

Technical Note

Title: Snowdon Hall, Vicarage Hill, Wrexham LL13 7HN

Subject: Flood Risk Review

Reference: ECL.10039.R05.001 Rev -

Date: 22nd April 2024

Author: B Aden

Reviewer: D Homan

1. Introduction

- 1.1 This Technical Note has been prepared for Gerald Eve LLP in support of the planning application for student amenity at Snowdon Hall, located off Vicarage Hill in Wrexham.
- 1.2 The Technical Note seeks to set out the development proposals and evaluate the associated flood risk characteristics within the context of the Planning Policy Wales and associated guidance. It is noted the SuDS Approving Body (SAB) is Wrexham County Borough Council (WCBC).

2. Existing Site

- 2.1. The site is situated to the east of, and adjoins to, an existing student residential block known as Snowdon Hall. A site location plan is shown in Figure 1 below.



Figure 1: Site Location

- 2.2. The existing site plans, including a topographical survey and several photos are provided in Appendix 1. The current courtyard to the east features mostly grassed areas with an asphalt path running through the courtyard; it contains limited garden furniture including a barbeque area and a large tree to the northern boundary. A 6-foot timber fence is to the perimeter, providing screening from neighbouring properties.
- 2.3. To the front of the accommodation block, the parking bays and access are unchanged; means of access and egress is easily achieved via the existing entrance to the west, allowing vehicular and pedestrian access to the development site. Access to the existing courtyard is provided via the asphalt pathway to the southern gable end of the residential block.
- 2.4. The topographical survey recently undertaken indicates that several soakaways are located within the site which receive surface water runoff from part of the residential block (i.e. roof downpipes); the size and capacity of these existing soakaways is not presently known. It is presumed that these existing soakaways were formed during the construction of the accommodation block. Further investigations are to be carried out to ascertain the sizes of the existing soakaways and catchment.
- 2.5. According to Natural Resource Wales (NRW), the site is not within a Site of Special Scientific Interest (SSSI).

3. Development Proposal

- 3.1. Most of the development is focused on, and specific to, the rear courtyard. The development proposals (see Appendix 2) seek to provide improved student amenity formed of new surfacing, mounted features, and a variety of shelters namely:
 - An enclosed wooden pavilion;
 - Pergola covering a garden kitchen, seating, tables and barbecue space;
 - Casual bench seating, outdoor dining and study seating;
 - A sunken outdoor games area to the south.
- 3.2. The new surfacing is expected to be permeable; formed by white or grey resin bound gravel and standard permeable paving. Requiring much of the existing grass to be changed.
- 3.3. The northern part of the courtyard is proposed to be higher than the southern part of the courtyard; stairs will connect the two areas. The existing large tree will be retained providing visual amenity value along with the current timber fencing to the boundary.
- 3.4. The courtyard development area measures 330m² with the smaller bin store area to the west measuring only 16m². The new flat roof area of the wooden pavilion measures only 32m²; this is considered the additional hard surfacing for the development.

4. Policy and guidance

- 4.1. The key policy and related guidance are summarised in Table 1 on the following page.

Policy	Provision
Planning Policy and accompanying Planning Practice Guidance	Planning Policy Wales (PPW) Edition 12 February 2024 Technical Advice Note (TAN) 15 updated November 2021
Flood and Water Management Act 2010	Sustainable Drainage (SuDS) Statutory Guidance

Flood Risk Management Plan	Wrexham County Borough Council Pre-Consultation Draft January 2016 Flood Risk Management Plan January 2016 <i>Flood risk management plan enables local authorities to gain insight into various sources of flooding risk and establish priorities for effective risk management.</i>
Catchment Flood Management Plan	River Dee Catchment Flood Management Plan January 2010 <i>Helps understand the scale and extent of flooding now and in the future and set policies for managing flood risk within the catchments.</i>
Local Development Plan	Wrexham County Borough Council Unitary Development Plan (1996 – 2011) <i>Development Plans provide the strategic locational guidance for development, and the detailed site-specific policies and identification of proposals for development.</i>
Other guidance	This includes CIRIA 753 and associated documents and management plans.

5. Geology

- 5.1. The British Geological Survey (BGS) indicates the superficial deposits is GLACIOFLUVIAL SHEET DEPOSITS, DEVENSIAN - SAND AND GRAVEL.
- 5.2. The underlying bedrock geology as described by BGS as SALOP FORMATION - MUDSTONE, SANDSTONE AND CONGLOMERATE. Lithological description is red and red-brown mudstone, and red-brown sandstone containing beds of pebbly sandstone and conglomerate itself containing Carboniferous limestone and chert clasts, and thin limestone beds and caliche in the lower part of the unit.
- 5.3. DEFRA's website Magic classifies the underlying bedrock as Secondary A Aquifer and the overlying superficial drift as Secondary A Aquifer. The site is outside of Source Protection Zone 1 and will pose no risk to groundwater.

6. Flood Risk

- 6.1. The Site is located within Flood Zone A; refer to 'Development Advice Map' within Appendix 3. Land within Flood Zone A is considered to be at little or no risk of fluvial or tidal/coastal flooding, with a less than 0.1% (1 in 1000) annual probability of flooding.
- 6.2. According to the National Resources Wales 'Flood Map for Planning Service' and other related sources of available flood records within Appendix 4, the risk of flooding to the Site is as follows:

Rivers and Sea:	Very Low
Surface water:	Low
Reservoirs:	Very Low
Sewers:	Low
Groundwater	Low
- 6.3. The development proposals are characterised as amenities and leisure thus classified as 'high vulnerability' development, this type of development however is suitable for Flood Zone A.

7. Surface Water Drainage Strategy

7.1 SuDS Statutory Standards

7.1.1 As the development site is greater than 100m² the planning application will require consent from the SAB. This Technical Note takes into consideration the implementation of Sustainable Urban Drainage Systems (SuDS). The standards are listed below:

- S1 - surface water runoff destination
- S2 - surface water runoff hydraulic control
- S3 - water quality
- S4 - amenity
- S5 - biodiversity
- S6 - design of drainage for construction, operation, and maintenance and structural integrity

7.2 Disposal of Surface Water

7.2.1 Disposal of surface water flows from the development will be determined using the hierarchical approach, namely: surface water runoff collected for use, discharge using infiltration methods, discharge to watercourse, discharge to a surface water sewer or similar drainage system and finally discharge to a combined sewer.

7.2.2 Preliminary dialogue with the SAB is included within Appendix 5. As requested, it is planned that infiltration testing to be undertaken to confirm infiltration rate for the site. It is assumed the rate will be favourable as existing soakaways have been located within the courtyard.

7.2.3 The topographical survey completed indicates the existing surface water drainage, within the courtyard, serving the rear of the student accommodation block outfalls to several existing soakaways. A new connection from the Pavilion roof (the only element positively drained) to this drainage network will be required resulting in the need to upgrade the existing soakaway to take marginally higher flows.

7.2.4 It is considered unfeasible to establish a new connection to a watercourse as it will cross third party land and requires a large distance to traverse.

7.3 Surface Water Proposal

7.3.1 The Pavilion roof measures only 32m²; surface water runoff from the roof is to discharge to a rainwater garden via a water butt. The rainwater garden provides water quality treatment, indirect amenity value and influences biodiversity by reducing downstream flows through open graded stone medium. It is anticipated that the raingarden will outfall at a reduced rate to an updated soakaway arrangement.

7.3.2 The proposed, linear rainwater garden is intended to be easily and safely constructed, maintained, and operated, providing both amenity and surface water management. Possible suppliers include the Hydroplanter™ with plant species to be in line with NRW or similar guidance.

7.3.3 The pedestrian surfaces are to be permeable and formed of permeable paving or resin bound gravel. Some isolated locations might require limited use of channel/threshold drain to ensure that runoff does not affect equipment or building threshold/access.

8 Conclusion

- 8.1 The site lies within Flood Zone A and is at very low risk of fluvial or tidal flooding; surface water and associated flood risk is considered to be low. The development is categorised as amenities and leisure which is deemed 'high vulnerability' development; this type of development however is suitable for Flood Zone A.
- 8.2 Under the Welsh Government requirements the development which is >100m² in size (irrespective of surface type), requires the submission of a SAB application; this is to be submitted to WCBC. Testing to confirm infiltration rates is to be completed within the next few weeks; test results to be included within the submission. It is noted that the presence of existing soakaways suggests rates will be favourable.
- 8.3 The proposed and existing impermeable areas are comparable in size with the Pavilion roof equivalent to the existing asphalt path to be removed. Notwithstanding this, it is intended to discharge the roof area via a series of SuDS, including a water butt and linear raingarden, to an updated soakaway. Surface modelling of the SuDS train will be completed at a detailed design stage following receipt of required site information.
- 8.4 The proposed pedestrian surfaces are to be formed either of permeable resin bound gravel or permeable paving; these surfaces are intended to mimic the existing infiltration of the grassed areas. The water butt tank will be used to collect the rainwater from the enclosed pavilion roof; this will be used for non-potable use where practicable.
- 8.5 The SuDS features are to be constructed according to best practice and standards and maintained to an agreed surface water management plan.

Appendix 1 - Existing Site Plan including a topographical survey and photos



FURNITURE KEY:

- 01 TIMBER FENCING
- 02 BBQ
- 03 EXISTING TREE
- 04 EXISTING HEDGE

FINISHES KEY:

- A TARMAC
- B GRASS

P01	First Issue	22/03/2024	LM	JL
Revision		Date	By	Chk

Title: Existing Site Plan

Project:	23146_Snowdon Hall	Scale:	1:100
Client:	Student Roost	Status:	A1
Stage:	Planning	Revision:	
Reference:	23146-56T-P2-00S-D-A-001	S2	P01

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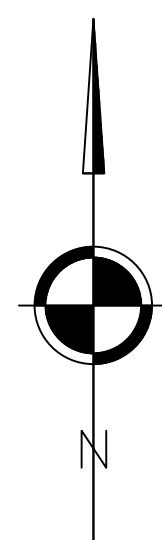
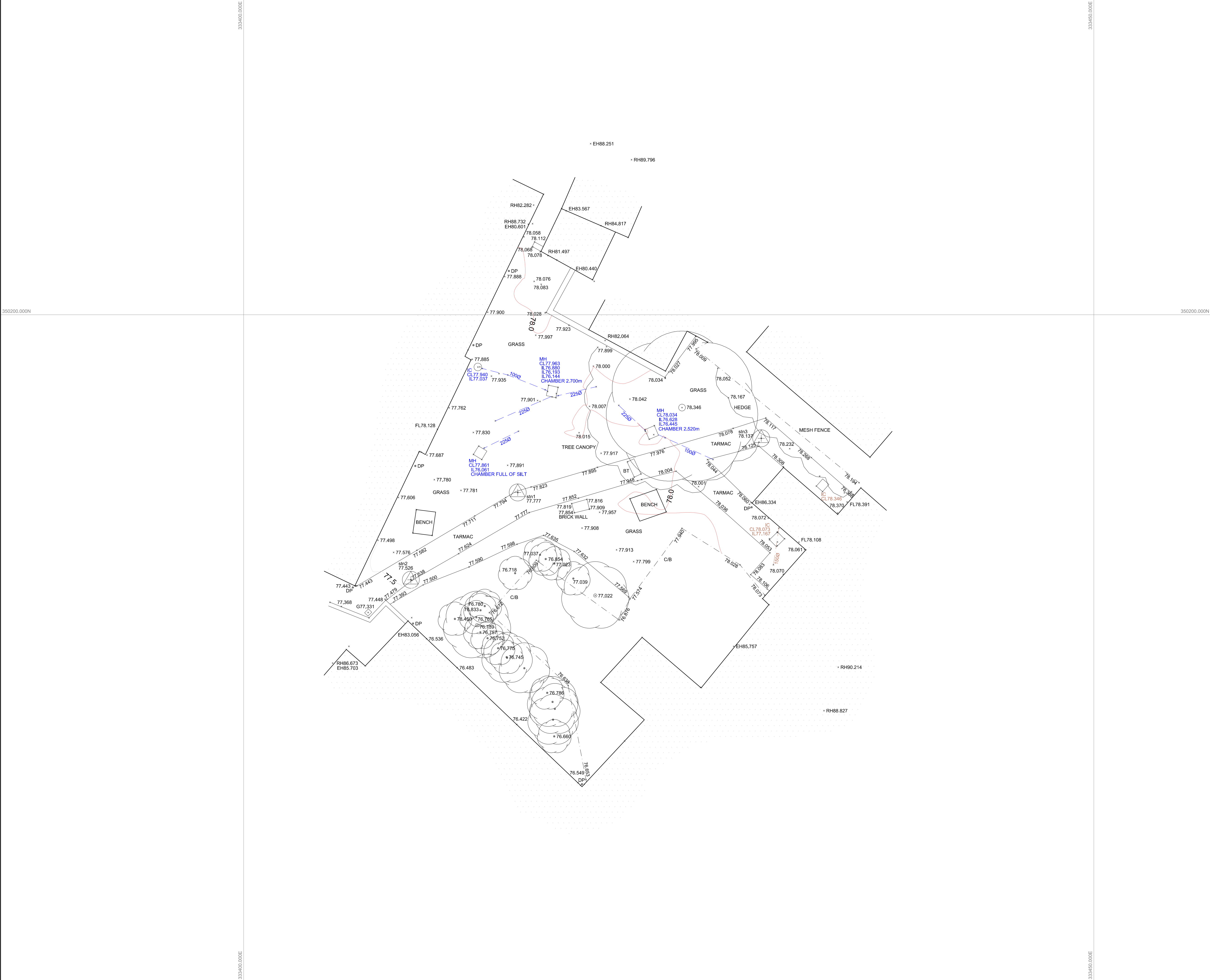
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KEY:
APPLICATION BOUNDARY





Topographical Survey Legend			
Bin	Litter bin	TL	Tie line
BH	Bone Hole	TP	Telegraph pole
Bol	Bollard	TPS	Tactile paving slabs
BS	Bus stop	TS	Traffic signal light
BT	British telecom ic	TV	Television cover
CPS	Concrete paving slabs	VP	Vent pipe
DR	Drain	WM	Water meter
Elec	Electrical ic	WO	Wash Out
EP	Elec. pole	UTL	Unable to lift
ER	Earth rod		
FH	Fire Hydrant	B/W	Barbed wire
FI	Flagpole	C/B	Closed boarded
FT	Floodlight	C/I	Corrugated iron
G	Gully	C/L	Chain link
GP	Galle post	C/P	Concrete panel
GV	Gas valve	H/R	Hand rail
IC	Inspection cover	I/R	Iron railings
JB	Junction box	O/B	Open boarded
KO	Kerb outlet	P/C	Post & chain
LB	Letter box	P/R	Post & rail
LP	Lamp post	P/W	Post & wire
Mk	Utility marker	W/M	Wire mesh
MP	Mile post		Level profile descriptions
MW	Monitoring Well	AL	Arch level
NP	Name plate	BL	Bed level
P	Post	CL	Cover level
PM	Ranking meter	EH	Eaves level
RE	Rodding eye	FL	Floor level
RS	Road sign	IL	Invert level
rwp	Rain water pipe	PL	Parapet level
SP	Sign post	RH	Roadridge level
ST	Stop tap	SL	Soffit level
SB	Service Box	Spr	Arch springing level
SV	Stop valve	Top	Top of pipe/culvert
TCB	Telephone call box	WH	Wall height
TH	Trial Hole	WL	Water level

BENCH MARK INFORMATION
All levels relate to O.S (Newlyn) Datum, Established using network RTK. Survey plotted on a plane local grid, orientated to National Grid.

NOTES
ONLY MANHOLES AND SERVICES VISIBLE AT TIME OF SURVEY SHOWN
DRAINAGE INFORMATION MUST BE CHECKED AND VERIFIED WITH LOCAL AUTHORITY RECORDS PRIOR TO WORK COMMENCING
Levels defining edge of carriageway are observed at channel (bottom of kerb). Unless otherwise stated.
TREE SPREADS ARE SYMBOLIC ONLY AND ARE REPRESENTATIVE OF THE AVERAGE SPREAD.
THE DRIP LINE LAYER DENOTES THE TREES EXTREMITY

SURVEY STATIONS			
stn1	333416.119	350189.546	77.777
stn2	333409.831	350184.411	77.526
stn3	333430.439	350192.732	78.137

REVISIONS

REV	DESCRIPTION	SURVEYED	DRAWN	DATE

JLP Surveying

JLP Surveying Consultants Ltd,
Suite 45 Rodney House,
King Street,
Wigan
WN1 1BT
Tel - 01942 243313
Fax - 01942 492230
Mobile - 07710 429498
EMAIL:- petehouston@jlp surveys.com

PROJECT
Student Roost
Vicarage Hill
Wrexham

DRAWING TITLE
Topographical Land Survey

SCALE	SHEET SIZE	No. of SHEETS	DATE	REVISION
1 : 100	A1	1	15.04.2024	

DRAWING NUMBER
S24-0300



Appendix 2 - Proposed Site Plans

FURNITURE KEY:

- 01 EXISTING TIMBER FENCING
- 02 GARDEN KITCHEN
- 03 OUTDOOR DINING/STUDY TABLE
- 04 BAR CHAIRS
- 05 CASUAL BENCH SEATING
- 06 EXISTING HEDGING
- 07 MIXED USE LAWN
- 08 FLEXIBLE PERGOLA COVERED AREA
- 09 OUTDOOR CHAIR
- 10 OUTDOOR TABLE
- 11 BIN STORE
- 12 EXISTING RETAINED TREE
- 13 DEFENSIVE HEDGING
- 14 TIMBER CLAD PAVILION WITH HEATING AND LIGHTING
- 15 WATER BUTT

FINISHES KEY:

- A WHITE RESIN BOUND GRAVEL
- B GRASS
- C PERMEABLE PAVING
- D FEATURE PAVING WITH GRASS AREAS
- E RAIN GARDEN

P01	First Issue	22/03/2024	LM	JL
Revision		Date	By	Chk

Title:	Proposed Site Plan			
Project:	23146_Snowdon Hall	Scale	1:100	
Client:	Student Roost	Status	A1	
Stage:	Planning	Revision		
Reference:	23146-56T-P0-00S-D-A-002	S2	P01	

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KEY:
APPLICATION BOUNDARY



Appendix 3 – Development Advice Map



Map Perygl Llifogydd / Flood Risk Map -

Allwedd / Map Key

Zone C1

Zone C2

Zone B

Zone A

Graddfa / Scale at A3 1: 5,001

Dyddiad / Date
21/03/2024

Appendix 4 – Flood Maps for Planning

Enter title (max 35 characters)

Flood Risk from Rivers

High

Low

High

Low

High

Low

Flood Risk from Reservoirs

10. *Journal of the American Medical Association*, 2000; 284: 2689-2694.

Date: 21/03/2024

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British National Grid

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

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Appendix 5 – SAB dialogue

David Homan

From: Balqaysa Aden
Sent: 09 April 2024 16:56
To: David Homan
Subject: FW: SAB form

Hi Dave,

Sab response for Snowdon 10039.

Cheers,
B

From: SAB <SAB@wrexham.gov.uk>
Sent: Tuesday, April 9, 2024 4:54 PM
To: Balqaysa Aden <balqaysa.aden@egniol.com>; SAB <SAB@wrexham.gov.uk>
Subject: RE: SAB form

Hi Balqaysa,
Please accept my apologies for the delay in getting back to you. We have unfortunately has some very inclement weather over the past couple of days and I have been needed elsewhere in the flood service.

We consider that the infiltration testing is necessary because you need to prove the 1 m clearance between the sub base under the resin bound gravel and the top of the water table. This is to meet the water quality requirement within the SAB approval.

We would not accept the simulation for a 1 in 30 year storm for SuDS features. Could you request that the manufacturer runs the 1 in 100 year event? If not, you may need to find an alternative supplier.

Kind regards,

Cathryn Hughes
Swyddog Risg Llifogydd Technegol
Technical Flood Risk Officer

BSc (Hons) Earth and Environmental Science, MSc Sustainable Water Management.



☎ 01978 729639 or 07789 745497

📍 Cyngor Bwrdeistref Sirol Wrecsam, Adran Amgylchedd a Thechnegol, De Ffordd yr Abaty, Ystad Ddiwydiannol Wrecsam, Wrecsam LL13 9PW

📍 Wrexham County Borough Council, Environment & Technical Department, Abbey Road South, Wrexham Industrial Estate, Wrexham LL13 9PW

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From: Balqaysa Aden <balqaysa.aden@egniol.com>
Sent: 05 April 2024 12:07