

New Extra Care, Wrexham

Drainage Statement

Document No: 20294/E01, Rev A

January 2021



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1. INTRODUCTION

Datrys have been commissioned by Carroll Ltd to prepare a drainage statement in support of a planning application for the construction of a 2 storey extra care facility containing 75 bedrooms and is located adjacent to Pendine Park Care Home, Wrexham at grid reference SJ 318 518. The existing site currently lies vacant and would be classified as greenfield.

This document sets out solutions to address the surface water runoff associated with the development. Proposals for dealing with the increased foul flows are also presented.

2. SURFACE WATER DRAINAGE HIERARCHY

Sustainable Drainage Philosophy

The surface water design has been undertaken in accordance with the SuDS drainage hierarchy given in the SuDS Manual published by CIRIA and accepted and adopted by the Lead Local Flood Authority (LLFA).

The drainage hierarchy is:

SuDS Priority Level	Design approach
Level 1	Surface water runoff is collected for re-use
Level 2	Surface water runoff is infiltrated to ground
Level 3	Surface water runoff is discharged to a surface water body
Level 4	Surface water runoff is discharged to a surface water sewer, highway drain, or another drainage system
Level 5	Surface water runoff is discharged to a combined sewer

Table 1 - SuDS drainage hierarchy

Priority Level 1 is the preferred (highest priority) and that 4 and 5 should only be used in exceptional circumstances.

Application of SuDS hierarchy to proposals

The following considerations are relevant to the application of the above to the proposed development.

Priority Level 1 – Re-use

Re-use will be considered where possible including possible inclusion of raised planters, water butts and raingardens. Regardless of re-use being incorporated into the design, a formal method for disposal must be provided to address excess volumes beyond that of which the above options provide.

Priority Level 2 – Infiltration to ground

Porosity testing has been undertaken and the results indicated that the sites underlying strata is permeable however its associated infiltration rate is low. As infiltration is feasible soakaways or similar SuDS features should be used. The majority of the site will utilise a large planer soakaway located within the vicinity of the access road and parking area. The area located at downhill of the site (south east) is not suitable for any SuDS features due to the existing restraints (badger den, root protection etc.). Supplementary porosity tests will be undertaken within the proposed locations of the soakaways/ SuDs features with all tests undertaken to BRE 365 requirements.

Priority Level 3 – Discharge to surface water body

There are no known watercourses within the site boundary with the nearest watercourse being located approximately 175m to the south west. If infiltration is not feasible a connection into the watercourse should be investigated.

Priority Level 4 – Surface water or highway sewer

Welsh Water asset maps (**Appendix B**) highlight an absence of surface water sewers within the vicinity. Multiple manholes have been located within Summerhill Road which could indicate to a highway surface water system. If the above priority levels are not feasible this should be investigated further.

Priority Level 5 – Disposal to combined sewer

Welsh Water asset maps indicate there are no combined sewers within the vicinity of the site.

3. DESIGN CRITERIA

From the above, the design will entail discharging the surface water to ground via soakaways. The system is to be designed to the following criteria:

Design element	Criterion
Climate change effects	+ 30%
Urban Creep	0%
No uncontrolled surface flooding or off-site run-off	Up to 1 in 100 Year Return Period + 30% Climate Change

Table 2 - Storm water design criteria

The calculation of the storm water run-off is derived from the Wallingford Modified Rational method and in compliance with BS EN 752-4 *Drain and sewer systems outside buildings*.

The following design criteria will apply for the surface water runoff of the site:

- Approved Document H, Building Regulations
- Sewers for Adoption, 7th Edition
- Rainfall runoff management for developments (SC030219)
- BRE Digest 365
- Statutory standards for sustainable drainage systems – designing, constructing, operating and maintaining surface water drainage systems.
- SuDS manual
- Non-Statutory SuDS Technical Standards for Sustainable Drainage: Practical Guidance

4. SUSTAINABLE DRAINAGE

Scheme Approach to Sustainable Drainage

The design for surface water disposal from the site will be considered in line with the CIRIA SuDS manual. This approach seeks to manage the quantity and quality of surface water runoff on or as close to the surface and as close to the source of the runoff as possible as well as providing amenity and biodiversity to the end users and flora and fauna.

In order for the surface water design to be approved by SAB (SuDS Approval Body), the design has to show compliance with Statutory National Standards for Sustainable Drainage Systems. These Standards are:

- S1 – Surface water runoff destination
- S2 – Surface water runoff hydraulic control
- S3 – Water quality
- S4 – Amenity
- S5 – Biodiversity
- S6 – Design of drainage for Construction and Maintenance and Structural Integrity

S1 – Surface water runoff destination

Re-use will be considered where possible including possible raised planters, water butts and raingardens. As infiltration is deemed feasible the surface water will be directed to ground via a combination of the permeable paving reservoir layer and trench soakaways.

S2 – Surface water runoff hydraulic control

The proposal is for the site to utilise below ground storage for up to a 1 in 100 year storm (+ climate change). Any extreme event past this will raise the water level within the reservoir layer/soakaway until the overflow is utilised and thus directing the surplus flows into a soakaway trench. This is designed to overflow so the surface water will discharge from site at the south east boundary thus mimicking the existing surface water flow path from the site.

S3 – Water quality

A pollution risk may arise from petrol or oil spillage from vehicles using the development site. The drainage of the car parking will form a part of the general site surface water drainage system and will be subjected to treatment via a type A style porous paving arrangement.

The sub-base reservoir layer of the permeable paving provides an effective measure to trap suspended solids and hydrocarbons thus improving the water quality before infiltration. The SuDS features in the scheme will be connected in series where possible to achieve a robust surface water management train providing effective treatment for contaminants by offering the chance for settlement of sediments and interception of hydrocarbons.

S4 – Amenity

The use of permeable paving within the site will promote multi-functionality, whilst the allowance of climate change aids the developments resilience to future change. A significant portion of the site will remain green with some areas being allocated for SuDS features, the areas will be landscaped to be aesthetically pleasing. For further information refer to the landscaping proposals.

S5 - Biodiversity

The proposals will attempt to promote surface conveyance. The majority of the site will remain greenfield and can be further improved by the incorporation of SuDS Planters located at certain rainwater downpipes which may provide habitat and food for insects, invertebrates and birds.

S6 - Design of drainage for Construction and Maintenance and Structural Integrity

All SuDS features will be installed by a competent contractor and will be situated in locations and at shallow depths where they can be easily maintained. A maintenance plan will state the maintenance requirements for the SuDS features in order for them to remain at their optimum capacity. All materials and components, where possible, will have a minimum design life equivalent to the design life of the development, including an appropriate factor of safety.

5. FOUL WATER DRAINAGE

The following design criteria will apply for the surface water runoff and foul discharge design of the site:

- Approved Document H, Building Regulations
- Sewers for Adoption 7th Edition
- BS EN 12056 Part 2.

The proposed development will discharge to an existing private pump station which connects via a rising main to a DCWW foul sewer. Due to the site topography and the location of the existing pumping chamber, foul flows generated from the extra care facility will be pumped to a new breaker chamber next to the existing pumping chamber and will discharge into the existing system via a gravity pipe.

The proposed development will generate a peak foul flow of 8.19l/s as calculated in **Appendix E**. The proposed pumping station will be designed to accommodate these flows whilst providing a minimum of 24 hour storage. Due to the nature of the site it is proposed that two pumps are installed within the pumping chamber (one acting as a backup).

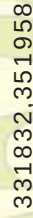
The existing pumping chamber within the adjacent site contains two pumps with one acting as a backup. The existing pumps models have been confirmed to be Flygt 3085 and NP 3085 MT, however the existing peak flow of the existing system is unknown. As the existing flow is unknown the design will assume the existing pumps work are working at peak flow and therefore will need to be replaced to cater for the new total flows.

As the new development will increase the foul flows discharging into the DCWW network a S106 will be required.

APPENDICES

APPENDIX A – DRAWINGS OF PROPOSALS

APPENDIX B – WELSH WATER UTILITY MAPS



- LEGEND**
- Clean Water
- Sluice Val
 - Air Val, SINGLE
 - Tap
 - Pressure Reducing Valve
 - Meter
 - BULK Meter
 - FH
 - Cap
 - Existing Main
 - NON COMPANY
- Sewerage External
- Foul
 - Surface Water
 - Combined
 - Rising Main
 - Private
 - Treatment Works
 - Pumping Station
 - Special Purpose
 - Unknown End
 - Change, Combined Overflow
 - Outfall, FOUL
 - Lamp Hole, Foul
 - Private Sewer Transfer
 - Lateral Sewer
 - Inspection Chamber

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**EXACT LOCATION OF
ALL APPARATUS TO
BE DETERMINED ON
SITE**

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APPENDIX C – INFILTRATION TESTING CALCULATIONS AND REPORT

18th April 2019

Mr M. Roberts
McCormick Architecture
The Moorings
Rowton Bridge Road
Christleton
Chester
CH3 7AE

Dear Mark,

**PENDINE PARK, SUMMERHILL
INFILTRATION TESTING**

Further to our discussions and site attendance please find below our summary report for the infiltration testing.

We attended site on Wednesday 17th April 2019 and excavated 5 No trial pits as indicated on the attached location plan, located in accordance with the requirements of BRE365 with regards to building proximity for soakaway devices.

Trial Holes SA1 through to SA4 were subject to infiltration tests however SA3a experienced groundwater inflow at a depth of 1.5m. An adjacent shallower pit was therefore excavated adjacent this in order to undertake the test.

Trial holes ref SA1-SA4 Inc. were filled with water in order to understand the infiltration characteristics of the underlying strata with a view to potentially aiding in disposal of surface water in a sustainable manner. The trial holes and tests were undertaken in accordance with guidance BRE365.

Soakaway ref SA1

SA1 was excavated to a depth of 2.3m, with overall pit dimensions of 1.7m long x 0.3m wide. The strata generally comprised of made ground to a depth of 1.4m onto dry sand. This sand was present through to 2.3m with no presence of groundwater or water ingress.

The pit was quickly filled with water and water drop recorded. The rate of water drop allowed 2 tests to be completed and infiltration rates are appended. Rates for Test 1 show 1.4×10^{-5} m/s and Test 2 shows 1.0×10^{-5} m/s.





SA1 Excavation



SA1 Arisings



SA1 Water test

Soakaway ref SA2

SA2 was excavated to a depth of 1.6m. The overall pit dimensions were 1.0m long x 0.3m wide.

The strata generally comprised of topsoil over sand, there was no presence of groundwater or water ingress, however, the sand was damp at this location.

The pit was quickly filled with water and water drop recorded. The rate of water drop was slow and only one test was undertaken. Rates for the test show 6.4×10^{-6} m/s.



SA2 Excavation



SA2 Arisings



SA2 Water test

Old Marsh Farm Barns
Welsh Road, Sealand
Flintshire CH5 2LY
Telephone: 01244 289 041

Soakaway ref SA3 and SA3a.

SA3a was excavated to a depth of 1.6m, however, it was noted that slight water ingress was present at the base therefore, this pit was left to allow groundwater to settle and a shallow adjacent pit was excavated in order to retain the tests above the groundwater zone. The first pit is now referenced as SA3a. Groundwater was recorded as settling at a depth of 1.35m after leaving the pit open for the day.

SA3 was excavated to a depth of 1.3m with overall pit dimensions of 0.9m long x 0.3m wide.

The strata generally comprised of topsoil over sand, there was no presence of groundwater or water ingress, however, the sand was again damp at this location.

The pit was quickly filled with water and water drop recorded. The rate of water drop was slow and only one test was undertaken. Rates for the test show 5.1×10^{-6} m/s.



SA3 Excavation



SA3 Arisings



SA3 Water test

Soakaway ref SA4

SA4 was excavated to a depth of 1.55m, with overall pit dimensions of 1.8m long x 0.3m wide.

The strata generally comprised of topsoil over dry sand, there was no presence of groundwater or water ingress.

The pit was quickly filled with water and water drop recorded. The rate of water drop allowed 2 tests to be completed and infiltration rates are appended. Rates for Test1 show 3.7×10^{-5} m/s and Test 2 shows 1.4×10^{-5} m/s.

Old Marsh Farm Barns
Welsh Road, Sealand
Flintshire CH5 2LY
Telephone: 01244 289 041





BETTS HYDRO
CONSULTING ENGINEERS

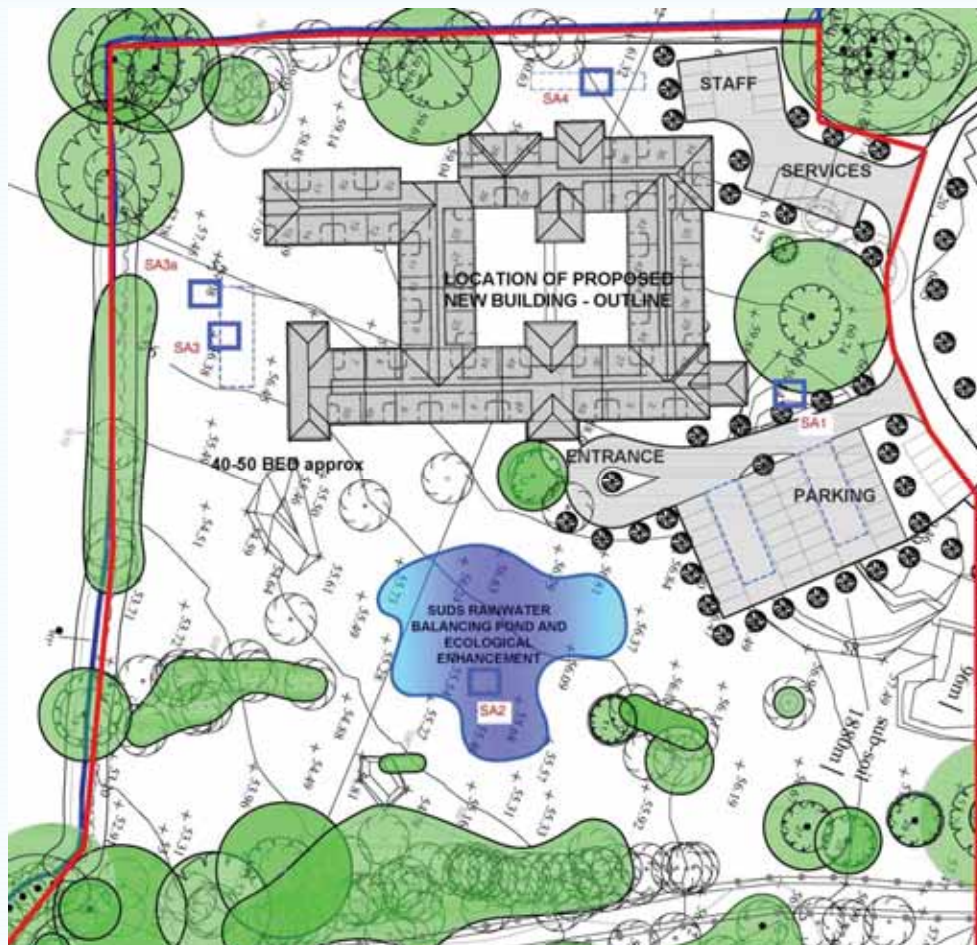


SA4 Excavation



SA4 Arisings

A copy of the infiltration test location plan is shown below for reference.



Infiltration test location plan.

Old Marsh Farm Barns
Welsh Road, Sealand
Flintshire CH5 2LY
Telephone: 01244 289 041



Summary

All test locations show that infiltration can be used as a viable method for dealing with surface water flows. The tests at the lower portion of the site, SA2 and SA3, will require a shallow device in order to keep above groundwater. These devices will also need to be sized appropriately to deal with the relatively low rates of infiltrations.

Regards



Robert Ankers
Director
Betts Hydro

Old Marsh Farm Barns
Welsh Road, Sealand
Flintshire CH5 2LY
Telephone: 01244 289 041



SOAKAWAY TEST RESULTS

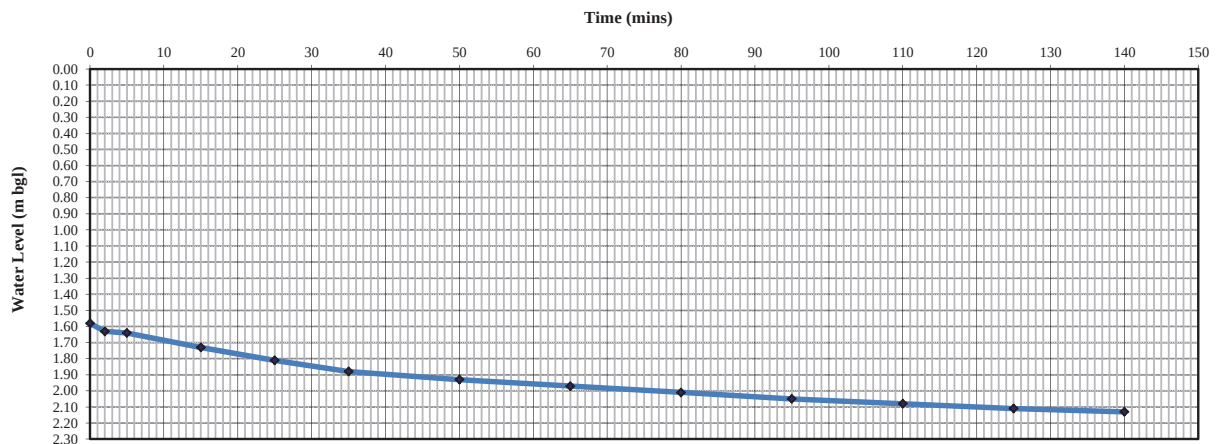
Date of Test: 17-04-19

Hole ID: SA1

Test No 1

Trial Pit Dimensions (m)	Length	Width	Depth	Depth for Analysis
	1.70	0.30	2.30	0.72

Time (mins)	Depth of water (m bgl)	Time (mins)	Depth of water (m bgl)	Effective storage volume in trial pit $V_{(p75-25)} = \text{between effective depths 25\% to 75\%} = 0.18 \text{ m}^3$	
0.0	1.580			Initial surface area of trial pit up to $a_{(p50)} = 50\% \text{ effective depth and including the base area.} = 1.95 \text{ m}^2$	
2.0	1.630				
5.0	1.640				
15.0	1.730				
25.0	1.810				
35.0	1.880			$t_{(p75-25)} = \text{Time for the water level to fall from 75\% to 25\% effective depth.} = 110 \text{ min}$	
50.0	1.930				
65.0	1.970				
80.0	2.010				
95.0	2.050				
110.0	2.080			Soil infiltration rate = $\frac{V_{(p75-25)}}{t_{(p75-25)} \times a_{(p50)} \times 60}$	
125.0	2.110				
140.0	2.130				
				Depth $_{(25\%)} = 2.12$	Depth $_{(75\%)} = 1.760 \text{ m}$
				Soil infiltration rate = $1.4\text{E-}05 \text{ m/sec}$	
				Remarks Dry Sand * Extrapolated soil infiltration rate	



SOAKAWAY TEST RESULTS

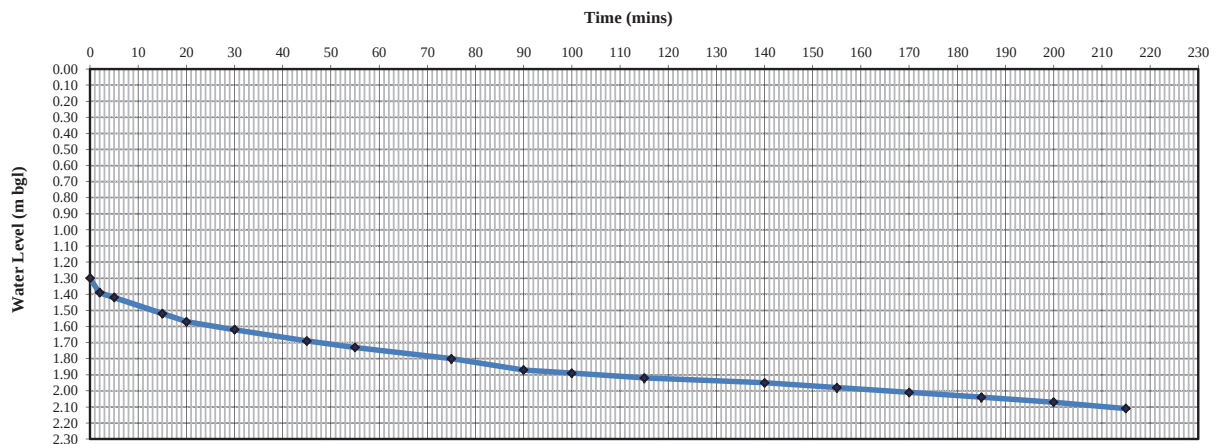
Date of Test: 17-04-19

Hole ID: SA1

Test No 2

Trial Pit Dimensions (m)	Length	Width	Depth	Depth for Analysis
	1.70	0.30	2.30	1.00

Time (mins)	Depth of water (m bgl)	Time (mins)	Depth of water (m bgl)	Effective storage volume in trial pit $V_{(p75-25)} = \text{between effective depths 25\% to 75\%} = 0.26 \text{ m}^3$	
0.0	1.300			Initial surface area of trial pit up to $a_{(p50)} = 50\% \text{ effective depth and including the base area} = 2.51 \text{ m}^2$	
2.0	1.390				
5.0	1.420				
15.0	1.520				
20.0	1.570				
30.0	1.620			$t_{(p75-25)} = \text{Time for the water level to fall from 75 \% to 25\% effective depth} = 167 \text{ min}$	
45.0	1.690				
55.0	1.730				
75.0	1.800				
90.0	1.870				
100.0	1.890			Soil infiltration rate = $\frac{V_{(p75-25)}}{t_{(p75-25)} \times a_{(p50)} \times 60}$	
115.0	1.920				
140.0	1.950				
155.0	1.980				
170.0	2.010				
185.0	2.040			Depth $_{(25\%)} = 2.05$	Depth $_{(75\%)} = 1.550 \text{ m}$
200.0	2.070			Soil infiltration rate = $1.0\text{E-}05 \text{ m/sec}$	
215.0	2.110			Remarks Dry Sand * Extrapolated soil infiltration rate	



SOAKAWAY TEST RESULTS

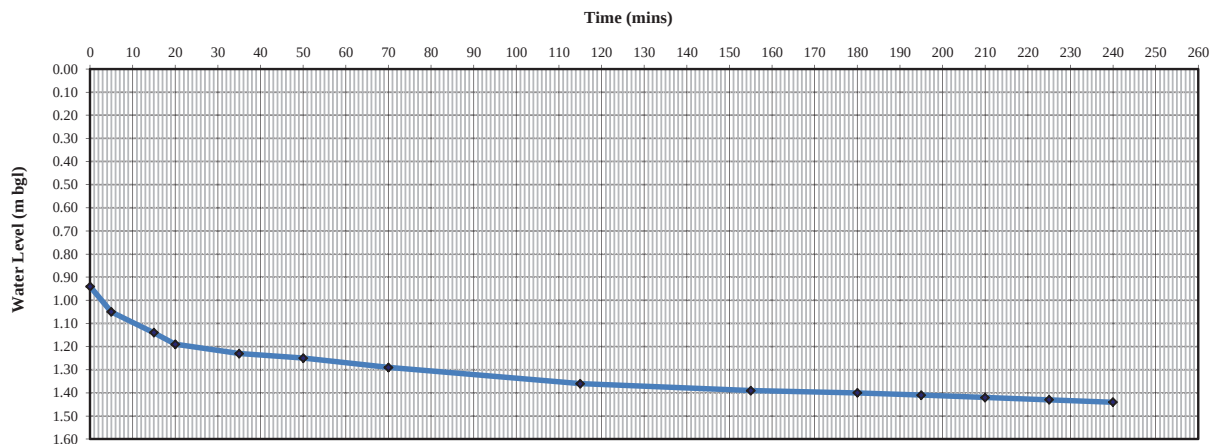
Date of Test: 17-04-19

Hole ID: SA2

Test No 1

Trial Pit Dimensions (m)	Length	Width	Depth	Depth for Analysis
	1.00	0.30	1.60	0.66

Time (mins)	Depth of water (m bgl)	Time (mins)	Depth of water (m bgl)	Effective storage volume in trial pit $V_{(p75-25)}$ = between effective depths 25% to 75%. = 0.10 m³
0.0	0.940			
5.0	1.050			
15.0	1.140			
20.0	1.190			Initial surface area of trial pit up to $a_{(p50)}$ = 50% effective depth and including the base area. = 1.16 m²
35.0	1.230			
50.0	1.250			
70.0	1.290			
115.0	1.360			$t_{(p75-25)}$ = Time for the water level to fall from 75 % to 25% effective depth. = 222 min
155.0	1.390			
180.0	1.400			
195.0	1.410			
210.0	1.420			Soil infiltration rate = $\frac{V_{(p75-25)}}{t_{(p75-25)} \times a_{(p50)} \times 60}$
225.0	1.430			
240.0	1.440			
				Depth_(25%) = 1.435 Depth_(75%) = 1.105 m
				Soil infiltration rate = 6.4E-06 m/sec
				Remarks
				Damp Sand
				* Extrapolated soil infiltration rate



SOAKAWAY TEST RESULTS

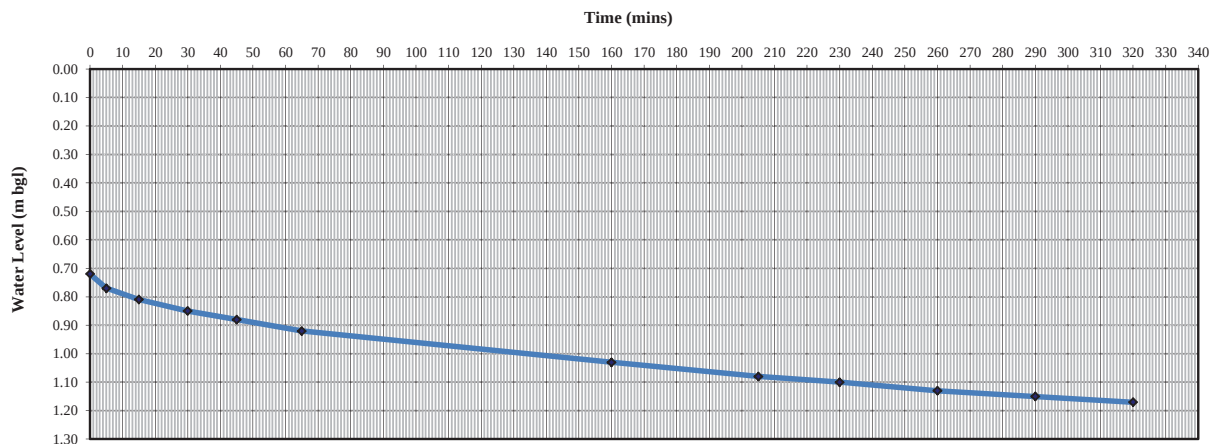
Date of Test: 17-04-19

Hole ID: SA3

Test No 1

Trial Pit Dimensions (m)	Length	Width	Depth	Depth for Analysis
	0.90	0.30	1.30	0.58

Time (mins)	Depth of water (m bgl)	Time (mins)	Depth of water (m bgl)	Effective storage volume in trial pit $V_{(p75-25)} = \text{between effective depths 25\% to 75\%} = 0.08 \text{ m}^3$	
0.0	0.720			Initial surface area of trial pit up to $a_{(p50)} = 50\% \text{ effective depth and including the base area.} = 0.97 \text{ m}^2$	
5.0	0.770				
15.0	0.810				
30.0	0.850				
45.0	0.880				
65.0	0.920			$t_{(p75-25)} = \text{Time for the water level to fall from 75 \% to 25\% effective depth.} = 263 \text{ min}$	
160.0	1.030				
205.0	1.080				
230.0	1.100				
260.0	1.130				
290.0	1.150			Soil infiltration rate = $\frac{V_{(p75-25)}}{t_{(p75-25)} \times a_{(p50)} \times 60}$	
320.0	1.170				
				Depth $_{(25\%)} = 1.155$	Depth $_{(75\%)} = 0.865 \text{ m}$
				Soil infiltration rate = $5.1\text{E-}06 \text{ m/sec}$	
				Remarks Damp Sand * Extrapolated soil infiltration rate	



SOAKAWAY TEST RESULTS

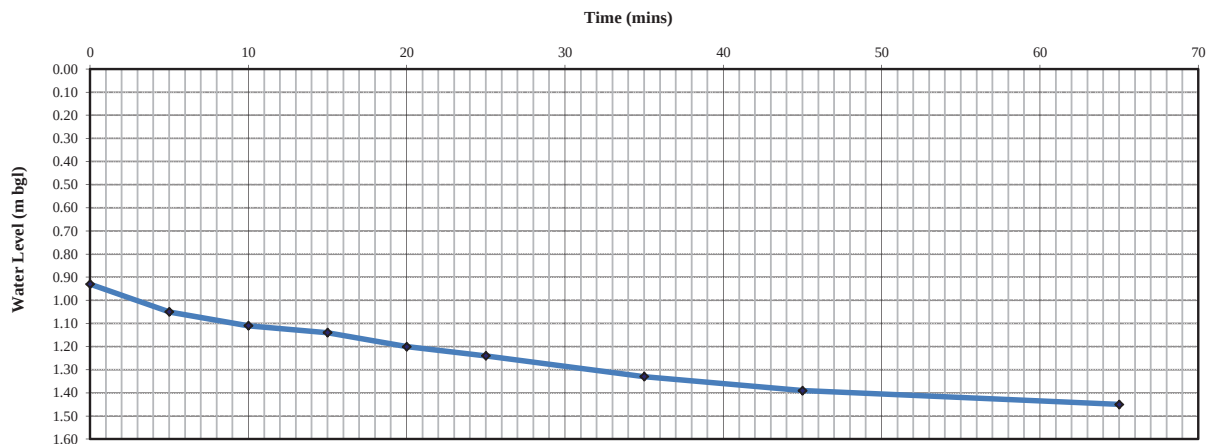
Date of Test: 17-04-19

Hole ID: SA4

Test No 1

Trial Pit Dimensions (m)	Length	Width	Depth	Depth for Analysis
	1.80	0.30	1.55	0.62

Time (mins)	Depth of water (m bgl)	Time (mins)	Depth of water (m bgl)	Effective storage volume in trial pit $V_{(p75-25)}$ = between effective depths 25% to 75%. = 0.17 m ³	
0.0	0.930			Initial surface area of trial pit up to $a_{(p50)}$ = 50% effective depth and including the base area. = 1.84 m ²	
5.0	1.050				
10.0	1.110				
15.0	1.140				
20.0	1.200				
25.0	1.240			$t_{(p75-25)}$ = Time for the water level to fall from 75 % to 25% effective depth. = 41 min	
35.0	1.330				
45.0	1.390				
65.0	1.450			Soil infiltration rate = $\frac{V_{(p75-25)}}{t_{(p75-25)} \times a_{(p50)} \times 60}$	
				Depth _(25%) = 1.395	Depth _(75%) = 1.085 m
				Soil infiltration rate = 3.7E-05 m/sec	
				Remarks Dry Sand * Extrapolated soil infiltration rate	



SOAKAWAY TEST RESULTS

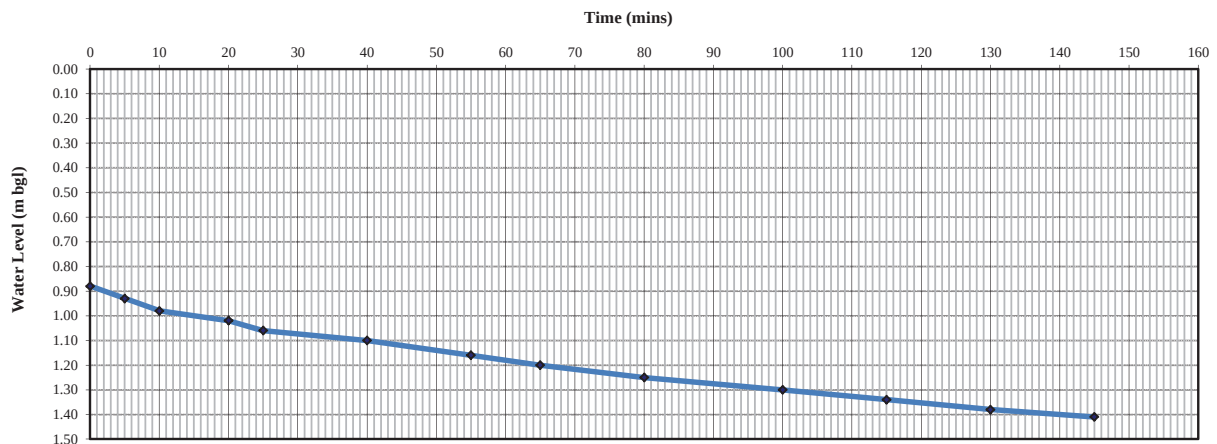
Date of Test: 17-04-19

Hole ID: SA4

Test No 2

Trial Pit Dimensions (m)	Length	Width	Depth	Depth for Analysis
	1.80	0.30	1.55	0.67

Time (mins)	Depth of water (m bgl)	Time (mins)	Depth of water (m bgl)	Effective storage volume in trial pit $V_{(p75-25)} = \text{between effective depths 25\% to 75\%} = 0.18 \text{ m}^3$	
0.0	0.880			Initial surface area of trial pit up to $a_{(p50)} = 50\% \text{ effective depth and including the base area.} = 1.95 \text{ m}^2$	
5.0	0.930				
10.0	0.980				
20.0	1.020				
25.0	1.060				
40.0	1.100			$t_{(p75-25)} = \text{Time for the water level to fall from 75 \% to 25\% effective depth.} = 109 \text{ min}$	
55.0	1.160				
65.0	1.200				
80.0	1.250				
100.0	1.300				
115.0	1.340			Soil infiltration rate = $\frac{V_{(p75-25)}}{t_{(p75-25)} \times a_{(p50)} \times 60}$	
130.0	1.380				
145.0	1.410				
				Depth $_{(25\%)} = 1.3825$	Depth $_{(75\%)} = 1.048 \text{ m}$
				Soil infiltration rate = $1.4\text{E-}05 \text{ m/sec}$	
				Remarks Dry Sand * Extrapolated soil infiltration rate	



APPENDIX D – CORRESPONDENCE WITH WCBC

AnnS Jones

From: Philip Forster
Sent: 12 March 2019 15:32
To: planning_admin
Subject: FW: P/2019/0126

Flood officer response

From: Neil Taunt
Sent: 12 March 2019 14:55
To: Philip Forster
Subject: P/2019/0126

Hi Phil,

Thank you for the recent consultation on the above outline application.

The site is located in DAM Zone A as defined within TAN15.

SuDS Approving Body Approval Requirement

As you will be aware, from the 7th of January 2019 any new development of more than one dwelling or that involves construction work of more than 100m² is required to obtain approval from the SuDS Approving Body (SAB) prior to the commencement of those construction works. Addendum A of the Pre Application Consultation report outlines intentions with regards to the inclusion of SuDS features into the proposed development. This would indicate that a scheme, fully compliant with the national standards would be developed for the site, maximising opportunities for water re use, amenity and biodiversity, whilst ensuring all surface water is managed at source using infiltration techniques. In principle I would see no reason why a compliant scheme could not be developed for this site during detailed design, but it has not been demonstrated that ground conditions would be suitable for the use of infiltration techniques. Ideally it should be demonstrated that ground conditions are suitable for the use of infiltration. If this is not the case then it would need to be demonstrated that an alternative means of surface water disposal is available.

Prior to the determination of the outline application, it must be clearly demonstrated that a Sustainable Drainage Scheme, compliant with the Welsh Ministers Statutory Standards for Wales, can be delivered for the site. In this instance target infiltration testing, carried out in accordance BRE365, would demonstrate the applicability of the indicated surface water management scheme. If ground conditions were not suitable to wholly manage the disposal of surface water generated, alternative destinations should be identified.

If you have any questions on the above please let me know.

Many thanks

Neil Taunt MCIWEM C.WEM CEnv CSci

Uwch Swyddog Rheoli Llifogydd / Senior Flood Management Officer



01978 729734 / 07808 787632

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



Environment & Planning, Wrexham County Borough Council, Abbey Road South, Wrexham Industrial Estate, Wrexham LL13 9PW



wreksam.gov.uk | wrexham.gov.uk



twitter.com/cbswreksam | twitter.com/wrexhamcbc



facebook.com/cynngorwreksam | facebook.com/wrexhamcouncil

Mark Roberts

From: Philip Forster
Sent: 03 May 2019 15:13
To: planning_admin
Subject: FW: P/2019/0126 RE: 4135-1 PENDINE PARK, SUMMERHILL - INFILTRATION HOLES

Flood officer response

From: Neil Taunt
Sent: 03 May 2019 14:59
To: Philip Forster
Subject: P/2019/0126 RE: 4135-1 PENDINE PARK, SUMMERHILL - INFILTRATION HOLES

Hi Phil,

I have reviewed the submitted testing information, whilst not carried out in full accordance with the full requirements of BRE 365, sufficient information has been submitted to indicate the use of soakaway, whilst in some cases marginal and ground water levels will need to be given appropriate consideration, is feasible on the site. Additional testing will be required to support any future application for SAB approval to represent post development conditions on site. In some locations infiltration rates are such that SuDS features may need to be of significant size to manage the required design event in accordance with the statutory standards. As such I would strongly recommend the applicant give consideration to these requirements at the earliest possible stage.

If permission were to be granted for the application I would request the following standard drainage condition and Note to Applicant be included on any permission:

COMPREHENSIVE DRAINAGE

No part of the development shall commence until a scheme for the comprehensive and integrated drainage of the site indicating how foul water, surface water and land drainage will be dealt with has been submitted to and approved in writing by the Local Planning Authority. The scheme as approved shall be implemented in accordance with a timescale to be agreed as part of the submitted details and maintained thereafter.

Note to Applicant – SAB Approval Required

Following the commencement of Schedule 3 of the Flood and Water Management Act, the works as proposed are required to obtain approval from the SuDS Approving Body (SAB) prior to commencement of those construction works. Further details of the SAB, the new national standards, the pre-application advice service and the application for approval process can be found on the Wrexham CBC's SAB webpage:

https://www.wrexham.gov.uk/english/planning_portal/sab/sab.htm or by contacting the SAB Team directly at SAB@wrexham.gov.uk .

If you have any questions on the above please let me know.

Many thanks

Neil

From: Mark Roberts [mailto:mark@mccormick-architecture.co.uk]
Sent: 18 April 2019 17:34
To: Philip Forster
Cc: Neil Taunt
Subject: FW: 4135-1 PENDINE PARK, SUMMERHILL - INFILTRATION HOLES
Importance: High

Dear Phil,

Further to our earlier email regarding the infiltration testing at Pendine Park, we've received the test results and report from Betts Hydro as attached, and the results show that the ground conditions are good for infiltration purposes, noting that the final choices of containment and dispersal systems in some areas will need to remain shallow.

As we're not at design stage yet, the detail for the actual systems will be developed as the project progresses if planning support is forthcoming, and we shall of course be developing the SuDS details with Neil's involvement for eventual approval.

I've taken the liberty of copying Neil with the results to assist.

In the meantime, if you have any further queries, please do not hesitate to contact us.

Best wishes.

Kind Regards

Mark Roberts R.I.B.A.

Associate Director / Senior Architect

For and on behalf of McCormick Architecture Limited



Tel: 01244 332020

THE MOORINGS, ROWTON BRIDGE ROAD, CHRISTLETON, CHESTER, CH3 7AE

www.mccormick-architecture.co.uk

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From: Rob Ankers <robankers@betts-associates.co.uk>

Sent: 18 April 2019 17:15

To: Mark Roberts <mark@mccormick-architecture.co.uk>; Gary Syme <Gary@carrollltd.co.uk>

Cc: Mario@pendinepark.com; Richard Nicholas <richardnicholas@betts-associates.co.uk>; Kirsty Williams <kirstywilliams@betts-associates.co.uk>

Subject: RE: 4135-1 PENDINE PARK, SUMMERHILL - INFILTRATION HOLES

Mark, please find attached our report and accompanying calculations.

If you need anything further please do not hesitate to contact me.

Regards

Robert Ankers

Director

BETTS ASSOCIATES & BETTS HYDRO

Civil & Structural Consulting Engineers & Specialists in Flood Risk

Old Marsh Farm Barns, Welsh Road, Sealand, Flintshire, CH5 2LY

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APPENDIX E – CORRESPONDENCE WITH DCWW

Wrexham County Council
16 Lord Street
Wrexham
LL11 1LG

Date: 28/03/2019
Our Ref: PLA0041069
Your Ref: P/2019/0126

Dear Sir

Grid Ref: SJ3181451803 331814 351803

Site: Pendine Park Nursing Home, Summerhill Road, Stansty, Wrexham

Development: Outline app for provision of new specialist and extra care facility to expand existing facility

We refer to your planning consultation relating to the above site, and we can provide the following comments in respect to the proposed development.

SEWERAGE

Having assessed the proposal, we note the proposed method of foul disposal is unknown. We would seek clarification as to whether a connection to the public sewerage system would be required as part of the proposed development.

In relation to surface water disposal, as of the 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 national standards, and is strongly recommended that the developer engage in pre-application consultation with the Wrexham County Borough Council, as the relevant SuDS Approval Body (SAB). Please note, DCWW is a statutory consultee to this application process and would provide comments on any SAB proposals.

Our response is based on the information provided by your application. Should the proposal alter during the course of the application process we kindly request that we are re-consulted and reserve the right to make new representation.

If you have any queries please contact the undersigned on 0800 917 2652 or via email at developer.services@dwrcymru.com

Please quote our reference number in all communications and correspondence.

Yours faithfully,



Alaw Jones
Development Control Officer
Developer Services



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.

APPENDIX F – CORRESPONDENCE WITH NRW

Date: 07/01/2019

FAO Mark Roberts (McCormick
Architecture)

Dear Mr Roberts,

PRELIMINARY PRE-APPLICATION ADVICE

DEVELOPMENT – OUTLINE APPLICATION FOR PROVISION OF A NEW SPECIALIST & EXTRA CARE FACILITY AT PENDINE PARK CARE HOMES TO EXPAND AND COMPLIMENT EXISTING SERVICES AND FACILITIES ALREADY OPERATIONAL ON SITE.

LOCATION – PENDINE PARK NURSING HOME, SUMMERHILL ROAD, STANSTY, WREXHAM

Thank you for consulting Natural Resources Wales about the above proposed development at pre-application stage.

This response forms our substantive response in accordance with article 2E of the Town and Country Planning (Development Management Procedure) (Wales) Order 2012

Please note that our comments are without prejudice to any comments we may wish to make when consulted on any subsequent planning application or permit (either at pre-application or application stage) for the proposed development. At that time, there may be new information available which we will need to take into account in making a formal response.

Based on the information submitted to us, we have significant concerns with the proposed development as submitted. On this basis, we would recommend to the local authority that they should only grant planning permission if they impose the following conditions. These conditions would address significant concerns that we have identified and we would not object provided they were attached to the planning permission.

Condition 1: External lighting/internal light spillage assessment compliant with the provisions of the Institution of Lighting Professionals and Bat Conservation Trust: Guidance Note 08/18: Bats and Artificial Lighting in the UK.

Condition 2: Reasonable Avoidance Measures (RAMs) relating to Great Crested Newts should be secured through planning conditions.

Condition 3: All Proposed bat conservation measures should be secured through planning conditions.

Condition 4: Submission and implementation of a Biosecurity Risk Assessment to the satisfaction of the LPA.

European Protected Species (EPS)

We note that ecological information in support of the above application (Roe, R. (2018). Pendine Park, Summerhill, Wrexham: Updated Ecological Assessment. Kingdom Ecology. Unpublished). In line with the recommendations in the above documents we recommend a condition in relation to the lighting scheme for the proposal and bat conservation measures should be implemented. In our view eDNA survey should have been carried out in respect of Great Crested Newts (GCN). However, a precautionary avoidance-based approach will address issues of uncertainty in relation to GCN. Reasonable Avoidance measures relating to GCN should, therefore, be implemented

Biosecurity

We consider biosecurity to be a material consideration owing to the nature and location of the proposal. In this case, biosecurity issues concern invasive non-native species (INNS) and diseases.

We therefore advise that any consent includes the imposition of a condition requiring the submission and implementation of a Biosecurity Risk Assessment to the satisfaction of the LPA.

We consider that this assessment must include :

- (i) appropriate measures to control any INNS on site; and
- (ii) measures or actions that aim to prevent INNS being introduced to the site for the duration of construction and operational phases of the scheme.

Foul Water

No information has been provided regarding the disposal of foul waters from the proposed development. 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.

Please consult us again if foul sewage from the proposed development is to be disposed of by a non-mains drainage system.

Please do not hesitate to contact us if we can be of any further assistance to you.

Our comments above only relate specifically to matters that are listed in our 'Consultation Topics' document (September 2018) which is published on our website:

(<https://cdn.naturalresources.wales/media/686847/dpas-consultation-topics-august-2018-eng.pdf?mode=pad&rnd=131819256840000000>). We have not considered potential effects on other matters and do not rule out the potential for the proposed development to affect other interests, including environmental interests of local importance.

Advice to Applicant

Pollution Prevention

Any construction or demolition work must be carried out in accordance with Environment Agency PPG 6: Working at Construction and Demolition Sites. The activity of importing waste into the site for use as, for example hardcore, must be registered with Natural Resources Wales as an exempt activity under Environmental Permitting Regulations 2016. The developer should contact Natural Resources Wales to discuss the necessity for an exemption permit for any material imported to and exported from the site. No material is to be deposited within 10m of any watercourse without discussion with Natural Resources Wales.

Any facilities for the storage of oils, fuels or chemicals shall be sited on impervious bases and surrounded by impervious bund walls. The volume of the bunded compound should be 110% of the capacity of the tank, all filling points, gauges, vents and sight glasses must be located within the bund. Associated pipe-work should be located above ground and protected from accidental damage. All filling points and tank overflow pipe outlets should be detailed to discharge downwards into the bund, refuelling should be supervised at all times - and preferably done on an impermeable surface.

Should any pollution occur during the operational phase, Natural Resources Wales should be notified via the incident hotline – 03000 65 3000.

Please note the view expressed in this letter is a response to a pre-planning enquiry only. We trust these comments will prove helpful but they should not set a precedent for any future Natural Resources Wales' response to any formal application for planning permission or other legal consent. Such applications shall be assessed on the information submitted and regulations of relevance at that time. The details contained in this letter are based on the information available to date.

If you have any queries on the above please do not hesitate to contact us.

Yn gywir / Yours sincerely,

Daniel Davies
Cyngorydd Cynllunio Datblygu / Development Planning Advisor
Cyfoeth Naturiol Cymru / Natural Resources Wales

APPENDIX G – FOUL CALCULATIONS

**DATRYS**

www.datrys.net

☒ Caernarfon: 01286 671027
☐ Mold: 01352 706205
CALCULATIONS

Job No. 20294

Sheet No. 1

Rev

Project: NEW EXTRA CARE, WREXHAM

Subject

Foul Calculations

Prepared By

JP

Date

14.12.20

Checked By

JA

Date

17.12.20

THE PROPOSAL INVOLVES THE FOLLOWING:

- DEVELOPMENT OF AN EXISTING SITE
- CONSTRUCTION OF AN EXTRA CARE FACILITY WITH ASSOCIATED PARKING AND ACCESS ROAD.

THE FOLLOWING DESIGN CALCULATIONS APPLY TO DOMESTIC FOUL DISCHARGE ONLY.

DOMESTIC FLOWS

CALCULATIONS ARE COMPILED IN ACCORDANCE WITH BSEN 182056 PT2 AND ASSUME THAT THE PROPERTY WILL CONTAIN THE FOLLOWING.

GROUND FLOOR (38 BEDROOMS)

44 x WC WITH 6L CISTERN	= 1.7 x 44 = 74.8
44 x WASH HAND BASIN	= 0.3 x 44 = 13.2
39 x SHOWER (W/PLUG)	= 1.3 x 39 = 50.7
1 x KITCHEN SINK	= 1.3 x 1 = 1.3
	<u>140.0 L/s</u>

FIRST FLOOR (37 BEDROOMS)

40 x WC w/ 6L CISTERN	= 1.7 x 40 = 68.0
40 x WASH HAND BASIN	= 0.3 x 40 = 12.0
37 x SHOWER (W/PLUG)	= 1.3 x 37 = 48.1
	<u>128.1 L/s</u>

$$\therefore \text{TOTAL DISCHARGE UNITS (DU)} = 268.1 \text{ L/s}$$

$$K = 0.5$$

$$Q = K \sqrt{\sum DU} = 0.5 \sqrt{268.1} = 8.19 \text{ L/s}$$

CAPACITY OF PIPEWORK LAID:

$$100\text{mm} @ 1:80 = 5.7 \text{ L/s}$$

$$150\text{mm} @ 1:120 = 14.25 \text{ L/s}$$

THE CALCULATION IS BASED ON THE DRAWING, "4135-1-A(200)04 - PROPOSED ENLARGED PART SITE PLAN" PROVIDED BY CARROLL ON 18.11.20.

APPENDIX H – SURFACE WATER CALCULATIONS



Soakaway calculations to BRE Digest 365

Project Extra Care Facility, Wrexham
 Ref 20294
 Description Total site excluding Carpark 1
 Calculation Sheet 1

1 in 100 year return period design

M5-60min 17
 r 0.3

Volumetric Runoff Coefficient		Area
Green	0	15099.0
Impermeable	1	2692.0
Permeable	0.35	1851.0

Total Effective Area 3339.85

Duration	Z1	M5-D	Z2	M100-D	30% c.c	I	Area	Inflow	Outflow (cu	Storage
5.0	0.34	5.78	1.81	10.5	13.6	163.1	3339.9	45.4	0.4	44.94
10.0	0.495	8.42	1.87	15.8	20.5	122.9	3339.9	68.4	0.9	67.50
15.0	0.59	10.03	1.91	19.2	24.9	99.6	3339.9	83.2	1.3	81.85
30.0	0.78	13.26	1.96	26.0	33.8	67.6	3339.9	113.0	2.7	110.27
60.0	1	17.00	2.01	34.1	44.3	44.3	3339.9	148.1	5.4	142.67
120.0	1.24	21.08	2.03	42.7	55.5	27.8	3339.9	185.4	10.8	174.61
240.0	1.55	26.35	2.00	52.7	68.5	17.1	3339.9	228.7	21.6	207.14
360.0	1.8	30.60	1.97	60.1	78.2	13.0	3339.9	261.1	32.4	228.72
600.0	2.13	36.21	1.92	69.5	90.4	9.0	3339.9	301.9	54.0	247.95
1440.0	2.79	47.43	1.83	86.8	112.9	4.7	3339.9	377.0	129.5	247.49
2880.0	3.5	59.50	1.75	103.9	135.0	2.8	3339.9	450.9	259.0	191.93

Percolation factor (FOS)	(m/s)	1.00E-05	Factor of Safety (Ciria 156)	3
Percolation factor (FOS)	(m/s)	3.33E-06		

Gravel Trench: Outflow and storage based on:			
Reservoir layer - parking			
Length of soakaway	(m)	30	
Width of soakaway	(m)	22	
Effective depth	(m)	2.3	
Eff Area of soakaways at 50%	(sq m)	449.60	
Base included in calcs			
Soakaway storage	(cu m)	455.4	

Soakaway Check		
Peak required storage	(m3)	248.0
Time for soakaway to lower to 50% volume	(hrs)	22.98



Soakaway calculations to BRE Digest 365

Project Extra Care Facility, Wrexham

Ref 20294

Description 1:100 year

Calculation Sheet 2

1 in 100 year return period design

M5-60min 17
r 0.3

Volumetric Runoff Coefficient		Area
Green	0	0.0
Impermeable	1	0.0
Permeable	0.35	471.0

Total Effective Area 164.85

Duration	Z1	M5-D	Z2	M100-D	30% c.c	I	Area	Inflow	Outflow (cu	Storage
5.0	0.34	5.78	1.81	10.5	13.6	163.1	164.9	2.2	0.0	2.21
10.0	0.495	8.42	1.87	15.8	20.5	122.9	164.9	3.4	0.1	3.32
15.0	0.59	10.03	1.91	19.2	24.9	99.6	164.9	4.1	0.1	4.02
30.0	0.78	13.26	1.96	26.0	33.8	67.6	164.9	5.6	0.2	5.40
60.0	1	17.00	2.01	34.1	44.3	44.3	164.9	7.3	0.4	6.95
120.0	1.24	21.08	2.03	42.7	55.5	27.8	164.9	9.2	0.7	8.43
240.0	1.55	26.35	2.00	52.7	68.5	17.1	164.9	11.3	1.4	9.85
360.0	1.8	30.60	1.97	60.1	78.2	13.0	164.9	12.9	2.2	10.73
600.0	2.13	36.21	1.92	69.5	90.4	9.0	164.9	14.9	3.6	11.30
1440.0	2.79	47.43	1.83	86.8	112.9	4.7	164.9	18.6	8.6	9.97
2880.0	3.5	59.50	1.75	103.9	135.0	2.8	164.9	22.3	17.3	4.98

Percolation factor (FOS) (m/s) 1.00E-05 Factor of Safety (Ciria 156) 3

Percolation factor (FOS) (m/s) 3.33E-06

Gravel Trench: Outflow and storage based on:

Reservoir layer - parking

Length of soakaway (m) 6

Width of soakaway (m) 6

Effective depth (m) 1

Eff Area of soakaways at 50% (sq m) 30.00

Base included in calcs

Soakaway storage (cu m) 10.8

additional storage provided by 1.2m chamber

Soakaway Check

Peak required storage (m3) 11.3

Time for soakaway to lower to 50% volume (hrs) 15.69

