

Appendix B

WSP | PB FW DRAINAGE CALCULATIONS

WSP Group Ltd		Page 1
.	Light Hill, Whitfield	
.	Foul Drainage	
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Date 09/03/2017 11:45	Designed by MAC	
File FOUL STRATEGY 270217.MDX	Checked by	
XP Solutions	Network 2016.1.1	

FOUL SEWERAGE DESIGN

Network Design Table for FOUL A.FWS

- Indicates pipe length does not match coordinates

PN	Length (m)	Fall (m)	Slope (1:X)	Area (ha)	Houses	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
F1.000	51.912	1.573	33.0	0.000	19	0.0	1.500	o	150	Pipe/Conduit	
F2.000	39.445	2.173	18.2	0.000	19	0.0	1.500	o	150	Pipe/Conduit	
F1.001	38.535	1.168	33.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F1.002	26.376	0.799	33.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F1.003	97.468	2.954	33.0	0.000	23	0.0	1.500	o	150	Pipe/Conduit	
F1.004	17.827	0.540	33.0	0.000	13	0.0	1.500	o	150	Pipe/Conduit	
F3.000	53.033	3.684	14.4	0.000	13	0.0	1.500	o	150	Pipe/Conduit	
F1.005	40.660	1.232	33.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F4.000	34.933	2.566	13.6	0.000	34	0.0	1.500	o	150	Pipe/Conduit	
F1.006	60.473	1.833	33.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F5.000	69.223	1.300	53.2	0.000	0	0.0	1.500	o	100	Pipe/Conduit	
F5.001	42.443	1.049	40.5	0.000	35	0.0	1.500	o	150	Pipe/Conduit	

Network Results Table

PN	US/IL (m)	Σ Area (ha)	Σ Base Flow (l/s)	Σ Hse	Add Flow (l/s)	P.Dep (mm)	P.Vel (m/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
F1.000	114.600	0.000	0.0	19	0.0	19	0.69	1.53	27.0	0.9
F2.000	115.200	0.000	0.0	19	0.0	16	0.85	2.06	36.5	0.9
F1.001	113.027	0.000	0.0	38	0.0	26	0.86	1.53	27.0	1.8
F1.002	111.859	0.000	0.0	38	0.0	26	0.86	1.53	27.0	1.8
F1.003	111.060	0.000	0.0	61	0.0	33	0.99	1.53	27.0	2.9
F1.004	108.106	0.000	0.0	74	0.0	36	1.05	1.53	27.0	3.5
F3.000	111.250	0.000	0.0	13	0.0	13	0.81	2.32	40.9	0.6
F1.005	107.566	0.000	0.0	87	0.0	40	1.10	1.53	27.0	4.1
F4.000	108.900	0.000	0.0	34	0.0	20	1.12	2.38	42.1	1.6
F1.006	106.334	0.000	0.0	121	0.0	47	1.21	1.53	27.0	5.7
F5.000	106.900	0.000	0.0	0	0.0	0	0.00	0.91	7.2	0.0
F5.001	105.550	0.000	0.0	35	0.0	27	0.78	1.38	24.4	1.6

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FOUL SEWERAGE DESIGN

Network Design Table for FOUL A.FWS

PN	Length (m)	Fall (m)	Slope (1:X)	Area (ha)	Houses	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
F1.007	63.503	1.924	33.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F6.000	27.669	0.860	32.2	0.000	19	0.0	1.500	o	150	Pipe/Conduit	
F6.001	34.088	0.426	80.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F6.002	13.456	0.168	80.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F6.003	53.958	2.998	18.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F6.004	38.143	2.119	18.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F6.005	36.985	1.849	20.0	0.000	29	0.0	1.500	o	150	Pipe/Conduit	
F6.006	62.891	3.730	16.9	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F7.000	17.873	1.250	14.3	0.000	28	0.0	1.500	o	150	Pipe/Conduit	
F7.001	117.184	3.800	30.8	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F6.007	44.281	0.443	100.0	0.000	20	0.0	1.500	o	150	Pipe/Conduit	
F6.008	96.398	1.130	85.3	0.000	36	0.0	1.500	o	150	Pipe/Conduit	
F1.008	38.041	1.153	33.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F8.000	70.671	0.883	80.0	0.000	36	0.0	1.500	o	150	Pipe/Conduit	
F8.001	41.902	0.698	60.0	0.000	24	0.0	1.500	o	150	Pipe/Conduit	

Network Results Table

PN	US/IL (m)	Σ Area (ha)	Σ Base Flow (l/s)	Σ Hse	Add Flow (l/s)	P.Dep (mm)	P.Vel (m/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
F1.007	104.501	0.000	0.0	156	0.0	53	1.30	1.53	27.0	7.3
F6.000	116.300	0.000	0.0	19	0.0	19	0.69	1.55	27.4	0.9
F6.001	115.440	0.000	0.0	19	0.0	23	0.51	0.98	17.3	0.9
F6.002	115.014	0.000	0.0	19	0.0	23	0.51	0.98	17.3	0.9
F6.003	114.846	0.000	0.0	19	0.0	16	0.85	2.07	36.6	0.9
F6.004	111.848	0.000	0.0	19	0.0	16	0.85	2.07	36.6	0.9
F6.005	109.729	0.000	0.0	48	0.0	26	1.09	1.96	34.7	2.3
F6.006	107.880	0.000	0.0	48	0.0	25	1.16	2.14	37.8	2.3
F7.000	109.200	0.000	0.0	28	0.0	19	1.04	2.32	41.1	1.3
F7.001	107.950	0.000	0.0	28	0.0	22	0.80	1.58	27.9	1.3
F6.007	104.150	0.000	0.0	96	0.0	56	0.76	0.88	15.5	4.5
F6.008	103.707	0.000	0.0	132	0.0	63	0.88	0.95	16.8	6.2
F1.008	102.577	0.000	0.0	288	0.0	75	1.53	1.53	27.0	13.5
F8.000	107.400	0.000	0.0	36	0.0	32	0.62	0.98	17.3	1.7
F8.001	106.517	0.000	0.0	60	0.0	38	0.80	1.13	20.0	2.8

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FOUL SEWERAGE DESIGN

Network Design Table for FOUL A.FWS

PN	Length (m)	Fall (m)	Slope (1:X)	Area (ha)	Houses	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
F8.002	75.276	1.882	40.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F8.003	77.534	1.938	40.0	0.000	28	0.0	1.500	o	150	Pipe/Conduit	
F8.004	15.246	0.574	26.6	0.000	49	0.0	1.500	o	150	Pipe/Conduit	
F1.009	25.476	0.639	39.9	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F9.000	59.528#	0.656	90.7	0.000	37	0.0	1.500	o	150	Pipe/Conduit	
F9.001	66.679#	1.844	36.2	0.000	38	0.0	1.500	o	150	Pipe/Conduit	
F9.002	105.600#	0.800	132.0	0.000	32	0.0	1.500	o	150	Pipe/Conduit	
F9.003	11.723#	0.187	62.7	0.000	31	0.0	1.500	o	150	Pipe/Conduit	
F9.004	54.271#	1.495	36.3	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F9.005	54.271#	2.696	20.1	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F9.006	22.674#	2.037	11.1	0.000	4	0.0	1.500	o	150	Pipe/Conduit	
F1.010	54.261	0.980	55.4	0.000	0	0.0	1.500	o	225	Pipe/Conduit	
F1.011	21.751	0.343	63.4	0.000	3	0.0	1.500	o	225	Pipe/Conduit	
F1.012	23.945	0.353	67.8	0.000	0	0.0	1.500	o	225	Pipe/Conduit	
F1.013	14.379	0.185	77.7	0.000	2	0.0	1.500	o	225	Pipe/Conduit	
F1.014	15.465	0.259	59.7	0.000	0	0.0	1.500	o	225	Pipe/Conduit	
F1.015	14.824	0.237	62.5	0.000	0	0.0	1.500	o	225	Pipe/Conduit	
F1.016	24.344	0.352	69.2	0.000	3	0.0	1.500	o	225	Pipe/Conduit	

Network Results Table

PN	US/IL (m)	Σ Area (ha)	Σ Base Flow (l/s)	Σ Hse	Add Flow (l/s)	P.Dep (mm)	P.Vel (m/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
F8.002	105.818	0.000	0.0	60	0.0	34	0.92	1.39	24.5	2.8
F8.003	103.936	0.000	0.0	88	0.0	42	1.03	1.39	24.5	4.1
F8.004	101.998	0.000	0.0	137	0.0	47	1.35	1.70	30.1	6.4
F1.009	101.424	0.000	0.0	425	0.0	102	1.55	1.39	24.6	19.9
F9.000	110.500	0.000	0.0	37	0.0	33	0.59	0.92	16.3	1.7
F9.001	109.844	0.000	0.0	75	0.0	38	1.02	1.46	25.8	3.5
F9.002	108.000	0.000	0.0	107	0.0	64	0.71	0.76	13.5	5.0
F9.003	107.200	0.000	0.0	138	0.0	59	0.99	1.11	19.6	6.5
F9.004	107.013	0.000	0.0	138	0.0	51	1.21	1.46	25.8	6.5
F9.005	105.518	0.000	0.0	138	0.0	44	1.49	1.96	34.6	6.5
F9.006	102.822	0.000	0.0	142	0.0	38	1.86	2.64	46.6	6.7
F1.010	100.710	0.000	0.0	567	0.0	104	1.49	1.54	61.4	26.6
F1.011	99.730	0.000	0.0	570	0.0	108	1.42	1.44	57.4	26.7
F1.012	99.387	0.000	0.0	570	0.0	110	1.38	1.39	55.5	26.7
F1.013	99.034	0.000	0.0	572	0.0	115	1.31	1.30	51.8	26.8
F1.014	98.849	0.000	0.0	572	0.0	106	1.45	1.49	59.1	26.8
F1.015	98.590	0.000	0.0	572	0.0	108	1.43	1.45	57.8	26.8
F1.016	98.353	0.000	0.0	575	0.0	111	1.37	1.38	54.9	27.0

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FOUL SEWERAGE DESIGN

Network Design Table for FOUL A.FWS

PN	Length (m)	Fall (m)	Slope (1:X)	Area (ha)	Houses	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
F10.000	111.736#	1.950	57.3	0.000	21	0.0	1.500	o	150	Pipe/Conduit	
F10.001	26.446#	1.351	19.6	0.000	29	0.0	1.500	o	150	Pipe/Conduit	
F11.000	66.023#	1.850	35.7	0.000	37	0.0	1.500	o	150	Pipe/Conduit	
F11.001	45.371#	0.900	50.4	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F11.002	33.930#	0.226	150.1	0.000	28	0.0	1.500	o	150	Pipe/Conduit	
F11.003	18.521#	0.123	150.6	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F11.004	54.660#	2.351	23.2	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F11.005	128.348#	1.283	100.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F11.006	24.101#	0.241	100.0	0.000	25	0.0	1.500	o	150	Pipe/Conduit	
F11.007	42.757#	0.428	100.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F11.008	31.162#	0.519	60.0	0.000	24	0.0	1.500	o	150	Pipe/Conduit	
F11.009	57.349#	0.990	57.9	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F11.010	22.600#	1.047	21.6	0.000	29	0.0	1.500	o	150	Pipe/Conduit	
F12.000	94.132#	1.400	67.2	0.000	26	0.0	1.500	o	150	Pipe/Conduit	
F12.001	14.519#	1.108	13.1	0.000	25	0.0	1.500	o	150	Pipe/Conduit	
F11.011	11.814#	0.295	40.0	0.000	0	0.0	1.500	o	225	Pipe/Conduit	
F11.012	22.935#	1.040	22.1	0.000	12	0.0	1.500	o	225	Pipe/Conduit	

Network Results Table

PN	US/IL (m)	Σ Area (ha)	Σ Base Flow (l/s)	Σ Hse	Add Flow (l/s)	P.Dep (mm)	P.Vel (m/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
F10.000	101.600	0.000	0.0	21	0.0	23	0.59	1.16	20.5	1.0
F10.001	99.650	0.000	0.0	50	0.0	26	1.12	1.99	35.1	2.3
F11.000	112.100	0.000	0.0	37	0.0	26	0.83	1.47	26.0	1.7
F11.001	110.250	0.000	0.0	37	0.0	29	0.73	1.24	21.8	1.7
F11.002	109.350	0.000	0.0	65	0.0	50	0.59	0.71	12.6	3.0
F11.003	109.124	0.000	0.0	65	0.0	50	0.59	0.71	12.6	3.0
F11.004	109.001	0.000	0.0	65	0.0	31	1.14	1.82	32.2	3.0
F11.005	106.650	0.000	0.0	65	0.0	45	0.68	0.88	15.5	3.0
F11.006	105.367	0.000	0.0	90	0.0	54	0.74	0.88	15.5	4.2
F11.007	105.126	0.000	0.0	90	0.0	54	0.74	0.88	15.5	4.2
F11.008	104.698	0.000	0.0	114	0.0	53	0.96	1.13	20.0	5.3
F11.009	104.179	0.000	0.0	114	0.0	53	0.97	1.15	20.4	5.3
F11.010	103.189	0.000	0.0	143	0.0	46	1.47	1.89	33.4	6.7
F12.000	104.650	0.000	0.0	26	0.0	26	0.59	1.07	18.9	1.2
F12.001	103.250	0.000	0.0	51	0.0	24	1.29	2.43	42.9	2.4
F11.011	102.067	0.000	0.0	194	0.0	54	1.24	1.82	72.2	9.1
F11.012	101.772	0.000	0.0	206	0.0	48	1.56	2.45	97.4	9.7

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FOUL SEWERAGE DESIGN

Network Design Table for FOUL A.FWS

PN	Length (m)	Fall (m)	Slope (1:X)	Area (ha)	Houses	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
F11.013	29.988#	1.925	15.6	0.000	0	0.0	1.500	o	225	Pipe/Conduit	
F11.014	14.857#	0.583	25.5	0.000	12	0.0	1.500	o	225	Pipe/Conduit	
F13.000	43.419#	0.543	80.0	0.000	13	0.0	1.500	o	150	Pipe/Conduit	
F13.001	5.081#	0.158	32.2	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F10.002	29.937#	0.223	134.0	0.000	0	0.0	1.500	o	225	Pipe/Conduit	
F1.017	70.792	0.544	130.1	0.000	7	0.0	1.500	o	300	Pipe/Conduit	
F14.000	53.377	0.297	179.7	0.000	633	0.0	1.500	o	225	Pipe/Conduit	
F14.001	20.519	0.114	180.0	0.000	0	0.0	1.500	o	225	Pipe/Conduit	
F14.002	60.675	0.337	180.0	0.000	0	0.0	1.500	o	225	Pipe/Conduit	
F14.003	19.109	0.107	178.6	0.000	0	0.0	1.500	o	225	Pipe/Conduit	
F15.000	47.311#	0.315	150.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F15.001	29.218#	0.195	150.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F15.002	51.135#	0.341	150.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F15.003	19.073#	0.127	150.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F15.004	19.943#	1.302	15.3	0.000	0	0.0	1.500	o	150	Pipe/Conduit	

Network Results Table

PN	US/IL (m)	Σ Area (ha)	Σ Base Flow (l/s)	Σ Hse	Add Flow (l/s)	P.Dep (mm)	P.Vel (m/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
F11.013	100.732	0.000	0.0	206	0.0	44	1.76	2.92	116.0	9.7
F11.014	98.807	0.000	0.0	218	0.0	51	1.51	2.28	90.6	10.2
F13.000	99.000	0.000	0.0	13	0.0	20	0.45	0.98	17.3	0.6
F13.001	98.457	0.000	0.0	13	0.0	16	0.62	1.55	27.4	0.6
F10.002	98.224	0.000	0.0	281	0.0	89	0.89	0.99	39.4	13.2
F1.017	97.926	0.000	0.0	863	0.0	145	1.20	1.22	85.9	40.5
F14.000	110.350	0.000	0.0	633	0.0	163	0.96	0.85	34.0	29.7
F14.001	110.053	0.000	0.0	633	0.0	163	0.96	0.85	34.0	29.7
F14.002	109.939	0.000	0.0	633	0.0	163	0.96	0.85	34.0	29.7
F14.003	109.602	0.000	0.0	633	0.0	163	0.97	0.86	34.1	29.7
F15.000	111.850	0.000	0.0	0	0.0	0	0.00	0.71	12.6	0.0
F15.001	111.535	0.000	0.0	0	0.0	0	0.00	0.71	12.6	0.0
F15.002	111.340	0.000	0.0	0	0.0	0	0.00	0.71	12.6	0.0
F15.003	110.999	0.000	0.0	0	0.0	0	0.00	0.71	12.6	0.0
F15.004	110.872	0.000	0.0	0	0.0	0	0.00	2.25	39.7	0.0

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FOUL SEWERAGE DESIGN

Network Design Table for FOUL A.FWS

PN	Length (m)	Fall (m)	Slope (1:X)	Area (ha)	Houses	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
F14.004	43.676	1.168	37.4	0.000	0	0.0	1.500	o	225	Pipe/Conduit	
F14.005	88.655	3.829	23.2	0.000	0	0.0	1.500	o	225	Pipe/Conduit	
F16.000	34.008	0.475	71.6	0.000	0	0.0	1.500	o	100	Pipe/Conduit	
F16.001	10.386	0.078	133.2	0.000	9	0.0	1.500	o	150	Pipe/Conduit	
F14.006	53.397	3.083	17.3	0.000	0	0.0	1.500	o	225	Pipe/Conduit	
F14.007	24.486	2.007	12.2	0.000	9	0.0	1.500	o	225	Pipe/Conduit	
F17.000	34.585	0.786	44.0	0.000	10	0.0	1.500	o	150	Pipe/Conduit	
F17.001	11.989	0.257	46.6	0.000	8	0.0	1.500	o	150	Pipe/Conduit	
F17.002	29.215	1.258	23.2	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F17.003	14.652	0.248	59.1	0.000	2	0.0	1.500	o	150	Pipe/Conduit	
F17.004	24.080	0.409	58.9	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F14.008	42.379	1.876	22.6	0.000	3	0.0	1.500	o	225	Pipe/Conduit	
F18.000	19.536	0.909	21.5	0.000	4	0.0	1.500	o	100	Pipe/Conduit	
F18.001	20.113	0.491	41.0	0.000	5	0.0	1.500	o	100	Pipe/Conduit	
F1.018	18.363	0.122	150.5	0.000	0	0.0	1.500	o	300	Pipe/Conduit	

Network Results Table

PN	US/IL (m)	Σ Area (ha)	Σ Base Flow (l/s)	Σ Hse	Add Flow (l/s)	P.Dep (mm)	P.Vel (m/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
F14.004	109.495	0.000	0.0	633	0.0	98	1.77	1.88	74.8	29.7
F14.005	108.252	0.000	0.0	633	0.0	86	2.12	2.39	95.1	29.7
F16.000	105.101	0.000	0.0	0	0.0	0	0.00	0.79	6.2	0.0
F16.001	104.576	0.000	0.0	9	0.0	19	0.34	0.76	13.4	0.4
F14.006	104.423	0.000	0.0	642	0.0	80	2.36	2.77	110.0	30.1
F14.007	101.340	0.000	0.0	651	0.0	74	2.69	3.30	131.1	30.5
F17.000	102.366	0.000	0.0	10	0.0	15	0.51	1.32	23.4	0.5
F17.001	101.580	0.000	0.0	18	0.0	20	0.60	1.28	22.7	0.8
F17.002	101.323	0.000	0.0	18	0.0	17	0.76	1.82	32.2	0.8
F17.003	100.065	0.000	0.0	20	0.0	22	0.57	1.14	20.2	0.9
F17.004	99.817	0.000	0.0	20	0.0	22	0.57	1.14	20.2	0.9
F14.008	99.333	0.000	0.0	674	0.0	89	2.17	2.42	96.3	31.6
F18.000	98.982	0.000	0.0	4	0.0	9	0.51	1.44	11.3	0.2
F18.001	98.073	0.000	0.0	9	0.0	16	0.53	1.04	8.2	0.4
F1.018	97.382	0.000	0.0	1546	0.0	225	1.28	1.13	79.8	72.5

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FOUL SEWERAGE DESIGN

Network Design Table for FOUL A.FWS

PN	Length (m)	Fall (m)	Slope (1:X)	Area (ha)	Houses	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
F1.019	18.643	0.124	150.3	0.000	0	0.0	1.500	o	300	Pipe/Conduit	
F1.020	57.760	4.176	13.8	0.000	0	0.0	1.500	o	300	Pipe/Conduit	
F19.000	31.108#	0.207	150.3	0.000	25	0.0	1.500	o	150	Pipe/Conduit	
F19.001	35.066#	0.234	150.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F19.002	15.032	0.100	150.0	0.000	24	0.0	1.500	o	150	Pipe/Conduit	
F19.003	10.403	0.069	150.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F19.004	29.025#	0.194	150.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F19.005	14.225	0.095	150.0	0.000	12	0.0	1.500	o	150	Pipe/Conduit	
F19.006	70.275#	0.878	80.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F19.007	8.414	0.262	32.1	0.000	32	0.0	1.500	o	150	Pipe/Conduit	
F19.008	47.347#	1.046	45.3	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F19.009	39.954#	1.580	25.3	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F19.010	17.913	0.179	100.1	0.000	4	0.0	1.500	o	150	Pipe/Conduit	
F19.011	12.850	0.128	100.4	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F20.000	46.030	0.381	120.8	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F21.000	45.385#	0.303	149.8	0.000	51	0.0	1.500	o	150	Pipe/Conduit	
F21.001	39.849#	0.425	93.8	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F21.002	25.744#	0.172	149.7	0.000	0	0.0	1.500	o	150	Pipe/Conduit	

Network Results Table

PN	US/IL (m)	Σ Area (ha)	Σ Base Flow (l/s)	Σ Hse	Add Flow (l/s)	P.Dep (mm)	P.Vel (m/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
F1.019	97.260	0.000	0.0	1546	0.0	225	1.28	1.13	79.9	72.5
F1.020	97.136	0.000	0.0	1546	0.0	107	3.19	3.74	264.2	72.5
F19.000	100.300	0.000	0.0	25	0.0	31	0.44	0.71	12.6	1.2
F19.001	100.093	0.000	0.0	25	0.0	31	0.44	0.71	12.6	1.2
F19.002	99.859	0.000	0.0	49	0.0	44	0.54	0.71	12.6	2.3
F19.003	99.759	0.000	0.0	49	0.0	44	0.54	0.71	12.6	2.3
F19.004	99.690	0.000	0.0	49	0.0	44	0.54	0.71	12.6	2.3
F19.005	99.496	0.000	0.0	61	0.0	49	0.58	0.71	12.6	2.9
F19.006	99.401	0.000	0.0	61	0.0	41	0.72	0.98	17.3	2.9
F19.007	98.523	0.000	0.0	93	0.0	41	1.13	1.55	27.4	4.4
F19.008	98.261	0.000	0.0	93	0.0	44	1.00	1.30	23.1	4.4
F19.009	97.215	0.000	0.0	93	0.0	38	1.23	1.75	30.9	4.4
F19.010	95.635	0.000	0.0	97	0.0	56	0.76	0.88	15.5	4.5
F19.011	95.456	0.000	0.0	97	0.0	56	0.76	0.87	15.4	4.5
F20.000	103.500	0.000	0.0	0	0.0	0	0.00	0.80	14.1	0.0
F21.000	108.200	0.000	0.0	51	0.0	44	0.55	0.71	12.6	2.4
F21.001	107.897	0.000	0.0	51	0.0	39	0.65	0.90	16.0	2.4
F21.002	107.472	0.000	0.0	51	0.0	44	0.55	0.71	12.6	2.4

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FOUL SEWERAGE DESIGN

Network Design Table for FOUL A.FWS

PN	Length (m)	Fall (m)	Slope (1:X)	Area (ha)	Houses	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
F22.000	25.105#	0.720	34.9	0.000	37	0.0	1.500	o	150	Pipe/Conduit	
F22.001	38.486#	0.910	42.3	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F21.003	52.687#	1.520	34.7	0.000	11	0.0	1.500	o	150	Pipe/Conduit	
F21.004	10.242#	0.405	25.3	0.000	25	0.0	1.500	o	150	Pipe/Conduit	
F21.005	59.388#	2.256	26.3	0.000	31	0.0	1.500	o	225	Pipe/Conduit	
F20.001	62.661	2.900	21.6	0.000	0	0.0	1.500	o	225	Pipe/Conduit	
F23.000	43.679#	0.291	150.1	0.000	28	0.0	1.500	o	150	Pipe/Conduit	
F23.001	44.372#	0.296	150.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F24.000	51.004#	1.900	26.8	0.000	28	0.0	1.500	o	150	Pipe/Conduit	
F24.001	58.051#	1.587	36.6	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F23.002	39.902#	0.266	150.0	0.000	0	0.0	1.500	o	225	Pipe/Conduit	
F23.003	33.005#	0.220	150.0	0.000	0	0.0	1.500	o	225	Pipe/Conduit	
F25.000	24.780#	1.200	20.7	0.000	36	0.0	1.500	o	150	Pipe/Conduit	
F25.001	49.012#	1.634	30.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit	

Network Results Table

PN	US/IL (m)	Σ Area (ha)	Σ Base Flow (l/s)	Σ Hse	Add Flow (l/s)	P.Dep (mm)	P.Vel (m/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
F22.000	108.930	0.000	0.0	37	0.0	26	0.83	1.49	26.3	1.7
F22.001	108.210	0.000	0.0	37	0.0	28	0.78	1.35	23.9	1.7
F21.003	107.300	0.000	0.0	99	0.0	43	1.12	1.49	26.4	4.6
F21.004	105.780	0.000	0.0	124	0.0	44	1.34	1.75	30.9	5.8
F21.005	105.300	0.000	0.0	155	0.0	44	1.35	2.24	89.2	7.3
F20.001	103.044	0.000	0.0	155	0.0	41	1.44	2.48	98.4	7.3
F23.000	102.500	0.000	0.0	28	0.0	33	0.46	0.71	12.6	1.3
F23.001	102.209	0.000	0.0	28	0.0	33	0.46	0.71	12.6	1.3
F24.000	105.400	0.000	0.0	28	0.0	22	0.84	1.70	30.0	1.3
F24.001	103.500	0.000	0.0	28	0.0	23	0.75	1.45	25.7	1.3
F23.002	101.838	0.000	0.0	56	0.0	41	0.54	0.94	37.2	2.6
F23.003	101.572	0.000	0.0	56	0.0	41	0.54	0.94	37.2	2.6
F25.000	106.300	0.000	0.0	36	0.0	23	0.99	1.93	34.2	1.7
F25.001	105.100	0.000	0.0	36	0.0	25	0.87	1.60	28.3	1.7

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FOUL SEWERAGE DESIGN

Network Design Table for FOUL A.FWS

PN	Length (m)	Fall (m)	Slope (1:X)	Area (ha)	Houses	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
F25.002	34.599#	2.039	17.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F23.004	36.371#	0.242	150.0	0.000	0	0.0	1.500	o	225	Pipe/Conduit	
F23.005	49.362#	0.329	150.0	0.000	0	0.0	1.500	o	225	Pipe/Conduit	
F23.006	22.058#	0.147	150.0	0.000	22	0.0	1.500	o	225	Pipe/Conduit	
F23.007	12.112#	0.081	150.0	0.000	0	0.0	1.500	o	225	Pipe/Conduit	
F23.008	11.724#	0.409	28.7	0.000	0	0.0	1.500	o	225	Pipe/Conduit	
F20.002	22.862	2.302	9.9	0.000	0	0.0	1.500	o	225	Pipe/Conduit	
F26.000	22.007	0.929	23.7	0.000	4	0.0	1.500	o	150	Pipe/Conduit	
F26.001	17.370	0.259	67.1	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F27.000	10.453	1.045	10.0	0.000	7	0.0	1.500	o	100	Pipe/Conduit	
F20.003	13.346	0.133	100.3	0.000	0	0.0	1.500	o	225	Pipe/Conduit	
F20.004	9.637	0.096	100.4	0.000	0	0.0	1.500	o	225	Pipe/Conduit	
F20.005	17.786	0.889	20.0	0.000	0	0.0	1.500	o	225	Pipe/Conduit	
F20.006	27.425	1.471	18.6	0.000	2	0.0	1.500	o	225	Pipe/Conduit	
F19.012	15.538	0.104	149.4	0.000	2	0.0	1.500	o	225	Pipe/Conduit	

Network Results Table

PN	US/IL (m)	Σ Area (ha)	Σ Base Flow (l/s)	Σ Hse	Add Flow (l/s)	P.Dep (mm)	P.Vel (m/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
F25.002	103.466	0.000	0.0	36	0.0	22	1.06	2.13	37.7	1.7
F23.004	101.352	0.000	0.0	92	0.0	52	0.62	0.94	37.2	4.3
F23.005	101.109	0.000	0.0	92	0.0	52	0.62	0.94	37.2	4.3
F23.006	100.780	0.000	0.0	114	0.0	58	0.66	0.94	37.2	5.3
F23.007	100.633	0.000	0.0	114	0.0	58	0.66	0.94	37.2	5.3
F23.008	100.553	0.000	0.0	114	0.0	38	1.19	2.15	85.4	5.3
F20.002	100.144	0.000	0.0	269	0.0	45	2.24	3.65	145.3	12.6
F26.000	99.030	0.000	0.0	4	0.0	9	0.47	1.81	31.9	0.2
F26.001	98.101	0.000	0.0	4	0.0	11	0.33	1.07	18.9	0.2
F27.000	99.012	0.000	0.0	7	0.0	10	0.80	2.11	16.6	0.3
F20.003	97.842	0.000	0.0	280	0.0	83	0.99	1.15	45.6	13.1
F20.004	97.709	0.000	0.0	280	0.0	83	0.99	1.15	45.6	13.1
F20.005	97.613	0.000	0.0	280	0.0	54	1.77	2.57	102.3	13.1
F20.006	96.724	0.000	0.0	282	0.0	54	1.82	2.67	106.0	13.2
F19.012	95.253	0.000	0.0	381	0.0	110	0.93	0.94	37.3	17.9

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FOUL SEWERAGE DESIGN

Network Design Table for FOUL A.FWS

PN	Length (m)	Fall (m)	Slope (1:X)	Area (ha)	Houses	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
F19.013	6.852#	2.114	3.2	0.000	6	0.0	1.500	o	225	Pipe/Conduit	
F1.021	24.999	0.125	200.0	0.000	0	0.0	1.500	o	375	Pipe/Conduit	
F1.022	11.876#	0.079	150.0	0.000	0	0.0	1.500	o	375	Pipe/Conduit	

Network Results Table

PN	US/IL (m)	Σ Area (ha)	Σ Base Flow (l/s)	Σ Hse	Add Flow (l/s)	P.Dep (mm)	P.Vel (m/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
F19.013	95.149	0.000	0.0	387	0.0	41	3.69	6.40	254.5	18.1
F1.021	92.885	0.000	0.0	1933	0.0	237	1.23	1.13	125.1	90.6
F1.022	92.760	0.000	0.0	1933	0.0	215	1.38	1.31	144.5	90.6

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PIPELINE SCHEDULES for FOUL A.FWS

Upstream Manhole

- Indicates pipe length does not match coordinates

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
F1.000	o	150	F1	116.750	114.600	2.000	Open Manhole	1200
F2.000	o	150	F2	117.300	115.200	1.950	Open Manhole	1200
F1.001	o	150	F2	117.400	113.027	4.223	Open Manhole	1200
F1.002	o	150	F3	116.100	111.859	4.091	Open Manhole	1200
F1.003	o	150	F4	114.840	111.060	3.630	Open Manhole	1200
F1.004	o	150	F5	112.800	108.106	4.544	Open Manhole	1200
F3.000	o	150	F7	113.400	111.250	2.000	Open Manhole	1200
F1.005	o	150	F6	112.700	107.566	4.984	Open Manhole	1200
F4.000	o	150	F9	111.000	108.900	1.950	Open Manhole	1200
F1.006	o	150	F6	111.000	106.334	4.516	Open Manhole	1200
F5.000	o	100	F11	109.000	106.900	2.000	Open Manhole	1200
F5.001	o	150	F12	107.700	105.550	2.000	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
F1.000	51.912	33.0	F2	117.400	113.027	4.223	Open Manhole	1200
F2.000	39.445	18.2	F2	117.400	113.027	4.223	Open Manhole	1200
F1.001	38.535	33.0	F3	116.100	111.859	4.091	Open Manhole	1200
F1.002	26.376	33.0	F4	114.840	111.060	3.630	Open Manhole	1200
F1.003	97.468	33.0	F5	112.800	108.106	4.544	Open Manhole	1200
F1.004	17.827	33.0	F6	112.700	107.566	4.984	Open Manhole	1200
F3.000	53.033	14.4	F6	112.700	107.566	4.984	Open Manhole	1200
F1.005	40.660	33.0	F6	111.000	106.334	4.516	Open Manhole	1200
F4.000	34.933	13.6	F6	111.000	106.334	4.516	Open Manhole	1200
F1.006	60.473	33.0	F6	107.450	104.501	2.799	Open Manhole	1200
F5.000	69.223	53.2	F12	107.700	105.600	2.000	Open Manhole	1200
F5.001	42.443	40.5	F6	107.450	104.501	2.799	Open Manhole	1200

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PIPELINE SCHEDULES for FOUL A.FWS

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
F1.007	o	150	F6	107.450	104.501	2.799	Open Manhole	1200
F6.000	o	150	F14	118.450	116.300	2.000	Open Manhole	1200
F6.001	o	150	F15	117.590	115.440	2.000	Open Manhole	1200
F6.002	o	150	F16	116.800	115.014	1.636	Open Manhole	1200
F6.003	o	150	F17	116.250	114.846	1.254	Open Manhole	1200
F6.004	o	150	F18	113.250	111.848	1.252	Open Manhole	1200
F6.005	o	150	F19	111.350	109.729	1.471	Open Manhole	1200
F6.006	o	150	F20	109.900	107.880	1.870	Open Manhole	1200
F7.000	o	150	F21	111.350	109.200	2.000	Open Manhole	1200
F7.001	o	150	F22	110.100	107.950	2.000	Open Manhole	1200
F6.007	o	150	F21	106.300	104.150	2.000	Open Manhole	1200
F6.008	o	150	F22	104.750	103.707	0.893	Open Manhole	1200
F1.008	o	150	F9	103.500	102.577	0.773	Open Manhole	1200
F8.000	o	150	F26	109.500	107.400	1.950	Open Manhole	1200
F8.001	o	150	F27	107.750	106.517	1.083	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
F1.007	63.503	33.0	F9	103.500	102.577	0.773	Open Manhole	1200
F6.000	27.669	32.2	F15	117.590	115.440	2.000	Open Manhole	1200
F6.001	34.088	80.0	F16	116.800	115.014	1.636	Open Manhole	1200
F6.002	13.456	80.0	F17	116.250	114.846	1.254	Open Manhole	1200
F6.003	53.958	18.0	F18	113.250	111.848	1.252	Open Manhole	1200
F6.004	38.143	18.0	F19	111.350	109.729	1.471	Open Manhole	1200
F6.005	36.985	20.0	F20	109.900	107.880	1.870	Open Manhole	1200
F6.006	62.891	16.9	F21	106.300	104.150	2.000	Open Manhole	1200
F7.000	17.873	14.3	F22	110.100	107.950	2.000	Open Manhole	1200
F7.001	117.184	30.8	F21	106.300	104.150	2.000	Open Manhole	1200
F6.007	44.281	100.0	F22	104.750	103.707	0.893	Open Manhole	1200
F6.008	96.398	85.3	F9	103.500	102.577	0.773	Open Manhole	1200
F1.008	38.041	33.0	F10	102.500	101.424	0.926	Open Manhole	1200
F8.000	70.671	80.0	F27	107.750	106.517	1.083	Open Manhole	1200
F8.001	41.902	60.0	F28	107.000	105.818	1.032	Open Manhole	1200

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PIPELINE SCHEDULES for FOUL A.FWS

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
F8.002	o	150	F28	107.000	105.818	1.032	Open Manhole	1200
F8.003	o	150	F29	105.550	103.936	1.464	Open Manhole	1200
F8.004	o	150	F30	103.250	101.998	1.102	Open Manhole	1200
F1.009	o	150	F10	102.500	101.424	0.926	Open Manhole	1200
F9.000	o	150	F32	112.200	110.500	1.550	Open Manhole	1200
F9.001	o	150	F33	111.600	109.844	1.606	Open Manhole	1200
F9.002	o	150	F23	110.950	108.000	2.800	Open Manhole	1200
F9.003	o	150	F24	109.164	107.200	1.814	Open Manhole	1200
F9.004	o	150	F25	108.963	107.013	1.800	Open Manhole	1200
F9.005	o	150	F37	107.468	105.518	1.800	Open Manhole	1200
F9.006	o	150	F35	104.772	102.822	1.800	Open Manhole	1200
F1.010	o	225	F4	103.670	100.710	2.735	Open Manhole	1200
F1.011	o	225	F5	101.790	99.730	1.835	Open Manhole	1200
F1.012	o	225	F6	101.462	99.387	1.850	Open Manhole	1200
F1.013	o	225	F7	101.090	99.034	1.831	Open Manhole	1200
F1.014	o	225	F8	100.725	98.849	1.651	Open Manhole	1200
F1.015	o	225	F9	100.275	98.590	1.460	Open Manhole	1200
F1.016	o	225	F10	99.925	98.353	1.347	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
F8.002	75.276	40.0	F29	105.550	103.936	1.464	Open Manhole	1200
F8.003	77.534	40.0	F30	103.250	101.998	1.102	Open Manhole	1200
F8.004	15.246	26.6	F10	102.500	101.424	0.926	Open Manhole	1200
F1.009	25.476	39.9	F4	103.670	100.785	2.735	Open Manhole	1200
F9.000	59.528#	90.7	F33	111.600	109.844	1.606	Open Manhole	1200
F9.001	66.679#	36.2	F23	110.950	108.000	2.800	Open Manhole	1200
F9.002	105.600#	132.0	F24	109.164	107.200	1.814	Open Manhole	1200
F9.003	11.723#	62.7	F25	108.963	107.013	1.800	Open Manhole	1200
F9.004	54.271#	36.3	F37	107.468	105.518	1.800	Open Manhole	1200
F9.005	54.271#	20.1	F35	104.772	102.822	1.800	Open Manhole	1200
F9.006	22.674#	11.1	F4	103.670	100.785	2.735	Open Manhole	1200
F1.010	54.261	55.4	F5	101.790	99.730	1.835	Open Manhole	1200
F1.011	21.751	63.4	F6	101.462	99.387	1.850	Open Manhole	1200
F1.012	23.945	67.8	F7	101.090	99.034	1.831	Open Manhole	1200
F1.013	14.379	77.7	F8	100.725	98.849	1.651	Open Manhole	1200
F1.014	15.465	59.7	F9	100.275	98.590	1.460	Open Manhole	1200
F1.015	14.824	62.5	F10	99.925	98.353	1.347	Open Manhole	1200
F1.016	24.344	69.2	F11	100.040	98.001	1.814	Open Manhole	1200

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PIPELINE SCHEDULES for FOUL A.FWS

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
F11.013	o	225	F46	104.200	100.732	3.243	Open Manhole	1200
F11.014	o	225	F28	102.200	98.807	3.168	Open Manhole	1200
F13.000	o	150	F29	100.671	99.000	1.521	Open Manhole	1200
F13.001	o	150	F30	101.494	98.457	2.887	Open Manhole	1200
F10.002	o	225	F27	101.301	98.224	2.852	Open Manhole	1200
F1.017	o	300	F11	100.040	97.926	1.814	Open Manhole	1200
F14.000	o	225	F31B	112.093	110.350	1.518	Open Manhole	1200
F14.001	o	225	F31A	112.929	110.053	2.651	Open Manhole	1200
F14.002	o	225	F31	112.810	109.939	2.646	Open Manhole	1200
F14.003	o	225	F32A	112.231	109.602	2.404	Open Manhole	1200
F15.000	o	150	F72	113.950	111.850	1.950	Open Manhole	1200
F15.001	o	150	F72	112.850	111.535	1.165	Open Manhole	1200
F15.002	o	150	F72	113.000	111.340	1.510	Open Manhole	1200
F15.003	o	150	F72	112.650	110.999	1.501	Open Manhole	1200
F15.004	o	150	F27	112.331	110.872	1.309	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
F11.013	29.988#	15.6	F28	102.200	98.807	3.168	Open Manhole	1200
F11.014	14.857#	25.5	F27	101.301	98.224	2.852	Open Manhole	1200
F13.000	43.419#	80.0	F30	101.494	98.457	2.887	Open Manhole	1200
F13.001	5.081#	32.2	F27	101.301	98.299	2.852	Open Manhole	1200
F10.002	29.937#	134.0	F11	100.040	98.001	1.814	Open Manhole	1200
F1.017	70.792	130.1	F12	100.218	97.382	2.536	Open Manhole	1200
F14.000	53.377	179.7	F31A	112.929	110.053	2.651	Open Manhole	1200
F14.001	20.519	180.0	F31	112.810	109.939	2.646	Open Manhole	1200
F14.002	60.675	180.0	F32A	112.231	109.602	2.404	Open Manhole	1200
F14.003	19.109	178.6	F32	111.935	109.495	2.215	Open Manhole	1200
F15.000	47.311#	150.0	F72	112.850	111.535	1.165	Open Manhole	1200
F15.001	29.218#	150.0	F72	113.000	111.340	1.510	Open Manhole	1200
F15.002	51.135#	150.0	F72	112.650	110.999	1.501	Open Manhole	1200
F15.003	19.073#	150.0	F27	112.331	110.872	1.309	Open Manhole	1200
F15.004	19.943#	15.3	F32	111.935	109.570	2.215	Open Manhole	1200

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PIPELINE SCHEDULES for FOUL A.FWS

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
F14.004	o	225	F32	111.935	109.495	2.215	Open Manhole	1200
F14.005	o	225	F33	110.308	108.252	1.831	Open Manhole	1200
F16.000	o	100	F40	107.001	105.101	1.800	Open Manhole	1200
F16.001	o	150	F41	106.526	104.576	1.800	Open Manhole	1200
F14.006	o	225	F35	106.463	104.423	1.815	Open Manhole	1200
F14.007	o	225	F36	103.368	101.340	1.803	Open Manhole	1200
F17.000	o	150	F42	104.175	102.366	1.659	Open Manhole	1200
F17.001	o	150	F43	103.320	101.580	1.590	Open Manhole	1200
F17.002	o	150	F44	103.025	101.323	1.552	Open Manhole	1200
F17.003	o	150	F45	101.570	100.065	1.355	Open Manhole	1200
F17.004	o	150	F45A	101.420	99.817	1.453	Open Manhole	1200
F14.008	o	225	F37	101.880	99.333	2.322	Open Manhole	1200
F18.000	o	100	F46	100.860	98.982	1.778	Open Manhole	1200
F18.001	o	100	F47	99.973	98.073	1.800	Open Manhole	1200
F1.018	o	300	F12	100.218	97.382	2.536	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
F14.004	43.676	37.4	F33	110.308	108.327	1.756	Open Manhole	1200
F14.005	88.655	23.2	F35	106.463	104.423	1.815	Open Manhole	1200
F16.000	34.008	71.6	F41	106.526	104.626	1.800	Open Manhole	1200
F16.001	10.386	133.2	F35	106.463	104.498	1.815	Open Manhole	1200
F14.006	53.397	17.3	F36	103.368	101.340	1.803	Open Manhole	1200
F14.007	24.486	12.2	F37	101.880	99.333	2.322	Open Manhole	1200
F17.000	34.585	44.0	F43	103.320	101.580	1.590	Open Manhole	1200
F17.001	11.989	46.6	F44	103.025	101.323	1.552	Open Manhole	1200
F17.002	29.215	23.2	F45	101.570	100.065	1.355	Open Manhole	1200
F17.003	14.652	59.1	F45A	101.420	99.817	1.453	Open Manhole	1200
F17.004	24.080	58.9	F37	101.880	99.408	2.322	Open Manhole	1200
F14.008	42.379	22.6	F12	100.218	97.457	2.536	Open Manhole	1200
F18.000	19.536	21.5	F47	99.973	98.073	1.800	Open Manhole	1200
F18.001	20.113	41.0	F12	100.218	97.582	2.536	Open Manhole	1200
F1.018	18.363	150.5	F13	99.930	97.260	2.370	Open Manhole	1200

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PIPELINE SCHEDULES for FOUL A.FWS

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
F1.019	o	300	F13	99.930	97.260	2.370	Open Manhole	1200
F1.020	o	300	F14	98.893	97.136	1.457	Open Manhole	1200
F19.000	o	150	F94	101.800	100.300	1.350	Open Manhole	1200
F19.001	o	150	F94	101.400	100.093	1.157	Open Manhole	1200
F19.002	o	150	F94	100.750	99.859	0.741	Open Manhole	1200
F19.003	o	150	F94	100.400	99.759	0.491	Open Manhole	1200
F19.004	o	150	F94	100.750	99.690	0.910	Open Manhole	1200
F19.005	o	150	F94	101.330	99.496	1.684	Open Manhole	1200
F19.006	o	150	F94	101.100	99.401	1.549	Open Manhole	1200
F19.007	o	150	F94	100.800	98.523	2.127	Open Manhole	1200
F19.008	o	150	F94	101.656	98.261	3.245	Open Manhole	1200
F19.009	o	150	F48	99.165	97.215	1.800	Open Manhole	1200
F19.010	o	150	F49	98.162	95.635	2.377	Open Manhole	1200
F19.011	o	150	F50	97.735	95.456	2.129	Open Manhole	1200
F20.000	o	150	F60	105.450	103.500	1.800	Open Manhole	1200
F21.000	o	150	F102	109.500	108.200	1.150	Open Manhole	1200
F21.001	o	150	F102	109.600	107.897	1.553	Open Manhole	1200
F21.002	o	150	F102	109.705	107.472	2.083	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
F1.019	18.643	150.3	F14	98.893	97.136	1.457	Open Manhole	1200
F1.020	57.760	13.8	F57	97.500	92.960	4.240	Open Manhole	1350
F19.000	31.108#	150.3	F94	101.400	100.093	1.157	Open Manhole	1200
F19.001	35.066#	150.0	F94	100.750	99.859	0.741	Open Manhole	1200
F19.002	15.032	150.0	F94	100.400	99.759	0.491	Open Manhole	1200
F19.003	10.403	150.0	F94	100.750	99.690	0.910	Open Manhole	1200
F19.004	29.025#	150.0	F94	101.330	99.496	1.684	Open Manhole	1200
F19.005	14.225	150.0	F94	101.100	99.401	1.549	Open Manhole	1200
F19.006	70.275#	80.0	F94	100.800	98.523	2.127	Open Manhole	1200
F19.007	8.414	32.1	F94	101.656	98.261	3.245	Open Manhole	1200
F19.008	47.347#	45.3	F48	99.165	97.215	1.800	Open Manhole	1200
F19.009	39.954#	25.3	F49	98.162	95.635	2.377	Open Manhole	1200
F19.010	17.913	100.1	F50	97.735	95.456	2.129	Open Manhole	1200
F19.011	12.850	100.4	F54	97.714	95.328	2.236	Open Manhole	1200
F20.000	46.030	120.8	F61	104.994	103.119	1.725	Open Manhole	1200
F21.000	45.385#	149.8	F102	109.600	107.897	1.553	Open Manhole	1200
F21.001	39.849#	93.8	F102	109.705	107.472	2.083	Open Manhole	1200
F21.002	25.744#	149.7	F102	109.570	107.300	2.120	Open Manhole	1200

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PIPELINE SCHEDULES for FOUL A.FWS

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
F22.000	o	150	F113	110.730	108.930	1.650	Open Manhole	1200
F22.001	o	150	F114	110.010	108.210	1.650	Open Manhole	1200
F21.003	o	150	F102	109.570	107.300	2.120	Open Manhole	1200
F21.004	o	150	F66	107.580	105.780	1.650	Open Manhole	1200
F21.005	o	225	F107	107.100	105.300	1.575	Open Manhole	1200
F20.001	o	225	F61	104.994	103.044	1.725	Open Manhole	1200
F23.000	o	150	F109	104.110	102.500	1.460	Open Manhole	1200
F23.001	o	150	F109	103.700	102.209	1.341	Open Manhole	1200
F24.000	o	150	F111	107.500	105.400	1.950	Open Manhole	1200
F24.001	o	150	F111	105.600	103.500	1.950	Open Manhole	1200
F23.002	o	225	F109	103.400	101.838	1.337	Open Manhole	1200
F23.003	o	225	F109	103.800	101.572	2.003	Open Manhole	1200
F25.000	o	150	F115	108.400	106.300	1.950	Open Manhole	1200
F25.001	o	150	F115	107.200	105.100	1.950	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
F22.000	25.105#	34.9	F114	110.010	108.210	1.650	Open Manhole	1200
F22.001	38.486#	42.3	F102	109.570	107.300	2.120	Open Manhole	1200
F21.003	52.687#	34.7	F66	107.580	105.780	1.650	Open Manhole	1200
F21.004	10.242#	25.3	F107	107.100	105.375	1.575	Open Manhole	1200
F21.005	59.388#	26.3	F61	104.994	103.044	1.725	Open Manhole	1200
F20.001	62.661	21.6	F62	102.150	100.144	1.781	Open Manhole	1200
F23.000	43.679#	150.1	F109	103.700	102.209	1.341	Open Manhole	1200
F23.001	44.372#	150.0	F109	103.400	101.913	1.337	Open Manhole	1200
F24.000	51.004#	26.8	F111	105.600	103.500	1.950	Open Manhole	1200
F24.001	58.051#	36.6	F109	103.400	101.913	1.337	Open Manhole	1200
F23.002	39.902#	150.0	F109	103.800	101.572	2.003	Open Manhole	1200
F23.003	33.005#	150.0	F109	104.000	101.352	2.423	Open Manhole	1200
F25.000	24.780#	20.7	F115	107.200	105.100	1.950	Open Manhole	1200
F25.001	49.012#	30.0	F115	106.000	103.466	2.384	Open Manhole	1200

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PIPELINE SCHEDULES for FOUL A.FWS

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
F25.002	o	150	F115	106.000	103.466	2.384	Open Manhole	1200
F23.004	o	225	F109	104.000	101.352	2.423	Open Manhole	1200
F23.005	o	225	F109	104.250	101.109	2.916	Open Manhole	1200
F23.006	o	225	F67	103.837	100.780	2.832	Open Manhole	1200
F23.007	o	225	F110	103.610	100.633	2.752	Open Manhole	1200
F23.008	o	225	F68	103.400	100.553	2.622	Open Manhole	1200
F20.002	o	225	F62	102.150	100.144	1.781	Open Manhole	1200
F26.000	o	150	F69	100.380	99.030	1.200	Open Manhole	1200
F26.001	o	150	F70	100.818	98.101	2.567	Open Manhole	1200
F27.000	o	100	F71	101.490	99.012	2.378	Open Manhole	1200
F20.003	o	225	F63	101.156	97.842	3.089	Open Manhole	1200
F20.004	o	225	F64	100.515	97.709	2.581	Open Manhole	1200
F20.005	o	225	F64A	100.010	97.613	2.172	Open Manhole	1200
F20.006	o	225	F65	99.098	96.724	2.149	Open Manhole	1200
F19.012	o	225	F54	97.714	95.253	2.236	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
F25.002	34.599#	17.0	F109	104.000	101.427	2.423	Open Manhole	1200
F23.004	36.371#	150.0	F109	104.250	101.109	2.916	Open Manhole	1200
F23.005	49.362#	150.0	F67	103.837	100.780	2.832	Open Manhole	1200
F23.006	22.058#	150.0	F110	103.610	100.633	2.752	Open Manhole	1200
F23.007	12.112#	150.0	F68	103.400	100.553	2.622	Open Manhole	1200
F23.008	11.724#	28.7	F62	102.150	100.144	1.781	Open Manhole	1200
F20.002	22.862	9.9	F63	101.156	97.842	3.089	Open Manhole	1200
F26.000	22.007	23.7	F70	100.818	98.101	2.567	Open Manhole	1200
F26.001	17.370	67.1	F63	101.156	97.842	3.164	Open Manhole	1200
F27.000	10.453	10.0	F63	101.156	97.967	3.089	Open Manhole	1200
F20.003	13.346	100.3	F64	100.515	97.709	2.581	Open Manhole	1200
F20.004	9.637	100.4	F64A	100.010	97.613	2.172	Open Manhole	1200
F20.005	17.786	20.0	F65	99.098	96.724	2.149	Open Manhole	1200
F20.006	27.425	18.6	F54	97.714	95.253	2.236	Open Manhole	1200
F19.012	15.538	149.4	F56	97.800	95.149	2.426	Open Manhole	1200

WSP Group Ltd		Page 20
.	Light Hill, Whitfield	
.	Foul Drainage	
.		
Date 09/03/2017 11:45	Designed by MAC	
File FOUL STRATEGY 270217.MDX	Checked by	
XP Solutions	Network 2016.1.1	

PIPELINE SCHEDULES for FOUL A.FWS

Upstream Manhole

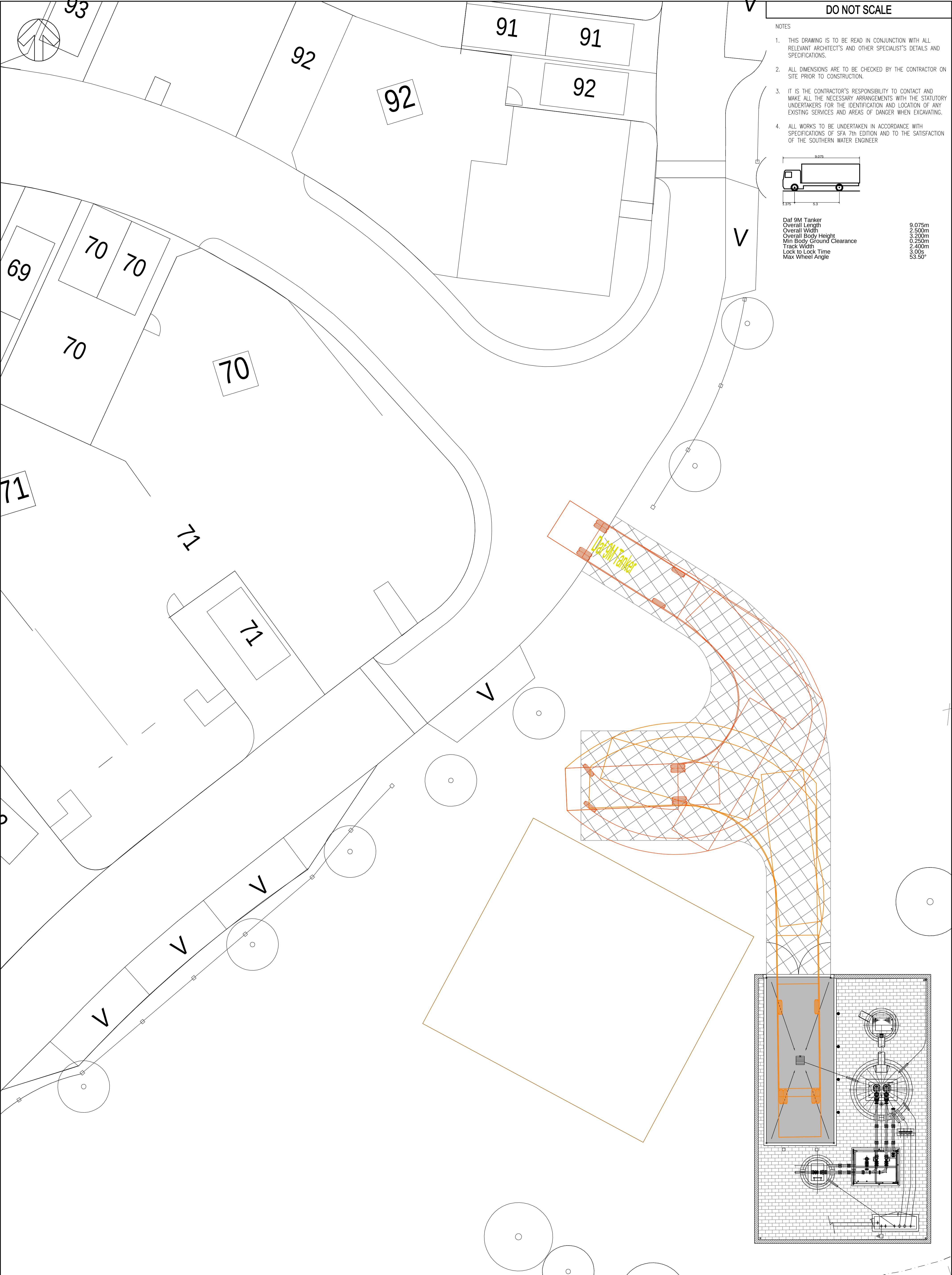
PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
F19.013	o	225	F56	97.800	95.149	2.426	Open Manhole	1200
F1.021	o	375	F57	97.500	92.885	4.240	Open Manhole	1350
F1.022	o	375	F58	95.230	92.760	2.095	Open Manhole	1350

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
F19.013	6.852#	3.2	F57	97.500	93.035	4.240	Open Manhole	1350
F1.021	24.999	200.0	F58	95.230	92.760	2.095	Open Manhole	1350
F1.022	11.876#	150.0	F17	97.881	92.681	4.826	Open Manhole	0

Appendix C

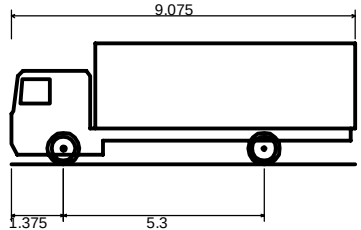
PUMPING STATION DETAILS



DO NOT SCALE

NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECT'S AND OTHER SPECIALIST'S DETAILS AND SPECIFICATIONS.
2. ALL DIMENSIONS ARE TO BE CHECKED BY THE CONTRACTOR ON SITE PRIOR TO CONSTRUCTION.
3. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONTACT AND MAKE ALL THE NECESSARY ARRANGEMENTS WITH THE STATUTORY UNDERTAKERS FOR THE IDENTIFICATION AND LOCATION OF ANY EXISTING SERVICES AND AREAS OF DANGER WHEN EXCAVATING.
4. ALL WORKS TO BE UNDERTAKEN IN ACCORDANCE WITH SPECIFICATIONS OF SFA 7th EDITION AND TO THE SATISFACTION OF THE SOUTHERN WATER ENGINEER



Daf 9M Tanker
Overall Length
Overall Width
Overall Body Height
Min Body Ground Clearance
Track Width
Lock to Lock Time
Max Wheel Angle

9.075m
2.500m
3.200m
0.250m
2.400m
3.00s
53.50°

REV	DATE	BY	DESCRIPTION	CHK	APD
C3	19/06/2017	GRJ	TURNING HEAD UPDATED	POC	POC
C2	03/04/2017	GRJ	FOOTPATHS REMOVED FROM SITE LAYOUT	HP	POC
C1	13/10/2016	GRJ	CONSTRUCTION ISSUE	HP	POC
P1	28/09/2016	GRJ	FIRST ISSUE	HP	---

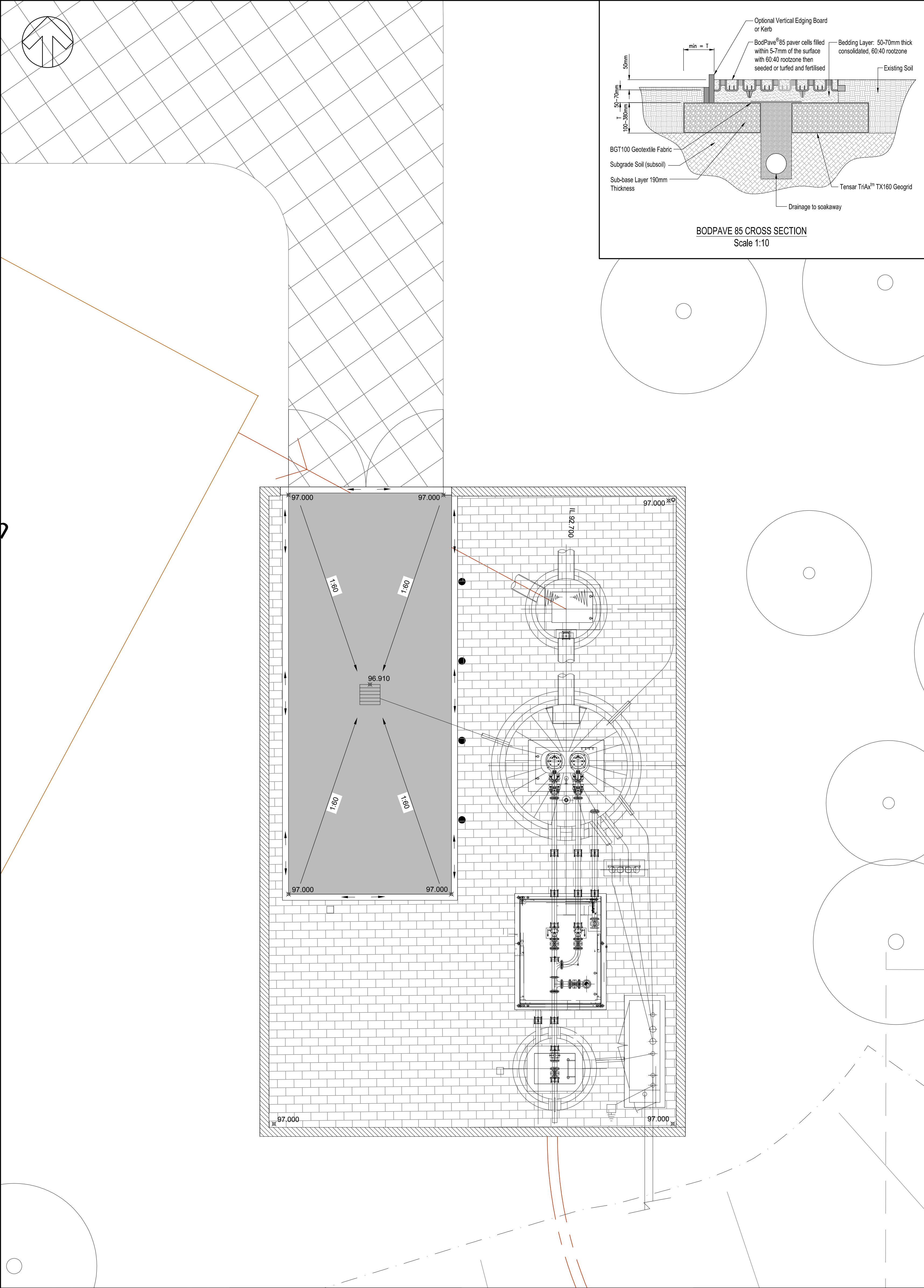
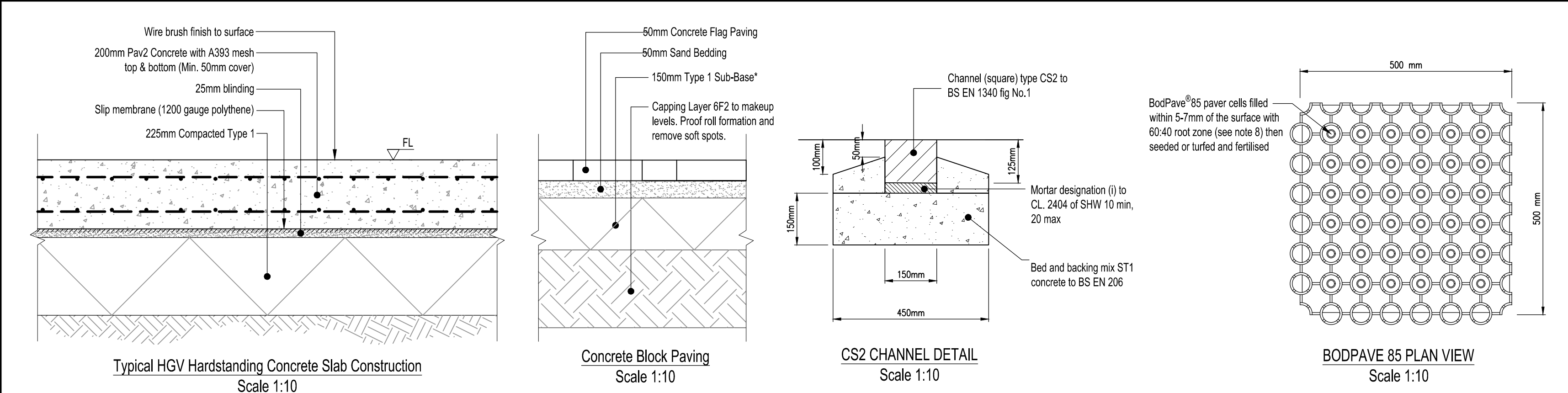
DRAWING STATUS: ISSUED FOR CONSTRUCTION

62-64 Hills Road, Cambridge CB2 1LA
Tel: +44 (0)1223 558 050 Fax: +44 (0)1223 558 051
www.wsp-pb.co.uk

CLIENT:	HALSBURY HOMES
ARCHITECT:	

PROJECT:	WHITFIELD PHASE 1 HOUSING
TITLE:	PUMP STATION ACCESS VEHICLE TRACKING

SCALE @ A1:	1:200	CHECKED:	HP	APPROVED:	-
CAD FILE:	3822-D-4010 to 4019	DESIGN-DRAWN:	GRJ	DATE:	
PROJECT No:	70013822	DRAWING No:	3822-D-4031	REV:	C3
© WSP Group Ltd					



- DO NOT SCALE**
- NOTES
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND OTHER SPECIALISTS DETAILS AND SPECIFICATIONS.
 - ALL DIMENSIONS ARE TO BE CHECKED BY THE CONTRACTOR ON SITE PRIOR TO CONSTRUCTION.
 - IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONTACT AND MAKE ALL THE NECESSARY ARRANGEMENTS WITH THE STATUTORY UNDERTAKERS FOR THE IDENTIFICATION AND LOCATION OF ANY EXISTING SERVICES AND AREAS OF DANGER WHEN EXCAVATING.
 - ALL WORKS TO BE UNDERTAKEN IN ACCORDANCE WITH SEWERS FOR ADOPTION 7th EDITION.
 - FOR M&E REFER TO PDAS DETAILS AND DRAWINGS.
- BODPAVE NOTES
- NOTE 1: IF TENSAR TRIAX™ TX160 GEOGRID IS OMITTED, THE TOTAL GRANULAR SUB-BASE (GSB) LAYER THICKNESS (T) MUST BE INCREASED BY MINIMUM 50%.
- NOTE 2: PERMEABLE/OPEN-GRADED (REDUCED FINES) SUB-BASE LAYER (I.E. TYPE 3) MAY BE SPECIFIED, E.G. AS PART OF SUSTAINABLE URBAN DRAINAGE SYSTEMS (SUDS).
- NOTE 3: MINIMUM SUB-BASE THICKNESS OVER TENSAR TRIAX™ TX160 GEOGRID SHALL BE 150MM. MAXIMUM SUB-BASE PARTICLE SIZE SHOULD MATCH MINIMUM SUB-BASE THICKNESS BUT NOT EXCEED 75MM DIAMETER. FOR SUB-BASE THICKNESSES OF AROUND 100MM, A MINIMUM 37.5MM PARTICLE SIZE SHOULD BE ADOPTED TO ALLOW EFFECTIVE INSTALLATION OF TENSAR TRIAX™ TX160 GEOGRID.
- NOTE 4: WHERE DRAINS ARE OMITTED AND A 'REDUCED FINES' SUB-BASE IS SPECIFIED FOR SUDS THIS MUST BE COVERED WITH EITHER A GEOTEXTILE FABRIC (I.E. BGT100) AND/OR A CLEAN, SUITABLY GRADED GRAVEL BLINDING TO AVOID THE BEDDING LAYER LEACHING INTO THE SUB-BASE.
- NOTE 5: SPECIFIC ADVICE ON CBR% STRENGTHS, GROUND CONDITIONS AND CONSTRUCTION OVER WEAK GROUND WITH A CBR LESS THAN 1% IS AVAILABLE FROM FIBERWEB GEOSYNTHETICS LIMITED. CBR% = CALIFORNIA BEARING RATIO, A MEASUREMENT OF SUBGRADE SOIL STRENGTH.
- NOTE 6: TYPICAL STANDARD DRAINAGE DETAIL: 100MM DIAMETER PERFORATED PIPE DRAINS LAID AT MINIMUM GRADIENT 1:100, BEDDED ON GRAVEL IN TRENCH BACKFILLED WITH 'DOT TYPE A' WASHED DRAINAGE AGGREGATE, TRENCH COVERED &/OR WRAPPED WITH A GEOTEXTILE FABRIC (I.E. BGT100), PIPES LEADING TO A SUITABLE OUTFALL OR SOAKAWAY. DRAINS INSTALLED DOWN CENTRE OR ONE EDGE OF AREAS UP TO 5 M WIDE. WIDER AREAS MAY REQUIRE ADDITIONAL LATERAL DRAINS AT 5-10M CENTRES. DRAINAGE DESIGN TO BE DETERMINED BY THE SPECIFIER BASED ON SPECIFIC SITE CONDITIONS.
- NOTE 7: DRAINAGE FOR A SUDS APPLICATION WILL VARY ACCORDING TO THE SITE BUT GENERALLY OMITTS THE REQUIREMENT FOR EXTENSIVE PIPE & TRENCH DRAINAGE SYSTEMS WITHIN THE SUB-BASE LAYER AND MAY REQUIRE AN ADDITIONAL LAYER OF BGT100 GEOTEXTILE FABRIC AT BASE OF CONSTRUCTION.
- NOTE 8: ROOTZONE BEDDING AND PAVER FILL MUST BE A FREE-DRAINING, STRUCTURALLY SOUND PROPRIETARY BLEND OF SAND/SOIL OR SAND/COMPOST SUCH AS USED IN SPORTS/GOLF CONSTRUCTION & NORMALLY IDENTIFIED AS A 60:40 OR 70:30 RATIO BLEND. THE USE OF SITE-WON MATERIALS OR IN-SITU SELF-BLENDING IS NOT RECOMMENDED WITHOUT TAKING FURTHER ADVICE.
- NOTE 9: MAXIMUM ADVISED GRADIENT FOR TRAFFIC APPLICATIONS: 12% (1:8) 7". BODPAVE®85 HAS SPECIFIC PEGGING POINTS IF REQUIRED FOR STEEP SLOPE APPLICATIONS. PEGGING IS NOT NECESSARY FOR STANDARD ACCESS ROUTE APPLICATIONS.
- NOTE10: BODPAVE®85 COMPLIES WITH BS8300:2009 - 'DESIGN OF BUILDINGS AND THEIR APPROACHES TO MEET THE NEEDS OF DISABLED PEOPLE' - CODE OF PRACTICE. (ISBN 978 0 580 57419) & BUILDING REGULATIONS DOCUMENT 'M' SECTION 6.

P3	19/06/2017	GRJ	TANK ADDED AND LAYOUT UPDATED ACCORDINGLY	HP	PCL
P2	03/04/2017	GRJ	FOOTPATHS REMOVED FROM SITE LAYOUT	HP	PCL
P1	06/03/2017	LMM	FIRST ISSUE	PC	✓
REV	DATE	BY	DESCRIPTION	CHK	APD
DRAWING STATUS					
FOR INFORMATION ONLY					



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www.wsp-pb.co.uk

CLIENT: HALSBURY HOMES

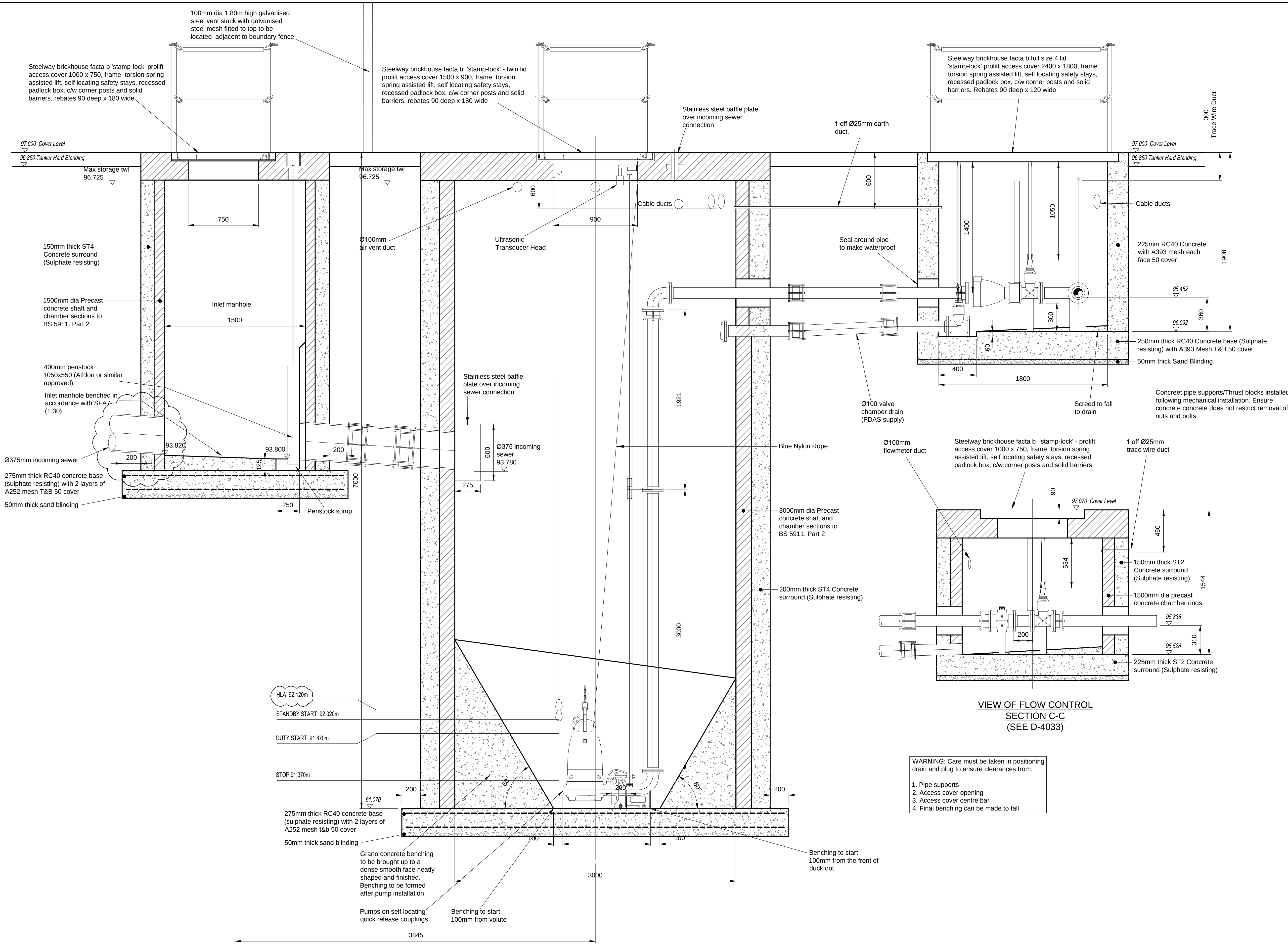
ARCHITECT:

PROJECT: WHITFIELD PHASE 1 HOUSING

TITLE: PUMP STATION GENERAL ARRANGEMENT STAGE 2

SCALE @ A1: 1:50	CHECKED: PC	APPROVED:
CAD FILE: 3822-D-4035	DESIGN-DRAWN: LMM	DATE:
PROJECT No: 70013822	DRAWING No: 3822-D-4035	REV: P3
© WSP Group Ltd		

\\SERO1CAM1\UK CORP.PBWAN.NET\PROJECTS\70013822 - WHITFIELD PHASE 1 HOUSING\E MODELS AND DRAWINGS\DEVELOPMENT\WIP\CONSTRUCTION\3822-D-4302-4303-CON - FOUL PUMPING STATION DETAILS.DWG 12/06/2017 11:23:48 Toner, Huw



- DO NOT SCALE
- NOTES
1. ALL DIMENSIONS ARE IN METER UNLESS OTHERWISE STATED.
 2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT SCHEME DRAWINGS AND SPECIFICATIONS.
 3. EXISTING ROAD LEVEL AND DRAINAGE INVERT LEVELS SHALL BE CHECKED PRIOR TO CONSTRUCTION COMMENCEMENT. ANY DISCREPANCY SHALL BE REFERRED TO THE ENGINEER.
 4. THE LOCATION AND DEPTH OF ALL EXISTING SERVICE APPARATUS SHOULD BE CONFIRMED WITH THE SERVICE AUTHORITIES PRIOR TO ANY EXCAVATION WORK TAKING PLACE.
 5. FOR DRAINAGE STANDARD DETAILS REFER TO DRAWING 3822-D-4300.
 6. PIPE MATERIAL UP TO 300mm DIA IS VITRIFIED CLAY AND GREATER THAN 300mm DIA IS CONCRETE.
 7. ALL WORKS ARE TO BE CARRIED OUT IN ACCORDANCE WITH SEWERS FOR ADOPTION 7th EDITION.
 8. COMPLIANCE WITH HEALTH & SAFETY MATTERS ON ANY TRENCH/MANHOLE IS OBLIGATORY AND A PERMIT TO ENTER A CONFINED SPACE IS REQUIRED WHEN CONNECTING SITE DRAINAGE TO THE EXISTING PUBLIC SEWERAGE SYSTEM. A PERMIT TO ENTER A CONFINED SPACE WILL BE OBTAINED FROM SOUTHERN WATER PRIOR TO THE WORKS COMMENCING ON ANY PUBLIC SEWERAGE SYSTEM.
 9. CLASS 5 BED & SURROUND TO BE USED WHERE COVER TO PIPE IS GREATER THAN 1.2m IN CARRIAGEWAY OR 0.9m IN PUBLIC OPEN SPACE, OTHERWISE CONCRETE PROTECTION WILL BE REQUIRED. REFER TO STANDARD DETAIL DRAWING 3822-D-4300.

C2	24/05/2017	LMM	HLA LEVEL UPDATED, INLET CHAMBER IL AMENDED	PPC	PPC
C1	13/10/2016	GRJ	CONSTRUCTION ISSUE	HP	PPC
P2	29/09/2016	GRJ	LEVELS ON INLET MANHOLE AND BAFFLE UPDATED	HP	-
P1	28/09/2016	GRJ	FIRST ISSUE	HP	-
REV	DATE	BY	DESCRIPTION	CHK	APD
DRAWING STATUS: ISSUED FOR CONSTRUCTION					



66-68 Hills Road, Cambridge CB2 1LA
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www.wspgroup.com www.pbworld.com

CLIENT: HALSBURY HOMES

ARCHITECT:

PROJECT: WHITFIELD PHASE 1 HOUSING

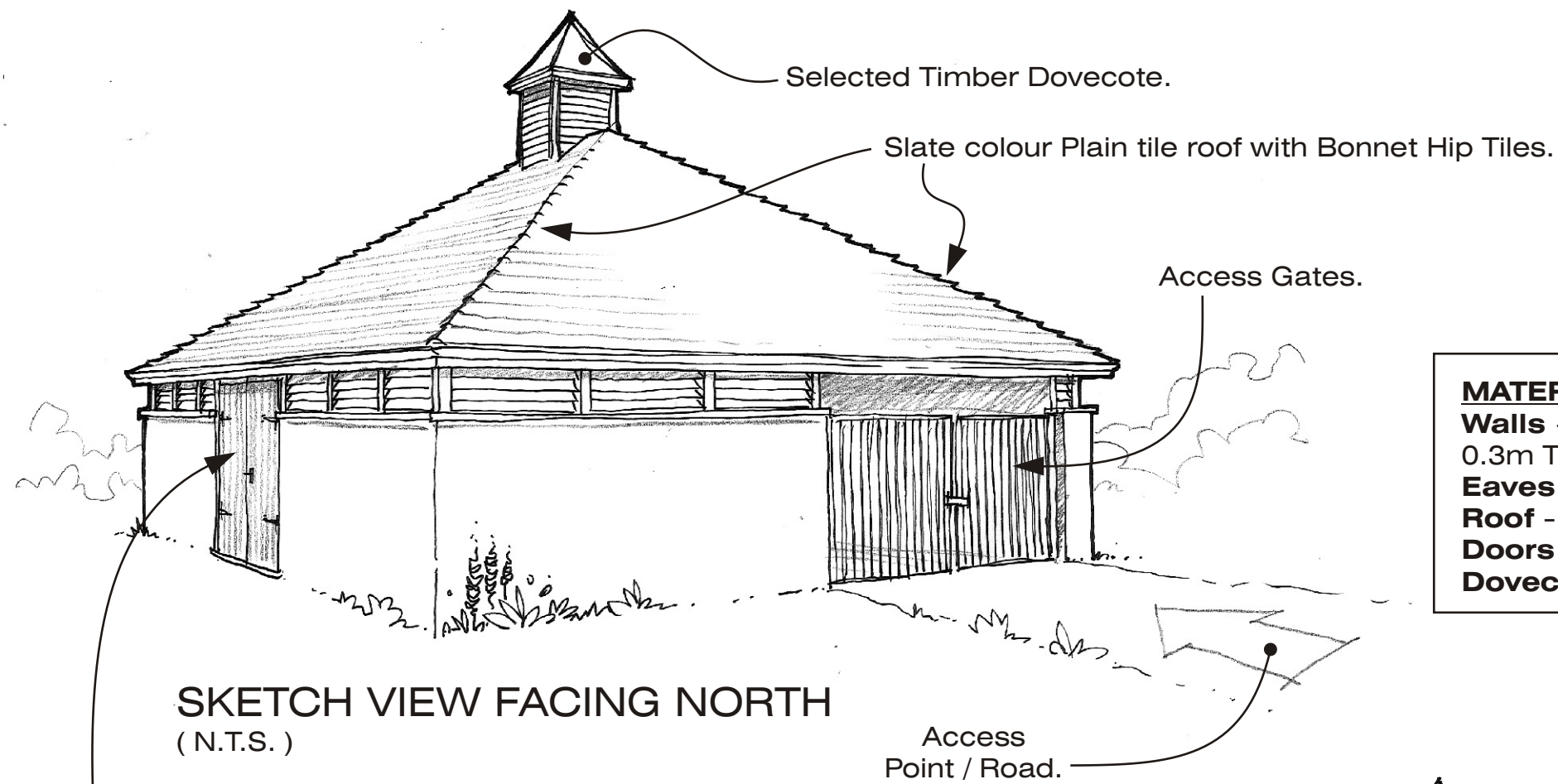
TITLE: FOUL PUMPING STATION SECTIONS

SCALE @ A1: 1:20	CHECKED: HP	APPROVED: -
CAD FILE: 3822-D-4032 to 4033	DESIGN-DRAWN: GRJ	DATE: September 16
PROJECT No: 70013822	DRAWING No: 3822-D-4302	REV: C2



NOTES

1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE STATED.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT SCHEDULE DRAWINGS AND SPECIFICATIONS.
3. ALL WORKERS ARE THE RESPONSIBILITY OF OTHERS INCLUDING PILING OF STEEL WORK SUCH AS ACCESS COVERS AND REINFORCING ETC. INSTALLATION OF CABLE BOLTS, BENCHING AND MINING GOOD AROUND PILES AFTER INSTALLATION.
4. REINFORCING BARS ARE TO BE A MINIMUM OF 12MM BELOW THE SURFACE. ANY STRUCTURAL DETAILING ON L1 WORKS SHOWN ON THIS DRAWING ARE ILLUSTRATIVE ONLY UNLESS OTHERWISE STATED AND SHOULD NOT BE USED FOR CONSTRUCTION.
5. BENCHING IS TO BE PERFORMED AFTER PILE INSTALLATION AND TO BE IN ACCORDANCE WITH THE APPLICABLE SERIES PDA ADAPTATION AND ADOPTING APPROPRIATE SPECIFICATION.
6. UNLESS OTHERWISE STATED, ALL LOTS ARE TO BE THE TOWN COUNCILS AND TO COMPLETE WITH DRAWING PILES. SERVICE LOTS TO BE TO BE COMPLETED AFTER REINFORCEMENT.
7. DRAWINGS ARE SHOWN DIMENSIONALLY ONLY. ALL LOTS TO BE Laid IN THE MOST DIRECT ROUTE TO SUIT THE SERVICE BENCH CARVED AROUND ANY NOBLE CHANGES OF DIRECTION.
8. LEVEL CONTROL POSITIONS ARE DIMENSIONAL ONLY. THEY WILL BE POSITIONED AWAY FROM OBSTRUCTIONS AND BE READILY ADJUSTABLE AFTER INSTALLATION.



Provide Black colour False Barn Door features to South, East & West elevations.

MATERIALS SCHEDULE

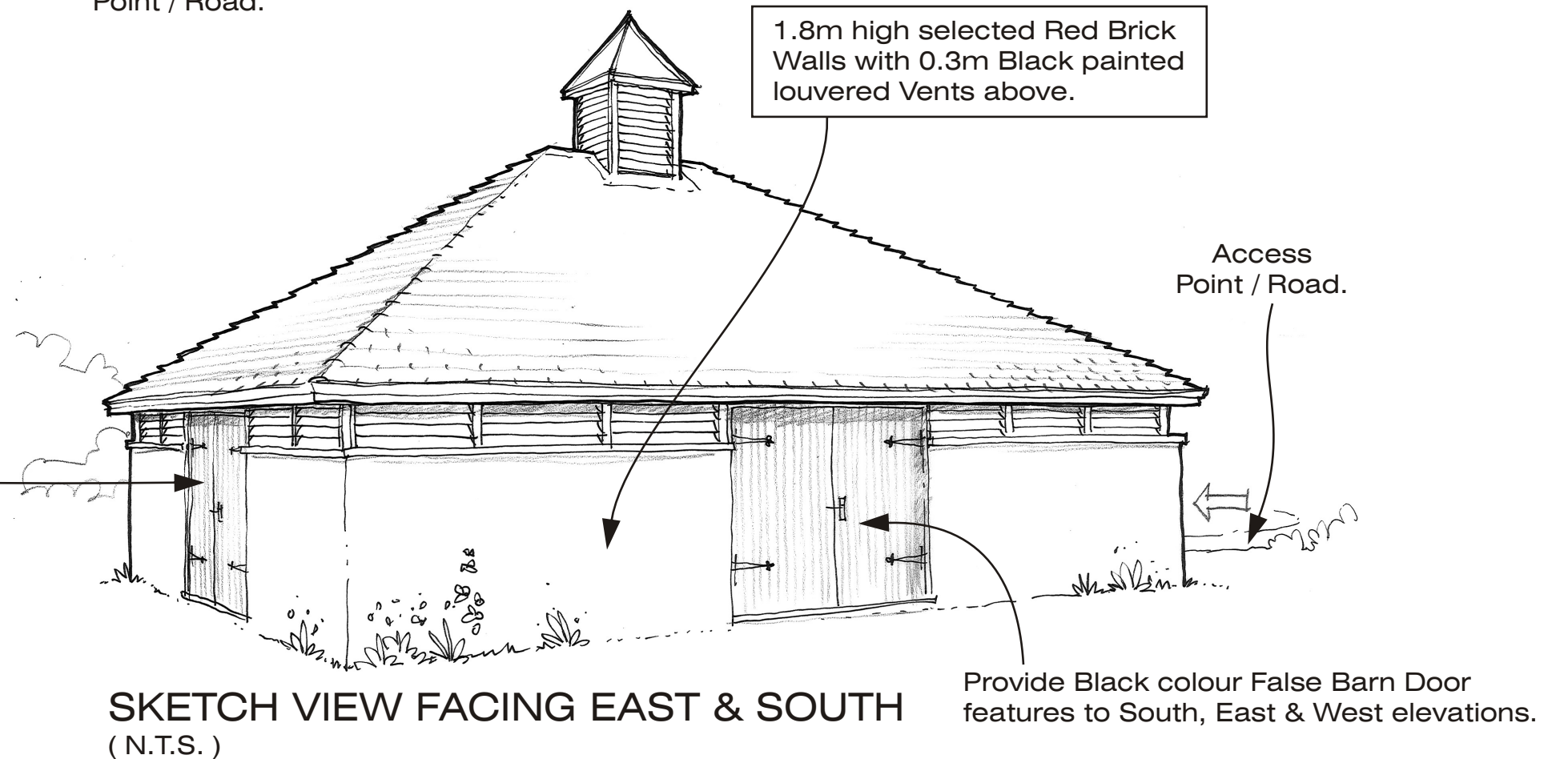
Walls - 1.8m high selected Red Brickwork with 0.3m Timber Vents with Black Painted finish over.

Eaves - Black Painted Timber.

Roof - Slate colour plain roof tiles with Bonnet Hips.

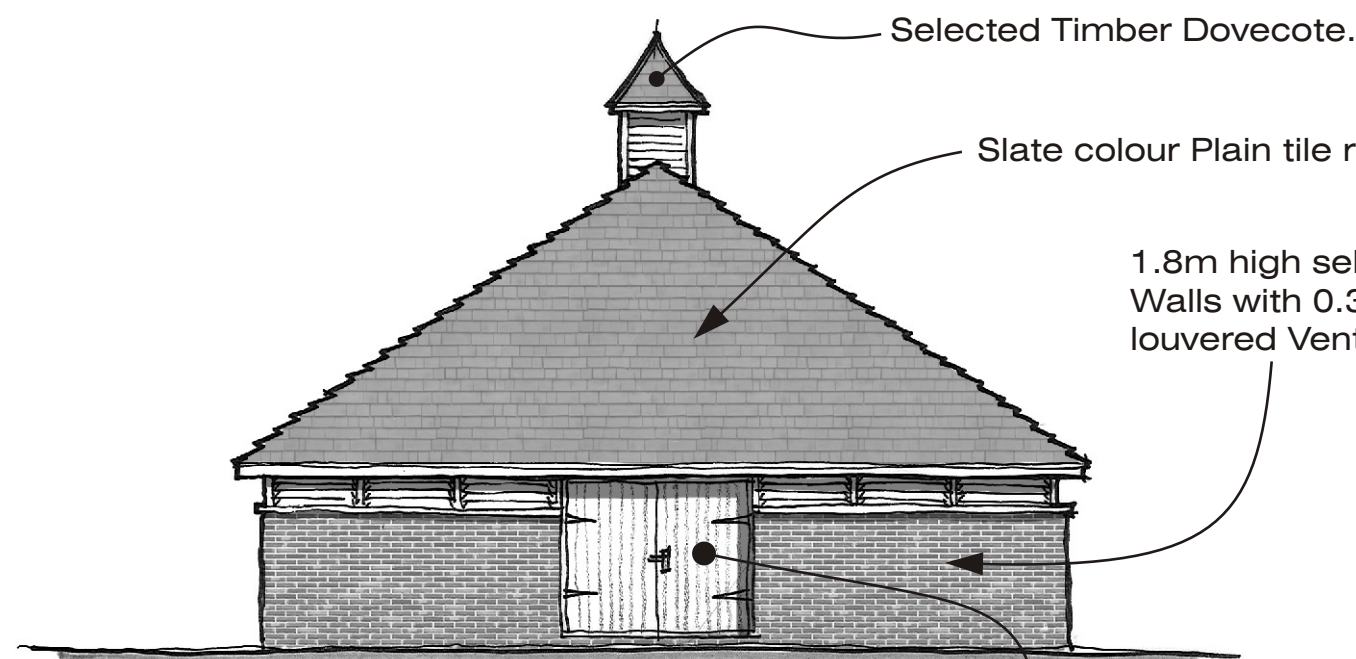
Doors - All (Real & False) in Timber with Black Painted Finish.

Dovecote -Timber with Black Painted Finish.

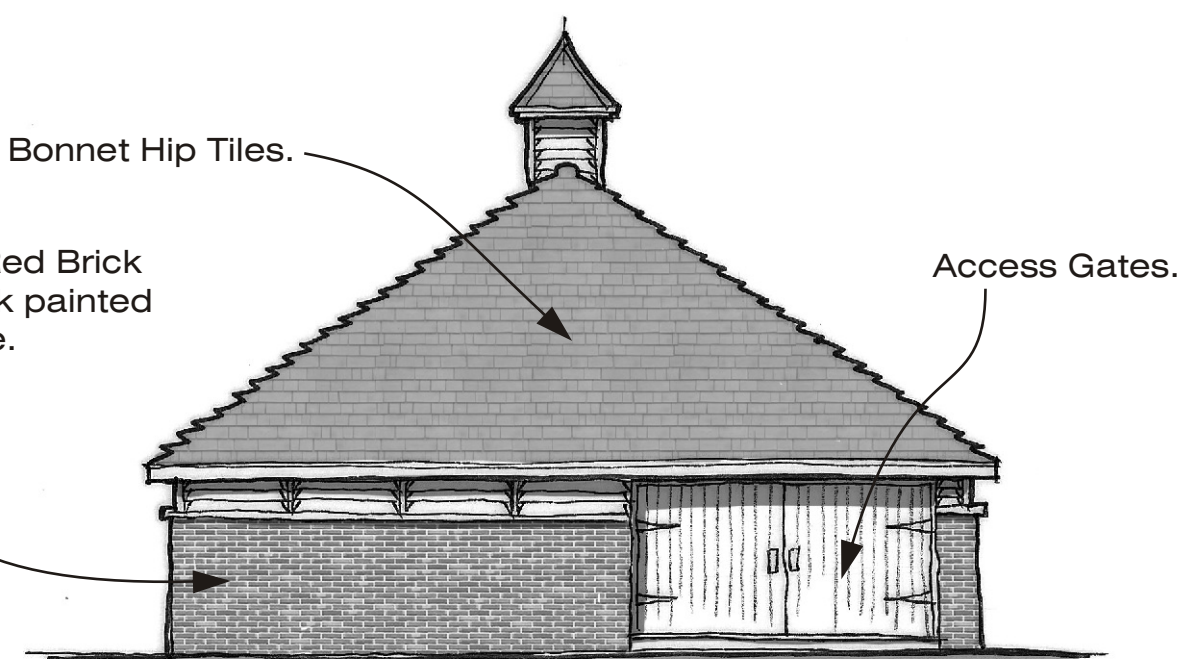


Provide Black colour False Barn Door features to South, East & West elevations.

"A" Drawing extended onto new sheet Ref: 6911PS 03 030417.

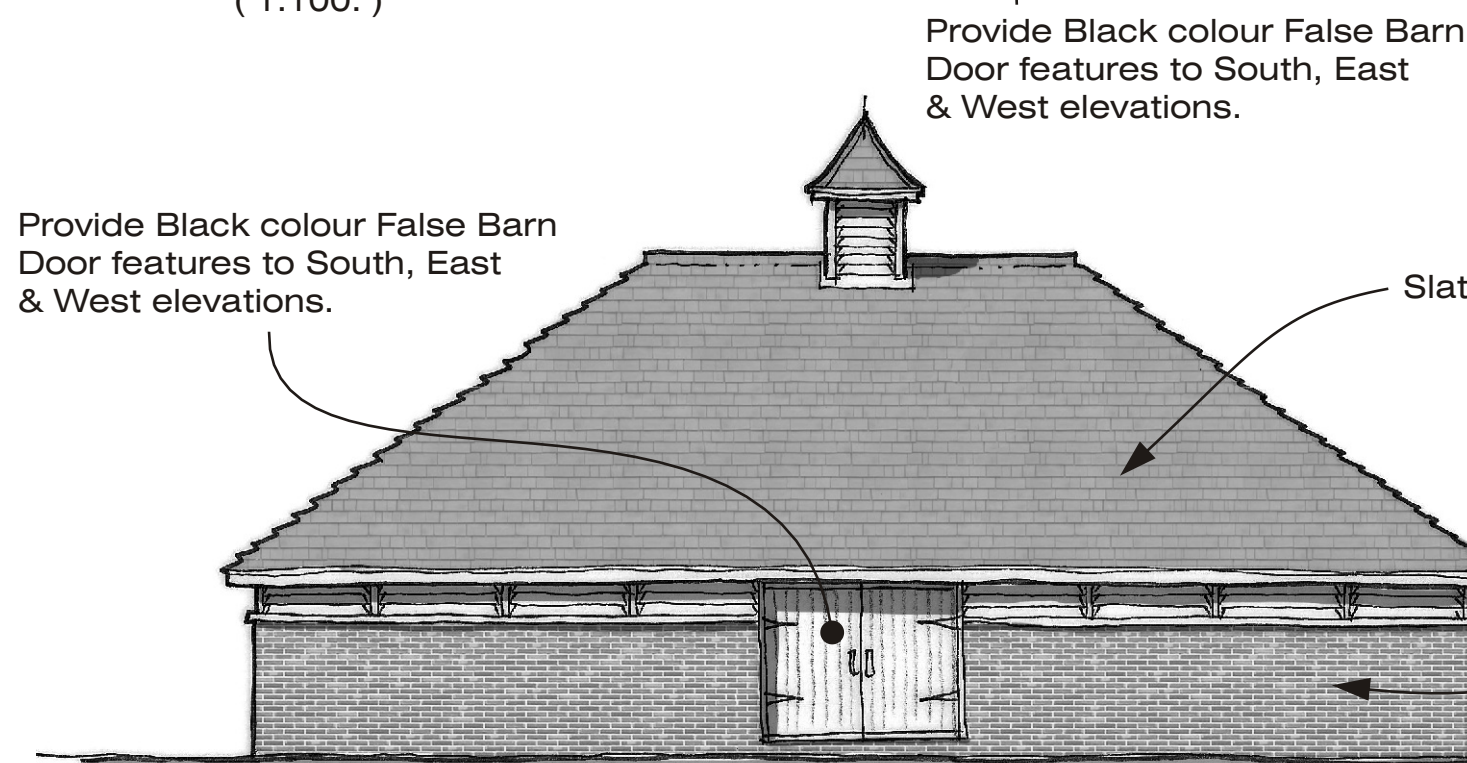


SOUTH FACING ELEVATION
(1:100.)



NORTH FACING ELEVATION
(1:100.)

10450mm



EAST & WEST FACING ELEVATIONS.
(1:100.)

15950mm

MATERIALS SCHEDULE

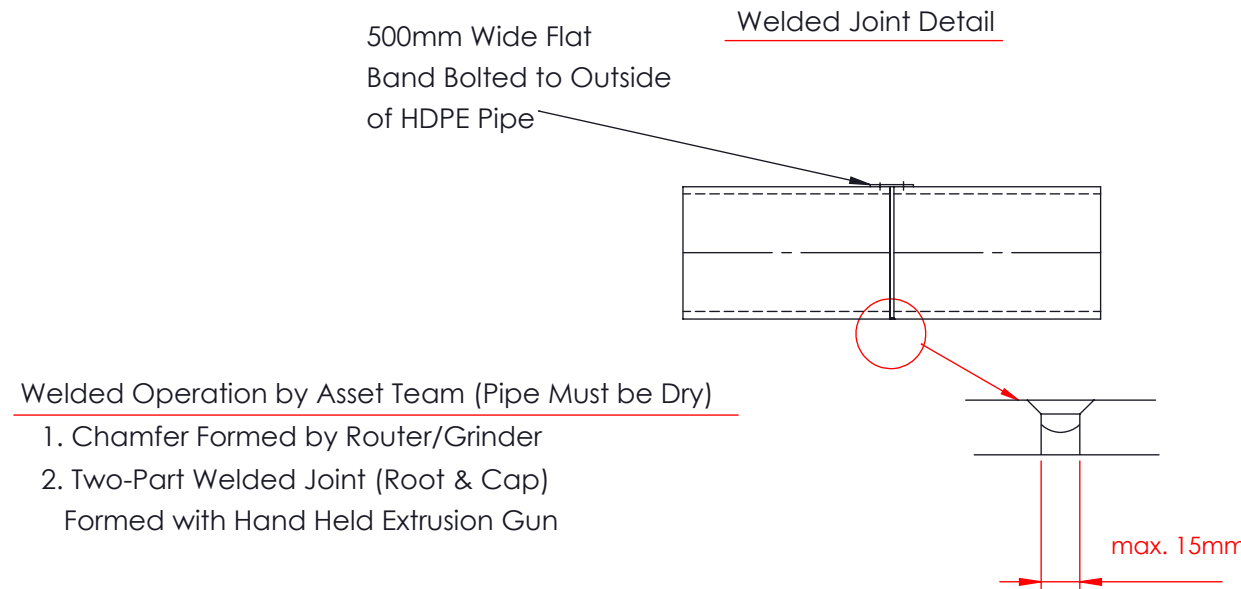
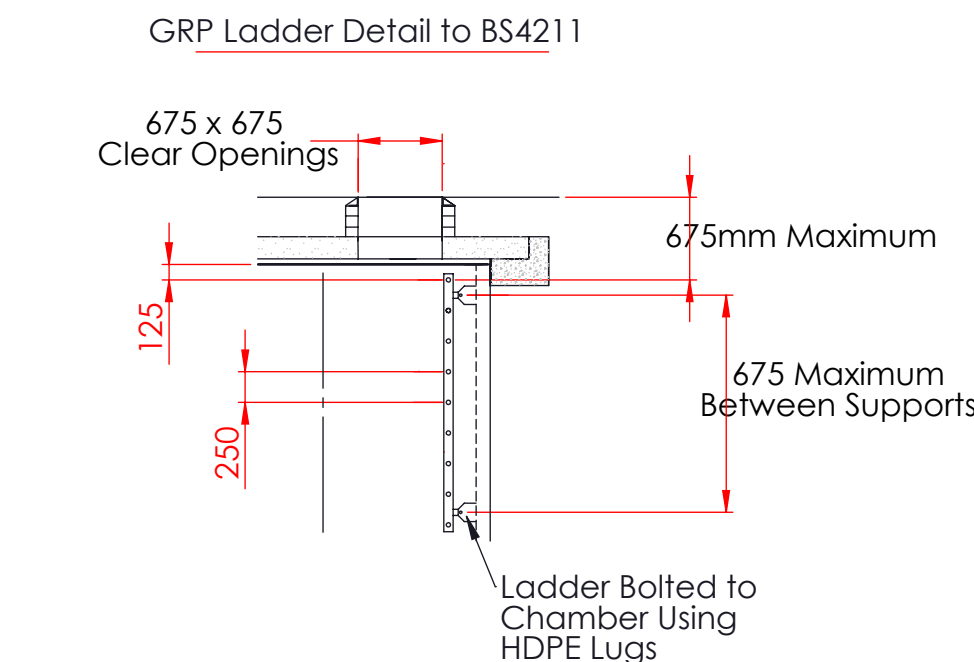
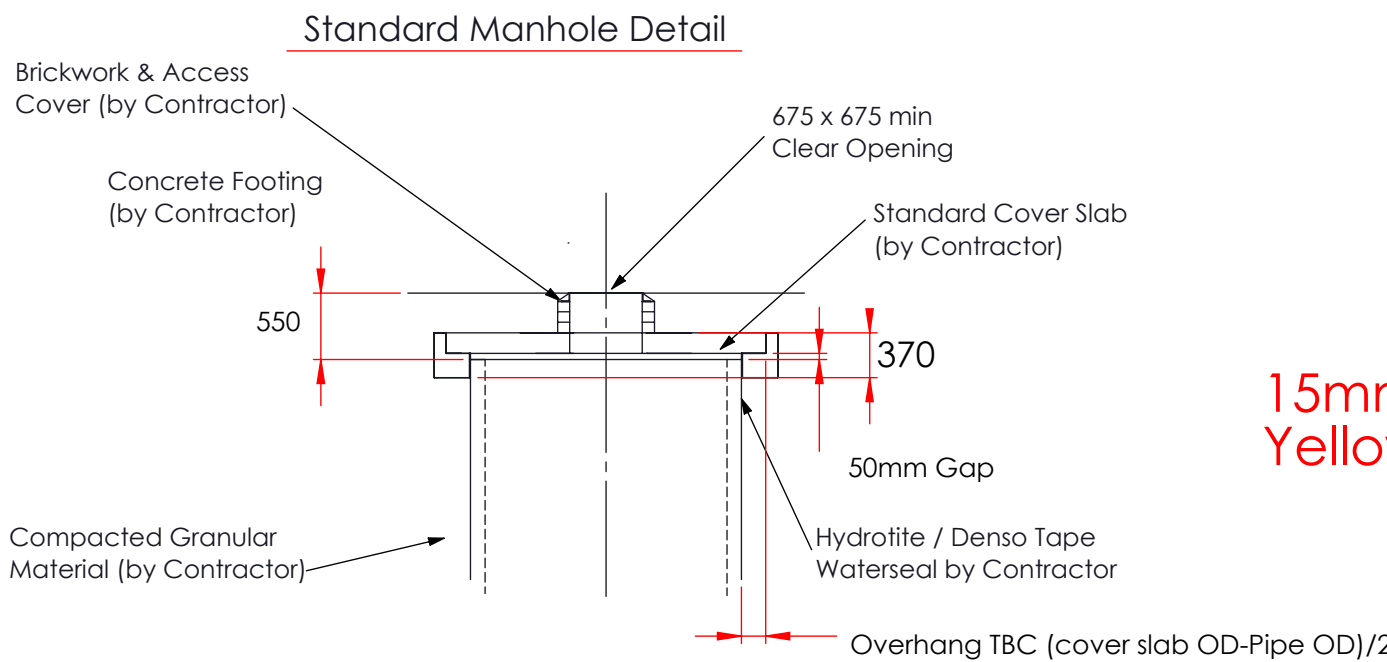
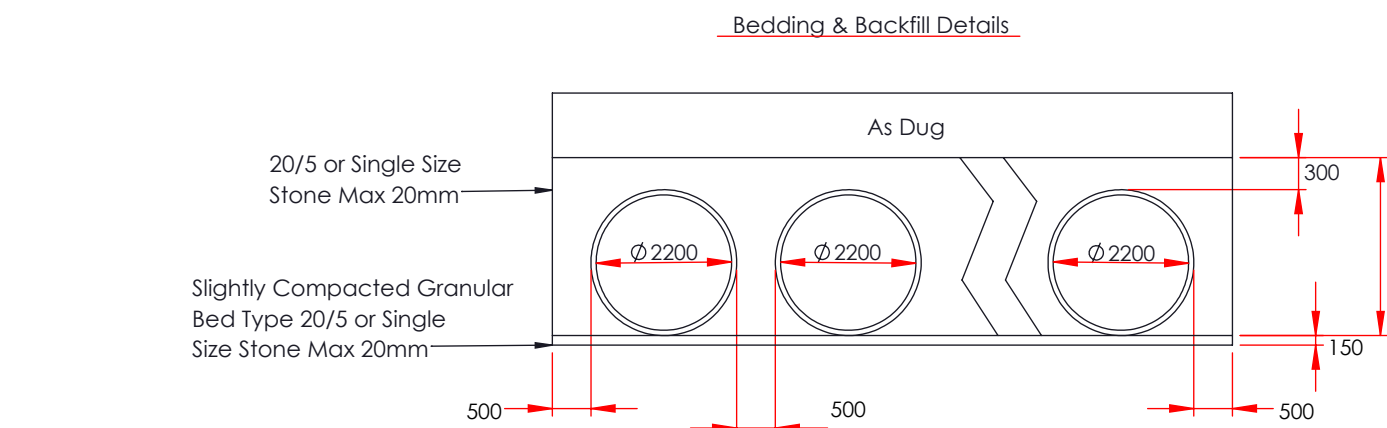
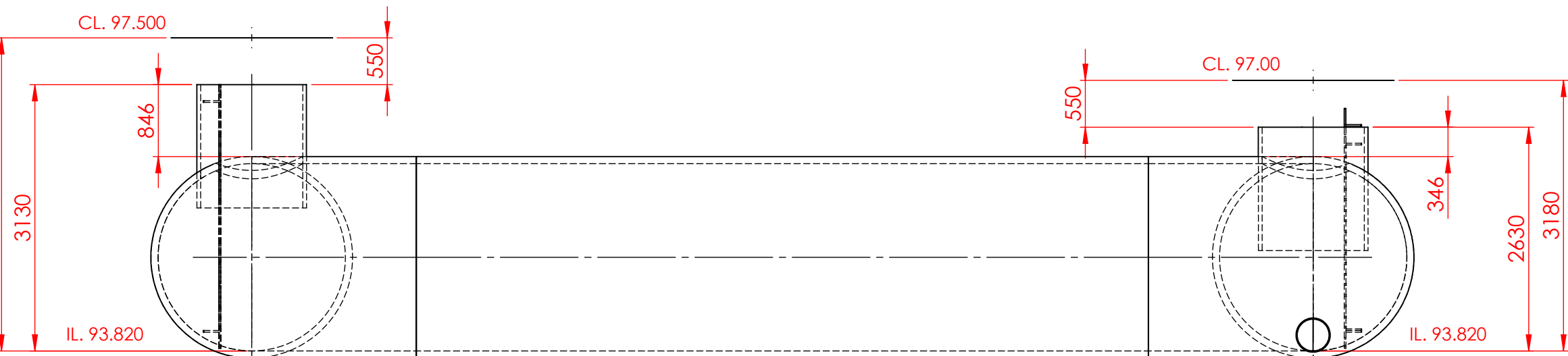
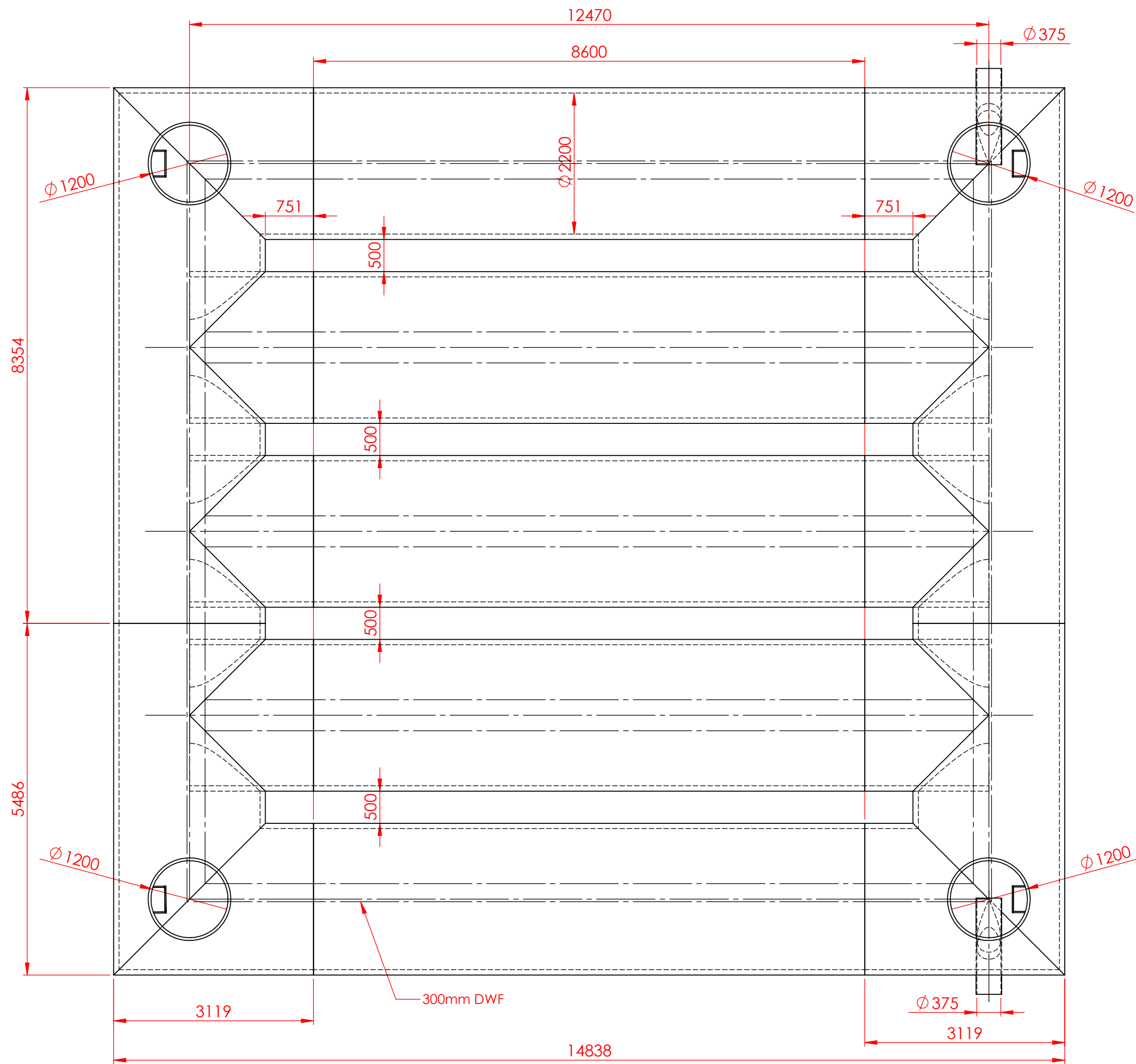
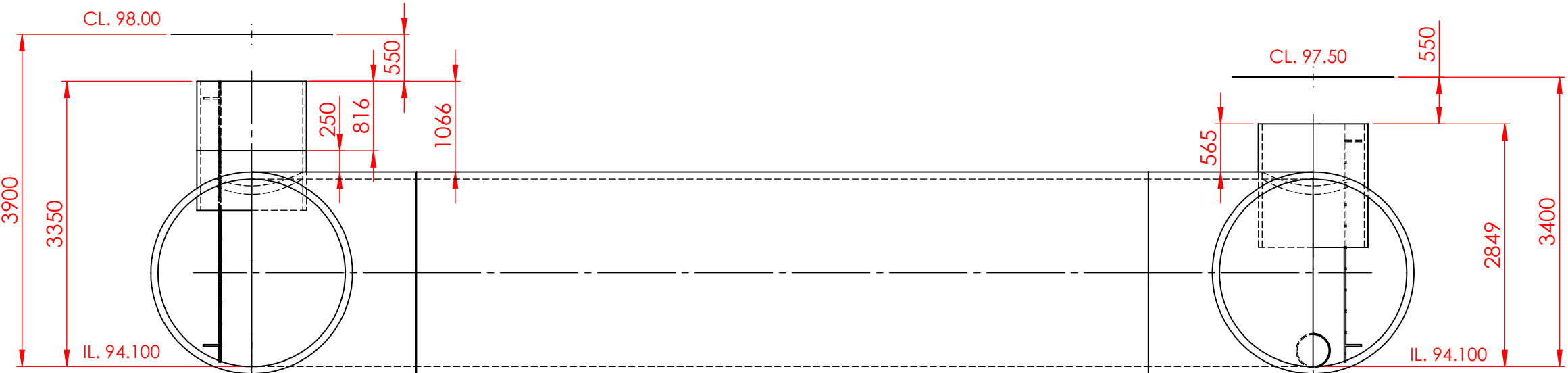
Walls - 1.8m high selected Red Brickwork with 0.3m Timber Vents with Black Painted finish over.

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Roof - Slate colour plain roof tiles with Bonnet Hips.

Doors - All (Real & False) in Timber with Black Painted Finish.

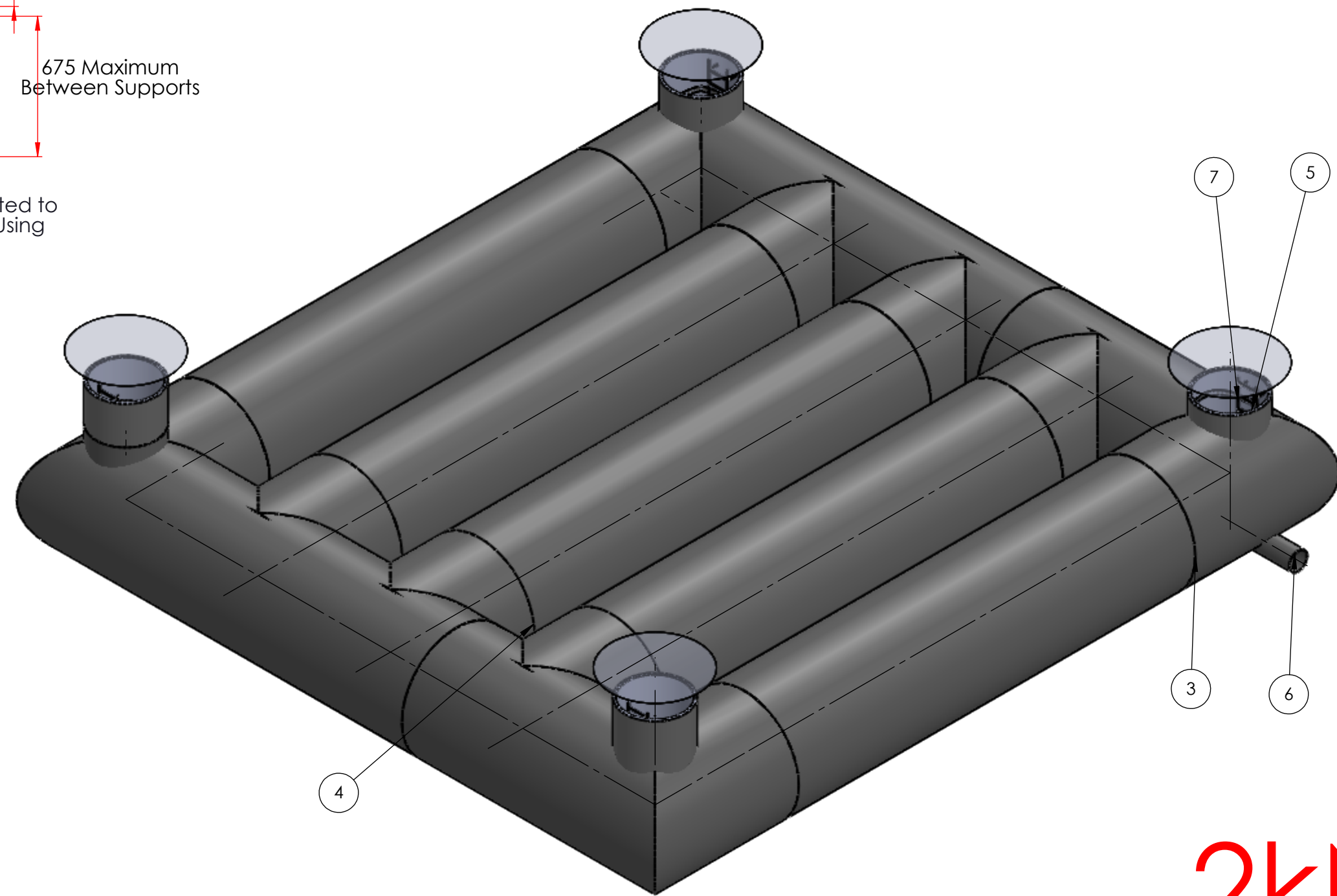
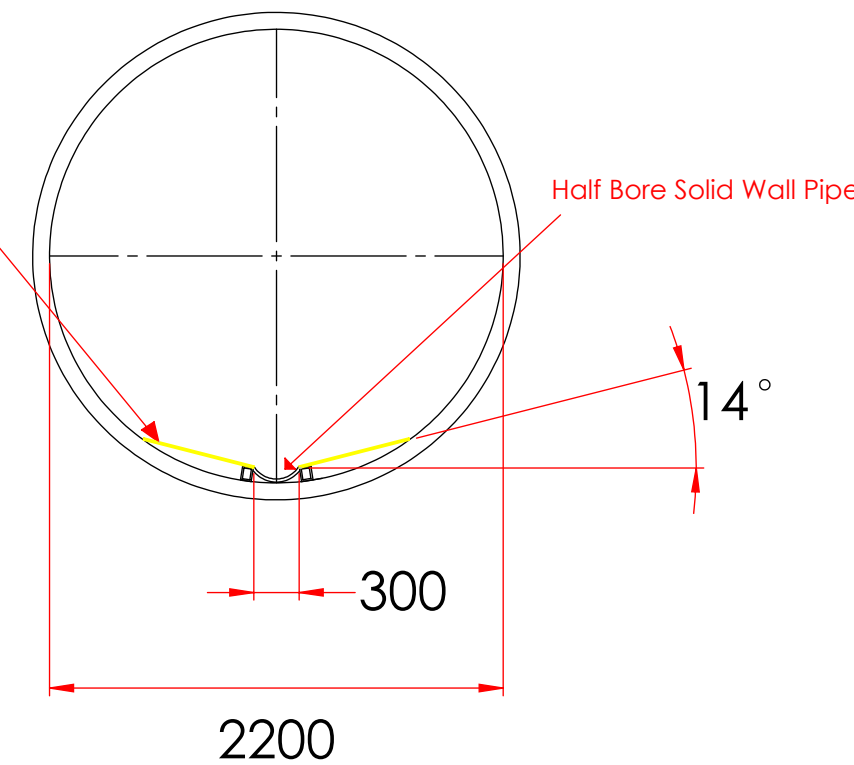
Dovecote -Timber with Black Painted Finish.



Welded Operation by Asset Team (Pipe Must be Dry)
1. Chamfer Formed by Router/Grinder
2. Two-Part Welded Joint (Root & Cap) Formed with Hand Held Extrusion Gun

DRY WEATHER FLOW CHANNEL

15mm Thick HDPE
Yellow Anti-Slip Flooring



2kN

NB-H109-Whitfield Phase 1

BILL OF MATERIALS

ITEM NO.	DIAMETER	DESCRIPTION	LENGTH	QTY.	End Prep	WEIGHT (Kg)
1	ID 2200 (OD 2368)	Open End Manifold	9105	2		1866.53
2	ID 2200 (OD 2368)	Open End Manifold	6237	2		1278.59
3	ID 2200 (OD 2368)	Straight Pipe	8600	5		1763
4	ID 2200 (OD 2368)	Straight Pipe	1935	6		396.68
5	ID 1200 (OD 1288)	Manhole	1450	3		116
6	ID 375 (OD 401)	Stub	1500	2		28.50
7		GRP Ladder	Rung 10	1		
8		GRP Ladder	Rung 12	1		
9		GRP Ladder	Rung 11	1		
10		GRP Ladder	Rung 13	1		
11		DWF	87000			
12	ID 1200 (OD 1288)	Manhole	816	1		79.23
13	ID 1200 (OD 1288)	Straight Pipe	700	1		40.60

JOINTING DETAILS

Ø DIA	TYPE	QTY	DELIVERY ADDRESS:
			SITE CONTACT:
			NUMBER:
			VEHICLE:
			DELIVERY DATE:
			PIPE SLUNG:
			AIR TESTING
			PIPE CLASS:
			WELDED JOINTS:
			TEEKAY COUPLINGS:
			SEALED BOX SECTIONS:
			PLATED JOINTS:

NOTES:

1. This drawing and associated detail are the property of Asset International Limited and may not be copied nor disclosed to a third party without written permission.
2. This drawing shall be read in conjunction with all related documentation and standard details.
3. Dimensions shall not be scaled from this drawing. All dimensions and levels to be checked and approved in writing by the contractor before manufacture.
4. All dimensions are subject to manufacturing tolerances.
5. All extrusion welding to DVS 2209.
6. Pipes become the responsibility of the contractor as offloading commences.

INSTALLATIONS GUIDELINES

Single Leg:-

1. Bedding and backfill as specified by Asset International.
2. Ensure no voids in surround under haunches.
3. Balance fill either side as fill commences.
4. Backfill in 250mm layers parallel to structure, with correct compaction if compaction is required.
5. Care should always be taken when removing trench boxes/sheeting. Reference should be made to Design Manual for Roads and Bridges, Volume 4, Section 2, Part 5 HA 40/01 for the recommended procedure.
6. Do not allow construction equipment over the structure, without adequate protection for minimum 800mm of cover over the crown of the pipe and backfill area.

Multi Leg:-

1. Bulk Excavation to formation.
2. Bedding to be specified by Asset International.
3. Asset recommends installation from interconnecting section first. Pipe placement can then commence.
4. Place line and level pipes tightening HDPE bands as you progress.
5. Commence the backfill operation starting at the interconnecting end progressing as evenly as possible along the structure.
6. Backfill as per recommending method in pipe laying section of manual.
7. Backfill of suitable material to final formation can then take place.
8. Do not allow construction equipment over the structure, without adequate protection or minimum 800mm of cover over the crown of the pipe and backfill area.

Note:

Further advice can be obtained from Asset's engineering department.

RESIDUAL RISKS

1. The trench should be excavated to the specified line and levels and the contractor should take all precautions required by statutory regulations, or dictated by actual circumstances, to ensure the safety of the public and the pipe layers. He should also avoid interrupting or damaging public or private utilities encountered during the course of the work.
2. Pipes should always be handled using nylon slings of the appropriate safe working load. Reference should always be made to the Health & Safety Guidelines Manual for information on deliveries and storage on site.
3. A permit to work procedure should always be in use for internal welding on site. Reference should always be made to the H&S Guidelines Manual for information.
4. Advise on site specific requirements should always be sought from Asset using the contact details below.

REVISIONS				
REV.	DESCRIPTION	DATE	INITIALS	
A	Pipe lengths changed	6/2/2017	LLH	
DRAWN BY	SR	CHKD	NB	SCALE
				1:60
				PIPE CLASS
				2kN
				DATE
				6/2/2017
TITLE:				
NB-H109-Whitfield Phase 1				
CUSTOMER NAME:				
DESCRIPTION:				
WEHOLITE				
ASSET INTERNATIONAL LTD				
WATER MANAGEMENT SOLUTIONS				
Stephenson Street, Newport, South Wales, NP19 4XH				
Web Site: www.weholite.co.uk Email: sales@weholite.co.uk				
Tel: 01633 271906 Fax: 01633 290519				
SHEET NUMBER: 1 OF 1				
DWG NO: NB-H109-Whitfield Phase 1				
REV: A				

Appendix D

SOUTHERN WATER LETTER DATED 15 JUNE 2017

Mr Phillip Jeans
Seymour House,
Beccles Road
Loddon, Norwich,
Norfolk
NR14 6JD

15/06/2017

Dear Mr Jeans

Halsbury Homes Development

You will recall at our meeting of 6th June 2017, we discussed the possibility of the initial phases of your development connecting to the existing sewerage system served by the Sandwich Road pumping station. To aid our consideration, you have previously shared the Richmond Park report (March 2017) produced by your consultant. You also explained in detail, at the meeting, your near term anticipated build out rates.

We have carefully considered the information provided and can confirm that we are able to accept the development of up to a total of 475 dwellings connecting into the soon to be built pumping station on your development site.

Agreeing to accept these flows is conditional on the following requirement being met to ensure the solution remains beneficial on an interim basis. The details of these conditions are as follows;

1. The solution is seen as an interim solution that ceases to be applicable on completion of the first phase of the permanent solution, a balance tank constructed in the vicinity of Sandwich Road by ourselves.
2. The interim solution will not have more than 475 properties associated with it.
3. The solution is dependent upon the construction of the pumping station as identified in the Richmond Park report.
4. The solution is dependent upon the installation of the storage proposal as identified in the same report. This is required for properties beyond the 94 currently under construction.
5. The flows from the pumping station will be subject to an automatic inhibit when there is insufficient capacity within the existing public sewerage system upstream of Sandwich Road pumping station. There will be no opportunity to override the inhibit.
6. When the inhibit is active, the management of flows in the sewers serving the development, including the on-site storage tank and pumping station, will be the responsibility of Halsbury Homes.
7. You will need to satisfy ourselves that you have duly considered the risk of septicity and odour associated with the operation of the inhibit and have a detailed plan to address this issue.

8. The pumping station is to serve foul domestic flows only, no surface water or highway drainage is to pass through the pumping station.
9. The temporary solution is to service only those properties associated with Halsbury Homes.
10. The costs associated with the construction of the pumping station, storage facility, rising main and connection to the existing public sewer, will be borne by Halsbury Homes.

As with all development sites the standard Southern Water property connection charges will apply. We would also welcome discussions with yourselves over a fair and proportionate contribution to the interim solution.

I trust the above consideration of an interim solution and the associated conditions will allow development to continue (subject to relevant planning approval). I would welcome confirmation of the acceptability of the above.

Yours

A handwritten signature in black ink, appearing to read "Paul Kent".

Paul Kent
Environment & Wastewater Strategy Manager

Cc: Mike Ebbs
Head of Regeneration and development, Dover District Council