

Q - Wragg Marsh

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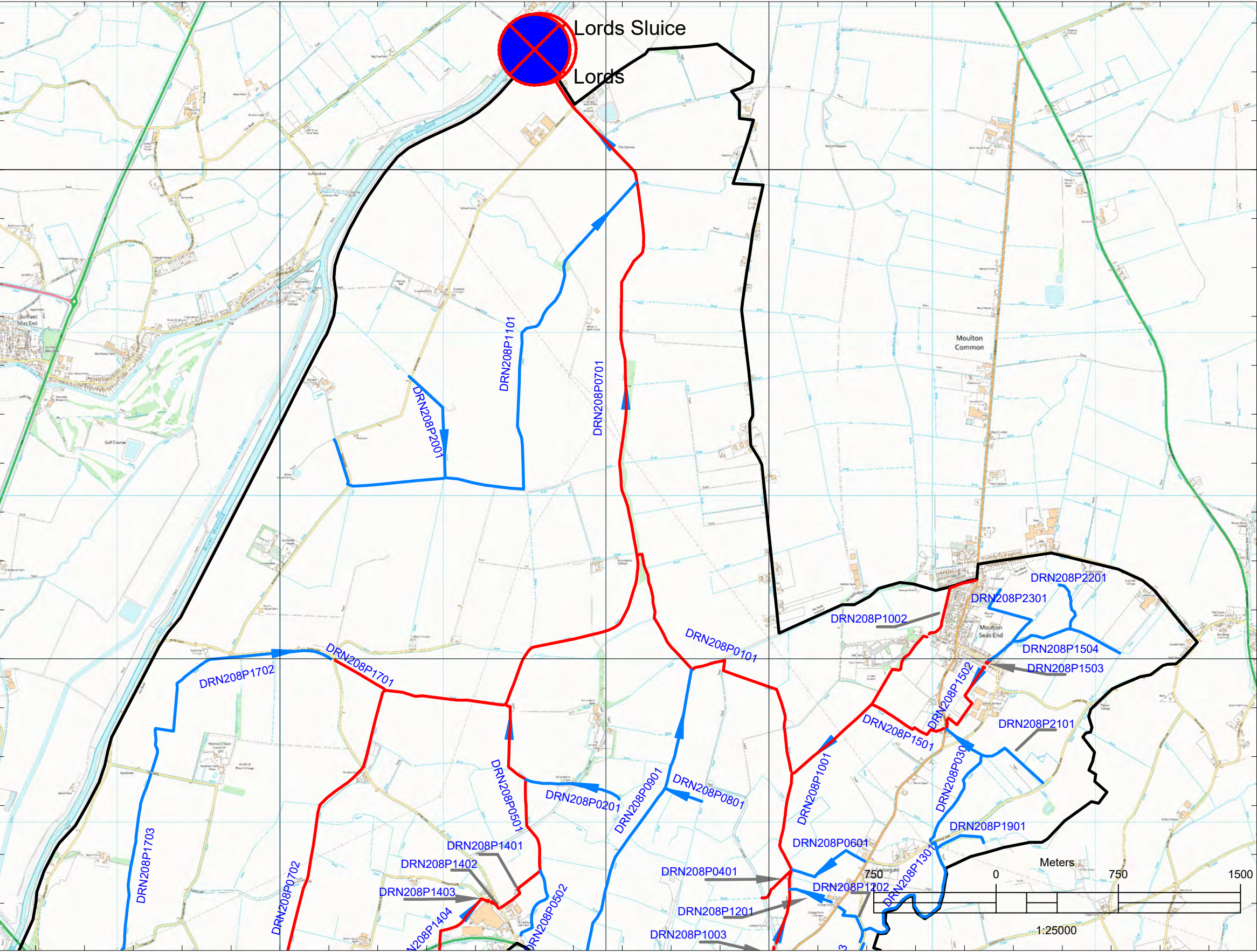
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R - Lords (S)



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N - Lawyers

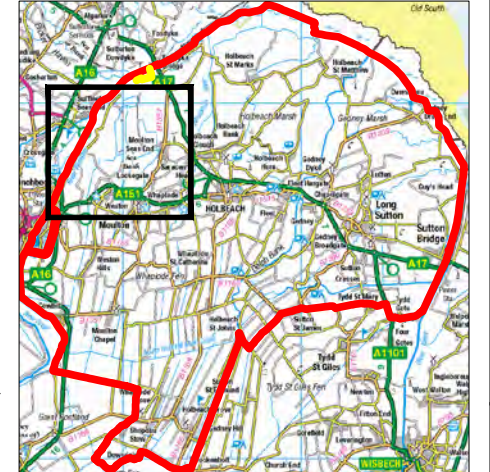
Lords (N)



LEGEND

-  - Catchment Boundary
-  - High Priority Watercourse
-  - IDB Ordinary Watercourse
-  - High Priority Pipeline
-  - Ordinary Pipeline
-  - Water Control Structure
-  - Pumping Station
-  - Inland Sluice
-  - Tidal Sluice

KEY MAP



N



SCALE	SHEET NUMBER
Best fit	© Crown Copyright and database rights [2012]. All rights reserved OS licence number 100029527.
PLOT DATE	CMT208P
03/11/2021	
FILE NAME	
SHIDB_webmap2020.dwg	

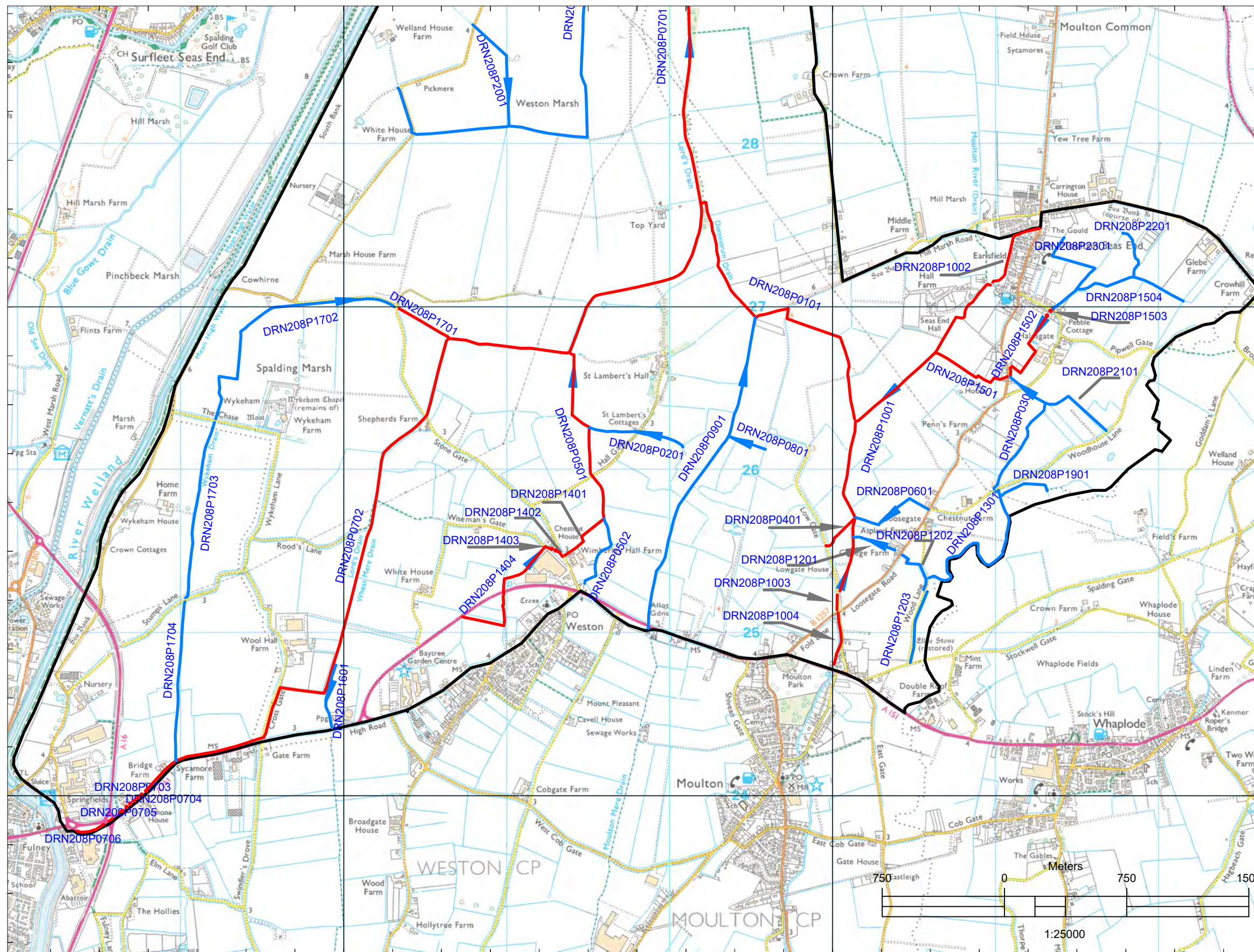
R - Lords (N)

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B - Wisemans

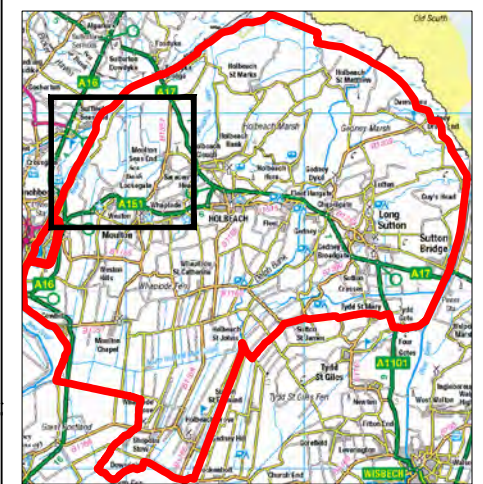
Lords (S)



LEGEND

- - Catchment Boundary
- - High Priority Watercourse
- - IDB Ordinary Watercourse
- - High Priority Pipeline
- - Ordinary Pipeline
- - Water Control Structure
- ⊗ - Pumping Station
- ⊗ - Inland Sluice
- ⊗ - Tidal Sluice

KEY MAP



SCALE	SHEET NUMBER
Best fit	CMT208P
PLOT DATE	
08/02/2023	
FILE NAME	SHIDB_webmap2020.dwg

APPENDIX E

DEVELOPMENT PROPOSALS



Key

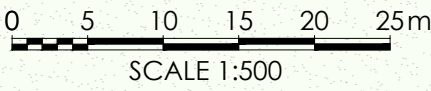
+000.00 Existing Levels

+000.00 Proposed Levels

All levels subject to engineer details

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Rev	Date	Description	Drawn	CHK'd
A	19.02.25	Roundabout updated to latest	BGL	JCB
B	03.06.25	Landscape plan + areas added	BGL	BL
C	23.06.25	Amended to comments	BGL	BL



Architecture
Masterplanning
Interior Design

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Project Title Proposed Development					
Holbeach Road Spalding					
Drawing Title Proposed Site Masterplan					
Drawn	Checked	Scale	BA1	BIM Status	Date
BGL	BL	1:500	NA		02.25
Drawing Status		Rev.	THP Project No		
Planning		C	19627		
Project No.	Originator	Volume	Level	Role	Number
19627	THPW	00	XX	DR A	1000

APPENDIX F

SURFACE WATER CALCULATIONS

Calculated by:	Matthew Wilson
Site name:	M&S
Site location:	Spalding

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.

Site Details

Latitude:	52.79676° N
Longitude:	0.1231° W
Reference:	3859342441
Date:	Apr 15 2024 16:21

Runoff estimation approach

IH124

Site characteristics

Total site area (ha):

1

Methodology

Q_{BAR} estimation method:

Calculate from SPR and SAAR

SPR estimation method:

Calculate from SOIL type

Notes

(1) Is $Q_{BAR} < 2.0$ l/s/ha?

When Q_{BAR} is < 2.0 l/s/ha then limiting discharge rates are set at 2.0 l/s/ha.

Soil characteristics

SOIL type:

Default

2

Edited

2

HOST class:

N/A

N/A

SPR/SPRHOST:

0.3

0.3

Hydrological characteristics

Default

Edited

(2) Are flow rates < 5.0 l/s?

Where flow rates are less than 5.0 l/s consent for discharge is usually set at 5.0 l/s if blockage from vegetation and other materials is possible.

SAAR (mm):	560	560	Lower consent flow rates may be set where the blockage risk is addressed by using appropriate drainage elements.
Hydrological region:	5	5	
Growth curve factor 1 year:	0.87	0.87	
Growth curve factor 30 years:	2.45	2.45	(3) Is $SPR/SPRHOST \leq 0.3$? Where groundwater levels are low enough the use of soakaways to avoid discharge offsite would normally be preferred for disposal of surface water runoff.
Growth curve factor 100 years:	3.56	3.56	
Growth curve factor 200 years:	4.21	4.21	

Greenfield runoff rates		
	Default	Edited
Q_{BAR} (l/s):	1.4	1.4
1 in 1 year (l/s):	1.22	1.22
1 in 30 years (l/s):	3.44	3.44
1 in 100 year (l/s):	5	5
1 in 200 years (l/s):	5.91	5.91

This report was produced using the greenfield runoff tool developed by HR Wallingford and available at 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 www.uksuds.com/terms-and-conditions.htm. The outputs from this tool are estimates of 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, CEH, Hydrosolutions or any other organisation for the use of this data in the design or operational characteristics of any drainage scheme.

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Depth (m)
MH01	0.038	4.00	3.100	900	0.600
PF04	0.013	4.00	3.550	450	0.450
CP05			3.400	450	0.450
PF06	0.008	4.00	3.300	450	0.450
CP07			3.250	450	0.425
MH03	0.020	4.00	3.400	450	0.600
PF08	0.024	4.00	3.350	450	0.450
CP09			3.250	450	0.450
MH02	0.039	4.00	3.000	900	0.675
RE12	0.013	4.00	3.300	150	0.450
MH13			3.400	450	0.700
RE14	0.012	4.00	3.300	150	0.450
MH15			3.350	450	0.750
MH11	0.030	4.00	3.300	450	0.820
PF16	0.018	4.00	3.150	450	0.450
CP17			3.150	450	0.550
MH10	0.025	4.00	3.000	1200	0.825
PF19	0.025	4.00	3.400	450	0.400
CP20			3.050	450	0.450
MH18	0.024	4.00	2.950	1350	0.900
MH22	0.052	4.00	3.350	450	0.850
MH23	0.074	4.00	3.200	450	0.900
PF25	0.021	4.00	3.300	450	0.450
CP26			3.150	450	0.450
PF27	0.015	4.00	3.150	450	0.450
CP28			3.050	450	0.450
MH21	0.035	4.00	3.250	1500	1.450
PF31	0.030	4.00	3.400	450	0.450
CP32			3.300	450	0.725
PF33	0.063	4.00	3.200	450	0.525
PF33a	0.035	4.00	3.100	450	0.625
CP34			3.100	450	0.725
MH29	0.019	4.00	3.300	900	1.000
PF35	0.065	4.00	2.950	450	0.525
PF35a	0.035	4.00	2.850	450	0.625
CP36			2.850	450	0.725
PF37	0.067	4.00	2.850	450	0.525
PF37a	0.053	4.00	2.750	450	0.550
CP38			2.750	450	0.625
MH30	0.033	4.00	3.100	1200	1.100
MH24	0.081	4.00	2.950	1500	1.825
MH39	0.043	4.00	3.300	1500	2.275
MH40	0.074	4.00	3.200	1800	2.255
MH41			2.900	1500	2.112

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	MH01	MH02	21.100	0.600	2.500	2.400	0.100	211.0	225	4.39	50.0
3.000	PF04	CP05	24.000	0.600	3.100	2.950	0.150	160.0	150	4.51	50.0
3.001	CP05	MH03	6.640	0.600	2.950	2.800	0.150	44.3	150	4.58	50.0
4.000	PF06	CP07	7.600	0.600	2.850	2.825	0.025	304.0	150	4.22	50.0
4.001	CP07	MH03	4.270	0.600	2.825	2.800	0.025	170.8	150	4.31	50.0
2.000	MH03	MH02	21.670	0.600	2.800	2.475	0.325	66.7	150	4.87	50.0
5.000	PF08	CP09	16.500	0.600	2.900	2.800	0.100	165.0	150	4.35	50.0
5.001	CP09	MH02	7.920	0.600	2.800	2.475	0.325	24.4	150	4.42	50.0
1.001	MH02	MH10	30.480	0.600	2.325	2.175	0.150	203.2	300	5.33	50.0
7.000	RE12	MH13	22.200	0.600	2.850	2.700	0.150	148.0	150	4.45	50.0
7.001	MH13	MH15	13.450	0.600	2.700	2.600	0.100	134.5	150	4.71	50.0
8.000	RE14	MH15	22.200	0.600	2.850	2.600	0.250	88.8	150	4.35	50.0
7.002	MH15	MH11	2.420	0.600	2.600	2.550	0.050	48.4	150	4.74	50.0
6.000	MH11	MH10	29.650	0.600	2.480	2.250	0.230	128.9	225	5.17	50.0
9.000	PF16	CP17	14.000	0.600	2.700	2.600	0.100	140.0	150	4.28	50.0
9.001	CP17	MH10	6.900	0.600	2.600	2.325	0.275	25.1	150	4.33	50.0
1.002	MH10	MH18	11.110	0.600	2.175	2.125	0.050	222.2	300	5.51	50.0
10.000	PF19	CP20	29.400	0.600	3.000	2.600	0.400	73.5	150	4.42	50.0
10.001	CP20	MH18	9.880	0.600	2.600	2.275	0.325	30.4	150	4.51	50.0
1.003	MH18	MH21	18.880	0.600	2.050	1.950	0.100	188.8	375	5.75	50.0
11.000	MH22	MH23	20.460	0.600	2.500	2.375	0.125	163.7	225	4.33	50.0
11.001	MH23	MH21	57.390	0.600	2.300	2.025	0.275	208.7	300	5.22	50.0
12.000	PF25	CP26	22.400	0.600	2.850	2.700	0.150	149.3	150	4.46	50.0
12.001	CP26	MH21	2.530	0.600	2.700	2.175	0.525	4.8	150	4.46	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)
1.000	0.896	35.6	6.9	0.375	0.375	0.038	0.0
3.000	0.792	14.0	2.3	0.300	0.300	0.013	0.0
3.001	1.516	26.8	2.3	0.300	0.450	0.013	0.0
4.000	0.571	10.1	1.4	0.300	0.275	0.008	0.0
4.001	0.766	13.5	1.4	0.275	0.450	0.008	0.0
2.000	1.233	21.8	7.4	0.450	0.375	0.041	0.0
5.000	0.779	13.8	4.3	0.300	0.300	0.024	0.0
5.001	2.048	36.2	4.3	0.300	0.375	0.024	0.0
1.001	1.099	77.7	25.7	0.375	0.525	0.142	0.0
7.000	0.824	14.6	2.3	0.300	0.550	0.013	0.0
7.001	0.865	15.3	2.3	0.550	0.600	0.013	0.0
8.000	1.067	18.9	2.2	0.300	0.600	0.012	0.0
7.002	1.449	25.6	4.5	0.600	0.600	0.025	0.0
6.000	1.150	45.7	9.9	0.595	0.525	0.055	0.0
9.000	0.847	15.0	3.3	0.300	0.400	0.018	0.0
9.001	2.018	35.7	3.3	0.400	0.525	0.018	0.0
1.002	1.050	74.3	43.4	0.525	0.525	0.240	0.0
10.000	1.174	20.7	4.5	0.250	0.300	0.025	0.0
10.001	1.832	32.4	4.5	0.300	0.525	0.025	0.0
1.003	1.315	145.2	52.2	0.525	0.925	0.289	0.0
11.000	1.019	40.5	9.4	0.625	0.600	0.052	0.0
11.001	1.084	76.6	22.8	0.600	0.925	0.126	0.0
12.000	0.820	14.5	3.8	0.300	0.300	0.021	0.0
12.001	4.622	81.7	3.8	0.300	0.925	0.021	0.0

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)
13.000	PF27	CP28	17.600	0.600	2.700	2.600	0.100	176.0	150	4.39	50.0
13.001	CP28	MH21	3.880	0.600	2.600	2.175	0.425	9.1	150	4.41	50.0
1.004	MH21	MH24	53.450	0.600	1.800	1.650	0.150	356.3	525	6.50	50.0
15.000	PF31	CP32	53.460	0.600	2.950	2.650	0.300	178.2	150	5.19	50.0
15.001	CP32	MH29	8.600	0.600	2.575	2.300	0.275	31.3	225	5.25	50.0
16.000	PF33	PF33a	31.500	0.600	2.675	2.475	0.200	157.5	225	4.51	50.0
16.001	PF33a	CP34	19.000	0.600	2.475	2.375	0.100	190.0	225	4.84	50.0
16.002	CP34	MH29	5.810	0.600	2.375	2.300	0.075	77.5	225	4.91	50.0
14.000	MH29	MH30	33.560	0.600	2.300	2.075	0.225	149.2	225	5.77	50.0
17.000	PF35	PF35a	31.500	0.600	2.425	2.225	0.200	157.5	225	4.51	50.0
17.001	PF35a	CP36	19.000	0.600	2.225	2.125	0.100	190.0	225	4.84	50.0
17.002	CP36	MH30	5.810	0.600	2.125	2.075	0.050	116.2	225	4.92	50.0
18.000	PF37	PF37a	26.500	0.600	2.325	2.200	0.125	212.0	225	4.49	50.0
18.001	PF37a	CP38	19.000	0.600	2.200	2.125	0.075	253.3	225	4.88	50.0
18.002	CP38	MH30	5.810	0.600	2.125	2.075	0.050	116.2	225	4.96	50.0
14.001	MH30	MH24	20.190	0.600	2.000	1.875	0.125	161.5	300	6.05	50.0
1.005	MH24	MH40	58.440	0.600	1.125	0.950	0.175	333.9	600	7.24	50.0
19.000	MH39	MH40	20.000	0.600	1.025	0.950	0.075	266.7	600	4.22	50.0
1.006	MH40	MH41	23.500	0.600	0.945	0.788	0.157	150.0	150	7.72	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)
13.000	0.754	13.3	2.7	0.300	0.300	0.015	0.0
13.001	3.354	59.3	2.7	0.300	0.925	0.015	0.0
1.004	1.180	255.5	87.8	0.925	0.775	0.486	0.0
15.000	0.749	13.2	5.4	0.300	0.500	0.030	0.0
15.001	2.348	93.3	5.4	0.500	0.775	0.030	0.0
16.000	1.039	41.3	11.4	0.300	0.400	0.063	0.0
16.001	0.945	37.6	17.7	0.400	0.500	0.098	0.0
16.002	1.487	59.1	17.7	0.500	0.775	0.098	0.0
14.000	1.068	42.5	26.6	0.775	0.800	0.147	0.0
17.000	1.039	41.3	11.7	0.300	0.400	0.065	0.0
17.001	0.945	37.6	18.1	0.400	0.500	0.100	0.0
17.002	1.212	48.2	18.1	0.500	0.800	0.100	0.0
18.000	0.894	35.5	12.1	0.300	0.325	0.067	0.0
18.001	0.817	32.5	21.7	0.325	0.400	0.120	0.0
18.002	1.212	48.2	21.7	0.400	0.800	0.120	0.0
14.001	1.234	87.2	72.3	0.800	0.775	0.400	0.0
1.005	1.327	375.1	174.7	1.225	1.650	0.967	0.0
19.000	1.486	420.2	7.8	1.675	1.650	0.043	0.0
1.006	0.818	14.5	195.9	2.105	1.962	1.084	0.0

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	21.100	211.0	225	Circular	3.100	2.500	0.375	3.000	2.400	0.375
3.000	24.000	160.0	150	Circular	3.550	3.100	0.300	3.400	2.950	0.300
3.001	6.640	44.3	150	Circular	3.400	2.950	0.300	3.400	2.800	0.450
4.000	7.600	304.0	150	Circular	3.300	2.850	0.300	3.250	2.825	0.275
4.001	4.270	170.8	150	Circular	3.250	2.825	0.275	3.400	2.800	0.450
2.000	21.670	66.7	150	Circular	3.400	2.800	0.450	3.000	2.475	0.375
5.000	16.500	165.0	150	Circular	3.350	2.900	0.300	3.250	2.800	0.300
5.001	7.920	24.4	150	Circular	3.250	2.800	0.300	3.000	2.475	0.375
1.001	30.480	203.2	300	Circular	3.000	2.325	0.375	3.000	2.175	0.525
7.000	22.200	148.0	150	Circular	3.300	2.850	0.300	3.400	2.700	0.550
7.001	13.450	134.5	150	Circular	3.400	2.700	0.550	3.350	2.600	0.600
8.000	22.200	88.8	150	Circular	3.300	2.850	0.300	3.350	2.600	0.600
7.002	2.420	48.4	150	Circular	3.350	2.600	0.600	3.300	2.550	0.600
6.000	29.650	128.9	225	Circular	3.300	2.480	0.595	3.000	2.250	0.525
9.000	14.000	140.0	150	Circular	3.150	2.700	0.300	3.150	2.600	0.400
9.001	6.900	25.1	150	Circular	3.150	2.600	0.400	3.000	2.325	0.525
1.002	11.110	222.2	300	Circular	3.000	2.175	0.525	2.950	2.125	0.525
10.000	29.400	73.5	150	Circular	3.400	3.000	0.250	3.050	2.600	0.300
10.001	9.880	30.4	150	Circular	3.050	2.600	0.300	2.950	2.275	0.525
1.003	18.880	188.8	375	Circular	2.950	2.050	0.525	3.250	1.950	0.925
11.000	20.460	163.7	225	Circular	3.350	2.500	0.625	3.200	2.375	0.600
11.001	57.390	208.7	300	Circular	3.200	2.300	0.600	3.250	2.025	0.925
12.000	22.400	149.3	150	Circular	3.300	2.850	0.300	3.150	2.700	0.300
12.001	2.530	4.8	150	Circular	3.150	2.700	0.300	3.250	2.175	0.925
13.000	17.600	176.0	150	Circular	3.150	2.700	0.300	3.050	2.600	0.300

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	MH01	900	Manhole	Adoptable	MH02	900	Manhole	Adoptable
3.000	PF04	450	Manhole	Adoptable	CP05	450	Manhole	Adoptable
3.001	CP05	450	Manhole	Adoptable	MH03	450	Manhole	Adoptable
4.000	PF06	450	Manhole	Adoptable	CP07	450	Manhole	Adoptable
4.001	CP07	450	Manhole	Adoptable	MH03	450	Manhole	Adoptable
2.000	MH03	450	Manhole	Adoptable	MH02	900	Manhole	Adoptable
5.000	PF08	450	Manhole	Adoptable	CP09	450	Manhole	Adoptable
5.001	CP09	450	Manhole	Adoptable	MH02	900	Manhole	Adoptable
1.001	MH02	900	Manhole	Adoptable	MH10	1200	Manhole	Adoptable
7.000	RE12	150	Sealed Manhole	Adoptable	MH13	450	Manhole	Adoptable
7.001	MH13	450	Manhole	Adoptable	MH15	450	Manhole	Adoptable
8.000	RE14	150	Sealed Manhole	Adoptable	MH15	450	Manhole	Adoptable
7.002	MH15	450	Manhole	Adoptable	MH11	450	Manhole	Adoptable
6.000	MH11	450	Manhole	Adoptable	MH10	1200	Manhole	Adoptable
9.000	PF16	450	Manhole	Adoptable	CP17	450	Manhole	Adoptable
9.001	CP17	450	Manhole	Adoptable	MH10	1200	Manhole	Adoptable
1.002	MH10	1200	Manhole	Adoptable	MH18	1350	Manhole	Adoptable
10.000	PF19	450	Manhole	Adoptable	CP20	450	Manhole	Adoptable
10.001	CP20	450	Manhole	Adoptable	MH18	1350	Manhole	Adoptable
1.003	MH18	1350	Manhole	Adoptable	MH21	1500	Manhole	Adoptable
11.000	MH22	450	Manhole	Adoptable	MH23	450	Manhole	Adoptable
11.001	MH23	450	Manhole	Adoptable	MH21	1500	Manhole	Adoptable
12.000	PF25	450	Manhole	Adoptable	CP26	450	Manhole	Adoptable
12.001	CP26	450	Manhole	Adoptable	MH21	1500	Manhole	Adoptable
13.000	PF27	450	Manhole	Adoptable	CP28	450	Manhole	Adoptable

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)
13.001	3.880	9.1	150	Circular	3.050	2.600	0.300	3.250	2.175	0.925
1.004	53.450	356.3	525	Circular	3.250	1.800	0.925	2.950	1.650	0.775
15.000	53.460	178.2	150	Circular	3.400	2.950	0.300	3.300	2.650	0.500
15.001	8.600	31.3	225	Circular	3.300	2.575	0.500	3.300	2.300	0.775
16.000	31.500	157.5	225	Circular	3.200	2.675	0.300	3.100	2.475	0.400
16.001	19.000	190.0	225	Circular	3.100	2.475	0.400	3.100	2.375	0.500
16.002	5.810	77.5	225	Circular	3.100	2.375	0.500	3.300	2.300	0.775
14.000	33.560	149.2	225	Circular	3.300	2.300	0.775	3.100	2.075	0.800
17.000	31.500	157.5	225	Circular	2.950	2.425	0.300	2.850	2.225	0.400
17.001	19.000	190.0	225	Circular	2.850	2.225	0.400	2.850	2.125	0.500
17.002	5.810	116.2	225	Circular	2.850	2.125	0.500	3.100	2.075	0.800
18.000	26.500	212.0	225	Circular	2.850	2.325	0.300	2.750	2.200	0.325
18.001	19.000	253.3	225	Circular	2.750	2.200	0.325	2.750	2.125	0.400
18.002	5.810	116.2	225	Circular	2.750	2.125	0.400	3.100	2.075	0.800
14.001	20.190	161.5	300	Circular	3.100	2.000	0.800	2.950	1.875	0.775
1.005	58.440	333.9	600	Circular	2.950	1.125	1.225	3.200	0.950	1.650
19.000	20.000	266.7	600	Circular	3.300	1.025	1.675	3.200	0.950	1.650
1.006	23.500	150.0	150	Circular	3.200	0.945	2.105	2.900	0.788	1.962

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
13.001	CP28	450	Manhole	Adoptable	MH21	1500	Manhole	Adoptable
1.004	MH21	1500	Manhole	Adoptable	MH24	1500	Manhole	Adoptable
15.000	PF31	450	Manhole	Adoptable	CP32	450	Manhole	Adoptable
15.001	CP32	450	Manhole	Adoptable	MH29	900	Manhole	Adoptable
16.000	PF33	450	Manhole	Adoptable	PF33a	450	Manhole	Adoptable
16.001	PF33a	450	Manhole	Adoptable	CP34	450	Manhole	Adoptable
16.002	CP34	450	Manhole	Adoptable	MH29	900	Manhole	Adoptable
14.000	MH29	900	Manhole	Adoptable	MH30	1200	Manhole	Adoptable
17.000	PF35	450	Manhole	Adoptable	PF35a	450	Manhole	Adoptable
17.001	PF35a	450	Manhole	Adoptable	CP36	450	Manhole	Adoptable
17.002	CP36	450	Manhole	Adoptable	MH30	1200	Manhole	Adoptable
18.000	PF37	450	Manhole	Adoptable	PF37a	450	Manhole	Adoptable
18.001	PF37a	450	Manhole	Adoptable	CP38	450	Manhole	Adoptable
18.002	CP38	450	Manhole	Adoptable	MH30	1200	Manhole	Adoptable
14.001	MH30	1200	Manhole	Adoptable	MH24	1500	Manhole	Adoptable
1.005	MH24	1500	Manhole	Adoptable	MH40	1800	Manhole	Adoptable
19.000	MH39	1500	Manhole	Adoptable	MH40	1800	Manhole	Adoptable
1.006	MH40	1800	Manhole	Adoptable	MH41	1500	Manhole	Adoptable

Manhole Schedule

Node	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
MH01	3.100	0.600	900	 0	1.000	2.500	225
PF04	3.550	0.450	450		3.000	3.100	150

Manhole Schedule

Node	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
CP05	3.400	0.450	450	1	3.000	2.950	150
				0	3.001	2.950	150
PF06	3.300	0.450	450	0	4.000	2.850	150
CP07	3.250	0.425	450	1	4.000	2.825	150
				0	4.001	2.825	150
MH03	3.400	0.600	450	1	4.001	2.800	150
				2	3.001	2.800	150
				0	2.000	2.800	150
PF08	3.350	0.450	450	0	5.000	2.900	150
CP09	3.250	0.450	450	1	5.000	2.800	150
				0	5.001	2.800	150
MH02	3.000	0.675	900	1	5.001	2.475	150
				2	2.000	2.475	150
				3	1.000	2.400	225
				0	1.001	2.325	300
RE12	3.300	0.450	150	0	7.000	2.850	150
MH13	3.400	0.700	450	1	7.000	2.700	150
				0	7.001	2.700	150
RE14	3.300	0.450	150	0	8.000	2.850	150
MH15	3.350	0.750	450	1	8.000	2.600	150
				2	7.001	2.600	150
				0	7.002	2.600	150
MH11	3.300	0.820	450	1	7.002	2.550	150
				0	6.000	2.480	225
PF16	3.150	0.450	450	0	9.000	2.700	150

Manhole Schedule

Node	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
CP17	3.150	0.550	450		1 9.000	2.600	150
					0 9.001	2.600	150
MH10	3.000	0.825	1200		1 9.001	2.325	150
					2 6.000	2.250	225
					3 1.001	2.175	300
					0 1.002	2.175	300
PF19	3.400	0.400	450				
					0 10.000	3.000	150
CP20	3.050	0.450	450		1 10.000	2.600	150
					0 10.001	2.600	150
MH18	2.950	0.900	1350		1 10.001	2.275	150
					2 1.002	2.125	300
					0 1.003	2.050	375
MH22	3.350	0.850	450				
					0 11.000	2.500	225
MH23	3.200	0.900	450		1 11.000	2.375	225
					0 11.001	2.300	300
PF25	3.300	0.450	450				
					0 12.000	2.850	150
CP26	3.150	0.450	450		1 12.000	2.700	150
					0 12.001	2.700	150
PF27	3.150	0.450	450				
					0 13.000	2.700	150
CP28	3.050	0.450	450		1 13.000	2.600	150
					0 13.001	2.600	150
MH21	3.250	1.450	1500		1 13.001	2.175	150
					2 12.001	2.175	150
					3 11.001	2.025	300
					4 1.003	1.950	375
					0 1.004	1.800	525
PF31	3.400	0.450	450				
					0 15.000	2.950	150

Manhole Schedule

Node	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
CP32	3.300	0.725	450	1	15.000	2.650	150
				0	15.001	2.575	225
PF33	3.200	0.525	450	0	16.000	2.675	225
PF33a	3.100	0.625	450	1	16.000	2.475	225
				0	16.001	2.475	225
CP34	3.100	0.725	450	1	16.001	2.375	225
				0	16.002	2.375	225
MH29	3.300	1.000	900	1	16.002	2.300	225
				2	15.001	2.300	225
				0	14.000	2.300	225
PF35	2.950	0.525	450	0	17.000	2.425	225
PF35a	2.850	0.625	450	1	17.000	2.225	225
				0	17.001	2.225	225
CP36	2.850	0.725	450	1	17.001	2.125	225
				0	17.002	2.125	225
PF37	2.850	0.525	450	0	18.000	2.325	225
PF37a	2.750	0.550	450	1	18.000	2.200	225
				0	18.001	2.200	225
CP38	2.750	0.625	450	1	18.001	2.125	225
				0	18.002	2.125	225
MH30	3.100	1.100	1200	1	18.002	2.075	225
				2	17.002	2.075	225
				3	14.000	2.075	225
				0	14.001	2.000	300
MH24	2.950	1.825	1500	1	14.001	1.875	300
				2	1.004	1.650	525
				0	1.005	1.125	600

Manhole Schedule

Node	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
MH39	3.300	2.275	1500		0	19.000	1.025	600
MH40	3.200	2.255	1800		1	19.000	0.950	600
					2	1.005	0.950	600
					0	1.006	0.945	150
MH41	2.900	2.112	1500		1	1.006	0.788	150

Simulation Settings

Rainfall Methodology	FSR	Analysis Speed	Detailed
Rainfall Events	Singular	Skip Steady State	x
FSR Region	England and Wales	Drain Down Time (mins)	480
M5-60 (mm)	20.000	Additional Storage (m³/ha)	20.0
Ratio-R	0.400	Starting Level (m)	
Summer CV	1.000	Check Discharge Rate(s)	x
Winter CV	1.000	Check Discharge Volume	x

Storm Durations

15	60	180	360	600	960	2160
30	120	240	480	720	1440	2880

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	0	0
30	25	0	0
100	25	0	0

Node MH41 Online Pump Control

Flap Valve	x	Design Depth (m)	1.550	Switch off depth (m)	0.100
Replaces Downstream Link	✓	Design Flow (l/s)	2.0		
Invert Level (m)	0.788	Switch on depth (m)	0.200		

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	0.000	0.101	2.000

Node MH40 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	0.945	Product Number	CTL-SHE-0064-2000-1200-2000
Design Depth (m)	1.200	Min Outlet Diameter (m)	0.100
Design Flow (l/s)	2.0	Min Node Diameter (mm)	1200

Node CP05 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	2.950	Slope (1:X)	160.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	0	Depth (m)	0.350
Safety Factor	2.0	Width (m)	5.000	Inf Depth (m)	
Porosity	0.30	Length (m)	25.000		

Node CP07 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	2.825	Slope (1:X)	152.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	6	Depth (m)	0.350
Safety Factor	2.0	Width (m)	5.000	Inf Depth (m)	
Porosity	0.30	Length (m)	8.600		

Node CP09 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	2.800	Slope (1:X)	165.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	2	Depth (m)	0.350
Safety Factor	2.0	Width (m)	5.000	Inf Depth (m)	
Porosity	0.30	Length (m)	17.500		

Node CP17 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	2.600	Slope (1:X)	140.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	0	Depth (m)	0.350
Safety Factor	2.0	Width (m)	5.000	Inf Depth (m)	
Porosity	0.30	Length (m)	15.000		

Node CP20 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	2.600	Slope (1:X)	74.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	60	Depth (m)	0.350
Safety Factor	2.0	Width (m)	5.000	Inf Depth (m)	
Porosity	0.30	Length (m)	28.600		

Node CP26 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	2.700	Slope (1:X)	149.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	0	Depth (m)	0.350
Safety Factor	2.0	Width (m)	6.200	Inf Depth (m)	
Porosity	0.30	Length (m)	23.400		

Node CP28 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	2.600	Slope (1:X)	176.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	90	Depth (m)	0.350
Safety Factor	2.0	Width (m)	4.900	Inf Depth (m)	
Porosity	0.30	Length (m)	18.600		

Node CP32 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	2.575	Slope (1:X)	178.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	0	Depth (m)	0.350
Safety Factor	2.0	Width (m)	5.000	Inf Depth (m)	
Porosity	0.30	Length (m)	55.000		

Node PF33a Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	2.475	Slope (1:X)	158.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	120	Depth (m)	0.350
Safety Factor	2.0	Width (m)	10.000	Inf Depth (m)	
Porosity	0.95	Length (m)	32.500		

Node CP34 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	2.375	Slope (1:X)	190.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)		Depth (m)	0.350
Safety Factor	2.0	Width (m)	10.000	Inf Depth (m)	
Porosity	0.95	Length (m)	20.000		

Node PF35a Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	2.225	Slope (1:X)	158.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)		Depth (m)	0.350
Safety Factor	2.0	Width (m)	10.000	Inf Depth (m)	
Porosity	0.95	Length (m)	32.500		

Node CP36 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	2.125	Slope (1:X)	190.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)		Depth (m)	0.350
Safety Factor	2.0	Width (m)	10.000	Inf Depth (m)	
Porosity	0.95	Length (m)	20.000		

Node PF37a Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	2.200	Slope (1:X)	212.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)		Depth (m)	0.350
Safety Factor	2.0	Width (m)	10.000	Inf Depth (m)	
Porosity	0.95	Length (m)	27.500		

Node CP38 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	2.125	Slope (1:X)	253.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)		Depth (m)	0.350
Safety Factor	2.0	Width (m)	10.000	Inf Depth (m)	
Porosity	0.95	Length (m)	20.000		

Node MH39 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	1.025
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	

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	300.0	0.0	1.200	300.0	0.0	1.201	0.0	0.0

Node MH24 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	1.125
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	

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	150.0	0.0	1.200	150.0	0.0	1.201	0.0	0.0

Results for 1 year Critical Storm Duration. Lowest mass balance: 99.65%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	MH01	10	2.572	0.072	7.6	0.1372	0.0000	OK
15 minute summer	PF04	10	3.147	0.047	2.6	0.0344	0.0000	OK
15 minute summer	CP05	11	2.980	0.030	2.6	0.1184	0.0000	OK
15 minute summer	PF06	10	2.892	0.042	1.6	0.0214	0.0000	OK
15 minute summer	CP07	11	2.863	0.038	1.6	0.1750	0.0000	OK
15 minute summer	MH03	11	2.861	0.061	7.2	0.0502	0.0000	OK
15 minute summer	PF08	10	2.965	0.065	4.8	0.0795	0.0000	OK
15 minute summer	CP09	11	2.837	0.037	4.8	0.1818	0.0000	OK
15 minute summer	MH02	10	2.443	0.118	26.6	0.2116	0.0000	OK
15 minute summer	RE12	10	2.894	0.044	2.6	0.0260	0.0000	OK
15 minute summer	MH13	10	2.742	0.042	2.6	0.0067	0.0000	OK
15 minute summer	RE14	10	2.886	0.036	2.4	0.0199	0.0000	OK
15 minute summer	MH15	10	2.651	0.051	5.0	0.0081	0.0000	OK
15 minute summer	MH11	10	2.554	0.074	10.9	0.0659	0.0000	OK
15 minute summer	PF16	10	2.753	0.053	3.6	0.0512	0.0000	OK
15 minute summer	CP17	10	2.633	0.033	3.6	0.1211	0.0000	OK
15 minute summer	MH10	11	2.357	0.182	45.2	0.3168	0.0000	OK
15 minute summer	PF19	10	3.053	0.053	5.0	0.0745	0.0000	OK
15 minute summer	CP20	10	2.641	0.041	5.0	0.0942	0.0000	OK
15 minute summer	MH18	11	2.218	0.168	53.1	0.3298	0.0000	OK
15 minute summer	MH22	10	2.580	0.080	10.3	0.1103	0.0000	OK
15 minute summer	MH23	10	2.416	0.116	25.0	0.2100	0.0000	OK
15 minute summer	PF25	10	2.911	0.061	4.2	0.0670	0.0000	OK
15 minute summer	CP26	10	2.725	0.025	4.2	0.0917	0.0000	OK
15 minute summer	PF27	10	2.752	0.052	3.0	0.0433	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)
15 minute summer	MH01	1.000	MH02	7.5	0.704	0.211	0.2256	
15 minute summer	PF04	3.000	CP05	2.6	0.746	0.187	0.0854	
15 minute summer	CP05	3.001	MH03	2.4	0.533	0.090	0.0307	
15 minute summer	PF06	4.000	CP07	1.6	0.502	0.157	0.0274	
15 minute summer	CP07	4.001	MH03	1.5	0.342	0.112	0.0219	
15 minute summer	MH03	2.000	MH02	7.1	1.090	0.328	0.1422	
15 minute summer	PF08	5.000	CP09	4.8	0.920	0.350	0.0881	
15 minute summer	CP09	5.001	MH02	4.5	1.358	0.124	0.0263	
15 minute summer	MH02	1.001	MH10	26.0	0.749	0.335	1.0707	
15 minute summer	RE12	7.000	MH13	2.6	0.628	0.179	0.0921	
15 minute summer	MH13	7.001	MH15	2.6	0.556	0.169	0.0627	
15 minute summer	RE14	8.000	MH15	2.4	0.588	0.127	0.0948	
15 minute summer	MH15	7.002	MH11	4.9	1.017	0.191	0.0117	
15 minute summer	MH11	6.000	MH10	10.8	0.809	0.237	0.4359	
15 minute summer	PF16	9.000	CP17	3.6	0.874	0.241	0.0592	
15 minute summer	CP17	9.001	MH10	3.4	1.238	0.096	0.0193	
15 minute summer	MH10	1.002	MH18	44.4	1.059	0.599	0.4662	
15 minute summer	PF19	10.000	CP20	5.0	1.074	0.242	0.1385	
15 minute summer	CP20	10.001	MH18	4.8	1.282	0.149	0.0372	
15 minute summer	MH18	1.003	MH21	53.6	1.182	0.369	0.8567	
15 minute summer	MH22	11.000	MH23	10.3	0.840	0.254	0.2507	
15 minute summer	MH23	11.001	MH21	23.6	0.964	0.308	1.4159	
15 minute summer	PF25	12.000	CP26	4.2	1.008	0.290	0.0972	
15 minute summer	CP26	12.001	MH21	4.1	2.281	0.050	0.0045	
15 minute summer	PF27	13.000	CP28	3.0	0.854	0.226	0.0641	

Results for 1 year Critical Storm Duration. Lowest mass balance: 99.65%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	CP28	10	2.624	0.024	3.0	0.0796	0.0000	OK
15 minute summer	MH21	11	2.020	0.220	89.8	0.4957	0.0000	OK
15 minute summer	PF31	10	3.018	0.068	6.0	0.1010	0.0000	OK
15 minute summer	CP32	11	2.612	0.037	5.5	0.1879	0.0000	OK
15 minute summer	PF33	10	2.765	0.090	12.5	0.2292	0.0000	OK
30 minute summer	PF33a	21	2.551	0.076	16.8	4.3836	0.0000	OK
60 minute summer	CP34	44	2.427	0.052	7.6	2.4655	0.0000	OK
30 minute summer	MH29	19	2.378	0.078	10.7	0.0790	0.0000	OK
15 minute summer	PF35	10	2.516	0.091	12.9	0.2402	0.0000	OK
30 minute summer	PF35a	21	2.301	0.076	17.1	4.4570	0.0000	OK
60 minute summer	CP36	44	2.182	0.057	7.8	2.9547	0.0000	OK
15 minute summer	PF37	10	2.424	0.099	13.3	0.2692	0.0000	OK
30 minute summer	PF37a	21	2.279	0.079	20.5	6.3821	0.0000	OK
60 minute summer	CP38	48	2.181	0.056	7.8	3.7711	0.0000	OK
60 minute summer	MH30	36	2.103	0.103	20.3	0.1775	0.0000	OK
960 minute winter	MH24	930	1.531	0.406	11.9	58.9978	0.0000	OK
960 minute winter	MH39	930	1.531	0.506	7.2	145.4235	0.0000	OK
960 minute winter	MH40	930	1.531	0.586	9.2	1.8772	0.0000	SURCHARGED
120 minute summer	MH41	28	0.988	0.200	1.8	0.3535	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)
15 minute summer	CP28	13.001	MH21	2.9	1.678	0.049	0.0067	
15 minute summer	MH21	1.004	MH24	88.3	1.122	0.346	4.2664	
15 minute summer	PF31	15.000	CP32	5.5	0.717	0.412	0.4073	
15 minute summer	CP32	15.001	MH29	5.4	0.693	0.058	0.0688	
15 minute summer	PF33	16.000	PF33a	12.6	1.101	0.305	0.3725	
30 minute summer	PF33a	16.001	CP34	8.3	1.013	0.221	0.1642	
60 minute summer	CP34	16.002	MH29	6.0	0.736	0.101	0.0489	
30 minute summer	MH29	14.000	MH30	10.5	0.882	0.247	0.4000	
15 minute summer	PF35	17.000	PF35a	13.0	1.115	0.315	0.3800	
30 minute summer	PF35a	17.001	CP36	8.5	0.998	0.226	0.1721	
60 minute summer	CP36	17.002	MH30	5.9	0.790	0.123	0.0436	
15 minute summer	PF37	18.000	PF37a	13.4	1.073	0.376	0.3422	
30 minute summer	PF37a	18.001	CP38	8.1	0.968	0.248	0.1713	
60 minute summer	CP38	18.002	MH30	5.7	0.781	0.118	0.0424	
60 minute summer	MH30	14.001	MH24	20.3	0.989	0.232	0.4143	
960 minute winter	MH24	1.005	MH40	8.5	0.166	0.023	14.0965	
960 minute winter	MH39	19.000	MH40	-6.8	-0.096	-0.016	5.3299	
960 minute winter	MH40	1.006	MH41	1.8	0.228	0.123	0.2219	
120 minute summer	MH41	Pump		2.0				60.2

Results for 30 year +25% CC Critical Storm Duration. Lowest mass balance: 81.34%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	MH01	10	2.815	0.315	23.2	0.6002	0.0000	FLOOD RISK
15 minute summer	PF04	10	3.185	0.085	7.9	0.0629	0.0000	OK
15 minute summer	CP05	11	3.004	0.054	7.9	0.3581	0.0000	OK
15 minute summer	PF06	12	2.963	0.113	4.9	0.0583	0.0000	OK
15 minute summer	CP07	12	2.962	0.137	6.3	1.4238	0.0000	OK
15 minute summer	MH03	12	2.954	0.154	19.3	0.1269	0.0000	SURCHARGED
15 minute summer	PF08	10	3.031	0.131	14.6	0.1612	0.0000	OK
15 minute summer	CP09	11	2.869	0.069	14.6	0.6043	0.0000	OK
15 minute summer	MH02	10	2.775	0.450	75.0	0.8062	0.0000	FLOOD RISK
15 minute summer	RE12	10	2.931	0.081	7.9	0.0484	0.0000	OK
15 minute summer	MH13	11	2.785	0.085	7.9	0.0135	0.0000	OK
15 minute summer	RE14	10	2.915	0.065	7.3	0.0356	0.0000	OK
15 minute summer	MH15	11	2.763	0.163	15.4	0.0260	0.0000	SURCHARGED
15 minute summer	MH11	11	2.733	0.253	32.2	0.2254	0.0000	SURCHARGED
15 minute summer	PF16	10	2.801	0.101	11.0	0.0966	0.0000	OK
15 minute summer	CP17	11	2.658	0.058	11.0	0.3642	0.0000	OK
15 minute summer	MH10	11	2.623	0.448	123.8	0.7775	0.0000	SURCHARGED
15 minute summer	PF19	10	3.103	0.103	15.2	0.1446	0.0000	OK
15 minute summer	CP20	10	2.674	0.074	15.2	0.2952	0.0000	OK
15 minute summer	MH18	11	2.406	0.356	149.4	0.6992	0.0000	OK
15 minute summer	MH22	10	2.662	0.162	31.7	0.2243	0.0000	OK
15 minute summer	MH23	10	2.547	0.247	76.7	0.4448	0.0000	OK
15 minute summer	PF25	10	2.970	0.120	12.8	0.1305	0.0000	OK
15 minute summer	CP26	10	2.746	0.046	12.8	0.3054	0.0000	OK
15 minute summer	PF27	10	2.796	0.096	9.1	0.0794	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)
15 minute summer	MH01	1.000	MH02	22.7	0.818	0.636	0.8392	
15 minute summer	PF04	3.000	CP05	7.9	1.012	0.567	0.1907	
15 minute summer	CP05	3.001	MH03	7.3	0.663	0.274	0.0772	
15 minute summer	PF06	4.000	CP07	4.7	0.559	0.467	0.1182	
15 minute summer	CP07	4.001	MH03	9.3	0.654	0.688	0.0736	
15 minute summer	MH03	2.000	MH02	19.2	1.358	0.879	0.3815	
15 minute summer	PF08	5.000	CP09	14.6	1.200	1.061	0.1956	
15 minute summer	CP09	5.001	MH02	13.2	1.541	0.365	0.1010	
15 minute summer	MH02	1.001	MH10	70.5	1.002	0.908	2.1464	
15 minute summer	RE12	7.000	MH13	7.9	0.834	0.543	0.2104	
15 minute summer	MH13	7.001	MH15	8.1	0.694	0.531	0.1877	
15 minute summer	RE14	8.000	MH15	7.3	0.747	0.387	0.2672	
15 minute summer	MH15	7.002	MH11	13.9	1.284	0.545	0.0426	
15 minute summer	MH11	6.000	MH10	29.4	0.820	0.642	1.1792	
15 minute summer	PF16	9.000	CP17	11.0	1.190	0.735	0.1301	
15 minute summer	CP17	9.001	MH10	10.6	1.255	0.296	0.0823	
15 minute summer	MH10	1.002	MH18	122.5	1.740	1.650	0.7720	
15 minute summer	PF19	10.000	CP20	15.2	1.409	0.733	0.3164	
15 minute summer	CP20	10.001	MH18	15.2	1.570	0.471	0.1209	
15 minute summer	MH18	1.003	MH21	150.3	1.485	1.035	1.8899	
15 minute summer	MH22	11.000	MH23	31.6	1.055	0.780	0.6462	
15 minute summer	MH23	11.001	MH21	72.7	1.262	0.948	3.2938	
15 minute summer	PF25	12.000	CP26	12.8	1.287	0.885	0.2199	
15 minute summer	CP26	12.001	MH21	13.0	2.900	0.159	0.0146	
15 minute summer	PF27	13.000	CP28	9.1	1.138	0.684	0.1418	

Results for 30 year +25% CC Critical Storm Duration. Lowest mass balance: 81.34%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	CP28	10	2.643	0.043	9.1	0.2515	0.0000	OK
600 minute winter	MH21	495	2.296	0.496	22.7	1.1155	0.0000	OK
15 minute summer	PF31	11	3.168	0.218	18.3	0.3249	0.0000	FLOOD RISK
15 minute summer	CP32	11	2.636	0.061	15.6	0.5142	0.0000	OK
15 minute summer	PF33	10	2.854	0.179	38.4	0.4573	0.0000	OK
30 minute summer	PF33a	21	2.610	0.135	51.3	13.7932	0.0000	OK
30 minute summer	CP34	29	2.472	0.097	24.2	8.4421	0.0000	OK
30 minute summer	MH29	19	2.448	0.148	31.1	0.1501	0.0000	OK
15 minute summer	PF35	10	2.608	0.183	39.6	0.4833	0.0000	OK
30 minute summer	PF35a	21	2.361	0.136	52.3	14.0585	0.0000	OK
1440 minute summer	CP36	960	2.287	0.162	4.9	20.7763	0.0000	OK
15 minute summer	PF37	10	2.530	0.205	40.9	0.5560	0.0000	OK
30 minute summer	PF37a	22	2.340	0.140	62.9	19.8546	0.0000	OK
1440 minute summer	CP38	960	2.287	0.162	4.8	23.2421	0.0000	OK
1440 minute summer	MH30	960	2.288	0.288	21.5	0.4990	0.0000	OK
720 minute winter	MH24	660	2.289	1.164	103.2	169.0127	0.0000	SURCHARGED
720 minute winter	MH39	570	2.455	1.430	100.3	345.2090	0.0000	SURCHARGED
720 minute winter	MH40	615	2.462	1.517	89.3	4.8570	0.0000	SURCHARGED
360 minute winter	MH41	544	1.062	0.274	2.1	0.4840	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)
15 minute summer	CP28	13.001	MH21	9.2	2.165	0.155	0.0218	
600 minute winter	MH21	1.004	MH24	23.7	0.768	0.093	11.4205	
15 minute summer	PF31	15.000	CP32	15.6	0.909	1.175	0.8600	
15 minute summer	CP32	15.001	MH29	15.2	0.945	0.163	0.1527	
15 minute summer	PF33	16.000	PF33a	38.5	1.461	0.932	0.8431	
30 minute summer	PF33a	16.001	CP34	24.2	1.339	0.645	0.3623	
30 minute summer	CP34	16.002	MH29	16.6	0.974	0.281	0.1126	
30 minute summer	MH29	14.000	MH30	30.6	1.147	0.721	0.8964	
15 minute summer	PF35	17.000	PF35a	39.7	1.471	0.961	0.8601	
30 minute summer	PF35a	17.001	CP36	24.7	1.333	0.656	0.3759	
1440 minute summer	CP36	17.002	MH30	9.8	0.683	0.203	0.2021	
15 minute summer	PF37	18.000	PF37a	40.8	1.412	1.148	0.7642	
30 minute summer	PF37a	18.001	CP38	23.7	1.292	0.729	0.3753	
1440 minute summer	CP38	18.002	MH30	9.9	0.719	0.206	0.2019	
1440 minute summer	MH30	14.001	MH24	19.9	0.896	0.228	1.4127	
720 minute winter	MH24	1.005	MH40	88.8	0.315	0.237	16.4612	
720 minute winter	MH39	19.000	MH40	-99.6	-0.354	-0.237	5.6335	
720 minute winter	MH40	1.006	MH41	2.1	0.250	0.148	0.3822	
360 minute winter	MH41	Pump		2.0				92.9

Results for 100 year +25% CC Critical Storm Duration. Lowest mass balance: 84.93%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	MH01	10	2.976	0.476	30.1	0.9065	0.0000	FLOOD RISK
15 minute summer	PF04	10	3.201	0.101	10.3	0.0744	0.0000	OK
15 minute summer	CP05	12	3.050	0.100	10.3	1.2310	0.0000	OK
15 minute summer	PF06	11	3.048	0.198	6.3	0.1022	0.0000	FLOOD RISK
15 minute summer	CP07	12	3.045	0.220	15.0	2.5048	0.0000	FLOOD RISK
15 minute summer	MH03	12	3.042	0.242	23.3	0.1996	0.0000	SURCHARGED
15 minute summer	PF08	10	3.139	0.239	19.0	0.2931	0.0000	FLOOD RISK
15 minute summer	CP09	12	2.926	0.126	18.5	1.9284	0.0000	OK
15 minute summer	MH02	11	2.895	0.570	81.1	1.0212	0.0000	FLOOD RISK
15 minute summer	RE12	11	3.044	0.194	10.3	0.1155	0.0000	FLOOD RISK
15 minute summer	MH13	11	2.983	0.283	9.9	0.0450	0.0000	SURCHARGED
15 minute summer	RE14	11	2.985	0.135	9.5	0.0745	0.0000	OK
15 minute summer	MH15	11	2.942	0.342	18.8	0.0544	0.0000	SURCHARGED
15 minute summer	MH11	11	2.898	0.418	37.1	0.3727	0.0000	SURCHARGED
15 minute summer	PF16	10	2.821	0.121	14.2	0.1161	0.0000	OK
15 minute summer	CP17	12	2.747	0.147	18.7	2.1319	0.0000	OK
15 minute summer	MH10	11	2.731	0.556	133.4	0.9649	0.0000	FLOOD RISK
15 minute summer	PF19	10	3.130	0.130	19.8	0.1829	0.0000	OK
1440 minute summer	CP20	1440	2.709	0.109	1.1	0.6209	0.0000	OK
1440 minute summer	MH18	1440	2.709	0.659	12.9	1.2944	0.0000	FLOOD RISK
15 minute summer	MH22	10	2.845	0.345	41.2	0.4772	0.0000	SURCHARGED
15 minute summer	MH23	10	2.712	0.412	97.4	0.7423	0.0000	SURCHARGED
15 minute summer	PF25	10	3.045	0.195	16.6	0.2133	0.0000	FLOOD RISK
15 minute summer	CP26	9	2.749	0.049	15.6	0.3402	0.0000	OK
15 minute summer	PF27	10	2.815	0.115	11.9	0.0953	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)
15 minute summer	MH01	1.000	MH02	29.8	0.820	0.836	0.8392	
15 minute summer	PF04	3.000	CP05	10.3	1.080	0.739	0.2495	
15 minute summer	CP05	3.001	MH03	10.3	0.674	0.386	0.1000	
15 minute summer	PF06	4.000	CP07	5.9	0.573	0.589	0.1338	
15 minute summer	CP07	4.001	MH03	10.9	0.729	0.803	0.0752	
15 minute summer	MH03	2.000	MH02	21.9	1.374	1.007	0.3815	
15 minute summer	PF08	5.000	CP09	18.5	1.203	1.344	0.2700	
15 minute summer	CP09	5.001	MH02	20.7	1.457	0.573	0.1321	
15 minute summer	MH02	1.001	MH10	76.7	1.090	0.988	2.1464	
15 minute summer	RE12	7.000	MH13	9.9	0.881	0.677	0.3908	
15 minute summer	MH13	7.001	MH15	9.6	0.698	0.632	0.2368	
15 minute summer	RE14	8.000	MH15	9.2	0.785	0.488	0.3810	
15 minute summer	MH15	7.002	MH11	19.0	1.250	0.743	0.0426	
15 minute summer	MH11	6.000	MH10	36.9	0.927	0.807	1.1792	
15 minute summer	PF16	9.000	CP17	14.1	1.247	0.939	0.2184	
15 minute summer	CP17	9.001	MH10	20.7	1.209	0.580	0.1212	
15 minute summer	MH10	1.002	MH18	129.2	1.834	1.740	0.7824	
15 minute summer	PF19	10.000	CP20	19.8	1.461	0.956	0.3969	
1440 minute summer	CP20	10.001	MH18	1.1	0.843	0.034	0.1545	
1440 minute summer	MH18	1.003	MH21	12.8	0.805	0.088	2.0824	
15 minute summer	MH22	11.000	MH23	38.9	1.054	0.960	0.8137	
15 minute summer	MH23	11.001	MH21	90.0	1.279	1.174	4.0111	
15 minute summer	PF25	12.000	CP26	15.6	1.320	1.079	0.2524	
15 minute summer	CP26	12.001	MH21	16.3	2.854	0.199	0.0268	
15 minute summer	PF27	13.000	CP28	11.9	1.233	0.892	0.1681	

Results for 100 year +25% CC Critical Storm Duration. Lowest mass balance: 84.93%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute summer	CP28	1440	2.709	0.109	0.7	1.5461	0.0000	OK
1440 minute summer	MH21	1440	2.709	0.909	21.5	2.0446	0.0000	SURCHARGED
15 minute summer	PF31	11	3.372	0.422	23.7	0.6292	0.0000	FLOOD RISK
1440 minute summer	CP32	1470	2.709	0.134	1.3	2.4254	0.0000	OK
15 minute summer	PF33	10	2.964	0.289	49.9	0.7394	0.0000	FLOOD RISK
1440 minute summer	PF33a	1470	2.709	0.234	4.4	40.7849	0.0000	SURCHARGED
1440 minute summer	CP34	1470	2.709	0.334	4.4	53.4610	0.0000	SURCHARGED
1440 minute summer	MH29	1470	2.709	0.409	6.6	0.4155	0.0000	SURCHARGED
15 minute summer	PF35	10	2.734	0.309	51.4	0.8151	0.0000	FLOOD RISK
1440 minute summer	PF35a	1440	2.709	0.484	6.9	77.0447	0.0000	FLOOD RISK
1440 minute summer	CP36	1440	2.709	0.584	13.7	56.6349	0.0000	FLOOD RISK
1440 minute summer	PF37	1440	2.709	0.384	3.0	1.0404	0.0000	FLOOD RISK
1440 minute summer	PF37a	1440	2.709	0.509	10.3	75.6547	0.0000	FLOOD RISK
1440 minute summer	CP38	1440	2.709	0.584	13.3	59.1652	0.0000	FLOOD RISK
1440 minute summer	MH30	1440	2.709	0.709	23.5	1.2268	0.0000	SURCHARGED
1440 minute summer	MH24	1440	2.709	1.584	40.0	175.2760	0.0000	FLOOD RISK
1440 minute summer	MH39	1440	2.709	1.684	27.9	345.7541	0.0000	SURCHARGED
1440 minute summer	MH40	1440	2.709	1.764	28.3	5.6457	0.0000	SURCHARGED
1440 minute summer	MH41	1500	1.503	0.715	2.1	1.2642	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)
1440 minute summer	CP28	13.001	MH21	0.7	1.112	0.012	0.0607	
1440 minute summer	MH21	1.004	MH24	20.0	0.684	0.078	11.5470	
15 minute summer	PF31	15.000	CP32	19.0	1.087	1.433	0.8941	
1440 minute summer	CP32	15.001	MH29	1.3	0.286	0.014	0.2769	
15 minute summer	PF33	16.000	PF33a	47.4	1.467	1.147	1.0395	
1440 minute summer	PF33a	16.001	CP34	4.4	0.696	0.117	0.7557	
1440 minute summer	CP34	16.002	MH29	4.4	0.638	0.074	0.2311	
1440 minute summer	MH29	14.000	MH30	6.6	0.760	0.155	1.3347	
15 minute summer	PF35	17.000	PF35a	48.7	1.475	1.180	1.0438	
1440 minute summer	PF35a	17.001	CP36	4.5	0.661	0.120	0.7557	
1440 minute summer	CP36	17.002	MH30	-10.2	0.712	-0.211	0.2311	
1440 minute summer	PF37	18.000	PF37a	3.0	0.427	0.084	1.0539	
1440 minute summer	PF37a	18.001	CP38	-6.6	0.657	-0.203	0.7557	
1440 minute summer	CP38	18.002	MH30	-13.3	0.740	-0.276	0.2311	
1440 minute summer	MH30	14.001	MH24	-17.9	0.884	-0.205	1.4218	
1440 minute summer	MH24	1.005	MH40	25.0	0.188	0.067	16.4612	
1440 minute summer	MH39	19.000	MH40	-26.0	-0.172	-0.062	5.6335	
1440 minute summer	MH40	1.006	MH41	2.1	0.250	0.147	0.4137	
1440 minute summer	MH41	Pump		2.0				207.7

APPENDIX G

DRAINAGE MAINTENANCE PLAN



ARP ASSOCIATES
CHARTERED CONSULTING ENGINEERS

Our ref: 1506/54tn1a

4th July 2024

COMMERCIAL DEVELOPMENT PROJECTS LIMITED

DRAINAGE MAINTENANCE PLAN
FOR
COMMERCIAL DEVELOPMENT AT HOLBEACH ROAD, SPALDING

Introduction

It is essential that drainage systems, including any Sustainable Drainage Systems (SuDS) and proprietary components, are subject to periodic inspection and maintenance over their lifetime, so that they continue to function to the intended design standard.

This document sets out the responsibilities for management and maintenance of the proposed drainage systems at the above site, and outlines a recommended maintenance regime to be implemented by the responsible party.

This report has been initially prepared for the use and reliance of the Client only. The report shall not be relied upon or transferred to any other parties without the written agreement of ARP Associates. For the avoidance of any doubt, where ARP Associates enters into a letter of reliance for the benefit of a third party, that third party will be permitted to rely on the report. No responsibility will be accepted where this report is used, either in its entirety or in part, by any other party without ARP Associates consent.

Revision Status and Requirements for Future Review

This maintenance plan has been prepared for agreement with the Lead Local Flood Authority and Local Planning Authority. The document should be finalised upon completion of construction, including all listed drainage drawing references which should be revised to 'as-built' status.

This plan should be reviewed periodically to confirm it is meeting the objective of ensuring effective drainage is maintained. The maintenance plan should be revised as necessary to keep systems working effectively.

Drainage Drawings and Documentation

The following drawings illustrate the drainage systems for this development, and should be kept with the maintenance plan and referred to when considering maintenance requirements:

- 1506/54/05.01 Private Drainage Layout – Sheet 1 of 2
- 1506/54/05.02 Private Drainage Layout – Sheet 2 of 2
- [Drawing list to be confirmed at detailed design]

Any documentation relating to proprietary drainage components should be kept with the maintenance plan and referred to when considering maintenance requirements.

Any persons undertaking maintenance should ensure they refer to the most recent revision of the listed drawings and documentation for the drainage systems, including 'as-built' drawings when available.

Overview of Drainage Systems

The development is served by separate systems of foul and surface water drainage.

Surface water runoff from car parks is collected by permeable paving in the parking bays and roads are served by trapped gullies. Storage is provided in sub-base granular or cellular units below the permeable paved parking spaces. Surface water from roads, car park, and roofs is routed to a flow control device with a maximum rate of discharge of 2l/s. Additional storage is provided upstream of the flow control in tanks beneath hardstanding areas in the southeast of the site, to manage flow up to the '1 in 100 year' rainfall event, including an allowance for the projected impacts of climate change. The system discharges by gravity to a pumping station in the southeast of the site, before being pumped to a new outfall onto the Ordinary Watercourse system within the site.

Domestic foul wastewater is to be managed on-site using a package treatment plant. The treated effluent is to be discharged via the same pumped outfall as the surface water drainage (downstream of the surface water flow control device).

Maintenance Responsibility

The ongoing inspection and maintenance of the surface water drainage system on this development will remain the responsibility of the site owner, although the inspection and maintenance activities may be carried out by a suitable contractor or management company working on behalf of the owner. If work is subcontracted, the contractor should be provided with a copy of this plan and the relevant drawings and documentation.

In particular, it should be noted that the owner of the package treatment plant is legally responsible to ensure that the system does not cause pollution, a health hazard or a nuisance.

All operation, inspection and maintenance should be undertaken by suitably qualified and competent professionals, using safe systems of work. In particular, it should be recognised that some maintenance tasks may necessitate entry into confined spaces – these tasks should only be undertaken by suitably trained operatives, using an appropriate safe systems of work.

Attention is drawn to the requirements of the Construction Design and Management Regulations 2015, and in particular, the duties and obligations of the Client.

Maintenance Regime

As a minimum, it is recommended that inspection and maintenance follow the regime set out below. However, the timescales indicated below should be reviewed based on inspections and should be increased in frequency if required.

Notwithstanding any recommendations set out in this document, all proprietary components should be operated/inspected/maintained in accordance with the manufacturer's requirements/specifications.

Further advice on inspection and maintenance of SuDS components is set out in CIRIA publication C753 The SuDS Manual (2015).

Asset/Item	Inspection and Maintenance Requirement
Overall Maintenance inspections	Inspection at regular intervals with appropriate remedial works instigated should the inspection show a need. After heavy storms or sustained periods of inclement weather, on-site inspection should take place.
Linear (Channel and slot) Drainage	Linear Drainage should be cleaned at regular intervals, recommended not more than six months apart. Jet-washing and suction-borne methods are recommended, with the contents disposed of at a licenced waste facility.
Carrier Drains	Drains/sewers should be cleaned at regular intervals, recommended not more than six months apart. Jet-washing and suction-borne methods are recommended, with the contents disposed of at a licenced waste facility.
Manholes/Inspection Chambers	Visual inspection of manholes and inspection chambers, to check for any siltation or obstruction to flow, should be undertaken at regular intervals, recommended not more than six months apart.
Catch Pits	Catch pits should be cleaned at regular intervals, recommended not more than six months apart. Jet-washing and suction-borne methods are recommended, with the contents disposed of at a licenced waste facility. Catch pits should be inspected in advance of storm conditions if feasible, and should be re-inspected after heavy storms or sustained periods of inclement weather.
Guttering/Rainwater Downpipes	These should be cleaned at regular intervals, in recommended not more than six months apart. In inclement months, this frequency is likely to increase.

Asset/Item	Inspection and Maintenance Requirement
Ironworks	Cover frames, gully lids etc. should be inspected at regular intervals, in particular to check line and level, and to ensure integrity, security of hinges and to check line/level is within safe and workable tolerance. Recommended not more than six months apart.
Car Park Roads and Kerb Channels	Manual or Motorised sweeping should be undertaken at appropriate intervals. Requirement should be periodically monitored and be flexible. Road level and low spots should be monitored to check for safe tolerance.
Attenuation Tank	Any attenuation tanks should be regularly inspected and maintained, as necessary, in accordance with Manufacturers requirements. The tank should be emptied of silt periodically (recommended not more than twelve months apart) using a suction unit and the contents disposed of at a licenced waste facility. Tanks should be inspected in advance of storm conditions if feasible, and should be re-inspected after heavy storms or sustained periods of inclement weather.
Vortex Flow Control	The flow control should be regularly inspected and maintained, as necessary, in accordance with Manufacturers requirements (recommended not more than twelve months apart). The sump of the unit should be emptied periodically (recommended not more than six months apart) using a suction unit and the contents disposed of at a licenced waste facility. The unit should be inspected in advance of storm conditions if feasible, and should be re-inspected after heavy storms or sustained periods of inclement weather.
Porous Paving	Annual brushing and stabilize permeable paving and contributing areas, removal of weeds and inspection of flows at outlets after rainfall events. Monitoring of silt accumulation in upstream silt traps and increase/co-ordinate surface's cleaning regime/silt trap emptying when needed.
Outfall/Inlet Headwalls and Flap Valves	Visual inspection of the surface water outfall and flap valve, to check for any obstruction to flow or debris, should be undertaken at regular intervals, recommended not more than six months apart. The outfall should be inspected in advance of storm conditions if feasible, and should be re-inspected after heavy storms or sustained periods of inclement weather.
Package Treatment Plant	The package treatment plant should be regularly inspected and maintained, as necessary, in accordance with Manufacturers recommendations. The unit should be fitted with a telemetry alarm system; should the alarm sound, the unit should be inspected, and maintenance implemented as appropriate. Any waste removed from the unit during maintenance must be removed by a registered waste carrier and disposed of appropriately.

Asset/Item	Inspection and Maintenance Requirement
Pumping Station	The pumping station should be regularly inspected and maintained, as necessary, in accordance with Manufacturer's requirements (recommended not more than twelve months apart). The unit should be fitted with a telemetry alarm system; should the alarm sound, the unit should be inspected, and maintenance implemented as appropriate. Any waste removed from the unit during maintenance must be removed by a registered waste carrier and disposed of appropriately.
Rising Main	The rising main should be regularly inspected and maintained, as necessary, in accordance with Manufacturers recommendations.
Grease Traps	This should be regularly inspected to check the build-up of debris, and should be emptied and cleaned at regular intervals, recommended not more than three months apart. Waste removed from the unit must be removed by a registered waste carrier and disposed of appropriately.
Watercourse Channels and Culverts	Visual inspection of watercourse culverts, to check for any obstruction to flow or erosion, should be undertaken at access manholes at regular intervals, recommended not more than six to twelve months apart. Culverts should be inspected in advance of storm conditions if feasible, and should be re-inspected after heavy storms or sustained periods of inclement weather.

Package Treatment Plant / Environmental Permit

The discharge of treated foul effluent from the package treatment plant to the watercourse to the south-east of the site, is subject to an Environmental Permit from the Environment Agency. The discharge must not cause pollution of surface water or groundwater, and the quality of the water discharged must comply with the terms of the permit at all times.

Any future changes to the foul discharge profile should be discussed with the Environment Agency to determine if a variation to the Environmental Permit is required.

The validity of the Environmental Permit is subject to this maintenance plan being implemented, particularly with respect to the package treatment plant being maintained in accordance with the manufacturer's instructions, such that the treated effluent quality remains as per the original design.

Details of the Environmental Permit holder must be kept up to date with the Environment Agency. An annual 'subsistence charge' for the permit may be payable to the Environment Agency by the permit holder.

If the site is sold, the operator must give the new operator a written notice stating that a small sewage discharge is being carried out and giving a description of the wastewater system and its maintenance requirements. The operator must ensure the system is appropriately decommissioned where it ceases to be in operation so that there is no risk of pollutants or polluting matter entering groundwater or watercourses.

Watercourses

There is an unnamed ditch/watercourse on the south-eastern boundary of the site, into which surface water runoff and treated foul effluent are discharged. This is classified as an 'Ordinary Watercourse'.

Responsibility for maintaining any watercourse rests with the owner of the watercourse; Under the principle of riparian ownership, the owner of any reach of the watercourse is normally the party who own the land through which the watercourse flows. Where the watercourse lies on a land ownership boundary, the two landowners normally have responsibility to the centre line of the watercourse. Further guidance on watercourse ownership responsibilities is available from <https://www.gov.uk/guidance/owning-a-watercourse>.

Visual inspection of the watercourse should be undertaken at regular intervals to check for any obstruction to flow or erosion. It is recommended that inspections take place not more than six months apart, but also after heavy storms or sustained periods of inclement weather. If advance warning is given, inspection should also take place prior to expected heavy storms or sustained periods of inclement weather.

Rubbish and debris which could cause an obstruction should be removed as necessary if safe to do so. General maintenance of the watercourse corridor should take place as required to maintain the flow, but you should check whether any work proposed requires prior consent. Works must not result in detriment to water quality, flood risk or ecology.

A Land Drainage Consent (under the Land Drainage Act 1991) may be required from the Land Drainage Authority (the local Internal Drainage Board) for any works (temporary or permanent) which have the potential to obstruct the flow in the watercourse, restrict flood storage, create a culvert, or modify any 'obstruction' already in place. Advice should be sought from the Land Drainage Authority in advance if any works affecting the watercourse are proposed.

Note: Land Drainage Authorities have permissive powers to maintain and improve Ordinary Watercourses in their area. Permissive powers include the power to force landowners to carry out maintenance if the watercourse is causing flooding etc elsewhere; or the power to undertake such maintenance and re-charge the landowner.