

Bryn Morfa, Bodelwyddan

Drainage Strategy

March 2020

Project Information	
Project:	Bryn Morfa, Bodelwyddan
Report Title:	Drainage Strategy
Client:	Maxi Developments Ltd
Instruction:	The instruction to undertake this Drainage Strategy was received from Mr Max Jones on behalf of the Client.
File Ref:	12188-Drainage Strategy-02

Approval Record	
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Document History		
Revision	Date	Comment
01	26/03/2020	First issue
02	31/03/2021	Second issue – updated to include revised development plans

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Introduction

Waterco has been instructed to prepare a Drainage Strategy in respect of a proposed residential development at Land at Bryn Morfa, Bodelwyddan, Denbighshire, LL18 5TT.

This report has been prepared in accordance with the Welsh Government 'Statutory standards for sustainable drainage systems – designing, constructing, operating and maintaining surface water drainage systems' (2018), referred to as 'the Statutory Standards for SuDS' herein.

This report has been prepared in consultation with Denbighshire County Council in their role as a SuDS Approval Body (SAB) and Dŵr Cymru Welsh Water (DCWW).

This report should be read in conjunction with the Infiltration Test Report produced by Waterco in October 2019 (report reference: 12188-Infiltration Test Report-01).

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Existing Conditions

The site covers an area of approximately 8,015m² and is located at National Grid Reference 299692, 375974. A location plan and an aerial image are included in Appendix A.

Online mapping (including Google Maps / Google Streetview imagery, accessed March 2021) shows that the site comprises undeveloped land. The site is bordered by agricultural land to the north, Bodelwyddan allotments to the east and residential properties to the south and west. Access to the site is provided from Bryn Morfa (road) to the west.

Local Topography

A topographical survey has been undertaken by Curvature in April 2019. The topographical survey shows that the site slopes from 12.47 metres Above Ordnance Datum (m AOD) in the south-west to 10.14m AOD in the north-east.

Topographic levels to m AOD have also been derived from a 1m resolution Natural Resources Wales (NRW) composite 'Light Detecting and Ranging' (LiDAR) Digital Terrain Model (DTM). The LiDAR data is consistent with the topographical survey.

Topographical information is provided as Appendix B.

Ground Conditions

Reference to the British Geological Survey (BGS) online mapping (1:50,000 scale) indicates that the site is

underlain by superficial deposits of Devensian Till, generally comprising diamicton. The superficial deposits are identified as being underlain by Warwickshire Group consisting of mudstone, siltstone and sandstone.

The geological mapping is available at a scale of 1:50,000 and as such may not be accurate on a site-specific basis.

According to NRW's Aquifer Designation data, obtained from the BGS GeoIndex online mapping (accessed March 2021), the superficial Devensian Till is classified as a Secondary (undifferentiated) Aquifer. Secondary Undifferentiated Aquifers are assigned in 'cases where it has not been possible to attribute either category A or B to a rock type. In most cases, this means that the layer in question has previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type'.

The underlying Warwickshire Group is classified as a Secondary A Aquifer. Secondary A Aquifers are 'permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers'.

The Cranfield University 'Soilscapes' map (accessed March 2021) indicates that the site is underlain by 'slowly permeable, seasonally wet, loamy and clayey soils'.

Infiltration testing has been undertaken by Waterco in October 2019 in accordance with BRE 365 specification. Full details of the infiltration testing are provided within the Waterco Infiltration Test Report (report reference: 12188-Infiltration test Report-01).

5No. trial pits were advanced on site. A trial pit location plan is included in Appendix C. Topsoil to a depth of approximately 0.2m below ground level (m.bgl) was identified. The topsoil was underlain by orange/brown/grey clay to the base of each trial pit (up to 1.67m.bgl).

No fall in water level was observed in the trial pits over a period of 4 hours. As such, infiltration techniques are not considered suitable on the site.

A photographic record of the infiltration testing is included as Appendix D.

Local Drainage

Public sewer records have been obtained from DCWW and are included in Appendix E. The DCWW sewer records show that there is a public combined rising main located along the western site boundary, originating from a DCWW sewage pumping station. The DCWW sewage pumping station is located adjacent to the site entrance.

A 100mm / 150mm public foul sewer is located with the gardens of the residential properties west of the site. The foul sewer discharges to the DCWW sewage pumping station. A surface water sewer (subject to private transfer) is located within Bryn Morfa (road), its eventual discharge point is not identified on the DCWW sewer records.

As identified during a site visit, the eastern boundary of the site is bordered by a land drain. The land drain

flows north and turns east immediately north of the site. The land drain forms a tributary of the River Gele. The land drain, immediately north-east of the site, is situated at or below 9.5m AOD.

Development Proposals

The proposed development is for the demolition of 1No. dwelling and the erection of 28No. dwellings including the creation of a new vehicular access, internal access road, 2No. attenuation ponds and associated works. A proposed development plan is included in Appendix F.

The proposed development will introduce hardstanding areas in the form of buildings, car parking and the access road. Hardstanding will comprise approximately 4,120m² or 51% of the total site area. The remaining permeable, soft landscaped areas will occupy approximately 3,895m² or 49% of the total site area.

All measurements have been taken from a .dwg copy of the 'Proposed Housing Layout and Landscape' (drawing number: EA / 5401 - 002).

Policy Context

The Denbighshire County Council Local Development Plan 2006 – 2021 was adopted on 4th June 2013 and is the current development plan for the county. The Local Development Plan contains the following policy relating to drainage:

'Policy VOE 6 – Water Management

All development will be required to eliminate or reduce surface water run-off from the site, where practicable. The run-off rates from the site should maintain or reduce pre-development rates...

Large developments, or the cumulative impact of smaller developments, incorporating water storing measures could by reducing surface water run-off, have the potential to reduce flow levels in water courses and water tables, and thereby have a negative impact on biodiversity. A balance must be achieved between management of water recycling and ensuring no adverse impact on the water environment and biodiversity.

The use of Sustainable Drainage Systems (SuDS) to manage surface water flows can also be an important tool in minimising flood risk by increasing permeable surfaces in an area which allows water to seep into the ground rather than running off into the drainage system. The effective use of permeable surfaces, soakaways and water storage areas should be incorporated in all new development where technically possible. SuDS can also reduce the impact of diffuse pollution from runoff and flooding securing environmental, biodiversity and aesthetic benefits. Early consideration of SuDS is required in order that a range of techniques can be considered and developers are encouraged to enter into early discussions with the Council.

The Council supports Natural Resources Wales in promoting sustainable drainage systems which maintain or reduce pre-development rates of run-off and will seek advice from the agency to determine allowable rates

of run-off.'

This report has been prepared in accordance with the Welsh Government 'Statutory standards for sustainable drainage systems – designing, constructing, operating and maintaining surface water drainage systems' (2018).

Consultation

Correspondence from Denbighshire County Council (LLFA) (dated May 2019) has been provided to Waterco by the Client. In their response, provided as Appendix G, Denbighshire County Council have stated:

'Drainage and Flood Risk:

Foul water drainage: No reference to the foul drainage arrangements for the proposed development are made within the enquiry. The Local Planning Authority will need to be satisfied the foul drainage arrangements for the proposed development are suitable and therefore details should be provided regarding foul drainage arrangements with any planning application.

We refer you to WG Circular 008/2018 on private drainage, and specifically paragraphs 2.3-2.5, which stress the first presumption must be to provide a system of foul drainage discharging into a public sewer.

Surface water drainage: Please be advised that since January 2019, new legislation came into force which makes Sustainable Drainage Systems (SuDS) a mandatory requirement on all new developments involving more than a single dwelling or a construction more than 100m². You must apply to the SuDS Approving Body (SAB) for approval on these types of developments.

It is therefore expected that a detailed drainage strategy for the proposed site be developed as early as possible and early engagement with the Council's SAB Officers is recommended.

Drainage plans showing the proposed surface water drainage details and drainage strategy would then be required to be submitted with any future planning application.

Flood Risk: The site is not location within a flood risk area.'

A consultation request to Denbighshire SAB was submitted in October 2019. In their response, the SAB stated:

'Regarding discharge rates, I would prefer not to apply a specific rate, but would expect you to demonstrate that the proposed development has no detrimental impact in terms of flood risk to the surrounding area, including the downstream reaches of the receiving watercourse, assuming that this is your intention and you have the necessary permission.

The current view across the six North Wales SABs is that 20% is an appropriate allowance for climate change.

I'd like to see an allowance for urban creep please. 10% would seem appropriate in this case.'

A pre-development enquiry request was submitted to DCWW in October 2019. In their response (Appendix E), DCWW have stated:

'Sewerage

The foul flows only from the proposed development can be accommodated within the public sewerage system. We advise that the flows should be communicated with the foul sewer serving Bryn Morfa.

...We would also like to make the developer aware that the proposed development is within close proximity of a public combined [sewage] pumping station. We would like to advise the developer that no habitable buildings should be constructed within a 15m vicinity of the pumping station so as to minimise any effects of noise and odour nuisance.'

Surface Water Management

The site currently comprises undeveloped land which is not formally drained.

The proposed development will introduce 4,120m² of hardstanding through the introduction of dwellings, driveways and an access road. It is understood that a buffer for tree root protection is required in the north-eastern extent.

The introduction of hardstanding area will result in an increase in surface water runoff rates and volumes. In order to ensure the proposed development will not increase flood risk elsewhere, surface water discharge from the site will be controlled.

Discharge Method

Standard S1 of the Welsh Government: Statutory standards for SuDS sets out the following hierarchy of drainage options:

Priority Level 1: Surface water runoff is collected for use;

Priority Level 2: Surface water runoff is infiltrated to ground;

Priority Level 3: Surface water runoff is discharged to a surface water body;

Priority Level 4: Surface water runoff is discharged to a surface water sewer, highway drain, or another drainage system;

Priority Level 5: Surface water runoff is discharged to a combined sewer.

Priority Level 1: Surface water runoff collected for use

In line with section G1.4 of the statutory standards for SuDS, rainwater harvesting is not proposed for this

site as:

1. There is no foreseeable need to harvest water at the site as DCWW water resources and drought management plans do not identify potential stresses on mains water supplies;
2. The use of rainwater harvesting is not a viable/ cost-effective part of the solution for managing surface water runoff on the site, taking account of the potential water supply benefits of such a system.

With regard to the second point above, the costs associated with rainwater harvesting systems (unit costs, installation costs, running costs and maintenance costs) outweigh the water saving costs. Furthermore, section G1.6 of the Statutory Standards for SuDS states that; 'in most cases, rainwater harvesting alone will not be adequate to deal with the site drainage and provision will be required for an overflow to a Level 2 or lower priority runoff destination.' As such, rainwater harvesting systems are not considered a cost-effective solution for managing surface water and a lower priority runoff destination is required.

However, and to encourage a cost-effective method of water re-use, a water but will be installed at each property. A water but will facilitate external water re-use.

Priority Level 2: Surface water runoff is infiltrated to ground

Infiltration testing to the BRE 365 specification has been carried out by Waterco in October 2019. The infiltration test results concluded that infiltration is not a feasible option for the site.

Priority Level 3: Surface water runoff is discharged to a surface water body

The nearest watercourse is an unnamed land drain which is located adjacent to the eastern site boundary. The land drain has onward connectivity to the River Gele. Discharge to the land drain is therefore proposed.

The land drain, adjacent to the north-eastern corner of the site, is situated at approximately 9.5m AOD. A gravity connection to the land drain appears achievable however may involve a requirement for limited land raising in the lower north-eastern extent of the site.

In accordance with Standard S2 of the Statutory Standards for SuDS, surface water discharge should be limited to greenfield runoff rates.

The existing greenfield runoff rates have been estimated using the Revitalised Flood Hydrograph Model (ReFH2) method. A summary of the greenfield rates for a range of events is provided as Appendix H. 1 in 1 year and 1 in 2 year greenfield runoff rate have considered, but given the site levels and the limited space available for attenuation these were not achievable.

An attenuation system was feasible for discharge rate of 7 l/s. This is comparable to the existing 1 in 5 year greenfield runoff rate for the 9,340m² development site of 7.1 l/s, and would still represent a substantial betterment on the greenfield run-off rate for more severe storm events.

Attenuation Storage

Attenuation storage will be provided in the form of a 2No. ponds which will be located in the lower northern

extent of the site. The ponds are identified on the proposed development plan (Appendix F).

Attenuation storage will be provided to accommodate the 1 in 100 year plus 20% climate change storm event as per SAB requirements. An attenuation storage estimate has been undertaken using MicroDrainage and is included in Appendix I.

An attenuation storage volume of 238m³ will be required to accommodate the 1 in 100 year plus 20% climate change (CC) event. The storage estimate is based on a flow rate of 7 l/s, storage within a tank or pond structure, an impermeable drainage area of 4,532m² (which includes a 10% allowance for urban creep), a design head of 0.8m and hydro brake flow control.

The attenuation volume is provided for indicative purposes only and should be verified at the detailed design stage.

The pond in the north-western extent with a base area (surface area at the outlet level) of 28m², a depth of 0.8m (between the inlet and outlet level), 1 in 3 side slopes and a total surface area (land take / top bank level) of 91m² will accommodate up to 48m³ of storage.

Taking into account the tree root protection zone; the pond in the north-eastern extent with a base area of 172m², a depth of 0.8m, 1 in 3 side slopes and a total surface area of 302m² will accommodate up to 190m³ of storage.

Both attenuation ponds together will provide sufficient storage required to accommodate the 1 in 100 year plus 20% climate change event – 238m³.

The top bank of the pond should be set a minimum of 300mm above the inlet level of incoming pipework (maximum water level).

The proposed surface water drainage scheme will ensure no increase in runoff over the lifetime of the development.

Exceedance Event

Storage will be provided for the 1 in 100 year plus 20% CC event. Storm events in excess of the 1 in 100 year plus 20% CC event will be permitted to produce temporary shallow depth flooding within the access road and landscaped areas. Exceedance flows within the access road would be directed north and towards the attenuation pond / landscaped areas. Finished floor levels will be set at a minimum of 150mm above surrounding ground levels ensuring exceedance flooding will not affect the buildings.

Surface Water Treatment

The Statutory Standards for SuDS sets out the following guidance for surface water treatment:

S3 – Surface water quality management

Treatment for surface water runoff should be provided to prevent negative impacts on the receiving water quality and/or protect downstream drainage systems, including sewers.

In accordance with the CIRIA C753 publication 'The SuDS Manual' (2015), residential roofs have a 'very low' pollution hazard level, with low traffic roads classified as having a 'low' pollution hazard level. Table 1 shows the pollution hazard indices for each land use.

Table 1 – Pollution Hazard Indices

Land Use	Pollution Hazard Level	Total Suspended Solids (TSS)	Metals	Hydrocarbons
Residential Roofs	Very Low	0.2	0.2	0.05
Low Traffic Roads	Low	0.5	0.4	0.4

Table extract taken from the CIRIA C753 publication 'The SuDS Manual' – Table 26.2

* Indices values range from 0-1.

Runoff from roofs and roads will be directed to a pond. Table 2 below demonstrates that a pond will provide sufficient treatment.

Table 2 – SuDS Mitigation Indices

Type of SuDS	Mitigation Indices		
	Total Suspended Solids (TSS)	Metals	Hydrocarbons
Pond	0.7	0.7	0.5

Table extract taken from the CIRIA C753 publication 'The SuDS Manual' – Table 26.3

Amenity and Biodiversity

The 'Statutory standards for SuDS' set out the following standards for amenity and biodiversity:

Standard S4 – Amenity – *The design of the surface water management system should maximise amenity benefits.*

Standard S5 – Biodiversity – *The design of the surface water treatment management system should maximise biodiversity benefits.*

The proposed drainage system will provide amenity and biodiversity benefits through the implementation of a pond.

Construction, Operation and Maintenance

Standard S6 of the 'Statutory standards for SuDS states:

Standard S6 – Design of drainage for Construction, Operation and Maintenance

- 1) All elements of the surface water drainage system should be designed so that they can be constructed easily, safely, cost effectively, in a timely manner, and with the aim of minimising the use of scarce resources and embedded carbon (energy).*
- 2) All elements of the surface water drainage system should be designed to ensure maintenance and operation can be undertaken (by the relevant responsible body) easily, safely, cost effectively, in a timely manner, and with the aim of minimising the use of scarce resources and embedded carbon (energy).*
- 3) The surface water drainage system should be designed to ensure structural integrity of all elements under anticipated loading conditions over the design life of the development site, taking into account the requirement for reasonable levels of maintenance.*

All drainage systems will be readily accessible for maintenance access. The site layout makes provision for a minimum 1m access strip around the perimeter of the pond.

Maintenance of the shared drainage system will be the responsibility of the SAB. A maintenance schedule for an attenuation pond is included in Appendix J.

Foul Drainage

Correspondence from DCWW (Appendix E) states; *'The foul flows only from the proposed development can be accommodated within the public sewerage system. We advise that the flows should be communicated with the foul sewer serving Bryn Morfa.'*

Therefore, foul flows should be discharged to the 100mm / 150mm public foul sewer serving Bryn Morfa. A connection could be made where the public foul sewer crosses under the location of the proposed site access road. A gravity connection appears feasible, however is subject to survey to confirm sewer invert levels.

Conclusions

The proposed development is for the demolition of 1No. dwelling and the erection of 28No. dwellings including the creation of a new vehicular access, internal access road, 2No. attenuation ponds and associated works.

The proposed development will introduce impermeable drainage area in the form of buildings, car parking and access. This will result in an increase in surface water runoff. In order to ensure the increase in surface water runoff will not increase flood risk elsewhere, flow control will be used and attenuation provided on site to accommodate storm events up to and including the 1 in 100 year plus 20% climate change event.

All methods of surface water discharge have been assessed. As infiltration techniques are not possible (as evidenced by infiltration testing), discharge of surface water will be made to a land drain adjacent to the eastern site boundary. Discharge will be made at the limited discharge rate of 7 l/s. Limited land raising in the north-eastern extent of the site may be required to facilitate gravity drainage.

Attenuation storage will be required on site in order to restrict surface water discharge to 7 l/s. Attenuation will be provided within 2No. ponds located in the northern extent of the site. The ponds will provide water quality, amenity and biodiversity benefits.

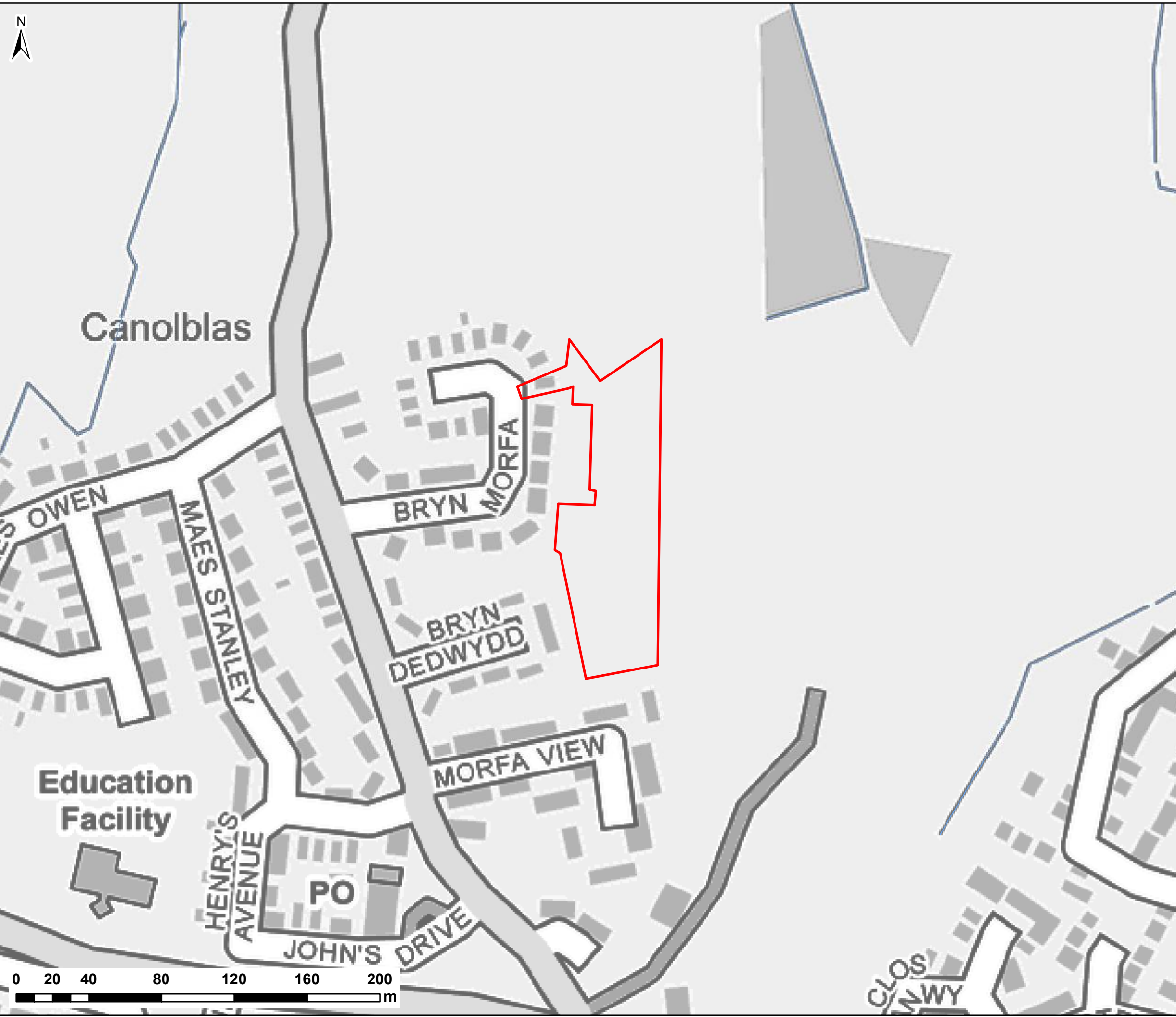
Foul flows should be discharged to the 100mm / 150mm public foul sewer immediately west of the site. A connection could be made where the public foul sewer crosses under the location of the proposed site access road.

A Concept Designer's Risk Assessment (cDRA) has been prepared to inform future designers of any identified hazards associated with the scheme. The cDRA has been included in Appendix K.

Recommendations

1. Submit this Drainage Strategy to the Planning Authority in support of the planning application;
2. Submit a formal pre-application to the SAB;
3. Verify the attenuation volumes included in this report when undertaking detailed drainage design.

Appendix A Location Plan & Aerial Image



NOTES:
1) ALL DIMENSIONS ARE IN METRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS STATED OTHERWISE

- LEGEND**
- Site Boundary
 - Watercourses / Water Bodies



CLIENT:
MAXI DEVELOPMENTS LTD



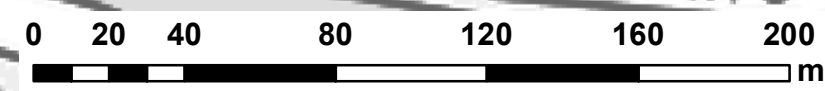
SCHEME:
**BRYN MORFA,
BODELWYDDAN**

PLOT TITLE:
LOCATION PLAN

PLOT STATUS: **FINAL** DATE: 17/09/2019

DRAWN: CM	CHECKED: AW	APPROVED: VG	PLOT SCALE @ A3: 1:2,000 (UNLESS STATED OTHERWISE)
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PLOT NAME: 12188-Location_Plan REV: -





NOTES:
1) ALL DIMENSIONS ARE IN METRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS STATED OTHERWISE

LEGEND

 Site Boundary



CLIENT:
MAXI DEVELOPMENTS LTD



SCHEME:
**BRYN MORFA,
BODELWYDDAN**

PLOT TITLE:
AERIAL PLAN

PLOT STATUS: **FINAL** DATE: 17/09/2019

DRAWN: CM	CHECKED: AW	APPROVED: VG	PLOT SCALE @ A3: 1:2,000 (UNLESS STATED OTHERWISE)
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PLOT NAME: 12188-Aerial_Plan	REV: -
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Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Appendix B LiDAR Extract & Topographical Survey



Legend

Symbols		
█ Boltard	█ Colm	█ Rain Water Gully
→ Direction of Watercourse	█ Road Sign	█ Road Sign
█ Electricity Pole	█ Shrubs	█ Slope
█ Fire Hydrant	█ Slope	█ Stop Tap
█ Gas Tap	█ Stop Tap	█ Stop Valve
█ Gate	█ Survey Station	█ Telegraph Pole
█ Gully	█ Tree (Spread to scale)	█ Tree Slump
█ Lamp Post	█ Utility Marker Post	
█ Manhole/Inspection Chamber		
█ Manhole/Inspection Chamber		
█ Manhole/Inspection Chamber		

Abbreviations

AV	Air Valve
BED	Bore Bed
BH	Bore Hole
BOL	Boltard
BT	British Telecom Inspection Chamber
BT	Telegraph Pole
BS	Bus Stop
CCTV	Closed Circuit Television Furniture
CEB	Control Electricity Box (Above ground)
DK	Drop Kero
ER	Earth Rod
EP	Electricity Pole
FH	Fire Hydrant
GU	Gully
IC	Inspection Chamber
LP	Lamp Post
LB	Letter Box
MP	Utility Marker Post
MH	Manhole
P	Post
RS	Road Sign
RE	Reading Eye
RWG	Rain Water Gully
SCF	Setting Out Point
ST	Stop Tap
SV	Stop Valve
TCS	Telephone Call Box
TL	Traffic Light
WM	Water Meter

Boundary Abbreviations

B/W	Barbed Wire Fence
C/B	Close Boarded Fence
Cu/B	Cash Barrier
C/L	Chain Link Fence
C/P	Chestnut Paling
C/I	Corrugated Iron Fence
U/R	Iron Railing
L/L	Larch/Fence Panel
P/W	Post & Wire Fence
P/C	Post & Chain
R/W	Retaining Wall
S/PAL	Steel Palisade Fence
S/P	Stock Proof Fence
W/M	Wire Mesh Fence

Title: **TOPOGRAPHIC SURVEY
LAND OFF BRYN MORFA
BODELWYDDAN**

Client: **MAX JONES
C/O BRYN RODYN
DOLWEN ROAD, OLD COLWYN**

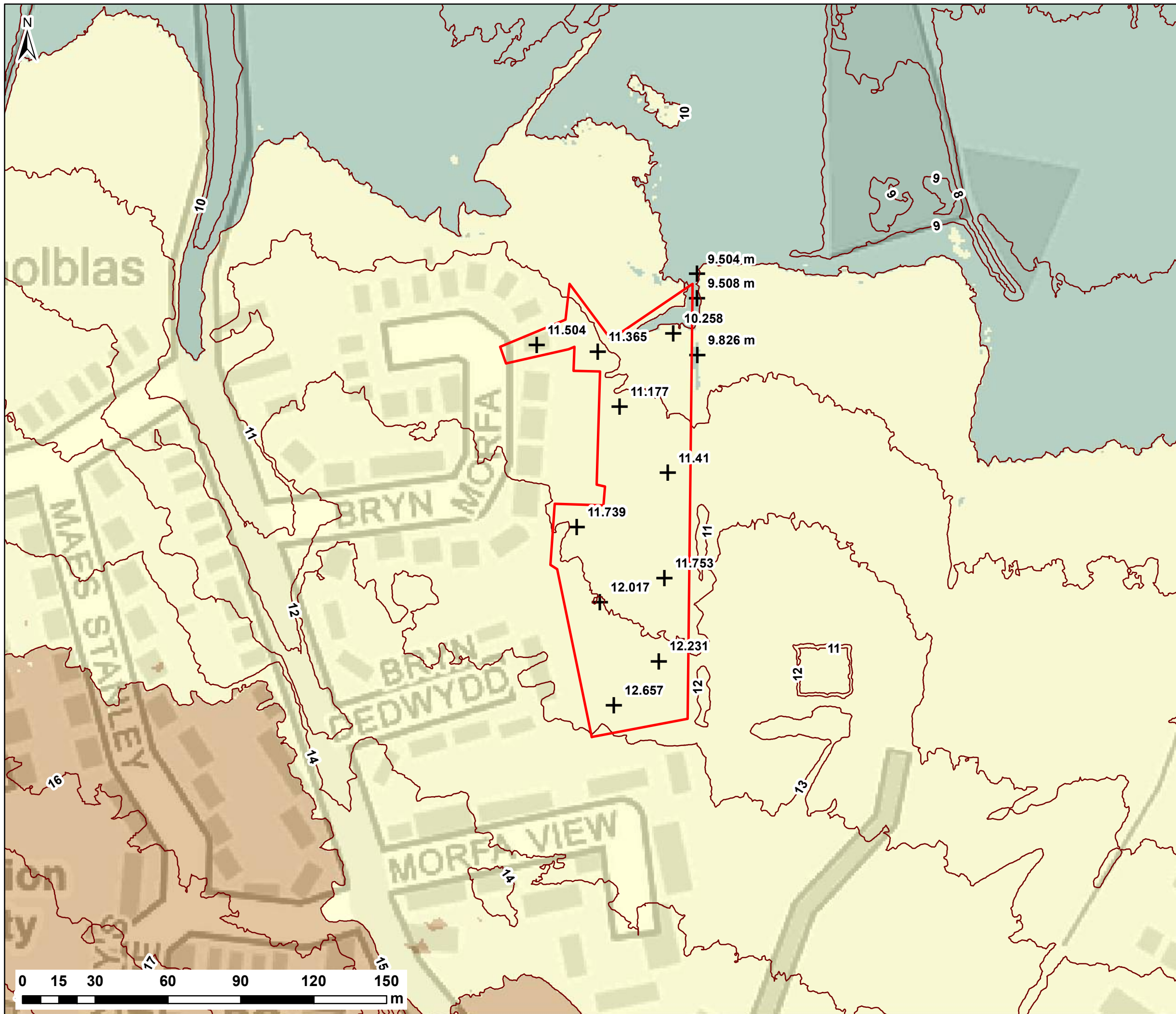
Notes:
1. CAD - Not into CS grid using OSGB 36
2. Datum - Read into CS datum using OSGB 36
3. Contour vertical interval = 1m
4. Survey orientated to grid north

SCALE: 1:200@A0 DATE: 12/04/19 CHECKED: SR DWG NO. 19_065/01

Survey data and drawings produced by:

CURVASURE
PROFESSIONAL CONSTRUCTION

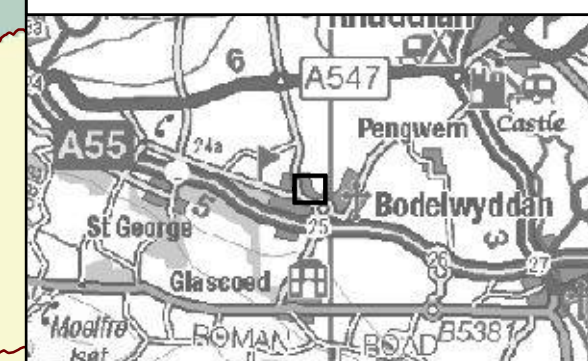
Curvasure Limited a company registered in England and Wales. Company No. 4830127
Registered Office: 23 Finches Drive, Colwyn Bay, Conwy, LL29 8HT
101492 532400 m07970 459236 f01492 532400 eadmin@curvasure.co.uk
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NOTES:
1) ALL DIMENSIONS ARE IN METRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS STATED OTHERWISE

LEGEND

- Site Boundary
- + Site Levels
- Ground Elevation (m AOD)**
- < 5
- 5 - 10
- 10 - 15
- 15 - 20
- > 20



CLIENT:
MAXI DEVELOPMENTS LTD



SCHEME:
**BRYN MORFA,
BODELWYDDAN**

PLOT TITLE:
**LIDAR ELEVATIONS
1m RESOLUTION**

PLOT STATUS: FINAL	DATE: 10/10/2019
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DRAWN: CM	CHECKED: AW	APPROVED: VG	PLOT SCALE @ A3: 1:1,500 (UNLESS STATED OTHERWISE)
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PLOT NAME: 12188-LIDAR	REV: -
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
Appendix C Trial Pit Location Plan

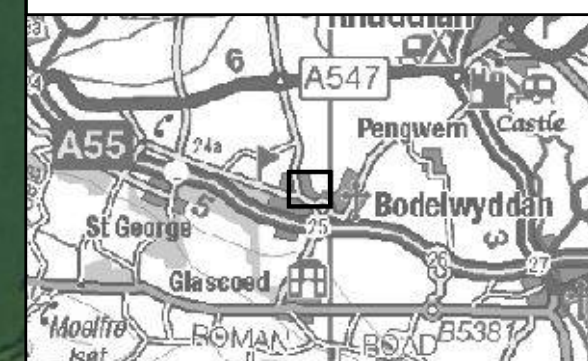


NOTES:
1) ALL DIMENSIONS ARE IN METRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS STATED OTHERWISE

LEGEND

 Site Boundary

 Trial Pit



CLIENT:
MAXI DEVELOPMENTS LTD



SCHEME:
**BRYN MORFA,
BODELWYDDAN**

PLOT TITLE:
**TRIAL PIT
LOCATION PLAN**

PLOT STATUS: **FINAL** DATE: 11/10/2019

DRAWN: CM CHECKED: AW APPROVED: VG PLOT SCALE @ A3: 1:2,000 (UNLESS STATED OTHERWISE)

PLOT NAME: 12188-Trial_Pit_Location_Plan REV: -



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Appendix D Photographic Record


Photo No.1	Job Reference & Number: 12188 – Bryn Morfa, Bodelwyddan
Date: October 2019	
Description: Water infill to trial pit 2	

Photo No. 2	Job Reference & Number: 12188 – Bryn Morfa, Bodelwyddan
Date: October 2019	
Description: Trial pit 2 arisings	

Photo No.3	Job Reference & Number: 12188 – Bryn Morfa, Bodelwyddan
Date: October 2019	
Description: Trial pit 2	


Photo No. 4	Job Reference & Number: 12188 – Bryn Morfa, Bodelwyddan
Date: October 2019	
Description: Trial pit 3 – side collapse (facing west)	

Photo No.5	Job Reference & Number: 12188 – Bryn Morfa, Bodelwyddan
Date: October 2019	
Description: Trial pit 3 -side collapse (facing east)	

Photo No.6	Job Reference & Number: 12188 – Bryn Morfa, Bodelwyddan
Date: October 2019	
Description: Trial pit 4 – side collapse	

Photo No.7	Job Reference & Number: 12188 – Bryn Morfa, Bodelwyddan
Date: October 2019	
Description: Trial pit 4 arisings	

Photo No.8	Job Reference & Number: 12188 – Bryn Morfa, Bodelwyddan
Date: October 2019	
Description: Trial pit 4 arisings – clay in matrix of sands and gravel	


Photo No.9	Job Reference & Number: 12188 – Bryn Morfa, Bodelwyddan
Date: October 2019	
Description: Trial pit 5, after infill of water	

Photo No.10	Job Reference & Number: 12188 – Bryn Morfa, Bodelwyddan
Date: October 2019	
Description: Trial pit 2 – after 3 hours.	

Photo No.11	Job Reference & Number: 12188 – Bryn Morfa, Bodelwyddan
Date: October 2019	
Description: View of site and trial pits, facing north.	

Photo No.12	Job Reference & Number: 12188 – Bryn Morfa, Bodelwyddan
Date: October 2019	
Description: View of site and trial pits, facing south.	

Photo No.13	Job Reference & Number: 12188 – Bryn Morfa, Bodelwyddan
Date: October 2019	
Description: Land drain adjacent to eastern site boundary – facing north.	


Photo No.14	Job Reference & Number: 12188 – Bryn Morfa, Bodelwyddan
Date: October 2019	
Description: Location of land drain, from the north-eastern corner of the site - facing east	

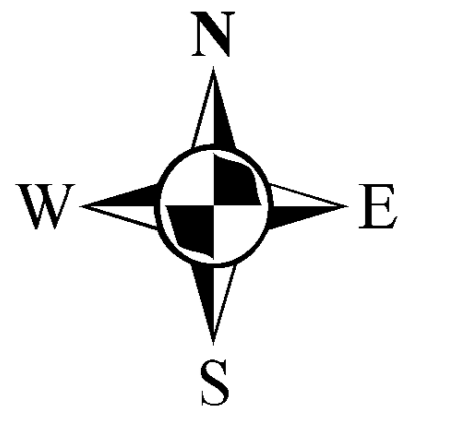
Photo No.15	Job Reference & Number: 12188 – Bryn Morfa, Bodelwyddan
Date: October 2019	
Description: Land drain, taken from field north of the site, facing south.	

Appendix E DCWW Sewer Plan and Correspondence



Dŵr Cymru
Welsh Water

Bryn Morfa, Bodelwyddan



LEGEND(Representative of most common features)

- Waste network:
- Foul chamber
 - Surface water chamber
 - Combined chamber
 - Combined sewer overflow
 - Special purpose chamber
 - Treatment works
 - △ Pumping station
 - Sewer symbol/colour indicates the type.
 - RED - Combined
 - GREEN - Surface Water
 - BROWN - Foul
 - Purple - Normal S24 sewers (for indicative purposes only)
- LH
 - Storm Overflow
 - Rising main
 - Gravity sewer
 - Private sewer
 - Private sewer subject to Sect. 124 adoption agreement
 - Private Sewer Transfer
 - Lateral Drain
 - Inspection Chamber

Notes:

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 (PF)) 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

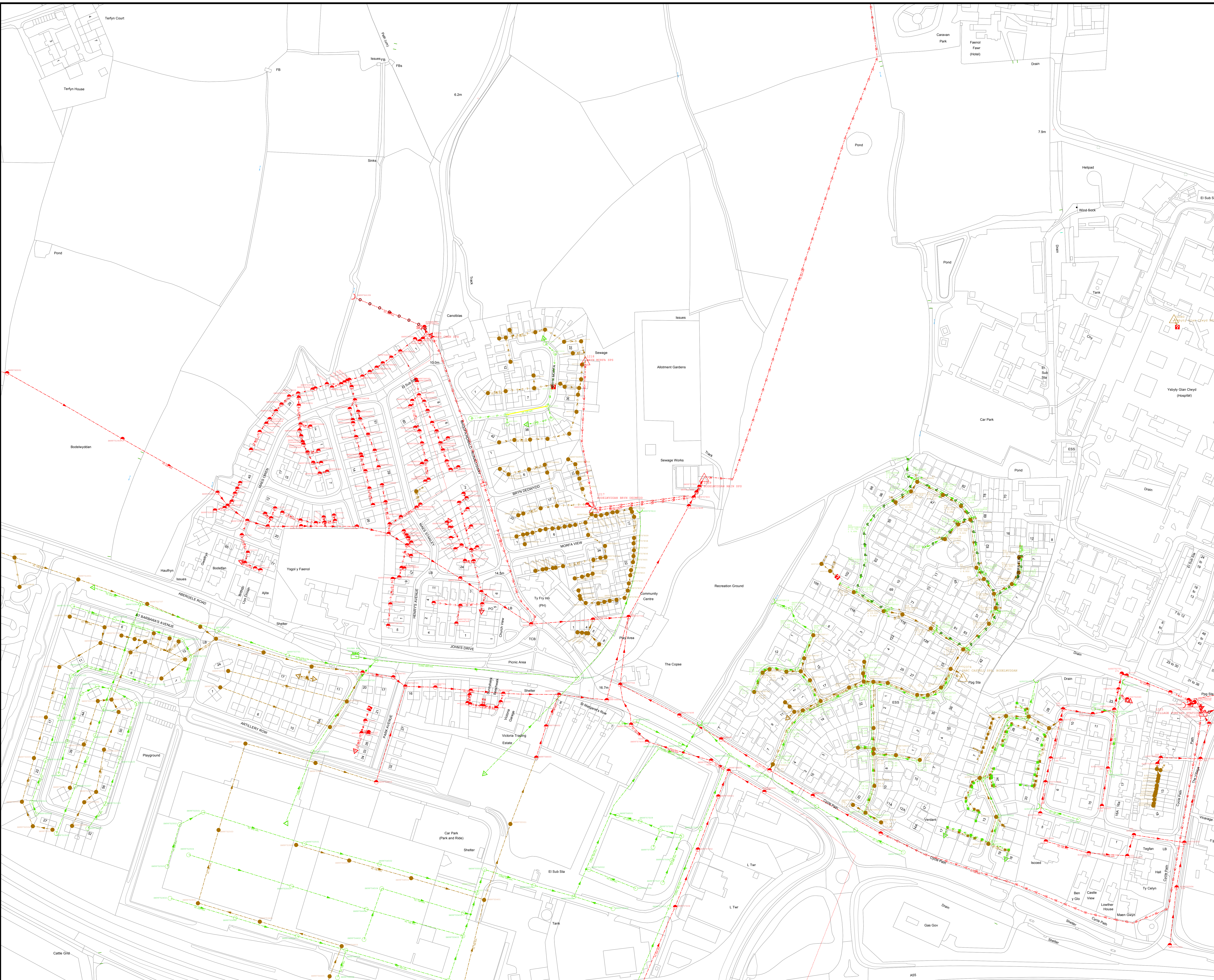
Dŵr Cymru Cymhaeaf (the Company) gives this information as to the position of its underground apparatus by way of general guidance only and on the basis of the best information available and to the extent that it is correct as at the date of recording or other works made in the vicinity of the Company's apparatus. The accuracy of locating apparatus before carrying out any excavations rests entirely on you. The information which is supplied by the Company is based upon the best information available and, in particular, but without prejudice to the generality of the foregoing, it should be noted that the records that are available to the Company may not disclose the existence of a water main, service pipe, sewer, lateral drain or disposal main and any associated apparatus laid before 1 September 1989, or, if they do, the particulars thereof including their position, may not be accurate. It must be understood that the furnishing of this information is entirely without prejudice to the provisions of the New Roads and Street Works Act 1991 and the Company's right to be compensated for any damage to its apparatus.

Service pipes are not generally shown but their presence should be anticipated.

EXACT LOCATIONS OF ALL APPARATUS TO BE DETERMINED ON SITE.

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Map Ref: 299692.375911
Map scale: 1:1250
Printed by: John Emma
Printed on: 25 Sep 2019



Waterco Ltd
Lon Parcwr Eden Court
Ruthin
Denbighshire
LL15 1NJ

Date: 08/10/2019
Our Ref: PPA0004354

Dear Miss McGough

Grid Ref: 299692 375974
Site Address: Bryn Morfa Bodelwyddan
Development: Bryn Morfa, Bodelwyddan

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.

SEWERAGE

The foul flows only from the proposed development can be accommodated within the public sewerage system. We advise that the flows should be communicated with the foul sewer serving Bryn Morfa.

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.

The proposed development site is crossed by a 110mm combined rising main with the approximate positions being marked on the attached Statutory Public Sewer Record. Under the Water Industry Act 1991 Dwr Cymru Welsh Water has rights of access to its apparatus at all times. No part of any building will be permitted within 3 metres either side of the centreline of each of the public sewers.

We would also like to make the developer aware that the proposed development is within close proximity of a public combined sewerage pumping station. We would like to advise the developer that no habitable buildings should be constructed within a 15m vicinity of the pumping station so as to minimise any effects of noise and odour nuisance

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.

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'. It is therefore recommended that the developer engage in consultation with Denbighshire County Council as the determining SuDS Approval Body (SAB), in relation to their proposals for SuDS features. Please note, Dwr Cymru Welsh Water is a statutory consultee to the SAB application process and will provide comments to any SuDS proposals by response to SAB consultation.

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. 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 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.

SEWAGE TREATMENT

No problems are envisaged with the Waste Water Treatment Works for the treatment of domestic discharges from this site.

WATER SUPPLY

A water supply can be made available to service this proposed development. The cost of providing new on-site watermains can be calculated upon the receipt of detailed site layout plans which should be sent to the above address.

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,



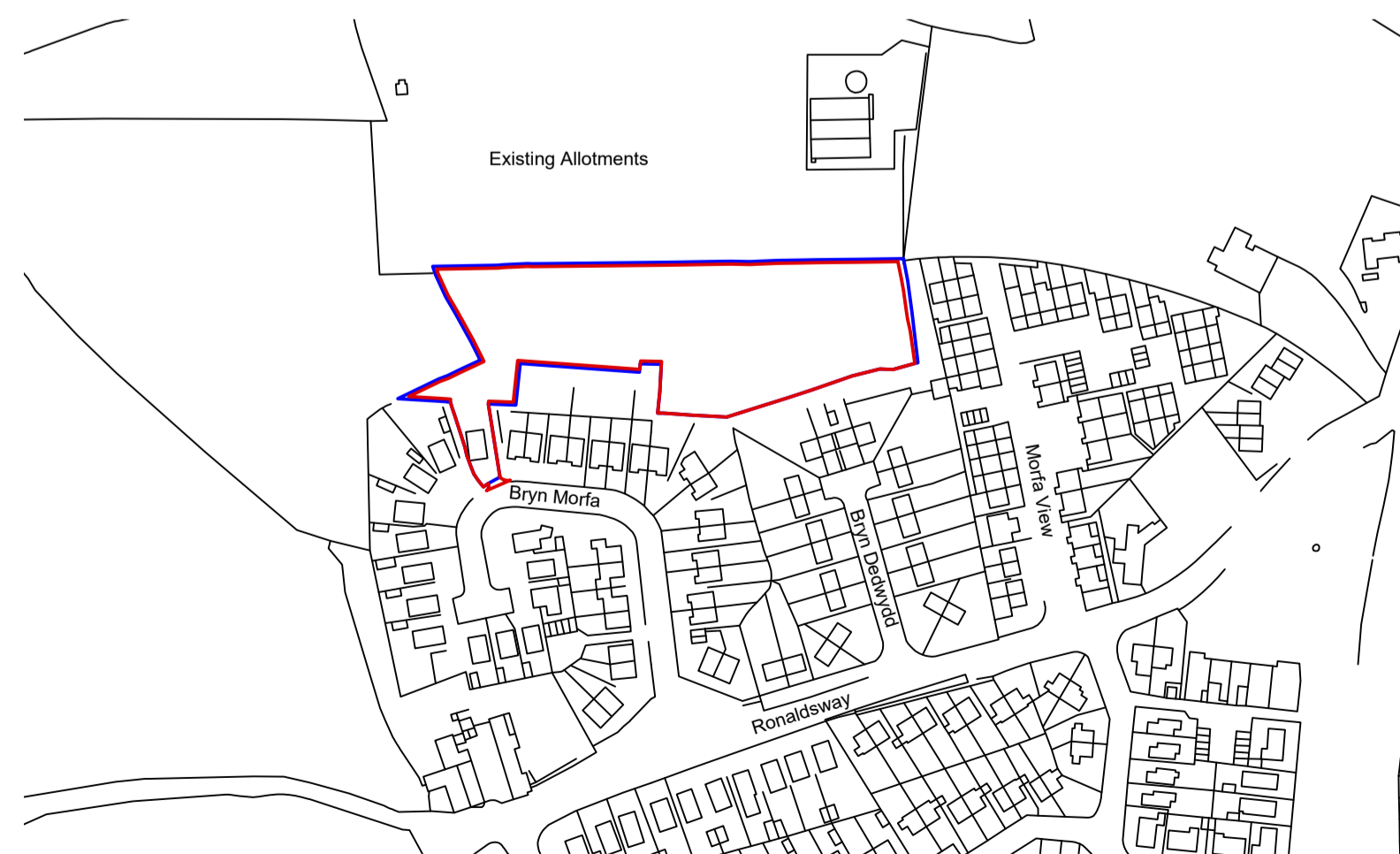
Owain George
Planning Liaison Manager
Developer Services

Please Note 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.

Appendix F Development Plans



1 Proposed Landscape and Housing Layout
Scale: 1:250



2 Site location plan
Scale: 1:2500

House Type Mix

Private Sale Units

House Type	Description	No
Type - A	4 Bed Detached (incl. Garage)	1
Type - B	3 Bed Semi-Detached (No internal Garage)	18
Type - C	2 Bed Semi-Detached (No internal Garage)	8*
Type - D	3 Bed Detached (No internal Garage)	1

* Pink Outline denotes affordable unit

Key

- Asphalt roadway/car parking
- Asphalt footpath
- Herringbone block paving
- Concrete paving flags to private footpaths and patio areas
- Private compost bin - min. 330L capacity
- Timber garden shed (2.4 x 1.8m)
- Fixed and secured rotary dryer in concrete footing to provide min 4in.m drying line
- Bin storage location:
1 no. 240L black wheeled bin for general refuse (0.58 x 0.74m)
1 no. 240L green wheeled bin for general refuse (0.58 x 0.74m)
- 1.8m high close board timber fence with gates where indicated
- 0.45m high knee rail to retention pond edge
- Grassed drainage retention pond. To engineer's specification. Base area as indicated
- Red line boundary
- Blue line boundary
- Low growing ornamental shrubs
- Biodiverse grassed area
- Ornamental hedge (1.2m high)
- Native shrub planting (above 1.2m high)
- Native planting (below 1.2m high)
- Existing retained tree (size of symbol indicates size of canopy)
- Existing retained hedgerow. To be pruned
- Proposed trees. Min 80% native species

Rev	Details	Date	Drawn	Title	Project No:	Drawing No:	Revision:	Client:
				Proposed Housing Layout and Landscape	5401	002		Avalon Developments Limited
					Scale: 1:250	@ A1	Drawn By: LS	Date: 26/03/21
								Project Address: 22 Bryn Morfa, Bodelwyddan, Rhyll LL18 5TP
								Project: Residential Development at Bryn Morfa

Appendix G Denbighshire County Council / SAB Correspondence

Eich cyf / Your ref

Ein cyf / Our ref : 40/2019/0368

Dyddiad / Date : 23 May 2019

Rhif union / Direct dial : 01824 706727



Mr Rhys Davies
Cadnant Planning Ltd.
1 Connaught House
Riverside Business Park
Benarth Road
Conwy
LL32 8UB

Dear Sir / Madam

**Town and Country Planning Act 1990
Town and Country Planning (Development Management Procedure) (Wales) Order 2012**

**CAIS / 40/2019/0368
APPLICATION:**

**CYNNIG / Enquiry for the erection of 31 dwellings with associated works
PROPOSAL:**
**LLEOLIAD / Land at Bryn Morfa, Bodelwyddan, Rhyl
LOCATION:**

I am writing in response to your pre-application enquiry dated 23rd April, 2019.

Planning history of the site

There is no planning history for the site which is of relevance to the proposal.

Planning policy context

All planning applications are assessed against the policies contained in the adopted Denbighshire Local Development Plan (LDP) and in the guidance contained in relevant Supplementary Planning Guidance Notes (SPGs), together with national planning policy and guidance set out in Welsh Government's Planning Policy Wales Edition 10 (PPW 10) and Technical Advice Notes (TANs).

The site is located outside the development boundary of Bodelwyddan.

The relevant LDP planning policies that would be applicable for residential development in this location are as follows:

Policy RD5 – The Welsh language and the social and cultural fabric of communities
Policy BSC1 – Growth Strategy for Denbighshire
Policy BSC3 – Securing infrastructure contributions from Development
Policy BSC4 – Affordable Housing
Policy BSC11 – Recreation and open space
Policy VOE5 – Conservation of natural resources
Policy VOE6 – Water management
Policy ASA3 – Parking standards

The Council has adopted a suite of Supplementary Planning Guidance Notes (SPGs) which amplify development plan policies and provide further information and guidance to developers. The following SPGs would apply to residential development in this location:-

Supplementary Planning Guidance Note: Affordable Housing
Supplementary Planning Guidance Note: Conservation and Enhancement of Biodiversity
Supplementary Planning Guidance Note: Parking Requirements in New Developments
Supplementary Planning Guidance Note: Planning for Community Safety
Supplementary Planning Guidance Note: Planning Obligations
Supplementary Planning Guidance Note: Planning and the Welsh language
Supplementary Planning Guidance Note: Recreational Public Open Space
Supplementary Planning Guidance Note: Residential Development
Supplementary Planning Guidance Note: Residential Development Design Guide
Supplementary Planning Guidance Note: Residential Space Standards
Supplementary Planning Guidance Note: Trees & Landscaping

Principle of development

The site lies outside of the development boundary for Bodelwyddan as defined in the adopted Denbighshire Local Development Plan (LDP) and as such the principle of development on this land is contrary to local policy.

The growth strategy within the adopted LDP and Policy BSC 1 sets out land allocations for housing to meet identified housing need across the County including Bodelwyddan. Bodelwyddan was identified as a strategic growth location in the adopted LDP (Policy BSC 5) and outline consent for a mixed use development including 1,715 homes was granted in 2016. This permission is extant and the site has been identified as a strategic site on a regional basis. It is not considered appropriate to potentially prejudice delivery of this strategic site by supporting an alternative proposal in this location.

It is acknowledged that according to the methodology contained in TAN 1 the Council is required to use in measuring housing land supply, that Denbighshire is not able to currently demonstrate a 5 year housing land supply. The Council contends that the methodology it is required to use does not present a realistic view of the land supply situation. The housing land supply in Denbighshire as published in the 2018 Joint Housing Land availability Study is 1.65 years. Using the 'Past Completions' methodology for comparison, based on average completions of 209 per annum since 2006, Denbighshire has a housing land supply of 9.19 years.

The Cabinet Secretary dis-applied paragraph 6.2 of TAN 1 in July 2018, effectively removing the paragraph which referred to attaching 'considerable' weight to the lack of a 5-year housing land supply as a material consideration in determining planning applications for housing.

The growth levels in the adopted LDP were informed by 2008 based household projections produced by Welsh Government. These indicated high levels of anticipated growth and resulted in a high dwelling requirement figure in the LDP. The predicted growth in households has not materialised and Denbighshire is in the process of preparing a replacement LDP to cover the period 2018 – 2033.

On 14th May 2019, the Council approved the draft Preferred Strategy for the replacement LDP for consultation. The growth levels in the draft Preferred strategy are informed by 2017 based household projections which indicate a greatly reduced level of household growth and subsequent dwelling requirement. It is contended that the perceived shortfall in the housing land supply will be eliminated when the replacement LDP is adopted. It is considered that very little weight should be attached to the lack of a 5 year housing land supply in consideration of this speculative housing proposal.

As the proposal falls outside of the development boundary you will be required to submit a full planning application and to meet the validation requirements set out in the approved Developer Guidance Note a copy of which is attached to this response.

Other material considerations

Notwithstanding the issue set out above with respect to the principle of the development, comments are provided below regarding other material considerations which would need to be addressed should an application be forthcoming:

Detailed Design / scale / layout / appearance/ landscaping:

Limited information has been supplied to inform the enquiry other than a layout plan. The plan as submitted would be broadly in-line with density requirements but does present a cramped form of development. If, as recommended open space is not provided on-site then there is an opportunity to revisit the layout to provide a less cramped form of development.

The properties proposed should meet the minimum floor space requirements set out in the Residential Space Standards SPG (below) and the mix proposed is considered acceptable.

Property Size	Minimum Gross Internal Area (GIA) in Square metres to the nearest metre
1 bed	50
2 bed	65
3 bed	80
4 bed and more	100

No elevational details have been supplied so I am unable to comment on the suitability of the design and appearance of the proposed dwellings.

The trees and hedgerow around the boundaries of the site should be protected and enhanced with additional landscaping undertaken within the site. Detailed hard and soft landscaping proposal should be provided with a planning application.

Amenity considerations: Visual/Residential

In relation to separation distances and spaces between new dwellings within the site and relationship with existing development, as referred to above, the layout does appear cramped. If the layout is amended to remove the open space from the site then there is an opportunity to revise the layout to provide a less cramped form of development with improved spacing and landscaping.

Further guidance is available in the Residential Development and Design Guide SPG's along with the Trees and Landscaping SPG

Access / Highways and Parking:

The Development Management Manual advises at paragraph 9.4.3 that material considerations must be fairly and reasonably related to the development concerned, and can include the number, size, layout, design and appearance of buildings, the means of access, landscaping, service availability and the impact on the neighbourhood and on the environment; and the effects of a development on, for example, health, public safety and crime. The highway impacts of development should therefore be regarded as a potential material consideration.

Policy ASA 3 requires adequate parking spaces for cars and bicycles in connection with development proposals, and outlines considerations to be given to factors relevant to the application of standards. These policies reflect general principles set out in Planning Policy Wales (PPW) and TAN 18 – Transport, in support of sustainable development.

The Parking Standards in New Developments SPG sets out the maximum parking standards for new developments.

Highways Officers have been consulted on the proposed access and highway arrangements. Based on the information provided, the comments received are as follows:

No objection in principle to the proposals subject to the following:

- *Visibility at the junction of Bryn Morfa shall be in accordance with TAN 18 Table B.*
- *The estate road shall be a minimum of 5.5m with 2.0m footway/service margins.*
- *Parking shall be in accordance with Denbighshire County Councils parking standards.*
- *Forward visibility for vehicle turning right into the new estate road from Bryn Morfa shall be considered and identified.*
- *Submission of Construction Method Statement*

Drainage and Flood Risk:

Foul water drainage:

No reference to the foul drainage arrangements for the proposed development are made within the enquiry. The Local Planning Authority will need to be satisfied the foul drainage

arrangements for the proposed development are suitable and therefore details should be provided regarding foul drainage arrangements with any planning application.

We refer you to WG Circular 008/2018 on private drainage, and specifically paragraphs 2.3-2.5, which stress the first presumption must be to provide a system of foul drainage discharging into a public sewer.

Surface water drainage:

Please be advised that since January 2019, new legislation came into force which makes Sustainable Drainage Systems (SuDS) a mandatory requirement on all new developments involving more than a single dwelling or a construction area more than 100m². You must apply to the SuDS Approving Body (SAB) for approval on these types of developments.

It is therefore expected that a detailed drainage strategy for the proposed site be developed as early as possible and early engagement with the Council's SAB Officers is recommended.

Drainage plans showing the proposed surface water drainage details and drainage strategy would then be required to be submitted with any future planning application.

Flood Risk:

The site is not located within a flood risk area.

Ecology:

Policy VOE 5 requires due assessment of potential impacts on protected species or designated sites of nature conservation, including mitigation proposals, and suggests that permission should not be granted where proposals are likely to cause significant harm to such interests. This reflects policy and guidance in Planning Policy Wales (Section 6.4), current legislation and SPG 18 – Nature Conservation and Species Protection, which stress the importance of the planning system in meeting biodiversity objectives through promoting approaches to development which create new opportunities to enhance biodiversity, prevent biodiversity losses, or compensate for losses where damage is unavoidable. Planning Policy Wales also draws attention to the contents of Section 6 of the Environment (Wales) Act 2016, which sets a duty on Local Planning Authorities to demonstrate they have taken all reasonable steps to maintain and enhance biodiversity in the exercise of their functions.

The Council's Ecology Officer has provided the following comments:-

The proposed development has the potential to result in negative impacts on nature conservation, and must incorporate appropriate avoidance, mitigation, compensation and enhancement measures to ensure that protected and priority species and habitats are not harmed. Ecological information will be required to support this application, the aim of which is to identify any protected species or habitats on or near to the site, which may be affected by the proposed development. This should include an initial extended Phase 1/ Preliminary Ecological Appraisal of the site, and targeted surveys for protected species identified as potentially occurring on the site during the initial ecological survey. It should be noted that this area of the county is known to support populations of great crested newt. Survey results for ponds within 500m of the site boundary should be sought, and ponds without recent survey data should be

surveyed for great crested newts. A specific program of avoidance, mitigation, compensation and enhancement should be prepared following the results of the ecological surveys, to ensure a net biodiversity gain as a result of this development. Financial contributions may be required to offset the loss of habitats unless compensatory areas are proposed and are capable of being managed in the long term for nature conservation.

Open Space:

LDP Policy BSC 11 requires new developments to provide open space in accordance with the County’s minimum standard of 2.4 hectares per 1000 population. On the basis of 31 dwellings, the following Community Recreational Open Space (CROS) and Children’s Play Space (CPA) is required:

Total Number of Units	31
TOTAL OCCUPANCY	71.3
OPEN SPACE REQUIREMENT	1711.2 Square metres
Outdoor Sport	1140.8 square metres
Children's Play	570.4 square metres

The layout plan provided shows an area of open space to the north of the site. Advice and guidance contained in SPG Recreational Public Open Space indicates that open space should be well located within developments and provide opportunities for natural surveillance. It is considered that the open space as shown is poorly located and would not provide a useful and useable area of open space. SPG Planning Obligations sets thresholds for on-site provision of 30 units for children’s play space and 200 units for outdoor sport provision. This development is for 31 units but given the proximity of both sports and children’s play provision adjacent to the community centre it is considered that the open space requirement could be best met via a commuted sum.

Based on 31 units and no on-site provision, a commuted sum of **£38,353.70** would be payable to meet the open space requirements from this proposal. The amount of open space required has been provided above, however the full calculation is available online by using the interactive open space calculator <https://www.denbighshire.gov.uk/en/resident/planning-and-building-regulations/local-development-plan/ldp-spg/ldp-supplementary-planning-guidance.aspx>

Affordable Housing:

LDP Policy BSC4 relates specifically to affordable housing, and requires that all developments of three or more residential units provide a minimum of 10% affordable housing either onsite on developments of 10 or more units, or by way of a financial contribution on developments of less than 10 units.

There is a significant need for affordable housing in the area, as can be seen from the attached housing market assessment information for Bodelwyddan.

The enquiry currently shows no affordable housing units being provided on site. Based on 31 units there would need to be 3 affordable dwellings provided on site with a financial contribution being required for the remaining 0.1 of a dwelling. Any application should make it clear exactly what is being proposed in the way of on-site affordable housing units and any contributions also required (See Affordable Housing SPG).

Welsh Language and Social and Cultural Fabric of communities:

The requirement to consider the needs and interests of the Welsh Language is set out in PPW 10; TAN 20 and Policy RD 5 of the Local Development Plan.

TAN 20 (2017) provides the most up to date guidance on the consideration of the Welsh Language.

The proposal would be considered to be a windfall site for the purposes of TAN 20, and therefore the impact of such a proposal on the linguistic character of the area would need to be assessed at application stage.

A Welsh language assessment should be submitted, which should promote measures that aim at supporting the Welsh language.

Education

The Planning Obligations SPG considers the key corporate priority to modernise education including how education infrastructure is an integral part of new residential development and has a crucial role to play in achieving and maintaining sustainable communities.

The proposed development (based on the calculations for the Planning Obligations SPG) will require 7.44 new primary school pupil places and 5.394 secondary school pupil places.

At present there is **insufficient capacity** at the local primary school in the area, a planning contribution of **£112,000** would be payable. There is sufficient capacity in the local secondary school and no contribution would currently be required in respect of this. However please be advised that school roll information changes frequently.

Agricultural Land Classification

The site is classified as Grade 3a Agricultural Land. Planning Policy Wales defines the top three grades (1-3a) as the 'Best and Most Versatile' agricultural land. Best and Most Versatile agricultural land accounts for approximately 7% of total land in Wales. Therefore it is important that it is protected as it is a finite resource (DEFRA, TAN: 6, 2010). Planning Policy Wales (Edition, 10, 2019, para 3.55) states that 'Land in grades 1, 2 and 3a should only be developed if there is an overriding need for the development, and either previously developed land or land in lower agricultural grades is unavailable, or available lower grade land has an environmental value recognised by a landscape, wildlife, historic or archaeological designation which outweighs the agricultural considerations'.

A detailed agricultural land quality survey should be submitted with any planning application to determine the current land classification. If any of the land is found to be 'Best and Most

Versatile' ie. Grades 1, 2 or 3a then a full justification of the need to develop the land and consideration of other sites of lower grade will also be required.

Noise and Odour

The site is located in close proximity to Sewage Treatment works. The Councils Pollution Control Officer has advised that an Odour Assessment should be undertaken with a management plan if necessary, and noise impact assessment with suitable mitigation measures put in place if required.

Planning obligations and Section 106 legal agreement:

As referred to above, planning contributions would be required in relation to Affordable housing, open space and education contributions. A Section 106 agreement would be required.

Welsh Government's Superfast Cymru

Under the UK wide Superfast Broadband Programme, the Welsh Government's Superfast Cymru scheme has been providing funding to support the roll-out of superfast broadband infrastructure across Wales. The County Council is supportive of this initiative as it has incorporated this into one of its corporate priorities. Hence the County Council is looking to ensure residents of new development have access to future-proofed, fast and reliable fibre broadband services, and is encouraging the installation of suitable fibre broadband connections in all new developments.

In this regard, you are encouraged to access the Openreach website through the following link. It has useful downloadable guidance for developers for installing fibre connections:

<https://www.ournetwork.openreach.co.uk/property-development.aspx>

If you are looking to work with Openreach on provision of a fibre broadband connection, you need to ensure your site is registered with them 9 months before the date you are looking for them to provide a service to the first new property. Their advice is that you contact them at least 8 weeks before you actually start work on site, to give enough time to get proposals drawn up and details agreed for incorporation into any scheme.

Pre-application Consultation Requirements

Since 1 August 2016, all major development proposals are required to carry out pre-application consultation in accordance with Article 1 of the Town and Country Planning (Development Management Procedure) (Wales) (Amendment) Order 2016 prior to submitting a planning application.

Please refer to the Welsh Government Guidance on pre-application consultation which sets out the procedures that will need to be followed.

<https://gweddill.gov.wales/topics/planning/policy/dear-cpo-letters/new-development-management-procedures/?lang=en>

Informal, without prejudice Officer Opinion of the proposal

The principle of housing development in this location is considered unacceptable, however we

acknowledge the sustainability of the location adjoining an existing settlement. A number of comments have been provided within this response, and certain issues highlighted which will need to be considered and addressed if a proposal is progressed.

Submitting a planning application

Should an application be progressed, in addition to the usual plans and documents, the following supporting documents would likely be required:-

- Pre Application Consultation Report
- Design and Access Statement
- Planning Statement
- Welsh Language Assessment
- Transport Statement/Assessment & Travel Plan
- Ecological Assessment
- Tree Report/ Arboricultural Method Statement
- Foul and Surface Water Drainage Scheme/Strategy
- Hard and Soft Landscaping Scheme
- Odour Assessment
- Construction Management Plan/Method Statement

I would advise that this response is based on the information available. It does not constitute a formal determination under the Town and Country Planning Act 1990. Any opinions contained herein are those of the Officer concerned and cannot be held as binding on the Council or its members.

Yours sincerely

Sarah Stubbs

Principal Planning Officer

Attachments:

Developer Guidance Notes

Ceire McGough

From: Wayne Hope <wayne.hope@denbighshire.gov.uk>
Sent: 10 October 2019 19:00
To: Ceire McGough
Cc: Alex Bebbington; Paul Owen
Subject: RE: 12188 - Bryn Morfa, Bodelwyddan - LLFA / SAB pre planning

Categories: Information received

Hi Ceire,

Apologies for not having responded sooner to your original email.

Referring to each of your queries in turn:

Regarding discharge rates, I would prefer not to apply a specific rate, but would expect you to demonstrate that the proposed development has no detrimental impact in terms of flood risk to the surrounding area, including the downstream reaches of the receiving watercourse, assuming that this is your intention and you have the necessary permission.

The current view across the six North Wales SABs is that 20% is an appropriate allowance for climate change.

The use of a pond for attenuation is fine, however I would encourage you to review the SuDS legislation, in particular the principles and standards, and also to refer to the SAB application forms (<https://www.denbighshire.gov.uk/en/resident/planning-and-building-regulations/planning/sustainable-drainage-systems-suds/sustainable-drainage-systems-suds.aspx>).

I'd like to see an allowance for urban creep please. 10% would seem appropriate in this case.

As a general comment, the proposed development appears somewhat formulaic, with no evidence that the principles of the SuDS standards and guidance have been fully embraced. I appreciate that there might be constraints placed on yourselves and your client due to the location of the site, however I think that there might be some opportunities to enhance the proposal. I'm well aware that Waterco are fully on board with the ethos that the Welsh Government has tried to encourage through the implementation of Schedule 3 and I'd be happy to discuss this further, together with your client if that would help. In that regard, the Council offers around 1 hour of face to face consultation free of charge.

Regards,

Wayne

Wayne Hope
Rheolwr Risg Llifogydd / Flood Risk Manager
Priffyrd, Cyfleusterau a Gwasanaethau Amgylcheddol/Highways, Facilities & Environmental Services
Ffon / Tel: 01824 706901
Symudol / Mobile: 07776 161612
e-bost: wayne.hope@sirddinbych.gov.uk
e-mail: wayne.hope@denbighshire.gov.uk
www.sirddinbych.gov.uk / www.denbighshire.gov.uk

[Rydym yn croesawu gohebiaeth yn Gymraeg. Byddwn yn ymateb i unrhyw ohebiaeth yn Gymraeg ac ni fydd hyn yn arwain at unrhyw oedi.](#)

[We welcome correspondence in Welsh. We will respond to any correspondence in Welsh which will not lead to a delay.](#)

From: Ceire McGough [mailto:ceire.mcgough@waterco.co.uk]
Sent: 10 October 2019 09:29
To: Land Drainage Consultations <landdrainage.consultations@denbighshire.gov.uk>
Subject: 12188 - Bryn Morfa, Bodelwyddan - LLFA / SAB pre planning

Good Morning,

Further to my below email; please can you advise when I should expect to receive a response from the LLFA / SAB regarding the drainage strategy for a residential development at Bryn Morfa, Bodelwyddan.

Furthermore, please advise if urban creep should be applied to attenuation volumes (e.g. hardstanding area to be increased by 10% to account for potential future urban creep).

Kind Regards,

Ceire McGough BSc
Environmental Consultant

Office: 01824 702220

Teams: ceire.mcgough@waterco.co.uk


Assessment, Modelling, Design
Ruthin - Chester - Manchester



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 Please consider the environment before printing this email.

From: Ceire McGough
Sent: 18 September 2019 16:33
To: 'landdrainage.consultations@denbighshire.gov.uk' <landdrainage.consultations@denbighshire.gov.uk>
Subject: 12188 - Bryn Morfa, Bodelwyddan - LLFA / SAB pre planning

Proposed residential development at Land at Bryn Morfa, Bodelwyddan, Denbighshire, LL18 5TT. Grid Reference: 299692, 375974.

Dear Sir / Madam,

We are currently preparing a Drainage Strategy for a proposed development at the above address. We are seeking comments from the Lead Local Flood Authority / SuDS Approval Body (SAB) on surface water drainage.

The proposed development is for the residential development of approximately 31 No new dwellings. A proposed development plan is attached for reference.

Infiltration testing is due to be undertaken within the next few weeks. However, where infiltration techniques are not a feasible solution, please could you advise if you have any discharge rate requirements (i.e. 1 in 1 year greenfield rate of 4.2 l/s).

Furthermore, please could you advise the required climate change amount to be applied to attenuation storage (i.e. 20% / 30% / 40%).

Where off site discharge is required (to watercourse) it is proposed to provide attenuation storage in the form of a pond within the public open space in the lower northern extent of the site.

If you have any questions or require any further information to process my request please don't hesitate to contact me.

Kind regards,

Ceire McGough BSc
Environmental Consultant

Office: 01824 702220

Teams: ceire.mcgough@waterco.co.uk



Assessment, Modelling, Design
Ruthin - Chester - Manchester - London

Shortlisted for awards in the following categories;
'Innovation in Project Management' & 'Impact in Water'



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Dilyn ni ar Twitter: <http://twitter.com/cyngorsDd> - Follow us on Twitter:
<http://twitter.com/DenbighshireCC>
Ymwelwch a ni ar-lein ar <http://www.sirddinbych.gov.uk> - Visit us online at
<http://www.denbighshire.gov.uk>

Mae'r wybodaeth a gynhwysir yn yr e-bost hwn ac unrhyw ffeiliau a drosglwyddir gydag o wedi eu bwriadu yn unig ar gyfer pwy bynnag y cyfeirir ef ato neu atynt. Os ydych wedi derbyn yr e-bost hwn drwy gamgymeriad, hysbyswch yr anfonwr ar unwaith os gwelwch yn dda. Mae cynnwys yr e-bost yn cynrychioli barn yr unigolyn(ion) a enwir uchod ac nid yw o angenrheidrwydd yn cynrychioli barn Cyngor Sir Ddinbych. Serch hynny, fel Corff Cyhoeddus, efallai y bydd angen i Gyngor Sir Ddinbych ddatgelu'r e-bost hwn [neu unrhyw ymateb iddo] dan ddarpariaethau deddfwriaethol.

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Appendix H ReFH2 Runoff Rates


DOCUMENT VERIFICATION RECORD	
Project:	Bryn Morfa, Bodelwyddan
Client:	Maxi Developments Ltd
Report Title:	Proposed Residential Development at Bryn Morfa - Drainage Strategy
Date:	March 2020

DOCUMENT REVIEW & APPROVAL	
Author:	Ceire McGough BSc (Hons)
Checker:	Johanne Williams LLB (Hons) PGDip MCIWEM
Approver:	Aled Williams BSc (Hons) MCIWEM

ReFH2 RUNOFF RATES*	
Return Period (Years)	As-rural Peak Flow (l/s)
1	4.3
2	4.9
5	7.1
10	8.8
30	12.3
50	14.4
75	16.3
100	17.8
200	21.7
1000	32.2

*Runoff Rates printed from the ReFH Flood Modelling software package


Appendix I MicroDrainage Storage Volumes

Waterco Ltd		Page 1
Eden Court Lon Parcwr Business Park Denbighshire LL15 1NJ	12188 - Bryn Morfa 1 in 100 year plus 20% CC	
Date 29/03/2021 File	Designed by CM Checked by AR	
XP Solutions		Source Control 2020.1.3

Summary of Results for 100 year Return Period (+20%)

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
15 min Summer	9.559	0.359	7.0	107.6	O K
30 min Summer	9.670	0.470	7.0	141.1	O K
60 min Summer	9.782	0.582	7.0	174.7	Flood Risk
120 min Summer	9.863	0.663	7.0	198.9	Flood Risk
180 min Summer	9.889	0.689	7.0	206.6	Flood Risk
240 min Summer	9.891	0.691	7.0	207.2	Flood Risk
360 min Summer	9.876	0.676	7.0	202.9	Flood Risk
480 min Summer	9.854	0.654	7.0	196.2	Flood Risk
600 min Summer	9.829	0.629	7.0	188.7	Flood Risk
720 min Summer	9.802	0.602	7.0	180.5	Flood Risk
960 min Summer	9.743	0.543	7.0	162.8	Flood Risk
1440 min Summer	9.626	0.426	7.0	127.8	O K
2160 min Summer	9.492	0.292	7.0	87.5	O K
2880 min Summer	9.404	0.204	7.0	61.2	O K
4320 min Summer	9.328	0.128	6.3	38.4	O K
5760 min Summer	9.305	0.105	5.1	31.5	O K
7200 min Summer	9.292	0.092	4.4	27.7	O K
8640 min Summer	9.284	0.084	3.8	25.2	O K
10080 min Summer	9.278	0.078	3.5	23.4	O K
15 min Winter	9.603	0.403	7.0	120.8	O K
30 min Winter	9.729	0.529	7.0	158.8	Flood Risk


Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	131.671	0.0	111.5	16
30 min Summer	88.087	0.0	149.2	31
60 min Summer	56.462	0.0	191.7	62
120 min Summer	34.462	0.0	234.0	120
180 min Summer	25.556	0.0	260.3	180
240 min Summer	20.565	0.0	279.3	232
360 min Summer	15.013	0.0	305.9	288
480 min Summer	11.952	0.0	324.7	352
600 min Summer	9.986	0.0	339.1	420
720 min Summer	8.608	0.0	350.8	490
960 min Summer	6.788	0.0	368.9	626
1440 min Summer	4.827	0.0	393.4	878
2160 min Summer	3.406	0.0	416.4	1232
2880 min Summer	2.653	0.0	432.5	1560
4320 min Summer	1.858	0.0	454.3	2208
5760 min Summer	1.449	0.0	472.6	2944
7200 min Summer	1.209	0.0	492.6	3672
8640 min Summer	1.050	0.0	513.6	4408
10080 min Summer	0.940	0.0	536.1	5136
15 min Winter	131.671	0.0	124.9	16
30 min Winter	88.087	0.0	167.0	31

Waterco Ltd		Page 2
Eden Court Lon Parcwr Business Park Denbighshire LL15 1NJ	12188 - Bryn Morfa 1 in 100 year plus 20% CC	
Date 29/03/2021 File	Designed by CM Checked by AR	
XP Solutions		Source Control 2020.1.3

Summary of Results for 100 year Return Period (+20%)

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m ³)	Status
60 min Winter	9.857	0.657	7.0	197.1	Flood Risk
120 min Winter	9.952	0.752	7.0	225.6	Flood Risk
180 min Winter	9.986	0.786	7.0	235.8	Flood Risk
240 min Winter	9.994	0.794	7.0	238.2	Flood Risk
360 min Winter	9.973	0.773	7.0	232.0	Flood Risk
480 min Winter	9.946	0.746	7.0	223.7	Flood Risk
600 min Winter	9.912	0.712	7.0	213.6	Flood Risk
720 min Winter	9.875	0.675	7.0	202.5	Flood Risk
960 min Winter	9.796	0.596	7.0	178.7	Flood Risk
1440 min Winter	9.618	0.418	7.0	125.5	O K
2160 min Winter	9.431	0.231	7.0	69.2	O K
2880 min Winter	9.340	0.140	6.7	42.0	O K
4320 min Winter	9.301	0.101	4.9	30.2	O K
5760 min Winter	9.284	0.084	3.8	25.3	O K
7200 min Winter	9.275	0.075	3.2	22.4	O K
8640 min Winter	9.268	0.068	2.8	20.4	O K
10080 min Winter	9.264	0.064	2.5	19.1	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m ³)	Discharge Volume (m ³)	Time-Peak (mins)
60 min Winter	56.462	0.0	214.7	60
120 min Winter	34.462	0.0	262.1	118
180 min Winter	25.556	0.0	291.6	176
240 min Winter	20.565	0.0	312.9	230
360 min Winter	15.013	0.0	342.6	328
480 min Winter	11.952	0.0	363.7	372
600 min Winter	9.986	0.0	379.8	450
720 min Winter	8.608	0.0	392.9	528
960 min Winter	6.788	0.0	413.1	682
1440 min Winter	4.827	0.0	440.6	938
2160 min Winter	3.406	0.0	466.4	1276
2880 min Winter	2.653	0.0	484.4	1556
4320 min Winter	1.858	0.0	508.8	2244
5760 min Winter	1.449	0.0	529.3	2944
7200 min Winter	1.209	0.0	551.7	3672
8640 min Winter	1.050	0.0	575.2	4408
10080 min Winter	0.940	0.0	600.5	5112

Waterco Ltd		Page 3
Eden Court Lon Parcwr Business Park Denbighshire LL15 1NJ	12188 - Bryn Morfa 1 in 100 year plus 20% CC	
Date 29/03/2021 File	Designed by CM Checked by AR	
XP Solutions		Source Control 2020.1.3


Rainfall Details

Rainfall Model	FEH	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
FEH Rainfall Version	2013	Cv (Winter)	0.840
Site Location	GB 299678 375980	Shortest Storm (mins)	15
Data Type	Point	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+20

Time Area Diagram

Total Area (ha) 0.453

Time (mins)		Area
From:	To:	(ha)
0	1	0.453

Waterco Ltd		Page 4
Eden Court Lon Parcwr Business Park Denbighshire LL15 1NJ	12188 - Bryn Morfa 1 in 100 year plus 20% CC	
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Model Details

Storage is Online Cover Level (m) 10.000

Tank or Pond Structure

Invert Level (m) 9.200

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	300.0	0.800	300.0

Hydro-Brake® Optimum Outflow Control

Unit Reference	MD-SHE-0127-7000-0800-7000
Design Head (m)	0.800
Design Flow (l/s)	7.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	127
Invert Level (m)	9.195
Minimum Outlet Pipe Diameter (mm)	150
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	0.800	7.0
Flush-Flo™	0.248	7.0
Kick-Flo®	0.553	5.9
Mean Flow over Head Range	-	6.0

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	4.5	1.200	8.5	3.000	13.0	7.000	19.6
0.200	6.9	1.400	9.1	3.500	14.0	7.500	20.2
0.300	7.0	1.600	9.7	4.000	15.0	8.000	20.9
0.400	6.8	1.800	10.2	4.500	15.8	8.500	21.4
0.500	6.4	2.000	10.8	5.000	16.7	9.000	22.1
0.600	6.1	2.200	11.3	5.500	17.4	9.500	22.7
0.800	7.0	2.400	11.7	6.000	18.2		
1.000	7.8	2.600	12.2	6.500	18.9		

Eden Court
Lon Parcwr Business Park
Denbighshire LL15 1NJ

12188 - Bryn Morfa
1 in 100 year plus 20% CC



Date 29/03/2021

Designed by CM

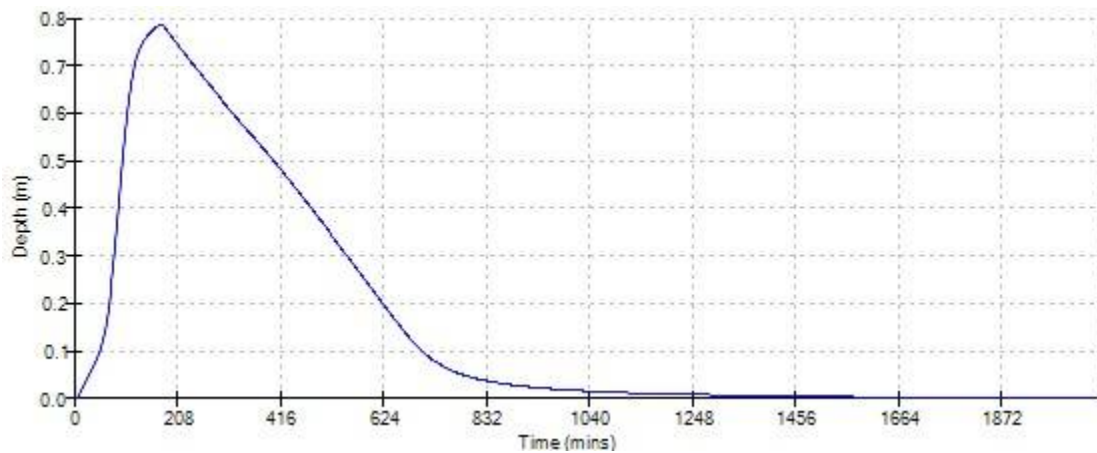
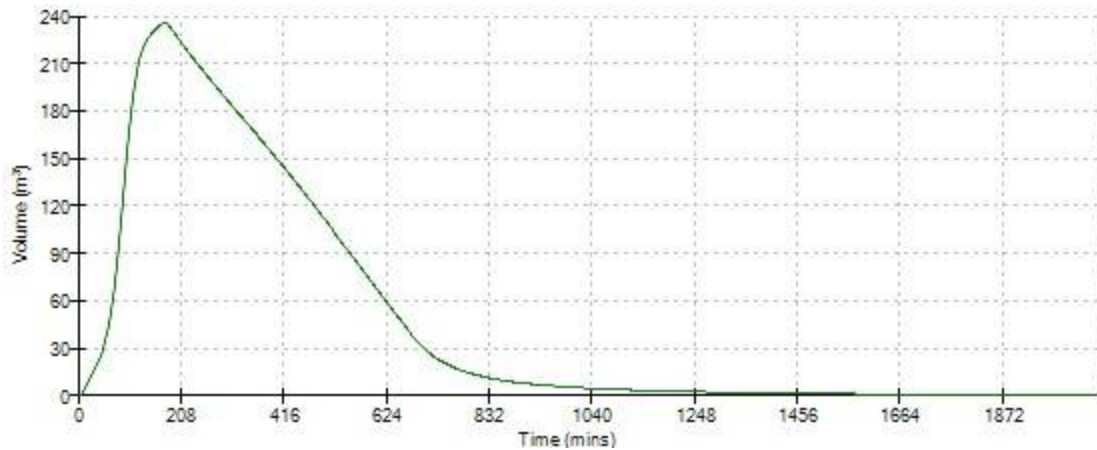
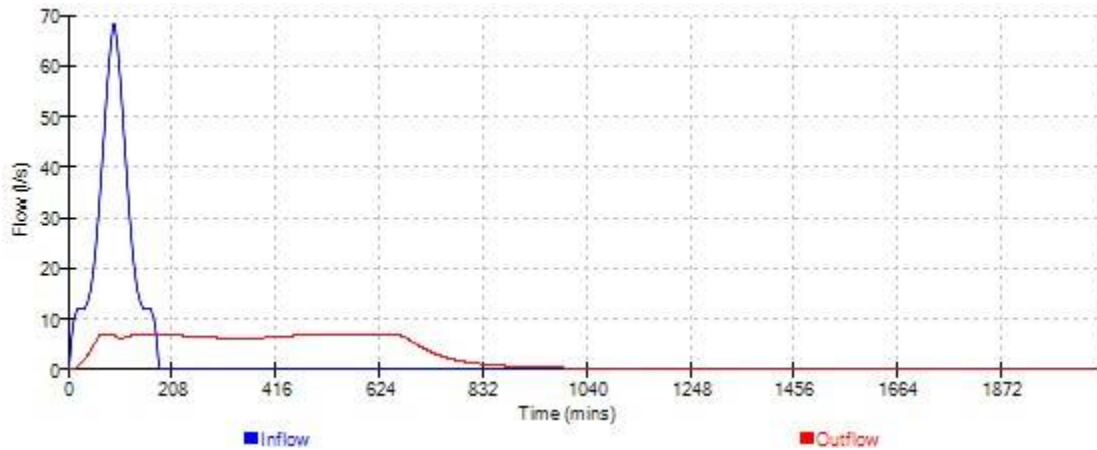
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Checked by AR

XP Solutions

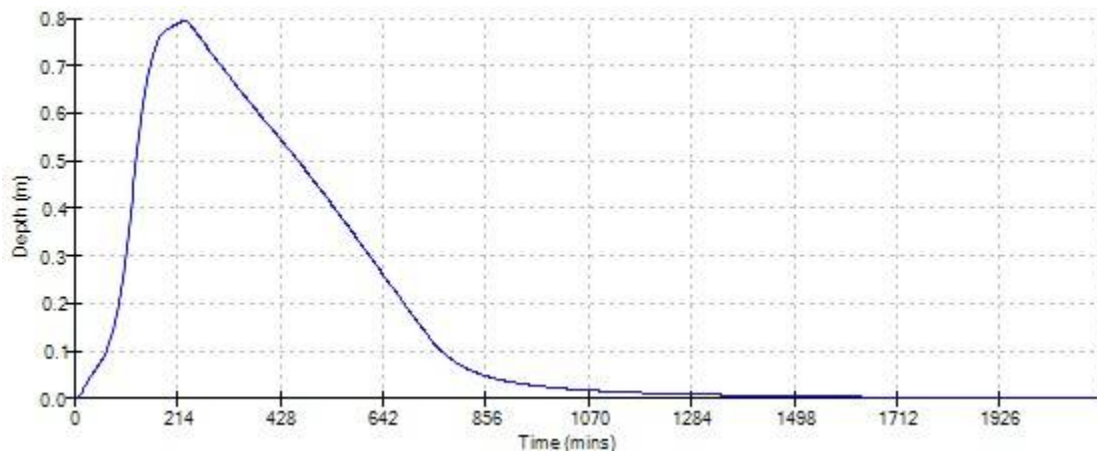
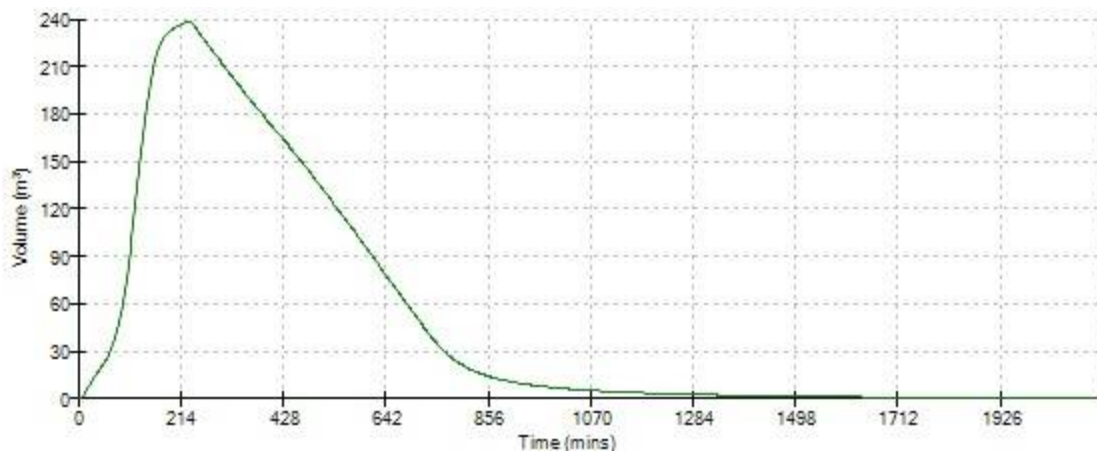
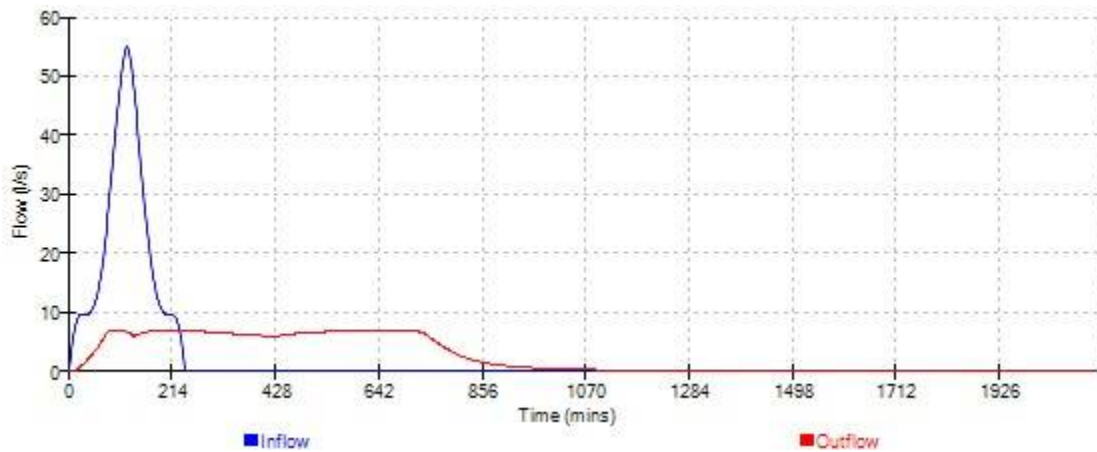
Source Control 2020.1.3

Event: 180 min Winter





Event: 240 min Winter



Eden Court
Lon Parcwr Business Park
Denbighshire LL15 1NJ

12188 - Bryn Morfa
1 in 100 year plus 20% CC



Date 29/03/2021

Designed by CM

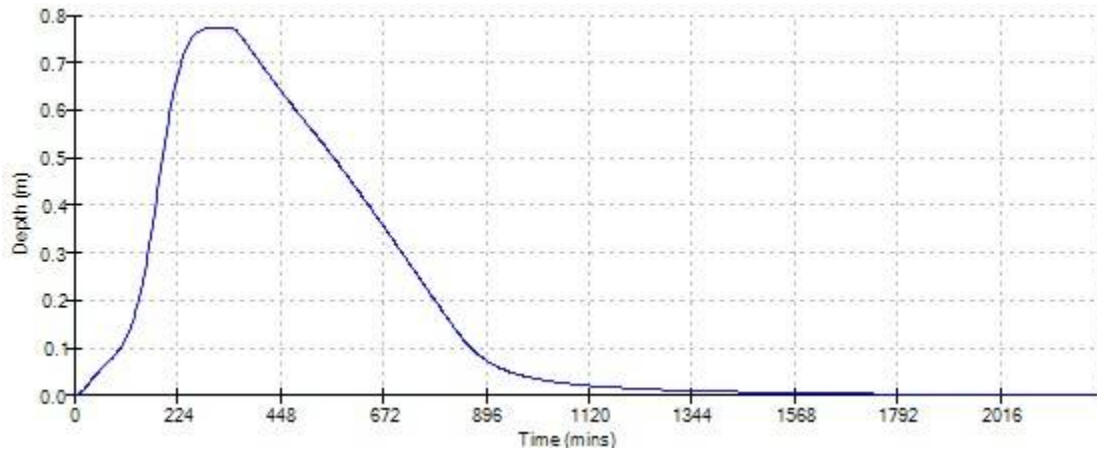
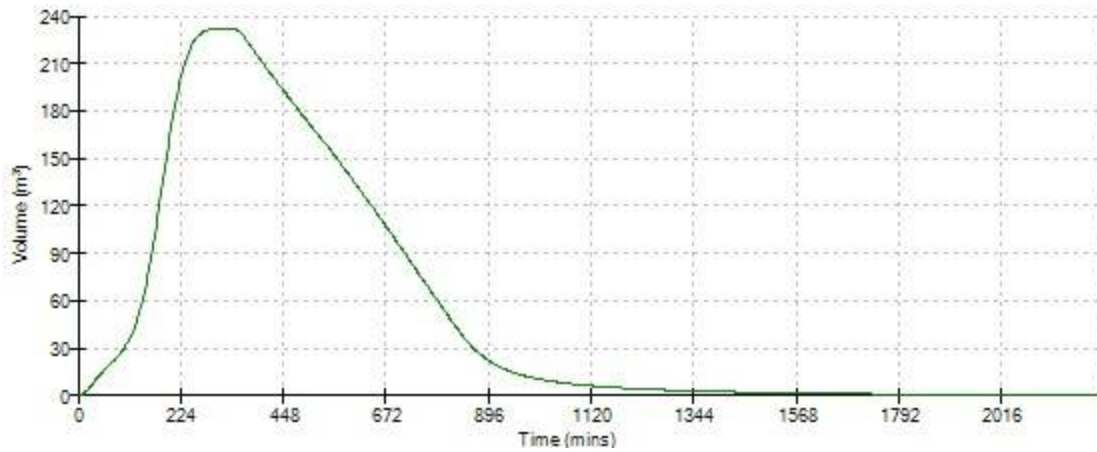
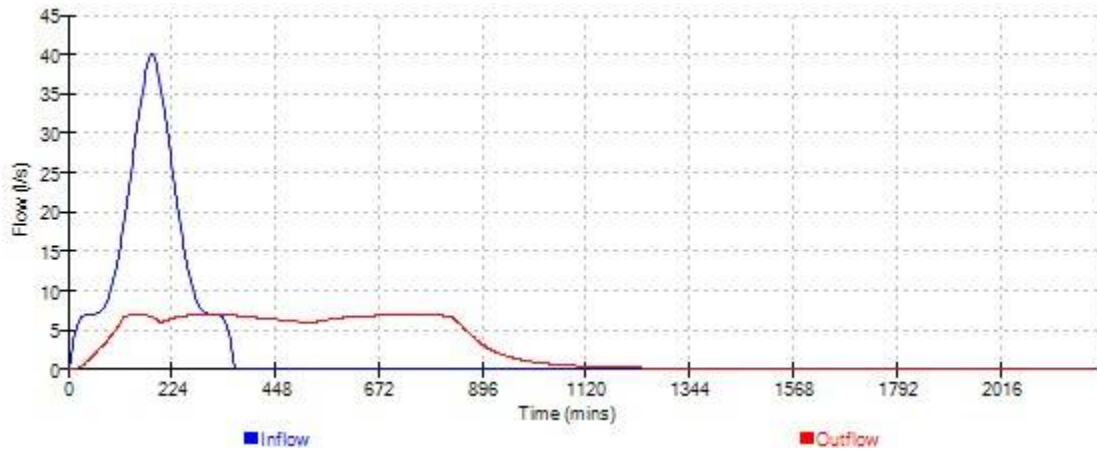
File

Checked by AR

XP Solutions

Source Control 2020.1.3

Event: 360 min Winter



Appendix J Maintenance Schedule

Operation and Maintenance Requirements for Ponds and Wetlands

Maintenance Schedule	Required Action	Typical Frequency
Regular maintenance	Remove litter and debris	Monthly (or as required)
	Cut the grass – public areas	Monthly (during growing season), or as required
	Inspect marginal and bankside vegetation and remove nuisance plants (for first 3 years)	Monthly (at start, then as required)
	Inspect inlets, outlets, banksides, structures, pipework etc for evidence of blockage, and / or physical damage.	Monthly
	Inspect water body for signs of poor water quality	Monthly (May – October)
	Inspect silt accumulation rates in any forebay and in main body of the pond and establish appropriate removal frequencies; undertake contamination testing once some build-up has occurred, to inform management and disposal options.	Half yearly
	Check any mechanical devices e.g. penstocks	Half yearly
	Hand cut submerged and emergent aquatic plants (at minimum of 0.1m above pond base; include max 25% of pond surface)	Annually
	Remove 25% of bank vegetation from water’s edge to a minimum of 1m above water level	Annually
	Remove sediment from any forebay	Every 1 – 5 years, or as required
	Remove sediment and planting from one quadrant of the main body of ponds without sediment forebays	Every 5 years, or as required
Occasional maintenance	Remove sediment from the main body of big ponds when pool volume is reduced by 20%	With effective pre-treatment, this will only be required rarely, e.g. 25-50 years
Remedial actions	Repair erosion or other damage	As required
	Replant where necessary	As required
	Aerate pond when signs of eutrophication are detected	As required
	Realign rip-rap or repair other damage	As required
	Repair/rehabilitate of Inlets, outlets and overflows	As required

Ref. Table 23.1 CIRIA C753 ‘The SuDS Manual’

The maintenance requirements detailed above are to be undertaken by the site owner.

Name :

Position :

Date :

Signed on behalf of the site owner :

Appendix K Concept Designer's Risk Assessment

Project: Bryn Morfa, Bodelwyddan
Client: Maxi Developments Ltd
Report Reference: 12188-Drainage Strategy-02

Project No: 12188

Prepared by:	Ceire McGough	Date:	29/03/2021
Checked by:	Andrew Russell	Date:	29/03/2021
Reviewed by:	Victoria Griffin	Date:	30/03/2021

Requirement:

The Construction (Design and Management) Regulations 2015 (CDM 2015) place an obligation on the Designer to take all reasonable steps to provide, with the design, sufficient information about the design, construction or maintenance of the structure, to adequately assist the client, other designers and contractors to comply with their duties under CDM. The Designer has undertaken this assessment to identify any extra-ordinary risks, or those that would not be expected on this particular project by an experienced and competent Contractor. The aim is to avoid needless paperwork and bureaucracy and ensure the assessment is project specific, relevant and proportionate to the risk.

DRA Summary

Each of the following risk areas has been considered using the question below. Is a risk present which is considered to be **extra-ordinary or unexpected** in this instance?

If **YES** - A detailed risk assessment is required at design stage

If **UNKNOWN** - Insufficient information has been provided at concept design stage and the risks are unknown. Further consideration must be given at design stage(s)

If **NO** - No further action is required.

Hazard Ref.	Risk Areas	YES, UNKNOWN or NO	Comments
1	Ground Conditions	Unknown	
2	Hazardous Environment	Unknown	
3	Existing Working Environment	Unknown	
4	Existing Services	Yes	Development is within close proximity to a sewage pumping station
5	Proximity to Other Structure(s)	Unknown	
6	Near Waterbody / flood risk	Yes	Watercourse adjacent to the eastern boundary
7	Proximity to Other Activities	Unknown	
8	Sequence of Construction	Unknown	
9	Access	Unknown	
10	Interfaces	Unknown	
11	Confined Space Working	Unknown	
12	Maintenance Considerations	Unknown	
13	Working at Height	Unknown	
14	Steep Slopes	Unknown	
15	Demolition / Refurbishment / Repair	Unknown	
16	Welfare	Unknown	
17	Occupational Health	Unknown	
18	Environmental Issues	Unknown	
19	Other Significant Hazards not Identified Above	Unknown	
20	Residual Risk to Future Users	Unknown	