

YSGOL YR HAFOD

JOHNSTOWN

Drainage Strategy Report

HAF-JPS-XX-XX-RP-C-0002

Rev: P01 Status: S1

August 2021

Document History

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Revision	Purpose Description	Originated	Authorised	Date

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1 Introduction

1.1 Commission

In April 2021 Wynne Construction, on behalf of Wrexham County Borough Council appointed JP Structural Design (JPS) to undertake this Drainage Strategy Report in support of a Full Detailed Planning Application for the construction of an extension and improvement scheme at the existing Ysgol Yr Hafod, Johnstown, Wrexham.

1.2 Existing Site

The existing school site and adjacent school house covers an area adjacent to Bangor Road of approximately 1.45 Ha as shown on the SABs information drawing in Appendix A. The site currently comprises circa 4,590m² of impermeable area.

1.3 Existing Drainage

On-site investigations suggest that the site is served by a combined drainage system which ultimately discharges to Welsh Waters 375mm diameter combined public sewer system located within Bangor Road.

Appendix B contains a copy of the public sewer record drawing and Appendix C a sketch of the existing site drainage systems.

1.4 Existing Flood Design

As stated above, the site covers an area of approximately 1.45 Ha. In accordance with the NRW Developers Advice Maps (shown in Appendix A,) the site is located within Flood Zone A – Land having less than 1 in 1000 annual probability of river or sea flooding. The NRW Flood Risk Map is also shown and has confirmed the site to be free from any flood concerns.

Due to the topography of the area, the risk of flooding from adjoining properties or roads is considered minimal, and therefore, the management of the surface water run-off generated by the post development site will be the principal flood risk associated with this scheme.

1.5 Proposed Development

The scheme consists of the construction of an extension to the rear of the existing school and redevelopment of the school house as nursery facilities with associated new car parking as well as playground, MUGA facilities and pedestrian access improvements.

Based upon the latest development plans for the final impermeable area generated by the proposals will be approximately 7,745m² as shown on the impermeable area plan. The drainage proposals drawings are contained in Appendix D and surface water drainage calculations are contained in Appendix E.

2 Drainage Proposals

2.1 Foul Drainage

The foul drainage volume and peak discharge will increase following completion of the scheme with the increase in pupils numbers from circa 210 to approximately 410. That said the impacts to the public sewer network will be minimised by the decommissioning of the existing infants site approximately 300m away.

Foul flows currently discharge to the 375mm public combined sewer in Bangor Road, correspondence from DCWW (Appendix F) states that; '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 water only sewer, downstream of manhole ref SJ30461151 located in the highway to the north Ysgol Yr Hafod, Johnstown. However, it is noted that the public foul sewer drains to the public combined sewer approximately 140m east of the site.

For the foul design proposals, we would therefore advocate a new separate foul drainage system is designed to serve the proposed extension connecting to the existing foul network serving the school and maintaining the connection to the public sewer network.

2.2 Surface Water Drainage

In accordance with the Welsh Assembly Government's implementation of Schedule 3, the Surface Water Drainage strategy adheres to the principles of;

- Reducing Flood Risk
- Improving Water Quality
- Protecting and Improving the Environment
- Ensuring the Stability & Durability of Drainage Systems

The site will be subject to a SAB application and the detailed Pre-Application Advice form is therefore contained in Appendix G.

Further to this, a pre-development enquiry request was submitted to DCWW in August 2019. In their response (Appendix F), DCWW have stated: 'The foul flows only from the proposed development can be accommodated within the public sewerage system. Following further investigation, it has been established that there is no feasible destination for surface water discharge from the school extension (building). Further consultation with DCWW with regards to connecting surface water from the building extension to the public combined sewer in Bangor Road states: 'We apply at least [a]sic 30% betterment rate, we would be happy with proposed discharge rate of 15 l/s [to the combined sewer] based on a 1 in 2 year event.... I can confirm that we will accept an attenuated maximum discharge rate of 15 l/s [from]sic for surface water generated from existing school and proposed extension into combined sewer within Bangor Road.'

The SAB application and preliminary proposals have therefore been developed on the strategy of providing a new separate surface water system to serve the whole estate prior to a restricted discharge of 15 l/s.

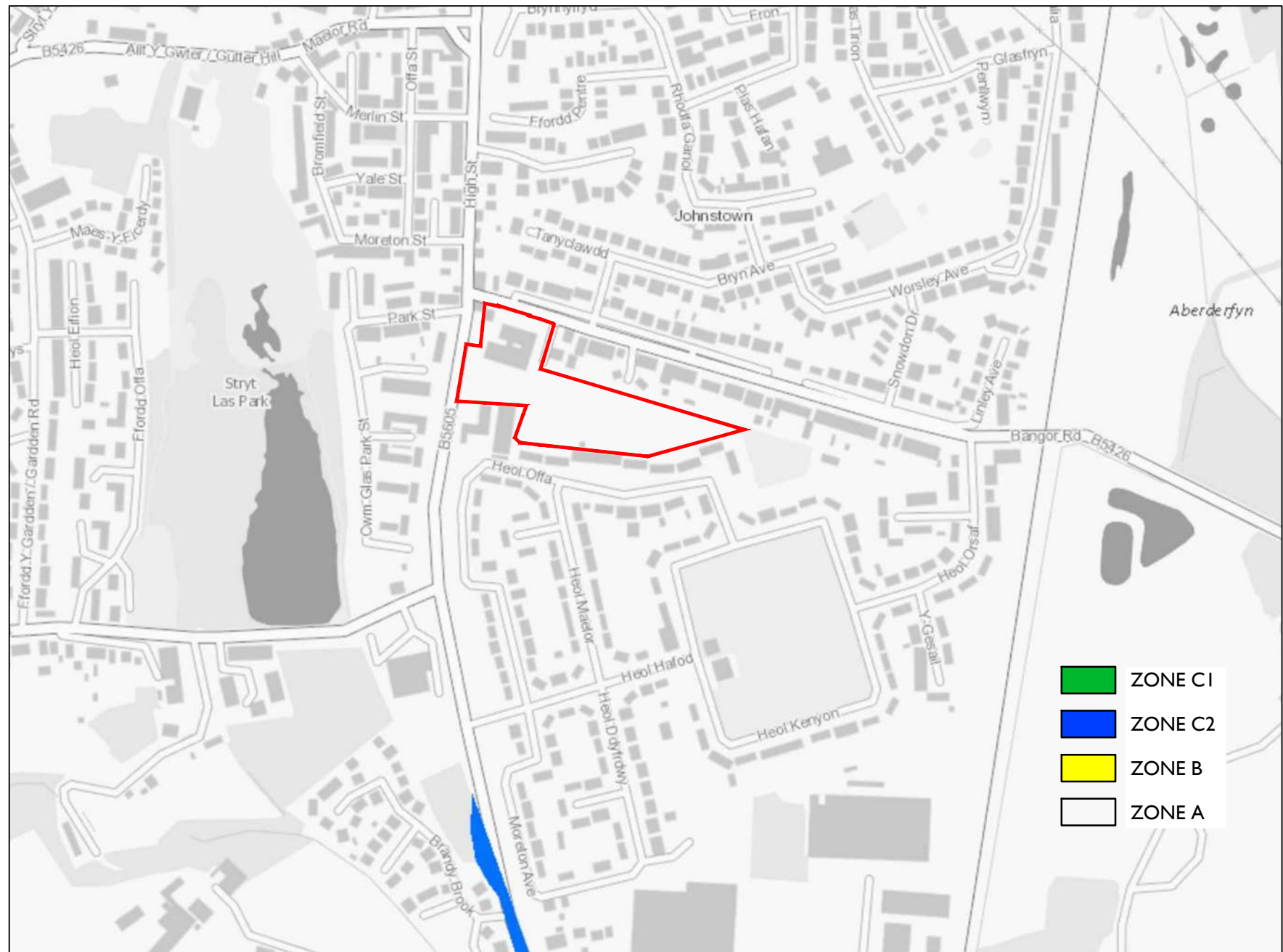
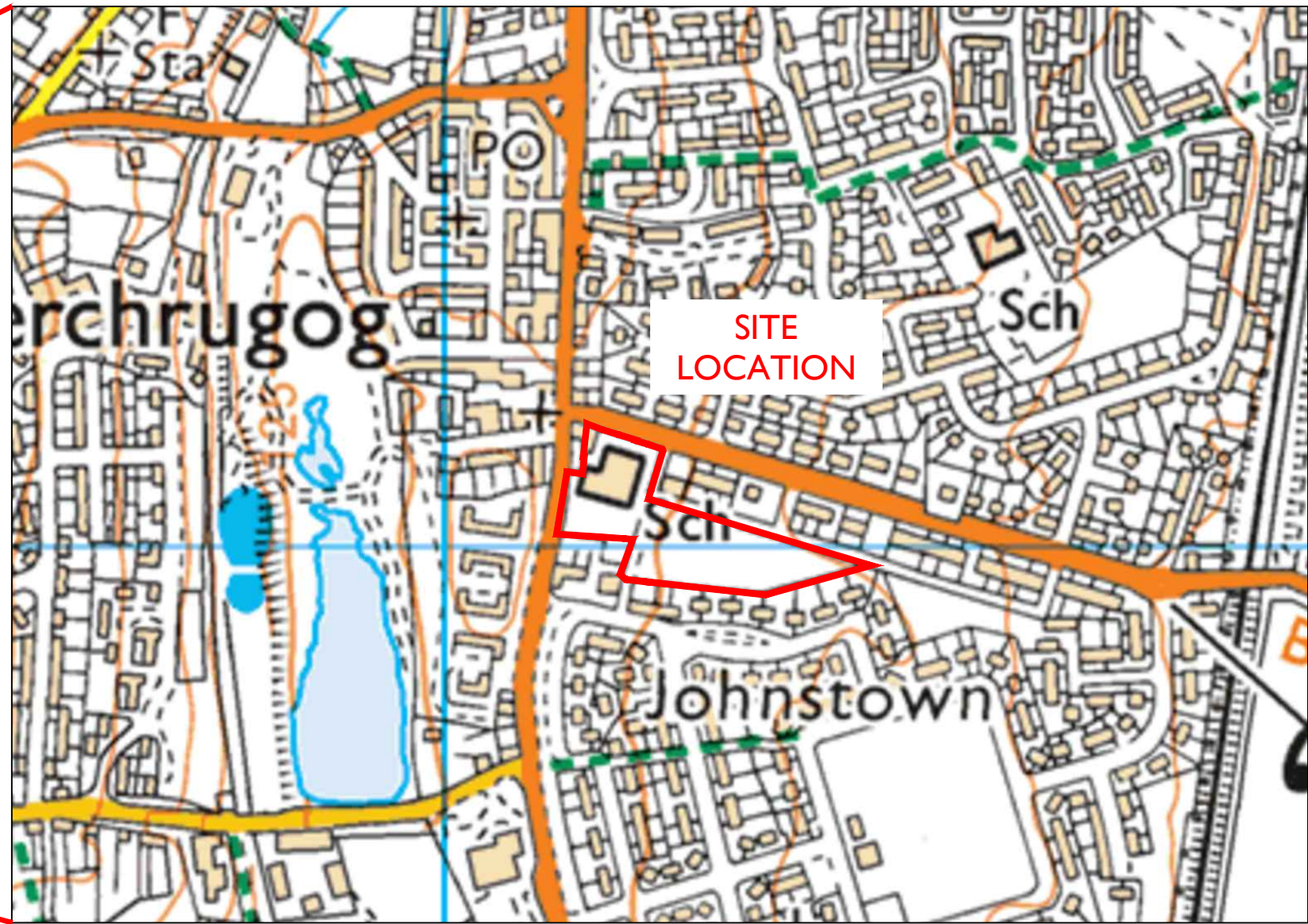
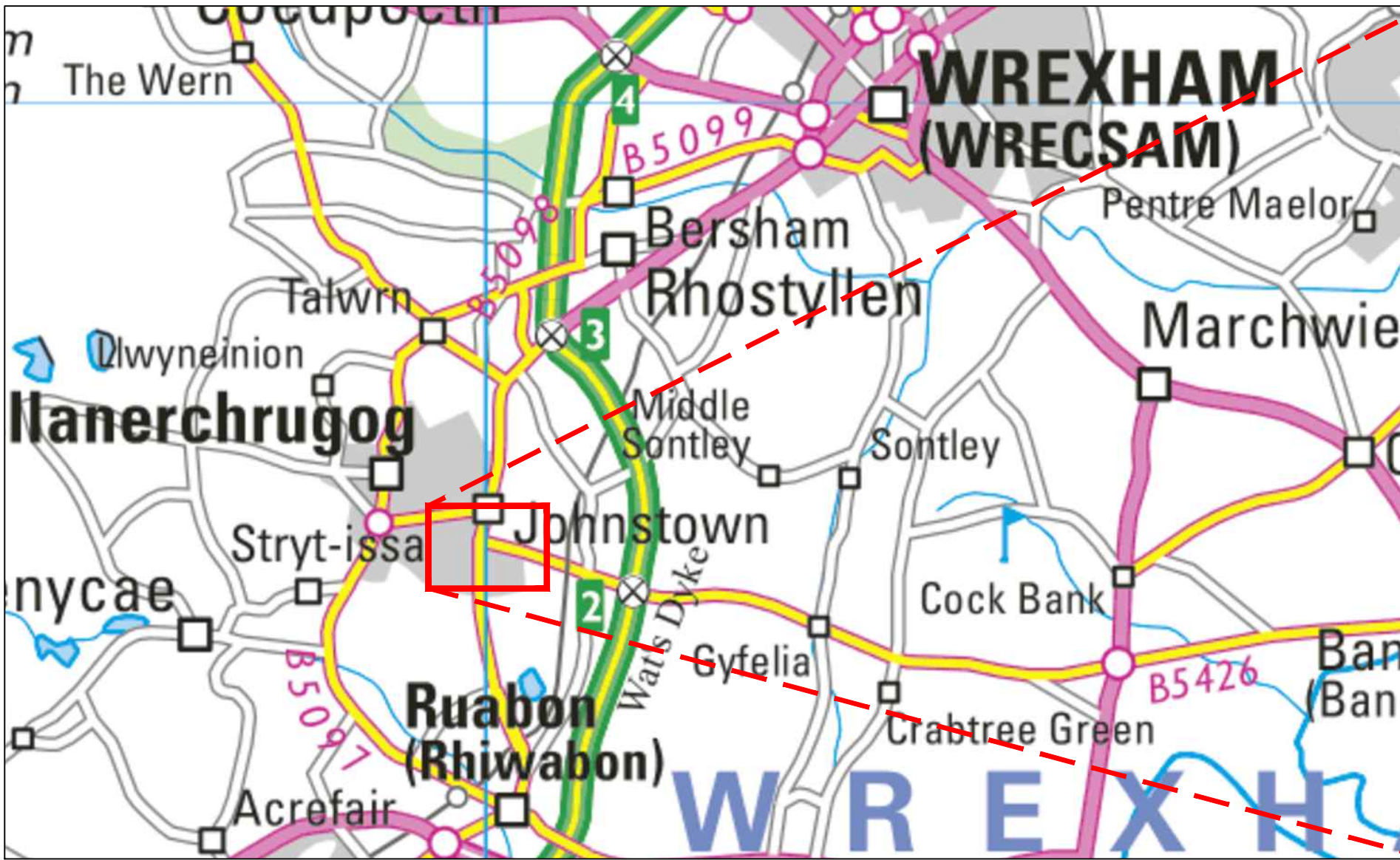
3 Conclusions

3.1 Conclusions

The proposed site is free from any existing flood risk and there are suitable points of connection for the disposal of the foul effluent and surface water run-off generated by the proposed development. We would expect the proposed development to be free from general objections in respect to draining the site but anticipate that the use of infiltration techniques will not be possible. There will also be suitable conditions imposed to ensure that the drainage proposals are designed and constructed in accordance with relevant statutory requirements.

4 Appendices

Appendix A – Site Information



SITE CO-ORDINATES

OS X (Eastings)330124

OS Y (Northings)346018

Nearest Post CodeLL14 2SY

Nat GridSJ301460 / SJ3012446018

AREAS

SITE BOUNDARY

14,565 SQ M

EXISTING IMPERMEABLE AREA

4,590 SQ M

ADDITIONAL IMPERMEABLE AREA

3,155 SQ M

TOTAL CATCHMENT AREA AFTER DEVELOPMENT

7,745 sq m

P02

REV

UPDATED AS PER LATEST LAYOUT

DESCRIPTION

RH

MM

JP

BY

CHK

APR

DATE

JPS

CIVIL + STRUCTURAL ENGINEERS

+44 (0)1244 893430

www.jpstructural.co.uk

info@jpstructural.co.uk

PURPOSE OF ISSUE

PRELIMINARY

STATUS

S1

PROJECT

YSGOL YR HAFOD JOHNSTOWN

TITLE

DRAINAGE SCHEME SITE INFORMATION

CLIENT

WYNNE

CONSTRUCTION

DRAWN BY

RH

CHECKED BY

MM

APPROVED BY

JP

DATE

30.07.2021

SCALE (@ A1)

As Shown

PROJECT NUMBER

94001

DRAWING NUMBER

HAF-JPS-XX-XX-DR-C-0500

REV

P02

PROPOSED / EXISTING IMPERMEABLE AREA
APPROX SCALE 1:500

EXISTING SATELLITE IMAGE
APPROX SCALE 1:2,500

Appendix B – Public Sewer Records



LEGEND(Representative of most common features)

 Waste network:	 Foul chamber	 Outfall
 Surface water chamber	 LH	 Lamphole
 Combined chamber	 Storm Overflow	 Rising main
 Combined sewer overflow	 Gravity sewer	 Private sewer
 Special purpose chamber	 Private sewer subject to Sect. 104 adoption agreement	 Private Sewer Transfer
 Treatment works	 S 104	 Lateral Drain
 Pumping station	 Inspection Chamber	

NB: Sewer symbol colour indicates the type:
RED - Combined
GREEN - Surface Water
BROWN - Foul
Purple - Former S24 sewers (for indicative purposes only)

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) 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 Cyfyngedig ('the Company') gives this information as to the position of its underground apparatus by way of general guidance only and on the strict understanding that it is based on the best information available and no warranty as to its correctness is relied upon in the event of excavations or other works made in the vicinity of the company's apparatus. The onus of locating apparatus before carrying out any excavations rests entirely on you. The information which is supplied by the Company, is done so in accordance with statutory requirements of sections 198 and 199 of the Water Industry Act 1991 which 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 underground may not be accurate. It must be understood that the furnishing of this information is entirely without prejudice to the provision of the New Roads and Street Works Act 1991 and the Company's right to be compensated for any damage to its apparatus.

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: 330143,346069
Map scale: 1:1250
Printed by: Emma John
Printed on: 18 May 2021

Appendix C – Existing Site Drainage



EXISTING DRAINAGE NOTES

THE LOCATION LINE & LEVEL OF ALL KNOWN EXISTING DRAINAGE PIPEWORK INDICATED ON THIS DRAWING IS APPROXIMATE AND FOR GUIDANCE PURPOSES ONLY.

IT IS THE CONTRACTORS RESPONSIBILITY TO DETERMINE THEIR EXACT LINE AND LEVEL, BY WAY OF HAND EXCAVATED TRIAL PITS, PRIOR TO THE COMMENCEMENT OF ANY EXCAVATION WORKS ON SITE. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS AND MAINTAIN THE STRUCTURAL INTEGRITY OF ALL ABOVE AND BELOW GROUND SERVICE INSTALLATIONS.

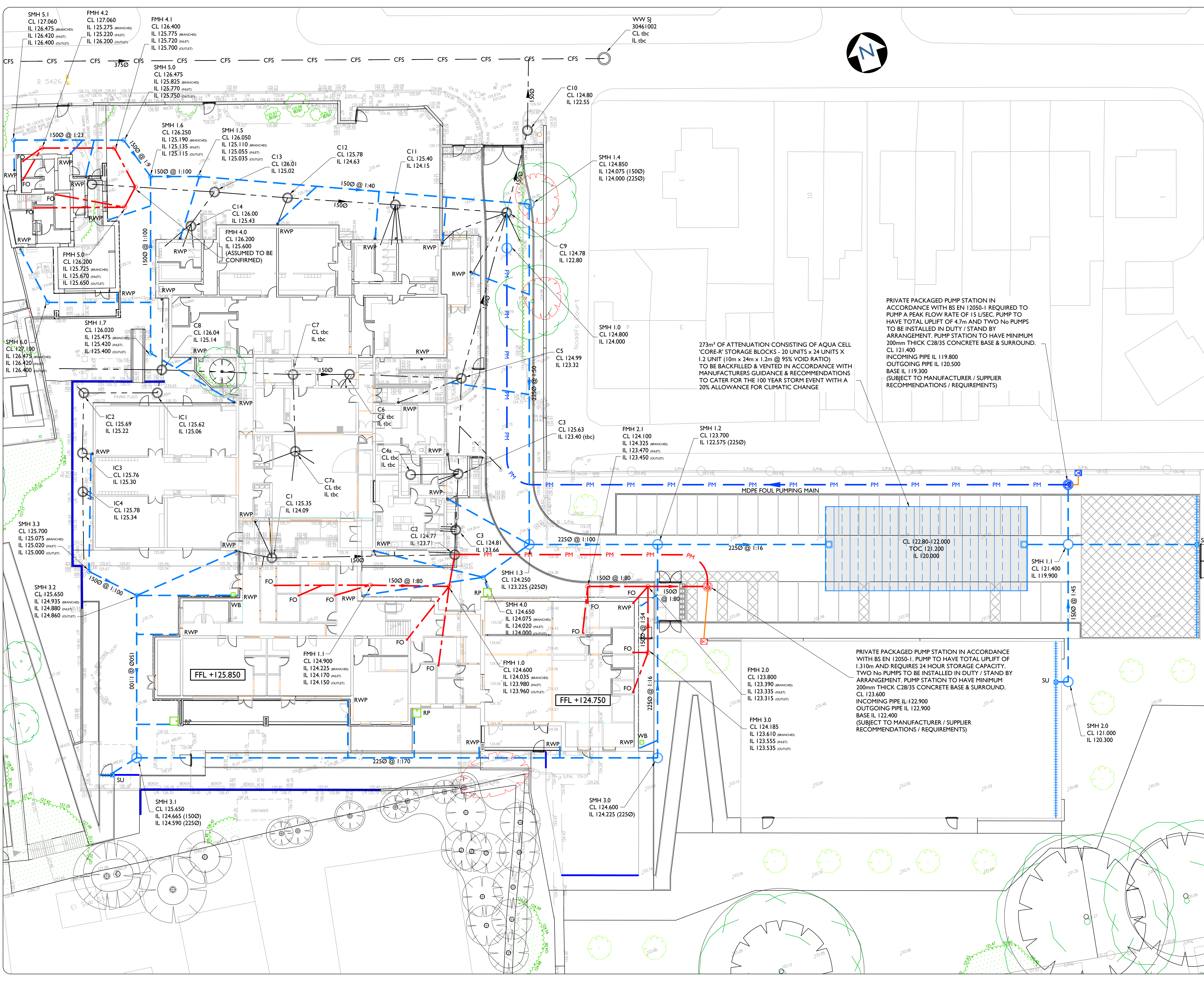
- KEY
- FWS EXISTING FOUL WATER SEWER
 - SWS EXISTING SW SEWER
 - CFS EXISTING COMBINED SEWER
 - HD EXISTING HIGHWAY DRAIN
 - EXISTING FOUL DRAIN
 - EXISTING SW DRAIN
 - EXISTING COMBINED FLOW DRAIN

REV	DESCRIPTION	BY	CHK	APR	DATE
-	-	-	-	-	-

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PURPOSE OF ISSUE	PRELIMINARY			STATUS	S1
PROJECT					
YSGOL YR HAFOD JOHNSTOWN					
TITLE					
DRAINAGE SCHEME EXISTING LAYOUT					
CLIENT					
					
DRAWN BY		CHECKED BY		APPROVED BY	
RH		MM		JP	
DATE		SCALE (@ A1)		PROJECT NUMBER	
30.07.2021		1:200		94001	
DRAWING NUMBER				REV	
HAF-JPS-XX-XX-DR-C-0501				P01	

Appendix D – Proposed Drainage Drawing



NOTES

- THE WORKS SHALL BE IN ACCORDANCE WITH THE FOLLOWING SPECIFICATIONS, NATIONAL BUILDING SPECIFICATION (NBS) AND SEWERS FOR ADOPTION, 7TH EDITION.
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ENGINEERS DRAWINGS, ARCHITECTS DRAWINGS, MECHANICAL AND ELECTRICAL DRAWINGS AND SPECIFICATIONS.
- THE LOCATION, LINE & LEVEL OF ALL KNOWN EXISTING BURIED SERVICE MAINS AND DRAINAGE PIPEWORK INDICATED ON THE DRAWINGS ARE APPROXIMATE AND FOR GUIDANCE PURPOSES ONLY. IT IS THE CONTRACTORS RESPONSIBILITY TO DETERMINE THEIR EXACT LINE & LEVEL, BY WAY OF HAND EXCAVATED TRIAL PITS, PRIOR TO THE COMMENCEMENT OF ANY EXCAVATION WORKS ON SITE. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO MAINTAIN THE STRUCTURAL INTEGRITY OF ALL ABOVE AND BELOW GROUND SERVICE MAINS / DRAINAGE INSTALLATIONS.
- THE CONTRACTOR MUST COMPLY WITH ALL CURRENT LEGISLATION RELATING TO HEALTH & SAFETY.
- THE MAIN CONTRACTOR IS RESPONSIBLE FOR THE DESIGN OF ALL TEMPORARY WORKS, AND IS ALSO RESPONSIBLE FOR THE SAFE MAINTENANCE AND STABILITY OF EXISTING BUILDINGS AT ALL TIMES.
- THE MAIN CONTRACTOR IS RESPONSIBLE FOR THE MITIGATION OF ALL OCCURRENCES OF GROUND WATER DURING THE CONSTRUCTION PERIOD.
- THE CONTRACTOR SHALL MAKE ALLOWANCE FOR RAISING / LOWERING ALL EXISTING ACCESS COVERS & FRAMES TO SUIT NEW FINISHED LEVELS.
- ALL SOFT / HARD PAVED AREAS AFFECTED BY THE WORKS SHALL BE FULLY REINSTATED UPON COMPLETION OF THE WORKS. ALL SURFACE MARKINGS DAMAGED BY THE WORKS SHALL BE FULLY REINSTATED.
- ALL SURPLUS EXCAVATED MATERIAL SHALL BE DISPOSED OF OFF SITE.
- ALL LEVELS ARE TO ORDNANCE DATUM

KEY

CFS

EXISTING COMBINED FLOW SEWER

EXISTING COMBINED DRAIN

PROPOSED FOUL SEWER

PROPOSED SW SEWER

PROPOSED ATTENUATION CRATES

LINEAR DRAINAGE CHANNEL (SU - UNIVERSAL SUMP UNIT WITH AIR TRAP)

PROPOSED FOUL OUTLET

PROPOSED RAIN WATER DOWN PIPE

PROPOSED WATER BUTT

PROPOSED RAINWATER PLANTER

PRIVATE PACKAGED PUMP STATION IN ACCORDANCE WITH BS EN 12050-1 REQUIRED TO PUMP A PEAK FLOW RATE OF 15 L/SEC. PUMP TO HAVE TOTAL UPLIFT OF 4.7m AND TWO No PUMPS TO BE INSTALLED IN DUTY / STAND BY ARRANGEMENT. PUMP STATION TO HAVE MINIMUM 200mm THICK C28/35 CONCRETE BASE & SURROUND. CL 121.400 INCOMING PIPE IL 119.800 OUTGOING PIPE IL 120.500 BASE IL 119.300 (SUBJECT TO MANUFACTURER / SUPPLIER RECOMMENDATIONS / REQUIREMENTS)

273m³ OF ATTENUATION CONSISTING OF AQUA CELL 'CORE-R' STORAGE BLOCKS - 20 UNITS x 24 UNITS x 1.2 UNIT (10m x 24m x 1.2m @ 95% VOID RATIO) TO BE BACKFILLED & VENTED IN ACCORDANCE WITH MANUFACTURERS GUIDANCE & RECOMMENDATIONS TO CATER FOR THE 100 YEAR STORM EVENT WITH A 20% ALLOWANCE FOR CLIMATIC CHANGE

PRIVATE PACKAGED PUMP STATION IN ACCORDANCE WITH BS EN 12050-1. PUMP TO HAVE TOTAL UPLIFT OF 1.310m AND REQUIRES 24 HOUR STORAGE CAPACITY. TWO No PUMPS TO BE INSTALLED IN DUTY / STAND BY ARRANGEMENT. PUMP STATION TO HAVE MINIMUM 200mm THICK C28/35 CONCRETE BASE & SURROUND. CL 123.600 INCOMING PIPE IL 122.900 OUTGOING PIPE IL 122.900 BASE IL 122.400 (SUBJECT TO MANUFACTURER / SUPPLIER RECOMMENDATIONS / REQUIREMENTS)

NO	DESCRIPTION	BY	CHK	APR	DATE
P02	UPDATED AS PER LATEST LAYOUT	RH	MM	JP	26.08.2021

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PURPOSE OF ISSUE	STATUS
PRELIMINARY	S1

PROJECT

YSGOL YR HAFOD JOHNSTOWN

TITLE

DRAINAGE SCHEME PROPOSED LAYOUT

CLIENT

DRAWN BY	CHECKED BY	APPROVED BY
RH	MM	JP

DATE	SCALE (@ A1)	PROJECT NUMBER
30.07.2021	1:200	94001

DRAWING NUMBER	REV
HAF-JPS-XX-XX-DR-C-0502	P02

Appendix E – Surface Water Calculations

**JPS**CIVIL +
STRUCTURAL
ENGINEERSJP Structural Design Ltd
Regus House
Chester Business Park
CH4 9QRFile: Hafod.pfd
Network: Storm Network
Russell Hardy
24/08/2021Page 1
Ysgol Yr Hafod
Surface Water
Attenuation Design**Design Settings**

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	100	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	30	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	17.000	Minimum Backdrop Height (m)	0.200
Ratio-R	0.300	Preferred Cover Depth (m)	1.200
CV	0.750	Include Intermediate Ground	✓
Time of Entry (mins)	4.00	Enforce best practice design rules	✓

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
Depth/Area 1	0.775	4.00	122.000		0.849	68.287	2.000
1			122.000	1200	14.211	68.398	2.413
2			122.000	1200	14.214	78.995	2.700

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.000	Depth/Area 1	1	13.362	0.600	120.000	119.587	0.413	32.4	300	4.08	50.0
1.001	1	2	10.597	0.600	119.587	119.300	0.287	36.9	300	4.15	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	2.773	196.0	136.5	1.700	2.113	0.775	0.0	185	2.989
1.001	2.595	183.4	136.5	2.113	2.400	0.775	0.0	194	2.835

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	13.362	32.4	300	Circular	122.000	120.000	1.700	122.000	119.587	2.113
1.001	10.597	36.9	300	Circular	122.000	119.587	2.113	122.000	119.300	2.400

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	Depth/Area 1		Junction		1	1200	Manhole	Adoptable
1.001	1	1200	Manhole	Adoptable	2	1200	Manhole	Adoptable

Simulation Settings

Rainfall Methodology	FSR	Analysis Speed	Normal
FSR Region	England and Wales	Skip Steady State	x
M5-60 (mm)	17.000	Drain Down Time (mins)	240
Ratio-R	0.300	Additional Storage (m³/ha)	20.0
Summer CV	0.750	Check Discharge Rate(s)	x
Winter CV	0.840	Check Discharge Volume	x

Storm Durations

15 | 30 | 60 | 120 | 180 | 240 | 360 | 480 | 600 | 720 | 960 | 1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
100	20	0	0

Node 1 Online Pump Control

Flap Valve	x	Invert Level (m)	119.587	Switch on depth (m)	0.600
Downstream Link	1.001	Design Depth (m)	0.250	Switch off depth (m)	0.500
Replaces Downstream Link	✓	Design Flow (l/s)	15.0		

Depth (m)	Flow (l/s)
0.250	15.000

Node Depth/Area 1 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	120.000
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	184

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	230.0	0.0	1.200	230.0	0.0	1.201	0.0	0.0

Other (defaults)

Entry Loss (manhole)	0.250	Entry Loss (junction)	0.000	Apply Recommended Losses	x
Exit Loss (manhole)	0.250	Exit Loss (junction)	0.000	Flood Risk (m)	0.300

Results for 100 year +20% CC Critical Storm Duration. Lowest mass balance: 99.83%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
180 minute winter	Depth/Area 1	168	121.346	1.346	91.3	272.7428	0.0000	SURCHARGED
180 minute winter	1	168	121.343	1.756	15.5	1.9862	0.0000	SURCHARGED
15 minute summer	2	1	119.300	0.000	15.0	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
180 minute winter	Depth/Area 1	1.000	1	15.5	0.449	0.079	0.9409	
180 minute winter	1	Pump	2	15.0				333.0

Appendix F – Welsh Water Correspondence

Miss Ceire McGough
Waterco
Lon Parcwr
Ruthin
Denbighshire
LL15 1NJ

Date: 18/09/2019
Our Ref: PPA0004289

Dear Miss McGough,

Site Address: Bangor Road, Johnstown
Development: Ysgol Y Hafod

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 to the foul water only sewer downstream of manhole ref SJ30461151 located in highway to the North of the site

Should a planning application be submitted for this development we will seek to control these points of communication via appropriate planning conditions and therefore recommend that any drainage layout or strategy submitted as part of your application takes this into account.

However, should you wish for an alternative connection point to be considered please provide further information to us in the form of a drainage strategy, preferably in advance of a planning application being submitted.

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.

The proposed development site is crossed by a 150mm foul water only sewer, please see copy of indicative public sewer record attached. No operational development is to take place within 3 metres either side of the centreline of the sewer. We request that prior to commencing any operational development the location of this asset is determined, if operational development is likely to commence within this area please stop works and contact us, the applicant may be able to divert this asset under Section 185 of the Water Industry Act 1991

Advisory Notes

The proposed development may be subject to Schedule 3 of the Flood and Water Management Act 2010. The development therefore may require approval of Sustainable Drainage Systems (SuDS) features, in accordance with national standards, and is strongly recommended that the developer engage in pre-application consultation with Wrexham Council, as the relevant SuDS Approval Body (SAB).

The applicant may need to apply to Dwr Cymru / Welsh Water for any connection to the public sewer under S106 of the Water industry Act 1991. 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 Gravity 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

The applicant is 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 us in dealing with the proposal the applicant may contact Dwr Cymru Welsh Water to establish the location and status of the apparatus. Under the Water Industry Act 1991 Dwr Cymru Welsh Water has rights of access to its apparatus at all times.

SEWERAGE TREATMENT

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



Welsh Water is owned by Glas Cymru – a 'not-for-profit' company.
Mae Dwr Cymru yn eiddo i Glas Cymru – cwmni 'nid-er-elw'.

We welcome correspondence in
Welsh and English

Dŵr Cymru Cyf, a limited company registered in
Wales no 2366777. Registered office: Pentwyn Road,
Nelson, Treharris, Mid Glamorgan CF46 6LY

Rydym yn croesawu gohebiaeth yn y
Gymraeg neu yn Saesneg

Dŵr Cymru Cyf, cwmni cyfyngedig wedi'i gofrestru yng
Nghymru rhif 2366777. Swyddfa gofrestredig: Heol Pentwyn
Nelson, Treharris, Morgannwg Ganol CF46 6LY.

WATER SUPPLY

We do not serve this area with a potable water supply, we advise that you contact the water provider for this area to discuss development proposals.

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.



Welsh Water is owned by Glas Cymru – a 'not-for-profit' company.
Mae Dŵr Cymru yn eiddo i Glas Cymru – cwmni 'nid-er-elw'.

We welcome correspondence in
Welsh and English

Dŵr Cymru Cyf, a limited company registered in
Wales no 2366777. Registered office: Pentwyn Road,
Nelson, Treharris, Mid Glamorgan CF46 6LY

Rydym yn croesawu gohebiaeth yn y
Gymraeg neu yn Saesneg

Dŵr Cymru Cyf, cwmni cyfyngedig wedi'i gofrestru yng
Nghymru rhif 2366777. Swyddfa gofrestredig: Heol Pentwyn
Nelson, Treharris, Morgannwg Ganol CF46 6LY.

Ceire McGough

From: Perry Rhodri <Rhodri.Perry@dwrcymru.com>
Sent: 20 November 2019 12:00
To: Ceire McGough
Subject: RE: 12431 - Ysgol Y Hafod, Johnstown - PPA0004289

Categories: Information received

Hi Ceire,

I can confirm that we will accept an attenuated maximum discharge rate of 15 l/s from for surface water generated from existing school and proposed extension into combined sewer within Bangor Road.

Kind regards,

Rhodri



Rhodri Perry

Development Control Officer | Developer Services | Dwr Cymru Welsh Water

Linea | Cardiff | CF3 0LT | T: 0800 917 2652 | www.dwrcymru.com

We will respond to your email as soon as possible but you should allow up to 10 working days to receive a response. For most of the services we offer we set out the timescales that we work to on our Developer Services section of our website. Just follow this link <http://www.dwrcymru.com/en/Developer-Services.aspx> and select the service you require where you will find more information and guidance notes which should assist you. If you cannot find the information you are looking for then please call us on 0800 917 2652 as we can normally deal with any questions you have during the call.

If we've gone the extra mile to provide you with excellent service, let us know. You can nominate an individual or team for a Diolch award through our [website](#).

From: Ceire McGough <ceire.mcgough@waterco.co.uk>
Sent: 20 November 2019 11:05
To: Perry Rhodri <Rhodri.Perry@dwrcymru.com>
Subject: RE: 12431 - Ysgol Y Hafod, Johnstown - PPA0004289

***** External Mail *****

Good Morning Rhodri,

Thank you for your email.

With regards to the below, please can you confirm that you will accept surface water runoff from both the proposed and existing building into the 375mm combined sewer within Bangor Road, at a limited discharge rate of 15 l/s. Which will be providing a 30% betterment on the existing situation.

Kind Regards,

Ceire

Ceire McGough BSc
Environmental Consultant

Office: 01824 702220
Teams: ceire.mcgough@waterco.co.uk

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 Please consider the environment before printing this email.

From: Perry Rhodri <Rhodri.Perry@dwrcymru.com>
Sent: 18 November 2019 16:18
To: Ceire McGough <ceire.mcgough@waterco.co.uk>
Subject: RE: 12431 - Ysgol Y Hafod, Johnstown - PPA0004289

Dear Ceire,

Thank you for providing discharge rates as requested,

We apply at least 30% betterment rate, we would be happy with proposed discharge rate of 15 l/s based on 1 in 2 year event

Thank you,

Rhodri



Rhodri Perry
Development Control Officer | Developer Services | Dwr Cymru Welsh Water
Linea | Cardiff | CF3 0LT | T: 0800 917 2652 | www.dwrcymru.com

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From: Ceire McGough <ceire.mcgough@waterco.co.uk>
Sent: 12 November 2019 10:18
To: Perry Rhodri <Rhodri.Perry@dwrcymru.com>
Subject: RE: 12431 - Ysgol Y Hafod, Johnstown - PPA0004289

***** External Mail *****

Good Morning Rhodri,

I hope you are well.

Further to my below e-mail, please can you advise when I can expect to receive a response regarding the option of discharging surface water from Ysgol Y Hafod, to the public combined sewer in Bangor Road, north of the site, as per the existing situation.

Kind Regards,

Ceire McGough BSc
Environmental Consultant

Office: 01824 702220

Teams: ceire.mcough@waterco.co.uk



Assessment, Modelling, Design



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Please consider the environment before printing this email.

From: Ceire McGough
Sent: 28 October 2019 12:39
To: 'Perry Rhodri' <Rhodri.Perry@dwrcymru.com>
Subject: RE: 12431 - Ysgol Y Hafod, Johnstown - PPA0004289

Good Afternoon Rhodri,

Thank you for your response.

The existing drainage area that discharges to the combined sewer in Bangor Road (existing school building and adjacent hard-surfaced yards) covers approximately 3,010m².

The Rational Method ($2.78 \times i \times A_p$) was used to estimate the existing unrestricted brownfield runoff rates. Whereby 'i' is the rainfall intensity for a 360min storm duration derived from FEH data. 'A_p' is the impermeable catchment area (0.301ha.)

Return Period (yr)	Rainfall Intensity (mm)	Runoff Rate (l/s)
1 in 2	24.7	20.7
1 in 30	58.2	48.7
1 in 100	75.8	63.4

In terms of the proposed discharge rate, this will be subject to your requirements. We have opportunity to provide flow control and attenuation. Do you have any discharge rate requirements i.e. a certain % betterment (reduction) which should be applied over existing rates?

Kind Regards,

Ceire McGough BSc
Environmental Consultant

Office: 01824 702220

Teams: ceire.mcough@waterco.co.uk



Assessment, Modelling, Design
Ruthin - Chester - Manchester





From: Perry Rhodri <Rhodri.Perry@dwrcymru.com>
Sent: 25 October 2019 16:45
To: Ceire McGough <ceire.mcgough@waterco.co.uk>
Subject: RE: 12431 - Ysgol Y Hafod, Johnstown - PPA0004289

Hi Ceire,

Thank you for email and attachments,

We are open to considering the surface water discharging to combined sewer on basis that school is already discharging there, however we would need to know current discharge figures as well as proposed? Once this is received I will confirm position.

Kind regards,

Rhodri



Rhodri Perry

Development Control Officer | Developer Services | Dwr Cymru Welsh Water

Linea | Cardiff | CF3 0LT | T: 0800 917 2652 | www.dwrcymru.com

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From: Ceire McGough <ceire.mcgough@waterco.co.uk>
Sent: 25 October 2019 12:24
To: Perry Rhodri <Rhodri.Perry@dwrcymru.com>
Subject: RE: 12431 - Ysgol Y Hafod, Johnstown - PPA0004289

***** External Mail *****

Good afternoon Rhodri,

Thank you for your email dated 18th October (Reference: PPA0004289). We look forward to receiving your comments regarding the acceptability of a connection to the surface water sewer in Heol Offa and Heol-Y-Cyngor.

Upon further investigation, in order to make a connection to either the public surface water sewer in Heol Offa or the public surface water sewer in Heol-Y-Cyngor, agreement / land acquisition would need to be secured from third parties. A pumped solution would also be required to achieve a connection to the public surface water sewers. Please see the attached DCWW sewer plan showing third party constraints.

The existing school drainage plans indicate that surface water from the existing school building drains to a 375mm public combined sewer in Bangor Road, north of the site. I have attached the drainage plan for the school for reference. The proposal includes an extension of the school building of 564m².

Please can you advise on the acceptability of discharging surface water from the proposed building extension to the public combined sewer located in Bangor Road utilising the existing drainage system (no new connection to the 375mm public sewer required). This option would facilitate gravity drainage (avoiding a pumped solution) and is not restricted by third party land constraints. Opportunities are available to reduce the flow rate (from the extension and existing school building) to the public combined sewer where required.

Kind Regards,

Ceire McGough BSc
Environmental Consultant

Office: 01824 702220

Teams: ceire.mcough@waterco.co.uk



Assessment, Modelling, Design
Ruthin - Chester - Manchester



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Please consider the environment before printing this email.

From: Perry Rhodri <Rhodri.Perry@dwrcymru.com>
Sent: 18 October 2019 16:27
To: Ceire McGough <ceire.mcough@waterco.co.uk>
Subject: RE: 12431 - Ysgol Y Hafod, Johnstown - PPA0004289

Hi Ceire,

Sorry for the delay in coming back to you on this,

My formal comments regarding surface water disposal will be issued to you on Monday.

Kind regards,

Rhodri



Rhodri Perry
Development Control Officer | Developer Services | Dwr Cymru Welsh Water
Linea | Cardiff | CF3 0LT | T: 0800 917 2652 | www.dwrcymru.com

We will respond to your email as soon as possible but you should allow up to 10 working days to receive a response. For most of the services we offer we set out the timescales that we work to on our Developer Services section of our website. Just follow this link <http://www.dwrcymru.com/en/Developer-Services.aspx> and select the service you require where you will find more information and guidance notes which should assist you. If you cannot find the information you are looking for then please call us on 0800 917 2652 as we can normally deal with any questions you have during the call.

If we've gone the extra mile to provide you with excellent service, let us know. You can nominate an individual or team for a Diolch award through our [website](#).

From: Ceire McGough [<mailto:ceire.mcough@waterco.co.uk>]
Sent: 15 October 2019 17:50
To: services developer <developer.services@dwrcymru.com>
Subject: 12431 - Ysgol Y Hafod, Johnstown - PPA0004289

***** External Mail *****

Good Afternoon,

Further to my below e-mail, please can you advise when I can expect a response regarding the option of discharging surface water to the sewerage system for the development at Ysgol Y Hafod, Johnstown.

As mentioned below; Infiltration testing (to BRE365 Standards) has been carried out at the site with results showing that infiltration will not be feasible and there are no watercourses within the vicinity of the site.

Please advise if a connection to the 150mm surface water sewer, located south of the site within Heol Offa would be acceptable.

Or, alternatively, a connection to the 150mm surface water sewer within Heol-Y-Cyngor, 170m east of the site.

Kind Regards,

Ceire McGough BSc
Environmental Consultant

Office: 01824 702220

Teams: ceire.mcgough@waterco.co.uk



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Please consider the environment before printing this email.

From: Ceire McGough
Sent: 19 September 2019 14:24
To: developer.services@dwrcymru.com
Subject: 12431 - Ysgol Y Hafod, Johnstown - PPA0004289

Good Afternoon

Thank you for the above response regarding a proposed development at Ysgol Y Hafod, Johnstown, Wrexham (Reference number: PPA0004289).

Infiltration testing (to BRE365 Standards) has been carried out at the site with results showing that infiltration will not be feasible. (I have attached the infiltration test results for reference).

There are no watercourses located within the vicinity of the site, therefore our options for surface water disposal is limited.

We note that there is a 150mm surface water sewer located in Heol Offa to the south of the site. Please can you advise whether a connection to the surface water sewer in Heol Offa at a limited discharge rate would be acceptable.

Kind Regards,

Ceire McGough BSc
Environmental Consultant

Office: 01824 702220



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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Dŵr Cymru), ei rif cofrestredig yw 02366777, ac mae ei swyddfa gofrestredig yn Heol Pentwyn, Nelson, Treharris, Morgannwg Ganol CF46 6LY. *****

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Appendix G – SAB Application

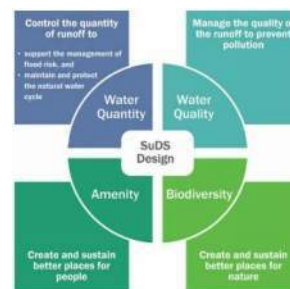


**SuDS Approving Body
Flood & Water Management Team
Environment Department
Wrexham County Borough Council
Abbey Road South
Wrexham
LL13 9PW**

Flood & Water Management Act 2010

Schedule 3 Sustainable Drainage

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



Application Form for Full Application Approval of SuDS on new developments in accordance with The Sustainable Drainage (Approval and Adoption Procedure) (Wales) Regulations 2018

Full Application Structure	
Full Application Form	<i>(To complete & return)</i>
Guidance on Completing the Full Application Form – including specific information and evidence required to support the application.	<i>(For guidance)</i>

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

Full Application Form

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

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

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

Please Note:

- 1. This form is for a Full SuDS Scheme Application for SAB approval ONLY;**
2. Approval of this application will be based on compliance with the [Statutory National Standards for Sustainable Drainage Systems \(SuDS\) for Wales](#) and [Statutory Instruments](#);
3. Once this application is made to SAB, it will be determined solely on the written technical and other information submitted with the full application;
4. You are strongly advised to have previously submitted a Pre-Application form to SAB, and engaged early, and directly, with the SAB, the LPA and all other relevant organisations that may have an interest in your SuDS scheme proposal, including the SAB statutory consultees listed below:
 - a. Sewerage undertaker
 - b. National Resources Wales
 - c. Highway Authority
 - d. Canal & River Trust
 - e. Internal Drainage Districts (NRW);
- 5. For a valid SuDS Scheme Full Application to the SAB, all sections of this form MUST be fully completed; and**
- 6. You are also required to provide technical information as indicated in the [Guidance](#) (or as otherwise directed by the SAB during Pre-Application discussions).**

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

of Information Act 2000 and the Environmental Information Regulations 2004 (if the Data Protection Act allows).

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

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

Please read through the [Guidance](#) and complete this application form carefully ensuring all boxes are completed fully. If you fill in the application form correctly first time, the SAB can process it quicker.

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

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

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

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

Applicants should complete this form and submit it, together with the necessary supporting documents, to Wrexham County Borough Council SuDs Approving Body.

Details for the payment of the Full Application fee will be provided upon confirmation of receipt of a valid application. This confirmation will include a unique reference (SAB/FUL/20XX/XXX) that must be quoted on all future correspondence. Your valid application will not be processed until the application fee is received and cleared in full.

When you have completed the application form please submit the form and associated documents to:

Electronically:	SAB@wrexham.gov.uk
Postal:	SuDS Approving Body Flood & Water Management Team Environment Department Wrexham County Borough Council Abbey Road South Wrexham, LL13 9PW

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

Content

ALL sections of this form MUST be fully completed

- 1. Applicant Details**
- 2. Site Details**
- 3. Interest in Land**
- 4. Application**
- 5. Application Fee**
- 6. Environmental Impact Assessment (EiA) Statement**
- 7. Compliance with Statutory National Standards for Sustainable Drainage Systems (SuDS)**
- 8. Assessment of Flood Risk**
- 9. Surface Water Discharge Hierarchy**
- 10. Infiltration Assessment**
- 11. Non-performance Bond, Adoption, Operation & Maintenance**
- 12. SuDS Scheme Application Checklist**
- 13. Declaration**

1. Applicant Details**Applicant Name and Address**

Title and Name		Mr Nick Bateman
Company		Wrexham County Borough Council
Suffix (unit/name/number)		
Address line 1		Ruthin Road
Address line 2		
Address line 3		
Town		Wrexham
County		
Postcode		LL13 7TU
Phone number	Mobile	
	Works	01978 315657
	Home	
e-mail address		nick.bateman@wrexham.gov.uk

Agent Name and Address

Title and Name		Mr Russell Hardy
Company		JP Structural Design Ltd.
Suffix (unit/name/number)		Regus House
Address line 1		Heron Way
Address line 2		
Address line 3		
Town		Chester
County		Cheshire
Postcode		CH4 9QR
Phone number	Mobile	07711107672
	Works	
	Home	
e-mail address		russell@jpstructural.co.uk

Preferred contact	Applicant ☐	Agent ☒
--------------------------	------------------------------------	---

2. Site Details

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

Name of proposed development	Ysgol Yr Hafod, Johnstown
-------------------------------------	---------------------------

Grid Reference (E/N)	330135 (E)	346048 (N)
Suffix (unit/name/number)	Ysgol Yr Hafod	
Address line 1	Bangor Road	
Address line 2		
Address line 3		
Town	Johnstown	
County	Wrexham	
Postcode	LL14 2SW	

Description of proposed development	The proposed development consists of a single storey extension (over 2 levels) to the south of the existing school building, a new MUGA and car parking facilities.	
Total application site area (Ha)	0.320 Ha	
Is the existing site currently developed i.e. Brownfield or is it currently undeveloped i.e. Greenfield?	Brownfield	
Existing use	Existing School for children aged 3 to 11 years old.	
Proposed use	Same as existing use, primary school for children aged 3 to 11 years old.	
Does the site cross more than one SAB area?	Yes ☐	No ☒
If "Yes", please confirm the proportionate area in each SAB below: (The main contact will be the SAB that has most of the surface water drainage system within its boundary.)		

SAB	% of Site Area

3. Interest in the Land

What interest do you have in the land?		
Owner	Yes ☐	No ☒
Prospective Owner	Yes ☐	No ☒
Other (please provide details)	Agent	

4. Application

Has any prior advice been sought from the SAB about this application?		Yes ☐	No ☒
If Yes, please complete the following information about the advice you were given. This will help the SAB to deal with this application more efficiently.			
Officer Name	Mr Neil Taunt		
Reference number	Meeting with Mr Neil Taunt, Waterco and WCBC	Date	26 09 2019
Details of pre-application advice received	A summary of main points identified during the SAB meeting detailed below: - The site currently drains to the public combined sewer, north of the site, with partial infiltration of surface water from the hardstanding play area. - Based on the Ground Investigation Report, the site is not suitable for traditional infiltration techniques (soakaways). - There are no watercourses within the vicinity of the site. - The public surface water sewer is separated from the site by third party, urbanized land, restricting the potential to make a connection to the sewer. - DCWW will be contacted to establish the feasibility of making a connection to the public combined sewer from the school extension. - The surface water management system should be designed to accommodate the 1 in 100 year + 20% Climate Change. Further to the above SAB Meeting on 26.09.2019, it was 'hoped' that elements of infiltration could be utilized but have not proven to be viable as the Ian Farmer Associates Ground Investigation report, referenced 42361, recorded 3 soakaway		

	tests as being attempted at the site in accordance with BRE 365, but essentially 'failing'. The tests were undertaken in August in conditions recorded as 'sunny' and yet the water level reduced by only 210mm, 160mm & 50mm in 6 hours respectively, therefore not producing a result. Noting also the very clayey substrata documented in the report, and that groundwater strikes were also encountered at shallow depths at various locations across the site, any proposed solution utilizing infiltration as a means of disposing surface water is therefore deemed unviable.
--	--

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

Is this application part of a phased approach to development of the site, or one of multiple applications for the same site?	Yes ☐	No ☒
If “Yes”, please provide brief details		

Is this application one of two or more applications made at the same time, each setting out an alternative proposal for construction of a drainage system	Yes ☐	No ☒
If “Yes”, please provide details of other applications made at the same time (include SAB Reference number if available)		

5. Application Fee

It is recommended you contact the SAB directly to ensure the correct fee is paid with the application.

		Area of Land (Ha)	Fraction	Fees
Application fee		N/A	N/A	£350.00
Each 0.1ha or fraction of 0.1ha, for first 0.5ha	£70.00	0.3		£210.00
Each 0.1ha or fraction of 0.1ha, from 0.5ha up to and including 1ha	£50.00	0.02		£100.00

Each 0.1ha or fraction of 0.1ha, from 1ha up to and including 5ha	£20.00	00		£0
Each additional 0.1ha or fraction of 0.1ha above 5Ha.	£10.00			£0
Is the applicant a town/community council?		If yes, application fee is half the amount		Yes
<u>If applicable</u> – reduction of 50% application fee due to this being an alternative proposal made at the same time.				£0
<u>If applicable</u> – application fee adjustment due to cross-SAB area approvals needed.				£0
			Total Fees	£330.00

6. Environmental Impact Assessment (EiA) Statement

Does this application relate to a development that is the subject of an EiA application under the Town & Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017(1)?	Yes ☐	No ☒
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7. Compliance with Statutory National Standards for Sustainable Drainage Systems (SuDS)

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

Standard Principles

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

Compliance with Standard Principles

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

In accordance with the Welsh Assembly Government's implementation of Schedule 3, the Surface Water Drainage strategy adheres to the principles of;

- Reducing Flood Risk
- Improving Water Quality
- Protecting and Improving the Environment

- Ensuring the Stability & Durability of Drainage Systems

The proposed scheme comprises a single storey extension to the south of the existing school building along with the construction of a new MUGA and new car parking facilities, extending over the existing playing field.

The existing drainage arrangements at the school comprise of a combined sewer system which in turn discharges into the existing combined public sewer network along Bangor Road.

The NRW Flood Risk maps have been consulted and the site is not at any risk of flooding. Further to this a ground investigation has been carried and permeability tests recorded no fall in water level indicating the superficial deposits (clay) to generally be practically impervious. Based on this the report confirms that soakaway drainage is not likely to be effective.

The topography of the existing hardstanding playing area falls away from Ruabon Road towards the playing fields (east) at gradients of approximately 1:37. The topography of the existing playing field falls even steeper towards the east at gradients of approximately 1:25.

The proposed building extension, new MUGA and car parking facilities extends across the existing hardstanding playing area and into half of the existing playing field. The proposed scheme is therefore located across steep gradients and across land deemed as practically impervious. In order to accommodate the proposed works across the existing steep gradients, the proposed single storey extension to the existing school building is proposed over 2 No floor levels (1.1m in difference), the proposed MUGA is located approximately 1.5m ABOVE the new car park. Further to this the proposed works is 'landlocked' as the existing playing field boundary is shared with residential properties, the southern boundary to the existing hardstanding play area is shared with a factory and the short western boundary is along Ruabon Road.

Prevention:

As discussed above, the existing ground is deemed practically impervious and therefore SUDs features such as permeable surfacing, rainwater gardens, soakaways have been discounted.

To improve the drainage system across the site and to reduce the possibility of flooding for the existing and proposed areas of the site, the Drainage Strategy includes a separate surface water and foul system across the existing and proposed drainage system for the school. Previous communications between WaterCo and DCWW, confirms DCWW have agreed a surface water Peak Flow rate of 15l/sec from the school site to be discharged into the existing private combined manhole upstream of the combined public sewer network along Bangor Road. The surface water discharge across the site (including the existing and proposed works) will therefore be attenuated onsite and pumped return to the existing combined drain just upstream of the combined public sewer network along Bangor Road.

The proposed attenuation has been designed to accommodate up to and including a 1 in 100 year return period plus 20% for Climate Change, as agreed with SAB on the 26.09.2019.

Rainwater butts will be installed around the site as a measure for harvesting an element of rainwater which can be used for plant irrigation, cleaning etc. Existing raised planters will be maintained across the site. Further to this rainwater planters will be installed around the site providing an opportunity to contribute to the natural environment and increasing the surface water discharge Time of Concentration.

Good House Keeping Measures

Linear drainage are proposed along the eastern boundaries of the car park and MUGA and outlets incorporate sump units. The sump units along with the attenuation for surface water from cross the school site will provide an opportunity for sediment to be removed from the surface water discharge.

Runoff from the roofs and playgrounds is considered to be a low risk in terms of pollution controls although it is proposed to install rainwater planters across the site and will provide an opportunity for the removal of pollutants through collection and biodegradation before returning cleansed water to the new improved surface water drainage system.

The bin store area will be relocated and drained separately to the foul system.

Local Source Control

Local source controls are implemented at the site with the use of rainwater butts, rainwater planters and surface water attenuation.

Rainwater butts and rainwater planters are proposed at the downpipes of the new extension, and will provide an element of attenuation, reuse and an increase Time of Concentration for the surface water discharge from the new roofs.

Surface water attenuation is proposed for the whole site and has been designed to accommodate storms up to and including 1 in 100 year return period plus 20% climate, as agreed with SAB on 26.09.2019. As discussed above the surface water discharge rate of 15l/sec to the DCWW combined sewer, along Bangor Road, has been agreed with DCWW.

Site Source Controls

There are no site source controls as such as all surface water is managed within the site.

As the system is a pump solution, with high ground water levels it has all discouraged the ideal of a leaky system as we are more concerned with water entering the system and effectively pump land drainage.

Relevant items of supporting information (e.g. evidence, technical documents, plans and drawings etc.), as shown in [Table A](#) and [Table B](#) of this Guidance **MUST** be listed below, and all relevant material submitted.

1. 94001-500-P01 – Site Information
2. 94001-501-P01 – Existing Drainage
3. 94001-502-P01 – Proposed Drainage
4. Waterco Communications with DCWW
5. Drainage Calculations

Standards 1 to 6

Compliance with Standard S1 - Surface water runoff destination

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

In determining a suitable methodology for disposal of surface water flows from this development, it is necessary to explore the technical options outlined under Standard S1 of the SNSSUDS 2018 document published by Welsh Government. This states that disposal should be made through the hierarchical approach which are, in order of preference, below:

- **Priority Level 1 – Surface water runoff collected for use:**
 Due to the nature of the development as an extension to an existing school facility, the existing ground conditions the topography of the site and the minimal remaining area of the site available post development for use by the children, it was considered impracticable for grey water harvesting type solutions to be considered. However, rainwater butts will be provided as a means of capturing rainwater for irrigation and cleansing purposes. Rainwater planters will also be implemented as a means of reusing rainwater to nurture and contribute to the amenity and biodiversity within the school site.
- **Priority Level 2 – Surface water runoff is infiltrated to ground:**
 As discussed previously, ground investigation (GI) was carried out at the site and the permeability of the site assessed. The outcome of the permeability testing recorded no fall in water level indicating the superficial deposits (clay) to generally be, as described in the GI Report as, 'practically impervious'. Further to this the GI Report states that soakaway drainage is not likely to be effective. Surface water runoff infiltrated to ground has therefore been discounted for the proposed scheme.
- **Priority Level 3 – Surface water runoff is discharged to a surface water body:**
 The closest surface water body located to the site are the ponds located at Stryt Las Park, approximately 200m to the west of the site and Ruabon Road. Due to the topography of the site, surface water generated across the school site falls towards the east and therefore further away from the ponds at Stryt Las Park. Further to this in order to discharge surface water to the ponds at Stryt Las Park, the surface water discharge drain would have to cross Ruabon Road and a number of third party land. This option has therefore been discounted.
- **Priority Level 4 – Surface water runoff is discharged to a surface water sewer, highway drain or another drainage system:**
 No surface water from the site is proposed to discharge to a surface water sewer.
- **Priority Level 5 – Surface water runoff is discharged to a combined sewer:**
 The drainage across the existing site consists of combined sewer drains which discharge into the combined public sewer network along Bangor Road. The Drainage Strategy for the proposed development includes a revised drainage system across the whole site (existing and proposed) with separate foul and surface water drains. The new surface water runoff from the site is discharged to the existing combined public sewer along Bangor Road at a peak discharge rate of 15 l/sec, as agreed with the DCWW.

Relevant items of supporting information (e.g. evidence, technical documents, plans and drawings etc.), as shown in [Table A](#) and [Table B](#) of this Guidance **MUST** be listed below, and all relevant material submitted.

1. 94001-501-P01 – Existing Drainage
2. 94001-502-P01 – Proposed Drainage
3. Waterco Communications with DCWW
4. DCWW Statutory Information
5. Ground Investigation Report

Compliance with Standard S2 - Surface water runoff hydraulic control

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

In accordance with statutory guidelines, the development of this site should not increase flood risk elsewhere and as such, all runoff from attenuated areas on site should be contained within the site boundary for up to and including a 1 in 100-year design period storm, plus 20% climate change, as agreed with SAB on 26.09.2019.

As discussed previously, infiltration based options have been discounted due to the impermeable nature of the existing ground conditions.

As per communications between Waterco and DCWW, a surface water discharge peak flow of 15l/sec has been agreed via the existing combined sewer connection upstream to the combined public sewer along Bangor Road.

The Drainage Strategy for the proposed development therefore includes the revised drainage system across the site, separating the foul and surface water drains. Surface water attenuation is therefore proposed, under the new car park, with a pumped return to the existing combined sewer drain which in turn discharges to the combined public sewer along Bangor Road. The proposed attenuation is designed for up to and including a 1 in 100 year return period, plus 20% climate.

Should an exceedance event occur, in excess of the 1 in 100 year return period plus 20% CC, surface water flows from across the site with follow the topography of the site and make its way onto the playing field and soft landscaped areas to the east and south east of the site. The existing soft landscaping (consisting of mature trees and hedges) and proposed soft landscaping will intercept exceedance flows and minimize any impact on neighboring properties.

Relevant items of supporting information (e.g. evidence, technical documents, plans and drawings etc.), as shown in [Table A](#) and [Table B](#) of this Guidance **MUST** be listed below, and all relevant material submitted.

1. 94001-502-P01 – Proposed Drainage
2. Waterco Communications with DCWW
3. Ground Investigation Report

Compliance with Standard S3 – Water Quality

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

In accordance with the CIRIA C753 publication 'The SUDs Manual' (2015) Table 26.2, commercial roofs (applicable to schools), are classified as having a 'low' pollution hazard level.

As discussed previously, infiltration based options have been discounted due to the impermeable nature of the existing ground conditions.

Rainwater butts and rainwater planters are proposed at the downpipes. Rainwater butts will provide retention for surface water runoff generated from the new roofs and will also provide an opportunity for sediment to settle thereby providing cleaner water for reuse across the site and excess surface water returned to the sewer network. Rainwater planters will provide an opportunity for the removal of pollutants through collection and biodegradation before returning improved water quality to the new onsite surface water drainage system.

ACO Channels, proposed along the eastern lengths of the car park and MUGA, will include outlets incorporating sump units. The sump units and proposed surface water attenuation will provide an opportunity for sedimentation to take place, and therefore an improved water quality will be pumped returned to the existing public sewer network.

The proposed pumps for the pumped return solution will provide filtration, thereby removing further sediment from the surface water before being discharged to the public sewer system.

The bin store will be relocated within the proposed development and will be drained separately to the foul drainage system.

Relevant items of supporting information (e.g. evidence, technical documents, plans and drawings etc.), as shown in [Table A](#) and [Table B](#) of this Guidance **MUST** be listed below, and all relevant material submitted.

1. 94001-502-P01 – Proposed Drainage

Compliance with Standard S4 – Amenity

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

Taking into considering that infiltration based solutions are not feasible, due to existing ground conditions, and the remaining outdoor area being reduced due to the proposed development SUDs components are minimal across the site. However, the proposed rainwater butts and rainwater planters and the retention of the existing raised planters will provide much needed amenity along the outskirts of the building. The site will also retain the existing soft landscaping (trees and hedges/shrubs) along with additional soft landscaping around the new MUGA and car park.

Further to the above it is considered that the scheme as a whole will add significant value / amenity with its additional learning spaces, new nursery, MUGA and improved parking facilities. The proposed scheme will also add aesthetic value with the new extension to the south of the existing school building which will also be visible along Ruabon Road.

Relevant items of supporting information (e.g. evidence, technical documents, plans and drawings etc.), as shown in [Table A](#) and [Table B](#) of this Guidance **MUST** be listed below, and all relevant material submitted.

1. 94001-502-P01 – Proposed Drainage

Compliance with Standard S5 – Biodiversity

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

The SuDS scheme biodiversity strategy should revolve around the creation of significant and varied habitat to increase the overall biodiversity of the site and ecological value.

Due to the size, type, location and existing ground conditions of the site, it has proved challenging to improve on biodiversity of the area. However, the implementation of rainwater butts will provide a means for garden irrigation, including the irrigation of the existing raised planters to be retained. Rainwater planters are proposed and will contribute to the biodiversity across the site. The existing soft landscaping, which include trees and hedges / shrubs, will be retained across the site. Further to this additional soft landscaping is proposed which will include new trees around the new car park and MUGA.

Relevant items of supporting information (e.g. evidence, technical documents, plans and drawings etc.), as shown in [Table A](#) and [Table B](#) of this Guidance **MUST** be listed below, and all relevant material submitted.

1. 94001-502-P01 – Proposed Drainage

Compliance with Standard S6– Design of drainage for Construction and Maintenance and Structural Integrity

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

The proposed system will not be required for adoption as it does not serve more than one property. However, it will still be designed to the standards set out in Ciria C753 & Sewers for Adoption 7th Edition. The proposed drainage scheme consists of predominantly standard products and methods of construction that should not concern a suitably experienced and qualified contractor.

An O&M manual will also be provided to the school in due course, including the final 'As Built' constructions drawings and a maintenance schedule for the drainage system.

A preliminary maintenance schedule is enclosed.

Relevant items of supporting information (e.g. evidence, technical documents, plans and drawings etc.), as shown [Table A](#) and [Table B](#) of this Guidance **MUST** be listed below, and all relevant material submitted.

1. JPS Maintenance Plan - Ysgol Yr Hafod

8. Assessment of Flood Risk

Is the site within an area at risk of flooding? Refer to Natural Resources Wales Development Advice maps. ([Natural Resources Wales / Development and flood risk](#))

Yes

☐

No

☒

If the proposed development is within the area at risk of flooding, you will need to consider whether it is appropriate to submit a flood consequences assessment. (Refer to [Technical Advice Note 15 \(TAN15\)](#)).

Is the site located within an area susceptible to surface water flooding? Refer to [NRW Surface Water Flood Maps](#).

Yes

☐

No

☒

Is the site located within an area susceptible to groundwater flooding?	Yes ☐	No ☒
Is there a watercourse (as defined under Section 72 Land Drainage Act 1991) located within 20m of the proposed development?	Yes ☐	No ☒

9. Surface Water Discharge Hierarchy

Surface water drainage arrangements shall demonstrate the proposed surface water drainage complies with National SuDS Standards. As much of the runoff as possible should be discharged to each hierarchy element before a lower hierarchy element is considered. Collection and infiltration methods of drainage are required to be considered in the first instance. With reference to the hierarchy levels below, please indicate your proposed drainage arrangements.

Level	Yes	No
1. Collect for use	☒	☐
2. Infiltration	☐	☒
3. To watercourse	☐	☒
a. Is it an Ordinary Watercourse?	☐	☐
b. Is it a Main River?	☐	☐
4. To surface water sewer	☐	☒
a. Is it a Highway drain?	☐	☐
b. Is it a public sewer?	☐	☐
c. Is it a private sewer?	☐	☐

d. Other	☐	☐
5. To combined sewer	☒	☐

Has advice been sought from the asset owners?	Yes ☒	No ☐
Has advice been sought from the land owners?	Yes ☒	No ☐

10. Infiltration Assessment

Where infiltration drainage is proposed, testing should be carried out to a methodology agreed with the SAB e.g. [Infiltration Drainage - Manual of Good Practice \(CIRIA R156\)](#) and [BRE Soakaway Design \(DG 365 – 2016\)](#), and be used to inform the design, construction, maintenance, testing and assessment of infiltration systems.

Has infiltration testing been carried out?		Yes ☒	No ☐	
Analysis of development Geology (including both bedrock and superficial deposits where known)		Records indicate superficial deposits of Glacial Till beneath the western part of the site and Glaciofluvial deposits to the east. Bedrock comprises to the west Sandstone of the Cefn Rock to the west and Mudstone of the Etruria Formation to the east. Permeability tests recorded no fall in water level indicating the superficial deposits (clay) to generally be practically impervious.		
Depth to groundwater (metres)		2.0m		
Borehole testing	Reference	BH04		
	Date	08	08	2019

Has a Contaminated Land Assessment been undertaken?	Yes ☐	No ☒
Is the infiltration drainage proposed on contaminated land?	Yes ☐	No ☒

Infiltration test result	Insufficient fall in water level therefore infiltration rate could not be determined.
--------------------------	---

11. Non-performance Bond, Adoption, Operation & Maintenance

What are your proposals regarding cost of works, adoption and maintenance of the SuDS scheme?	
Non-performance Bond – Estimated cost of work	N/A
Adoption (including land agreements etc)	N/A
Funded Maintenance Plan for the lifetime of the development	N/A

12. SuDS Scheme Application Checklist

Please complete the following checklist and make sure you have read the Guidance on Making SuDS Applications for SAB Approval , the Guidance on completing the Full Application Form , and provided all the necessary information in support of your application:	
Correct Full Application fee.	We would be grateful if the fee could be confirmed.
Completed, signed and dated Full Application form.	Yes
Plan/s specifying the construction area and the extent of the drainage system for which approval is sought. All plan/s shall be at a scale of 1:2500 and MUST show the direction of North.	Yes
Taken account of SAB Guidance on technical information to be submitted to enable SAB to assess your Full Application.	Yes

13. Declaration

I/ we hereby apply for SuDS Approval as described in this form and the accompanying plans/drawings and additional information. I confirm that I have read and complied with the National SuDS Standards and, to the best of my knowledge, any facts stated are true and accurate and any opinions given are the genuine opinions of the persons giving them.

This form has been completed using evidence from the Flood Consequences Assessment where applicable, surface water drainage strategy and site plans and associated documents.

This form has been completed using accurate information. It can be used as a summary of the detailed surface water drainage proposals on this site, and clearly shows that these drainage proposals conform to the National SuDS Standards for Wales.

Form completed by	Russell Hardy
Signature	
Qualification of person responsible for signing off this application	BSc (Hons) Civil Engineering
Company	JP Structural Design
On behalf of (Client's details)	Wrexham County Borough Council
Date	30.07.2021

Disclaimer

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

For information as to how Wrexham County Borough Council handles personal data, please see our Privacy Notices on our website: www.wrexham.gov.uk

Appendix H – GI Extract

WREXHAM COUNTY BOROUGH COUNCIL

**YSGOL YR HAFOD,
JOHNSTOWN, LL14 2SW**

GROUND INVESTIGATION REPORT

Contract: 42361

Date: September 2019

Ian Farmer Associates (1998) Limited
14 – 15 Rufford Court, Warrington, Cheshire
WA1 4RF
Tel: 01925 855440
e-mail: warrington@ianfarmer.co.uk

- 6.2.6 Square pad foundations of widths about 1m at a minimum depth of 0.75m should support an allowable bearing pressure about 100kN/m² which would provide an adequate factor of safety against shear failure and limit settlements to the order of 25mm.
- 6.2.7 It is possible that shallow strip foundations could be supported on different strata, in this instance sand and clay, resulting in possible differential settlements developing due to the different settlement characteristics of these strata. It is recommended that reinforcement should be included within strip foundations to span loose zones and minimise differential settlement.

6.3 Ground Floor Slabs

- 6.3.1 Based on observation on site consideration may be given to constructing ground floor slabs on formation prepared in the natural strata.
- 6.3.2 Any deleterious material should be removed and replaced with properly compacted granular fill.

6.4 Excavations

- 6.4.1 Based on observations on site, together with the results of in-situ and laboratory tests, it is considered that excavations to less than 1.00m may not stand unsupported in the short term. Side support for safety purposes should of course be provided to all excavations which appear unstable, and those more than 1.20m deep, in accordance with Health and Safety Regulations.
- 6.4.2 It is anticipated that standard plant will be generally suitable for excavation.

6.2 Permeability

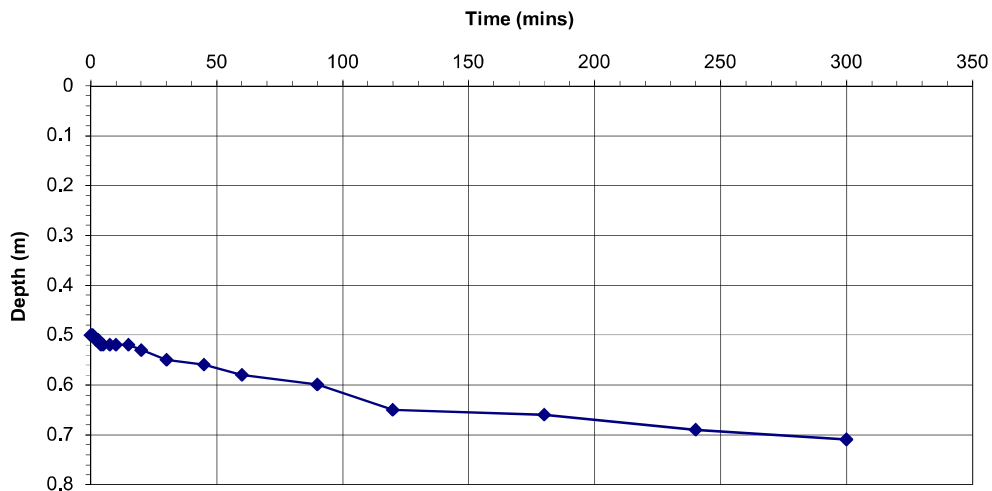
- 6.4.1 The permeability of the ground was assessed by in-situ variable head testing carried out in BH04. The results are presented in Appendix 2.
- 6.4.2 The test recorded no fall in water level indicating the superficial deposits (clay) to generally be practically impervious (Ref 9.11).
- 6.4.3 On this basis soakaway drainage is not likely to be effective.

CALCULATION OF INFILTRATION RATE IN ACCORDANCE WITH BRE DG 365: 2016

Client:	Wrexham Borough County Council		
Site:	Johnstown		
Job No:	42361	Test No:	SA01
Date	08/08/2019	Weather:	Sunny

INPUT DATA AND CALCULATION

Time (min)	Depth (m)	Size of Trial Pit	Length (m) =	2.00
0	0.5		Width (m) =	0.60
0.5	0.5		Depth (m) =	1.60
1	0.5			
2	0.51	Depth to water at start of test (m) = 0.50		
3	0.51	Depth to water at end of test (m) = 0.71		
4	0.52	Depth to water at 75% level (m) = 0.78		
5	0.52	Depth to water at 50% level (m) = 1.05		
7.5	0.52	Depth to water at 25% level (m) = 1.33		
10	0.52			
15	0.52	Base area of pit (m ²) = 1.20		
20	0.53	Effective area of loss a _{s50} (m ²) = 4.06		
30	0.55	V _{P75} - V _{P25} (m ³) = 0.66		
45	0.56			
60	0.58			
90	0.6			
120	0.65			
180	0.66			
240	0.69			
300	0.71			
		Soil infiltration rate, f, (m/s) =		n/a
				normal test
		Tested by:	HD/HH	Date: 08/08/2019
		Checked by:	HH	Date: 19/08/2019


Notes

Insufficient fall in water level therefore infiltration rate could not be determined.

Soakaway Trial Pit Photographs



Trial Pit SA01



Trial Pit SA01

Soakaway Trial Pit Photographs



Trial Pit SA01

	Plant used: Tracked excavator		Project: Ysgol Yr Hafod, Johnstown			Location ID: SA02	
	Dates: 08/08/2019		Client: Wrexham County Council			Sheet 1 of 1	
Trial Pit Log		Location: 330229.43E 346021.57N		Ground level:	Logged by: HH	Vertical scale: 1:25	Contract ID: 42361

Samples & In Situ Testing			Strata Details				Scale	Water Strike	Backfill/ Installation
Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Strata Description	Legend			
				(0.30)	Grass over dark brown, fine to coarse SAND with rootlets.		1		
				0.30	Orangish grey, mottled brown, gravelly, slightly clayey, fine to coarse SAND with rare nodules of clay and low cobble content.				
				(1.20)					
				1.50	End of Trial Pit at 1.50m				
							2		
							3		
							4		
							5		

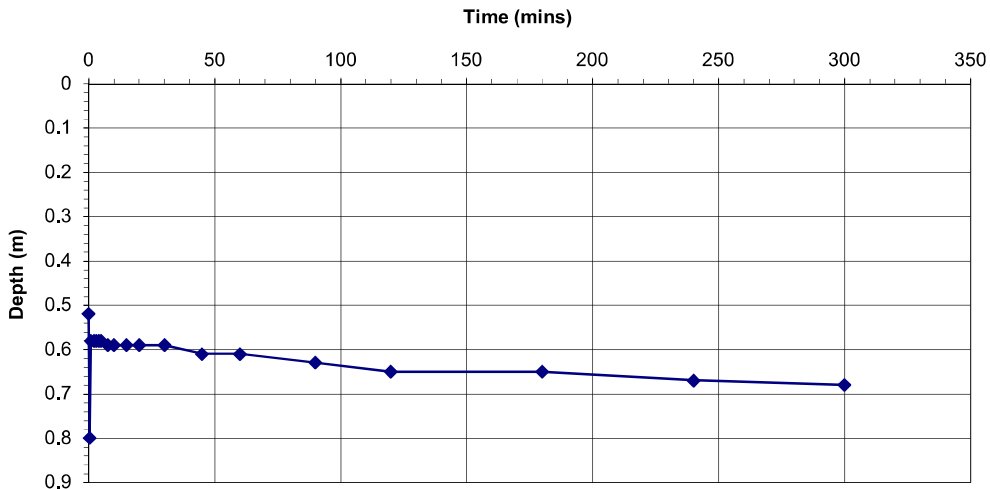
Termination:			Stability: Soakaway pit remained stable during excavation.		Remarks:	
Dimensions (Length m x Width m): 2.20 x 0.80						
Water Strikes						
Strike (m)	Time (mins)	Rose to (m)	Remarks			
					Checked by: Status:	IFA TP v01.01 DRAFT

CALCULATION OF INFILTRATION RATE IN ACCORDANCE WITH BRE DG 365: 2016

Client:	Wrexham Borough County Council		
Site:	Johnstown		
Job No:	42361	Test No:	SA02
Date	08/08/2019	Weather:	Sunny

INPUT DATA AND CALCULATION

Time (min)	Depth (m)	Size of Trial Pit	Length (m) =	2.20
0	0.52		Width (m) =	0.60
0.5	0.8		Depth (m) =	1.50
1	0.58			
2	0.58	Depth to water at start of test (m) = 0.52		
3	0.58	Depth to water at end of test (m) = 0.80		
4	0.58	Depth to water at 75% level (m) = 0.77		
5	0.58	Depth to water at 50% level (m) = 1.01		
7.5	0.59	Depth to water at 25% level (m) = 1.26		
10	0.59			
15	0.59	Base area of pit (m ²) = 1.32		
20	0.59	Effective area of loss a _{s50} (m ²) = 4.06		
30	0.59	V _{P75} - V _{P25} (m ³) = 0.65		
45	0.61	From the graph: t_{p75} (min) = n/a t_{p25} (min) = n/a		
60	0.61			
90	0.63			
120	0.65			
180	0.65			
240	0.67			
300	0.68			
		Soil infiltration rate, f, (m/s) =		n/a
				normal test
		Tested by:	HD/HH	Date: 08/08/2019
		Checked by:	HH	Date: 19/08/2019


Notes

Insufficient fall in water level therefore infiltration rate could not be determined.

Soakaway Trial Pit Photographs



Trial Pit SA02



Trial Pit SA02

Soakaway Trial Pit Photographs



Trial Pit SA02

	Plant used: Tracked excavator		Project: Ysgol Yr Hafod, Johnstown			Location ID: SA03	
	Dates: 08/08/2019		Client: Wrexham County Council			Sheet 1 of 1	
Trial Pit Log		Location: 330178.73E 346013.14N		Ground level:	Logged by: HD	Vertical scale: 1:25	Contract ID: 42361

Samples & In Situ Testing			Strata Details				Scale	Water Strike	Backfill/ Installation
Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Strata Description	Legend			
				(0.30)	Grass over dark brown, fine to coarse SAND with rootlets.		1		
				0.30	Orangish brown and grey, gravelly, slightly clayey, fine to coarse SAND. Gravel is subangular to subrounded, fine to coarse including mudstone, coal and sandstone.				
				(1.20)					
				1.50	End of Trial Pit at 1.50m				
							2		
							3		
							4		
							5		

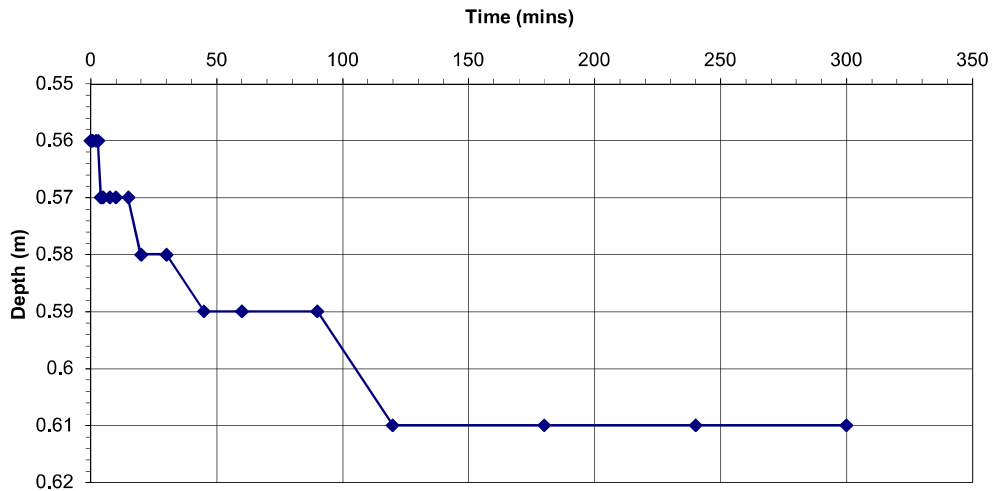
Termination:			Stability: Soakaway pit remained stable during excavation.		Remarks:	
Dimensions (Length m x Width m): 2.30 x 0.85						
Water Strikes						
Strike (m)	Time (mins)	Rose to (m)	Remarks			
					Checked by: Status:	IFA TP v01.01 DRAFT

CALCULATION OF INFILTRATION RATE IN ACCORDANCE WITH BRE DG 365: 2016

Client:	Wrexham Borough County Council		
Site:	Johnstown		
Job No:	42361	Test No:	SA03
Date	08/08/2019	Weather:	Sunny

INPUT DATA AND CALCULATION

Time (min)	Depth (m)	Size of Trial Pit	Length (m) =	2.00	
0	0.56		Width (m) =	0.60	
0.5	0.56		Depth (m) =	1.50	
1	0.56				
2	0.56	Depth to water at start of test (m) = 0.56			
3	0.56	Depth to water at end of test (m) = 0.61			
4	0.57	Depth to water at 75% level (m) = 0.80			
5	0.57	Depth to water at 50% level (m) = 1.03			
7.5	0.57	Depth to water at 25% level (m) = 1.27			
10	0.57				
15	0.57	Base area of pit (m ²) = 1.20			
20	0.58	Effective area of loss a _{s50} (m ²) = 3.64			
30	0.58	V _{P75} - V _{P25} (m ³) = 0.56			
45	0.59	From the graph: t_{p75} (min) = n/a t_{p25} (min) = n/a			
60	0.59				
90	0.59				
120	0.61				
180	0.61				
240	0.61				
300	0.61				
		Soil infiltration rate, f, (m/s) =		n/a	normal test
		Tested by: HD/HH		Date:	08/08/2019
		Checked by: HH		Date:	19/08/2019


Notes

Insufficient fall in water level therefore infiltration rate could not be determined.

Soakaway Trial Pit Photographs



Trial Pit SA03



Trial Pit SA03

Soakaway Trial Pit Photographs



Trial Pit SA03

Appendix I – O&M Manuals

Wynne Construction

Ysgol Yr Hafod,

Johnstown

Attenuation Tank and Packaged
Pumping Stations - Maintenance
Plan

94001-JPS-XX-XX-RP-D-0001

Rev: P01 Status: S4

July 2021



Table 1: Maintenance Inspection Checklist

GENERAL INFORMATION			
Site ID	Ysgol Yr Hafod, Johnstown, Wrexham, LL14 2SW		
Site Location and co-ordinates (GIS if appropriate)	Bangor Road, Johnstown, Wrexham (330135, 346048)		
Elements forming the Sewage Treatment scheme	SW Attenuation Packaged Pumping Stations	Approved Drawing Reference(s)	94001-502-P01
Inspection frequency	Annual	Approved Specification Reference	-
Type of development	School	Specific purpose of any parts of the scheme (e.g. biodiversity, wildlife and visual aspects)	-
Agreements Restrictions			
Discharge Type	Connection	Outflow	Agreement
Surface Water	Pumped Return to MH upstream of public sewer network	15l/sec	DCWW
Foul	Pumped Return to MH upstream of public sewer network	TBC	



	Inspection date				Inspection date			
	Details	Y/N	Action required	Date Completed	Details	Y/N	Action required	Date Completed
GENERAL INSPECTION ITEMS								
Is there any evidence of erosion, ponding, or other poor hydraulic performance?								
Is there any evidence of, oils, poor water quality, odours, nuisance insects?								
Have any health and safety risks been identified to either the public or maintenance operatives?								



	Inspection date				Inspection date			
	Details	Y/N	Action required	Date Completed	Details	Y/N	Action required	Date Completed
SILT/SEDIMENT ACCUMULATION								
Is there any sediment accumulation at inlets (or other defined accumulation zones such as the surface of filter drains or infiltration basins and within proprietary devices)? If yes, state depth (mm) and extent Is removal required? If yes, state waste disposal requirements and confirm all waste management requirements have been complied with (consult Environment Agency or SEPA).								
SYSTEM BLOCKAGES / SEWAGE BUILD UP								
Is there evidence of sewage accumulation in the system? If yes, is this a blockage risk?								
Is there any evidence of any other clogging/blockage of outlets or drainage paths?								



	Inspection date				Inspection date			
	Details	Y/N	Action required	Date Completed	Details	Y/N	Action required	Date Completed
INFRASTRUCTURE								
Is there evidence of any accidental damage to the system (e.g. wheel ruts?)								
Is there any evidence of cross connections or other unauthorised inflows?								
Is there any evidence of tampering with the pumping station?								
Has annual pumping station service been undertaken?								
Is there any evidence of tampering with the Attenuation Tanks?								
Are Attenuation tank vents clear?								
Is there any evidence of tampering with the flow controls?								
Are gullies/channels/kerb drainage clear of debris/detritus?								
Are Rainwater Down Pipes and gutters clear of debris /detritus?								



Are there any other matters that could affect the performance of the system in relation to the design objectives for hydraulic, effluent quality, biodiversity, visual and odour aspects? (Specify.)								
OTHER OBSERVATIONS								
Information appended (e.g. photos)								



	Inspection date				Inspection date			
	Details	Y/N	Action required	Date Completed	Details	Y/N	Action required	Date Completed
SUITABILITY OF CURRENT MAINTENANCE REGIME								
Continue as current								
Increase maintenance								
Decrease maintenance								
NEXT INSPECTION								
Proposed date for next inspection								

Additional Notes