

Arun District Council
Civic Centre
Maltravers Rd
Littlehampton
BN17 5LF

Our Ref: PD/243912/03
Date: 19th September 2025
BWB Contact: David Hollingsworth
Mobile: [REDACTED]
Email: [REDACTED]

Dear Sir/Madam

**PLANNING REF BE/150/22/OUT [BE/16/25/RES] – NEWLANDS ROAD, BOGNOR
REGIS P022 9NN– SURFACE WATER DRAINAGE**

This letter has been produced in response to the recent Lead Local Flood Authority (LLFA) objection letter dated 13th August 2025 and issued to Arun District Council as the latest consultation response on the above reserved matters submission. The LLFA have requested further information relating the location of surface flooding contained in the site during extreme rainfall events.

I am pleased to note the LLFA acknowledgement that the calculations submitted in our last note (reference PD/243912/03) has satisfied them that all flooding is removed in the 3.33% event and agreement to the modelling of the flood nodes as presented.

I note that the LLFA have two outstanding queries requiring further information, namely:

1. Whether the external flooding can be further reduced, and;
2. The LLFA have requested information to demonstrate that the building will not be flooded in the extreme rainfall events modelled (1% event adjusted by +45% for climate change) and that the surface flooding stays on site.

In answer to the first query we have further reviewed our proposals and incorporated a small amount of additional storage in pipe references 1.010 and 1.011. This has been achieved by upsizing 78m of previously 750mm diameter pipe to 1200mm diameter, introducing an additional 55m³ of storage into the system. This change serves to eliminate the minor flooding from manhole SW50 around the site entrance and reduces the spills from other manholes in the 100 year +45% climate change storm event.

Regarding the residual flooding in that extreme event, the additional of the extra storage and a number of other SUDS features eliminates most of the flooding except that in the low lying loading docks and a small spill from a manhole on the yard access to unit 1. We have consulted with the developer of the buildings and confirmed that the extent of external flooding proposed in the loading docks and the shallow flooding of the unit 1 yard access road is acceptable to them and is within the parameters of their development specification and within the operational expectations of building

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tenants. The flood protection standard of 100 year return period +45% climate change is for the building (not the external works) and this has been achieved. To apply this standard to external works is not considered commercially viable or desirable by the developer, so we are not proposing further attenuation storage.

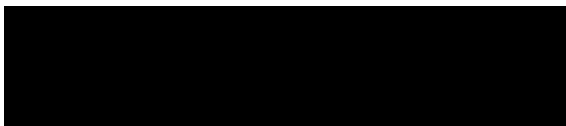
It should be noted that the flood depths and locations set out below would not prevent the operation of the building in this extreme event as lorries in the loading docks can reverse trailers into the depth of water proposed in the dock. The lorries are then rear end load from finished floor level via the dock leveller, so no one needs to access the bottom of the loading dock and the lorry tractor is up gradient from the deepest flooding in shallower water (approx. 350mm). The flooding of parking areas does not exceed 100mm depth, so these could also remain operational in this extreme event.

In answer to the second query please find enclosed updated drawing number 243912-BWB-EXT-XX-D-C-0537 Revision P03 (SUDS Overview and Masterplan Amendments). This has been updated to show the spill locations, volumes and areas of flooding that result in the 100 year+45% event. This demonstrates that all incidental flooding from manholes is contained on site within kerb heights and dock pit arrangements at acceptable depths. It also demonstrates that this flooding would drain back down to our drainage system following the storm with no water spilling out of the site.

Flood protection to the building in the 100 year +45% event is achieved with >600mm freeboard.

I trust this demonstrates that the design operates satisfactorily in the extreme design event and enables the Lead Local Flood Authority to withdraw your objection.

Yours faithfully



David Hollingsworth BEng (hons) DipWEM MSc
Director

Encl:

Hydraulic Calculation Report reference 243912-BWB-EXT-XX-M-C-0500-A4-C06

BWB Drainage Layout reference 243912-BWB-EXT-XX-D-X-0500-A4-C04

BWB SUDS Overview and Masterplan Amendments 243912-BWB-EXT-XX-D-C-0537-S2-P03

Proposed Development Discharge Rate 243912-BWB-EXT-XX-G-C-0536-S2-P02

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	1	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	1.000	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	x
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	x
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
1	0.080	5.00	3.376	900	494258.572	101373.022	1.176
2			3.862	900	494302.395	101383.250	1.962
3	0.021	5.00	2.830	900	494330.501	101389.806	1.160
4	0.182	5.00	2.830	900	494329.938	101429.136	1.350
5			2.975	1200	494323.972	101429.136	1.545
6			3.100	1500	494306.862	101439.388	1.840
7	0.081	5.00	3.250	1500	494292.142	101448.208	2.030
8	0.201	5.00	3.479	1500	494266.340	101447.867	2.319
9	0.086	5.00	3.400	1200	494258.481	101455.349	1.600
10			3.450	1500	494251.543	101455.258	2.250
11			3.593	1800	494239.341	101447.464	2.493
12		5.00	3.620	900	494098.649	101499.328	0.620
13	0.026	5.00	3.650	900	494099.603	101435.147	1.075
14			3.675	900	494100.533	101370.907	1.600
15	0.261	5.00	3.706	1500	494103.680	101363.570	1.911
16	0.487	5.00	3.704	1500	494124.534	101363.795	2.149
17		5.00	3.418	1200	494158.962	101354.803	2.113
18	0.254	5.00	3.700	1200	494178.252	101376.460	1.775
19			3.514	1500	494182.332	101363.615	2.259
20			3.579	1500	494220.134	101375.607	2.404
J2	0.166	5.00	2.391	1200	494184.083	101432.089	0.781
22	0.330	5.00	3.000	1500	494204.085	101432.443	1.650
23			3.126	1500	494204.244	101420.970	1.856
24			3.678	1500	494204.380	101394.589	2.478
25	0.149	5.00	3.492	1200	494154.037	101349.088	1.734
26	0.066	5.00	3.519	900	494192.894	101378.147	1.069
27	0.019	5.00	3.340	1200	494197.388	101359.599	1.925
28	0.081	5.00	3.256	1200	494220.559	101365.203	1.946
29			3.235	1200	494226.507	101366.646	1.995
30	0.023	5.00	3.623	1500	494225.866	101383.980	2.503
31			3.451	1800	494233.398	101386.902	2.391
32	0.101	5.00	3.456	1800	494232.839	101447.511	2.526
33	0.060	5.00	3.456	1800	494232.393	101477.837	2.596
34	0.043	5.00	3.230	1800	494230.095	101517.661	2.450
35	0.013	5.00	3.634	900	494097.702	101564.737	1.064
36	0.140	5.00	3.699	1500	494100.770	101572.123	1.564
37	0.392	5.00	3.699	1500	494140.283	101572.672	1.849
38			3.707	1500	494173.595	101573.140	1.947
39		5.00	3.517	1500	494163.985	101582.507	2.627
40			3.499	1500	494175.985	101576.646	2.629
41	0.005	5.00	3.415	1500	494204.285	101557.358	2.615
J1	0.048	5.00	2.391	1200	494182.883	101517.961	0.786

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
43	0.177	5.00	3.000	1200	494201.716	101521.011	1.605
44			3.150	1200	494201.549	101531.374	1.835
45	0.147	5.00	3.522	900	494158.278	101587.058	1.522
46			3.275	900	494185.655	101574.790	1.785
47	0.057	5.00	3.371	1200	494200.191	101564.150	2.181
48			3.370	1200	494204.850	101560.596	2.250
49	0.022	5.00	3.348	1800	494213.587	101555.791	2.568
50	0.004	5.00	3.341	1800	494226.874	101555.916	2.641
ExMH2	0.197	5.00	2.860	1800	494226.798	101573.518	2.220
ExMH1	0.062	5.00	3.580	1200	494150.911	101606.609	1.300
ExMH3			2.680	1800	494245.463	101578.840	2.040
ExMH4	0.084	5.00	2.710	1800	494277.278	101609.015	2.200
ExMH5	0.122	5.00	2.370	1800	494340.155	101673.616	1.910
ExMH6	0.129	5.00	2.430	1800	494379.221	101715.415	2.260
Outfall			2.440		494378.469	101722.864	2.290

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
S3.000	12	13	64.188	0.600	3.000	2.575	0.425	151.0	150	6.31	50.0
S3.001	13	14	64.247	0.600	2.575	2.150	0.425	151.2	150	7.63	50.0
S3.002	14	15	7.983	0.600	2.075	2.020	0.055	145.1	225	7.75	50.0
S3.003	15	16	20.855	0.600	1.795	1.705	0.090	231.7	450	8.01	50.0
S3.004	16	19	57.798	0.600	1.555	1.255	0.300	192.7	600	8.56	50.0
S4.000	17	19	24.976	0.600	1.305	1.255	0.050	499.5	600	5.38	50.0
S5.000	18	19	13.477	0.600	1.925	1.555	0.370	36.4	300	5.09	50.0
S3.005	19	20	39.659	0.600	1.255	1.175	0.080	495.7	600	9.17	50.0
S3.006	20	30	10.147	0.600	1.175	1.120	0.055	184.5	600	9.26	50.0
S6.000	25	27	44.607	0.600	1.758	1.490	0.268	166.4	225	5.74	50.0
S7.000	26	27	19.085	0.600	2.450	1.565	0.885	21.6	150	5.15	50.0
S6.001	27	28	23.839	0.600	1.415	1.310	0.105	227.0	300	6.12	50.0
S6.002	28	29	6.121	0.600	1.310	1.240	0.070	87.4	300	6.18	50.0
S6.003	29	30	17.346	0.600	1.240	1.120	0.120	144.6	300	6.40	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
S3.000	0.815	14.4	0.0	0.470	0.925	0.000	0.0	0	0.000
S3.001	0.815	14.4	4.7	0.925	1.375	0.026	0.0	59	0.729
S3.002	1.083	43.1	4.7	1.375	1.461	0.026	0.0	50	0.712
S3.003	1.331	211.7	51.8	1.461	1.549	0.287	0.0	151	1.107
S3.004	1.751	495.0	139.8	1.549	1.659	0.774	0.0	217	1.515
S4.000	1.082	306.1	0.0	1.513	1.659	0.000	0.0	0	0.000
S5.000	2.613	184.7	46.0	1.475	1.659	0.254	0.0	102	2.183
S3.005	1.087	307.2	185.7	1.659	1.804	1.028	0.0	337	1.136
S3.006	1.789	505.9	185.7	1.804	1.903	1.028	0.0	251	1.658
S6.000	1.010	40.2	26.8	1.509	1.625	0.149	0.0	135	1.081
S7.000	2.178	38.5	11.9	0.919	1.625	0.066	0.0	57	1.923
S6.001	1.039	73.4	42.3	1.625	1.646	0.234	0.0	163	1.074
S6.002	1.682	118.9	56.9	1.646	1.695	0.315	0.0	146	1.664
S6.003	1.305	92.3	56.9	1.695	2.203	0.315	0.0	171	1.371

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
S8.000A	J2	22	20.005	0.600	1.610	1.515	0.095	210.6	300	5.31	37.3
S8.000	22	23	11.400	0.600	1.350	1.270	0.080	142.5	450	5.42	50.0
S8.001	23	24	26.307	0.600	1.270	1.200	0.070	375.8	450	5.84	50.0
S8.002	24	30	23.995	0.600	1.200	1.120	0.080	299.9	450	6.18	50.0
S3.007	30	31	8.079	0.600	1.120	1.060	0.060	134.7	225	9.38	50.0
S3.008	31	32	60.612	0.600	1.060	0.930	0.130	466.2	750	10.17	50.0
S1.000	1	2	45.001	0.600	2.200	1.900	0.300	150.0	225	5.70	50.0
S1.001	2	3	28.860	0.600	1.900	1.670	0.230	125.5	225	6.12	50.0
S1.002	3	4	39.334	0.600	1.670	1.480	0.190	207.0	300	6.72	50.0
S1.003	4	5	5.966	0.600	1.480	1.430	0.050	119.3	300	6.79	50.0
S1.004	5	6	19.946	0.600	1.430	1.370	0.060	332.4	450	7.09	50.0
S1.005	6	7	17.160	0.600	1.260	1.220	0.040	429.0	600	7.33	50.0
S1.006	7	8	25.804	0.600	1.220	1.160	0.060	430.1	600	7.70	50.0
S1.007	8	11	27.002	0.600	1.160	1.100	0.060	450.0	600	8.10	50.0
S2.000	9	10	6.939	0.600	1.800	1.425	0.375	18.5	225	5.04	50.0
S2.001	10	11	14.479	0.600	1.200	1.100	0.100	144.8	450	5.18	50.0
S1.008	11	32	6.502	0.600	1.100	1.080	0.020	325.1	600	8.18	50.0
S1.009	32	33	30.329	0.600	0.930	0.860	0.070	433.3	750	10.54	50.0
S1.010	33	34	39.890	0.600	0.860	0.780	0.080	498.6	1200	10.94	50.0
S1.011	34	50	38.390	0.600	0.780	0.700	0.080	479.9	1200	11.32	50.0
S9.000	12	35	65.416	0.600	3.000	2.570	0.430	152.1	150	6.34	50.0
S9.001	35	36	8.046	0.600	2.570	2.510	0.060	134.1	150	6.50	50.0
S9.002	36	37	39.517	0.600	2.135	2.000	0.135	292.7	450	7.05	50.0
S9.003	37	38	33.315	0.600	1.850	1.760	0.090	370.2	600	7.49	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
S8.000A	1.079	76.3	22.4	0.481	1.185	0.166	0.0	111	0.941
S8.000	1.701	270.5	89.6	1.200	1.406	0.496	0.0	178	1.534
S8.001	1.042	165.8	89.6	1.406	2.028	0.496	0.0	236	1.062
S8.002	1.168	185.8	89.6	2.028	2.053	0.496	0.0	220	1.158
S3.007	1.125	44.7	336.4	2.278	2.166	1.862	0.0	225	1.146
S3.008	1.289	569.5	336.4	1.641	1.776	1.862	0.0	416	1.340
S1.000	1.065	42.3	14.4	0.951	1.737	0.080	0.0	90	0.964
S1.001	1.166	46.3	14.4	1.737	0.935	0.080	0.0	86	1.030
S1.002	1.089	77.0	18.2	0.860	1.050	0.101	0.0	99	0.897
S1.003	1.438	101.6	51.1	1.050	1.245	0.283	0.0	150	1.439
S1.004	1.109	176.4	51.1	1.095	1.280	0.283	0.0	166	0.966
S1.005	1.169	330.5	51.1	1.240	1.430	0.283	0.0	158	0.857
S1.006	1.168	330.1	65.8	1.430	1.719	0.364	0.0	180	0.919
S1.007	1.141	322.6	102.1	1.719	1.893	0.565	0.0	231	1.017
S2.000	3.056	121.5	15.5	1.375	1.800	0.086	0.0	54	2.116
S2.001	1.687	268.3	15.5	1.800	2.043	0.086	0.0	73	0.933
S1.008	1.345	380.2	117.6	1.893	1.776	0.651	0.0	228	1.192
S1.009	1.338	591.0	472.3	1.776	1.846	2.614	0.0	509	1.477
S1.010	1.668	1886.7	483.2	1.396	1.250	2.674	0.0	412	1.410
S1.011	1.701	1923.5	491.0	1.250	1.441	2.717	0.0	410	1.435
S9.000	0.812	14.4	0.0	0.470	0.914	0.000	0.0	0	0.000
S9.001	0.866	15.3	2.4	0.914	1.039	0.013	0.0	40	0.632
S9.002	1.183	188.1	27.6	1.114	1.249	0.153	0.0	116	0.854
S9.003	1.259	356.1	98.4	1.249	1.347	0.545	0.0	215	1.084

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
S9.004	38	40	4.243	0.600	1.760	0.870	0.890	4.8	600	7.50	50.0
S10.000	39	40	13.355	0.600	0.890	0.870	0.020	667.7	600	5.24	50.0
S9.005	40	41	34.248	0.600	0.870	0.800	0.070	489.3	600	8.02	50.0
S9.006	41	49	9.433	0.600	0.800	0.780	0.020	471.7	600	8.16	50.0
S12.000	45	46	30.000	0.600	2.000	1.490	0.510	58.8	225	5.29	50.0
S12.001	46	47	18.014	0.600	1.490	1.190	0.300	60.0	225	5.47	50.0
S12.002	47	48	5.860	0.600	1.190	1.120	0.070	83.7	225	5.54	50.0
S12.003	48	49	9.971	0.600	1.120	1.080	0.040	249.3	300	5.71	50.0
S11.000A	J1	43	19.078	0.600	1.605	1.470	0.135	141.3	225	5.29	37.3
S11.000	43	44	10.364	0.600	1.395	1.315	0.080	129.6	300	5.41	50.0
S11.001	44	49	27.223	0.600	1.315	1.080	0.235	115.8	300	5.73	50.0
S9.007	49	50	13.288	0.600	0.780	0.700	0.080	166.1	225	8.38	50.0
S1.012	50	ExMH2	17.602	0.600	0.700	0.640	0.060	293.4	450	11.57	50.0
Ex 1	ExMH1	ExMH2	82.788	0.600	2.280	0.670	1.610	51.4	225	5.75	36.1
Ex 2	ExMH2	ExMH3	19.409	0.600	0.670	0.640	0.030	647.0	750	11.86	24.8
Ex 3	ExMH3	ExMH4	43.849	0.600	0.640	0.510	0.130	337.3	750	12.35	23.7
Ex 4	ExMH4	ExMH5	90.103	0.600	0.510	0.460	0.050	1802.1	750	14.66	21.7
Ex 5	ExMH5	ExMH6	57.213	0.600	0.460	0.170	0.290	197.3	750	15.14	20.9
Ex 6	ExMH6	Outfall	7.487	0.600	0.170	0.150	0.020	374.4	225	15.32	21.5

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
S9.004	11.199	3166.3	98.4	1.347	2.029	0.545	0.0	71	5.213
S10.000	0.935	264.3	0.0	2.027	2.029	0.000	0.0	0	0.000
S9.005	1.094	309.3	98.4	2.029	2.015	0.545	0.0	232	0.976
S9.006	1.114	315.1	99.4	2.015	1.968	0.550	0.0	231	0.992
S12.000	1.708	67.9	26.5	1.297	1.560	0.147	0.0	98	1.609
S12.001	1.691	67.2	26.5	1.560	1.956	0.147	0.0	98	1.592
S12.002	1.430	56.9	36.9	1.956	2.025	0.204	0.0	132	1.519
S12.003	0.991	70.1	36.9	1.950	1.968	0.204	0.0	155	1.004
S11.000A	1.098	43.6	6.5	0.561	1.305	0.048	0.0	58	0.792
S11.000	1.380	97.5	40.7	1.305	1.535	0.225	0.0	135	1.319
S11.001	1.460	103.2	40.7	1.535	1.968	0.225	0.0	131	1.377
S9.007	1.011	40.2	180.9	2.343	2.416	1.001	0.0	225	1.030
S1.012	1.182	187.9	672.6	2.191	1.770	3.722	0.0	450	1.197
Ex 1	1.828	72.7	8.1	1.075	1.965	0.062	0.0	51	1.216
Ex 2	1.092	482.6	356.9	1.440	1.290	3.982	0.0	482	1.190
Ex 3	1.518	670.5	341.0	1.290	1.450	3.982	0.0	379	1.524
Ex 4	0.650	287.1	318.9	1.450	1.160	4.066	0.0	750	0.656
Ex 5	1.988	878.5	316.3	1.160	1.510	4.187	0.0	310	1.834
Ex 6	0.670	26.6	335.4	2.035	2.065	4.317	0.0	225	0.682

Pipeline Schedule

Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
64.188	151.0	150	Circular	3.620	3.000	0.470	3.650	2.575	0.925
64.247	151.2	150	Circular	3.650	2.575	0.925	3.675	2.150	1.375
7.983	145.1	225	Circular	3.675	2.075	1.375	3.706	2.020	1.461
20.855	231.7	450	Circular	3.706	1.795	1.461	3.704	1.705	1.549
57.798	192.7	600	Circular	3.704	1.555	1.549	3.514	1.255	1.659
24.976	499.5	600	Circular	3.418	1.305	1.513	3.514	1.255	1.659
13.477	36.4	300	Circular	3.700	1.925	1.475	3.514	1.555	1.659
39.659	495.7	600	Circular	3.514	1.255	1.659	3.579	1.175	1.804
10.147	184.5	600	Circular	3.579	1.175	1.804	3.623	1.120	1.903
44.607	166.4	225	Circular	3.492	1.758	1.509	3.340	1.490	1.625
19.085	21.6	150	Circular	3.519	2.450	0.919	3.340	1.565	1.625
23.839	227.0	300	Circular	3.340	1.415	1.625	3.256	1.310	1.646
6.121	87.4	300	Circular	3.256	1.310	1.646	3.235	1.240	1.695
17.346	144.6	300	Circular	3.235	1.240	1.695	3.623	1.120	2.203
20.005	210.6	300	Circular	2.391	1.610	0.481	3.000	1.515	1.185
11.400	142.5	450	Circular	3.000	1.350	1.200	3.126	1.270	1.406
26.307	375.8	450	Circular	3.126	1.270	1.406	3.678	1.200	2.028
23.995	299.9	450	Circular	3.678	1.200	2.028	3.623	1.120	2.053
8.079	134.7	225	Circular	3.623	1.120	2.278	3.451	1.060	2.166
60.612	466.2	750	Circular	3.451	1.060	1.641	3.456	0.930	1.776
45.001	150.0	225	Circular	3.376	2.200	0.951	3.862	1.900	1.737
28.860	125.5	225	Circular	3.862	1.900	1.737	2.830	1.670	0.935
39.334	207.0	300	Circular	2.830	1.670	0.860	2.830	1.480	1.050
5.966	119.3	300	Circular	2.830	1.480	1.050	2.975	1.430	1.245
19.946	332.4	450	Circular	2.975	1.430	1.095	3.100	1.370	1.280

US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
12	900	Manhole	Adoptable	13	900	Manhole	Adoptable
13	900	Manhole	Adoptable	14	900	Manhole	Adoptable
14	900	Manhole	Adoptable	15	1500	Manhole	Adoptable
15	1500	Manhole	Adoptable	16	1500	Manhole	Adoptable
16	1500	Manhole	Adoptable	19	1500	Manhole	Adoptable
17	1200	Manhole	Adoptable	19	1500	Manhole	Adoptable
18	1200	Manhole	Adoptable	19	1500	Manhole	Adoptable
19	1500	Manhole	Adoptable	20	1500	Manhole	Adoptable
20	1500	Manhole	Adoptable	30	1500	Manhole	Adoptable
25	1200	Manhole	Adoptable	27	1200	Manhole	Adoptable
26	900	Manhole	Adoptable	27	1200	Manhole	Adoptable
27	1200	Manhole	Adoptable	28	1200	Manhole	Adoptable
28	1200	Manhole	Adoptable	29	1200	Manhole	Adoptable
29	1200	Manhole	Adoptable	30	1500	Manhole	Adoptable
J2	1200	Manhole	Adoptable	22	1500	Manhole	Adoptable
22	1500	Manhole	Adoptable	23	1500	Manhole	Adoptable
23	1500	Manhole	Adoptable	24	1500	Manhole	Adoptable
24	1500	Manhole	Adoptable	30	1500	Manhole	Adoptable
30	1500	Manhole	Adoptable	31	1800	Manhole	Adoptable
31	1800	Manhole	Adoptable	32	1800	Manhole	Adoptable
1	900	Manhole	Adoptable	2	900	Manhole	Adoptable
2	900	Manhole	Adoptable	3	900	Manhole	Adoptable
3	900	Manhole	Adoptable	4	900	Manhole	Adoptable
4	900	Manhole	Adoptable	5	1200	Manhole	Adoptable
5	1200	Manhole	Adoptable	6	1500	Manhole	Adoptable

Pipeline Schedule

Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
17.160	429.0	600	Circular	3.100	1.260	1.240	3.250	1.220	1.430
25.804	430.1	600	Circular	3.250	1.220	1.430	3.479	1.160	1.719
27.002	450.0	600	Circular	3.479	1.160	1.719	3.593	1.100	1.893
6.939	18.5	225	Circular	3.400	1.800	1.375	3.450	1.425	1.800
14.479	144.8	450	Circular	3.450	1.200	1.800	3.593	1.100	2.043
6.502	325.1	600	Circular	3.593	1.100	1.893	3.456	1.080	1.776
30.329	433.3	750	Circular	3.456	0.930	1.776	3.456	0.860	1.846
39.890	498.6	1200	Circular	3.456	0.860	1.396	3.230	0.780	1.250
38.390	479.9	1200	Circular	3.230	0.780	1.250	3.341	0.700	1.441
65.416	152.1	150	Circular	3.620	3.000	0.470	3.634	2.570	0.914
8.046	134.1	150	Circular	3.634	2.570	0.914	3.699	2.510	1.039
39.517	292.7	450	Circular	3.699	2.135	1.114	3.699	2.000	1.249
33.315	370.2	600	Circular	3.699	1.850	1.249	3.707	1.760	1.347
4.243	4.8	600	Circular	3.707	1.760	1.347	3.499	0.870	2.029
13.355	667.7	600	Circular	3.517	0.890	2.027	3.499	0.870	2.029
34.248	489.3	600	Circular	3.499	0.870	2.029	3.415	0.800	2.015
9.433	471.7	600	Circular	3.415	0.800	2.015	3.348	0.780	1.968
30.000	58.8	225	Circular	3.522	2.000	1.297	3.275	1.490	1.560
18.014	60.0	225	Circular	3.275	1.490	1.560	3.371	1.190	1.956
5.860	83.7	225	Circular	3.371	1.190	1.956	3.370	1.120	2.025
9.971	249.3	300	Circular	3.370	1.120	1.950	3.348	1.080	1.968
19.078	141.3	225	Circular	2.391	1.605	0.561	3.000	1.470	1.305
10.364	129.6	300	Circular	3.000	1.395	1.305	3.150	1.315	1.535
27.223	115.8	300	Circular	3.150	1.315	1.535	3.348	1.080	1.968
13.288	166.1	225	Circular	3.348	0.780	2.343	3.341	0.700	2.416

US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
6	1500	Manhole	Adoptable	7	1500	Manhole	Adoptable
7	1500	Manhole	Adoptable	8	1500	Manhole	Adoptable
8	1500	Manhole	Adoptable	11	1800	Manhole	Adoptable
9	1200	Manhole	Adoptable	10	1500	Manhole	Adoptable
10	1500	Manhole	Adoptable	11	1800	Manhole	Adoptable
11	1800	Manhole	Adoptable	32	1800	Manhole	Adoptable
32	1800	Manhole	Adoptable	33	1800	Manhole	Adoptable
33	1800	Manhole	Adoptable	34	1800	Manhole	Adoptable
34	1800	Manhole	Adoptable	50	1800	Manhole	Adoptable
12	900	Manhole	Adoptable	35	900	Manhole	Adoptable
35	900	Manhole	Adoptable	36	1500	Manhole	Adoptable
36	1500	Manhole	Adoptable	37	1500	Manhole	Adoptable
37	1500	Manhole	Adoptable	38	1500	Manhole	Adoptable
38	1500	Manhole	Adoptable	40	1500	Manhole	Adoptable
39	1500	Manhole	Adoptable	40	1500	Manhole	Adoptable
40	1500	Manhole	Adoptable	41	1500	Manhole	Adoptable
41	1500	Manhole	Adoptable	49	1800	Manhole	Adoptable
45	900	Manhole	Adoptable	46	900	Manhole	Adoptable
46	900	Manhole	Adoptable	47	1200	Manhole	Adoptable
47	1200	Manhole	Adoptable	48	1200	Manhole	Adoptable
48	1200	Manhole	Adoptable	49	1800	Manhole	Adoptable
J1	1200	Manhole	Adoptable	43	1200	Manhole	Adoptable
43	1200	Manhole	Adoptable	44	1200	Manhole	Adoptable
44	1200	Manhole	Adoptable	49	1800	Manhole	Adoptable
49	1800	Manhole	Adoptable	50	1800	Manhole	Adoptable

Pipeline Schedule

Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
17.602	293.4	450	Circular	3.341	0.700	2.191	2.860	0.640	1.770
82.788	51.4	225	Circular	3.580	2.280	1.075	2.860	0.670	1.965
19.409	647.0	750	Circular	2.860	0.670	1.440	2.680	0.640	1.290
43.849	337.3	750	Circular	2.680	0.640	1.290	2.710	0.510	1.450
90.103	1802.1	750	Circular	2.710	0.510	1.450	2.370	0.460	1.160
57.213	197.3	750	Circular	2.370	0.460	1.160	2.430	0.170	1.510
7.487	374.4	225	Circular	2.430	0.170	2.035	2.440	0.150	2.065

US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
50	1800	Manhole	Adoptable	ExMH2	1800	Manhole	Adoptable
ExMH1	1200	Manhole	Adoptable	ExMH2	1800	Manhole	Adoptable
ExMH2	1800	Manhole	Adoptable	ExMH3	1800	Manhole	Adoptable
ExMH3	1800	Manhole	Adoptable	ExMH4	1800	Manhole	Adoptable
ExMH4	1800	Manhole	Adoptable	ExMH5	1800	Manhole	Adoptable
ExMH5	1800	Manhole	Adoptable	ExMH6	1800	Manhole	Adoptable
ExMH6	1800	Manhole	Adoptable	Outfall		Junction	

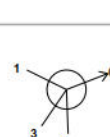
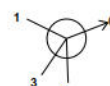
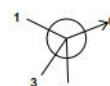
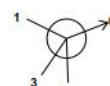
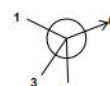
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
1	494258.572	101373.022	3.376	1.176	900		0	S1.000	2.200	225
2	494302.395	101383.250	3.862	1.962	900		1	S1.000	1.900	225
						0	S1.001	1.900	225	
3	494330.501	101389.806	2.830	1.160	900		1	S1.001	1.670	225
						0	S1.002	1.670	300	
4	494329.938	101429.136	2.830	1.350	900		1	S1.002	1.480	300
						0	S1.003	1.480	300	
5	494323.972	101429.136	2.975	1.545	1200		1	S1.003	1.430	300
						0	S1.004	1.430	450	
6	494306.862	101439.388	3.100	1.840	1500		1	S1.004	1.370	450
						0	S1.005	1.260	600	
7	494292.142	101448.208	3.250	2.030	1500		1	S1.005	1.220	600
						0	S1.006	1.220	600	

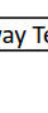
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
8	494266.340	101447.867	3.479	2.319	1500	 1 0	S1.006	1.160	600
9	494258.481	101455.349	3.400	1.600	1200	 0 0	S1.007	1.160	600
10	494251.543	101455.258	3.450	2.250	1500	 1 0	S2.000 S2.001	1.425 1.200	225 450
11	494239.341	101447.464	3.593	2.493	1800	 1 2 0	S2.001 S1.007	1.100 1.100	450 600
12	494098.649	101499.328	3.620	0.620	900	 0-2 0-1 0-2	S3.000 S9.000	3.000 3.000	150 150
13	494099.603	101435.147	3.650	1.075	900	 1 0	S3.000 S3.001	2.575 2.575	150 150
14	494100.533	101370.907	3.675	1.600	900	 1 0	S3.001 S3.002	2.150 2.075	150 225
15	494103.680	101363.570	3.706	1.911	1500	 1 0	S3.002 S3.003	2.020 1.795	225 450
16	494124.534	101363.795	3.704	2.149	1500	 1 0	S3.003 S3.004	1.705 1.555	450 600
17	494158.962	101354.803	3.418	2.113	1200	 0 0	S4.000	1.305	600
18	494178.252	101376.460	3.700	1.775	1200	 0 0	S5.000	1.925	300
19	494182.332	101363.615	3.514	2.259	1500	 1 2 3 0	S5.000 S4.000 S3.004 S3.005	1.555 1.255 1.255 1.255	300 600 600 600
20	494220.134	101375.607	3.579	2.404	1500	 1 0	S3.005 S3.006	1.175 1.175	600 600

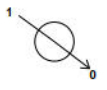
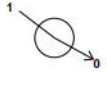
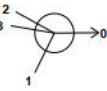
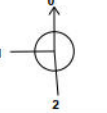
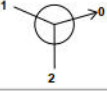
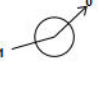
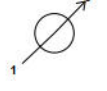
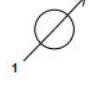
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
J2	494184.083	101432.089	2.391	0.781	1200		0	S8.000A	1.610	300
22	494204.085	101432.443	3.000	1.650	1500		1	S8.000A	1.515	300
23	494204.244	101420.970	3.126	1.856	1500		0	S8.000	1.350	450
24	494204.380	101394.589	3.678	2.478	1500		1	S8.001	1.270	450
25	494154.037	101349.088	3.492	1.734	1200		0	S8.001	1.200	450
26	494192.894	101378.147	3.519	1.069	900		0	S6.000	1.758	225
27	494197.388	101359.599	3.340	1.925	1200		1	S7.000	1.565	150
28	494220.559	101365.203	3.256	1.946	1200		2	S6.000	1.490	225
29	494226.507	101366.646	3.235	1.995	1200		0	S6.001	1.415	300
30	494225.866	101383.980	3.623	2.503	1500		1	S6.001	1.310	300
31	494233.398	101386.902	3.451	2.391	1800		0	S6.002	1.310	300
32	494232.839	101447.511	3.456	2.526	1800		1	S6.002	1.240	300
33	494232.393	101477.837	3.456	2.596	1800		1	S6.003	1.240	300
							2	S8.002	1.120	450
							3	S6.003	1.120	300
							0	S3.006	1.120	600
							0	S3.007	1.120	225
							1	S3.007	1.060	225
							0	S3.008	1.060	750
							1	S1.008	1.080	600
							2	S3.008	0.930	750
							0	S1.009	0.930	750
							1	S1.009	0.860	750
							0	S1.010	0.860	1200

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
34	494230.095	101517.661	3.230	2.450	1800	 1	S1.010	0.780	1200
35	494097.702	101564.737	3.634	1.064	900	 1	S1.011	0.780	1200
36	494100.770	101572.123	3.699	1.564	1500	 1	S9.000	2.570	150
37	494140.283	101572.672	3.699	1.849	1500	 1	S9.001	2.510	150
38	494173.595	101573.140	3.707	1.947	1500	 1	S9.002	2.135	450
39	494163.985	101582.507	3.517	2.627	1500	 1	S9.002	2.000	450
40	494175.985	101576.646	3.499	2.629	1500	 1	S9.003	1.850	600
41	494204.285	101557.358	3.415	2.615	1500	 1	S9.003	1.760	600
J1	494182.883	101517.961	2.391	0.786	1200	 1	S9.004	1.760	600
43	494201.716	101521.011	3.000	1.605	1200	 1	S10.000	0.890	600
44	494201.549	101531.374	3.150	1.835	1200	 1	S10.000	0.870	600
45	494158.278	101587.058	3.522	1.522	900	 1	S9.004	0.870	600
46	494185.655	101574.790	3.275	1.785	900	 1	S9.005	0.870	600
						 1	S9.005	0.800	600
						1	S9.006	0.800	600
						1	S11.000A	1.605	225
						1	S11.000A	1.470	225
						1	S11.000	1.395	300
						1	S11.000	1.315	300
						1	S11.001	1.315	300
						1	S12.000	2.000	225
						1	S12.000	1.490	225
						1	S12.001	1.490	225

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
47	494200.191	101564.150	3.371	2.181	1200		1 S12.001	1.190	225
						0	S12.002	1.190	225
48	494204.850	101560.596	3.370	2.250	1200		1 S12.002	1.120	225
						0	S12.003	1.120	300
49	494213.587	101555.791	3.348	2.568	1800		1 S11.001	1.080	300
						2	S12.003	1.080	300
						3	S9.006	0.780	600
						0	S9.007	0.780	225
50	494226.874	101555.916	3.341	2.641	1800		1 S9.007	0.700	225
						2	S1.011	0.700	1200
						0	S1.012	0.700	450
ExMH2	494226.798	101573.518	2.860	2.220	1800		1 Ex 1	0.670	225
						2	S1.012	0.640	450
						0	Ex 2	0.670	750
ExMH1	494150.911	101606.609	3.580	1.300	1200		0 Ex 1	2.280	225
ExMH3	494245.463	101578.840	2.680	2.040	1800		1 Ex 2	0.640	750
						0	Ex 3	0.640	750
ExMH4	494277.278	101609.015	2.710	2.200	1800		1 Ex 3	0.510	750
						0	Ex 4	0.510	750
ExMH5	494340.155	101673.616	2.370	1.910	1800		1 Ex 4	0.460	750
						0	Ex 5	0.460	750
ExMH6	494379.221	101715.415	2.430	2.260	1800		1 Ex 5	0.170	750
						0	Ex 6	0.170	225
Outfall	494378.469	101722.864	2.440	2.290			1 Ex 6	0.150	225

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Normal	Starting Level (m)	
Rainfall Events	Singular	Skip Steady State	x	Check Discharge Rate(s)	x
Summer CV	1.000	Drain Down Time (mins)	240	Check Discharge Volume	x
Winter CV	1.000	Additional Storage (m³/ha)	0.0		

Storm Durations

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

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	0	0
2	0	0	0
30	0	0	0
30	40	0	0
100	45	0	0

Node Outfall Surcharged Outfall

Overrides Design Area	x	Depression Storage Area (m ²)	0	Evapo-transpiration (mm/day)	0
Overrides Design Additional Inflow	x	Depression Storage Depth (mm)	0		
Applies to All storms					

Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
0	0.500	255	0.500	510	0.500	765	0.500	1020	0.500	1275	0.500
15	0.500	270	0.500	525	0.500	780	0.500	1035	0.500	1290	0.500
30	0.500	285	0.500	540	0.500	795	0.500	1050	0.500	1305	0.500
45	0.500	300	0.500	555	0.500	810	0.500	1065	0.500	1320	0.500
60	0.500	315	0.500	570	0.500	825	0.500	1080	0.500	1335	0.500
75	0.500	330	0.500	585	0.500	840	0.500	1095	0.500	1350	0.500
90	0.500	345	0.500	600	0.500	855	0.500	1110	0.500	1365	0.500
105	0.500	360	0.500	615	0.500	870	0.500	1125	0.500	1380	0.500
120	0.500	375	0.500	630	0.500	885	0.500	1140	0.500	1395	0.500
135	0.500	390	0.500	645	0.500	900	0.500	1155	0.500	1410	0.500
150	0.500	405	0.500	660	0.500	915	0.500	1170	0.500	1425	0.500
165	0.500	420	0.500	675	0.500	930	0.500	1185	0.500	1440	0.500
180	0.500	435	0.500	690	0.500	945	0.500	1200	0.500		
195	0.500	450	0.500	705	0.500	960	0.500	1215	0.500		
210	0.500	465	0.500	720	0.500	975	0.500	1230	0.500		
225	0.500	480	0.500	735	0.500	990	0.500	1245	0.500		
240	0.500	495	0.500	750	0.500	1005	0.500	1260	0.500		

Node 11 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	1.100	Product Number	CTL-SHE-0087-5000-2470-5000
Design Depth (m)	2.470	Min Outlet Diameter (m)	0.100
Design Flow (l/s)	5.0	Min Node Diameter (mm)	1200

Node 30 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	1.120	Product Number	CTL-SHE-0128-1000-2230-1000
Design Depth (m)	2.230	Min Outlet Diameter (m)	0.150
Design Flow (l/s)	10.0	Min Node Diameter (mm)	1500

Node 49 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	0.780	Product Number	CTL-SHE-0086-5000-2570-5000
Design Depth (m)	2.570	Min Outlet Diameter (m)	0.100
Design Flow (l/s)	5.0	Min Node Diameter (mm)	1200

Node 50 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	0.700	Product Number	CTL-SHE-0137-1100-2000-1100
Design Depth (m)	2.000	Min Outlet Diameter (m)	0.150
Design Flow (l/s)	11.0	Min Node Diameter (mm)	1500

Node ExMH6 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	0.510	Product Number	CTL-SHE-0165-1600-2000-1600
Design Depth (m)	2.000	Min Outlet Diameter (m)	0.225
Design Flow (l/s)	16.0	Min Node Diameter (mm)	1800

Node 4 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	2.530
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	542.0	542.0	0.300	542.0	566.8

Node 6 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	1.300
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	150.0	0.0	0.800	150.0	0.0	0.801	0.0	0.0

Node 9 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	2.670
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	200.0	200.0	0.350	200.0	217.5	0.351	0.0	217.5

Node 10 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	1.220
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	375.0	0.0	0.800	375.0	0.0	0.801	0.0	0.0

Node 17 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	1.320
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	770.0	0.0	0.800	770.0	0.0	0.801	0.0	0.0

Node 23 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	1.270
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	500.0	0.0	0.800	500.0	0.0	0.801	0.0	0.0

Node 24 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	1.200
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	350.0	0.0	1.200	350.0	0.0	1.201	0.0	0.0

Node 25 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	2.850
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Time to half empty (mins)	

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	660.0	660.0	0.350	660.0	691.9	0.351	0.0	691.9

Node 26 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	2.850
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Time to half empty (mins)	

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	137.5	137.5	0.350	137.5	152.0	0.351	0.0	152.0

Node 39 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	0.920
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	780.0	0.0	1.200	780.0	0.0	1.201	0.0	0.0

Node 45 Depth/Area Storage Structure

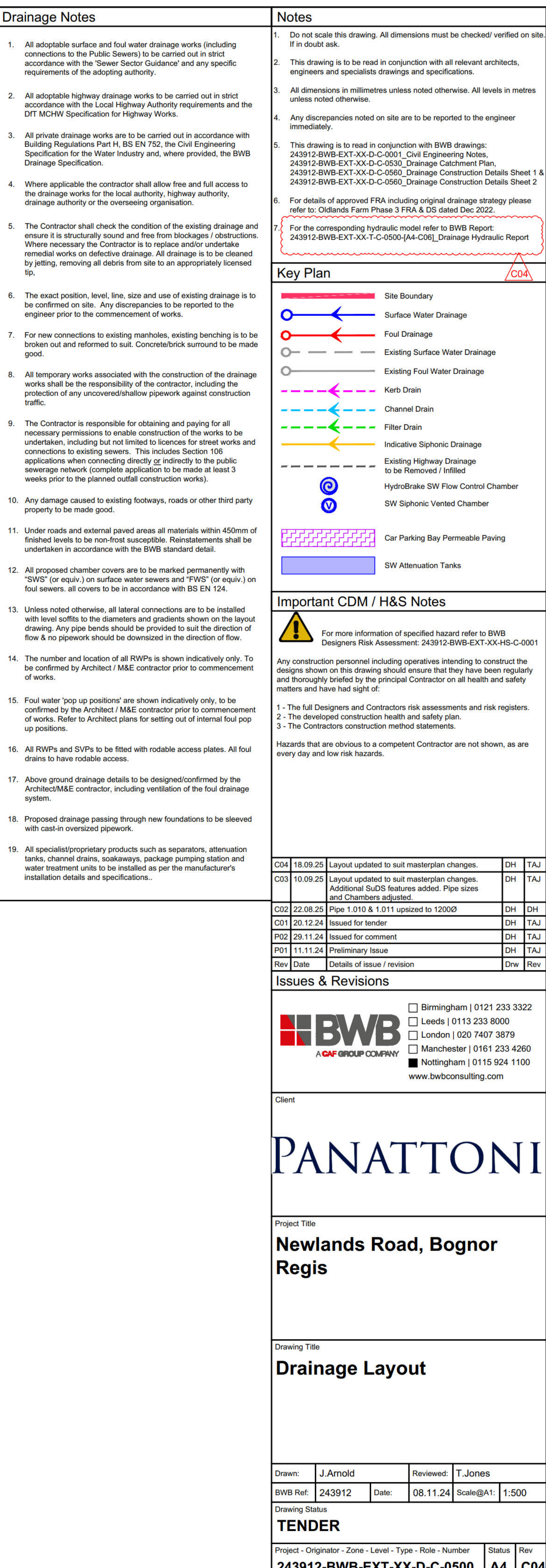
Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	2.800
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Time to half empty (mins)	

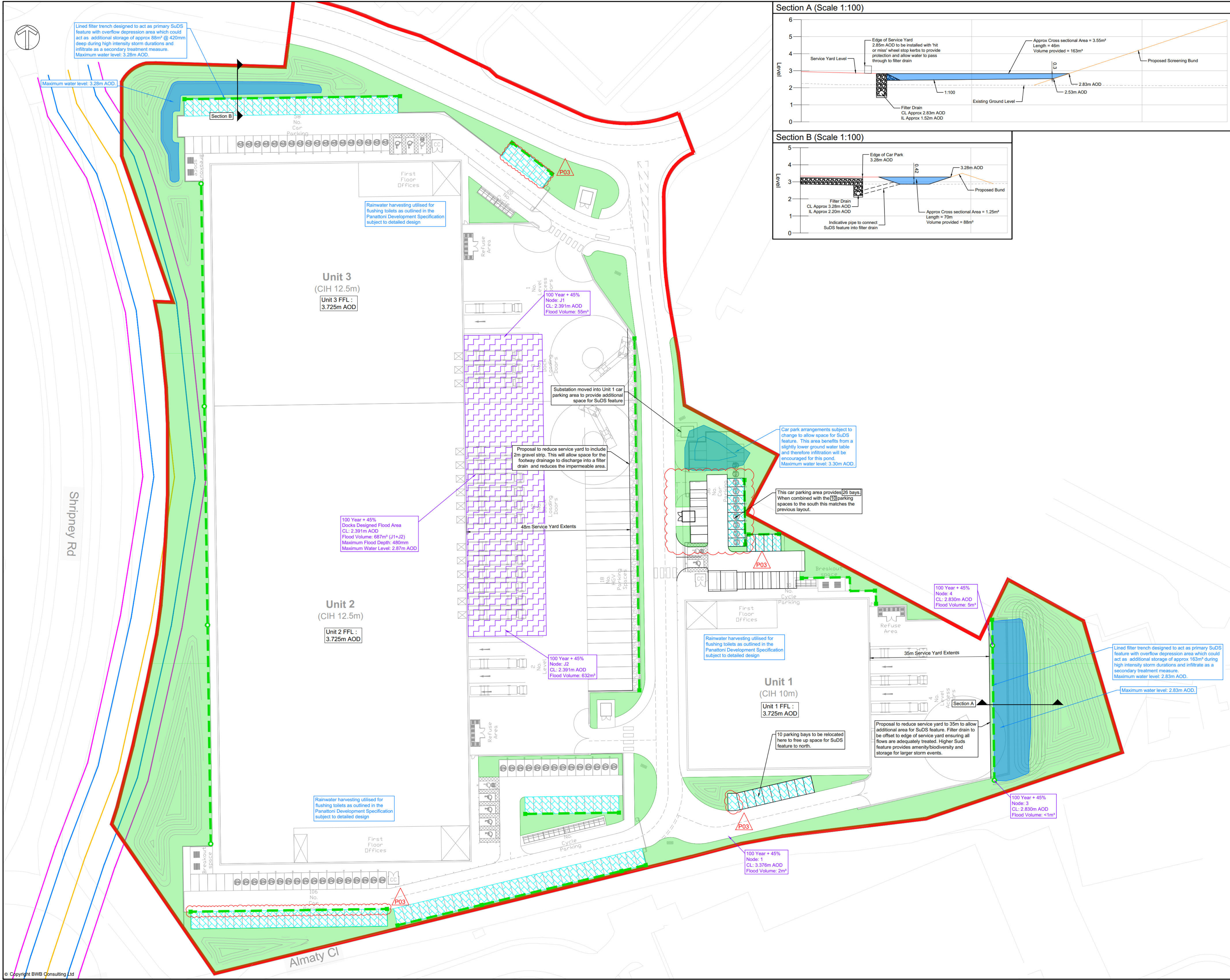
Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	313.0	313.0	0.350	313.0	335.0	0.351	0.0	335.0

Node 45 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	2.860
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	132.0	132.0	0.420	132.0	149.1







Flow control chamber to be installed with a Vortex Flow Control restricted back to 16l/s

- ## Key
- | | |
|---|---|
|  | Proposed Development Site Boundary |
|  | Existing Highway Drainage Catchment (0.606ha) |
|  | Existing Highway Drainage Catchment with Proposed Development (0.594ha) |
|  | Positively Drained Impermeable Catchment (3.66tha) |
|  | Positively Drained Landscaping Catchment (0.222tha) |
- ∴ The total positively drained area has been based off a combination of 100% of impermeable areas and 25% for positively drained landscaping area to give a total catchment area of $(3.664 + (0.222 \times 0.25)) = \mathbf{3.719ha}$

This sketch has been produced to demonstrate the drainage philosophy behind the proposed development.

The proposed development will be restricted back to Qbar greenfield runoff rates calculated in line with ARUM supplementary requirements for surface water drainage proposals (i.e. IH124 method).

The proposed drainage will incorporate the existing highway drainage and analysed to ensure flood risk is not increased within the existing road. The proposed development Qbar runoff rate will be added to the existing 5 l/s highway discharge at the final flow control chamber.

Issues & Revisions

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Client _____

PANATTONI

Project Title

**Newlands Road, Bognor
Regis**

Drawing Title

**Proposed Development
Discharge Rate**

Drawn:	D.Holmes		Reviewed:	T.Jones	
BWB Ref:	243912	Date:	Sept 25	Scale@A1:	1:500

For Information

Project - Originator - Zone - Level - Type - Role - Number	Status	Rev
243912-BWB-EXT-XX-G-C-0536	S2	P02