DATRYS

Caernarfon | Mold
01286 671027
info@datrys.coop

Revision P3

Proposal: 36 Unit Housing Development
Address: Tyddyn Fletcher, Land Adj. Llanberis Road, Caernarfon

Initial Drainage Strategy:

Existing drainage

1. The site has no former usage other than agricultural land. There is an existing ditch located northwest within the site which discharges to an open ditch across A4086 Llanberis Road via a concrete culvert where it eventually meets Afon Cadnant.
2. There are two combined sewers present within the vicinity of the proposed site; one which lies outside the site's eastern boundary flowing from northeast to southwest (fronting Cibyn Industrial Estate). Another which lies outside the site's southwestern boundary flowing from south to northwest.
3. A surface water sewer is present and lies outside the eastern corner of the site's boundary, where the network crosses into Cibyn industrial estate.
4. An existing watermain crosses the proposed site from north to south. An easement of 3m each side of centreline is required.
5. There are highway gullies within the existing highway (A4086 Llanberis Road). Their connections and outfall destinations are yet to be identified.

Foul

1. A PPA application (**PPA0008827)** was made to DCWW in July 2024 relative to the proposed development of 36 units. The response received 23/07/24 advised a preferred connection point was suggested at chamber SH49622601 located immediately outside the southeast of site.

2. DCWW advised that a Developer Impact Assessment (DIA) is required as the site is assumed to overload the wastewater treatment works, Caernarfon WwTW and consideration of the impact of any additional spills as a result of additional flows are being assessed by DCWW. We requested that the DIA accounts for 90 units to assess the result for future phases proposed for the site. The DIA report was issued by DCWW on the 12th of March 2025, and stated that even though the additional development could impose a significant risk to site compliance, especially on TSS, that there is no cost appropriate solution for the development. Additional treatment, such as tertiary solids removal, would cost a significant amount, and due to the development being only 90 units, it is proposed that the additional risk is accepted by DCWW.

3. The preferred connection point at chamber SH49622601 was thought to be too shallow. We considered two potential options to remove foul water from the site. An onsite pumped solution to discharge to chamber SH49622601, or an offsite gravity network along the A4086 Llanberis Road highway and connecting into chamber SH48629606 fronting Cae'r Carreg junction.

4. The options were assessed, and the offsite gravity solution was thought to be the most cost-effective option. A discussion is ongoing with DCWW to substitute the point of connection.

Surface Water

Disposal of surface water is summarised as follows:

1. A site investigation has been carried out in advance of the scheme design. Based on the information received, two porosity tests were carried out, one of which failed and the other drained successfully. The Site Investigation was undertaken in late October 2024.
2. Further infiltration tests were required at the proposed western green area to prove permeability. The testing took place April 2025, where an additional two tests were carried out, one of which failed and the other drained successfully.
3. Following infiltration testing, the design approach was to discharge the site's surface water to an infiltration basin accompanied by a below ground cellular soakaway.
4. A soakaway was sized in line with the rate of infiltration and location of permeable ground. This proved the storage provided was insufficient to infiltrate the whole site.
5. A discharge to the existing ditch within the adjacent field will be required at a proposed discharge rate of 3.4l/s (QBar), additional storage is also required to manage the whole site during a 1 in 100 year +30% Climate Change +10% Urban Creep. An agreement with LLFA on the discharge rate will be sought.
6. The proposals will look to incorporate various SUDS features in order to meet the water quality, amenity and biodiversity requirements, through use of a mixture of raingardens, an infiltration basin and cellular soakaway and will incorporate porous paving where possible. Re-use of rainwater will be promoted through the provision of above ground water butts at the base of rainwater down-pipes to provide the ability to provide re-use of rainwater.

Supporting Information:

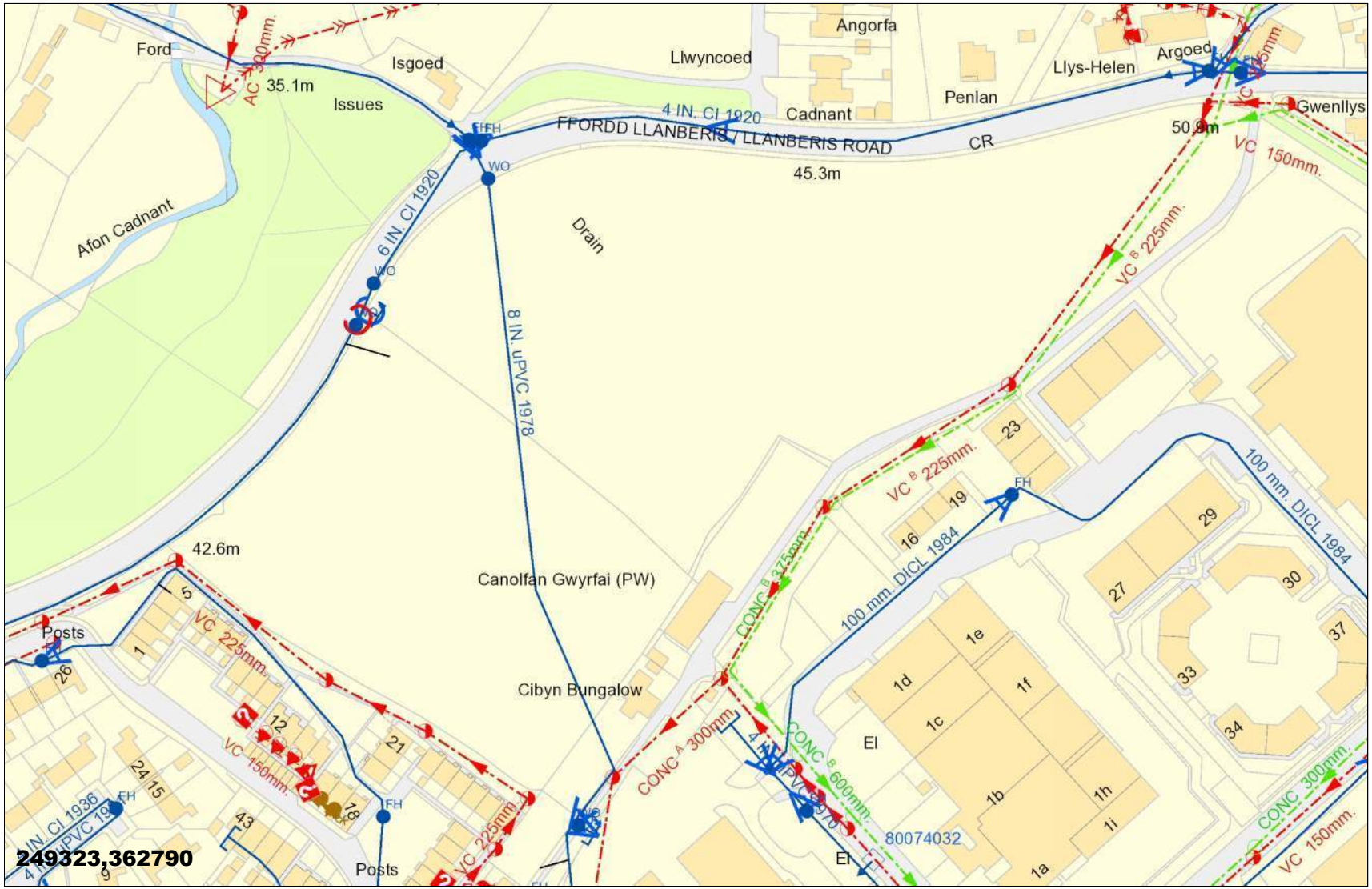
- DCWW Apparatus Mapping
- SAB Pre-Application
- SK501-1 Foul Drainage Layout Scheme
- SK501-3 Proposed Surface Water Drainage Layout Scheme
- DCWW Developer Impact Assessment Report
- DCWW Pre Planning Advice

Dŵr Cymru
Welsh Water

Tyddyn Fletcher, Llanberis Road

28/06/2024

Scale: 1: 2000



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

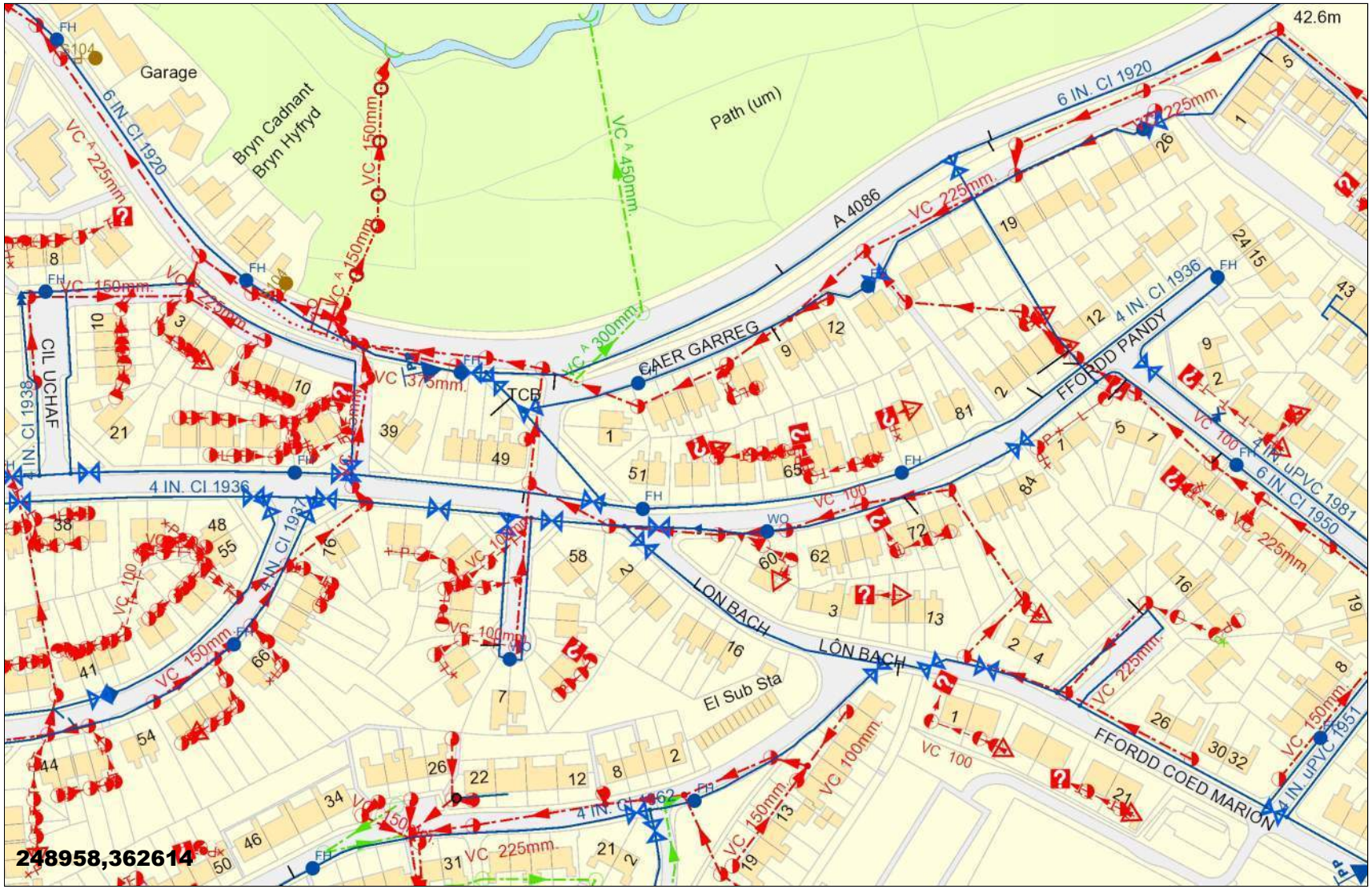
Whilst every reasonable effort has been taken to correctly record the pipe material of DCWW assets, there is a possibility that in some cases pipe material (other than Asbestos Cement or Pitch Fibre) may be found to be Asbestos Cement (AC) or Pitch Fibre (PF). It is therefore advisable that the possible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

Dŵr Cymru
Welsh Water

Tyddyn Fletcher

07/10/2024

Scale: 1: 2000



LEGEND

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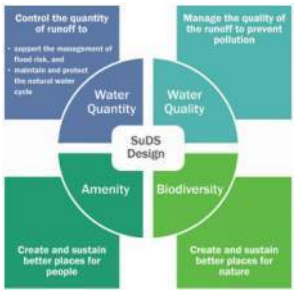
SAB details: Gwynedd Council

Flood & Water Management Act 2010

Schedule 3 Sustainable Drainage

SuDS Scheme Application for SuDS Approving Body (SAB) Approval – Wales



Application Form for Pre-Application Advice on SuDS on new developments, with reference to The Sustainable Drainage (Approval and Adoption Procedure) (Wales) Regulations 2018

Pre-Application Structure	
Pre-Application Form	*(To complete & return)*
Guidance on Completing the Pre-Application Form – including specific information and evidence required to support the application.	*(For guidance)*

(Use hyperlinks above to directly access the Form and Guidance)

Pre-Application Form

This form is based on the requirements provided by Welsh Government for the sole purpose of submitting information to the SuDS Approving Body (SAB) in accordance with the legislation detailed on this form and other relevant items of primary and subordinate legislation.

Please be aware that once you have downloaded this form, the SAB and Welsh Government will have no access to the form of the data you enter into it. Subsequent use of this form is solely at your discretion, including the choice to complete and submit it to the SAB in agreement with the declaration section.

Upon receipt of this form and any supporting information, it is the responsibility of the SAB to inform you of its obligations in regard to the processing of your application. Please refer to its website for further information on any legal, regulatory and commercial requirements relating to information security and data protection of the information you have provided.

Please Note:

1. This form is for **Pre-Application** discussions with SAB ONLY;
2. Consideration of this application will be based on compliance with the Statutory National Standards for Sustainable Drainage Systems (SuDS) for Wales. and Statutory Instruments;
3. You are advised to engage early, and directly, with the LPA and all other relevant organisations that may have an interest in your SuDS scheme proposal, including the SAB statutory consultees listed below:
    a. Sewerage undertaker
    b. National Resources Wales
    c. Highway Authority
    d. Canal & River Trust
    e. Internal Drainage Districts (NRW);
4. **For a valid SuDS Scheme Pre-Application to the SAB, ALL sections of this form SHOULD be completed;** and
5. You are encouraged to provide an initial response to the further questions contained in the Guidance on completing this form, and to submit as much initial technical information as possible about your SuDS scheme proposals (also as indicated in the Guidance); as this will assist the SAB with pre-application considerations and discussions.

We will process the information you provide so that we can deal with your application. We may also process or release the information to offer you documents or services relating to environmental matters and consult the public, public organisation and other organisations; provide information from the public register to anyone who asks or prevent anyone from breaking environmental law, investigate cases where environmental law may have been broken and take any action that is needed, and respond to requests for information under the Freedom of Information Act 2000 and the Environmental Information Regulations 2004 (if the Data Protection Act allows).

Please ensure that the information you submit is accurate and correct and does not include personal or sensitive information. If you require any further clarification, please contact the SAB directly.

If printed, please complete using block capitals and black ink prior to submitting to the SAB.

Please read through the Guidance and complete this application form carefully. If you fill in the application form correctly first time, the SAB can process it quicker.

Prior to the submission of a Full Application, applicants are strongly advised to make this Pre-Application submission to discuss their proposals with the SAB and ensure that an acceptable SuDS scheme is submitted later, at the Full Application stage. Please note that pre-application fees may apply.

Submissions made in support of this application shall be based upon current legislation and industry best practice including documents referenced in Guidance on Making SuDS Applications for SAB Approval.

Proposals submitted should be developed by a competent and suitability qualified professional, experienced in drainage/ SuDs / flood risk management design.

Where applicable, the LPA planning reference or unique identifier should be included.

Applicants should complete this form and submit it, together with relevant supporting documents, to Gwynedd Council's SuDs Approving Body.

Where applicable, payment of the Pre-Application fee can be made via BACS, Cheque (made payable to Gwynedd Council) or in person at one of our Contact Centres. The following reference should be quoted SuDSPreApp. Your application will not be processed until the application fee is received and cleared in full.

When you have completed the application form please submit the form and associated documents to:
Electronically: sab@gwynedd.llyw.cymru
Phone: 01758 704113
Postal: Suds Approval Body, YGC, Swyddfa'r Cyngor, Ffordd y Cob, Pwllheli, Gwynedd. LL53 5AA

If you are not sure about anything contained in the application form, please contact us.

Content

ALL sections of this form SHOULD be fully completed unless otherwise stated.

1. Applicant Details

Applicant Name and Address

Title and Name		
Company		Adra Tai Cyfyngedig
Suffix (unit/name/number)		
Address line 1		Tŷ Coch
Address line 2		Llys y Dderwen
Address line 3		Parc Menai, 9 Ffordd Y Parc
Town		Bangor
County		Gwynedd
Postcode		LL57 4BL
Phone number	**Mobile**	
	Works	0300 123 8084
	Home	
e-mail address		c.bracegirdle@datrys.coop

Agent Name and Address

Title and Name		Miss Cadi Bracegirdle
Company		Datrys Consulting Engineers
Suffix (unit/name/number)		Unit 1 Block C
Address line 1		Doc Fictoria
Address line 2		
Address line 3		
Town		Caernarfon
County		Gwynedd
Postcode		LL55 1TH
Phone number	**Mobile**	
	Works	01286671027
	Home	
e-mail address		c.bracegirdle@datrys.coop

Preferred contact	~~Applicant~~	Agent

2. Site Details

A general description of site location supported by a plan specifying the construction area and the extent of the drainage system should be submitted. Plans shall be at a scale of 1:2500. All plans should show the direction of North.

Name of proposed development	Tyddyn Fletcher, Land Adj. Ffordd Llanberis

Grid Reference (E/N)	249238	362756
Suffix (unit/name/number)		
Address line 1	Land Adj. Ffordd Llanberis	
Address line 2		
Address line 3		
Town	Caernarfon	
County	Gwynedd	
Postcode	LL55 2DU	

Description of proposed development	Housing development compromising of 36 units with associated parking, amenity/SuDS space, and play area.
Total application site area (Ha)	1.35
Is the site currently developed i.e. Brownfield, or is it currently undeveloped i.e. Greenfield?	Greenfield
Existing land use	Agricultural
Proposed land use	Housing

3. Application

Has any prior advice been sought from the SuDS Approving Body (SAB) about this application?	Yes ☒	No ☐
If Yes, please complete the following information about the advice you were given. This will help the SAB to deal with this application more efficiently.		

Officer Name	Dan Hughes				
Reference	n/a	**Date**	19/20	08	2024
Details of pre-application advice received	A proposal was made to SAB initially to discharge site runoff to a trench soakaway with excess water stored in an attenuation tank and discharged at a controlled rate into the existing ditch within the immediate field. SAB response detailed the requirement for further evidence to prove infiltration within proposed attenuation area to increase soakaway size and eliminate the need to discharge into ditch. (correspondence attached)				

Does this application relate to any other SAB application already made?	Yes ☐	No ☒
If "Yes", please provide SAB Reference number		

Is this application part of a phased approach to development of the site, or one of multiple applications for the same site?	Yes ☒	No ☐
If "Yes", please provide brief details	One of multiple applications for the same site, further phases proposed but not confirmed yet.	

4. Environmental Impact Assessment (EiA) Statement

Does this application relate to a development that is the subject of an EiA application under the Town & Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017(1)?	Yes ☐	No ☒

5. Compliance with Statutory National Standards for Sustainable Drainage Systems (SuDS)

All sustainable drainage systems MUST comply with the Statutory National Standards for Sustainable Drainage Systems (SuDS) for Wales. You are advised to refer to the detailed text in the Standards that relate to the information required below. The Standards are re-produced, in the Guidance to assist in completing this application form.

Standard Principles

The Principles listed below will underpin the design of surface water management schemes to meet the Statutory National Standards. Where possible, please provide a brief summary in each of the boxes below relating to each of the bulleted Standard Principles and itemised Standards 1 to 6, showing how your proposed surface water drainage scheme complies with this statutory requirement.

Compliance with Standard Principles
My proposed surface water drainage scheme will comply in the following way/s:
A porosity test was undertaken in October, 2024. The test results indicated that a soakaway would be partially feasible for areas within this site. We have been advised by SAB officer Dan Hughes, that further tests are required to prove if infiltration is feasible in locations where a soakaway could be extended to. These tests are yet to be undertaken, but have been scheduled in. The proposal's surface water will be managed close to the surface and as close to the runoff as possible by using a variety of permeable paving where possible, raingarden and an infiltration basin. We have assumed infiltration will be feasible within the proposed locations that awaits testing. Therefore, we have proposed a cellular soakaway system to manage the excess surface water that cannot be managed within the infiltration basin's volume. An overspill within the basin will be direct into the nearby existing ditch within the immediate field if needed, which will only be utilised during exceedance events i.e in excess of 1 in 100 + cc design event. The SuDS feature will be used in sequence as a management train with the intention of improving water quality. The infiltration basin and cellular soakaway will be designed for 1 in 100-year plus 30% climate change including allowance for 10% urban creep. The site is to remain under single ownership, with the SuDS features to be maintained by Adra. A maintenance plan is to be provided to ensure the adequacy of the drainage into the long term future. Chambers or access via

rodding eyes will be provided at heads of runs to ensure the system can be appropriately maintained e.g. jetting.
Where possible, relevant items of supporting information (e.g. evidence, technical documents, plans and drawings etc.), as shown in Table A and Table B of this Guidance should be listed below and all relevant material submitted.
1. 24169/SK501-3 P2 Surface Water Drainage Layout Scheme 2. Initial Drainage Strategy 3. Impermeable v Permeable Area Plan 4. Table 26.2 of the SuDS Manual (C753) 5. Table 26.3 of the SuDS Manual (C753) 6. SuDS Manual Part B, Chapter 5

Standards 1 to 6

Compliance with Standard S1 - Surface water runoff destination
My proposed surface water drainage scheme will comply in the following way/s:
Surface water from roofs will be directed to porous paving where possible, which will promote filtration before entering the proposed surface water network. The network then connects to an infiltration basin which will act as storage for the site, as all flows cannot be accommodate by the basin, a cellular soakaway system is in place to manage the excess water. The discharge from the basin will include an overspill to allow excess water into the existing ditch towards the nearby watercourse i.e. in excess of 1 in 100+ cc design event. Surface water runoff from the highway will be directed to gullies with catchpits to ensure any debris is removed from the surface water system at source. Gullies will also act to prevent any site runoff from entering the existing highway network
Where possible, relevant items of supporting information (e.g. evidence, technical documents, plans and drawings etc.), as shown in Table A and Table B of this Guidance should be listed below and all relevant material submitted.
1. 24169/SK501-3 P2 Surface Water Drainage Layout Scheme 2. Initial Drainage Strategy

Compliance with Standard S2 - Surface water runoff hydraulic control
My proposed surface water drainage scheme will comply in the following way/s:
Surface water will be directed to permeable paving where possible and directed through an infiltration basin, which will offer the opportunity for evapotranspiration.

An overspill within the infiltration basin will direct surface water through a proposed existing ditch which will further offer the opportunity for evapotranspiration prior to entering the formal watercourse.

Where possible, relevant items of supporting information (e.g. evidence, technical documents, plans and drawings etc.), as shown in Table A and Table B of this Guidance should be listed below and all relevant material submitted.

1. 24169/SK501-3 P2 Surface Water Drainage Layout Scheme
2. Initial Drainage Strategy

Compliance with Standard S3 – Water Quality

My proposed surface water drainage scheme will comply in the following way/s:

Table 26.2 of the SuDS Manual identifies the site as a low pollution hazard with indices varying between 0.4-0.5. Table 26.3 suggests raingardens offer a mitigation index of 0.5-0.6 and proprietary systems 0.4. Additionally, permeable paving is suggested to have a mitigation index of 0.6-0.7 and retention basin 0.5-0.7.

Catchpits will collect silt prior to entering the soakaway, which will promote an increase in water quality and provide opportunity to remove debris from the system.

The SuDS features in the scheme will be connected in series to achieve a robust surface water management train providing effective treatment for contaminants by offering the chance for settlement of sediments and interception of hydrocarbons.

Where possible, relevant items of supporting information (e.g. evidence, technical documents, plans and drawings etc.), as shown in Table A and Table B of this Guidance should be listed below and all relevant material submitted.

1. 24169/SK501-3 P2 Surface Water Drainage Layout Scheme
2. Table 26.2 of the SuDS Manual (C753)
3. Table 26.3 of the SuDS Manual (C753)

Compliance with Standard S4 – Amenity

My proposed surface water drainage scheme will comply in the following way/s:

The design of the surface water management system will maximise amenity benefits by retaining green spaces where possible, by proposing the use of a raingarden.

An infiltration basin will also promote an aesthetically pleasing landscape, promoting residents to reach their daily recommended step goal. It will also act as an infiltration space feature, for intercepting runoff and providing an aesthetically

pleasing vegetated area within site. It will also aid in the resilience to future change due to the consideration for climate change and urban creep.
Where possible, relevant items of supporting information (e.g. evidence, technical documents, plans and drawings etc.), as shown in Table A and Table B of this Guidance should be listed below and all relevant material submitted.
1. 24169/SK501-3 P2 Surface Water Drainage Layout Scheme 2. Initial Drainage Strategy 3. SuDS Manual Part B, Chapter 5

Compliance with Standard S5 – Biodiversity
My proposed surface water drainage scheme will comply in the following way/s:
The proposals will promote surface conveyance where possible providing opportunity for wildlife and potentially increase the number of species in the area. Soft landscaping within the infiltration basin and raingarden will include a variety of planting of known wildlife value to the local area, providing food and habitat for invertebrate, insects and birds.
Where possible, relevant items of supporting information (e.g. evidence, technical documents, plans and drawings etc.), as shown in Table A and Table B of this Guidance should be listed below and all relevant material submitted.
1. 24169/SK501-3 P2 Surface Water Drainage Layout Scheme 2. SuDS Manual Part B, Chapter 6

Compliance with Standard S6 – Design of drainage for Construction and Maintenance and Structural Integrity
My proposed surface water drainage scheme will comply in the following way/s:
All SuDS features will be installed by a competent contractor and will be situated in locations and at shallow depths so that they can be easily maintained. A maintenance plan will be provided during the full SAB application, to highlight maintenance requirements for the SuDS features in order for them to remain at optimum capacity. All materials and components, where possible, will have a minimum design life equivalent to the design life of the development, including an appropriate factor of safety.
Where possible, relevant items of supporting information (e.g. evidence, technical documents, plans and drawings etc.), as shown in Table A and Table B of this Guidance should be listed below and all relevant material submitted.
1. 24169/SK501-3 P2 Surface Water Drainage Layout Scheme

6. Initial Assessment of Flood Risk

Is the site within an area at risk of flooding? Refer to Natural Resources Wales Development Advice maps. (Natural Resources Wales / Development and flood risk)	Yes ☐	No ☒
If the proposed development is within the area at risk of flooding, you will need to consider whether it is appropriate to submit a flood consequences assessment. (Refer to Technical Advice Note 15 (TAN15).		

Is the site located within an area susceptible to surface water flooding? Refer to NRW Surface Water Flood Maps.	Yes ☐	No ☒
Is the site located within an area susceptible to groundwater flooding?	Yes ☐	No ☒
Is there a watercourse (as defined under Section 72 Land Drainage Act 1991) **located within 20m of the proposed development?**	Yes ☐	No ☒

7. SuDS Scheme Application - Checklist

Please complete the following checklist and make sure you have read the Guidance on Making SuDS Applications for SAB Approval, the Guidance on completing the Pre-Application Form, and provided all the necessary information in support of your application:	
Pre-Application fee (where required)	Yes ☒
Completed, signed and dated Pre-Application Form.	Yes ☒
Considered further questions and technical information in the Guidance, required to help assess your Pre-Application and assist your Full Application proposals at a later date.	Yes ☒

9. Declaration

I/ we hereby apply for SuDS Pre-Application Advice as described in this form and the accompanying plans/drawings and additional information. I confirm that, to the best of my knowledge, any facts stated are true and accurate and any opinions given are the genuine opinions of the persons giving them.
This form is completed using accurate information and can be used as a summary of concept of the surface water drainage strategy on this site.

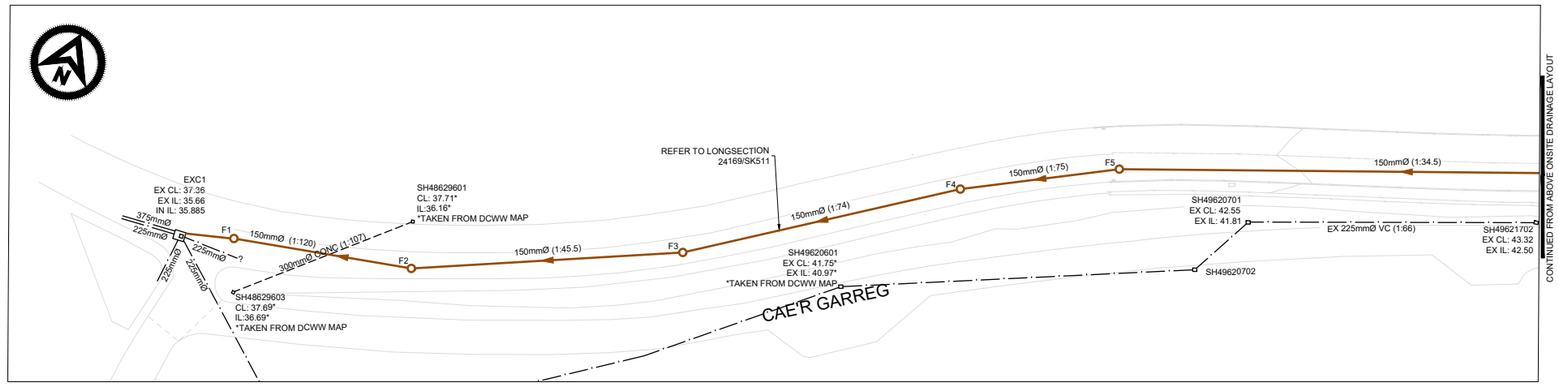
Form completed by	Miss Cadi Wyn Bracegirdle
Signature	
Qualification of person responsible for signing off this application	Nigel Jones BEng (Hons) CEng MICE
Company	Waterco Datrys
On behalf of (Client's details)	Adra Tai Cyfyngedig
Date	30.04.2025

Disclaimer
Information provided on this form and in supporting documents may be published on the SABs SuDS register and website and be made publicly available.

PROJECT No. 24169 | DRG No. SK501-1

DO NOT SCALE

ONSITE DRAINAGE LAYOUT
1:500



OFFSITE DRAINAGE LAYOUT
1:500

NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECT'S, ENGINEER'S AND OTHER SPECIALISTS' DRAWINGS.
2. PLEASE REFER TO ARCHITECTS DRAWINGS FOR FINAL BUILDING LOCATION
3. REFER TO DATRYS DRAWING 24169/SK511 FOR LONGSECTION

KEY

- SITE BOUNDARY
- EXISTING COMBINED SEWER AND CHAMBERS
- EXISTING SURFACE WATER SEWER AND CHAMBERS
- PROPOSED FOUL DRAINAGE AND CHAMBERS
- PROPOSED SURFACE WATER DRAINAGE AND CHAMBERS
- PROPOSED PERFORATED PIPE
- PROPOSED PERMEABLE PAVING
- PROPOSED RAINGARDEN
- WB PROPOSED WATER BUTT

REV	DATE	DESCRIPTION	BY	CHK	APP
P4	16.05.25	DRAINAGE AMENDED TO SUIT INFILTRATION RESULTS	CB	LI	NJ
P3	06.05.25	DRAINAGE AMENDED TO SUIT LAYOUT UPDATE	CB	NJ	AC
P2	19.12.24	LAYOUT AMENDED	CB	LI	AC

REVISIONS

PRELIMINARY

CLIENT

Adra

PROJECT

Tyddyn Fletcher,
Llanberis Road, Caernarfon.

TITLE

Foul Drainage Layout Scheme

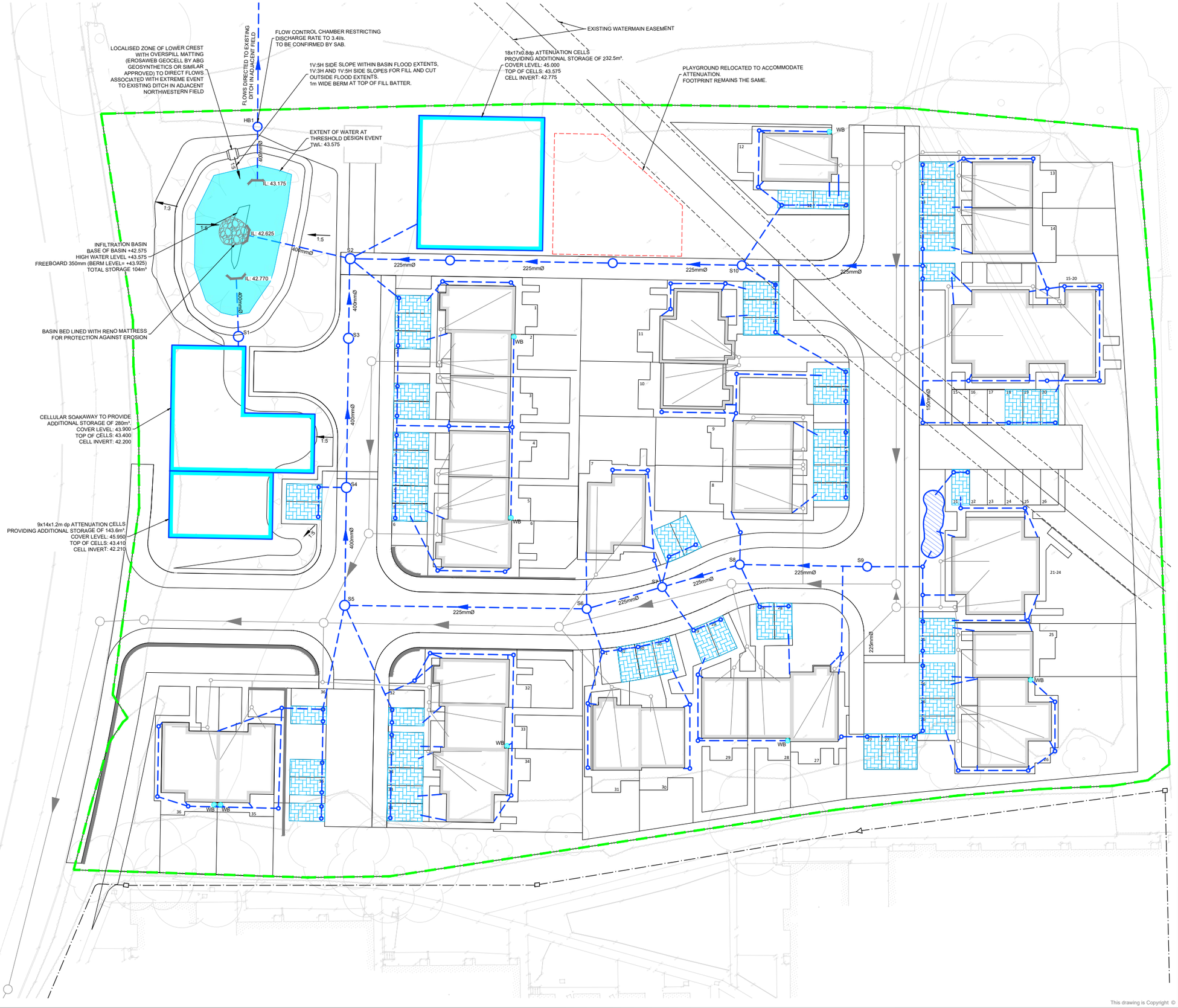
DATRYS

Caernarfon:
Unit 1 Block C, Doc Victoria
Caernarfon, LL55 1TH
Tel: 01286 671027

Mold:
Suite 4A, Broncoed House
Wrexham Road, Mold, CH7 1HP
Tel: 01352 706205
info@datrys.coop | www.datrys.net

DRAWN CB	CHECKED LI	PASSED AC	
DATE 30.09.24	DATRYS REF.		
SCALE AT A1 1:500	AUTOCAD REF. 24169/SK501		
DRAWING No. 24169/SK501-1	REVISION P4		

PROJECT No. 24169 | DRG No. SK501-3 | **DO NOT SCALE**



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2. PLEASE REFER TO ARCHITECTS DRAWINGS FOR FINAL BUILDING LOCATION
3. ALL DRAINAGE COMPONENTS ARE TO COMPLY WITH CURRENT BRITISH STANDARDS & BUILDING REGULATIONS REQUIREMENTS
4. **AT ALL OUTFALL POINTS TO AN EXISTING NETWORK, THE POSITION AND INVERT LEVEL OF EXISTING DRAINS MUST BE CONFIRMED WELL IN ADVANCE OF THE PROGRAMMED DATE FOR INSTALLING ANY OF THE UPSTREAM DRAINAGE, OR ORDERING ANY MATERIALS IN ORDER TO ALLOW TIME FOR ANY NECESSARY REVISIONS TO THE HYDRAULIC DESIGN.**
5. ALL GRAVITY PVC-U PIPEWORK TO BE TO BS 4660:2000 OR BS EN 1401-1:2009 WHERE RELEVANT UNLESS NOTED OTHERWISE
6. ALL CONCRETE SHALL BE GEN3 WITH SULPHATE RESISTING IN ACCORDANCE WITH BS8500 U.N.O.
7. FINAL LOCATIONS AND DETAILS OF SOIL & VENT PIPE, STUB STACKS, RAINWATER DOWN PIPES, GULLYS etc. TO BE CONFIRMED BY REFERENCE TO ARCHITECTS' DRAWINGS
8. ALL PIPES INTO MH's TO BE SOFFIT TO SOFFIT LVL U.N.O.
9. WHERE CHAMBERS ARE POSITIONED ON 90° CORNERS, ALWAYS USE THE MAIN CHANNEL BY FITTING A 45° BEND ON THE INLET AND OUTLET
10. ALL NON ADOPTABLE DOMESTIC FOUL AND SURFACE WATER PIPE RUNS SHALL CONSIST OF 100mm Ø PIPES LAID AT A MINIMUM FALL OF 1 IN 80 U.N.O
11. ALL CONNECTIONS FROM HIGHWAY GULLIES TO BE 150mmØ LAID AT FALLS OF BETWEEN 1:20 & 1:100 WITH TYPE S BED & SURROUND TO ALL CONNECTIONS WHERE MIN 1.2m COVER IS ACHIEVED. TYPE Z BED & SURROUND TO ALL OTHER CONNECTIONS.
12. COVER LEVELS ARE APPROXIMATE AND SHOULD MATCH PROPOSED SURROUNDING LEVELS. CONTRACTOR TO USE OFFICIAL TBM'S FOR SETTING OUT.
13. IT IS RECOMMENDED TO WORK TO 3 BLOCK COURSES ABOVE BISCUIT TO ALLOW FOR TOLERANCES IN FINAL SURFACE
14. CLAUSES (e.g E2.32) REFER TO SEWER FOR ADOPTION 7 OR CIVIL ENGINEERING SPECIFICATION FOR THE WATER INDUSTRY

KEY

- SITE BOUNDARY
- EXISTING COMBINED SEWER AND CHAMBERS
- EXISTING SURFACE WATER SEWER AND CHAMBERS
- PROPOSED FOUL DRAINAGE AND CHAMBERS
- PROPOSED SURFACE WATER DRAINAGE AND CHAMBERS
- PROPOSED PERFORATED PIPE
- PROPOSED PERMEABLE PAVING
- PROPOSED RAINGARDEN
- WB PROPOSED WATER BUTT
- PROPOSED CELLULAR SOAKAWAY

REV	DATE	DESCRIPTION	BY	CHK	APP
P3	16.05.25	DRAINAGE AMENDED TO SUIT INFILTRATION RESULTS	CB	LI	NJ
P2	30.04.25	SITE LAYOUT UPDATED. INFILTRATION BASIN NOTE AMENDED.	CB	LI	NJ

REVISIONS

PRELIMINARY

CLIENT: Adra

PROJECT: Tyddyn Fletcher, Llanberis Road, Caernarfon.

TITLE: Surface Water Drainage Layout Scheme

DATRYS

Caernarfon: Unit 1 Block C, Doc Victoria, Caernarfon, LL55 1TH, Tel: 01286 671027
Mold: Suite 4A, Broncoed House, Wrexham Road, Mold, CH7 1HP, Tel: 01352 706205
info@datrys.coop | www.datrys.net

DRAWN CB	CHECKED LI	PASSED LI	
DATE 20.12.24	DATRYS REF.		
SCALE AT A1 1:250	AUTOCAD REF. 24169/SK501		
DRAWING No. 24169/SK501-3	REVISION P3		

DŴR CYMRU WELSH WATER

Developer Impact Assessment

November 2024

Caernarfon WwTW

Tyddyn Fletcher - 90 Units

Control sheet					
Project Title **Project Code (Process)** **Project Code (Civils)** **Unique ID** **DCWW SAP Project Code** **Document Reference Number**			**Caernarfon WwTW Developer Impact Assessment (Tyddyn Fletcher)** **DIA.DCWW.CAERNARFON2024**		
Rev	**Date**	**Description Purpose**	**Prepared**	**Checked**	**Approved**
P0	**27/02/2025**		**Ifan Griffith**	**L Gaskin**	

EXECUTIVE SUMMARY

A study has been conducted to assess the impact of a new housing development on the Dwr Cymru Welsh Water (DCWW) Caernarfon wastewater treatment works (WwTW) in Gwynedd. The proposal is for a development of 90 houses, which corresponds to a relative increase of 216 population equivalent. The existing process is hydraulically and biologically overloaded and is not compliant with DCWW design guidelines for current flow and loads (Table 1).

Table 1 - Process upgrades required to meet design guidelines for the current shortfall and developer impact

	Capacity available	**Additional capacity required**		**Shortfall**
		Currently required	**Developer impact**	
Primary settlement (FPF)	602 m^3 190 m^2	710 m^3 237 m^2	9 m^3 3 m^2	117 m^3 50 m^2
ASP	1242 m^3	1687 m^3	28 m^3	473 m^3
Final settlement (FPF)	848 m^3 254 m^2	710 m^3 296 m^2	9 m^3 4 m^2	None 46 m^2

The primary settlement tanks are hydraulically overloaded and the developer impact would increase the shortfall volume by 9m^3, increasing risk of solids carry over. The ASP is also overloaded and the developer impact would increase the shortfall by 28m^3. The area of the FST is also undersized and the development would put additional strain on the settlement. The additional development would increase TSS loading by over 15 kg/d theoretically, and increase BOD loading by 13 kg/d. The site currently performs well against it's FPF and DWF permit.

Table 2 - Comparison of exiting works performance against current and future consents

	Current consent	**Current performance**	**Risk of breaching future consent**
BOD, mg/l	25	9.3 (95 %ile)	Low
TSS, mg/l	35	20.8 (95 %ile)	Medium / High
AmmN, mg/l	8.5	0.4 (95 %ile)	Low

The assessment has found that:

- The PST and FST are undersized for TSS and BOD removal and does not meet DCWW design specifications. The site has failed twice on TSS on regulatory samples.
- The ASP process is undersized for BOD treatment and does not meet DCWW design specifications.
- The site performs well against DWF and FPF permit and not in risk of breaching consent.
- Analysis of UWW data and 'flow and load' survey has found that the crude loadings are usually higher than the official figure, leading to increased solids and BOD in process.
- Despite the additional risks to TSS and BOD compliance with the additional development, it has been decided that the impact of the development is not large enough for a cost proportionate solution, thus it has been advised that this development can go ahead with no process upgrade.

1 CONTENTS

2 INTRODUCTON

Dŵr Cymru Welsh Water (DCWW) has been commissioned to undertake a Development Impact Assessment (DIA) to determine the potential impact of a new housing development of 90 properties to Caernarfon wastewater treatment works (WwTW).

An assessment of the performance at existing flows and loads was conducted, and the required process capacity to perform within DCWW design guidelines presented. The development impact was then assessed.

This report covers the findings from the DIA and recommends any process upgrades required to meet DCWW design guidelines.

Acronyms used within report:

WwTW	Waste Water Treatment Works
DCWW	Dwr Cymru Welsh Water
BOD	Biochemical Oxygen Demand
AmmN	Ammonia
TSS	Total Suspended Solids
DWF	Dry Weather Flow
FPF	Flow Passed Forward
PST	Primary Settlement Tank
FPF	Flow Passed Forward
ASP	Activated Sludge Process
FBDA	Fine Bubble Diffused Aeration
FST	Final Settlement Tank
OSM	Operator Self-Monitoring
UWW	Urban Waste Water
DIA	Developer Impact Assessment
HFR	Hydraulic Flow Rate
HLR	Hydraulic Loading Rate
OLR	Organic Loading Rate
AGA	Above Ground Asset
TP	Total Phosphorus

3 BACKGROUND

3.1 Caernarfon WwTW

Caernarfon WwTW is an activated sludge process (ASP) site currently serving a population equivalent of approximately 12,661. Historically, the site has had a few sample failures, most recently 2 suspended solids failures in June and July 2022.

The works receives flow from 6 outlying pumping stations. The incoming flows are directed to the Works Inlet Pumping Station, where the sewage is pumped using two screw pumps each pump capable of pumping 3 x DWF. Any flows in excess of 6 x DWF (198l/s) pass to the Storm Screw Pump, capable of pumping 400l/s which lifts the storm flows to a Huber Rotamat Storm Screen. The storm flows then discharge to the receiving waters, the storm screenings removed are returned to the inlet well. When the capacity of the Screw Pumps is exceeded and in an emergency on failure of the pumping station, flows pass through a 10mm bar screen to a high level gravity overflow directly into the outfall. An actuated penstock prevents high tide levels from flowing into the pumping station.

The inlet flows are pumped to the two Duty/Standby Inlet Screens. The removed screenings are flushed to the Macerator Tank for processing, whilst the screened flows pass to the grit removal plant.

The screened and de-gritted flows then pass through a “flow to treatment” penstock, which causes excess flows to divert to two Storm Tanks.

The flow to treatment arrives at the Primary Settlement Tanks distribution chamber where it splits equally between the two tanks both fitted with half bridge scrapers. Primary sludge is removed using dedicated sludge pumps, which pump to the Sludge Holding Tank.

The Primary Settled effluent flows to the Aeration lanes where it splits equally between the two lanes and flows into the Anoxic Zone where it combines with the Return Activated Sludge and is mixed prior to entering the aeration lanes. Air is supplied to the aeration lane by air blowers and is distributed throughout the tank through a network of submerged pipework and diffuser heads. Biologically treated effluent weirs over the outlet of the aeration tanks and flows to a single Final Settlement Tank.

The Final Settlement Tank has a rotating half bridge and sludge scraper system and sludge is removed by hydrostatic head to the Return Activated Sludge pumping station. The Surpus Activated Sludge is removed by a submersible pump that pumps to the sludge holding tank.

The existing process unit sizes are set out in Table 1. Process unit volumes were measured out by DCWW staff on site.

Table 3 - Process unit sizes for Caernarfon WwTW

	Quantity	**Total Volume, m^3**	**Total Surface area, m^2**
upward flow primary settlement tank	2	602	190
ASP (FBDA)	2	1242	276
upward flow humus settlement tank	1	848	254

3.2 Current, flows loads and consents

Figure 1 – Daily average MCert flow from October 2023 to October 2024

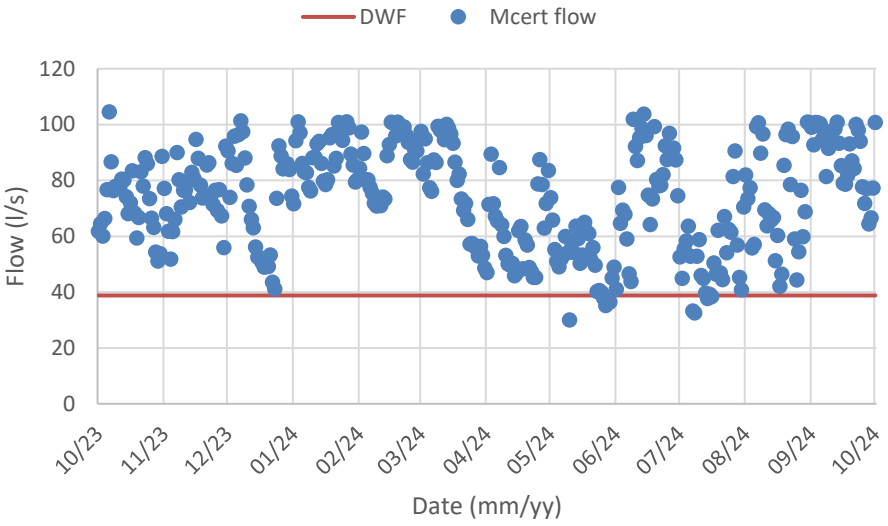
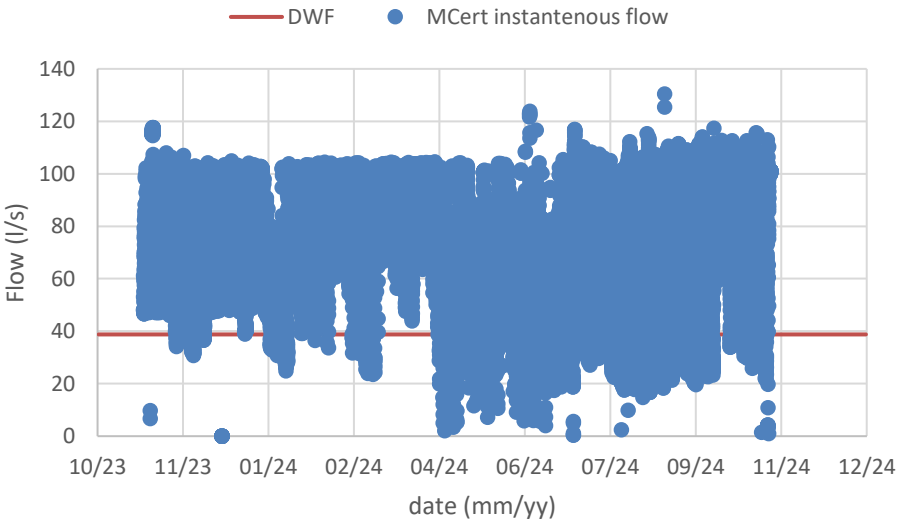


Figure 2 – Instantaneous MCert flow from October 2023 to October 2024



3.2.1 Crude sewage load and population equivalent

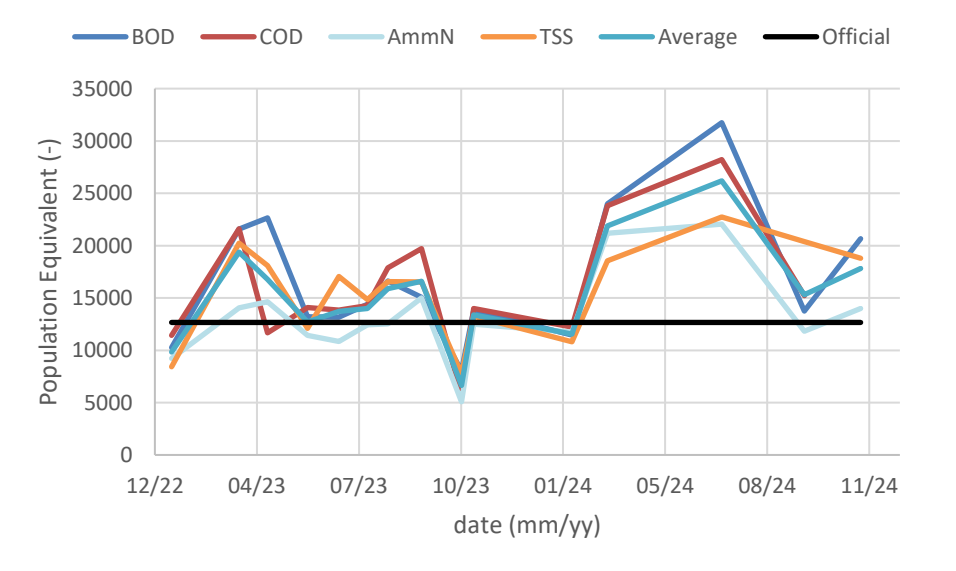
Current crude sewage loads to the works obtained from regulatory crude sampling are set out in Table 2. The data presented is based on 24 hours composite samples obtained by the regulatory team with a total of 15 samples being available in the given period.

Table 4 - Current loads to Caernarfon WwTW based on November 2022 to November 2024

	BOD, kg/d	**COD, kg/d**	**AmmN, kg/d**	**TSS, kg/d**
Average	1001	2156	99	1102
Min	482	769	38	543
Max	1905	3810	165	1591
90th percentile	1407	3126	140	1423

The crude data in Table 2 shows that there is some variability in the strength of the crude. The average PE figure from this data set (includes all averages above) is 15,442. However, PE figures peak at 26,189 (average of all maximum figures).

Figure 3 - Population equivalent figures based on regulatory sampling of crude sewage



3.2.2 Final effluent performance analysis

Final effluent quality data has been obtained for the period November 2021 to November 2024. Over this period, the process has generally performed within consent based on operator self-monitoring (OSM) regulatory samples and internal flow and load survey data.

Figure 4 - Operator self-monitoring (OSM) and UWW regulatory final effluent sample data for period November 2021 to November 2024 (BOD)

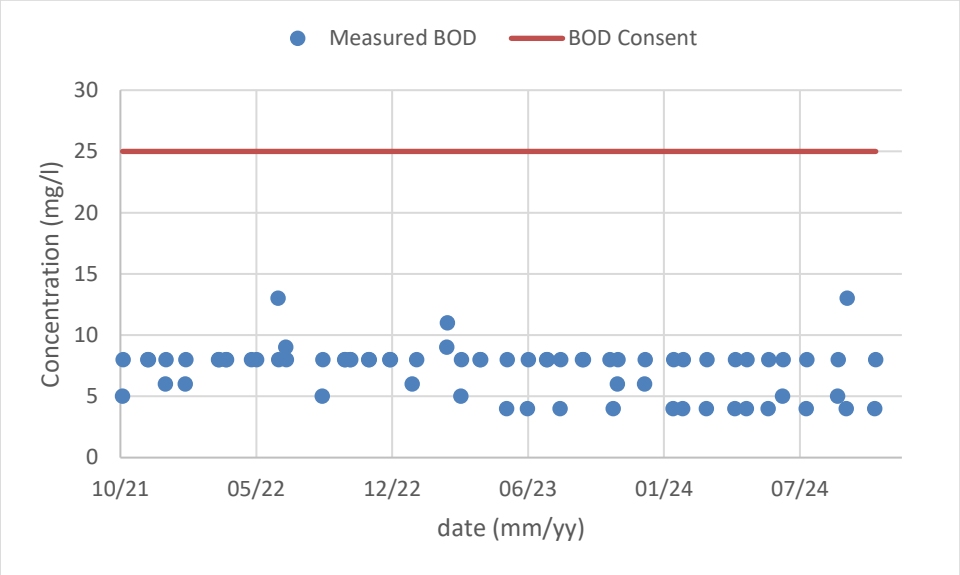


Figure 5 - Operator self-monitoring (OSM) and UWW regulatory final effluent sample data for period November 2021 to November 2024 (Ammonia)

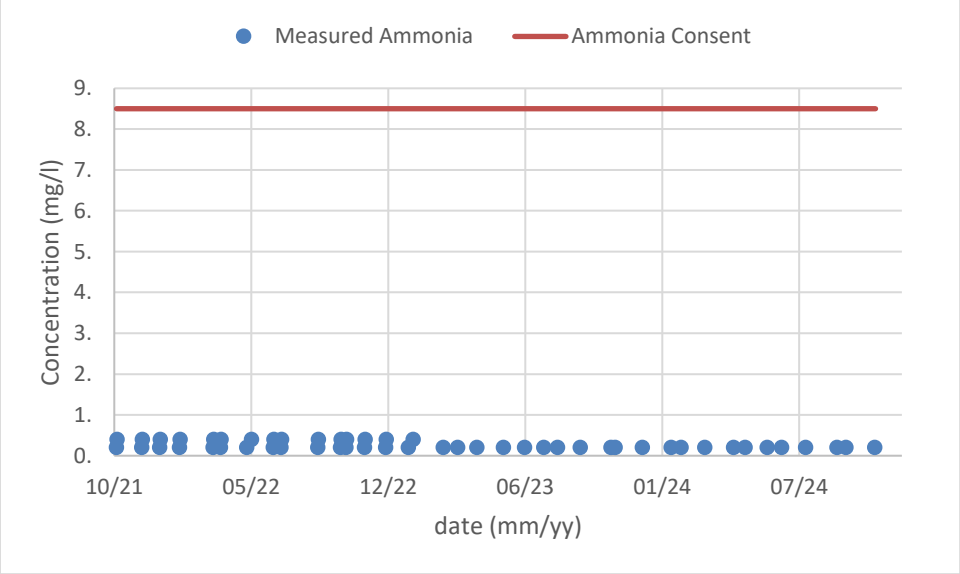


Figure 6 - Operator self-monitoring (OSM) and UWW regulatory final effluent sample data for period November 2021 to November 2024 (TSS)

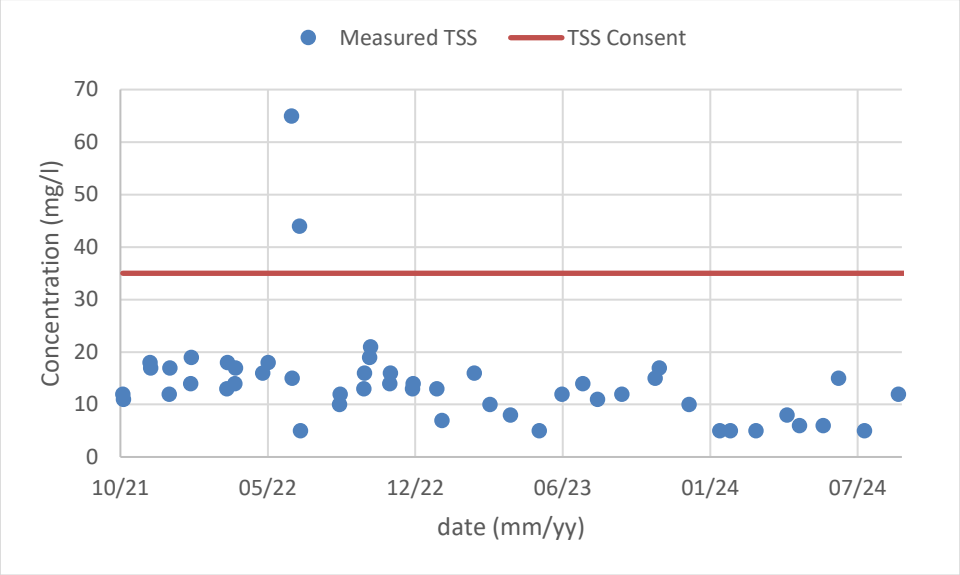


Table 5 - Summary of final effluent OSM and UWWTD data

Parameter	Consent mg/l	Average mg/l	95th percentile mg/l	No. consent failures	No. samples
BOD	25	7.38	9.3	0	78
COD	125	37.2	53.9	0	43
TSS	35	13.5	20.8	2	74
AmmN	8.5	0.3	0.4	0	66

On average, the site performs well against current limits, with a few exceedances in the past. Two TSS failures were experienced within a month of each other in 2022. These failures were put down to insufficient removal of SAS in the FST due to full sludge holding tank, leading to denitrification and solids carry over, but does show a risk of solids carry over.

The table below summarizes the overall site performance against numerical consents for flow and final effluent determinants.

Table 6 - Consented flows and loads for final effluent Caernarfon WwTW and measured final effluent quality from OSM & UWW regulatory samples between 2021-24

	Regulatory consent	Current Performance*
Population equivalent	-	13,256
DWF, m³/d	3,352	3,135

Average flow, m^3/d	-	4,985
Infiltration, m^3/d	-	-
FPF, m^3/d	8,520	10,563 (instantenous)
Chemical oxygen demand (COD), mg/L (UWWR)	125	37.2
Biochemical oxygen demand (BOD), mg/L	25	9.3
Total suspended solids (TSS), mg/L	35	20.8
Ammonical nitrogen (AmmN), mg/L	8.5	0.4

3.2.3 Flow and Load Survey

A through works sampling programme was carried out from the 4th to the 10th November 2024 using 24 hours composites and all samples were analysed by an accredited 3rd party laboratory. The data highlights that on average the crude load was higher than theoretically expected. The two final days of sampling had crude loads lower than theoretically expected, but one day the PE was over 7,000 higher than the theoretical PE, showing that loadings can be much stronger than theoretically expected, even during winter months. The BOD/COD ratio was on average 0.46 which is representative of crude sewage with an adequate biodegradability index.

Table 7 - Crude sewage flow and load data for Caernarfon WwTW with an expected population equivalent of 12,661

Crude sewage	BOD (mg/L)	COD (mg/L)	Ammonia (mg/L)	TSS (mg/L)	TP (mg/L)	Flow (L/s)	Population equivalent (Average)
10-Nov-24	153	372	31.9	86	6.69	39.89	8,907
09-Nov-24	192	458	28.8	207	9.55	40.38	11,604
08-Nov-24	307	873	32.9	426	9.52	44.84	19,327
07-Nov-24	308	586	31.5	200	15.55	45.7	17,416
06-Nov-24	211	460	28.6	164	9.57	57.76	16,298
05-Nov-24	222	524	25.2	215	6.19	71.64	19,672
04-Nov-24	171	379	24	93	6.27	62.48	13,186
Average	**223.43**	**521.71**	**28.99**	**198.71**	**9.05**	**51.81**	**15,201**

From the F&L data, the removal rates of BOD and TSS were in line with what would be expected through an upward flow PST with auto-desludging. The removals through the ASP/FST were also good, with above 85% TSS removal, and above 90% removal for both BOD and COD. Ammonia removals were good on average, with over 98% removal.

Table 8 - Relative % removals across the process units from the flow and load survey at Caernarfon WwTW

	% BOD	%COD	% TSS	% Ammonia
Post PST	35.47	30.49	55.49	15.66
Post ASP/FST	92.57	90.70	85.28	98.34

Given that during the F&L, the PE varied considerably during different days. Because of this, the UWW PE from the latest June Return document was used, which was 13,256. This is hereby considered representative of the crude sewage load at Caernarfon WwTW.

The PSTs do not comply with DCWW design guidelines, with both the hydraulic flow rate and retention time above design specification. The ASP process is also above specification for food to mass ratio, as well as the hydraulic retention time through the system. The FST is also undersized at FPF, with the upward flow velocity out of specification, although the hydraulic retention time is within specification.

Table 9 - Assessment of current primary and secondary treatment process units at FPF.

Parameter	**Design Standard**	**Actual**	**Compliant**
PST			
Design hydraulic flow rate (HLR_{design}), m/h	1.5 (DCWW, 2014)	1.87	No
Minimum hydraulic retention time (HRT_{min}), h	2.0 (DCWW, 2014)	1.7	No
Process volume, m^3	n/a	601.88	n/a
Process area, m^2	n/a	190.07	n/a
ASP			
F:M, d^{-1}	0.11	0.149	No
Hydraulic retention time, h	4	3.5	No
Process volume, m^3	n/a	1,242	n/a
Process area, m^2	n/a	276	n/a
Final tank			
Upward Flow Velocity m/h	1.2 (DCWW, 2013a)	1.4	No
HRT_{min} h	2 (DCWW, 2013a)	2.4	Yes
Process volume, m^3	n/a	847.78	n/a
Process area, m^2	n/a	254.34	n/a

3.3 Future flows, loads and consents

Future flows and loads were derived assuming per capita water consumption of 150 l/h/d and per capita loads of 60 g-BOD/h/d, 8.0 g-AmmN/h/d, 70 g-TSS/h/d and 2.5 g-TP/h/d (DCWW, 2011a). This was conducted for the respective population equivalents derived from the assumption of an occupancy rate of 2.4 inhabitants per property (**Error! Reference source not found.**) and additionally, an infiltration factor of 40% was applied (DCWW, 2011a). The new developments are assumed to have separate foul and storm sewerage, and hence a 1.4 factor for misconnections and infiltration was applied. Future development DWF and FFT was assumed to be:

Future development DWF = PG + I + E

Development FFT = 3PG + I + 3E

Future Total FPF = Current consented FPF

Where, P = population equivalent is accounted as 41
G = Per capita domestic water consumption = 0.15 m^3/h/d
I = Infiltration as a percentage of PG = 40 %
E = Trade effluent (not applicable to this development)

Table 10 - Development flows and loads from planned development.

Number of domestic connections	**Population equivalent**	**Development flows and loads** (DCWW Specs)				
		DWF m^3/d	**FPF m^3/d**	**BOD kg/d**	**TSS kg/d**	**AmmN kg/d**
90	216	45.36	110.16	12.96	15.12	1.62

The derived future flow and load increases were then applied to the current DWF and FPF conditions at Caernarfon WwTW.

Table 11 - Breakdown of future flow derivation for future flow to existing process capacity at Caernarfon WwTW. The crude sewage loads and loading rates to existing process units at FPF are included.

Future flows	
DWF in 2023, m3/d	2740
Total future DWF, m^3/d	2829
Total future average flow, m^3/d	5042
Total future FPF, m^3/d	8520
Future crude sewage loads	
BOD, kg/d	1014
TSS, kg/d	1117

AmmN, kg/d	101
Future loading rates at FPF for existing process unit sizes	
PST HLR_{actual} m/h	1.87
PST HRT, h	1.7
F:M, d^{-1}	0.152
Applied solids, kg/m^2h	5.46
Final tank HLR_{actual} m/h	1.4
Final tank HRT, h	2.4
Predicted future consent	
BOD, mg/l	25
TSS, mg/l	35
Amm, mg/L	8.5

4 FUTURE REQUIREMENTS

The required additional process capacity to meet design guidelines (Table 9) is set out in Table 12.

Table 12 - Process upgrades required to meet design guidelines for the current shortfall and developer impact.

	Capacity available	Additional capacity required		Shortfall
		Currently required	Developer impact	
Primary settlement (FPF)	602 m^3 190 m^2	710 m^3 237 m^2	9 m^3 3 m^2	117 m^3 50 m^2
ASP	1242 m^3	1687 m^3	28 m^3	473 m^3
Final settlement (FPF)	848 m^3 254 m^2	710 m^3 296 m^2	9 m^3 4 m^2	None 46 m^2

The primary settlement tanks are hydraulically overloaded and the developer impact would increase the shortfall volume by 9m^3, increasing risk of solids carry over. The ASP is also overloaded and the developer impact would increase the shortfall by 28m^3. The area of the FST is also undersized and the development would put additional strain on the settlement. The additional development would increase TSS loading by over 15 kg/d theoretically, and increase BOD loading by 13 kg/d. The site currently performs well against it's FPF and DWF permit.

Additionally, the capacity of the blowers at site to deal with the additional load was checked. The blowers at site are Aerzen positive displacement blowers (GM 80 L), and the specification sheet for these blowers were checked to see what their maximum capacity was. The maximum air flow currently required and what will be required to the development was calculated, and the below table shows the results.

Table 13 - Blower capacity compared against current and future demand

	Air flow (m^3/h)
Blower Capacity	15,000
Current demand	3,154
Future demand	3,518

Table 14 - Comparison of exiting works performance against current and future consents

	Current consent	Current performance	Risk of breaching future consent
BOD, mg/l	25	9.3 (95 %ile)	
TSS, mg/l	35	20.8 (95 %ile)	
AmmN, mg/l	8.5	0.4 (95 %ile)	

The assessment has found that:

- The PST and FST are undersized for TSS and BOD removal and does not meet DCWW design specifications. The site has failed twice on TSS on regulatory samples.
- The ASP process is undersized for BOD treatment and does not meet DCWW design specifications.
- The site performs well against DWF and FPF permit and not in risk of breaching consent.
- Analysis of UWW data and 'flow and load' survey has found that the crude loadings are usually higher than the official figure, leading to increased solids and BOD in process.
- Despite the additional risks to TSS and BOD compliance with the additional development, it has been decided that the impact of the development is not large enough for a cost proportionate solution, thus it has been advised that this development can go ahead with no process upgrade.

5 CONCLUSIONS & RECOMMENDATIONS

It has been decided that even though the additional development could impose a significant risk to site compliance, especially on TSS, that there is no cost appropriate solution for the development. Additional treatment, such as tertiary solids removal, would cost a significant amount, and due to the development being only 90 units, it is proposed that the additional risk is accepted by DCWW.

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Dŵr Cymru
Welsh Water

Developer Services
PO Box 3146
Cardiff
CF30 0EH

Tel: +44 (0)800 917 2652
Fax: +44 (0)2920 740472
E.mail: developer.services@dwrcymru.com

Gwasanaethau Datblygu
Blwch Post 3146
Caerdydd
CF30 0EH

Ffôn: +44 (0)800 917 2652
Ffacs: +44 (0)2920 740472
E.bost: developer.services@dwrcymru.com

Miss Cadi Bracegirdle
Datrys Consulting Engineers Ltd
Unit 1 Block C
Doc Fictoria
Caernarfon
Gwynedd
LL55 1TH

Date: 22/08/2024
Our Ref: PPA0008827

Dear Miss Bracegirdle,

Grid Ref: 249314 362809
Site Address: Tyddyn Fletcher, Llanberis Road, Caernarfon, Gwynedd
Development: Phase 1 - 36 Residential Units

I refer to your pre-planning enquiry received relating to the above site, seeking our views on the capacity of our network of assets and infrastructure to accommodate your proposed development. Having reviewed the details submitted I can provide the following comments which should be taken into account within any future planning application for the development.

APPRAISAL

Firstly, we note that the proposal relates to a residential development comprising of 36 dwellings on land off Llanberis Road, Caernarfon and acknowledge that the site comprises of a potential windfall development with no allocated status in the Local Development Plan (LDP). Accordingly, whilst it does not appear an assessment has been previously undertaken of the public sewerage and watermains systems, we offer the following comments as part of our appraisal of this development.

PUBLIC SEWERAGE NETWORK

The proposed development site is located in the immediate vicinity of a separate sewerage system, comprising combined and surface water public sewers, which drains to Caernarfon Wastewater Treatment Works (WwTW).

This site is crossed by a public sewers with their approximate position being marked on the attached Statutory Public Sewer Record. In accordance with the Water Industry Act 1991, Dwr Cymru Welsh Water requires access to its apparatus at all times in order to carry out maintenance and repairs.
No part of any building, structure, trees or SuDS features will be permitted within the protection zone of the public sewers measured 3 metres either side of the centreline. Our strong recommendation is that your site layout takes into account the location of the assets crossing the site and should be referred to in

any master-planning exercises or site layout plans submitted as part of any subsequent planning application. Further information regarding Asset Protection is provided in the attached Advice & Guidance note.

You are also advised that some public sewers and lateral drains may not be recorded on our maps of public sewers because they were originally privately owned and were transferred into public ownership by nature of the Water Industry (Schemes for Adoption of Private Sewers) Regulations 2011. The presence of such assets may affect the proposal. In order to assist you may contact Dwr Cymru Welsh Water on 0800 085 3968 to establish the location and status of the apparatus in and around your site. Please be mindful that under the Water Industry Act 1991 Dwr Cymru Welsh Water has rights of access to its apparatus at all times.

SURFACE WATER DRAINAGE

As of 7th January 2019, this proposed development is subject to Schedule 3 of the Flood and Water Management Act 2010. The development therefore requires approval of Sustainable Drainage Systems (SuDS) features, in accordance with the 'Statutory standards for sustainable drainage systems – designing, constructing, operating and maintaining surface water drainage systems'. As highlighted in these standards, the developer is required to explore and fully exhaust all surface water drainage options in accordance with a hierarchy which states that discharge to a combined sewer shall only be made as a last resort. Disposal should be made through the hierarchical approach, preferring infiltration and, where infiltration is not possible, disposal to a surface water drainage body in liaison with the Land Drainage Authority and/or Natural Resources Wales.

It is therefore recommended that the developer consult with Gwynedd Council, as the determining SuDS Approval Body (SAB), in relation to their proposals for SuDS features. Please note, DCWW is a statutory consultee to the SAB application process and will provide comments to any SuDS proposals by response to SAB consultation. Please refer to further detailed advice relating to surface water management included in our attached Advice & Guidance note.

Please be advised due to capacity constraints with the public combined sewerage network and Caernarfon Wastewater Treatment Works under no circumstances would we allow surface water runoff from the proposed development to directly/indirectly communicate with the public combined sewer.

In addition, please note that no highway or land drainage run-off will be permitted to discharge directly or indirectly into the public sewerage system.

FOUL WATER DRAINAGE – SEWERAGE NETWORK

We have considered the impact of foul flows generated by the proposed development and concluded that flows can be accommodated within the public sewerage system. We advise that the flows should be connected to the 225mm combined sewer at manhole SH49621701 located to the south west of the site.

Should a planning application be submitted for this development we will seek to control these points of communication via appropriate planning conditions and therefore recommend that any drainage layout or strategy submitted as part of your application takes this into account. However, should you wish for an alternative connection point to be considered please provide further information to us in the form of a drainage strategy, preferably in advance of a planning application being submitted.

You may need to apply to Dwr Cymru Welsh Water for any connection to the public sewer under Section 106 of the Water industry Act 1991. However, if the connection to the public sewer network is either via a lateral drain (i.e. a drain which extends beyond the connecting property boundary) or via a new sewer (i.e. serves more than one property), it is now a mandatory requirement to first enter into a Section 104 Adoption Agreement (Water Industry Act 1991). The design of the sewers and lateral drains must also conform to the Welsh Ministers Standards for Foul Sewers and Lateral Drains, and conform with the publication "Sewers for Adoption"- 7th Edition. Further information can be obtained via the Developer Services pages of www.dwrcymru.com.

SEWAGE TREATMENT

The proposed development would overload the Waste Water Treatment Works. No improvements are planned within Dwr Cymru Welsh Water's Capital Investment Programme.

If you wish to progress this development then it will be necessary for a Development Impact Assessment to be undertaken on the Wastewater Treatment Works at the developer's expense. The conclusion of this study will determine any improvement works required.

The costs for undertaking this study must be paid for by the developer. For you to obtain a quotation for the feasibility study, we will require a fee of £250 + VAT to engage our consultants, this fee is non refundable.

POTABLE WATER SUPPLY

Capacity is currently available in the water supply system to accommodate the development. We reserve the right however to reassess our position as part of the formal application for the provision of new water mains under Section 41 and Section 51 of the Water Industry Act (1991) to ensure there is sufficient capacity available to serve the development without causing detriment to existing customers' supply as demands upon our water systems change continually.

This site is in crossed by a trunk watermain with the approximate position being marked on the attached plan. In accordance with the Water Industry Act 1991, Dwr Cymru Welsh Water requires access to its apparatus at all times in order to carry out maintenance and repairs. No operational development including the raising and lowering of ground levels will be permitted within the easement of the trunk watermain measured 5 metres either side of the centreline We would advise that the trunk watermain and its required easement should be located within a public and accessible area and not within any private amenity area or curtilage of any dwellings. Our strong recommendation is that your site layout is amended to take into account the location of the assets crossing the site and should be referred to in any

master-planning exercises or site layout plans submitted as part of any subsequent planning application. Alternatively, it may be possible to divert the public watermain if the developer applies under Section 185 of the Water Industry Act and we request that they contact us to discuss and consider possible solutions.

In the first instance, we would advise of the need to accurately locate the assets on site as our record plans are a general guidance only and should not be relied upon in the event of excavations or other works made in the vicinity of the assets. We would need to carry out the survey work and would suggest that the developer contact our colleagues at PlanandProtect@dwrcymru.com for a quotation. Further information regarding Asset Protection is provided in the attached Advice & Guidance note as well as our Developer Services website, which offers guidance on building SuDS features over or near to our assets at https://developers.dwrcymru.com/en/help-advice/regulation-to-be-aware-of/sustainable-drainage-systems

I trust the above information is helpful and will assist you in forming water and drainage strategies that should accompany any future planning application. I also attach copies of our water and sewer extract plans for the area, and a copy of our Planning Guidance Note which provides further information on our approach to the planning process, making connections to our systems and ensuring any existing public assets or infrastructure located within new development sites are protected.

Please note that our response is based on the information provided in your enquiry and should the information change we reserve the right to make a new representation. Should you have any queries or wish to discuss any aspect of our response please do not hesitate to contact our dedicated team of planning officers, either on 0800 917 2652 or via email at **developer.services@dwrcymru.com**

Please quote our reference number in all communications and correspondence.

Yours faithfully,

Owain George
Planning Liaison Manager
Developer Services

<u>Please Note</u> that demands upon the water and sewerage systems change continually; consequently the information given above should be regarded as reliable for a maximum period of 12 months from the date of this letter.