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	12.07.2018	Issued for Planning		DM	WEH
rev.	date	Description		Drawn	Chk.

WARD COLE
consulting engineers

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client:

Citygrove

project:
Morrisons High Street
VIEWSLEY, West Drayton

drawing title:

Proposed Drainage Strategy

scale: 1:200 (A1) status: Planning

job number: 10-4897	drawing number: SK500	revision: -
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NOTE:
T4, T5, etc REFER TO EXISTING
TREES AS SURVEYED. PLEASE
REFER TO THE RELEVANT TREE
SURVEY INFORMATION.

Option 2 - Runoff discharge
to Grand Canal; max. 5 l/s
@ 0.3m/s.
Subject to the consent of
the Canal & River Trust.

FMH 9301
C.L. 29.14
I.L. 27.02

Option 1 - Runoff discharge
to 10m x 1.5m x 2m deep
trench soakaway.
(Subject to satisfactory
soil percolation rates)

Option 1 - Runoff discharge
to 2.4mØ x 2m deep ring
soakaway.
(Subject to satisfactory
soil percolation rates)

Fuel interceptor to be
installed in service yard

Blue Green Roof System by
Optigreen, Radmat or other
approved specialist on
Amenity Deck. Surface
water attenuation in
Geocells 1000m² x 0.4m
deep; max. outflow 5 l/s

Possible re-use of existing
foul connection

Possible new 150mmØ
foul connection

Possible re-use of existing
foul connection

FMH 0302
C.L. 29.38
I.L. 27.12

FMH 0201
C.L. 30.32
I.L. 27.39

FMH 0301
C.L. 30.50
I.L. 27.83

Existing 300mmØ Foul Sewer

Existing 225mmØ Foul Sewer

Grand Union Canal

HIGH STREET

Appendix F

Typical Blue Green Roof System Details

Medo Green Roof System

Inspection chamber

ProTherm
XENERGY SL-EP

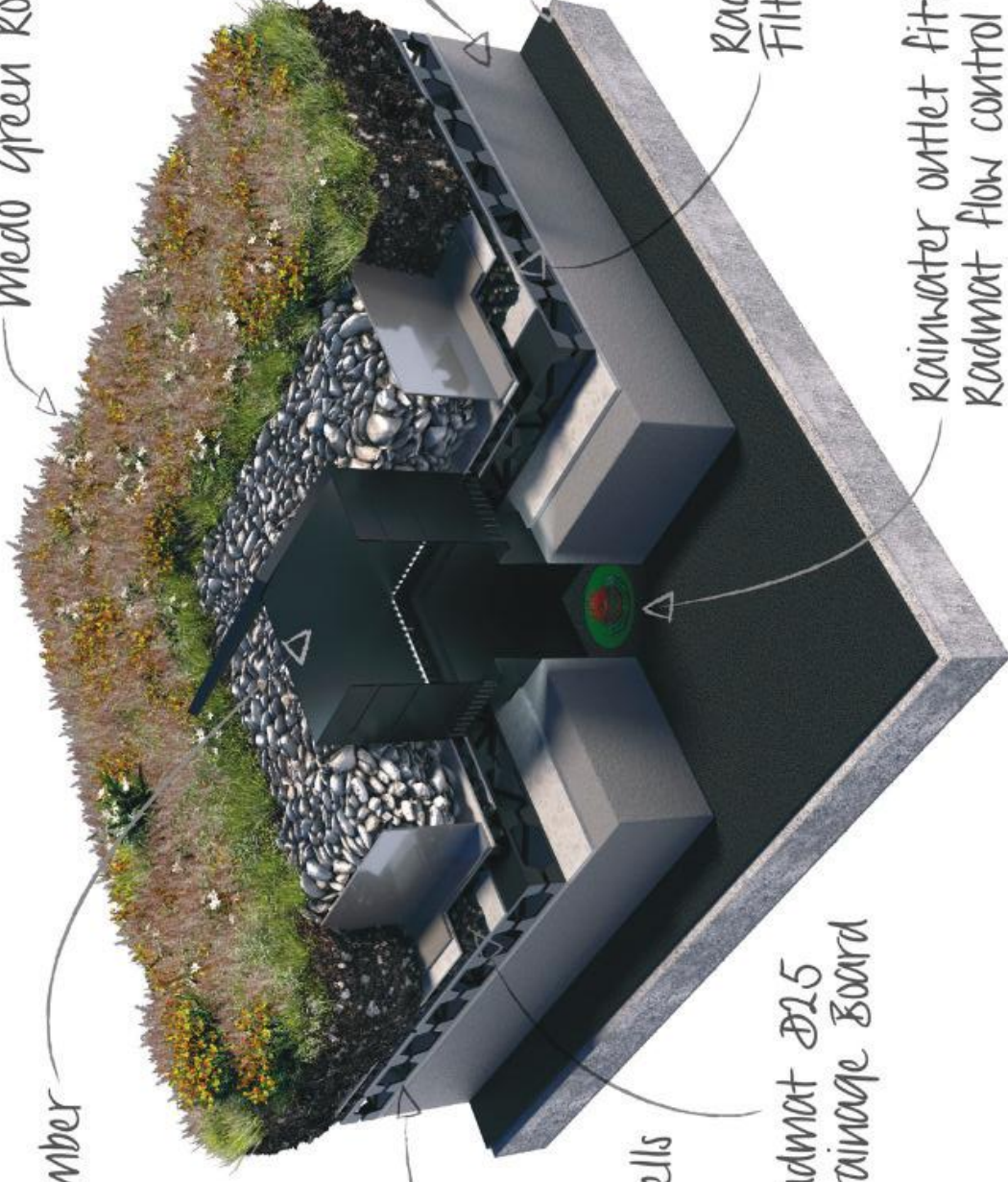
Permaquik
PQ6100

Radmat G13
Filter Fleece

Rainwater outlet fitted with
Radmat flow control

Radmat SNG
Blue Roof Geocells

Radmat Ø25
Drainage Board



Product Data Sheet



General Information

The Radmat range of **SWG Blue Roof Geocells** provides attenuation as part of a Blue Roof system that is designed to manage and control incident rainfall at a rate in line with the SuDS strategy or the attenuation requirements for a development.

Manufactured from Polypropylene SWG Blue Roof Geocells are load bearing modular units that are clipped together to form a single or double layer attenuation cell that is wrapped in **Radmat G12 Geotextile Filter Fleece**. Used in conjunction with rainwater outlet restrictors to control discharge, the Blue Roof is designed to be half empty within 24 hours.

For a higher loading capability use SWB Blue Roof.

Property	Unit	SWG100	SWG150	SWG200	SWG300	SWG400	SWG600
Length	mm	600	600	600	600	600	600
Width	mm	600	600	600	600	600	600
Height	mm	100	150	200	300	400	600
Structure volume	m ³	0.036	0.054	0.072	0.108	0.144	0.216
Storage volume	m ³	0.0324	0.0513	0.0684	0.1026	0.1368	0.2052
Weight	kg	1.8	2.7	3.6	5.4	7.2	10.8
Short term compressive strength							
	Vertical	kN/m ²	400	400	400	400	400
	Lateral	kN/m ²	100	100	100	100	100
Volume Void Ratio	%	90	90	95	95	95	95
Average effective perforated surface	%	60	60	60	60	60	60

This information given in good faith and is based on the latest knowledge available to Radmat Building products Ltd. Whilst every effort has been made to ensure that the contents of the publication are current while going to press, customers are advised that products, techniques and codes of practice are under constant review and liable to change without notice.

For further information on Radmat products and services please call **01858 410372**, email tech enquiries@radmat.com or visit our website www.radmat.com

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Retention Roof – Flow Control for extensive and intensive green roofs



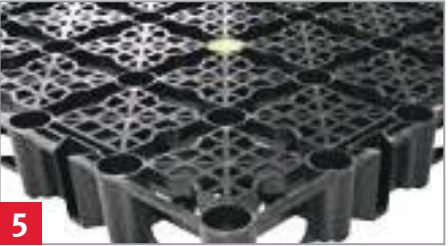
Extensive and intensive green roof



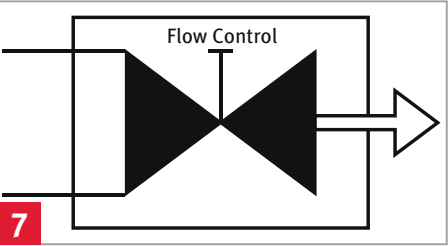
Optigreen Suction and Capillary Fleece RMS 500 K



Optigreen Water Retention Box WRB 80F for extensive greenings with capillary system



Optigreen Water Retention Box WRB 85i for intensive greenings with capillary system



Optigreen Flow Control System object specific adjustment of the flow diameter



Optigreen Protection and Storage Fleece RMS 500 resp. 900

Technical Data

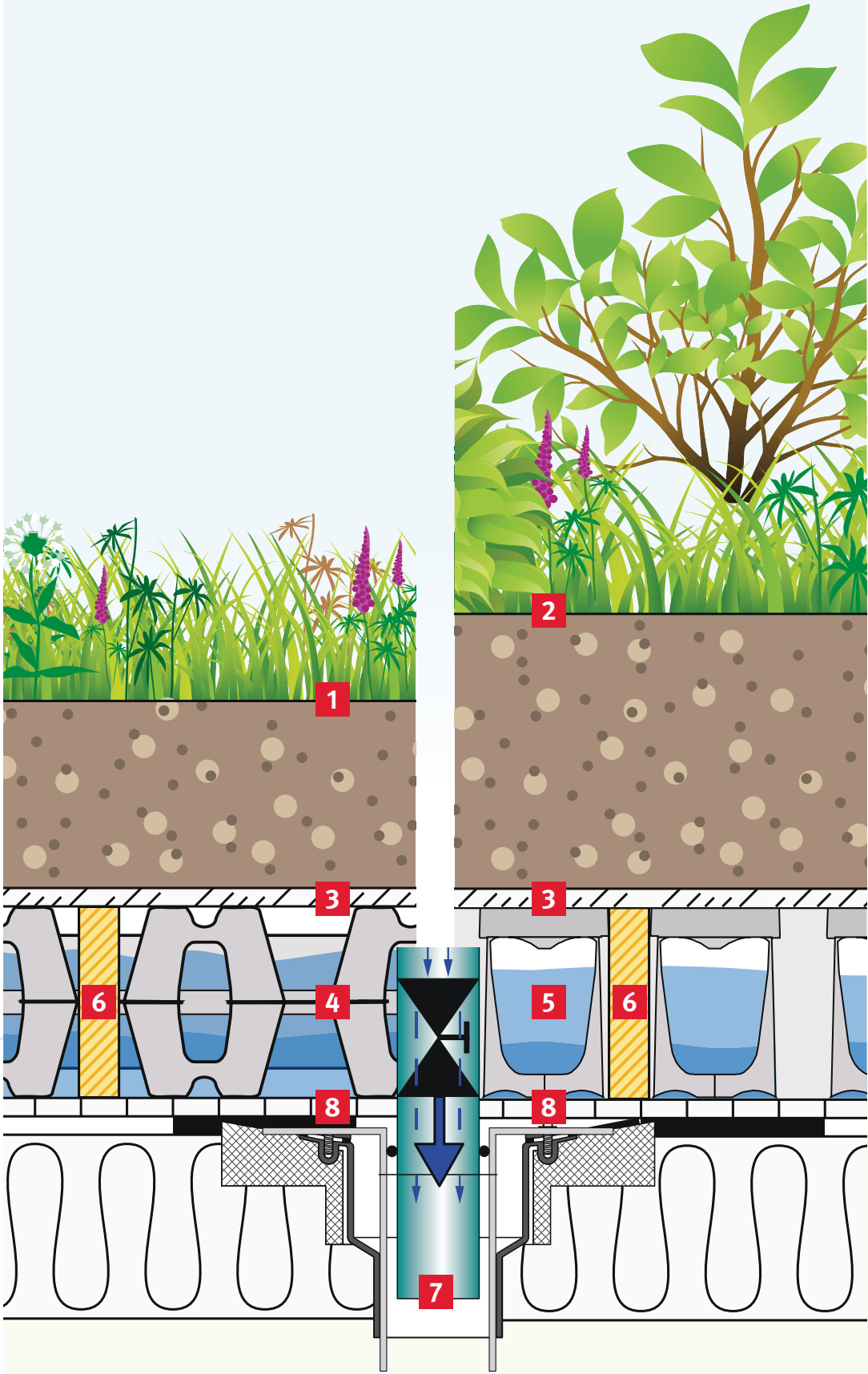
Weight	
Build-up depth	
Roof pitch	
Vegetation form	
Water retention	
! Maximum run-off rate object-related adjustable	

Special features

- Greenable: retention plus greening
- Optigreen Water Retention Box WRB with flow control
- Additional storage volume from 76 to 140 l/m²
- Discharge yield, also less than 1 l/s adjustable
- Increased transpiration performance through an integrated capillary system

Field of application

Extensive and intensive green roofs:
Optigreen System Solution Economy Roof,
Nature Roof, Garden Roof and Landscape Roof



Extensive Greening	Intensive Greening
120 – 300 kg/m ² or 1.2 – 3.0 kN/m ²	300 – 570 kg/m ² or 3.0 – 5.7 kN/m ²
160 – 250 mm	250 – 500 mm
0°	0°
herbs- grasses-sedum	perennial plants-shrubs-trees-lawn areas
up to 76 – 140 l/m ² + water retention in the substrate	up to 80 – 140 l/m ² + water retention in the substrate
from 0.1 l/s	from 0.1 l/s

Appendix G

Illustrative Micro Drainage Source Control Simulations

Ward & Cole		Page 1
Fosse House	Morrisons High Street	
Roman Wharf	Yiewsley, West Drayton	
Lincoln LN1 1SR	10-4897	
Date 12/06/2018	Designed by DM	
File Blue-Green Roof Attenuation....	Checked by	
Micro Drainage	Source Control 2017.1	

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

Half Drain Time : 698 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
15 min Summer	33.856	0.156	0.0	3.2	3.2	148.1	O K
30 min Summer	33.902	0.202	0.0	4.0	4.0	191.8	O K
60 min Summer	33.947	0.247	0.0	4.2	4.2	234.7	O K
120 min Summer	34.003	0.303	0.0	4.2	4.2	288.3	O K
180 min Summer	34.033	0.333	0.0	4.4	4.4	316.1	O K
240 min Summer	34.049	0.349	0.0	4.5	4.5	331.9	O K
360 min Summer	34.063	0.363	0.0	4.6	4.6	345.2	O K
480 min Summer	34.065	0.365	0.0	4.6	4.6	346.6	O K
600 min Summer	34.061	0.361	0.0	4.6	4.6	343.2	O K
720 min Summer	34.057	0.357	0.0	4.6	4.6	339.2	O K
960 min Summer	34.047	0.347	0.0	4.5	4.5	329.7	O K
1440 min Summer	34.026	0.326	0.0	4.4	4.4	309.7	O K
2160 min Summer	33.995	0.295	0.0	4.2	4.2	280.1	O K
2880 min Summer	33.965	0.265	0.0	4.2	4.2	252.2	O K
4320 min Summer	33.921	0.221	0.0	4.1	4.1	209.5	O K
5760 min Summer	33.892	0.192	0.0	3.9	3.9	182.4	O K
7200 min Summer	33.873	0.173	0.0	3.6	3.6	164.5	O K
8640 min Summer	33.859	0.159	0.0	3.3	3.3	151.4	O K
10080 min Summer	33.849	0.149	0.0	3.1	3.1	141.5	O K
15 min Winter	33.856	0.156	0.0	3.2	3.2	148.2	O K
30 min Winter	33.902	0.202	0.0	4.0	4.0	192.0	O K
60 min Winter	33.947	0.247	0.0	4.2	4.2	234.9	O K
120 min Winter	34.004	0.304	0.0	4.2	4.2	288.5	O K
180 min Winter	34.033	0.333	0.0	4.4	4.4	316.4	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	162.016	0.0	117.6	26
30 min Summer	105.843	0.0	157.3	41
60 min Summer	65.694	0.0	227.5	70
120 min Summer	41.265	0.0	287.1	128
180 min Summer	30.890	0.0	322.7	186
240 min Summer	24.917	0.0	346.9	246
360 min Summer	18.127	0.0	377.8	362
480 min Summer	14.329	0.0	397.2	480
600 min Summer	11.881	0.0	410.4	538
720 min Summer	10.166	0.0	419.9	594
960 min Summer	7.909	0.0	432.1	714
1440 min Summer	5.515	0.0	442.6	982
2160 min Summer	3.826	0.0	501.8	1388
2880 min Summer	2.954	0.0	514.9	1788
4320 min Summer	2.062	0.0	531.2	2512
5760 min Summer	1.608	0.0	570.3	3240
7200 min Summer	1.337	0.0	591.6	3968
8640 min Summer	1.156	0.0	611.6	4680
10080 min Summer	1.028	0.0	628.7	5448
15 min Winter	162.016	0.0	117.6	26
30 min Winter	105.843	0.0	157.3	40
60 min Winter	65.694	0.0	227.5	68
120 min Winter	41.265	0.0	287.1	126
180 min Winter	30.890	0.0	322.7	184

Ward & Cole		Page 2
Fosse House Roman Wharf Lincoln LN1 1SR	Morrisons High Street Yiewsley, West Drayton 10-4897	
Date 12/06/2018	Designed by DM	
File Blue-Green Roof Attenuation....	Checked by	
Micro Drainage	Source Control 2017.1	

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

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max E Outflow (l/s)	Max Volume (m³)	Status
240 min Winter	34.050	0.350	0.0	4.5	4.5	332.3	O K
360 min Winter	34.064	0.364	0.0	4.6	4.6	345.9	O K
480 min Winter	34.066	0.366	0.0	4.7	4.7	347.9	O K
600 min Winter	34.062	0.362	0.0	4.6	4.6	344.2	O K
720 min Winter	34.056	0.356	0.0	4.6	4.6	337.9	O K
960 min Winter	34.043	0.343	0.0	4.5	4.5	326.3	O K
1440 min Winter	34.016	0.316	0.0	4.3	4.3	300.5	O K
2160 min Winter	33.975	0.275	0.0	4.2	4.2	260.9	O K
2880 min Winter	33.937	0.237	0.0	4.2	4.2	224.7	O K
4320 min Winter	33.889	0.189	0.0	3.8	3.8	179.3	O K
5760 min Winter	33.860	0.160	0.0	3.3	3.3	152.4	O K
7200 min Winter	33.842	0.142	0.0	3.0	3.0	134.9	O K
8640 min Winter	33.829	0.129	0.0	2.7	2.7	122.6	O K
10080 min Winter	33.819	0.119	0.0	2.4	2.4	113.3	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
240 min Winter	24.917	0.0	346.9	240
360 min Winter	18.127	0.0	377.9	354
480 min Winter	14.329	0.0	397.3	464
600 min Winter	11.881	0.0	410.5	570
720 min Winter	10.166	0.0	420.1	658
960 min Winter	7.909	0.0	432.5	746
1440 min Winter	5.515	0.0	443.3	1048
2160 min Winter	3.826	0.0	502.0	1492
2880 min Winter	2.954	0.0	515.1	1872
4320 min Winter	2.062	0.0	531.4	2604
5760 min Winter	1.608	0.0	570.3	3352
7200 min Winter	1.337	0.0	591.6	4104
8640 min Winter	1.156	0.0	611.7	4840
10080 min Winter	1.028	0.0	629.4	5552

Ward & Cole		Page 3
Fosse House Roman Wharf Lincoln LN1 1SR	Morrisons High Street Yiewsley, West Drayton 10-4897	
Date 12/06/2018	Designed by DM	
File Blue-Green Roof Attenuation....	Checked by	
Micro Drainage		Source Control 2017.1

Rainfall Details

Rainfall Model	FEH	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.900
FEH Rainfall Version	2013	Cv (Winter)	0.900
Site Location	GB 506048 180372	Shortest Storm (mins)	15
Data Type	Point	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.413

Time (mins)	Area	Time (mins)	Area	Time (mins)	Area
From: To: (ha)		From: To: (ha)		From: To: (ha)	
0 4 0.138		4 8 0.138		8 12 0.138	

Ward & Cole		Page 4
Fosse House Roman Wharf Lincoln LN1 1SR	Morrisons High Street Yiewsley, West Drayton 10-4897	
Date 12/06/2018	Designed by DM	
File Blue-Green Roof Attenuation....	Checked by	
Micro Drainage		Source Control 2017.1

Model Details

Storage is Online Cover Level (m) 34.500

Cellular Storage Structure

Invert Level (m) 33.700 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	1000.0	1000.0	0.400	1000.0	1056.0	0.500	0.0	1056.0

Crown Vortex Valve® Outflow Control

Design Head (m) 0.420 Vortex Valve® Type R1 SW Only Invert Level (m) 33.700
Design Flow (l/s) 5.0 Diameter (mm) 114

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	1.9	0.800	6.9	2.000	10.9	4.000	15.4	7.000	20.3
0.200	4.0	1.000	7.7	2.200	11.4	4.500	16.3	7.500	21.0
0.300	4.2	1.200	8.4	2.400	11.9	5.000	17.2	8.000	21.7
0.400	4.9	1.400	9.1	2.600	12.4	5.500	18.0	8.500	22.4
0.500	5.4	1.600	9.7	3.000	13.3	6.000	18.8	9.000	23.1
0.600	6.0	1.800	10.3	3.500	14.4	6.500	19.6	9.500	23.7

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Fosse House Roman Wharf Lincoln LN1 1SR	Morrisons High Street Yiewsley, West Drayton 10-4897	
Date 12/06/2018 File Trench Soakaway.srcx	Designed by DM Checked by	
Micro Drainage		Source Control 2017.1

Summary of Results for Input Hydrograph

Half Drain Time : 15 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m ³)	Status
Input Hydrograph	28.973	1.523	4.6	6.9	O K

Storm Event	Flooded Volume (m ³)	Time-Peak (mins)
Input Hydrograph	0.0	488

Morrisons High Street
Yiewsley, West Drayton
10-4897

Designed by DM
Checked by



Source Control 2017.1

Time (mins)	Flow (l/s)	Time (mins)	Flow (l/s)	Time (mins)	Flow (l/s)	Time (mins)	Flow (l/s)	Time (mins)	Flow (l/s)	Time (mins)	Flow (l/s)	Time (mins)	Flow (l/s)	Time (mins)	Flow (l/s)
2	0.0	116	0.5	230	3.6	344	4.5	458	4.6	572	4.5	686	4.3	800	4.0
4	0.0	118	0.5	232	3.7	346	4.5	460	4.7	574	4.5	688	4.3	802	4.0
6	0.0	120	0.6	234	3.7	348	4.5	462	4.7	576	4.5	690	4.3	804	4.0
8	0.0	122	0.6	236	3.8	350	4.5	464	4.7	578	4.5	692	4.2	806	4.0
10	0.0	124	0.6	238	3.8	352	4.5	466	4.7	580	4.5	694	4.2	808	4.0
12	0.0	126	0.6	240	3.9	354	4.5	468	4.7	582	4.5	696	4.2	810	4.0
14	0.0	128	0.6	242	3.9	356	4.5	470	4.7	584	4.5	698	4.2	812	4.0
16	0.0	130	0.7	244	4.0	358	4.5	472	4.6	586	4.4	700	4.2	814	4.0
18	0.0	132	0.7	246	4.0	360	4.6	474	4.6	588	4.4	702	4.2	816	4.0
20	0.0	134	0.7	248	4.1	362	4.6	476	4.6	590	4.4	704	4.2	818	4.0
22	0.0	136	0.7	250	4.1	364	4.6	478	4.6	592	4.4	706	4.2	820	4.0
24	0.0	138	0.8	252	4.1	366	4.6	480	4.6	594	4.4	708	4.2	822	4.0
26	0.0	140	0.8	254	4.1	368	4.6	482	4.6	596	4.4	710	4.2	824	4.0
28	0.0	142	0.8	256	4.2	370	4.6	484	4.6	598	4.4	712	4.2	826	4.0
30	0.0	144	0.9	258	4.2	372	4.6	486	4.6	600	4.4	714	4.2	828	4.0
32	0.0	146	0.9	260	4.2	374	4.6	488	4.6	602	4.4	716	4.2	830	4.1
34	0.0	148	0.9	262	4.2	376	4.6	490	4.6	604	4.4	718	4.2	832	4.1
36	0.0	150	1.0	264	4.2	378	4.6	492	4.6	606	4.4	720	4.2	834	4.1
38	0.0	152	1.0	266	4.2	380	4.6	494	4.6	608	4.4	722	4.2	836	4.1
40	0.0	154	1.0	268	4.2	382	4.6	496	4.6	610	4.4	724	4.2	838	4.1
42	0.1	156	1.1	270	4.2	384	4.6	498	4.6	612	4.4	726	4.2	840	4.1
44	0.1	158	1.1	272	4.1	386	4.6	500	4.6	614	4.4	728	4.2	842	4.1
46	0.1	160	1.2	274	4.1	388	4.6	502	4.6	616	4.4	730	4.2	844	4.1
48	0.1	162	1.2	276	4.1	390	4.6	504	4.6	618	4.4	732	4.2	846	4.1
50	0.1	164	1.3	278	4.1	392	4.6	506	4.6	620	4.4	734	4.2	848	4.1
52	0.1	166	1.3	280	4.0	394	4.6	508	4.6	622	4.4	736	4.2	850	4.1
54	0.1	168	1.4	282	4.0	396	4.6	510	4.6	624	4.4	738	4.2	852	4.1
56	0.1	170	1.4	284	4.1	398	4.6	512	4.6	626	4.4	740	4.2	854	4.1
58	0.1	172	1.5	286	4.1	400	4.6	514	4.6	628	4.4	742	4.2	856	4.1
60	0.1	174	1.5	288	4.1	402	4.6	516	4.6	630	4.4	744	4.2	858	4.1</

Ward & Cole		Page 3
Fosse House	Morrisons High Street	
Roman Wharf	Yiewsley, West Drayton	
Lincoln LN1 1SR	10-4897	
Date 12/06/2018	Designed by DM	
File Trench Soakaway.srcx	Checked by	
Micro Drainage	Source Control 2017.1	

Input Hydrograph

Time (mins)	Flow (l/s)	Time (mins)	Flow (l/s)	Time (mins)	Flow (l/s)	Time (mins)	Flow (l/s)	Time (mins)	Flow (l/s)	Time (mins)	Flow (l/s)	Time (mins)	Flow (l/s)	Time (mins)	Flow (l/s)
914	4.2	1028	4.1	1142	3.8	1256	3.4	1370	2.9	1484	2.5	1598	2.1	1712	1.7
916	4.2	1030	4.1	1144	3.8	1258	3.4	1372	2.9	1486	2.5	1600	2.0	1714	1.7
918	4.2	1032	4.1	1146	3.8	1260	3.4	1374	2.9	1488	2.4	1602	2.0	1716	1.7
920	4.2	1034	4.1	1148	3.8	1262	3.4	1376	2.9	1490	2.4	1604	2.0	1718	1.7
922	4.2	1036	4.1	1150	3.8	1264	3.4	1378	2.9	1492	2.4	1606	2.0	1720	1.7
924	4.2	1038	4.1	1152	3.8	1266	3.3	1380	2.9	1494	2.4	1608	2.0	1722	1.7
926	4.2	1040	4.1	1154	3.8	1268	3.3	1382	2.9	1496	2.4	1610	2.0	1724	1.7
928	4.2	1042	4.1	1156	3.8	1270	3.3	1384	2.9	1498	2.4	1612	2.0	1726	1.7
930	4.2	1044	4.1	1158	3.8	1272	3.3	1386	2.8	1500	2.4	1614	2.0	1728	1.7
932	4.2	1046	4.1	1160	3.8	1274	3.3	1388	2.8	1502	2.4	1616	2.0	1730	1.7
934	4.2	1048	4.1	1162	3.8	1276	3.3	1390	2.8	1504	2.4	1618	2.0	1732	1.7
936	4.2	1050	4.1	1164	3.7	1278	3.3	1392	2.8	1506	2.4	1620	2.0	1734	1.7
938	4.2	1052	4.1	1166	3.7	1280	3.3	1394	2.8	1508	2.4	1622	2.0	1736	1.7
940	4.2	1054	4.1	1168	3.7	1282	3.3	1396	2.8	1510	2.4	1624	2.0	1738	1.6
942	4.2	1056	4.1	1170	3.7	1284	3.3	1398	2.8	1512	2.4	1626	2.0	1740	1.6
944	4.2	1058	4.1	1172	3.7	1286	3.3	1400	2.8	1514	2.3	1628	2.0	1742	1.6
946	4.2	1060	4.1	1174	3.7	1288	3.3	1402	2.8	1516	2.3	1630	2.0	1744	1.6
948	4.2	1062	4.1	1176	3.7	1290	3.2	1404	2.8	1518	2.3	1632	1.9	1746	1.6
950	4.2	1064	4.0	1178	3.7	1292	3.2	1406	2.8	1520	2.3	1634	1.9	1748	1.6
952	4.2	1066	4.0	1180	3.7	1294	3.2	1408	2.8	1522	2.3	1636	1.9	1750	1.6
954	4.2	1068	4.0	1182	3.7	1296	3.2	1410	2.8	1524	2.3	1638	1.9	1752	1.6
956	4.2	1070	4.0	1184	3.7	1298	3.2	1412	2.7	1526	2.3	1640	1.9	1754	1.6
958	4.2	1072	4.0	1186	3.7	1300	3.2	1414	2.7	1528	2.3	1642	1.9	1756	1.6
960	4.2	1074	4.0	1188	3.7	1302	3.2	1416	2.7	1530	2.3	1644	1.9	1758	1.6
962	4.2	1076	4.0	1190	3.7	1304	3.2	1418	2.7	1532	2.3	1646	1.9	1760	1.6
964	4.2	1078	4.0	1192	3.6	1306	3.2	1420	2.7	1534	2.3	1648	1.9	1762	1.6
966	4.2	1080	4.0	1194	3.6	1308	3.2	1422	2.7	1536	2.3	1650	1.9	1764	1.6
968	4.2	1082	4.0	1196	3.6	1310	3.2	1424	2.7	1538	2.3	1652	1.9	1766	1.6
970	4.2	1084	4.0	1198	3.6	1312	3.2	1426	2.7	1540	2.3	1654	1.9	1768	1.6
972	4.2	1086	4.0	1200	3.6	1314	3.2	1428	2.7	1542	2.2	1656	1.9	1770	1.6
974	4.2	1088	4.0	1202	3.6	1316	3.1	1430	2.7	1544	2.2	1658	1.9	1772	1.6
976	4.2	1090	4.0	1204	3.6	1318	3.1	1432	2.7	1546	2.2	1660	1.9	1774	1.6
978	4.2	1092	4.0	1206	3.6	1320	3.1	1434	2.7	1548	2.2	1662	1.9	1776	1.6
980	4.2	1094	4.0	1208	3.6	1322	3.1	1436	2.7	1550	2.2	1664	1.9	1778	1.5
982	4.2	1096	4.0	1210	3.6	1324	3.1	1438	2.6	1552	2.2	1666	1.8	1780	1.5
984	4.2	1098	4.0	1212	3.6	1326	3.1	1440	2.6	1554	2.2	1668	1.8	1782	1.5
986	4.2	1100	4.0	1214	3.6	1328	3.1	1442	2.6	1556	2.2	1670	1.8	1784	1.5
988	4.2	1102	3.9	1216	3.6	1330	3.1	1444	2.6	1558	2.2	1672	1.8	1786	1.5
990	4.2	1104	3.9	1218	3.5	1332	3.1	1446	2.6	1560	2.2	1674	1.8	1788	1.5
992	4.2	1106	3.9	1220	3.5	1334	3.1	1448	2.6	1562	2.2	1676	1.8	1790	1.5
994	4.2	1108	3.9	1222	3.5	1336	3.1	1450	2.6	1564	2.2	1678	1.8	1792	1.5
996	4.2	1110	3.9	1224	3.5	1338	3.0	1452	2.6	1566	2.2	1680	1.8	1794	1.5
998	4.2	1112	3.9	1226	3.5	1340	3.0	1454	2.6	1568	2.2	1682	1.8	1796	1.5
1000	4.2	1114	3.9	1228	3.5	1342	3.0	1456	2.6	1570	2.1	1684	1.8	1798	1.5
1002	4.2	1116	3.9	1230	3.5	1344	3.0	1458	2.6	1572	2.1	1686	1.8	1800	1.5
1004	4.2	1118	3.9	1232	3.5	1346	3.0	1460	2.6	1574	2.1	1688	1.8	1802	1.5
1006	4.1	1120	3.9	1234	3.5	1348	3.0	1462	2.5	1576	2.1	1690	1.8	1804	1.5
1008	4.1	1122	3.9	1236	3.5	1350	3.0	1464	2.5	1578	2.1	1692	1.8	1806	1.5
1010	4.1	1124	3.9	1238	3.5	1352	3.0	1466	2.5	1580	2.1	1694	1.8	1808	1.5
1012	4.1	1126	3.9	1240	3.5	1354	3.0	1468	2.5	1582	2.1	1696	1.8	1810	1.5
1014	4.1	1128	3.9	1242	3.5	1356	3.0	1470	2.5	1584	2.1	1698	1.8	1812	1.5
1016	4.1	1130	3.9	1244	3.4	1358	3.0	1472	2.5	1586	2.1	1700	1.7	1814	1.5
1018	4.1	1132	3.9	1246	3.4	1360	3.0	1474	2.5	1588	2.1	1702	1.7	1816	1.5
1020	4.1	1134	3.9	1248	3.4	1362	3.0	1476	2.5	1590	2.1	1704	1.7	1818	1.5
1022	4.1	1136	3.8	1250	3.4	1364	2.9	1478	2.5	1592	2.1	1706	1.7	1820	1.4
1024	4.1	1138	3.8	1252	3.4	1366	2.9	1480	2.5	1594	2.1	1708	1.7	1822	1.4
1026	4.1	1140	3.8	1254	3.4	1368	2.9	1482	2.5	1596	2.1	1710	1.7	1824	1.4

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Fosse House	Morrisons High Street	
Roman Wharf	Yiewsley, West Drayton	
Lincoln LN1 1SR	10-4897	
Date 12/06/2018	Designed by DM	
File Trench Soakaway.srcx	Checked by	
Micro Drainage	Source Control 2017.1	

Input Hydrograph

Time (mins)	Flow (l/s)	Time (mins)	Flow (l/s)	Time (mins)	Flow (l/s)	Time (mins)	Flow (l/s)	Time (mins)	Flow (l/s)	Time (mins)	Flow (l/s)	Time (mins)	Flow (l/s)	Time (mins)	Flow (l/s)
1826	1.4	1940	1.2	2054	1.0	2168	0.9	2282	0.7	2396	0.6	2510	0.5	2624	0.5
1828	1.4	1942	1.2	2056	1.0	2170	0.9	2284	0.7	2398	0.6	2512	0.5	2626	0.5
1830	1.4	1944	1.2	2058	1.0	2172	0.9	2286	0.7	2400	0.6	2514	0.5	2628	0.5
1832	1.4	1946	1.2	2060	1.0	2174	0.9	2288	0.7	2402	0.6	2516	0.5	2630	0.5
1834	1.4	1948	1.2	2062	1.0	2176	0.9	2290	0.7	2404	0.6	2518	0.5	2632	0.5
1836	1.4	1950	1.2	2064	1.0	2178	0.9	2292	0.7	2406	0.6	2520	0.5	2634	0.5
1838	1.4	1952	1.2	2066	1.0	2180	0.8	2294	0.7	2408	0.6	2522	0.5	2636	0.5
1840	1.4	1954	1.2	2068	1.0	2182	0.8	2296	0.7	2410	0.6	2524	0.5	2638	0.5
1842	1.4	1956	1.2	2070	1.0	2184	0.8	2298	0.7	2412	0.6	2526	0.5	2640	0.5
1844	1.4	1958	1.2	2072	1.0	2186	0.8	2300	0.7	2414	0.6	2528	0.5	2642	0.5
1846	1.4	1960	1.2	2074	1.0	2188	0.8	2302	0.7	2416	0.6	2530	0.5	2644	0.5
1848	1.4	1962	1.2	2076	1.0	2190	0.8	2304	0.7	2418	0.6	2532	0.5	2646	0.5
1850	1.4	1964	1.2	2078	1.0	2192	0.8	2306	0.7	2420	0.6	2534	0.5	2648	0.5
1852	1.4	1966	1.2	2080	1.0	2194	0.8	2308	0.7	2422	0.6	2536	0.5	2650	0.5
1854	1.4	1968	1.2	2082	1.0	2196	0.8	2310	0.7	2424	0.6	2538	0.5	2652	0.5
1856	1.4	1970	1.2	2084	1.0	2198	0.8	2312	0.7	2426	0.6	2540	0.5	2654	0.5
1858	1.4	1972	1.1	2086	1.0	2200	0.8	2314	0.7	2428	0.6	2542	0.5	2656	0.5
1860	1.4	1974	1.1	2088	1.0	2202	0.8	2316	0.7	2430	0.6	2544	0.5	2658	0.5
1862	1.4	1976	1.1	2090	1.0	2204	0.8	2318	0.7	2432	0.6	2546	0.5	2660	0.5
1864	1.3	1978	1.1	2092	1.0	2206	0.8	2320	0.7	2434	0.6	2548	0.5	2662	0.5
1866	1.3	1980	1.1	2094	1.0	2208	0.8	2322	0.7	2436	0.6	2550	0.5	2664	0.5
1868	1.3	1982	1.1	2096	1.0	2210	0.8	2324	0.7	2438	0.6	2552	0.5	2666	0.5
1870	1.3	1984	1.1	2098	1.0	2212	0.8	2326	0.7	2440	0.6	2554	0.5	2668	0.5
1872	1.3	1986	1.1	2100	1.0	2214	0.8	2328	0.7	2442	0.6	2556	0.5	2670	0.5
1874	1.3	1988	1.1	2102	0.9	2216	0.8	2330	0.7	2444	0.6	2558	0.5	2672	0.5
1876	1.3	1990	1.1	2104	0.9	2218	0.8	2332	0.7	2446	0.6	2560	0.5	2674	0.5
1878	1.3	1992	1.1	2106	0.9	2220	0.8	2334	0.7	2448	0.6	2562	0.5	2676	0.5
1880	1.3	1994	1.1	2108	0.9	2222	0.8	2336	0.7	2450	0.6	2564	0.5	2678	0.4
1882	1.3	1996	1.1	2110	0.9	2224	0.8	2338	0.7	2452	0.6	2566	0.5	2680	0.4
1884	1.3	1998	1.1	2112	0.9	2226	0.8	2340	0.7	2454	0.6	2568	0.5	2682	0.4
1886	1.3	2000	1.1	2114	0.9	2228	0.8	2342	0.7	2456	0.6	2570	0.5	2684	0.4
1888	1.3	2002	1.1	2116	0.9	2230	0.8	2344	0.7	2458	0.6	2572	0.5	2686	0.4
1890	1.3	2004	1.1	2118	0.9	2232	0.8	2346	0.7	2460	0.6	2574	0.5	2688	0.4
1892	1.3	2006	1.1	2120	0.9	2234	0.8	2348	0.7	2462	0.6	2576	0.5	2690	0.4
1894	1.3	2008	1.1	2122	0.9	2236	0.8	2350	0.7	2464	0.6	2578	0.5	2692	0.4
1896	1.3	2010	1.1	2124	0.9	2238	0.8	2352	0.7	2466	0.6	2580	0.5	2694	0.4
1898	1.3	2012	1.1	2126	0.9	2240	0.8	2354	0.7	2468	0.6	2582	0.5	2696	0.4
1900	1.3	2014	1.1	2128	0.9	2242	0.8	2356	0.7	2470	0.6	2584	0.5	2698	0.4
1902	1.3	2016	1.1	2130	0.9	2244	0.8	2358	0.7	2472	0.6	2586	0.5	2700	0.4
1904	1.3	2018	1.1	2132	0.9	2246	0.8	2360	0.7	2474	0.6	2588	0.5	2702	0.4
1906	1.3	2020	1.1	2134	0.9	2248	0.8	2362	0.7	2476	0.6	2590	0.5	2704	0.4
1908	1.3	2022	1.1	2136	0.9	2250	0.8	2364	0.7	2478	0.6	2592	0.5	2706	0.4
1910	1.3	2024	1.1	2138	0.9	2252	0.8	2366	0.7	2480	0.6	2594	0.5	2708	0.4
1912	1.3	2026	1.1	2140	0.9	2254	0.8	2368	0.7	2482	0.6	2596	0.5	2710	0.4
1914	1.3	2028	1.1	2142	0.9	2256	0.8	2370	0.7	2484	0.6	2598	0.5	2712	0.4
1916	1.3	2030	1.0	2144	0.9	2258	0.8	2372	0.7	2486	0.6	2600	0.5	2714	0.4
1918	1.3	2032	1.0	2146	0.9	2260	0.8	2374	0.7	2488	0.6	2602	0.5	2716	0.4
1920	1.2	2034	1.0	2148	0.9	2262	0.8	2376	0.7	2490	0.6	2604	0.5	2718	0.4
1922	1.2	2036	1.0	2150	0.9	2264	0.8	2378	0.7	2492	0.6	2606	0.5	2720	0.4
1924	1.2	2038	1.0	2152	0.9	2266	0.8	2380	0.7	2494	0.6	2608	0.5	2722	0.4
1926	1.2	2040	1.0	2154	0.9	2268	0.8	2382	0.7	2496	0.6	2610	0.5	2724	0.4
1928	1.2	2042	1.0	2156	0.9	2270	0.7	2384	0.6	2498	0.6	2612	0.5	2726	0.4
1930	1.2	2044	1.0	2158	0.9	2272	0.7	2386	0.6	2500	0.6	2614	0.5	2728	0.4
1932	1.2	2046	1.0	2160	0.9	2274	0.7	2388	0.6	2502	0.5	2616	0.5	2730	0.4
1934	1.2	2048	1.0	2162	0.9	2276	0.7	2390	0.6	2504	0.5	2618	0.5	2732	0.4
1936	1.2	2050	1.0	2164	0.9	2278	0.7	2392	0.6	2506	0.5	2620	0.5	2734	0.4
1938	1.2	2052	1.0	2166	0.9	2280	0.7	2394	0.6	2508	0.5	2622	0.5	2736	0.4

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Fosse House Roman Wharf Lincoln LN1 1SR	Morrisons High Street Yiewsley, West Drayton 10-4897	
Date 12/06/2018 File Trench Soakaway.srcx	Designed by DM Checked by	
Micro Drainage		Source Control 2017.1

Input Hydrograph

Time (mins)	Flow (l/s)	Time (mins)	Flow (l/s)	Time (mins)	Flow (l/s)	Time (mins)	Flow (l/s)	Time (mins)	Flow (l/s)	Time (mins)	Flow (l/s)	Time (mins)	Flow (l/s)	Time (mins)	Flow (l/s)
2738	0.4	2756	0.4	2774	0.4	2792	0.4	2810	0.4	2828	0.4	2846	0.4	2864	0.4
2740	0.4	2758	0.4	2776	0.4	2794	0.4	2812	0.4	2830	0.4	2848	0.4	2866	0.4
2742	0.4	2760	0.4	2778	0.4	2796	0.4	2814	0.4	2832	0.4	2850	0.4	2868	0.4
2744	0.4	2762	0.4	2780	0.4	2798	0.4	2816	0.4	2834	0.4	2852	0.4	2870	0.4
2746	0.4	2764	0.4	2782	0.4	2800	0.4	2818	0.4	2836	0.4	2854	0.4	2872	0.4
2748	0.4	2766	0.4	2784	0.4	2802	0.4	2820	0.4	2838	0.4	2856	0.4	2874	0.4
2750	0.4	2768	0.4	2786	0.4	2804	0.4	2822	0.4	2840	0.4	2858	0.4	2876	0.4
2752	0.4	2770	0.4	2788	0.4	2806	0.4	2824	0.4	2842	0.4	2860	0.4	2878	0.4
2754	0.4	2772	0.4	2790	0.4	2808	0.4	2826	0.4	2844	0.4	2862	0.4	2880	0.4

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Micro Drainage	Source Control 2017.1	

Model Details

Storage is Online Cover Level (m) 29.500

Trench Soakaway Structure

Infiltration Coefficient Base (m/hr)	1.00000	Trench Width (m)	1.5
Infiltration Coefficient Side (m/hr)	1.00000	Trench Length (m)	10.0
Safety Factor	3.0	Slope (1:X)	10000.0
Porosity	0.30	Cap Volume Depth (m)	1.650
Invert Level (m)	27.450	Cap Infiltration Depth (m)	0.000

Ward & Cole		Page 1
Fosse House Roman Wharf Lincoln LN1 1SR	Morrisons High Street Yiewsley, West Drayton 10-4897	
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Micro Drainage Source Control 2017.1		

Summary of Results for Input Hydrograph

Half Drain Time : 29 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m ³)	Status
Input Hydrograph	28.778	1.328	4.5	13.4	O K

Storm Event	Flooded Volume (m ³)	Time-Peak (mins)
Input Hydrograph	0.0	562

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Fosse House Roman Wharf Lincoln LN1 1SR	Morrisons High Street Yiewsley, West Drayton 10-4897	
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Micro Drainage	Source Control 2017.1	

Model Details

Storage is Online Cover Level (m) 29.500

Lined Soakaway Structure

Infiltration Coefficient Base (m/hr)	1.00000	Ring Diameter (m)	2.40
Infiltration Coefficient Side (m/hr)	1.00000	Pit Multiplier	2.0
Safety Factor	3.0	Number Required	1
Porosity	0.30	Cap Volume Depth (m)	1.650
Invert Level (m)	27.450	Cap Infiltration Depth (m)	0.000

Appendix H

Consultation Responses

Mr Daniel Mutepfa
Ward Cole
Byron Business Centre (Unit 16) Duke
Street
Hucknall
Nottingham
NG15 7HP

Our ref: NE/2018/128309/01-L01
Your ref: 180302/KS05
Date: 20 March 2018

Dear Mr. Mutepfa,

**Mixed development comprising 1565m² supermarket/warehouse floor space (ground Floor), 160 housing units on 7 floors, ground floor and basement car parking
41-67 High Street, West Drayton, Hillingdon, UB7 7QQ**

Preliminary opinion regarding development at the application site

Thank you for the above pre-application enquiry. The response below is a preliminary opinion of the constraints which should be considered for the proposed use at this site. I understand that you may only be focusing on one aspect of the development, however I have included all the environmental constraints and opportunities for the site within our remit. If you would like further advice, such as the review of a Flood Risk Assessment (FRA), we now charge for this service. Further information about this can be found on our [website](#).

EA opinion

The proposal as submitted does not coincide with any constraints that fall within the remit of the Environment Agency. For example, the site is within Flood Zone 1 (low probability of flooding) and not within a Source Protection Zone (sensitive groundwater areas). If a planning application was submitted for this development as proposed, we would likely have no objections.

Note to applicant

Please note that the view expressed in this letter by the Environment Agency is a response to a pre application enquiry only and does not represent our final view in relation to any future planning application made in relation to this site.

We reserve the right to change our position in relation to any such application. You should seek your own expert advice in relation to technical matters relevant to any planning application before submission.

This opinion is based on the information submitted and current planning policy and guidance.

Cont/d..

If you have any questions please contact me on 0208 474 9008 or email me at HNL.SustainablePlaces@environment-agency.gov.uk, quoting the reference at the beginning of this letter.

Invitation for further advice

We have provided this initial preliminary opinion in response to the pre application enquiry. If you would like any further detailed advice we would be happy to provide this subject to a charge.

Yours sincerely,

Mr. James Passmore
Sustainable Places Planning Advisor

Direct dial: 0208 474 9008

Direct e-mail: james.passmore1@environment-agency.gov.uk



Mr Daniel Mutepfa
Ward Cole Consulting Engineers
Fosse House, Roman Wharf
Lincoln
LN1 1SR



Your account number
DS6045471



Developer.services@thameswater.co.uk



0800 009 3921

Mon – Fri 9am-5pm,

20/03/2018

Pre Development Enquiry

Site Address: Morrison's, 43-67 High Street, Yiewsley, West Drayton, London, UB7 7QQ, OS grid ref. 506047, 180347.

Existing site: Commercial: 2540m². Foul water discharging by gravity into foul water sewer in St. Stephen's Road, Existing SW run off for 1 in 1: 69.5l/s 1 in 10: 142.4l/s, 1 in 30: 178.7l/s 1 in 100: 228.3l/s discharging into soakaway.

Proposed Development: Units Houses: 160, Commercial: 1565m². Foul water discharging by gravity into foul water sewer in St. Stephen's Road, Unknown surface water strategy.

Dear Mr Mutepfa,

I write in relation to the Pre-Development application submitted, we have completed the assessment of the foul water flows and surface water run-off based on the information submitted in your application with the purpose of assessing sewer capacity within the existing Thames Water sewer network.

Foul Water

From the information you have provided, we can confirm that the existing foul sewer network does have sufficient capacity to accommodate the proposed foul water discharge from the proposed development.

Surface Water

Please note that discharging surface water to the public sewer network should only be considered after all other methods of disposal have been investigated and proven to not be viable. In accordance with the Building Act 2000 Clause H3.3, positive connection to a public sewer will only be consented when it can be demonstrated that the hierarchy of disposal methods have been examined and proven to be impracticable. The disposal hierarchy being: 1st Soakaways; 2nd Watercourses; 3rd Sewers.

Only when it can be proven that soakage into the ground or a connection into the adjacent watercourse is not possible would we consider a restricted discharge into the public surface water sewer network.

We would encourage techniques such as green roofs and/or permeable paving that restricts surface water discharge from your site.

Based upon policy 5.13 of the London Plan. Typically greenfield run off rates of 5l/s/ha should be aimed for using the drainage hierarchy. The hierarchy lists the preference for surface water disposal as follows; Store Rainwater for later use > Use infiltration techniques, such as porous surfaces in non-clay areas > Attenuate rainwater in ponds or open water features for gradual release > Discharge rainwater direct to a watercourse > Discharge rainwater direct to a surface water sewer/drain > Discharge rainwater to the combined sewer. Due to the proximity of the development site to the adjacent watercourse, Thames Water would not support a connection to the public sewer network for surface water disposal.

Where disposal of surface water is other than to a public sewer, then the applicant shall ensure that approval for the discharge has been obtained from the appropriate authorities.

Please note that the Local Planning authority may comment on surface water discharge under the planning process.

Please Note

All connection requests are subject to a full Section 106 (Water Industry Act 1991) application before the Company can confirm approval to the connection itself. Please also note that capacity in the public sewerage system cannot be reserved.

Foul and surface water must not be combined. This will only be permitted when a combined public sewerage system exists. When it is proposed to connect to a combined public sewer, the site drainage should be separate and combined at the final manhole nearest the boundary. Connections are not permitted for the removal of Ground Water. The discharge of non-domestic effluent is not permitted until a valid trade effluent consent has been issued by Thames Water. If anything other than domestic sewage is discharged into the public sewers without the above agreement an offence is committed and the applicant will be liable to the penalties contained in Section 109(1) (WIA 1991). Applicants should contact Trade Effluent prior to seeking a connection approval, to discuss trade effluent consent and conditions of discharge. A Trade Effluent reference number should be obtained and included in the relevant box of the attached application form. The address for Trade Effluent is - Thames Water Utilities Limited, Waste Water Quality, Crossness Sewage Treatment Works, Belvedere Road, Abbeywood, London. SE2 9AQ. Alternatively you can telephone them on 020 8507 4321.

Any approvals are subject to conditions that may be imposed through the planning process

Note on trunk sewers: Connecting directly to Trunk sewers can be complex and dangerous, which means we often refuse permission. In this case, you will need to find an alternative sewer or method of discharge. Please contact the Sewer Connections team through our Helpdesk on 0800 009 39 21 for further information.

If Thames Water permits a connection to the trunk sewer, we will insist on carrying out the connection ourselves under Section 107 of the Water Industry Act. We would advise for you to apply as soon as possible.

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The views expressed by Thames Water in this letter are in response to this pre development enquiry at this time and do not represent our final views on any future planning applications made in relation to this site.

Yours sincerely,

Artur Jaroma
Developer Services

Daniel Mutepfa

From: Osi Ivowi <Osi.Ivowi@canalrivertrust.org.uk>
Sent: 01 March 2018 14:20
To: Daniel Mutepfa
Cc: Nick Pogson; Enquiries TPWSouth
Subject: RE: Proposed Mixed Development, Morrisons High Street, Yiewsley, West Drayton
Attachments: Form 1.doc; Form 2 - Form version April 2017 - National.docx; Form 6 - Surface Water Discharge Application.doc

Good day Daniel,

Thank you for your enquiry regarding the discharge of surface water from the proposed site into the Grand Union Canal.

The Canal & River Trust undertakes a staged process to review the impact of all new or modified discharges to its network, in addition to any considerations that are made by the Environment Agency via the environmental permitting process and/or the Local Planning Authority via the normal planning process.

This initial correspondence constitutes Stage 1 of our process. We will need to ensure your application is formally recorded onto our system before we can progress for licenses to undertake operations that may affect the Canal & River Trust assets. We need you to be aware of our *"Code of Practice for Works Affecting the Canal & River Trust"* and link below will gain you access to the Code which is in 3 parts;

<https://canalrivertrust.org.uk/business-and-trade/undertaking-works-on-our-property-and-our-code-of-practice>

To commence Stage 2 of our process requires the applicant to complete and submit Forms 1 and 6 from the Code of Practice so that consistent information about the proposal is provided by all applicants. The relevant documents are attached. Section 3 of Part 2, the Detailed Information section of the Code of Practice provides details on the surface water discharge process including guidance on how to undertake the Outline Impact Assessment. Table 3 provides a list of the required information that should be submitted at the Outline and Detailed Impact Assessment stages and should be read in conjunction with Form 6 and used as a check list for submission. The initial submission of Forms 1 and 6 must be accompanied by a cheque for the relevant Administration Fee of **£380.00 plus VAT (£456.00)** in accordance with the above-mentioned code.

To commence Stage 3 of our process requires that, once the documentation is received, logged and checked for completeness, a further contribution of **£2000.00+VAT (£2400.00)** is submitted along with a Cost Undertaking (Form 2). This is a contribution towards the cost of a technical review by the Canal & River Trust of the impacts of the proposed discharge on the flood risk and water quality of the receiving Waterway.

Depending on the outcome of this technical review (which normally takes around 4 weeks), further work may be required (by the Applicant) to enable a more detailed consideration to be completed (Stage 4) or the proposal may be accepted in principle at that point. Further guidance can be found in the Code of Practice and your attention is brought to the fact that a commercial agreement will always be sought before any discharge to our network can take place, an estimation of this can be provided by our Utilities Surveyor. The Canal & River Trust is not a drainage authority and we have no obligation to accept discharges.

In addition to Forms 1 and 6, we will also need the following from you for invoicing purposes:

- Company name or individual responsible for receiving invoices.
- Address to which invoices should be sent.
- Company Registration Number (if applicable).
- Company VAT Registration Number (if applicable).
- Your Purchase Order Number included on the Cost Undertaking (if not please state in writing that you do not issue PO number).

The above information is required so that we can issue a WBS number (your unique identifier) for use in all future communication. All submissions, other than payments, by commercial organisations should be in electronic format; hard copy presentations are not permissible unless in exceptional circumstances and then only by prior agreement.

A Discharge Consent or Environmental Permit from the Environment Agency does not confer the right to discharge to the waterways that are owned or managed by the Canal & River Trust.

Regards

Osi Ivowi

Regional Manager (South)
Infrastructure Services Team

T: 01908 302591 M: 07776 472644

E: osi.ivowi@canalrivertrust.org.uk

Canal & River Trust, First Floor North, Station House,
500 Elder Gate, Milton Keynes MK9 1BB

Please do not encroach upon Canal & River Trust land or apparatus until you have written consent from Canal & River Trust to do so.



The Canal & River Trust is a new charity entrusted with the care of 2,000 miles of waterways in England and Wales. Get involved, join us - Visit | Donate | Volunteer at www.canalrivertrust.org.uk

Canal & River Trust is a charitable company limited by guarantee registered in England & Wales with company number **07807276**; and charity number **1146792**.

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From: Nick Pogson

Sent: 01 March 2018 13:12

To: daniel@wardcole.co.uk

Cc: Osi Ivowi <Osi.Ivowi@canalrivertrust.org.uk>; Claire McLean <Claire.McLean@canalrivertrust.org.uk>; Jacquie Watt <Jacquie.Watt@canalrivertrust.org.uk>; Bernadette McNicholas <Bernadette.McNicholas@canalrivertrust.org.uk>

Subject: FW: Proposed Mixed Development, Morrisons High Street, Yiewsley, West Drayton

Daniel,

Thank you for your email.

CRT have a standard process for reviewing surface water discharges and I'll ask Osi (Works Engineer) to provide you the forms by cc to this email. Should the proposal be acceptable, the commercial contract would be handled by Jacquie Watt (Utilities Surveyor) also cc'd.

Please also let us know if you may require rights to discharge ground water discharge during the construction of the basement?

I've also cc'd Bernadette (Estates Surveyor) who is the relevant contact for any property agreements such as crane over sail, hoarding licences, bridge crossings, etc.

Any queries, please let me know.

Kind regards
Nick

Appendix I

SUDS Maintenance Plan

SUDS Management and Maintenance Plan

The Blue Green Roof System will be managed and maintained in accordance with the specialist designer / installer's specifications. Maintenance of the proposed soakaway will be as follows in accordance with the recommendations of *The SUDS Manual* and manufacturers' guidelines.

- Inspect for sediment and debris in pre-treatment components and floor of inspection chamber and inside of concrete manhole rings if applicable – Annually.
- Cleaning of gutters and any filters on downpipes – As required based on inspections where applicable.
- Trimming any roots that may be causing blockages – Annually or as required.
- Remove sediment and debris from pre-treatment components and floor of inspection chamber – As required based on inspections.
- Reconstruct soakaway and / or replace clean void fill, if performance deteriorates or failure occurs – As required.
- Replacement of clogged geotextile (soakaway reconstruction required) – As required.
- Inspect silt trap and note rate of sediment accumulation – Monthly in the first year and then annually.
- Check soakaway to ensure emptying is occurring – Annually.