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Document name: 221625-EDGE-XX-XX-RP-C-0001_PROPOSED DRAINAGE[P01]

TECHNICAL NOTE FOR 221625 - COLLYHURST VILLAGE

Prepared for:

Garry Newbold

DEX Construction

Second Floor Northern Assurance Building

9-21 Princess St

Manchester

M2 4DN

Revision	Date	Description	Prepared by	Checked by	Approved by
P01	13/08/2025	Preliminary	M.A.	R.A.	R.A.

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1 INTRODUCTION

The purpose of this Technical Note is to address the comments received from the Local Lead Flood Authority (LLFA) in relation to the proposed drainage strategy, which forms part of the application for the erection of 168 three and four storey dwellinghouses, and two, five and six storey apartment buildings to provide 76 residential apartments, together with an associated ground floor flexible commercial unit and the creation of a new public park on land bounded by Rochdale Road, Shellard Road, Harrowby Drive, Johnny King Close, Thornton Street North, Stretton Close, and Marston Street, Manchester.

During the detailed design stage, the proposed surface water system for the scheme was optimised to maximise the potential benefits of the proposed SuDS elements. As a result, part of the drainage catchment that originally drained to the southern network and was stored in an offline attenuation tank was re-directed to the central network. This aimed to increase the catchment drained by the pond and, consequently, enhance the water treatment process provided by the proposed pond to the collected runoff.

This catchment area was deducted from the southern network and added to the central surface water system. This change removed the need for a tank in the southern network and introduced slightly oversized pipes to attenuate runoff volumes. Similarly, the new catchment increased water levels within the pond, slightly reducing the previous pond freeboard to 374 mm, which remains above the CIRIA recommended minimum of 300 mm. Therefore, this update was considered beneficial for the scheme from a sustainability perspective, and the remaining drainage design was updated to suit the new catchment arrangement.

As a result of the revised drainage, the LLFA reviewed the submission and provided the following comments:

The reason we requested updated calculations was to support the altered drainage strategy, as the southern catchment area no longer drains to an attenuation tank and instead will contribute additional flow into the attenuation pond. We need to assess the impact of this change on the capacity of the pond and any impacts on the upstream surface water system, however the updated hydraulic calculations provided only include to the point of outfall into the pond.

Please could the applicant respond to the following points:

- Please include the attenuation pond within the hydraulic calculations &/or provide updated modelled pond water levels to account for the additional flow into the pond.*
- The Plot Drainage Sheet 1, 2 and 3 drawings (221625-EDGE-XX-XX-DR-C-2010 C07, 221625-EDGE-XX-XX-DR-C-2011 C08, 221625-EDGE-XX-XX-DR-C-2012 C04) do not have manhole reference numbers on the surface water manholes, so it is not possible to cross-reference these with the updated hydraulic calculations. Please provide a layout plan which corresponds with the manhole/pipe references used in the hydraulic calculations (SW1, SW2 etc).*

The above points are addressed and justified in the below paragraphs of this technical note, following the design principles stated in CIRIA C753 The SuDS Manual.

2 POND DESIGN

The pond design is included in the MicroDrainage calculations for Surface Water Network 2 (central network). Figure 2.1 below shows an extract from MicroDrainage, detailing the pond design parameters used for the hydraulic simulations.

Figure 2.1 – Pond design parameters

The screenshot displays the 'Pond (Tank/Storage Structure)' window in MicroDrainage. The 'Structure Number' is 1, 'U/S/MH Name' is SW22, and 'DS Pipe Number' is 1.008. The 'Structure Type' is 'Tank or Pond'. The 'Tank or Pond Details' section shows 'Flow through structure' as unchecked, 'Manning's N' as 0.000, and 'Invert Level (m)' as 52.206. A table lists 'Depth (m)' and 'Area (m²)' values for various depths. The 'Network Details' section shows 'Cover Level (m)' as 55.951, 'Pipe No.' as 1.007, 'Invert' as 52.132, 'Lowest Incoming pipe' as 1.007, and 'Outgoing Pipe' as 1.008. A diagram of a trapezoidal pond cross-section is shown on the right. Buttons for 'OK', 'Cancel', and 'Help' are visible. A note at the bottom states: 'Please specify pipe number for flow through structure, or please specify DS pipe number for structures on manhole locations.'

Structure Number	U/S/MH Name	(DS) Pipe Number	DS/MH Name	Structure Type
1	SW22	1.008		Tank or Pond

Depth (m)	Area (m²)
0.000	41.1
0.494	107.4
1.494	315.2
2.494	675.1
2.495	0.0

Network Details
Cover Level (m) 55.951
Pipe No. 1.007 Invert 52.132 (m)
Lowest Incoming pipe 1.007
Outgoing Pipe 1.008

Pond water levels for the critical storm at each return period are summarised in Table 2.1.

Table 2.1 – Pond water levels

	Pond Water Levels (m)	Water depth (m)
1 in 2-Year	53.092	0.886
1 in 30-Year	53.693	1.487
1 in 100-Year + 40% Climate Change	54.426	2.220

The top of the pond bank is set at 54.800m, resulting in a minimum freeboard of 374mm for the peak storm during the 1 in 100-year + 40% climate change event. This freeboard exceeds the minimum recommended by CIRIA guidance (300 mm) and is therefore considered suitable for the drainage design.

Complete drainage calculations are provided in Appendix B of this Technical Note.

3 DRAINAGE CATCHMENT

The new catchment areas transferred to the pond network are shown on drawings 221625-EDGE-XX-XX-DR-C-2003_CATCHMENT ANALYSIS SHEET 1 [P01] and 221625-EDGE-XX-XX-DR-C-2004_CATCHMENT ANALYSIS SHEET 2 [P01], both included in Appendix C.

For further clarification and to address LLFA queries, Figures 3.1 to 3.3 present an overlay of the drainage catchments and drainage layout in this area, assisting in cross-referencing manhole and pipe names with the MicroDrainage calculations.

Figure 3.1 – Catchment Areas for Surface Water network 2

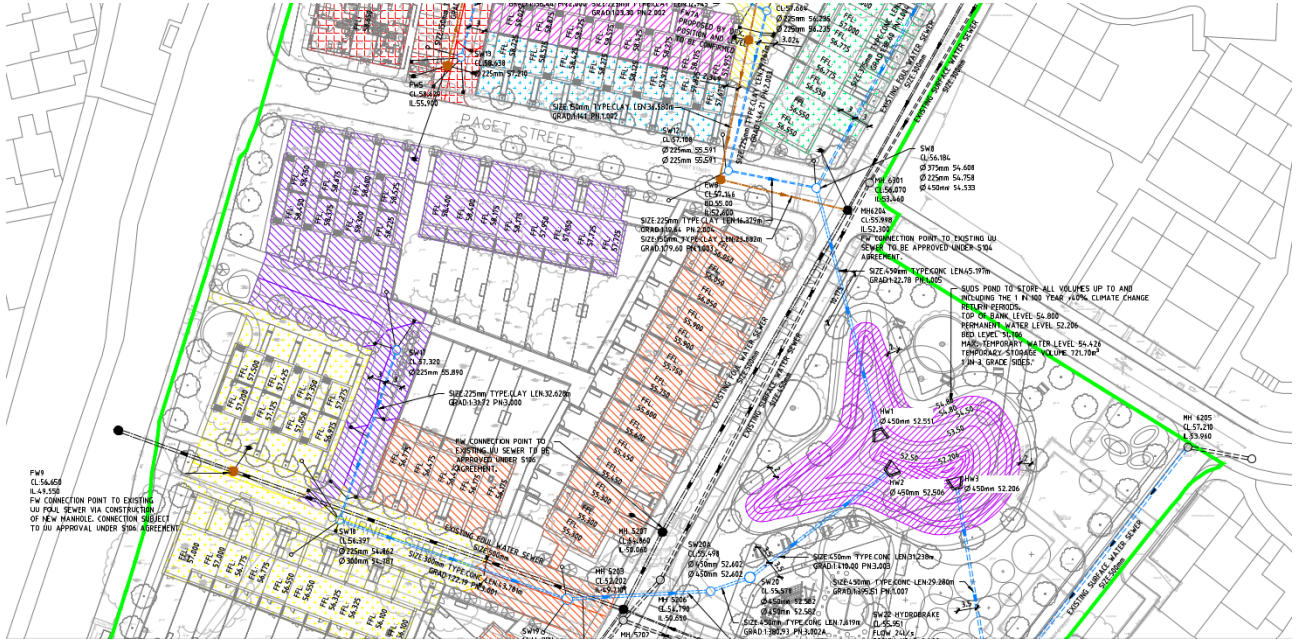


Figure 3.2 – Catchment Areas for Surface Water network 2

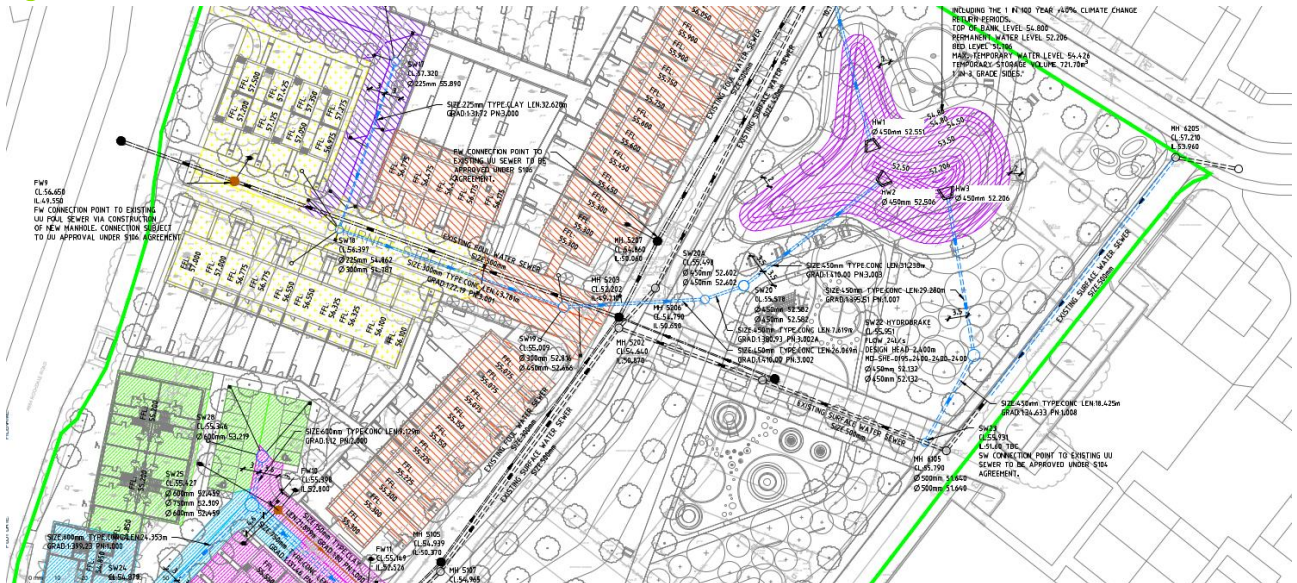
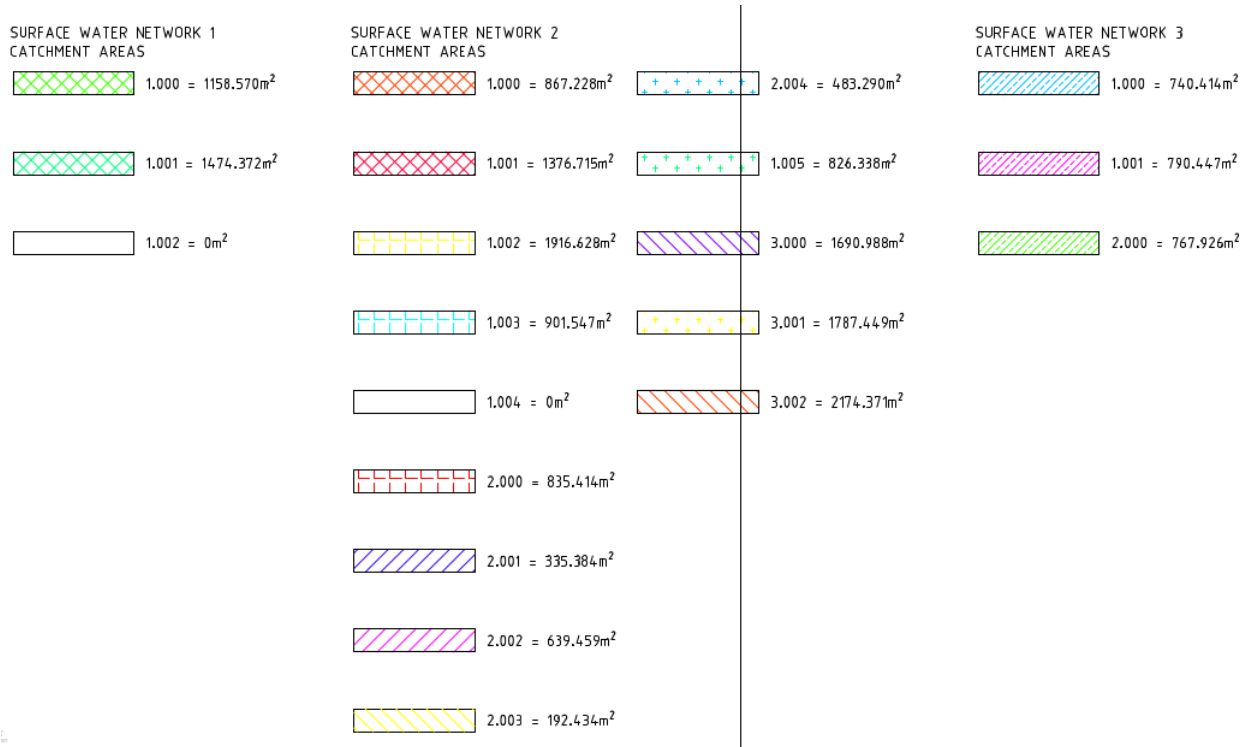


Figure 3.3 – Catchment Areas for Surface Water network 2



Similarly, to address any potential misunderstanding between the proposed drainage layout and the hydraulic calculations, Figures 3.4 to 3.6 below show an overlay of the adoptable and private drainage for Surface Water Network 2.

Figure 3.4 – Adoptable and private drainage for surface water network 2

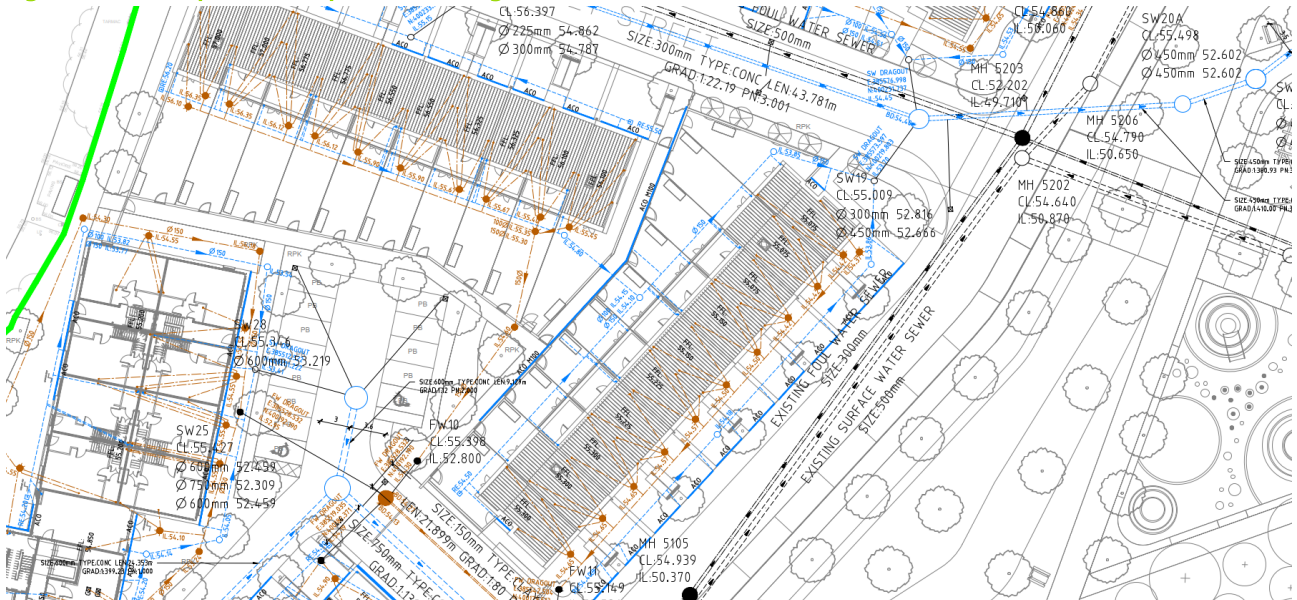


Figure 3.5 – Adoptable and private drainage for surface water network 2

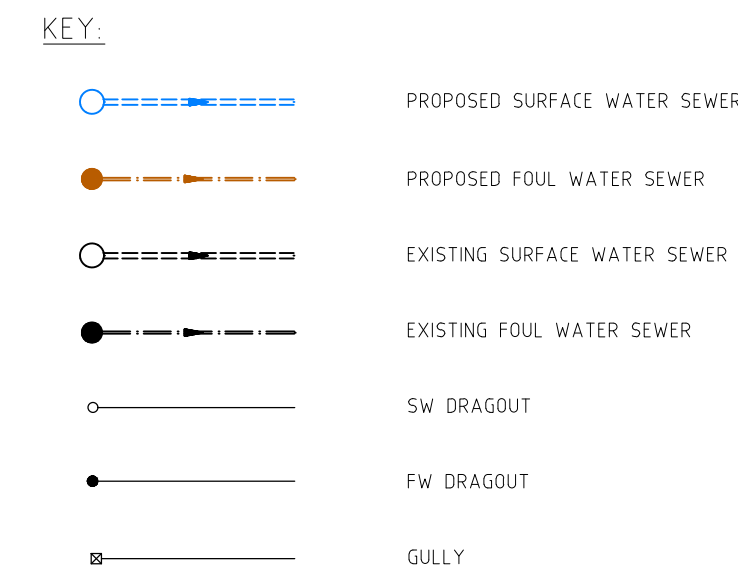


Figure 3.6 – Adoptable and private drainage for surface water network 2



Adoptable drainage layout plans are included in Appendix A, and private plot drainage drawings are provided in Appendix D.

APPENDIX A DRAINAGE LAYOUT



1. ALL SEWERS ARE DESIGNED IN ACCORDANCE WITH SEWER SECTOR GUIDANCE V.0.2 AND UNITED UTILITIES GUIDELINES AND STANDARD DETAILS.
2. ALL CO-ORDINATES AND LEVELS SHOWN ARE RELATIVE TO THE TOPOGRAPHIC SURVEY.
3. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THE LINE AND LOCATION OF ANY EXISTING SEWERS, AS WELL AS ANY EXISTING SEWERS, ARE INVERTED CORRECTLY ON THE DRAWING ARE CORRECT PRIOR TO THE COMMENCEMENT OF ANY WORKS. ANY DISCREPANCIES MUST BE REPORTED IMMEDIATELY.
4. PRIOR TO THE COMMENCEMENT OF ANY ON SITE WORKS THE CONTRACTOR MUST CONTACT THE SEWER MASTER AND BE IN POSSESSION OF THE LATEST DRAWINGS SHOWING THEIR APPARATUS.
5. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ALLOW FOR THE SUPERVISION OF THE CONSTRUCTION WORKS BY UNITED UTILITIES AND /OR THE SEWERWAYS AUTHORITY. THE CONTRACTOR WILL NOTIFY THE SUPERVISING OFFICER GIVING NOTICE WHICH WILL BE IN ACCORDANCE WITH THE AUTHORITIES REQUIREMENTS.
6. THE EXISTED SEWER WILL BE 800mm DIA PIPE WORK AND SHALL BE EXTRA STRENGTH TO BS EN 295-991 PART 1.
7. ANY PRE CAST CONCRETE PIPE WORK WILL BE IN ACCORDANCE WITH BS EN 196-2002.
8. IT IS THE CONTRACTORS RESPONSIBILITY TO ENSURE THE CORRECT BEDDING, SURROUND AND BACKFILL PROCEDURES ARE FOLLOWED FOR PVC PIPES, FOR DETAILS OF EMBEDMENT AND SURROUND FOR FLEXIBLE PIPES REFER TO UNITED UTILITIES STANDARD DETAIL SIND/005/01 AND ALL MANHOLES AND CHAMBERS SHALL BE IN ACCORDANCE WITH BS EN 197-2002.
9. SEWERS WITH COVER TO SOFFIT GREATER THAN 1.2m IN ROADS AND 0.5m IN FIELDS SHALL HAVE BEDDING SURROUND AS FOLLOWS: RIGID CONCRETE SLOPE SHALL BE CLASS 5 AND PIPE EMBEDMENT SHALL BE CLASS 5 ALL IN ACCORDANCE WITH UNITED UTILITIES STANDARD DETAIL SIND/005/01.
10. ANY SEWER FOR COVER LESS THAN 1.2m TO COVER LESS THAN 1.2m TO PIPE SOFFIT IN ROADS OR 0.5m TO PIPE SOFFIT IN FIELDS WILL HAVE A MINIMUM 150mm GEN 3 CONCRETE BED AND SURROUND WITH FLEXIBILITY MAINTAINED WITH FLEXICELL EXPANSION JOINT FILLER OR SIMILAR APPROVED AT EACH CHAMBER.
11. PRIVATE DRAINAGE CONNECTIONS TO THE SEWER WILL BE 150MM DIAMETER AND LAID TO THE SPECIFIED INVERT.
12. THE INVERT LEVELS SPECIFIED AT THE DRAG OUT CHAMBER ARE INCLINING LEVELS.
13. WHEREVER POSSIBLE PRIVATE DRAINAGE RUNS WILL REMAIN WITHIN THE CURTILAGE OF THE DWELLING FOR WHICH THEY SERVED.
14. ANY CONNECTION TO THE SEWER SHALL BE MADE BY MANUFACTURED JUNCTION PIPES A SADDLE CONNECTION IS NOT PERMITTED UNLESS IT IS CLEARLY SPECIFIED.
15. CONNECTIONS TO THE EXISTING SEWER WILL BE IN ACCORDANCE WITH SECTION 10 APPROVAL GRANTED BY UNITED UTILITIES.
16. CONNECTIONS TO THE EXISTING WATERCOURSE WILL BE IN ACCORDANCE WITH APPROVAL GRANTED BY THE EA.
17. WHILE THIS DRAWING IS ISSUED FOR CONSTRUCTION, WORKS ARE ILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO COMPLY WITH SECTION 104 AND SECTION 38 APPROVALS HAVE BEEN CONFIRMED.



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Project Name	
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Client _____

DEX CONSTRUCTION

Designed	Drawn	Check
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A.R. A.R. M.A

	Drawing Title			
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DRAINAGE LAYOUT

SHEET 1

SHEET 1

Project No. 001005

221625 

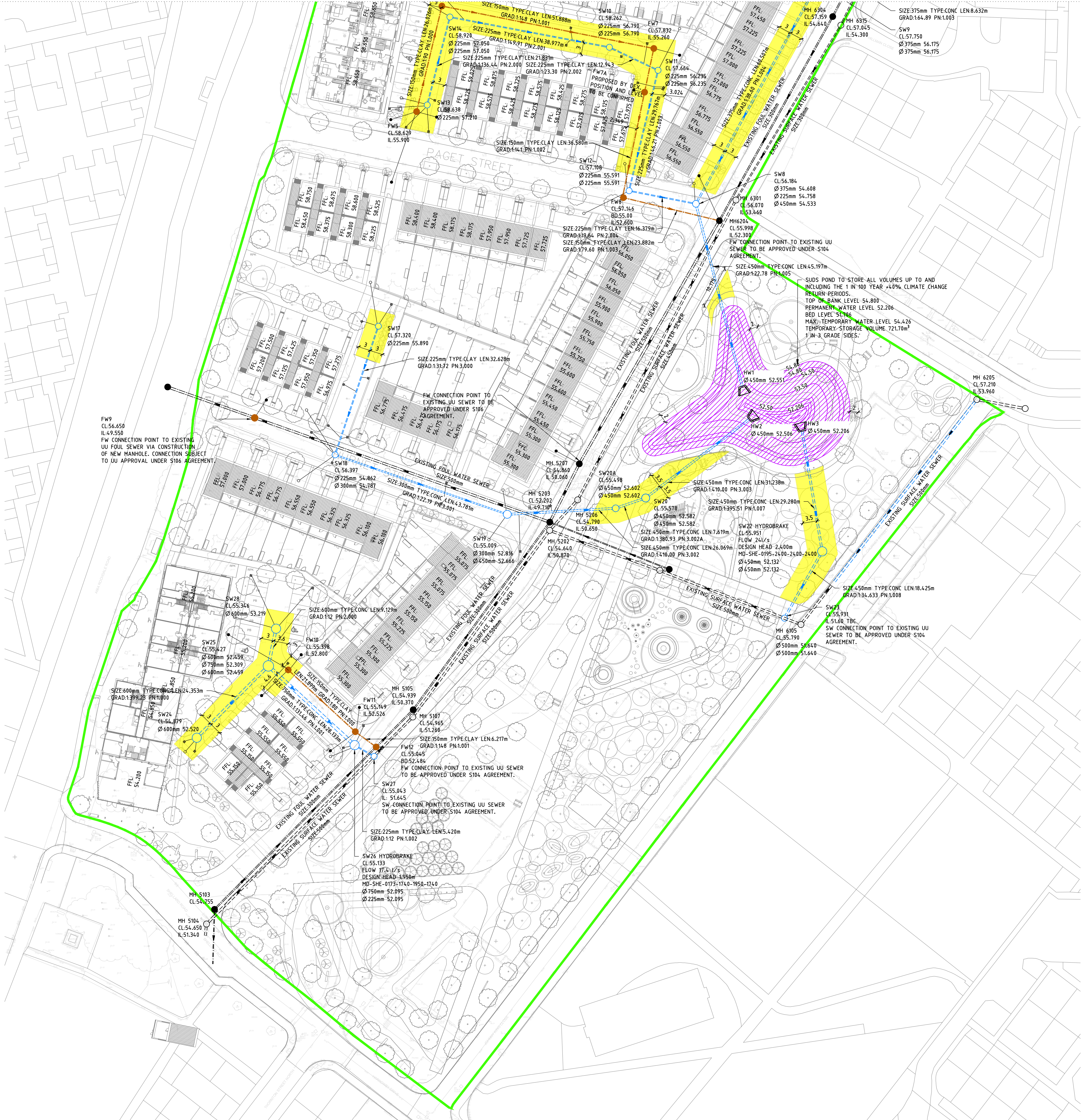
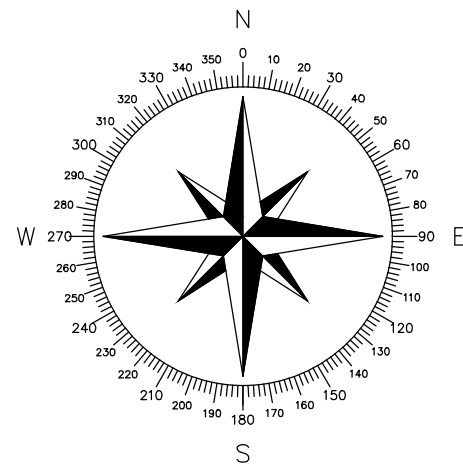
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**ISSUED FOR
CONSTRUCTION**

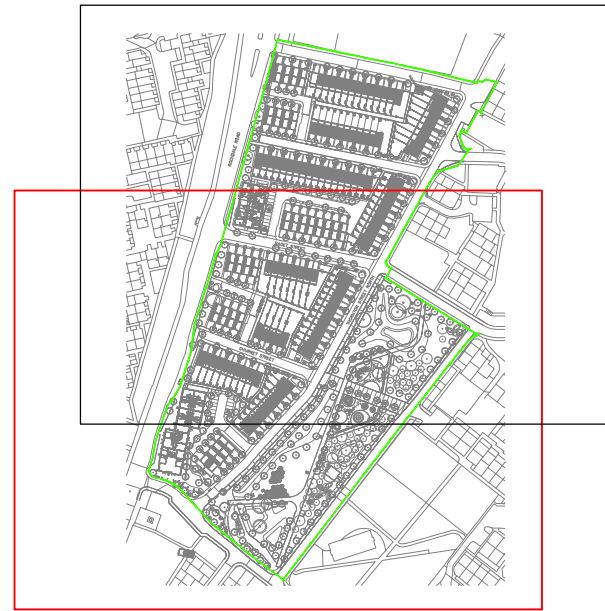
Revision

C07



- KEY:
- PROPOSED SURFACE WATER SEWER
 - PROPOSED FOUL WATER SEWER
 - EXISTING SURFACE WATER SEWER
 - EXISTING FOUL WATER SEWER
 - SW DRAGOUT
 - FW DRAGOUT
 - GULLY

- NOTES:
- ALL SEWERS ARE DESIGNED IN ACCORDANCE WITH SEWER SECTOR GUIDANCE V.0.2 AND UNITED UTILITIES GUIDELINES AND STANDARD DETAILS.
 - ALL CO-ORDINATES AND LEVELS SHOWN ARE RELATIVE TO THE TOPOGRAPHIC SURVEY.
 - IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THE LINE AND LOCATION OF ANY EXISTING SEWERS, AS WELL AS ANY EXISTING GROUND AND INVERT LEVELS SHOWN ON THE DRAWING ARE CORRECT PRIOR TO THE COMMENCEMENT OF ANY WORKS. ANY DISCREPANCIES MUST BE REPORTED IMMEDIATELY.
 - PRIOR TO THE COMMENCEMENT OF ANY ON SITE WORKS THE CONTRACTOR MUST CONTACT THE STATUTORY UNDERTAKER AND BE IN POSSESSION OF THE LATEST DRAWINGS SHOWING THEIR APPARATUS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ALLOW FOR THE SUPERVISION OF THE CONSTRUCTION WORKS BY UNITED UTILITIES AND/OR THE HIGHWAYS AUTHORITY. THE CONTRACTOR WILL NOTIFY THE SUPERVISING OFFICER GIVING NOTICE WHICH WILL BE IN ACCORDANCE WITH THE AUTHORITIES REQUIREMENTS.
 - THE PROPOSED SEWERS WILL BE CLAY PIPE WORK AND SHALL BE EXTRA STRENGTH TO BS EN 295:1991 PART 1.
 - ANY PRE CAST CONCRETE PIPE WORK WILL BE IN ACCORDANCE WITH BS EN 1916:2002.
 - IT IS THE CONTRACTORS RESPONSIBILITY TO ENSURE THE CORRECT BEDDING, SURROUND AND BACKFILLING PROCEDURES ARE FOLLOWED FOR PVC PIPES. FOR DETAILS OF EMBEDMENT AND SURROUND FOR FLEXIBLE PIPES REFER TO UNITED UTILITIES STANDARD DETAIL STD/05/001.
 - ALL MAINHOLES AND CHAMBERS SHALL BE IN ACCORDANCE WITH BS EN 1917:2002.
 - SEWERS WITH COVER TO SOFFIT GREATER THAN 1.2m IN ROADS AND 0.9m IN FIELDS SHALL HAVE BED AND SURROUND AS FOLLOWS: RIGID PIPE EMBEDMENT SHALL BE CLASS 5, SEM RIGID PIPE EMBEDMENT SHALL BE CLASS 5 ALL IN ACCORDANCE WITH UNITED UTILITIES STANDARD DETAIL STD/05/001.
 - ANY SEWER FOR ADOPTION WITH A COVER OF LESS THAN 1.2m TO PIPE SOFFIT IN ROADS OR 0.9m TO PIPE SOFFIT IN FIELDS WILL HAVE A MINIMUM 150mm GEN 3 CONCRETE BED AND SURROUND WITH FLEXIBILITY MAINTAINED WITH FLEXCELL EXPANSION JOINT FILLER OR SIMILAR APPROVED AT EACH PIPE JOINT.
 - PRIVATE DRAINAGE CONNECTIONS TO THE SEWER WILL BE 150mm DIAMETER AND LAID TO THE SPECIFIED INVERT.
 - THE INVERT LEVELS SPECIFIED AT THE DRAG OUT CHAMBER ARE INCOMING LEVELS.
 - WHEREVER POSSIBLE PRIVATE DRAINAGE RUNS WILL REMAIN WITHIN THE CURTILAGE OF THE DWELLING FOR WHICH THEY SERVE.
 - THE CONNECTION TO THE ADAPTABLE SEWER SHALL BE MANUFACTURED JUNCTION PIPES A SADDLE CONNECTION IS NOT PERMITTED UNLESS IT IS CLEARLY SPECIFIED.
 - CONNECTIONS TO THE EXISTING SEWER WILL BE IN ACCORDANCE WITH SECTION 104 APPROVAL GRANTED BY UNITED UTILITIES.
 - CONNECTIONS TO THE EXISTING WATERCOURSE WILL BE IN ACCORDANCE WITH APPROVAL GRANTED BY THE EA.
 - WHILE THIS DRAWING IS ISSUED FOR CONSTRUCTION, WORKS ARE STILL AT THE DEVELOPERS RISK UNTIL THE SECTION 104 AND SECTION 38 APPROVALS HAVE BEEN CONFIRMED.



SHEET LOCATION
NTS

C07 28.07.25	Amended in line with client comments.	H.S. R.A.
C06 23.07.25	Amended easement around pond.	H.S. R.A.
C05 18.06.24	Thornton Street North design added	M.A. R.A.
Rev	Date	Description
By	CHK	

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Project Name
COLLYHURST VILLAGE

Client
DEX CONSTRUCTION

Designed	Drawn	Checked	Scale @ A1
A.R.	A.R.	M.A.	1:500

Drawing Title
**DRAINAGE LAYOUT
SHEET 2**

Project No. 221625	ISSUED FOR CONSTRUCTION
Drawing No. 221625-EDGE-XX-DR-C-2002	Revision C07

FILENAME

PLOT DATE

0 mm 10 20 30 40 50

APPENDIX B DRAINAGE CALCULATIONS

Edge Consulting UK		Page 0
Barton Arcade Manchester M3 2BH		
Date 13/08/2025 10:20 File SURFACE WATER NETWORK 2...	Designed by phill Checked by	
XP Solutions	Network 2020.1.3	

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for SURFACE WATER NETWORK 2

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	30	PIMP (%)	100
M5-60 (mm)	18.000	Add Flow / Climate Change (%)	0
Ratio R	0.358	Minimum Backdrop Height (m)	0.600
Maximum Rainfall (mm/hr)	100	Maximum Backdrop Height (m)	3.000
Maximum Time of Concentration (mins)	30	Min Design Depth for Optimisation (m)	1.200
Foul Sewage (l/s/ha)	0.000	Min Vel for Auto Design only (m/s)	1.00
Volumetric Runoff Coeff.	0.850	Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Network Design Table for SURFACE WATER NETWORK 2

« - Indicates pipe capacity < flow

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
1.000	24.558	0.490	50.1	0.086	5.00	0.0	0.600	o	225	Pipe/Conduit	
1.001	54.627	1.781	30.7	0.137	0.00	0.0	0.600	o	225	Pipe/Conduit	
1.002	28.280	1.104	25.6	0.191	0.00	0.0	0.600	o	300	Pipe/Conduit	
1.003	8.631	0.133	64.9	0.090	0.00	0.0	0.600	o	375	Pipe/Conduit	
1.004	60.487	1.567	38.6	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	
2.000	24.209	0.151	160.3	0.083	5.00	0.0	0.600	o	225	Pipe/Conduit	
2.001	35.778	0.224	159.7	0.033	0.00	0.0	0.600	o	225	Pipe/Conduit	
2.002	18.543	0.530	35.0	0.063	0.00	0.0	0.600	o	225	Pipe/Conduit	
2.003	29.761	0.744	40.0	0.019	0.00	0.0	0.600	o	225	Pipe/Conduit	
2.004	16.358	0.833	19.6	0.048	0.00	0.0	0.600	o	225	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.000	100.00	5.22	59.833	0.086	0.0	0.0	0.0	1.85	73.6	26.4
1.001	100.00	5.60	59.343	0.223	0.0	0.0	0.0	2.37	94.3	68.4
1.002	100.00	5.76	57.487	0.414	0.0	0.0	0.0	3.12	220.5	127.1
1.003	100.00	5.82	56.308	0.504	0.0	0.0	0.0	2.25	248.8	154.7
1.004	100.00	6.16	56.175	0.504	0.0	0.0	0.0	2.92	323.0	154.7
2.000	100.00	5.39	57.240	0.083	0.0	0.0	0.0	1.03	41.0	25.5
2.001	100.00	5.97	57.089	0.116	0.0	0.0	0.0	1.03	41.0	35.6
2.002	100.00	6.11	56.865	0.179	0.0	0.0	0.0	2.22	88.2	54.9
2.003	99.09	6.35	56.335	0.198	0.0	0.0	0.0	2.07	82.5	60.2
2.004	98.50	6.44	55.591	0.246	0.0	0.0	0.0	2.97	117.9	74.4

Edge Consulting UK		Page 1
Barton Arcade Manchester M3 2BH		
Date 13/08/2025 10:20 File SURFACE WATER NETWORK 2...	Designed by phill Checked by	
XP Solutions Network 2020.1.3		

Network 2020.1.3

Network Design Table for SURFACE WATER NETWORK 2

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
1.005	42.598	0.609	69.9	0.083	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.006	9.535	1.374	6.9	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
3.000	34.229	1.070	32.0	0.169	5.00	0.0	0.600	o	225	Pipe/Conduit	
3.001	43.711	1.325	33.0	0.179	0.00	0.0	0.600	o	300	Pipe/Conduit	
3.002	34.260	0.086	398.4	0.217	0.00	0.0	0.600	o	450	Pipe/Conduit	
3.003	39.896	0.711	56.1	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.007	32.933	0.074	445.0	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.008	9.860	0.021	469.5	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	

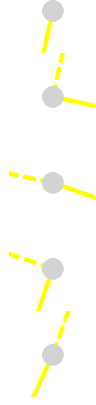
Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.005	96.68	6.73	54.533	0.833	0.0	0.0	0.0	2.43	387.0	247.2
1.006	96.56	6.75	53.925	0.833	0.0	0.0	0.0	7.75	1233.3	247.2
3.000	100.00	5.25	55.932	0.169	0.0	0.0	0.0	2.32	92.3	51.9
3.001	100.00	5.51	54.787	0.348	0.0	0.0	0.0	2.75	194.2	106.8
3.002	100.00	6.07	53.348	0.565	0.0	0.0	0.0	1.01	161.0	173.4
3.003	99.28	6.32	53.262	0.565	0.0	0.0	0.0	2.72	432.4	173.4
1.007	93.22	7.33	52.206	1.398	0.0	0.0	0.0	0.96	152.2	400.0
1.008	92.25	7.50	52.132	1.398	0.0	0.0	0.0	0.93	148.2	400.0

Edge Consulting UK		Page 2
Barton Arcade Manchester M3 2BH		
Date 13/08/2025 10:20	Designed by phill	
File SURFACE WATER NETWORK 2...	Checked by	
XP Solutions		Network 2020.1.3

Manhole Schedules for SURFACE WATER NETWORK 2

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam., L*W (mm)	Pipe Out PN	Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN	Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
SW4	61.258	1.425	Open Manhole	1350	1.000	59.833	225				
SW5	60.768	1.425	Open Manhole	1350	1.001	59.343	225	1.000	59.343	225	
SW6	58.987	1.500	Open Manhole	1350	1.002	57.487	300	1.001	57.562	225	
SW7	57.883	1.575	Open Manhole	1350	1.003	56.308	375	1.002	56.383	300	
SW9	57.750	1.575	Open Manhole	1350	1.004	56.175	375	1.003	56.175	375	
SW13	58.665	1.425	Open Manhole	1350	2.000	57.240	225				
SW14	58.991	1.902	Open Manhole	1350	2.001	57.089	225	2.000	57.089	225	
SW10	58.444	1.579	Open Manhole	1350	2.002	56.865	225	2.001	56.865	225	
SW11	57.822	1.487	Open Manhole	1350	2.003	56.335	225	2.002	56.335	225	
SW12	57.108	1.517	Open Manhole	1350	2.004	55.591	225	2.003	55.591	225	
SW8	56.184	1.651	Open Manhole	1500	1.005	54.533	450	1.004	54.608	375	
								2.004	54.758	225	
SW16	55.723	1.799	Open Manhole	1800	1.006	53.925	450	1.005	53.924	450	
SW17	57.357	1.425	Open Manhole	1350	3.000	55.932	225				
SW18	56.397	1.610	Open Manhole	1350	3.001	54.787	300	3.000	54.862	225	
SW19	55.500	2.152	Open Manhole	1800	3.002	53.348	450	3.001	53.462	300	
SW20	55.578	2.316	Open Manhole	1800	3.003	53.262	450	3.002	53.262	450	
SW21	55.738	3.532	Open Manhole	1800	1.007	52.206	450	1.006	52.551	450	345
								3.003	52.551	450	345
SW22	55.951	3.819	Open Manhole	2100	1.008	52.132	450	1.007	52.132	450	
SW23	56.071	3.960	Open Manhole	1350		OUTFALL		1.008	52.111	450	

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
SW4	385578.844	400402.374	385578.844	400402.374	Required	
SW5	385573.480	400378.407	385573.480	400378.407	Required	
SW6	385626.919	400367.076	385626.919	400367.076	Required	
SW7	385653.637	400357.809	385653.637	400357.809	Required	
SW9	385650.794	400349.660	385650.794	400349.660	Required	

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PIPELINE SCHEDULES for SURFACE WATER NETWORK 2

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)
1.000	o	225	SW4	61.258	59.833	1.200	Open Manhole	1350
1.001	o	225	SW5	60.768	59.343	1.200	Open Manhole	1350
1.002	o	300	SW6	58.987	57.487	1.200	Open Manhole	1350
1.003	o	375	SW7	57.883	56.308	1.200	Open Manhole	1350
1.004	o	375	SW9	57.750	56.175	1.200	Open Manhole	1350
2.000	o	225	SW13	58.665	57.240	1.200	Open Manhole	1350
2.001	o	225	SW14	58.991	57.089	1.677	Open Manhole	1350
2.002	o	225	SW10	58.444	56.865	1.354	Open Manhole	1350
2.003	o	225	SW11	57.822	56.335	1.262	Open Manhole	1350
2.004	o	225	SW12	57.108	55.591	1.292	Open Manhole	1350
1.005	o	450	SW8	56.184	54.533	1.201	Open Manhole	1500
1.006	o	450	SW16	55.723	53.925	1.348	Open Manhole	1800
3.000	o	225	SW17	57.357	55.932	1.200	Open Manhole	1350
3.001	o	300	SW18	56.397	54.787	1.310	Open Manhole	1350
3.002	o	450	SW19	55.500	53.348	1.702	Open Manhole	1800
3.003	o	450	SW20	55.578	53.262	1.866	Open Manhole	1800
1.007	o	450	SW21	55.738	52.206	3.082	Open Manhole	1800

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)
1.000	24.558	50.1	SW5	60.768	59.343	1.200	Open Manhole	1350
1.001	54.627	30.7	SW6	58.987	57.562	1.200	Open Manhole	1350
1.002	28.280	25.6	SW7	57.883	56.383	1.200	Open Manhole	1350
1.003	8.631	64.9	SW9	57.750	56.175	1.200	Open Manhole	1350
1.004	60.487	38.6	SW8	56.184	54.608	1.201	Open Manhole	1500
2.000	24.209	160.3	SW14	58.991	57.089	1.677	Open Manhole	1350
2.001	35.778	159.7	SW10	58.444	56.865	1.354	Open Manhole	1350
2.002	18.543	35.0	SW11	57.822	56.335	1.262	Open Manhole	1350
2.003	29.761	40.0	SW12	57.108	55.591	1.292	Open Manhole	1350
2.004	16.358	19.6	SW8	56.184	54.758	1.201	Open Manhole	1500
1.005	42.598	69.9	SW16	55.723	53.924	1.349	Open Manhole	1800
1.006	9.535	6.9	SW21	55.738	52.551	2.737	Open Manhole	1800
3.000	34.229	32.0	SW18	56.397	54.862	1.310	Open Manhole	1350
3.001	43.711	33.0	SW19	55.500	53.462	1.738	Open Manhole	1800
3.002	34.260	398.4	SW20	55.578	53.262	1.866	Open Manhole	1800
3.003	39.896	56.1	SW21	55.738	52.551	2.737	Open Manhole	1800
1.007	32.933	445.0	SW22	55.951	52.132	3.369	Open Manhole	2100

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<u>Online Controls for SURFACE WATER NETWORK 2</u>																																																																										
<u>Hydro-Brake® Optimum Manhole: SW22, DS/PN: 1.008, Volume (m³): 18.2</u>																																																																										
Unit Reference MD-SHE-0195-2400-2400-2400																																																																										
Design Head (m) 2.400																																																																										
Design Flow (l/s) 24.0																																																																										
Flush-Flo™ Calculated																																																																										
Objective Minimise upstream storage																																																																										
Application Surface																																																																										
Sump Available Yes																																																																										
Diameter (mm) 195																																																																										
Invert Level (m) 52.132																																																																										
Minimum Outlet Pipe Diameter (mm) 225																																																																										
Suggested Manhole Diameter (mm) 1800																																																																										
<table><tr><td>Control Points</td><td>Head (m)</td><td>Flow (l/s)</td></tr><tr><td>Design Point (Calculated)</td><td>2.400</td><td>24.0</td></tr><tr><td>Flush-Flo™</td><td>0.697</td><td>24.0</td></tr><tr><td>Kick-Flo®</td><td>1.460</td><td>18.9</td></tr><tr><td>Mean Flow over Head Range</td><td>-</td><td>20.9</td></tr></table>			Control Points	Head (m)	Flow (l/s)	Design Point (Calculated)	2.400	24.0	Flush-Flo™	0.697	24.0	Kick-Flo®	1.460	18.9	Mean Flow over Head Range	-	20.9																																																									
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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																																																																										
<table><tr><td>Depth (m)</td><td>Flow (l/s)</td><td>Depth (m)</td><td>Flow (l/s)</td><td>Depth (m)</td><td>Flow (l/s)</td><td>Depth (m)</td><td>Flow (l/s)</td></tr><tr><td>0.100</td><td>6.7</td><td>1.200</td><td>22.3</td><td>3.000</td><td>26.7</td><td>7.000</td><td>40.1</td></tr><tr><td>0.200</td><td>18.1</td><td>1.400</td><td>20.0</td><td>3.500</td><td>28.7</td><td>7.500</td><td>41.5</td></tr><tr><td>0.300</td><td>21.3</td><td>1.600</td><td>19.8</td><td>4.000</td><td>30.6</td><td>8.000</td><td>42.8</td></tr><tr><td>0.400</td><td>22.7</td><td>1.800</td><td>20.9</td><td>4.500</td><td>32.4</td><td>8.500</td><td>44.0</td></tr><tr><td>0.500</td><td>23.5</td><td>2.000</td><td>22.0</td><td>5.000</td><td>34.1</td><td>9.000</td><td>45.3</td></tr><tr><td>0.600</td><td>23.9</td><td>2.200</td><td>23.0</td><td>5.500</td><td>35.7</td><td>9.500</td><td>46.5</td></tr><tr><td>0.800</td><td>23.9</td><td>2.400</td><td>24.0</td><td>6.000</td><td>37.2</td><td></td><td></td></tr><tr><td>1.000</td><td>23.4</td><td>2.600</td><td>24.9</td><td>6.500</td><td>38.7</td><td></td><td></td></tr></table>			Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	0.100	6.7	1.200	22.3	3.000	26.7	7.000	40.1	0.200	18.1	1.400	20.0	3.500	28.7	7.500	41.5	0.300	21.3	1.600	19.8	4.000	30.6	8.000	42.8	0.400	22.7	1.800	20.9	4.500	32.4	8.500	44.0	0.500	23.5	2.000	22.0	5.000	34.1	9.000	45.3	0.600	23.9	2.200	23.0	5.500	35.7	9.500	46.5	0.800	23.9	2.400	24.0	6.000	37.2			1.000	23.4	2.600	24.9	6.500	38.7		
Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)																																																																			
0.100	6.7	1.200	22.3	3.000	26.7	7.000	40.1																																																																			
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0.500	23.5	2.000	22.0	5.000	34.1	9.000	45.3																																																																			
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<u>Storage Structures for SURFACE WATER NETWORK 2</u> <u>Tank or Pond Manhole: SW22, DS/PN: 1.008</u> Invert Level (m) 52.206 <table><tr><th>Depth (m)</th><th>Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th></tr><tr><td>0.000</td><td>41.1</td><td>1.494</td><td>315.2</td><td>2.495</td><td>0.0</td></tr><tr><td>0.494</td><td>107.4</td><td>2.494</td><td>675.1</td><td></td><td></td></tr></table>			Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	0.000	41.1	1.494	315.2	2.495	0.0	0.494	107.4	2.494	675.1		
Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)															
0.000	41.1	1.494	315.2	2.495	0.0															
0.494	107.4	2.494	675.1																	
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2 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
for SURFACE WATER NETWORK 2

PN	US/MH Name	Surcharged		Flooded		Half Drain		Pipe Flow (l/s)	Status	Level Exceeded
		Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Time (mins)	Flow (l/s)			
1.000	SW4	-0.157	0.000	0.20			13.3		OK	
1.001	SW5	-0.133	0.000	0.34			31.2		OK	
1.002	SW6	-0.191	0.000	0.28			56.3		OK	
1.003	SW7	-0.191	0.000	0.48			68.2		OK	
1.004	SW9	-0.255	0.000	0.22			68.0		OK	
2.000	SW13	-0.134	0.000	0.34			12.7		OK	
2.001	SW14	-0.120	0.000	0.43			16.7		OK	
2.002	SW10	-0.138	0.000	0.31			24.7		OK	
2.003	SW11	-0.132	0.000	0.35			27.0		OK	
2.004	SW12	-0.138	0.000	0.32			33.0		OK	
1.005	SW8	-0.274	0.000	0.32			110.5		OK	
1.006	SW16	-0.326	0.000	0.17			111.2		OK	
3.000	SW17	-0.140	0.000	0.30			26.2		OK	
3.001	SW18	-0.193	0.000	0.27			49.4		OK	
3.002	SW19	-0.209	0.000	0.55			76.9		OK	
3.003	SW20	-0.313	0.000	0.20			76.6		OK	
1.007	SW21	0.447	0.000	0.80			106.3	SURCHARGED		
1.008	SW22	0.510	0.000	0.29			24.0	SURCHARGED		

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Manchester

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File SURFACE WATER NETWORK 2...

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

for SURFACE WATER NETWORK 2

Simulation Criteria

Areal Reduction Factor 1.000

Hot Start (mins) 0

Hot Start Level (mm) 0

Manhole Headloss Coeff (Global) 0.500

Foul Sewage per hectare (l/s) 0.000

Additional Flow - % of Total Flow 0.000

MADD Factor * 10m³/ha Storage 2.000

Inlet Coefficient 0.800

Flow per Person per Day (l/per/day) 0.000

Number of Input Hydrographs 0

Number of Online Controls 1

Number of Offline Controls 0

Number of Storage Structures 1

Number of Time/Area Diagrams 0

Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR

Region England and Wales Cv (Summer) 0.750

M5-60 (mm) 18.000

Ratio R 0.357

Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0

Analysis Timestep Fine

DTS Status ON

DVD Status OFF

Inertia Status OFF

Profile(s) Summer and Winter

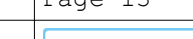
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440

Return Period(s) (years) 2, 30, 100

Climate Change (%) 0, 0, 40

	US/MH		Return	Climate	First (X)	First (Y)	First (Z)	Overflow	Water
	PN	Name	Storm	Period	Change	Surcharge	Flood	Overflow	Level
								Act.	(m)
1.000	SW4	15	Winter	30	+0%	100/15	Summer		59.928
1.001	SW5	15	Winter	30	+0%	100/15	Summer		59.490
1.002	SW6	15	Winter	30	+0%	100/15	Summer		57.663
1.003	SW7	15	Winter	30	+0%	30/15	Summer		56.691
1.004	SW9	15	Winter	30	+0%				56.366
2.000	SW13	15	Winter	30	+0%	100/15	Summer		57.373
2.001	SW14	15	Winter	30	+0%	100/15	Summer		57.254
2.002	SW10	15	Winter	30	+0%	100/15	Summer		56.999
2.003	SW11	15	Winter	30	+0%	100/15	Summer		56.481
2.004	SW12	15	Winter	30	+0%	100/15	Summer		55.728
1.005	SW8	15	Winter	30	+0%	100/15	Summer		54.817
1.006	SW16	15	Winter	30	+0%	100/15	Summer		54.114
3.000	SW17	15	Winter	30	+0%	100/15	Summer		56.055
3.001	SW18	15	Winter	30	+0%	100/15	Summer		54.953
3.002	SW19	15	Winter	30	+0%	30/15	Summer		53.821
3.003	SW20	120	Winter	30	+0%	100/15	Summer		53.706
1.007	SW21	120	Winter	30	+0%	2/15	Summer		53.702
1.008	SW22	120	Winter	30	+0%	2/15	Summer		53.693

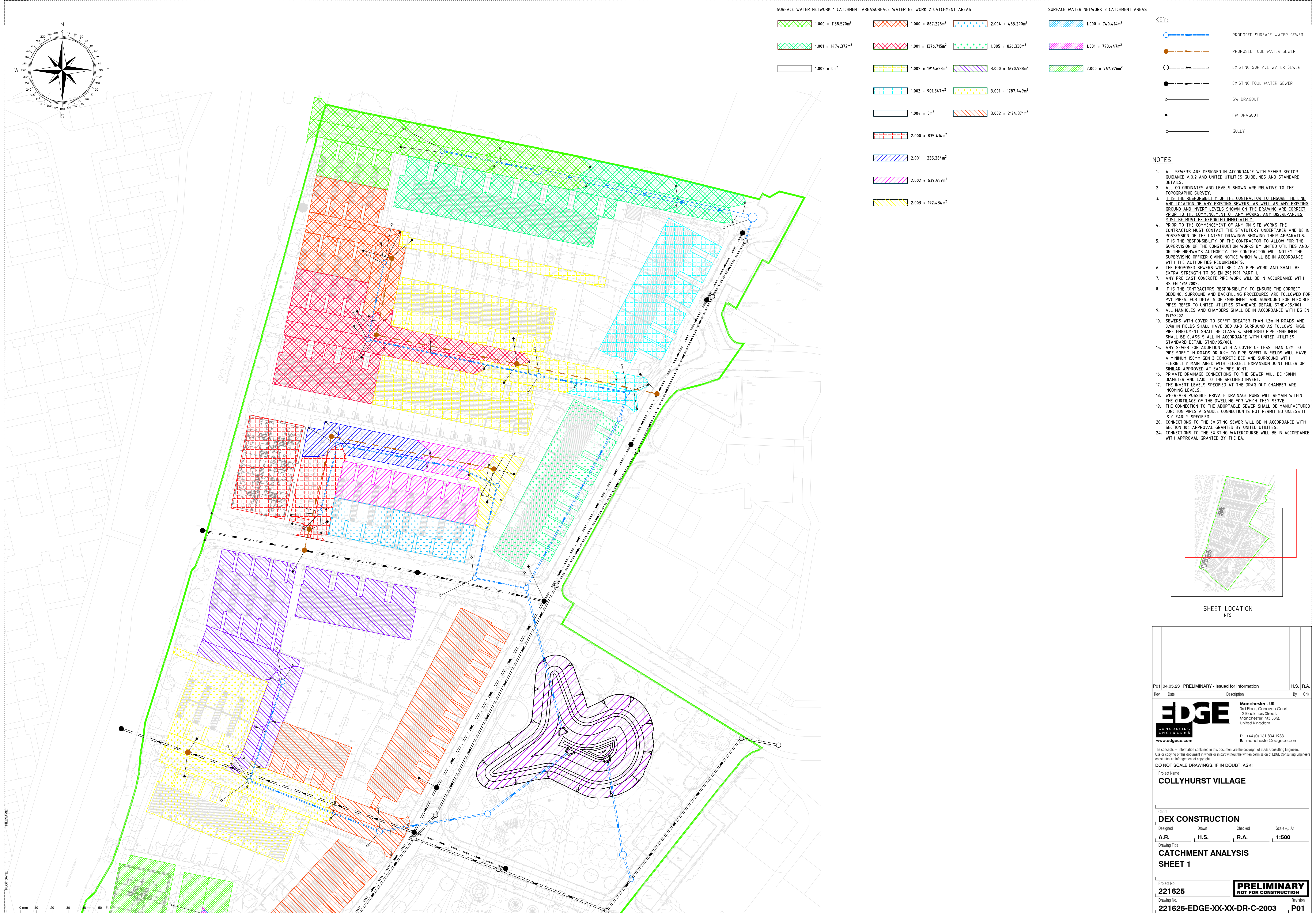
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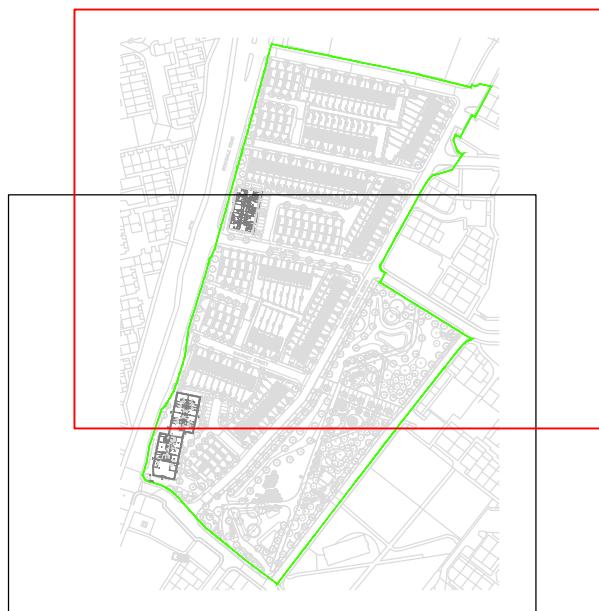
100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SURFACE WATER NETWORK 2

PN	US/MH Name	Surcharged		Flooded		Half Drain		Pipe Flow (l/s)	Status	Level Exceeded
		Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Time (mins)	Flow (l/s)			
1.000	SW4	0.285	0.000	0.62			42.1	SURCHARGED		
1.001	SW5	0.607	0.000	1.11			101.0	SURCHARGED		
1.002	SW6	0.233	0.000	0.99			196.9	SURCHARGED		
1.003	SW7	0.246	0.000	1.70			243.1	SURCHARGED		
1.004	SW9	-0.118	0.000	0.80			243.3	OK		
2.000	SW13	0.318	0.000	1.02			38.6	SURCHARGED		
2.001	SW14	0.314	0.000	1.33			51.6	SURCHARGED		
2.002	SW10	0.144	0.000	0.93			73.6	SURCHARGED		
2.003	SW11	0.240	0.000	1.04			79.9	SURCHARGED		
2.004	SW12	0.241	0.000	0.97			101.1	SURCHARGED		
1.005	SW8	0.472	0.000	1.05			364.7	SURCHARGED		
1.006	SW16	0.551	0.000	0.50			328.5	SURCHARGED		
3.000	SW17	0.323	0.000	0.92			80.2	SURCHARGED		
3.001	SW18	0.616	0.000	0.89			160.8	SURCHARGED		
3.002	SW19	1.134	0.000	1.72			241.8	SURCHARGED		
3.003	SW20	1.069	0.000	0.51			194.8	SURCHARGED		
1.007	SW21	1.971	0.000	3.65			484.0	SURCHARGED		
1.008	SW22	1.844	0.000	0.29			24.0	SURCHARGED		

APPENDIX C CATCHMENT ANALYSIS

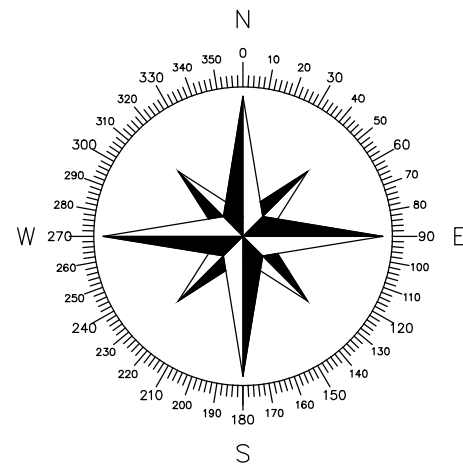


- KEY:**
- PROPOSED SURFACE WATER SEWER
 - PROPOSED FOUL WATER SEWER
 - EXISTING SURFACE WATER SEWER
 - EXISTING FOUL WATER SEWER
 - SW DRAGOUT
 - FW DRAGOUT
 - GULLY
- NOTES:**
- ALL SEWERS ARE DESIGNED IN ACCORDANCE WITH SEWER SECTOR GUIDANCE V.0.2 AND UNITED UTILITIES GUIDELINES AND STANDARD DETAILS.
 - ALL CO-ORDINATES AND LEVELS SHOWN ARE RELATIVE TO THE TOPOGRAPHIC SURVEY.
 - IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THE LINE AND LOCATION OF ANY EXISTING SEWERS, AS WELL AS ANY EXISTING GROUND AND INVERT LEVELS SHOWN ON THE DRAWING ARE CORRECT PRIOR TO THE COMMENCEMENT OF ANY WORKS. ANY DISCREPANCIES MUST BE MUST BE REPORTED IMMEDIATELY.
 - PRIOR TO THE COMMENCEMENT OF ANY ON SITE WORKS THE CONTRACTOR MUST CONTACT THE STATUTORY UNDERTAKER AND BE IN POSSESSION OF THE LATEST DRAWINGS SHOWING THEIR APPARATUS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ALLOW FOR THE SUPERVISION OF THE CONSTRUCTION WORKS BY UNITED UTILITIES AND/OR THE HIGHWAYS AUTHORITY. THE CONTRACTOR WILL NOTIFY THE SUPERVISING OFFICER GIVING NOTICE WHICH WILL BE IN ACCORDANCE WITH THE AUTHORITIES REQUIREMENTS.
 - THE PROPOSED SEWERS WILL BE CLAY PIPE WORK AND SHALL BE EXTRA STRENGTH TO BS EN 295:1991 PART 1.
 - ANY PRE CAST CONCRETE PIPE WORK WILL BE IN ACCORDANCE WITH BS EN 1916:2002.
 - IT IS THE CONTRACTORS RESPONSIBILITY TO ENSURE THE CORRECT BEDDING, SURROUND AND BACKFILLING PROCEDURES ARE FOLLOWED FOR PVC PIPES. FOR DETAILS OF EMBEDMENT AND SURROUND FOR FLEXIBLE PIPES REFER TO UNITED UTILITIES STANDARD DETAIL STD/05/001.
 - ALL MANHOLES AND CHAMBERS SHALL BE IN ACCORDANCE WITH BS EN 1917:2002.
 - SEWERS WITH COVER TO SOFFIT GREATER THAN 1.2m IN ROADS AND 0.9m IN FIELDS SHALL HAVE BED AND SURROUND AS FOLLOWS: RIGID PIPE EMBEDMENT SHALL BE CLASS 5. SEMI RIGID PIPE EMBEDMENT SHALL BE CLASS 5 ALL IN ACCORDANCE WITH UNITED UTILITIES STANDARD DETAIL STD/05/001.
 - ANY SEWER FOR ADOPTION WITH A COVER OF LESS THAN 1.2m TO PIPE SOFFIT IN ROADS OR 0.9m TO PIPE SOFFIT IN FIELDS WILL HAVE A MINIMUM 150mm GEN 3 CONCRETE BED AND SURROUND WITH FLEXIBILITY MAINTAINED WITH FLEXCELL EXPANSION JOINT FILLER OR SIMILAR APPROVED AT EACH PIPE JOINT.
 - PRIVATE DRAINAGE CONNECTIONS TO THE SEWER WILL BE 150MM DIAMETER AND LAID TO THE SPECIFIED INVERT.
 - THE INVERT LEVELS SPECIFIED AT THE DRAG OUT CHAMBER ARE INCOMING LEVELS.
 - WHEREVER POSSIBLE PRIVATE DRAINAGE RUNS WILL REMAIN WITHIN THE CURTLAGE OF THE DWELLING FOR WHICH THEY SERVE.
 - THE CONNECTION TO THE ADOPTABLE SEWER SHALL BE MANUFACTURED JUNCTION PIPES A SADDLE CONNECTION IS NOT PERMITTED UNLESS IT IS CLEARLY SPECIFIED.
 - CONNECTIONS TO THE EXISTING SEWER WILL BE IN ACCORDANCE WITH SECTION 106 APPROVAL GRANTED BY UNITED UTILITIES.
 - CONNECTIONS TO THE EXISTING WATERCOURSE WILL BE IN ACCORDANCE WITH APPROVAL GRANTED BY THE EA.



SHEET LOCATION
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P01 04.05.23 PRELIMINARY - Issued for Information		H.S. R.A.
Rev	Date	Description
EDGE CONSULTING ENGINEERS www.edgece.com		Manchester . UK 3rd Floor, Cornarvon Court, 12 Blackfriars Street, Manchester, M3 9BQ, United Kingdom T: +44 (0) 161 834 1938 E: manchester@edgece.com
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Project Name COLLYHURST VILLAGE		
Client DEX CONSTRUCTION		
Designed	Drawn	Checked
A.R.	H.S.	R.A.
Drawing Title CATCHMENT ANALYSIS SHEET 1		Scale @ A1 1:500
Project No. 221625		PRELIMINARY NOT FOR CONSTRUCTION
Drawing No. 221625-EDGE-XX-XX-DR-C-2003		
Revision		P01

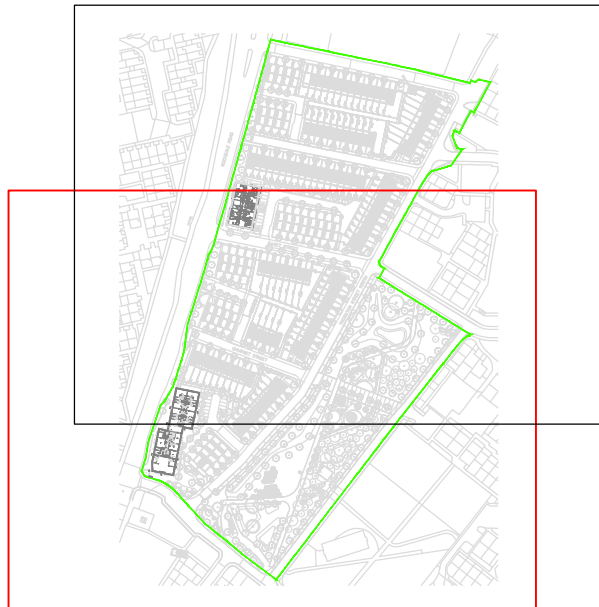


SURFACE WATER NETWORK 1 CATCHMENT AREAS			SURFACE WATER NETWORK 2 CATCHMENT AREAS		
	1.000 = 1158.570m ²		1.000 = 867.228m ²		2.004 = 483.290m ²
	1.001 = 1474.372m ²		1.001 = 1376.715m ²		1.005 = 826.338m ²
	1.002 = 0m ²		1.002 = 1916.628m ²		3.000 = 1690.988m ²
			1.003 = 901.547m ²		3.001 = 1787.449m ²
			1.004 = 0m ²		3.002 = 2174.371m ²
			2.000 = 835.414m ²		
			2.001 = 335.384m ²		
			2.002 = 639.459m ²		
			2.003 = 192.434m ²		

SURFACE WATER NETWORK 3 CATCHMENT AREAS	
	1.000 = 740.414m ²
	1.001 = 790.447m ²
	2.000 = 767.926m ²

	PROPOSED SURFACE WATER SEWER
	PROPOSED FOUL WATER SEWER
	EXISTING SURFACE WATER SEWER
	EXISTING FOUL WATER SEWER
	SW DRAGOUT
	FW DRAGOUT
	GULLY

- NOTES:
- ALL SEWERS ARE DESIGNED IN ACCORDANCE WITH SEWER SECTOR GUIDANCE V.0.2 AND UNITED UTILITIES GUIDELINES AND STANDARD DETAILS.
 - ALL CO-ORDINATES AND LEVELS SHOWN ARE RELATIVE TO THE TOPOGRAPHIC SURVEY.
 - IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THE LINE AND LOCATION OF ANY EXISTING SEWERS, AS WELL AS ANY EXISTING GROUND AND INVERT LEVELS SHOWN ON THE DRAWING ARE CORRECT PRIOR TO THE COMMENCEMENT OF ANY WORKS. ANY DISCREPANCIES MUST BE MUST BE REPORTED IMMEDIATELY.
 - PRIOR TO THE COMMENCEMENT OF ANY ON SITE WORKS THE CONTRACTOR MUST CONTACT THE STATUTORY UNDERTAKER AND BE IN POSSESSION OF THE LATEST DRAWINGS SHOWING THEIR APPARATUS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ALLOW FOR THE SUPERVISION OF THE CONSTRUCTION WORKS BY UNITED UTILITIES AND/OR THE HIGHWAYS AUTHORITY. THE CONTRACTOR WILL NOTIFY THE SUPERVISING OFFICER GIVING NOTICE WHICH WILL BE IN ACCORDANCE WITH THE AUTHORITIES REQUIREMENTS.
 - THE PROPOSED SEWERS WILL BE CLAY PIPE WORK AND SHALL BE EXTRA STRENGTH TO BS EN 295:1991 PART 1.
 - ANY PRE CAST CONCRETE PIPE WORK WILL BE IN ACCORDANCE WITH BS EN 1916:2002.
 - IT IS THE CONTRACTORS RESPONSIBILITY TO ENSURE THE CORRECT BEDDING, SURROUND AND BACKFILLING PROCEDURES ARE FOLLOWED FOR PVC PIPES. FOR DETAILS OF EMBEDMENT AND SURROUND FOR FLEXIBLE PIPES REFER TO UNITED UTILITIES STANDARD DETAIL STDND/05/001.
 - ALL MANHOLES AND CHAMBERS SHALL BE IN ACCORDANCE WITH BS EN 1917:2002.
 - SEWERS WITH COVER TO SOFFIT GREATER THAN 1.2m IN ROADS AND 0.9m IN FIELDS SHALL HAVE BED AND SURROUND AS FOLLOWS: RIGID PIPE EMBEDMENT SHALL BE CLASS S. SEMI RIGID PIPE EMBEDMENT SHALL BE CLASS S ALL IN ACCORDANCE WITH UNITED UTILITIES STANDARD DETAIL STDND/05/001.
 - ANY SEWER FOR ADOPTION WITH A COVER OF LESS THAN 1.2m TO PIPE SOFFIT IN ROADS OR 0.9m TO PIPE SOFFIT IN FIELDS WILL HAVE A MINIMUM 150mm GEN 3 CONCRETE BED AND SURROUND WITH FLEXIBILITY MAINTAINED WITH FLEXICELL EXPANSION JOINT FILLER OR SIMILAR APPROVED AT EACH PIPE JOINT.
 - PRIVATE DRAINAGE CONNECTIONS TO THE SEWER WILL BE 150MM DIAMETER AND LAID TO THE SPECIFIED INVERT.
 - THE INVERT LEVELS SPECIFIED AT THE DRAG OUT CHAMBER ARE INCOMING LEVELS.
 - WHEREVER POSSIBLE PRIVATE DRAINAGE RUNS WILL REMAIN WITHIN THE CURTLAGE OF THE DWELLING FOR WHICH THEY SERVE.
 - THE CONNECTION TO THE ADOPTABLE SEWER SHALL BE MANUFACTURED JUNCTION PIPES A SADDLE CONNECTION IS NOT PERMITTED UNLESS IT IS CLEARLY SPECIFIED.
 - CONNECTIONS TO THE EXISTING SEWER WILL BE IN ACCORDANCE WITH SECTION 104 APPROVAL GRANTED BY UNITED UTILITIES.
 - CONNECTIONS TO THE EXISTING WATERCOURSE WILL BE IN ACCORDANCE WITH APPROVAL GRANTED BY THE EA.



SHEET LOCATION
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P01 04.05.23	PRELIMINARY - Issued for Information	H.S. MA.
Rev	Date	Description

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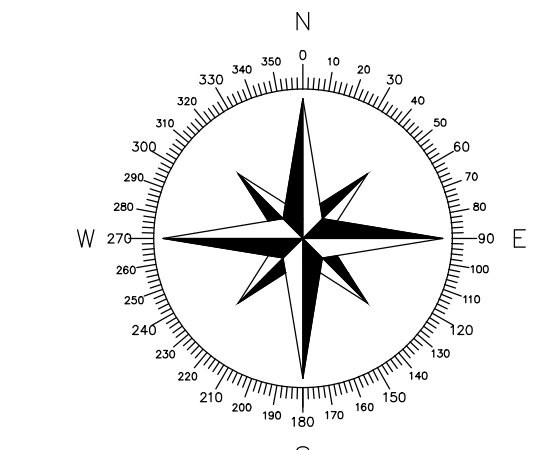
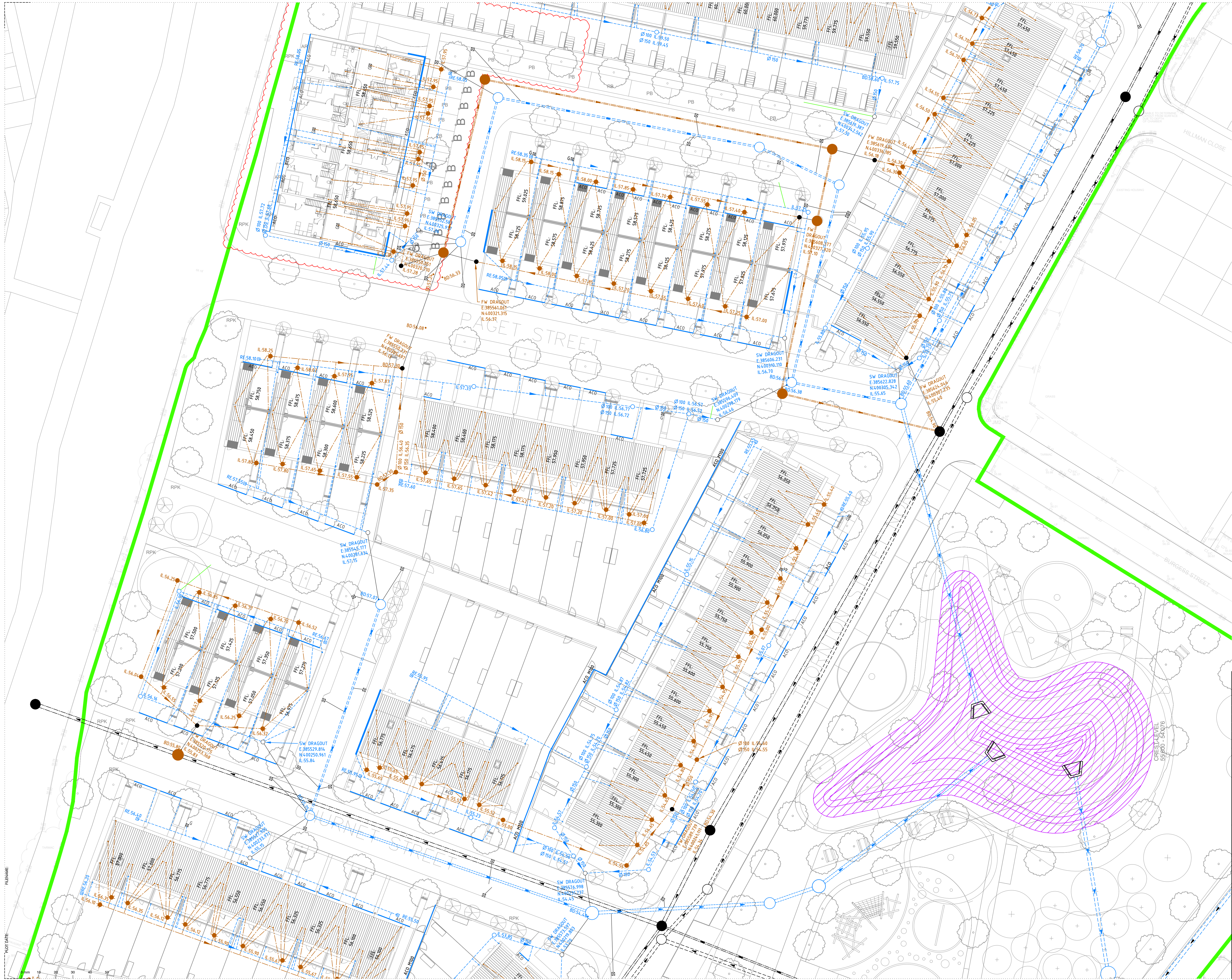
Manchester . UK
3rd Floor, Corporation Court,
12 Blackfriars Street,
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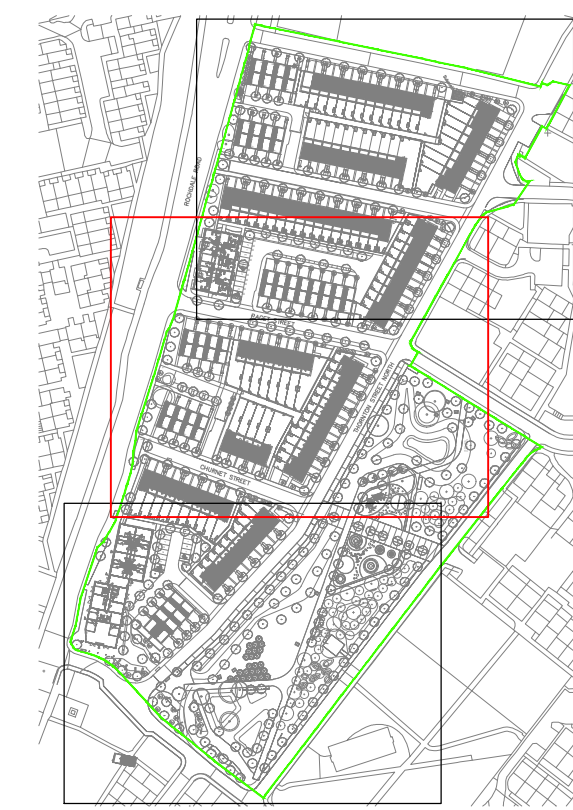
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Project Name COLLYHURST VILLAGE			
Client DEX CONSTRUCTION			
Designed	Drawn	Checked	Scale @ A1
A.R.	H.S.	R.A.	1:500
Drawing Title CATCHMENT ANALYSIS SHEET 2			
Project No. 221625	PRELIMINARY NOT FOR CONSTRUCTION		
Drawing No. 221625-EDGE-XX-XX-DR-C-2004	Revision	P01	

APPENDIX C PLOT DRAINAGE

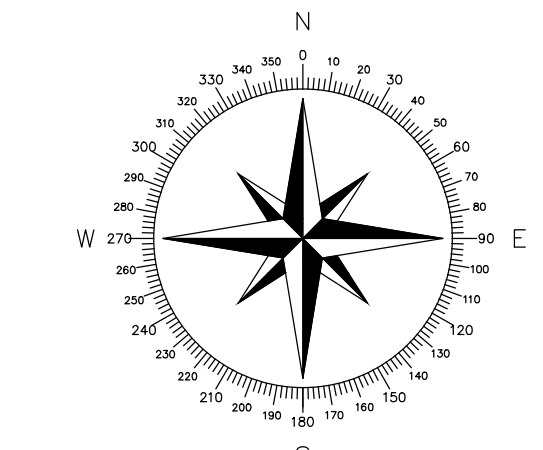


- KEY**
- IL 38.400 SURFACE WATER SEWER & INSPECTION CHAMBER
 - RE 38.400 SURFACE WATER SEWER & RODDING EYE
 - IL 38.200 FOUL WATER SEWER & INSPECTION CHAMBER
 - CONNECTION FROM SUDS TREE PITS/RAIN GARDENS
- LEGEND**
- IL INVERT LEVEL
 - RE RODDING EYE
 - BD BACKDROP
- NOTES:**
- WHERE THE DEPTH TO INVERT LEVEL IS A MAXIMUM OF 1.2M PRIVATE DRAINAGE CHAMBERS WILL BE A 475MM DIAMETER POLYPROPYLENE INSPECTION CHAMBER (PPIC).
 - WHERE THE DEPTH TO INVERT LEVEL IS A MAXIMUM OF 3M PRIVATE DRAINAGE CHAMBERS WILL BE A 475MM DIAMETER HEPWORTH REDUCED ACCESS TELESCOPIC POLYPROPYLENE INSPECTION CHAMBER (PPIC).
 - WHERE THE DEPTH TO INVERT LEVEL IS A MAXIMUM OF 5M PRIVATE DRAINAGE CHAMBERS WILL BE A 475MM DIAMETER HEPWORTH REDUCED ACCESS SEWER SYSTEM.
 - WHERE CHAMBERS ARE SITED IN TRAFFICKED AREAS (DRIVEWAYS ETC) A D400 GRADE COVER MUST BE USED.
 - PRIVATE DRAINAGE PIPES TO BE 100MM DIAMETER UNLESS STATED OTHERWISE.
 - 100MM PRIVATE DRAINAGE PIPES TO BE HEPWORTH 'SUPERSLEVE HOUSEDRAIN' OR SIMILAR APPROVED.
 - 150MM PRIVATE DRAINAGE PIPES TO BE HEPWORTH 'SUPERSLEVE 150' OR SIMILAR APPROVED.
 - SVP, STACK, BIG AND RWP LOCATIONS ARE TO BE SET OUT FROM BUTTRESS ARCHITECTS AND FUTURE SERV DRAWINGS. POSITIONS SHOWN ON EDGE PLOT DRAINAGE DESIGNS ARE TO BE CHECKED AND CONFIRMED PRIOR TO DRAINAGE WORKS COMMENCING.
 - ALL INTERNAL RWPS NOT CONNECTED TO AND AN EXTERNAL CHAMBER SHOULD HAVE INTERNAL RODDING ACCESS.



SHEET LOCATION
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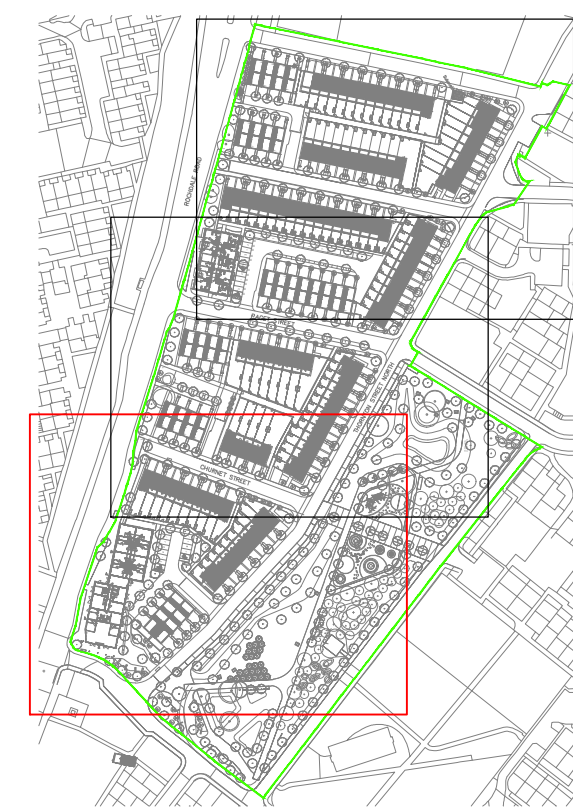
C09 28.07.25 Amended in line with client comments.			H.S. R.A.
C08 19.05.25 Amended in line with council comments.			H.S. R.A.
C07 13.03.25 ACOs added to MCC request			H.S. R.A.
C06 02.10.24 Added additional C1 pop up locations			H.S. R.A.
C05 01.10.24 Updated C1 apartment drainage			H.S. R.A.
C04 22.01.24 Updated apartment drainage			F.S. R.A.
Rev	Date	Description	By
EDGE CONSULTING ENGINEERS			
Manchester, UK 3rd Floor, Canon Court, 12 Blackfriars Street, Manchester, M3 2BQ, United Kingdom			
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Project Name COLLYHURST VILLAGE			
Client DEX CONSTRUCTION			
Designed	Drawn	Checked	Scale @ A1
A.R.	A.R.	R.A.	1:250
Drawing Title PLOT DRAINAGE SHEET 2			
Project No. 221625			
Drawing No. 221625-EDGE-XX-DR-C-2011			
ISSUED FOR CONSTRUCTION			
Revision			
C09			



- KEY**
- IL 38.400 SURFACE WATER SEWER & INSPECTION CHAMBER
 - RE 38.400 SURFACE WATER SEWER & RODDING EYE
 - IL 38.200 FOUL WATER SEWER & INSPECTION CHAMBER
 - CONNECTION FROM SUDS TREE PITS/RAIN GARDENS

- LEGEND**
- IL INVERT LEVEL
 - RE RODDING EYE
 - BD BACKDROP

- NOTES:**
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 - WHERE THE DEPTH TO INVERT LEVEL IS A MAXIMUM OF 3M PRIVATE DRAINAGE CHAMBERS WILL BE A 475MM DIAMETER HEPWORTH REDUCED ACCESS TELESCOPIC POLYPROPYLENE INSPECTION CHAMBER (PPIC).
 - WHERE THE DEPTH TO INVERT LEVEL IS A MAXIMUM OF 5M PRIVATE DRAINAGE CHAMBERS WILL BE A 475MM DIAMETER HEPWORTH REDUCED ACCESS SEWER SYSTEM.
 - WHERE CHAMBERS ARE SITED IN TRAFFICKED AREAS (DRIVEWAYS ETC) A D400 GRADE COVER MUST BE USED.
 - PRIVATE DRAINAGE PIPES TO BE 100MM DIAMETER UNLESS STATED OTHERWISE.
 - 100MM PRIVATE DRAINAGE PIPES TO BE HEPWORTH 'SUPERSLEVE HOUSEDRAIN' OR SIMILAR APPROVED.
 - 150MM PRIVATE DRAINAGE PIPES TO BE HEPWORTH 'SUPERSLEVE 150' OR SIMILAR APPROVED.
 - SVP, STACK, BIG AND RWP LOCATIONS ARE TO BE SET OUT FROM BUTTRESS ARCHITECTS AND FUTURE SERV DRAWINGS. POSITIONS SHOWN ON EDGE PLOT DRAINAGE DESIGNS ARE TO BE CHECKED AND CONFIRMED PRIOR TO DRAINAGE WORKS COMMENCING.
 - ALL INTERNAL RWPS NOT CONNECTED TO AND EXTERNAL CHAMBER SHOULD HAVE INTERNAL RODDING ACCESS



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C05: 28.07.25: Amended in line with client comments.		H.S. R.A.
C04: 20.05.25: Amended in line with council comments.		H.S. R.A.
C03: 13.03.25: ACOs added at MOC request		H.S. R.A.
C02: 12.02.24: Updated plot drainage inline with client comments		F.S. R.A.
C01: 20.10.23: Issued for Construction		H.S. R.A.
Rev	Date	Description
EDGE CONSULTING ENGINEERS		
Manchester, UK 3rd Floor, Corporation Court, 12 Blackfriars Street, Manchester, M3 9BQ, United Kingdom		
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Project Name: COLLYHURST VILLAGE		
Client: DEX CONSTRUCTION		
Designed	Drawn	Checked
A.R.	A.R.	R.A.
Drawing Title: PLOT DRAINAGE SHEET 3		
Project No. 221625		
Drawing No. 221625-EDGE-XX-DR-C-2012		
Revision C05		

FILENAME: PLOT DATE: