Merchant Exchange
17-19 Whitworth Street West
manchester@curtins.com
Manchester
M1 5WG

T. 0161 236 2394

www.curtins.com

Drainage Planning Conditions

Subject: Plot F, Great Jackson Street (Building F1/Phase 2)

Ref: 078524/DPCC/P2 Rev V01

Date: 20/11/2023

The Planning Permission Ref: 132199/FO/2021
Conditions 50 relates to Pre-Commencement drainage proposals for the development (Phase 2).

Proposed Drainage:

The proposed drainage system consists of a separate foul and surface water network.
Reference should be made to the following drainage design documents:

- Z1-CUR-G580-PL-GRD-92500-P02_Proposed Drainage Strategy
- Z1-CUR-G580-PL-GRD-92502-P01_Proposed Drainage Strategy Phase 2
- Z1-CUR-G580-Pl-GRD-92510-P02_Drainage Notes
- Z1-CUR-G580-Pl-XX-92520-P02_Manhole Schedule
- Z1-CUR-G580-DE-XX-92530-P02_ Drainage Details 1
- Z1-CUR-G580-DE-XX-92531-P02_ Drainage Details 2
- Z1-CUR-G580-DE-XX-92531-P02_ Drainage Details 3
- Z1-CUR-G580-DE-XX-92531-P02_ Drainage Details 4
- Z1-CUR-G580-PL-GRD-92000-P01_Existing Impermeable Areas
- Z1-CUR-G580-PL-GRD-92001-P01_Proposed Impermeable Areas
- Z1-CUR-G580-PL-GRD-92002-P01_Overland Flow Routes
- Surface Water Calcs Without Surcharged Outfall
- Surface Water Calcs With Surcharged Outfall

It is worth noting that the system has been designed as a single network serving Phase 1 and Phase 2, overall flows and attenuation serve both plots (F1 and F2). Phase 1 has been modelled independently and was submitted as part of the first phasing. This submission includes both phases as a single designed approach.

With specific reference to the conditioned point:

Merchant Exchange
17-19 Whitworth Street West
manchester@curtins.com
Manchester
M1 5WG

T. 0161 236 2394

www.curtins.com

Condition 50

Prior to the commencement of development within Phase 2, details of surface water drainage work in accordance with Non-Statutory Technical Standards for Sustainable Drainage Systems (March 2015), or any subsequent replacement national standards, shall be submitted to and approved in writing by the City Council as local planning authority. The details shall include the following information: o Consideration of alternative green SuDS solution if practicable; o Details and calculations of surface water attenuation that offers a reduction in surface water runoff rate in line with the Manchester Trafford and Salford Strategic Flood Risk Assessment, i.e. at least a 50% reduction in runoff rate compared to the existing rates, as the site is located within Conurbation Core Critical Drainage Area; o For developments which were previously developed, the peak runoff rate from the development to any drain, sewer or surface water body for the 1 in 1 year rainfall event and the 1 in 100 year rainfall event must be as close as reasonably practicable to the greenfield runoff rate from the development for the same rainfall event, but should never exceed the rate of discharge from the development prior to redevelopment for that event; o An existing and proposed impermeable areas drawing to accompany all discharge rate calculations; o Runoff volume in the 1 in 100 year, 6 hours rainfall shall be constrained to a value as close as is reasonable practicable to the greenfield runoff volume for the same event, but never to exceed the runoff volume from the development site prior to redevelopment; o Evidence that the drainage system has been designed (unless an area is designated to hold and/or convey water as part of the design) so that flooding does not occur during a 1 in 100 year rainfall event with allowance for 40% climate change in any part of a building; o Details of drainage to prevent surface water flows into basement levels. o Assessment of overland flow routes for extreme events that is diverted away from buildings (including basements). Overland flow routes need to be designed to convey the flood water in a safe manner in the event of a blockage or exceedance of the proposed drainage system capacity including inlet structures. A layout with overland flow routes needs to be presented with appreciation of these overland flow routes with regards to the properties on site and adjacent properties off site; o As the site is proposed to drain to a Main River the Environment Agency should be consulted. An email of acceptance of proposed flows will suffice. The Environment Agency should also be consulted to confirm the level of surcharge which should be used on the outfall for the proposed hydraulic model; o Where an application is part of a larger site which already has planning permission it is essential that the new proposal does not compromise the drainage scheme already approved; o Hydraulic calculation of the proposed drainage system; o Construction details of flow control and SuDS elements.	**Pre-Commencement**

Consideration of alternative green SuDS solution if practicable.

As the site is largely covered by basement, and infiltration is not compatible, there is limited opportunities for components such as green swales and ponds. However, a large portion of the external podium will be covered by permeable finishes which will locally attenuate surface water run-off. The permeable finishes will vary between soft and hard landscape and as such will be considered as localised green SuDS. There are also tree corridors, which will actively accept run-off and will require connection to the drainage network. These components will provide source control to the local areas they serve.

Merchant Exchange
17-19 Whitworth Street West
manchester@curtins.com
Manchester
M1 5WG

T. 0161 236 2394

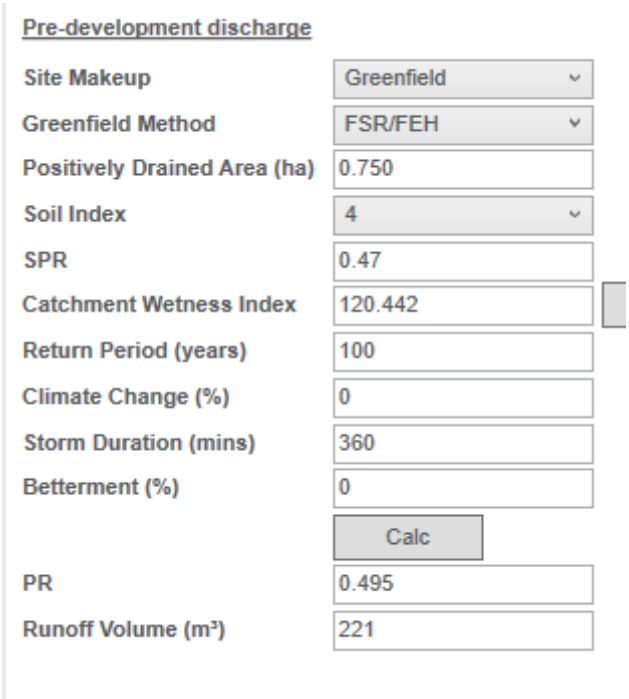
www.curtins.com

Details and calculations of surface water attenuation that offers a reduction in surface water runoff rate in line with the Manchester Trafford and Salford Strategic Flood Risk Assessment, i.e. at least a 50% reduction in runoff rate compared to the existing rates, as the site is located within Conurbation Core Critical Drainage Area.
Refer to the Drainage Calculations enclosed in Appendix B.
Calculations are based on an overall maximum discharge of 115 l/s, as agreed during planning.

For developments which were previously developed, the peak runoff rate from the development to any drain, sewer or surface water body for the 1 in 1 year rainfall event and the 1 in 100 year rainfall event must be as close as reasonably practicable to the greenfield runoff rate from the development for the same rainfall event, but should never exceed the rate of discharge from the development prior to redevelopment for that event.
Discharge rates are based on a maximum of 115 l/s as agreed at planning. This was agreed on the basis of a 50% reduction acknowledging that there is a 100% removal of surface water flows into the combined sewer network.

An existing and proposed impermeable areas drawing to accompany all discharge rate calculations.
Refer to Impermeable Areas drawings in Appendix C.

Runoff volume in the 1 in 100-year, 6 hours rainfall shall be constrained to a value as close as is reasonably practicable to the greenfield runoff volume for the same event, but never to exceed the runoff volume from the development site prior to redevelopment.
The greenfield run-off volume for the site is estimated as 221m3 for the 100-year 6-hour event as shown below.



Merchant Exchange
17-19 Whitworth Street West
manchester@curtins.com
Manchester
M1 5WG

T. 0161 236 2394

www.curtins.com

The post development run off volume is 523m3 for the 100 year 6 hour event as shown below.

US Node ID	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status	Link ID	DS Node ID	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
S1	192	30.806	0.056	3.3	0.0999	0.0000	OK	1.000	S1A	3.3	0.268	0.044	0.0894	
S1A	192	30.804	0.086	13.5	0.0863	0.0000	OK	1.001	US1	13.5	0.691	0.181	0.4087	
US1	184	30.731	0.108	20.6	0.1256	0.0000	OK	1.002	S3	20.6	0.820	0.276	0.7295	
S2	192	30.616	0.046	0.0	0.0661	0.0000	OK	3.000	S3	0.0	-0.009	-0.001	0.2344	
S3	192	30.616	0.125	24.1	6.1267	0.0000	OK	1.003	S4	24.0	0.910	0.322	0.2951	
S4	192	30.425	0.285	35.9	0.8970	0.0000	OK	1.005	US2	35.8	0.390	0.149	4.8382	
US2	192	30.422	0.324	42.2	0.0000	0.0000	OK	1.005_1	S5	42.1	0.366	0.175	4.0150	
S5	192	30.420	0.353	47.4	0.6232	0.0000	OK	1.006	US3	47.3	0.336	0.196	4.4842	
US3	192	30.417	0.381	50.8	0.1403	0.0000	OK	1.007	US4	50.7	0.311	0.210	1.9037	
US4	192	30.417	0.393	54.2	0.1401	0.0000	OK	1.008_1	S8	54.2	0.300	0.225	3.5852	
S6	184	32.019	0.039	3.6	0.0687	0.0000	OK	6.000	S7	3.6	0.840	0.145	0.1433	
S7	184	31.379	0.049	5.2	0.0702	0.0000	OK	6.001	S8	5.2	1.079	0.206	0.0342	
S8	192	30.414	0.435	59.3	0.7694	0.0000	OK	Hydro-Brake®	RED	59.3				
RED	192	30.162	0.211	59.3	0.0000	0.0000	OK	1.010	EX_S2_OF	59.2	1.185	0.836	0.3655	523.4
EX_S2_OF	192	30.110	0.189	59.2	0.0000	0.0000	OK							
PP01	200	31.568	0.038	7.1	4.0197	0.0000	OK	2.000	S1A	6.9	2.726	0.241	0.0058	
PP02	192	31.753	0.043	6.4	0.0694	0.0000	OK	4.000	US2	6.4	1.994	0.375	0.0456	
PP03	192	32.031	0.031	5.3	2.0738	0.0000	OK	5.000	S5	5.2	2.691	0.179	0.0084	

Although there is an increase in volume post development, the existing site was likely to have discharged far in excess of the equivalent greenfield volume. The site is 100% impermeable and actively draining. There is also no application of climate change on the existing greenfield volumes whereas the proposed is +40%.

Evidence that the drainage system has been designed (unless an area is designated to hold and/or convey water as part of the design) so that flooding does not occur during a 1 in 100-year rainfall event with allowance for 40% climate change in any part of a building.

The system has been designed to accommodate the 100-year event with an allowance of 40% climate change. Refer to calculations enclosed in Appendix B.

Details of drainage to prevent surface water flows into basement levels.
Drainage is locally suspended within the basement below the ground floor slab and will be fully sealed. Drainage at lower basement levels will be pumped up to ground level and therefore backflows are not possible.

Assessment of overland flow routes for extreme events that is diverted away from buildings (including basements). Overland flow routes need to be designed to convey the flood water in a safe manner in the event of a blockage or exceedance of the proposed drainage system capacity including inlet structures. A layout with overland flow routes needs to be presented with appreciation of these overland flow routes with regards to the properties on site and adjacent properties off site.
Refer to the Overland Flow Routes drawing enclosed in Appendix C.

As the site is proposed to drain to a Main River the Environment Agency should be consulted. An email of acceptance of proposed flows will suffice. The Environment Agency should also be consulted to confirm the level of surcharge which should be used on the outfall for the proposed hydraulic model.
The Environment Agency have confirmed that the LLFA should approve the discharge rates, which were agreed at planning.

The surcharged level in the river has been obtained and based on the 100 year + 35% climate change event the water level has been modelled as 28.8m AoD. The existing outfall connection is at 29.775m AoD and is therefore not impacted by high river levels.
The Environment Agency Correspondence and River Model Map and Levels is enclosed in Appendix D.

Refer to calculations enclosed in Appendix B with and without surcharged outfall.

Merchant Exchange
17-19 Whitworth Street West
manchester@curtins.com
Manchester
M1 5WG

T. 0161 236 2394

www.curtins.com

Where an application is part of a larger site which already has planning permission it is essential that the new proposal does not compromise the drainage scheme already approved.
The system has been designed holistically as Phase 1 and Phase 2.

Hydraulic calculation of the proposed drainage system.

Refer to calculations enclosed in Appendix B.

Construction details of flow control and SuDS elements.
Refer to the Drainage Details drawing enclosed in Appendix A.

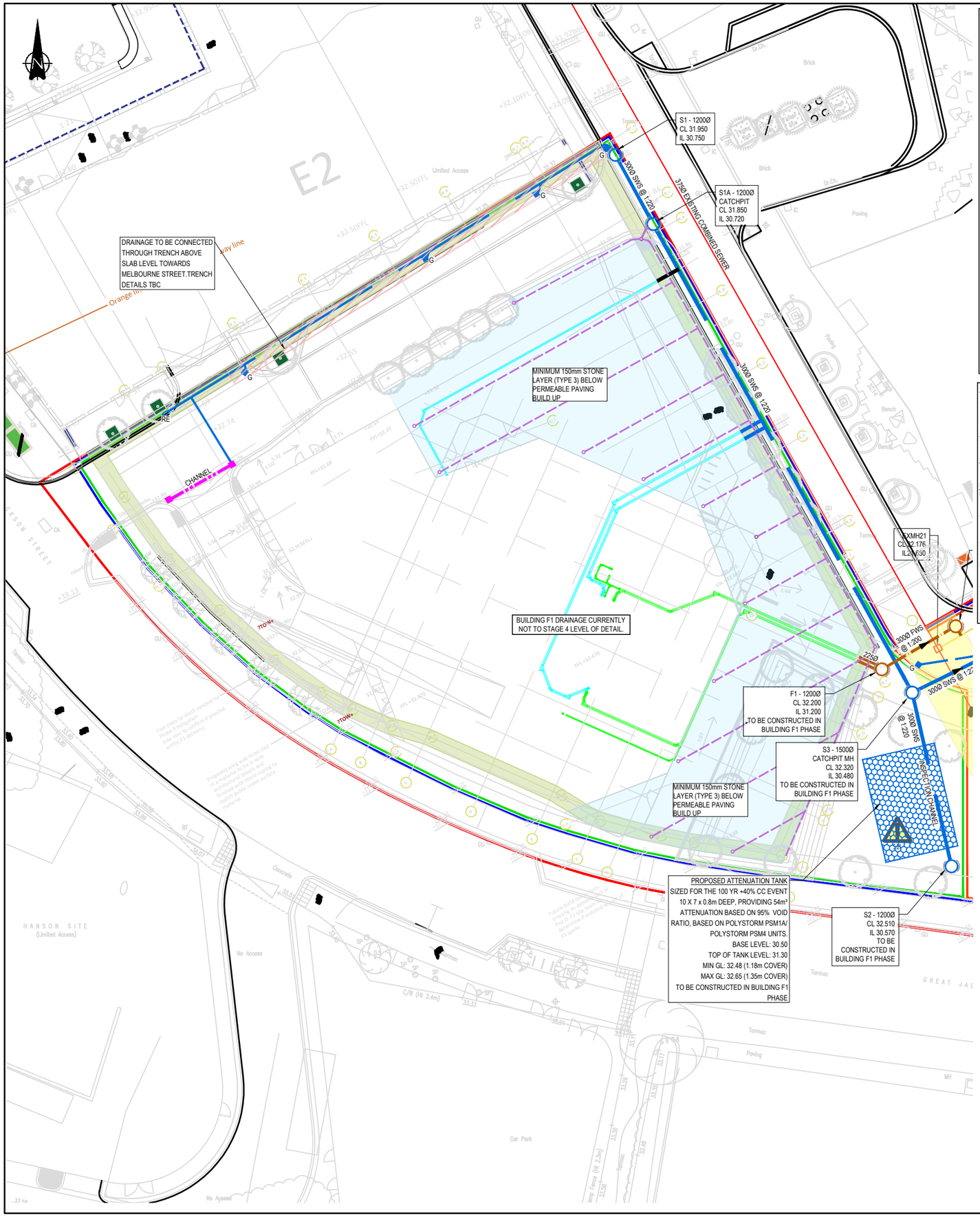
Merchant Exchange
17-19 Whitworth Street West
manchester@curtins.com
Manchester
M1 5WG

T. 0161 236 2394

www.curtins.com

Appendix A

- Z1-CUR-G580-PL-GRD-92500-P02_Proposed Drainage Strategy
- Z1-CUR-G580-PL-GRD-92502-P01_Proposed Drainage Strategy Phase 2
- Z1-CUR-G580-Pl-GRD-92510-P02_Drainage Notes
- Z1-CUR-G580-Pl-XX-92520-P02_Manhole Schedule
- Z1-CUR-G580-DE-XX-92530-P02_ Drainage Details 1
- Z1-CUR-G580-DE-XX-92531-P02_ Drainage Details 2
- Z1-CUR-G580-DE-XX-92531-P02_ Drainage Details 3
- Z1-CUR-G580-DE-XX-92531-P02_ Drainage Details 4



DESIGN PHILOSOPHY

SURFACE WATER DESIGN
THE DESIGN PROVIDES CAPACITY UP TO THE 100 YEAR + 40% CLIMATE CHANGE EVENT.
SW FLOW RATE: 115L/S (BASED ON 50% REDUCTION OF EXISTING 1-YEAR BROWNFIELD FLOW RATE) BOTH PHASES.

ATTENUATION
APPROXIMATE STORAGE REQUIREMENT:53M^3 PROVIDED WITHIN CELLULAR STORAGE.
FURTHER ATTENUATION IS PROVIDED WITHIN PERMEABLE PAVING SUB-BASE & OVERSIZED PIPEWORK.

OUTFALL:
SITE DISCHARGES TO THE EXISTING 300Ø SEWER IN POND STREET.
A S106 AGREEMENT IS REQUIRED WITH UNITED UTILITIES:
PART 1 BY CURTINS
PART 2 BY CONCTRACTOR

LEVELS INDICATE THAT PUMPING WILL NOT BE REQUIRED.

POLLUTION TREATMENT/ SUSTAINABLE DRAINAGE:
A PROPORTION OF THE HARDSTANDING AREA IS SERVED BY PERMEABLE PAVING.
INFILTRATION IS NOT CONSIDERED APPROPRIATE FOR THIS SCHEME.

FOUL WATER DESIGN (PLOT F1 ONLY)

FW PEAK FLOW RATE:29.5L/S (BASED ON 3,500 DISCHARGE UNITS LOADING PROVIDED BY M&E DESIGNER)

OUTFALL:
SITE DISCHARGES TO THE EXISTING 375Ø SEWER IN OWEN STREET (VIA EXISTING SEWER IN POND STREET).
A S106 AGREEMENT IS REQUIRED WITH UNITED UTILITIES:
PART 1 BY CURTINS
PART 2 BY CONCTRACTOR

LEVELS INDICATE THAT PUMPING WILL NOT BE REQUIRED. TBC FOLLOWING FURTHER DESIGN AND SURVEY WORK.

OTHER DISCIPLINE DRAWING REFERENCES

THE DESIGN OF THIS SCHEME HAS BEEN DESIGNED IN ACCORDANCE WITH THE BELOW DRAWINGS AND INFORMATION.

TOPOGRAPHICAL SURVEY REF:
11072_001B / 1 TO 3 REV B. BY N.D. OLIVER, DATED DEC 2022

CCTV SURVEY:
SURVEY BY IWJS DATED JUNE 2023

UNITED UTILITIES RECORDS:
UUPS-ORD-275021, DATED APRIL 2021

STRUCTURAL ENGINEERS DRAWING REF:

ARCHITECTS DRAWING REF:
10334-F2-SHP-G200-PL-GRD-001 GA GROUND FLOOR
10334-F2-SHP-G260-PL-GRD-001 STRUCTURAL LAYOUT GROUND FLOOR

LANDSCAPE ARCHITECTS DRAWING REF:
Z1-TPM-G710-PL-XX-3851 101 LANDSCAPE GA DRAFT 25/10/23

M&E ENGINEERS DRAWING REF:
F1-FUT-G580-PL-B1-001 REV P2 25.07.23

KEY:

- RED LINE PLANNING BOUNDARY
- SITE OWNERSHIP BOUNDARY (OFFSET INSIDE REDLINE FOR CLARITY)
- PHASE 1 BOUNDARY (OFFSET INSIDE OWNERSHIP FOR CLARITY)
- PHASE 2 BOUNDARY (OFFSET INSIDE OWNERSHIP FOR CLARITY)
- EXISTING PUBLIC COMBINED SEWER (APPROXIMATE LOCATION)
- EXISTING PRIVATE SW SEWER
- EXISTING PRIVATE FW SEWER
- PROPOSED SURFACE WATER DRAINAGE
- PROPOSED SURFACE WATER (100Ø PERFORATED PIPE)
- PROPOSED FOUL WATER DRAINAGE
- PERMEABLE PAVING
- PROPOSED ATTENUATION TANK
- G PROPOSED SURFACE WATER GULLY
- EG EXISTING SURFACE WATER GULLY TO BE RETAINED
- PROPOSED LINEAR DRAINAGE CHANNEL RENAKER TO ADVISE ON PRODUCT TO BE USED.
- EXISTING DRAINAGE TO BE ABANDONED
- PROPOSED FOUNDATION
- PROPOSED BASEMENT CAPPING BEAM

HAZARD REFERENCES

REFER TO DRAWING Z1-CUR-G580-PL-GRD-92500 FOR HAZARDS DETAILS & MITIGATION MEASURES TABLE

GENERAL NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ENGINEERS DRAWINGS AND SPECIFICATIONS.
2. DESIGN BASED ON TOPOGRAPHICAL SURVEY INFORMATION AVAILABLE AT THE TIME OF DESIGN.
3. DO NOT SCALE THIS DRAWING. ANY AMBIGUITIES, OMISSIONS AND ERRORS ON DRAWINGS SHALL BE BROUGHT TO THE ENGINEERS ATTENTION IMMEDIATELY. ALL DIMENSIONS MUST BE CHECKED / VERIFIED ON SITE.
4. ALL DIMENSIONS ARE IN METRES AND LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS OTHERWISE NOTED.
5. FOR DRAINAGE NOTES, REFER TO DRAWING Z1-CUR-G580-PI-GRD-92510.
6. FOR MANHOLE SCHEDULE, REFER TO DRAWING Z1-CUR-G580-PL-XX-92520.

Rev:	Description:	Date:	By:	Chkd:
P01	ISSUED FOR STAGE 3 / PLANNING CONDITION DISCHARGE	20/11/23	CG	CG

Curtins
Merchant Exchange, 17-19 Whitworth Street West, Manchester, M1 5WG
0161 236 2394
manchester@curtins.com
www.curtins.com
Civils & Structures • Transport Planning • Environmental • Infrastructure • Geotechnical • Conservation & Heritage • Principal Designer
Birmingham • Bristol • Cambridge • Cardiff • Douglas • Dublin • Edinburgh • Glasgow • Kendal • Leeds • Liverpool • London • Manchester • Nottingham

Status: SUITABLE FOR INFORMATION — S2

Project: PLOT F, GREAT JACKSON STREET

Drg Title: PROPOSED DRAINAGE LAYOUT PHASE 2 (PLOT F1)

Drawn By	Designed By	Checked By
KS	CG	CG

Project No	Date	Scales @ A1
078524	20/11/23	1:200

Project Code - Originator - Function - Spatial - Form - Discipline - Number: Z1-CUR -G580 - PL - GRD - 92502

Revision: P01

\\ma-fs-1\Projects\078001 - 078500\078524 - Plot F Great Jackson Street\04-Production\4A-Models-Drawings\

"RESIDUAL HAZARD REGISTER (RELATES TO CIVIL/STRUCTURAL MATTERS ONLY)
MUST BE READ IN CONJUNCTION WITH CURTINS RESIDUAL HAZARD REGISTER 080866-CUR-ZZ-XX-HA-X-00001.
HAZARDS THAT SHOULD BE OBVIOUS TO A COMPETENT CONTRACTOR HAVE NOT BEEN INDICATED ON THIS DRAWING. SHOULD ANY ADDITIONAL HAZARDS BE IDENTIFIED, THE CONTRACTOR SHOULD NOTIFY ALL RELEVANT PROJECT TEAM MEMBERS."

HAZARD REGISTER

Hazard Ref.	Item (Feature, Element or Activity)	Potential Hazard Identified	Action (Information to Assist Control)
3.00 Existing Buried & Overhead Services			
3.01	Existing UU Combined public sewers on site.	Damage to pipes during site basement works	CCTV Survey unlikely to accurately position due to depth of sewer (10m) sewer to be investigated prior to piling - during proof dig works to locate
3.02	Existing Live Services	Existing Live Services - particularly if services are to be retained through development.	Carry out additional surveys and investigations to locate and protect the services in co-ordination with Services Engineer/Statutory Undertakers.
4.00 Demolition of Existing Structures/ Site Clearance			
4.01	Site Clearance	Contaminated Land	Contractor to review specific site investigation report and determine what measures are required for removing spoil from site.
5.00 Excavations and Foundations			
5.01	Deep Excavation for attenuation tank	Excavation collapse/instability	Contractor method statements considering adequate support for excavations. Sequencing of works ot be considered.
5.02	Groundworks	Ground Gas	Undertake Site investigation to identify potential contamination in the ground.
5.03	Groundworks	Contamination in Ground	Site Investigation Undertaken and contamination identified. Contractor to review SI information.
6.00 Materials and Processes			
6.01	Construction Loadings	Drainage components designed for permanent use and not taken temporary construction loadings into account.	Inform Contractor. Contractor to provide protection measures as part of Construction Methodology.

OTHER DISCIPLINE DRAWING REFERENCES

THE DESIGN OF THIS SCHEME HAS BEEN DESIGNED IN ACCORDANCE WITH THE BELOW DRAWINGS AND INFORMATION.

TOPOGRAPHICAL SURVEY REF:
11072_001B / 1 TO 3 REV B. BY N.D. OLIVER, DATED DEC 2022

CCTV SURVEY:
SURVEY BY IWJS DATED JUNE 2023

UNITED UTILITIES RECORDS:
UUPS-GRD-275021, DATED APRIL 2021

STRUCTURAL ENGINEERS DRAWING REF:
1799-F2-DP2-G210-PL-00-3525 REV P04 CAPPING BEAM GA
1799-F2-DP2-G200-PL-B2-2610 REV P01 FOUNDATION GA

ARCHITECTS DRAWING REF:
10334-F2-SHP-G200-PL-GRD-001 GA GROUND FLOOR
10334-F2-SHP-G260-PL-GRD-001 STRUCTURAL LAYOUT GROUND FLOOR

LANDSCAPE ARCHITECTS DRAWING REF:
Z1-TPM-G710-PL-XX-3851 101 REV P3 LANDSCAPE GA DRAFT

M&E ENGINEERS DRAWING REF:
F2-FUT-G580-PL-GRD-001 REV P2 LEVEL 00 ABOVE GROUND DRAINAGE
F2-FUT-G580-PL-B1-001 REV P4 LEVEL B1 ABOVE GROUND DRAINAGE
F2-FUT-G580-PL-B2-001 REV P2 LEVEL B2 ABOVE GROUND DRAINAGE

DESIGN PHILOSOPHY

SURFACE WATER DESIGN
THE DESIGN PROVIDES CAPACITY UP TO THE 100 YEAR + 40% CLIMATE CHANGE EVENT.
SW FLOW RATE: 115L/S (BASED ON 50% REDUCTION OF EXISTING 1-YEAR BROWNFIELD FLOW RATE)

ATTENUATION
APPROXIMATE STORAGE REQUIREMENT:53M³ PROVIDED WITHIN CELLULAR STORAGE.
FURTHER ATTENUATION IS PROVIDED WITHIN PERMEABLE PAVING SUB-BASE & OVERSIZED PIPEWORK.

OUTFALL:
SITE DISCHARGES TO THE EXISTING 300Ø SEWER IN POND STREET.
A S106 AGREEMENT IS REQUIRED WITH UNITED UTILITIES:
PART 1 BY CURTINS
PART 2 BY CONCTRACTOR

LEVELS INDICATE THAT PUMPING WILL NOT BE REQUIRED.

POLLUTION TREATMENT/ SUSTAINABLE DRAINAGE:
A PROPORTION OF THE HARDSTANDING AREA IS SERVED BY PERMEABLE PAVING.
FOR CARRIAGEWAY DRAINAGE, FILTER TRAPS ARE TO BE FITTED TO ALL ROAD GULLIES. (INCLUDING EXISTING RETAINED GULLIES). TO BE SMART GULLY UNITS BY NAYLOR O.S.A
INFILTRATION IS NOT CONSIDERED APPROPRIATE FOR THIS SCHEME.

FOUL WATER DESIGN (PLOT F2 ONLY)

FW PEAK FLOW RATE:29.1L/S (BASED ON 3,380 DISCHARGE UNITS LOADING PROVIDED BY M&E DESIGNER)

OUTFALL:
SITE DISCHARGES TO THE EXISTING 375Ø SEWER IN OWEN STREET.
A S106 AGREEMENT IS REQUIRED WITH UNITED UTILITIES:
PART 1 BY CURTINS
PART 2 BY CONCTRACTOR

LEVELS INDICATE THAT PUMPING WILL NOT BE REQUIRED. TBC FOLLOWING FURTHER DESIGN AND SURVEY WORK.

KEY:

- RED LINE PLANNING BOUNDARY
- SITE OWNERSHIP BOUNDARY (OFFSET INSIDE REDLINE FOR CLARITY)
- PHASE 1 BOUNDARY (OFFSET INSIDE OWNERSHIP FOR CLARITY)
- PHASE 2 BOUNDARY (OFFSET INSIDE OWNERSHIP FOR CLARITY)
- EXISTING PUBLIC COMBINED SEWER (APPROXIMATE LOCATION)
- EXISTING PRIVATE SW SEWER
- EXISTING PRIVATE FW SEWER
- PROPOSED SURFACE WATER DRAINAGE
- PROPOSED SURFACE WATER (100Ø PERFORATED PIPE)
- PROPOSED FOUL WATER DRAINAGE
- PERMEABLE PAVING
- PROPOSED ATTENUATION TANK
- G — PROPOSED SURFACE WATER GULLY (FILTER TRAPS REQUIRED TO ALL GULLIES - NAYLOR SMAR!
- EG — EXISTING SURFACE WATER GULLY TO BE RETAINED (Filter Traps required to all Gullies - Naylor Smart Gullies O.S.A) GULLY CONNECTIONS TO BE RETAINED AS MUCH AS POSSII INTO PROPOSED DRAINAGE
- PROPOSED LINEAR DRAINAGE CHANNEL RENAKER TO ADVISE ON PRODUCT TO BE USED.
- EXISTING DRAINAGE TO BE ABANDONED
- PROPOSED FOUNDATION
- PROPOSED BASEMENT CAPPING BEAM

GENERAL NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ENGINEERS DRAWINGS AND SPECIFICATIONS.
2. DESIGN BASED ON TOPOGRAPHICAL SURVEY INFORMATION AVAILABLE AT THE TIME OF DESIGN.
3. DO NOT SCALE THIS DRAWING. ANY AMBIGUITIES, OMISSIONS AND ERRORS ON DRAWINGS SHALL BE BROUGHT TO THE ENGINEERS ATTENTION IMMEDIATELY. ALL DIMENSIONS MUST BE CHECKED / VERIFIED ON SITE.
4. ALL DIMENSIONS ARE IN METRES AND LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS OTHERWISE NOTED.
5. FOR DRAINAGE NOTES, REFER TO DRAWING Z1-CUR-G580-PI-GRD-92510.
6. FOR MANHOLE SCHEDULE, REFER TO DRAWING Z1-CUR-G580-PL-XX-92520.

EXISTING OUTFALL TO MEDLOCK RIVER

MH S1, 1200 DIA PCC RING CL 32.075 IL29.790

300mm SURFACE WATER SEWER 1:200

EXG MH S2, 1200 DIA PCC RING CL 32.900 TBC IL29.921

EXISTING 300mm SURFACE WATER SEWER 1:200

EXISTING OUTFALL PIPE, EXACT LINE AND DEPTH TBC

ALL MANHOLES AND DRAINAGE IN POND STREET TO BE SURVEYED!

ALL EXISTING CONNECTIONS TO THE EXISTING SEWER IN POND STREET TO BE RECONNECTED TO THE NEW SURFACE WATER SEWER IN POND STREET.

EXISTING CULVERT APPEARS TO SERVE ONLY ROAD GULLIES ALONG POND STREET AND CONNECTS TO FOUL SYSTEM (REF SURVEY Z1-RBL-JC10-PL-XX-002_Ver1). ADDITIONAL SURVEYS REQUIRED TO CONFIRM THIS IS ONLY SERVING POND STREET. POND STREET DRAINAGE WILL BE RECONNECTED TO NEW SURFACE WATER NETWORK TO RIVER OUTFALL. THEREFORE SHOWN AS TO BE REMOVED.

INDICATIVE TREE CORRIDOR - TREE PIT DETAILS TBC BY TPM

(ASSUMED) EXG SWMH1 CL 32.860 IL31.750

450Ø - 300Ø REDUCER PIECE REQUIRED.

S8 - 2100Ø FCC HYDROBRAKE REF: CTL-SHE-0408-1150-2100-1150 FLOW 115 l/s HEAD 1.8m CL 32.900 IL 29.979 (APPROX)

EXISTING PIPE TO BE REMOVED

EXISTING MH TO BE REMOVED

EXG MH S3, 1200 DIA PCC RING CL 33.050 TBC IL30.000

S7 - 1500Ø CL 32.920 IL 31.330

S13 - 1200Ø CATCHPIT CL 32.800 IL 30.590

DRAINAGE TO THIS AREA TBC DEPENDENT ON IMPERMEABLE OR PERMEABLE TARMAC.

DRAINAGE TO RAMP BOTTOM OF RAMP TO BE DESIGNED BY M&E ENGINEER

EXISTING LAYBY OUTSIDE PLANNING BOUNDARY ADDITIONAL DRAINAGE MAY BE REQUIRED IN THIS AREA. REQUIREMENTS TBC

(ASSUMED) EXG MANHOLE 7 CL 32.616 IL28.616 BD 31.360

(ASSUMED) EXG SWMH2 CL 32.580 IL31.370

MINIMUM 350mm STONE LAYER (TYPE 3) BELOW PERMEABLE PAVING BUILD UP

(ASSUMED) EXG SWMH3 CL 32.230 IL31.700

S5B - 450Ø CATCHPIT MH CL 32.490 IL 31.650

EXMH21 CL 32.176 IL21.680

F2 - 1200Ø CL 32.200 IL 31.165 POTENTIALLY ONLINE EXG

S5 - 1500Ø CATCHPIT MH CL 32.360 IL 30.100

PERFORATED PIPES IN SUB-BASE TO BE 100Ø @ 5m CENTRES. MIN GRADIENT TO BE 1:100

MINIMUM 350mm STONE LAYER (TYPE 3) BELOW PERMEABLE PAVING BUILD UP

BUILDING F1 DRAINAGE CURRENTLY NOT TO STAGE 4 LEVEL OF DETAIL.

STUBS FOR BUILDING F1 DRAINAGE. ACCURATE LOCATION & INVERT LEVELS TO BE PROVIDED BY CONTRACTOR

S4 - 1500Ø CATCHPIT MH CL 32.160 IL 30.140

PIPE THROUGH EDGING/UPSTAND

EDGING/ UPSTAND TO SEPARATE PERMEABLE BUILD UP ZONES

PIPE THROUGH UPSTAND

EDGING/UPSTAND REQUIRED TO EDGE OF PERMEABLE ZONE

F1 - 1200Ø CL 32.200 IL 31.200 TO BE CONSTRUCTED IN BUILDING F1 PHASE

S5A - 450Ø CATCHPIT MH CL 32.425 IL 31.730

PERFORATED PIPES IN SUB-BASE TO BE 100Ø @ 5m CENTRES. MIN GRADIENT TO BE 1:100

S3 - 1500Ø CATCHPIT MH CL 32.320 IL 30.480 TO BE CONSTRUCTED IN BUILDING F1 PHASE

PROPOSED LEVELS TBC BY TPM

EDGING/ UPSTAND REQUIRED TO SEPARATE PERMEABLE BUILD UP ZONES

MINIMUM 150mm STONE LAYER (TYPE 3) BELOW PERMEABLE PAVING BUILD UP

CHANNELS TO BE COORDINATED WITH TREE PITS

PROPOSED ATTENUATION TANK SIZED FOR THE 100 YR +40% CC EVENT 10 X 7 x 0.8m DEEP, PROVIDING 54m³ ATTENUATION BASED ON 95% VOID RATIO, BASED ON POLYSTORM PSM1A/ POLYSTORM PSM4 UNITS. BASE LEVEL: 30.50 TOP OF TANK LEVEL: 31.30 MIN GL: 32.48 (1.18m COVER) MAX GL: 32.65 (1.35m COVER) TO BE CONSTRUCTED IN BUILDING F1 PHASE

S2 - 1200Ø CL 32.510 IL 30.570 TO BE CONSTRUCTED IN BUILDING F1 PHASE

APPROXIMATE ROUTE OF EXISTING 375mm PUBLIC SEWER. LOCATION TO BE CONFIRMED BY SURVEY. 6m EASEMENT REQUIRED BY UNITED UTILITIES WITHIN PRIVATE LAND, EASEMENT POSITIONED 3m EITHER SIDE OF CENTRELINE. ALL PROPOSALS WITHIN THE EASEMENT TO BE AGREED WITH UNITED UTILITIES.

S6 - 1500Ø CL 33.330 IL 31.980

Rev:	Description:	Date:	By:	Chkd:
P02	DRAFT ISSUE FOR COMMENT	13/09/23	ATL	CG
P01	ISSUED FOR STAGE 3/PLANNING CONDITIONS	28/07/23	KS	CG

Curtins
Merchant Exchange, 17-19 Whitworth Street West, Manchester, M1 5WG
0161 236 2394
manchester@curtins.com
www.curtins.com
Civils & Structures • Transport Planning • Environmental • Infrastructure • Geotechnical • Conservation & Heritage • Principal Designer
Birmingham • Bristol • Cambridge • Cardiff • Douglas • Dublin • Edinburgh • Glasgow • Kendal • Leeds • Liverpool • London • Manchester • Nottingham

Status: SUITABLE FOR INFORMATION — S2

Project: PLOT F, GREAT JACKSON STREET

Drg Title: PROPOSED DRAINAGE LAYOUT

Drawn By	Designed By	Checked By
KS	KS	CG

Project No	Date	Scales @ A0
078524	25/07/23	1:250

Project Code - Originator - Function - Spatial - Form - Discipline - Number: Z1-CUR- G580 - PI - GRD - 92500 — Revision: P02

3.02 4.01 5.02 5.03 6.01 SITE WIDE HAZARDS

1:1 0 10 20 30 40 50 60 70 80 90 100

Date/Time:25 Jul 2023 - 15:50:05 S:\Z1 Great Jackson Street\04 Production\04 Models\Civil 3D\078524 - Plot F Great Jackson Street.dwg

GENERAL NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ENGINEERS DRAWINGS AND SPECIFICATIONS.

2. ALL ADOPTABLE DRAINAGE WORKS INCLUDING WORKS TO EXISTING PUBLIC SEWERS TO BE UNDERTAKEN IN ACCORDANCE WITH "DESIGN AND CONSTRUCTION GUIDANCE FOR FOUL AND SURFACE WATER SEWERS OFFERED FOR ADOPTION - LATEST EDITION" AND "CIVIL ENGINEERING SPECIFICATION FOR THE WATER INDUSTRY 7th EDITION" AND CONSTRUCTED TO THE RELEVANT STATUTORY UNDERTAKERS DETAILS.

3. ALL PRIVATE DRAINAGE WORKS TO BE IN ACCORDANCE WITH CURTINS DRAINAGE SPECIFICATION, "CIVIL ENGINEERING SPECIFICATION FOR THE WATER INDUSTRY 7th EDITION", BS EN 752 2017 'DRAIN AND SEWER SYSTEMS OUTSIDE BUILDINGS' AND THE BUILDING REGULATIONS APPROVED 'DOCUMENT H'.

4. DO NOT SCALE THIS DRAWING. ANY AMBIGUITIES, OMISSIONS AND ERRORS ON DRAWINGS SHALL BE BROUGHT TO THE ENGINEERS ATTENTION IMMEDIATELY. ALL DIMENSIONS MUST BE CHECKED / VERIFIED ON SITE.

5. DESIGN BASED ON TOPOGRAPHICAL SURVEY AND CCTV SURVEY INFORMATION AVAILABLE AT THE TIME OF THE DESIGN.

6. WHERE EXISTING DRAINAGE IS BEING USED, ALLOWANCES SHOULD BE MADE TO REMEDIATE THIS DRAINAGE IN LINE WITH AVAILABLE CCTV SURVEY INFORMATION. IF NO SURVEY IS AVAILABLE, IT IS ADVISED TO OBTAIN ONE PRIOR TO COMMENCEMENT OF WORKS.

7. ALL EXISTING SERVICES TO BE LOCATED PRIOR TO COMMENCEMENT OF ANY DRAINAGE WORKS, AND WHERE NECESSARY PROTECTION OR DIVERSIONS TO BE UNDERTAKEN TO AVOID CONFLICT WITH THE PROPOSED WORK.

8. OUTFALL CONNECTION(S) SUBJECT TO AGREEMENT WITH THE APPROVING AUTHORITY.

9. ALL DIMENSIONS ARE IN METRES AND LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS OTHERWISE NOTED.

10. COVER LEVELS, GULLY POSITIONS, AND BUILDINGS LOCATION ARE APPROXIMATE AND SHALL BE CONFIRMED BY ARCHITECT/ LANDSCAPE ARCHITECT. CONTRACTOR TO ALLOW FOR ADJUSTMENT TO SUIT AGREED POSITIONS AND FINISHED LEVELS, AND CONFIRM ALL COVER LEVELS ON SITE.

11. ALL INTERNAL DRAINAGE CONNECTIONS ARE PROVIDED TO THE PENETRATION POSITIONS SHOWN ON ARCHITECT AND M&E DRAWINGS. REFER TO DIMENSIONED LOCATIONS AND DIAMETERS ON ARCHITECT'S GROUND FLOOR SETTING-OUT PLANS.

12. ALL UNDERGROUND FOUL DRAINAGE SHOULD BE SUITABLY VENTED AT OR NEAR TO THE HEAD OF RUNS.

13. ALL ACCESS FITTINGS, STACKS, RWP'S AND GULLIES TO BE RODDABLE. ALL TO HAVE LOW LEVEL RODDING ACCESS PLATES UNLESS AN ALTERNATIVE MEANS OF ACCESS IS AGREED. ACCESS POINT TO BE ABOVE ANY GROUND FLOOR CONNECTED APPLIANCE SPILL LEVEL.

14. LARGE ACCESS FITTING REQUIRED ABOVE GROUND WHERE GREATER THAN 12M UP TO 22M TO A JUNCTION. SMALL ACCESS FITTING REQUIRED UP TO 12M TO A JUNCTION.

15. ALL GULLY AND CHANNEL DRAIN OUTLETS AND TERMINATION POINTS TO BE TRAPPED AND RODDABLE. INTERNAL GULLIES AND CHANNEL DRAINS TO BE SPECIFIED BY OTHERS.

16. WHERE NO WC'S ARE CONNECTED UPSTREAM, UNDERSLAB FW DRAINAGE TO BE LAID AT 1:40 MIN. AFTER THE CONNECTION OF AT LEAST 1NO WC, A MIN. FALL OF 1:80 APPLIES.

17. ALL CONNECTIONS FROM POP-UPS TO BE LAID AT A CONSTANT GRADIENT TO JUNCTION/ INSPECTION CHAMBER/ MANHOLE UNLESS NOTED OTHERWISE. ANY ISSUES RELATING TO CLASHES WITH FOUNDATIONS ARE TO BE FORWARDED TO THE ENGINEER, ALLOWING SUFFICIENT TIME FOR AN ALTERNATIVE SOLUTION TO BE PROPOSED.

18. INVERT LEVELS AT MANHOLES/ INSPECTION CHAMBERS TO BE USED TO SET OUT PIPEWORK. PIPE GRADIENTS ARE SHOWN INDICATIVELY ONLY.

19. ALL PIPE DIAMETERS GIVEN ARE NOMINAL INTERNAL PIPE DIAMETERS.

20. ALL SEWERS, UNLESS AGREED OTHERWISE STATED, SHALL BE:
- 100mm to 300mm DIA TO BE VITRIFIED CLAY.
- 375mm DIA AND GREATER TO BE CLASS 120 CONCRETE PIPES.

19. AS AN ALTERNATIVE THE CONTRACTOR MAY USE AN APPROVED UNPLASTICISED POLYVINYL CHLORIDE (PVCU) WITH APPROVAL FROM THE ENGINEER.

20. SEWER PIPES TO BE LAID IN MAXIMUM 3 METRE LENGTHS UNLESS THERE IS A SPECIFIC OPERATIONAL NEED TO LAY LONGER LENGTHS.

21. THE FIRST PIPE OUT OF MANHOLES TO BE AS SHORT AS PRACTICABLE SO AS TO PROVIDE A FLEXIBLE JOINT AS CLOSE AS POSSIBLE TO THE OUTSIDE FACE OF THE CONCRETE SURROUND AND CONNECTED TO A LENGTH OF ROCKER PIPE.

22. ALL NEW CONNECTIONS INTO EXISTING MANHOLES (OR INTO EXISTING SEWERS) TO BE 'SOFFITS LEVEL' UNLESS OTHERWISE NOTED.

23. ALL ADOPTABLE DRAINAGE PIPES WILL REQUIRE A MINIMUM OF 1200mm COVER, IN ACCORDANCE WITH SEWERAGE UNDERTAKERS REQUIREMENTS. WHERE THIS IS NOT ACHIEVED, IT WILL BE NECESSARY TO AGREE THE BED AND SURROUND DETAIL.

24. ALL PRIVATE DRAINAGE PIPES WITH A COVER OF LESS THAN 600mm IN NON-TRAFFICKED AREAS AND LESS THAN 1200mm IN TRAFFICKED AREAS TO BE BEDDED AND SURROUNDED IN CONCRETE (CLASS Z). COMPRESSIBLE MATERIAL SHALL BE PROVIDED AT EVERY PIPE JOINT. WHERE COVER EXCEEDS THIS DEPTH, PIPES ARE TYPICALLY BEDDED AND SURROUNDED IN CLASS S. REFER TO PIPE EMBEDMENT DETAILS DRAWING FOR SPECIFIC TYPES.

25. WHERE DRAINAGE PIPES ARE LESS THAN 300mm BELOW THE UNDERSIDE OF THE GROUND FLOOR SLAB, CONCRETE ENCASEMENT IS REQUIRED (CLASS Z). COMPRESSIBLE JOINTS ARE TO BE PROVIDED AT EVERY PIPE JOINT WITHIN THE CONCRETE.

26. WHERE PIPES ARE MORE THAN 300mm BELOW THE UNDERSIDE OF THE SLAB, CLASS S BEDDING IS ACCEPTABLE.

27. SULPHATE RESISTANT CEMENT (C20-DC2) AND PRECAST CONCRETE PRODUCTS MUST BE USED OR A LABORATORY REPORT PROVIDED TO PROVE THAT SUCH PRECAUTIONS ARE NOT REQUIRED.

28. WHERE FOUL SEWERS RUN ABOVE SURFACE SEWERS, CONCRETE PROTECTION MAY BE REQUIRED AT CROSSOVERS TO PREVENT ANY POTENTIAL CONTAMINATION.

29. ALL CONNECTIONS PASSING THROUGH BASES OR EDGE BEAMS TO BE IN SEALED SLEEVES. ALTERNATIVELY CONNECTIONS MAY BE CAST-IN WITH FLEXIBLE JOINTS NOT GREATER THAN 150MM FROM FACE OF CONCRETE.

30. THE CHAMBER SIZE OF MANHOLES WITH MORE THAN ONE CONNECTION MAY NEED TO BE INCREASED TO ACCOMMODATE THE CONNECTIONS AND BENDS.

31. ALL MANHOLE COVERS IN BLOCK/SLAB AND EXTERNAL PAVING AREAS TO HAVE RECESSED COVERS OF THE APPROPRIATE GRADE TO ACCEPT ARCHITECT'S PAVING PROPOSAL.

32. ALL INTERNAL COVERS TO HAVE MECHANICALLY JOINTED CORNERS AND DOUBLE SEALED WITH RECESSED TRAY TO ALLOW FOR FINISHES.

33. UNLESS NOTED OTHERWISE IN THE MANHOLE SCHEDULE, ALL MANHOLE, GULLY AND CHANNEL COVERS (IRONWORK) SHOULD BE THE FOLLOWING SPECIFICATION:
- B125 LOAD CLASS IN PEDESTRIAN AREAS
- D400 LOAD CLASS IN VEHICULAR AREAS.

34. ALL PROPRIETARY PRODUCTS TO BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURERS REQUIREMENTS, INSTRUCTIONS AND RECOMMENDATIONS.

35. GREASE TRAPS SHOULD BE PROVIDED ABOVE GROUND WITHIN AN ENZYME TREATMENT SYSTEM, BY APPROPRIATE SPECIALIST DESIGNER. WHERE A BELOW GROUND GREASE TREATMENT SYSTEM IS REQUIRED - THIS SHOULD BE CONFIRMED TO ALLOW APPROPRIATE GREASE TREATMENT SIZING.

36. THE DESIGN IS BASED ON A GRAVITY RAINWATER SYSTEM. WHERE A SIPHONIC SYSTEM IS PROPOSED ADDITIONAL NOTES REQUIRED AND DESIGN ADJUSTED TO SUIT.

GENERAL NOTES:

Rev:	Description:	Date:	By:	Chkd:
P02	DRAFT ISSUE FOR COMMENT	13/09/23	ATL	CG
P01	ISSUED FOR STAGE 3/PLANNING CONDITIONS	28/07/23	KS	CG

Curtins
Merchant Exchange, 17-19 Whitworth Street West, Manchester, M1 5WG
0161 236 2394
manchester@curtins.com
www.curtins.com

Civils & Structures • Transport Planning • Environmental • Infrastructure • Geotechnical • Conservation & Heritage • Principal Designer
Birmingham • Bristol • Cambridge • Cardiff • Douglas • Dublin • Edinburgh • Glasgow • Kendal • Leeds • Liverpool • London • Manchester • Nottingham

Status: WORK IN PROGRESS — S0

Project: PLOT F, GREAT JACKSON STREET

Drg Title: DRAINAGE NOTES

Drawn By	Designed By	Checked By
KS	KS	CG

Project No	Date	Scales @ A2
078524	05/07/23	NTS

Project Code - Originator - Function - Spatial - Form - Discipline - Number: Z1 - CUR - G580 - PL - GRD - 92510

Revision: P02

\\mafs02\Projects\078001 - 079000\078524 - Plot F Great Jackson Street\Q4-Production\4A-Models-Drawings-CAD\DWG

Surface Water Manhole schedule

MH REF	CL (mAOD)	IL (mAOD)	DEPTH TO SOFFIT (m)	DS PIPE DIA (mm)	MH DIA (mm)	MH TYPE	COVER SIZE (mm)	COVER CLASS	COVER TYPE	RECESSED	RESTRICTED ACCESS	HIGH LEVEL CONN	BACK DROP	COMMENTS	EASTING	NORTHING
S1	TO BE PROVIDED FOR PLOT F1															
S1A																
S2	32.59	30.57	1.72	300	1500	TYPE B	600X600	D400	SINGLE SEALED	Y	N	N	N	CATCHPIT	383389.648	397221.477
S3	32.32	30.48	1.54	300	1200	TYPE B	600X600	D400	SINGLE SEALED	Y	N	N	N		383385.919	397237.958
S4	32.16	30.14	1.42	600	1500	TYPE C	1200X675	D400	SINGLE SEALED	N	N	Y	N		383393.46	397241.667
S5A	32.43	31.73	0.54	150	450	PPIC	450X450	D400	SINGLE SEALED	N	N	N	N	CATCHPIT	383409.636	397243.713
S5B	32.36	31.65	0.56	150	450	PPIC	450X450	D400	SINGLE SEALED	N	N	N	N	CATCHPIT	383419.756	397249.857
S5	32.30	30.10	1.60	600	1500	TYPE B	600X600	D400	SINGLE SEALED	N	N	N	N	CATCHPIT	383416.598	397255.309
S6	33.33	31.98	1.20	150	1500	TYPE C	1200X675	D400	SINGLE SEALED	N	N	N	N		383492.097	397249.762
S7	32.92	31.33	1.44	150	1500	PPIC	450X450	D400	SINGLE SEALED	N	N	N	N		383476.322	397279.142
S8	32.900	29.979	2.47	450	2100	TYPE B	600X600	D400	SINGLE SEALED	N	N	N	N	FLOW CONTROL CHAMBER FLOWS RESTRICTED TO 115l/s	383470.711	397287.371
S9	32.64	30.92	1.57	150	600	PPIC	600X600	D400	SINGLE SEALED	Y	Y	N	N	ACCESS RESTRICTED TO 350mm	383438.321	397263.582
S10	32.71	30.77	1.71	225	600	PPIC	600X600	D400	SINGLE SEALED	Y	Y	N	N	ACCESS RESTRICTED TO 350mm	383444.742	397267.342
S11	32.75	30.68	1.77	300	600	PPIC	600X600	D400	SINGLE SEALED	Y	Y	N	N	ACCESS RESTRICTED TO 350mm	383446.785	397268.513
S12	32.74	30.67	1.77	300	600	PPIC	600X600	D400	SINGLE SEALED	Y	Y	N	N	ACCESS RESTRICTED TO 350mm	383448.15	397269.309
S13	32.80	30.59	1.91	300	1200	TYPE B	600X600	D400	SINGLE SEALED	Y	N	N	N	CATCHPIT	383462.846	397277.871

Foul Water Manhole schedule

MH REF	CL (mAOD)	IL (mAOD)	DEPTH TO SOFFIT (m)	DS PIPE DIA (mm)	MH DIA (mm)	MH TYPE	COVER SIZE (mm)	COVER CLASS	COVER TYPE	RECESSED	RESTRICTED ACCESS	HIGH LEVEL CONN	BACK DROP	COMMENTS	EASTING	NORTHING
F1	TO BE PROVIDED FOR PLOT F1															
F2	32.200	31.165	0.735	300	1350	TYPE C	750X750	D400	SINGLE SEALED	N	N	N	N		383390.044	397244.258
F3	32.780	30.000	2.555	225	600	PPIC	600X600	D400	SINGLE SEALED	Y	N	N	31.00	ACCESS RESTRICTED TO 350mm	383447.845	397268.096
F4	32.730	29.976	2.454	300	600	PPIC	600X600	D400	SINGLE SEALED	Y	N	N	31.00	ACCESS RESTRICTED TO 350mm	383445.758	397266.905
F5	32.500	29.650	2.550	300	1200	TYPE B	600X600	D400	SINGLE SEALED	N	N	N	N		383442.482	397272.194

COVER LEVELS ARE INDICATIVE AND TO BE CONFIRMED BY LANDSCAPE ARCHITECT

COORDINATES BASED ON CENTRE POINT OF PIPES AND MANHOLES WILL NEED TO BE ADJUSTED TO SUIT ACHIEVING THE REQUIRED BENCHING WIDTHS.

ECONFIGURATION OF EXSTING MANHOLE MH7.

GENERAL NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ENGINEERS DRAWINGS AND SPECIFICATIONS.
2. ALL ADOPTABLE DRAINAGE WORKS INCLUDING WORKS TO EXISTING PUBLIC SEWERS TO BE UNDERTAKEN IN ACCORDANCE WITH "DESIGN AND CONSTRUCTION GUIDANCE FOR FOUL AND SURFACE WATER SEWERS OFFERED FOR ADOPTION - LATEST EDITION" AND "CIVIL ENGINEERING SPECIFICATION FOR THE WATER INDUSTRY 7th EDITION" AND CONSTRUCTED TO THE RELEVANT STATUTORY UNDERTAKERS DETAILS.
3. ALL PRIVATE DRAINAGE WORKS TO BE IN ACCORDANCE WITH CURTINS DRAINAGE SPECIFICATION, "CIVIL ENGINEERING SPECIFICATION FOR THE WATER INDUSTRY 7th EDITION", BS EN 752 2017 "DRAIN AND SEWER SYSTEMS OUTSIDE BUILDINGS' AND THE BUILDING REGULATIONS APPROVED 'DOCUMENT H'.
4. ANY AMBIGUITIES, OMISSIONS AND ERRORS ON DRAWINGS SHALL BE BROUGHT TO THE ENGINEERS ATTENTION IMMEDIATELY. ALL DIMENSIONS MUST BE CHECKED / VERIFIED ON SITE.
5. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
6. THE CHAMBER SIZE OF MANHOLES WITH MORE THAN ONE CONNECTION MAY NEED TO BE INCREASED TO ACCOMMODATE THE CONNECTIONS AND BENDS.
7. COVER LEVELS BASED ON LANDSCAPE GENERAL ARRANGEMENTS.
8. COVER LEVELS, GULLY POSITIONS, AND BUILDING LOCATION ARE APPROXIMATE AND SHALL BE CONFIRMED BY ARCHITECT/LANDSCAPE ARCHITECT. CONTRACTOR TO ALLOW FOR ADJUSTMENT TO SUIT AGREED POSITIONS AND FINISHED LEVELS, AND CONFIRM ALL COVER LEVELS ON SITE.
9. ALL MANHOLE COVERS IN BLOCK/SLAB AND EXTERNAL PAVING AREAS MAY REQUIRE RECESSED COVERS OF THE APPROPRIATE GRADE TO ACCEPT THE LANDSCAPE ARCHITECT'S PAVING PROPOSAL. TBC BY LANDSCAPE ARCHITECT.
10. THE LANDSCAPE ARCHITECT MAY REQUIRE THE ORIENTATION OF CHAMBER COVERS TO BE CO-ORDINATED WITH THE PAVING PATTERN. THIS WILL BE SUBJECT TO REVIEW WITH THE MANHOLE INTERNAL BENCHING ARRANGEMENT, LANDING AND STEP LOCATION AND IF REQUIRED, SHOULD BE ADVISED TO US AS SOON AS POSSIBLE.
11. ALL MANHOLE, GULLY AND CHANNEL (ACCESS/OUTLET) COVERS (IRONWORK) SHOULD BE THE FOLLOWING SPECIFICATION:
    - B125 LOAD CLASS IN PEDESTRIAN AREAS
    - D400 LOAD CLASS IN VEHICULAR AREAS.

    ANY AMBIGUITIES ON DRAWINGS/ACCESS AND MAINTENANCE STRATEGY SHALL BE BROUGHT TO THE ENGINEERS ATTENTION IMMEDIATELY.
12. ALL SURFACE CHANNEL ACCESS BOXES/OUTLET BOXES IN BLOCK/SLAB AND EXTERNAL PAVING AREAS MAY REQUIRE RECESSED COVERS OF THE APPROPRIATE GRADE TO ACCEPT THE LANDSCAPE ARCHITECT'S PAVING PROPOSAL. TBC BY LANDSCAPE ARCHITECT AND SUBJECT TO AVAILABILITY FROM MANUFACTURER.
13. ALL SURFACE CHANNELS TO BE OF THE TREADSAFE TYPE, UNLESS OTHERWISE SPECIFIED.
14. ALL PROPRIETARY PRODUCTS TO BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURERS REQUIREMENTS, INSTRUCTIONS AND RECOMMENDATIONS.

Rev:	Description:	Date:	By:	Chkd:
P02	DRAFT ISSUE FOR COMMENT	13/09/23	ATL	CG
P01	ISSUED FOR STAGE 3/PLANNING CONDITIONS	28/07/23	KS	CG

Curtins
Merchant Exchange, 17-19 Whitworth Street West, Manchester, M1 5WG
0161 236 2394
manchester@curtins.com
www.curtins.com
Civils & Structures • Transport Planning • Environmental • Infrastructure • Geotechnical • Conservation & Heritage • Principal Designer
Birmingham • Bristol • Cambridge • Cardiff • Douglas • Dublin • Edinburgh • Glasgow • Kendal • Leeds • Liverpool • London • Manchester • Nottingham

Status: SUITABLE FOR INFORMATION — S2

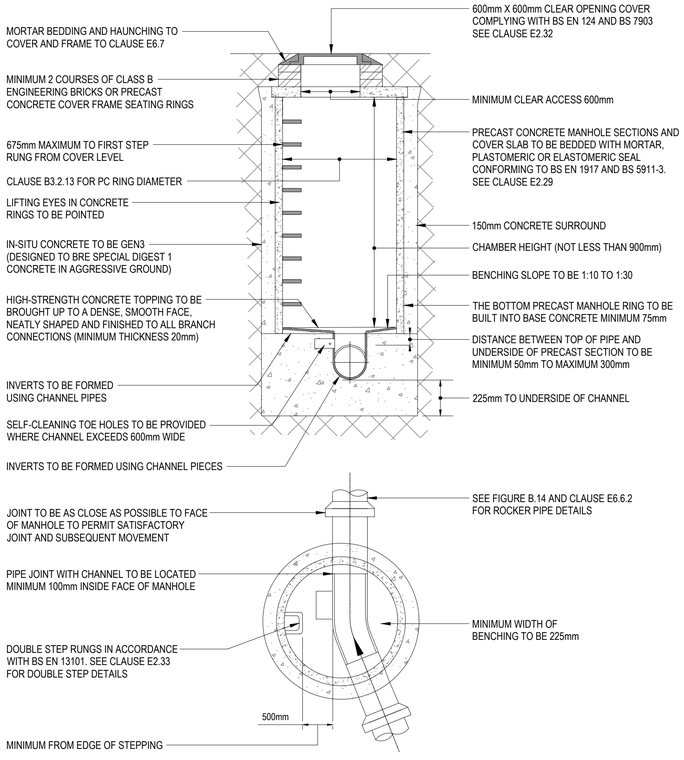
Project: PLOT F, GREAT JACKSON STREET

Drg Title: MANHOLE SCHEDULE

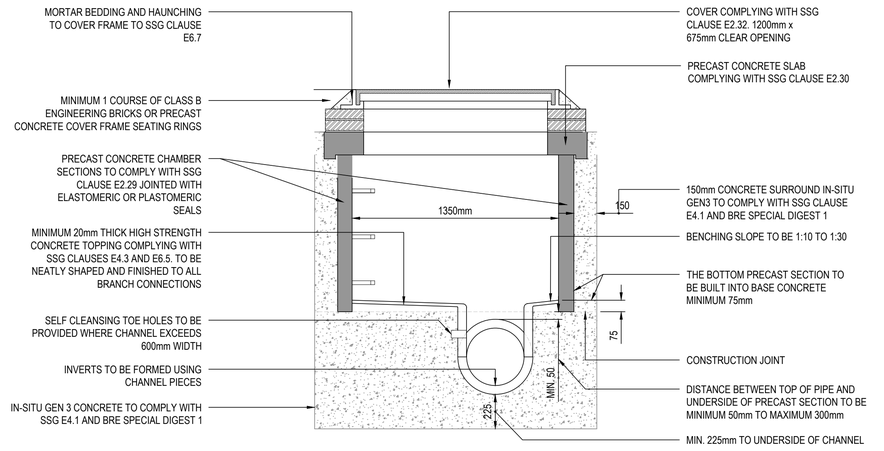
Drawn By	Designed By	Checked By
KS	KS	CG
Curtins Project Reference 078524	Date 05/07/23	Scales @ A1 NTS

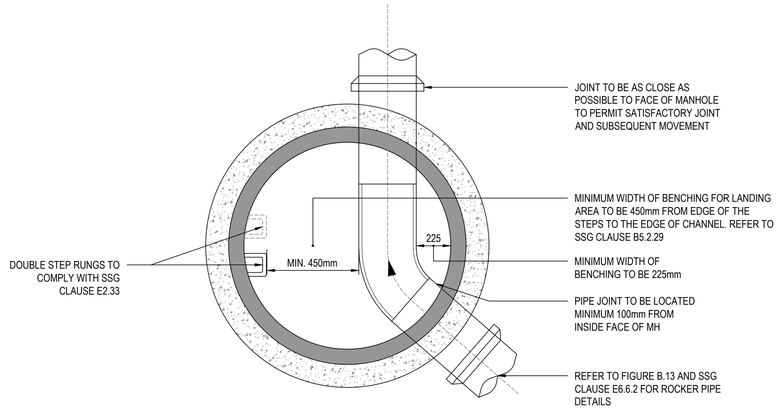
Project No - Originator - Function - Spatial - Form - Discipline - Number: Z1 - CUR - G580 - PL -XX- 92520 — Revision: P02

\\mafs02\Projects\078001 - 079000\078524 - Plot F Great Jackson Street\04-Production\4A-Models-Drawings\C\CAD\92\



TYPICAL MANHOLE DETAIL - TYPE B
(MAXIMUM DEPTH FROM COVER TO SOFFIT OF PIPE 3.0 m)

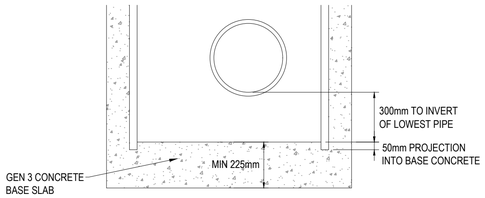




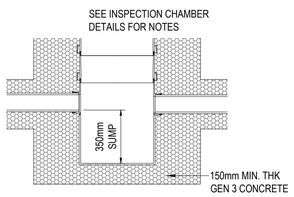
TYPICAL MANHOLE DETAIL - TYPE C
DEPTH FROM COVER LEVEL TO SOFFIT OF PIPE <1.5m WITH STEPS
RIGID MATERIAL CONSTRUCTION WITH CONCRETE SURROUND

GENERAL NOTES:

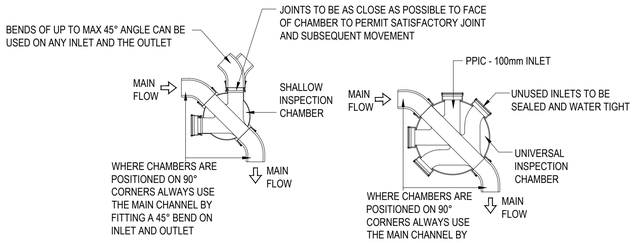
1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ENGINEERS DRAWINGS AND SPECIFICATIONS.
2. DO NOT SCALE THIS DRAWING. ANY AMBIGUITIES, OMISSIONS AND ERRORS ON DRAWINGS SHALL BE BROUGHT TO THE ENGINEERS ATTENTION IMMEDIATELY. ALL DIMENSIONS MUST BE CHECKED / VERIFIED ON SITE.
3. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
4. FOR FULL DRAINAGE NOTES REFER TO DWG Z1-CUR-G580-PL-GRD-92510.

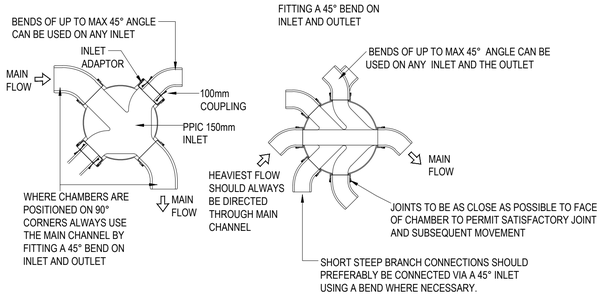


CATCH PIT DETAIL

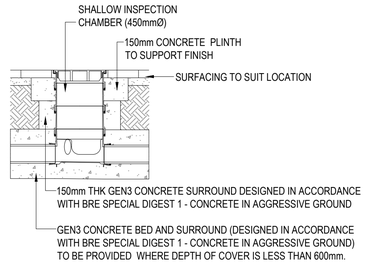


PPIC CATCHPIT BASE DETAIL

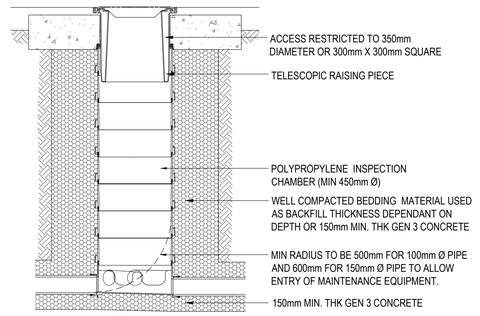




INSPECTION CHAMBER BASE DETAILS

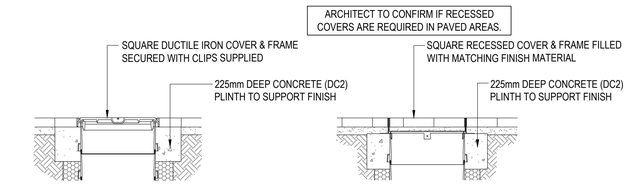


SHALLOW INSPECTION CHAMBER
MAX DEPTH 1.2m



DEEP INSPECTION CHAMBER
DEPTHS BETWEEN 1.2m AND 3.0m

TYPICAL INSPECTION CHAMBER DETAILS - PPIC



SITED IN HARD LANDSCAPED AREAS WITH STANDARD SQUARE COVER

SITED IN HARD LANDSCAPED AREAS WITH RECESSED COVER

TYPICAL INSPECTION CHAMBER COVER DETAILS

Rev:	Description:	Date:	By:	Chkd:
P02	DRAFT ISSUE FOR COMMENT	13.09.23	ATL	CG
P01	ISSUED FOR STAGE 3/PLANNING CONDITIONS	28/07/23	KS	CG

Curtins
Merchant Exchange, 17-19 Whitworth Street West, Manchester, M1 5WG
0161 236 2394
manchester@curtins.com
www.curtins.com
Civils & Structures • Transport Planning • Environmental • Infrastructure • Geotechnical • Conservation & Heritage • Principal Designer
Birmingham • Bristol • Cambridge • Cardiff • Douglas • Dublin • Edinburgh • Glasgow • Kendal • Leeds • Liverpool • London • Manchester • Nottingham

Status: SUITABLE FOR INFORMATION — S2

Project: PLOT F, GREAT JACKSON STREET

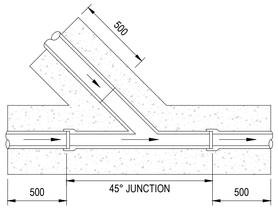
Drg Title: DRAINAGE DETAILS SHEET 1

Drawn By	Designed By	Checked By
KS	KS	CG
Curtins Project Reference 078524	Date 05/07/23	Scales @ A1 NTS

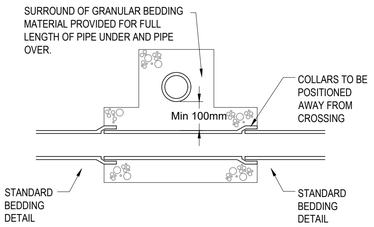
Project No - Originator - Function - Spatial - Form - Discipline - Number: Z1 - CUR - G580 - DE - XX - 92530

Revision: P02

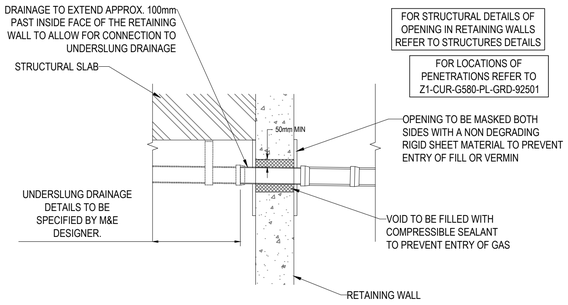
\\mafil2\Projects\078001 - 079000\078524 - Plot F Great Jackson Street\04-Production\4A-Models-Drawings\CAD\92530



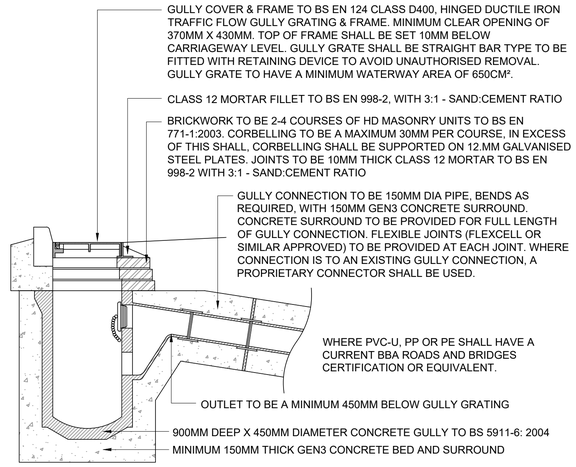
TYPICAL SADDLE CONNECTION



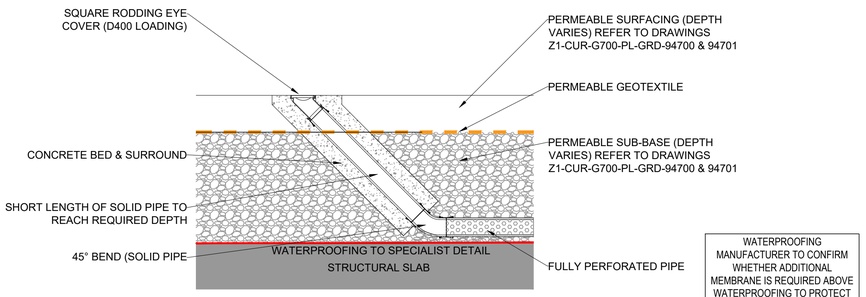
PIPE CROSSINGS DETAIL



PENTRATION DETAIL THROUGH RETAINING WALL

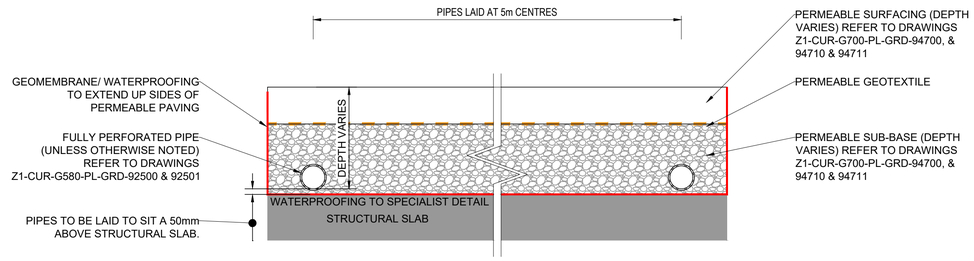


ROAD GULLY

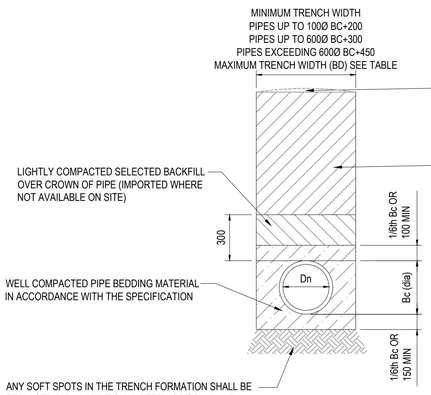


RODDING POINT DETAIL (RE)

WATERPROOFING MANUFACTURER TO CONFIRM WHETHER ADDITIONAL MEMBRANE IS REQUIRED ABOVE WATERPROOFING TO PROTECT FROM STONE



DRAINAGE UNDER PERMEABLE PAVING



CLASS S - 360° GRANULAR SURROUND PIPE BEDDING DETAIL

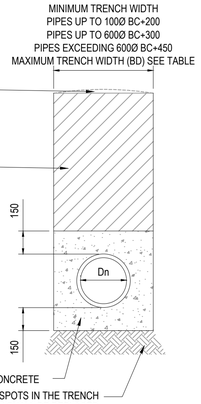
SOFT LANDSCAPE AREAS
IN SOFT LANDSCAPING AREAS TRENCH FILL ABOVE PIPES IS TO BE MOUNDED TO A MAXIMUM DEPTH OF 50MM TO ALLOW FOR FUTURE SETTLEMENT.

HARDSTANDING AREAS
SHW TYPE 1 GRANULAR MATERIAL
SOFT LANDSCAPE AREAS
SELECTED BACKFILL MATERIAL UP TO UNDERSIDE OF TOP-SOIL

THE FLEXIBLE JOINTS IN THE PIPES SHALL BE MAINTAINED AT THE END OF EACH PIPE WITH COMPRESSIBLE SHEET CUT ACCURATELY TO FIT THE PIPE PROFILE TO BREAK THE CONCRETE SURROUND

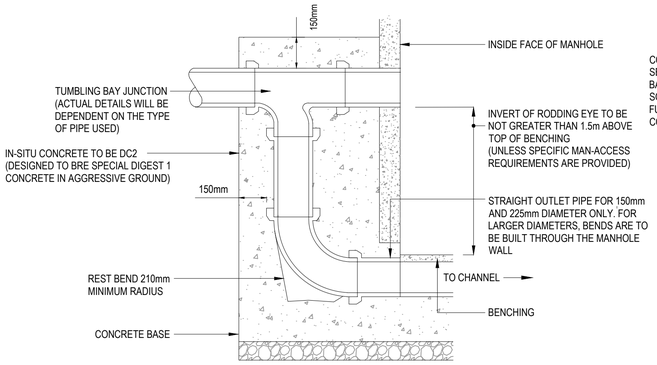
Dn	Bd
150	0.6
225	0.7
300	0.85
375	1.05
450	1.15
525	1.25
600	1.35
675	1.45
750	1.50

MAXIMUM TRENCH WIDTH

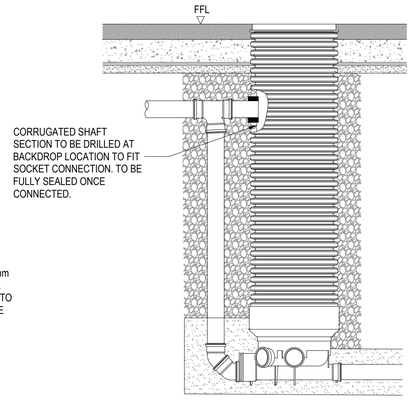


CLASS Z - CONCRETE BED AND SURROUND PIPE BEDDING DETAIL

(COVER < 900mm IN VEHICULAR LOADING AND OPEN FIELD. COVER <600mm ELSEWHERE EXCEPT UNDER BUILDINGS.)



EXTERNAL VERTICAL BACKDROP



TYPICAL INSPECTION CHAMBER BACKDROP DETAIL

GENERAL NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ENGINEERS DRAWINGS AND SPECIFICATIONS.
2. DO NOT SCALE THIS DRAWING. ANY AMBIGUITIES, OMISSIONS AND ERRORS ON DRAWINGS SHALL BE BROUGHT TO THE ENGINEERS ATTENTION IMMEDIATELY. ALL DIMENSIONS MUST BE CHECKED / VERIFIED ON SITE.
3. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
4. FOR FULL DRAINAGE NOTES REFER TO DWG Z1-CUR-G580-PL-GRD-92510.

Rev.	Description:	Date:	By:	Chkd:
P02	DRAFT ISSUE FOR COMMENT	13/09/23	ATL	CG
P01	ISSUED FOR STAGE 3/PLANNING CONDITIONS	28/07/23	KS	CG

Curtins
Merchant Exchange, 17-19 Whitworth Street West, Manchester, M1 5WG
0161 236 2394
manchester@curtins.com
www.curtins.com
Civils & Structures • Transport Planning • Environmental • Infrastructure • Geotechnical • Conservation & Heritage • Principal Designer
Birmingham • Bristol • Cambridge • Cardiff • Douglas • Dublin • Edinburgh • Glasgow • Kendal • Leeds • Liverpool • London • Manchester • Nottingham

Status: SUITABLE FOR INFORMATION — S2

Project: PLOT F, GREAT JACKSON STREET

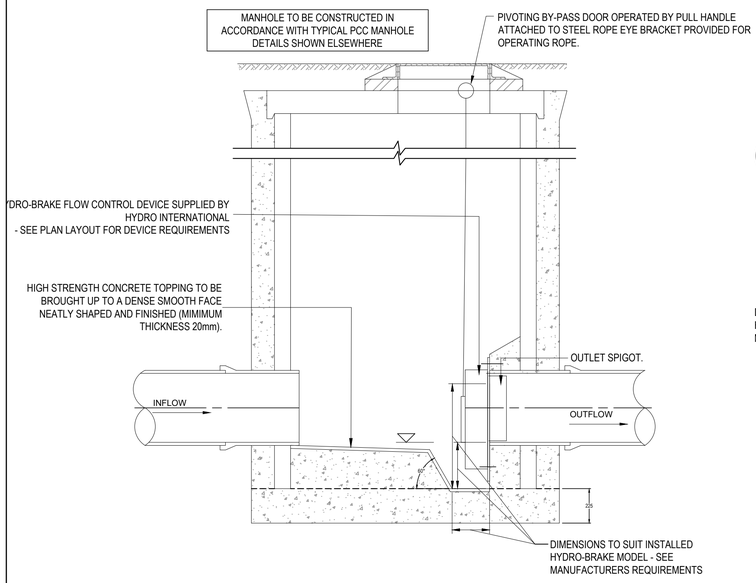
Drg Title: DRAINAGE DETAILS SHEET 2

Drawn By	Designed By	Checked By
KS	KS	CG
Curtins Project Reference 078524	Date 05/07/23	Scales @ A1 NTS

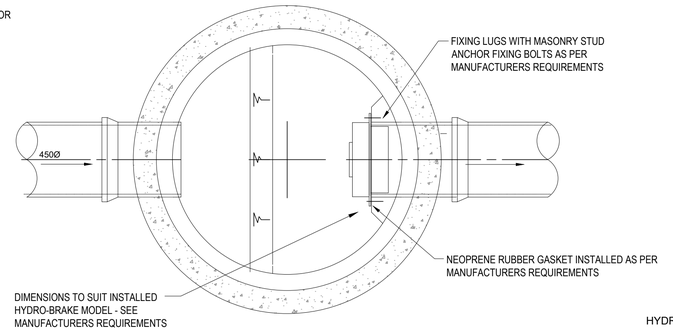
Project No - Originator - Function - Spatial - Form - Discipline - Number: Z1 - CUR - G580 - DE - XX - 92531

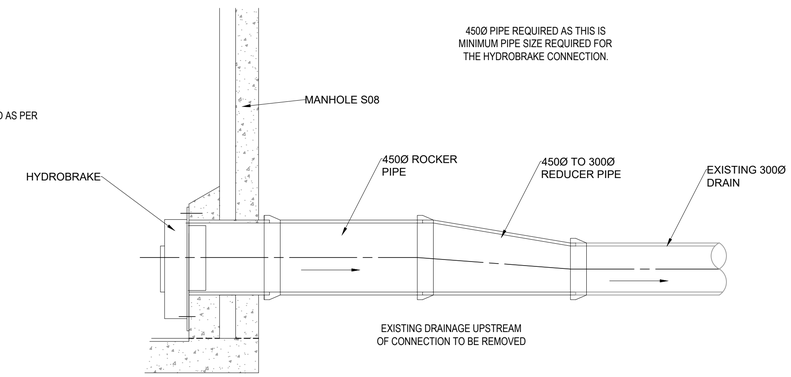
Revision: P02

\\mafile2\Projects\078001 - 079000\078524 - Plot F Great Jackson Street\04-Production\04-Models-Drawings\CAD\2D\



FLOW CONTROL MANHOLE (HYDRO-BRAKE)





REDUCER PIPE TO TIE INTO EXISTING DRAINAGE

GENERAL NOTES:

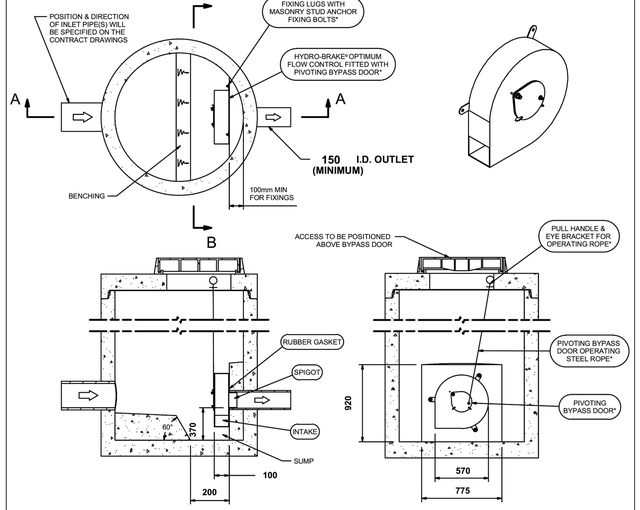
1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ENGINEERS DRAWINGS AND SPECIFICATIONS.
2. DO NOT SCALE THIS DRAWING. ANY AMBIGUITIES, OMISSIONS AND ERRORS ON DRAWINGS SHALL BE BROUGHT TO THE ENGINEERS ATTENTION IMMEDIATELY. ALL DIMENSIONS MUST BE CHECKED / VERIFIED ON SITE.
3. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
4. REFER TO DRAWING Z1-CUR-G580-PL-GRD-92500 & 92501 FOR THE LOCATION OF THE ATTENUATION TANK.
5. FLOW CONTROL TO BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURERS REQUIREMENTS, INSTRUCTIONS AND RECOMMENDATIONS.
6. WHERE ALTERNATIVE FLOW CONTROL DEVICE IS PREFERRED, IT WILL BE SUBJECT TO REDESIGN TO CONFIRM WHETHER THE SYSTEM HAS CAPACITY.
7. FOR FULL DRAINAGE NOTES REFER TO DWG Z1-CUR-G580-PL-GRD-92510.

Technical Specification		
Control Point	Head (m)	Flow (l/s)
Primary Design	1.800	5.000
Flush-Flo™	0.411	4.387
Kick-Flo®	0.838	3.510
Mean Flow		4.064

hydro-int.com/patents

Hydro-Brake® Optimum Flow Control including:

- 3 mm grade 304L stainless steel
- Integral stainless steel pivoting by-pass door allowing clear line of sight through to outlet, c/w stainless steel operating rope
- Beed blasted finish to maximise corrosion resistance
- Stainless steel fixings
- Rubber gasket to seal outlet
- Indicative Weight: 20 kg



SECTION A-A SECTION B-B

IMPORTANT: LIMIT OF HYDRO INTERNATIONAL SUPPLY
THE DEVICE WILL BE HANDED TO SUIT SITE CONDITIONS
FOR SITE SPECIFIC DETAILS AND MINIMUM CHAMBER SIZE REFER TO HYDRO INTERNATIONAL
ALL CIVIL AND INSTALLATION WORK BY OTHERS
* WHERE SUPPLIED
HYDRO-BRAKE® FLOW CONTROL & HYDRO-BRAKE® OPTIMUM FLOW CONTROL ARE REGISTERED TRADEMARKS FOR FLOW CONTROLS DESIGNED AND MANUFACTURED EXCLUSIVELY BY HYDRO INTERNATIONAL

THIS DESIGN LAYOUT IS FOR ILLUSTRATIVE PURPOSES ONLY. NOT TO SCALE.

DESIGN ADVICE !

The head/flow characteristics of this SHE-0094-5000-1800-5000 Hydro-Brake® Optimum Flow Control are unique. Dynamic hydraulic modelling evaluates the full head/flow characteristic curve.
The use of any other flow control will invalidate any design based on this data and could constitute a flood risk.

Hydro International

DATE	07/07/2023 13:47
SITE	PLOT F
DESIGNER	Kiran Sawyer
REF	

SHE-0094-5000-1800-5000
Hydro-Brake® Optimum

© 2023 Hydro International Ltd • Unit 2, Rivermead Court • Kenn Business Park • Windmill Road • Kenn • Clevedon • BS21 6FT • Tel: 01275 878371 • www.hydro-int.com • Email: Enquiries@hydro-int.com

kiran.sawyer@curtins.com

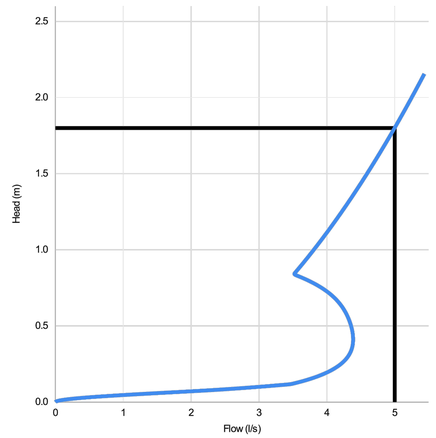
Technical Specification		
Control Point	Head (m)	Flow (l/s)
Primary Design	1.800	5.000
Flush-Flo	0.411	4.387
Kick-Flo®	0.838	3.510
Mean Flow		4.064

hydro-int.com/patents

BBA APPROVAL INSPECTION TESTING CERTIFICATION CERTIFICATE No 08/4596

wrc approved PT/503/0422 Valid: 01/04/2022 - 31/03/2027

Head (m)	Flow (l/s)
0.000	0.000
0.062	1.639
0.124	3.530
0.186	3.960
0.248	4.202
0.310	4.328
0.372	4.380
0.434	4.385
0.497	4.359
0.559	4.309
0.621	4.232
0.683	4.116
0.745	3.942
0.807	3.685
0.869	3.569
0.931	3.684
0.993	3.795
1.055	3.902
1.117	4.007
1.179	4.108
1.241	4.206
1.303	4.302
1.366	4.396
1.428	4.488
1.490	4.577
1.552	4.665
1.614	4.750
1.676	4.834
1.738	4.917
1.800	4.998



DESIGN ADVICE !

The head/flow characteristics of this SHE-0094-5000-1800-5000 Hydro-Brake Optimum® Flow Control are unique. Dynamic hydraulic modelling evaluates the full head/flow characteristic curve.
The use of any other flow control will invalidate any design based on this data and could constitute a flood risk.

Hydro International

DATE	07/07/2023 13:47
Site	PLOT F
DESIGNER	Kiran Sawyer
Ref	

SHE-0094-5000-1800-5000
Hydro-Brake Optimum®

© 2018 Hydro International, Rivermead Court, Kenn Business Park, Windmill Road, Kenn, Clevedon, BS21 6FT. Tel 01275 878371 Fax 01275 874979 Web www.hydro-int.com Email designtools@hydro-int.com

Rev.	Description:	Date:	By:	Chkd:
P02	DRAFT ISSUE FOR COMMENT	13.09.23	ATL	CG
P01	ISSUED FOR STAGE 3/PLANNING CONDITIONS	28/07/23	KS	CG

Curtins
Merchant Exchange, 17-19 Whitworth Street West, Manchester, M1 5WG
0161 236 2394
manchester@curtins.com
www.curtins.com
Civils & Structures • Transport Planning • Environmental • Infrastructure • Geotechnical • Conservation & Heritage • Principal Designer
Birmingham • Bristol • Cambridge • Cardiff • Douglas • Dublin • Edinburgh • Glasgow • Kendal • Leeds • Liverpool • London • Manchester • Nottingham

Status: SUITABLE FOR INFORMATION **S2**

Project: PLOT F, GREAT JACKSON STREET

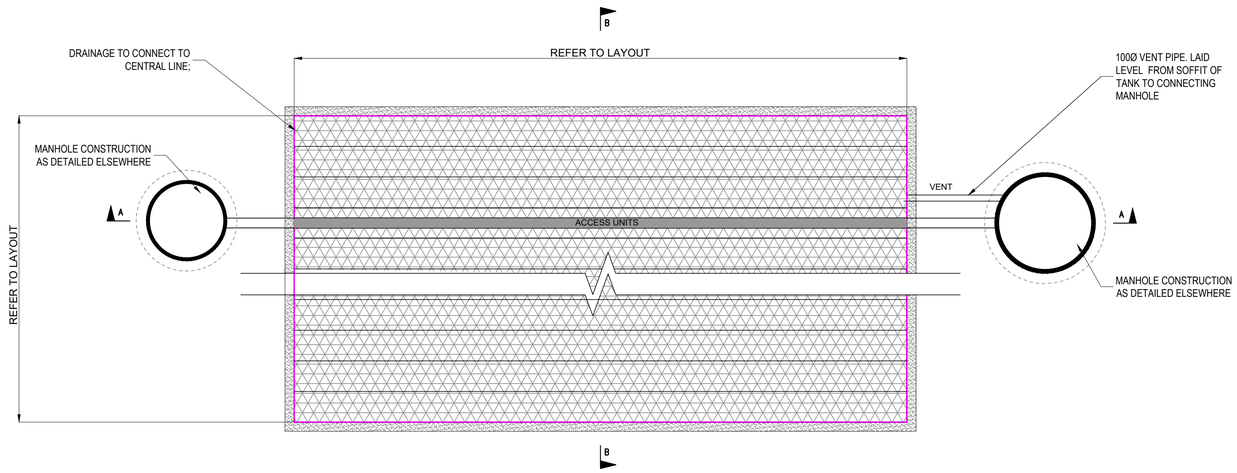
Drg Title: DRAINAGE DETAILS SHEET 3

Drawn By	Designed By	Checked By
KS	KS	CG

Curtins Project Reference	Date	Scales @ A1
078524	05/07/23	NTS

Project No - Originator - Function - Spatial - Form - Discipline - Number	Revision
Z1 - CUR - G580 - DE-XX- 92532	P02

\\mafile2\Projects\078001 - 079000\078524 - Plot F Great Jackson Street\Q4-Production\4A-Models-Drawings\CIC\CAD\92532



TYPICAL ATTENUATION TANK PLAN

CURRENT DESIGN ASSUMPTIONS

DESIGN BASED ON POLYSTORM R (PSM1A) AND POLSTORM INSPECT (PSM4) UNITS. 1000X500X400(D),

TANK IS LOCATED IN AN AREA SUBJECT TO PEDESTRIAN LOADING ONLY*. DETAILED STRUCTURAL CALCULATIONS REQUIRED TO PROVE TANK HAS SUFFICIENT STRENGTH.
*FINAL LOADING CASE TBC AS PART OF F1 WORKS

THE MANUFACTURER WILL NEED TO CONFIRM THAT THE TANK HAS SUFFICIENT STRENGTH FOR THIS LOCATION IN ACCORDANCE WITH CIRIA C680.

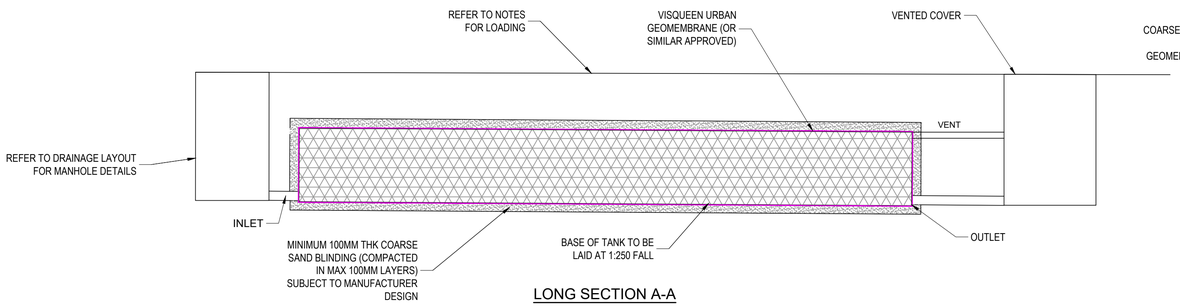
GROUND LEVEL APPROX 32.45 - 32.65**
INLET LEVEL: 30.55
OUTLET LEVEL: 30.50
MIN COVER: 1.15m
MAX COVER: 1.30m
**FINAL COVER LEVELS TBC BY LANDSCAPE ARCHITECT

DIMENSIONS OF TOTAL UNIT ARE AS SHOWN.
PLAN AREA OF TANK IS 70m² (10m x 7m)
TOTAL DEPTH OF TANK IS 0.8m.
ATTENUATION VOLUME, BASED ON 95% VOID RATIO IS 54m³

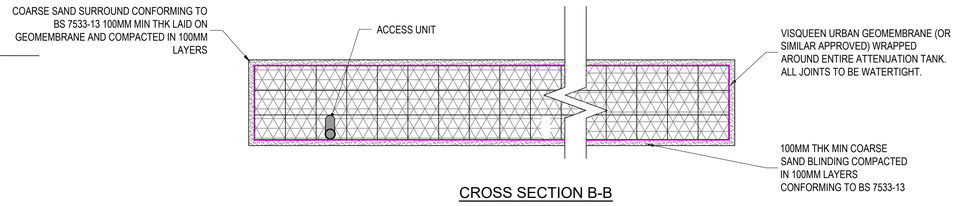
IMPERMEABLE MEMBRANE, BED AND SURROUND TO BE CONFIRMED WITH THE MANUFACTURER.

GROUNDWATER LEVELS TAKEN FROM MONITORING WELL BH03 BY GEO-ASSIST RANGE FROM 23.31 - 23.57.
AS GROUNDWATER LEVELS ARE BELOW THE BASE OF TANK, FLOATATION IS NOT THOUGHT TO BE AN ISSUE. HOWEVER, THIS SHOULD BE CONFIRMED BY THE MANUFACTURER.

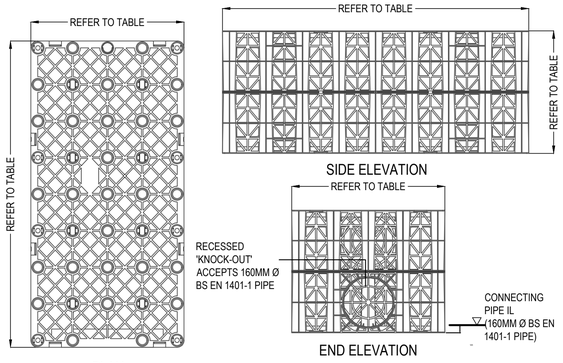
REFER TO DRAINAGE LAYOUT FOR TANK & INLET/OUTLET LOCATIONS.



LONG SECTION A-A



CROSS SECTION B-B

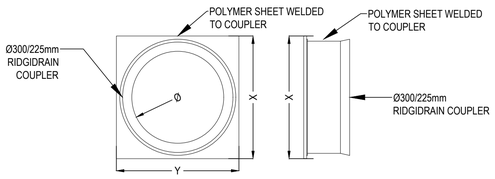


POLYPIPE POLYSTORM PSM1 ONE UNIT TYPICAL DETAILS

POLYSTORM FLANGE ADAPTER TABLE

FLANGE CODE	Ø (mm)	X (mm)	Y (mm)
PSMFA300	375	385	450

* FLANGE ADAPTERS ARE COMPATIBLE WITH THE PSM1, PSM1A,PSM2, PSM5 CELLS.
* CONSIDERATION TO HYDRAULIC PERFORMANCE SHOULD BE TAKEN WHEN USING A FLANGE ADAPTER



POLYSTORM FLANGE ADAPTER DETAIL

GENERAL NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ENGINEERS DRAWINGS AND SPECIFICATIONS.
2. DO NOT SCALE THIS DRAWING. ANY AMBIGUITIES, OMISSIONS AND ERRORS ON DRAWINGS SHALL BE BROUGHT TO THE ENGINEER,S ATTENTION IMMEDIATELY. ALL DIMENSIONS MUST BE CHECKED / VERIFIED ON SITE.
3. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
4. REFER TO DRAINAGE LAYOUT Z1-CUR-G580-PL-GRD-92500 FOR THE LOCATION OF THE ATTENUATION TANK.
5. ATTENUATION TANK TO BE INSTALLED STRICTLY IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS.
6. THE CURRENT TANK IS BASED ON POLYSTORM UNITS BY POLYPIPE. WHERE AN ALTERNATIVE ATTENUATION TANK DEVICE IS PREFERRED, IT WILL BE SUBJECT TO REDESIGN TO CONFIRM WHETHER THE SYSTEM HAS CAPACITY.
7. THE DESIGN OF THE TANK SHOULD BE PROVIDED BY THE MANUFACTURER OR SUPPLIER TO ENSURE THE TANK IS SUFFICIENT FOR THE SITE SPECIFIC CRITERIA.
8. THE TANK DESIGN SHOULD INCORPORATE:
   - CRATES SUBJECT TO REGULAR HEAVY VEHICLE LOADING,
   - SUITABLE MAINTENANCE ACCESS; AND
   - VENTING TO PREVENT TRAPPED AIR POCKETS.
9. THE STRENGTH OF THE TANK SHOULD COMPLY WITH CIRIA C680 STRUCTURAL DESIGN OF MODULAR GEOCELLULAR DRAINAGE TANKS.
10. ACCESS FOR MAINTENANCE SHOULD BE IN ACCORDANCE WITH CIRIA GUIDANCE.
11. VENTING TO THE TANK SHOULD BE CONFIRMED BY THE TANK MANUFACTURER. VENTING SHOULD BE LOCATED WITHIN LANDSCAPED AREAS, OR ROUTED BACK TO THE NEAREST MANHOLE ABOVE THE DESIGN WATER LEVEL.
12. CONSTRUCTION AND INSTALLATION OF THE TANK SHOULD BE STRICTLY IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION REQUIREMENTS.
13. THE CURRENT DESIGN OF THE TANK IS BASED ON USE OF POLYPIPE MODULES, TO ALLOW AN ASSUMPTION OF UNIT SIZES WITHIN THE OVERALL DESIGN. HOWEVER, WHERE AN ALTERNATIVE SYSTEM IS PROPOSED, THE DIMENSIONS OF THE UNITS WILL NEED TO BE CHECKED WITHIN THE DESIGN AND MAY RESULT IN A REDESIGN.
14. THE CONTRACTOR SHALL PROHIBIT THE MOVEMENT OF CONSTRUCTION PLANT ACROSS THE STORAGE TANK AND WHERE NECESSARY PROVIDE ADDITIONAL SUPPORT AND PROTECTION TO THE STRUCTURE. PARTICULARLY POST CONSTRUCTION. TEMPORARY FENCING CAN BE USED TO PROHIBIT TRADE STOCKS, PILLING MATERIALS, HEAVY PLANTS ETC.
15. FOR FULL DRAINAGE NOTES REFER TO DWG Z1-CUR-G580-PL-GRD-92510

Rev:	Description:	Date:	By:	Chkd:
P02	DRAFT ISSUE FOR COMMENT	13/09/23	ATL	CG
P01	ISSUED FOR STAGE 3/PLANNING CONDITIONS	28/07/23	KS	CG

Curtins
Merchant Exchange, 17-19 Whitworth Street West, Manchester, M1 5WG
0161 236 2394
manchester@curtins.com
www.curtins.com
Civils & Structures • Transport Planning • Environmental • Infrastructure • Geotechnical • Conservation & Heritage • Principal Designer
Birmingham • Bristol • Cambridge • Cardiff • Douglas • Dublin • Edinburgh • Glasgow • Kendal • Leeds • Liverpool • London • Manchester • Nottingham

Status: SUITABLE FOR INFORMATION — S2

Project: PLOT F, GREAT JACKSON STREET

Drg Title: DRAINAGE DETAILS SHEET 4

Drawn By	Designed By	Checked By
KS	KS	CG
Curtins Project Reference 078524	Date 05/07/23	Scales @ A1 NTS

Project No - Originator - Function - Spatial - Form - Discipline - Number: Z1 - CUR - G580 - DE -XX- 92533

Revision: P02

\\mafs02\Projects\078001 - 079000\078524 - Plot F Great Jackson Street\04-Production\44-Models-Drawings\CIVIL\DWG

Merchant Exchange
17-19 Whitworth Street West
manchester@curtins.com
Manchester
M1 5WG

T. 0161 236 2394

www.curtins.com

curtins

Appendix B

- Surface Water Calcs Plan
- Surface Water Calcs Without Surcharged Outfall
- Surface Water Calcs With Surcharged Outfall

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	1	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	18.000	Minimum Backdrop Height (m)	0.200
Ratio-R	0.358	Preferred Cover Depth (m)	1.200
CV	0.750	Include Intermediate Ground	✓
Time of Entry (mins)	5.00	Enforce best practice design rules	x

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
S1	0.066	5.00	31.950	1200	383358.322	397287.016	1.200
S1A	0.008	5.00	31.940	600	383361.696	397280.909	1.222
US1	0.147	5.00	32.130		383371.618	397262.597	1.507
S2		5.00	32.513	1500	383389.648	397221.477	1.943
S3			32.320	1200	383385.919	397237.958	1.827
S4	0.097	5.00	32.160	1500	383393.460	397241.667	2.020
S5			32.360	1500	383416.598	397255.309	2.262
US4			32.490		383462.508	397282.518	2.462
S6	0.032	5.00	33.330	1500	383492.097	397249.762	1.350
S7	0.055	5.00	32.920	1500	383476.322	397279.142	1.590
S8			32.900	2100	383470.711	397287.371	2.921
RED			32.700		383470.558	397290.457	2.749
EX_S2_OF			32.900	1350	383470.197	397297.763	2.979
PP01	0.079	10.00	32.000	100	383359.696	397279.804	0.470
S5A	0.057	10.00	32.490	450	383419.756	397249.857	0.840
PP03	0.073	10.00	33.070	100	383440.313	397260.227	2.060
S9			32.640	600	383438.321	397263.582	1.719
S10	0.034	5.00	32.710	600	383444.742	397267.342	1.938
S11	0.034	5.00	32.750	600	383446.785	397268.513	2.069
S12	0.034	5.00	32.740	600	383448.150	397269.309	2.067
S13	0.027	5.00	32.800	1200	383462.846	397277.871	2.212

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.000	S1	S1A	6.977	0.600	30.750	30.718	0.032	220.0	300	5.11	46.2
1.001	S1A	US1	20.827	0.600	30.718	30.623	0.095	220.0	300	10.34	32.9
1.002	US1	S3	28.489	0.600	30.623	30.494	0.129	220.0	300	10.79	32.1
3.000	S2	S3	16.898	0.600	30.570	30.493	0.077	220.0	300	5.27	45.7

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	1.056	74.6	8.3	0.900	0.922	0.066	0.0	67	0.702
1.001	1.056	74.6	13.6	0.922	1.207	0.153	0.0	86	0.808
1.002	1.056	74.6	26.1	1.207	1.526	0.300	0.0	122	0.964
3.000	1.056	74.6	0.0	1.643	1.527	0.000	0.0	0	0.000

Flow+ v10.2 Copyright © 1988-2023 Causeway Technologies Ltd

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.003	S3	S4	8.404	0.600	30.493	30.455	0.038	220.0	300	10.92	31.9
1.005	S4	S5	33.702	0.600	30.140	30.098	0.042	802.4	600	11.58	30.9
1.005_1	S5	US4	53.367	0.600	30.098	30.031	0.067	800.0	600	12.62	29.5
1.006	US4	S8	9.531	0.600	30.028	30.016	0.012	800.0	600	12.81	29.2
6.000	S6	S7	33.347	0.600	31.980	31.330	0.650	51.3	150	5.39	45.2
6.001	S7	S8	9.960	0.600	31.330	31.131	0.199	50.0	150	5.51	44.8
1.008	S8	RED	6.728	0.600	29.979	29.951	0.028	240.3	450	8.03	37.5
1.010	RED	EX_S2_OF	7.315	0.600	29.951	29.921	0.030	243.8	300	8.12	37.3
2.000	PP01	S1A	2.285	0.600	31.530	31.030	0.500	4.6	100	10.01	33.5
4.000	S5A	S5	6.301	0.600	31.650	31.587	0.063	100.0	100	10.14	33.2
5.000	PP03	S9	3.902	0.600	31.010	30.971	0.039	100.0	100	10.08	33.3
5.001	S9	S10	7.441	0.600	30.921	30.847	0.074	100.0	150	10.21	33.1
5.002	S10	S11	2.355	0.600	30.772	30.756	0.016	150.0	225	10.24	33.0
5.003	S11	S12	1.580	0.600	30.681	30.673	0.008	200.0	300	10.27	33.0
5.004	S12	S13	17.008	0.600	30.673	30.588	0.085	200.0	300	10.52	32.6
5.005	S13	US4	4.659	0.600	30.588	30.328	0.260	17.9	300	10.55	32.5

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.003	1.056	74.6	25.9	1.527	1.405	0.300	0.0	122	0.962
1.005	0.852	240.8	33.3	1.420	1.662	0.397	0.0	149	0.604
1.005_1	0.853	241.1	36.2	1.662	1.859	0.454	0.0	156	0.621
1.006	0.853	241.1	52.0	1.862	2.284	0.656	0.0	188	0.685
6.000	1.408	24.9	3.9	1.200	1.440	0.032	0.0	40	1.029
6.001	1.426	25.2	10.6	1.440	1.619	0.087	0.0	68	1.364
1.008	1.307	207.8	75.5	2.471	2.299	0.743	0.0	187	1.206
1.010	1.002	70.8	75.1	2.449	2.679	0.743	0.0	270	1.121
2.000	3.642	28.6	7.2	0.370	0.810	0.079	0.0	34	3.027
4.000	0.769	6.0	5.1	0.740	0.673	0.057	0.0	71	0.862
5.000	0.769	6.0	6.6	1.960	1.569	0.073	0.0	100	0.790
5.001	1.005	17.8	6.6	1.569	1.713	0.073	0.0	63	0.929
5.002	1.065	42.3	9.6	1.713	1.769	0.107	0.0	73	0.864
5.003	1.108	78.3	12.6	1.769	1.767	0.141	0.0	81	0.820
5.004	1.108	78.3	15.4	1.767	1.912	0.175	0.0	90	0.867
5.005	3.731	263.7	17.8	1.912	1.862	0.202	0.0	52	2.158

Flow+ v10.2 Copyright © 1988-2023 Causeway Technologies Ltd

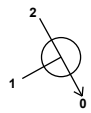
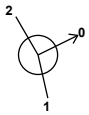
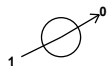
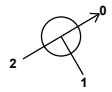
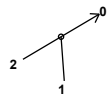
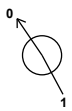
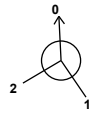
Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	6.977	220.0	300	1 STANDARD	31.950	30.750	0.900	31.940	30.718	0.922
1.001	20.827	220.0	300	1 STANDARD	31.940	30.718	0.922	32.130	30.623	1.207
1.002	28.489	220.0	300	1 STANDARD	32.130	30.623	1.207	32.320	30.494	1.526
3.000	16.898	220.0	300	1 STANDARD	32.513	30.570	1.643	32.320	30.493	1.527
1.003	8.404	220.0	300	1 STANDARD	32.320	30.493	1.527	32.160	30.455	1.405
1.005	33.702	802.4	600	1 STANDARD	32.160	30.140	1.420	32.360	30.098	1.662
1.005_1	53.367	800.0	600	1 STANDARD	32.360	30.098	1.662	32.490	30.031	1.859
1.006	9.531	800.0	600	1 STANDARD	32.490	30.028	1.862	32.900	30.016	2.284
6.000	33.347	51.3	150	1 STANDARD	33.330	31.980	1.200	32.920	31.330	1.440
6.001	9.960	50.0	150	1 STANDARD	32.920	31.330	1.440	32.900	31.131	1.619
1.008	6.728	240.3	450	1 STANDARD	32.900	29.979	2.471	32.700	29.951	2.299
1.010	7.315	243.8	300	1 STANDARD	32.700	29.951	2.449	32.900	29.921	2.679
2.000	2.285	4.6	100	1 STANDARD	32.000	31.530	0.370	31.940	31.030	0.810
4.000	6.301	100.0	100	1 STANDARD	32.490	31.650	0.740	32.360	31.587	0.673
5.000	3.902	100.0	100	1 STANDARD	33.070	31.010	1.960	32.640	30.971	1.569
5.001	7.441	100.0	150	1 STANDARD	32.640	30.921	1.569	32.710	30.847	1.713
5.002	2.355	150.0	225	1 STANDARD	32.710	30.772	1.713	32.750	30.756	1.769
5.003	1.580	200.0	300	1 STANDARD	32.750	30.681	1.769	32.740	30.673	1.767
5.004	17.008	200.0	300	1 STANDARD	32.740	30.673	1.767	32.800	30.588	1.912
5.005	4.659	17.9	300	1 STANDARD	32.800	30.588	1.912	32.490	30.328	1.862

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	S1	1200	Manhole	1 STANDARD	S1A	600	Manhole	1 STANDARD
1.001	S1A	600	Manhole	1 STANDARD	US1		Junction	
1.002	US1		Junction		S3	1200	Manhole	1 STANDARD
3.000	S2	1500	Manhole	1 STANDARD	S3	1200	Manhole	1 STANDARD
1.003	S3	1200	Manhole	1 STANDARD	S4	1500	Manhole	1 STANDARD
1.005	S4	1500	Manhole	1 STANDARD	S5	1500	Manhole	1 STANDARD
1.005_1	S5	1500	Manhole	1 STANDARD	US4		Junction	
1.006	US4		Junction		S8	2100	Manhole	1 STANDARD
6.000	S6	1500	Manhole	1 STANDARD	S7	1500	Manhole	1 STANDARD
6.001	S7	1500	Manhole	1 STANDARD	S8	2100	Manhole	1 STANDARD
1.008	S8	2100	Manhole	1 STANDARD	RED		Junction	
1.010	RED		Junction		EX_S2_OF	1350	Manhole	1 STANDARD
2.000	PP01	100	Manhole	1 STANDARD	S1A	600	Manhole	1 STANDARD
4.000	S5A	450	Manhole	1 STANDARD	S5	1500	Manhole	1 STANDARD
5.000	PP03	100	Manhole	1 STANDARD	S9	600	Manhole	1 STANDARD
5.001	S9	600	Manhole	1 STANDARD	S10	600	Manhole	1 STANDARD
5.002	S10	600	Manhole	1 STANDARD	S11	600	Manhole	1 STANDARD
5.003	S11	600	Manhole	1 STANDARD	S12	600	Manhole	1 STANDARD
5.004	S12	600	Manhole	1 STANDARD	S13	1200	Manhole	1 STANDARD
5.005	S13	1200	Manhole	1 STANDARD	US4		Junction	

Flow+ v10.2 Copyright © 1988-2023 Causeway Technologies Ltd

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
S1	383358.322	397287.016	31.950	1.200	1200				
						0	1.000	30.750	300
S1A	383361.696	397280.909	31.940	1.222	600		1	2.000	31.030	100
							2	1.000	30.718	300
						0	1.001	30.718	300
US1	383371.618	397262.597	32.130	1.507			1	1.001	30.623	300
						0	1.002	30.623	300
S2	383389.648	397221.477	32.513	1.943	1500				
						0	3.000	30.570	300
S3	383385.919	397237.958	32.320	1.827	1200		1	3.000	30.493	300
							2	1.002	30.494	300
						0	1.003	30.493	300
S4	383393.460	397241.667	32.160	2.020	1500		1	1.003	30.455	300
						0	1.005	30.140	600
S5	383416.598	397255.309	32.360	2.262	1500		1	4.000	31.587	100
							2	1.005	30.098	600
						0	1.005_1	30.098	600
US4	383462.508	397282.518	32.490	2.462			1	5.005	30.328	300
							2	1.005_1	30.031	600
						0	1.006	30.028	600
S6	383492.097	397249.762	33.330	1.350	1500				
						0	6.000	31.980	150
S7	383476.322	397279.142	32.920	1.590	1500		1	6.000	31.330	150
						0	6.001	31.330	150
S8	383470.711	397287.371	32.900	2.921	2100		1	6.001	31.131	150
							2	1.006	30.016	600
						0	1.008	29.979	450
RED	383470.558	397290.457	32.700	2.749			1	1.008	29.951	450
						0	1.010	29.951	300
EX_S2_OF	383470.197	397297.763	32.900	2.979	1350		1	1.010	29.921	300

Flow+ v10.2 Copyright © 1988-2023 Causeway Technologies Ltd

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
PP01	383359.696	397279.804	32.000	0.470	100		0	2.000	31.530	100
S5A	383419.756	397249.857	32.490	0.840	450		0	4.000	31.650	100
PP03	383440.313	397260.227	33.070	2.060	100		0	5.000	31.010	100
S9	383438.321	397263.582	32.640	1.719	600		1	5.000	30.971	100
							0	5.001	30.921	150
S10	383444.742	397267.342	32.710	1.938	600		1	5.001	30.847	150
							0	5.002	30.772	225
S11	383446.785	397268.513	32.750	2.069	600		1	5.002	30.756	225
							0	5.003	30.681	300
S12	383448.150	397269.309	32.740	2.067	600		1	5.003	30.673	300
							0	5.004	30.673	300
S13	383462.846	397277.871	32.800	2.212	1200		1	5.004	30.588	300
							0	5.005	30.588	300

Simulation Settings

Rainfall Methodology	FSR	Analysis Speed	Normal
FSR Region	England and Wales	Skip Steady State	x
M5-60 (mm)	18.000	Drain Down Time (mins)	240
Ratio-R	0.358	Additional Storage (m³/ha)	20.0
Summer CV	0.750	Check Discharge Rate(s)	x
Winter CV	0.840	Check Discharge Volume	x

Storm Durations

15	30	60	120	180	240	360	480	600	720	960	1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	0	0
30	0	0	0
100	40	0	0

Flow+ v10.2 Copyright © 1988-2023 Causeway Technologies Ltd

Node S8 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	29.979	Product Number	CTL-SHE-0408-1150-1800-1150
Design Depth (m)	1.800	Min Outlet Diameter (m)	0.450
Design Flow (l/s)	115.0	Min Node Diameter (mm)	

Node S3 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	30.493
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	13

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	70.0	0.0	0.800	70.0	0.0	0.801	0.0	0.0

Node PP01 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	31.530	Slope (1:X)	1000.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	0	Depth (m)	0.350
Safety Factor	2.0	Width (m)	17.500	Inf Depth (m)	
Porosity	0.30	Length (m)	50.000		

Node S5A Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	32.000	Slope (1:X)	1000.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	0	Depth (m)	0.350
Safety Factor	2.0	Width (m)	16.000	Inf Depth (m)	
Porosity	1.00	Length (m)	49.000		

Node PP03 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	32.600	Slope (1:X)	1000.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	0	Depth (m)	0.350
Safety Factor	2.0	Width (m)	14.000	Inf Depth (m)	
Porosity	0.30	Length (m)	47.000		

Flow+ v10.2 Copyright © 1988-2023 Causeway Technologies Ltd

Results for 1 year Critical Storm Duration. Lowest mass balance: 99.52%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	S1	10	30.822	0.072	8.0	0.1604	0.0000	OK
15 minute winter	S1A	11	30.795	0.077	10.9	0.0317	0.0000	OK
15 minute winter	US1	11	30.752	0.129	28.3	0.2520	0.0000	OK
30 minute winter	S2	22	30.599	0.029	0.7	0.0521	0.0000	OK
30 minute winter	S3	22	30.599	0.106	23.3	7.1657	0.0000	OK
30 minute winter	S4	24	30.328	0.188	23.5	0.5118	0.0000	OK
30 minute winter	S5	24	30.324	0.226	26.1	0.3985	0.0000	OK
30 minute winter	US4	24	30.319	0.291	36.5	0.0000	0.0000	OK
15 minute winter	S6	10	32.020	0.040	3.9	0.0889	0.0000	OK
15 minute winter	S7	11	31.401	0.071	10.5	0.1753	0.0000	OK
30 minute winter	S8	24	30.318	0.339	40.1	1.1731	0.0000	OK
30 minute winter	RED	24	30.118	0.167	40.0	0.0000	0.0000	OK
30 minute winter	EX_S2_OF	24	30.075	0.154	40.0	0.0000	0.0000	OK
30 minute winter	PP01	25	31.559	0.029	6.4	2.2941	0.0000	OK
15 minute winter	S5A	14	31.722	0.072	4.7	0.1092	0.0000	OK
15 minute winter	PP03	14	31.107	0.097	6.0	0.0693	0.0000	OK
15 minute winter	S9	14	30.985	0.064	6.0	0.0182	0.0000	OK
15 minute winter	S10	11	30.854	0.082	9.6	0.0519	0.0000	OK
15 minute winter	S11	11	30.788	0.107	13.5	0.0654	0.0000	OK
15 minute winter	S12	11	30.773	0.100	17.4	0.0610	0.0000	OK
15 minute winter	S13	11	30.648	0.060	20.6	0.0826	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	S1	1.000	S1A	7.9	0.592	0.106	0.0938	
15 minute winter	S1A	1.001	US1	10.9	0.547	0.146	0.4497	
15 minute winter	US1	1.002	S3	28.1	0.985	0.377	0.8132	
15 minute winter	S2	3.000	S3	-0.8	-0.087	-0.011	0.2058	
30 minute winter	S3	1.003	S4	17.4	0.826	0.233	0.1767	
30 minute winter	S4	1.005	S5	21.6	0.433	0.090	2.8974	
30 minute winter	S5	1.005_1	US4	25.4	0.302	0.105	6.1522	
30 minute winter	US4	1.006	S8	36.0	0.382	0.149	1.3222	
15 minute winter	S6	6.000	S7	3.8	0.644	0.153	0.1990	
15 minute winter	S7	6.001	S8	10.2	1.298	0.407	0.0786	
30 minute winter	S8	Hydro-Brake®	RED	40.0				
30 minute winter	RED	1.010	EX_S2_OF	40.0	1.042	0.564	0.2806	54.6
30 minute winter	PP01	2.000	S1A	4.2	2.429	0.148	0.0040	
15 minute winter	S5A	4.000	S5	4.7	0.815	0.779	0.0363	
15 minute winter	PP03	5.000	S9	6.0	0.823	0.994	0.0281	
15 minute winter	S9	5.001	S10	6.0	0.870	0.338	0.0514	
15 minute winter	S10	5.002	S11	9.6	0.803	0.227	0.0282	
15 minute winter	S11	5.003	S12	13.5	0.629	0.173	0.0340	
15 minute winter	S12	5.004	S13	17.5	1.162	0.223	0.2592	
15 minute winter	S13	5.005	US4	20.6	2.150	0.078	0.0446	

Flow+ v10.2 Copyright © 1988-2023 Causeway Technologies Ltd

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.52%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	S1	11	30.877	0.127	19.7	0.2843	0.0000	OK
15 minute winter	S1A	11	30.862	0.144	26.2	0.0597	0.0000	OK
15 minute winter	US1	11	30.851	0.228	68.4	0.4442	0.0000	OK
30 minute winter	S2	23	30.694	0.124	1.6	0.2191	0.0000	OK
30 minute winter	S3	23	30.694	0.201	56.8	13.5803	0.0000	OK
30 minute winter	S4	22	30.671	0.531	65.2	1.4482	0.0000	OK
30 minute winter	S5	22	30.670	0.572	65.9	1.0104	0.0000	OK
30 minute winter	US4	22	30.666	0.638	92.6	0.0000	0.0000	SURCHARGED
15 minute winter	S6	10	32.044	0.064	9.5	0.1426	0.0000	OK
15 minute winter	S7	11	31.489	0.159	25.7	0.3899	0.0000	SURCHARGED
30 minute winter	S8	22	30.663	0.684	106.0	2.3686	0.0000	SURCHARGED
30 minute winter	RED	22	30.282	0.331	105.4	0.0000	0.0000	SURCHARGED
30 minute winter	EX_S2_OF	22	30.172	0.251	105.4	0.0000	0.0000	OK
30 minute winter	PP01	26	31.577	0.047	15.6	6.0132	0.0000	OK
15 minute winter	S5A	14	31.967	0.317	11.5	0.4807	0.0000	SURCHARGED
15 minute winter	PP03	13	31.396	0.386	14.7	0.2767	0.0000	SURCHARGED
15 minute winter	S9	14	31.037	0.116	14.6	0.0329	0.0000	OK
15 minute winter	S10	11	30.908	0.136	23.2	0.0861	0.0000	OK
15 minute winter	S11	11	30.857	0.176	32.7	0.1076	0.0000	OK
15 minute winter	S12	11	30.833	0.160	42.3	0.0977	0.0000	OK
15 minute winter	S13	10	30.685	0.097	49.9	0.1332	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	S1	1.000	S1A	19.1	0.715	0.257	0.2162	
15 minute winter	S1A	1.001	US1	26.3	0.692	0.352	0.9462	
15 minute winter	US1	1.002	S3	68.0	1.255	0.911	1.5416	
15 minute winter	S2	3.000	S3	-3.6	-0.192	-0.048	0.6197	
15 minute winter	S3	1.003	S4	48.2	1.075	0.646	0.3911	
30 minute summer	S4	1.005	S5	55.2	0.419	0.229	8.6392	
30 minute winter	S5	1.005_1	US4	67.1	0.310	0.278	14.9066	
30 minute winter	US4	1.006	S8	92.8	0.378	0.385	2.6847	
15 minute winter	S6	6.000	S7	9.3	0.752	0.376	0.4101	
15 minute winter	S7	6.001	S8	24.2	1.496	0.960	0.1605	
30 minute winter	S8	Hydro-Brake®	RED	105.4				
30 minute winter	RED	1.010	EX_S2_OF	105.4	1.510	1.487	0.4879	135.0
30 minute winter	PP01	2.000	S1A	9.6	2.928	0.334	0.0075	
15 minute winter	S5A	4.000	S5	11.4	1.454	1.884	0.0488	
15 minute winter	PP03	5.000	S9	14.6	1.872	2.426	0.0302	
15 minute winter	S9	5.001	S10	14.7	1.060	0.825	0.1027	
15 minute winter	S10	5.002	S11	23.2	1.011	0.547	0.0540	
15 minute winter	S11	5.003	S12	32.7	0.807	0.418	0.0640	
15 minute winter	S12	5.004	S13	42.3	1.473	0.540	0.4909	
15 minute winter	S13	5.005	US4	49.9	2.698	0.189	0.1929	

Flow+ v10.2 Copyright © 1988-2023 Causeway Technologies Ltd

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.52%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
30 minute winter	S1	25	31.390	0.640	28.1	1.4280	0.0000	SURCHARGED
30 minute winter	S1A	25	31.390	0.672	39.3	0.2781	0.0000	SURCHARGED
30 minute winter	US1	25	31.373	0.750	97.4	1.4638	0.0000	SURCHARGED
30 minute winter	S2	26	31.324	0.754	10.5	1.3322	0.0000	SURCHARGED
30 minute winter	S3	25	31.328	0.835	116.8	54.1771	0.0000	SURCHARGED
30 minute winter	S4	25	31.310	1.170	91.8	3.1922	0.0000	SURCHARGED
30 minute winter	S5	25	31.301	1.203	97.8	2.1252	0.0000	SURCHARGED
30 minute winter	US4	25	31.307	1.279	109.4	0.0000	0.0000	SURCHARGED
15 minute winter	S6	12	32.172	0.192	17.2	0.4292	0.0000	SURCHARGED
15 minute winter	S7	11	31.939	0.608	44.5	1.4963	0.0000	SURCHARGED
30 minute winter	S8	25	31.306	1.327	126.6	4.5959	0.0000	SURCHARGED
15 minute winter	RED	12	30.307	0.356	114.9	0.0000	0.0000	SURCHARGED
15 minute winter	EX_S2_OF	20	30.181	0.260	114.9	0.0000	0.0000	OK
30 minute winter	PP01	27	31.602	0.072	28.5	12.5602	0.0000	OK
30 minute winter	S5A	26	32.021	0.371	20.6	4.0915	0.0000	SURCHARGED
30 minute winter	PP03	22	32.428	1.418	26.4	1.0164	0.0000	SURCHARGED
30 minute winter	S9	23	31.516	0.595	24.4	0.1685	0.0000	SURCHARGED
30 minute winter	S10	25	31.356	0.584	36.0	0.3705	0.0000	SURCHARGED
30 minute winter	S11	25	31.342	0.661	50.1	0.4040	0.0000	SURCHARGED
30 minute winter	S12	25	31.337	0.664	63.6	0.4065	0.0000	SURCHARGED
30 minute winter	S13	25	31.315	0.727	71.1	0.9999	0.0000	SURCHARGED

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	S1	1.000	S1A	32.2	0.733	0.431	0.4913	
15 minute summer	S1A	1.001	US1	46.1	0.705	0.618	1.4666	
15 minute summer	US1	1.002	S3	118.1	1.680	1.582	2.0062	
15 minute winter	S2	3.000	S3	-10.5	-0.229	-0.141	1.1899	
30 minute winter	S3	1.003	S4	91.8	1.303	1.230	0.5918	
30 minute winter	S4	1.005	S5	94.4	0.486	0.392	9.4931	
30 minute winter	S5	1.005_1	US4	100.0	0.355	0.415	15.0323	
120 minute winter	US4	1.006	S8	121.4	0.431	0.503	2.6847	
15 minute winter	S6	6.000	S7	16.1	0.963	0.649	0.5871	
15 minute winter	S7	6.001	S8	40.4	2.293	1.602	0.1736	
30 minute winter	S8	Hydro-Brake®	RED	114.9				
15 minute winter	RED	1.010	EX_S2_OF	114.9	1.638	1.622	0.4947	183.4
15 minute winter	PP01	2.000	S1A	16.3	3.139	0.571	0.0149	
30 minute winter	S5A	4.000	S5	12.4	1.585	2.054	0.0488	
15 minute winter	PP03	5.000	S9	25.3	3.234	4.191	0.0305	
15 minute winter	S9	5.001	S10	25.2	1.431	1.419	0.1310	
15 minute winter	S10	5.002	S11	38.0	1.046	0.897	0.0937	
15 minute winter	S11	5.003	S12	55.8	0.924	0.713	0.1113	
15 minute winter	S12	5.004	S13	73.0	1.607	0.933	1.1977	
15 minute winter	S13	5.005	US4	89.5	2.851	0.339	0.3281	

Flow+ v10.2 Copyright © 1988-2023 Causeway Technologies Ltd

Merchant Exchange
17-19 Whitworth Street West
manchester@curtins.com
Manchester
M1 5WG

T. 0161 236 2394

www.curtins.com

Appendix C

- Z1-CUR-G580-PL-GRD-92000-P01_Existing Impermeable Areas
- Z1-CUR-G580-PL-GRD-92001-P01_Proposed Impermeable Areas
- Z1-CUR-G580-PL-GRD-92002-P01_Overland Flow Routes

KEY:

RED LINE BOUNDARY

SITE OWNERSHIP BOUNDARY

PHASE 1 BOUNDARY

PHASE 2 BOUNDARY

CATCHMENT AREAS		
CATCHMENT NO.	AREA (m²)	HATCH
TOTAL IMPERMEABLE AREA	8650	

GENERAL NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ENGINEERS DRAWINGS AND SPECIFICATIONS.
2. DESIGN BASED ON TOPOGRAPHICAL SURVEY INFORMATION AVAILABLE AT THE TIME OF DESIGN.
3. DO NOT SCALE THIS DRAWING. ANY AMBIGUITIES, OMISSIONS AND ERRORS ON DRAWINGS SHALL BE BROUGHT TO THE ENGINEERS ATTENTION IMMEDIATELY. ALL DIMENSIONS MUST BE CHECKED / VERIFIED ON SITE.
4. ALL DIMENSIONS ARE IN METRES AND LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS OTHERWISE NOTED.

Rev:	Description:	Date:	By:	Chkd:
P01	ISSUED FOR INFORMATION	28/07/23	KS	CG

curtins
Merchant Exchange, 17-19 Whitworth Street West, Manchester, M1 5WG
0161 238 2394
manchester@curtins.com
www.curtins.com
Civils & Structures • Transport Planning • Environmental • Infrastructure • Geotechnical • Conservation & Heritage • Principal Designer
Birmingham • Bristol • Cambridge • Cardiff • Douglas • Dublin • Edinburgh • Glasgow • Kendal • Leeds • Liverpool • London • Manchester • Nottingham

Status: SUITABLE FOR INFORMATION — S2

Project: Plot F, Great Jackson Street, Manchester

Drg Title: EXISTING IMPERMEABLE AREAS

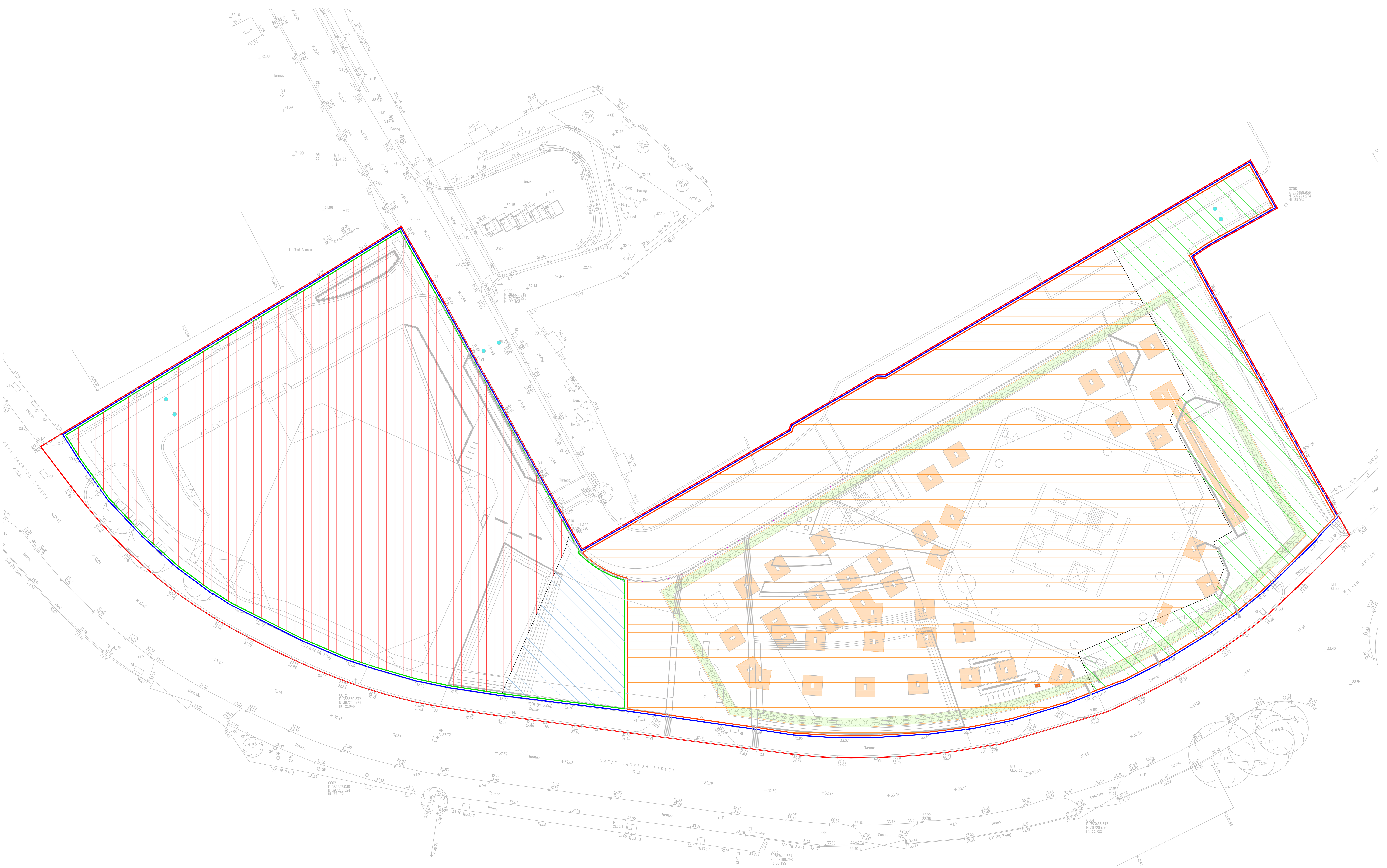
Size:	Date:	Drawn By:	Designed By:	Checked By:
A0	23/06/23	KS	CG	CG

Scale: 1:200

Project No.	Originator:	Volume:	Level:	Type:	Role:	Category / Number:	Rev:
Z1	- CUR -	G580 -	PL -	GRD -	-	92000 -	P01

Do not scale from this drawing. © Curtins Ltd. Reproduction in whole or in part is prohibited without the prior written permission of Curtins Ltd.

Issued 28/07/2023 - 13:00:03 - P:\Projects\P0001 - P0100\P0092\P0092-CUR-G580-PL-GRD-92000-P01 Plot F Great Jackson Street.rvt



KEY:

- RED LINE BOUNDARY
- SITE OWNERSHIP BOUNDARY
- PHASE 1 BOUNDARY
- PHASE 2 BOUNDARY

CATCHMENT AREAS		
CATCHMENT NO.	AREA (m^2)	HATCH
1.00	2972	
2.00	300	
3.00	4271	
4.00	943	

GENERAL NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ENGINEERS DRAWINGS AND SPECIFICATIONS.
2. DESIGN BASED ON TOPOGRAPHICAL SURVEY INFORMATION AVAILABLE AT THE TIME OF DESIGN.
3. DO NOT SCALE THIS DRAWING. ANY AMBIGUITIES, OMISSIONS AND ERRORS ON DRAWINGS SHALL BE BROUGHT TO THE ENGINEERS ATTENTION IMMEDIATELY. ALL DIMENSIONS MUST BE CHECKED / VERIFIED ON SITE.
4. ALL DIMENSIONS ARE IN METRES AND LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS OTHERWISE NOTED.

Rev:	Description:	Date:	By:	Chkd:
p01	ISSUED FOR INFORMATION	28/07/23	KS	CG

curtins
Merchant Exchange, 17-19 Whitworth Street West, Manchester, M1 5WG
0161 236 2394
manchester@curtins.com
www.curtins.com
Civils & Structures • Transport Planning • Environmental • Infrastructure • Geotechnical • Conservation & Heritage • Principal Designer
Birmingham • Bristol • Cambridge • Cardiff • Douglas • Dublin • Edinburgh • Glasgow • Kendal • Leeds • Liverpool • London • Manchester • Nottingham

Status: SUITABLE FOR INFORMATION S2

Project: Plot F, Great Jackson Street, Manchester

Drg Title: PROPOSED IMPERMEABLE AREAS

Size:	Date:	Drawn By:	Designed By:	Checked By:
A0	23/06/23	KS	CG	CG
Scale: 1:200				

Project No:	Originator:	Volume:	Level:	Type:	Role:	Category / Number:	Rev:
Z1	CUR	G580	PL	GRD		92001	P01

\\mafs02\Projects\078001 - 079000\078524 - Plot F Great Jackson Street\Q4-Production\4A-Models-Drawings\C\CAD\92\

GENERAL NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ENGINEERS DRAWINGS AND SPECIFICATIONS.
2. DO NOT SCALE THIS DRAWING. ANY AMBIGUITIES, OMISSIONS AND ERRORS ON DRAWINGS SHALL BE BROUGHT TO THE ENGINEERS ATTENTION IMMEDIATELY. ALL DIMENSIONS MUST BE CHECKED / VERIFIED ON SITE.
3. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.

KEY

- INDICATES THE FLOW ROUTE BASED ON FULL INLET CAPACITY OF COMPONENTS . i.e FALLS AT SURFACE
- INDICATES THE GENERAL GROUND LEVEL FALLS TO THE DRAINAGE SYSTEM
- GROUND LEVELS TO FALL AWAY FROM THE PROPOSED BUILDING
- RED LINE BOUNDARY
- SITE OWNERSHIP BOUNDARY
- PHASE 1 BOUNDARY
- PHASE 2 BOUNDARY

Rev:	Description:	Date:	By:	Chkd:
P01	ISSUED FOR PLANNING CONDITIONS	28/07/23	KS	CG

curtins
Merchant Exchange, 17-19 Whitworth Street West, Manchester, M1 5WG
0161 236 2394
manchester@curtins.com
www.curtins.com
Civils & Structures • Transport Planning • Environmental • Infrastructure • Geotechnical • Conservation & Heritage • Principal Designer
Birmingham • Bristol • Cambridge • Cardiff • Douglas • Dublin • Edinburgh • Glasgow • Kendal • Leeds • Liverpool • London • Manchester • Nottingham

Status: SUITABLE FOR INFORMATION — S2

Project: Plot F, Great Jackson Street, Manchester

Drg Title: PROPOSED OVERLAND FLOW ROUTES

Size:	Date:	Drawn By:	Designed By:	Checked By:
A0	23/06/23	KS	CG	CG

Scale: 1:200

Project No:	Originator:	Volume:	Level:	Type:	Role:	Category / Number:	Rev:
Z1	- CUR	-G580-	PL	-GRD-	-	92002	- P01

Date/Plot:28/07/2023 08:51 - T:\5000\25824 - Plot F Great Jackson Street\Cad Production\Arch Drawings\Z1-CUR-XX-XX-DR-A-92002.dwg

Merchant Exchange
17-19 Whitworth Street West
manchester@curtins.com
Manchester
M1 5WG

T. 0161 236 2394

www.curtins.com

Appendix D

- Environment Agency Correspondence
- River Medlock Flood Model Map
- River Medlock Flood Model Levels Table

Chloé Grimsley

From: SPPlanning.RFH <SPPlanning.RFH@environment-agency.gov.uk>
Sent: 05 July 2023 09:26
To: Chloé Grimsley
Cc: Enquiries, Unit
Subject: RE: 230626/MC16 Plot F, Great Jackson Street - POST PLANNING ADVICE

Good Morning Chloé,

Thank you for your email.

We do not normally comment on discharge rates, this falls to the LLFA as they are the competent authority.

With regards to the surcharge levels, the standard of surcharge expected also needs to be specified by the LLFA. The Flood Risk Assessment for the development should contain flood levels associated with the River Medlock, if it doesn't, the river model data can be requested at the following email address: InfoRequests.GMMC@environment-agency.gov.uk.

Kind regards,

Siobhan Martin
Pronouns: she/her
Planning Advisor, Sustainable Places | Greater Manchester, Merseyside, Cheshire
Environment Agency | Richard Fairclough House, Knutsford Road, Latchford, Warrington WA4 1HT
Team email: SPPlanning.RFH@environment-agency.gov.uk



From: Enquiries, Unit <enquiries@environment-agency.gov.uk>
Sent: 26 June 2023 16:41
To: Chloé Grimsley <Chloe.Grimsley@curtins.com>
Subject: RE: 230626/MC16 Plot F, Great Jackson Street - POST PLANNING ADVICE

Good afternoon,

I have passed your enquiry to our Sustainable Places team for the relevant area and they will be in touch with you shortly.

The Freedom of Information Act and Environmental Information Regulations state that a public authority must respond to requests for information within 20 working days, but we aim to respond to all enquiries as quickly as we can.

However due to the ongoing COVID-19 pandemic affecting staff and resources we may take longer than the 20 working days to reply. We will aim to provide an answer as soon as we can.

You can find more information about our service commitment by clicking on the link below:

https://www.gov.uk/government/publications/environment-agency-customer-service-commitment

Should you wish to contact the Sustainable Places team directly, please use the contact details below. Please quote your Enquiry Reference 230626/MC16 in any correspondence with us regarding this matter.

Sustainable Places
Environment Agency
Greater Manchester, Merseyside and Cheshire Area
Richard Fairclough House
Knutsford Road
Latchford
Warrington
WA4 1HT

SPPlanning.RFH@environment-agency.gov.uk

Kind Regards

Matthew Codd (He/Him)
Customer Service Advisor
Environment Agency: Contact Centre Services - Part of Operations, Regulation, Monitoring & Customer
Phone: 03708 506506
Working hours: Monday – Friday

Please accept my thanks for your email in advance - each UK adult sending one less 'thank you' email a day would save more than 16,400 tonnes of carbon a year

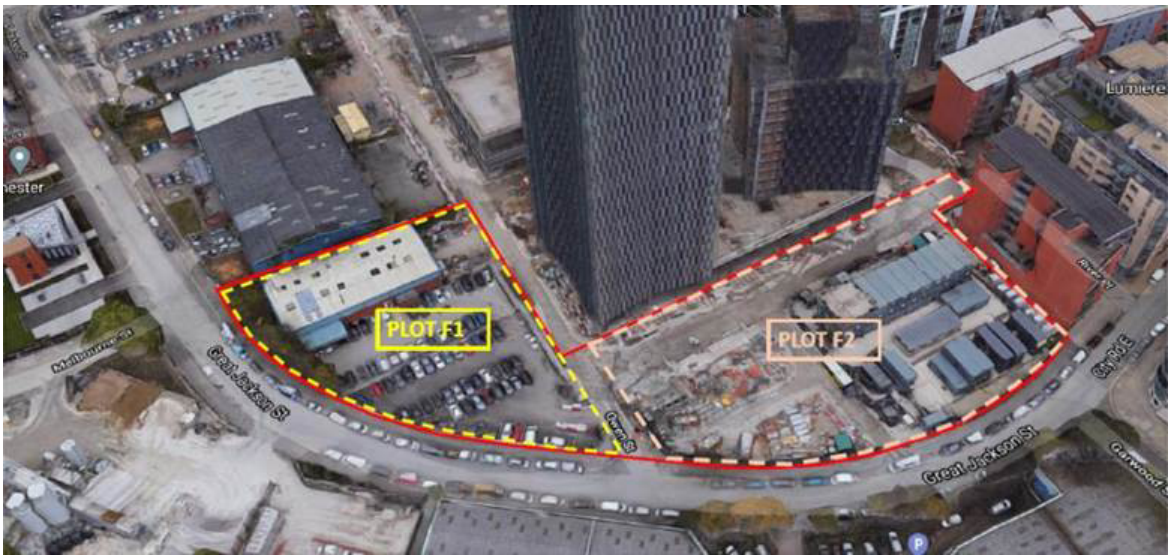


From: Chloé Grimsley <Chloe.Grimsley@curtins.com>
Sent: 13 June 2023 14:48
To: Enquiries, Unit <enquiries@environment-agency.gov.uk>
Subject: 230626/MC16 Plot F, Great Jackson Street - POST PLANNING ADVICE

Good Afternoon,

We are currently completing the detailed design for a new development at Great Jackson Street – Plot F on behalf of Renaker.
The site location is shown below:





The development has planning approval – **Planning Reference No. 132199/FO/2021**

The development comprises two new 51 storey apartment towers, plus basements for Car Parking. Building F1 is located west of Owen Street and Building F2 is located east of Owen Street.

Curtins completed the Approved FRA and Drainage Strategy and the proposed Drainage Strategy, and the proposed Drainage Strategy is attached.

The Foul Water drainage is proposed to discharge to the combined public sewer on site and the Surface Water drainage is proposed to discharge to the River Medlock via an existing 300mm sewer outfall which was constructed as part of an earlier phase by Renaker. It is proposed that the single outfall will serve both building plots.

The existing surface water discharge rates have been estimated as 230 l/s based on the site area, therefore the proposed rates are to be limited to a maximum of 115 l/s. Manchester Lead Local Flood Authority (LLFA) have been consulted regarding discharge rates and they have confirmed during a meeting (15th June 2021) that the above discharge rates would be acceptable. Planning Conditions associated with the planning approval are based on a maximum discharge of 115 l/s.

However, the planning conditions also note:
As the site is proposed to drain to a Main River, the Environment Agency should be consulted. An email of acceptance of proposed flows will suffice. The Environment Agency should also be consulted to confirm the level of surcharge which should be used on the outfall for the proposed hydraulic model;

Based on the above, please could you therefore confirm if the flows are acceptable based on the agreement with MCC of 115 l/s and what the surcharge level in the river we should design for at the outfall. The outfall location is shown below.



Kind Regards,
Chloé

Chloé Grimsley
Principal Civil Engineer
T. 0161 236 2394
chloe.grimsley@curtins.com

Merchant Exchange
17-19 Whitworth Street West
Manchester M1 5WG

curti

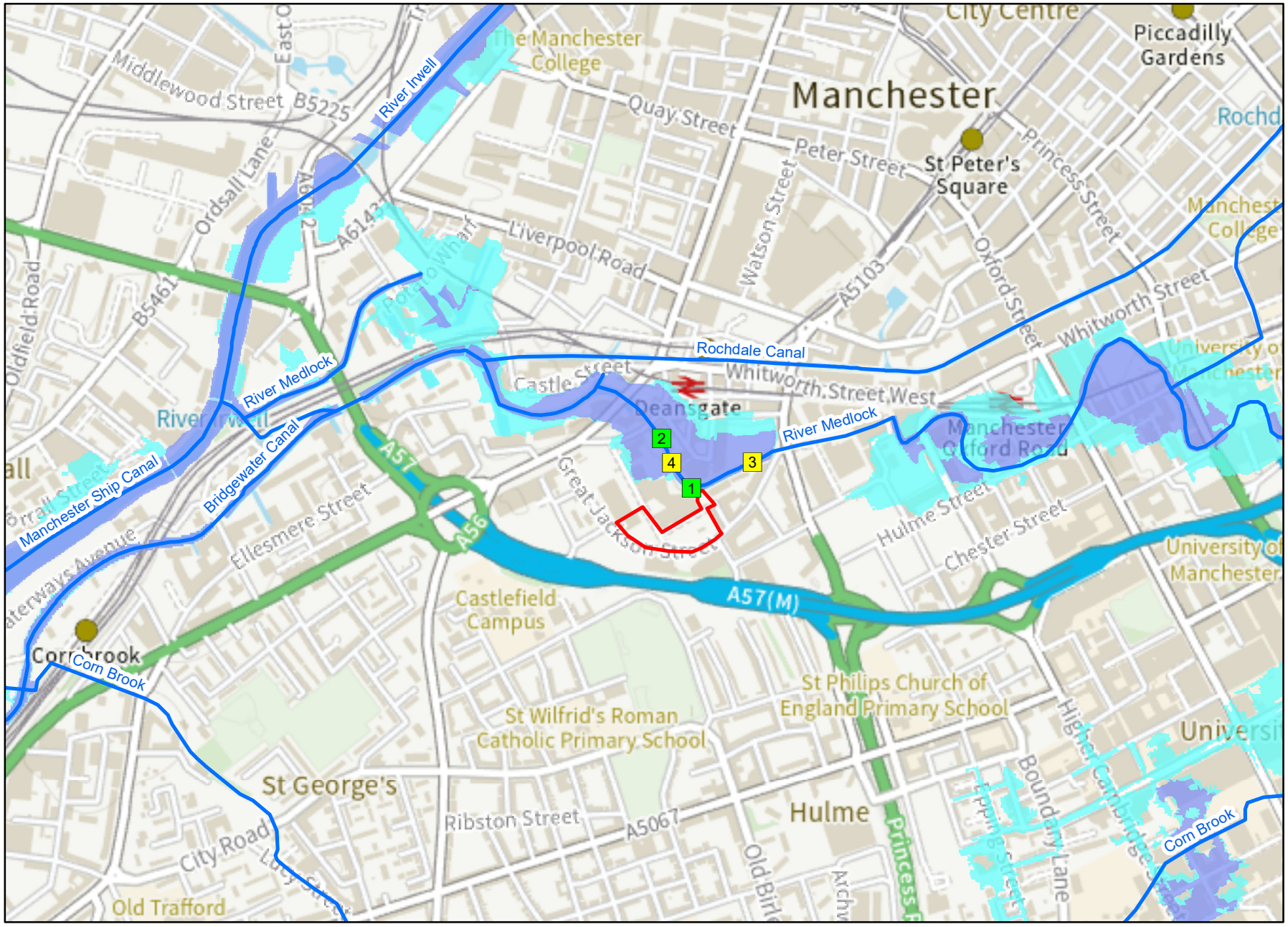
INVESTORS IN PE
We invest in people Pl

CIVILS & STRUCTURES • TRANSPORT PLANNING • ENVIRONMENTAL • INFRASTRUCTURE • GEOTECHNICAL • CONSERVATION & HERITAGE • PRINCIPAL D
Birmingham • Bristol • Cambridge • Cardiff • Douglas • Dublin • Edinburgh • Glasgow • Kendal • Leeds • Liverpool • London • Manchester • Nottin

Connect with us on LinkedIn **www.curt**

Information in this message may be confidential and may be legally privileged. If you have received this message by mistake, please notify the sender immediately, delete it and do not copy it to anyone else. We have checked this email and its attachments for viruses. But you should still check any attachment before opening it. We may have to make this message and any reply to it public if asked to under the Freedom of Information Act, Data Protection Act or for litigation. Email messages and attachments sent to or from any Environment Agency address may also be accessed by someone other than the sender or recipient, for business purposes.

Detailed Flood Map Centred on Owen Street, Manchester, M15 4TP.
Created 15/06/2023 [GMMC313800JM]



Environment Agency

1:10,001

N

Legend

- Site Location
- Medlock
- Manchester Ship Canal
- Main River
- Flood Zone 3
- Flood Zone 2

© Environment Agency copyright and database rights 2023. All rights reserved. © Crown Copyright and database rights 2023. Ordnance Survey licence number 100024198.

Contact Us: National Customer Contact Centre, PO Box 544, Rotherham, S60 1BY. Tel: 03708 506 506 (Mon-Fri 8-6). Email: enquiries@environment-agency.gov.uk

					Undefended				
Map Reference	Model Node Reference	Easting	Northing	Data	4 % AEP (1 in 25 year)	1 % AEP (1 in 100 year)	1 % AEP (1 in 100 year) + 35% increase in flow	1 % AEP (1 in 100 year) + 70% increase in flow	0.1 % AEP (1 in 1000 year)
1	ea013_Model_MEDL01_00003	383445	397325	Modelled Water Level (m aodN)	27.83	28.13	28.80	29.04	29.22
				Modelled Flow (cumecs)	51.45	59.55	69.16	77.04	88.55
2	ea013_Model_MEDL01_00001	383390	397417	Modelled Water Level (m aodN)	27.77	28.07	28.76	29.02	29.22
				Modelled Flow (cumecs)	51.45	59.54	69.13	71.56	73.35

Model data taken from Medlock 2011

AEP - Annual Exceedence Probability

m aodN - metres above ordnance datum Newlyn

cumecs - cubic metres per second

Notes:

*Climate Change Scenario - 30%, 35% and 70% increases in flow calculated for the 2080's (2070 - 2115). Please see https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances for more information regarding the new climate change guidance. The location of the site and the type (vulnerability) of development determine the climate change allowances to consider in any flood risk assessment.

					Normal Operation											1 Gate Closed	All Gates Closed	
Map Reference	Model Node Reference	Easting	Northing	Data	20 % AEP (1 in 5 year)	10 % AEP (1 in 10 year)	4 % AEP (1 in 25 year)	2 % AEP (1 in 50 year)	1.33 % AEP (1 in 75 year)	1 % AEP (1 in 100 year)	1 % AEP (1 in 100 year) + 30% increase in flow	1 % AEP (1 in 100 year) + 35% increase in flow	1 % AEP (1 in 100 year) + 70% increase in flow	0.5 % AEP (1 in 200 year)	0.1 % AEP (1 in 1000 year)	1 % AEP (1 in 100 year)	1 % AEP (1 in 100 year)	0.1 % AEP (1 in 1000 year)
3	ea013_0251_MEDL01_0270	383558	397373	Modelled Water Level (m aodN)	28.64	28.80	28.96	29.12	29.23	29.31	29.62	29.67	30.03	29.54	30.35	29.31	29.31	30.35
				Modelled Flow (cumecs)	32.32	37.75	44.58	51.82	56.89	61.19	78.00	80.77	102.62	73.19	122.66	61.19	61.19	122.77
4	ea013_0251_MEDL01_0074	383409	397372	Modelled Water Level (m aodN)	28.60	28.74	28.89	29.04	29.13	29.20	29.48	29.52	29.82	29.40	30.11	29.20	29.20	30.12
				Modelled Flow (cumecs)	32.59	38.06	44.95	52.25	57.36	61.70	78.66	81.45	103.23	73.80	125.99	61.70	61.70	126.18

Model data taken from Manchester Ship Canal 2016

AEP - Annual Exceedence Probability

m aodN - metres above ordnance datum Newlyn

cumecs - cubic metres per second

Notes:

*Climate Change Scenario - 30%, 35% and 70% increases in flow calculated for the 2080's (2070 - 2115). Please see https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances for more information regarding the new climate change guidance. The location of the site and the type (vulnerability) of development determine the climate change allowances to consider in any flood risk assessment.

For the Manchester Ship Canal Model, we provide the following three scenarios:
1. Normal Operation: All sluice gates operate automatically to maintain a navigable pounded water level upstream of each set of sluice gates. During times of high flow the gates are opened automatically to allow excess water pass downstream. During extreme conditions the sluice gates can be manually overridden to extend the opening heights.
2. Latchford 1 Gate Closed Scenario: This scenario represents a single operational sluice gate at Latchford Locks fixed closed. Therefore, only operational movements from 2 active sluice gates.The model setup removes the gate from PID controller setup and an IED file is used to define the sluice gate as fixed in the closed position.
3. Latchford 3 Gates Closed Scenario: This scenario has been defined as the removal of operational rules at all three sluice gates at Latchford Locks, thus, all gates are fixed in the closed position resulting in no regulation of upstream water levels. The model setup removes each of the gates from PID controller setup and an IED file is used to define sluice gates fixed in the closed position.