

Record of Infiltration Testing

Site Name: Howarth Knowl House, Rochdale, OL12 9JD

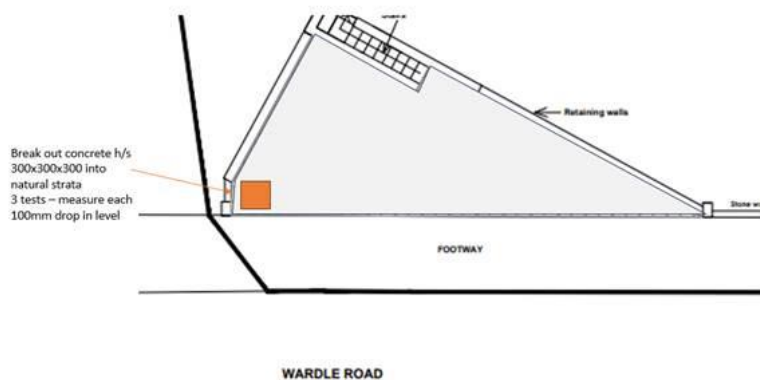
Date: Thursday 24th October 2024

Weather Conditions: Cloudy and overcast, dry

Method:

1. 1no. hole progressed at formation level progressed to 0.75m depth and tested.
2. Test hole in base - 300mm x 300mm x 300mm.
3. 3 tests completed and time taken for water drop recorded.

Test Location:



Recorded Results:

Test	Water drop	Hole 1
		(Base of hole 0.75m)
1st test	100mm	2 mins 40 secs
	200mm	6 mins 14 secs
	300mm	13 mins 32 secs
2nd test	100mm	4 mins 32 secs
	200mm	10 mins 37 secs
	300mm	21 mins 06 secs
3rd test	100mm	5 mins 0 secs
	200mm	11 mins 23 secs
	300mm	27 mins 15 secs
* Times quoted are total time elapsed since start		

Images:



Excavated Hole adjacent to gate post at formation level



Depth of Hole

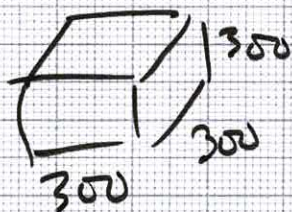


Infiltration
Testing



Infiltration
Complete

6715, HOWARTH KNOWL HOUSE



$$V = 0.3^3 = 0.027 \text{ m}^3$$

$$A = 5 \times 0.3^2 = 0.45 \text{ m}^2$$

$$T = 27 \text{ min}, 15 \text{ SECS}$$

$$T = 1635 \text{ SECS.}$$

$$F = \frac{V}{\Delta T} = \frac{0.027}{0.45 \times 1635.}$$

$$F = 3.67 \times 10^{-5} \text{ m/s}$$

$$F = 0.1321 \text{ m/hr.}$$



Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	2	Maximum Rainfall (mm/hr)	0.0
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	20.000	Minimum Backdrop Height (m)	0.200
Ratio-R	0.300	Preferred Cover Depth (m)	1.200
CV	0.750	Include Intermediate Ground	✓
Time of Entry (mins)	5.00	Enforce best practice design rules	✓

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Depth (m)
SIC1	0.005	5.00	188.000	450	0.600
TANK	0.000		188.000	100	0.650

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.000	SIC1	TANK	2.000	0.600	187.400	187.350	0.050	40.0	150	5.02	0.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	1.596	28.2	0.0	0.450	0.500	0.005	0.0	0	0.000

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	2.000	40.0	150	Circular	188.000	187.400	0.450	188.000	187.350	0.500

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	SIC1	450	Manhole	Adoptable	TANK	100	Manhole	Adoptable

Manhole Schedule

Node	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
SIC1	188.000	0.600	450				
				0	1.000	187.400	150
TANK	188.000	0.650	100				
				1	1.000	187.350	150

Simulation Settings

Rainfall Methodology	FSR	Analysis Speed	Normal
FSR Region	England and Wales	Skip Steady State	x
M5-60 (mm)	20.000	Drain Down Time (mins)	10080
Ratio-R	0.300	Additional Storage (m³/ha)	0.0
Summer CV	0.750	Check Discharge Rate(s)	x
Winter CV	0.840	Check Discharge Volume	x

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 %)
100	40	0	0

Node TANK Online Depth/Flow Control

Flap Valve	x	Replaces Downstream Link	✓	Invert Level (m)	187.350
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Depth (m)	Flow (l/s)
0.001	0.000

Node TANK Soakaway Storage Structure

Base Inf Coefficient (m/hr)	0.13210	Invert Level (m)	187.350	Depth (m)	0.300
Side Inf Coefficient (m/hr)	0.13210	Time to half empty (mins)	160	Inf Depth (m)	
Safety Factor	2.0	Pit Width (m)	2.000	Number Required	1
Porosity	1.00	Pit Length (m)	3.000		

Approval Settings

Node Size	✓	Minimum Full Bore Velocity (m/s)	
Node Losses	✓	Maximum Full Bore Velocity (m/s)	3.000
Link Size	✓	Proportional Velocity	✓
Minimum Diameter (mm)	150	Return Period (years)	
Link Length	✓	Minimum Proportional Velocity (m/s)	0.750
Maximum Length (m)	100.000	Maximum Proportional Velocity (m/s)	3.000
Coordinates	✓	Surcharged Depth	✓
Accuracy (m)	1.000	Return Period (years)	
Crossings	✓	Maximum Surcharged Depth (m)	0.100
Cover Depth	✓	Flooding	✓
Minimum Cover Depth (m)		Return Period (years)	30
Maximum Cover Depth (m)	3.000	Time to Half Empty	x
Backdrops	✓	Discharge Rates	✓
Minimum Backdrop Height (m)		Discharge Volume	✓
Maximum Backdrop Height (m)	1.500	100 year 360 minute (m³)	
Full Bore Velocity	✓		

Results for 100 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	SIC1	116	187.706	0.306	1.3	0.0487	0.0000	FLOOD RISK
120 minute winter	TANK	116	187.706	0.356	1.9	1.8058	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
120 minute winter	SIC1	1.000	TANK	1.9	0.619	0.068	0.0352	
120 minute winter	TANK	Depth/Flow		0.0				0.0
120 minute winter	TANK	Infiltration		0.2				