



WATER CONSERVATION STATEMENT

PROPOSED RESIDENTIAL DEVELOPMENT
AT GWEL Y LLAN, LLANDEGFAN

MÔN CIVILS
LIMITED

September 2023
Revision P02

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1.0 Introduction

This report contains a water conservation for the proposed residential development located on a vacant parcel of land located adjacent to Gwel y Llan, Llandegfan, LL59 5YH. The location and site boundary of the site is illustrated on the attached plan contained within **Appendix A**, coordinates for the development are provided within **Table 1**.

Table 1. Existing Site Details

OS Grid Reference:	SH 56841 74257
Easting (X)	256841
Northing: (Y)	374257
What3Words:	mistress.trudges.shopper
Site Area:	9,863.971m ² - (0.99 Ha)

The proposed development contains 30 new dwellings consisting of four 2-person 1-bed (2P1B) apartments, thirteen 4-person 2-bed (4P2B) properties, eight 5-person 3-bed (5P3B) properties, a single 7-person 4 bed (7P4B) property and four 3-person 2-bed (3P2B) bungalow, along with a new length of adoptable highway. A copy of the proposed architectural drawings for the site are contained within **Appendix B**.

1.1 Scope of Report

This report aims to demonstrating how surface water run-off from the proposed development site will be treated as a valuable resource.

The Anglesey and Gwynedd Joint Local Development Plan 2011 – 2026 POLICY PCYFF 6 states “Proposals should incorporate water conservation measures where practicable, including Sustainable Urban Drainage Systems (SUDS). All proposals should implement flood minimisation or mitigation measures where possible, to reduce surface water run-off and minimise its contribution to flood risk elsewhere. Proposals greater than 1,000m² or 10 dwellings should be accompanied by a Water Conservation Statement.

2.0 Water Conservation

Water efficiency has a significant role to play in addressing the challenges faced by the water sector and beyond. It is one of the few tools that can address both climate change mitigation and climate change adaptation. Water efficiency can reduce pressure on existing infrastructure and offset the need for new infrastructure. It can help reduce water and energy bills for households and businesses. The extremes of weather and changes in demand will put an increasing strain on water infrastructure. The links between water and energy will become more critical. This section of the report should be read in conjunction with the proposed drainage layout contained within **Appendix C**.

In accordance with the SuDS Manual 2015 and the Statutory standards for sustainable drainage systems for Wales, surface water should be managed and discharged from a new development in line with the following hierarchy:

Priority level 1: Re-use of water;

Priority level 2: Infiltration into ground;

Priority level 3: Discharge to a water body;

Priority level 4: Discharge to a surface water run-off drain;

Priority level 5: Discharge to a combined surface water and foul drain.

Priority 1: In order to comply with the Policy PCYFF 6: Water Conservation and the SuDS Hierarchy, it is proposed to provide SuDS features within the surface water drainage network which will promote the reuse of surface water run-off. The proposed design does this using the following features:

- Above Ground water Butts
- Rain Gardens / Bioretention systems
- Planted/vegetated swales and basins.

Each property has been designed with a single **above ground water butt** located within the rear garden at the base of a rainwater downpipe from the roof of said property, this will intercept surface water for re-use for watering plants or recreation use within the gardens of the property and reduce overall demand on the water supply.

Rain Gardens / Bioretention systems and proposed throughout the development will all surface water run-off passing through at least two rain gardens prior to its proposed point of discharge. The design of the system utilises perforated pipework with the perforations laid downwards preventing surface water from continuing through the system until be the soil surrounding the pipework is saturated. This saturated soil then feeds the planning above, which has been selected based on its ability to absorb high levels of water to reduce overall flow through the system and achieve losses.

Planted/vegetated swales and basins have been designed with near flat bases to slow the rate of surface water flow through the feature promoting infiltration into the ground, the proposed basins are to be planted with plants capable of absorbing large quantities of water to further help to reduce the overall run-off and reduce the quantity of water leaving the site.

Introducing such features will help to reduce risk of flooding downstream of the development by using rainwater and a valuable resource which intern will help boost the biodiversity and ecology of the site.

Priority 2: Porosity testing has been undertaken on site as part of the geo-environmental report on the 13nd of August 2023. The result of the testing deemed the site is unsuitable for the use of infiltration systems due to the slow rate of infiltration recorded due to the very firm nature of the below ground strata and the presence of ground water, encountered at the approx. 2.0m below ground level. However, although a lack of infiltration was recorded during the testing in order to help provide losses within the system and reduce the impact of flooding downstream of the development it is proposed to utilises geotextile membrane surrounds to the based and embankments of swales and basins (where min 5m away from properties), as opposed to the conventional impermeable membrane which prevent infiltration. such features will allow surface water to infiltrate into the ground initially until saturated and allow for losses within the system.

Priority 3: The proposed drainage strategy identifies the proposed point of disposal as being a land drainage feature 150m north-west of the site.

APPENDICES

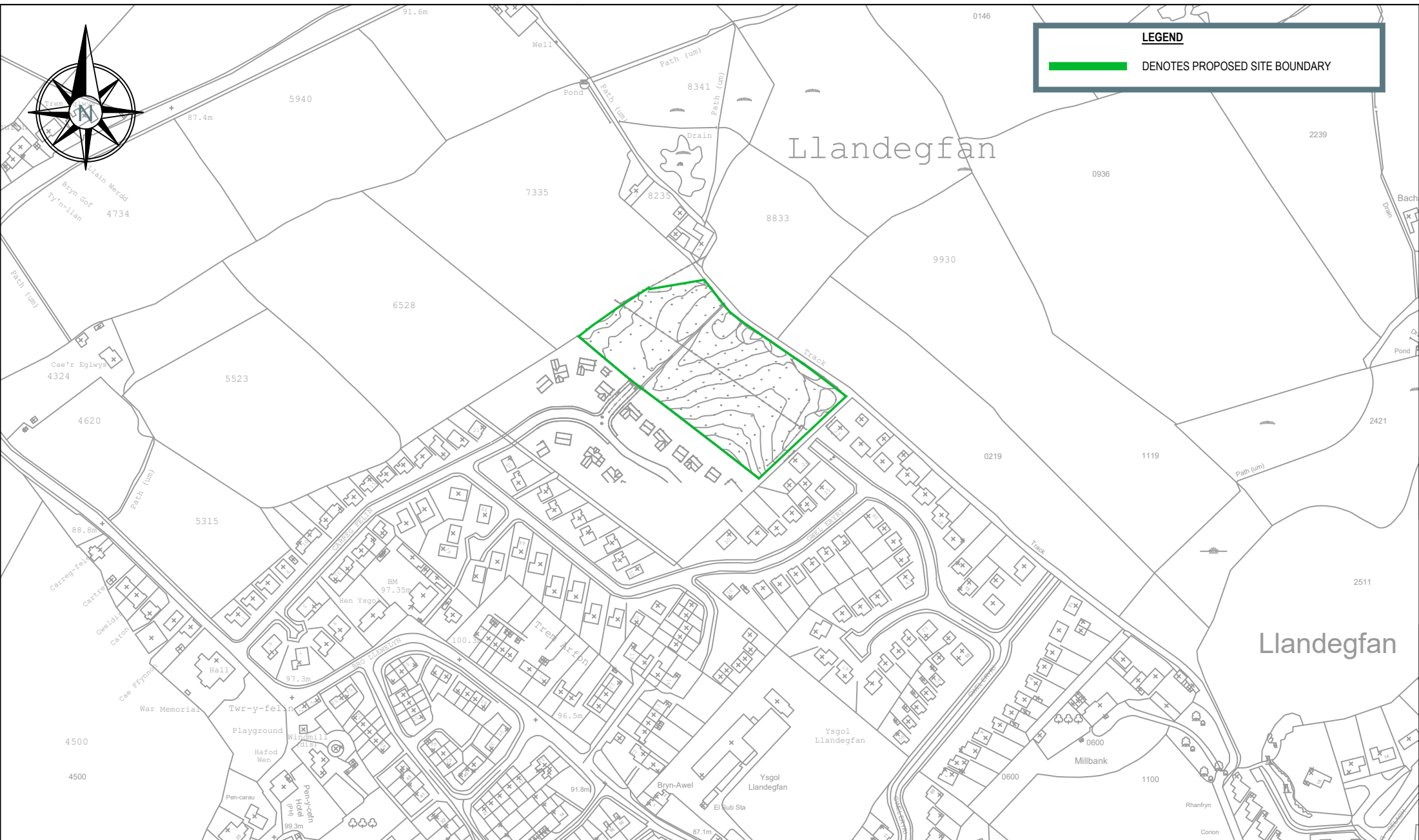
APPENDIX A

Site Location Plan



LEGEND

▬ DENOTES PROPOSED SITE BOUNDARY



GRID REFERENCE	SH 56836 74257
EASTING	256836
NORTHING	374257
POSTCODE	LL59 5YH
SITE AREA	9,863.971 m ² (0.99 Ha)

P01	07.09.2023	PRELIMINARY ISSUE	BT	KB
REV	DATE	DESCRIPTION	BY	APP
PROJECT: GWEL Y LLAN, LLANDEGFAN				
TITLE: SITE LOCATION PLAN				
STATUS: S2	PROJECT No: 292	DRAWING No: 001	REV: P01	

SCALE @ A3: 1:2,500	DESIGNED: BT	DRAWN: BT	CHECKED: KB	APPROVED: KB	DATE: SEPTEMBER 2023
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MON CIVILS
LIMITED

APPENDIX B

Proposed Site Layout

REV.	DESCRIPTION	DATE	BY	CHK.
P1	INITIAL ISSUE	28/11/2022	GD	GI
P2	UPDATED LAYOUT	24/01/2023	GI	SD
P3	AREA ADDED	14/02/2023	GI	SD
P4	PLOT NUMBERS ADDED	14/02/2023	MM	GI
P5	PHASE 1 AND 2 SHOWN	20/02/2023	MM	GI
P6	REV ALTRIO	22/06/2023	GI	DP
P7	SITE DESIGN DEVELOPMENT	13/06/2023	GI	GI
P8	FOLLOWING ENGINEER INPUT	04/10/2023	GI	GI
P9	SITE DEVELOPMENT POST CIVIL DRAINAGE			



- EXTERNAL WORKS KEY**
- PATIO & PATHS - CONCRETE OR BLOCK PAVING
 - DRIVEWAYS/PARKING - PERMEABLE PAVING
 - ADOPTABLE ROADS - TARMAC
 - ADOPTABLE FOOTPATHS
 - SAB
 - SHRUB PLANTING
 - POS
- ECOLOGY ENHANCEMENTS**
- PROVISION OF BAT AND BIRD BOXES POSITIONED IN EXISTING FEATURES AS ECOLOGIST RECOMMENDATIONS
- 1x20 SCHWEGLER (OR EQUIVALENT) 1B AND 2H BIRD BOXES
 - 2x20 SCHWEGLER (OR EQUIVALENT) 3FF BAT BOX PLANTED IN GROUP OF 3 IN TREE APPROVED BY QUALIFIED ECOLOGIST

- BOUNDARY KEY**
- S80 GOLD STANDARD ROBUST TIMBER GARDEN SHED, FROM A SUPPLIER APPROVED BY CLYDATHIN, WITH TONGUE AND GROOVE CLADDING AND TOUGLE AND GROOVE ROOF BOARDING TO BE PROVIDED. ALL TIMBER TO BE PRESERVATIVE TREATED, COLOUR TO CLYDATHIN APPROVAL, COMPLETE WITH MEDIUM DUTY PADLOCK WITH THREE KEYS. SIZE TO MEET WELSH GOVERNMENT DQR REQUIREMENTS UNDER S80 GOLD STANDARD. ANCHOR POST/FRAME FOR SECURING BICYCLES AS WELSH GOVERNMENT SUSTAINABILITY REQUIREMENTS. THE SHED TO BE LINED OR IN-SITU CONCRETE BASE 100MM THICK, SHED BEARINGS TO BE BOLT FIXED WITH RESIN ANCHOR BOLTS.
 - EXTERNAL RAIN WATER COLLECTING BUTTS - 250 LITRE INCLUDING CHILD/ WIND RESISTANT LED TAP FOR WATER DRAIN OFF, SUPPORT PLUMB-FIXED LEVEL WITH RAIN WATER PIPE
 - BINS STORE AREAS - PROVIDE SUFFICIENT AREAS TO STORE 2ND LARGE WHEELIE BINS AND 3RD RECYCLING BOXES.
 - HEAVY DUTY ROTARY CLOTHES DRIERS OF 4 ARM DESIGN AND MINIMUM 1200MM LINEAR LENGTH TO BE PROVIDED TO ALL PRIVATE GARDEN AREAS AND AT A RATIO OF 1 PER 2 DWELLINGS FOR COMMUNAL DRYING AREAS TO FLATS.
 - EXTERNAL AIR SOURCE HEAT PUMPS

KEY

AFFORDABLE HOUSES

TYPE	AMOUNT	GfE(m ²)
2P1B FLAT	4	53 (GF) 61 (FF)
4P2B	13	83
5P3B	8	93
7P4B	1	114
3P2B BUNG	4	61
Total		30

PUBLIC OPEN SPACE
PUBLIC OPEN SPACE REQUIREMENT - 1348M²
PUBLIC OPEN SPACE PROVISION - 1492M²

PROPOSED SITE PLAN
SCALE: 1 : 200

N

0 2 4 6 8 10 12m
1:200 @ A0

sa saer architects
www.saer-works | 01482 452478 | studio@saer-works

PROJECT
**GWEL Y LLAN,
LLANDEGFAN**

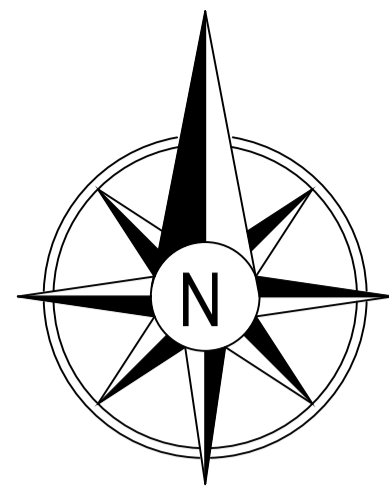
CLIENT
CLWYD ALYN

DRAWING TITLE
PROPOSED SITE PLAN

DRAWING STATUS PLANNING	STATUS S3
DRAWING No. GYL-SAL-01-ZZ-DR-A-0003	PROJECT No. P1185
SCALE As indicated@A0	REVISION PB

APPENDIX C

Proposed Drainage Layout



REFER TO DRAWING
292 - 012 FOR OFFSITE SURFACE
WATER DRAINAGE WORKS.



- GENERAL**
- G1 DO NOT SCALE FROM THIS DRAWING.
 - G2 ALL LEVELS IN METRES UNLESS NOTED OTHERWISE ON DRAWING.
 - G3 THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT ENGINEERS AND ARCHITECTS DRAWINGS AND RELEVANT SPECIFICATION CLAUSES.
 - G4 PLEASE REFER TO ARCHITECTS DRAWINGS FOR FINAL BUILDING LOCATION.
 - G6 ALL PROPOSED LEVELS ARE TO BE CONFIRMED BY THE ARCHITECT.
 - G7 FINAL LOCATIONS AND DETAILS OF SOIL VENT PIPES, STUB STACKS, RAINWATER DOWN PIPES, GULLIES ETC. TO BE CONFIRMED BY REFERENCE TO ARCHITECT DRAWINGS.
 - G8 ALL THRESHOLD DRAIN DETAILS TO BE TO ARCHITECT DETAILS.

- DRAINAGE**
- D1 ALL DRAINAGE COMPONENTS ARE TO COMPLY WITH CURRENT BRITISH STANDARDS.
 - D2 DRAIN PIPE THROUGH WALLS OR BENEATH FOUNDATIONS (SPREAD ONLY) TO HAVE REINFORCED CONCRETE BRIDGE LINTELS OVER AND PIPE SURROUNDED IN FLEXIBLE MATERIAL (50mm).
 - D3 ALL PIPES INTO CHAMBERS TO SOFFIT TO SOFFIT U.N.O.
 - D4 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 OF ANY MATERIALS IN ORDER TO ALLOW TIME FOR ANY NECESSARY REVISIONS TO THE HYDRAULIC DESIGN.
 - D5 ALL GRAVITY UPVC PIPEWORK TO BE TO BS 4680 OR BS 5481 WHERE RELEVANT UNLESS NOTED OTHERWISE.
 - D6 ALL NON ADOPTABLE DOMESTIC FOUL AND SURFACE WATER PIPE RUNS SHALL CONSIST OF 100mm DIA. PIPES LAID AT NO FLATTER THAN 1 IN 80 FALLS U.N.O.
 - D7 A SEWER OR LATERAL DRAIN WITH A NOMINAL INTERNAL DIAMETRE OF 100mm, OR A LATERAL DRAIN SERVING TEN OR LESS PROPERTIES IS LAID TO A GRADIENT NOT FLATTER THAN 1:80, WHERE THERE IS AT LEAST ONE WC CONNECTED AND 1:40 IF THERE IS NO WC CONNECTED.
 - D8 THERMOPLASTIC PIPES, JOINTS & FITTINGS FOR GRAVITY SEWERS SHALL COMPLY WITH THE RELEVANT PROVISIONS OF BS EN 1401-1, BS EN 1852 & BS EN 12956-1.
 - D9 THERMOPLASTIC STRUCTURED WALL PIPE. THERMOPLASTIC STRUCTURED WALL SEWER PIPE SHALL COMPLY WITH THE RELEVANT PROVISIONS OF BS EN 13476-1 & BS EN 13476-2 OR BS EN 13476-3. PIPES SHALL BE BS ITEMARKED OR HAVE EQUIVALENT THIRD PART CERTIFICATION. PIPES LESS THAN OR EQUAL TO 500mm IN DIAMETRE SHALL HAVE NOMINAL SHORT-TERM RING STIFFNESS NOT LESS THAN 8kN/m² (SN8) OR BE SUBJECT TO A QUALITY SYSTEM FOR STORAGE & EMBEDMENT.
Nom. SHORT TERM RING STIFFNESS OF 2kN/m² (SN2) IS ACCEPTABLE FOR PIPES GREATER THAN Ø 500mm, SUBJECT TO SUPPORTING STRUCTURAL DESIGN LOAD CALCULATIONS BEING PROVIDED.
TRANSPORTATION, HANDLING, STORAGE AND LAYING SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
WHERE A FITTING IS INSTALLED ON A SEWER LENGTH, IT SHALL HAVE THE SAME INTERNAL BORE AS THE SEWER. Max. LENGTH OF PIPE FOR LAYING IS 3.0m OR Ø x 10, WHICHEVER IS THE GREATER, UNLESS WELDED JOINTS ARE USED.
 - D10 OPTIMUM TRENCH WIDTH = PIPE + 300mm. CONTRACTOR TO ENSURE TRENCH WALLS ARE SUITABLY PROPPED.
 - D11 BACKFILLING TO PIPE TRENCHES BENEATH ROADS, CAR PARKING AND STRUCTURES TO BE M.O.T. TYPE 1 GRANULAR MATERIAL UP TO FORMATION LEVEL FROM THE TOP OF THE SPECIFIED PIPE SURROUND (WELL COMPACTED IN 150mm LAYERS).
 - D12 BACKFILLING TO PIPE TRENCHES BENEATH LANDSCAPED AREAS TO BE SELECTED EXCAVATED MATERIAL FREE FROM LARGE STONES GREATER THAN 75mm, LUMPS OF CLAY OVER 100mm, ANY TIMBER, FROZEN MATERIAL OR VEGETATION MATTER UP TO FORMATION/ GROUND LEVEL FROM THE TOP OF THE SPECIFIED PIPE SURROUND (WELL COMPACTED IN 150mm LAYERS).
 - D13 GRANULAR MATERIAL NOMINAL SIZE 10mm SINGLE SIZED OR 14mm TO 5mm GRADED.
 - D14 BACKFILL MUST NOT BE LACED ON CONCRETE BEDDING OR SURROUND UNTIL THE CONCRETE COMPRESSIVE STRENGTH HAS REACHED 15N/mm².
 - D15 BRICKS OR BLOCKS MUST NOT BE PLACED IN THE BEDDING MORTAR FOR SETTING THE PIPES TO LEVEL.
 - D16 ROCKER PIPES TO BE PROVIDED AT TYPE 2 CONCRETE CHAMBERS AND AT TRANSITION FROM CONCRETE SURROUND (TYPE 2) TO GRANULAR SURROUND (TYPE 5) ALL ROCKER PIPE LENGTHS TO BE 600mm.
 - D17 MAX DISTANCE FROM FACE OF CONCRETE SURROUND TO FIRST FLEXIBLE JOINT TO BE 150mm.
 - D18 MANHOLE COVERS AND FRAMES. MANHOLE COVERS AND FRAMES SHALL COMPLY WITH THE RELEVANT PROVISIONS OF THE BS EN 124 M BS 7903 AND HIGHWAYS AGENCY GUIDANCE DOCUMENT HA 10409. THEY SHALL BE OF NON ROCKING DESIGN WHICH DOES NOT RELAY TO THE CUSHION INSERTS.
MANHOLE COVER ON FOUL ONLY SEWERS SHALL BE OF LOW LEAKAGE TYPES IN ORDER TO PREVENT EXCESSIVE SURFACE WATER INGRESS.
AS A MINIMUM, CLASS D400 SHALL BE USED IN CARRIAGEWAYS OR ROADS (INCLUDING PEDESTRIAN STREETS), HARD SHOULDERS AND PARKING AREAS USED BY ALL TYPES OF VEHICLES.

- ADOPTION**
- A1 CONNECTION TO THE PUBLIC SEWER. SUBJECT TO A SECTION 104 ADOPTION AGREEMENT BEING COMPLETE, A SECTION 106 APPLICATION TO CONNECT MUST BE MADE TO DOWN. THE DEVELOPER SHALL GIVE 21 DAYS NOTICE PRIOR TO CONNECTION. THE WORKS MAY ONLY BE UNDERTAKEN BY AN SSIP HEALTH & SAFETY APPROVED CONTRACTOR.
 - A2 CONSTRUCTION OF SEWER TO BE IN ACCORDANCE WITH WELSH MINISTERS STANDARDS AND SFA 7TH EDITION.
 - A3 THE DEVELOPER MUST SELF-VET AND CERTIFY THAT THE DESIGN CRITERIA, MATERIAL STANDARDS AND WORKMANSHIP SPECIFICATIONS FOR THE PROPOSED ADOPTABLE LATERAL DRAIN ARE IN ACCORDANCE WITH THOSE SET OUT IN 'SEWERS FOR ADOPTION' 7TH EDITION, THE WELSH MINISTERS STANDARDS AND THE REQUIREMENTS OF DOWN AS THE STATUTORY SEWERAGE UNDERTAKER.

REV	DATE	DESCRIPTION	BY	CHK	APP
P02	03.10.2023	UPDATED TO SUIT REVISED LAYOUT	KB	BT	KB
P01	29.09.2023	FIRST ISSUE	KB	BT	KB

DRAWING STATUS: **PRELIMINARY**

CLIENT: **DU CONSTRUCTION**

ARCHITECT: **SAER ARCHITECTS**

PROJECT: **GWEL Y LLAN, LLANDEGFAN**

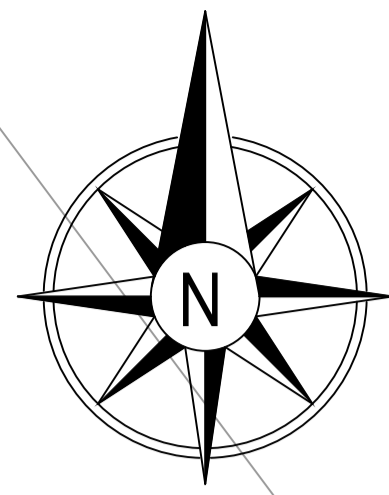
TITLE: **SAB AGREEMENT LAYOUT**

STATUS:	PROJECT No:	007	REV:	P01	
S2	292				
SCALE @ A1:	DESIGNED:	DRAWN:	CHECKED:	APPROVED:	DATE:
1:250	BT	KB	BT	BT	SEPTEMBER 2023



LEGEND

- PROPOSED SITE BOUNDARY
- - - PROPOSED SURFACE WATER CHAMBER AND PIPE RUN
- - - PROPOSED FOUL WATER CHAMBER AND PIPE RUN TO REMAIN PRIVATE
- - - EXISTING FOUL SEWER
- - - PROPOSED PERFORATED SURFACE WATER PIPE.
- PROPOSED ACO CHANNEL DRAINAGE.
- ▨ PROPOSED RAIN GARDENS
- ▨ PROPOSED BASINS & SWALES
- PROPOSED WATER BUTT



HYDROBRAKE FLOW CONTROL DEVICE RESTRICTING FLOW FROM SITE TO GREENFIELD RUN OFF RATES AS NOTED WITHIN THE TABLE BELOW.

RETURN PERIOD	DISCHARGE RATE
1:1 YEAR	6.8 L/S
1:30 YEAR	13.9 L/S
1:100 YEAR	16.8 L/S

PROPOSED BASIN PROVIDING APPROX 500m³ OF STORAGE, ACCOMODATING THE 1:100 YEAR RETURN PERIOD + 30% CLIMATE CHANGE

300mm DEEP CONVEYANCE SWALE

7335

1

8235

LEGEND

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P01	29.09.2023	FIRST ISSUE	KB	BT	KB
REV	DATE	DESCRIPTION	BY	CHK	APP

DRAWING STATUS:

PRELIMINARY

CLIENT: DU CONSTRUCTION

ARCHITECT: SAER ARCHITECTS

PROJECT: GWEL Y LLAN, LLANDEGFAN

TITLE: PROPOSED OFF-SITE SURFACE WATER DRAINAGE LAYOUT

STATUS: S2	PROJECT No: 292	012	REV: P01
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SCALE @ A1: 1:250	DESIGNED: BT	DRAWN: KB	CHECKED: BT	APPROVED: BT	DATE: SEPTEMBER 2023
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