overflow
-  Outfall, FOUL
-  Lamp Hole, Foul
-  Private Sewer Transfer
-  Lateral Drain
-  Inspection Chamber

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 of 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 disclose 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 is 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

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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.



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5. 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 B

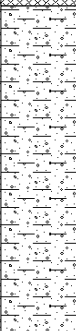
Infiltration Test Results



Figure 2: Site Plan

Project: Menai Avenue, Croeserw	Job No.: 14402	Intégral Géotechnique	Integral House, 7 Beddau Way, Castlegate Business Park, Caerphilly, CF83 2AX. Tel: 029 2080 7991
Client: Tai Tarian Limited	Scale: n/a		

 Intégral House, 7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX Tel. 029 20807991 Fax. 029 20862176 mail@integralgeotec.com			Project Name: Menai Avenue			Project No.: 14402		Trial Pit No.: SA6 Sheet 1 of 1	
Location: Croeserw			Client: Tai Tarian Limited			Logged By: JM		Scale 1:25	
Equipment: JCB 4CX			Coordinates:			Dimensions 1.60m			
Date Excavated: 23/10/2025			Level:			Depth : 1.90m 0.80m			
Samples & In-situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description			
Depth (m)	Type	Results							
0.50	ES		0.10		 Dense vegetation over soft brown slightly sandy slightly gravelly SILT with roots and rootlets. Gravel is fine to coarse subangular to subrounded of sandstone.	1			
				 Loose grey locally black slightly clayey sandy GRAVEL with low cobble and boulder content of brick and concrete. Gravel is fine to coarse of mudstone and sandstone. Inclusions of glass, fabric, ceramic, clinker, slate and metal (MADE GROUND).					
				 ...metal pipe recovered at 1.0m bgl measuring 1.5m in length.					
			1.70		 Weak to very weak grey stained orange brown thinly bedded MUDSTONE.	2			
			1.90		 Recovered as slightly sandy GRAVEL with a medium cobble content of tabular mudstone. Gravel is fine to coarse angular to subangular of mudstone.				
						End of Trialpit at 1.90 m			
						3			
						4			
						5			
Remarks: 1. Trial pit terminated at 1.9m due to hard dig within bedrock.			Groundwater: 1. Major groundwater influx at 1.6m.			Key: D - Small disturbed sample B - Bulk disturbed sample ES - Environmental soil sample W - Water sample			
			Stability: 1. Pit wall instability associated with cobble and boulder removal.						

 Intégral House, 7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX Tel. 029 20807991 Fax. 029 20862176 mail@integralgeotec.com			Project Name: Menai Avenue			Project No.: 14402		Trial Pit No.: SA7 Sheet 1 of 1	
Location: Croeserw			Client: Tai Tarian Limited			Logged By: JM		Scale 1:25	
Equipment: JCB 4CX			Coordinates:			Dimensions Depth : 2.40m 0.70m 2.10m			
Date Excavated: 23/10/2025			Level:						
Samples & In-situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description			
Depth (m)	Type	Results							
0.60	ES		0.50			Loose grey and black locally reddish brown gravelly SAND with low cobble and boulder content of concrete. Gravel is fine to coarse angular to subrounded of sandstone and mudstone. Inclusions of plastic, clinker and metal (MADE GROUND).			
			1.20			Loose yellowish brown and black SANDS and GRAVELS. Gravel is fine to coarse angular to subrounded of sandstone and mudstone (MADE GROUND).			
1.30	D		2.30			Loose light grey slightly sandy clayey GRAVEL. Gravel is fine to coarse angular to subangular of sandstone and mudstone.			
			2.40			Weak to very weak grey stained orange brown thinly bedded MUDSTONE.			
						Recovered as slightly sandy GRAVEL with a medium cobble content of tabular mudstone. Gravel is fine to coarse angular to subangular of mudstone. End of Trialpit at 2.40 m			

Remarks:
 1. Trial pit terminated at 2.4m due to hard dig within bedrock.

 2. Soil infiltration test carried out.

Groundwater: 1. No groundwater encountered.

 Stability: 1. Stable in the short term.

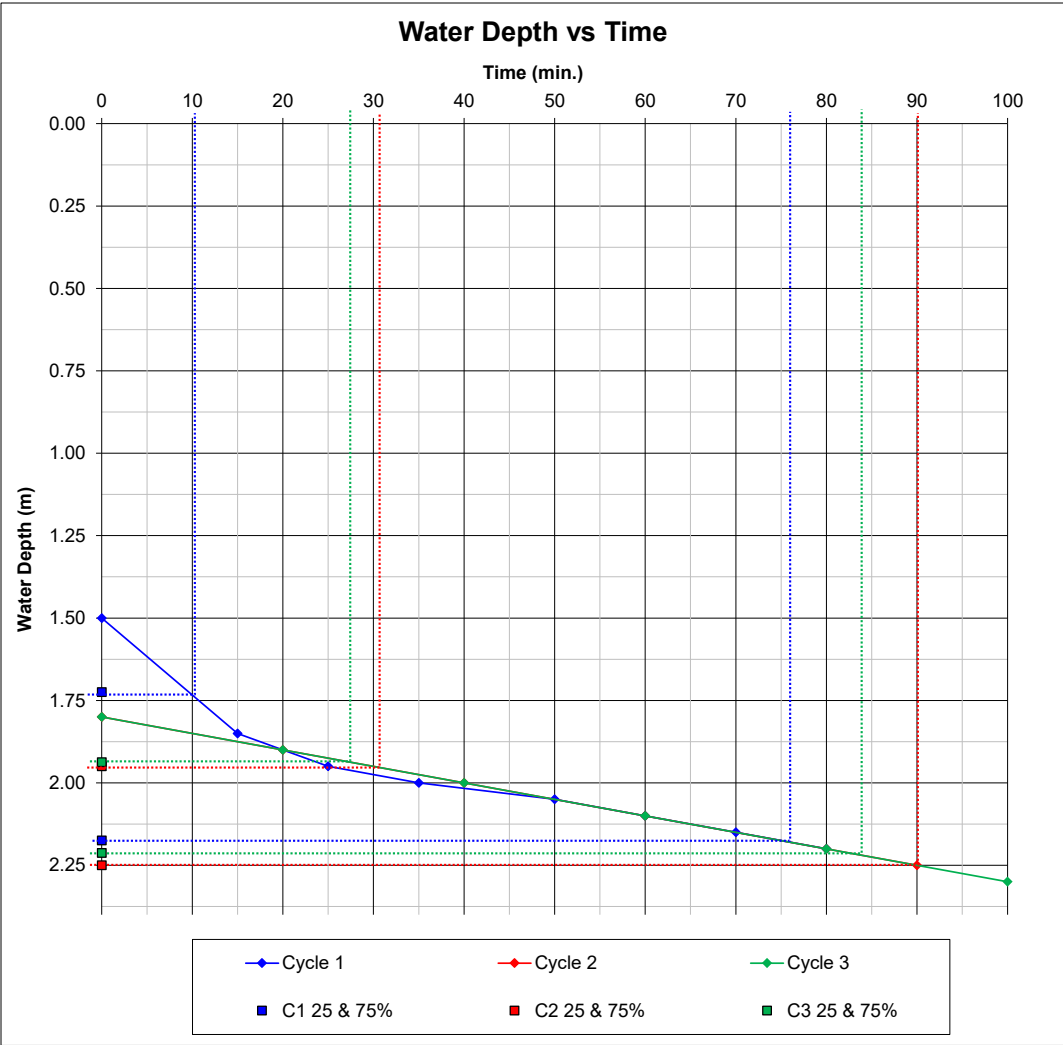
Key:
 D - Small disturbed sample
 B - Bulk disturbed sample
 ES - Environmental soil sample
 W - Water sample



14402 Menai Avenue, Croeserw

Trial Pit Information	
Length (m)	2.10
Width (m)	0.70
Depth (m)	2.40
Groundwater	None
Weather Conditions	Dry
Date	23-Oct-25

Remarks
1. Test undertaken within natural strata.

[illegible]

Design Soil Infiltration Rate: 3.9E-05 m/s

Appendix C

Greenfield Runoff Calculations

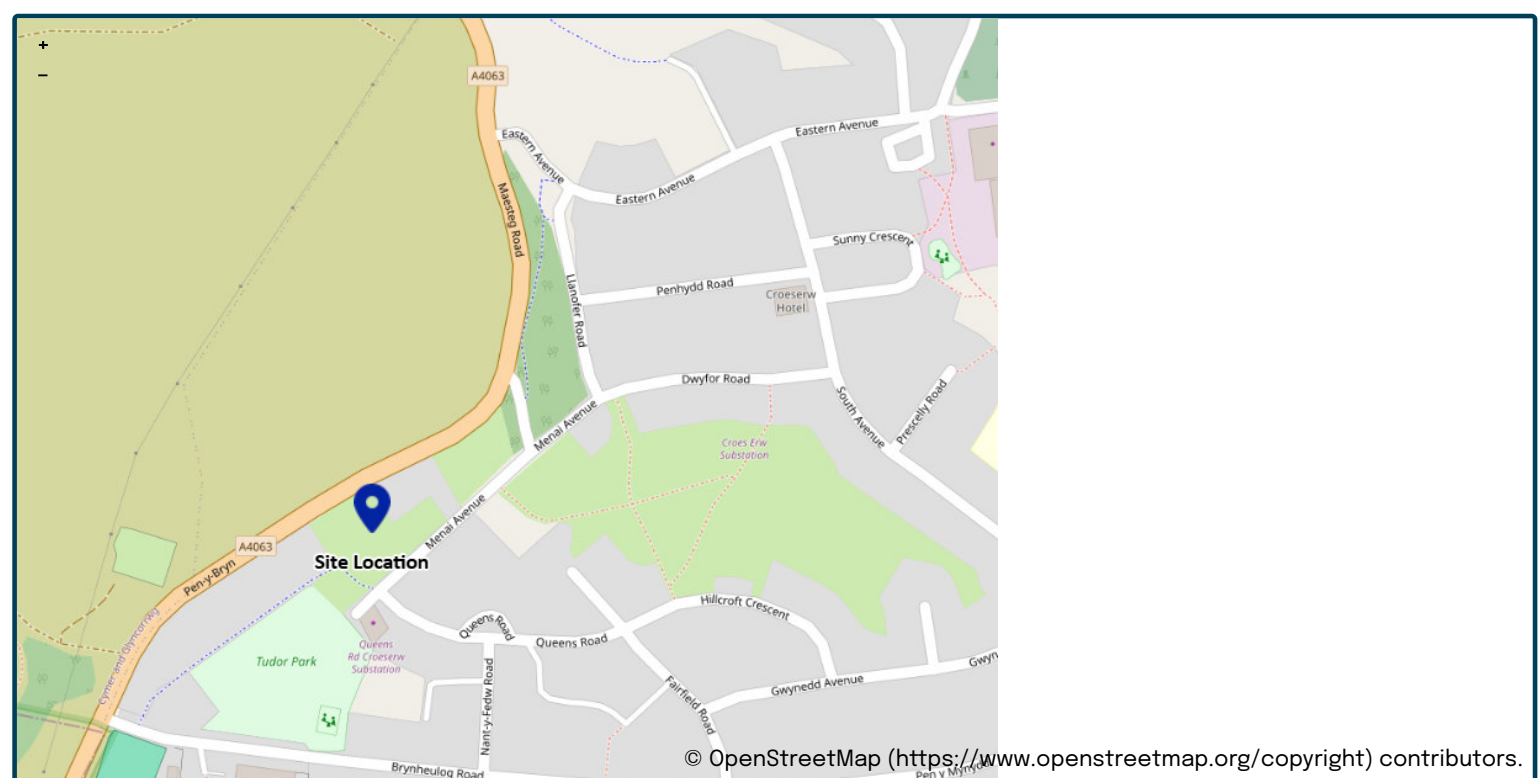
This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance “Rainfall runoff management for developments”, SC030219 (2013), the SuDS Manual C753 (CIRIA, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Project details

Date	24/02/2026
Calculated by	Richard John
Reference	2754
Model version	2.2.3

Location

Site name	Menai Avenue
Site location	Croeserw



Site easting (British National Grid)	286421
Site northing (British National Grid)	195245

Site details

Total site area (ha)	1	ha
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Greenfield runoff

Method

Method	FEH statistical (2025)
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FEH statistical (2025)

	<u>My value</u>	<u>Map value</u>
SAAR9120 (mm)	2389	mm
BFIHOST19scaled	0.304	
QMed-QBar conversion	1.075	1.075
QMed (l/s)	26.8	l/s
QBar (FEH statistical 2025) (l/s)	28.8	l/s

Growth curve factors

	<u>My value</u>	<u>Map value</u>
Hydrological region	9	9
1 year growth factor	0.88	
2 year growth factor	0.93	
10 year growth factor	1.42	
30 year growth factor	1.78	
100 year growth factor	2.18	
200 year growth factor	2.46	

Results

Method	FEH statistical (2025)
Flow rate 1 year (l/s)	25.3
Flow rate 2 year (l/s)	26.8
Flow rate 10 years (l/s)	40.8
Flow rate 30 years (l/s)	51.2
Flow rate 100 years (l/s)	62.7
Flow rate 200 years (l/s)	70.8

Please note runoff estimation is subject to significant uncertainty. Results are therefore normally reported to only 1 decimal place. Where 2 decimal places are provided, this does not indicate accuracy to this level, it has been adopted to prevent ‘zero’ figures from being reported. Outputs less than 0.01 l/s are reported as 0.01 l/s.

Disclaimer

This report was produced using the Greenfield runoff rate estimation tool (2.2.3) developed by HR Wallingford and available at uksuds.com (<https://www.uksuds.com/>). The use of this tool is subject to the UK SuDS terms and conditions and licence agreement, which can both be found at uksuds.com/terms-conditions (<https://www.uksuds.com/terms-conditions>). The outputs from this tool have been used to estimate Greenfield runoff rates. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, Centre for Ecology and Hydrology, Wallingford Hydrosolutions or any other organisation for the use of these data in the design or operational characteristics of any drainage scheme.

Appendix D

Engineering Appraisal Plan



1. All information provided on this drawing is intended for preliminary site appraisal/Planning purposes only.
2. The drawing is based upon limited information provided. As such, it is advised that detailed discussions should underwritten with relevant agencies e.g. Local Highway Authority, Local Sewerage Undertaker, Local SuDS Adoption Body etc in order to ascertain the acceptability of the proposals.
3. All drainage is indicative only. Existing low water sewer locations are shown based on DOWM sewer cover records. All storm water/SuDS elements are assumed indicative only at this stage, as details of existing storm sewers and/or infiltration rates were not available at the time of preparing this appraisal. However, it is assumed that tanked permeable driveways will be utilized, together with rain gardens, storage tanks/detention basins as required. Should infiltration not be suitable, infiltration systems or surface water management network shall be restricted to pre-development greenfield runoff rates.

289.84' Proposed Ground Level

Masonry Retaining Wall (Height Indicated)

Exposed Facing Brickwork (Height Indicated)

1 in 2 max Embankment

Finished Floor Level

Steps (No. Indicated)

Existing Gully/Combined Drain/Sewer (from Drinteach CCTV survey)

Existing Storm Drain/Sewer (from Drinteach CCTV survey)

Existing Sewer to be Abandoned

Existing Combined Water Sewer (from sewer records)

Orifice chamber (flow control)

Domestic storm water drainage

Rodding Eye

Type 4 SW Inspection Chamber

Type 3 SW Inspection Chamber

Foul Water Drain (Non-Adoptable)

Foul Water Sewer (Adoptable)

Type 4 FW Inspection Chamber (Non-Adoptable)

Type 3 FW Inspection Chamber (Non-Adoptable)

Type 4 FW Inspection Chamber (Adoptable)

Type 3 FW Inspection Chamber (Adoptable)

Porous asphalt / permeable paved driveway

Rain Garden to provide interception and Treatment

Infiltration/Boretention area

Above Ground Rain Garden

SuDSpood by GreenBlue Urban o.s.a.

Water Butt

Flow from rwp to permeable surfacing etc

Root Protection Area to existing trees

Proposed SuDS Strategy is subject to approval from NPT SAB.

Infiltration Testing undertaken December 2025 provided the following results:

SA6	- 1.6×10^{-4} (groundwater at 1.6m bgl)
SA7	- 3.9×10^{-5}

Foul drainage layouts subject to detailed design, building surveys and consultation with DCWW.

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Rev	Date	By	CHK	Description
-	-	-	-	-

Client: Tai Tarian		Project: Menai Avenue, Croeserw Site 1		Drawing Title: Engineering Appraisal		 spring design	
Drawing Status: PLANNING SUBMISSION	Date: 02.2026	Drawn By: MCC	Checked: MCC	Director: 1:250 @ A1	Job No: 2754	Drawing No: 506	Rev: A
Unit 2 Chapel Barns Merthyr Mawr Bridgend CF32 0LS t: 01656 656267 e: mail@spring-consultancy.co.uk							

