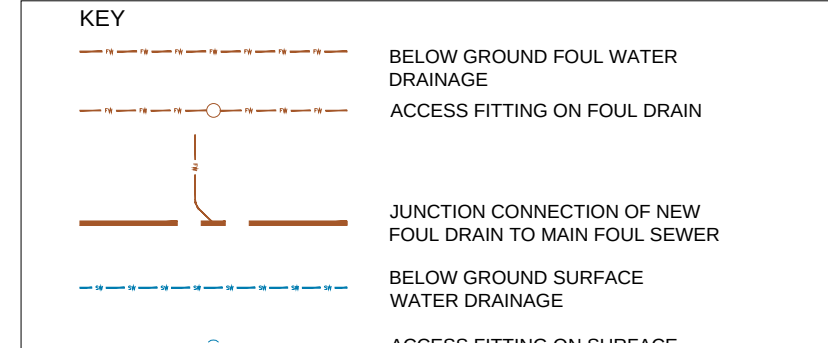




Drainage Calculations									
Calculations are based on Ordnance Datum Levels from Grid-OS active GPS network, Datum-OS, survey by Plan-Ti Geomatics, June 2009, for site at E Broedrade Industrial Estate, and local site levels taken August 2017.									
FITTING No	COVER LEVEL	INVERT LEVEL	DISTANCE TO NEXT FITTING	GRADIENT	FALL OVER DISTANCE	PIPE Ømm	FITTING	DEPTH	FLOW l/s
1 : X									
FOUL DRAINAGE - Run 1									
F1	4.150	3.900	16.525	40.000	0.413	100	REST BEND	0.250	
F2	4.000	3.650	10.575	80.000	0.132	100	100 Ø BIC	0.350	
F3	3.977	3.727	24.635	40.000	0.138	100	450 Ø BIC	0.635	
F4	3.964	3.075	21.415	80.000	0.268	100	450 Ø BIC	0.889	
F5	4.041	2.807	10.750	80.000	0.134	100	450 Ø BIC	1.234	
NEW JUNCTION									
	GL 4.162	2.673	21.492	40.000	0.537	100	45° JUNCTION	1.515	
FOUL DRAINAGE - Run 2									
F6	4.150	3.670	1.300	40.000	0.028	100	REST BEND	0.480	
F7	4.000	3.643	12.025	40.000	0.301	100	450 Ø BIC	0.357	
F3	3.977	3.342							
F3	3.977	3.342				100	450 Ø BIC	0.635	
FOUL DRAINAGE - Run 3									
F8	4.380	3.621	1.030	40.000	0.026		SVP+RE	0.759	
F9	4.225	3.595	4.660	40.000	0.117		225 Ø A/C	0.630	
F10	4.220	3.479	24.930	40.000	0.123		450 Ø BIC	0.761	
F11	4.230	3.156	24.405	70.000	0.349		450 Ø BIC	1.074	
F5	4.041	2.807					450 Ø BIC	1.234	
F5	4.041	2.807							
FITTING No	COVER LEVEL	INVERT LEVEL	DISTANCE TO NEXT FITTING	GRADIENT	FALL OVER DISTANCE	PIPE Ømm	FITTING	DEPTH	FLOW l/s
SURFACE WATER DRAINAGE - Run 1									
S1	3.540	3.090	11.056	80.000	0.138	150	RE	0.450	2.20
S2	3.550	2.952	23.000	80.000	0.188	150	450 Ø BIC	0.986	4.40
S3	3.800	2.664	21.055	200.000	0.205	150	450 Ø BIC	1.136	10.30
SO 1a	4.165	2.559					SOAKAWAY	1.606	
S8	3.800	3.300	0.700	DROPPER	0.636	150	GULY POT	0.500	3.70
S8	3.800	2.664						1.136	10.30
S4	3.812	3.587	11.360	80.000	0.142		GATIC START	0.225	
S5	3.835	3.445	4.648				GATIC END	0.390	
SO OUT	3.835	3.241	4.648	80.000	0.058	150	GATIC BOX	0.952	4.06
J2	3.905	3.185					Y JUNCTION	0.720	
S6	3.835	3.335	4.180	29.040	0.144	150	GULY POT	0.500	2.35
S1	3.905	3.191						0.714	
S7	3.700	3.250	4.715	80.000	0.059	150	RE	0.450	2.20
S1	3.905	3.191						0.714	
SO 1a	3.905	3.185	16.921	200.000	0.085		Y JUNCTION	0.720	
J2	4.165	3.100					SOAKAWAY	1.065	
S9	4.380	4.155	3.850	40.000	0.096		GATIC START	0.225	MINIMAL
S10 IN	4.380	4.059					GATIC END	0.321	
SO OUT	4.380	3.719	8.380	40.000	0.210	150	GATIC BOX	0.661	MINIMAL
SO 1b	4.265	3.510					SOAKAWAY	0.756	
FITTING No	COVER LEVEL	INVERT LEVEL	DISTANCE TO NEXT FITTING	GRADIENT	FALL OVER DISTANCE		FITTING	DEPTH	
S11	4.380	4.155	2.213	40.000	0.055	150	GATIC START	0.225	MINIMAL
S10 IN	4.380	4.100					GATIC END	0.280	
SO OUT	4.380	3.719	8.380	40.000	0.210		GATIC BOX	0.661	MINIMAL
SO 1b	4.265	3.510					SOAKAWAY	0.756	
S12	4.225	3.775	15.000	80.000	0.188	150	RE	0.450	2.50
S13	4.230	3.588	7.330	80.000	0.090	150	450 Ø BIC	0.643	5.00
S14	4.230	3.488	11.170	80.000	0.140	150	450 Ø BIC	0.732	7.35
S15	4.010	3.358	2.250	150.000	0.051	150	450 Ø BIC	0.672	9.15
J9	4.010	3.343	10.215	150.000	0.066	150	Y JUNCTION	0.687	11.76
J4	4.010	3.275	4.070	150.000	0.027	150	Y JUNCTION	0.735	14.06
J5	4.130	3.248	6.970	150.000	0.046	150	Y JUNCTION	0.882	16.66
SO1b	4.265	3.201					SOAKAWAY	1.064	
S16	4.210	3.710	5.990	28.255	0.212	150	GULY POT	0.500	2.35
S14	4.230	3.488					450 Ø BIC	0.732	
S17	4.012	3.512	7.201	46.760	0.154	150	GULY POT	0.500	1.81
S15	4.020	3.358					450 Ø BIC	0.672	
S18	3.920	3.420	3.430	23.655	0.145	150	GULY POT	0.500	2.30
J4	4.010	3.275					Y JUNCTION	0.735	
S19	4.230	3.392	5.740	40.000	0.144	150	RWP + RE	0.819	2.60
J5	4.130	3.248						0.882	
EX F MH GLADIATOR	4.480	4.000						0.480	
	4.315							0.315	
SURFACE WATER DRAINAGE - Yard Drainage									
To calculate the volume of water from the area to be drained multiply the surface area by a design rainfall intensity of 0.014 litres/second/m²									
YARD	AREA m²	INTENSITY	VOLUME IN LITRES / SECOND	STORE = AREA X 12mm		FITTING			
YARD 1	167.750	0.014	2.349	2.013		GULY POT			
YARD 2	129.500	0.014	1.813	1.554		GULY POT			
YARD 3	164.000	0.014	2.296	1.968		GULY POT			
YARD 4	264.000	0.014	3.696	3.168		GULY POT			
YARD 5	290.000	0.014	4.060	3.400		GATIC			
YARD 6	108.000	0.014	2.352	2.016		GULY POT			
TOTALS	1181.250			14.199					
UNITS 6a & 6b ROOF DRAINAGE WAS CALCULATED USING THE ALUMASC GUTTER AND DOWNPIPE CALCULATOR.									
THE ROOF WAS DIVIDED INTO 4 SECTIONS EACH WITH AN OUTLET AT ONE END FOR CALCULATION PURPOSES									
ROOF	AREA m²	INTENSITY	VOLUME IN LITRES / SECOND	STORE = AREA X 12mm	RWP Ø	FITTING			
RWP 1 E	141.340	0.018	2.500	1.720	150				
RWP 2 E	141.340	0.018	2.500	1.720	150				
RWP 3 W	147.950	0.018	2.600	1.771	150				
RWP 4 W	147.950	0.018	2.600	1.771	150				
TOTALS	581.880			6.982					
UNITS 7a & 7b ROOF DRAINAGE WAS CALCULATED USING THE ALUMASC GUTTER AND DOWNPIPE CALCULATOR.									
THE ROOF WAS DIVIDED INTO 4 SECTIONS EACH WITH AN OUTLET AT ONE END FOR CALCULATION PURPOSES									
ROOF	AREA m²	INTENSITY	VOLUME IN LITRES / SECOND	STORE = AREA X 12mm	RWP Ø	mm FITTING			
RWP 1 E	121.610	0.018	2.200	1.459	150				
RWP 2 E	121.610	0.018	2.200	1.459	150				
RWP 3 W	121.610	0.018	2.200	1.459	150				
RWP 4 W	121.610	0.018	2.200	1.459	150				
TOTALS	486.440			5.837					
BRETT MARTIN STORM CRATES TO FORM SOAKAWAY WITH STORAGE CAPACITY. EACH CRATE HAS A CAPACITY OF 0.3m³. CRATE DIMENSIONS ARE 1200mm x 600mm x 420mm									
TOTAL STORAGE CAPACITY REQUIRED FOR THE SITE IS								27.019	
NO OF CRATES REQUIRED = CAPACITY DIVIDED BY CRATE CAPACITY 27.019 / 0.3								90.062	
FITTING No	COVER LEVEL	INVERT LEVEL	DISTANCE TO NEXT FITTING	GRADIENT	FALL OVER DISTANCE		FITTING	DEPTH	
EX SOAKAWAY	3.935	1.635						2.300	
FITTING No	COVER LEVEL	INVERT LEVEL	DISTANCE TO NEXT FITTING	GRADIENT	FALL OVER DISTANCE	PIPE Ømm	FITTING	DEPTH	
1 : X									
S3 / SO 1a	4.165	2.559						1.606	
J2 / SO 1a	4.165	3.100						0.765	
S10 / SO 1b	4.265	3.510						1.065	
J5 / SO 1b	4.265	3.201						1.064	
LOWEST INVERT									
INCOMING PIPES									
SOAKAWAY	4.165	1.719	BRETT MARTIN STORM CRATE					2.446	
CRATES IN 2 LAY	4.265	1.719	1.2 x 0.6 x 0.42 PER LAYER					2.546	
45 No CRATES PER LAYER			0.840 BELOW PIPE INVERT						
FITTING No	COVER LEVEL	INVERT LEVEL	DISTANCE TO NEXT FITTING	GRADIENT	FALL OVER DISTANCE	PIPE Ømm	FITTING	DEPTH	
MH 3102	4.020	2.710	41.000	341.667	0.120	225		1.310	
MH 4101	4.290	2.590	28.300	202.143	0.140	225		1.700	
MH 4102	4.480	2.450						2.030	
NEW JUNCTION	GL 4.162	2.647	21.492	342.000			225 45° JUNCTION	1.515	
F6	4.041	2.912	10.500	40.000	0.263			1.130	
NEW MH	4.158	2.649						1.509	

Hargreaves
Rustington House, Worthing Road, Rustington, West Sussex, BN16 3PS
Tel No: (01903) 777775 E-mail: enquiries@hprop.co.uk
Website www.hargreaves.co.uk