



Rose Villa

Drainage Strategy Report

June 2026

Prepared for:
The Crown Estate



This document has been prepared by WCI Group Ltd (trading as WCI Consulting Engineers) in accordance with the above client's instructions and requirements for their specific and sole use. Consequently, any third party liability is expressly excluded.

Document ownership assignment and any third party requirement to use, reproduce or reference upon this document or any part of, should seek the prior express written consent and agreement of WCI Consulting Engineers.

Any information provided by third parties and referred to herein is used in good faith and has not been checked or verified by WCI Consulting Engineers, unless otherwise expressly stated in the document.

Issue	Date	Status	Author	Checked By
1	05.06.26	For comment	MN	KM

WCI Consulting Engineers

enquiries@wci.co.uk

wci.co.uk

Registered in England:

WCI Group Ltd

Company No. 06434634

Unit 1, The Watershed

Old Brewery Road

Wiveliscombe

TA4 2PW

Tel: +44 1984 623404

CONTENTS

1	INTRODUCTION	4
2	THE SITE	4
2.1	Site location	4
2.2	The existing site.....	5
2.3	The proposed site	6
3	SURFACE WATER DRAINAGE STRATEGY	7
3.1	Impermeable catchment.....	7
3.2	Surface water design	7
3.3	Runoff Destinations (Standard 1).....	7
3.4	Management of everyday rainfall (Standard 2).....	8
3.5	Management of extreme rainfall and flooding (Standard 3).....	8
3.6	Water quality (Standard 4).....	11
3.7	Amenity and Biodiversity (Standard 5 & 6).....	12
3.8	Design of drainage for construction, operation, maintenance, decommissioning and structural integrity (Standard 7).....	12
4	FOUL WATER DRAINAGE STRATEGY	13
4.1	Foul water flows	13
4.2	Foul water discharge	13
4.3	Proposed foul water design.....	13
	APPENDIX A – WESSEX WATER ASSET RECORDS.....	15
	APPENDIX B – ROUNDWAY EXISTING DRAINAGE	17
	APPENDIX C – IMPERMEABLE AREAS PLAN	18
	APPENDIX D – PROPOSED DRAINAGE LAYOUT PLAN	19
	APPENDIX E – GREENFIELD RUN-OFF CALCULATIONS.....	20
	APPENDIX F – CAUSEWAY FLOW MODELLING	21
	APPENDIX G – SUDS WATER QUALITY MATRIX	22
	APPENDIX H – DESIGNERS RISK ASSESSMENT	23
	APPENDIX I – SUDS OPERATION & MAINTENANCE SCHEDULE	24

FIGURES

Figure 1 – Site location.....	5
Figure 2 - Exceedance overland flow paths	11
Figure 3 - Offline attenuation with filter drain [Source: Polypipe]	12

TABLES

Table 1 - Greenfield run-off calculations	8
Table 2 - Attenuation summary.....	9
Table 3 - Soakaway summary	10
Table 4 - Foul flows and loads summary	13

1 INTRODUCTION

WCI Group Ltd (WCI) have been commissioned by The Crown Estate (the "Applicant") to support a planning application to construct 2 no. 3-bed dwellings in Roundway, Devizes.

Planning permission was granted by Wiltshire Council under planning reference PL/2021/08195 with conditions. WCI have been asked to help discharge conditions 3 and 4 relating to surface water and sewerage. The wording of these conditions can be found below:

- | | |
|---|--|
| 3 | <p>No development shall commence on site until a scheme for the discharge of surface water from the site (including surface water from the access/driveway), incorporating sustainable drainage details, has been submitted to and approved in writing by the Local Planning Authority. The development shall not be first occupied until surface water drainage has been constructed in accordance with the approved scheme.</p> <p>REASON: To ensure that the development can be adequately drained.</p> |
| 4 | <p>No development shall commence on site until details of the works for the disposal of sewerage including the point of connection to the existing public sewer have been submitted to and approved in writing by the Local Planning Authority. No dwelling shall be first occupied until the approved sewerage details have been fully implemented in accordance with the approved plans.</p> <p>REASON: To ensure that the proposal is provided with a satisfactory means of drainage and does not increase the risk of flooding or pose a risk to public health or the environment.</p> |

The report will aim to discharge this condition by presenting a surface water and foul drainage solution that will comply with both local council guidance and best management practices.

2 THE SITE

2.1 Site location

The site is located to the south of Rose Villa off Folly Road, Roundway, Devizes, Wiltshire, SN10 2HY and is centred on National Grid Reference SU 01456 63180.

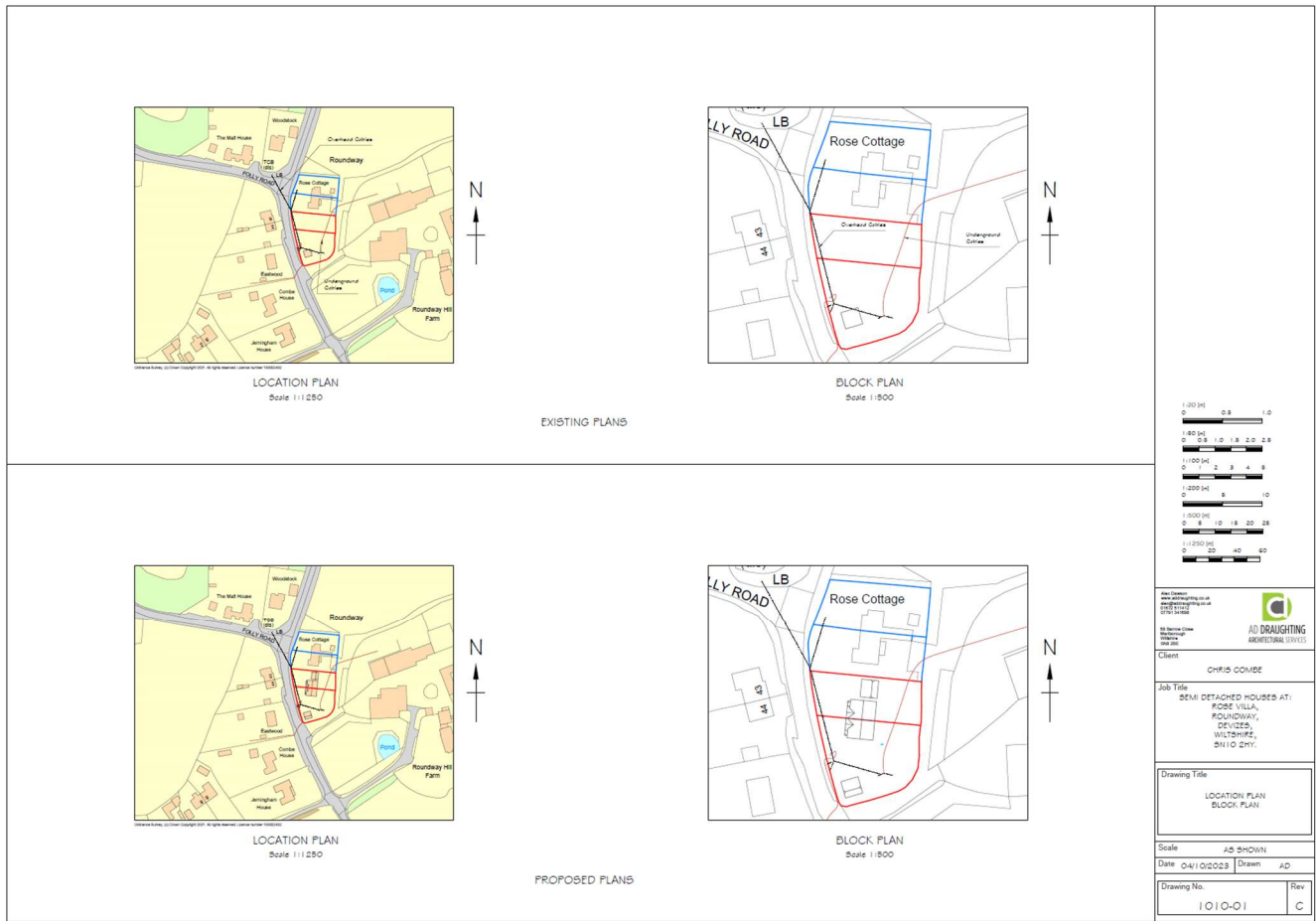


Figure 1 – Site location

2.2 The existing site

2.2.1 Site context

The application extents were formally garden space associated with Rose Villa to the north and also includes a disused garage to the south of the plot. The site is bounded by hedges along the eastern and western boundary, a close boarded fence along the northern boundary with Rose villa and assorted trees to the south with a timber fence and gated access to the garage.

Access to the garage is off a private access road from Folly Road, which then wraps around the application boundary to Rose Villa and Rose Cottage. Folly Road lies to the west of the application boundary.

Roundway Business Park is located on the opposite side of the access road to the east of the proposed site, and is owned and leased out to businesses by the applicant.

2.2.2 Site topography

A topographic survey was undertaken by Prism measured Surveys, reference 2025.141-01, dated June 2025. The site is generally quite flat with a gentle fall from north to south. The highest point of the site was noted to be approximately 142.578 m AOD at the northwest corner of the site and the lowest approximately 141.104m AOD at the southeast corner of the site. A gradient of approximately 1V:30H was calculated across the site.

2.2.3 Existing surface water drainage

There is no known existing surface water drainage present onsite, where all run-off appears to drain to ground or any exceedance flows would convey to the southeast corner of the site towards the private access track and eventually onto Folly Road.

A utility survey was completed by Greenhatch, referenced 58197_UG, dated May 2026. It was noted that there is a drainage chamber to the northeast of the site, within the application boundary, which appear to discharge to the north toward Rose Villa, however any contributing gullies, channels or rainwater pipes could not be identified.

2.2.4 Existing foul water drainage

Wessex Water are the statutory sewerage undertakers for the local area. Wessex Water asset records suggests that there are no public foul or surface water sewer within the vicinity of the proposed development. The closest public sewer is approximately 500m to the southwest located along Hopton Road, within the Hopton Industrial Estate. Wessex Water asset records for the proposed development and Hopton Road have been provided in Appendix A – Wessex Water Asset Records.

There are no known private foul networks present onsite. However, it is understood that the neighbouring Rose Villa and Rose Cottage discharge to a septic tank along the side of the access road, which then has an outfall to the Roundway Business Park's foul drainage network which is privately maintained by the applicant. This is ultimately discharged to a watercourse via a package treatment plant (PTP). A plan showing private offsite drainage is shown in Appendix B – Roundway Existing Drainage

2.3 The proposed site

The proposed development includes the construction of 2no. 3-bed dwellings with associated driveway and garden.



3 SURFACE WATER DRAINAGE STRATEGY

Surface water run-off is generated from impermeable areas intercepting rainfall. By changing the extent of the impermeable area through the new development, there is likely to be an impact on the volume of run-off and or how quickly this run-off enters offsite manmade or natural water ways. If not managed appropriately onsite, there is a risk of flash flooding and damages to the downstream infrastructure.

The National Standards for Sustainable Drainage System (NSDS), The Wiltshire Council – 'Drainage Betterment Strategy' (June 2024) and the Developer Guidance Notes – 'Surface water soakaways' (December 2018) provides a series of design criteria in line with national standards to help manage surface water run-off for new developments.

The following section will first determine the extent of the impermeable area that will impact surface water run-off, it will then highlight the surface water design principals to be used and then will follow the 'SuDS standards' set out within the NSDS.

3.1 Impermeable catchment

The impermeable catchment area of the proposed site is made up of roof areas. The total impermeable catchment area for the site is 116.4m² (or 0.012 ha). Driveway and external hardstands will remain porous.

In accordance with the Wiltshire Council guidance (WCG), a 10% allowance for urban creep has been included for any new domestic applications to account for any impermeable run-off that may be added under permitted development. Therefore, an impermeable area of 128m² (or 0.013 ha) will be used when calculating total run-off from the proposed development.

An impermeable areas plan has been provided in Appendix C – Impermeable Areas Plan.

3.2 Surface water design

It is proposed that surface water run-off from all impermeable areas associated with the new dwellings are to be intercepted by gutters and rainwater pipes. The interception of surface water run-off will be designed in accordance with Building Regulations Approved Document H

The incorporation of Sustainable Urban Drainage System (SuDS) principals to manage run-off rates and volumes discharging offsite will be in accordance with WCG and its references to other best management practices such as the Ciria C753 'SuDS Manual'.

All surface water and foul water flows will remain separate.

A proposed drainage network has been provided in Appendix D – Proposed Drainage Layout Plan.

3.3 Runoff Destinations (Standard 1)

The hierarchy for the discharge of surface water runoff from the site is as follows taken from the NSDS:

- Collection for non-potable use,
- Infiltration into the ground,
- Discharge to an above ground surface water body,
- Discharge to a surface water sewer, or piped drainage system; and
- Discharge to a combined sewer

The use of Rainwater Harvesting (RWH) for collection shall be considered and applied where feasible without compromising public health and security.

Infiltration tests were completed in May 2025 by Terra firma and an infiltration test report produced referenced TF-25-441, dated May 2026. Two no. test pits were excavated at the anticipated location of the proposed soakaways and infiltration tests were completed in accordance with BRE Digest 365.

Within Terra firma's reports, they concluded that in both test locations that surface water discharges to ground would unlikely be feasible. The Terra firma infiltration test report has been submitted separately as part of the application.

Further down the hierarchy, a discharge to a surface water body, piped surface water drain and combined drain were all reviewed, with possible points either too far and therefore prohibitively very expensive for the size of the development or a connection to a private system would not be accepted (e.g. a connection to a highway drain).

With all the priority discharge points exhausted, we will therefore look to attenuate to greenfield run-off rates and discharge to ground via a soakaway. The rationale for this approach would be to mimic that of a pre-development scenario where direct rainfall would hit the surface and infiltrate to ground at a very slow rate that would not increase flood risk.

3.4 Management of everyday rainfall (Standard 2)

The NSDS requires that 'Everyday' rainfall, defined as the first 5 mm of rainfall for the majority of rainfall events, does not discharge off-site.

Where it has been determined that a RWH can be suitably utilised to serve the new dwellings or infiltration rates are favourable for a soakaway design, this would be deemed suitable to address standard 2.

3.5 Management of extreme rainfall and flooding (Standard 3)

3.5.1 Restricting flows to greenfield

The NSDS requires that the run-off rate and volume is controlled onsite up to the 1 in 100-year storm event (1% AEP) to ensure that any downstream risk is not increased compared to the pre-development scenario. It is also stipulated that the surface water run-off rate for the 1 in 2 year (50% AEP) has no negative impact.

The objective of the surface water design is to reduce run-off rates to as near to greenfield rates as possible to mimic a pre-development scenario before being discharged to ground.

The greenfield run-off rate for the site has been calculated using the FEH statistical 2025 method which uses Standard Average Annual Rainfall (SAAR9120) for the 30-year period between 1991-2020 and BFIHOST19 data (soil hydrology characteristics for catchment responsiveness) to determine the median annual flow rate (Q_{med}) to ascertain the mean annual flow rate (Q_{bar}).

The runoff rates for the different periods are calculated using growth factors for the relevant geological region in which the site is situated.

Greenfield runoff rates are calculated based on an impermeable development area of 0.012ha (without urban creep), a SAAR9120 of 782mm, a BFIHOST19 value of 0.72 and hydrological region 8. Greenfield runoff calculations have been provided in Appendix E – Greenfield Run-Off Calculations and summarised in Table 1.

Return Period	Entire site catchment Greenfield Runoff (L/s)
Q_{bar}	0.02
1 in 1 year	0.01
1 in 30 year	0.04
1 in 100 year	0.04
1 in 200 year	0.10

Table 1 - Greenfield run-off calculations

Restricting flows to less than 1 L/s is generally difficult to achieve due to the potential for blockages and associated flood risk. As the site has a Q_{bar} runoff rate significantly less than 1 L/s, the type of flow control was assessed for likelihood of blockage based on the type of contributing catchment (e.g. risk of sediment generation), whether the flow control can be protected sufficiently through upstream controls (e.g. SuDS) and requirements for ongoing operation and maintenance.

It is proposed that flows are restricted with the use of a vortex flow control chamber (Hydro-brake or equivalent) for each of the properties. The upstream catchment is predominately roof area with leaves and minor silts contributing to potential blockages. A filter drain and catchpit will look to capture a lot of the particulates that would likely contribute to blockage risk but ultimately would not prevent the risk of blockages for any small apertures to restrict flows.

The required aperture to achieve Q_{bar} at 0.02 l/sec would be less than 20mm, which is significantly less than the recommended 50mm stipulated with the NSDS; and it is noted that proprietary manufacturers would not be able to supply such a product.

It is therefore proposed that the vortex control is limited to 0.5 l/sec for each of the 2 plots with an aperture of 33mm, which is likely to be achievable based on the low hazard of sediments within the contributing catchment, water quality controls upstream and ongoing operation and maintenance.

By restricting each plot to 0.5l/sec, throttled flows would be attenuated upstream of the flow control. The most appropriate attenuation structure for this site would be a below ground cellular storage tanks due to spatial constraints. The cellular storage tank will be sized to store flows up to the 1 in 100-year peak storm event plus a 45% allowance for climate change to account for the 'upper end allowance' for the design life of the proposed building.

Causeway flow model has been created for the design of the attenuation features and has been provided in Appendix F – Causeway Flow . A summary of the attenuation feature has been tabled below:

Characteristics	Each plot (Plot 1 & Plot 2)
Attenuation type:	Attenuation storage tanks (Chapter 21 'SuDS Manual')
Restricted flow:	0.5 l/s
Critical storm for sizing storage required:	100 year +45% climate change
Storage required:	1.63 m ³
Storage details:	Cellular tanks 4m ² plan area 0.4m deep Porosity 95%

Table 2 - Attenuation summary

3.5.2 Discharge to ground

After restricted each plot to 0.5l/sec and attenuating any throttled flows up to the 1 in 100-year event with 45% climate change, the combined flows from both properties will be discharged to a soakaway. As infiltration testing could not determine a suitable infiltration rate to BRE Digest 365, the sizing of a soakaway has been based on a minimum rate of infiltration stated within the NSDS of 1×10^{-6} m/s (or 0.0036m/hr) to provide a rate representative of a poorly draining soil.

The most appropriate soakaway system has been deemed to be an infiltration trench due to spatial constraints.

The infiltration trench will be designed to accommodate up to the 1 in 100-year storm event plus 45% climate change to account for the 'upper end allowance' for the design life of the proposed building.

Causeway flow model has been created for the design of the soakaway and has been provided in Appendix F – Causeway Flow . A summary of the soakaway feature has been tabled below:

Characteristics	Requirement
Soakaway type:	Infiltration trench (Chapter 13 'SuDS Manual')
Restricted flow:	Infiltration rate: 0.0036 m/hr
Critical storm for sizing storage required:	100 year +45% climate change
Factor of safety:	2
Storage required:	6.78 m ³
Storage details:	Trench width: 1.2m Trench depth: 1.85 (max) Trench length: 14m Porosity 95%

Table 3 - Soakaway summary

3.5.3 Resultant flows

With the combination of the restricted discharge of both properties to 0.5 l/s and discharge to a trench soakaway with a limited infiltration rate of 1×10^{-6} m/s, the resultant outflow was noted to be 0.0 l/s through all storm event up to the 1 in 100-year plus 45% climate change. The result for the 1 in 100-year event has been provided below, with all other storms presented in Appendix G.

Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 91.28%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
60 minute winter	Geocellular (plot 1)	49	141.961	0.712	2.0	1.6320	0.0000	FLOOD RISK
600 minute winter	Geocellular (plot 2)	570	141.556	0.896	0.4	1.6373	0.0000	FLOOD RISK
600 minute winter	Soakaway (offsite)	585	141.546	0.899	0.5	6.7823	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m ³)
60 minute winter	Geocellular (plot 1)	plot 1	Soakaway (offsite)	0.5	1.054	0.022	0.0006
600 minute winter	Geocellular (plot 2)	plot 2	Soakaway (offsite)	0.5	0.354	0.085	0.0101
600 minute winter	Soakaway (offsite)	Infiltration		0.0			

3.5.4 Overland flow path

Overland flow paths in exceedance events above the 100-year peak storm event and in a blockage scenario, have been reviewed. All flows will mimic that of the current scenario where flows will follow the natural topography of the site. The finished floor levels of the proposed building will have a minimum threshold of 150mm above the current land profile where any watershed will be diverted away from building openings. No existing dwellings or access routes will be impeded by the developments overland flow pathways. Refer to Figure 2 below for overland flow pathways.

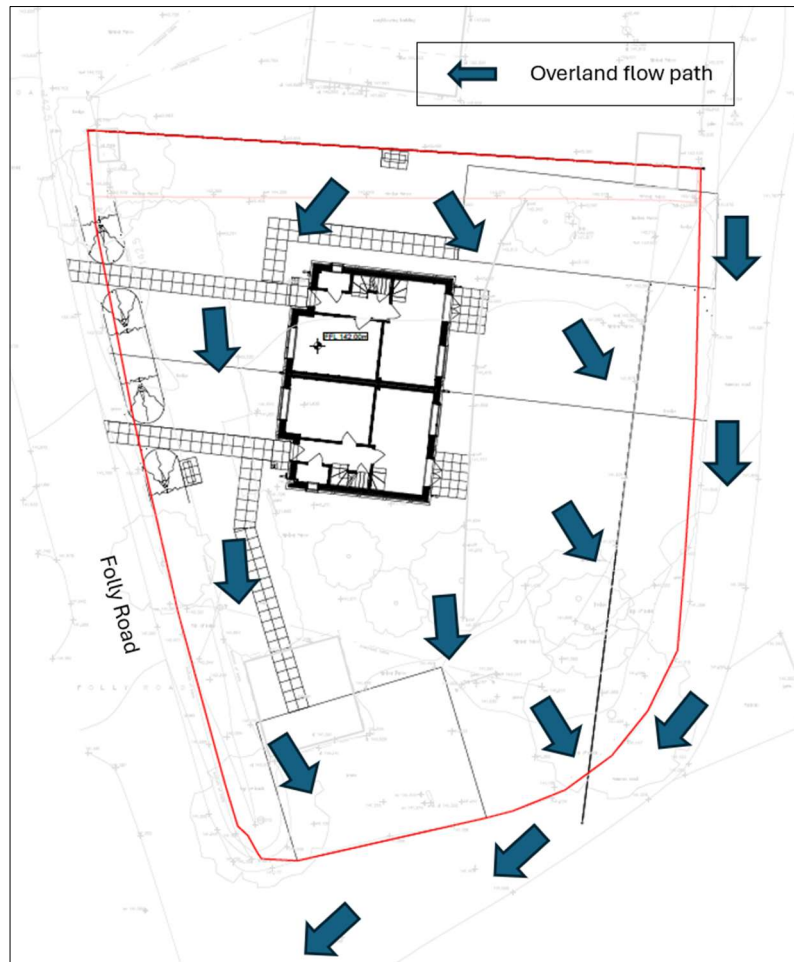


Figure 2 - Exceedance overland flow paths

3.6 Water quality (Standard 4)

Water quality for the proposed site has been reviewed against the CIRIA SuDS manual chapter 26 to determine pollution hazard for the land use – in this development's case, residential roofing and parking.

The land-use with the highest pollution hazard (Table 26.2 SuDS Manual) is residential roofing with a resultant 'Very Low' pollution hazard.

HR Wallingford (uksuds.com) water quality assessment calculator was used to determine which SuDS feature would be suitable for the treatment of the proposed land use. It was noted that the use of a filter drain as part of the attenuation construction (see Figure 3), would provide sufficient water quality control.

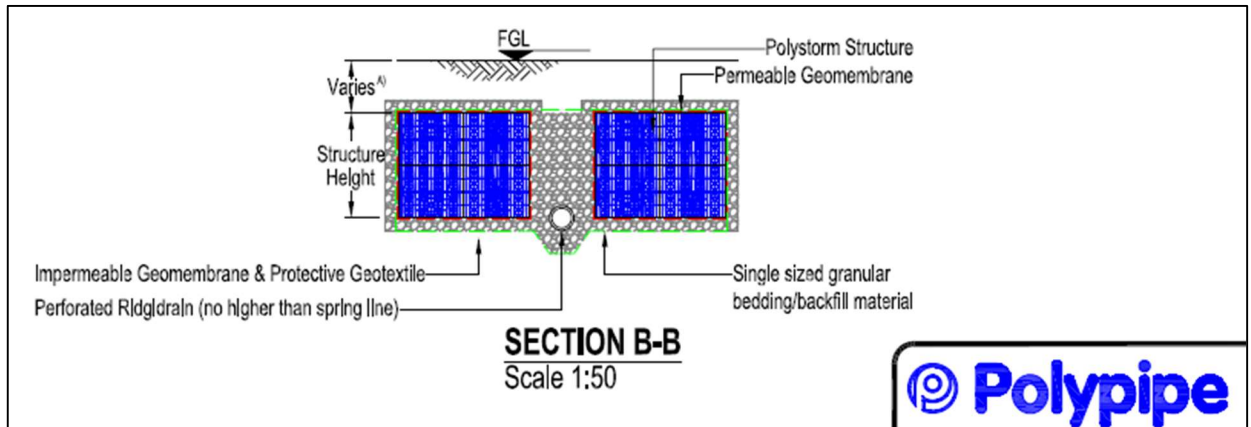


Figure 3 - Offline attenuation with filter drain [Source: Polypipe]

Results from the assessment calculator can be found in Appendix G – Suds Water Quality Matrix.

3.7 Amenity and Biodiversity (Standard 5 & 6)

As the site is for a private domestic property, the provision of amenity is already provided through development. Further landscaping features could be integrated as a SuDS feature to provide biodiversity in the form of bioretention features (rain gardens, raised planters tree pits etc.).

3.8 Design of drainage for construction, operation, maintenance, decommissioning and structural integrity (Standard 7)

The NSDS refers to the Construction and Design Management regulations 2015 (CDM) which includes the requirements for designers to take account of the health and safety risks associated with the construction, operation and maintenance and decommissioning of the drainage system and to minimise these risks as far as reasonably practicable.

A designer's risk assessment has been completed as part of the design process and has been included in Appendix H – Designers Risk Assessment which reviews the design across various stages of the development.

A SuDS Operation and Maintenance Manual has been provided in Appendix I – Suds Operation & Maintenance Schedule which is in accordance with Part D Technical Details of the CIRIA C753 SuDS Manual.

4 FOUL WATER DRAINAGE STRATEGY

4.1 Foul water flows

Foul flows generated by the site have been calculated using British Water's Flows and Loads – 4.

The proposed 2no. 3-bed dwellings equates to a population equivalency of 5 people for each plot. Flows and Loads suggests that a standard residential dwelling would generate approximately 150 l/person/day equating to a total wastewater production of 750 l/day for each dwelling and a total of 1,500 l/day generated by both plots. A summary of the Flows and load calculations have been provided in Table 4.

Dwelling Number/Name		Bedrooms	Type	PE
Residential				
Each plot (plot 1/Plot 2)		2	House	5
Balancing Factor				1
Specified PE				5

Description	Population	Flow (litres/day)		BOD (grams/day)		NH3 (grams/ day)	
	TOTAL	Per head	TOTAL	Per head	TOTAL	Per Head	TOTAL
Domestic Dwellings							
Standard residential	5	150	750	60	300	8	40

Table 4 - Foul flows and loads summary

4.2 Foul water discharge

The hierarchy for selecting a method for the discharge of foul effluent from the proposed development is as follows based on Building Regulations document H:

- ☐ Public sewer,
- ☐ Private sewer with a connection to public sewer
- ☐ Treatment plant/Septic tank; and
- ☐ Cesspool

The closest public foul sewer is within the Hopton Industrial Estate, approximately 500m away. Under Environmental Permitting Regulations (EPR) and general binding rules, it is stipulated that a public sewer that is more than number of dwellings multiplied by 30 would be deemed proportionately unfeasible to make a connection, which would be the case of this development (i.e. 2no. dwellings x 30 = 60m).

It is proposed to utilise the existing foul network associated with Roundway Business Park, that currently supports the neighbouring properties Rose Villa and Rose Cottage. The foul network is privately maintained by the applicant with an ultimate discharge to a watercourse.

4.3 Proposed foul water design

All domestic foul effluent will be picked up via a gravity drainage network which will be kept separate from any surface water drainage in accordance with Building Regulations Approved Document H.

The connection to the existing pipe network will be via a BS EN 12566 compliant Package Treatment Plant (PTP) for each individual plot (i.e. no shared system). This would follow EPR and general binding rules due to the existing foul networks discharge to watercourse. The applicant will need to amend any permits currently associated with the existing discharge to watercourse, to include the additional flows from the 2 new dwellings.

Each PTP will have the capacity for a population equivalency of 5 (5PE), maintained in accordance with manufacturers guidance and regularly emptied and serviced by a British Water certified engineer.

A proposed drainage layout has been attached in Appendix D – Proposed Drainage Layout Plan.



Appendix A – Wessex Water Asset Records

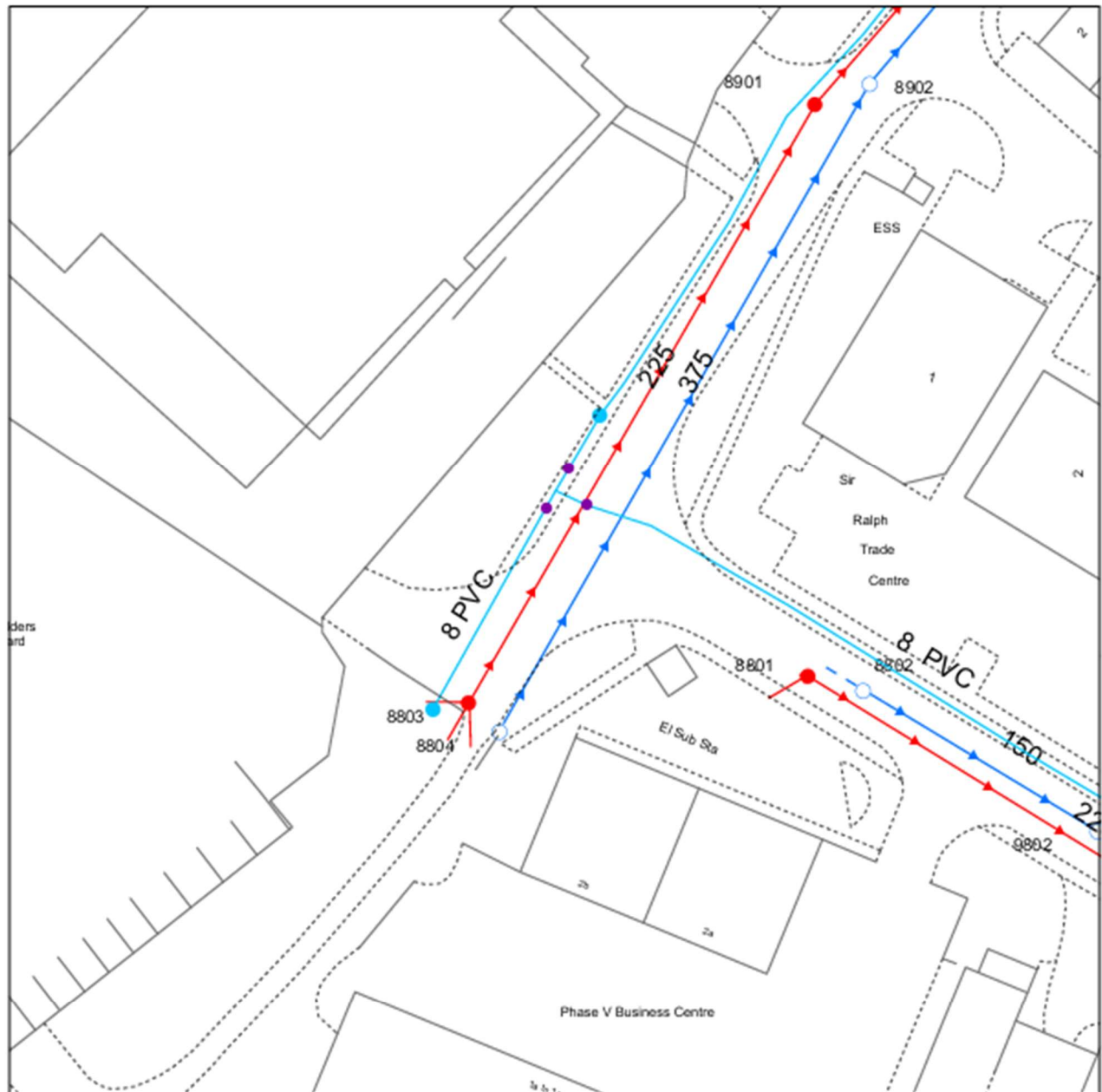
Wessex Water Web Map



Reproduced from the Ordnance Survey map by permission on behalf of the Controller of Her Majesty's Stationery Office © Crown Copyright. Licence 100019530.

WATER MAINS	SEWERS	STRATEGIC PUBLIC	PRIVATE	SECTION 104	OTHER WESSEX PIPES	NON-WESSEX / UNKNOWN
- Distribution - Washout - Raw Water - Abandoned - Private	- Foul - Surface - Combined - Abandoned				- Rising Mains - Standby Rising Mains - Effluent Disposal - Overflow - Syphon	- Private Rising Mains - Culverted Watercourse - Highway Drain - Use Unknown - Status Unknown
FITTINGS - Hydrant - Other	STRUCTURES - Manhole - Foul - Manhole - Surface - Manhole - Combined - Inlet - Lamphole - Bifurcation - Foul - Bifurcation - Surface - Bifurcation - Combined - Combined Sewage Overflow	- Pumping Station - Surface - Pumping Stn - Foul/Combined - Gully - Vent Column - Rodding Eye - Catchpit - Flushing Chamber - Soakaway - Non Return Valve - Air Valve	- Hatch Box - Washout			
Colours generally indicate the use of the sewer/drain (i.e. Red - Foul, Dark Blue - Surface, Magenta - Combined/Dual Use, Light Green - Highway Drain, Mid Green - Overflow). Some styles of line and symbol are shown on the key in sample/typical colours.						
					OTHER STRUCTURES - Attenuation Tank - Storage Tank	- Chamber - Tunnel - Interceptor
Information in this map is provided for identification purposes only. No warranty as to accuracy is given or implied. The precise route of pipe work may not exactly match that shown. Wessex Water does not accept liability for inaccuracies. Sewers and lateral drains adopted by Wessex Water under the Water Industry (Schemes for Adoption of Private Sewers) Regulations 2011 are to be plotted over time and may not yet be shown. In carrying out any works, you accept liability for the cost of any repairs to Wessex Water apparatus damaged as a result of your works. You are advised to commence excavations using hand tools only. Mechanical digging equipment should not be used until pipe work has been precisely located. If you are considering any form of building works and pipe work is shown within the boundary of your property or a property to be purchased (or very close by) a surveyor should plot its exact position prior to commencing works or purchase. If you are proposing to build over or near Wessex Water's apparatus you should contact the Developer Services Team, tel: 01225 526333 or e-mail: developer.enquiries@wessexwater.co.uk to discuss your proposals. Details of assets within Wessex Water's land ownership are unavailable through this service.					Wessex Water YTL GROUP	
					Date: 01/11/2024 Centre: 401498E, 163172N Scale: 1:884 (when printed at A1 size)	

Wessex Water Network Map



Reproduced from the Ordnance Survey map with the permission of the Controller of His Majesty's Stationary Office. © Crown copyright and database rights (2020) OS AC0000848304



Appendix B – Roundway Existing Drainage



Sewage Map



Location Plan shows area bounded by: 401398.44, 163000.0 401798.44, 163400.0 (at a scale of 1:2500), OSGridRef: SU 1596319. The representation of a road, track or path is no evidence of a right of way. The representation of features as lines is no evidence of a property boundary.

Produced on 11th May 2023 from the Ordnance Survey National Geographic Database and incorporating surveyed revision available at this date. Reproduction in whole or part is prohibited without the prior permission of Ordnance Survey. © Crown copyright 2023. Supplied by www.buyaplan.co.uk a licensed Ordnance Survey partner (100053143). Unique plan reference: #00819198-ED25DC.

Ordnance Survey and the OS Symbol are registered trademarks of Ordnance Survey, the national mapping agency of Great Britain. Buy A Plan® logo, pdf design and the www.buyaplan.co.uk website are Copyright © Passinc Ltd 2023.

-  Into treatment plant
-  Into septic tanks
-  Proposed new link

Appendix C – Impermeable Areas Plan



Z:\z WCI JOBS\FORSR\Rose Villa - SN10 2HYd. Drawings\DWG\27651-121-Impermeable Areas Plan.dwg



This drawing is copyright to WCI Group Ltd. It shall not be used without permission for any purpose. Reproduction is only permitted by prior arrangement. Do not scale from this drawing. All discrepancies to be related back to the originator for verification prior to commencing the works.

COMMERCIAL IN CONFIDENCE

NOTES

DRAWING REVISIONS:

1.0 DRAWING REFERENCES

1.1 Proposed layout as per Savills drawing 666126-401B, dated 20.04.26.

1.2 Topographic survey as per Prism Measured Surveys drawing 2025.141-01, dated June 2025.

1.3 Utility Survey as per Greenhatch Group drawing 58197_UG, dated May 2026.

2.0 DRAWING NOTES

2.1 Drawing to be read in conjunction with other Engineer drawings. Refer to document register.

P03	Updates to suit comments	MN	KM	02/06/26
P02	Updated site plan	MN	KM	01/06/26
P01	Draft for comment	MN	KM	26/05/26
REV	PURPOSE OF REVISION	DRW	CHK	DATE

WCI
CONSULTING
ENGINEERS

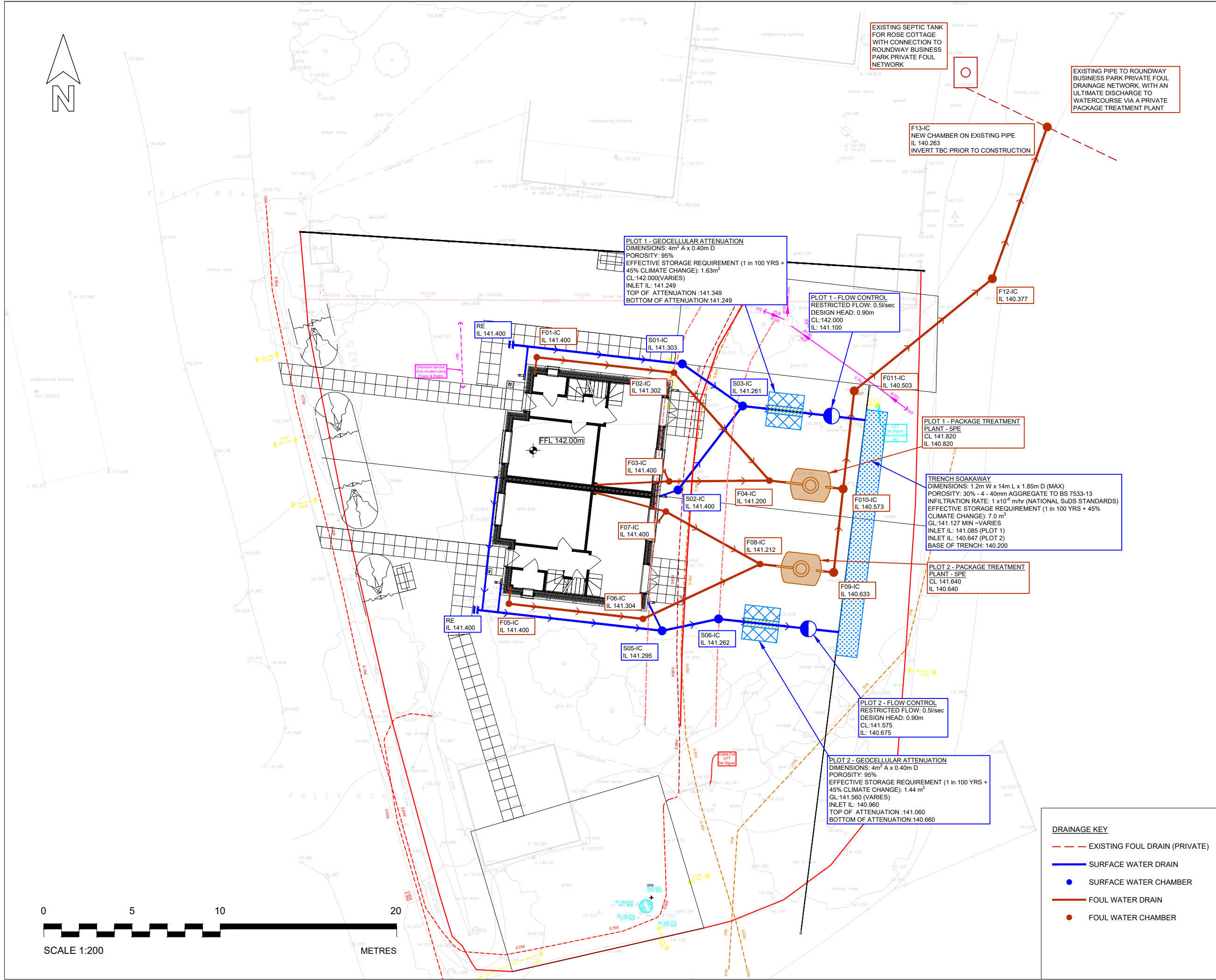
Wiveliscombe, TA4 2PW
Tel. 01984 623404

PROJECT	ROSE VILLA		
SITE LOCATION	FOLLY ROAD SN10 2HY SU 01457 63178		
CLIENT	THE CROWN ESTATE		
DRAWING TITLE	IMPERMEABLE AREAS PLAN		
DRAWING STATUS	FOR COMMENT		
SCALE @ A1	1:200	DATE	26/05/26
DRAWING NUMBER	27651-121	REV	P03

Appendix D – Proposed Drainage Layout Plan



Z:\z WCI\JOBS\FORSIR\Rose Villa - SW10 2HY.dwg Drawings\DWG\27651-101-Proposed drainage layout.dwg



This drawing is copyright to WCI Group Ltd. It shall not be used without permission for any purpose. Reproduction is only permitted by prior arrangement. Do not scale from this drawing. All discrepancies to be related back to the originator for verification prior to commencing the works.

COMMERCIAL IN CONFIDENCE

NOTES

DRAWING REVISIONS:

1.0 DRAWING REFERENCES

1.1 Proposed layout as per Savills drawing 666126-401B, dated 20.04.26.

1.2 Topographic survey as per Prism Measured Surveys drawing 2025.141-01, dated June 2025.

1.3 Utility Survey as per Greenhatch Group drawing 58197_UG, dated May 2026.

2.0 DRAWING NOTES

2.1 Drawing to be read in conjunction with other Engineer drawings. Refer to document register.

REV	PURPOSE OF REVISION	DRW	CHK	DATE
P04	Foul lateral added	MN	KM	04/06/26
P03	Updated to suit comments	MN	KM	02/06/26
P02	Updated site plan	MN	KM	01/06/26
P01	Draft for comment	MN	KM	27/05/26

WCI CONSULTING ENGINEERS

Wiveliscombe, TA4 2PW
Tel. 01984 623404

PROJECT
ROSE VILLA

SITE LOCATION
FOLLY ROAD
SN10 2HY
SU 01457 63178

CLIENT
THE CROWN ESTATE

DRAWING TITLE
PROPOSED DRAINAGE LAYOUT

DRAWING STATUS
FOR COMMENT

SCALE @ A3
1:200

DATE
26/05/26

DRAWING NUMBER
27651-101

REV
P04

Appendix E – Greenfield Run-Off Calculations



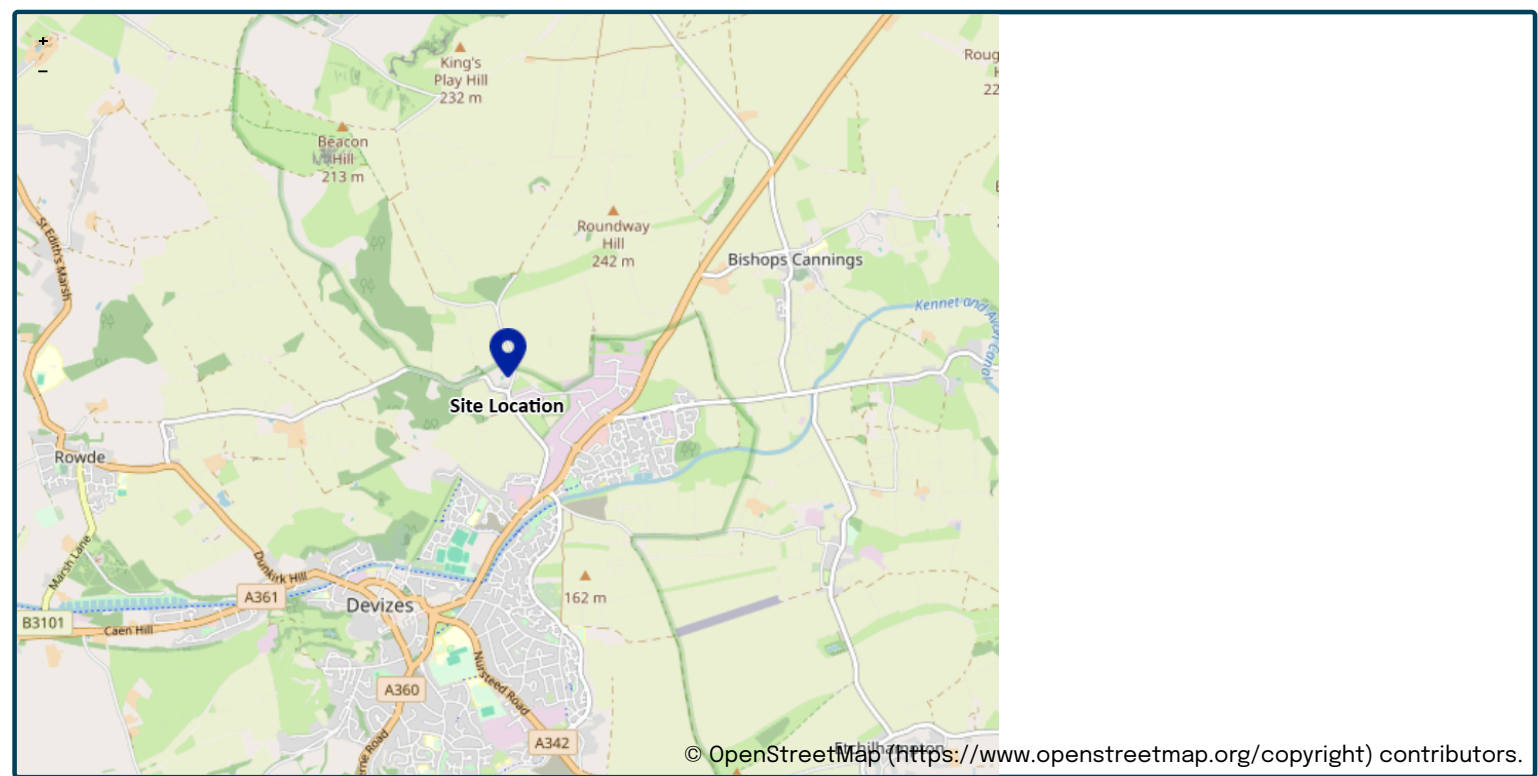
This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance “Rainfall runoff management for developments”, SC030219 (2013), the SuDS Manual C753 (CIRIA, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Project details

Date	01/06/2026
Calculated by	MN
Reference	27651
Model version	2.2.3

Location

Site name	Rose Villa
Site location	SN10 2HY



Site easting (British National Grid)	401419
Site northing (British National Grid)	163161

Site details

Total site area (ha)	0.012	ha
----------------------	-------	----

We use cookies on this site to enhance your user experience

By clicking the Accept button, you agree to us doing so.

OK, I AGREE

MORE INFO

Greenfield runoff

Method

Method	FEH statistical (2025)
--------	------------------------

FEH statistical (2025)

	<u>My value</u>	<u>Map value</u>
SAAR9120 (mm)	782	mm
BFIHOST19scaled	0.72	
QMed-QBar conversion	1.075	1.075
QMed (l/s)	0.02	l/s
QBar (FEH statistical 2025) (l/s)	0.02	l/s

Growth curve factors

	<u>My value</u>	<u>Map value</u>
Hydrological region	8	8
1 year growth factor	0.78	
2 year growth factor	0.93	
10 year growth factor	1.49	
30 year growth factor	1.95	
100 year growth factor	2.43	
200 year growth factor	2.78	

Results

Method	FEH statistical (2025)
Flow rate 1 year (l/s)	0.01
Flow rate 2 year (l/s)	0.02
Flow rate 10 years (l/s)	0.03
Flow rate 30 years (l/s)	0.04
Flow rate 100 years (l/s)	0.04
Flow rate 200 years (l/s)	0.1

Please note runoff estimation is subject to significant uncertainty. Results are therefore normally reported to only 1 decimal place. Where 2 decimal places are provided, this does not indicate accuracy to this level, it has been adopted to prevent ‘zero’ figures from being reported. Outputs less than 0.01 l/s are reported as 0.01 l/s.

Disclaimer

This report was produced using the Greenfield runoff rate estimation tool (2.2.3) developed by HR Wallingford and available at uksuds.com (<https://www.uksuds.com/>). The use of this tool is subject to the UK SuDS terms and conditions and licence agreement, which can both be found at uksuds.com/terms-conditions (<https://www.uksuds.com/terms-conditions>). The outputs from this tool have been used to estimate Greenfield runoff rates. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, Centre for Ecology and Hydrology, Wallingford Hydrosolutions or any other organisation for the use of these data in the design or operational characteristics of any drainage scheme.

We use cookies on this site to enhance your user experience

By clicking the Accept button, you agree to us doing so.

Appendix F – Causeway Flow modelling



Design Settings

Rainfall Methodology	FEH-22	Maximum Time of Concentration (mins)	30.00	Preferred Cover Depth (m)	1.200
Return Period (years)	100	Maximum Rainfall (mm/hr)	50.0	Include Intermediate Ground	✓
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00	Enforce best practice design rules	✓
CV	0.750	Connection Type	Level Soffits		
Time of Entry (mins)	5.00	Minimum Backdrop Height (m)	0.200		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Easting (m)	Northing (m)	Depth (m)	Invert Level (m)
Geocellular (plot 1)	0.006	5.00	142.000	28.993	100.636	0.751	141.249
Geocellular (plot 2)	0.006	5.00	141.560	28.034	64.614	0.900	140.660
Soakaway (offsite)			141.575	73.712	83.771	0.928	140.647

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)
plot 1	Geocellular (plot 1)	Soakaway (offsite)	1.480	0.600	141.249	141.085	0.164	9.0	100	5.01	50.0
plot 2	Geocellular (plot 2)	Soakaway (offsite)	1.290	0.600	140.660	140.647	0.013	99.2	100	5.03	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)
plot 1	2.588	20.3	0.8	0.651	0.390	0.006	0.0	14	1.251
plot 2	0.772	6.1	0.8	0.800	0.828	0.006	0.0	25	0.533

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)
plot 1	1.480	9.0	100	Circular	142.000	141.249	0.651	141.575	141.085	0.390
plot 2	1.290	99.2	100	Circular	141.560	140.660	0.800	141.575	140.647	0.828

Link	US Node	Node Type	DS Node	Node Type
plot 1	Geocellular (plot 1)	Junction	Soakaway (offsite)	Junction
plot 2	Geocellular (plot 2)	Junction	Soakaway (offsite)	Junction

Simulation Settings

Rainfall Methodology	FEH-22	Winter CV	0.840	Drain Down Time (mins)	1440	Check Discharge Rate(s)	x
Rainfall Events	Singular	Analysis Speed	Detailed	Additional Storage (m³/ha)	20.0	Check Discharge Volume	x
Summer CV	0.750	Skip Steady State	✓	Starting Level (m)			

Storm Durations

15	60	180	360	600	960	2160	4320	7200	10080
30	120	240	480	720	1440	2880	5760	8640	

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)	Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	0	0	30	0	0	0
2	0	0	0	100	45	0	0

Node Geocellular (plot 1) Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Downstream Link	plot 1	Sump Available	✓
Replaces Downstream Link	x	Product Number	CTL-SHE-0033-5000-0900-5000
Invert Level (m)	141.249	Min Outlet Diameter (m)	0.075
Design Depth (m)	0.900	Min Node Diameter (mm)	1200
Design Flow (l/s)	0.5		

Node Geocellular (plot 2) Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Downstream Link	plot 2	Sump Available	✓
Replaces Downstream Link	x	Product Number	CTL-SHE-0033-5000-0900-5000
Invert Level (m)	140.660	Min Outlet Diameter (m)	0.075
Design Depth (m)	0.900	Min Node Diameter (mm)	1200
Design Flow (l/s)	0.5		

Node Geocellular (plot 1) Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	141.249
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	39

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	4.0	4.0	0.399	4.0	6.8	0.400	0.0	6.8

Node Geocellular (plot 2) Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	140.660
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	4.0	4.0	0.399	4.0	6.8	0.400	0.0	6.8

Node Soakaway (offsite) Soakaway Storage Structure

Base Inf Coefficient (m/hr)	0.00360	Porosity	0.30	Pit Width (m)	1.200	Inf Depth (m)	
Side Inf Coefficient (m/hr)	0.00360	Invert Level (m)	140.200	Pit Length (m)	14.000	Number Required	1
Safety Factor	2.0	Time to half empty (mins)	2725	Depth (m)			

Results for 1 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
30 minute winter	Geocellular (plot 1)	22	141.290	0.041	0.4	0.1614	0.0000	OK
30 minute winter	Geocellular (plot 2)	23	140.703	0.043	0.4	0.1704	0.0000	OK
600 minute winter	Soakaway (offsite)	450	140.525	-0.123	0.2	1.6354	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
30 minute winter	Geocellular (plot 1)	plot 1	Soakaway (offsite)	0.2	0.826	0.010	0.0004
30 minute winter	Geocellular (plot 2)	plot 2	Soakaway (offsite)	0.2	0.351	0.031	0.0007
600 minute winter	Soakaway (offsite)	Infiltration		0.0			

Results for 2 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
30 minute winter	Geocellular (plot 1)	23	141.311	0.062	0.6	0.2440	0.0000	OK
30 minute winter	Geocellular (plot 2)	23	140.725	0.065	0.6	0.2547	0.0000	OK
720 minute winter	Soakaway (offsite)	525	140.656	0.009	0.2	2.2996	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
30 minute winter	Geocellular (plot 1)	plot 1	Soakaway (offsite)	0.3	0.934	0.015	0.0005
30 minute winter	Geocellular (plot 2)	plot 2	Soakaway (offsite)	0.3	0.399	0.048	0.0009
720 minute winter	Soakaway (offsite)	Infiltration		0.0			

Results for 30 year Critical Storm Duration. Lowest mass balance: 97.52%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
30 minute winter	Geocellular (plot 1)	27	141.460	0.211	1.6	0.8370	0.0000	SURCHARGED
360 minute winter	Geocellular (plot 2)	336	140.965	0.305	0.3	1.1995	0.0000	SURCHARGED
360 minute winter	Soakaway (offsite)	360	140.964	0.317	0.6	3.8503	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
30 minute winter	Geocellular (plot 1)	plot 1	Soakaway (offsite)	0.4	0.991	0.018	0.0005
360 minute winter	Geocellular (plot 2)	plot 2	Soakaway (offsite)	0.3	0.397	0.047	0.0101
360 minute winter	Soakaway (offsite)	Infiltration		0.0			

Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 91.28%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute winter	Geocellular (plot 1)	49	141.961	0.712	2.0	1.6320	0.0000	FLOOD RISK
600 minute winter	Geocellular (plot 2)	570	141.556	0.896	0.4	1.6373	0.0000	FLOOD RISK
600 minute winter	Soakaway (offsite)	585	141.546	0.899	0.5	6.7823	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
60 minute winter	Geocellular (plot 1)	plot 1	Soakaway (offsite)	0.5	1.054	0.022	0.0006
600 minute winter	Geocellular (plot 2)	plot 2	Soakaway (offsite)	0.5	0.354	0.085	0.0101
600 minute winter	Soakaway (offsite)	Infiltration		0.0			

Appendix G – Suds Water Quality Matrix



SUMMARY TABLE		DESIGN CONDITIONS			
		1	2	3	4
Land Use Type	Residential roofing				
Pollution Hazard Level	Very low				
Pollution Hazard Indices					
TSS	0.2				
Metals	0.2				
Hydrocarbons	0.05				
SuDS components proposed					
Component 1	Filter drain (where the trench is not designed as an infiltration component)	SuDS components can only be assumed to deliver these indices if they follow design guidance with respect to hydraulics and treatment set out in the relevant technical component chapters of the SuDS Manual. See also checklists in Appendix B	Filter drains should be preceded by upstream component(s) that trap(s) silt, or designed specifically to retain sediment in a separate zone, easily accessible for maintenance, such that the sediment will not be re-suspended in subsequent events		
Component 2	None				
Component 3	None				
SuDS Pollution Mitigation Indices					
TSS	0.4				
Metals	0.4				
Hydrocarbons	0.4				
Groundwater protection type	None				
Groundwater protection					
Pollution Mitigation Indices					
TSS	0				
Metals	0				
Hydrocarbons	0				
Combined Pollution Mitigation Indices		Reference to local planning documents should also be made to identify any additional protection required for sites due to habitat conservation (see Chapter 7 The SuDS design process). The implications of developments on or within close proximity to an area with an environmental designation, such as a Site of Special Scientific Interest (SSSI), should be considered via consultation with relevant conservation bodies such as Natural England			
TSS	0.4				
Metals	0.4				
Hydrocarbons	0.4				
Acceptability of Pollution Mitigation					
TSS	Sufficient				
Metals	Sufficient				
Hydrocarbons	Sufficient				

Appendix H – Designers Risk Assessment



[illegible]

Appendix I – Suds Operation & Maintenance Schedule



Feature	SuDS Manual Chapter	Maintenance Schedule	Required action	Typical frequency	Responsibility
Soakaway	13.12	Regular Maintenance	Inspect for sediment and debris in pre-treatment components and floor of inspection tube or chamber and inside of concrete manhole rings	Annually	Homeowner
			Cleaning of gutters and any downpipe filters	Annually (or as required based on inspections)	Homeowner
			Trimming any roots that may cause blockages	Annually (or as required)	Homeowner
		Occasional Maintenance	Remove sediment and debris in pre-treatment components and floor of inspection tube or chamber and inside of concrete manhole rings	As required, based on inspections	Homeowner
		Remedial Actions	Reconstruct soakaway and/or replace or clean void fill, if performance deteriorates or failure occurs	As required	Homeowner
			Replacement of clogged geotextile (will require reconstruction of soakaway)	As required	Homeowner
		Monitoring	Inspect silt traps and note rate of sediment accumulation	Monthly in the first year, then annually	Homeowner
			Check soakaway to ensure emptying is occurring	Annually	Homeowner
Proprietary treatment Systems	14.12	Routine Maintenance	Remove litter and debris and inspect for sediment, oil and grease accumulation	Six monthly	Homeowner
			Change filter media where applicable	As recommended by manufacturer	Homeowner
			Remove sediment, oil grease and floatables	As necessary - indicated by system inspections or immediately following significant spill	Homeowner
		Remedial actions	Replace malfunctioning parts or structures	As required	Homeowner
		Monitoring	Inspect for evidence of poor operation	Six monthly	Homeowner
			Inspect filter media and establish appropriate replacement frequencies	Six monthly	Homeowner
			Inspect sediment accumulation rates and establish appropriate removal frequencies	Monthly during first half year of operation, then every six months	Homeowner
Filter Drains	16.12	Regular Maintenance	Remove litter (including leaf litter) and debris from filter drain surface, access chambers and pre-treatment devices	Monthly (or as required)	Homeowner
			Inspect filter drain surface, inlet/outlet pipework and control systems for blockages, clogging, standing water and structural damage	Monthly	Homeowner
			Inspect pre-treatment systems, inlets and perforated pipework for silt accumulation, and establish appropriate silt removal frequencies	Six monthly	Homeowner
			Remove sediment from pre-treatment devices	Six monthly, or as required	Homeowner
		Occasional Maintenance	Remove or control tree roots where they are encroaching the sides of the filter drain, using recommended methods (e.g. NJUG, 2007 or BS 3998:2010)	As required	Homeowner
			At locations with high pollution loads, remove surface geotextile and replace, and wash or replace overlying filter medium	Five yearly, or as required	Homeowner
			Clear perforated pipework of blockages	As required	Homeowner
Attenuation storage tanks	21.13	Regular Maintenance	Inspect and identify any areas that are not operating correctly. if required, take remedial action	Monthly for 3 months, then annually	Homeowner
			Remove debris from catchment surface (where it may cause risks to performance)	Monthly	Homeowner
			For systems where rainfall infiltrates into the tank from above, check surface of filter for blockage by sediment, algae or other matter; remove and replace surface infiltration medium as necessary	Annually	Homeowner
			Remove sediment from pre-treatment structure and/or internal forebays	Annually, or as required	Homeowner
		Remedial actions	Repair/rehabilitate inlets, outlets, overflows and vents	As required	Homeowner
		Monitoring	Inspect/check all inlets, outlets, vents and overflows to ensure that they are in good condition and operating as designed	Annually	Homeowner
			Survey inside of the tank for sediment build-up and remove if necessary	Every 5 years or as required	Homeowner
Private drainage network (pipes, chambers and gullies)	N/A	Regular maintenance	Inspect and identify any areas that are not operating correctly. If required, take remedial action	Monthly for 3 months, then annually	Homeowner
			Remove debris from gully covers and other inlet/outlets	Monthly	Homeowner
			Remove sediments and debris from bottom of gully and/or catchpit sumps.	Annually	Homeowner
		Occasional Maintenance	Water jet pipes to flush out any sediments and debris. Where blockages are suspected that cannot be flushed out, a drainage CCTV survey should be carried out and remediation action taken.	As required, or after sever storms	Homeowner
		Remedial Actions			
			Repair any damage and carry out pipe lining where required	As required	Homeowner