



Project Title

Report to Discharge Drainage Related Planning Conditions

At

**229 Moston Lane East,
Moston,
Manchester,
M40 3HY.**

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1.0 Introduction

- 1.1 In January 2022 a planning application was submitted Manchester City Council for the proposed development of a 2-story dwelling with associated boundary treatment following demolition of existing garage at 229 Moston Lane East, Manchester M40 3HY.

No Flood Risk Assessment or Drainage Strategy Report was submitted with the application.

Planning approval, ref 132185/FO/2021 was granted in June 2022 subject to a planning condition relating to the drainage of the development.

This report has been prepared to remove this condition; number 14.

2.0 Drainage Strategy

2.1 Existing Runoff Rates

The area of the new dwelling currently encompasses an impermeable driveway, garage and grassed area to the rear. As such the site is considered to be both brownfield and greenfield for drainage purposes.

Due to the size of the area, the existing flow rates are considered to be too low to quantify.

Based on the small area of the new dwelling and to prevent blockage in line with SuDS guidance, a peak post development flow rate of 3l/s will be applied.

2.2 Existing Drainage

Located with Moston Lane East there is a 300mm diameter combined water public sewer flowing southeast. Located with the rear and side alleyway of the proposed property there is a 150/225mm diameter combined sewer that connects to the larger sewer in Moston Lane East. There are no surface water sewers in close proximity. The existing property connects to these sewers both to the front and rear. Refer to Figure 1 below.

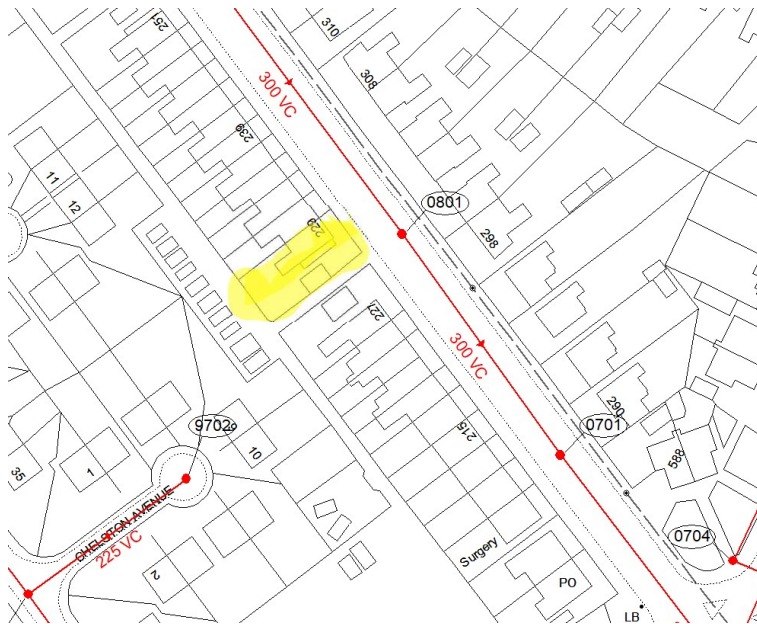


Figure 1: United Utilities Sewer Records (from 2006)

2.3 Existing Geology

Due to the small size of the scheme, no detailed Phase 2 site investigation has been completed at the site. A review of the BGS geology maps for the area indicate the superficial deposits to encompass Till, which is generally deemed to be clay and thus unsuitable for infiltration. To support this assessment, a trial pit investigation was carried out in the rear corner of the garden, which would be the only viable position for the soakaway. This identified topsoil, over made ground, over stiff clay at 0.65m depth. Refer to Photographs below.

This has confirmed that infiltration is not deemed suitable at this location.



Photographs of Trial Pit indicating Stiff Clay at 0.65m Depth

2.4 Hydrological Assessment

A review of the local maps would indicate the closest watercourse to be the River Medlock, located some 2km to the southwest at its closest point.

2.5 SuDS Hierarchal Approach

Based on the existing drainage configuration, plus an assessment of the local site conditions, the SuDS hierarchal approach for discharge of surface water at the development site is considered in detail below:

Method	Suitability	Suitability for Development
Infiltration to Ground	No	A review of the BGS Maps and a site-specific trial pit has indicated the underlying ground to be clay and thus unsuitable for infiltration.
Connection to Watercourse	No	The closest watercourse is 2km from the site.
Connection to Surface Water Sewer	No	No surface water sewers in close proximity.
Connection to Combined Water Sewer	Yes	New connection to be made to the combined public sewer in adjacent alleyway at restricted rates.

Table 1: SuDS Hierarchal Approach

2.6 Surface Water Drainage Strategy

The general principal of the surface water drainage strategy is to collect the runoff from the roof of the new dwelling and direct it to a number of new RWP's that will drop down to a small new surface water network. All flows will merge at a flow control chamber, limiting the peak flow to 3l/s and outfall to the combined public sewer in the adjacent alleyway. This is also deemed the minimum to prevent blockage. A small hydraulic model has been simulated and confirms that no attenuation measures are required and that there is a very small volume (0.07m³) of exceedance flooding for the extreme 100 year + 40% CC storm event. The drainage GA can be found in Appendix A with the calculations in Appendix B. Table 2 below defines the peak post development flow rates for each return period event as taken from the hydraulic model.

	1 year	30 year	100 year + 40% CC
Post Development Peak Runoff Rates	0.9 l/s	1.9 l/s	3.0 l/s

Table 2: Peak Post Development Discharge Rates

2.7 Foul Flows

Foul flows generated by the new development will discharge via new SVP's to a new below ground drainage network that connects to the to the combined public sewer.

2.8 Maintenance

The drainage network encompasses standard pipework and manholes and a flow control. As long as the gullies at the base of the rainwater pipes are kept clear of leaves and detritus by regular inspection by the owner then this should negate it passing into the network.

All management and maintenance of the drainage will be with the building owner. This will involve general maintenance of the drainage network in accordance with best practice. All drainage will remain private and not be adopted by the local sewerage authority. Typically, the maintenance regime will be in line with the table below.

<u>Future Maintenance of the Drainage System</u>			
Responsibility	Feature	Maintenance	Frequency
Owner	Rainwater gutters, downpipes and above ground drainage.	Regular maintenance and inspections.	Ad-hoc sweeping and emptying of silt and debris required. Annual visual inspections to check for damage/leaks.
	Flow control chambers.	Regular maintenance / removal of blockages and debris.	Annual inspection and following significant rainfall events.
	Pipes, sewers, manholes	Regular maintenance / removal of blockages and debris.	Annual inspection and removal of silts if required.

Table 3: Management & Maintenance Plan.

3.0 Drainage Related Planning Condition and Responses

3.1 Planning Conditions

The detailed planning conditions are listed below in *italics* with the PG Consulting response in Blue below.

Condition 5.

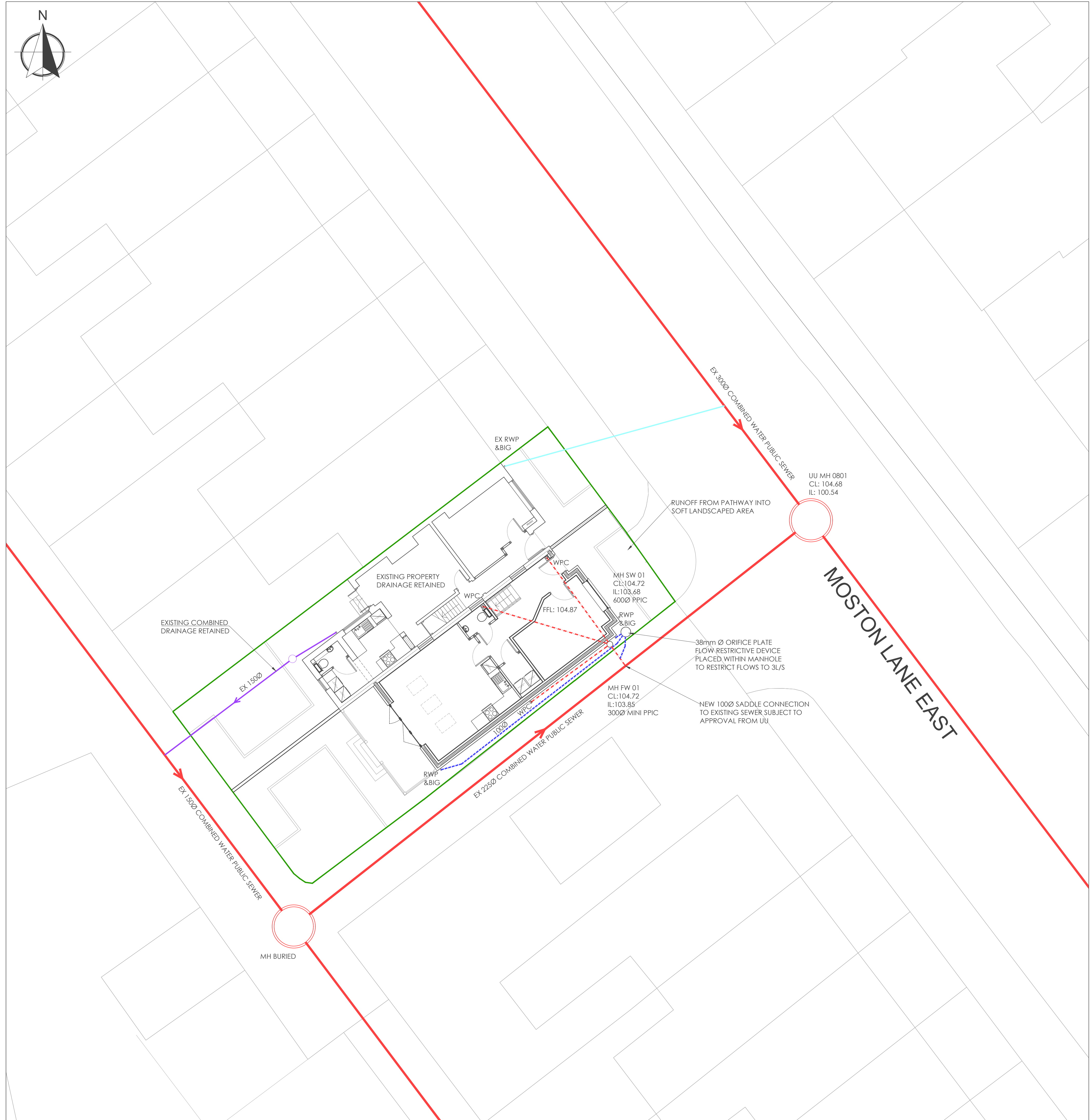
Prior to the commencement of development, a surface water drainage layout for the site, based on sustainable drainage principles, shall be submitted to and approved in writing by the City Council as Local Planning Authority. The development shall be constructed and completed in accordance with the approved details.

As discussed in Section 2, the SuDS hierarchal approach has been proposed for the development. Based on the findings a new connection will be made to the combined public sewer in the adjacent alleyway, with a flow control restricting the peak rate to 3l/s.

The Drainage GA can be found in Appendix A with Calculations in Appendix B.

Appendix A – PG Consulting Drawing

PGC 224-C-001: Drainage GA



DRAINAGE NOTES

1. THE CONTRACTOR IS RESPONSIBLE FOR THE CONFIRMATION OF ALL POSITIONS AND LEVELS OF EXISTING DRAINS, SEWERS AND MANHOLES PRIOR TO THE COMMENCEMENT OF THE PROPOSED WORKS AND ANY DISCREPANCIES REPORTED IMMEDIATELY TO PGC.
2. ALL PRIVATE DRAINAGE WITHIN THE SITE IS TO COMPLY WITH THE REQUIREMENTS OF BS EN 752 AND BUILDING REGULATIONS PART H.
3. NO DEVIATION FROM THE CONTENT OF THIS DRAWING IS ALLOWED WITHOUT PERMISSION OF PGC.
4. FOR DETAILS OF WORKMANSHIP AND MATERIALS REFER TO THE SPECIFICATION, BUILDING REGULATIONS AND BRITISH STANDARDS CURRENT AT THE TIME OF THE WORK.
5. ADEQUATE PROTECTION IS TO BE PROVIDED TO MAINTAIN INTEGRITY OF THE EXISTING SERVICES AND PROPOSED WORKS DURING CONSTRUCTION.
6. COVER LEVELS ARE PROVISIONAL AND THE FINAL LEVEL SHOULD BE ADJUSTED AND SET TO SUIT THE PROPOSED FINISHED LEVELS AS CONFIRMED BY THE ARCHITECT.
7. CONCRETE SURROUND IS TO BE PROVIDED TO ALL DRAINS WITH A COVER OF LESS THAN 1.2m OF THE FINISHED GROUND LEVEL IN HIGHWAY AREAS OR WITHIN 0.6m IF WITHIN LANDSCAPED AREAS. AN EXPANSION JOINT IS TO BE PROVIDED AT EACH AND EVERY PIPE JOINT.
8. ANY GRADIENTS OF DRAINS INDICATED ARE INDICATIVE ONLY AND THE CONTRACTOR SHALL INSTALL THE DRAINS TO THE SPECIFIED LEVELS SHOWN FOR EACH MANHOLE (U.O.N). CATCHPIT INVERT LEVELS ARE FOR THE OUTGOING PIPE WITH THE SUMP LEVEL SPECIFIED SEPARATELY.
9. ALL PIPEWORK WITHIN MANHOLES ARE TO BE LAID SOFFIT TO SOFFIT (U.O.N). ALL CHAMBER INVERT LEVELS ARE FOR THE OUTGOING PIPE LEVELS. BACKDROP PIPEWORK SHALL BE CONNECTED AT SOFFIT TO SOFFIT WITH THE RODDING ACCESS LEVEL SPECIFIED.
10. ALL INVERT LEVELS PROVIDED FOR 475mm PPIC CHAMBER ARE TO THE LOWEST PIPE WITHIN THE BENCHING ARRANGEMENT.
11. MANHOLE COVERS AND FRAMES ARE TO BE IN ACCORDANCE WITH BS EN 124 AND THE FOLLOWING:
 - VEHICULAR AREAS: CLASS D400 (E600 IN SERVICE YARD LOCATIONS), DOUBLE TRIANGULAR, 150mm DEEP DUCTILE IRON COVER AND FRAME WITH THREE POINT COVER SEATING, (NON-ROCK DESIGN) BADGED FW OR SW FOR FOUL OR SURFACE WATER DRAINAGE.
 - PEDESTRIAN AREAS: CLASS B125, 100mm DEEP, BADGED FW OR SW FOR FOUL OR SURFACE WATER DRAINAGE.
 - IF COVERS ARE REQUIRED TO BE RECESSED A HOWE GREEN 1050 HEAVY DUTY, STAINLESS STEEL EDGE, EXTERNAL USE, 100mm RECESS OR SIMILAR APPROVED SHALL BE USED.
12. REFER TO ARCHITECT'S DRAWING FOR RWP'S/WPC'S POP UP SIZES. ALL REST BENDS ARE ASSUMED TO BE 1000 SET 600mm BELOW SSL, UNLESS OTHER SPECIFIED. THE CONTRACTOR SHALL ALLOW FOR SUITABLE VIKING JOHNSON ADAPTORS/COUPLINGS FOR JOINTING THE DIFFERENT PIPE MATERIALS/PIPE SIZES.
13. ALL BRICKWORK IN CONNECTION WITH DRAINAGE IS BE SOLID ENGINEERING BRICK CLASS B TO BS 3921.
14. ALL INSITU CONCRETE TO BE GEN3 UNLESS SPECIFIED OTHERWISE.
15. DRAINAGE CHANNELS ARE TO BE ACO MD SYSTEM C/W 'HEELGUARD' GRATES OR 'BRICKSLOT' TO LANDSCAPE ARCHITECT APPROVAL.
16. ALL PRECAST CONCRETE PIPES, CHAMBER PRODUCTS AND ROAD GULLIES SHALL BE TO BS 5911 AND BE KITEMARKED.
17. VITRIFIED CLAY PIPES TO CONFORM TO BS EN 295 MANUFACTURER: HEPWORTH SUPERSLEEVE;
 - 100/150mmØ -40 kN/m
 - 225mmØ -45 kN/m
 - 300mmØ -72 kN/mAND BE SUPPLIED WITH EPDM SEALING RINGS AS STANDARD.
18. PLASTIC PIPEWORK IS ACCEPTABLE AND SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS
19. UPON COMPLETION OF THE WORKS, ALL THE DRAINS SHALL BE CLEANED BY JETTING, REMOVING ALL DEBRIS FROM SITE. NO DEBRIS SHALL BE PERMITTED TO ENTER THE EXISTING DRAINAGE SYSTEM.
20. UPON COMPLETION OF THE WORKS THE CONTRACTOR SHALL SURVEY THE WORKS AND PROVIDE A SUITABLY

GENERAL NOTES

1. DRAWINGS ARE TO BE READ IN CONJUNCTION WITH ALL RELEVANT SPECIFICATIONS, ENGINEERS, ARCHITECTS & SERVICES DRAWINGS, INCLUDING APPROVED BUILDERS WORK DRAWINGS. CONTRACTOR TO NOTIFY ENGINEERS OF DISCREPANCIES BETWEEN STRUCTURAL DRAWINGS AND SPECIFICATIONS OR OTHER DRAWINGS.
2. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
3. DETAILS OF EXISTING SEWERS SHALL BE CONFIRMED BY THE CONTRACTOR ON SITE PRIOR TO THE COMMENCEMENT OF WORKS. ANY DISCREPANCIES ARE TO BE REPORTED TO THE ENGINEER IMMEDIATELY. THE CONTRACTOR SHOULD CHECK THE LEVELS OF ALL NEW OUT FALLS IN RELATION TO EXISTING SEWERS PRIOR TO ANY CONSTRUCTION TO ENSURE THE PROPOSED DESIGN CAN BE ACHIEVED.
4. DO NOT SCALE FROM THIS DRAWN. WORK TO DIMENSIONS OR COORDINATES PROVIDED. ALL LEVELS ARE IN MILLIMETRES, UNLESS OTHERWISE NOTED. ANY AMBIGUITIES, OMISSIONS AND ERRORS ON DRAWINGS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER IMMEDIATELY.

KEY

- EXISTING COMBINED WATER PUBLIC SEWER
- EXISTING COMBINED WATER DRAINAGE
- EXISTING SURFACE WATER DRAINAGE
- PROPOSED FOUL WATER DRAINAGE
- PROPOSED SURFACE WATER DRAINAGE
- RWP RAINWATER PIPE
- WPC WASTE POINT COLLECTION
- SITE BOUNDARY

NOTE ALL RWP AND SVP LOCATIONS TO BE CONFIRMED BY OTHERS

ALL PIPEWORK TO BE 1000 UNLESS NOTED OTHERWISE

P1	17.02.24	PG	PG	PRELIMINARY ISSUE
REV	DATE	DRAWN	REV'D ENG.	NOTES
CLIENT				
MAJOR GROUP DEVELOPMENTS LTD				
PROJECT				
229 MOSTON LANE EAST MANCHSTER				
DRAWING TITLE				
DRAINAGE GA				
DRAWING STATUS				
PRELIMINARY				
SCALE	DRAWN BY	ENGINEER	SHEET	
1:100	PG	PG	A1	
DRAWING NO.			REVISION	
PGC224-C-100			P1	

Appendix B – Hydraulic Calculations

		Page 1
	229 Moston Lane East SW Network	
Date 19/01/2024 File Moston Lane East Sw Net...	Designed by paulg Checked by	
Innovyze	Network 2017.1.2	

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	2	PIMP (%)	100
M5-60 (mm)	18.500	Add Flow / Climate Change (%)	0
Ratio R	0.335	Minimum Backdrop Height (m)	0.200
Maximum Rainfall (mm/hr)	50	Maximum Backdrop Height (m)	1.500
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.	0.750	Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Time Area Diagram for Storm

Time (mins)	Area (ha)
0-4	0.008

Total Area Contributing (ha) = 0.008

Total Pipe Volume (m³) = 0.134

Network Design Table for Storm

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	7.000	0.120	58.3	0.004	3.00	0.0	0.600	o	100	Pipe/Conduit	
2.000	7.000	0.120	58.3	0.004	3.00	0.0	0.600	o	100	Pipe/Conduit	
1.001	3.000	0.150	20.0	0.000	0.00	0.0	0.600	o	100	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	50.00	3.12	103.800	0.004	0.0	0.0	0.0	1.01	7.9	0.5
2.000	50.00	3.12	103.800	0.004	0.0	0.0	0.0	1.01	7.9	0.5
1.001	50.00	3.14	103.680	0.008	0.0	0.0	0.0	1.73	13.6	1.1

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Innovyze		Network 2017.1.2																																																																																																											
<div>PIPELINE SCHEDULES for Storm</div> <div>Upstream Manhole</div> <table><tr><th>PN</th><th>Hyd Sect</th><th>Diam (mm)</th><th>MH Name</th><th>C.Level (m)</th><th>I.Level (m)</th><th>D.Depth (m)</th><th>MH Connection</th><th>MH DIAM., L*W (mm)</th></tr><tr><td>1.000</td><td>o</td><td>100</td><td>RE</td><td>104.720</td><td>103.800</td><td>0.820</td><td>Open Manhole</td><td>150</td></tr><tr><td>2.000</td><td>o</td><td>100</td><td>RWP</td><td>104.720</td><td>103.800</td><td>0.820</td><td>Open Manhole</td><td>150</td></tr><tr><td>1.001</td><td>o</td><td>100</td><td>SW01</td><td>104.720</td><td>103.680</td><td>0.940</td><td>Open Manhole</td><td>600</td></tr></table> <div>Downstream Manhole</div> <table><tr><th>PN</th><th>Length (m)</th><th>Slope (1:X)</th><th>MH Name</th><th>C.Level (m)</th><th>I.Level (m)</th><th>D.Depth (m)</th><th>MH Connection</th><th>MH DIAM., L*W (mm)</th></tr><tr><td>1.000</td><td>7.000</td><td>58.3</td><td>SW01</td><td>104.720</td><td>103.680</td><td>0.940</td><td>Open Manhole</td><td>600</td></tr><tr><td>2.000</td><td>7.000</td><td>58.3</td><td>SW01</td><td>104.720</td><td>103.680</td><td>0.940</td><td>Open Manhole</td><td>600</td></tr><tr><td>1.001</td><td>3.000</td><td>20.0</td><td>sewer</td><td>104.100</td><td>103.530</td><td>0.470</td><td>Open Manhole</td><td>0</td></tr></table> <div>Free Flowing Outfall Details for Storm</div> <table><tr><th>Outfall Pipe Number</th><th>Outfall Name</th><th>C. Level (m)</th><th>I. Level (m)</th><th>Min I. Level (m)</th><th>D,L (mm)</th><th>W (mm)</th></tr><tr><td>1.001</td><td>sewer</td><td>104.100</td><td>103.530</td><td>103.000</td><td>0</td><td>0</td></tr></table> <div>Simulation Criteria for Storm</div> <div>Volumetric Runoff Coeff 0.750 Additional Flow - % of Total Flow 0.000 Areal Reduction Factor 1.000 MADD Factor * 10m³/ha Storage 2.000 Hot Start (mins) 0 Inlet Coeffiecient 0.800 Hot Start Level (mm) 0 Flow per Person per Day (l/per/day) 0.000 Manhole Headloss Coeff (Global) 0.500 Run Time (mins) 60 Foul Sewage per hectare (l/s) 0.000 Output Interval (mins) 1</div> <div>Number of Input Hydrographs 0 Number of Storage Structures 0 Number of Online Controls 1 Number of Time/Area Diagrams 0 Number of Offline Controls 0 Number of Real Time Controls 0</div> <div>Synthetic Rainfall Details</div> <table><tr><td>Rainfall Model</td><td>FSR</td><td>Profile Type</td><td>Summer</td></tr><tr><td>Return Period (years)</td><td>2</td><td>Cv (Summer)</td><td>0.750</td></tr><tr><td>Region</td><td>England and Wales</td><td>Cv (Winter)</td><td>0.840</td></tr><tr><td>M5-60 (mm)</td><td>18.500</td><td>Storm Duration (mins)</td><td>30</td></tr><tr><td>Ratio R</td><td>0.335</td><td></td><td></td></tr></table>				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	100	RE	104.720	103.800	0.820	Open Manhole	150	2.000	o	100	RWP	104.720	103.800	0.820	Open Manhole	150	1.001	o	100	SW01	104.720	103.680	0.940	Open Manhole	600	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	7.000	58.3	SW01	104.720	103.680	0.940	Open Manhole	600	2.000	7.000	58.3	SW01	104.720	103.680	0.940	Open Manhole	600	1.001	3.000	20.0	sewer	104.100	103.530	0.470	Open Manhole	0	Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)	1.001	sewer	104.100	103.530	103.000	0	0	Rainfall Model	FSR	Profile Type	Summer	Return Period (years)	2	Cv (Summer)	0.750	Region	England and Wales	Cv (Winter)	0.840	M5-60 (mm)	18.500	Storm Duration (mins)	30	Ratio R	0.335		
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Innovyze	Network 2017.1.2	
<p style="text-align: center;"><u>Online Controls for Storm</u></p> <p style="text-align: center;"><u>Orifice Manhole: SW01, DS/PN: 1.001, Volume (m³): 0.4</u></p> <p style="text-align: center;">Diameter (m) 0.038 Discharge Coefficient 0.600 Invert Level (m) 103.680</p>		
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Innovyze		Network 2017.1.2						
<u>1 year Return Period Summary of Critical Results by Maximum Flood Volume</u> <u>(Rank 1) for Storm</u>								
Simulation Criteria								
Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000								
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 2.000								
Hot Start Level (mm) 0 Inlet Coefficient 0.800								
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000								
Foul Sewage per hectare (l/s) 0.000								
Number of Input Hydrographs 0 Number of Storage Structures 0								
Number of Online Controls 1 Number of Time/Area Diagrams 0								
Number of Offline Controls 0 Number of Real Time Controls 0								
Synthetic Rainfall Details								
Rainfall Model FSR Ratio R 0.335								
Region England and Wales Cv (Summer) 0.750								
M5-60 (mm) 18.500 Cv (Winter) 0.840								
Margin for Flood Risk Warning (mm) 300.0								
Analysis Timestep 2.5 Second Increment (Extended)								
DTS Status OFF								
DVD Status ON								
Inertia Status ON								
Profile(s) Summer and Winter								
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440								
Return Period(s) (years) 1, 30, 100								
Climate Change (%) 0, 0, 40								
US/MH Return Climate First (X) First (Y) First (Z) Overflow								
PN	Name	Storm	Period	Change	Surcharge	Flood	Overflow	Act.
1.000	RE	120 Winter	1	+0%	30/15 Summer	100/15 Summer		
2.000	RWP	120 Winter	1	+0%	30/15 Summer	100/15 Summer		
1.001	SW01	120 Winter	1	+0%	1/15 Summer	100/15 Summer		
Water Surcharged Flooded						Pipe		
US/MH	Level	Depth	Volume	Flow /	Overflow	Flow	Level	
PN	Name	(m)	(m³)	Cap.	(l/s)	(l/s)	Status	Exceeded
1.000	RE	103.811	-0.089	0.000	0.02	0.2	OK	2
2.000	RWP	103.811	-0.089	0.000	0.02	0.2	OK	2
1.001	SW01	103.719	-0.061	0.000	0.03	0.4	OK	1
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229 Moston Lane East
SW Network
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Date 19/01/2024

Designed by paulg

File Moston Lane East Sw Net...

Checked by

Innovyze

Network 2017.1.2

30 year Return Period Summary of Critical Results by Maximum Flood Volume
(Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs	0	Number of Storage Structures	0
Number of Online Controls	1	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.335
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	18.500	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0
Analysis Timestep 2.5 Second Increment (Extended)	
DTS Status	OFF
DVD Status	ON
Inertia Status	ON

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 0, 40

PN	US/MH		Return Climate		First (X)	First (Y)	First (Z)	Overflow	
	Name	Storm	Period	Change	Surcharge	Flood	Overflow	Act.	
1.000	RE	120	Winter	30	+0%	30/15	Summer	100/15	Summer
2.000	RWP	120	Winter	30	+0%	30/15	Summer	100/15	Summer
1.001	SW01	120	Winter	30	+0%	1/15	Summer	100/15	Summer

PN	US/MH Name	Water	Surcharged	Flooded	Pipe		Status	Level Exceeded
		Level (m)	Depth (m)	Volume (m³)	Flow / Overflow Cap. (l/s)	Flow (l/s)		
1.000	RE	103.815	-0.085	0.000	0.06	0.4	OK	2
2.000	RWP	103.815	-0.085	0.000	0.06	0.4	OK	2
1.001	SW01	103.774	-0.006	0.000	0.08	0.8	OK	1

		Page 6																																																																																									
		<div>229 Moston Lane East SW Network</div> <div></div>																																																																																									
Date 19/01/2024		Designed by paulg																																																																																									
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<div>100 year Return Period Summary of Critical Results by Maximum Flood Volume (Rank 1) for Storm</div> <div>Simulation Criteria</div> <div>Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000 Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 2.000 Hot Start Level (mm) 0 Inlet Coeffiecient 0.800 Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000 Foul Sewage per hectare (l/s) 0.000</div> <div>Number of Input Hydrographs 0 Number of Storage Structures 0 Number of Online Controls 1 Number of Time/Area Diagrams 0 Number of Offline Controls 0 Number of Real Time Controls 0</div> <div>Synthetic Rainfall Details</div> <div>Rainfall Model FSR Ratio R 0.335 Region England and Wales Cv (Summer) 0.750 M5-60 (mm) 18.500 Cv (Winter) 0.840</div> <div>Margin for Flood Risk Warning (mm) 300.0 Analysis Timestep 2.5 Second Increment (Extended) DTS Status OFF DVD Status ON Inertia Status ON</div> <div>Profile(s) Summer and Winter Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440 Return Period(s) (years) 1, 30, 100 Climate Change (%) 0, 0, 40</div> <div><table><tr><th>PN</th><th>US/MH Name</th><th>Storm</th><th>Return Period</th><th>Climate Change</th><th>First (X) Surchage</th><th>First (Y) Flood</th><th>First (Z) Overflow</th><th>Overflow Act.</th></tr><tr><td>1.000</td><td>RE</td><td>15 Winter</td><td>100</td><td>+40%</td><td>30/15 Summer</td><td>100/15 Summer</td><td></td><td></td></tr><tr><td>2.000</td><td>RWP</td><td>15 Winter</td><td>100</td><td>+40%</td><td>30/15 Summer</td><td>100/15 Summer</td><td></td><td></td></tr><tr><td>1.001</td><td>SW01</td><td>15 Winter</td><td>100</td><td>+40%</td><td>1/15 Summer</td><td>100/15 Summer</td><td></td><td></td></tr></table></div> <div><table><tr><th rowspan="2">PN</th><th rowspan="2">US/MH Name</th><th colspan="2">Water</th><th colspan="2">Surcharged</th><th colspan="2">Flooded</th><th colspan="2">Pipe</th><th rowspan="2">Level Exceeded</th></tr><tr><th>Level (m)</th><th>Depth (m)</th><th>Volume (m³)</th><th>Flow / Cap.</th><th>Overflow (l/s)</th><th>Flow (l/s)</th><th>Status</th></tr><tr><td>1.000</td><td>RE</td><td>104.720</td><td>0.820</td><td>0.031</td><td>0.26</td><td></td><td>1.9</td><td>FLOOD</td><td>2</td></tr><tr><td>2.000</td><td>RWP</td><td>104.720</td><td>0.820</td><td>0.031</td><td>0.26</td><td></td><td>1.9</td><td>FLOOD</td><td>2</td></tr><tr><td>1.001</td><td>SW01</td><td>104.720</td><td>0.940</td><td>0.002</td><td>0.28</td><td></td><td>3.0</td><td>FLOOD</td><td>1</td></tr></table></div> <tr><td colspan="4">©1982-2017 XP Solutions</td></tr>				PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surchage	First (Y) Flood	First (Z) Overflow	Overflow Act.	1.000	RE	15 Winter	100	+40%	30/15 Summer	100/15 Summer			2.000	RWP	15 Winter	100	+40%	30/15 Summer	100/15 Summer			1.001	SW01	15 Winter	100	+40%	1/15 Summer	100/15 Summer			PN	US/MH Name	Water		Surcharged		Flooded		Pipe		Level Exceeded	Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Flow (l/s)	Status	1.000	RE	104.720	0.820	0.031	0.26		1.9	FLOOD	2	2.000	RWP	104.720	0.820	0.031	0.26		1.9	FLOOD	2	1.001	SW01	104.720	0.940	0.002	0.28		3.0	FLOOD	1	©1982-2017 XP Solutions			
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