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LB/9762
7th October 2024

Manchester City Council
P 0 Box 532,
Town Hall
M60 2LA

9762 – Former Mather & Platt Foundry, Grimshaw Lane, Manchester, M40 2BA
Planning Application Reference: 129444/FO/2021

Dear Sir/ Madame,
Please find a response to planning condition 13 below.

Planning Condition 13:

"13) Prior to the first occupation of the development, details of the implementation, maintenance and management of the sustainable drainage scheme shall be submitted for approval in writing by the City Council, as Local Planning Authority. For the avoidance of doubt this shall include:
- Verification reporting providing photographic evidence of construction;
- Management and maintenance plan for the lifetime of the development which shall include the arrangements adoption by any public body or statutory undertaker, or any other arrangements to secure the operation of the sustainable drainage scheme throughout its lifetime.
- Timescale for implementation

The implementation of the management and maintenance plan shall be implemented in accordance with the timescales agreed and retained for as long as the development remains in use.

Reason - To manage flooding and pollution and to ensure that a managing body is in place for the sustainable drainage system and there is funding and maintenance mechanism for the lifetime of the development pursuant to policies SP1, EN14 and DM1 of the Manchester Core Strategy (2012)."

PTA response:

We can confirm that the proposed Sustainable Drainage System for the development Phase 1 has been constructed generally in accordance with the agreed scheme and a Below Ground Maintenance Plan is attached to be implemented in order to keep the system performing as designed.

I trust the following information is sufficient to clear the planning condition 13 but if additional information is required, please do not hesitate in contacting me.

Supporting Documents:

- Site photographic evidence during the construction of surface water drainage elements. Please that attenuation tank 3 and the attenuation pond are SuDS features within Phase 2 of this development which is not currently being considered for the discharge of this condition
- PTA Record drawings.
    - 9762-PTA-XX-XX-DR-C-8100_Proposed Sitewide Drainage Layout_ Rev C05
    - 9762-PTA-XX-XX-DR-C-8101_Proposed Drainage Sheet 1 of 7_ Rev C09
    - 9762-PTA-XX-XX-DR-C-8102_Proposed Drainage Sheet 2 of 7_ Rev C07
    - 9762-PTA-XX-XX-DR-C-8103_Proposed Drainage Sheet 3 of 7_ Rev C07
    - 9762-PTA-XX-XX-DR-C-8131_Proposed Drainage Details Sheet 1 of 3_ Rev C02
    - 9762-PTA-XX-XX-DR-C-8132_Proposed Drainage Details Sheet 2 of 3_ Rev C02
    - 9762-PTA-XX-XX-DR-C-8151_Phase 1 Surface Water Manhole Schedule_ Rev C07
    - 9762-PTA-XX-XX-DR-C-8151_Phase 1 Foul Water Manhole Schedule_ Rev C06
- Surface Water MicroDrainage Model As-built Results
- United Utilities Sewer Map
- United Utilities S106 Consent
- 9762-PTA-XX-XX-SP-C-9078_Below Ground Drainage Maintenance Plan Rev C01.
- CCTV Drainage Survey Report by Lanes Group plc ref. LSO0381562 1 dated 19/07/2024.

Further to the above please see below a reply to the comments dated 25th of September 2024 on the information previously submitted to discharge this condition:

"The following details are still outstanding:
-Micro drainage manhole schedule to cross reference to the as-built drawing;
-The latest engineering drawing no. 9762-PTA-XX-XX-DR-C-8101 now indicates a section of the 375mm combined sewer to be 'abandoned / removed' and it has been confirmed this to be private network. Evidence of any investigation to confirm this section is 'redundant' is required. Any existing connections will need to be accommodated (if identified).
-The applicant also must present a consistent package to discharge condition 13 (including all layouts and calculations). The layout and calculations must be jointly updated to account for any edits required. When preparing a resubmission, the applicant must ensure that the drainage layout and hydraulic calculations correspond, and that they can be cross-referenced for checks. This includes layout annotations and schedule printouts."

PTA response:

- Microdrainage calculations results now include a manhole schedule and a layout plan with relevant pipe and manhole references.
- This section of the 375mm diameter combined sewer was a private drain that previously drained the site. During demolition all laterals were surveyed and no connections to 3rd party areas were encountered. During construction this section of drain has been removed, and as such we have now removed it from the record drawings. Updated drawings are attached for reference.

- The manhole references within the Microdrainage SW Model results have been updated to match the as-built Layout Drawings.

Regards,

Luís Brito
Senior Civil Engineer

Site Pictures

Picture 1 & 2 shows the installation of Attenuation Tank No 1.

Pictures 3 & 4 shows the construction of the main surface water sewer laid along the access road.

Picture 5 show the temporary excavation works for the oil separator installation.

Picture 6 show the oil separator installation besides the temporary works excavation for its installation.

Pictures 7 & 8 shows the Attenuation Tank No 2 being constructed. The geocellular units are being laid over the impermeable membrane wrapped/sealed.

Pictures 9 & 10 shows the construction of the surface water demarcation manhole prior to the connection into the public sewer.

Picture 10 shows the installation of Vortex Flow Control within manhole reference SWMH153.

Picture 12 shows the installation of Vortex Flow Control within manhole reference SWMH138.

Picture 13 shows the installation of Vortex Flow Control within manhole reference SWMH157.

Drainage Layout Record Drawings

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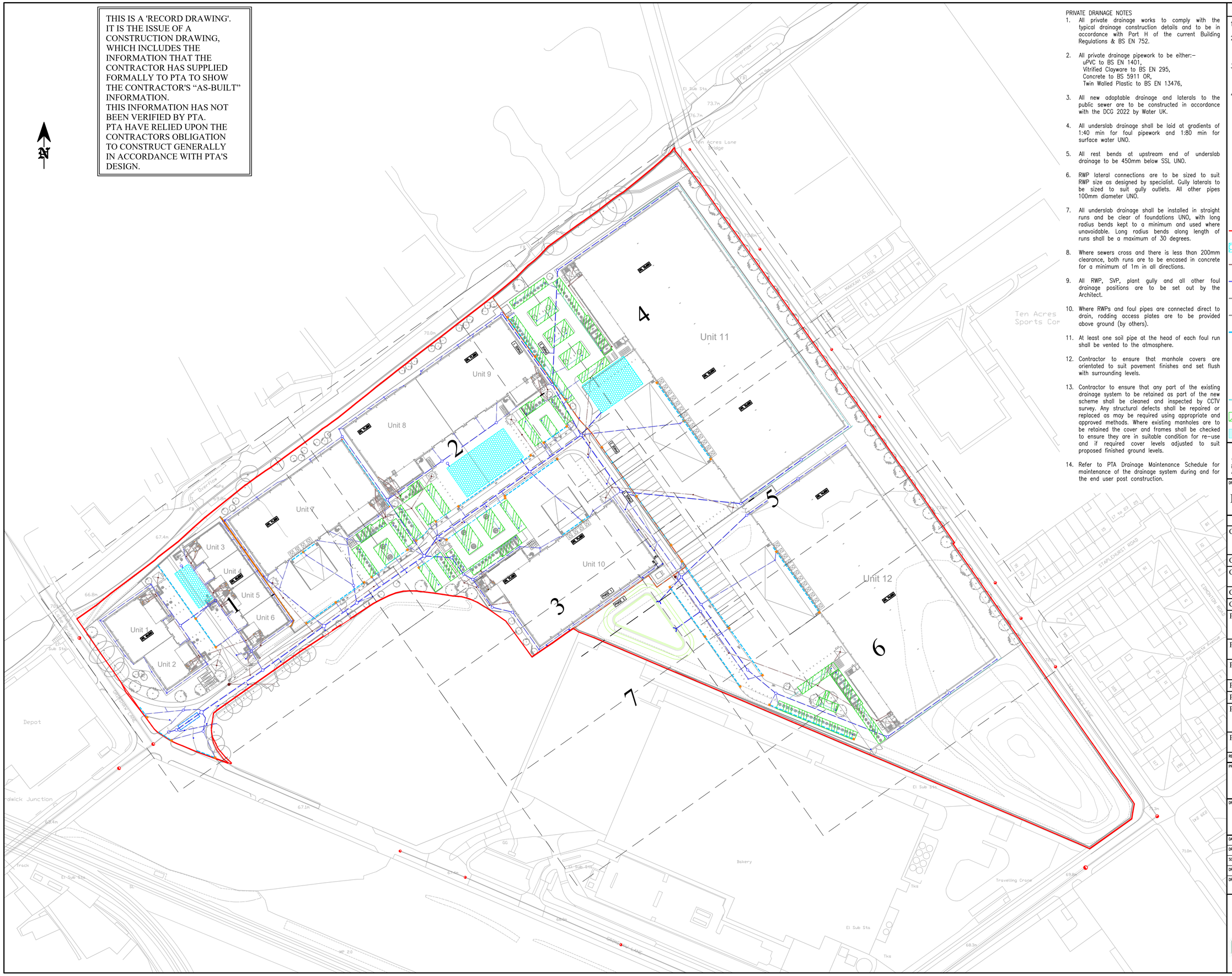

PRIVATE DRAINAGE NOTES

1. All private drainage works to comply with the typical drainage construction details and to be in accordance with Part H of the current Building Regulations & BS EN 752.
2. All private drainage pipework to be either:–
   uPVC to BS EN 1401,
   Vitrified Clayware to BS EN 295,
   Concrete to BS 5911 OR,
   Twin Walled Plastic to BS EN 13476,
3. All new adoptable drainage and laterals to the public sewer are to be constructed in accordance with the DCG 2022 by Water UK.
4. All underslab drainage shall be laid at gradients of 1:40 min for foul pipework and 1:80 min for surface water UNO.
5. All rest bends at upstream end of underslab drainage to be 450mm below SSL UNO.
6. RWP lateral connections are to be sized to suit RWP size as designed by specialist. Gully laterals to be sized to suit gully outlets. All other pipes 100mm diameter UNO.
7. All underslab drainage shall be installed in straight runs and be clear of foundations UNO, with long radius bends kept to a minimum and used where unavoidable. Long radius bends along length of runs shall be a maximum of 30 degrees.
8. Where sewers cross and there is less than 200mm clearance, both runs are to be encased in concrete for a minimum of 1m in all directions.
9. All RWP, SVP, plant gully and all other foul drainage positions are to be set out by the Architect.
10. Where RWPs and foul pipes are connected direct to drain, rodding access plates are to be provided above ground (by others).
11. At least one soil pipe at the head of each foul run shall be vented to the atmosphere.
12. Contractor to ensure that manhole covers are orientated to suit pavement finishes and set flush with surrounding levels.
13. Contractor to ensure that any part of the existing drainage system to be retained as part of the new scheme shall be cleaned and inspected by CCTV survey. Any structural defects shall be repaired or replaced as may be required using appropriate and approved methods. Where existing manholes are to be retained the cover and frames shall be checked to ensure they are in suitable condition for re–use and if required cover levels adjusted to suit proposed finished ground levels.
14. Refer to PTA Drainage Maintenance Schedule for maintenance of the drainage system during and for the end user post construction.

Notes:

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4. The Contractor is advised that all design drawings and information are to be read concurrently and any discrepancies or omissions reported directly to PTA's Civil Engineering Department.

Key:

- Site Boundary
- Attenuation Tank
- Proposed Foul Water Drainage
- Proposed Surface Water Drainage
- Existing Combined Sewers
- Existing Combined Sewers to be abandoned/removed
- Drainage Channel
- Drainage Channel Chamber
- Proposed Gully
- TG Trapped Gully
- Perforated Pipe
- Proposed Permeable Car Park
- Phase 2

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DRAWING STATUS

FOR CONSTRUCTION

REV	DESCRIPTION	BY	DATE	CHK'D
C05	Updated Record Issue; Redundant Existing Drainage Removed.	LB	07.10.24	SLW
C04	Record Issue.	LB	25.07.24	SLW
C03	SW & FW Adjustments; notes Added.	LB	29.09.23	SLW
C02	SW Drainage Adjustments.	LB	07.08.23	SLW
C01	Construction Issue.	LB	26.07.22	SLW
P11	Phasing Boundary Revised; Stone House Entrance Added.	LB	27.06.23	
P10	Phasing Hatch Added; Attenuation Tanks Updated.	LB	03.02.23	
P09	Indicative Attenuation Tank Connections Added.	LB	07.06.22	
P08	Minor Adjustments.	LB	19.05.22	
P07	Redesigned SW Network.	LB	12.04.22	
P06	Site Layout Updated; SW Network Adjusted; Pond Added.	LB	13.08.21	
P05	Site Layout Updated; SW Network Redesigned.	LB	07.06.21	

PROJECT TITLE

Grimshaw Lane, Manchester

DRAWING TITLE

Proposed Sitewide Drainage Layout

DATE	October 2020	CHECKED DO	CHECKED ENG	PTA PROJ No	9762
DRAWN	LB	LB	SLW		
SCALE	1:1000			REVISION	C05
ORG SIZE	A1				

DRAWING No

9762-PTA-XX-XX-DR-C-8100

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Overflow
MOPS
FB
Refer to BEA landscape drawings for banking detail within RPA.
Grimshaw Lane Bridge
GRIMSHAW LANE
750x1125mm
750x1125mm

UU7800
CL (69.590)
IL (60.040)

SW144
CL (69.434)
IL (67.930)
ø225mm @ 1:135
SW143
CL (69.456)
IL (68.280)
ø150mm @ 1:65
FW117
CL (69.463)
IL (68.775)
FW118
CL (69.463)
IL (68.750)
TG
ø100mm
Attenuation Cellular Tank 2
Aquacrate 414
V = 250m²x1.2m=300m³
(95% Voids)
CL Varies (69.250-69.220)
IL 67.200
ø300mm @ 1:81
SW142
CL (69.456)
IL (68.750)
ø150mm @ 1:32
SW145
CL (69.456)
IL (68.750)
ø150mm @ 1:78
SW146
CL (69.456)
IL (68.485)
ø150mm @ 1:52
FW119
CL (69.474)
IL (68.200)
FW120
CL (69.474)
IL (68.175)
ø150mm @ 1:60
ø225mm @ 1:45

Unit 2
Unit 3
Unit 4
Unit 5
Unit 6
Unit 7
FFL 69.500
FFL 69.500
FFL 71.250

SW151
CL (69.376)
IL (67.250)
10.0m
ø150mm @ 1:24
E 386854.094 N 399931.286
E 386862.258 N 399937.060
25.0m
ø100mm @ 1:15
E 386868.530 N 399910.875
E 386876.695 N 399916.650
ø375mm @ 1:54
SW148
CL (69.383)
IL (67.485)
SW150 Tank 2
CL (69.376)
Sump IL (66.600)
Sump 0.500
ø375mm
ø375mm
SW152
CL (69.450)
IL (67.060)
FW124
CL (69.466)
IL (68.245)
FW125
CL (69.466)
IL (68.220)
ø100mm @ 1:60
ø150mm @ 1:52
ø300mm @ 1:148
ø150mm

ø150mm
FW121
CL (69.466)
IL (68.750)
FW122
CL (69.466)
IL (68.630)
ø150mm
SW149
CL (69.449)
IL (68.750)
ø150mm
ø150mm @ 1:87
ø150mm
SW139
CL (69.467)
IL (68.500)
ø150mm
SW140
CL (69.473)
IL (68.185)
ø150mm
ø225mm @ 1:102
ø150mm
SW137
CL (71.174)
IL (69.355)
ø150mm
ø225mm @ 1:134
ø150mm
TG
ø150mm @ 1:13
ø150mm
SW134
CL (70.102)
IL (69.350)
ø150mm
ø150mm
SW131
CL (71.144)
IL (69.775)
ø150mm
ø150mm @ 1:33
Perforated
ø150mm
FW128
CL (70.951)
IL (70.300)
ø100mm @ 1:8
ø300mm @ 1:54
ø225mm @ 1:95
ø300mm @ 1:33
Perforated Pipe ø150mm

ø150mm @ 1:86
ø150mm
SW136
CL (71.196)
IL (69.855)
SW135
CL (71.206)
IL (70.200)
ø150mm
ø150mm
SW113
CL (71.206)
IL (70.400)

New indirect foul through the existing private sewer into the public combined sewer within Grimshaw Lane under the approved S106 application from United Utilities ref 04564000
TG
ø100mm
ø150mm @ 1:23
ø150mm
ø150mm
ø225mm @ 1:22
ø100mm
SW153 Flow Control 5 l_s
CL (69.347)
IL (66.435)
ø300mm @ 1:19
FW116B
CL (67.845)
IL (66.800)
FW116C
CL (67.624)
IL (64.500)
TBC
SW155
CL (66.853)
IL (65.500)
Indicative oil separator vent location to be agreed with client.
ø300mm @ 1:24
FW116A
CL (69.765)
IL (68.190)
SW141
CL (69.450)
IL (67.850)
ø150mm
SW132
CL (70.579)
IL (68.850)
SW133
CL (70.471)
IL (66.550)
ø375mm @ 1:5
ø150mm @ 1:12
Perforated Pipe ø150mm

Existing ø375mm outfall connection into combined public sewer with Grimshaw Lane to be CCTV surveyed to ascertain its condition for reuse any encountered damage shall be repaired as required.
UU No Ref
CL (66.560)
IL (59.000)
SW159
CL (66.543)
To be built on existing private combined sewer
ø375mm
New surface water connection through the existing private sewer into the public combined sewer within Grimshaw Lane under the approved S106 application from United Utilities ref 04564000
Non return valve at surface water final lateral outfall
Alton HDPE 400mm Flap Valve or similar approved
ø375mm
ø225mm @ 1:131
ø300mm @ 1:165
SW158
CL (66.634)
IL (64.550)
ø375mm @ 1:106
SW156
CL (66.759)
IL (65.500)
Extg ø375mm
BD IL 66.00
ø675mm @ 1:73
ø150mm @ 1:17
ø150mm @ 1:32
ø600mm @ 1:39
ø150mm @ 1:125
ø750mm @ 1:367
ø750mm @ 1:324
FW116
CL (70.490)
IL (68.550)
Indicative oil separator alarm ducts and kiosk location to be agreed with client.

SW157 Flow Control 95 l_s
CL (66.943)
Sump IL (63.750)
Sump 1.000
Stone House Site
Surface Water Lateral IL 64.700
Pipe to be capped at site boundary, location and level to be recorded
Full retention oil separator
P200 1C/SC by SPEL or similar approved
Accesses to have D400 covers.
Flow control restricting discharge to 95 l/s through the full retention oil separator into existing combined sewer within the site.
Hydro-Brake Optimum
Ref. MD-SHE-0374-9500-1985-9500
95 l/s @ 1.985m design head
Indicative oil separator alarm ducts route to be agreed with client.
SW154
CL (68.074)
IL (65.350)
ø150mm @ 1:54
Stone House Site
Foul Water Lateral IL 65.000
Pipe to be capped at site boundary, location and level to be recorded
Flow control restricting discharge to 5 l/s into proposed SW system cascading downstream into existing combined sewer within the site.
Hydro-Brake Optimum
Ref. MD-SHE-0088-5000-2350-5000
5 l/s @ 2.35m design head
SW138 Flow Control 80 l_s
CL (70.071)
Sump IL (65.485)
Sump 1.000
Flow control restricting discharge to 80 l/s into proposed SW system cascading downstream into existing combined sewer within the site
Hydro-Brake Optimum
Ref. MD-SHE-0321-8000-3750-8000
80 l/s @ 3.75m design head
Surface water discharge into the existing private combined sewer to be restricted to a total of 95 l/s.

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5. Contractor to allow for RWP, drainage channels, gullies and attenuation tank connections.

Key:
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- Drainage Channel Chamber
- Proposed Gully
- TG Trapped Gully
- Perforated Pipe
- Proposed Permeable Car Park
- Phase 2
- Tree Protection Construction Exclusion Zone
- Root Protection Barrier, refer to PTA drawing 9762-8310

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DRAWING STATUS
FOR CONSTRUCTION

REV	DESCRIPTION	BY	DATE	CH'CD
C09	Updated Record Issue; S106 Reference Noted; Redundant Existing Drainage Removed.	LB	07.10.24	SLW
C08	Record Issue.	LB	25.07.24	SLW
C07	RWP Locations Adjusted.	LB	16.11.23	SLW
C06	RWP Locations Added And Adjusted; Cover Levels Updated.	LB	31.10.23	SLW
C05	Drainag Channel Moved & RWPs Locations Adjusted.	LB	05.10.23	SLW
C04	FW Route & RWPs Locations Adjusted.	LB	29.09.23	SLW
C03	Minor Adjustments To Foul Water Drain Points.	LB	22.09.23	LB
C02	SW Drainage Layout & RWP Locations Adjusted.	LB	07.08.23	SLW
C01	Construction Issue.	LB	26.07.23	SLW
P09	Phasing Boundary Revised; Stone House Entrance Added & Manhole References Updated.	LB	27.06.23	

PROJECT TITLE
Grimshaw Lane, Manchester

DRAWING TITLE
Proposed Drainage Sheet 1 of 7

DATE	March 2021	CHECKED DO	LB
DRAWN	LB	CHECKED ENG	SLW
SCALE	1:250	PTA PROJ No	9762
ORG SIZE	A1	REVISION	C09

DRAWING No
9762-PTA-XX-XX-DR-C-8101

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5. Refer to BEA drawings for details on Tree Root Protection Areas.

Key:

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DRAWING STATUS

FOR CONSTRUCTION

REV	DESCRIPTION	BY	DATE	CHK'D
C07	Record Issue.	LB	25.07.24	SLW
C06	RWP Locations Adjusted & FW Network Moved.	LB	16.11.23	SLW
C05	RWP Locations Added And Adjusted; Cover Levels Updated.	LB	31.10.23	SLW
C04	SW Route Adjusted.	LB	29.09.23	SLW
C03	Attenuation Tank 1 Updated.	LB	22.09.23	LB
C02	RWP Connections Added.	LB	07.08.23	SLW
C01	Construction Issue.	LB	26.07.23	SLW
P09	Phasing Boundary Revised; Stone House Entrance Added & Manhole References Updated.	LB	27.06.23	
P08	Phasing Hatch Added; Attenuation Tanks Updated.	LB	03.02.23	
P07	Indicative Attenuation Tank Connections Added.	LB	07.06.22	
P06	Drainage Channel Laterals & Permeable Paving Drainage Added; Manhole Cover Levels Updated; Attenuation Tank 1 Revised.	LB	19.05.22	

PROJECT TITLE

Grimshaw Lane, Manchester

DRAWING TITLE

Proposed Drainage
Sheet 2 of 7

DATE	March 2021	CHECKED DO	CHECKED ENG	PTA PROJ No
DRAWN	LB	LB	SLW	9762
SCALE	1:250			REVISION
DRG SIZE	A1			C07

DRAWING No

9762-PTA-XX-XX-DR-C-8102

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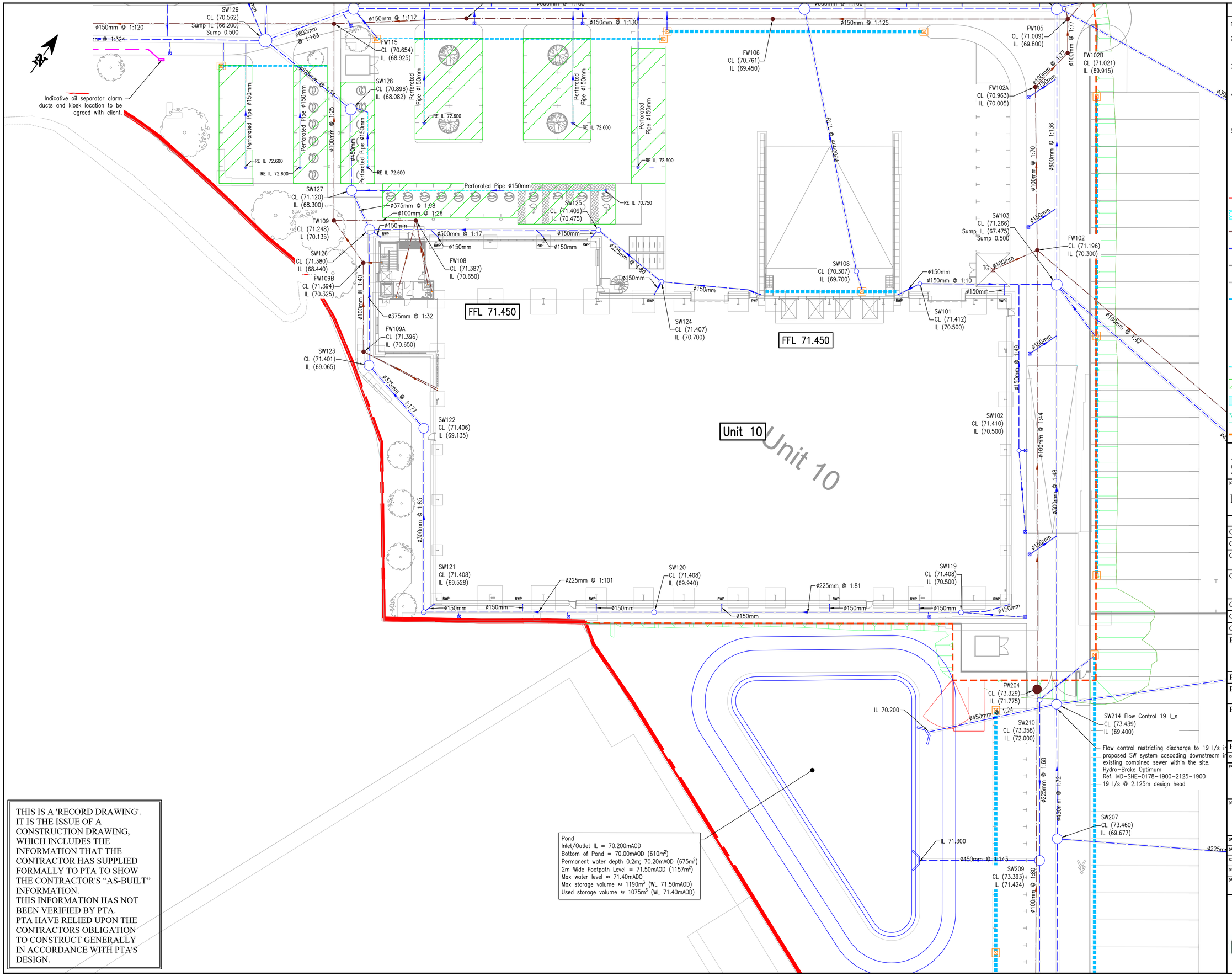

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5. Refer to BEA drawings for details on Tree Root Protection Areas.

Key:

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- Drainage Channel Chamber
- Proposed Gully
- TG Trapped Gully
- Perforated Pipe
- Proposed Permeable Car Park
- Phase 2
- Tree Protection Construction Exclusion Zone
- Root Protection Barrier, refer to PTA drawing 9762-8310

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DRAWING STATUS

FOR CONSTRUCTION

REV	DESCRIPTION	BY	DATE	CHK'D
C07	Record Issue.	LB	25.07.24	SLW
C06	FW Network Adjusted.	LB	07.06.24	SLW
C05	RWP Locations Adjusted & FW Network Moved.	LB	16.11.23	SLW
C04	RWP Locations Added And Adjusted; Cover Levels Updated.	LB	31.10.23	SLW
C03	SW Route Adjusted.	LB	29.09.23	SLW
C02	Gullies Position Adjusted.	LB	07.08.23	SLW
C01	Construction Issue.	LB	26.07.23	SLW
P09	Phasing Boundary Revised; Stone House Entrance Added & Manhole References Updated.	LB	27.06.23	
P08	Phasing Hatch Added.	LB	03.02.23	
P07	Indicative Attenuation Tank Connections Added.	LB	07.06.22	
P06	Drainage Channel Laterals & Permeable Paving Drainage Added; Manhole Cover Levels Updated.	LB	19.05.22	
P05	Redesigned SW Network.	LB	12.04.22	

PROJECT TITLE

Grimshaw Lane, Manchester

DRAWING TITLE

Proposed Drainage
Sheet 3 of 7

DATE	March 2021	CHECKED DO	CHECKED ENG	PTA PROJ No
DRAWN	LB	LB	SLW	9762
SCALE	1:250			REVISION
DRG SIZE	A1			C07

DRAWING No

9762-PTA-XX-XX-DR-C-8103

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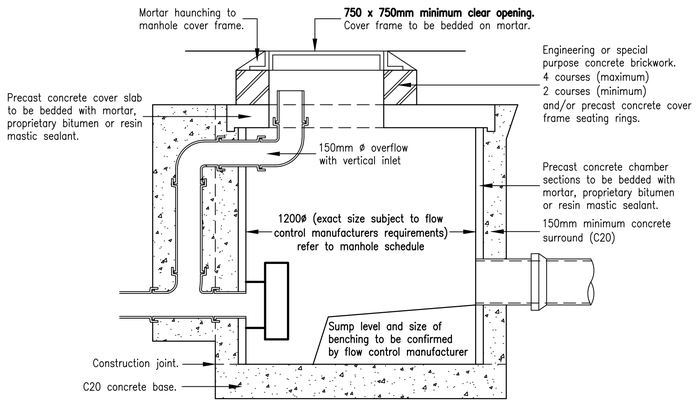
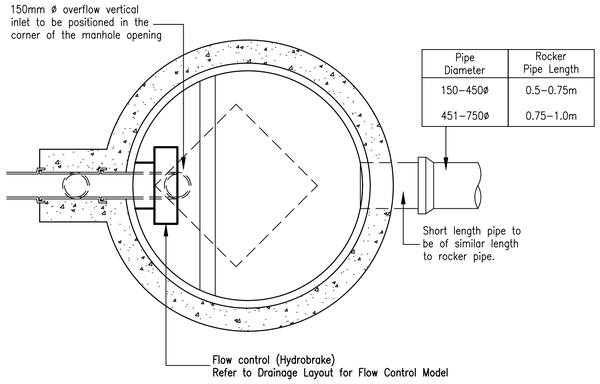
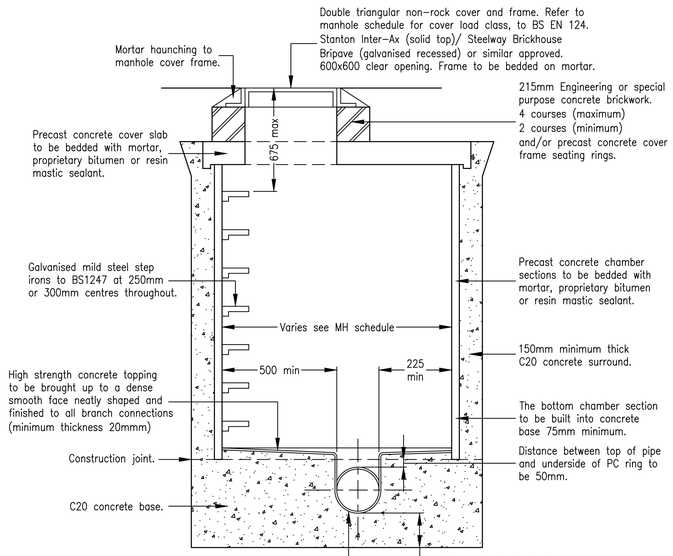




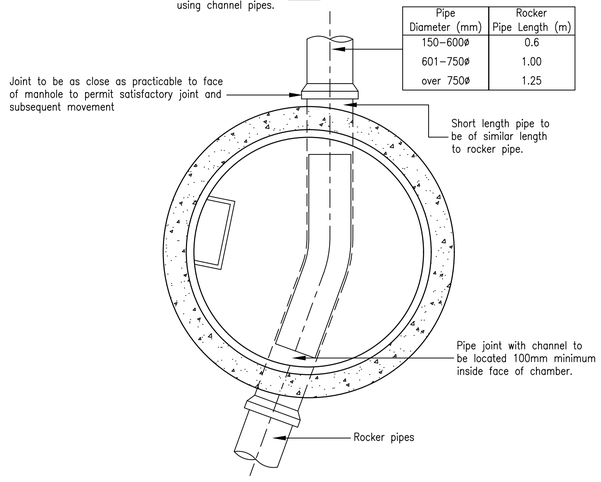
Pipe Diameter	Rocker Pipe Length
150–450ø	0.5–0.75m
451–750ø	0.75–1.0m

Hydrobrake Catchpit Manhole Detail

1:20

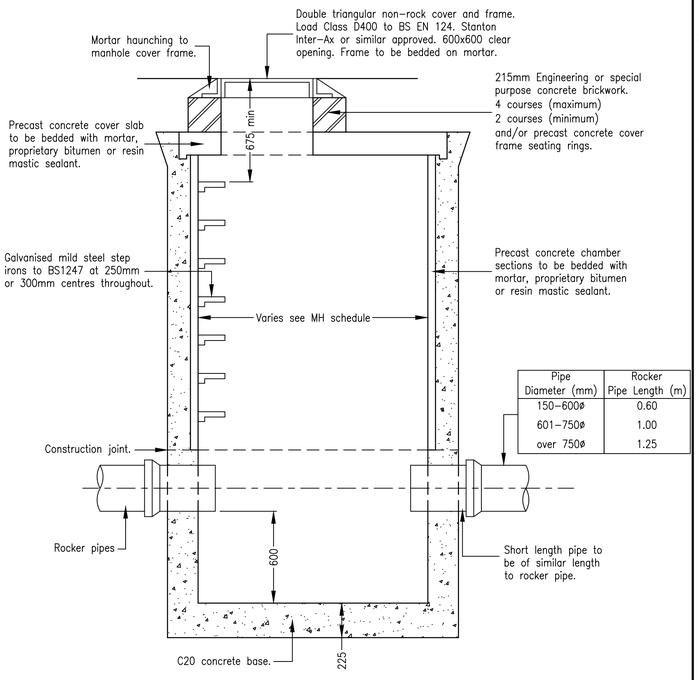


Pipe Diameter (mm)	Rocker Pipe Length (m)
150–600ø	0.6
601–750ø	1.00
over 750ø	1.25



PC Ring Manhole Detail

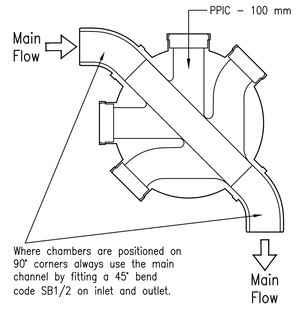
1:20



Pipe Diameter (mm)	Rocker Pipe Length (m)
150–600ø	0.60
601–750ø	1.00
over 750ø	1.25

PC Ring Catchpit Manhole Detail

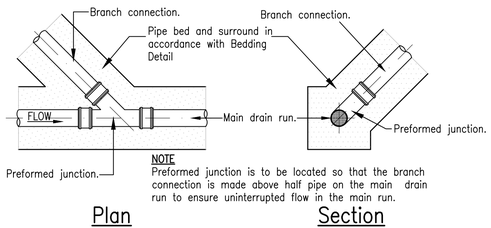
1:20



Plastic Inspection Chamber

Internal Plan View

1:20

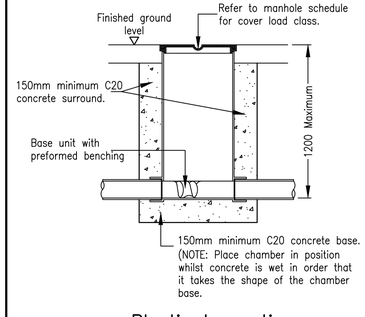


NOTE
Preformed junction is to be located so that the branch connection is made above half pipe on the main drain run to ensure uninterrupted flow in the main run.

Plan Section

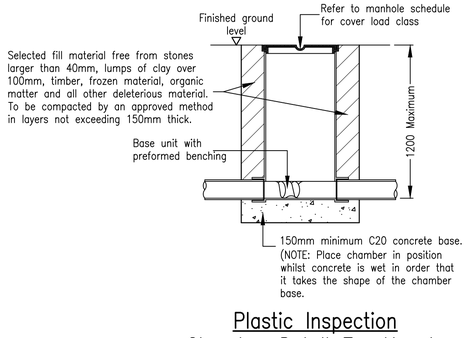
Preformed Junction Detail

1:20



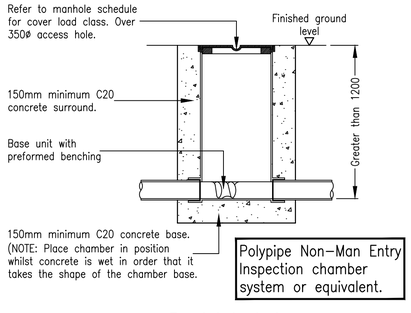
Plastic Inspection Chamber Detail For Use in Vehicular Areas

1:20



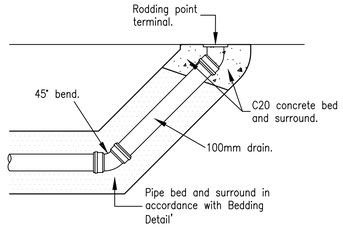
Plastic Inspection Chamber Detail For Use in Landscaped/Pedestrian Areas

1:20



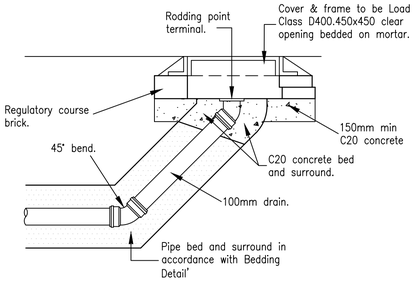
Restricted Access Plastic Inspection Chamber

1:20



Rodding Eye Detail

1:20



Heavy Duty Rodding Eye Detail

1:20

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DRAWING STATUS

FOR CONSTRUCTION

REV	DESCRIPTION	BY	DATE	CHK'D
C02	Record Issue.	LB	25.07.24	SLW
C01	Construction Issue.	LB	26.07.23	SLW
P01	First Issue.	LB	19.03.21	

PROJECT TITLE

Grimshaw Lane, Manchester

DRAWING TITLE

Proposed Drainage Details Sheet 1 of 2

DATE	March 2021	CHECKED DO	CHECKED ENG	PTA PROJ No
DRAWN	LB	LB	SLW	9762
SCALE	As Noted			REVISION
ORG SIZE	A1			C02

DRAWING No

9762-PTA-XX-XX-DR-C-8131

Consulting Civil & Structural Engineers
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29 Red Lion Street
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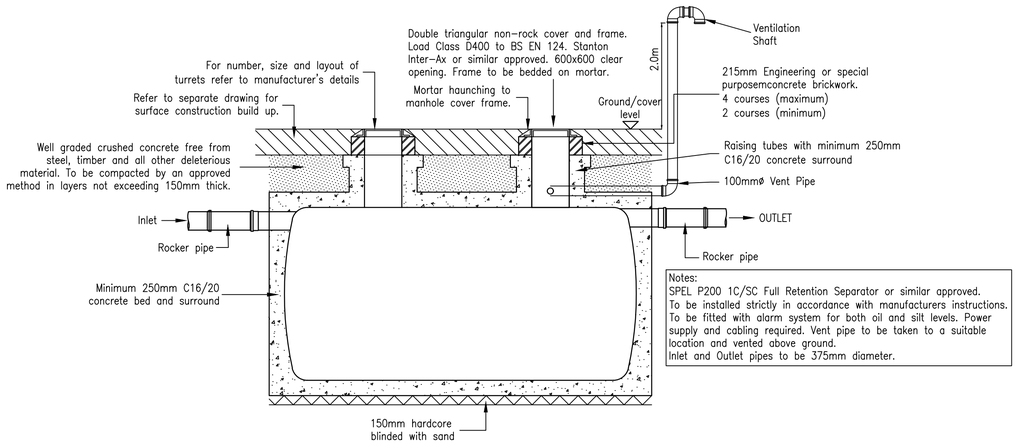
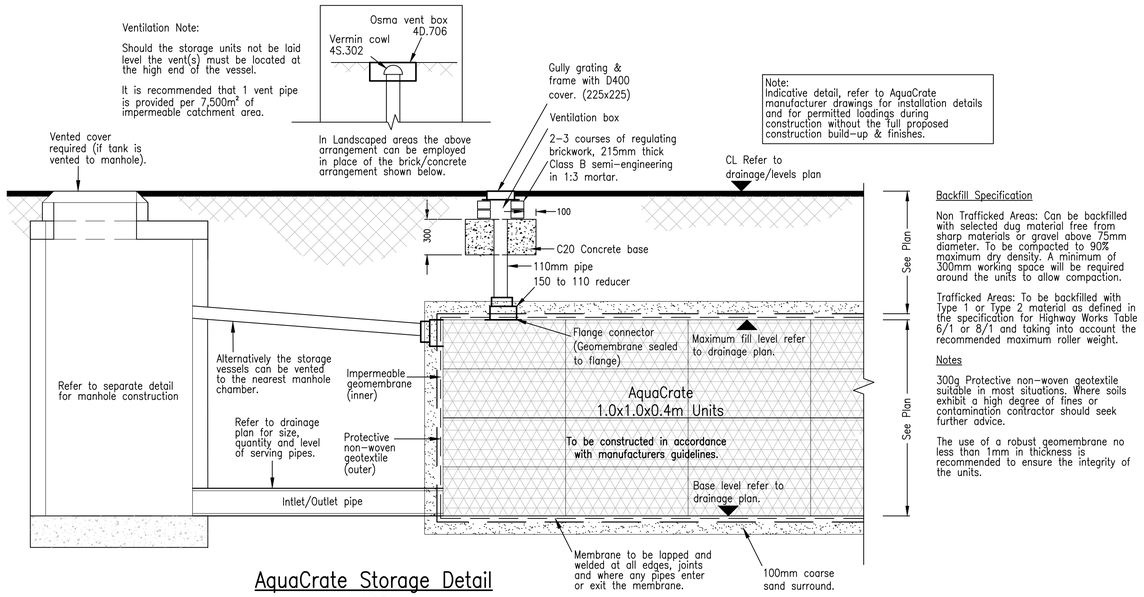


Notes:
SPEL P200 1C/SC Full Retention Separator or similar approved.
To be installed strictly in accordance with manufacturers instructions.
To be fitted with alarm system for both oil and silt levels. Power supply and cabling required. Vent pipe to be taken to a suitable location and vented above ground.
Inlet and Outlet pipes to be 375mm diameter.

Typical Full Retention Separator Detail
1:50



AquaCrate Storage Detail
1:25

Backfill Specification

Non Trafficked Areas: Can be backfilled with selected dug material free from sharp materials or gravel above 75mm diameter. To be compacted to 90% maximum dry density. A minimum of 300mm working space will be required around the units to allow compaction.

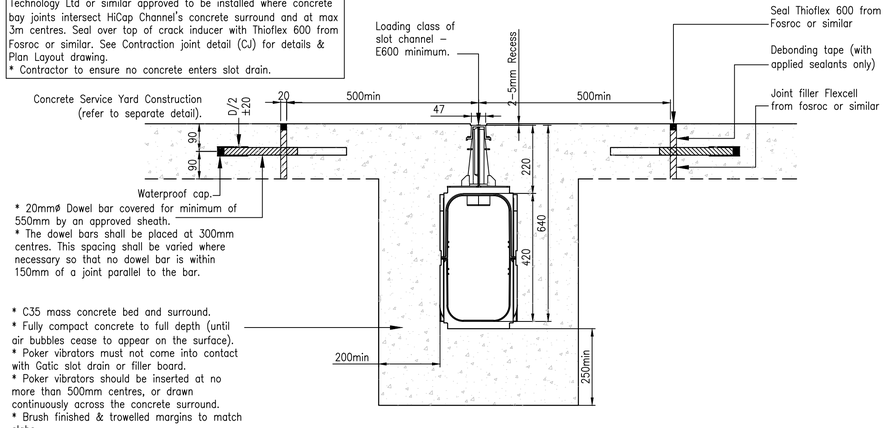
Trafficked Areas: To be backfilled with Type 1 or Type 2 material as defined in the specification for Highway Works Table 6/1 or 8/1 and taking into account the recommended maximum roller weight.

Notes

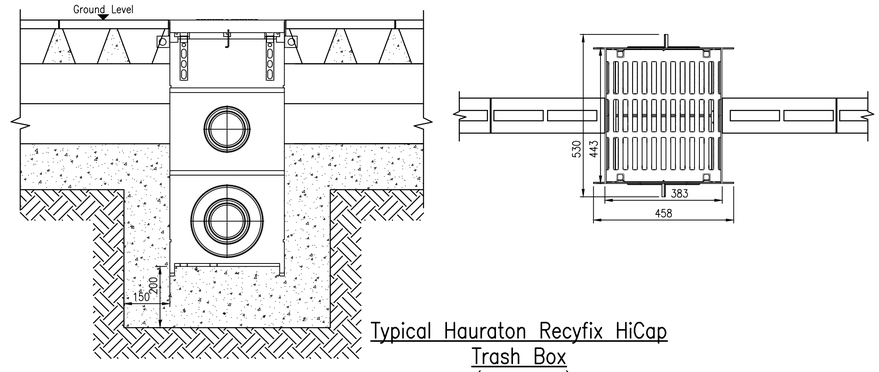
300g Protective non-woven geotextile suitable in most situations. Where soils exhibit a high degree of fines or contamination contractor should seek further advice.

The use of a robust geomembrane no less than 1mm in thickness is recommended to ensure the integrity of the units.

* HiCap Channel should be installed strictly in accordance with Manufacturers instructions.
* Ensure a fall in concrete surround so that the top of throat is 2-5mm below concrete slab level.
* 2 Part crack inducer/joint former by SCP Concrete Sealing Technology Ltd or similar approved to be installed where concrete bay joints intersect HiCap Channel's concrete surround and at max 3m centres. Seal over top of crack inducer with Thioflex 600 from Fosroc or similar. See Contraction joint detail (CJ) for details & Plan Layout drawing.
* Contractor to ensure no concrete enters slot drain.



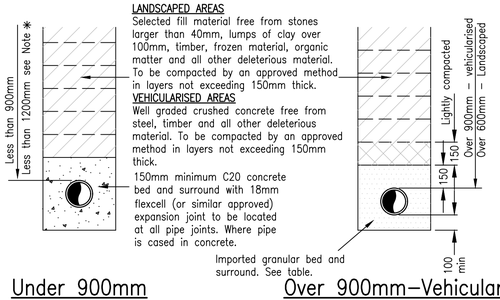
Hauraton Recyfix HiCap Channel Detail
(1:10)



Typical Hauraton Recyfix HiCap Trash Box
(Not to scale)

NOTE: ✳
Where PVCu pipes larger than 300mm diameter are used in vehicularized areas, the concrete protection detail shall be installed up to 1200mm cover.

NOTE:
Concrete protection detailed to be installed where pipes are near foundations (see seperate detail) and as above in accordance with Part H of Building Regs., clause 2.45



Under 900mm
(under 1200mm see Note ✳)

LANDSCAPED AREAS
Selected fill material free from stones larger than 40mm, lumps of clay over 100mm, timber, frozen material, organic matter and all other deleterious material. To be compacted by an approved method in layers not exceeding 150mm thick.

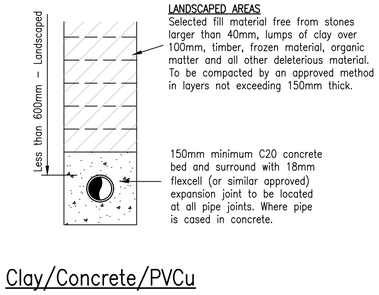
VEHICULARISED AREAS
Well graded crushed concrete free from steel, timber and all other deleterious material. To be compacted by an approved method in layers not exceeding 150mm thick.

150mm minimum C20 concrete bed and surround with 18mm flexcell (or similar approved) expansion joint to be located at all pipe joints. Where pipe is cased in concrete.

Imported granular bed and surround. See table.

Over 900mm–Vehicular
Over 600mm–Landscaped

Pipe Bedding Details
Concrete, Clay & PVCu Pipes
1:20



LANDSCAPED AREAS
Selected fill material free from stones larger than 40mm, lumps of clay over 100mm, timber, frozen material, organic matter and all other deleterious material. To be compacted by an approved method in layers not exceeding 150mm thick.

150mm minimum C20 concrete bed and surround with 18mm flexcell (or similar approved) expansion joint to be located at all pipe joints. Where pipe is cased in concrete.

Clay/Concrete/PVCu

Pipe Bedding Details
Under 600mm Landscaped
1:20

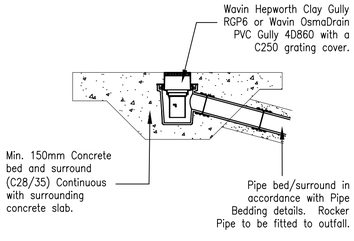
Granular materials for Pipe Bedding

TO BE EITHER
Nominal single size aggregate complying with BS EN 12620 as follows:

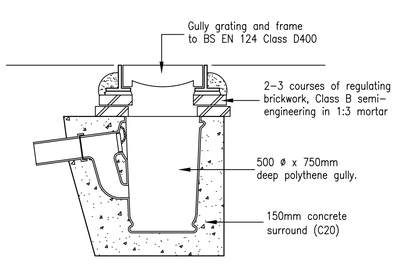
DN 100 10mm size
DN 150 10mm or 14mm size
DN 200 to DN300 10mm, 14mm or 20mm size
DN 375 to 525 14mm or 20mm size
DN 600 and above 14mm or 20mm or 40mm size

OR
Graded aggregate complying with table 4 of BS 882:1992 as follows:

DN 100 14mm to 5mm
DN 150 to DN 525 20mm to 5mm or 14mm to 5mm
DN 600 and above 40m to 5mm or 20mm to 5mm or 14mm to 5mm



External Trapped Yard Gully
1:20



Gully Detail
1:20

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DRAWING STATUS
FOR CONSTRUCTION

REV	DESCRIPTION	BY	DATE	CHK'D
C02	Record Issue.	LB	25.07.24	SLW
C01	Construction Issue.	LB	26.07.23	SLW
P02	Oil Separator Detail Changed.	LB	07.06.21	
P01	First Issue.	LB	19.03.21	

PROJECT TITLE
Grimshaw Lane, Manchester

DRAWING TITLE
Proposed Drainage Details Sheet 2 of 2

DATE	March 2021	CHECKED DO	CHECKED ENG	PTA PROJ No
DRAWN	LB	LB	SLW	9762
SCALE	As Noted			REVISION
DRG SIZE	A1			C02

DRAWING No
9762-PTA-XX-XX-DR-C-8132

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PHASE 1 SURFACE WATER MANHOLE SCHEDULE

MANHOLE NAME	COVER LEVEL [m AOD]	CHAMBER INVERT LEVEL [m AOD]	SUMP DEPTH [m]	INVERT LEVELS [m AOD]	COORDINATES [m]	CLEAR OPENING & COVER TYPE [mm]	COVER GRADE	INTERNAL DIMENSIONS [mm] & MANHOLE TYPE
SW101	71.412	70.500 (0.912 DEPTH)	0.000	70.775 (150ø IN) 70.500 (150ø OUT)	E: 387101.691 N: 399968.403	600x600	D400	450ø PIC
SW102	71.410	70.500 (0.910 DEPTH)	0.000	70.525 (100ø IN) 70.525 (100ø IN) 70.500 (150ø OUT)	E: 387127.909 N: 399956.751	600x600	D400	450ø PIC
SW103	71.266	67.475 (3.791 DEPTH)	0.500	68.275 (300ø IN) 68.425 (150ø IN) 68.200 (375ø IN) 67.975 (600ø OUT)	E: 387118.287 N: 399980.013	600x600	D400	1500ø PC Ring
SW104	71.306	70.250 (1.056 DEPTH)	0.000	70.400 (150ø IN) 70.400 (150ø IN) 70.250 (300ø OUT)	E: 387021.582 N: 400066.590	600x600	C250	600ø PIC
SW105	71.247	69.535 (1.712 DEPTH)	0.000	69.685 (300ø IN) 69.835 (150ø IN) 69.535 (450ø OUT)	E: 387047.807 N: 400085.267	600x600	C250	1350ø PC Ring
SW106	71.209	69.060 (2.149 DEPTH)	0.000	69.060 (450ø IN) 69.360 (150ø IN) 69.060 (450ø OUT)	E: 387077.692 N: 400043.302	600x600	C250	1350ø PC Ring
SW107	70.979	67.175 (3.804 DEPTH)	0.500	67.675 (600ø IN) 67.825 (450ø IN) 67.675 (600ø OUT)	E: 387094.750 N: 400013.289	600x600	D400	1500ø PC Ring Catchpit
SW108	70.307	69.700 (0.607 DEPTH)	0.000	69.775 (225ø IN) 69.700 (300ø OUT)	E: 387092.972 N: 399964.487	600x600	D400	600ø PIC
SW109 Tank 1	70.779	66.800 (3.979 DEPTH)	0.500	67.300 (600ø IN) 67.525 (300ø IN) 67.450 (450ø IN) 67.300 (600ø OUT)	E: 387064.279 N: 399991.730	600x600	D400	1500ø PC Ring
SW110	70.707	66.935 (3.772 DEPTH)	0.000	66.935 (600ø IN) 67.310 (225ø IN) 67.310 (225ø IN) 67.385 (150ø IN) 66.935 (600ø OUT)	E: 387009.822 N: 399953.199	600x600	D400	1500ø PC Ring
SW111	71.306	70.425 (0.881 DEPTH)	0.000	70.500 (150ø IN) 70.500 (150ø IN) 70.425 (225ø OUT)	E: 386978.050 N: 400035.782	600x600	C250	600ø PIC
SW112	71.306	70.100 (1.206 DEPTH)	0.000	70.100 (225ø IN) 70.175 (150ø IN) 70.100 (225ø OUT)	E: 386951.404 N: 400016.937	600x600	D400	600ø PIC
SW113	71.206	70.400 (0.806 DEPTH)	0.000	70.400 (150ø IN) 70.400 (150ø OUT)	E: 386934.186 N: 399998.875	600x600	C250	600ø PC Ring
SW114	71.263	69.965 (1.298 DEPTH)	0.000	70.040 (225ø IN) 70.115 (150ø IN) 70.115 (150ø IN) 69.965 (300ø OUT)	E: 386953.330 N: 400012.493	600x600	C250	1200ø PC Ring
SW115	71.220	69.600 (1.620 DEPTH)	0.000	69.825 (150ø IN) 69.825 (150ø IN) 69.600 (375ø OUT)	E: 387044.545 N: 400020.690	600x600	D400	1350ø PC Ring
SW116	71.220	69.335 (1.885 DEPTH)	0.000	69.335 (375ø IN) 69.560 (150ø IN) 69.335 (375ø OUT)	E: 387012.391 N: 399997.938	600x600	D400	1350ø PC Ring
SW117	71.183	67.550 (3.633 DEPTH)	0.000	67.550 (300ø OUT)	E: 387015.612 N: 399996.622	600x600	D400	1350ø PC Ring
SW118	71.266	69.070 (2.196 DEPTH)	0.000	69.145 (300ø IN) 69.070 (375ø IN) 69.295 (150ø IN) 69.070 (375ø OUT)	E: 386980.017 N: 399975.033	600x600	C250	1350ø PC Ring
SW119	71.408	70.500 (0.908 DEPTH)	0.000	70.575 (150ø IN) 70.625 (100ø IN) 70.500 (225ø OUT)	E: 387134.759 N: 399932.274	600x600	C250	600ø PIC
SW120	71.408	69.940 (1.468 DEPTH)	0.000	69.940 (225ø IN) 69.940 (225ø OUT)	E: 387097.682 N: 399906.049	600x600	C250	600ø PIC
SW121	71.408	69.528 (1.880 DEPTH)	0.000	69.603 (225ø IN) 70.061 (150ø IN) 69.528 (300ø OUT)	E: 387069.851 N: 399886.363	600x600	C250	600ø PIC
SW122	71.406	69.135 (2.271 DEPTH)	0.000	69.210 (300ø IN) 69.135 (375ø OUT)	E: 387054.155 N: 399908.554	600x600	C250	1350ø PC Ring
SW123	71.401	69.065 (2.336 DEPTH)	0.000	69.065 (375ø IN) 69.065 (375ø OUT)	E: 387042.149 N: 399911.478	600x600	C250	1350ø PC Ring
SW124	71.407	70.700 (0.707 DEPTH)	0.000	70.775 (150ø IN) 70.775 (150ø IN) 70.700 (225ø OUT)	E: 387070.314 N: 399946.547	600x600	D400	600ø PIC
SW125	71.409	70.475 (0.934 DEPTH)	0.000	70.550 (225ø IN) 70.625 (150ø IN) 70.475 (300ø OUT)	E: 387058.303 N: 399947.399	600x600	D400	600ø PIC
SW126	71.380	68.440 (2.940 DEPTH)	0.000	68.440 (375ø IN) 68.515 (300ø IN) 68.665 (150ø IN) 68.440 (375ø OUT)	E: 387030.640 N: 399927.944	600x600	C250	1350ø PC Ring
SW127	71.120	68.300 (2.820 DEPTH)	0.000	68.375 (375ø IN) 68.600 (150ø IN) 68.300 (450ø OUT)	E: 387025.112 N: 399931.095	600x600	C250	1350ø PC Ring
SW128	70.896	68.082 (2.814 DEPTH)	0.000	68.177 (450ø IN) 68.082 (525ø OUT)	E: 387018.090 N: 399940.831	600x600	D400	1500ø PC Ring
SW129	70.562	66.200 (4.362 DEPTH)	0.500	66.850 (600ø IN) 67.075 (375ø IN) 66.925 (525ø IN) 66.700 (750ø OUT)	E: 387001.887 N: 399941.835	600x600	D400	1800ø PC Ring Catchpit
SW130	71.216	70.150 (1.066 DEPTH)	0.000	70.150 (150ø IN) 70.150 (150ø IN) 70.150 (150ø OUT)	E: 386974.719 N: 399965.090	450x450	C250	450ø PIC

PHASE 1 SURFACE WATER MANHOLE SCHEDULE

MANHOLE NAME	COVER LEVEL [m AOD]	CHAMBER INVERT LEVEL [m AOD]	SUMP DEPTH [m]	INVERT LEVELS [m AOD]	COORDINATES [m]	CLEAR OPENING & COVER TYPE [mm]	COVER GRADE	INTERNAL DIMENSIONS [mm] & MANHOLE TYPE
SW131	71.144	69.775 (1.369 DEPTH)	0.000	69.925 (150ø IN) 69.925 (150ø IN) 69.925 (150ø IN) 69.775 (300ø OUT)	E: 386956.042 N: 399951.879	600x600	C250	600ø PIC
SW132	70.579	68.850 (1.729 DEPTH)	0.000	68.925 (300ø IN) 69.000 (225ø IN) 68.850 (375ø OUT)	E: 386960.019 N: 399924.441	600x600	D400	1350ø PC Ring
SW133	70.471	66.550 (3.921 DEPTH)	0.000	66.550 (750ø IN) 66.925 (375ø IN) 67.150 (150ø IN) 66.550 (750ø OUT)	E: 386961.952 N: 399914.127	600x600	D400	1800ø PC Ring
SW134	70.102	69.350 (0.752 DEPTH)	0.000	69.425 (150ø IN) 69.350 (225ø OUT)	E: 386932.029 N: 399942.235	600x600	D400	600ø PIC
SW135	71.206	70.200 (1.006 DEPTH)	0.000	70.200 (150ø IN) 70.200 (150ø IN) 70.200 (150ø OUT)	E: 386902.782 N: 399976.647	450x450	C250	450ø PIC
SW136	71.196	69.855 (1.341 DEPTH)	0.000	69.930 (150ø IN) 69.930 (150ø IN) 69.980 (100ø IN) 69.855 (225ø OUT)	E: 386883.739 N: 399963.178	600x600	C250	600ø PIC
SW137	71.174	69.355 (1.819 DEPTH)	0.000	69.430 (225ø IN) 69.505 (150ø IN) 69.555 (100ø IN) 69.355 (300ø OUT)	E: 386908.777 N: 399927.820	600x600	D400	600ø PIC
SW138 Flow Control 80 l_s	70.071	65.485 (4.586 DEPTH)	1.000	66.485 (750ø IN) 66.935 (300ø IN) 67.085 (150ø IN) 66.485 (600ø OUT)	E: 386942.478 N: 399900.393	750x750	D400	2100ø PC Ring Flow Control Chamber
SW139	69.467	68.500 (0.967 DEPTH)	0.000	68.500 (150ø IN) 68.550 (100ø IN) 68.500 (150ø OUT)	E: 386885.829 N: 399956.726	450x450	C250	450ø PIC
SW140	69.473	68.185 (1.288 DEPTH)	0.000	68.260 (150ø IN) 68.185 (225ø OUT)	E: 386897.893 N: 399939.664	600x600	C250	600ø PIC
SW141	69.450	67.850 (1.600 DEPTH)	0.000	67.850 (225ø IN) 67.925 (150ø IN) 67.975 (100ø IN) 67.850 (225ø OUT)	E: 386923.540 N: 399902.985	600x600	C250	600ø PIC
SW142	69.456	68.750 (0.706 DEPTH)	0.000	68.750 (150ø IN) 68.750 (150ø OUT)	E: 386824.853 N: 399882.635	450x450	C250	450ø PIC
SW143	69.456	68.280 (1.176 DEPTH)	0.000	68.355 (150ø IN) 68.355 (150ø IN) 68.280 (225ø OUT)	E: 386809.980 N: 399903.656	600x600	C250	600ø PIC
SW144	69.434	67.930 (1.504 DEPTH)	0.000	68.005 (225ø IN) 67.930 (300ø OUT)	E: 386840.199 N: 399925.031	600x600	C250	600ø PIC
SW145	69.456	68.750 (0.706 DEPTH)	0.000	68.750 (150ø IN) 68.750 (150ø OUT)	E: 386840.479 N: 399873.292	450x450	C250	450ø PIC
SW146	69.456	68.485 (0.971 DEPTH)	0.000	68.560 (150ø IN) 68.560 (150ø IN) 68.485 (225ø OUT)	E: 386849.427 N: 399860.644	600x600	C250	600ø PIC
SW147	69.465	67.750 (1.715 DEPTH)	0.000	67.825 (225ø IN) 67.750 (300ø OUT)	E: 386873.637 N: 399877.768	600x600	C250	600ø PIC
SW148	69.383	67.485 (1.898 DEPTH)	0.000	67.560 (300ø IN) 67.560 (300ø IN) 67.485 (375ø OUT)	E: 386857.412 N: 399900.707	600x600	D400	1350ø PC Ring
SW149	69.449	68.750 (0.699 DEPTH)	0.000	68.750 (150ø IN) 68.750 (150ø IN) 68.750 (150ø OUT)	E: 386865.611 N: 399933.426	450x450	D400	450ø PIC
SW150 Tank 2	69.376	66.600 (2.776 DEPTH)	0.500	67.100 (375ø IN) 67.250 (225ø IN) 67.100 (375ø IN) 67.100 (375ø OUT)	E: 386874.460 N: 399912.765	600x600	D400	1350ø PC Ring
SW151	69.376	67.250 (2.126 DEPTH)	0.000	67.250 (375ø OUT)	E: 386858.053 N: 399935.960	600x600	D400	1200ø PC Ring
SW152	69.450	67.060 (2.390 DEPTH)	0.000	67.060 (375ø IN) 67.285 (150ø IN) 67.135 (300ø OUT)	E: 386878.302 N: 399915.483	600x600	D400	1350ø PC Ring
SW153 Flow Control 5 l_s	69.347	66.435 (2.912 DEPTH)	0.000	66.510 (225ø IN) 66.435 (300ø IN) 66.585 (150ø IN) 66.585 (150ø IN) 66.585 (150ø IN) 66.435 (300ø OUT)	E: 386899.453 N: 399885.580	750x750	D400	1200ø PC Ring Flow Control Chamber
SW154	68.074	65.350 (2.724 DEPTH)	0.000	65.350 (600ø IN) 65.725 (300ø IN) 65.350 (675ø OUT)	E: 386906.272 N: 399874.270	600x600	D400	1500ø PC Ring
SW155	66.853	65.500 (1.353 DEPTH)	0.000	65.650 (150ø IN) 65.650 (225ø IN) 65.652 (150ø IN) 65.500 (300ø OUT)	E: 386859.229 N: 399850.593	600x600	D400	1200ø PC Ring
SW156	66.759	65.500 (1.259 DEPTH)	0.000	65.650 (150ø IN) 65.650 (150ø IN) 65.650 (225ø IN) 65.500 (375ø OUT)	E: 386871.034 N: 399838.172	600x600	D400	1350ø PC Ring
SW157 Flow Control 95 l_s	66.943	63.750 (3.193 DEPTH)	1.000	64.750 (675ø IN) 65.050 (300ø IN) 65.425 (375ø IN) 64.750 (375ø OUT)	E: 386870.040 N: 399849.396	750x750	D400	2100ø PC Ring Flow Control Chamber
SW158	66.634	64.550 (2.084 DEPTH)	0.000	64.550 (375ø IN) 64.550 (300ø IN) 64.550 (375ø OUT)	E: 386855.151 N: 399838.865	600x600	D400	1500ø PC Ring
SW159	66.543	64.290 (2.253 DEPTH)	0.000	64.290 (375ø IN)	E: 386850.597 N: 399837.664	600x600	D400	1500ø PC Ring

Notes:

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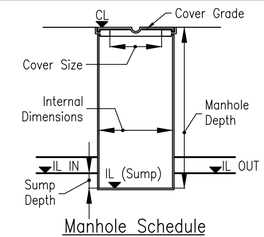

Manhole Schedule Explanatory Detail

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DRAWING STATUS

FOR CONSTRUCTION

REV	DESCRIPTION	BY	DATE	CHK'D
C07	Record Issue.	LB	25.07.24	SLW
C06	MH SW104, SW111, SW124 & SW135 Moved Back; Minor Cover Levels Adjustments.	LB	16.11.23	SLW
C05	MH SW104, SW111, SW124 & SW135 Moved; Minor Cover Levels Adjustments.	LB	31.10.23	SLW
C04	Cover Levels Adjustments.	LB	05.10.23	SLW
C03	Surface Water Network Adjustments.	LB	29.09.23	LB
C02	Construction Issue.	LB	07.08.23	SLW
C01	Construction Issue.	LB	26.07.23	SLW
P08	Schedule Updated To Phase 1 Only.	LB	27.06.23	
P07	Minor Adjustments.	LB	03.02.23	
P06	SW Pipe Connections Added.	LB	07.06.22	
P05	SW Cover Levels Updated.	LB	19.05.22	
P04	SW Network Updated.	LB	12.04.22	
P03	SW Network Updated.	LB	08.06.21	
P02	SW Network Updated.	LB	06.04.21	

PROJECT TITLE

Grimshaw Lane, Manchester

DRAWING TITLE

Phase 1 Surface Water Manhole Schedule

DATE	March 2021	CHECKED DO	CHECKED ENG	PTA PROJ No
DRAWN	LB	LB	SLW	9762
SCALE	N/A			REVISION
DRG SIZE	A1			C07

DRAWING No

9762-PTA-XX-XX-DR-C-8151

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PHASE 1 FOUL WATER MANHOLE SCHEDULE

MANHOLE NAME	COVER LEVEL [m AOD]	CHAMBER INVERT LEVEL [m AOD]	SUMP DEPTH [m]	INVERT LEVELS [m AOD]	COORDINATES [m]	CLEAR OPENING & COVER TYPE [mm]	COVER GRADE	INTERNAL DIMENSIONS [mm] & MANHOLE TYPE
FW102	71.196	70.300 (0.896 DEPTH)	0.000	70.300 (100ø IN) 70.300 (100ø IN) 70.350 (100ø IN) 70.350 (100ø OUT)	E: 387113.004 N: 399982.496	450x450	D400	450ø PIC
FW102A	70.963	70.005 (0.958 DEPTH)	0.000	70.005 (100ø IN) 70.005 (100ø OUT)	E: 387098.813 N: 400002.035	450x450	D400	450ø PIC
FW102B	71.021	69.915 (1.106 DEPTH)	0.000	69.915 (100ø IN) 69.915 (100ø OUT)	E: 387099.811 N: 400008.907	450x450	D400	450ø PIC
FW103	71.279	70.500 (0.779 DEPTH)	0.000	70.550 (100ø IN) 70.500 (100ø IN) 70.550 (100ø IN) 70.500 (100ø OUT)	E: 387074.903 N: 400040.347	450x450	C250	450ø PIC
FW104	71.305	70.350 (0.955 DEPTH)	0.000	70.400 (100ø IN) 70.350 (100ø IN) 70.400 (100ø IN) 70.350 (100ø OUT)	E: 387071.309 N: 400037.667	450x450	C250	450ø PIC
FW105	71.009	69.800 (1.209 DEPTH)	0.000	69.850 (100ø IN) 70.550 (100ø IN) 69.800 (150ø OUT)	E: 387096.924 N: 400012.989	450x450 Restricted to 350ø	D400	450ø PIC
FW106	70.761	69.450 (1.311 DEPTH)	0.000	69.450 (150ø IN) 69.450 (150ø OUT)	E: 387061.311 N: 399987.792	450x450 Restricted to 350ø	D400	450ø PIC
FW107	70.724	69.100 (1.624 DEPTH)	0.000	69.100 (150ø IN) 69.100 (150ø OUT)	E: 387024.266 N: 399961.661	450x450 Restricted to 350ø	D400	450ø PIC
FW108	71.387	70.650 (0.737 DEPTH)	0.000	70.700 (100ø IN) 70.700 (100ø IN) 70.650 (100ø IN) 70.650 (100ø OUT)	E: 387035.452 N: 399932.930	450x450 Recessed	C250	450ø PIC
FW109	71.248	70.135 (1.113 DEPTH)	0.000	70.185 (100ø IN) 70.135 (100ø IN) 70.135 (100ø OUT)	E: 387025.554 N: 399925.947	450x450	C250	450ø PIC
FW109A	71.396	70.650 (0.746 DEPTH)	0.000	70.700 (100ø IN) 70.650 (100ø IN) 70.650 (100ø OUT)	E: 387040.346 N: 399912.650	450x450	C250	450ø PIC
FW109B	71.394	70.325 (1.069 DEPTH)	0.000	70.375 (100ø IN) 70.325 (100ø IN) 70.325 (100ø OUT)	E: 387032.708 N: 399923.356	450x450	C250	450ø PIC
FW110	71.157	70.300 (0.857 DEPTH)	0.000	70.350 (100ø IN) 70.300 (100ø IN) 70.350 (100ø IN) 70.300 (100ø OUT)	E: 386977.852 N: 399964.282	450x450 Recessed	C250	450ø PIC
FW111	71.273	70.525 (0.748 DEPTH)	0.000	70.575 (100ø IN) 70.525 (100ø IN) 70.575 (100ø IN) 70.525 (100ø OUT)	E: 386986.040 N: 399976.256	450x450	C250	450ø PIC
FW112	71.160	70.325 (0.835 DEPTH)	0.000	70.375 (100ø IN) 70.325 (100ø IN) 70.375 (100ø IN) 70.325 (100ø OUT)	E: 386987.751 N: 399977.464	450x450	C250	450ø PIC
FW113	71.152	70.375 (0.777 DEPTH)	0.000	70.425 (100ø IN) 70.375 (100ø IN) 70.425 (100ø IN) 70.375 (100ø OUT)	E: 386979.019 N: 399965.119	450x450	C250	450ø PIC
FW114	71.048	70.025 (1.023 DEPTH)	0.000	70.075 (100ø IN) 70.025 (100ø IN) 70.075 (100ø IN) 70.025 (100ø OUT)	E: 386994.367 N: 399970.041	450x450	D400	450ø PIC
FW115	70.654	68.925 (1.729 DEPTH)	0.000	68.925 (150ø IN) 68.925 (100ø IN) 68.975 (100ø IN) 68.925 (150ø OUT)	E: 387008.751 N: 399949.706	450x450 Restricted to 350ø	D400	450ø PIC
FW116	70.490	68.550 (1.940 DEPTH)	0.000	68.550 (150ø IN) 68.550 (150ø OUT)	E: 386972.016 N: 399923.714	450x450 Restricted to 350ø	D400	450ø PIC
FW116A	69.765	68.190 (1.575 DEPTH)	0.000	68.190 (150ø IN) 68.240 (100ø IN) 68.190 (150ø OUT)	E: 386935.559 N: 399897.348	450x450 Restricted to 350ø	D400	450ø PIC

PHASE 1 FOUL WATER MANHOLE SCHEDULE

MANHOLE NAME	COVER LEVEL [m AOD]	CHAMBER INVERT LEVEL [m AOD]	SUMP DEPTH [m]	INVERT LEVELS [m AOD]	COORDINATES [m]	CLEAR OPENING & COVER TYPE [mm]	COVER GRADE	INTERNAL DIMENSIONS [mm] & MANHOLE TYPE
FW116B	67.845	66.800 (1.045 DEPTH)	0.000	66.800 (150ø IN) 66.850 (150ø IN) 66.800 (150ø OUT)	E: 386898.815 N: 399871.351	450x450	D400	450ø PIC
FW116C	67.624	64.500 (3.124 DEPTH)	0.000	66.000 (150ø IN) 64.500 (150ø IN)	E: 386886.282 N: 399865.849	600x600	D400	1350ø PC Ring
FW117	69.463	68.775 (0.688 DEPTH)	0.000	68.825 (100ø IN) 68.825 (100ø IN) 68.775 (100ø IN) 68.775 (100ø OUT)	E: 386842.861 N: 399919.019	450x450 Recessed	C250	450ø PIC
FW118	69.463	68.750 (0.713 DEPTH)	0.000	68.750 (100ø IN) 68.800 (100ø IN) 68.800 (100ø IN) 68.750 (100ø OUT)	E: 386843.438 N: 399918.202	450x450 Recessed	C250	450ø PIC
FW119	69.474	68.200 (1.274 DEPTH)	0.000	68.200 (100ø IN) 68.250 (100ø IN) 68.250 (100ø IN) 68.200 (100ø OUT)	E: 386868.352 N: 399882.990	450x450 Recessed Restricted to 350ø	C250	450ø PIC
FW120	69.474	68.175 (1.299 DEPTH)	0.000	68.175 (100ø IN) 68.225 (100ø IN) 68.225 (100ø IN) 68.175 (100ø OUT)	E: 386868.929 N: 399882.175	450x450 Recessed Restricted to 350ø	C250	450ø PIC
FW121	69.466	68.750 (0.716 DEPTH)	0.000	68.800 (100ø IN) 68.800 (100ø IN) 68.750 (100ø OUT)	E: 386861.104 N: 399941.520	450x450 Recessed	C250	450ø PIC
FW122	69.466	68.630 (0.836 DEPTH)	0.000	68.630 (100ø IN) 68.680 (100ø IN) 68.680 (100ø IN) 68.630 (100ø OUT)	E: 386863.870 N: 399937.611	450x450 Recessed	C250	450ø PIC
FW123	69.477	68.750 (0.727 DEPTH)	0.000	68.800 (100ø IN) 68.800 (100ø IN) 68.750 (100ø IN) 68.800 (100ø IN) 68.750 (100ø OUT)	E: 386877.068 N: 399920.154	450x450 Recessed	C250	450ø PIC
FW124	69.466	68.245 (1.221 DEPTH)	0.000	68.245 (100ø IN) 68.295 (100ø IN) 68.295 (100ø IN) 68.245 (100ø OUT)	E: 386881.580 N: 399912.572	450x450 Recessed Restricted to 350ø	C250	450ø PIC
FW125	69.466	68.220 (1.246 DEPTH)	0.000	68.220 (100ø IN) 68.270 (100ø IN) 68.270 (100ø IN) 68.220 (100ø OUT)	E: 386882.159 N: 399911.754	450x450 Recessed Restricted to 350ø	C250	450ø PIC
FW126	69.451	67.760 (1.691 DEPTH)	0.000	67.810 (100ø IN) 67.810 (100ø IN) 67.810 (100ø IN) 67.810 (100ø IN) 67.760 (150ø OUT)	E: 386896.300 N: 399891.761	450x450 Recessed Restricted to 350ø	C250	450ø PIC
FW127	69.444	68.820 (0.624 DEPTH)	0.000	68.870 (100ø IN) 68.870 (100ø IN) 68.820 (100ø OUT)	E: 386905.064 N: 399888.832	450x450	C250	450ø PIC
FW128	70.951	70.300 (0.651 DEPTH)	0.000	70.300 (100ø IN) 70.300 (100ø OUT)	E: 386918.311 N: 399917.051	450x450	D400	450ø PIC
FW129	71.036	70.300 (0.736 DEPTH)	0.000	70.300 (100ø IN) 70.300 (100ø OUT)	E: 387059.756 N: 400013.569	450x450	D400	450ø PIC

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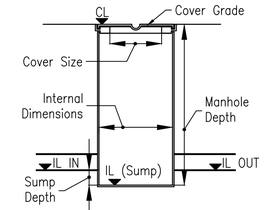

Manhole Schedule Explanatory Detail

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DRAWING STATUS
FOR CONSTRUCTION

REV	DESCRIPTION	BY	DATE	CHK'D
C06	Record Issue.	LB	25.07.24	SLW
C05	FW Manholes Adjusted; FW102A & FW02B Added, FW101 Removed.	LB	07.06.24	SLW
C04	FW Manholes Adjusted; FW109A & FW09B Added.	LB	16.11.23	SLW
C03	Minor Cover Levels Adjustments.	LB	31.10.23	SLW
C02	Foul Water Network Adjustments; FW116A, FW116B &FW166C Added.	LB	29.09.23	LB
C01	Construction Issue.	LB	26.07.23	SLW
P02	Schedule Updated To Phase 1 Only.	LB	27.06.23	
P01	First Issue.	LB	19.03.21	

PROJECT TITLE
Grimshaw Lane, Manchester

DRAWING TITLE
Phase 1 Foul Water Manhole Schedule

DATE	March 2021	CHECKED DO	CHECKED ENG	PTA PROJ No
DRAWN	LB	LB	SLW	9762
SCALE	N/A			REVISION
DRG SIZE	A1			C06

DRAWING No
9762-PTA-XX-XX-DR-C-8161

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Surface Water Drainage Model As-built Results

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for 9762 - SW

Pipe Sizes PTA Manhole Sizes PTA

FSR Rainfall Model - England and Wales

Return Period (years)	1	PIMP (%)	100
M5-60 (mm)	18.100	Add Flow / Climate Change (%)	0
Ratio R	0.352	Minimum Backdrop Height (m)	0.200
Maximum Rainfall (mm/hr)	50	Maximum Backdrop Height (m)	1.500
Maximum Time of Concentration (mins)	30	Min Design Depth for Optimisation (m)	1.000
Foul Sewage (l/s/ha)	0.000	Min Vel for Auto Design only (m/s)	1.00
Volumetric Runoff Coeff.	0.750	Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Time Area Diagram for 9762 - SW

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	2.008	4-8	1.561	8-12	0.005

Total Area Contributing (ha) = 3.574

Total Pipe Volume (m³) = 196.644

Network Design Table for 9762 - SW

« - Indicates pipe capacity < flow

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S3.000	31.153	0.565	55.1	0.069	5.00	0.0	0.600	o	300	Pipe/Conduit	
S3.001	51.248	0.475	107.9	0.055	0.00	0.0	0.600	o	450	Pipe/Conduit	
S3.002	34.522	1.234	28.0	0.052	0.00	0.0	0.600	o	450	Pipe/Conduit	
S4.000	20.254	1.841	11.0	0.053	5.00	0.0	0.600	o	150	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S3.000	45.60	5.24	70.250	0.069	0.0	0.0	0.0	2.12	150.0	8.5
S3.001	44.05	5.68	69.535	0.124	0.0	0.0	0.0	1.96	311.2	14.8
S3.002	43.55	5.83	69.060	0.177	0.0	0.0	0.0	3.86	613.2	20.8
S4.000	46.10	5.11	70.500	0.053	0.0	0.0	0.0	3.06	54.0	6.7

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Network Design Table for 9762 - SW

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S5.000	62.060	1.124	55.2	0.042	5.00	0.0	0.600	o	300	Pipe/Conduit	
S4.001	40.758	0.300	135.9	0.021	0.00	0.0	0.600	o	600	Pipe/Conduit	
S3.003	37.327	0.375	99.5	0.045	0.00	0.0	0.600	o	600	Pipe/Conduit	
S6.000	39.566	2.072	19.1	0.036	5.00	0.0	0.600	o	300	Pipe/Conduit	
S3.004	66.709	0.365	182.8	0.420	0.00	0.0	0.600	o	600	Pipe/Conduit	
S3.005	13.861	0.085	163.1	0.409	0.00	0.0	0.600	o	600	Pipe/Conduit	
S7.000	32.637	0.325	100.5	0.069	5.00	0.0	0.600	o	225	Pipe/Conduit	
S7.001	4.844	0.059	81.5	0.073	0.00	0.0	0.600	o	225	Pipe/Conduit	
S8.000	23.493	0.285	82.3	0.046	5.00	0.0	0.600	o	150	Pipe/Conduit	
S7.002	45.993	0.814	56.5	0.051	0.00	0.0	0.600	o	300	Pipe/Conduit	
S9.000	39.390	0.265	148.5	0.096	5.00	0.0	0.600	o	375	Pipe/Conduit	
S9.001	39.657	0.264	150.2	0.080	0.00	0.0	0.600	o	375	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S5.000	44.72	5.49	69.400	0.042	0.0	0.0	0.0	2.12	149.9	5.1
S4.001	43.61	5.81	67.975	0.117	0.0	0.0	0.0	2.09	590.2	13.8
S3.003	42.73	6.09	67.675	0.338	0.0	0.0	0.0	2.44	690.2	39.1
S6.000	45.83	5.18	69.750	0.036	0.0	0.0	0.0	3.61	255.5	4.4
S3.004	40.87	6.70	67.300	0.794	0.0	0.0	0.0	1.80	508.4	87.8
S3.005	40.52	6.82	66.935	1.202	0.0	0.0	0.0	1.90	538.4	131.9
S7.000	44.98	5.42	70.425	0.069	0.0	0.0	0.0	1.30	51.9	8.4
S7.001	44.78	5.47	70.100	0.142	0.0	0.0	0.0	1.45	57.6	17.3
S8.000	45.21	5.35	70.400	0.046	0.0	0.0	0.0	1.11	19.6	5.7
S7.002	43.53	5.84	69.965	0.240	0.0	0.0	0.0	2.10	148.2	28.2
S9.000	44.89	5.44	69.600	0.096	0.0	0.0	0.0	1.48	164.0	11.7
S9.001	43.36	5.89	69.335	0.176	0.0	0.0	0.0	1.48	163.0	20.7

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Network Design Table for 9762 - SW

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S7.003	39.755	1.893	21.0	0.056	0.00	0.0	0.600	o	375	Pipe/Conduit	
S10.000	45.414	0.560	81.1	0.058	5.00	0.0	0.600	o	225	Pipe/Conduit	
S10.001	34.090	0.335	101.8	0.079	0.00	0.0	0.600	o	225	Pipe/Conduit	
S10.002	27.181	0.320	84.9	0.086	0.00	0.0	0.600	o	300	Pipe/Conduit	
S10.003	12.357	0.070	176.5	0.009	0.00	0.0	0.600	o	375	Pipe/Conduit	
S10.004	20.090	0.626	32.1	0.004	0.00	0.0	0.600	o	375	Pipe/Conduit	
S11.000	12.041	0.150	80.2	0.073	5.00	0.0	0.600	o	225	Pipe/Conduit	
S11.001	33.820	1.955	17.3	0.043	0.00	0.0	0.600	o	300	Pipe/Conduit	
S10.005	6.363	0.065	97.9	0.067	0.00	0.0	0.600	o	375	Pipe/Conduit	
S10.006	12.004	0.144	83.3	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
S10.007	16.234	1.082	15.0	0.000	0.00	0.0	0.600	o	525	Pipe/Conduit	
S3.006	48.606	0.150	324.0	0.098	0.00	0.0	0.600	o	750	Pipe/Conduit	
S12.000	22.877	0.225	101.5	0.047	5.00	0.0	0.600	o	150	Pipe/Conduit	
S12.001	27.742	0.841	33.0	0.092	0.00	0.0	0.600	o	300	Pipe/Conduit	
S13.000	32.912	0.346	95.0	0.042	5.00	0.0	0.600	o	225	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S7.003	42.82	6.06	69.071	0.472	0.0	0.0	0.0	3.97	438.4	54.7
S10.000	44.61	5.52	70.500	0.058	0.0	0.0	0.0	1.45	57.8	7.0
S10.001	43.13	5.96	69.940	0.137	0.0	0.0	0.0	1.30	51.5	16.0
S10.002	42.29	6.22	69.530	0.223	0.0	0.0	0.0	1.71	120.7	25.6
S10.003	41.83	6.38	69.135	0.232	0.0	0.0	0.0	1.36	150.3	26.3
S10.004	41.52	6.48	69.065	0.236	0.0	0.0	0.0	3.21	354.3	26.6
S11.000	46.00	5.14	70.700	0.073	0.0	0.0	0.0	1.46	58.1	9.1
S11.001	45.45	5.29	70.475	0.116	0.0	0.0	0.0	3.80	268.5	14.3
S10.005	41.34	6.54	68.439	0.420	0.0	0.0	0.0	1.83	202.3	47.0
S10.006	41.08	6.63	68.300	0.420	0.0	0.0	0.0	2.23	354.5	47.0
S10.007	40.95	6.67	68.081	0.420	0.0	0.0	0.0	5.80	1256.5	47.0
S3.006	39.12	7.35	66.700	2.191	0.0	0.0	0.0	1.55	684.4	232.1
S12.000	45.10	5.38	70.150	0.047	0.0	0.0	0.0	1.00	17.6	5.7
S12.001	44.50	5.55	69.775	0.139	0.0	0.0	0.0	2.75	194.1	16.8
S13.000	45.01	5.41	69.350	0.042	0.0	0.0	0.0	1.34	53.3	5.2

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Network Design Table for 9762 - SW

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S12.002	10.494	1.749	6.0	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
S3.007	23.830	0.065	366.6	0.132	0.00	0.0	0.600	o	750	Pipe/Conduit	
S14.000	23.325	0.270	86.4	0.046	5.00	0.0	0.600	o	150	Pipe/Conduit	
S14.001	43.326	0.425	101.9	0.050	0.00	0.0	0.600	o	225	Pipe/Conduit	
S14.002	43.450	2.287	19.0	0.056	0.00	0.0	0.600	o	300	Pipe/Conduit	
S3.008	44.646	1.175	38.0	0.131	0.00	0.0	0.600	o	600	Pipe/Conduit	
S15.000	20.896	0.240	87.0	0.040	5.00	0.0	0.600	o	150	Pipe/Conduit	
S15.001	44.756	0.335	133.6	0.042	0.00	0.0	0.600	o	225	Pipe/Conduit	
S15.002	29.717	1.340	22.2	0.028	0.00	0.0	0.600	o	225	Pipe/Conduit	
S16.000	25.750	0.395	65.2	0.019	5.00	0.0	0.600	o	150	Pipe/Conduit	
S16.001	37.015	0.275	134.6	0.032	0.00	0.0	0.600	o	225	Pipe/Conduit	
S16.002	29.798	0.365	81.6	0.118	0.00	0.0	0.600	o	300	Pipe/Conduit	
S17.000	15.493	0.190	81.7	0.007	5.00	0.0	0.600	o	150	Pipe/Conduit	
S17.001	29.694	0.660	45.0	0.015	0.00	0.0	0.600	o	225	Pipe/Conduit	
S17.002	27.634	0.187	147.8	0.086	0.00	0.0	0.600	o	300	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S12.002	44.41	5.58	68.850	0.182	0.0	0.0	0.0	6.46	456.5	21.8
S3.007	38.43	7.62	66.550	2.504	0.0	0.0	0.0	1.46	643.1	260.6
S14.000	45.18	5.36	70.200	0.046	0.0	0.0	0.0	1.08	19.1	5.7
S14.001	43.27	5.92	69.855	0.097	0.0	0.0	0.0	1.30	51.5	11.3
S14.002	42.63	6.12	69.355	0.153	0.0	0.0	0.0	3.62	256.2	17.6
S3.008	37.97	7.81	66.485	2.788	0.0	0.0	0.0	3.96	1119.3	286.7
S15.000	45.32	5.32	68.500	0.040	0.0	0.0	0.0	1.08	19.1	4.9
S15.001	43.05	5.98	68.185	0.083	0.0	0.0	0.0	1.13	44.9	9.6
S15.002	42.49	6.16	67.850	0.111	0.0	0.0	0.0	2.79	111.0	12.8
S16.000	45.24	5.34	68.750	0.019	0.0	0.0	0.0	1.25	22.0	2.3
S16.001	43.35	5.89	68.280	0.051	0.0	0.0	0.0	1.13	44.7	6.0
S16.002	42.44	6.18	67.930	0.169	0.0	0.0	0.0	1.74	123.1	19.5
S17.000	45.65	5.23	68.750	0.007	0.0	0.0	0.0	1.11	19.7	0.9
S17.001	44.73	5.49	68.485	0.022	0.0	0.0	0.0	1.96	77.7	2.7
S17.002	43.51	5.84	67.750	0.108	0.0	0.0	0.0	1.29	91.3	12.7

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Network Design Table for 9762 - SW

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S16.003	20.882	0.385	54.2	0.086	0.00	0.0	0.600	o	375	Pipe/Conduit	
S16.004	4.706	0.038	123.8	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	
S18.000	21.978	1.374	16.0	0.023	5.00	0.0	0.600	o	150	Pipe/Conduit	
S16.005	36.627	0.610	60.0	0.038	0.00	0.0	0.600	o	300	Pipe/Conduit	
S15.003	13.207	0.167	79.1	0.032	0.00	0.0	0.600	o	300	Pipe/Conduit	
S3.009	43.948	0.586	75.0	0.035	0.00	0.0	0.600	o	675	Pipe/Conduit	
S19.000	10.877	0.144	75.5	0.062	5.00	0.0	0.600	o	375	Pipe/Conduit	
S20.000	11.268	0.094	119.9	0.035	5.00	0.0	0.600	o	375	Pipe/Conduit	
S3.010	18.237	0.412	44.3	0.086	0.00	0.0	0.600	o	375	Pipe/Conduit	
S3.011	4.709	0.053	88.8	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S16.003	42.00	6.32	67.485	0.364	0.0	0.0	0.0	2.47	272.3	41.4
S16.004	41.85	6.37	67.100	0.364	0.0	0.0	0.0	1.63	179.7	41.4
S18.000	45.98	5.14	68.750	0.023	0.0	0.0	0.0	2.53	44.7	2.8
S16.005	40.97	6.67	67.060	0.424	0.0	0.0	0.0	2.03	143.7	47.1
S15.003	40.62	6.79	66.435	0.568	0.0	0.0	0.0	1.77	125.1	62.4
S3.009	37.40	8.05	65.350	3.391	0.0	0.0	0.0	3.03	1083.8	343.4
S19.000	46.19	5.09	65.500	0.062	0.0	0.0	0.0	2.09	230.5	7.7
S20.000	46.09	5.11	65.500	0.035	0.0	0.0	0.0	1.65	182.7	4.4
S3.010	37.14	8.16	64.750	3.574	0.0	0.0	0.0	2.73	301.5«	359.5
S3.011	37.05	8.20	64.550	3.574	0.0	0.0	0.0	1.92	212.4«	359.5

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Area Summary for 9762 - SW

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
3.000	User	-	100	0.069	0.069	0.069
3.001	User	-	100	0.055	0.055	0.055
3.002	User	-	100	0.052	0.052	0.052
4.000	User	-	100	0.053	0.053	0.053
5.000	User	-	100	0.042	0.042	0.042
4.001	User	-	100	0.021	0.021	0.021
3.003	User	-	100	0.045	0.045	0.045
6.000	User	-	100	0.036	0.036	0.036
3.004	User	-	100	0.420	0.420	0.420
3.005	User	-	100	0.409	0.409	0.409
7.000	User	-	100	0.069	0.069	0.069
7.001	User	-	100	0.073	0.073	0.073
8.000	User	-	100	0.046	0.046	0.046
7.002	User	-	100	0.051	0.051	0.051
9.000	User	-	100	0.096	0.096	0.096
9.001	User	-	100	0.080	0.080	0.080
7.003	User	-	100	0.056	0.056	0.056
10.000	User	-	100	0.058	0.058	0.058
10.001	User	-	100	0.079	0.079	0.079
10.002	User	-	100	0.086	0.086	0.086
10.003	User	-	100	0.009	0.009	0.009
10.004	User	-	100	0.004	0.004	0.004
11.000	User	-	100	0.073	0.073	0.073
11.001	User	-	100	0.043	0.043	0.043
10.005	User	-	100	0.067	0.067	0.067
10.006	-	-	100	0.000	0.000	0.000
10.007	-	-	100	0.000	0.000	0.000
3.006	User	-	100	0.098	0.098	0.098
12.000	User	-	100	0.047	0.047	0.047
12.001	User	-	100	0.092	0.092	0.092
13.000	User	-	100	0.042	0.042	0.042
12.002	-	-	100	0.000	0.000	0.000
3.007	User	-	100	0.132	0.132	0.132
14.000	User	-	100	0.046	0.046	0.046
14.001	User	-	100	0.050	0.050	0.050
14.002	User	-	100	0.056	0.056	0.056
3.008	User	-	100	0.131	0.131	0.131
15.000	User	-	100	0.040	0.040	0.040
15.001	User	-	100	0.042	0.042	0.042
15.002	User	-	100	0.028	0.028	0.028
16.000	User	-	100	0.019	0.019	0.019
16.001	User	-	100	0.032	0.032	0.032
16.002	User	-	100	0.118	0.118	0.118
17.000	User	-	100	0.007	0.007	0.007
17.001	User	-	100	0.015	0.015	0.015
17.002	User	-	100	0.086	0.086	0.086
16.003	User	-	100	0.086	0.086	0.086
16.004	-	-	100	0.000	0.000	0.000
18.000	User	-	100	0.023	0.023	0.023
16.005	User	-	100	0.038	0.038	0.038
15.003	User	-	100	0.032	0.032	0.032

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Area Summary for 9762 - SW

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
3.009	User	-	100	0.035	0.035	0.035
19.000	User	-	100	0.062	0.062	0.062
20.000	User	-	100	0.035	0.035	0.035
3.010	User	-	100	0.086	0.086	0.086
3.011	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				3.574	3.574	3.574

Free Flowing Outfall Details for 9762 - SW

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
S3.011		66.500	64.497	0.000	0	0

Simulation Criteria for 9762 - SW

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	2.000
Hot Start (mins)	0	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	60
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1

Number of Input Hydrographs	0	Number of Storage Structures	2
Number of Online Controls	3	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Summer
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	18.200	Storm Duration (mins)	30
Ratio R	0.350		

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Online Controls for 9762 - SW

Hydro-Brake® Optimum Manhole: SW138 Flow Control 80 l/s, DS/PN: S3.008, Volume (m³): 21.8

Unit Reference	MD-SHE-0321-8000-3750-8000
Design Head (m)	3.750
Design Flow (l/s)	80.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	321
Invert Level (m)	66.485
Minimum Outlet Pipe Diameter (mm)	Site Specific Design (Contact Hydro International)
Suggested Manhole Diameter (mm)	Site Specific Design (Contact Hydro International)

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	3.750	79.9
Flush-Flo™	1.078	79.9
Kick-Flo®	2.273	62.7
Mean Flow over Head Range	-	69.7

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

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	9.6	1.200	79.7	3.000	71.7	7.000	108.2
0.200	32.8	1.400	78.9	3.500	77.3	7.500	111.9
0.300	57.7	1.600	77.4	4.000	82.5	8.000	115.5
0.400	68.3	1.800	75.1	4.500	87.3	8.500	119.0
0.500	72.4	2.000	71.4	5.000	91.9	9.000	122.4
0.600	75.3	2.200	65.6	5.500	96.3	9.500	125.6
0.800	78.6	2.400	64.4	6.000	100.4		
1.000	79.8	2.600	66.9	6.500	104.4		

Hydro-Brake® Optimum Manhole: SW153 Flow Control 5 l/s, DS/PN: S15.003, Volume (m³): 6.9

Unit Reference	MD-SHE-0088-5000-2350-5000
Design Head (m)	2.350
Design Flow (l/s)	5.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	88
Invert Level (m)	66.435
Minimum Outlet Pipe Diameter (mm)	150

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Hydro-Brake® Optimum Manhole: SW153 Flow Control 5 l/s, DS/PN: S15.003, Volume (m³): 6.9

Suggested Manhole Diameter (mm) 1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	2.350	5.0
Flush-Flo™	0.382	3.8
Kick-Flo®	0.786	3.0
Mean Flow over Head Range	-	3.8

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

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	2.7	1.200	3.7	3.000	5.6	7.000	8.3
0.200	3.5	1.400	3.9	3.500	6.0	7.500	8.6
0.300	3.7	1.600	4.2	4.000	6.4	8.000	8.9
0.400	3.8	1.800	4.4	4.500	6.8	8.500	9.2
0.500	3.7	2.000	4.6	5.000	7.1	9.000	9.4
0.600	3.6	2.200	4.8	5.500	7.4	9.500	9.7
0.800	3.0	2.400	5.0	6.000	7.8		
1.000	3.4	2.600	5.2	6.500	8.1		

Hydro-Brake® Optimum Manhole: SW157 Flow Control 95 l/s, DS/PN: S3.010, Volume (m³): 24.7

Unit Reference	MD-SHE-0374-9500-1985-9500
Design Head (m)	1.985
Design Flow (l/s)	95.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	374
Invert Level (m)	64.750
Minimum Outlet Pipe Diameter (mm)	450
Suggested Manhole Diameter (mm)	Site Specific Design (Contact Hydro International)

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.985	94.9
Flush-Flo™	0.658	94.9
Kick-Flo®	1.400	80.2
Mean Flow over Head Range	-	80.3

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

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Hydro-Brake® Optimum Manhole: SW157 Flow Control 95 l/s, DS/PN: S3.010, Volume (m³): 24.7

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	10.6	1.200	88.7	3.000	116.0	7.000	175.5
0.200	37.4	1.400	80.4	3.500	125.1	7.500	181.5
0.300	70.7	1.600	85.5	4.000	133.5	8.000	187.3
0.400	91.0	1.800	90.5	4.500	141.4	8.500	193.0
0.500	93.7	2.000	95.3	5.000	148.9	9.000	198.5
0.600	94.8	2.200	99.8	5.500	156.0	9.500	203.8
0.800	94.4	2.400	104.1	6.000	162.7		
1.000	92.3	2.600	108.2	6.500	169.2		

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Storage Structures for 9762 - SW

Cellular Storage Manhole: SW109 Tank 1, DS/PN: S3.004

Invert Level (m) 67.500 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.92
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	861.0	0.0	1.601	0.0	0.0
1.600	861.0	0.0	2.000	0.0	0.0

Cellular Storage Manhole: SW150 Tank 2, DS/PN: S16.004

Invert Level (m) 67.200 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	250.0	0.0	1.201	0.0	0.0
1.200	250.0	0.0	2.000	0.0	0.0

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Summary of Critical Results by Maximum Level (Rank 1) for 9762 - SW

Simulation Criteria

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

Number of Input Hydrographs	0	Number of Storage Structures	2
Number of Online Controls	3	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model		FSR	Ratio R 0.346
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	18.200	Cv (Winter)	0.840

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

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
S3.000	SW104	15 Winter	100	+40%				
S3.001	SW105	15 Winter	100	+40%				
S3.002	SW106	15 Winter	100	+40%				
S4.000	SW101	15 Winter	100	+40%				
S5.000	SW214	15 Winter	100	+40%				
S4.001	SW103	120 Winter	100	+40%	100/60 Winter			
S3.003	SW107	120 Winter	100	+40%	100/30 Winter			
S6.000	SW108	15 Winter	100	+40%				
S3.004	SW109 Tank 1	120 Winter	100	+40%	30/60 Winter			
S3.005	SW110	15 Winter	100	+40%	1/15 Summer			
S7.000	SW111	15 Winter	100	+40%	100/15 Summer			
S7.001	SW112	15 Winter	100	+40%	30/15 Summer			
S8.000	SW113	15 Winter	100	+40%	100/15 Summer			
S7.002	SW114	15 Winter	100	+40%	100/15 Summer			
S9.000	SW115	15 Winter	100	+40%	100/15 Summer			
S9.001	SW116	15 Winter	100	+40%	100/15 Summer			
S7.003	SW118	15 Winter	100	+40%	100/15 Summer			
S10.000	SW119	15 Winter	100	+40%	100/15 Summer			
S10.001	SW120	15 Winter	100	+40%	100/15 Summer			

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Summary of Critical Results by Maximum Level (Rank 1) for 9762 - SW

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)
S3.000	SW104	70.356	-0.194	0.000	0.27			36.7
S3.001	SW105	69.685	-0.300	0.000	0.23			66.5
S3.002	SW106	69.189	-0.321	0.000	0.18			95.4
S4.000	SW101	70.581	-0.069	0.000	0.56			28.5
S5.000	SW214	69.480	-0.220	0.000	0.15			22.1
S4.001	SW103	68.638	0.063	0.000	0.04			21.3
S3.003	SW107	68.638	0.363	0.000	0.09			53.3
S6.000	SW108	69.807	-0.243	0.000	0.08			18.9
S3.004	SW109 Tank 1	68.636	0.736	0.000	0.25		124	116.9
S3.005	SW110	69.105	1.570	0.000	0.35			120.4
S7.000	SW111	70.818	0.168	0.000	0.68			33.1
S7.001	SW112	70.674	0.349	0.000	2.00			68.6
S8.000	SW113	70.842	0.292	0.000	1.17			21.8
S7.002	SW114	70.454	0.189	0.000	0.80			111.5
S9.000	SW115	70.188	0.213	0.000	0.29			43.6
S9.001	SW116	70.072	0.362	0.000	0.62			91.6
S7.003	SW118	69.948	0.502	0.000	0.58			231.2
S10.000	SW119	71.384	0.659	0.000	0.51			28.4
S10.001	SW120	71.265	1.100	0.000	1.18			57.4

PN	US/MH Name	Status	Level Exceeded
S3.000	SW104	OK	
S3.001	SW105	OK	
S3.002	SW106	OK	
S4.000	SW101	OK	
S5.000	SW214	OK	
S4.001	SW103	SURCHARGED	
S3.003	SW107	SURCHARGED	
S6.000	SW108	OK	
S3.004	SW109 Tank 1	SURCHARGED	
S3.005	SW110	SURCHARGED	
S7.000	SW111	SURCHARGED	
S7.001	SW112	SURCHARGED	
S8.000	SW113	SURCHARGED	
S7.002	SW114	SURCHARGED	
S9.000	SW115	SURCHARGED	
S9.001	SW116	SURCHARGED	
S7.003	SW118	SURCHARGED	
S10.000	SW119	FLOOD RISK	
S10.001	SW120	FLOOD RISK	

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Summary of Critical Results by Maximum Level (Rank 1) for 9762 - SW

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood
S10.002	SW121	15 Winter	100	+40%	100/15 Summer	
S10.003	SW122	15 Winter	100	+40%	100/15 Summer	
S10.004	SW123	15 Winter	100	+40%	30/15 Summer	
S11.000	SW124	15 Winter	100	+40%		
S11.001	SW125	15 Winter	100	+40%		
S10.005	SW126	15 Winter	100	+40%	30/15 Summer	
S10.006	SW127	15 Winter	100	+40%	30/15 Summer	
S10.007	SW128	15 Winter	100	+40%	30/15 Summer	
S3.006	SW129	15 Winter	100	+40%	1/15 Summer	
S12.000	SW130	15 Winter	100	+40%	100/15 Summer	
S12.001	SW131	15 Summer	100	+40%		
S13.000	SW134	15 Summer	100	+40%	100/15 Summer	
S12.002	SW132	15 Summer	100	+40%	30/15 Summer	
S3.007	SW133	15 Winter	100	+40%	1/15 Summer	
S14.000	SW135	15 Summer	100	+40%	100/15 Summer	
S14.001	SW136	15 Summer	100	+40%	100/15 Summer	
S14.002	SW137	15 Summer	100	+40%	100/15 Summer	
S3.008	SW138 Flow Control 80 l/s	15 Winter	100	+40%	1/15 Summer	
S15.000	SW139	480 Winter	100	+40%	100/15 Summer	
S15.001	SW140	480 Winter	100	+40%	100/15 Winter	
S15.002	SW141	480 Winter	100	+40%	100/15 Summer	
S16.000	SW142	480 Winter	100	+40%	100/360 Winter	
S16.001	SW143	480 Winter	100	+40%	100/240 Winter	
S16.002	SW144	480 Winter	100	+40%	100/120 Winter	
S17.000	SW145	480 Winter	100	+40%	100/360 Winter	
S17.001	SW146	480 Winter	100	+40%	100/360 Winter	
S17.002	SW147	480 Winter	100	+40%	100/60 Winter	
S16.003	SW148	480 Winter	100	+40%	100/30 Winter	
S16.004	SW150 Tank 2	480 Winter	100	+40%	30/15 Winter	
S18.000	SW149	480 Winter	100	+40%	100/360 Winter	
S16.005	SW152	480 Winter	100	+40%	1/60 Winter	
S15.003	SW153 Flow Control 5 l/s	480 Winter	100	+40%	1/15 Summer	
S3.009	SW154	30 Winter	100	+40%	100/15 Summer	
S19.000	SW155	30 Winter	100	+40%	100/15 Summer	
S20.000	SW156	30 Winter	100	+40%	100/15 Summer	
S3.010	SW157 Flow Control 95 l/s	30 Winter	100	+40%	1/15 Summer	
S3.011	SW158	180 Winter	100	+40%		

PN	US/MH Name	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.
S10.002	SW121			70.766	0.936	0.000	0.85
S10.003	SW122			70.518	1.008	0.000	0.95
S10.004	SW123			70.413	0.973	0.000	0.40
S11.000	SW124			70.851	-0.074	0.000	0.78
S11.001	SW125			70.578	-0.197	0.000	0.26
S10.005	SW126			70.154	1.340	0.000	1.71

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Summary of Critical Results by Maximum Level (Rank 1) for 9762 - SW

PN	US/MH Name	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.
S10.006	SW127			69.927	1.177	0.000	0.87
S10.007	SW128			69.799	1.193	0.000	0.24
S3.006	SW129			69.448	1.998	0.000	0.39
S12.000	SW130			70.554	0.254	0.000	1.46
S12.001	SW131			69.965	-0.110	0.000	0.44
S13.000	SW134			69.897	0.322	0.000	0.47
S12.002	SW132			69.725	0.575	0.000	0.30
S3.007	SW133			69.519	2.219	0.000	0.22
S14.000	SW135			70.587	0.237	0.000	1.26
S14.001	SW136			70.174	0.094	0.000	1.01
S14.002	SW137			69.818	0.163	0.000	0.35
S3.008	SW138 Flow Control 80 l/s			69.534	2.449	0.000	0.08
S15.000	SW139			69.129	0.479	0.000	0.15
S15.001	SW140			69.127	0.717	0.000	0.13
S15.002	SW141			69.125	1.050	0.000	0.07
S16.000	SW142			69.134	0.234	0.000	0.06
S16.001	SW143			69.133	0.628	0.000	0.08
S16.002	SW144			69.132	0.902	0.000	0.10
S17.000	SW145			69.131	0.231	0.000	0.03
S17.001	SW146			69.132	0.421	0.000	0.02
S17.002	SW147			69.131	1.081	0.000	0.09
S16.003	SW148			69.130	1.270	0.000	0.11
S16.004	SW150 Tank 2			69.128	1.653	0.000	0.08
S18.000	SW149			69.128	0.228	0.000	0.04
S16.005	SW152			69.127	1.767	0.000	0.05
S15.003	SW153 Flow Control 5 l/s			69.122	2.387	0.000	0.05
S3.009	SW154			67.050	1.025	0.000	0.10
S19.000	SW155			66.806	0.931	0.000	0.14
S20.000	SW156			66.806	0.931	0.000	0.09
S3.010	SW157 Flow Control 95 l/s			66.805	1.680	0.000	0.38
S3.011	SW158			64.824	-0.101	0.000	0.88

PN	US/MH Name	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S10.002	SW121			92.2	SURCHARGED	
S10.003	SW122			101.4	SURCHARGED	
S10.004	SW123			119.7	SURCHARGED	
S11.000	SW124			38.6	OK	
S11.001	SW125			62.8	OK	
S10.005	SW126			183.6	SURCHARGED	
S10.006	SW127			186.3	SURCHARGED	
S10.007	SW128			191.9	SURCHARGED	
S3.006	SW129			223.0	SURCHARGED	
S12.000	SW130			24.3	SURCHARGED	
S12.001	SW131			76.4	OK	
S13.000	SW134			23.5	FLOOD RISK*	

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Summary of Critical Results by Maximum Level (Rank 1) for 9762 - SW

PN	US/MH Name	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S12.002	SW132			98.9	SURCHARGED	
S3.007	SW133			105.1	SURCHARGED	
S14.000	SW135			22.8	SURCHARGED	
S14.001	SW136			49.5	SURCHARGED	
S14.002	SW137			84.2	SURCHARGED	
S3.008	SW138 Flow Control 80 l/s			79.7	SURCHARGED	
S15.000	SW139			2.7	SURCHARGED	
S15.001	SW140			5.6	SURCHARGED	
S15.002	SW141			7.4	SURCHARGED	
S16.000	SW142			1.3	SURCHARGED	
S16.001	SW143			3.5	SURCHARGED	
S16.002	SW144			11.4	SURCHARGED	
S17.000	SW145			0.5	SURCHARGED	
S17.001	SW146			1.5	SURCHARGED	
S17.002	SW147			7.3	SURCHARGED	
S16.003	SW148			24.5	SURCHARGED	
S16.004	SW150 Tank 2		682	8.7	FLOOD RISK	
S18.000	SW149			1.5	SURCHARGED	
S16.005	SW152			6.5	SURCHARGED	
S15.003	SW153 Flow Control 5 l/s			5.3	FLOOD RISK	
S3.009	SW154			91.8	SURCHARGED	
S19.000	SW155			20.5	FLOOD RISK	
S20.000	SW156			10.4	FLOOD RISK	
S3.010	SW157 Flow Control 95 l/s			94.8	FLOOD RISK	
S3.011	SW158			94.8	OK	

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29 Red Lion Street Chesham Bucks HP5 1EJ	Phase 1 Only Grimshaw Lane Manchester
Date 04/10/2024 10:56 File 9762 SW PHASE 1 AT 95 LS.MDX	Designed by LB Checked by
XP Solutions	Network 2020.1.3

Manhole Schedules for 9762 - SW

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	Pipe Out PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
SW104	71.306	1.056	Open Manhole	600	S3.000	70.250	300				
SW105	71.247	1.712	Open Manhole	1350	S3.001	69.535	450	S3.000	69.685	300	
SW106	71.435	2.375	Open Manhole	1350	S3.002	69.060	450	S3.001	69.060	450	
SW101	71.412	0.912	Open Manhole	450	S4.000	70.500	150				
SW214	73.439	4.039	Open Manhole	1200	S5.000	69.400	300				
SW103	71.418	3.443	Open Manhole	1500	S4.001	67.975	600	S4.000	68.659	150	234
								S5.000	68.276	300	1
SW107	70.979	3.304	Open Manhole	1500	S3.003	67.675	600	S3.002	67.826	450	1
								S4.001	67.675	600	
SW108	70.307	0.557	Open Manhole	600	S6.000	69.750	300				
SW109 Tank 1	70.779	3.479	Open Manhole	1500	S3.004	67.300	600	S3.003	67.300	600	
								S6.000	67.678	300	78
SW110	70.707	3.772	Open Manhole	1500	S3.005	66.935	600	S3.004	66.935	600	
SW111	71.306	0.881	Open Manhole	600	S7.000	70.425	225				
SW112	71.306	1.206	Open Manhole	600	S7.001	70.100	225	S7.000	70.100	225	
SW113	71.206	0.806	Open Manhole	450	S8.000	70.400	150				
SW114	71.070	1.105	Open Manhole	600	S7.002	69.965	300	S7.001	70.041	225	1
								S8.000	70.115	150	
SW115	71.220	1.620	Open Manhole	1350	S9.000	69.600	375				

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Manhole Schedules for 9762 - SW

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	Pipe Out PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
SW116	71.220	1.885	Open Manhole	1350	S9.001	69.335	375	S9.000	69.335	375	
SW118	71.266	2.195	Open Manhole	1350	S7.003	69.071	375	S7.002	69.151	300	5
								S9.001	69.071	375	
SW119	71.408	0.908	Open Manhole	600	S10.000	70.500	225				
SW120	71.408	1.468	Open Manhole	600	S10.001	69.940	225	S10.000	69.940	225	
SW121	71.408	1.878	Open Manhole	600	S10.002	69.530	300	S10.001	69.605	225	
SW122	71.406	2.271	Open Manhole	1350	S10.003	69.135	375	S10.002	69.210	300	
SW123	71.396	2.331	Open Manhole	1350	S10.004	69.065	375	S10.003	69.065	375	
SW124	71.407	0.707	Open Manhole	600	S11.000	70.700	225				
SW125	71.409	0.934	Open Manhole	600	S11.001	70.475	300	S11.000	70.550	225	
SW126	71.248	2.809	Open Manhole	1350	S10.005	68.439	375	S10.004	68.439	375	
								S11.001	68.520	300	6
SW127	71.120	2.820	Open Manhole	1350	S10.006	68.300	450	S10.005	68.374	375	
SW128	70.920	2.839	Open Manhole	1500	S10.007	68.081	525	S10.006	68.156	450	
SW129	70.562	3.862	Open Manhole	1800	S3.006	66.700	750	S3.005	66.850	600	
								S7.003	67.178	375	103
								S10.007	66.999	525	74
SW130	71.216	1.066	Open Manhole	450	S12.000	70.150	150				
SW131	71.067	1.292	Open Manhole	600	S12.001	69.775	300	S12.000	69.925	150	

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29 Red Lion Street Chesham Bucks HP5 1EJ	Phase 1 Only Grimshaw Lane Manchester
Date 04/10/2024 10:56 File 9762 SW PHASE 1 AT 95 LS.MDX	Designed by LB Checked by
XP Solutions	Network 2020.1.3

Manhole Schedules for 9762 - SW

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	Pipe Out PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
SW134	70.102	0.752	Sealed Manhole	600	S13.000	69.350	225				
SW132	70.600	1.750	Open Manhole	600	S12.002	68.850	300	S12.001	68.934	300	84
								S13.000	69.004	225	79
SW133	70.471	3.921	Open Manhole	1800	S3.007	66.550	750	S3.006	66.550	750	
								S12.002	67.101	300	101
SW135	71.206	1.006	Open Manhole	450	S14.000	70.200	150				
SW136	71.196	1.341	Open Manhole	600	S14.001	69.855	225	S14.000	69.930	150	
SW137	71.174	1.819	Open Manhole	600	S14.002	69.355	300	S14.001	69.430	225	
SW138 Flow Control 80 l/s	70.071	3.586	Open Manhole	1800	S3.008	66.485	600	S3.007	66.485	750	
								S14.002	67.068	300	283
SW139	69.467	0.967	Open Manhole	450	S15.000	68.500	150				
SW140	69.473	1.288	Open Manhole	600	S15.001	68.185	225	S15.000	68.260	150	
SW141	69.450	1.600	Open Manhole	600	S15.002	67.850	225	S15.001	67.850	225	
SW142	69.456	0.706	Open Manhole	450	S16.000	68.750	150				
SW143	69.456	1.176	Open Manhole	600	S16.001	68.280	225	S16.000	68.355	150	
SW144	69.434	1.504	Open Manhole	600	S16.002	67.930	300	S16.001	68.005	225	
SW145	69.456	0.706	Open Manhole	450	S17.000	68.750	150				
SW146	69.456	0.971	Open Manhole	600	S17.001	68.485	225	S17.000	68.560	150	
SW147	69.465	1.715	Open Manhole	600	S17.002	67.750	300	S17.001	67.825	225	

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Manhole Schedules for 9762 - SW

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	Pipe Out PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
SW148	69.485	2.000	Open Manhole	1350	S16.003	67.485	375	S16.002	67.565	300	5
								S17.002	67.563	300	3
SW150 Tank 2	69.376	2.276	Open Manhole	1350	S16.004	67.100	375	S16.003	67.100	375	
SW149	69.449	0.699	Open Manhole	450	S18.000	68.750	150				
SW152	69.450	2.390	Open Manhole	1350	S16.005	67.060	300	S16.004	67.062	375	77
								S18.000	67.376	150	166
SW153 Flow Control 5 l/s	69.347	2.912	Open Manhole	1200	S15.003	66.435	300	S15.002	66.510	225	
								S16.005	66.450	300	15
SW154	68.075	2.765	Open Manhole	1800	S3.009	65.350	675	S3.008	65.310	600	
								S15.003	66.268	300	543
SW155	66.839	1.339	Open Manhole	1500	S19.000	65.500	375				
SW156	66.853	1.353	Open Manhole	1500	S20.000	65.500	375				
SW157 Flow Control 95 l/s	66.943	2.193	Open Manhole	2100	S3.010	64.750	375	S3.009	64.764	675	314
								S19.000	65.356	375	606
								S20.000	65.406	375	656
SW158	66.638	2.300	Open Manhole	1500	S3.011	64.550	375	S3.010	64.338	375	
	66.500	2.003	Open Manhole	0		OUTFALL		S3.011	64.497	375	

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Manhole Schedules for 9762 - SW

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
SW104	387021.582	400066.590	387021.582	400066.590	Required	
SW105	387047.119	400084.433	387047.119	400084.433	Required	
SW106	387077.692	400043.302	387077.692	400043.302	Required	
SW101	387101.691	399968.403	387101.691	399968.403	Required	
SW214	387154.125	399929.347	387154.125	399929.347	Required	
SW103	387118.287	399980.013	387118.287	399980.013	Required	
SW107	387094.750	400013.289	387094.750	400013.289	Required	
SW108	387092.972	399964.487	387092.972	399964.487	Required	

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Manhole Schedules for 9762 - SW

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
SW109 Tank 1	387064.279	399991.730	387064.279	399991.730	Required	
SW110	387009.822	399953.199	387009.822	399953.199	Required	
SW111	386978.050	400035.782	386978.050	400035.782	Required	
SW112	386951.404	400016.937	386951.404	400016.937	Required	
SW113	386934.186	399998.875	386934.186	399998.875	Required	
SW114	386953.330	400012.493	386953.330	400012.493	Required	
SW115	387044.545	400020.690	387044.545	400020.690	Required	
SW116	387012.390	399997.938	387012.390	399997.938	Required	

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Manhole Schedules for 9762 - SW

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
SW118	386980.017	399975.033	386980.017	399975.033	Required	
SW119	387134.759	399932.274	387134.759	399932.274	Required	
SW120	387097.682	399906.049	387097.682	399906.049	Required	
SW121	387069.851	399886.363	387069.851	399886.363	Required	
SW122	387054.155	399908.554	387054.155	399908.554	Required	
SW123	387042.149	399911.478	387042.149	399911.478	Required	
SW124	387070.314	399946.547	387070.314	399946.547	Required	
SW125	387058.303	399947.399	387058.303	399947.399	Required	

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Manhole Schedules for 9762 - SW

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
SW126	387030.640	399927.944	387030.640	399927.944	Required	
SW127	387025.112	399931.095	387025.112	399931.095	Required	
SW128	387018.090	399940.831	387018.090	399940.831	Required	
SW129	387001.887	399941.835	387001.887	399941.835	Required	
SW130	386974.719	399965.090	386974.719	399965.090	Required	
SW131	386956.031	399951.895	386956.031	399951.895	Required	
SW134	386931.952	399941.630			No Entry	
SW132	386960.019	399924.441	386960.019	399924.441	Required	

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Manhole Schedules for 9762 - SW

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
SW133	386961.952	399914.127	386961.952	399914.127	Required	
SW135	386902.782	399976.647	386902.782	399976.647	Required	
SW136	386883.739	399963.178	386883.739	399963.178	Required	
SW137	386908.777	399927.820	386908.777	399927.820	Required	
SW138 Flow Control 80 l/s	386942.478	399900.393	386942.478	399900.393	Required	
SW139	386885.829	399956.726	386885.829	399956.726	Required	
SW140	386897.893	399939.664	386897.893	399939.664	Required	
SW141	386923.540	399902.985	386923.540	399902.985	Required	

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Manhole Schedules for 9762 - SW

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
SW142	386824.853	399882.635	386824.853	399882.635	Required	
SW143	386809.980	399903.656	386809.980	399903.656	Required	
SW144	386840.199	399925.031	386840.199	399925.031	Required	
SW145	386840.479	399873.292	386840.479	399873.292	Required	
SW146	386849.427	399860.644	386849.427	399860.644	Required	
SW147	386873.400	399878.167	386873.400	399878.167	Required	
SW148	386857.412	399900.707	386857.412	399900.707	Required	
SW150 Tank 2	386874.460	399912.765	386874.460	399912.765	Required	

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Manhole Schedules for 9762 - SW

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
SW149	386865.611	399933.426	386865.611	399933.426	Required	
SW152	386878.302	399915.483	386878.302	399915.483	Required	
SW153 Flow Control 5 l/s	386899.453	399885.580	386899.453	399885.580	Required	
SW154	386906.272	399874.270	386906.272	399874.270	Required	
SW155	386859.229	399850.593	386859.229	399850.593	Required	
SW156	386871.034	399838.172	386871.034	399838.172	Required	
SW157 Flow Control 95 l/s	386870.040	399849.396	386870.040	399849.396	Required	
SW158	386855.151	399838.865	386855.151	399838.865	Required	

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Manhole Schedules for 9762 - SW

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
	386850.597	399837.664			No Entry	

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PIPELINE SCHEDULES for 9762 - SW

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S3.000	o	300	SW104	71.306	70.250	0.756	Open Manhole	600
S3.001	o	450	SW105	71.247	69.535	1.262	Open Manhole	1350
S3.002	o	450	SW106	71.435	69.060	1.925	Open Manhole	1350
S4.000	o	150	SW101	71.412	70.500	0.762	Open Manhole	450
S5.000	o	300	SW214	73.439	69.400	3.739	Open Manhole	1200
S4.001	o	600	SW103	71.418	67.975	2.843	Open Manhole	1500

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S3.000	31.153	55.1	SW105	71.247	69.685	1.262	Open Manhole	1350
S3.001	51.248	107.9	SW106	71.435	69.060	1.925	Open Manhole	1350
S3.002	34.522	28.0	SW107	70.979	67.826	2.703	Open Manhole	1500
S4.000	20.254	11.0	SW103	71.418	68.659	2.609	Open Manhole	1500
S5.000	62.060	55.2	SW103	71.418	68.276	2.842	Open Manhole	1500
S4.001	40.758	135.9	SW107	70.979	67.675	2.704	Open Manhole	1500

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PIPELINE SCHEDULES for 9762 - SW

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S3.003	o	600	SW107	70.979	67.675	2.704	Open Manhole	1500
S6.000	o	300	SW108	70.307	69.750	0.257	Open Manhole	600
S3.004	o	600	SW109 Tank 1	70.779	67.300	2.879	Open Manhole	1500
S3.005	o	600	SW110	70.707	66.935	3.172	Open Manhole	1500
S7.000	o	225	SW111	71.306	70.425	0.656	Open Manhole	600

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S3.003	37.327	99.5	SW109 Tank 1	70.779	67.300	2.879	Open Manhole	1500
S6.000	39.566	19.1	SW109 Tank 1	70.779	67.678	2.801	Open Manhole	1500
S3.004	66.709	182.8	SW110	70.707	66.935	3.172	Open Manhole	1500
S3.005	13.861	163.1	SW129	70.562	66.850	3.112	Open Manhole	1800
S7.000	32.637	100.5	SW112	71.306	70.100	0.981	Open Manhole	600

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PIPELINE SCHEDULES for 9762 - SW

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S7.001	o	225	SW112	71.306	70.100	0.981	Open Manhole	600
S8.000	o	150	SW113	71.206	70.400	0.656	Open Manhole	450
S7.002	o	300	SW114	71.070	69.965	0.805	Open Manhole	600
S9.000	o	375	SW115	71.220	69.600	1.245	Open Manhole	1350
S9.001	o	375	SW116	71.220	69.335	1.510	Open Manhole	1350

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S7.001	4.844	81.5	SW114	71.070	70.041	0.804	Open Manhole	600
S8.000	23.493	82.3	SW114	71.070	70.115	0.805	Open Manhole	600
S7.002	45.993	56.5	SW118	71.266	69.151	1.815	Open Manhole	1350
S9.000	39.390	148.5	SW116	71.220	69.335	1.510	Open Manhole	1350
S9.001	39.657	150.2	SW118	71.266	69.071	1.820	Open Manhole	1350

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PIPELINE SCHEDULES for 9762 - SW

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S7.003	o	375	SW118	71.266	69.071	1.820	Open Manhole	1350
S10.000	o	225	SW119	71.408	70.500	0.683	Open Manhole	600
S10.001	o	225	SW120	71.408	69.940	1.243	Open Manhole	600
S10.002	o	300	SW121	71.408	69.530	1.578	Open Manhole	600
S10.003	o	375	SW122	71.406	69.135	1.896	Open Manhole	1350
S10.004	o	375	SW123	71.396	69.065	1.956	Open Manhole	1350
S11.000	o	225	SW124	71.407	70.700	0.482	Open Manhole	600

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S7.003	39.755	21.0	SW129	70.562	67.178	3.009	Open Manhole	1800
S10.000	45.414	81.1	SW120	71.408	69.940	1.243	Open Manhole	600
S10.001	34.090	101.8	SW121	71.408	69.605	1.578	Open Manhole	600
S10.002	27.181	84.9	SW122	71.406	69.210	1.896	Open Manhole	1350
S10.003	12.357	176.5	SW123	71.396	69.065	1.956	Open Manhole	1350
S10.004	20.090	32.1	SW126	71.248	68.439	2.434	Open Manhole	1350
S11.000	12.041	80.2	SW125	71.409	70.550	0.634	Open Manhole	600

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PIPELINE SCHEDULES for 9762 - SW

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S11.001	o	300	SW125	71.409	70.475	0.634	Open Manhole	600
S10.005	o	375	SW126	71.248	68.439	2.434	Open Manhole	1350
S10.006	o	450	SW127	71.120	68.300	2.370	Open Manhole	1350
S10.007	o	525	SW128	70.920	68.081	2.314	Open Manhole	1500
S3.006	o	750	SW129	70.562	66.700	3.112	Open Manhole	1800
S12.000	o	150	SW130	71.216	70.150	0.916	Open Manhole	450

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S11.001	33.820	17.3	SW126	71.248	68.520	2.428	Open Manhole	1350
S10.005	6.363	97.9	SW127	71.120	68.374	2.371	Open Manhole	1350
S10.006	12.004	83.3	SW128	70.920	68.156	2.314	Open Manhole	1500
S10.007	16.234	15.0	SW129	70.562	66.999	3.038	Open Manhole	1800
S3.006	48.606	324.0	SW133	70.471	66.550	3.171	Open Manhole	1800
S12.000	22.877	101.5	SW131	71.067	69.925	0.992	Open Manhole	600

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PIPELINE SCHEDULES for 9762 - SW

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S12.001	o	300	SW131	71.067	69.775	0.992	Open Manhole	600
S13.000	o	225	SW134	70.102	69.350	0.527	Sealed Manhole	600
S12.002	o	300	SW132	70.600	68.850	1.450	Open Manhole	600
S3.007	o	750	SW133	70.471	66.550	3.171	Open Manhole	1800
S14.000	o	150	SW135	71.206	70.200	0.856	Open Manhole	450

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S12.001	27.742	33.0	SW132	70.600	68.934	1.366	Open Manhole	600
S13.000	32.912	95.0	SW132	70.600	69.004	1.371	Open Manhole	600
S12.002	10.494	6.0	SW133	70.471	67.101	3.070	Open Manhole	1800
S3.007	23.830	366.6	SW138 Flow Control 80 l/s	70.071	66.485	2.836	Open Manhole	1800
S14.000	23.325	86.4	SW136	71.196	69.930	1.116	Open Manhole	600

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PIPELINE SCHEDULES for 9762 - SW

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S14.001	o	225	SW136	71.196	69.855	1.116	Open Manhole	600
S14.002	o	300	SW137	71.174	69.355	1.519	Open Manhole	600
S3.008	o	600	SW138 Flow Control 80 l/s	70.071	66.485	2.986	Open Manhole	1800
S15.000	o	150	SW139	69.467	68.500	0.817	Open Manhole	450
S15.001	o	225	SW140	69.473	68.185	1.063	Open Manhole	600
S15.002	o	225	SW141	69.450	67.850	1.375	Open Manhole	600

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S14.001	43.326	101.9	SW137	71.174	69.430	1.519	Open Manhole	600
S14.002	43.450	19.0	SW138 Flow Control 80 l/s	70.071	67.068	2.703	Open Manhole	1800
S3.008	44.646	38.0	SW154	68.075	65.310	2.165	Open Manhole	1800
S15.000	20.896	87.0	SW140	69.473	68.260	1.063	Open Manhole	600
S15.001	44.756	133.6	SW141	69.450	67.850	1.375	Open Manhole	600
S15.002	29.717	22.2	SW153 Flow Control 5 l/s	69.347	66.510	2.612	Open Manhole	1200

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PIPELINE SCHEDULES for 9762 - SW

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S16.000	o	150	SW142	69.456	68.750	0.556	Open Manhole	450
S16.001	o	225	SW143	69.456	68.280	0.951	Open Manhole	600
S16.002	o	300	SW144	69.434	67.930	1.204	Open Manhole	600
S17.000	o	150	SW145	69.456	68.750	0.556	Open Manhole	450
S17.001	o	225	SW146	69.456	68.485	0.746	Open Manhole	600
S17.002	o	300	SW147	69.465	67.750	1.415	Open Manhole	600
S16.003	o	375	SW148	69.485	67.485	1.625	Open Manhole	1350

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S16.000	25.750	65.2	SW143	69.456	68.355	0.951	Open Manhole	600
S16.001	37.015	134.6	SW144	69.434	68.005	1.204	Open Manhole	600
S16.002	29.798	81.6	SW148	69.485	67.565	1.620	Open Manhole	1350
S17.000	15.493	81.7	SW146	69.456	68.560	0.746	Open Manhole	600
S17.001	29.694	45.0	SW147	69.465	67.825	1.415	Open Manhole	600
S17.002	27.634	147.8	SW148	69.485	67.563	1.622	Open Manhole	1350
S16.003	20.882	54.2	SW150 Tank 2	69.376	67.100	1.901	Open Manhole	1350

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PIPELINE SCHEDULES for 9762 - SW

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S16.004	o	375	SW150 Tank 2	69.376	67.100	1.901	Open Manhole	1350
S18.000	o	150	SW149	69.449	68.750	0.549	Open Manhole	450
S16.005	o	300	SW152	69.450	67.060	2.090	Open Manhole	1350
S15.003	o	300	SW153 Flow Control 5 l/s	69.347	66.435	2.612	Open Manhole	1200
S3.009	o	675	SW154	68.075	65.350	2.050	Open Manhole	1800

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S16.004	4.706	123.8	SW152	69.450	67.062	2.013	Open Manhole	1350
S18.000	21.978	16.0	SW152	69.450	67.376	1.924	Open Manhole	1350
S16.005	36.627	60.0	SW153 Flow Control 5 l/s	69.347	66.450	2.597	Open Manhole	1200
S15.003	13.207	79.1	SW154	68.075	66.268	1.507	Open Manhole	1800
S3.009	43.948	75.0	SW157 Flow Control 95 l/s	66.943	64.764	1.504	Open Manhole	2100

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PIPELINE SCHEDULES for 9762 - SW

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S19.000	o	375	SW155	66.839	65.500	0.964	Open Manhole	1500
S20.000	o	375	SW156	66.853	65.500	0.978	Open Manhole	1500
S3.010	o	375	SW157 Flow Control 95 l/s	66.943	64.750	1.818	Open Manhole	2100
S3.011	o	375	SW158	66.638	64.550	1.713	Open Manhole	1500

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S19.000	10.877	75.5	SW157 Flow Control 95 l/s	66.943	65.356	1.212	Open Manhole	2100
S20.000	11.268	119.9	SW157 Flow Control 95 l/s	66.943	65.406	1.162	Open Manhole	2100
S3.010	18.237	44.3	SW158	66.638	64.338	1.925	Open Manhole	1500
S3.011	4.709	88.8		66.500	64.497	1.628	Open Manhole	0

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