



Appendix D

Greenfield Run-off Calculation

Surface Water Attenuation Calculation

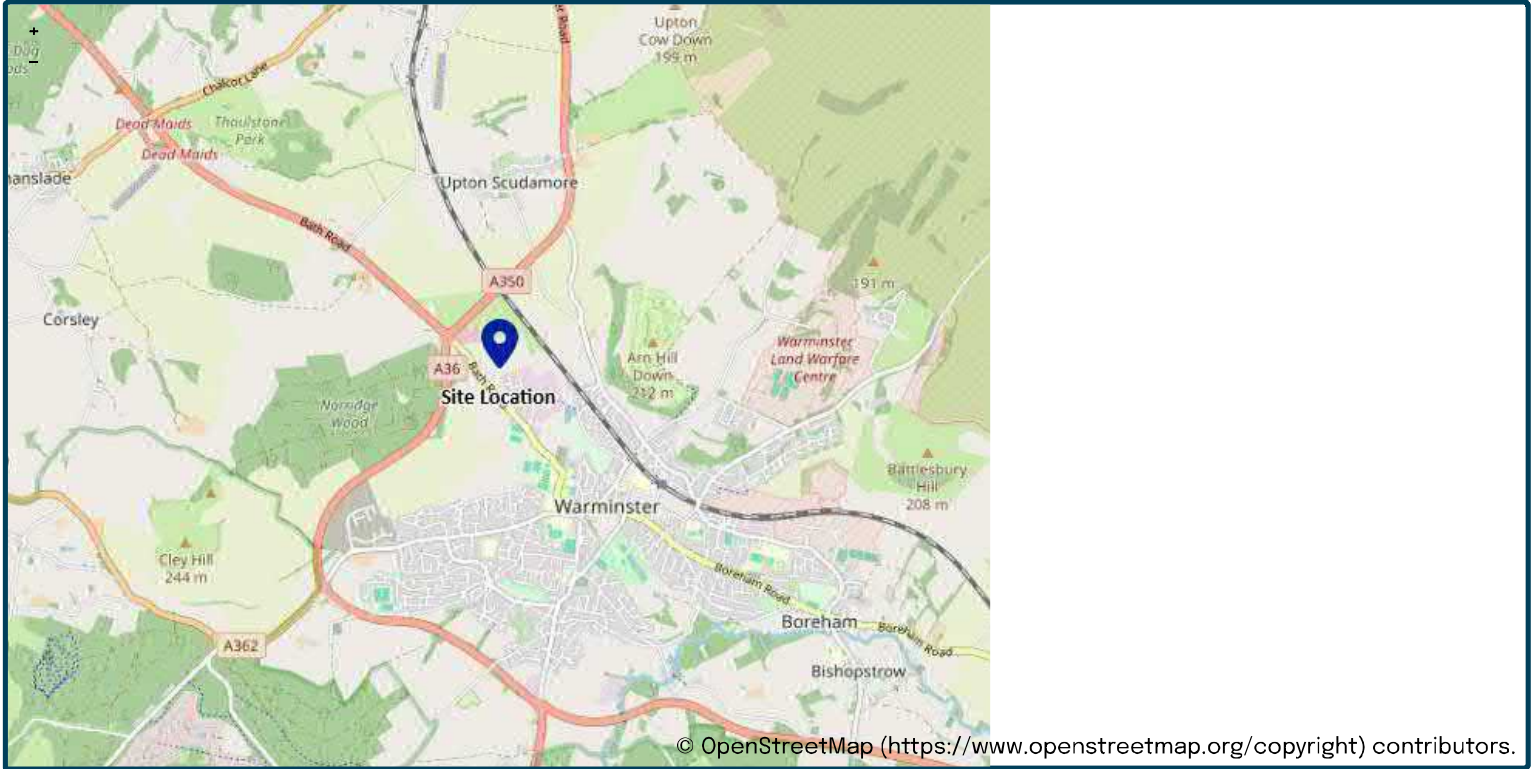
This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance “Rainfall runoff management for developments”, SC030219 (2013), the SuDS Manual C753 (CIRIA, 2015) and the non-statutory standards for SuDS (Defra, 2015). 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	28/10/2025
Calculated by	ND
Reference	Bath Road, Warminster
Model version	2.2.1

Location

Site name	Bath Road,
Site location	Warminster



Site easting (British National Grid)	386420
Site northing (British National Grid)	146095

Site details

Total site area (ha)	0.210	ha
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Greenfield runoff

Method

Method	FEH statistical (2025)
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FEH statistical (2025)

	My value		Map value
SAAR9120 (mm)	941	mm	
BFIHOST19scaled	0.881		
QMed-QBar conversion	1.075	☐	1.075
QMed (l/s)	0.2	l/s	
QBar (FEH statistical 2025) (l/s)	0.2	l/s	

Growth curve factors

	My value		Map value
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)	0.1	l/s
Flow rate 2 year (l/s)	0.2	l/s
Flow rate 10 years (l/s)	0.3	l/s
Flow rate 30 years (l/s)	0.4	l/s
Flow rate 100 years (l/s)	0.5	l/s
Flow rate 200 years (l/s)	0.5	l/s

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 (2.2.1) 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.

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	2	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	0.750	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Easting (m)	Northing (m)	Depth (m)
Depth/Area 1	0.213	5.00	119.550	35.584	65.826	1.600

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Normal	Starting Level (m)	
Rainfall Events	Singular	Skip Steady State	x	Check Discharge Rate(s)	x
Summer CV	0.750	Drain Down Time (mins)	240	Check Discharge Volume	x
Winter CV	0.840	Additional Storage (m³/ha)	0.0		

Storm Durations

15	30	60	120	180	240	360	480	600	720	960	1440
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Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0
30	40	0	0
100	45	10	0

Node Depth/Area 1 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	117.950	Product Number	CTL-SHE-0070-2000-0800-2000
Design Depth (m)	0.800	Min Outlet Diameter (m)	0.100
Design Flow (l/s)	2.0	Min Node Diameter (mm)	1200

Node Depth/Area 1 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	1.0	Invert Level (m)	117.950
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	220.0	220.0	0.750	220.0	259.4	0.751	0.0	259.4

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
360 minute winter	Depth/Area 1	256	118.077	0.127	5.3	26.5787	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)
360 minute winter	Depth/Area 1	Hydro-Brake®	1.9	38.8

Results for 30 year +40% CC 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
360 minute winter	Depth/Area 1	352	118.418	0.468	15.0	97.8707	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)
360 minute winter	Depth/Area 1	Hydro-Brake®	2.0	57.7

Results for 100 year +45% CC +10% A 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
600 minute winter	Depth/Area 1	570	118.686	0.736	14.5	153.7731	0.0000	OK
Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)				
600 minute winter	Depth/Area 1	Hydro-Brake®	2.0	81.4				

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	2	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	0.750	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Easting (m)	Northing (m)	Depth (m)
Depth/Area 1	0.008	5.00	122.200	35.589	65.826	0.600

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Normal	Starting Level (m)	
Rainfall Events	Singular	Skip Steady State	x	Check Discharge Rate(s)	x
Summer CV	0.750	Drain Down Time (mins)	240	Check Discharge Volume	x
Winter CV	0.840	Additional Storage (m³/ha)	0.0		

Storm Durations

15	30	60	120	180	240	360	480	600	720	960	1440
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Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0
30	40	0	0
100	45	10	0

Node Depth/Area 1 Online Orifice Control

Flap Valve	x	Design Depth (m)	0.200	Discharge Coefficient	0.600
Replaces Downstream Link	x	Design Flow (l/s)	0.5		
Invert Level (m)	121.600	Diameter (m)	0.023		

Node Depth/Area 1 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	1.0	Invert Level (m)	121.600
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Time to half empty (mins)	48

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	58.0	58.0	0.470	58.0	70.7	0.471	0.0	70.7

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 (m ³)	Flood (m ³)	Status
120 minute winter	Depth/Area 1	84	121.636	0.036	0.4	0.6214	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m ³)
120 minute winter	Depth/Area 1	Orifice	0.2	1.1

Results for 30 year +40% CC 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
120 minute winter	Depth/Area 1	90	121.725	0.125	1.2	2.1807	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)
120 minute winter	Depth/Area 1	Orifice	0.4	3.4

Results for 100 year +45% CC +10% A Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
120 minute winter	Depth/Area 1	92	121.790	0.190	1.8	3.3045	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m ³)
120 minute winter	Depth/Area 1	Orifice	0.5	5.0

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	2	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	0.750	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Easting (m)	Northing (m)	Depth (m)
Depth/Area 1	0.007	5.00	121.200	35.612	65.877	0.300

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Normal	Starting Level (m)	
Rainfall Events	Singular	Skip Steady State	x	Check Discharge Rate(s)	x
Summer CV	0.750	Drain Down Time (mins)	240	Check Discharge Volume	x
Winter CV	0.840	Additional Storage (m³/ha)	0.0		

Storm Durations

15	30	60	120	180	240	360	480	600	720	960	1440
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Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0
30	0	0	0
100	45	10	0

Node Depth/Area 1 Online Orifice Control

Flap Valve	x	Design Depth (m)	0.160	Discharge Coefficient	0.600
Replaces Downstream Link	x	Design Flow (l/s)	0.5		
Invert Level (m)	120.900	Diameter (m)	0.024		

Node Depth/Area 1 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	1.0	Invert Level (m)	120.900
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	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	13.5	13.5	0.200	24.0	24.4	0.201	0.0	24.4

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
120 minute winter	Depth/Area 1	82	120.933	0.033	0.3	0.4759	0.0000	OK
Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)				
120 minute winter	Depth/Area 1	Orifice	0.2	1.0				

Results for 30 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
60 minute winter	Depth/Area 1	47	120.977	0.077	1.2	1.2014	0.0000	OK
Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)				
60 minute winter	Depth/Area 1	Orifice	0.3	1.7				

Results for 100 year +45% CC +10% A 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
60 minute winter	Depth/Area 1	55	121.056	0.156	2.5	2.7357	0.0000	OK
Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)				
60 minute winter	Depth/Area 1	Orifice	0.5	3.7				

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	2	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	0.750	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Easting (m)	Northing (m)	Depth (m)
Depth/Area 1	0.013	5.00	122.800	35.589	65.826	0.600

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Normal	Starting Level (m)	
Rainfall Events	Singular	Skip Steady State	x	Check Discharge Rate(s)	x
Summer CV	0.750	Drain Down Time (mins)	240	Check Discharge Volume	x
Winter CV	0.840	Additional Storage (m³/ha)	0.0		

Storm Durations

15	30	60	120	180	240	360	480	600	720	960	1440
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Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0
30	40	0	0
100	45	10	0

Node Depth/Area 1 Online Orifice Control

Flap Valve	x	Design Depth (m)	0.400	Discharge Coefficient	0.600
Replaces Downstream Link	x	Design Flow (l/s)	0.5		
Invert Level (m)	122.200	Diameter (m)	0.019		

Node Depth/Area 1 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	1.0	Invert Level (m)	122.200
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Time to half empty (mins)	208

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	52.0	52.0	0.470	52.0	64.0	0.471	0.0	64.0

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 (m ³)	Flood (m ³)	Status
240 minute winter	Depth/Area 1	172	122.277	0.077	0.4	1.1946	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m ³)
240 minute winter	Depth/Area 1	Orifice	0.2	2.5

Results for 30 year +40% CC 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
120 minute winter	Depth/Area 1	110	122.468	0.267	2.0	4.1729	0.0000	OK
Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)				
120 minute winter	Depth/Area 1	Orifice	0.4	5.3				

Results for 100 year +45% CC +10% A 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
180 minute winter	Depth/Area 1	144	122.606	0.406	2.1	6.3316	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)
180 minute winter	Depth/Area 1	Orifice	0.5	8.1

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	2	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	0.750	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Easting (m)	Northing (m)	Depth (m)
Depth/Area 1	0.015	5.00	123.050	35.589	65.837	0.600

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Normal	Starting Level (m)	
Rainfall Events	Singular	Skip Steady State	x	Check Discharge Rate(s)	x
Summer CV	0.750	Drain Down Time (mins)	240	Check Discharge Volume	x
Winter CV	0.840	Additional Storage (m³/ha)	0.0		

Storm Durations

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

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0
30	40	0	0
100	45	10	0

Node Depth/Area 1 Online Orifice Control

Flap Valve	x	Design Depth (m)	0.410	Discharge Coefficient	0.600
Replaces Downstream Link	x	Design Flow (l/s)	0.5		
Invert Level (m)	122.450	Diameter (m)	0.019		

Node Depth/Area 1 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	1.0	Invert Level (m)	122.450
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Time to half empty (mins)	252

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	65.0	65.0	0.470	65.0	78.4	0.471	0.0	78.4

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
240 minute winter	Depth/Area 1	176	122.528	0.078	0.5	1.5173	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)
240 minute winter	Depth/Area 1	Orifice	0.2	2.7

Results for 30 year +40% CC 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
240 minute winter	Depth/Area 1	184	122.717	0.267	1.4	5.1978	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)
240 minute winter	Depth/Area 1	Orifice	0.4	7.2

Results for 100 year +45% CC +10% A 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
240 minute winter	Depth/Area 1	188	122.844	0.394	2.0	7.6770	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)
240 minute winter	Depth/Area 1	Orifice	0.5	9.3

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	2	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	0.750	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Easting (m)	Northing (m)	Depth (m)
Depth/Area 1	0.012	5.00	123.100	35.612	65.877	0.900

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Normal	Starting Level (m)	
Rainfall Events	Singular	Skip Steady State	x	Check Discharge Rate(s)	x
Summer CV	0.750	Drain Down Time (mins)	240	Check Discharge Volume	x
Winter CV	0.840	Additional Storage (m³/ha)	0.0		

Storm Durations

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

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0
30	40	0	0
100	45	10	0

Node Depth/Area 1 Online Orifice Control

Flap Valve	x	Design Depth (m)	0.410	Discharge Coefficient	0.600
Replaces Downstream Link	x	Design Flow (l/s)	0.5		
Invert Level (m)	122.200	Diameter (m)	0.019		

Node Depth/Area 1 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	1.0	Invert Level (m)	122.200
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Time to half empty (mins)	108

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	36.0	36.0	0.600	36.0	48.8	0.601	0.0	48.8

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 (m ³)	Flood (m ³)	Status
180 minute winter	Depth/Area 1	124	122.289	0.089	0.5	0.9598	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m ³)
180 minute winter	Depth/Area 1	Orifice	0.2	2.0

Results for 30 year +40% CC 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
180 minute winter	Depth/Area 1	136	122.528	0.328	1.4	3.5396	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)
180 minute winter	Depth/Area 1	Orifice	0.4	5.8

Results for 100 year +45% CC +10% A 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
180 minute winter	Depth/Area 1	140	122.700	0.500	2.0	5.3977	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)
180 minute winter	Depth/Area 1	Orifice	0.5	8.2

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	2	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	0.750	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Easting (m)	Northing (m)	Depth (m)
Depth/Area 1	0.022	5.00	123.420	35.612	65.845	0.620

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Normal	Starting Level (m)	
Rainfall Events	Singular	Skip Steady State	x	Check Discharge Rate(s)	x
Summer CV	0.750	Drain Down Time (mins)	240	Check Discharge Volume	x
Winter CV	0.840	Additional Storage (m³/ha)	0.0		

Storm Durations

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

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0
30	40	0	0
100	45	10	0

Node Depth/Area 1 Online Orifice Control

Flap Valve	x	Design Depth (m)	0.540	Discharge Coefficient	0.600
Replaces Downstream Link	x	Design Flow (l/s)	0.5		
Invert Level (m)	122.800	Diameter (m)	0.018		

Node Depth/Area 1 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	1.0	Invert Level (m)	122.800
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.30	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	74.0	74.0	0.600	74.0	92.3	0.601	0.0	92.3

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
240 minute winter	Depth/Area 1	176	122.911	0.110	0.7	2.4530	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)
240 minute winter	Depth/Area 1	Orifice	0.2	3.6

Results for 30 year +40% CC 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
240 minute winter	Depth/Area 1	192	123.183	0.383	2.1	8.5125	0.0000	OK
Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)				
240 minute winter	Depth/Area 1	Orifice	0.4	8.6				

Results for 100 year +45% CC +10% A 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
360 minute winter	Depth/Area 1	280	123.365	0.565	2.2	12.5443	0.0000	OK
Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)				
360 minute winter	Depth/Area 1	Orifice	0.5	13.0				

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	2	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	0.750	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Easting (m)	Northing (m)	Depth (m)
Depth/Area 1	0.023	5.00	123.550	35.618	65.877	0.600

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Normal	Starting Level (m)	
Rainfall Events	Singular	Skip Steady State	x	Check Discharge Rate(s)	x
Summer CV	0.750	Drain Down Time (mins)	240	Check Discharge Volume	x
Winter CV	0.840	Additional Storage (m³/ha)	0.0		

Storm Durations

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

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0
30	0	0	0
100	45	10	0

Node Depth/Area 1 Online Orifice Control

Flap Valve	x	Design Depth (m)	0.430	Discharge Coefficient	0.600
Replaces Downstream Link	x	Design Flow (l/s)	0.5		
Invert Level (m)	122.950	Diameter (m)	0.019		

Node Depth/Area 1 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	1.0	Invert Level (m)	122.950
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.30	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	109.0	109.0	0.470	109.0	126.4	0.471	0.0	126.4

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
480 minute winter	Depth/Area 1	320	123.034	0.084	0.5	2.7473	0.0000	OK
Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)				
480 minute winter	Depth/Area 1	Orifice	0.2	5.1				

Results for 30 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
360 minute winter	Depth/Area 1	272	123.142	0.192	1.2	6.2789	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)
360 minute winter	Depth/Area 1	Orifice	0.3	7.8

Results for 100 year +45% CC +10% A 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
360 minute winter	Depth/Area 1	288	123.366	0.416	2.3	13.6157	0.0000	OK
Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)				
360 minute winter	Depth/Area 1	Orifice	0.5	12.5				

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	2	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	0.750	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Easting (m)	Northing (m)	Depth (m)
Depth/Area 1	0.006	5.00	122.500	35.612	65.877	0.600

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Normal	Starting Level (m)	
Rainfall Events	Singular	Skip Steady State	x	Check Discharge Rate(s)	x
Summer CV	0.750	Drain Down Time (mins)	240	Check Discharge Volume	x
Winter CV	0.840	Additional Storage (m³/ha)	0.0		

Storm Durations

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

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0
30	0	0	0
100	45	10	0

Node Depth/Area 1 Online Orifice Control

Flap Valve	x	Design Depth (m)	0.200	Discharge Coefficient	0.600
Replaces Downstream Link	x	Design Flow (l/s)	0.5		
Invert Level (m)	121.900	Diameter (m)	0.023		

Node Depth/Area 1 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	1.0	Invert Level (m)	121.900
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Time to half empty (mins)	24

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	41.8	41.8	0.470	41.8	52.6	0.471	0.0	52.6

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
120 minute winter	Depth/Area 1	80	121.933	0.033	0.3	0.4163	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)
120 minute winter	Depth/Area 1	Orifice	0.2	0.9

Results for 30 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
60 minute winter	Depth/Area 1	48	121.979	0.079	1.0	0.9918	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)
60 minute winter	Depth/Area 1	Orifice	0.3	1.5

Results for 100 year +45% CC +10% A 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
60 minute winter	Depth/Area 1	49	122.078	0.178	2.2	2.2341	0.0000	OK
Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)				
60 minute winter	Depth/Area 1	Orifice	0.5	3.1				

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	2	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	0.750	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Easting (m)	Northing (m)	Depth (m)
Depth/Area 1	0.007	5.00	121.600	35.612	65.877	0.300

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Normal	Starting Level (m)	
Rainfall Events	Singular	Skip Steady State	x	Check Discharge Rate(s)	x
Summer CV	0.750	Drain Down Time (mins)	240	Check Discharge Volume	x
Winter CV	0.840	Additional Storage (m³/ha)	0.0		

Storm Durations

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

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0
30	0	0	0
100	45	10	0

Node Depth/Area 1 Online Orifice Control

Flap Valve	x	Design Depth (m)	0.130	Discharge Coefficient	0.600
Replaces Downstream Link	x	Design Flow (l/s)	0.5		
Invert Level (m)	121.300	Diameter (m)	0.026		

Node Depth/Area 1 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	1.0	Invert Level (m)	121.300
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	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	16.8	16.8	0.200	29.5	29.9	0.201	0.0	29.9

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
120 minute winter	Depth/Area 1	82	121.328	0.028	0.3	0.5023	0.0000	OK
Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)				
120 minute winter	Depth/Area 1	Orifice	0.2	1.0				

Results for 30 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
60 minute winter	Depth/Area 1	47	121.364	0.064	1.2	1.2049	0.0000	OK
Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)				
60 minute winter	Depth/Area 1	Orifice	0.3	1.7				

Results for 100 year +45% CC +10% A 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
60 minute winter	Depth/Area 1	55	121.430	0.130	2.5	2.7085	0.0000	OK
Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)				
60 minute winter	Depth/Area 1	Orifice	0.5	3.7				

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	2	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	0.750	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Easting (m)	Northing (m)	Depth (m)
Depth/Area 1	0.003	5.00	121.350	35.589	65.826	0.600

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Normal	Starting Level (m)	
Rainfall Events	Singular	Skip Steady State	x	Check Discharge Rate(s)	x
Summer CV	0.750	Drain Down Time (mins)	240	Check Discharge Volume	x
Winter CV	0.840	Additional Storage (m³/ha)	0.0		

Storm Durations

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

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0
30	40	0	0
100	45	10	0

Node Depth/Area 1 Online Orifice Control

Flap Valve	x	Design Depth (m)	0.120	Discharge Coefficient	0.600
Replaces Downstream Link	x	Design Flow (l/s)	0.3		
Invert Level (m)	120.750	Diameter (m)	0.020		

Node Depth/Area 1 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	1.0	Invert Level (m)	120.750
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Time to half empty (mins)	0

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	30.0	30.0	0.470	30.0	39.1	0.471	0.0	39.1

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
360 minute winter	Depth/Area 1	224	120.772	0.022	0.1	0.1995	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)
360 minute winter	Depth/Area 1	Orifice	0.1	0.5

Results for 30 year +40% CC 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
60 minute winter	Depth/Area 1	46	120.826	0.076	0.7	0.6821	0.0000	OK
Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)				
60 minute winter	Depth/Area 1	Orifice	0.2	1.0				

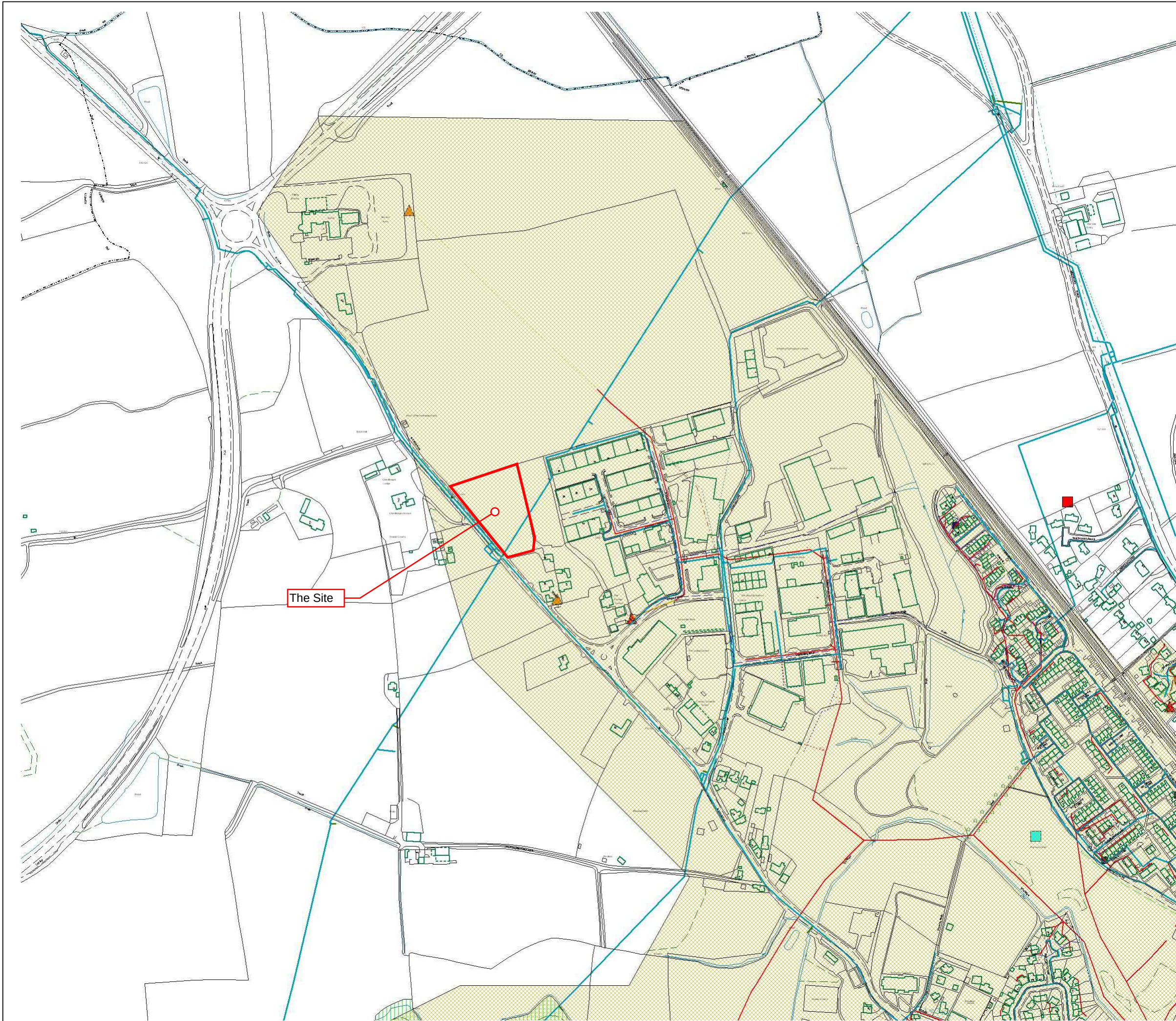
Results for 100 year +45% CC +10% A Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute winter	Depth/Area 1	48	120.868	0.118	1.1	1.0596	0.0000	OK
Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)				
60 minute winter	Depth/Area 1	Orifice	0.3	1.6				



Appendix E

Wessex Water Asset Mapping



Bath Road

BA12 8PF

Printed on : 05/03/2021 15:46

WATER MAINS

Public

Private

Public

Raw Water

Abandoned

Valve

Hydrant

PRV

Meter

SEWERS

Public - Section 104 - Private

Foul

Combined

Surface

Abandoned sewers

OTHER WESSEX PIPES

Rising Mains

Effluent Disposal Main

Overflow

NON-WESSEX PIPES

Private Rising Mains

Culverted Water Course

Highway Drain

Information in this plan 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.

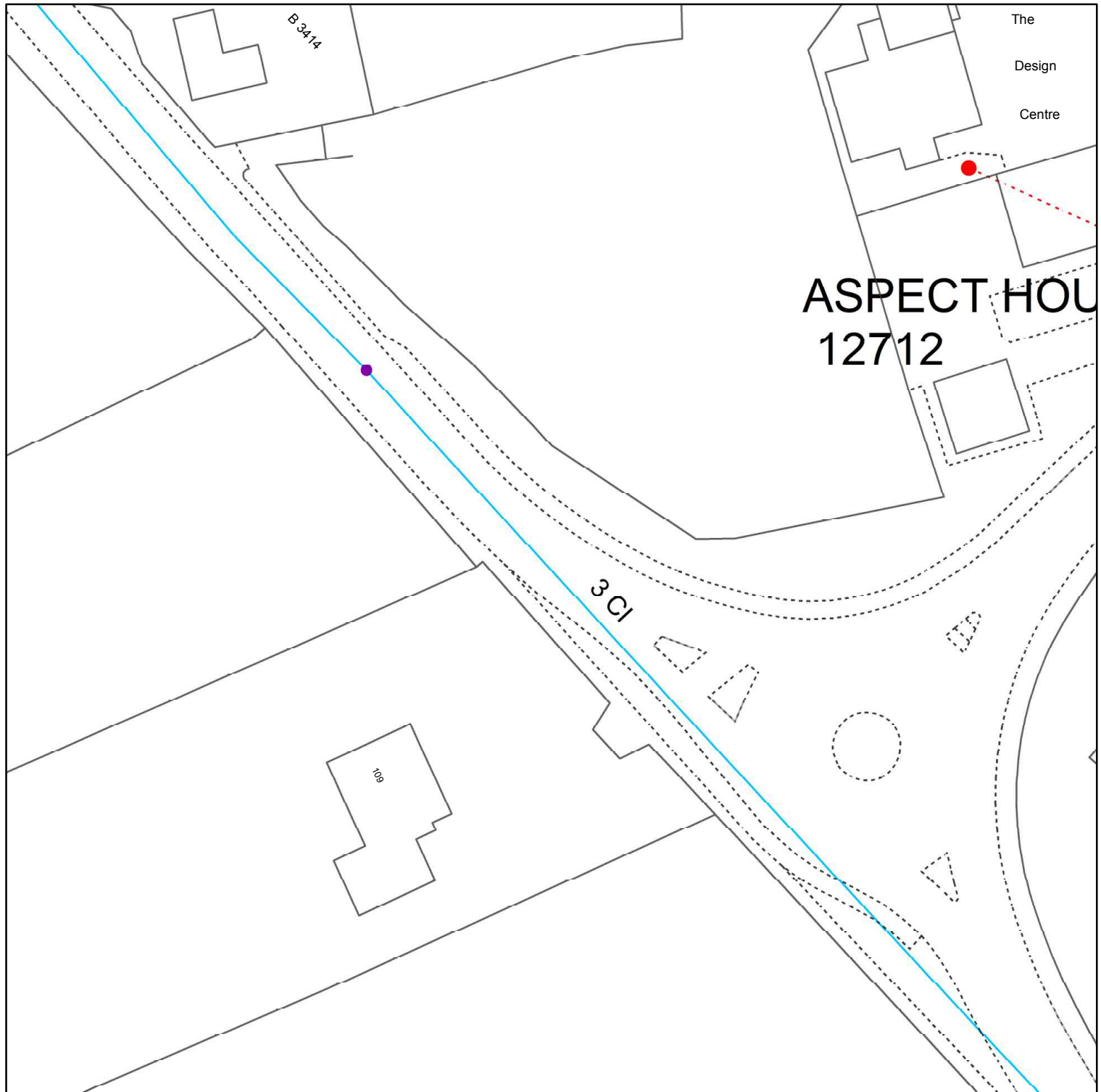
If you are considering any form of building works and pipe work is shown within the boundary of your property or a property to be purchased (or very close by) a surveyor should plot its exact position prior to commencing works or purchase. If you are proposing to build over or near Wessex Water's apparatus you should contact the Developer Services Team, tel: 01225 526333 or e-mail: developer.enquiries@wessexwater.co.uk to discuss your proposals to discuss your proposals.

Centre:386508.61 , 146133.09

Scale = 1:5000

Metres 100 200 300

Wessex Water Network Map



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WATER MAINS		SEWERS		STRATEGIC		PUBLIC		PRIVATE		SECTION 104		OTHER WESSEX PIPES		NON-WESSEX / UNKNOWN	
	Distribution		Foul								Rising Mains			Private Rising Mains	
	Washout		Surface								EDM			Culverted Watercourse	
	Raw Water		Combined								Overflow			Highway Drain	
	Abandoned		Abandoned								Syphon			Use Unknown	
	Private	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.															
FITTINGS		STRUCTURES			Pumping Station - Surface										
	Hydrant		Manhole - Foul		Pumping Stn - Foul/Combined										
	Other		Manhole - Surface		Gully										
			Manhole - Combined		Vent Column										
			Inlet		Rodding Eye										
			Outfall		Catchpit										
			Lamphole		Flushing Chamber										
			Bifurcation - Foul		Soakaway										
			Bifurcation - Surface		Non Return Valve										
			Bifurcation - Combined		Air Valve										
			Combined Sewage Overflow		Hatch Box										
					Washout										
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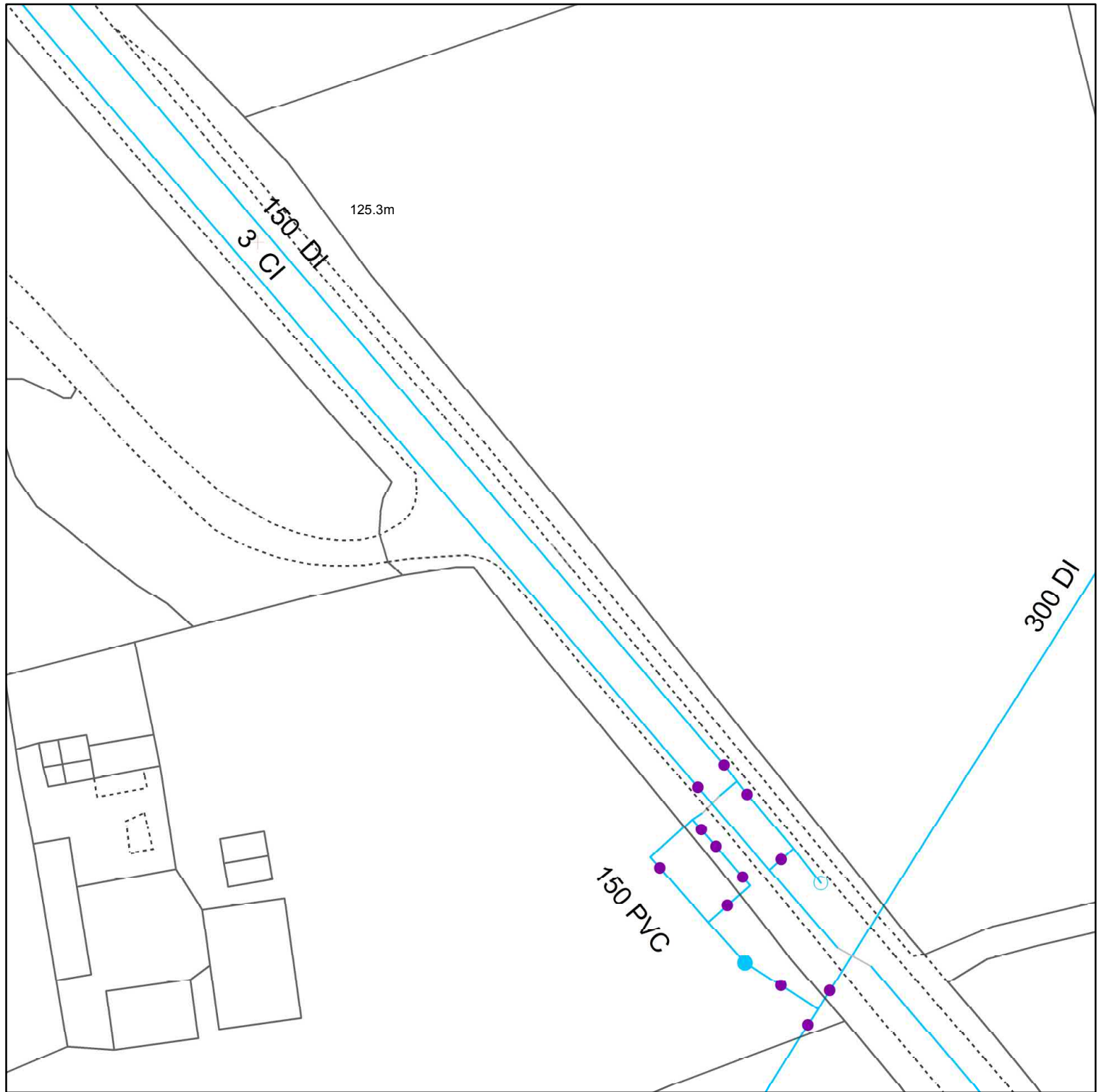
Wessex Water Network Map



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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 - EDM - Overflow - Syphon	- Private Rising Mains - Culverted Watercourse - Highway Drain - Use Unknown - Status Unknown
FITTINGS - Hydrant - Other	STRUCTURES - Manhole - Foul - Manhole - Surface - Manhole - Combined - Inlet - Outfall - 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	OTHER STRUCTURES - Attenuation Tank - Storage Tank - Chamber - Tunnel - Interceptor	Wessex Water YTL GROUP
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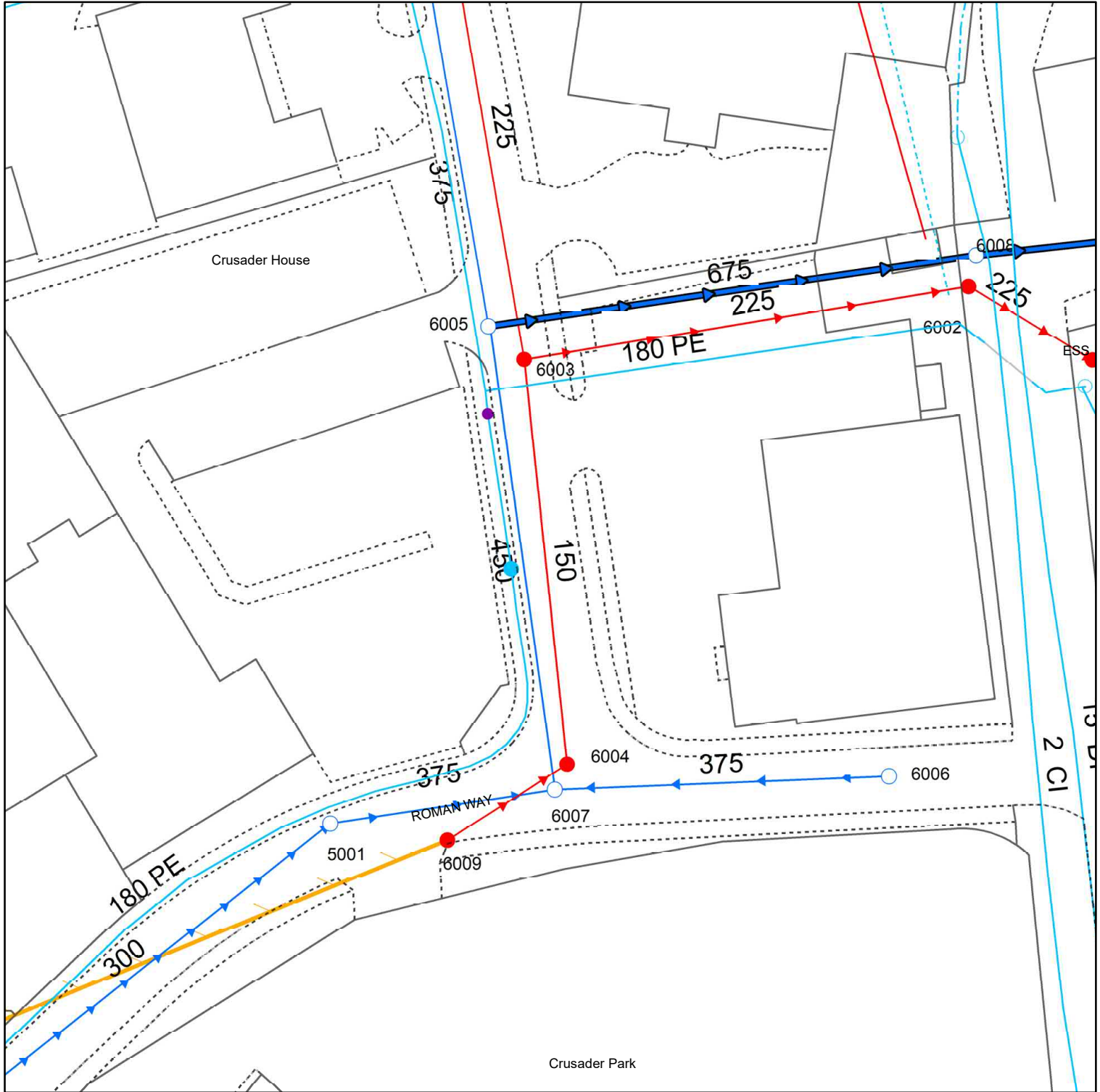
Wessex Water Network Map



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WATER MAINS		SEWERS		STRATEGIC		PUBLIC		PRIVATE		SECTION 104		OTHER WESSEX PIPES		NON-WESSEX / UNKNOWN																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
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Wessex Water Network Map



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WATER MAINS	SEWERS	STRATEGIC PUBLIC	PRIVATE	SECTION 104	OTHER WESSEX PIPES	NON-WESSEX / UNKNOWN
- Distribution - Washout - Raw Water - Abandoned - Private	- Foul - Surface - Combined - Abandoned 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.				- Rising Mains - EDM - Overflow - Syphon	- Private Rising Mains - Culverted Watercourse - Highway Drain - Use Unknown - Status Unknown
FITTINGS	STRUCTURES					
- Hydrant - Other	- Manhole - Foul - Manhole - Surface - Manhole - Combined - Inlet - Outfall - 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				
						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: 16/06/2021 Centre: 386623, 146053 Scale: 1:625 (when printed at A4 size)

Neil Doble

From: Stella Davies <Stella.Davies@wessexwater.co.uk>
Sent: 20 November 2025 12:30
To: Neil Doble
Cc: Dave Sartin
Subject: RE: WW DEV RESP PL52480 - 20-058 Bath Road, Warminster

Hello Neil,

Thank you for your email below.

In terms of surface water discharge:

- For discharge into highway drain you will need to liaise with the Highway Authority
- For discharge to NAV you will need to liaise with NAV it is Leep

For foul drainage,

- it is not in Wessex Water gift to offer you a connection into a private foul sewer network
- the nearest public foul sewer in Roman Way is FWMH ref: ST86466009, the agreed strategy would be based on connection via this manhole
- if you wish to use private sewer you need to obtain agreement from that sewer owner

We trust that the above clarifies and offers some assistance.

Note: These comments are based upon known circumstances prevailing at the time of writing. A review of the contents of this email is required where 18 months or more have elapsed since issue or in the light of significant changes likely to impact upon the response (e.g. changes in development numbers or phasing). Please email review requests to planning.liaison@wessexwater.co.uk

Best Regards,

Stella Davies
Senior Planning Liaison Engineer



Wessex Water
Operations Centre, Claverton Down, Bath BA2 7WW

Web ytl.com | wessexwater.co.uk



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This email is being sent to you on behalf of Wessex Water Limited, a company registered in England and Wales with number 02366633. Its registered office is Wessex Water Operations Centre, Claverton Down Road, Claverton Down, Bath, BA2 7WW.

From: Neil Doble <ndoble@ima-tp.com>
Sent: 18 November 2025 08:09
To: Stella Davies <Stella.Davies@wessexwater.co.uk>
Cc: Dave Sartin <dsartin@ima-tp.com>
Subject: WW DEV RESP PL52480 - 20-058 Bath Road, Warminster

Hi Stella,

Just to update you.

- The surface water proposals are now to discharge to the southwest of the development (subject to approvals/agreement). We are looking to connect into a highway manhole which we understand connects to the west into new attenuation basins(as part of the new development to the west). We understand that the sewers downstream of the highway sewer are to be adopted under a NAV (Leep Network) and would look to apply for the upstream highway sewers to be adopted under a S102 application.
- With regards to the foul, we are now looking at discharging to the south into the existing private foul network (serving house number 46-48) which falls by gravity into a private pumping station which then is pumped into the public sewer within Roman Way. You previously accepted this option in your correspondence dated 29th October 2024 but we just wanted to update you on the current proposals for the development.

I will note to the architect's to remove the trees within the watermain easement.

If you could just confirm if you still find this acceptable and I will include your response within the latest Flood Risk Assessment.

Kind regards,

Neil

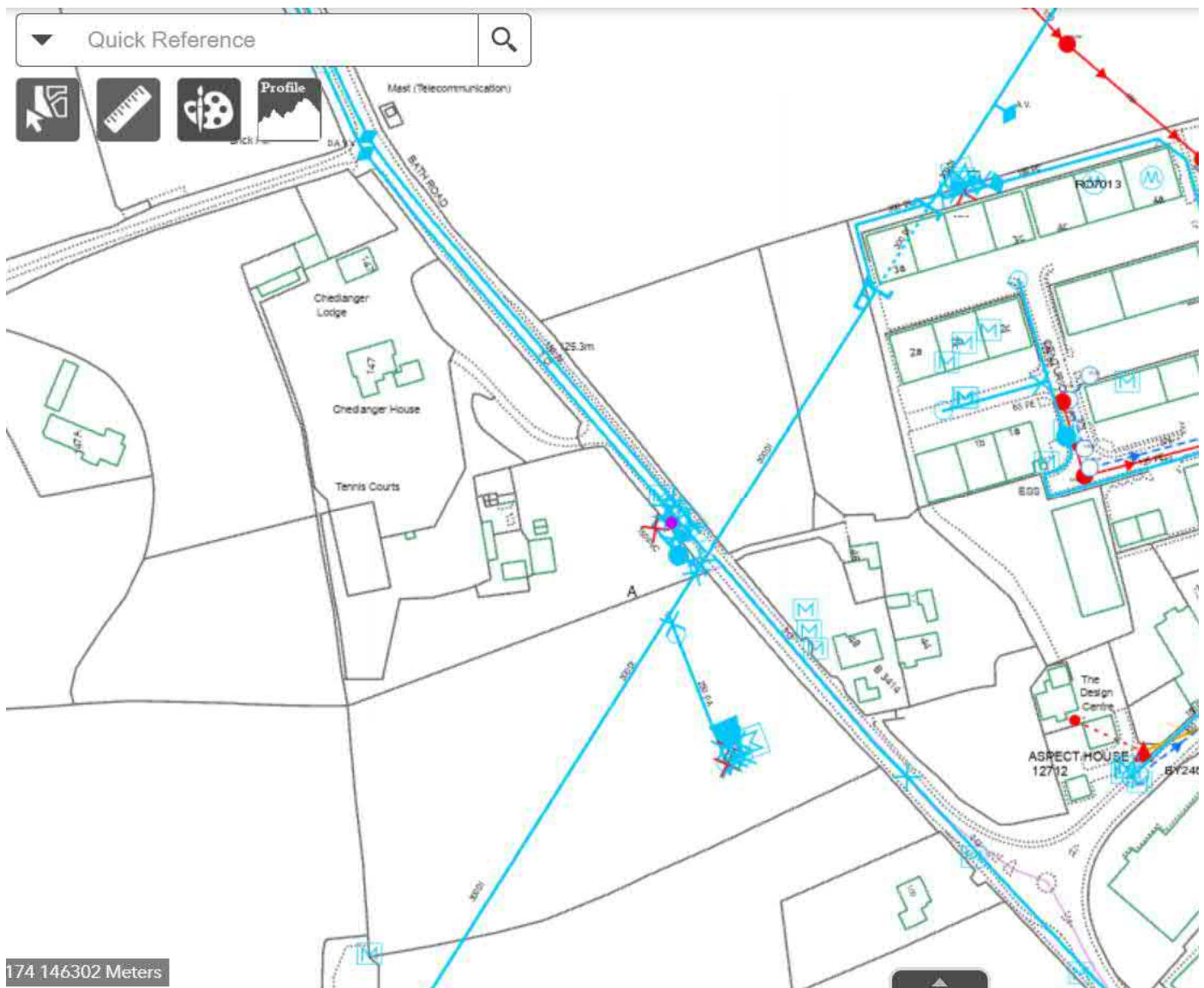
From: Stella Davies <Stella.Davies@wessexwater.co.uk>
Sent: 20 May 2025 10:47
To: Neil Doble <ndoble@ima-tp.com>
Cc: Dave Sartin <dsartin@ima-tp.com>
Subject: RE: WW DEV RESP PL52480 - 20-058 Bath Road, Warminster

Good morning, Neil,

Thank you for the below enquiry.

Foul Water

Wessex Water can offer you point of connection to the existing public sewer manhole ref ST86465103 (5103 on the below extract) located in Centurion Way (east of the site). On your plan you have shown a possible connection to a private foul drainage. Please note that any connections to a private system would need to be pursued with the owner of that system. Such a connection is outside Wessex Water control.



Developers may connect to the nearest public foul sewer at their cost on a 'size for size' basis, and Wessex Water are responsible for managing the sewer network to accommodate the additional domestic foul flows from granted development. We fund this through our infrastructure charging arrangements.

Connection is agreed by application. More information is available under the link: [Sewer connection](#)

Surface Water Drainage (rainwater falling onto, and running off, impermeable surfaces)

Surface water must be disposed of via the SuDS Hierarchy which is subject to Building Regulations and NPPF.

No surface water runoff, land drainage or ground water will be accepted into a public sewer that carries sewerage, either directly or indirectly.

As you can see from the attached map, there are no public surface water sewers on site or in the vicinity of the site.

The National Planning Policy Framework (NPPF) mandates that Sustainable Drainage Systems (SuDS) must be incorporated into new developments to manage surface water runoff, mitigate flood risks, and provide additional benefits, including enhanced water quality and green spaces. However, the proposed surface water drainage strategy fails to meet NPPF requirements regarding SuDS and sustainable development. Additionally, it omits compliance with the surface water discharge hierarchy.

In line with the drainage hierarchy outlined in Approved Document H of the Building Regulations, Planning Practice Guidance, and the necessity to address water scarcity, all surface water runoff should aim to be discharged as high up the following hierarchy as feasible:

- Rainwater reuse through harvesting or greywater recycling
- An adequate soakaway or other infiltration system
- A hybrid solution involving infiltration and discharge to a surface water body
- Discharge directly to a surface water body (e.g., an ordinary watercourse)
- Discharge to a surface water sewer, highway drain, or other drainage system

Wessex Water statement on surface water discharge can be accessed via the following link: [wwds-dev063p-surface-water-drainage-policy.pdf/](https://www.wessexwater.co.uk/dev063p-surface-water-drainage-policy.pdf/)

Review of your plan indicates connection to a Highway Drainage. Please liaise with the Wiltshire Council LLFA on the relevant agreements. Surface water drainage strategy to be agreed with the LLFA.

Proposed Layout and conflict with Wessex Water Assets

A review of the our assets map indicates the presence of an existing **300mm diameter water distribution main** crossing the site.

To accommodate this infrastructure, the development layout must be designed to include a dedicated **corridor along the water main's route**, ensuring a **minimum 5-meter standoff** on either side of the pipe.

Additionally:

- **No tree planting** is permitted within **6 meters** of the water main.
- The **mature tree canopy** and **root structure** must not interfere with Wessex Water apparatus or restrict access for maintenance and excavation along the public main.

Ensuring compliance with these requirements is essential for protecting the integrity of the water infrastructure and maintaining access for future operational needs.

The current layout shows trees encroaching the area that should be dedicated for the stand-off. This is not permitted. You would also review positioning of the dwellings.

More information about building near or over minor sewer can be found here: [Building near to or over a minor public sewer](#)

Note: These comments are based upon known circumstances prevailing at the time of writing. A review of the contents of this email is required where 18 months or more have elapsed since issue or in the light of significant changes likely to impact upon the response (e.g. changes in development numbers or phasing). Please email review requests to planning.liaison@wessexwater.co.uk

Best Regards,

Stella Davies

Senior Planning Liaison Engineer



Wessex Water

Operations Centre, Claverton Down, Bath BA2 7WW

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From: Neil Doble <ndoble@ima-tp.com>
Sent: 20 May 2025 08:14
To: Planning Liaison <planning.liaison@wessexwater.co.uk>
Cc: Dave Sartin <dsartin@ima-tp.com>
Subject: RE: WW DEV RESP PL52480 - 20-058 Bath Road, Warminster

Hi,

Thanks for your email. We have investigated the foul route to the south and there are potential issues with connecting through this route. We are looking at a possible alternative foul connection to the east of the site into Centurion Way (see attached). This would be a pumped to the boundary of the site and then a gravity connection through third party land (via sewer requisitions or through agreement with the land owner) to connect into public foul manhole 5103. We would be looking to offer length of gravity sewer for adoption. Can you confirm if this is also acceptable?

Please note we are looking at the surface water connection shown as a possible alternative surface water connection into highway drainage subject to a S102 application/capacity. We are aware that we would need to reach agreement through the highways authority and Leep for this connection.

Kind regards,
Neil

From: Planning Liaison
Sent: 29 October 2024 11:38
To: Neil Doble
Cc: Dave Sartin
Subject: FW: WW DEV RESP PL52480 - 20-058 Bath Road, Warminster
PL52480

Good Morning Neil,
Thank you for your email.

Water Supply

Subject to application Wessex Water will supply the proposed 9 dwellings via a connection to the 150mm public water main at Bath Road.

For more information and how to apply please see here: [Supply connections \(wessexwater.co.uk\)](https://www.wessexwater.co.uk/supply-connections)

Foul Water Disposal

Subject to application Wessex Water will accept the foul flows only from the proposed 9 dwellings via a connection to the public 150mm foul sewer located in Roman Way.

For more information and how to apply please see here: [Wastewater \(wessexwater.co.uk\)](https://www.wessexwater.co.uk/wastewater)

Surface Water Drainage

Surface water must be disposed of via the SuDS Hierarchy which is subject to Building Regulations.

Please Note: No surface water runoff, land drainage or ground water will be accepted into a public sewer that carries sewerage, either directly or indirectly.

We note you are proposing surface water discharge from the site to connect into the 300mm public surface water sewer at a rate of 2l/s for the 9 dwellings and this is acceptable to us. However, this must remain the maximum rate for the site for all events including for all 1 in 100 year storm events.

It is also important that there is no ingress of groundwater into our network from the proposed permeable paving.

Kind regards,

Lydia Daniel

Senior Planning Liaison Technician

Wessex Water

Claverton Down Bath BA2 7WW

wessexwater.co.uk



These comments are based upon known circumstances prevailing at the time of writing. A review of the contents of this email is required where 18 months or more have elapsed since issue or in the light of significant changes likely to impact upon the response (e.g. changes in development numbers or phasing). Please email review requests to

planning.liaison@wessexwater.co.uk

From: Neil Doble <ndoble@ima-tp.com>

Sent: Monday, October 28, 2024 12:08 PM

To: Planning Liaison <planning.liaison@wessexwater.co.uk>

Cc: Dave Sartin <dsartin@ima-tp.com>

Subject: 20-058 Bath Road, Warminster

Hi,

We have a site located off Bath Rd, Warminster. The development site is for 9 dwellings with access via the south of the site. Please find attached Conceptual Drainage Strategy drawing for your information.

Grid reference: 386384 , 146132

Postcode: BA12 7RY

We are looking for a capacity check for the following:

Foul Discharge Option 1

Possible connection to MH 5103 located to the east of the development site. Estimated proposed discharge rate 0.45l/s.

Foul Discharge Option 2

Possible connection to private chamber to the south of the development. Estimated discharge rate 0.45l/s.

Surface Water Discharge

Connection to 5901 at 2l/s (Qbar) for the 1:100 + 45% climate change event

If you could advise on capacity within your network. We look forwards to hearing from you.

Many Thanks,

Neil

Neil Doble

Infrastructure Engineer

IMA Transport Planning Ltd

Montreux House, 18A James Street West, Bath. BA1 2BT | Office: 01225 444 011 | DD: 01225 939129

E: ndoble@ima-tp.com | www.ima-tp.com

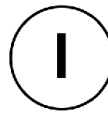


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Wessex Water Services Limited, Registered in England No 2366648. Registered Office – Wessex Water Operations Centre, Claverton Down Road, Claverton Down, Bath, BA2 7WW



Appendix F

Infiltration Testing

Mr Charles Woodhead
Greatworth Property Managers Ltd
127a High Street
Hungerford
RG17 0DL

14th June 2023

Dear Mr Woodhead

Re: Brick Hill Farm, Warminster – In-situ Infiltration and Percolation Testing

As instructed we attended the above site on the 12th and 13th June 2023 to undertake four in-situ infiltration and percolation tests at the general locations indicated by your engineer, as shown on the attached annotated plan, following agreement with Mr Ellis the site owner.

Summary of Site Works

The purpose of the works was to obtain the information necessary to support any future drainage solution discharging to land and to determine if the groundwater table is likely to be an issue.

For surface water discharge design four trial pits (SA01 to SA04), as detailed in Table 1, were dug to carryout infiltration tests in accordance with the procedures outlined in BRE Digest 365 Soakaway Design 1991. This test requires the time for the water level to drop from 25% to 75% to be recorded in three consecutive tests in order to calculate the infiltration rate.

Table 1 – Soakaway Trial Pit Dimensions

Date of Test	Trial Pit ref	Pit length	Pit width	Pit depth
12 th March 2022	SA01	2.30m	0.80m	2.25m
	SA02	2.00m	0.80m	2.25m
	SA03	2.10m	0.80m	2.30m
	SA04	2.60m	0.80m	2.20m

For the design of the drainage field for septic tank discharge a further four shallow pits, as detailed in Table 2, were also dug near the soakaway trial pits in which there was a 300mm x 300mm sump in the base. This is the approach required for the BS6297 percolation test to calculate the Vp value, which also uses the time for the sump to drain from 25% to 75% repeated three times in each pit.

Table 2 – Percolation Test Pits Depths Dimensions

Date Dug	Percolation Pit ref	Base depth
12 th March 2022	PT01	1.30m
	PT02	1.35m
	PT03	1.40m
	PT04	1.50m

As can be seen from the attached selection of photographs all the trial pits revealed a layer of clayey sandy topsoil resting directly on the natural chalk apart from trial pit SA01, which revealed a thin band of clay below the topsoil.

BRE365 - Infiltration Results

Attached are copies of the infiltration record sheets that unfortunately, as summarised in the table below, show the soils are not to be suitable for a soakaway drainage solution as none of the tests were completed in the time available.

Table 3 - Summary of the Infiltration Test Results based on BRE365 Method

Trial Pit	Test Number	Depth to Base (m)	Depth to Standing Water (m)	Total Water Level Drop (m)	Total Time Taken (min)	Infiltration Rate (m/s)
SA01	Round 1	2.25	Dry	0.045	240	n/a
SA02	Round 1	2.25	Dry	0.060	240	n/a
SA03	Round 1	2.30	Dry	0.090	330	n/a
SA04	Round 1	2.20	Dry	0.070	420	n/a

Also based upon the rate the pits were draining none of them would drain within 24 hours, which is a requirement for a soakaway design. Although, the soils did allow some water to infiltrate, which based upon the surface area of the test pits and recorded level drop the infiltration rates were in the region of 2×10^{-7} m/s to 6×10^{-7} m/s.

BS6297 - Percolation Results

As part of the test procedure for the percolation test the 300mm x 300mm x 300mm sumps in the base of each pit is filled with water and left overnight prior to start test. Unfortunately, as shown in the table below and attached photographs, three of the four sumps were found to still contain water the following morning and therefore were unsuitable for being used for the test.

Table 4 - Summary of the Percolation Test Results

Test Pit	Water level drop overnight	Test Number	Time to drop from 25-75%	Vp (s/mm)
PT01	65mm	Test abandoned as sump did not drain overnight		
PT02	300mm DRY	Round 1	Only dropped a total of 68.3% in 9 hours 20 minutes	n/a
PT03	100mm	Test abandoned as sump did not drain overnight		
PT04	110mm	Test abandoned as sump did not drain overnight		

The one drained sump was refilled to start the percolation test but unfortunately did not achieve the required 75% drop in level over a period of nearly 9½ hours. Therefore, the test has to be deemed unsuccessful because the calculated Vp based upon the fall achieved is 179s/mm, which exceeds the maximum allowable 100 s/mm.

Groundwater Level

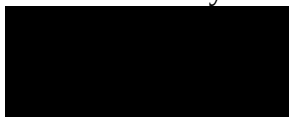
A trial pit was excavated in the lowest south-western corner of the site but as can be seen from the attached photograph, the chalk was very hard and had to be broken out as blocks. The pit was widened to provide more working room but once it reached 2.7m deep the JCB no longer had the power extend the pit any deeper, however the pit was dry.

Conclusion

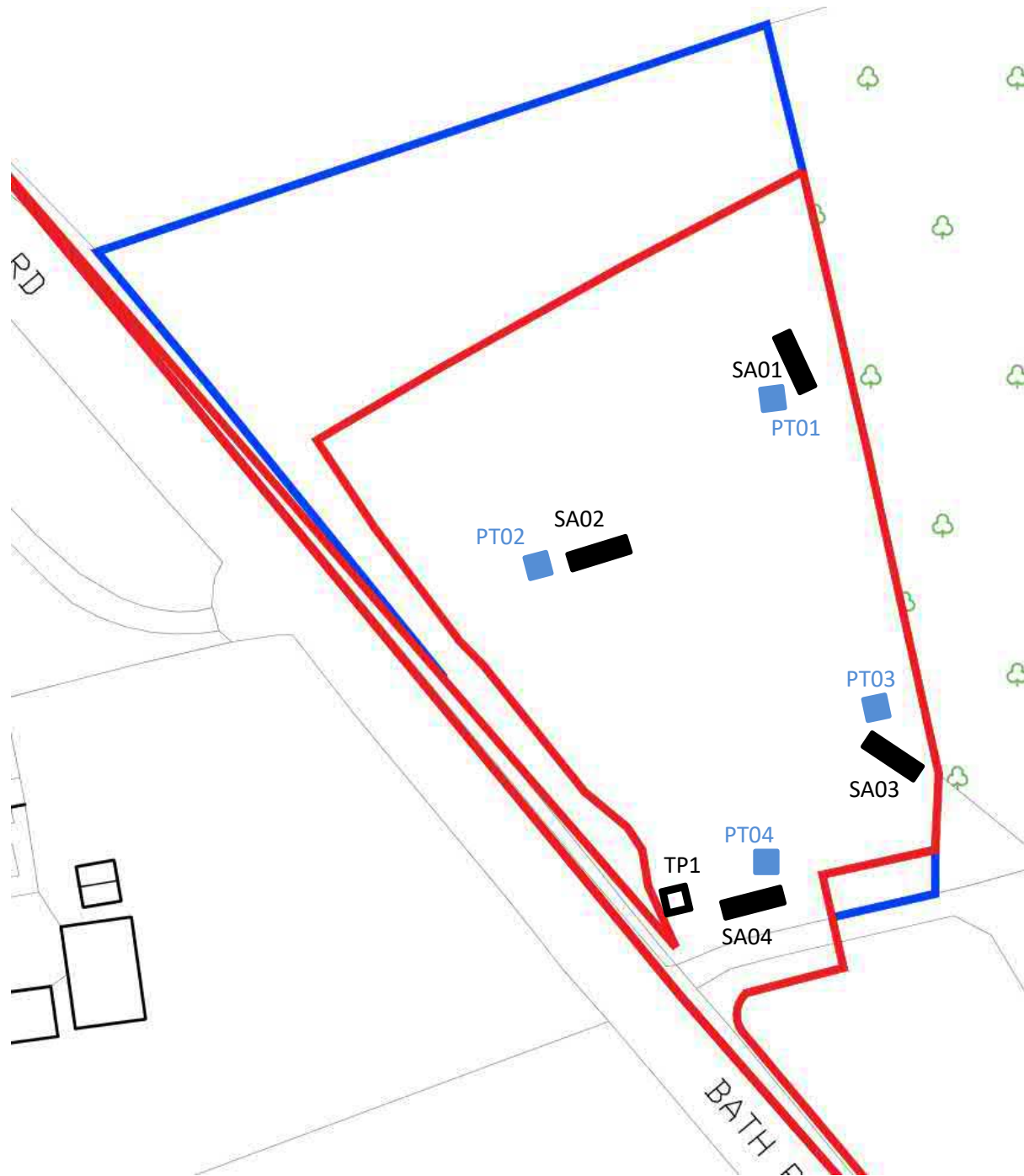
Although the natural soil is chalk and it has been shown to have limited capacity to permit the infiltration of water the rates achieved are insufficient to support the design of a soakaway drainage solution for surface water or a drainage field for the discharge from a septic tank.

I hope the above and attached are sufficiently detailed but if you have any queries or would like to discuss the results further then please do not hesitate to contact me.

Yours sincerely



Richard Blaney
for Forge Environmental Management Ltd



KEY

- Location of BRE365 infiltration test pit
- Position of BS6297 percolation test pit
- Trial Pit position

PROJECT Brick Hill Farm, Warminster	CLIENT Greatworth Property Managers Ltd	Date : 14 th June 2023	 The Forge Lower Vagg Chilthorne Domer Yeovil Somerset BA21 3PY Tel : 01935 840 346
		Scale : Not To Scale	
DRAWING TITLE Infiltration and Percolation Test Locations		DRAWING No. BRI384.D/001	



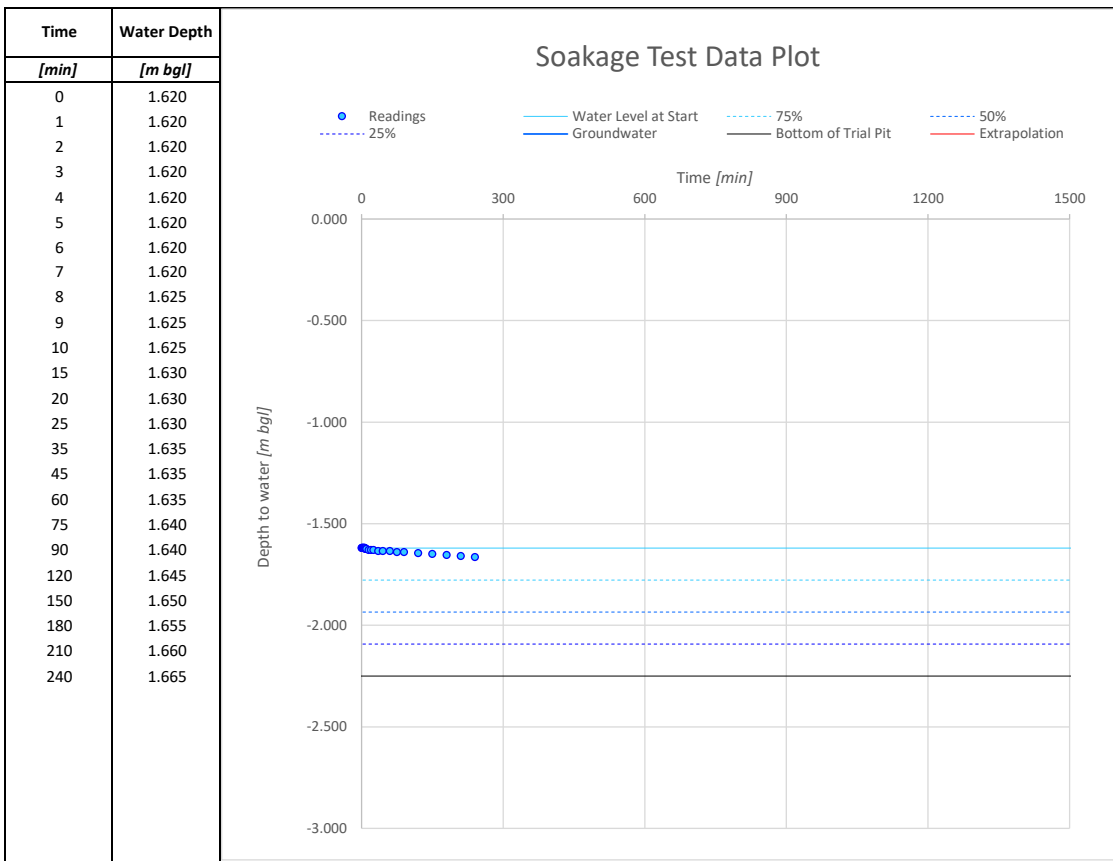
SOIL INFILTRATION RATE

Client: Greatworth Property Managers Ltd
Project Title: Brick Hill Farm, Warminster
Project No: BRI384.S

Trial Pit No: SA01
Test No: 1
Date: 12th June 2023
Logged by: RB

Length [m]: 2.30
Depth [m]: 2.25
Width [m]: 0.80
Groundwater [m bgl]:

Ground	Conditions	from - to [m bgl]		Description
		0.000	0.300	Dark Brown clayey silty SAND (Topsoil)
		0.300	0.600	Brown sandy CLAY
		0.600	2.250	White CHALK



Soil Infiltration Rate [m/s]:
$$f = \frac{V_{p75-25}}{a_{s50} \times t_{p75-25}}$$

with:

V_{p75-25} as Effective Storage Volume of water between 75% and 25% effective storage depth [m³] **0.58**

a_{s50} as Internal Surface Area of the soakage trial pit up to 50% storage depth including the base area [m²] **3.79**

t_{p75-25} as Time for the water level to fall from 75% to 25% effective storage depth [s] **n/a**

Soil Infiltration Rate [m/s]: **n/a**

Remarks: Result could not be calculated. Soakage test failed.



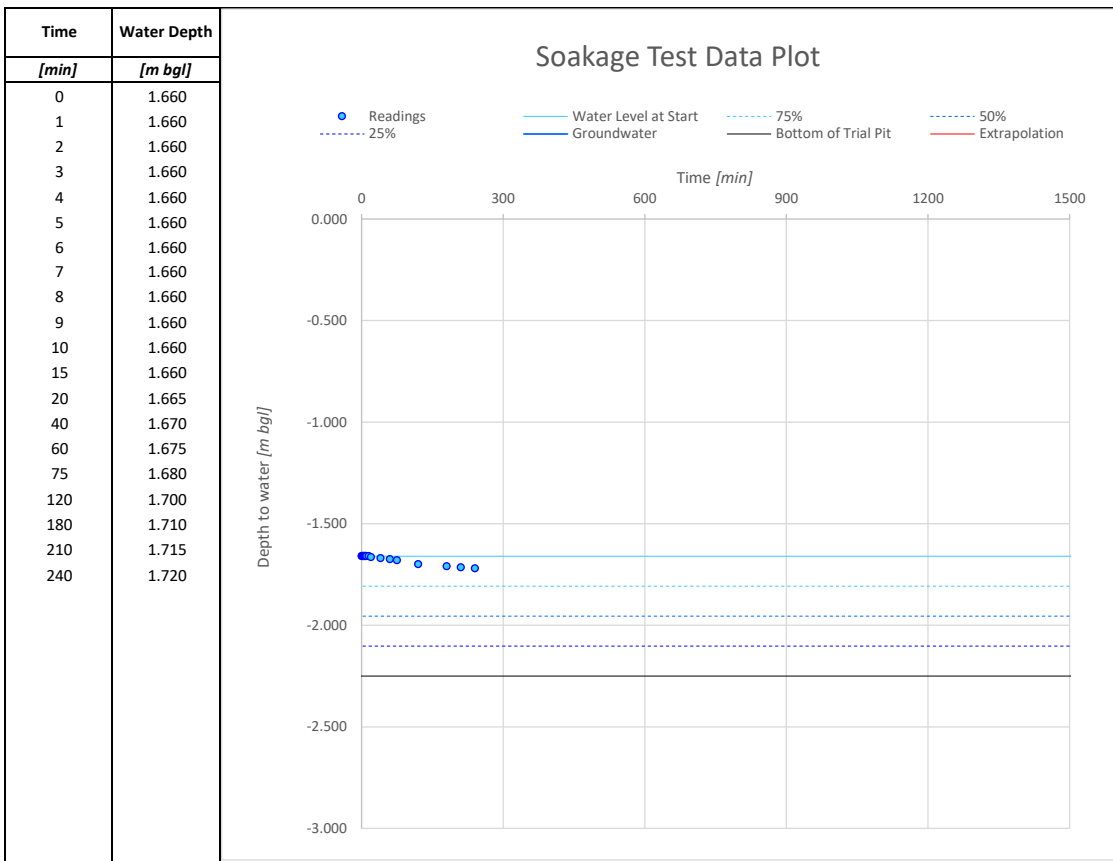
SOIL INFILTRATION RATE

Client: Greatworth Property Managers Ltd
Project Title: Brick Hill Farm, Warminster
Project No: BRI384.S

Trial Pit No: SA02
Test No: 1
Date: 12th June 2023
Logged by: RB

Length [m]: 2.00
Depth [m]: 2.25
Width [m]: 0.80
Groundwater [m bgl]:

Ground	Conditions	from - to [m bgl]		Description
		0.000	0.250	Dark Brown clayey silty SAND (Topsoil)
		0.250	2.250	White CHALK



Soil Infiltration Rate [m/s]:
$$f = \frac{V_{p75-25}}{a_{s50} \times t_{p75-25}}$$

with:

V_{p75-25} as Effective Storage Volume of water between 75% and 25% effective storage depth [m³] **0.47**

a_{s50} as Internal Surface Area of the soakage trial pit up to 50% storage depth including the base area [m²] **3.25**

t_{p75-25} as Time for the water level to fall from 75% to 25% effective storage depth [s] **n/a**

Soil Infiltration Rate [m/s]: **n/a**

Remarks: Result could not be calculated. Soakage test failed.



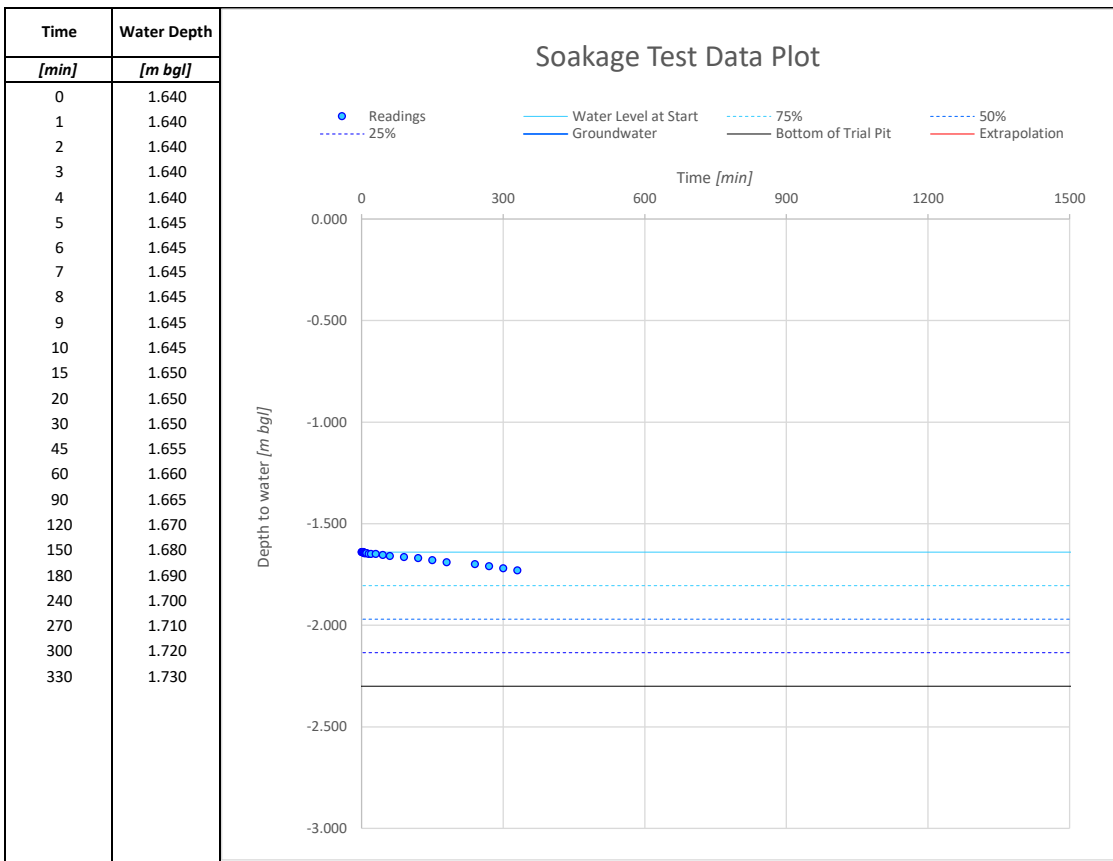
SOIL INFILTRATION RATE

Client: Greatworth Property Managers Ltd
Project Title: Brick Hill Farm, Warminster
Project No: BRI384.S

Trial Pit No: SA02
Test No: 1
Date: 12th June 2023
Logged by: RB

Length [m]: 2.10
Depth [m]: 2.30
Width [m]: 0.80
Groundwater [m bgl]:

Ground	Conditions	from - to [m bgl]		Description
		0.000	0.450	Dark Brown clayey silty SAND (Topsoil)
		0.450	2.250	White CHALK



Soil Infiltration Rate [m/s]:
$$f = \frac{V_{p75-25}}{a_{s50} \times t_{p75-25}}$$

with:

V_{p75-25} as Effective Storage Volume of water between 75% and 25% effective storage depth [m³] **0.55**

a_{s50} as Internal Surface Area of the soakage trial pit up to 50% storage depth including the base area [m²] **3.59**

t_{p75-25} as Time for the water level to fall from 75% to 25% effective storage depth [s] **n/a**

Soil Infiltration Rate [m/s]: **n/a**

Remarks: Result could not be calculated. Soakage test failed.

Digging the pit hit very hard band in southern end was pit was extended northwards and dig continued. The test was undertaken in deeper northern section



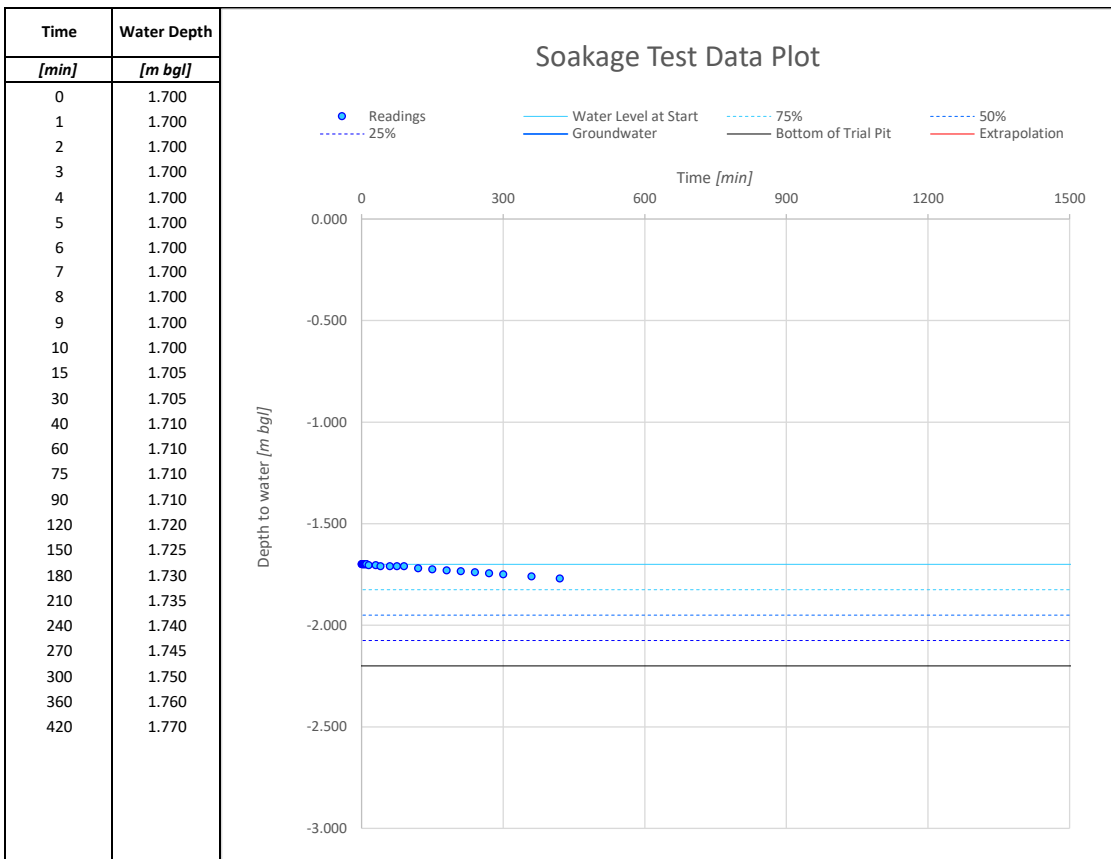
SOIL INFILTRATION RATE

Client: Greatworth Property Managers Ltd
Project Title: Brick Hill Farm, Warminster
Project No: BRI384.S

Trial Pit No: SA02
Test No: 1
Date: 12th June 2023
Logged by: RB

Length [m]: 2.60
Depth [m]: 2.20
Width [m]: 0.80
Groundwater [m bgl]:

Ground	Conditions	from - to [m bgl]		Description
		0.000	0.400	Dark Brown clayey silty SAND (Topsoil)
		0.400	2.250	White CHALK



Soil Infiltration Rate [m/s]:
$$f = \frac{V_{p75-25}}{a_{s50} \times t_{p75-25}}$$

with:

V_{p75-25} as Effective Storage Volume of water between 75% and 25% effective storage depth [m³] **0.52**

a_{s50} as Internal Surface Area of the soakage trial pit up to 50% storage depth including the base area [m²] **3.78**

t_{p75-25} as Time for the water level to fall from 75% to 25% effective storage depth [s] **n/a**

Soil Infiltration Rate [m/s]: **n/a**

Remarks: Result could not be calculated. Soakage test failed.

Digging the pit hit very hard band in southern end was pit was extended northwards and dig continued. The test was undertaken in deeper northern section



SOIL PERCOLATION RESULT

Client : Greatworth Property Managers Ltd
Date of Tests : 12th June 2023
Project Title : Brick Hill Farm, Warminster
Project No : BRI384.S

Test Pit No : SP02

Depth of pit (m) : 1.35
Depth to water level (m) :

Ground Conditions	From to (m bgl)		Description
	0.000	0.400	Dark brown clayey silty SAND (topsoil)
	0.400	1.350	White CHALK

Test No	Times				Time Lapse 25-75% drop			Vp (s/mm)
	Start	25% drop	75% drop	Dry	hours	minutes	second	
1	07:25	09:17	-	-	-	-	-	n/a
2								
3								
Average Vp =								n/a

Comments

The test was run until 16:45 (9hours 20mins) when the the level had dropped to 205mm (i.e only achieved 68.3% drop). Therefore the test was abandoned.

Although not compliant with BS6297 for the fall from 25% to 68.3% the Vp = 179 > 100 = fails