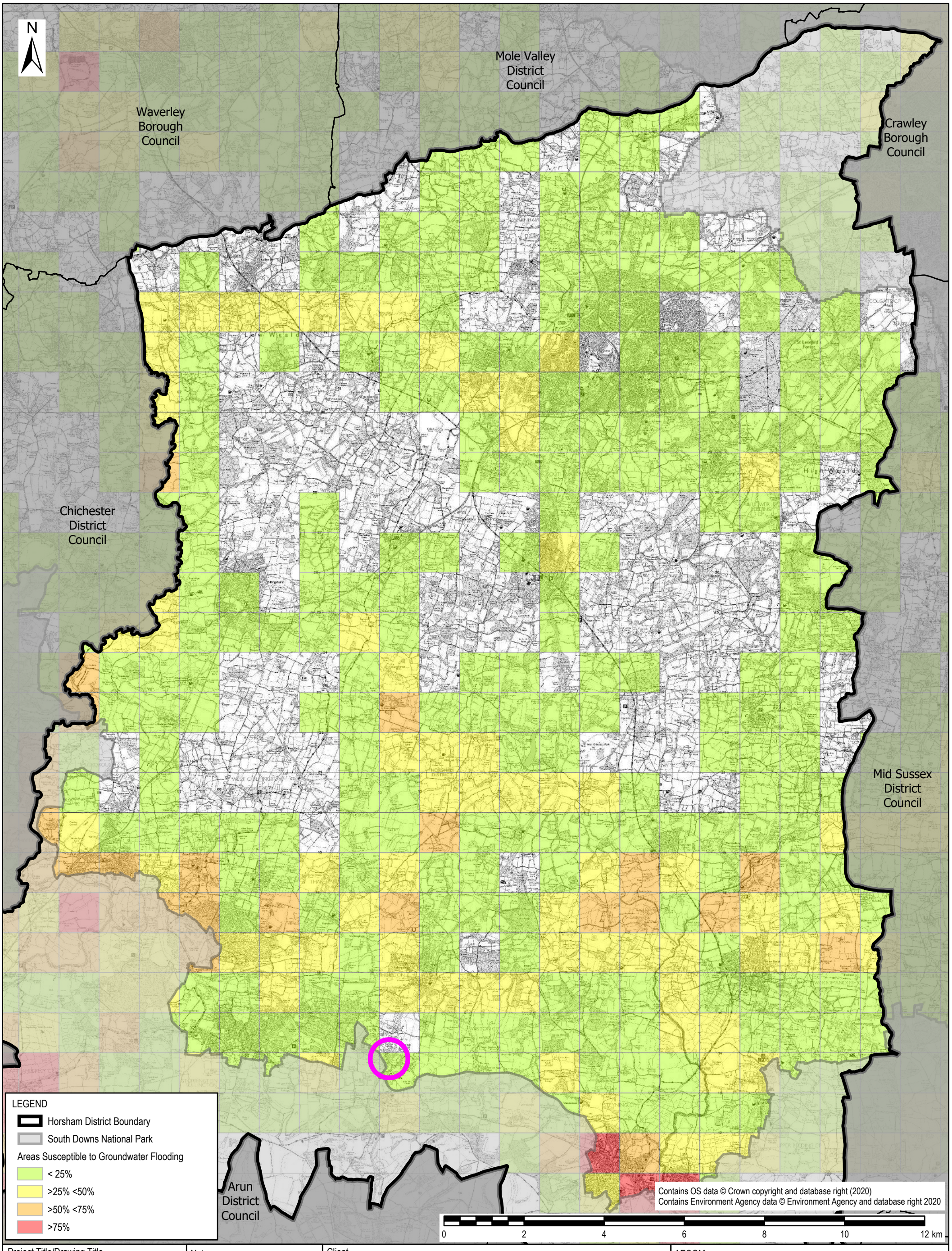


Project Title/Drawing Title

HORSHAM DISTRICT COUNCIL SFRA

FIGURE 3A- AREAS SUSCEPTIBLE TO GROUNDWATER FLOODING

Notes

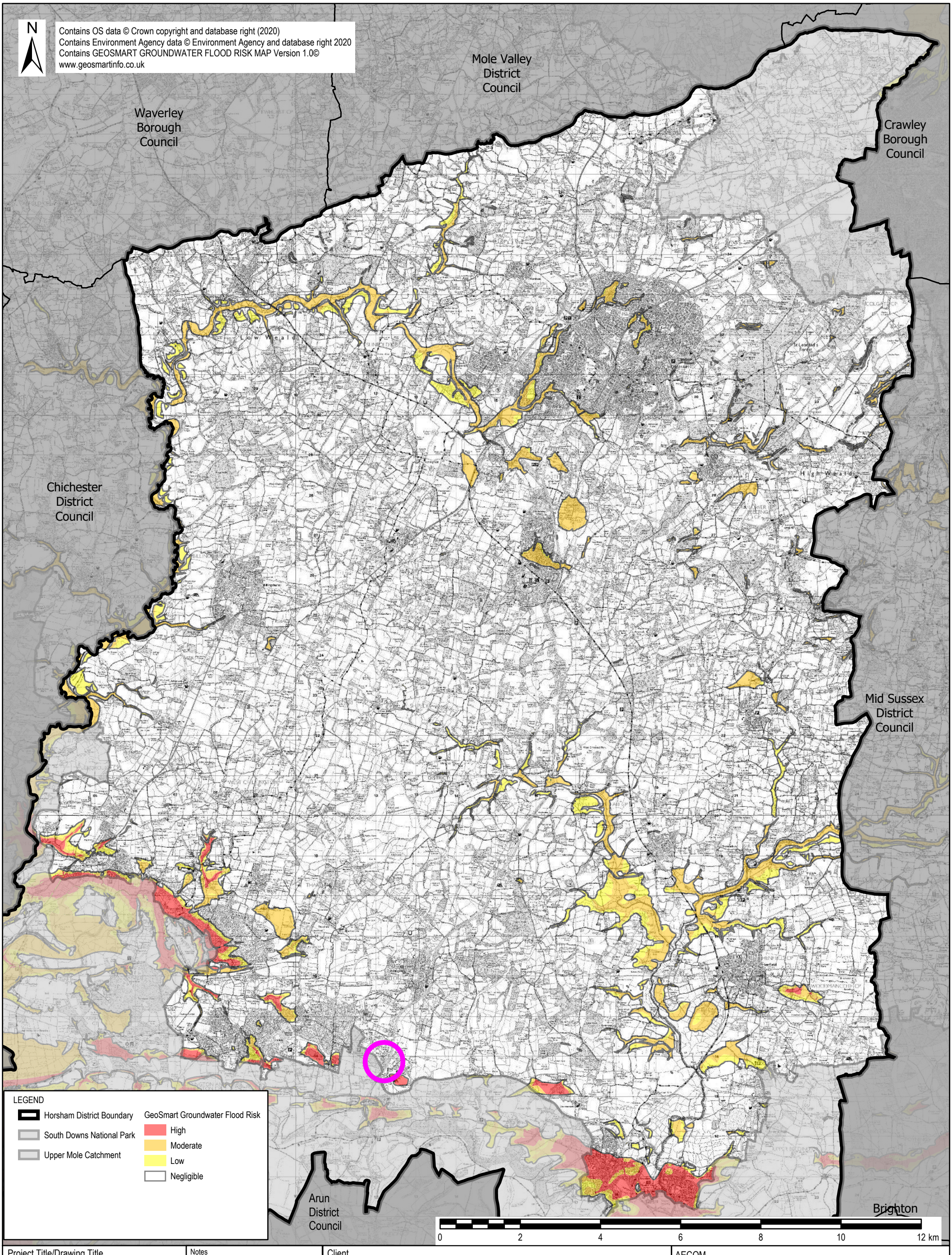
1. Areas Susceptible to Groundwater Flooding (AStGWF) is a strategic scale map showing where groundwater flooding could occur on a 1km square grid. It shows the proportion of each 1km grid square where geological and hydrogeological conditions show that groundwater flooding could occur. The susceptible areas are represented by one of four categories showing the proportion of each 1km square that is susceptible to groundwater emergence. It does not show the likelihood of groundwater flooding occuring.
2. The absence of values for any grid square means that no part of that square is identified as being susceptible to groundwater emergence.
3. The map identifies areas where further investigation is needed to assess whether groundwater flooding may affect property or infrastructure.
4. This data shown is the Environment Agency dataset 'Areas Susceptible to Groundwater Flooding'

Client: HORSHAM DISTRICT COUNCIL

Drawn	Checked	Approved
SB	SL	EC
Date	Scale @ A3	Purpose of Issue
09/01/2020	1:85,000	FINAL
Drawing Number		Rev
FIGURE 3A		02

AECOM
Midpoint
Alençon Link, Basingstoke
Hampshire, RG21 7PP
Telephone (01256) 310200
Fax (01256) 310201
www.aecom.com

File Name: \\eu.aecomnet.com\EMIA\UK\UKBAS1\Jobs\PR-427626 - Horsham SFRA\900_CAD_GIS\920_GIS



File Name: \\eu.aecomnet.com\EMIA\UK\UKBAS1\Jobs\PR-427626 - Horsham SFRA\900_CAD_GIS\920_GIS

Project Title/Drawing Title

HORSHAM DISTRICT COUNCIL SFRA

FIGURE 3B- AREAS AT RISK OF GROUNDWATER FLOODING

Notes

1. GeoSmart groundwater flood risk map is based on a model on a 5m grid displaying the likelihood of groundwater flooding greater than 1% annual probability of occurrence (1 in 100 chance each year) at a site due to elevated groundwater levels. The map is intended to provide a useful initial view but does not provide an alternative to a proper site-specific assessment.
The at risk areas are represented by one of four categories showing areas that are at risk of groundwater emergence.
2. High risk: High risk of groundwater flooding in this area with a chance of greater than 1% annual probability of occurrence (1 in 100 chance each year) or more frequent.
3. Moderate risk: Moderate risk of groundwater flooding in this area with a chance of greater than 1% annual probability of occurrence (1 in 100 chance each year).
4. Low risk: Low risk of groundwater flooding in this area with a chance of greater than 1% annual probability of occurrence (1 in 100 chance each year).
5. Negligible risk: Negligible risk of groundwater flooding in this area and any groundwater flooding incidence has a less than 1% annual probability of occurrence (1 in 100 year chance each year). Any area that does not fall into the high, moderate or low risk bands is considered to be at a negligible risk.

Client: HORSHAM DISTRICT COUNCIL

Drawn	Checked	Approved
SB	SL	EC
Date	Scale @ A3	Purpose of Issue
09/01/2020	1:85,000	FINAL
Drawing Number		Rev
FIGURE 3B		02

AECOM
Midpoint
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Appendix J

QMED Calculation

FEH Mean Annual Flood

Input

QMED Method	2008	URBEXT (1990)	0.0149
Site Location	GB 512300 113800 TQ 12300 13800	SPRHOST	17.680
Area (ha)	0.041	BFIHOST	0.791
SAAR (mm)	924	FARL	0.991

Results

QMED Rural (l/s) 0.2 QMED Urban (l/s) 0.2

Appendix K

Drainage Strategy Plan and Details

north

Node 'PP4': Permeable Paviours
Area: 38.44m²
CL: Varies (min. 51.160)
IL: Varies (min. 50.530)
Depth 0.630m
Slope: 1 in 20
Subbase: 0.500m
Subbase Porosity: 30%
Volume : 5.163m³

Pipe below slab to pass through foundations above footings. Pipe to be protected through foundation using foam surround and rocker pipes.

Geocellular Tank 'CS4'
3m x 2.5m x 0.4m
(L x W x D)
CL: 50.200 (Patio Level)
IL: 49.064
Top of Tank: 49.464
Cover to tank: 0.736m
Porosity: 95%
Volume: 2.662m³

'PP3' Outfall
Orifice [Ø27mm]
Design Flow: 1.0 l/s
Design Head: 0.40m
IL: 50.820

'PP4' Outfall
Orifice [Ø28mm]
Design Flow: 1.1 l/s
Design Head: 0.45m
IL: 50.530

Node 'PP3': Permeable Paviours
Area: 33.06m²
CL: Varies (min. 51.450)
IL: Varies (min. 50.820)
Depth 0.630m
Slope: 1 in 20
Subbase: 0.500m
Subbase Porosity: 30%
Volume : 4.521m³

Pipe 1.004 L = 13.362
100Ø 1/9.1

Pipe 1.005 L = 20.219
100Ø 1/13.8

Manhole 'CS4': Hydrobrake
Ref: MD-SHE-0060-1600-1000-1600
CL: 50.200
IL: 49.064
Design Flow: 1.6 l/s
Design Head: 1.000m

'PP2' Outfall
Orifice [Ø24mm]
Design Flow: 0.8 l/s
Design Head: 0.40m
IL: 51.170

'CS3' Flow Control
Orifice [Ø22mm]
Design Flow: 0.9 l/s
Design Head: 0.80m
IL: 49.150

Outfall 'Outfall'
Outfall to watercourse (with ongoing connectivity)
CL: 48.600
IL: 47.600
Modeled as fully surcharged to 1.000m for 1,440-minutes

Node 'PP2': Permeable Paviours
Area: 37.36m²
CL: Varies (min. 51.800)
IL: Varies (min. 51.170)
Depth 0.630m
Slope: 1 in 20
Subbase: 0.500m
Subbase Porosity: 30%
Volume : 4.326m³

Geocellular Tank 'CS3'
3m x 2.5m x 0.4m
(L x W x D)
CL: 50.200 (Patio Level)
IL: 49.150
Top of Tank: 49.550
Cover to tank: 0.65m
Porosity: 95%
Volume: 2.662m³

'CS2' Flow Control
Orifice [Ø20mm]
Design Flow: 0.8 l/s
Design Head: 0.80m
IL: 49.300

'PP1' Outfall
Orifice [Ø23mm]
Design Flow: 0.7 l/s
Design Head: 0.40m
IL: 51.920

Geocellular Tank 'CS2'
3m x 2.5m x 0.4m
(L x W x D)
CL: 50.300 (Patio Level)
IL: 49.300
Top of Tank: 49.700
Cover to tank: 0.60m
Porosity: 95%
Volume: 2.662m³

'CS1' Flow Control
Orifice [Ø19mm]
Design Flow: 0.7 l/s
Design Head: 0.80m
IL: 49.550

Node 'PP1': Permeable Paviours
Area: 29.16m²
CL: Varies (min. 52.550)
IL: Varies (min. 51.920)
Depth 0.630m
Slope: 1 in 20
Subbase: 0.500m
Subbase Porosity: 30%
Volume : 4.056m³

Geocellular Tank 'CS1'
3m x 2.5m x 0.4m
(L x W x D)
CL: 50.550 (Patio Level)
IL: 49.550
Top of Tank: 49.950
Cover to tank: 0.60m
Porosity: 95%
Volume: 2.662m³

Old London Road
Telegraph Pole
Telegraph Line
Adjoining Land
Existing Trees Retained
Existing Shrubbery to be Retained
New Telegraph Pole
Survey Point
51167 mm
50735 mm
48916 mm
49053 mm
52559 mm
Plot 4 3B 4P
Plot 3 3B 4P
Plot 2 3B 4P
Plot 1 3B 4P
Parking
ACO
Shed
Acoustic Fencing

0 2 4 6 8m
SCALE IN METRES
1:100

Notes

1. This Drainage Strategy Plan is for planning purposes and does not constitute detailed designs and should not be used for construction purposes
2. All levels and dimensions are to be checked on site before any work commences. All dimensions are in metres unless stated otherwise.
3. This drawing has been based upon survey supplied information and Motion cannot guarantee the accuracy of the data provided.
4. The drainage levels are based on existing levels, but also proposed levels where existing site features present unusual changes in gradient.
5. Any discrepancies should be reported to the engineer immediately, so that clarification can be sought prior to the commencement of works.
6. This drawing should be read in conjunction with all other relevant engineering details, drawings and specification.
7. 350mm minimum cover is to be provided for private pipes laid in soft/paved areas, with 900mm minimum cover to be provided for private pipes laid beneath roads / driveways unless not practicable. Where unachievable, shallow pipe drains may require protection using concrete surround or paving slabs bridging the trench, subject to the NHBC Inspector's requirements.
8. Manholes situated within areas accessible to motor vehicles are to be fitted with suitable strength covers and frames.

Legend

- Site Boundary
- Permeable Pavement
- Surface Water Geocellular Attenution
- Surface Water Gravity Pipe
- Surface Water Catchpit/Silt Trap
- Orifice Flow Control Manhole
- Hydrobrake Flow Control Chamber
- Proposed Headwall
- Polypipe Linflex Filter Pipe with Geotextile Surround

Rev.	Description	Drn	Chk	App	Date
P01	First Issue	ST	PA	PA	03/08/2025

Drawing Status:
FOR PLANNING
NOT FOR CONSTRUCTION

motion
Guildford - Reading - London
www.motion.co.uk

Client:
James Williams

Project:
Land East of Old London Road, Washington

Title:
Proposed Drainage Strategy Plan

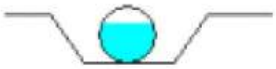
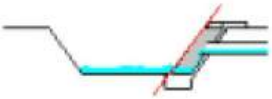
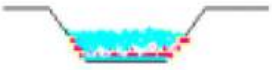
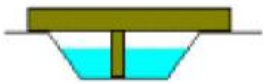
Scale: 1:100 (@ A1)

Drawing: 2411100-0500-P01
Revision: P01

C:\Users\phillalen\Motion\SaffSite - 1flowas 2411100\Drawings\2411100-0500-P01 [Proposed Drainage Strategy Plan].dwg

Appendix L

Ordinary Watercourse Consent Requirements

Image	Description/Action
	Pipe culvert of part or whole section of watercourse, including modification of existing pipe culvert Consent required under Section 23 1(b & c)
	Oversized box culvert of part or whole section of watercourse, including modification of existing box culvert Consent required under Section 23 1(b & c)
	Addition or alteration of trash screens (grilles) Consent required under Section 23 1(b & c)
	Bank protection works, not resulting in loss of cross sectional area Unlikely to require consent*.
	Pipe crossing in channel Consent required under Section 23 1(b & c)
	Pipe crossing above bank Unlikely to require consent*
	Pipe crossing below bed Unlikely to require consent*
	Protruding pipe outfall with or without headwall Consent required under Section 23 1(b & c)
	Outfall within bank profile with or without headwall Unlikely to require consent*
	Weir/Dam or impoundment that would obstruct natural flow Consent required under Section 23 1(a)
	Bridge where soffit level is below bank top level Consent required under Section 23 1(a) if it has the potential to affect flow
	Clear span bridge or abutments not within cross sectional area Unlikely to require consent*
	Bridge abutments or supports within cross sectional area Consent required under section 23 1(a)
	Clear span bridge Unlikely to require consent*.
	Bridge with support in channel. Consent required under section 23 1(a)

***May require consent if temporary works cause obstructions to flow.**

Note: "flow" should be determined as bank full flow conditions

Appendix M

MicroDrainage Network Model Outputs

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FEH Rainfall Model

Return Period (years)	100
FEH Rainfall Version	2013
Site Location	GB 512300 113800 TQ 12300 13800
Data Type	Catchment
Maximum Rainfall (mm/hr)	550
Maximum Time of Concentration (mins)	30
Foul Sewage (l/s/ha)	0.000
Volumetric Runoff Coeff.	1.000
PIMP (%)	100
Add Flow / Climate Change (%)	0
Minimum Backdrop Height (m)	0.200
Maximum Backdrop Height (m)	1.500
Min Design Depth for Optimisation (m)	1.200
Min Vel for Auto Design only (m/s)	1.00
Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Time Area Diagram for Storm

Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.041	4-8	0.003

Total Area Contributing (ha) = 0.043

Total Pipe Volume (m³) = 0.363

Network Design Table for Storm

- Indicates pipe length does not match coordinates

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
1.000	0.734	0.009	80.0	0.000	15.00	0.0	0.600	o	100	Pipe/Conduit	
1.001	1.200#	0.750	1.6	0.006	0.00	0.0	0.600	o	100	Pipe/Conduit	
1.002	1.200#	0.350	3.4	0.006	0.00	0.0	0.600	o	100	Pipe/Conduit	
1.003	1.200#	0.290	4.1	0.006	0.00	0.0	0.600	o	100	Pipe/Conduit	
1.004	13.362	1.466	9.1	0.007	0.00	0.0	0.600	o	100	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.000	98.15	15.01	51.929	0.000	0.0	0.0	0.0	0.86	6.8	0.0
1.001	98.14	15.02	51.920	0.006	0.0	0.0	0.0	6.17	48.4	2.2
1.002	98.13	15.02	51.170	0.012	0.0	0.0	0.0	4.21	33.0	4.4
1.003	98.11	15.03	50.820	0.019	0.0	0.0	0.0	3.83	30.1	6.7
1.004	97.84	15.11	50.530	0.026	0.0	0.0	0.0	2.58	20.2	9.3

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
2.000	0.932	0.012	80.0	0.000	15.00	0.0	0.600	o	100	Pipe/Conduit	
2.001	2.450#	0.250	9.8	0.004	0.00	0.0	0.600	o	100	Pipe/Conduit	
2.002	2.450#	0.150	16.3	0.004	0.00	0.0	0.600	o	100	Pipe/Conduit	
2.003	2.450#	0.086	28.5	0.004	0.00	0.0	0.600	o	100	Pipe/Conduit	
1.005	20.219	1.464	13.8	0.004	0.00	0.0	0.600	o	100	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
2.000	98.14	15.02	49.562	0.000	0.0	0.0	0.0	0.86	6.8	0.0
2.001	98.09	15.03	49.550	0.004	0.0	0.0	0.0	2.48	19.5	1.5
2.002	98.02	15.06	49.300	0.009	0.0	0.0	0.0	1.92	15.1	3.0
2.003	97.93	15.08	49.150	0.013	0.0	0.0	0.0	1.45	11.4	4.6
1.005	97.33	15.28	49.064	0.043	0.0	0.0	0.0	2.09	16.4	15.2

Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	-	-	100	0.000	0.000	0.000
1.001	User	-	100	0.003	0.003	0.003
	User	-	100	0.003	0.003	0.006
1.002	User	-	100	0.003	0.003	0.003
	User	-	100	0.003	0.003	0.006
1.003	User	-	100	0.003	0.003	0.003
	User	-	100	0.003	0.003	0.006
1.004	User	-	100	0.004	0.004	0.004
	User	-	100	0.003	0.003	0.007
2.000	-	-	100	0.000	0.000	0.000
2.001	User	-	100	0.003	0.003	0.003
	User	-	100	0.002	0.002	0.004
2.002	User	-	100	0.003	0.003	0.003
	User	-	100	0.002	0.002	0.004
2.003	User	-	100	0.003	0.003	0.003
	User	-	100	0.002	0.002	0.004
1.005	User	-	100	0.003	0.003	0.003
	User	-	100	0.002	0.002	0.004
				Total	Total	Total
				0.043	0.043	0.043

Surcharged Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
1.005	Outfall	48.600	47.600	47.600	0	0

Datum (m) 47.600 Offset (mins) 0

Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
1	1.000	27	1.000	53	1.000	79	1.000	105	1.000	131	1.000	157	1.000	183	1.000
2	1.000	28	1.000	54	1.000	80	1.000	106	1.000	132	1.000	158	1.000	184	1.000
3	1.000	29	1.000	55	1.000	81	1.000	107	1.000	133	1.000	159	1.000	185	1.000
4	1.000	30	1.000	56	1.000	82	1.000	108	1.000	134	1.000	160	1.000	186	1.000
5	1.000	31	1.000	57	1.000	83	1.000	109	1.000	135	1.000	161	1.000	187	1.000
6	1.000	32	1.000	58	1.000	84	1.000	110	1.000	136	1.000	162	1.000	188	1.000
7	1.000	33	1.000	59	1.000	85	1.000	111	1.000	137	1.000	163	1.000	189	1.000
8	1.000	34	1.000	60	1.000	86	1.000	112	1.000	138	1.000	164	1.000	190	1.000
9	1.000	35	1.000	61	1.000	87	1.000	113	1.000	139	1.000	165	1.000	191	1.000
10	1.000	36	1.000	62	1.000	88	1.000	114	1.000	140	1.000	166	1.000	192	1.000
11	1.000	37	1.000	63	1.000	89	1.000	115	1.000	141	1.000	167	1.000	193	1.000
12	1.000	38	1.000	64	1.000	90	1.000	116	1.000	142	1.000	168	1.000	194	1.000
13	1.000	39	1.000	65	1.000	91	1.000	117	1.000	143	1.000	169	1.000	195	1.000
14	1.000	40	1.000	66	1.000	92	1.000	118	1.000	144	1.000	170	1.000	196	1.000
15	1.000	41	1.000	67	1.000	93	1.000	119	1.000	145	1.000	171	1.000	197	1.000
16	1.000	42	1.000	68	1.000	94	1.000	120	1.000	146	1.000	172	1.000	198	1.000
17	1.000	43	1.000	69	1.000	95	1.000	121	1.000	147	1.000	173	1.000	199	1.000
18	1.000	44	1.000	70	1.000	96	1.000	122	1.000	148	1.000	174	1.000	200	1.000
19	1.000	45	1.000	71	1.000	97	1.000	123	1.000	149	1.000	175	1.000	201	1.000
20	1.000	46	1.000	72	1.000	98	1.000	124	1.000	150	1.000	176	1.000	202	1.000
21	1.000	47	1.000	73	1.000	99	1.000	125	1.000	151	1.000	177	1.000	203	1.000
22	1.000	48	1.000	74	1.000	100	1.000	126	1.000	152	1.000	178	1.000	204	1.000
23	1.000	49	1.000	75	1.000	101	1.000	127	1.000	153	1.000	179	1.000	205	1.000
24	1.000	50	1.000	76	1.000	102	1.000	128	1.000	154	1.000	180	1.000	206	1.000
25	1.000	51	1.000	77	1.000	103	1.000	129	1.000	155	1.000	181	1.000	207	1.000
26	1.000	52	1.000	78	1.000	104	1.000	130	1.000	156	1.000	182	1.000	208	1.000

Surcharged Outfall Details for Storm

Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
209	1.000	271	1.000	333	1.000	395	1.000	457	1.000	519	1.000	581	1.000	643	1.000
210	1.000	272	1.000	334	1.000	396	1.000	458	1.000	520	1.000	582	1.000	644	1.000
211	1.000	273	1.000	335	1.000	397	1.000	459	1.000	521	1.000	583	1.000	645	1.000
212	1.000	274	1.000	336	1.000	398	1.000	460	1.000	522	1.000	584	1.000	646	1.000
213	1.000	275	1.000	337	1.000	399	1.000	461	1.000	523	1.000	585	1.000	647	1.000
214	1.000	276	1.000	338	1.000	400	1.000	462	1.000	524	1.000	586	1.000	648	1.000
215	1.000	277	1.000	339	1.000	401	1.000	463	1.000	525	1.000	587	1.000	649	1.000
216	1.000	278	1.000	340	1.000	402	1.000	464	1.000	526	1.000	588	1.000	650	1.000
217	1.000	279	1.000	341	1.000	403	1.000	465	1.000	527	1.000	589	1.000	651	1.000
218	1.000	280	1.000	342	1.000	404	1.000	466	1.000	528	1.000	590	1.000	652	1.000
219	1.000	281	1.000	343	1.000	405	1.000	467	1.000	529	1.000	591	1.000	653	1.000
220	1.000	282	1.000	344	1.000	406	1.000	468	1.000	530	1.000	592	1.000	654	1.000
221	1.000	283	1.000	345	1.000	407	1.000	469	1.000	531	1.000	593	1.000	655	1.000
222	1.000	284	1.000	346	1.000	408	1.000	470	1.000	532	1.000	594	1.000	656	1.000
223	1.000	285	1.000	347	1.000	409	1.000	471	1.000	533	1.000	595	1.000	657	1.000
224	1.000	286	1.000	348	1.000	410	1.000	472	1.000	534	1.000	596	1.000	658	1.000
225	1.000	287	1.000	349	1.000	411	1.000	473	1.000	535	1.000	597	1.000	659	1.000
226	1.000	288	1.000	350	1.000	412	1.000	474	1.000	536	1.000	598	1.000	660	1.000
227	1.000	289	1.000	351	1.000	413	1.000	475	1.000	537	1.000	599	1.000	661	1.000
228	1.000	290	1.000	352	1.000	414	1.000	476	1.000	538	1.000	600	1.000	662	1.000
229	1.000	291	1.000	353	1.000	415	1.000	477	1.000	539	1.000	601	1.000	663	1.000
230	1.000	292	1.000	354	1.000	416	1.000	478	1.000	540	1.000	602	1.000	664	1.000
231	1.000	293	1.000	355	1.000	417	1.000	479	1.000	541	1.000	603	1.000	665	1.000
232	1.000	294	1.000	356	1.000	418	1.000	480	1.000	542	1.000	604	1.000	666	1.000
233	1.000	295	1.000	357	1.000	419	1.000	481	1.000	543	1.000	605	1.000	667	1.000
234	1.000	296	1.000	358	1.000	420	1.000	482	1.000	544	1.000	606	1.000	668	1.000
235	1.000	297	1.000	359	1.000	421	1.000	483	1.000	545	1.000	607	1.000	669	1.000
236	1.000	298	1.000	360	1.000	422	1.000	484	1.000	546	1.000	608	1.000	670	1.000
237	1.000	299	1.000	361	1.000	423	1.000	485	1.000	547	1.000	609	1.000	671	1.000
238	1.000	300	1.000	362	1.000	424	1.000	486	1.000	548	1.000	610	1.000	672	1.000
239	1.000	301	1.000	363	1.000	425	1.000	487	1.000	549	1.000	611	1.000	673	1.000
240	1.000	302	1.000	364	1.000	426	1.000	488	1.000	550	1.000	612	1.000	674	1.000
241	1.000	303	1.000	365	1.000	427	1.000	489	1.000	551	1.000	613	1.000	675	1.000
242	1.000	304	1.000	366	1.000	428	1.000	490	1.000	552	1.000	614	1.000	676	1.000
243	1.000	305	1.000	367	1.000	429	1.000	491	1.000	553	1.000	615	1.000	677	1.000
244	1.000	306	1.000	368	1.000	430	1.000	492	1.000	554	1.000	616	1.000	678	1.000
245	1.000	307	1.000	369	1.000	431	1.000	493	1.000	555	1.000	617	1.000	679	1.000
246	1.000	308	1.000	370	1.000	432	1.000	494	1.000	556	1.000	618	1.000	680	1.000
247	1.000	309	1.000	371	1.000	433	1.000	495	1.000	557	1.000	619	1.000	681	1.000
248	1.000	310	1.000	372	1.000	434	1.000	496	1.000	558	1.000	620	1.000	682	1.000
249	1.000	311	1.000	373	1.000	435	1.000	497	1.000	559	1.000	621	1.000	683	1.000
250	1.000	312	1.000	374	1.000	436	1.000	498	1.000	560	1.000	622	1.000	684	1.000
251	1.000	313	1.000	375	1.000	437	1.000	499	1.000	561	1.000	623	1.000	685	1.000
252	1.000	314	1.000	376	1.000	438	1.000	500	1.000	562	1.000	624	1.000	686	1.000
253	1.000	315	1.000	377	1.000	439	1.000	501	1.000	563	1.000	625	1.000	687	1.000
254	1.000	316	1.000	378	1.000	440	1.000	502	1.000	564	1.000	626	1.000	688	1.000
255	1.000	317	1.000	379	1.000	441	1.000	503	1.000	565	1.000	627	1.000	689	1.000
256	1.000	318	1.000	380	1.000	442	1.000	504	1.000	566	1.000	628	1.000	690	1.000
257	1.000	319	1.000	381	1.000	443	1.000	505	1.000	567	1.000	629	1.000	691	1.000
258	1.000	320	1.000	382	1.000	444	1.000	506	1.000	568	1.000	630	1.000	692	1.000
259	1.000	321	1.000	383	1.000	445	1.000	507	1.000	569	1.000	631	1.000	693	1.000
260	1.000	322	1.000	384	1.000	446	1.000	508	1.000	570	1.000	632	1.000	694	1.000
261	1.000	323	1.000	385	1.000	447	1.000	509	1.000	571	1.000	633	1.000	695	1.000
262	1.000	324	1.000	386	1.000	448	1.000	510	1.000	572	1.000	634	1.000	696	1.000
263	1.000	325	1.000	387	1.000	449	1.000	511	1.000	573	1.000	635	1.000	697	1.000
264	1.000	326	1.000	388	1.000	450	1.000	512	1.000	574	1.000	636	1.000	698	1.000
265	1.000	327	1.000	389	1.000	451	1.000	513	1.000	575	1.000	637	1.000	699	1.000
266	1.000	328	1.000	390	1.000	452	1.000	514	1.000	576	1.000	638	1.000	700	1.000
267	1.000	329	1.000	391	1.000	453	1.000	515	1.000	577	1.000	639	1.000	701	1.000
268	1.000	330	1.000	392	1.000	454	1.000	516	1.000	578	1.000	640	1.000	702	1.000
269	1.000	331	1.000	393	1.000	455	1.000	517	1.000	579	1.000	641	1.000	703	1.000
270	1.000	332	1.000	394	1.000	456	1.000	518	1.000	580	1.000	642	1.000	704	1.000

Surcharged Outfall Details for Storm

Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
705	1.000	767	1.000	829	1.000	891	1.000	953	1.000	1015	1.000	1077	1.000	1139	1.000
706	1.000	768	1.000	830	1.000	892	1.000	954	1.000	1016	1.000	1078	1.000	1140	1.000
707	1.000	769	1.000	831	1.000	893	1.000	955	1.000	1017	1.000	1079	1.000	1141	1.000
708	1.000	770	1.000	832	1.000	894	1.000	956	1.000	1018	1.000	1080	1.000	1142	1.000
709	1.000	771	1.000	833	1.000	895	1.000	957	1.000	1019	1.000	1081	1.000	1143	1.000
710	1.000	772	1.000	834	1.000	896	1.000	958	1.000	1020	1.000	1082	1.000	1144	1.000
711	1.000	773	1.000	835	1.000	897	1.000	959	1.000	1021	1.000	1083	1.000	1145	1.000
712	1.000	774	1.000	836	1.000	898	1.000	960	1.000	1022	1.000	1084	1.000	1146	1.000
713	1.000	775	1.000	837	1.000	899	1.000	961	1.000	1023	1.000	1085	1.000	1147	1.000
714	1.000	776	1.000	838	1.000	900	1.000	962	1.000	1024	1.000	1086	1.000	1148	1.000
715	1.000	777	1.000	839	1.000	901	1.000	963	1.000	1025	1.000	1087	1.000	1149	1.000
716	1.000	778	1.000	840	1.000	902	1.000	964	1.000	1026	1.000	1088	1.000	1150	1.000
717	1.000	779	1.000	841	1.000	903	1.000	965	1.000	1027	1.000	1089	1.000	1151	1.000
718	1.000	780	1.000	842	1.000	904	1.000	966	1.000	1028	1.000	1090	1.000	1152	1.000
719	1.000	781	1.000	843	1.000	905	1.000	967	1.000	1029	1.000	1091	1.000	1153	1.000
720	1.000	782	1.000	844	1.000	906	1.000	968	1.000	1030	1.000	1092	1.000	1154	1.000
721	1.000	783	1.000	845	1.000	907	1.000	969	1.000	1031	1.000	1093	1.000	1155	1.000
722	1.000	784	1.000	846	1.000	908	1.000	970	1.000	1032	1.000	1094	1.000	1156	1.000
723	1.000	785	1.000	847	1.000	909	1.000	971	1.000	1033	1.000	1095	1.000	1157	1.000
724	1.000	786	1.000	848	1.000	910	1.000	972	1.000	1034	1.000	1096	1.000	1158	1.000
725	1.000	787	1.000	849	1.000	911	1.000	973	1.000	1035	1.000	1097	1.000	1159	1.000
726	1.000	788	1.000	850	1.000	912	1.000	974	1.000	1036	1.000	1098	1.000	1160	1.000
727	1.000	789	1.000	851	1.000	913	1.000	975	1.000	1037	1.000	1099	1.000	1161	1.000
728	1.000	790	1.000	852	1.000	914	1.000	976	1.000	1038	1.000	1100	1.000	1162	1.000
729	1.000	791	1.000	853	1.000	915	1.000	977	1.000	1039	1.000	1101	1.000	1163	1.000
730	1.000	792	1.000	854	1.000	916	1.000	978	1.000	1040	1.000	1102	1.000	1164	1.000
731	1.000	793	1.000	855	1.000	917	1.000	979	1.000	1041	1.000	1103	1.000	1165	1.000
732	1.000	794	1.000	856	1.000	918	1.000	980	1.000	1042	1.000	1104	1.000	1166	1.000
733	1.000	795	1.000	857	1.000	919	1.000	981	1.000	1043	1.000	1105	1.000	1167	1.000
734	1.000	796	1.000	858	1.000	920	1.000	982	1.000	1044	1.000	1106	1.000	1168	1.000
735	1.000	797	1.000	859	1.000	921	1.000	983	1.000	1045	1.000	1107	1.000	1169	1.000
736	1.000	798	1.000	860	1.000	922	1.000	984	1.000	1046	1.000	1108	1.000	1170	1.000
737	1.000	799	1.000	861	1.000	923	1.000	985	1.000	1047	1.000	1109	1.000	1171	1.000
738	1.000	800	1.000	862	1.000	924	1.000	986	1.000	1048	1.000	1110	1.000	1172	1.000
739	1.000	801	1.000	863	1.000	925	1.000	987	1.000	1049	1.000	1111	1.000	1173	1.000
740	1.000	802	1.000	864	1.000	926	1.000	988	1.000	1050	1.000	1112	1.000	1174	1.000
741	1.000	803	1.000	865	1.000	927	1.000	989	1.000	1051	1.000	1113	1.000	1175	1.000
742	1.000	804	1.000	866	1.000	928	1.000	990	1.000	1052	1.000	1114	1.000	1176	1.000
743	1.000	805	1.000	867	1.000	929	1.000	991	1.000	1053	1.000	1115	1.000	1177	1.000
744	1.000	806	1.000	868	1.000	930	1.000	992	1.000	1054	1.000	1116	1.000	1178	1.000
745	1.000	807	1.000	869	1.000	931	1.000	993	1.000	1055	1.000	1117	1.000	1179	1.000
746	1.000	808	1.000	870	1.000	932	1.000	994	1.000	1056	1.000	1118	1.000	1180	1.000
747	1.000	809	1.000	871	1.000	933	1.000	995	1.000	1057	1.000	1119	1.000	1181	1.000
748	1.000	810	1.000	872	1.000	934	1.000	996	1.000	1058	1.000	1120	1.000	1182	1.000
749	1.000	811	1.000	873	1.000	935	1.000	997	1.000	1059	1.000	1121	1.000	1183	1.000
750	1.000	812	1.000	874	1.000	936	1.000	998	1.000	1060	1.000	1122	1.000	1184	1.000
751	1.000	813	1.000	875	1.000	937	1.000	999	1.000	1061	1.000	1123	1.000	1185	1.000
752	1.000	814	1.000	876	1.000	938	1.000	1000	1.000	1062	1.000	1124	1.000	1186	1.000
753	1.000	815	1.000	877	1.000	939	1.000	1001	1.000	1063	1.000	1125	1.000	1187	1.000
754	1.000	816	1.000	878	1.000	940	1.000	1002	1.000	1064	1.000	1126	1.000	1188	1.000
755	1.000	817	1.000	879	1.000	941	1.000	1003	1.000	1065	1.000	1127	1.000	1189	1.000
756	1.000	818	1.000	880	1.000	942	1.000	1004	1.000	1066	1.000	1128	1.000	1190	1.000
757	1.000	819	1.000	881	1.000	943	1.000	1005	1.000	1067	1.000	1129	1.000	1191	1.000
758	1.000	820	1.000	882	1.000	944	1.000	1006	1.000	1068	1.000	1130	1.000	1192	1.000
759	1.000	821	1.000	883	1.000	945	1.000	1007	1.000	1069	1.000	1131	1.000	1193	1.000
760	1.000	822	1.000	884	1.000	946	1.000	1008	1.000	1070	1.000	1132	1.000	1194	1.000
761	1.000	823	1.000	885	1.000	947	1.000	1009	1.000	1071	1.000	1133	1.000	1195	1.000
762	1.000	824	1.000	886	1.000	948	1.000	1010	1.000	1072	1.000	1134	1.000	1196	1.000
763	1.000	825	1.000	887	1.000	949	1.000	1011	1.000	1073	1.000	1135	1.000	1197	1.000
764	1.000	826	1.000	888	1.000	950	1.000	1012	1.000	1074	1.000	1136	1.000	1198	1.000
765	1.000	827	1.000	889	1.000	951	1.000	1013	1.000	1075	1.000	1137	1.000	1199	1.000
766	1.000	828	1.000	890	1.000	952	1.000	1014	1.000	1076	1.000	1138	1.000	1200	1.000

Surcharged Outfall Details for Storm

Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
1201	1.000	1231	1.000	1261	1.000	1291	1.000	1321	1.000	1351	1.000	1381	1.000	1411	1.000
1202	1.000	1232	1.000	1262	1.000	1292	1.000	1322	1.000	1352	1.000	1382	1.000	1412	1.000
1203	1.000	1233	1.000	1263	1.000	1293	1.000	1323	1.000	1353	1.000	1383	1.000	1413	1.000
1204	1.000	1234	1.000	1264	1.000	1294	1.000	1324	1.000	1354	1.000	1384	1.000	1414	1.000
1205	1.000	1235	1.000	1265	1.000	1295	1.000	1325	1.000	1355	1.000	1385	1.000	1415	1.000
1206	1.000	1236	1.000	1266	1.000	1296	1.000	1326	1.000	1356	1.000	1386	1.000	1416	1.000
1207	1.000	1237	1.000	1267	1.000	1297	1.000	1327	1.000	1357	1.000	1387	1.000	1417	1.000
1208	1.000	1238	1.000	1268	1.000	1298	1.000	1328	1.000	1358	1.000	1388	1.000	1418	1.000
1209	1.000	1239	1.000	1269	1.000	1299	1.000	1329	1.000	1359	1.000	1389	1.000	1419	1.000
1210	1.000	1240	1.000	1270	1.000	1300	1.000	1330	1.000	1360	1.000	1390	1.000	1420	1.000
1211	1.000	1241	1.000	1271	1.000	1301	1.000	1331	1.000	1361	1.000	1391	1.000	1421	1.000
1212	1.000	1242	1.000	1272	1.000	1302	1.000	1332	1.000	1362	1.000	1392	1.000	1422	1.000
1213	1.000	1243	1.000	1273	1.000	1303	1.000	1333	1.000	1363	1.000	1393	1.000	1423	1.000
1214	1.000	1244	1.000	1274	1.000	1304	1.000	1334	1.000	1364	1.000	1394	1.000	1424	1.000
1215	1.000	1245	1.000	1275	1.000	1305	1.000	1335	1.000	1365	1.000	1395	1.000	1425	1.000
1216	1.000	1246	1.000	1276	1.000	1306	1.000	1336	1.000	1366	1.000	1396	1.000	1426	1.000
1217	1.000	1247	1.000	1277	1.000	1307	1.000	1337	1.000	1367	1.000	1397	1.000	1427	1.000
1218	1.000	1248	1.000	1278	1.000	1308	1.000	1338	1.000	1368	1.000	1398	1.000	1428	1.000
1219	1.000	1249	1.000	1279	1.000	1309	1.000	1339	1.000	1369	1.000	1399	1.000	1429	1.000
1220	1.000	1250	1.000	1280	1.000	1310	1.000	1340	1.000	1370	1.000	1400	1.000	1430	1.000
1221	1.000	1251	1.000	1281	1.000	1311	1.000	1341	1.000	1371	1.000	1401	1.000	1431	1.000
1222	1.000	1252	1.000	1282	1.000	1312	1.000	1342	1.000	1372	1.000	1402	1.000	1432	1.000
1223	1.000	1253	1.000	1283	1.000	1313	1.000	1343	1.000	1373	1.000	1403	1.000	1433	1.000
1224	1.000	1254	1.000	1284	1.000	1314	1.000	1344	1.000	1374	1.000	1404	1.000	1434	1.000
1225	1.000	1255	1.000	1285	1.000	1315	1.000	1345	1.000	1375	1.000	1405	1.000	1435	1.000
1226	1.000	1256	1.000	1286	1.000	1316	1.000	1346	1.000	1376	1.000	1406	1.000	1436	1.000
1227	1.000	1257	1.000	1287	1.000	1317	1.000	1347	1.000	1377	1.000	1407	1.000	1437	1.000
1228	1.000	1258	1.000	1288	1.000	1318	1.000	1348	1.000	1378	1.000	1408	1.000	1438	1.000
1229	1.000	1259	1.000	1289	1.000	1319	1.000	1349	1.000	1379	1.000	1409	1.000	1439	1.000
1230	1.000	1260	1.000	1290	1.000	1320	1.000	1350	1.000	1380	1.000	1410	1.000	1440	1.000

Simulation Criteria for Storm

Volumetric Runoff Coeff	1.000	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	0.000
Hot Start (mins)	0	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	60
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1

Number of Input Hydrographs	0	Number of Offline Controls	0	Number of Time/Area Diagrams	0
Number of Online Controls	8	Number of Storage Structures	8	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH	Summer Storms	Yes
Return Period (years)	100	Winter Storms	No
FEH Rainfall Version	2013	Cv (Summer)	1.000
Site Location	GB 512300 113800 TQ 12300 13800	Cv (Winter)	0.840
Data Type	Catchment	Storm Duration (mins)	30

Online Controls for Storm

Orifice Manhole: PP1, DS/PN: 1.001, Volume (m³): 0.2

Diameter (m) 0.023 Discharge Coefficient 0.600 Invert Level (m) 51.920

Orifice Manhole: PP2, DS/PN: 1.002, Volume (m³): 0.2

Diameter (m) 0.024 Discharge Coefficient 0.600 Invert Level (m) 51.170

Orifice Manhole: PP3, DS/PN: 1.003, Volume (m³): 0.2

Diameter (m) 0.027 Discharge Coefficient 0.600 Invert Level (m) 50.820

Orifice Manhole: PP4, DS/PN: 1.004, Volume (m³): 0.2

Diameter (m) 0.028 Discharge Coefficient 0.600 Invert Level (m) 50.530

Orifice Manhole: CS1, DS/PN: 2.001, Volume (m³): 0.3

Diameter (m) 0.019 Discharge Coefficient 0.600 Invert Level (m) 49.550

Orifice Manhole: CS2, DS/PN: 2.002, Volume (m³): 0.3

Diameter (m) 0.020 Discharge Coefficient 0.600 Invert Level (m) 49.300

Orifice Manhole: CS3, DS/PN: 2.003, Volume (m³): 0.3

Diameter (m) 0.022 Discharge Coefficient 0.600 Invert Level (m) 49.150

Hydro-Brake® Optimum Manhole: CS4, DS/PN: 1.005, Volume (m³): 0.4

Unit Reference	MD-SHE-0060-1600-1000-1600
Design Head (m)	1.000
Design Flow (l/s)	1.6
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	60
Invert Level (m)	49.064
Minimum Outlet Pipe Diameter (mm)	75
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.000	1.6	Kick-Flo®	0.531	1.2
Flush-Flo™	0.262	1.5	Mean Flow over Head Range	-	1.3

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

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	1.3	0.200	1.5	0.300	1.5	0.400	1.4	0.500	1.3

Hydro-Brake® Optimum Manhole: CS4, DS/PN: 1.005, Volume (m³): 0.4

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)
0.600	1.3	1.600	2.0	2.600	2.5	5.000	3.3	7.500	4.0
0.800	1.4	1.800	2.1	3.000	2.6	5.500	3.5	8.000	4.2
1.000	1.6	2.000	2.2	3.500	2.8	6.000	3.6	8.500	4.3
1.200	1.7	2.200	2.3	4.000	3.0	6.500	3.8	9.000	4.4
1.400	1.9	2.400	2.4	4.500	3.2	7.000	3.9	9.500	4.5

Storage Structures for Storm

Porous Car Park Manhole: PP1, DS/PN: 1.001

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	5.4
Membrane Percolation (mm/hr)	1000	Length (m)	5.4
Max Percolation (l/s)	8.1	Slope (1:X)	20.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	51.920	Cap Volume Depth (m)	0.500

Porous Car Park Manhole: PP2, DS/PN: 1.002

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	5.6
Membrane Percolation (mm/hr)	1000	Length (m)	5.6
Max Percolation (l/s)	8.7	Slope (1:X)	20.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	51.170	Cap Volume Depth (m)	0.500

Porous Car Park Manhole: PP3, DS/PN: 1.003

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	5.7
Membrane Percolation (mm/hr)	1000	Length (m)	5.8
Max Percolation (l/s)	9.2	Slope (1:X)	20.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	50.820	Cap Volume Depth (m)	0.500

Porous Car Park Manhole: PP4, DS/PN: 1.004

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	6.2
Membrane Percolation (mm/hr)	1000	Length (m)	6.2
Max Percolation (l/s)	10.7	Slope (1:X)	20.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	50.530	Cap Volume Depth (m)	0.500

Cellular Storage Manhole: CS1, DS/PN: 2.001

Invert Level (m)	49.550	Safety Factor	2.0
Infiltration Coefficient Base (m/hr)	0.00000	Porosity	0.95
Infiltration Coefficient Side (m/hr)	0.00000		

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	7.0	7.0	0.400	7.0	11.4	0.401	0.0	11.4

Cellular Storage Manhole: CS2, DS/PN: 2.002

Invert Level (m)	49.300	Safety Factor	2.0
Infiltration Coefficient Base (m/hr)	0.00000	Porosity	0.95
Infiltration Coefficient Side (m/hr)	0.00000		

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	7.0	7.0	0.400	7.0	11.4	0.401	0.0	11.4

Cellular Storage Manhole: CS3, DS/PN: 2.003

Invert Level (m) 49.150 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	7.0	7.0	0.400	7.0	11.4	0.401	0.0	11.4

Cellular Storage Manhole: CS4, DS/PN: 1.005

Invert Level (m) 49.064 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	7.0	7.0	0.400	7.0	11.4	0.401	0.0	11.4

Volume Summary (Static)

Length Calculations based on Centre-Centre

Pipe Number	USMH Name	Manhole Volume (m³)	Pipe Volume (m³)	Storage Structure Volume (m³)	Total Volume (m³)
1.000	1	0.000	0.006	0.000	0.006
1.001	PP1	0.178	0.009	4.056	4.244
1.002	PP2	0.178	0.009	4.326	4.514
1.003	PP3	0.178	0.009	4.521	4.709
1.004	PP4	0.178	0.105	5.163	5.446
2.000	6	0.000	0.007	0.000	0.007
2.001	CS1	0.283	0.019	2.662	2.964
2.002	CS2	0.283	0.019	2.662	2.964
2.003	CS3	0.297	0.019	2.662	2.978
1.005	CS4	0.321	0.159	2.662	3.142
Total		1.896	0.363	28.716	30.975

2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	0.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs	0	Number of Offline Controls	0	Number of Time/Area Diagrams	0
Number of Online Controls	8	Number of Storage Structures	8	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH	Data Type	Catchment
FEH Rainfall Version	2013	Cv (Summer)	1.000
Site Location	GB 512300 113800 TQ 12300 13800	Cv (Winter)	1.000

Margin for Flood Risk Warning (mm)	300.0	DVD Status	ON
Analysis Timestep	Fine	Inertia Status	ON
DTS Status	OFF		

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760
Return Period(s) (years)	2, 10, 30, 100
Climate Change (%)	0, 40, 40, 45

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
1.000	1	60 Summer	2	+0%					52.029	0.000
1.001	PP1	120 Summer	2	+0%	2/30 Summer				52.036	0.016
1.002	PP2	120 Summer	2	+0%	2/15 Summer				51.362	0.092
1.003	PP3	180 Summer	2	+0%	2/15 Summer				51.023	0.103
1.004	PP4	240 Summer	2	+0%	2/15 Summer				50.764	0.134
2.000	6	120 Summer	2	+0%					49.611	-0.051
2.001	CS1	120 Summer	2	+0%	10/30 Summer				49.611	-0.039
2.002	CS2	240 Summer	2	+0%	2/180 Summer				49.403	0.003
2.003	CS3	240 Summer	2	+0%	2/120 Summer				49.263	0.013
1.005	CS4	180 Summer	2	+0%	10/15 Summer				49.149	-0.015

PN	US/MH Name	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	1	0.000	0.02			0.1	SURCHARGED*	
1.001	PP1	0.000	0.01		24	0.4	SURCHARGED	
1.002	PP2	0.000	0.03		44	0.5	SURCHARGED	
1.003	PP3	0.000	0.04		57	0.7	SURCHARGED	
1.004	PP4	0.000	0.04		72	0.8	SURCHARGED	
2.000	6	0.000	0.00			0.0	OK*	
2.001	CS1	0.000	0.01		56	0.2	OK	
2.002	CS2	0.000	0.02		88	0.3	SURCHARGED	
2.003	CS3	0.000	0.04		108	0.3	SURCHARGED	
1.005	CS4	0.000	0.08		108	1.2	OK	

10 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	0.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs	0	Number of Offline Controls	0	Number of Time/Area Diagrams	0
Number of Online Controls	8	Number of Storage Structures	8	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH	Data Type	Catchment
FEH Rainfall Version	2013	Cv (Summer)	1.000
Site Location	GB 512300 113800 TQ 12300 13800	Cv (Winter)	1.000

Margin for Flood Risk Warning (mm)	300.0	DVD Status	ON
Analysis Timestep	Fine	Inertia Status	ON
DTS Status	OFF		

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760
Return Period(s) (years)	2, 10, 30, 100
Climate Change (%)	0, 40, 40, 45

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
1.000	1	15 Summer	10	+40%					52.029	0.000
1.001	PP1	120 Summer	10	+40%	2/30 Summer				52.156	0.136
1.002	PP2	180 Summer	10	+40%	2/15 Summer				51.513	0.243
1.003	PP3	180 Summer	10	+40%	2/15 Summer				51.189	0.269
1.004	PP4	240 Winter	10	+40%	2/15 Summer				50.908	0.278
2.000	6	120 Winter	10	+40%					49.662	0.000
2.001	CS1	120 Summer	10	+40%	10/30 Summer				49.696	0.046
2.002	CS2	240 Summer	10	+40%	2/180 Summer				49.571	0.171
2.003	CS3	240 Summer	10	+40%	2/120 Summer				49.434	0.184
1.005	CS4	240 Summer	10	+40%	10/15 Summer				49.293	0.129

PN	US/MH Name	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	1	0.000	0.02			0.1	SURCHARGED*	
1.001	PP1	0.000	0.02		44	0.5	SURCHARGED	
1.002	PP2	0.000	0.04		78	0.7	FLOOD RISK	
1.003	PP3	0.000	0.05		93	0.8	FLOOD RISK	
1.004	PP4	0.000	0.05		140	1.0	FLOOD RISK	
2.000	6	0.000	0.01			0.0	SURCHARGED*	
2.001	CS1	0.000	0.02		80	0.3	SURCHARGED	
2.002	CS2	0.000	0.03		152	0.3	SURCHARGED	
2.003	CS3	0.000	0.05		168	0.4	SURCHARGED	
1.005	CS4	0.000	0.09		144	1.4	SURCHARGED	

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	0.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs	0	Number of Offline Controls	0	Number of Time/Area Diagrams	0
Number of Online Controls	8	Number of Storage Structures	8	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH	Data Type	Catchment
FEH Rainfall Version	2013	Cv (Summer)	1.000
Site Location	GB 512300 113800 TQ 12300 13800	Cv (Winter)	1.000

Margin for Flood Risk Warning (mm)	300.0	DVD Status	ON
Analysis Timestep	Fine	Inertia Status	ON
DTS Status	OFF		

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760
Return Period(s) (years)	2, 10, 30, 100
Climate Change (%)	0, 40, 40, 45

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
1.000	1	15 Summer	30	+40%					52.029	0.000
1.001	PP1	60 Summer	30	+40%	2/30 Summer				52.207	0.187
1.002	PP2	120 Winter	30	+40%	2/15 Summer				51.598	0.328
1.003	PP3	180 Winter	30	+40%	2/15 Summer				51.271	0.351
1.004	PP4	180 Winter	30	+40%	2/15 Summer				50.971	0.341
2.000	6	15 Summer	30	+40%					49.662	0.000
2.001	CS1	120 Summer	30	+40%	10/30 Summer				49.747	0.097
2.002	CS2	180 Winter	30	+40%	2/180 Summer				49.647	0.247
2.003	CS3	240 Winter	30	+40%	2/120 Summer				49.522	0.272
1.005	CS4	240 Winter	30	+40%	10/15 Summer				49.392	0.228

PN	US/MH Name	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	1	0.000	0.02			0.1	SURCHARGED*	
1.001	PP1	0.000	0.02		40	0.6	SURCHARGED	
1.002	PP2	0.000	0.04		72	0.7	FLOOD RISK	
1.003	PP3	0.000	0.06		111	0.8	FLOOD RISK	
1.004	PP4	0.000	0.06		174	1.1	FLOOD RISK	
2.000	6	0.000	0.01			0.0	SURCHARGED*	
2.001	CS1	0.000	0.02		108	0.3	SURCHARGED	
2.002	CS2	0.000	0.03		180	0.3	SURCHARGED	
2.003	CS3	0.000	0.05		188	0.4	SURCHARGED	
1.005	CS4	0.000	0.09		152	1.5	SURCHARGED	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	0.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs	0	Number of Offline Controls	0	Number of Time/Area Diagrams	0
Number of Online Controls	8	Number of Storage Structures	8	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH	Data Type	Catchment
FEH Rainfall Version	2013	Cv (Summer)	1.000
Site Location	GB 512300 113800 TQ 12300 13800	Cv (Winter)	1.000

Margin for Flood Risk Warning (mm)	300.0	DVD Status	ON
Analysis Timestep	Fine	Inertia Status	ON
DTS Status	OFF		

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760
Return Period(s) (years)	2, 10, 30, 100
Climate Change (%)	0, 40, 40, 45

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
1.000	1	15 Summer	100	+45%					52.029	0.000
1.001	PP1	60 Summer	100	+45%	2/30 Summer				52.279	0.259
1.002	PP2	180 Winter	100	+45%	2/15 Summer				51.741	0.471
1.003	PP3	180 Winter	100	+45%	2/15 Summer				51.393	0.473
1.004	PP4	180 Winter	100	+45%	2/15 Summer				51.056	0.426
2.000	6	15 Summer	100	+45%					49.662	0.000
2.001	CS1	240 Summer	100	+45%	10/30 Summer				50.124	0.474
2.002	CS2	240 Winter	100	+45%	2/180 Summer				50.088	0.688
2.003	CS3	240 Winter	100	+45%	2/120 Summer				50.075	0.825
1.005	CS4	240 Winter	100	+45%	10/15 Summer				50.017	0.853

PN	US/MH Name	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	1	0.000	0.02			0.1	SURCHARGED*	
1.001	PP1	0.000	0.03		48	0.7	FLOOD RISK	
1.002	PP2	0.000	0.04		90	0.7	FLOOD RISK	
1.003	PP3	0.000	0.06		147	0.9	FLOOD RISK	
1.004	PP4	0.000	0.06		210	1.2	FLOOD RISK	
2.000	6	0.000	0.01			0.0	SURCHARGED*	
2.001	CS1	0.000	0.02		172	0.3	SURCHARGED	
2.002	CS2	0.000	0.03		316	0.3	FLOOD RISK	
2.003	CS3	0.000	0.07		364	0.5	FLOOD RISK	
1.005	CS4	0.000	0.10		288	1.6	FLOOD RISK	

Appendix N

Drainage Management and Maintenance Plan

Land East of Old London Road
Washington, West Sussex

Drainage Management and Maintenance Plan

For

James Williams

Document Control Sheet

Land East of Old London Road

Washington, West Sussex

James Williams

This document has been issued and amended as follows:

Date	Issue	Prepared by	Approved by
28th August 2025	Final A	Phil Allen MCIWEM C.WEM	Neil Jaques

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Contents

1.0 Introduction

1.1 This document sets out the principles for the long-term management and maintenance of the proposed surface water drainage system on the proposed development on the land east of Old London Road, Washington, West Sussex.

1.2 The purpose of this document is to ensure that the site management company or their agents have a robust inspection and maintenance plan going forwards. This ensures the optimum operation of the surface water drainage system and that it will be continually maintained for the lifetime of the development. This will contribute to reducing the risk of surface water flooding both on- and off-site.

1.3 All those responsible for maintenance should follow relevant health and safety legislation for all activities listed within this report (including lone working, if relevant). Method statements and risk assessments should always be undertaken and made available, if requested.

1.4 This document has been produced by Motion on behalf of their client, James Williams. This document describes the typical management and maintenance tasks that are known at the design stage (maintenance frequencies and typical tasks, for example). These have been drawn from industry guidance such as CIRIA C753 - The SuDS Manual – and manufacturer's own guidance.

1.5 Maintenance is considered as a construction activity under the CDM Regulations 2015. Under the CDM Regulations, it is a requirement that a competent person be appointed to carry out a required role. CDM defines a competent person as an individual with sufficient knowledge of the specific tasks to be undertaken, as well as sufficient experience and ability to carry out their duties in relation to the task in a way that secures health and safety on site.

1.6 In recognition of the requirements of the CDM Regulations 2015, this surface water management and maintenance plan expects that the maintenance work will be carried out by a competent person who must have prior knowledge of the drainage components and SuDS systems on site.

1.7 There are limitations on what this document can prescribe at this time. At this stage this document cannot name the specific individuals who will carry out the maintenance and what equipment is to be used. Related to this, this document is unable to provide method statements for exactly how maintenance practices will be carried out. These can only be determined at the time of the maintenance being carried out by the exact maintenance need and the antecedent site conditions. Therefore, this is to be the responsibility of the site management company and/or the individuals carrying out the work. We urge those who are carrying out the maintenance to record this information and make it available to the Local Planning Authority (LPA), if required to do so. This drainage management and maintenance plan needs to be a living document that is owned and maintained by the adopting site management company.

2.0 Maintenance Categories

2.1 There are three categories of maintenance activities referred to in this report. These are:

Regular maintenance (including inspections and monitoring)

- Regular maintenance consists of basic tasks done on a frequent and predictable schedule, including inspections, vegetation management, and litter, silt and debris removal.

Occasional maintenance

- Occasional maintenance comprises tasks that are likely to be required periodically, but on a much less frequent and predictable basis than the routine tasks (sediment removal is an example).

Remedial maintenance

- Remedial maintenance comprises of intermittent tasks that may be required to rectify faults associated with the system. The likelihood of faults can be minimised by correct installation, regular inspection and timely maintenance. Where remedial work is found to be necessary, it is likely to be due to site-specific characteristics or unforeseen events and, as such, timings are difficult to predict.
- This document should be read in conjunction with the design drawings of the drainage system, so that the location and type of each feature can be recognised and understood.

3.0 The Drainage System Components

Surface water

3.1 The proposed surface water drainage system is made up of a number of components. These include:

- Water Butts
- Pipes
- Manholes
- Catchpit manholes/silt traps
- Polystorm Rainwater Diffuser Units
- Permeable Paviours
- Geocellular Attenuation Tanks
- Orifice and Hydrobrake Flow Controls

3.2 All components should be installed in accordance with the manufacturer's instructions and to the levels/arrangement as defined on the designer's drawings. Not doing so will invalidate any warranty provided by the manufacturer.

3.3 All maintenance and cleaning must be carried out in accordance with manufacturer's recommendations and by competent and suitably qualified staff, as defined in the CDM regulations 2015.

4.0 General Maintenance Principles

4.1 All surface water drainage systems, whether piped gravity systems, Sustainable Drainage Systems (SuDS), or flow control devices and pumps, require regular maintenance to keep them working at optimum efficiency and capacity. The maintenance of the surface water drainage system on the land east of Old London Road, Washington should be carried out alongside other regular maintenance tasks on site.

4.2 Timely and adequate maintenance will increase the lifespan of all the drainage components. Inadequate maintenance will do the reverse. Therefore, the projected lifespan and anticipated replacement date of each drainage component cannot be forecast at the time of this document being produced.

4.3 The site management company and/or their agents are responsible for the maintenance of the surface water drainage system.

4.4 Construction activities can create and discharge significant quantities of sediment that will quickly clog the surface water drainage system. Therefore, construction-stage sediment removal is required immediately post-construction. This may require several cleans of the system during the first year after installation. The construction site manager should assess this and carry out cleaning as necessary.

4.5 Catchpit manholes/silt traps will be specified upstream of discharge to the permeable paving. They will remove gross solids and most silts. It is important that any debris build-up in the catchpit manholes/silt traps is removed at regular intervals. This will reduce the risk of the permeable paving becoming silted up. It will maintain its design capacity and function.

4.6 Cleaning should also take place after large storms when there have been increased surface water flows and visible entrainment and deposition of debris.

4.7 An increased frequency of inspection and maintenance should be programmed into the autumn and winter months in acknowledgement that:

- Leaf fall from deciduous trees in autumn will result in an increased amount of leaf litter and an elevated blockage risk of drainage infrastructure.
- Increased rainfall during winter months will result in greater quantities of water moving through the drainage system and a greater input of silt and other debris.

4.8 Table 4.1, one the next page, gives an overview of typical maintenance tasks and the frequency with which they need to be undertaken. Section 5 – Inspection and Maintenance Frequency of Components – will assign typical maintenance frequencies and tasks to the specific components within the surface water drainage system on the development on the land east of Old London Road.

Table 4.1 - Typical maintenance tasks and frequencies

Activity	Indicative Frequency	Typical Tasks
Routine/regular maintenance	Monthly to annually	„ Litter picking „ Silt removal „ Inspection of all inlets, outlets and control structures „ Weed removal and invasive plant control
Occasional maintenance	Annually up to 25 years	„ Silt control around components „ Vegetation management around components „ Sweeping of pavement areas to remove surface silt „ Silt removal from catchpits, cellular storage structures
Remedial maintenance	As required	„ Inlet/outlet repairs „ Erosion repairs „ Reinstatement of edgings „ Reinstatement following pollution „ Removal of silt build-up and leaf litter after storms „ Repair of vandalism „ Replacement of any blocked filter „ membranes/materials

5.0 Inspection and Maintenance Frequency of Components

5.1 Table 5.1 below lists each of the components used within the site's surface water drainage system. It suggests an indicative maintenance frequency for each component and ascribes typical maintenance tasks to them.

5.2 This list is not exhaustive, nor is it prescriptive. As mentioned in Section 3, additional, unscheduled maintenance may be required following adverse weather conditions or after autumn leaf falls. Additional maintenance tasks may be required to adequately clean and maintain individual components.

5.3 The list of components should be cross-referenced with the designer's drawings so that the location of each component can be identified.

5.4 It is the responsibility of the site management company and/or their agents to ensure that all necessary maintenance activities are carried out in a timely manner and that the design performance of each drainage component is preserved.

5.5 If there is any uncertainty regarding the correct and safe methods of cleaning, or what equipment should be used, the manufacturer should be consulted.

Table 5.1 - Maintenance Frequency and Task for Drainage Components

Activity	Indicative Frequency	Anticipated Tasks
Water Butts	Annually in Autumn to Winter	„ Remove falling leaves and seeds from guttering or those that have found their way into the water butt. „ Water may stagnate slightly. If so, use a water butt cleaning disc into the tank. „ In autumn and winter, drain water off every 10 days (or less) to make sure that water butts don't overflow and that water is kept moving. This will stop larvae and flies from using the water butt. „ Use safe products such as vinegar to clean the outside of the tank and the inside of the lid and be careful not to contaminate water with chemicals. „ At least once a year, completely empty the water butt and scrub it out with warm soapy water and then rinse thoroughly. This is best done at a time when the water butt is already nearly empty (end of summer) or when it can readily refill (winter).
Pipes	As required	„ Identify any pipes that may not be operating properly and employ a competent, qualified contractor to inspect using CCTV. „ If the pipe is blocked with silt or debris, the pipe should be jetted clean from an upstream access point. All silt and debris should be captured and removed at a downstream access point. „ Inspect once clean. „ If any other defects are encountered (cracks, displaced joints, root ingress), appropriate

		solutions should be discussed with a competent and qualified contractor. These services are usually provided by the same companies that offer CCTV surveys and pipe jetting services.
Manholes	Annually	„ Inspect/identify any damage or areas that are not operating correctly „ Remove silt, litter, leaves and other detritus. „ Inspect once clean.
Catchpit Manholes/Silt Traps	Twice a year, before and after autumn/winter	„ Inspect/identify any damage or areas that are not operating correctly „ Remove silt, litter, leaves and other detritus. „ Inspect once clean.
Polystorm Rainwater Diffuser Units	Twice a year, before and after autumn/winter	„ Inspect the diffuser units for silt accumulation and condition of surrounding geotextile. „ Remove silt, litter, leaves and other detritus via jetting if necessary. „ Inspect once clean.
Permeable paving	Once a year after autumn leaf fall, or reduced frequency as required, based on site-specific observations of clogging or manufacturer's recommendations.	„ Agitate surface by means of mechanical sweeping or vacuuming to ensure no vegetation or moss is allowed to establish and grow in the joints. „ Mechanical sweeping of paviours and refilling of joints with the correct aggregate need only be carried out at intervals of 5 years or so „ Remove weeds from the surface through the application of glyphosate-based weed killers „ Stabilise and mow contributing and adjacent areas. „ Inspect once clean. „ See Table 20.15 of CIRIA C753 for more information. „ Permeable paving has a nominal 25-year lifespan, if correctly and regularly maintained. „ When subjected to low level oil drips permeable paviours can continue to biodegrade hydrocarbons indefinitely. „ Major oil spills have the potential to contaminate the surface and the underlying crushed stone. In the event of a major oil spill, the area of block paviours and crushed stone that is affected should be removed, cleaned and reinstalled.
Geocellular Attenuation Tanks	Annually	„ Contact manufacturer for instruction on approved and safe inspection and maintenance practices. „ Inspect/identify any areas that are not operating correctly. „ Remove debris from catchment surface. „ Remove sediment from pre-treatment structures.

		„ Check for silt build-up and flush and remove as required (in accordance with manufacturer's instructions). „ Inspect once clean. „ See Table 21.3 of CIRIA C753 for more information. „ Most geocellular units have a 60-year creep limited life expectancy, so they should be planned for replacement by 2075 (approx.).
Orifice Plates	Every 3 – 6 months.	„ Orifice plates have no moving parts to fail and quality units are made of stainless steel to resist scour, degradation and chemical attack. „ The orifice plates in this scheme are to be downstream of the permeable paviours, so all contributing flows should be heavily filtered and free of any debris. „ Debris and silt should be removed if present. „ Check wear on orifice to ensure no enlargement is taking place. „ Any visible fixing bolts should be checked. „ If there is a suspected blockage, the housing chamber can be inspected internally, the blockage cleared and the orifice returned to its working position.
Hydrobrake chamber	Every three months for the first year, then annually thereafter	„ Contact manufacturer for instruction on approved and safe inspection and maintenance practices. „ Inspect Hydrobrake and check functionality. Remove any detritus as required. „ Inspect once clean.

5.6 Upon completion of maintenance activities, a record should be kept of the work carried out. This should be retained, and an annual maintenance report should be compiled, which should include the following:

- Observations resulting from inspections
- Maintenance and operation activities undertaken during the year
- Recommendations for inspections and maintenance programmes for the following year

5.7 On the last page of this document is a table with suggested information should be recorded and included with the maintenance plan. As mentioned in the introduction to this document, this should be a living document and regularly updated, as required.

Date	Component requiring maintenance	Issues prompting maintenance	Scheduled maintenance (Y/N)	Maintenance carried out	Additional works required (Y/N). If yes, please detail	Next scheduled date of inspection and maintenance

Appendix O

Exceedance Plan

north

Node 'PP4': Permeable Paviours
Area: 38.44m²
CL: Varies (min. 51.160)
IL: Varies (min. 50.530)
Depth 0.630m
Slope: 1 in 20
Subbase: 0.500m
Subbase Porosity: 30%
Volume : 5.163m³

'PP3' Outfall
Orifice [Ø27mm]
Design Flow: 1.0 l/s
Design Head: 0.40m
IL: 50.820

'PP4' Outfall
Orifice [Ø28mm]
Design Flow: 1.1 l/s
Design Head: 0.45m
IL: 50.530

Pipe below slab to pass through foundations above footings. Pipe to be protected through foundation using foam surround and rocker pipes.

Geocellular Tank 'CS4'
3m x 2.5m x 0.4m
(L x W x D)
CL: 50.200 (Patio Level)
IL: 49.064
Top of Tank: 49.464
Cover to tank: 0.736m
Porosity: 95%
Volume: 2.662m³

Node 'PP3': Permeable Paviours
Area: 33.06m²
CL: Varies (min. 51.450)
IL: Varies (min. 50.820)
Depth 0.630m
Slope: 1 in 20
Subbase: 0.500m
Subbase Porosity: 30%
Volume : 4.521m³

Pipe 1.004 L = 13.362
100Ø 1/9.1

Pipe 1.005 L = 20.219
100Ø 1/13.8

Manhole 'CS4': Hydrobrake
Ref: MD-SHE-0060-1600-1000-1600
CL: 50.200
IL: 49.064
Design Flow: 1.6 l/s
Design Head: 1.000m

'PP2' Outfall
Orifice [Ø24mm]
Design Flow: 0.8 l/s
Design Head: 0.40m
IL: 51.170

'CS3' Flow Control
Orifice [Ø22mm]
Design Flow: 0.9 l/s
Design Head: 0.80m
IL: 49.150

Geocellular Tank 'CS3'
3m x 2.5m x 0.4m
(L x W x D)
CL: 50.200 (Patio Level)
IL: 49.150
Top of Tank: 49.550
Cover to tank: 0.65m
Porosity: 95%
Volume: 2.662m³

Outfall 'Outfall'
Outfall to watercourse (with ongoing connectivity)
CL: 48.600
IL: 47.600
Modeled as fully surcharged to 1.000m for 1,440-minutes

Node 'PP2': Permeable Paviours
Area: 34.36m²
CL: Varies (min. 51.800)
IL: Varies (min. 51.170)
Depth 0.630m
Slope: 1 in 20
Subbase: 0.500m
Subbase Porosity: 30%
Volume : 4.326m³

'CS2' Flow Control
Orifice [Ø20mm]
Design Flow: 0.8 l/s
Design Head: 0.80m
IL: 49.300

'PP1' Outfall
Orifice [Ø23mm]
Design Flow: 0.7 l/s
Design Head: 0.40m
IL: 51.920

Geocellular Tank 'CS2'
3m x 2.5m x 0.4m
(L x W x D)
CL: 50.300 (Patio Level)
IL: 49.300
Top of Tank: 49.700
Cover to tank: 0.60m
Porosity: 95%
Volume: 2.662m³

'CS1' Flow Control
Orifice [Ø19mm]
Design Flow: 0.7 l/s
Design Head: 0.80m
IL: 49.550

Node 'PP1': Permeable Paviours
Area: 29.16m²
CL: Varies (min. 52.550)
IL: Varies (min. 51.920)
Depth 0.630m
Slope: 1 in 20
Subbase: 0.500m
Subbase Porosity: 30%
Volume : 4.056m³

Geocellular Tank 'CS1'
3m x 2.5m x 0.4m
(L x W x D)
CL: 50.550 (Patio Level)
IL: 49.550
Top of Tank: 49.950
Cover to tank: 0.60m
Porosity: 95%
Volume: 2.662m³

Old London Road
Telegraph Pole
Telegraph Line
Existing Trees Retained
Existing Shrubbery to be Retained
Plot 4 3B 4P
Plot 3 3B 4P
Plot 2 3B 4P
Plot 1 3B 4P
Parking
ACO
Shed
Acoustic Fencing
Survey Point
Adjoining Land
New Telegraph Pole
50735 mm
51147 mm
48916 mm
49053 mm
52559 mm

0 2 4 6 8m
SCALE IN METRES
1:100

Notes

1. This Drainage Strategy Plan is for planning purposes and does not constitute detailed designs and should not be used for construction purposes
2. All levels and dimensions are to be checked on site before any work commences. All dimensions are in metres unless stated otherwise.
3. This drawing has been based upon survey supplied information and Motion cannot guarantee the accuracy of the data provided.
4. The drainage levels are based on existing levels, but also proposed levels where existing site features present unusual changes in gradient.
5. Any discrepancies should be reported to the engineer immediately, so that clarification can be sought prior to the commencement of works.
6. This drawing should be read in conjunction with all other relevant engineering details, drawings and specification.
7. 350mm minimum cover is to be provided for private pipes laid in soft/paved areas, with 900mm minimum cover to be provided for private pipes laid beneath roads / driveways unless not practicable. Where unachievable, shallow pipe drains may require protection using concrete surround or paving slabs bridging the trench, subject to the NHBC Inspector's requirements.
8. Manholes situated within areas accessible to motor vehicles are to be fitted with suitable strength covers and frames.

Legend

- Site Boundary
- Permeable Pavement
- Surface Water Geocellular Attenution
- Surface Water Gravity Pipe
- Surface Water Catchpit/Silt Trap
- Orifice Flow Control Manhole
- Hydrobrake Flow Control Chamber
- Proposed Headwall
- Polypipe Linflex Filter Pipe with Geotextile Surround

Rev.	Description	Drn	Chk	App	Date
P01	First Issue	ST	PA	PA	03/08/2025

Drawing Status:
FOR PLANNING
NOT FOR CONSTRUCTION

motion
Guildford - Reading - London
www.motion.co.uk

Client: James Williams

Project: Land East of Old London Road, Washington

Title: Proposed Drainage Strategy Plan

Scale: 1:100 (@ A1)

Drawing: 2411100-0500-P01

Revision: P01

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