

Surface Water Drainage and Maintenance Statement

Project Yapton Free Church, Main Road, Yapton
Project Number 22815
By Tom Zajac
Date 29 June 2017

Proposed Development

The proposed development is for the extension and alteration to improve existing kitchen facilities and provide a disabled toilet to the existing Yapton Church building located to the south of Main Road, Yapton, BN18 0ED.

The site location plan, existing site and proposed site layouts are attached in Appendix 1 at the rear of this statement.

Design Criteria

The surface water drainage system has been designed in accordance with the National Planning Policy Framework (NPPF) and its accompanying Guidance and Technical Standards for SuDS. It also complies with the requirements under Building Regulations Part H.

The surface water drainage system has been designed to accept the discharge from a 100 year return period pluvial event with a further 40% allowance for future climate change.

In accordance with the CIRIA SuDS Manual 2015 (Report C753), NPPF and Building Regulations Part H the surface water drainage design follows a discharge destination hierarchy ranging from infiltration to ground as first priority before consideration for discharging to a watercourse and as a last resort discharging to a public sewer.

Geology

The information available from British Geological Survey (BGS) indicates that the proposed site is underlain by Lewes Nodular Chalk Formation overlaid by River Terrace Deposits.

The nearest available BGS borehole log information notes that the groundwater levels were recorded at varying depths between 1.9m and 2.0m below existing ground levels.

Onsite monitoring of groundwater levels has been undertaken to a depth of 2.1m below existing ground level over the period from 8 March 2017 to 31 May 2017. During that period ground water level has been recorded at 2.045m below the existing ground level.



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Infiltration tests to BRE 365 have been undertaken confirming the site is suitable to drain to ground via infiltration. Infiltration rates of 3.95×10^{-5} m/s and 1.03×10^{-5} m/s have been calculated from the test results. The worse case soakage rate of 1.03×10^{-5} m/s has been adopted for design purposes.

Copies of the British Geological Survey maps together with extracts of borehole log information and BRE 365 test results together with soil permeability calculations are attached in Appendix 2 at the rear of this statement.

Surface Water

The proposed development area comprises 20m² extension of roof area.

Surface water runoff from the roof area will be collected and discharged into the ground either via cellular or gravel filled trench soakaway.

The Environment Agency recommendation and best practice suggest a minimum buffer zone of 1m between the invert level of any infiltration system and the top of groundwater level to allow suitable treatment of any runoff before entering the aquifer.

From the drainage calculations either a 1.5m wide, 3m long and 0.6m deep gravel filled trench soakaway or a 1.5m wide, 2m long and 1 crate deep cellular crates soakaway system would be sufficient to accept the discharge from a 100 year rainfall return period with a further 40% allowance for future climate change.

The drainage calculations and proposed surface water drainage layout are attached in Appendix 3 at the rear of this statement.

Surface Water Quality

Table 26.2 in Chapter 26 of CIRIA report C753 The SuDS Manual provides Pollution Hazard Indices for varying land types and uses and defines residential roofs to be at very low potential for pollution. The table below summarises the anticipated pollution index from the proposed development.

Land Use	Pollution hazard level	Total suspended solids (TSS)	Metals	Hydro-carbons
Residential roof	Very low	0.2	0.2	0.05

Based on the SuDS Manual the discharge of clean roof water directly to ground is acceptable. However, all roof water downpipes need to be sealed against pollutants entering the system from polluted surface runoff, effluent disposal or other form of discharge.

The proposed drainage system accounts for the minimum 1m buffer zone between the invert level of infiltration system and the top of recorded groundwater level. This will minimise the risk of groundwater rising into the infiltration component and protect the functionality of the infiltration process by ensuring a sufficient depth of unsaturated material is provided which will also protect groundwater from any contamination in the runoff.

Indicative Schedule of Maintenance

Once appointed the Contractor will prepare a site specific method statement for the control of silt and other pollutants during construction. Ciria Report C532, Control of Water Pollution from Construction Sites, provides further guidance on this.

The Contractor will maintain the proposed drainage system during construction and until the handing over of the site. Upon completion the maintenance will be passed on to the Church management team.

The maintenance schedule below details the typical tasks to be undertaken at different intervals.

Indicative Schedule of Maintenance for the Proposed Surface Water Drainage System:

Maintenance Schedule	Required Action	Frequency
Regular Maintenance	Remove sediment and debris from silt trap, inlet chambers and slot/aco channels	6 monthly
	Litter and debris removal – above ground	Monthly or as required
	Litter and debris removal – catch pits/ drain channels	Monthly or as required
Irregular Maintenance	Remove debris / blockages to silt traps, aco channels	As required
Corrective Maintenance	Repairs to access chambers	As required
	Inspect inlet, outlet from downpipe and gullies for blockages, standing water and clear	As required

**Yapton Free Church, Main Road, Yapton
Surface Water Maintenance Summary Sheet:
For Church Management Team**

Inspection/Action Required	Gutters	Silt Traps, Drain Channels	Surface Water Pipework	Manholes
After leaf fall in Autumn	✓	✓		
6 Months	✓	✓		
1 Year				✓
2 Years			✓	

List of Appendices

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|------------|---|
| Appendix 1 | Site Location Plan, Existing Site Layout Plan and Proposed Site Layout |
| Appendix 2 | British Geological Survey Maps, Borehole Log Information, BRE 365 Test Results and Soil Permeability Calculations |
| Appendix 3 | Surface Water Drainage Calculations and Proposed Surface Water Drainage Layout |

Appendix 1
Site Location Plan
Existing Site Layout
Proposed Site Layout





Existing Site Layout

SCALE
1:100 @ A3



Proposed Site Layout

1:100 @ A3

Appendix 2

**British Geological Survey Maps,
Borehole Log Information,
BRE 365 Test Results and
Soil Permeability Calculations**



British Geological Survey

NATURAL ENVIRONMENT RESEARCH COUNCIL

Geology of Britain viewer



[More BGS map viewers](#)



Surface Geology

3D Models



Borehole Scans



Earthquake Timeline

Surface Geology

- ☒ Superficial only
- ☐ Bedrock only
- ☐ Bedrock and Superficial

Visible geology:
1:50 000 scale

Geology
Key

[More on digital geology](#)



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Location

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Basemap

100% 0%

Geology Transparency

Grid Ref: 500822, 106042

BN180EA

Superficial geology

1:50 000 scale superficial deposits description:
River Terrace Deposits (undifferentiated) - Sand, Silt And Clay. Superficial Deposits formed up to 3 million years ago in the Quaternary Period. Local environment previously dominated by rivers.

Setting: rivers. These rocks were formed from rivers depositing mainly sand and gravel detrital material in channels to form river terrace deposits, with fine silt and clay from overbank floods forming floodplain alluvium, and some bogs depositing peat; includes estuarine and coastal plain deposits mapped as alluvium.

[Further details](#)

[What are Superficial Deposits?](#)

[To purchase detailed geological reports for this area, try our GeoReports service](#)

0 0.3 0.6km

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British Geological Survey

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Surface Geology

3D Models

Borehole Scans

Earthquake Timeline

Surface Geology

- ☐ Superficial only
- ☒ Bedrock only
- ☐ Bedrock and Superficial

Visible geology:
1:50 000 scale

Geology
Key

[More on digital geology](#)



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Grid Ref: 500931, 106045

BN180EA

Bedrock geology

1:50 000 scale bedrock geology description: Lewes Nodular Chalk Formation, Seaford Chalk Formation, Newhaven Chalk Formation, Culver Chalk Forma. Sedimentary Bedrock formed approximately 71 to 94 million years ago in the Cretaceous Period. Local environment previously dominated by warm chalk seas.

Setting: warm chalk seas. These rocks were formed in warm shallow 'Chalk' shelf seas with little sediment input from land. They often consist of a calcareous ooze of the microscopic remains of plankton, especially the disc shaped calcite plates or coccoliths that make up the spherical coccolithophores.

[Further details](#)

[What is Bedrock Geology?](#)

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Surface
Geology

3D
Models



Borehole
Scans



Earthquake
Timeline

Borehole Scans

Click on a borehole to view
scan.

Borehole depth

- 0 - 10m
- 10 - 30m
- 30m+
- Unknown
- Confidential
or Restricted

[More on boreholes](#)

Go to
Location

Switch
Basemap

100% 0%

Geology Transparency

Grid Ref: 499096, 104638

0 0.15 0.3km

esri

SU 90 SE 29 9738 0335

North-east end of Drove Lane, Yapton

Surface level +6.6 m
Water struck at +1.9 m
October 1981

Block H
Overburden 2.9 m
Mineral 1.0 m
Bedrock 2.3 m+

LOG

Geological classification

Lithology

Thickness Depth
m m

	Soil	0.5	0.5
Brickearth	Clay, brown, silty	1.4	1.9
Raised Beach Deposits (younger)	Silt, chalky, with chalk pebbles	1.0	2.9
	'Very clayey' sandy gravel	1.0	3.9
	Gravel: coarse with flint dominant, and fine with chalk dominant; some cobbles		
	Sand: fine with some medium and coarse; coarse mostly chalk		
	Fines: silt and clay, chalky		
Upper Chalk	Chalk, rubbly, soft, silty and sandy to 6.0 m	2.3+	6.2

GRADING

Mean for deposit percentages			Depth below surface (m)	Percentages						
Fines	Sand	Gravel		Fines	Sand	Gravel				
				-1/4	+1/4 - 1/2	+1/2 - 1	+1 - 4	+4 - 16	+16 - 64	+64 mm
35	38	27	2.9-3.9	35	28	4	6	10	14	3



British Geological Survey

SU 90 SE 33

9827 0349

British Geological Survey

Yapton Church

British Geological Survey

Block H

Surface level +6.4 m

Water not struck

September 1981

Waste 1.4 m

Bedrock 1.6 m+

LOG

Geological classification

British Geological Survey

Lithology

British Geological Survey

Thickness

m

Depth

m

British Geological Survey

Brickearth

Soil and made ground

0.3

0.3

Clay, very sandy, mottled brown and grey-brown; some small flint pebbles

1.1

1.4

Upper Chalk

Chalk, soft, weathered, pale yellowish brown; nodular flints

1.6+

3.0

British Geological Survey

British Geological Survey

British Geological Survey

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Yapton Free Church

Percolation Test Results

Thurs 15 June 2017

Test 1		Test 2		Test 3	
Time (min)	Depth to water (mm)	Time	Depth to water (mm)	Time	Depth to water (mm)
0950	0	1340	0	1730	0
0955	280	1350	310	1740	260
1000	510	1400	590	1750	530
1005	670	1410	800	1800	670
1010	850	1420	940	1810	790
1015	980	1430	1060	1820	895
1020	1090	1440	1150	1830	980
1025	1180	1450	1220	1840	1060
1030	1250	1500	1270	1850	1120
1035	1300	1510	1340	1900	1160
1040	1370	1520	1360	1910	1200
1045	1400	1530	1380	1920	1240
1050	1440	1540	1420	1930	1275
1055	1480	1550	1450	1940	1295
1100	1510	1600	1470	1950	1325
1110	1550	1610	1500	2000	1355
1120	1620	1620	1520	2010	1370
		1630	1540	2020	1390
		1640	1550	2030	1420
		1650	1565	2040	1435
		1700	1580	2050	1465
		1710	1600	2100	1480
				2110	1490
				2120	1510
				2130	1525
				2140	1530
				2150	1540
				2200	1555
				2210	1565
				2220	1575
				2230	1590
				2240	1600

Size of pit/bore hole width: 300mm, depth: 2.1m

Location: 4metres from external wall of building

Documents/YFC-extension to OCB/percolation test results 15.6.17

Soil Permeability Calculation

Yapton Free Church											
TEST 1				TEST 2				TEST 3			
Diameter of Borehole		0.3 m		Diameter of Borehole		0.3 m		Diameter of Borehole		0.3 m	
Surface area of pit		0.070685835 m ²		Surface area of pit		0.070685835 m ²		Surface area of pit		0.070685835 m ²	
Effective Depth (Initial depth of water)		1.62 m		Effective Depth (Initial depth of water)		1.6 m		Effective Depth (Initial depth of water)		1.6 m	
V _{p75-25}	0.05725553 m ³			V _{p75-25}	0.056548668 m ³			V _{p75-25}	0.056549 m ³		
a _{p50}	0.83409285 m ²			a _{p50}	0.824668072 m ²			a _{p50}	0.824668 m ²		
t _{p75-25}	time for water to fall from	1.215 m		t _{p75-25}	time for water to fall from	1.2 m		t _{p75-25}	time for water to fall from	1.2 m	
	to	0.405 m			to	0.4 m			to	0.4 m	
		1740 s				6660 s				5100 s	
Infiltration rate = V _{p75-25} / (a _{p50} × t _{p75-25})				Infiltration rate = V _{p75-25} / (a _{p50} × t _{p75-25})				Infiltration rate = V _{p75-25} / (a _{p50} × t _{p75-25})			
Infiltration rate =		3.95E-05 m/s		Infiltration rate =		1.03E-05 m/s		Infiltration rate =		1.34E-05 m/s	

Appendix 3

Surface Water Drainage Calculations
and Proposed Surface Water Drainage Layout

The Civil Engineering Practice

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11 Tungsten Building

George Street

Fishersgate BN41 1RA

22811 Yapton Free Church

The Old Church Building

Main Road, Yapton

Date 20 June 2017

File Aquacell Trench.srcx

Designed by TZ

Checked by SRM

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Source Control 2016.1

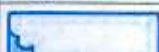
Summary of Results for 100 year Return Period (+40%)

Half Drain Time : 275 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	4.761	0.161	0.0	0.5	O K
30 min Summer	4.812	0.212	0.0	0.6	Flood Risk
60 min Summer	4.861	0.261	0.0	0.7	Flood Risk
120 min Summer	4.900	0.300	0.0	0.9	Flood Risk
180 min Summer	4.911	0.311	0.0	0.9	Flood Risk
240 min Summer	4.911	0.311	0.0	0.9	Flood Risk
360 min Summer	4.909	0.309	0.0	0.9	Flood Risk
480 min Summer	4.903	0.303	0.0	0.9	Flood Risk
600 min Summer	4.895	0.295	0.0	0.8	Flood Risk
720 min Summer	4.887	0.287	0.0	0.8	Flood Risk
960 min Summer	4.869	0.269	0.0	0.8	Flood Risk
1440 min Summer	4.835	0.235	0.0	0.7	Flood Risk
2160 min Summer	4.791	0.191	0.0	0.5	O K
2880 min Summer	4.754	0.154	0.0	0.4	O K
4320 min Summer	4.701	0.101	0.0	0.3	O K
5760 min Summer	4.667	0.067	0.0	0.2	O K
7200 min Summer	4.650	0.050	0.0	0.1	O K
8640 min Summer	4.644	0.044	0.0	0.1	O K
10080 min Summer	4.639	0.039	0.0	0.1	O K
15 min Winter	4.780	0.180	0.0	0.5	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
15 min Summer	128.238	0.0	22
30 min Summer	86.178	0.0	36
60 min Summer	55.250	0.0	64
120 min Summer	34.177	0.0	122
180 min Summer	25.410	0.0	180
240 min Summer	20.436	0.0	210
360 min Summer	15.037	0.0	272
480 min Summer	12.081	0.0	340
600 min Summer	10.185	0.0	408
720 min Summer	8.854	0.0	478
960 min Summer	7.093	0.0	616
1440 min Summer	5.178	0.0	882
2160 min Summer	3.772	0.0	1276
2880 min Summer	3.009	0.0	1644
4320 min Summer	2.184	0.0	2340
5760 min Summer	1.738	0.0	3048
7200 min Summer	1.455	0.0	3680
8640 min Summer	1.260	0.0	4408
10080 min Summer	1.115	0.0	5136
15 min Winter	128.238	0.0	22

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XP Solutions	Source Control 2016.1	

Summary of Results for 100 year Return Period (+40%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	4.839	0.239	0.0	0.7	Flood Risk
60 min Winter	4.895	0.295	0.0	0.8	Flood Risk
120 min Winter	4.941	0.341	0.0	1.0	Flood Risk
180 min Winter	4.956	0.356	0.0	1.0	Flood Risk
240 min Winter	4.958	0.358	0.0	1.0	Flood Risk
360 min Winter	4.953	0.353	0.0	1.0	Flood Risk
480 min Winter	4.945	0.345	0.0	1.0	Flood Risk
600 min Winter	4.934	0.334	0.0	1.0	Flood Risk
720 min Winter	4.921	0.321	0.0	0.9	Flood Risk
960 min Winter	4.895	0.295	0.0	0.8	Flood Risk
1440 min Winter	4.844	0.244	0.0	0.7	Flood Risk
2160 min Winter	4.780	0.180	0.0	0.5	O K
2880 min Winter	4.730	0.130	0.0	0.4	O K
4320 min Winter	4.663	0.063	0.0	0.2	O K
5760 min Winter	4.644	0.044	0.0	0.1	O K
7200 min Winter	4.637	0.037	0.0	0.1	O K
8640 min Winter	4.632	0.032	0.0	0.1	O K
10080 min Winter	4.629	0.029	0.0	0.1	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
30 min Winter	86.178	0.0	36
60 min Winter	55.250	0.0	64
120 min Winter	34.177	0.0	120
180 min Winter	25.410	0.0	176
240 min Winter	20.436	0.0	230
360 min Winter	15.037	0.0	288
480 min Winter	12.081	0.0	364
600 min Winter	10.185	0.0	442
720 min Winter	8.854	0.0	518
960 min Winter	7.093	0.0	666
1440 min Winter	5.178	0.0	950
2160 min Winter	3.772	0.0	1344
2880 min Winter	3.009	0.0	1708
4320 min Winter	2.184	0.0	2380
5760 min Winter	1.738	0.0	2992
7200 min Winter	1.455	0.0	3680
8640 min Winter	1.260	0.0	4416
10080 min Winter	1.115	0.0	5136

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XP Solutions	Source Control 2016.1	

Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	19.500	Shortest Storm (mins)	15
Ratio R	0.350	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.002

Time (mins)	Area	Time (mins)	Area
From: To:	(ha)	From: To:	(ha)
0 4	0.001	4 8	0.001

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11 Tungsten Building George Street Fishersgate BN41 1RA	22811 Yapton Free Church The Old Church Building Main Road, Yapton	
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XP Solutions	Source Control 2016.1	

Model Details

Storage is Online Cover Level (m) 5.100

Cellular Storage Structure

Invert Level (m) 4.600 Safety Factor 1.5
Infiltration Coefficient Base (m/hr) 0.03708 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.03708

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	3.0	3.0	2.600	0.0	7.1
0.200	3.0	4.3	2.800	0.0	7.1
0.400	3.0	5.4	3.000	0.0	7.1
0.600	3.0	6.5	3.200	0.0	7.1
0.800	0.0	7.1	3.400	0.0	7.1
1.000	0.0	7.1	3.600	0.0	7.1
1.200	0.0	7.1	3.800	0.0	7.1
1.400	0.0	7.1	4.000	0.0	7.1
1.600	0.0	7.1	4.200	0.0	7.1
1.800	0.0	7.1	4.400	0.0	7.1
2.000	0.0	7.1	4.600	0.0	7.1
2.200	0.0	7.1	4.800	0.0	7.1
2.400	0.0	7.1	5.000	0.0	7.1

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11 Tungsten Building George Street Fishersgate BN41 1RA	22815 Yapton Free Church The Old Church Building Main Road, Yapton	
Date 20 June 2017	Designed by TZ	
File TRENCH SOAKAWAY.SRCX	Checked by SRM	
XP Solutions	Source Control 2016.1	

Summary of Results for 100 year Return Period (+40%)

Half Drain Time : 149 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	4.775	0.325	0.0	0.4	O K
30 min Summer	4.873	0.423	0.0	0.6	Flood Risk
60 min Summer	4.958	0.508	0.0	0.7	Flood Risk
120 min Summer	5.002	0.552	0.0	0.7	Flood Risk
180 min Summer	5.002	0.552	0.0	0.7	Flood Risk
240 min Summer	4.989	0.539	0.0	0.7	Flood Risk
360 min Summer	4.960	0.510	0.0	0.7	Flood Risk
480 min Summer	4.929	0.479	0.0	0.6	Flood Risk
600 min Summer	4.898	0.448	0.0	0.6	Flood Risk
720 min Summer	4.867	0.417	0.0	0.6	Flood Risk
960 min Summer	4.810	0.360	0.0	0.5	Flood Risk
1440 min Summer	4.721	0.271	0.0	0.4	O K
2160 min Summer	4.631	0.181	0.0	0.2	O K
2880 min Summer	4.569	0.119	0.0	0.2	O K
4320 min Summer	4.504	0.054	0.0	0.1	O K
5760 min Summer	4.492	0.042	0.0	0.1	O K
7200 min Summer	4.485	0.035	0.0	0.0	O K
8640 min Summer	4.480	0.030	0.0	0.0	O K
10080 min Summer	4.477	0.027	0.0	0.0	O K
15 min Winter	4.817	0.367	0.0	0.5	Flood Risk

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
15 min Summer	128.238	0.0	21
30 min Summer	86.178	0.0	35
60 min Summer	55.250	0.0	62
120 min Summer	34.177	0.0	118
180 min Summer	25.410	0.0	146
240 min Summer	20.436	0.0	178
360 min Summer	15.037	0.0	246
480 min Summer	12.081	0.0	314
600 min Summer	10.185	0.0	382
720 min Summer	8.854	0.0	448
960 min Summer	7.093	0.0	578
1440 min Summer	5.178	0.0	824
2160 min Summer	3.772	0.0	1192
2880 min Summer	3.009	0.0	1532
4320 min Summer	2.184	0.0	2208
5760 min Summer	1.738	0.0	2936
7200 min Summer	1.455	0.0	3672
8640 min Summer	1.260	0.0	4400
10080 min Summer	1.115	0.0	5136
15 min Winter	128.238	0.0	21

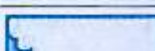
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Summary of Results for 100 year Return Period (+40%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	4.930	0.480	0.0	0.6	Flood Risk
60 min Winter	5.031	0.581	0.0	0.8	Flood Risk
120 min Winter	5.093	0.643	0.0	0.9	Flood Risk
180 min Winter	5.092	0.642	0.0	0.9	Flood Risk
240 min Winter	5.075	0.625	0.0	0.8	Flood Risk
360 min Winter	5.033	0.583	0.0	0.8	Flood Risk
480 min Winter	4.985	0.535	0.0	0.7	Flood Risk
600 min Winter	4.936	0.486	0.0	0.7	Flood Risk
720 min Winter	4.888	0.438	0.0	0.6	Flood Risk
960 min Winter	4.802	0.352	0.0	0.5	Flood Risk
1440 min Winter	4.684	0.234	0.0	0.3	O K
2160 min Winter	4.570	0.120	0.0	0.2	O K
2880 min Winter	4.505	0.055	0.0	0.1	O K
4320 min Winter	4.488	0.038	0.0	0.1	O K
5760 min Winter	4.480	0.030	0.0	0.0	O K
7200 min Winter	4.475	0.025	0.0	0.0	O K
8640 min Winter	4.472	0.022	0.0	0.0	O K
10080 min Winter	4.470	0.020	0.0	0.0	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
30 min Winter	86.178	0.0	35
60 min Winter	55.250	0.0	62
120 min Winter	34.177	0.0	118
180 min Winter	25.410	0.0	170
240 min Winter	20.436	0.0	192
360 min Winter	15.037	0.0	268
480 min Winter	12.081	0.0	342
600 min Winter	10.185	0.0	414
720 min Winter	8.854	0.0	484
960 min Winter	7.093	0.0	612
1440 min Winter	5.178	0.0	864
2160 min Winter	3.772	0.0	1216
2880 min Winter	3.009	0.0	1524
4320 min Winter	2.184	0.0	2204
5760 min Winter	1.738	0.0	2896
7200 min Winter	1.455	0.0	3672
8640 min Winter	1.260	0.0	4376
10080 min Winter	1.115	0.0	5128

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Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	19.500	Shortest Storm (mins)	15
Ratio R	0.350	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.002

Time (mins)	Area	Time (mins)	Area
From: To:	(ha)	From: To:	(ha)
0 4	0.001	4 8	0.001

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Model Details

Storage is Online Cover Level (m) 5.100

Trench Soakaway Structure

Infiltration Coefficient Base (m/hr)	0.03708	Trench Width (m)	1.5
Infiltration Coefficient Side (m/hr)	0.03708	Trench Length (m)	3.0
Safety Factor	1.5	Slope (1:X)	0.0
Porosity	0.30	Cap Volume Depth (m)	0.650
Invert Level (m)	4.450	Cap Infiltration Depth (m)	0.300



DRAINAGE KEY:

Private Storm Drainage

-  Catchpit Manhole
-  Rodding Eye
-  AGO/Slot Drain
-  Rainwater Pipe
-  Soakaway Crates

AquaCell Prime (or similar approved) soakaway crates
2m x 1.5m x 0.4m deep
CL:9.500
SL:9.000
BL:8.600

SW 2 Catchpit
CL:9.550
IL:8.940

1000 3.5m @ 1:100

1000 6.1m @ 1:100

SW 1
CL:9.800
IL:9.000

1000 6.55m @ 1:100

5m Soakaway clearance boundary from proposed extension

Scale 1:100

Proposed Drainage Layout

Scale 1:100 @ A3

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