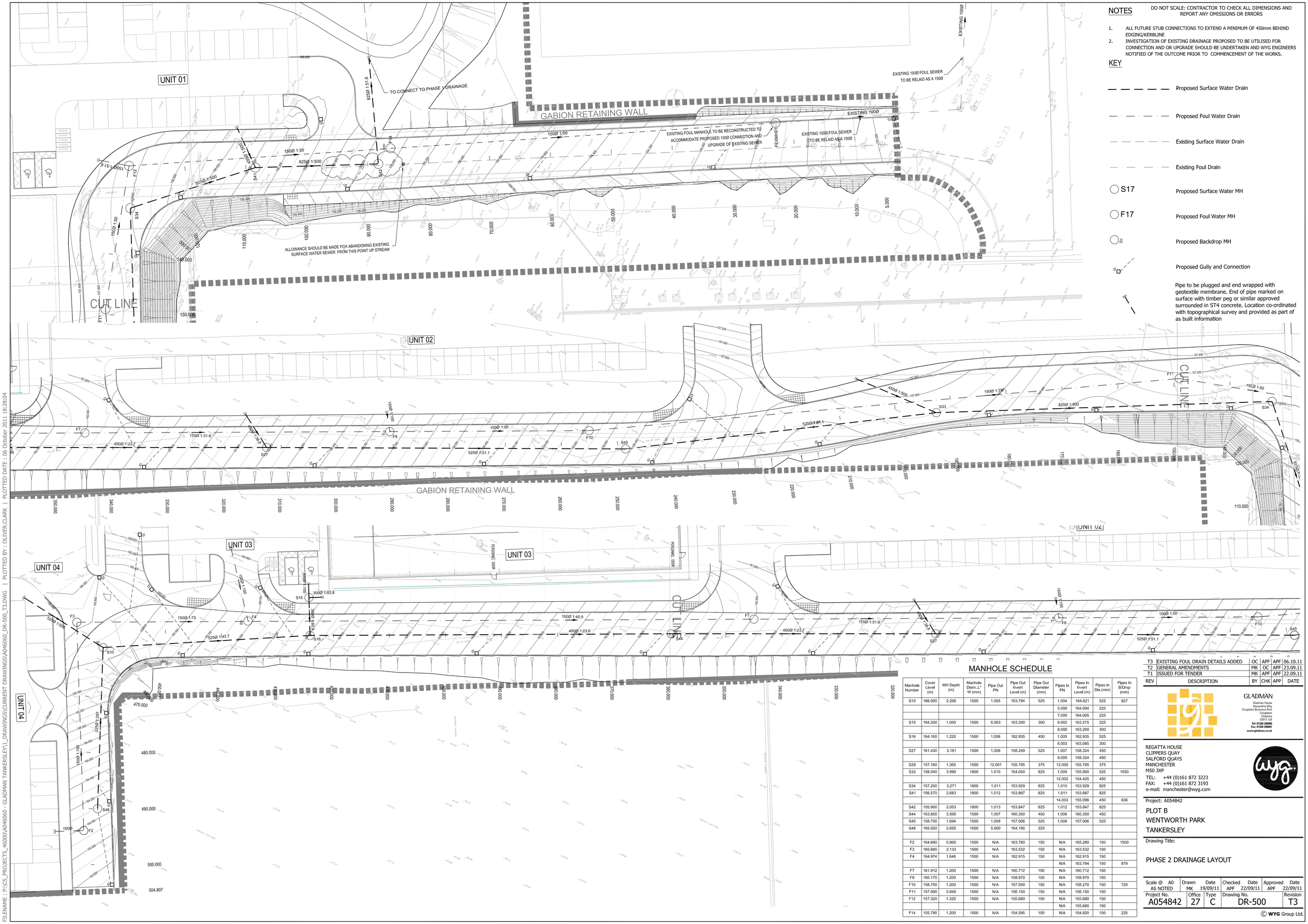
Appendix C Existing Site Drainage Drawings



NOTES

DO NOT SCALE: CONTRACTOR TO CHECK ALL DIMENSIONS AND REPORT ANY OMISSIONS OR ERRORS

1. ALL FUTURE STUB CONNECTIONS TO EXTEND A MINIMUM OF 450mm BEHIND EDGING/KERBLINE
2. INVESTIGATION OF EXISTING DRAINAGE PROPOSED TO BE UTILISED FOR CONNECTION AND OR UPGRADE SHOULD BE UNDERTAKEN AND WYG ENGINEERS NOTIFIED OF THE OUTCOME PRIOR TO COMMENCEMENT OF THE WORKS.

KEY

- Proposed Surface Water Drain
- Proposed Foul Water Drain
- Existing Surface Water Drain
- Existing Foul Drain
- S17 — Proposed Surface Water MH
- F17 — Proposed Foul Water MH
- BD — Proposed Backdrop MH
- Proposed Gully and Connection

Pipe to be plugged and end wrapped with geotextile membrane. End of pipe marked on surface with timber peg or similar approved surrounded in ST4 concrete. Location co-ordinated with topographical survey and provided as part of as built information

MANHOLE SCHEDULE

Manhole Number	Cover Level (m)	MH Depth (m)	Manhole Diam.,L*W (mm)	Pipe Out PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN	Pipes In Invert Level (m)	Pipes In Dia (mm)	Pipes In B/Drop (mm)
S10	166.000	2.206	1500	1.005	163.794	525	1.004	164.621	525	827
							5.000	164.094	225	
							7.000	164.005	225	
S15	164.200	1.000	1500	6.003	163.200	300	6.002	163.275	225	
							8.000	163.200	300	
S16	164.160	1.225	1500	1.006	162.935	450	1.005	162.935	525	
							6.003	163.085	300	
S27	161.430	3.181	1500	1.008	158.249	525	1.007	158.324	450	
							9.005	158.324	450	
S29	157.160	1.365	1500	12.001	155.795	375	12.000	155.795	375	
S33	158.040	3.990	1800	1.010	154.050	825	1.009	155.900	525	1550
							12.002	154.425	450	
S34	157.200	3.271	1800	1.011	153.929	825	1.010	153.929	825	
S41	156.570	2.683	1800	1.012	153.887	825	1.011	153.887	825	
							14.003	155.098	450	836
S42	155.900	2.053	1800	1.013	153.847	825	1.012	153.847	825	
S44	163.850	3.500	1500	1.007	160.350	450	1.006	160.350	450	
S45	158.700	1.694	1500	1.009	157.006	525	1.008	157.006	525	
S48	165.020	0.825	1050	5.000	164.195	225				
F2	164.680	0.900	1500	N/A	163.780	150	N/A	165.280	150	1500
F3	165.665	2.133	1500	N/A	163.532	150	N/A	163.532	150	
F4	164.974	1.646	1500	N/A	162.915	150	N/A	162.915	150	
							N/A	163.794	150	879
F7	161.912	1.200	1500	N/A	160.712	150	N/A	160.712	150	
F8	160.170	1.200	1500	N/A	158.970	150	N/A	158.970	150	
F10	158.750	1.200	1500	N/A	157.550	150	N/A	158.270	150	720
F11	157.090	0.940	1500	N/A	156.150	150	N/A	156.150	150	
F12	157.320	1.325	1500	N/A	155.680	150	N/A	155.680	150	
							N/A	155.680	150	
F14	155.795	1.200	1500	N/A	154.595	150	N/A	154.820	150	225

REV	DESCRIPTION	BY	CHK	APP	DATE
T3	EXISTING FOUL DRAIN DETAILS ADDED	OC	APF	APF	06.10.11
T2	GENERAL AMENDMENTS	MK	OC	APF	23.09.11
T1	ISSUED FOR TENDER	MK	APF	APF	22.09.11

GLADMAN
Gladman House
Alexandria Way
Congleton Business Park
Congleton
Cheshire
CW12 1LB
Tel: 01260 288800
Fax: 01260 288801
www.gladman.co.uk

REGATTA HOUSE
CLIPPERS QUAY
SALFORD QUAYS
MANCHESTER
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FAX: +44 (0)161 872 3193
e-mail: manchester@wyg.com

Project: A054842

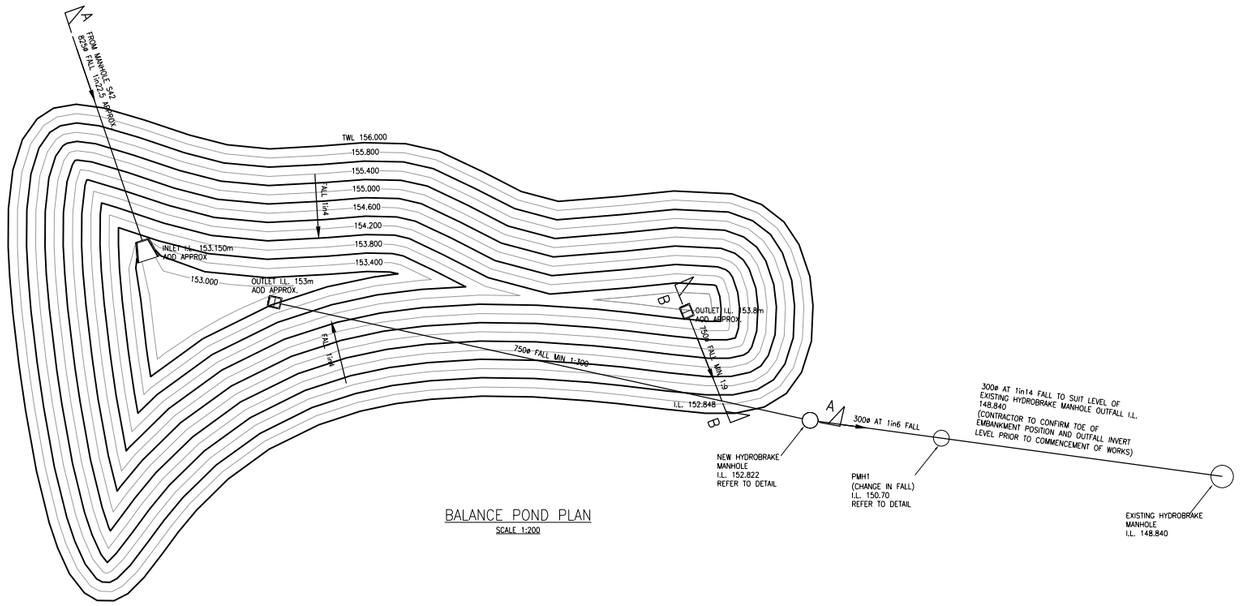
PLOT B
WENTWORTH PARK
TANKERSLEY

Drawing Title:

PHASE 2 DRAINAGE LAYOUT

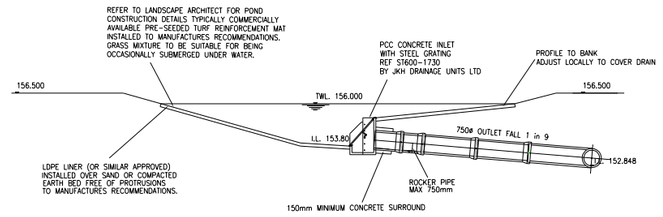
Scale @ A0	Drawn	Date	Checked	Date	Approved	Date
AS NOTED	MK	19/09/11	APF	22/09/11	APF	22/09/11

Project No.	Office	Type	Drawing No.	Revision
A054842	27	C	DR-500	T3



BALANCE POND PLAN

SCALE 1:200

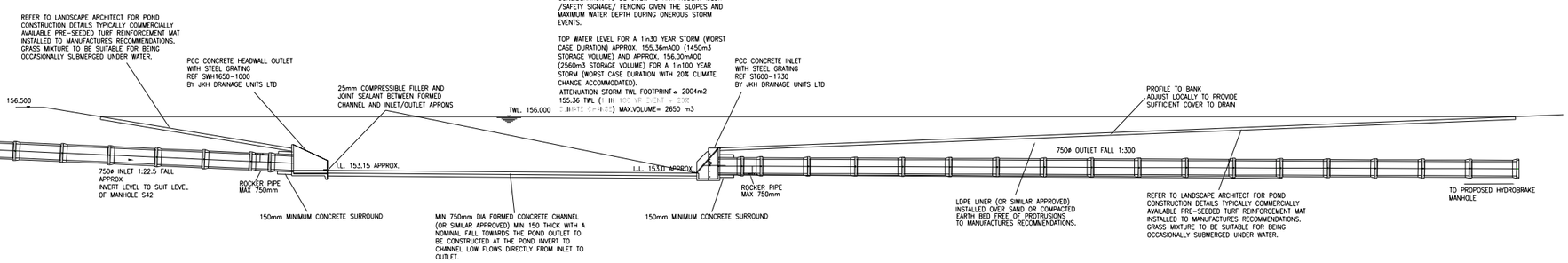


SECTION ON B-B

SCALE 1:100

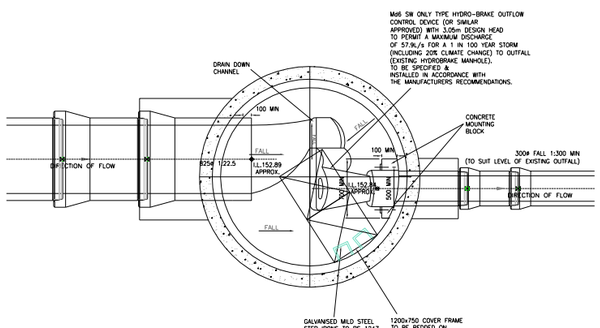
NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS, ENGINEERS AND SPECIALISTS DETAILS AND SPECIFICATIONS.
2. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED. LEVELS ARE IN METRES A.O.D.
3. ALL DIMENSIONS ARE TO BE CHECKED ON SITE BY THE CONTRACTOR/FABRICATOR PRIOR TO COMMENCEMENT OF WORK.
4. ALL WORK TO BE IN ACCORDANCE WITH CIVIL ENGINEERING SPECIFICATION FOR THE WATER INDUSTRY 6th EDITION, PUBLISHED BY THE WATER RESEARCH CENTRE.
5. ALL SOFT SPOTS TO BE REMOVED FROM BOTTOM OF EXCAVATIONS AND TO BE REFILLED TO FORMATION LEVEL WITH THE SAME MATERIAL AS PERMANENT WORKS WHICH REST IN IT.
6. CUT ENDS OF REINFORCED CONCRETE PIPES ARE TO BE TREATED WITH EPOXY RESIN PAINT/MORTAR.
7. CONCRETE BENCHING AND PIPE SURROUND SHALL BE PLACED IN SINGLE CONTINUOUS OPERATION FROM TOP BASE SLAB TO TOP OF BENCHING AND PIPE SURROUND.
8. LIMESTONE PIPE BEDDING WILL NOT BE PERMITTED IN ACIDIC GROUND WATER CONDITIONS. REFER TO CONTRACT SPECIFICATION FOR SPECIFIC DETAILS.
9. ALL PIPES WITH MORE THAN 600mm COVER BETWEEN SOFFIT AND FINISHED SURFACE TO BE IN CLASS 'S' (GRANULAR SURROUND) BEDDING.
10. U.N.O. PIPES MAY BE CONCRETE, CLAYWARE OR PLASTIC SUBJECT TO INSTALLATION, PROTECTION AND BEDDING DETAILS BEING TO MANUFACTURERS RECOMMENDATIONS IF PLASTIC IS USED IN LIEU OF CONCRETE.
11. ALL COVER LEVELS SHOWN ARE INDICATIVE ONLY. ACCURATE COVER LEVELS SHOULD BE DETERMINED FROM THE EXTERNAL LEVELS DRAWING.
12. PIPES OF DIFFERENT DIAMETERS ENTERING MANHOLES SHOULD BE INSTALLED WITH SOFFITS AT THE SAME LEVEL.
13. ALL PONDS ARE TO BE PROVIDED WITH A LDPE WATERTIGHT LINER.
    a) THE LINER SHALL BE LAID ON A 50MM THICK SAND OR GEOTEXTILE FABRIC PROTECTION LAYER PLACED ON THE TRIMMED FORMATION.
    b) ALL JOINTS IN THE LINER ARE TO BE WELDED AND TESTED TO CONFIRM EFFECTIVENESS OF SEAL.
    c) ALL PENETRATIONS BY PIPES OR OTHER DETAILS TO BE SEALED WITH A PROPRIETARY 'TOP HAT' DETAIL MADE OF THE SAME LINER MATERIAL AND SITE WELDED.
    d) THE LINER SHALL BE ANCHORED AT THE TOP OF THE SLOPE TO A DETAILS APPROVED BY THE MANUFACTURER.
    e) THE LINER SHALL BE OVERLAID WITH A PROTECTIVE MEMBRANE TO THE MANUFACTURE'S SPECIFICATION PRIOR TO PLACING ANY 'SUB-SOIL' MATERIAL OVER THE LINING MEMBRANE.
    f) THE LINING INSTALLATION SHALL PROVIDE A 25 YEAR GUARANTEE.
14. SETTING OUT COORDINATES TO BE CONFIRMED FOLLOWING GROUND MODEL FINALISATION.



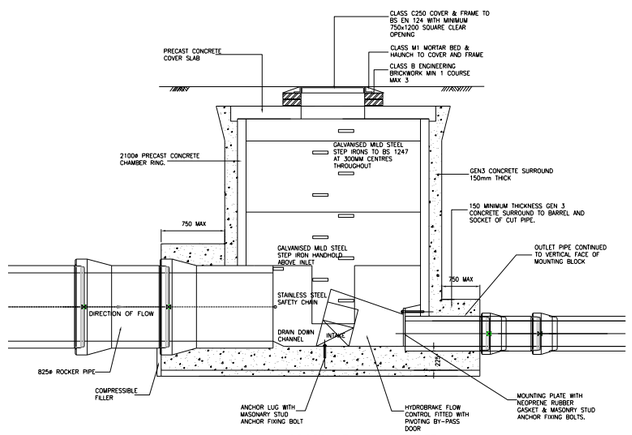
SECTION ON A-A

SCALE 1:100



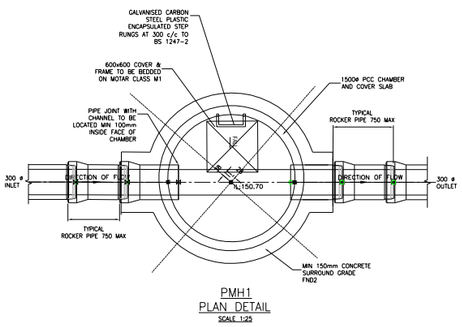
HYDROBRAKE MANHOLE TYPICAL PLAN

SCALE 1:25



HYDROBRAKE MANHOLE DETAIL TYPICAL SECTION

SCALE 1:25



PMH1 PLAN DETAIL

SCALE 1:25

HYDROBRAKE MANHOLE

INDICATIVE ARRANGEMENT (FOR ILLUSTRATIVE PURPOSES ONLY – TO BE ALTERED SUBJECT TO HYDROBRAKE DESIGN AND MANUFACTURERS RECOMMENDATIONS).

REV	DESCRIPTION	BY	CHK	APP	DATE
A	ISSUED FOR CONSTRUCTION	JR	PS	JS	23,10,08

GLADMAN

REGATTA HOUSE
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SALFORD QUAYS
MANCHESTER
M50 3XP
TEL: +44 (0)161 872 3223
FAX: +44 (0)161 872 3153
e-mail; manchester@wyg.com

White Young Green

Project;

PLOT B
WENTWORTH
TANKERSLEY

Drawing Title;

ATTENUATION POND AND HYDROBRAKE MANHOLE DETAILS

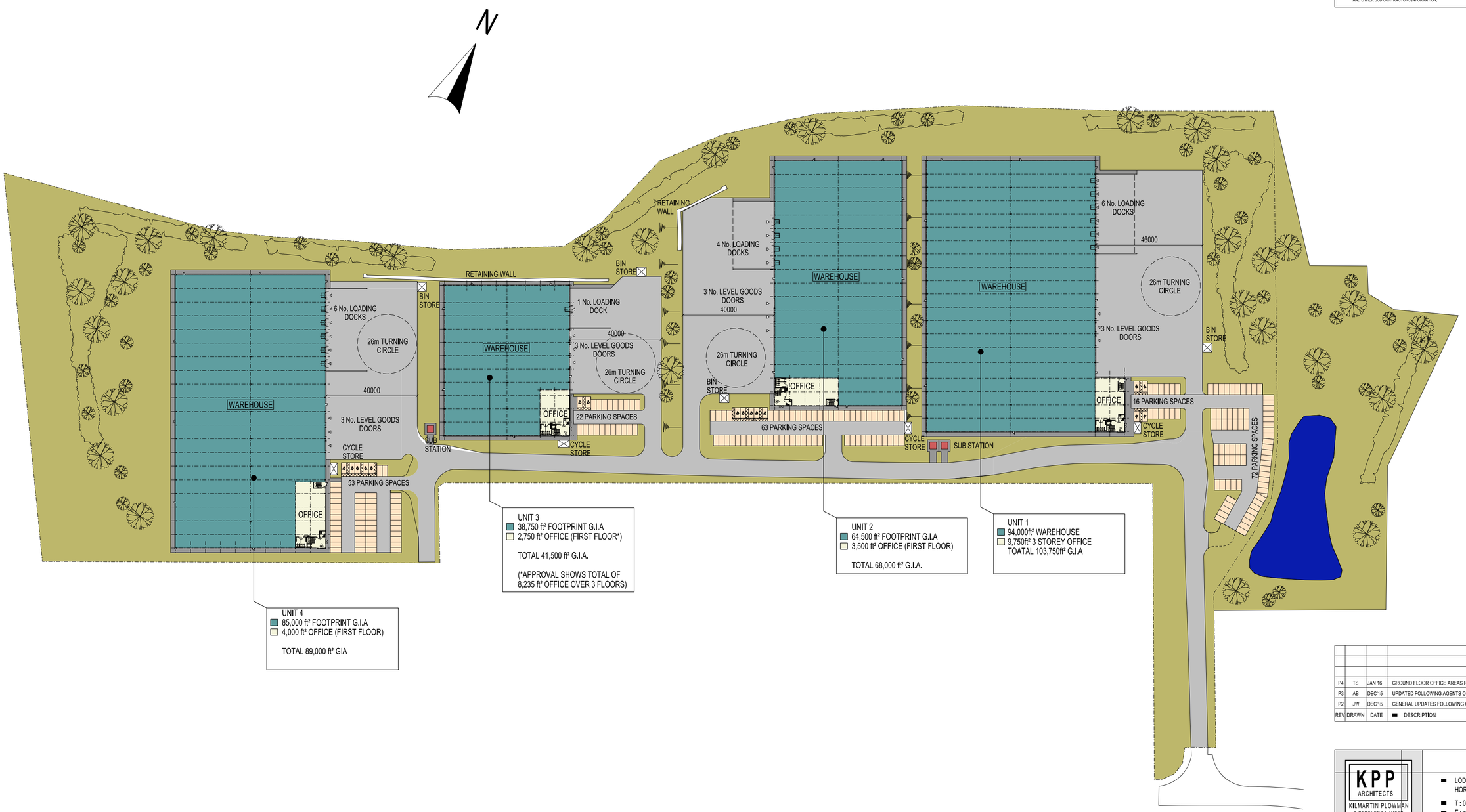
Scale	Drawn	Date	Checked	Date	Approved	Date
AS SHOWN	JR	11,08,08	PS	23,10,08	JS	23,10,08

Project No.	Office	Type	Drawing No.	Revision
A046060	018	C	018	A

SHEET SIZE : A0 LANDSCAPE

Appendix D Proposed Site Layout Plan

KPP ARCHITECTS
KILMARTIN PLOWMAN & PARTNERS LIMITED



UNIT 4
- 85,000 ft² FOOTPRINT G.I.A
- 4,000 ft² OFFICE (FIRST FLOOR)

TOTAL 89,000 ft² GIA

UNIT 3
- 38,750 ft² FOOTPRINT G.I.A
- 2,750 ft² OFFICE (FIRST FLOOR*)

TOTAL 41,500 ft² G.I.A.

(*APPROVAL SHOWS TOTAL OF 8,235 ft² OFFICE OVER 3 FLOORS)

UNIT 2
- 64,500 ft² FOOTPRINT G.I.A
- 3,500 ft² OFFICE (FIRST FLOOR)

TOTAL 68,000 ft² G.I.A.

UNIT 1
- 94,000ft² WAREHOUSE
- 9,750ft² 3 STOREY OFFICE

TOATAL 103,750ft² G.I.A

REV	DRAWN	DATE	DESCRIPTION
P4	TS	JAN 16	GROUND FLOOR OFFICE AREAS REMOVED
P3	AB	DEC'15	UPDATED FOLLOWING AGENTS COMMENTS
P2	JW	DEC'15	GENERAL UPDATES FOLLOWING CLIENT MEETING

KPP ARCHITECTS
KILMARTIN PLOWMAN & PARTNERS LIMITED

LODGE HOUSE 12 TOWN STREET
HORSFORTH LEEDS LS18 4RJ

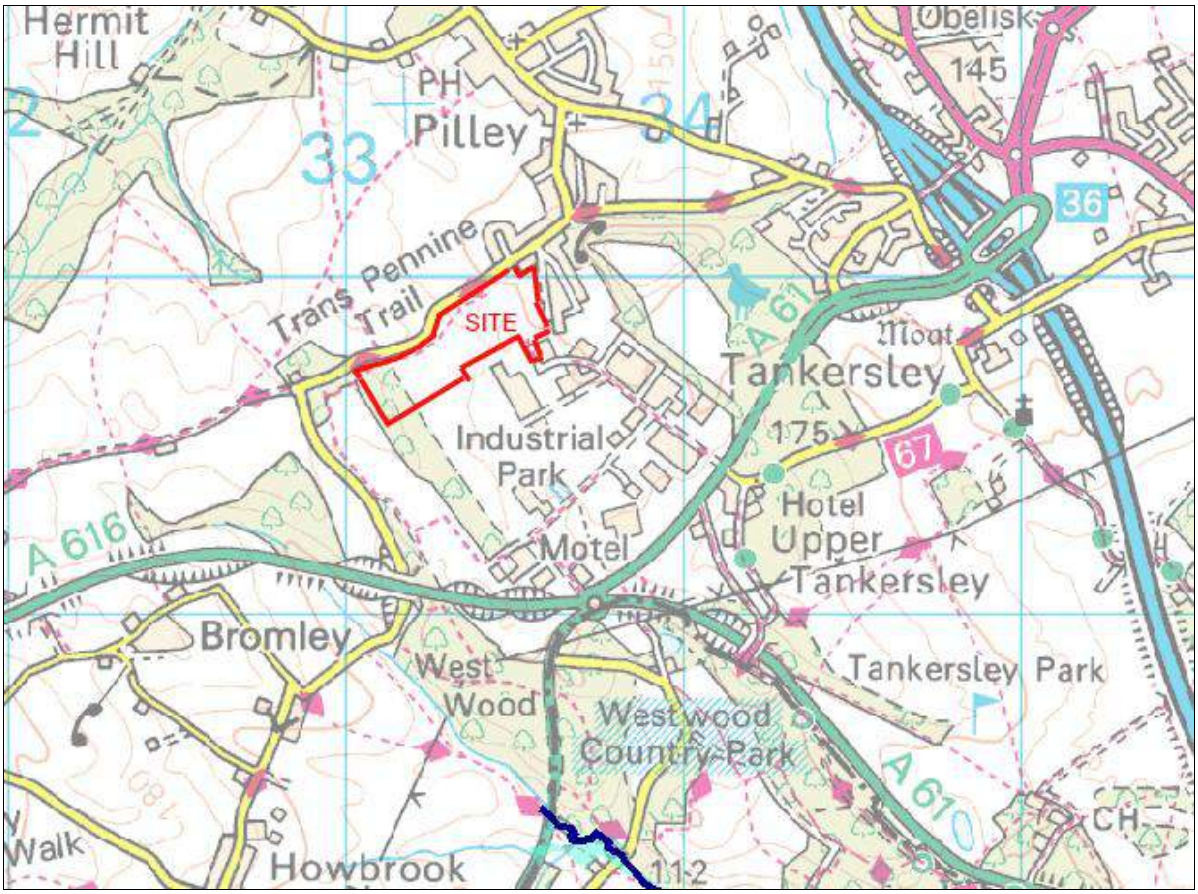
T : 0113 239 0460 F : 0113 239 0475
E : architects@kpp-leeds.co.uk
W : www.kpp-leeds.co.uk

PROJECT TITLE: TANKERSLEY PARK BARNSLEY

TITLE: SITE PLAN

STATUS	PLANNING	SCALE	1:1250 @A2
DRAWN	AS		
FILE	P:\PROJECTS2\ -	DATE	NOV'15
PROJECT	1979	DRAWING	201
REVISION	P6		

Appendix E Environment Agency Flood Map



Flood Map obtained from Environment Agency website (December 2015)

Appendix F – Windes Microdrainage Calculations

Summary of Results for 30 year Return Period

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
15 min Summer	154.833	1.183	57.7	587.2	O K
30 min Summer	155.030	1.380	57.7	756.8	O K
60 min Summer	155.182	1.532	57.7	905.1	O K
120 min Summer	155.268	1.618	57.7	995.3	O K
180 min Summer	155.269	1.619	57.7	997.0	O K
240 min Summer	155.252	1.602	57.7	978.7	O K
360 min Summer	155.205	1.555	57.7	929.2	O K
480 min Summer	155.155	1.505	57.7	877.6	O K
600 min Summer	155.102	1.452	57.7	824.8	O K
720 min Summer	155.046	1.396	57.7	771.7	O K
960 min Summer	154.930	1.280	57.7	668.0	O K
1440 min Summer	154.696	1.046	57.7	483.8	O K
2160 min Summer	154.387	0.737	57.4	287.2	O K
2880 min Summer	154.165	0.515	54.9	176.2	O K
4320 min Summer	153.948	0.298	48.0	89.3	O K
5760 min Summer	153.895	0.245	38.9	70.9	O K
7200 min Summer	153.866	0.216	32.8	61.2	O K
8640 min Summer	153.846	0.196	28.5	54.9	O K
10080 min Summer	153.832	0.182	25.2	50.5	O K
15 min Winter	154.925	1.275	57.7	663.2	O K
30 min Winter	155.136	1.486	57.7	858.8	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	68.720	0.0	639.6	21
30 min Summer	45.545	0.0	848.0	35
60 min Summer	28.921	0.0	1077.8	64
120 min Summer	17.839	0.0	1329.7	122
180 min Summer	13.302	0.0	1487.3	162
240 min Summer	10.751	0.0	1602.7	194
360 min Summer	7.934	0.0	1774.1	258
480 min Summer	6.394	0.0	1906.3	326
600 min Summer	5.405	0.0	2014.3	392
720 min Summer	4.710	0.0	2106.2	460
960 min Summer	3.787	0.0	2258.4	590
1440 min Summer	2.782	0.0	2488.5	838
2160 min Summer	2.041	0.0	2739.1	1188
2880 min Summer	1.637	0.0	2929.1	1528
4320 min Summer	1.198	0.0	3215.7	2204
5760 min Summer	0.960	0.0	3434.2	2936
7200 min Summer	0.807	0.0	3611.8	3672
8640 min Summer	0.701	0.0	3762.6	4336
10080 min Summer	0.622	0.0	3896.6	5136
15 min Winter	68.720	0.0	716.4	21
30 min Winter	45.545	0.0	949.9	35

Summary of Results for 30 year Return Period

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
60 min Winter	155.305	1.655	57.7	1036.3	O K
120 min Winter	155.414	1.764	57.7	1161.5	O K
180 min Winter	155.431	1.781	57.7	1182.1	O K
240 min Winter	155.411	1.761	57.7	1158.2	O K
360 min Winter	155.347	1.697	57.7	1082.9	O K
480 min Winter	155.275	1.625	57.7	1003.2	O K
600 min Winter	155.195	1.545	57.7	918.0	O K
720 min Winter	155.109	1.459	57.7	831.6	O K
960 min Winter	154.927	1.277	57.7	665.3	O K
1440 min Winter	154.558	0.908	57.7	389.7	O K
2160 min Winter	154.137	0.487	54.3	163.7	O K
2880 min Winter	153.946	0.296	47.8	88.4	O K
4320 min Winter	153.876	0.226	35.1	64.7	O K
5760 min Winter	153.845	0.195	28.1	54.5	O K
7200 min Winter	153.825	0.175	23.7	48.2	O K
8640 min Winter	153.811	0.161	20.6	44.0	O K
10080 min Winter	153.800	0.150	18.3	40.7	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
60 min Winter	28.921	0.0	1207.2	64
120 min Winter	17.839	0.0	1489.2	120
180 min Winter	13.302	0.0	1665.7	176
240 min Winter	10.751	0.0	1795.1	228
360 min Winter	7.934	0.0	1987.0	282
480 min Winter	6.394	0.0	2135.1	356
600 min Winter	5.405	0.0	2256.0	430
720 min Winter	4.710	0.0	2359.0	500
960 min Winter	3.787	0.0	2529.5	634
1440 min Winter	2.782	0.0	2787.2	872
2160 min Winter	2.041	0.0	3067.8	1192
2880 min Winter	1.637	0.0	3280.7	1472
4320 min Winter	1.198	0.0	3601.7	2204
5760 min Winter	0.960	0.0	3846.3	2936
7200 min Winter	0.807	0.0	4045.2	3584
8640 min Winter	0.701	0.0	4214.2	4336
10080 min Winter	0.622	0.0	4364.4	5016

Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	30	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	18.800	Shortest Storm (mins)	15
Ratio R	0.360	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+0

Time Area Diagram

Total Area (ha) 4.970

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	2.485	4	8	2.485

Model Details

Storage is Online Cover Level (m) 156.500

Tank or Pond Structure

Invert Level (m) 153.650

Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	246.0	2.850	2120.0

Hydro-Brake Optimum® Outflow Control

Unit Reference	MD-SHE-0284-5790-3050-5790
Design Head (m)	3.050
Design Flow (l/s)	57.9
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Diameter (mm)	284
Invert Level (m)	153.650
Minimum Outlet Pipe Diameter (mm)	300
Suggested Manhole Diameter (mm)	Site Specific Design (Contact Hydro International)

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	3.050	57.7
Flush-Flo™	0.883	57.7
Kick-Flo®	1.873	45.6
Mean Flow over Head Range	-	50.2

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

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	8.9	1.200	56.7	3.000	57.3	7.000	86.4
0.200	29.3	1.400	55.2	3.500	61.7	7.500	89.3
0.300	48.1	1.600	52.6	4.000	65.8	8.000	92.2
0.400	52.0	1.800	48.1	4.500	69.7	8.500	94.9
0.500	54.6	2.000	47.1	5.000	73.3	9.000	97.6
0.600	56.2	2.200	49.3	5.500	76.8	9.500	100.2
0.800	57.6	2.400	51.4	6.000	80.1		
1.000	57.5	2.600	53.4	6.500	83.3		

Summary of Results for 100 year Return Period (+20%)

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
15 min Summer	155.214	1.564	57.7	937.8	O K
30 min Summer	155.476	1.826	57.7	1236.2	O K
60 min Summer	155.695	2.045	57.7	1525.2	O K
120 min Summer	155.851	2.201	57.7	1754.9	O K
180 min Summer	155.899	2.249	57.7	1828.0	O K
240 min Summer	155.902	2.252	57.7	1833.9	O K
360 min Summer	155.865	2.215	57.7	1775.8	O K
480 min Summer	155.827	2.177	57.7	1717.0	O K
600 min Summer	155.789	2.139	57.7	1660.4	O K
720 min Summer	155.751	2.101	57.7	1605.6	O K
960 min Summer	155.673	2.023	57.7	1495.1	O K
1440 min Summer	155.491	1.841	57.7	1255.6	O K
2160 min Summer	155.172	1.522	57.7	895.2	O K
2880 min Summer	154.868	1.218	57.7	615.7	O K
4320 min Summer	154.371	0.721	57.3	278.1	O K
5760 min Summer	154.082	0.432	53.0	140.4	O K
7200 min Summer	153.947	0.297	47.9	88.7	O K
8640 min Summer	153.909	0.259	41.5	75.6	O K
10080 min Summer	153.884	0.234	36.6	67.1	O K
15 min Winter	155.324	1.674	57.7	1057.2	O K
30 min Winter	155.602	1.952	57.7	1398.1	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	106.641	0.0	992.9	22
30 min Summer	71.361	0.0	1329.0	36
60 min Summer	45.589	0.0	1699.0	66
120 min Summer	28.149	0.0	2098.2	124
180 min Summer	20.935	0.0	2340.7	182
240 min Summer	16.856	0.0	2512.8	242
360 min Summer	12.354	0.0	2762.6	316
480 min Summer	9.912	0.0	2955.4	380
600 min Summer	8.349	0.0	3111.6	444
720 min Summer	7.253	0.0	3243.6	512
960 min Summer	5.803	0.0	3460.3	650
1440 min Summer	4.230	0.0	3783.8	924
2160 min Summer	3.078	0.0	4129.8	1296
2880 min Summer	2.453	0.0	4388.4	1644
4320 min Summer	1.778	0.0	4772.1	2296
5760 min Summer	1.414	0.0	5059.4	2944
7200 min Summer	1.183	0.0	5289.9	3672
8640 min Summer	1.022	0.0	5483.5	4400
10080 min Summer	0.903	0.0	5657.1	5136
15 min Winter	106.641	0.0	1112.1	22
30 min Winter	71.361	0.0	1488.6	36

Summary of Results for 100 year Return Period (+20%)

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
60 min Winter	155.835	2.185	57.7	1729.7	O K
120 min Winter	156.010	2.360	57.7	2008.9	O K
180 min Winter	156.071	2.421	57.7	2111.4	O K
240 min Winter	156.086	2.436	57.7	2137.5	O K
360 min Winter	156.061	2.411	57.7	2094.2	O K
480 min Winter	156.010	2.360	57.7	2008.9	O K
600 min Winter	155.965	2.315	57.7	1934.7	O K
720 min Winter	155.918	2.268	57.7	1858.0	O K
960 min Winter	155.812	2.162	57.7	1695.8	O K
1440 min Winter	155.559	1.909	57.7	1341.4	O K
2160 min Winter	155.042	1.392	57.7	768.3	O K
2880 min Winter	154.562	0.912	57.7	391.8	O K
4320 min Winter	154.014	0.364	50.8	113.6	O K
5760 min Winter	153.909	0.259	41.5	75.6	O K
7200 min Winter	153.874	0.224	34.7	64.0	O K
8640 min Winter	153.853	0.203	30.0	57.2	O K
10080 min Winter	153.838	0.188	26.6	52.3	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
60 min Winter	45.589	0.0	1902.9	64
120 min Winter	28.149	0.0	2350.0	122
180 min Winter	20.935	0.0	2621.6	180
240 min Winter	16.856	0.0	2814.4	236
360 min Winter	12.354	0.0	3094.1	344
480 min Winter	9.912	0.0	3310.0	432
600 min Winter	8.349	0.0	3485.0	472
720 min Winter	7.253	0.0	3632.8	550
960 min Winter	5.803	0.0	3875.6	704
1440 min Winter	4.230	0.0	4237.9	1010
2160 min Winter	3.078	0.0	4625.4	1364
2880 min Winter	2.453	0.0	4915.1	1672
4320 min Winter	1.778	0.0	5344.9	2252
5760 min Winter	1.414	0.0	5666.5	2936
7200 min Winter	1.183	0.0	5924.6	3672
8640 min Winter	1.022	0.0	6141.6	4328
10080 min Winter	0.903	0.0	6336.1	5112

Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	18.800	Shortest Storm (mins)	15
Ratio R	0.360	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+20

Time Area Diagram

Total Area (ha) 4.970

Time (mins) From:	To:	Area (ha)	Time (mins) From:	To:	Area (ha)
0	4	2.485	4	8	2.485

Model Details

Storage is Online Cover Level (m) 156.500

Tank or Pond Structure

Invert Level (m) 153.650

Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	246.0	2.850	2120.0

Hydro-Brake Optimum® Outflow Control

Unit Reference	MD-SHE-0284-5790-3050-5790
Design Head (m)	3.050
Design Flow (l/s)	57.9
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Diameter (mm)	284
Invert Level (m)	153.650
Minimum Outlet Pipe Diameter (mm)	300
Suggested Manhole Diameter (mm)	Site Specific Design (Contact Hydro International)

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	3.050	57.7
Flush-Flo™	0.883	57.7
Kick-Flo®	1.873	45.6
Mean Flow over Head Range	-	50.2

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

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	8.9	1.200	56.7	3.000	57.3	7.000	86.4
0.200	29.3	1.400	55.2	3.500	61.7	7.500	89.3
0.300	48.1	1.600	52.6	4.000	65.8	8.000	92.2
0.400	52.0	1.800	48.1	4.500	69.7	8.500	94.9
0.500	54.6	2.000	47.1	5.000	73.3	9.000	97.6
0.600	56.2	2.200	49.3	5.500	76.8	9.500	100.2
0.800	57.6	2.400	51.4	6.000	80.1		
1.000	57.5	2.600	53.4	6.500	83.3		

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