

16th August 2022
Rev 2 – 17.8.22

RE: FORMER BARTONS INFANT SCHOOL, BERSTED
Council Ref: BE/40/22/PL

Technical Note in response to LLFA comments

This note has been prepared in response to the points raised in Arun District Council's memo to AC planning team.

We would respond to the points raised as follows:

- 1) *Please can you provide calculations to confirm the proposed geo-cellular storage will not become buoyant if the groundwater was to become elevated.*
 - *The groundwater monitoring results suggest high groundwater across the entire site.*
 - *The base of the geo-cellular storage system is ~1.5m below ground level (BGL) in the center of the site, and all 3 of the groundwater monitoring results provided suggest groundwater levels will become elevated above this level.*
 - *Consequently, we would request that calculations are submitted to confirm that the proposed SuDS will not need to be altered in order to accommodate the expected high groundwater levels.*
 - *At this stage in the planning process, we anticipate a worst case groundwater level will be encountered, based on the testing provided. At present the FRA suggests in section 2.6 that this will be around 1.0m BGL.*

Groundwater monitoring was carried out from 24th November 2021 to 30th March 2022 by Risk Management Ltd. The results are contained in the appendix to this note. The peak GW level was recorded as 1.84m AOD on 24th November 2021 within BH3 and 2nd February 2021 in BH1. The tank invert is 1.835m AOD. Therefore, this figure has been used in the flotation calculations appended.

These show that the tank is not in danger of flotation.

- 2) *Additional information should be provided on the proposed SuDS to show how the treatment provided to the runoff will impact the water quality.*
 - *We are concerned that there may be insufficient space if additional SuDS are required to ensure a suitable quality of water is discharged offsite. We request that calculations are provided which follow the Basic Index Method, to confirm that the proposed SuDS will treat runoff sufficiently.*

See attached calculator sheets taken from the Susdrain web site which show treatment for water falling on residential roads and car parking is sufficiently treated by the permeable paving and swale provided.

- 3) A 10% allowance for urban creep should be applied to the design. A 10% allowance does not appear to have been applied.

10% has been added to the calculations for all the plots and drainage layout updated accordingly. See attached revised microdrainage calculations and drawing 11642/1601 rev P5

Civil Engineering - Transport Planning - Flood Risk

GTA Civils & Transport, Gloucester House, 66a Church Walk, Burgess Hill, West Sussex, BN15 9AG

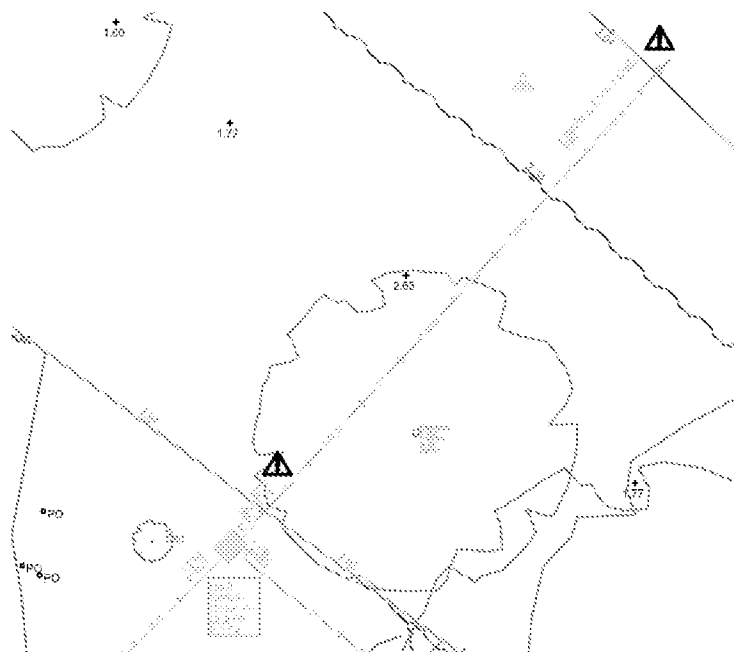
- 4) We require the fences to be at least 3m from top of bank, between the development and ancient watercourse, to ensure that the proposals are in accordance with our land drainage byelaws. This easement should be delineated and confirmed on the drainage layout plan.
- From the information provided it appears that a 2m easement (approximately) has been provided for access and maintenance of the watercourse at present. It is recognised that no buildings are located within 5m (as is also required).

We have clarified the location of the top of bank of the watercourse and shown a 3.5m easement to a relocated fenceline location on amended drawing 11642/1601 rev P5 appended.

- 5) We are unsure how the ditch / small watercourse adjacent to the site connects to the nearby main river and we have concerns regarding how onward connection from the development site to this watercourse, or the main river will be achieved.
- The drainage layout shows the proposed onward connection to the main river crossing the smaller ditch channel. There is likely to be works required to facilitate the connection as shown, or to ensure the ditch / small channel is fit for purpose and has onward connectivity to the main river if a connection to this feature is proposed at the detailed design stage.
- We require additional details of the proposed connection, including whether an existing connection between the main river and smaller channel is present.
- We require details of how any pipework can be accommodated / will pass through the area where the existing ditch / channel is. This pipework should remain above the water level within the main river.

We have searched the area and we cannot find connectivity between the small watercourse and main river due to dense undergrowth.

The proposed connection is mimicking the existing school outfall location which is shown on the survey plan appended, extract below:



Extract of utilities survey showing existing school outfall

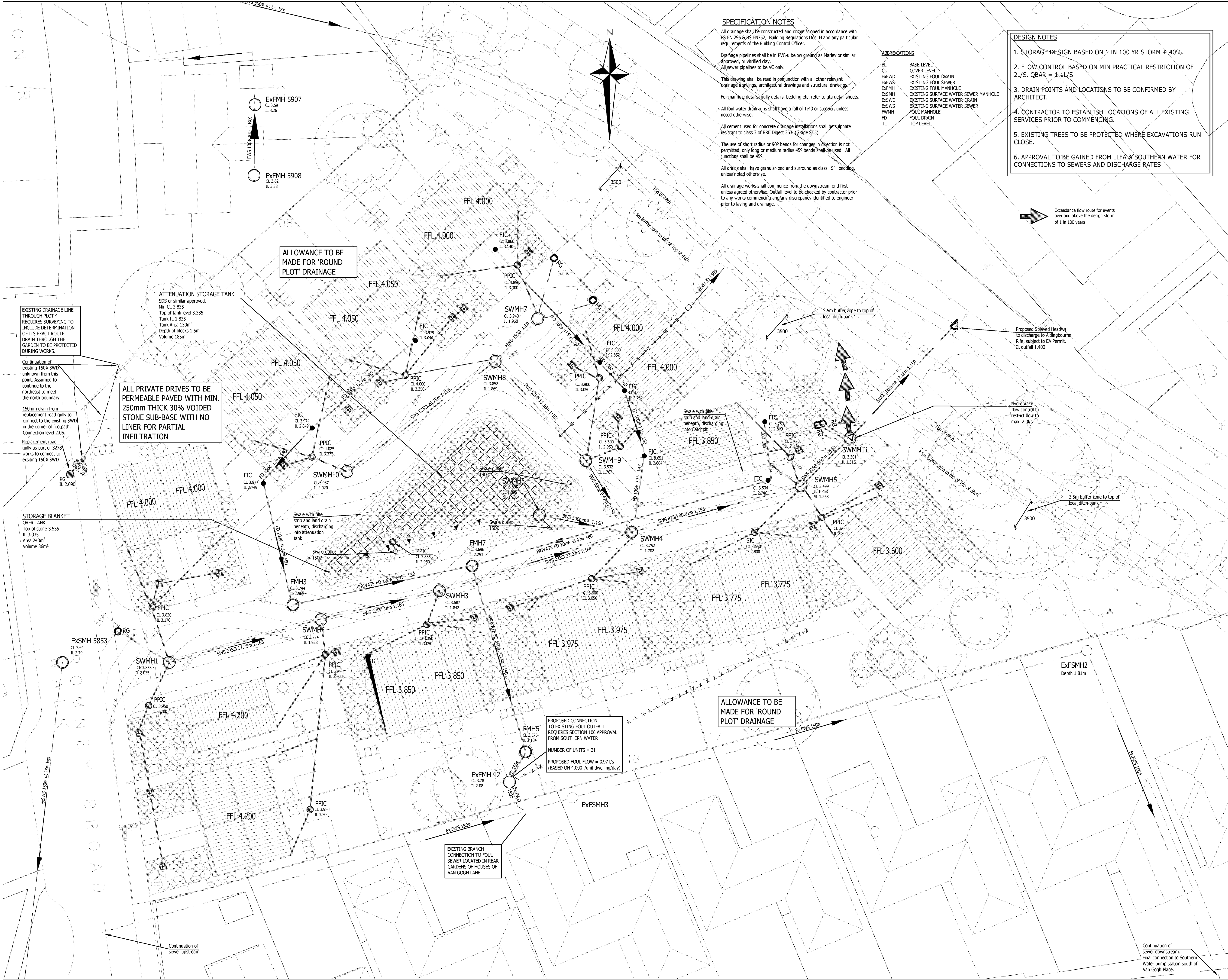
The only reason this existing outfall was not used was that it is not in a convenient location for future maintenance, as the manhole falls in the garden of plot 13.

The level of the existing outfall is likely to be somewhere in the region of 1.4m AOD (as upstream chamber is 1.54m) which is what we are proposing, so the new outfall will have no more impact than the existing, especially taking into account this used to have no flow restriction from the school site.

The main rife ditch bed level has been surveyed at approximately 1.020m AOD in the vicinity of the connection with no water level in the rife present. So the connection is 380mm above bed level which we feel is more than sufficient.

Report end.

Report by
Martin Roberts
I.Eng ACIWEM MCIHT
GTA Civils & Transport Ltd



SPECIFICATION NOTES

All drainage shall be constructed and commissioned in accordance with BS EN 295 & BS EN 752, Building Regulations Doc. H and any particular requirements of the Building Control Officer.

Drainage pipelines shall be in PVC-u below ground as Manley or similar approved, or vitrified clay.

All sewer pipelines to be VC only.

This drawing shall be read in conjunction with all other relevant drainage drawings, architectural drawings and structural drawings.

For manhole details, gully details, bedding etc, refer to gta detail sheets.

All foul water drain runs shall have a fall of 1:40 or steeper, unless noted otherwise.

All cement used for concrete drainage installations shall be sulphate resistant to class 3 of BRE Digest 363 (Grade SFS).

The use of short radius or 90° bends for changes in direction is not permitted, only long or medium radius 45° bends shall be used. All junctions shall be 45°.

All drains shall have granular bed and surround as class 'S' bedding, unless noted otherwise.

All drainage works shall commence from the downstream end first unless agreed otherwise. Outfall level to be checked by contractor prior to any works commencing and any discrepancy identified to engineer prior to laying and drainage.

ABBREVIATIONS

BL BASE LEVEL
CL COVER LEVEL
EXFWD EXISTING FOUL DRAIN
EXFWS EXISTING FOUL SEWER
EXFMH EXISTING FOUL MANHOLE
EXSMH EXISTING SURFACE WATER SEWER MANHOLE
EXSWD EXISTING SURFACE WATER DRAIN
EXSWS EXISTING SURFACE WATER SEWER
FWMH FOUL MANHOLE
FD FOUL DRAIN
TL TOP LEVEL

DESIGN NOTES

1. STORAGE DESIGN BASED ON 1 IN 100 YR STORM + 40%.
2. FLOW CONTROL BASED ON MIN PRACTICAL RESTRICTION OF 2L/S. QBAR = 1:1L/S
3. DRAIN POINTS AND LOCATIONS TO BE CONFIRMED BY ARCHITECT.
4. CONTRACTOR TO ESTABLISH LOCATIONS OF ALL EXISTING SERVICES PRIOR TO COMMENCING.
5. EXISTING TREES TO BE PROTECTED WHERE EXCAVATIONS RUN CLOSE.
6. APPROVAL TO BE GAINED FROM LLFA & SOUTHERN WATER FOR CONNECTIONS TO SEWERS AND DISCHARGE RATES

GENERAL NOTES

1. The location, size, depth and identification of existing services that may be shown or referred to on this drawing have been assessed from non intrusive observations, record drawings or the like. The contractor shall safely carry out intrusive investigations, trial holes or soundings prior to commencing work to satisfy himself that it is safe to proceed and that the assessments are accurate. Any discrepancies shall be notified to gta prior to works commencing.
2. Tender or billing drawings shall not be used for construction or the ordering of materials.
3. Do not scale. All dimensions and levels to be site confirmed.
4. This drawing shall be read in conjunction with all relevant architects, consultants drawings and specifications, together with H&S plan requirements.
5. Copyright : This drawing must not be copied, amended nor reproduced without the prior written agreement of gta.
6. All drawings specifications and recommendations made by gta are subject to Local Authority and other relevant Statutory Authorities approval. Any works or services made abortive due to the client proceeding prior to these approvals is considered wholly at the Clients risk. gta hold no responsibility for resulting abortive works or costs.

KEY

- Existing surface water drain
- Existing foul water drain
- Private surface water drain
- Private foul drain
- Adoptable foul sewer
- Adoptable surface water sewer
- Adoptable Section 38 highway drain
- Private Foul Water Manhole
- Private Surface Water Manhole
- Adoptable Highway Manhole
- Adoptable Section 104 Surface water sewer Manhole
- SVP Foul drain point D307.0
- RWP SW Drain point for RWP D203.5
- Drainage channel
- Works boundary
- FIC Foul Plastic Inspection Chamber
- SIC Surface Water Inspection Chamber
- SAC 300mm diameter Surface Water Access Chamber
- FAC 300mm diameter Foul Water Access Chamber
- SIC Polypropylene Catchpit 4500
- RG Adoptable Highway Road gully
- YG Private Yard gully
- RG Private Road gully



P5	Tank volume increased to take into account urban creep. Stream buffer shown.	16/08/2022	JR	MR
P4	LATEST TREE RETENTION PLAN ADDED. PLOTS 20&21 FFL'S CHANGED TO 3.850.	14/04/2022	JR	MR
P3	SITE BOUNDARY AMENDED TO SITE WORKS LINE.	29/03/2022	KK	JR
P2	REVISED TO LATEST SITE PLAN	04/02/2022	KK	JR
P1	INITIAL ISSUE	31/01/2022	KK	MR
Rev	Amendments	Date	Dis	Chk

Status PRELIMINARY

Client GRAVITY CONSULTING ENGINEERS

Architect ALLIES AND MORRISON

Project SITE 2 FORMER BARTONS INFANT SCHOOL, NORTH BERSTED

Title DRAINAGE LAYOUT

Date	JANUARY 2022	Scale @ A1	1:200
Clients Ref.		Project Ref.	11642

gta Civils & Transport
Gloucester House, 66a Church Walk,
Burgess Hill, West Sussex, RH15 9AS
Tel. 01444 871444 Web: www.gtacivils.co.uk

Drawing Number	11642/1601	Rev.	P5
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ProjectFormer Bartons Infant School, Bersted

Project ref11642

RevisionTank - Anti-Flotation Calculation

V1 - 2.8.22

Main tank	Calc 1
Tank Area at base (m2)	130.000
Top GW level(m AOD)	1.840
Tank base level(m AOD)	1.835
Depth GW- Base (m)	0.040
Ballast thickness (m)	0.000
Depth of cover over tank	0.500
Depth below water table(m)	0.040
Volume for buoyancy (m³)	5.200
Tank Buoyancy force (kN)	51.0
Ballast construction depth (m)	0.000
Ballast downward force (kN)	0.00
Soil depth over tank (m)	0.500
Soil downward force (kN))	1020.50
Downward anchor forces (kN)	1020.50
Net Buoyancy Force	969.49
Factor of safety	20.0
	OK

Obtain groundwater level from soil report

Indicates field to be completed

Start with an assumed ballast depth, then adjust if FoS is less than 1.1

Bottom of ballast to top groundwater level

9.81kN/m³ for water. Positive figure denotes uplift force, negative figure denotes downward force

Note: If a negative figure is shown above for tank buoyancy then no ballast is required

Assumed dry (liner below ballast)

Unsaturated Clay = 1900Kg/m³ or 18.64kN/m³ - Saturated Clay = 2300Kg/m³ or 22.56kN/m³(Engineeringtoolbox.com)

Assumed topsoil. Change if different material/ surfacing

Density of Dry Topsoil = 1600 Kg/m³ = 15.7kn/m³

Negative figure denotes uplift force, positive figure denotes downward force

minimum acceptable value: 1.1

SUMMARY TABLE		DESIGN CONDITIONS			
		1	2	3	4
Land Use Type	Low traffic roads (e.g. residential roads and general access roads, < 300 traffic movements/day)				
Pollution Hazard Level	Low				
Pollution Hazard Indices					
TSS	0.5				
Metals	0.4				
Hydrocarbons	0.4				
SuDS components proposed		SuDS components can only be assumed to deliver these indices if they follow design guidance with respect to hydraulics and treatment set out in the relevant technical component chapters of the SuDS Manual. See also checklists in Appendix B			
Component 1	Swale				
Component 2	None				
Component 3	None				
SuDS Pollution Mitigation Indices					
TSS	0.5				
Metals	0.6				
Hydrocarbons	0.6				
Groundwater protection type	None				
Groundwater protection					
Pollution Mitigation Indices					
TSS	0				
Metals	0				
Hydrocarbons	0				
Combined Pollution Mitigation Indices		Reference to local planning documents should also be made to identify any additional protection required for sites due to habitat conservation (see Chapter 7 The SuDS design process). The implications of developments on or within close proximity to an area with an environmental designation, such as a Site of Special Scientific Interest (SSSI), should be considered via consultation with relevant conservation bodies such as Natural England			
TSS	0.5				
Metals	0.6				
Hydrocarbons	0.6				
Acceptability of Pollution Mitigation					
TSS	Sufficient				
Metals	Sufficient				
Hydrocarbons	Sufficient				

CIRIA SUDS POLLUTION INDICES CALCULATOR - ROADS

SUMMARY TABLE		DESIGN CONDITIONS			
		1	2	3	4
Land Use Type	Residential parking				
Pollution Hazard Level	Low				
Pollution Hazard Indices					
TSS	0.5				
Metals	0.4				
Hydrocarbons	0.4				
SuDS components proposed		SuDS components can only be assumed to deliver these indices if they follow design guidance with respect to hydraulics and treatment set out in the relevant technical component chapters of the SuDS Manual. See also checklists in Appendix B			
Component 1	Pervious pavement (where the pavement is not designed as an infiltration component)				
Component 2	None				
Component 3	None				
SuDS Pollution Mitigation Indices					
TSS	0.7				
Metals	0.6				
Hydrocarbons	0.7				
Groundwater protection type	None				
Groundwater protection					
Pollution Mitigation Indices					
TSS	0				
Metals	0				
Hydrocarbons	0				
Combined Pollution Mitigation Indices		Reference to local planning documents should also be made to identify any additional protection required for sites due to habitat conservation (see Chapter 7 The SuDS design process). The implications of developments on or within close proximity to an area with an environmental designation, such as a Site of Special Scientific Interest (SSSI), should be considered via consultation with relevant conservation bodies such as Natural England			
TSS	0.7				
Metals	0.6				
Hydrocarbons	0.7				
Acceptability of Pollution Mitigation					
TSS	Sufficient				
Metals	Sufficient				
Hydrocarbons	Sufficient				

CIRIA SUDS POLLUTION INDICES CALCULATOR - PARKING

GTA Civils Ltd		Page 0
Gloucester House	Bersted 11642	
66a Church Walk	SW calcs with urban creep	
Burgess Hill RH15 9AS	All storms	
Date 26/07/2022	Designed by MCR	
File 220726 11642 Network with urban creep.mdx	Checked by	
Micro Drainage	Network 2020.1.3	

STORM SEWER DESIGN by the Modified Rational Method

Network Design Table for Surface Network 1

« - Indicates pipe capacity < flow

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	17.690	0.107	165.3	0.068	5.00	0.0	0.600	o	225	Pipe/Conduit	⊗
1.001	14.255	0.086	165.8	0.027	0.00	0.0	0.600	o	225	Pipe/Conduit	⊗
1.002	22.923	0.140	164.0	0.037	0.00	0.0	0.600	o	225	Pipe/Conduit	⊗
2.000	20.623	0.151	136.4	0.044	5.00	0.0	0.600	o	525	Pipe/Conduit	⊗
3.000	7.083	0.091	77.9	0.020	5.00	0.0	0.600	o	150	Pipe/Conduit	⊗
2.001	15.430	0.102	150.8	0.051	0.00	0.0	0.600	o	525	Pipe/Conduit	⊗
2.002	9.889	0.065	152.3	0.000	0.00	0.0	0.600	o	525	Pipe/Conduit	⊗
1.003	20.925	0.134	156.2	0.047	0.00	0.0	0.600	o	325	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	50.00	5.29	1.035	0.068	0.0	0.0	0.0	1.01	40.3	9.2
1.001	50.00	5.53	1.928	0.095	0.0	0.0	0.0	1.01	40.3	12.8
1.002	50.00	5.90	1.842	0.131	0.0	0.0	0.0	1.02	40.5	17.8
2.000	50.00	5.18	2.020	0.044	0.0	0.0	0.0	1.92	414.8	6.0
3.000	50.00	5.10	1.960	0.020	0.0	0.0	0.0	1.14	20.1	2.7
2.001	50.00	5.32	1.869	0.115	0.0	0.0	0.0	1.82	394.3	15.5
2.002	50.00	5.41	1.787	0.115	0.0	0.0	0.0	1.81	392.4	15.5
1.003	50.00	6.05	1.702	0.293	0.0	0.0	0.0	2.37	1268.8	39.6

GTA Civils Ltd		Page 1
Gloucester House	Bersted 11642	
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Date 26/07/2022	Designed by MCR	
File 220726 11642 Network with urban creep.mdx	Checked by	
Micro Drainage	Network 2020.1.3	

STORM SEWER DESIGN by the Modified Rational Method

Network Design Table for Surface Network 1

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
4.000	3.977	0.383	10.4	0.000	5.00	0.0	0.600	o	150	Pipe/Conduit	⊗
1.004	7.296	0.053	137.7	0.031	0.00	0.0	0.600	o	225	Pipe/Conduit	⊗
1.005	16.504	0.110	150.0	0.000	0.00	0.0	0.600	o	225	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)
4.000	50.00	5.02	3.190	0.000	0.0	0.0	0.0	3.14	55.6	0.0
1.004	50.00	6.10	1.368	0.323	0.0	0.0	0.0	2.53	1351.8	43.8
1.005	50.00	6.35	1.315	0.323	0.0	0.0	0.0	1.07	42.34	43.8

Surcharged Outfall Details for Surface Network 1

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
1.005	SMH6	3.000	1.405	0.000	0	0
Datum (m) 1.405 Offset (mins) 0						

GTA Civils Ltd		Page 2
Gloucester House	Bersted 11642	
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Micro Drainage	Network 2020.1.3	

Surcharged Outfall Details for Surface Network 1

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)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
1	0.300	35	0.300	69	0.300	103	0.300	137	0.300	171	0.300	205	0.300	239	0.300	273	0.300	307	0.300
2	0.300	36	0.300	70	0.300	104	0.300	138	0.300	172	0.300	206	0.300	240	0.300	274	0.300	308	0.300
3	0.300	37	0.300	71	0.300	105	0.300	139	0.300	173	0.300	207	0.300	241	0.300	275	0.300	309	0.300
4	0.300	38	0.300	72	0.300	106	0.300	140	0.300	174	0.300	208	0.300	242	0.300	276	0.300	310	0.300
5	0.300	39	0.300	73	0.300	107	0.300	141	0.300	175	0.300	209	0.300	243	0.300	277	0.300	311	0.300
6	0.300	40	0.300	74	0.300	108	0.300	142	0.300	176	0.300	210	0.300	244	0.300	278	0.300	312	0.300
7	0.300	41	0.300	75	0.300	109	0.300	143	0.300	177	0.300	211	0.300	245	0.300	279	0.300	313	0.300
8	0.300	42	0.300	76	0.300	110	0.300	144	0.300	178	0.300	212	0.300	246	0.300	280	0.300	314	0.300
9	0.300	43	0.300	77	0.300	111	0.300	145	0.300	179	0.300	213	0.300	247	0.300	281	0.300	315	0.300
10	0.300	44	0.300	78	0.300	112	0.300	146	0.300	180	0.300	214	0.300	248	0.300	282	0.300	316	0.300
11	0.300	45	0.300	79	0.300	113	0.300	147	0.300	181	0.300	215	0.300	249	0.300	283	0.300	317	0.300
12	0.300	46	0.300	80	0.300	114	0.300	148	0.300	182	0.300	216	0.300	250	0.300	284	0.300	318	0.300
13	0.300	47	0.300	81	0.300	115	0.300	149	0.300	183	0.300	217	0.300	251	0.300	285	0.300	319	0.300
14	0.300	48	0.300	82	0.300	116	0.300	150	0.300	184	0.300	218	0.300	252	0.300	286	0.300	320	0.300
15	0.300	49	0.300	83	0.300	117	0.300	151	0.300	185	0.300	219	0.300	253	0.300	287	0.300	321	0.300
16	0.300	50	0.300	84	0.300	118	0.300	152	0.300	186	0.300	220	0.300	254	0.300	288	0.300	322	0.300
17	0.300	51	0.300	85	0.300	119	0.300	153	0.300	187	0.300	221	0.300	255	0.300	289	0.300	323	0.300
18	0.300	52	0.300	86	0.300	120	0.300	154	0.300	188	0.300	222	0.300	256	0.300	290	0.300	324	0.300
19	0.300	53	0.300	87	0.300	121	0.300	155	0.300	189	0.300	223	0.300	257	0.300	291	0.300	325	0.300
20	0.300	54	0.300	88	0.300	122	0.300	156	0.300	190	0.300	224	0.300	258	0.300	292	0.300	326	0.300
21	0.300	55	0.300	89	0.300	123	0.300	157	0.300	191	0.300	225	0.300	259	0.300	293	0.300	327	0.300
22	0.300	56	0.300	90	0.300	124	0.300	158	0.300	192	0.300	226	0.300	260	0.300	294	0.300	328	0.300
23	0.300	57	0.300	91	0.300	125	0.300	159	0.300	193	0.300	227	0.300	261	0.300	295	0.300	329	0.300
24	0.300	58	0.300	92	0.300	126	0.300	160	0.300	194	0.300	228	0.300	262	0.300	296	0.300	330	0.300
25	0.300	59	0.300	93	0.300	127	0.300	161	0.300	195	0.300	229	0.300	263	0.300	297	0.300	331	0.300
26	0.300	60	0.300	94	0.300	128	0.300	162	0.300	196	0.300	230	0.300	264	0.300	298	0.300	332	0.300
27	0.300	61	0.300	95	0.300	129	0.300	163	0.300	197	0.300	231	0.300	265	0.300	299	0.300	333	0.300
28	0.300	62	0.300	96	0.300	130	0.300	164	0.300	198	0.300	232	0.300	266	0.300	300	0.300	334	0.300
29	0.300	63	0.300	97	0.300	131	0.300	165	0.300	199	0.300	233	0.300	267	0.300	301	0.300	335	0.300
30	0.300	64	0.300	98	0.300	132	0.300	166	0.300	200	0.300	234	0.300	268	0.300	302	0.300	336	0.300
31	0.300	65	0.300	99	0.300	133	0.300	167	0.300	201	0.300	235	0.300	269	0.300	303	0.300	337	0.300
32	0.300	66	0.300	100	0.300	134	0.300	168	0.300	202	0.300	236	0.300	270	0.300	304	0.300	338	0.300
33	0.300	67	0.300	101	0.300	135	0.300	169	0.300	203	0.300	237	0.300	271	0.300	305	0.300	339	0.300
34	0.300	68	0.300	102	0.300	136	0.300	170	0.300	204	0.300	238	0.300	272	0.300	306	0.300	340	0.300

GTA Civils Ltd		Page 3
Gloucester House 66a Church Walk Burgess Hill RH15 9AS	Bersted 11642 SW calcs with urban creep All storms	
Date 26/07/2022	Designed by MCR	
File 220726 11642 Network with urban creep.mdx	Checked by	
Micro Drainage	Network 2020.1.3	

Surcharged Outfall Details for Surface Network 1

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)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
409	0.300	443	0.300	477	0.300	511	0.300	545	0.300	579	0.300	613	0.300	647	0.300	681	0.300	715	0.300
410	0.300	444	0.300	478	0.300	512	0.300	546	0.300	580	0.300	614	0.300	648	0.300	682	0.300	716	0.300
411	0.300	445	0.300	479	0.300	513	0.300	547	0.300	581	0.300	615	0.300	649	0.300	683	0.300	717	0.300
412	0.300	446	0.300	480	0.300	514	0.300	548	0.300	582	0.300	616	0.300	650	0.300	684	0.300	718	0.300
413	0.300	447	0.300	481	0.300	515	0.300	549	0.300	583	0.300	617	0.300	651	0.300	685	0.300	719	0.300
414	0.300	448	0.300	482	0.300	516	0.300	550	0.300	584	0.300	618	0.300	652	0.300	686	0.300	720	0.300
415	0.300	449	0.300	483	0.300	517	0.300	551	0.300	585	0.300	619	0.300	653	0.300	687	0.300	721	0.300
416	0.300	450	0.300	484	0.300	518	0.300	552	0.300	586	0.300	620	0.300	654	0.300	688	0.300	722	0.300
417	0.300	451	0.300	485	0.300	519	0.300	553	0.300	587	0.300	621	0.300	655	0.300	689	0.300	723	0.300
418	0.300	452	0.300	486	0.300	520	0.300	554	0.300	588	0.300	622	0.300	656	0.300	690	0.300	724	0.300
419	0.300	453	0.300	487	0.300	521	0.300	555	0.300	589	0.300	623	0.300	657	0.300	691	0.300	725	0.300
420	0.300	454	0.300	488	0.300	522	0.300	556	0.300	590	0.300	624	0.300	658	0.300	692	0.300	726	0.300
421	0.300	455	0.300	489	0.300	523	0.300	557	0.300	591	0.300	625	0.300	659	0.300	693	0.300	727	0.300
422	0.300	456	0.300	490	0.300	524	0.300	558	0.300	592	0.300	626	0.300	660	0.300	694	0.300	728	0.300
423	0.300	457	0.300	491	0.300	525	0.300	559	0.300	593	0.300	627	0.300	661	0.300	695	0.300	729	0.300
424	0.300	458	0.300	492	0.300	526	0.300	560	0.300	594	0.300	628	0.300	662	0.300	696	0.300	730	0.300
425	0.300	459	0.300	493	0.300	527	0.300	561	0.300	595	0.300	629	0.300	663	0.300	697	0.300	731	0.300
426	0.300	460	0.300	494	0.300	528	0.300	562	0.300	596	0.300	630	0.300	664	0.300	698	0.300	732	0.300
427	0.300	461	0.300	495	0.300	529	0.300	563	0.300	597	0.300	631	0.300	665	0.300	699	0.300	733	0.300
428	0.300	462	0.300	496	0.300	530	0.300	564	0.300	598	0.300	632	0.300	666	0.300	700	0.300	734	0.300
429	0.300	463	0.300	497	0.300	531	0.300	565	0.300	599	0.300	633	0.300	667	0.300	701	0.300	735	0.300
430	0.300	464	0.300	498	0.300	532	0.300	566	0.300	600	0.300	634	0.300	668	0.300	702	0.300	736	0.300
431	0.300	465	0.300	499	0.300	533	0.300	567	0.300	601	0.300	635	0.300	669	0.300	703	0.300	737	0.300
432	0.300	466	0.300	500	0.300	534	0.300	568	0.300	602	0.300	636	0.300	670	0.300	704	0.300	738	0.300
433	0.300	467	0.300	501	0.300	535	0.300	569	0.300	603	0.300	637	0.300	671	0.300	705	0.300	739	0.300
434	0.300	468	0.300	502	0.300	536	0.300	570	0.300	604	0.300	638	0.300	672	0.300	706	0.300	740	0.300
435	0.300	469	0.300	503	0.300	537	0.300	571	0.300	605	0.300	639	0.300	673	0.300	707	0.300	741	0.300
436	0.300	470	0.300	504	0.300	538	0.300	572	0.300	606	0.300	640	0.300	674	0.300	708	0.300	742	0.300
437	0.300	471	0.300	505	0.300	539	0.300	573	0.300	607	0.300	641	0.300	675	0.300	709	0.300	743	0.300
438	0.300	472	0.300	506	0.300	540	0.300	574	0.300	608	0.300	642	0.300	676	0.300	710	0.300	744	0.300
439	0.300	473	0.300	507	0.300	541	0.300	575	0.300	609	0.300	643	0.300	677	0.300	711	0.300	745	0.300
440	0.300	474	0.300	508	0.300	542	0.300	576	0.300	610	0.300	644	0.300	678	0.300	712	0.300	746	0.300
441	0.300	475	0.300	509	0.300	543	0.300	577	0.300	611	0.300	645	0.300	679	0.300	713	0.300	747	0.300
442	0.300	476	0.300	510	0.300	544	0.300	578	0.300	612	0.300	646	0.300	680	0.300	714	0.300	748	0.300

GTA Civils Ltd		Page 4
Gloucester House 66a Church Walk Burgess Hill RH15 9AS	Bersted 11642 SW calcs with urban creep All storms	
Date 26/07/2022	Designed by MCR	
File 220726 11642 Network with urban creep.mdx	Checked by	
Micro Drainage	Network 2020.1.3	

Surcharged Outfall Details for Surface Network 1

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)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
817	0.300	851	0.300	885	0.300	919	0.300	953	0.300	987	0.300	1021	0.300	1055	0.300	1089	0.300	1123	0.300
818	0.300	852	0.300	886	0.300	920	0.300	954	0.300	988	0.300	1022	0.300	1056	0.300	1090	0.300	1124	0.300
819	0.300	853	0.300	887	0.300	921	0.300	955	0.300	989	0.300	1023	0.300	1057	0.300	1091	0.300	1125	0.300
820	0.300	854	0.300	888	0.300	922	0.300	956	0.300	990	0.300	1024	0.300	1058	0.300	1092	0.300	1126	0.300
821	0.300	855	0.300	889	0.300	923	0.300	957	0.300	991	0.300	1025	0.300	1059	0.300	1093	0.300	1127	0.300
822	0.300	856	0.300	890	0.300	924	0.300	958	0.300	992	0.300	1026	0.300	1060	0.300	1094	0.300	1128	0.300
823	0.300	857	0.300	891	0.300	925	0.300	959	0.300	993	0.300	1027	0.300	1061	0.300	1095	0.300	1129	0.300
824	0.300	858	0.300	892	0.300	926	0.300	960	0.300	994	0.300	1028	0.300	1062	0.300	1096	0.300	1130	0.300
825	0.300	859	0.300	893	0.300	927	0.300	961	0.300	995	0.300	1029	0.300	1063	0.300	1097	0.300	1131	0.300
826	0.300	860	0.300	894	0.300	928	0.300	962	0.300	996	0.300	1030	0.300	1064	0.300	1098	0.300	1132	0.300
827	0.300	861	0.300	895	0.300	929	0.300	963	0.300	997	0.300	1031	0.300	1065	0.300	1099	0.300	1133	0.300
828	0.300	862	0.300	896	0.300	930	0.300	964	0.300	998	0.300	1032	0.300	1066	0.300	1100	0.300	1134	0.300
829	0.300	863	0.300	897	0.300	931	0.300	965	0.300	999	0.300	1033	0.300	1067	0.300	1101	0.300	1135	0.300
830	0.300	864	0.300	898	0.300	932	0.300	966	0.300	1000	0.300	1034	0.300	1068	0.300	1102	0.300	1136	0.300
831	0.300	865	0.300	899	0.300	933	0.300	967	0.300	1001	0.300	1035	0.300	1069	0.300	1103	0.300	1137	0.300
832	0.300	866	0.300	900	0.300	934	0.300	968	0.300	1002	0.300	1036	0.300	1070	0.300	1104	0.300	1138	0.300
833	0.300	867	0.300	901	0.300	935	0.300	969	0.300	1003	0.300	1037	0.300	1071	0.300	1105	0.300	1139	0.300
834	0.300	868	0.300	902	0.300	936	0.300	970	0.300	1004	0.300	1038	0.300	1072	0.300	1106	0.300	1140	0.300
835	0.300	869	0.300	903	0.300	937	0.300	971	0.300	1005	0.300	1039	0.300	1073	0.300	1107	0.300	1141	0.300
836	0.300	870	0.300	904	0.300	938	0.300	972	0.300	1006	0.300	1040	0.300	1074	0.300	1108	0.300	1142	0.300
837	0.300	871	0.300	905	0.300	939	0.300	973	0.300	1007	0.300	1041	0.300	1075	0.300	1109	0.300	1143	0.300
838	0.300	872	0.300	906	0.300	940	0.300	974	0.300	1008	0.300	1042	0.300	1076	0.300	1110	0.300	1144	0.300
839	0.300	873	0.300	907	0.300	941	0.300	975	0.300	1009	0.300	1043	0.300	1077	0.300	1111	0.300	1145	0.300
840	0.300	874	0.300	908	0.300	942	0.300	976	0.300	1010	0.300	1044	0.300	1078	0.300	1112	0.300	1146	0.300
841	0.300	875	0.300	909	0.300	943	0.300	977	0.300	1011	0.300	1045	0.300	1079	0.300	1113	0.300	1147	0.300
842	0.300	876	0.300	910	0.300	944	0.300	978	0.300	1012	0.300	1046	0.300	1080	0.300	1114	0.300	1148	0.300
843	0.300	877	0.300	911	0.300	945	0.300	979	0.300	1013	0.300	1047	0.300	1081	0.300	1115	0.300	1149	0.300
844	0.300	878	0.300	912	0.300	946	0.300	980	0.300	1014	0.300	1048	0.300	1082	0.300	1116	0.300	1150	0.300
845	0.300	879	0.300	913	0.300	947	0.300	981	0.300	1015	0.300	1049	0.300	1083	0.300	1117	0.300	1151	0.300
846	0.300	880	0.300	914	0.300	948	0.300	982	0.300	1016	0.300	1050	0.300	1084	0.300	1118	0.300	1152	0.300
847	0.300	881	0.300	915	0.300	949	0.300	983	0.300	1017	0.300	1051	0.300	1085	0.300	1119	0.300	1153	0.300
848	0.300	882	0.300	916	0.300	950	0.300	984	0.300	1018	0.300	1052	0.300	1086	0.300	1120	0.300	1154	0.300
849	0.300	883	0.300	917	0.300	951	0.300	985	0.300	1019	0.300	1053	0.300	1087	0.300	1121	0.300	1155	0.300
850	0.300	884	0.300	918	0.300	952	0.300	986	0.300	1020	0.300	1054	0.300	1088	0.300	1122	0.300	1156	0.300

GTA Civils Ltd		Page 5
Gloucester House 66a Church Walk Burgess Hill RH15 9AS	Bersted 11642 SW calcs with urban creep All storms	
Date 26/07/2022 File 220726 11642 Network with urban creep.mdx	Designed by MCR Checked by	
Micro Drainage		Network 2020.1.3

Surcharged Outfall Details for Surface Network 1

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)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
1225	0.300	1243	0.300	1261	0.300	1279	0.300	1297	0.300	1315	0.300	1333	0.300	1351	0.300	1369	0.300	1387	0.300
1226	0.300	1244	0.300	1262	0.300	1280	0.300	1298	0.300	1316	0.300	1334	0.300	1352	0.300	1370	0.300	1388	0.300
1227	0.300	1245	0.300	1263	0.300	1281	0.300	1299	0.300	1317	0.300	1335	0.300	1353	0.300	1371	0.300	1389	0.300
1228	0.300	1246	0.300	1264	0.300	1282	0.300	1300	0.300	1318	0.300	1336	0.300	1354	0.300	1372	0.300	1390	0.300
1229	0.300	1247	0.300	1265	0.300	1283	0.300	1301	0.300	1319	0.300	1337	0.300	1355	0.300	1373	0.300	1391	0.300
1230	0.300	1248	0.300	1266	0.300	1284	0.300	1302	0.300	1320	0.300	1338	0.300	1356	0.300	1374	0.300	1392	0.300
1231	0.300	1249	0.300	1267	0.300	1285	0.300	1303	0.300	1321	0.300	1339	0.300	1357	0.300	1375	0.300	1393	0.300
1232	0.300	1250	0.300	1268	0.300	1286	0.300	1304	0.300	1322	0.300	1340	0.300	1358	0.300	1376	0.300	1394	0.300
1233	0.300	1251	0.300	1269	0.300	1287	0.300	1305	0.300	1323	0.300	1341	0.300	1359	0.300	1377	0.300	1395	0.300
1234	0.300	1252	0.300	1270	0.300	1288	0.300	1306	0.300	1324	0.300	1342	0.300	1360	0.300	1378	0.300	1396	0.300
1235	0.300	1253	0.300	1271	0.300	1289	0.300	1307	0.300	1325	0.300	1343	0.300	1361	0.300	1379	0.300	1397	0.300
1236	0.300	1254	0.300	1272	0.300	1290	0.300	1308	0.300	1326	0.300	1344	0.300	1362	0.300	1380	0.300	1398	0.300
1237	0.300	1255	0.300	1273	0.300	1291	0.300	1309	0.300	1327	0.300	1345	0.300	1363	0.300	1381	0.300	1399	0.300
1238	0.300	1256	0.300	1274	0.300	1292	0.300	1310	0.300	1328	0.300	1346	0.300	1364	0.300	1382	0.300	1400	0.300
1239	0.300	1257	0.300	1275	0.300	1293	0.300	1311	0.300	1329	0.300	1347	0.300	1365	0.300	1383	0.300	1401	0.300
1240	0.300	1258	0.300	1276	0.300	1294	0.300	1312	0.300	1330	0.300	1348	0.300	1366	0.300	1384	0.300	1402	0.300
1241	0.300	1259	0.300	1277	0.300	1295	0.300	1313	0.300	1331	0.300	1349	0.300	1367	0.300	1385	0.300	1403	0.300
1242	0.300	1260	0.300	1278	0.300	1296	0.300	1314	0.300	1332	0.300	1350	0.300	1368	0.300	1386	0.300	1404	0.300

GTA Civils Ltd		Page 6
Gloucester House	Bersted 11642	
66a Church Walk	SW calcs with urban creep	
Burgess Hill RH15 9AS	All storms	
Date 26/07/2022	Designed by MCR	
File 220726 11642 Network with urban creep.mdx	Checked by	
Micro Drainage	Network 2020.1.3	

Online Controls for Surface Network 1

Hydro-Brake® Optimum Manhole: SMH11, DS/PN: 1.005, Volume (m³): 30.9

Unit Reference	MD-SHE-0059-2000-1700-2000	Sump Available	Yes
Design Head (m)	1.700	Diameter (mm)	59
Design Flow (l/s)	2.0	Invert Level (m)	1.515
Flush-Flo™	Calculated	Minimum Outlet Pipe Diameter (mm)	75
Objective	Minimise upstream storage	Suggested Manhole Diameter (mm)	1200
Application	Surface		

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.700	2.0	Kick-Flo®	0.527	1.2
Flush-Flo™	0.257	1.5	Mean Flow over Head Range	-	1.5

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)	Depth (m)	Flow (l/s)
0.100	1.3	0.600	1.3	1.600	1.9	2.600	2.4	5.000	3.3	7.500	4.0
0.200	1.4	0.800	1.4	1.800	2.1	3.000	2.6	5.500	3.4	8.000	4.1
0.300	1.4	1.000	1.6	2.000	2.2	3.500	2.8	6.000	3.6	8.500	4.2
0.400	1.4	1.200	1.7	2.200	2.2	4.000	3.0	6.500	3.7	9.000	4.3
0.500	1.3	1.400	1.8	2.400	2.3	4.500	3.1	7.000	3.8	9.500	4.4

GTA Civils Ltd		Page 7
Gloucester House	Bersted 11642	
66a Church Walk	SW calcs with urban creep	
Burgess Hill RH15 9AS	All storms	
Date 26/07/2022	Designed by MCR	
File 220726 11642 Network with urban creep.mdx	Checked by	
Micro Drainage	Network 2020.1.3	

Storage Structures for Surface Network 1

Porous Car Park Manhole: SMH9, DS/PN: 2.002

Infiltration Coefficient Base (m/hr)	0.00000	Porosity	0.30	Slope (1:X)	0.0
Membrane Percolation (mm/hr)	1000	Invert Level (m)	3.035	Depression Storage (mm)	5
Max Percolation (l/s)	66.7	Width (m)	10.0	Evaporation (mm/day)	3
Safety Factor	2.0	Length (m)	24.0	Membrane Depth (mm)	0

Tank or Pond Manhole: SMH4, DS/PN: 1.003

Invert Level (m) 1.835

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	130.0	1.500	130.0	1.501	0.0

GTA Civils Ltd		Page 8
Gloucester House	Bersted 11642	
66a Church Walk	SW calcs with urban creep	
Burgess Hill RH15 9AS	All storms	
Date 26/07/2022	Designed by MCR	
File 220726 11642 Network with urban creep.mdx	Checked by	
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2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Surface Network 1

Simulation Criteria

Areal Reduction Factor 1.000 Manhole Headloss Coeff (Global) 0.500 MADD Factor * 10m³/ha Storage 2.000
 Hot Start (mins) 0 Foul Sewage per hectare (l/s) 0.000 Inlet Coefficient 0.800
 Hot Start Level (mm) 0 Additional Flow - % of Total Flow 0.000 Flow per Person per Day (l/per/day) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
 Number of Online Controls 1 Number of Storage Structures 2 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Data Type Point
 FEH Rainfall Version 2013 Cv (Summer) 1.000
 Site Location GB 492545 100911 SU 92545 00911 Cv (Winter) 1.000

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep 2.5 Second Increment (Extended) Inertia Status OFF
 DTS Status ON

Profile(s) Summer and Winter
 Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440
 Return Period(s) (years) 2, 30, 100
 Climate Change (%) 0, 0, 40

PN	US/MH Name	Event	US/CL (m)	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Maximum Vol (m³)	Discharge Vol (m³)	Maximum Velocity (m/s)	Pipe Flow (l/s)	Status
1.000	SMH1	360 minute 2 year Winter I+0%	3.853	2.150	-0.110	0.000	0.07	0.124	20.266	0.5	2.4	OK
1.001	SMH2	360 minute 2 year Winter I+0%	3.774	2.149	-0.004	0.000	0.09	0.723	28.272	0.5	3.2	OK
1.002	SMH3	360 minute 2 year Winter I+0%	3.687	2.148	0.081	0.000	0.12	0.859	38.834	0.5	4.3	SURCHARGED
2.000	SMH10	360 minute 2 year Winter I+0%	3.937	2.146	-0.399	0.000	0.01	0.308	13.187	0.3	1.5	OK
3.000	SMH7	360 minute 2 year Winter I+0%	3.940	2.147	0.037	0.000	0.04	0.205	5.891	0.5	0.6	SURCHARGED
2.001	SMH8	360 minute 2 year Winter I+0%	3.852	2.146	-0.248	0.000	0.01	1.924	33.641	0.4	3.6	OK
2.002	SMH9	360 minute 2 year Winter I+0%	3.532	2.146	-0.145	0.000	0.01	2.875	32.207	0.1	3.2	OK
1.003	SMH4	360 minute 2 year Winter I+0%	3.752	2.146	-0.381	0.000	0.01	43.811	62.739	0.1	5.3	OK
4.000	PP1	15 minute 2 year Summer I+0%	3.600	3.100	-0.150	0.000	0.00	0.000	0.000	0.0	0.0	OK

GTA Civils Ltd		Page 9
Gloucester House 66a Church Walk Burgess Hill RH15 9AS	Bersted 11642 SW calcs with urban creep All storms	
Date 26/07/2022 File 220726 11642 Network with urban creep.mdx	Designed by MCR Checked by	
Micro Drainage	Network 2020.1.3	

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

										Water Surcharged		Flooded		Maximum		Pipe	Status
US/MH		Event			US/CL	Level	Depth	Volume	Flow /	Maximum	Discharge	Velocity	Flow				
PN	Name				(m)	(m)	(m)	(m³)	Cap.	Vol	(m³)	Vol	(m³)	(m/s)	(l/s)		
1.004	SMH5	360 minute	2 year	Winter	I+0%	3.499	2.145	-0.248	0.000	0.01	7.764	65.355	0.1	5.6	OK		
1.005	SMH11	960 minute	2 year	Winter	I+0%	3.301	2.146	0.406	0.000	0.04	11.649	116.595	0.5	1.4	SURCHARGED		

GTA Civils Ltd		Page 10
Gloucester House	Bersted 11642	
66a Church Walk	SW calcs with urban creep	
Burgess Hill RH15 9AS	All storms	
Date 26/07/2022	Designed by MCR	
File 220726 11642 Network with urban creep.mdx	Checked by	
Micro Drainage	Network 2020.1.3	

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

Simulation Criteria

Areal Reduction Factor 1.000 Manhole Headloss Coeff (Global) 0.500 MADD Factor * 10m³/ha Storage 2.000
 Hot Start (mins) 0 Foul Sewage per hectare (l/s) 0.000 Inlet Coefficient 0.800
 Hot Start Level (mm) 0 Additional Flow - % of Total Flow 0.000 Flow per Person per Day (l/per/day) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
 Number of Online Controls 1 Number of Storage Structures 2 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Data Type Point
 FEH Rainfall Version 2013 Cv (Summer) 1.000
 Site Location GB 492545 100911 SU 92545 00911 Cv (Winter) 1.000

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep 2.5 Second Increment (Extended) Inertia Status OFF
 DTS Status ON

Profile(s) Summer and Winter
 Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440
 Return Period(s) (years) 2, 30, 100
 Climate Change (%) 0, 0, 40

PN	US/MH Name	Event	US/CL (m)	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m ³)	Flow / Cap.	Maximum Vol (m ³)	Discharge Vol (m ³)	Maximum Velocity (m/s)	Pipe Flow (l/s)	Status
1.000	SMH1	480 minute 30 year Winter I+0%	3.853	2.553	0.293	0.000	0.09	0.580	37.261	0.6	3.2	SURCHARGED
1.001	SMH2	480 minute 30 year Winter I+0%	3.774	2.553	0.400	0.000	0.12	1.356	51.090	0.5	4.3	SURCHARGED
1.002	SMH3	480 minute 30 year Winter I+0%	3.687	2.552	0.485	0.000	0.16	1.317	70.326	0.5	5.9	SURCHARGED
2.000	SMH10	480 minute 30 year Winter I+0%	3.937	2.550	0.005	0.000	0.01	1.337	23.785	0.3	2.0	SURCHARGED
3.000	SMH7	480 minute 30 year Winter I+0%	3.940	2.551	0.441	0.000	0.05	0.662	10.502	0.5	0.9	SURCHARGED
2.001	SMH8	480 minute 30 year Winter I+0%	3.852	2.550	0.156	0.000	0.02	5.177	58.499	0.3	4.5	SURCHARGED
2.002	SMH9	480 minute 30 year Winter I+0%	3.532	2.550	0.259	0.000	0.02	4.981	54.223	0.2	3.9	SURCHARGED
1.003	SMH4	480 minute 30 year Winter I+0%	3.752	2.551	0.024	0.000	0.01	97.766	83.206	0.2	5.3	SURCHARGED
4.000	PP1	15 minute 30 year Summer I+0%	3.600	3.100	-0.150	0.000	0.00	0.000	0.000	0.0	0.0	OK

GTA Civils Ltd			Page 11
Gloucester House	Bersted 11642		
66a Church Walk	SW calcs with urban creep		
Burgess Hill RH15 9AS	All storms		
Date 26/07/2022	Designed by MCR		
File 220726 11642 Network with urban creep.mdx	Checked by		
Micro Drainage	Network 2020.1.3		

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

			Water Surcharged Flooded						Maximum Pipe			Status
PN	US/MH Name	Event	US/CL (m)	Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Maximum Vol (m³)	Discharge Vol (m³)	Velocity (m/s)	Pipe Flow (l/s)	
1.004	SMH5	480 minute 30 year Winter I+0%	3.499	2.558	0.165	0.000	0.01	12.710	89.817	0.1	4.9	SURCHARGED
1.005	SMH11	480 minute 30 year Winter I+0%	3.301	2.561	0.821	0.000	0.04	19.011	75.684	0.0	1.5	SURCHARGED

GTA Civils Ltd		Page 12
Gloucester House 66a Church Walk Burgess Hill RH15 9AS	Bersted 11642 SW calcs with urban creep All storms	
Date 26/07/2022	Designed by MCR	
File 220726 11642 Network with urban creep.mdx	Checked by	
Micro Drainage	Network 2020.1.3	

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

Simulation Criteria

Areal Reduction Factor 1.000 Manhole Headloss Coeff (Global) 0.500 MADD Factor * 10m³/ha Storage 2.000
 Hot Start (mins) 0 Foul Sewage per hectare (l/s) 0.000 Inlet Coefficient 0.800
 Hot Start Level (mm) 0 Additional Flow - % of Total Flow 0.000 Flow per Person per Day (l/per/day) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
 Number of Online Controls 1 Number of Storage Structures 2 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Data Type Point
 FEH Rainfall Version 2013 Cv (Summer) 1.000
 Site Location GB 492545 100911 SU 92545 00911 Cv (Winter) 1.000

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep 2.5 Second Increment (Extended) Inertia Status OFF
 DTS Status ON

Profile(s) Summer and Winter
 Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440
 Return Period(s) (years) 2, 30, 100
 Climate Change (%) 0, 0, 40

PN	US/MH Name	Event	Water Surcharged Flooded				Maximum				Pipe Flow	Status
			US/CL (m)	Level (m)	Depth (m)	Volume (m ³)	Flow / Cap.	Maximum Vol (m ³)	Discharge Vol (m ³)	Velocity (m/s)		
1.000	SMH1	15 minute 100 year Summer I+40%	3.353	3.469	1.209	0.000	1.35	1.616	23.273	1.2	48.8	SURCHARGED
1.001	SMH2	15 minute 100 year Summer I+40%	3.774	3.276	1.123	0.000	1.84	2.174	31.523	1.6	64.9	SURCHARGED
1.002	SMH3	480 minute 100 year Winter I+40%	3.687	3.219	1.152	0.000	0.28	2.071	120.175	0.5	10.3	SURCHARGED
2.000	SMH10	480 minute 100 year Winter I+40%	3.937	3.216	0.671	0.000	0.01	3.031	39.671	0.3	3.3	SURCHARGED
3.000	SMH7	480 minute 100 year Winter I+40%	3.940	3.217	1.107	0.000	0.08	1.416	17.580	0.5	1.5	SURCHARGED
2.001	SMH8	480 minute 100 year Winter I+40%	3.852	3.216	0.822	0.000	0.03	6.148	99.695	0.3	8.6	SURCHARGED
2.002	SMH9	480 minute 100 year Winter I+40%	3.532	3.216	0.925	0.000	0.03	19.739	93.699	0.3	8.2	SURCHARGED
1.003	SMH4	480 minute 100 year Winter I+40%	3.752	3.217	0.690	0.000	0.01	186.102	104.334	0.3	6.7	SURCHARGED
4.000	PP1	480 minute 100 year Winter I+40%	3.600	3.218	-0.032	0.000	0.00	0.098	0.002	0.1	0.1	OK

GTA Civils Ltd			Page 13
Gloucester House	Bersted 11642		
66a Church Walk	SW calcs with urban creep		
Burgess Hill RH15 9AS	All storms		
Date 26/07/2022	Designed by MCR		
File 220726 11642 Network with urban creep.mdx	Checked by		
Micro Drainage	Network 2020.1.3		

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

							Water Surcharged		Flooded					Maximum		Pipe	
PN	US/MH						US/CL	Level	Depth	Volume	Flow /	Maximum	Discharge	Velocity	Flow		
	Name	Event					(m)	(m)	(m)	(m³)	Cap.	Vol (m³)	Vol (m³)	(m/s)	(l/s)	Status	
1.004	SMH5	480 minute	100	year	Summer	I+40%	3.499	3.222	0.829	0.000	0.01	14.464	120.395	0.2	6.6	FLOOD RISK	
1.005	SMH11	480 minute	100	year	Summer	I+40%	3.301	3.228	1.488	0.000	0.05	29.685	95.446	0.1	1.9	FLOOD RISK	