Atlas Park Development

Flood Risk Assessment and Drainage Strategy

for



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Version V2

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1.0 - EXECUTIVE SUMMARY

Burrows Graham Ltd have been commissioned by Aviva Life and Pensions UK Limited to undertake a Flood Risk Assessment and Drainage Strategy to support a full planning application for the proposed Atlas Park development, Wythenshawe. The proposals comprise the construction of seven industrial and logistics warehouse units, together with ancillary offices, service yards, parking, landscaping, amenity space and associated infrastructure.

The Environment Agency Flood Map for Planning indicates that the site is located entirely within Flood Zone 1 and is therefore considered to be at low risk of fluvial flooding. The site is also considered to be at low risk of flooding from groundwater, sewers, tidal sources and reservoirs.

The Environment Agency Long-Term Flood Risk mapping identifies localised areas of high surface water flood risk within the existing site, predominantly corresponding with existing low-lying areas. The proposed development will mitigate this risk through reprofiling of the existing ground and implementation of a new surface water drainage network. On this basis, the developed site is considered to be at low risk of surface water flooding.

In accordance with the drainage hierarchy, infiltration has been discounted due to the low-permeability clay deposits underlying the site. No accessible watercourses are present on site and, as such, surface water runoff from the proposed development will discharge to the existing United Utilities public surface water sewer.

Surface water runoff will be attenuated on site within underground attenuation storage and restricted to a maximum discharge rate of 39.0 l/s, equivalent to the calculated greenfield QBAR rate. The proposed drainage system will ensure no surface water flooding for rainfall events up to and including the 1 in 30-year storm event, and that the 1 in 100-year storm event, including a 45% allowance for climate change, can be accommodated. The proposed development will therefore not increase flood risk off-site

Foul water drainage will be split between two separate gravity networks, utilising the existing United Utilities foul sewer within Atlas Park and the combined sewer adjacent to Simonsway. The development is anticipated to generate an average foul flow of approximately 0.67 l/s and a peak foul flow of approximately 4.02 l/s. Any new or reused connections to the public sewerage system will be subject to a Section 106 agreement.

Access and egress will be provided via three access points, all of which, together with the proposed internal access road, are located within Flood Zone 1 and therefore provide a safe means of access to and egress from the development.

2.0 - PROJECT BACKGROUND

2.1 - Appointment

Burrows Graham Ltd have been commissioned by 'Aviva Life and Pensions UK Limited' (referred to as 'the applicant' hereafter) to undertake a flood risk assessment and drainage strategy of suitable scope to support the full planning application for the Atlas Park development, Wythenshawe for industrial (Use Class E(g)(iii) and B2) and logistics (Use Class B8) development comprising seven no. warehouse units.

2.2 - Aim of study

This Flood risk assessment and drainage strategy has been developed in due cognisance of all relevant available policy information. It is anticipated that this report will satisfy the requirements of the National Planning Policy Framework (NPPF) and all relevant flood risk planning policies.

2.3 - Relevant policy and strategy documents

The following documents were reviewed as part of this Flood Risk Assessment:

- Defra Sustainable Drainage Systems Non-Statutory Technical Standards for Sustainable Drainage Systems (March 2015)
- Environment Agency Climate Change Guidance (February 2016)
- Flood and Water Management Act (April 2010)
- National Planning Policy Framework (August 2026) and Planning Practice Guidance (March 2014)
- Sustainable Drainage Systems Written Statement HCWS161 (December 2014)
- Manchester Core Strategy
- Strategic Flood Risk Assessment (Level 1 SFRA) – February 2018
- Greater Manchester Strategic Flood Risk Management Framework – March 2019
- 'Places for Everyone' Joint Development Plan

2.4 - Proposed development

Proposals for the development are the construction of seven units (light industrial (Use Class E(g)(iii), general industrial (Use Class B2) and/or storage or distribution (Use Class B8), together with ancillary offices (Use Class E(g)(i)) and associated service yards, parking, landscaping, amenity space and infrastructure, with vehicular access of Simonsway and Atlas Park.

Reference should be made to the 'Proposed Site Plan' included in Appendix A, an extract of which is shown below.



Figure 1 – Proposed Site Plan

3.0 - SITE DETAILS

3.1 - Site description



Figure 2 – Site Location Plan

Table 1 - Site characteristics

Site address	Land adjoining Atlas Business Park, Wythenshawe
Grid reference	SJ836860
Area (hectares)	The site boundary measures 7.87 hectares.
Usage	A mixture of previously developed and undeveloped land, as well as an existing structure to be demolished.
Existing Surroundings	The site is surrounded by a mix of residential and commercial uses, with residential properties to the north and west, commercial offices to the east, long-stay airport parking to the south, and a trading estate with additional commercial units to the west.
Topography	Given the site's previous use, the existing topography relatively varied. However, ground levels generally fall in a northerly direction, ranging from approximately 69.4m AOD to 68.2m AOD within the western parcel and from approximately 68.8m AOD to 67.2m AOD within the eastern parcel.

3.2 Existing drainage

As a portion of the site has previously been developed, several existing drainage networks are present within the proposed development boundary. These networks are to be abandoned, broken out and disposed of as part of the proposed works.

Furthermore, a review of the United Utilities sewer records indicates that both surface water and foul water sewers are located within Atlas Park, as well as a large-diameter combined sewer running adjacent to Simonsways along the northern perimeter of the site.

3.3 - Existing watercourses

No existing watercourses have been identified on site. The nearest Main River is Gatley Brook, located approximately 200m east of the site.

3.4 - Geology and hydrogeology

A review of the Preliminary Geo-Environmental Risk Assessment, undertaken by Lucion, indicates that the site is anticipated to be underlain by superficial deposits comprising Devensian Till, with localised Topsoil and/or Made Ground anticipated in areas of former development. The underlying bedrock comprises the Bollin Mudstone Member of the Mercia Mudstone Group, consisting predominantly of mudstone and siltstone.

There are no BGS recorded boreholes within the site or its immediate vicinity. However, a previous ground investigation undertaken approximately 250m south-east of the site identified the following ground conditions encountered:

- Topsoil comprising black slightly gravelly silty clay, to 0.3m bgl;
- Made Ground comprising soft brown gravelly silty clay, or clayey gravel, with brick, to a depth between 0.3m and 0.7m bgl;
- Alluvium comprising firm black fibrous silty clay with occasional gravel and coal fragments and an organic odour, between 0.7m and 1.4m bgl;
- Glacial till comprising firm to stiff reddish brown mottled grey slightly gravelly silty clay with pockets of sand, to a depth of 10.45m bgl.

Groundwater was not encountered during the nearby intrusive investigation to a maximum depth of approximately 10.45m bgl. Subsequent monitoring recorded groundwater at approximately 2.0m to 2.2m bgl within one borehole, although observations within another borehole were considered likely to be influenced by surface water ingress.

The site is not located within a designated groundwater Source Protection Zone.

4.0 – FLOOD RISK STATEMENT

4.1 - Fluvial flood risk

The National Planning Policy Framework (NPPF) categorises flood risk as follows:

- Zone 1 (low probability) – Land assessed as having less than a 1 in 1,000 annual probability of river or sea flooding (<0.1%);
- Zone 2 (medium probability) – Land assessed as having between a 1 in 100 and 1 in 1,000 annual probability of river flooding (1% – 0.1%), or between a 1 in 200 and 1 in 1,000 annual probability of sea flooding (0.5% – 0.1%) in any year; and
- Zone 3a (high probability) - Land assessed as having a 1 in 100 or greater annual probability of river flooding (>1%), or a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year.
- Zone 3b The Functional Floodplain - This zone comprises land where water has to flow or be stored in times of flood. Local planning authorities should identify in their Strategic Flood Risk Assessments areas of functional floodplain and its boundaries accordingly, in agreement with the EA. (Not separately distinguished from Zone 3a on the Flood Map).

The EA flood map for planning shows that the site is located entirely within flood zone 1. It is therefore considered to be at low risk of flooding from rivers or the sea.

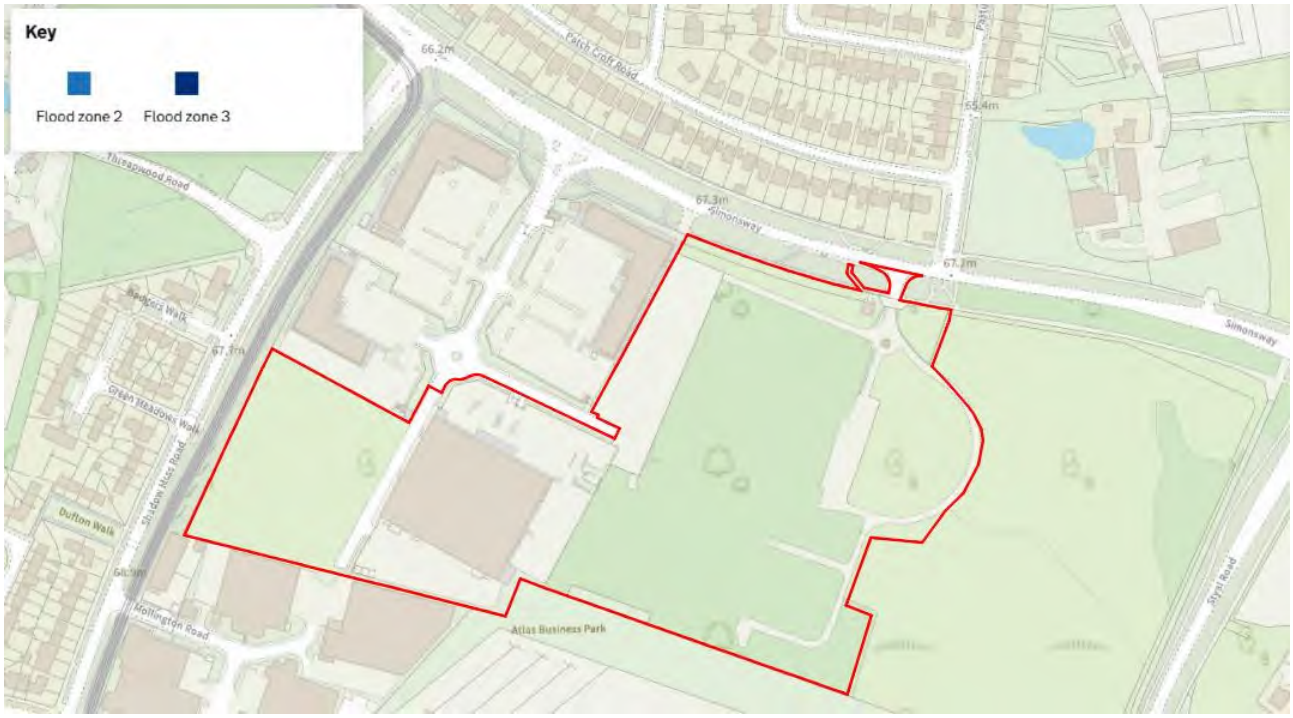


Figure 3 – EA Flood Map for Planning

4.2 - Surface water flooding

The EA descriptions for the High, Medium and Low risk scenarios for surface water flooding are as follows:

- High risk means that each year this area has a chance of flooding of greater than 3.3%.
- Medium risk means that each year this area has a chance of flooding of between 1% and 3.3%.
- Low risk means that each year this area has a chance of flooding of between 0.1% and 1%.
- Very Low risk means that each year this area has a chance of flooding of less than 0.1%.

The EA flood map of Long-Term Flood Risk from Surface Water indicates that portions of the site are at high risk of surface water flooding, predominantly within localised low-lying areas. To the west of the site, surface water flooding is indicated within the external car park surrounding the existing building to be demolished. Further localised area of surface water flooding is indicated within the south-eastern portion of the site, corresponding with a localised low point in the existing topography where surface water has the potential to accumulate.

However, on the basis there are no overland flow routes from offsite coming onto the site, the proposed development will mitigate any surface water flood risk through the reprofiling of the existing ground and the implementation of a new surface water drainage network. Proposed impermeable areas will be positively drained to the network, designed in accordance with relevant national guidance and the principles of the CIRIA SuDS Manual. The reprofiling of the ground will remove the existing localised low points and provide appropriate overland exceedance routes, thereby reducing the risk of surface water ponding within the developed site.

With these measures in place, the site is considered to be at low risk of surface water flooding.

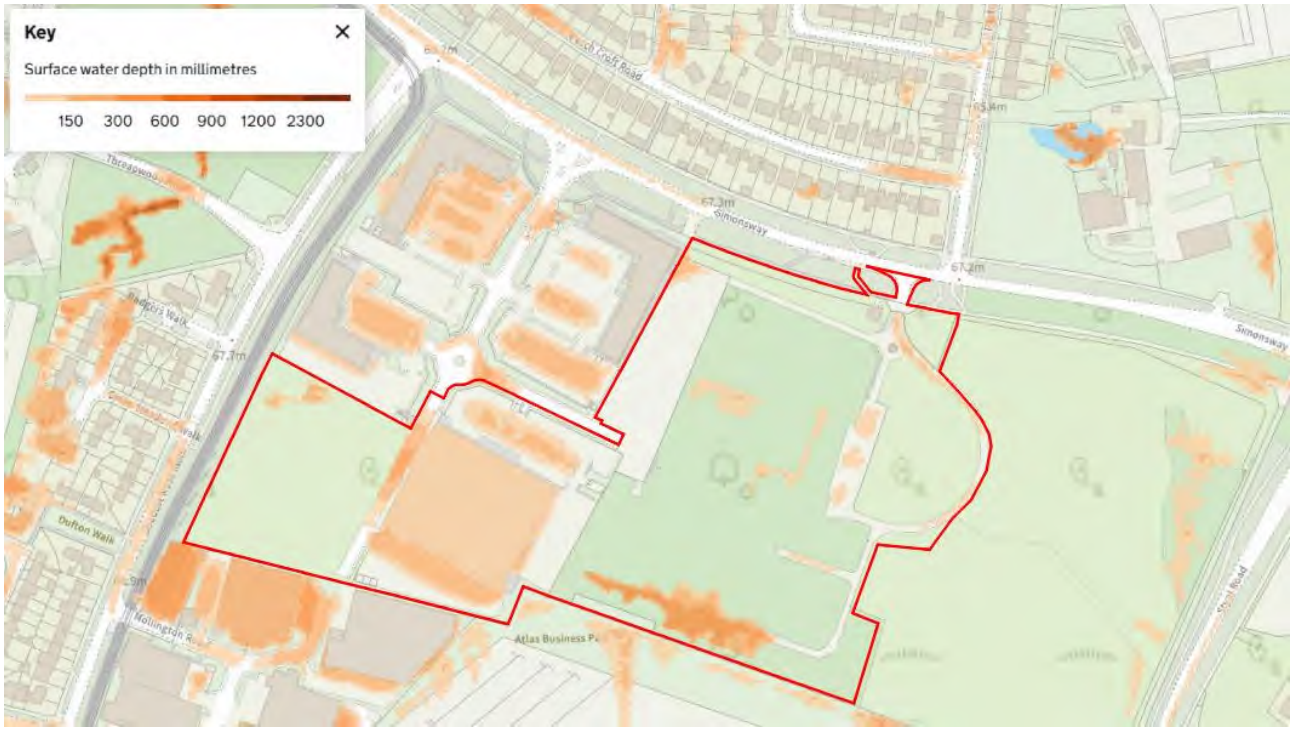


Figure 4 – EA Flood Map for Surface Water

4.3 - Groundwater flood risk

The groundwater vulnerability map within the SFRA, shown in Figure 5, indicates that the site is located within an area considered to be at low risk of groundwater flooding.

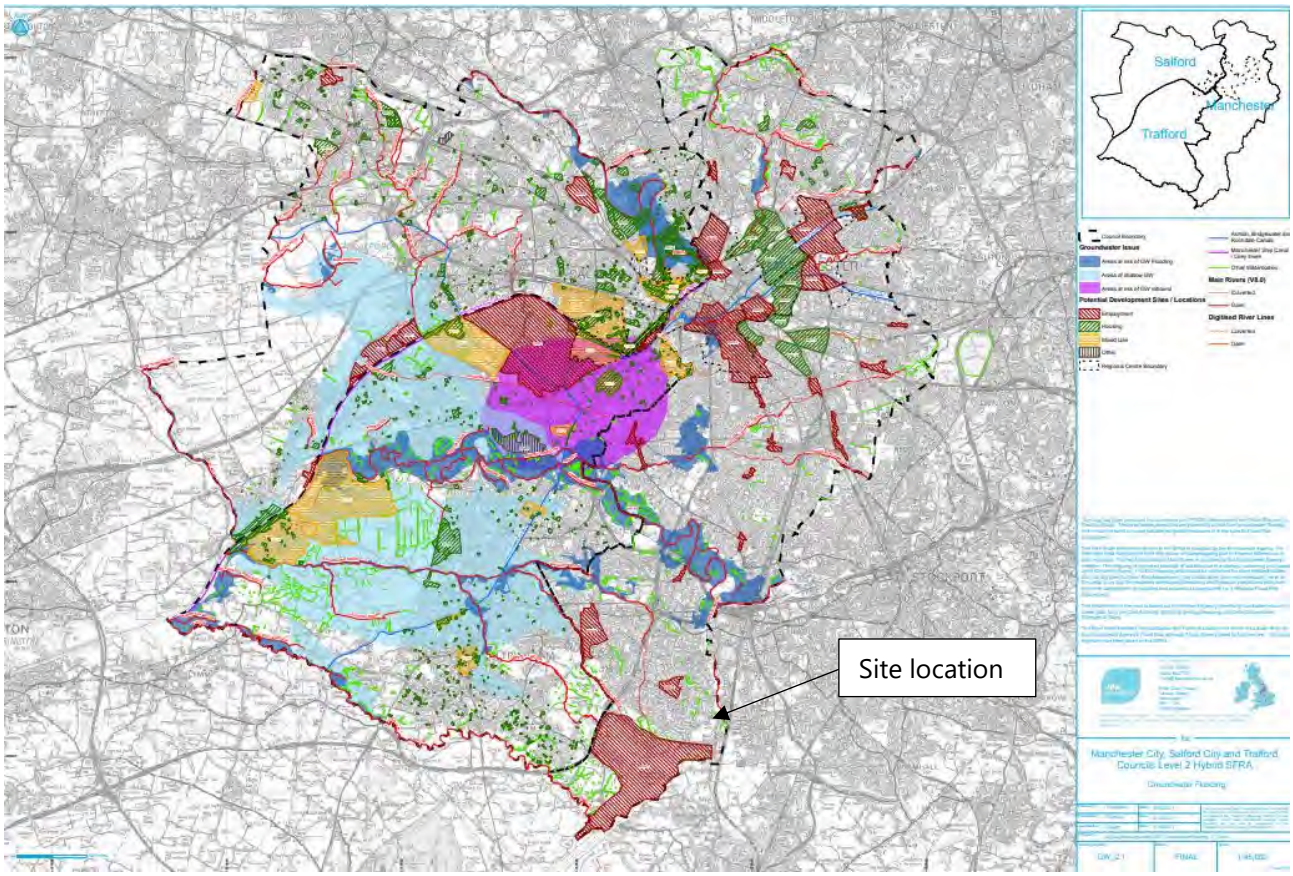


Figure 5 – SFRA Groundwater Vulnerability

Based on the available information, groundwater flooding is considered to be low risk.

4.4 - Sewer flooding

The United Utilities asset plan indicates that surface water, foul water, and combined drainage systems are in the immediate vicinity of the site. As United Utilities owns and maintains these drainage systems, the site is considered to be at low risk of flooding from sewers.

4.5 - Tidal flooding

The site is remote from tidal influences and is therefore not at risk of tidal or coastal flooding.

4.6 - Reservoir flooding

No reservoirs are in close proximity. Therefore, the site is not at risk of reservoir flooding.

5.0– SURFACE WATER DRAINAGE STRATEGY

5.1 – Disposal of surface water

The method for removal of surface water from the site has been selected in accordance with the hierarchy outlined in Building Regulations Part H as summarised below:

- Infiltration to the ground
- Discharge to a watercourse
- Connection to a surface water sewer
- Connection to a combined sewer

As described in section 3.4 of this report, the site is underlain by low-permeability clay deposits and, as such, it would not be feasible to implement infiltration or soakaway methods for the disposal of surface water. Furthermore, as there are no accessible watercourses on site, it is proposed to discharge the surface water from the proposed development into the existing United Utilities public surface water sewer in Atlas Park.

Due to the levels at the north of the site in the Unit 1 car park and the road connection to Simonsway, a portion of the site needs to be pumped to achieve a gravity connection to Atlas Park. In order to mitigate the risks associated with a pumped solution, we have proposed to connect Unit 1 and a portion of the road to the combined sewer. This connection will be at 5 l/s.

The discharge to Atlas Park will be restricted to 34 l/s to ensure the overall discharge rate is restricted to 39 l/s reflecting the greenfield runoff rate as calculated in section 5.6.

A copy of the sewer records has been included within Appendix C of this report.

5.2 – Sustainable Drainage Systems

Sustainable Drainage Systems (SuDS) will be utilised in line with The SuDS Manual (C753) guidance and aim to minimise the impact a development has on the runoff quantity and quality and maximise amenity and biodiversity opportunities.

The management train approach is a fundamental principle of SuDS, it aims to primarily reduce pollution, flow rates and volume of runoff from the site. The main objective is to treat the runoff as close to the source as possible, and as such, many of the following aspects should be included within the drainage strategy.

- **Prevention** – The use of good site design and rainwater re-use measures to prevent runoff.
- **Source Control** – Controlling the runoff as close to source as possible by using; green roofs, porous pavements and soakaways.
- **Site Control** – Use of water management techniques within local area, i.e. detention basins and geo-cellular storage.
- **Regional Control** – Management of water from a number of sites in a specific location, i.e. balancing ponds and wetlands.

The drainage strategy for this development will incorporate site control measures, including underground geo-cellular tanks sized to accommodate storage for extreme storm events, and flow control devices that restrict surface water runoff.

5.3 – General strategy

For details of the detailed drainage proposals for the site, reference should be made to drawing (ref: 30460-BGL-XX-XX-DR-C-00250), which has been included in Appendix D of this report.

5.4 – Total site area and impermeable areas

The total drained impermeable area of the proposed development has been measured to be 6.656 hectares.

5.5 – Climate Change

The climate change allowances are to be considered in line with the EA Climate Change Allowances Guidance. As this type of development is classed as less vulnerable, the central allowance has been applied. As such, in line with the latest guidance and DEFRA climate change allowances, a 45% allowance has been made.

5.6 – Discharge rates

The site is considered to be a mixture of greenfield and brownfield development.

The hydrological characteristics for the site have been taken from uksuds.com and summarised in Table 2 below.

Table 2 – Hydrological characteristics for the site

SAAR9120 (mm)	826
Hydrological region	10
Soil type	4
SPR	0.47

Using the IH124 method and the above hydrological characteristics, the greenfield runoff rates for a site based on a total site area of 6.656 hectares have been set out in Table 3.

Table 3 – Greenfield runoff rates

QBAR	39.0 l/s
Q(1)	33.9 l/s
Q(30)	66.3 l/s
Q(100)	81.1 l/s

Therefore, in line with the National Planning Policy Framework, the peak discharge rate for the proposed development should not exceed 39 l/s (QBAR), for all storms up to and including the 1 in 100 year storm plus 45% allowance for climate. This reflects a significant betterment for all storm events given the current nature of the site, in particular in extreme storm events.

5.7 – Attenuation storage

In order to achieve the restriction in peak rate of surface water runoff from the developed site as described above, on site surface water attenuation storage will be required in order to temporarily store the residual volume of surface water for rainfall events resulting in a peak runoff rate over and above the flow rate noted above. Attenuation will be provided in the form of an underground attenuation tank.

The attenuation storage will be designed to ensure that there is no surface water flooding on site for rainfall events up to and including the 1 in 30 year storm event. The attenuation storage will be designed to ensure that surface water runoff for storm events up to and including the 100 year storm plus a 45% allowance will not cause a risk of flooding to properties or increase the flood risk outside of the site.

A hydraulic modelling exercise of the proposed drainage system has been undertaken, and the results have been included in Appendix E of this report.

5.8 – Water quality

The proposed development is considered to have a high pollution hazard level in accordance with the CIRIA SuDS Manual, due to the proposed industrial use and associated HGV service yards. Therefore, the proposed drainage strategy incorporates Class 1 Full Retention Separators.

Given the nature of the proposed development and the associated pollution risk, Class 1 Full Retention Separators are considered appropriate. The separators will be appropriately sized based upon the contributing catchment areas and anticipated flows.

5.9 – Maintenance

Reference should be made to the Drainage Inspection and Maintenance Schedule in Appendix F, which includes required actions and typical frequencies for all drainage infrastructure serving the development. The drainage will be managed and maintained by an appointed Management Company.

6.0 – FOUL WATER DRAINAGE STRATEGY

The drainage strategy proposes to divide the foul drainage network for the development into two separate foul networks, to allow for gravity connections. To do so, it is proposed to utilise both the United Utilities foul sewer, within Atlas Park, as well as the United Utilities combined sewer, which runs parallel to Simonsway.

Any new connections (including the re-use of existing connections) to the public sewerage system will require a Section 106 agreement.

Based on an anticipated gross internal floor space of each proposed unit, it is anticipated that the average foul flow from the development will be 0.67 l/s and the peak flow will be 4.02 l/s. This has been calculated using the following formula:

6DWF = 6PG + I + 3E
Where:
6DWF = foul drainage design flow (l/d)
P = population= 165 persons per hectare (5% office – 1 person per 12 sq m and 95% warehouse – 1 person per 77 sq m)
G = water consumption = 90 l/person/day (Flows and Loads – Full Time Staff)
I = dry weather infiltration = 10%
E = trade effluent = 0 Allowance

Table 4 – Foul Discharge Rates

Unit Reference	Dry Weather Flow (l/s) (DWF)	Peak Flow (l/s) (6DWF)
Unit 1	0.16	0.96
Unit 2	0.04	0.24
Unit 3	0.04	0.24
Unit 4	0.10	0.60
Unit 5	0.09	0.54
Unit 6	0.13	0.78
Unit 7	0.11	0.66
Total	**0.67**	**4.02**

7.0 - MITIGATION / MANAGEMENT OF FLOOD RISK

7.1– Access and egress

Access to and egress from the site will be provided via three points. Units 1–5 will be accessed via a proposed site access road connecting Simonsway to Atlas Park, whilst Units 6–7 will be served by a separate access and egress point from the Atlas Park roundabout.

All three access and egress points, together with the proposed site access road, are located within Flood Zone 1 and are therefore considered to provide a safe means of access to and egress from the development.

7.2 - Drainage & exceedance flow routes

The proposed surface water drainage system will ensure that there is no increase in flood risk to the site or elsewhere in the local catchment for all storm events up to and including the 100 year storm plus 45% climate change.

In the event of blockages to the drainage system that may cause flooding, it is considered that any surface water arising from the drainage system can be directed away from buildings, managed and contained on site within low-lying external areas.

8.0 – CONCLUSION

This Flood Risk Assessment has demonstrated that the proposed development is appropriate in terms of flood risk and can be safely occupied. The site is located entirely within Flood Zone 1 and is at low risk from fluvial, tidal, groundwater, sewer and reservoir flooding.

Surface water runoff from impermeable areas will be appropriately managed through the proposed drainage strategy, which will attenuate runoff and discharge it at controlled rate without increasing flood risk elsewhere.

APPENDIX A – PROPOSED SITE PLAN



AREA SCHEDULE

UNIT 1	**88,530 ft²**
Warehouse	80,920 ft²
Office (FF)	3,860 ft²
Office (SF)	3,750 ft²
Car Parking spaces	82
Accessible Bays	*6*
EV Charging spaces	*17*
Shared spaces	*5*
Cycle spaces	*20*
Motorcycle spaces	*5*
UNIT 2	**24,820 ft²**
Warehouse	22,130 ft²
Office (FF only)	2,690 ft²
Car Parking spaces	25
Accessible Bays	*2*
EV Charging spaces	*5*
Shared spaces	*2*
Cycle spaces	*6*
Motorcycle spaces	*2*
UNIT 3	**20,910 ft²**
Warehouse	18,220 ft²
Office (FF only)	2,690 ft²
Car Parking spaces	20
Accessible Bays	*2*
EV Charging spaces	*4*
Shared spaces	*2*
Cycle spaces	*6*
Motorcycle spaces	*2*
UNIT 4	**55,990 ft²**
Warehouse	51,890 ft²
Office (FF)	4,100 ft²
Car Parking spaces	54
Accessible Bays	*3*
EV Charging spaces	*11*
Shared spaces	*3*
Cycle spaces	*14*
Motorcycle spaces	*3*
UNIT 5	**48,560 ft²**
Warehouse	44,490 ft²
Office (FF)	4,070 ft²
Car Parking spaces	55
Accessible Bays	*3*
EV Charging spaces	*11*
Shared spaces	*3*
Cycle spaces	*12*
Motorcycle spaces	*3*
UNIT 6	**71,220 ft²**
Warehouse	63,600 ft²
Office (FF)	3,880 ft²
Office (SF)	3,740 ft²
Car Parking spaces	66
Accessible Bays	*4*
EV Charging spaces	*14*
Shared spaces	*4*
Cycle spaces	*16*
Motorcycle spaces	*3*
UNIT 7	**62,990 ft²**
Warehouse	55,400 ft²
Office (FF)	3,860 ft²
Office (SF)	3,730 ft²
Car Parking spaces	58
Accessible Bays	*3*
EV Charging spaces	*12*
Shared spaces	*3*
Cycle spaces	*16*
Motorcycle spaces	*3*
Total GIA	**373,020 ft²**
Total Parking Spaces	**360**

Disclaimer:
Subject to survey.

Notes:

0 10 20 30 40 50
SCALE 1:1000 @ A1

N

KEY

- Site Boundary (847,890 ft² / 78,770 m² / 19.44 acres / 7.87 ha)
- Existing Substation
- Pedestrian & Cycle Route
- Proposed Fence Line
- Existing Fence Line
- Proposed Retaining Wall
- Refuse Store
- Amenity Area
- Insitu Concrete (with light brush finish)
- Truck Pave
- Asphalt
- Block paving
- Soft Landscaping
- New Entrance
- (1) Cycle Stands
- (2) Car Share Spaces
- (3) EV Charging Bays
- (4) Motorcycle Spaces
- (R) Refuse
- (A) Accessible Parking Bays
- (SS) Sub-Station
- Existing Trees
- Existing Trees to be Removed

Rev:	Notes:	Date:	Dwn:	Iss:
P07	Amendments to red boundary line	11.09.2026	CM	HA
P06	Amendments to unit 7 & Tree retention highlighted	09.09.2026	CM	HA
P04	Amendments to Layout	21.08.2026	AH	HA
P03	Amendments to Layout	14.08.2026	AH	HA
P02	Amendments to Layout	12.08.2026	AH	HA
P01	First Issue	06.08.2026	AH	HA

Suitability Code:
PLANNING

Client:
AVIVA INVESTORS

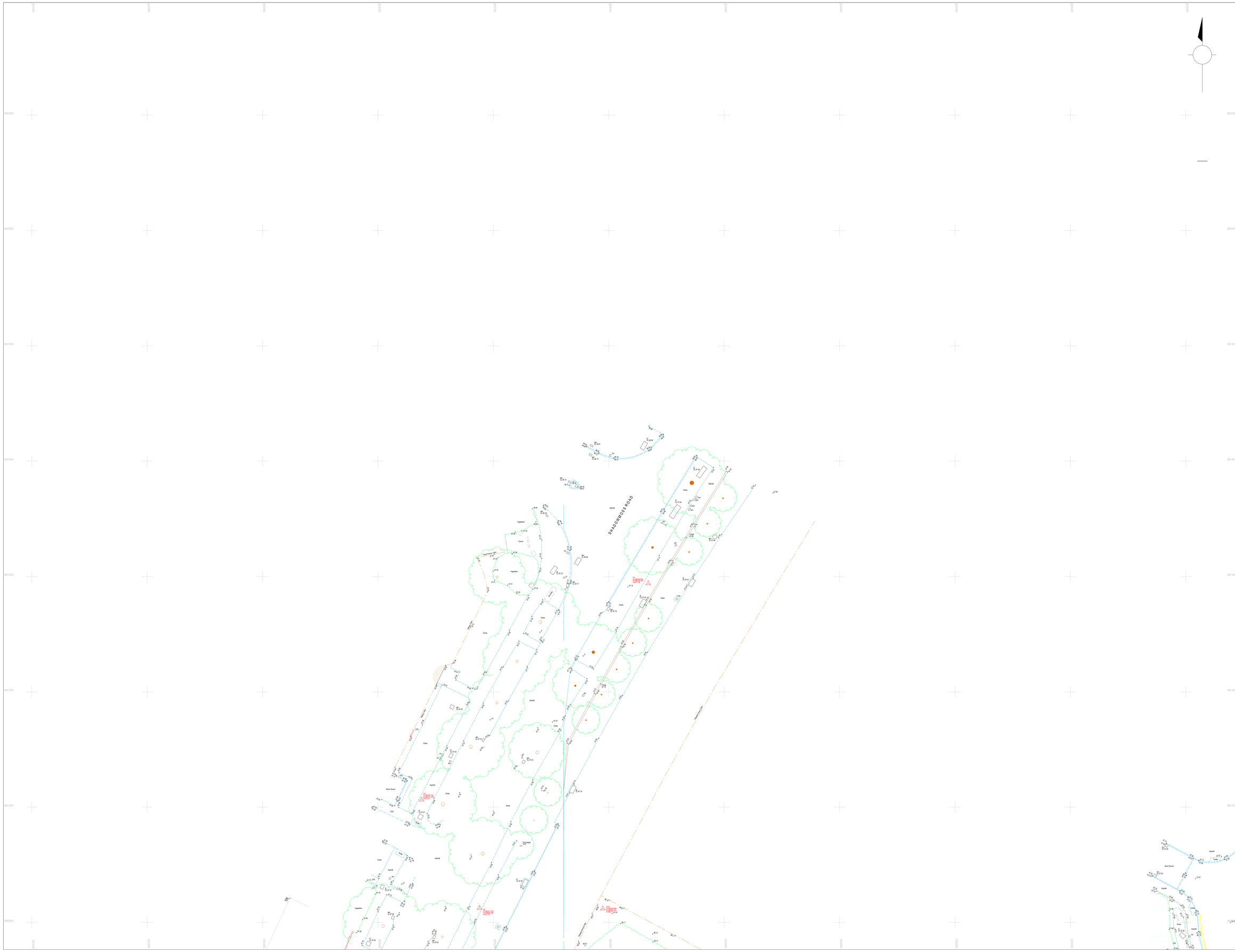
hale
ARCHITECTURE | DESIGN MANAGEMENT
22c Leathermarket Street, London, SE1 3HP

Project:
Atlas Business Park
Manchester

Drawing Title:
Proposed Site Plan

Project No: 20071
Scale @ A1 / A3: 1:1000 / 1:2000
Drawing No: 20071-HAL-ZZ-ZZ-DR-A-PL003
Revision: P07

APPENDIX B – TOPOGRAPHICAL SURVEY



UTILITY LEGEND

BT	British Telecom	GAS	Gas Pipe
CATV	Cable Television	UGPR	Unknown GPR Target
CCTV	Closed Circuit Television	PSD	Possible Service (PAS only)
UD	Unidentified	TEL	Telecom Cable
DR	Unidentified Drainage	HP	High Voltage Cable
CW	Combined Water	WS	Buffalo Service Route
FW	Foul Water	OP	Oil Pipeline
SW	Storm Water	SL	Street Lighting
EA	Earth	TC	Traffic Controls
E	Electric Cable	US	Unknown Service
ED	Empty Duct	UC	Unknown Cable
FO	Fibre Optic	UP	Unknown Pipeline
FM	Fire Hydrant Main	WM	Water Main
FUEL	Fuel Pipeline		
	Assumed Route Service highlighted yellow (Example BT)	BT	

AWRA	Combined Survey Area	UTS	Unable to Survey
AWAA	Planning Buffer Area	UTT	Unable to Trace (Services)
AWEA	GPR Data Collection Area	UVT	Unable to Visually Inspect (Within Cover)
(0.60d)	Depth to Top of Service	WL	Water Level (Within Cover)
(>0.60d)	Approximate Depth to Top of Service	dD	Unable to Trace (Due to Blockage)
(NDA)	No Depth Attainable	UL	Unable to Trace Further
K.TC.01	Invert Level (Drainage)	EoT	End of Trace
PE	Polyethylene Pipe Material	UT	Unable to Trace
UTL	Unable to Lift (Cover)	CP	Unable to Trace (Capped Port)
	Anomalous Ground		Unable to Survey

NOT TO SCALE

PAS128 SURVEYS

(S-SV-E-SZF) - S-SV = Depth in metres, SV = Quality Level, F = Post processed GPR

Key to Quality Levels	
Quality Level	Definition
D	Undefined (Safe, desktop records search)
B4	Suspected to exist, not detected by GPR or EML
B3	Horizontal position located by one technique only
B2	Horizontal and vertical position located by one technique only
B1	Horizontal and vertical position located by multiple techniques
A	Horizontal and vertical position verified visually of the service

ABBREVIATIONS

ACU	Air Conditioning Unit	FL	Fixed Light	SIG	Service in Ground
BB	Bolitna Beacon	GV	Gas Valve	SP	Sign Post
B	Bollard	GU	Gully	SC	Stop Cock
BH	Borehole	IC	Inspection Chamber	SV	Stuice Valve
CAB	Cabinet	LB	Lighting Bollard	TP	Telegraph Pole
CL	Cover Level	LP	Lamp Post	TL	Traffic Light
CPS	Concrete Paving Slabs	LIG	Light in Ground	TM	Ticket Machine
CTV	Cable Television	MH	Manhole Cover	VP	Vent Pipe
EVCP	Charging Point	MKR	Marker Post	UV	Unknown Valve
DP	Down Pipe	PB	Post Box	WP	Waste Pipe
EP	Electric Pole	PM	Phone Mast	WM	Water Meter
ER	Earth Rod	PC	Post	WV	Water Valve
FFL	Finished Floor Level	RE	Reading Eye		
FP	Feeder Pillar	RS	Road Sign		
FH	Fire Hydrant	RWP	Rain Water Pipe		

TOPOGRAPHIC LEGEND

	Building		Embankment Slope
	Bank Bottom		Fence
	Bank Top		Heras Fence
	Canopy		Kerb Channel
	Concrete		Kerb Top
	Cover with Chamber Extents		Levels
	Crash Barrier		Overhead Service
	Drainage Channel		Tree
	Drop Kerb		Wall
	Edge Detail		

GENERAL NOTES

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Sheet Layout

Sheet 01	Sheet 02	Sheet 03
Sheet 04	Sheet 05	Sheet 06

Rev	Notes	Drawn	Date
Notes:	Survey is referenced to OS Grid and Level Datum. Previous Sumo Survey SOR018000 has been inserted into this model for reference.		
A	Drainage notes and partial info added.	WM	11/08/26
A	Title blocks amended.	WM	11/08/26

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Hampshire
PO9 2NL

TEL:0845 456 1104

www.sumoservices.com

Title:

2D Topographic Survey

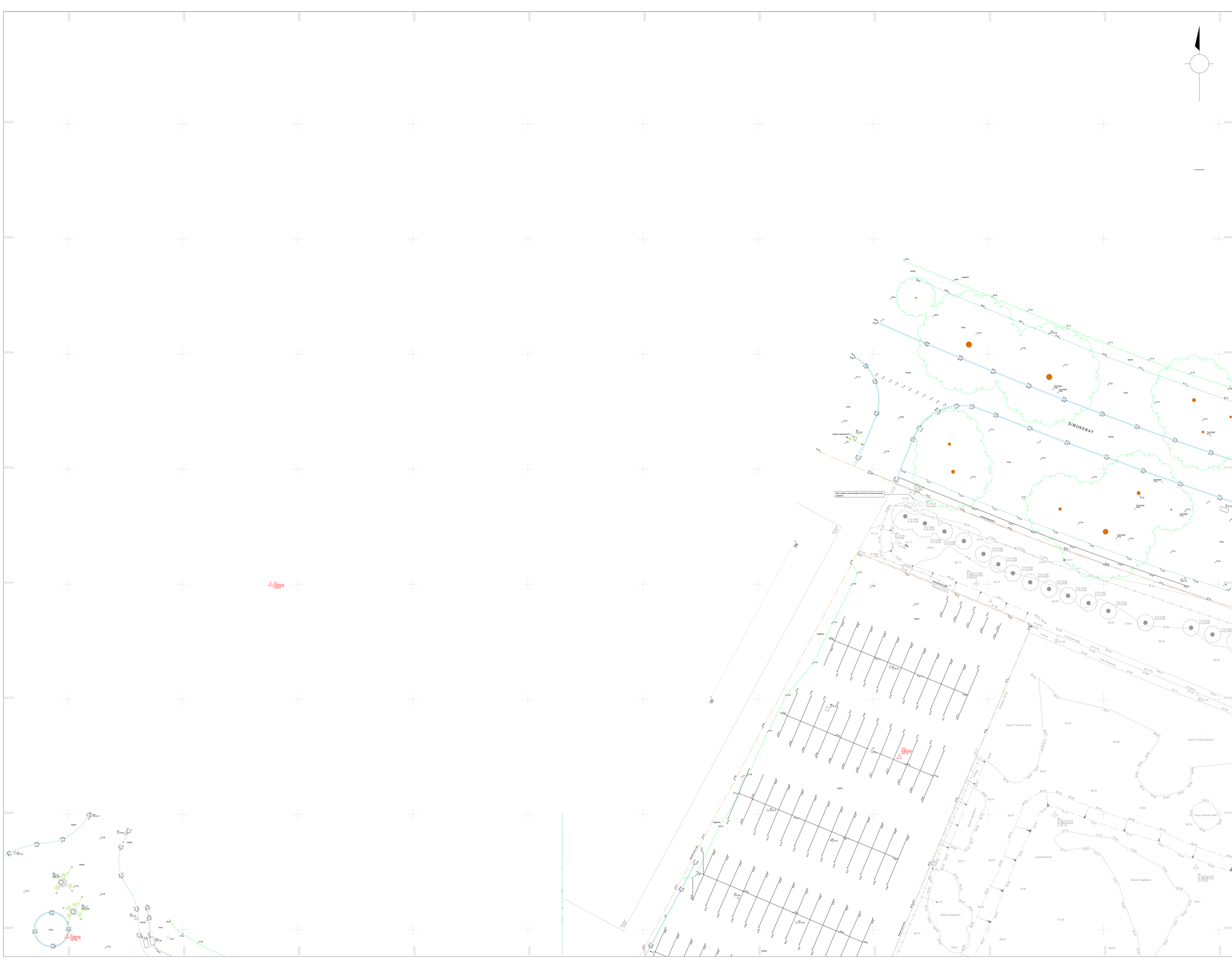
Client:

Hale Architecture Ltd

Project:

Atlas Business Park Area, Atlas Park, Wythenshawe

Date:	23/07/26	Postcode:	M22 5PR
Surveyed:	KHH/KW	Scale:	1:200 (A0 Sheet)
Drawn:	WM		
Checked:	KHH/KW		
Job No:		Sheet:	Rev:
SUMO-28484-2 & 29308		01	A



UTILITY LEGEND

BT	British Telecom	GAS	Gas Pipe
CATV	Cable Television	GPR	Unknown GPR Target
CCTV	Closed Circuit Television	GPP	Possible Service (PAS only)
UG	Underground Cable	HV	High Voltage Cable
DR	Unidentified Drainage	MV	Medium Voltage Cable
CW	Combined Water	MS	Multiple Service Route
FW	Foul Water	OP	Oil Pipeline
SW	Storm Water	SL	Street Lighting
EA	Earth	TC	Traffic Controls
E	Electric Cable	US	Unknown Service
ED	Empty Duct	UC	Unknown Cable
FO	Fibre Optic	UP	Unknown Pipeline
FW	Fire Hydrant Main	WM	Water Main
FUEL	Fuel Pipeline	XX	

Assumed Route Service highlighted yellow (Example BT)

AWRA	Concreted Surface Area	UTS	Unable to Survey
AWLA	Previously Buried Area	UTT	Unable to Trace (Services)
AWEA	GPR Data Collection Area	UVT	Unable to Visually Inspect (Within Cover)
(0.60d)	Depth to Top of Service	WL	Water Level (Within Cover)
(>0.60d)	Approximate Depth to Top of Service	dD	Unable to Trace (Due to Blockage)
(NDA)	No Depth Attainable	tA	Unable to Trace Further
K.TC.01	Invert Level (Drainage)	tM	End of Trace
PE	Polyethylene Pipe Material	TP	Unable to Trace
UTL	Unable to Lift (Cover)	CP	Unable to Trace (Capped Port)

Anomalous Ground — Unable to Survey

PAS128 SURVEYS

(0.60d BZP) - 0.60d = Depth in metres, BZ = Quality Level, P = Post processed GPR

Key to Quality Levels	
Quality Level	Definition
D	Undefined (Data, desktop records search)
B4	Suspected to exist, not detected by GPR or EML
B3	Horizontal position located by one technique only
B2	Horizontal and vertical position located by one technique only
B1	Horizontal and vertical position located by multiple techniques
A	Horizontal and vertical position verified visually of the service

ABBREVIATIONS

ACU	Air Conditioning Unit	FL	Fixed Light	SIG	Service in Ground
BB	Bolitho Beacon	GV	Gas Valve	SP	Sign Post
B	Bollard	GU	Gully	SC	Stop Cock
BH	Borehole	IC	Inspection Chamber	SV	Scata Valve
CAB	Cabinet	LB	Lighting Bollard	TP	Telegraph Pole
CL	Cover Level	LP	Lamp Post	TL	Traffic Light
CPS	Concrete Paving Slabs	LIG	Light in Ground	TM	Ticket Machine
CTV	Cable Television	MH	Manhole Cover	VP	Vent Pipe
EVCP	Charging Point	MKR	Marker Post	UV	Unknown Valve
DP	Down Pipe	PB	Post Box	WP	Waste Pipe
EP	Electric Pole	PM	Phone Mast	WM	Water Meter
ER	Earth Rod	PI	Post	WV	Water Valve
FFL	Finished Floor Level	RE	Rodding Eye		
FP	Feeder Pillar	RS	Road Sign		
FH	Fire Hydrant	RWP	Rain Water Pipe		

TOPOGRAPHIC LEGEND

GENERAL NOTES

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A	Title blocks amended.	WM	11/08/26

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2D Topographic Survey

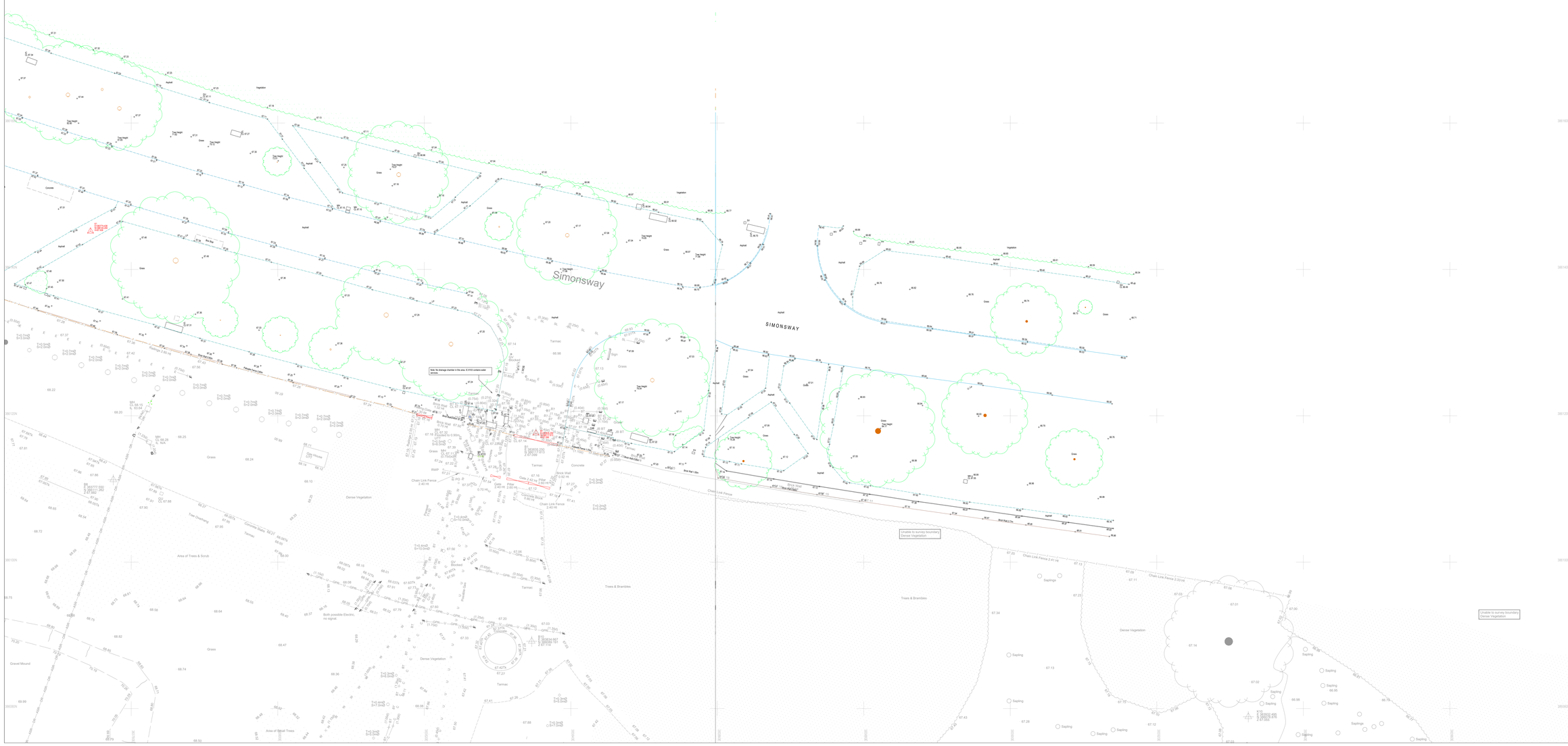
Client:

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Project:

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Surveyed:	KHH/KW	Scale:	1:200 (A0 Sheet)
Drawn:	WM		
Checked:	KHH/KW		
Job No:	SUMO-28484-2 & 29308	Sheet:	02
		Rev:	A



UTILITY LEGEND

BT	British Telecom	GAS	Gas Pipe
CATV	Cable Television	GPR	Unknown GPR Target
CCTV	Closed Circuit Television	HP	Possible Service (PAS only)
UD	Unidentified	HV	High Voltage Cable
UW	Unidentified Drainage	MV	Medium Voltage Cable
CW	Combined Water	MS	Multiple Service Route
FW	Foul Water	OL	Oil Pipeline
SW	Storm Water	SL	Street Lighting
EA	Earth	TC	Traffic Controls
E	Electric Cable	US	Unknown Service
ED	Empty Duct	UC	Unknown Cable
FO	Fibre Optic	UP	Unknown Pipeline
FW	Fire Hydrant Main	WM	Water Main
FUEL	Fuel Pipeline	XX	Unknown

Assumed Route Service highlighted yellow (Example BT)

AWRA	Combined Survey Area	UTS	Unable to Survey
AWAA	Privately Owned Area	UTT	Unable to Trace (Services)
AWEA	GPR PAS Extension Area	UVT	Unable to Visually Inspect (Within Cover)
(0.60d)	Depth to Top of Service	WL	Water Level (Within Cover)
(+0.60d)	Approximate Depth to Top of Service	UD	Unable to Trace (Due to Blockage)
(NDA)	No Depth Attainable	UL	Unable to Trace Further
IL 72.30	Invert Level (Drainage)	EoT	End of Trace
PE	Polyethylene Pipe Material	UT	Unable to Trace
UTL	Unable to Lift (Cover)	CP	Unable to Trace (Capped Port)

Anomalous Ground

Unable to Survey

PAS128 SURVEYS

(0.60d BZP) 0.60d = Depth in metres, BZ = Quality Level, P = Post processed GPR

Key to Quality Levels	
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ABBREVIATIONS

ACU	Air Conditioning Unit	FL	Flood Light	SIG	Service in Ground
BB	Bedina Beacon	GV	Gas Valve	SP	Sign Post
B	Bollard	GU	Gully	SC	Stop Cock
BH	Borehole	IC	Inspection Chamber	SV	Stuice Valve
CAB	Cabinet	LB	Lighting Bollard	TP	Telegraph Pole
CL	Cover Level	LP	Lamp Post	TL	Traffic Light
CPS	Concrete Paving Slabs	LIG	Light in Ground	TM	Ticket Machine
CTV	Cable Television	MH	Manhole Cover	VP	Vent Pipe
EVCP	Charging Point	MKR	Marker Post	UV	Unknown Valve
DP	Down Pipe	PB	Post Box	WP	Waste Pipe
EP	Electric Pole	PM	Phone Mast	WM	Water Meter
ER	Earth Rod	PP	Post	WV	Water Valve
FFL	Finished Floor Level	RE	Rodding Eye		
FP	Feeder Pillar	RG	Road Gully		
FH	Fire Hydrant	RWP	Rain Water Pipe		

TOPOGRAPHIC LEGEND

Building	Embankment Slope		
Bank Bottom	Fence		
Bank Top	Heras Fence		
Canopy	Kerb Channel		
Concrete	Kerb Top		
Cover with Chamber Extents	Levels	+ 10.00	
Crash Barrier	Overhead Service		
Drainage Channel	Tree		
Drop Kerb	Wall		
Edge Detail			

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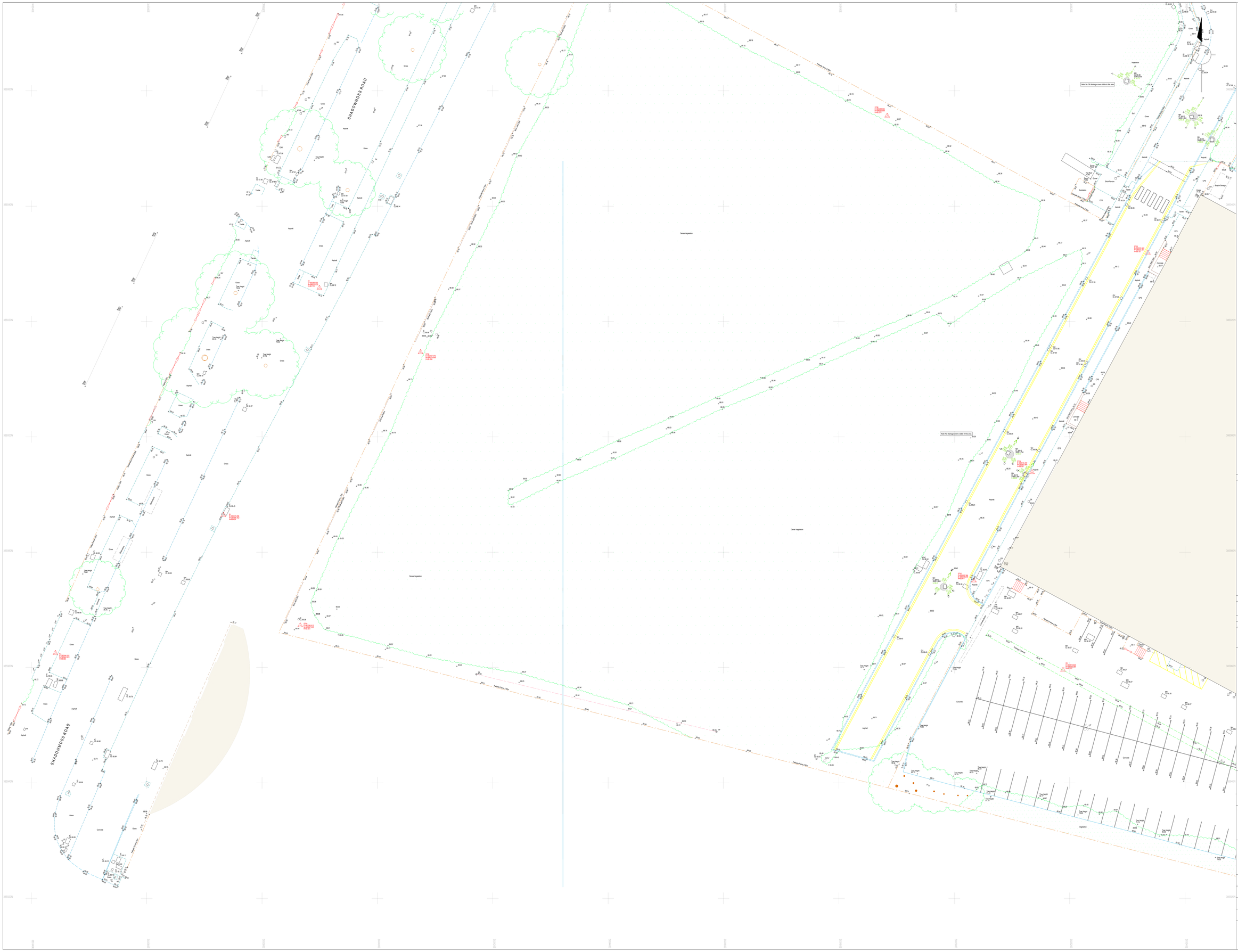
Client:

Hale Architecture Ltd

Project:

Atlas Business Park Area, Atlas Park, Wythenshawe

Date:	23/07/26	Postcode:	M22 5PR
Surveyed:	KHH/KW	Scale:	1:200 (A0 Sheet)
Drawn:	WM		
Checked:	KHH/KW		
Job No:	SUMO-28484-2 & 29308	Sheet:	03
		Rev:	A


SHADOWMOSS ROAD
SHADOWMOSS ROAD
Dense Vegetation
Dense Vegetation
Dense Vegetation
Note: No IP/I drainage cover visible in this area.
Note: No drainage covers visible in this area.
Asphalt
Grass
Concrete
Tree Height
Tactile
Kerb
Edge
Drainage Channel
Footpath Flows E-Wly
Footpath Flows E-Wly
Footpath Flows E-Wly
Shadowmoss Road
Shadowmoss Road
Shadowmoss Road



UTILITY LEGEND

BT — British Telecom
CATV — Cable Television
CCTV — Closed Circuit Television
UNK — Unidentified Service
UD — Unidentified Drainage
CW — Combined Water
FW — Foul Water
SW — Storm Water
E — Earth
E — Electric Cable
ED — Empty Duct
FO — Fibre Optic
FW — Fire Hydrant Main
FUEL — Fuel Pipeline
Unmarked Route Service highlighted yellow (Example BT)

GPR — Gas Pipe
GPR — Unknown GPR Target
GPR — Possible Service (PAS only)
HP — Telecoms Duct
HP — Sewer Rising Main
MS — Multiple Service Route
OP — Oil Pipeline
SL — Street Lighting
TC — Traffic Controls
UNK — Unknown Service
UNK — Unknown Cable
UNK — Unknown Pipeline
WM — Water Main

AWSA — Contractor Survey Area
AWSA — Previous Survey Area
AWSA — GPR Data Collection Area
Depth to Top of Service (0.60m)
(1.635m)
(NDA)
Nonconformity
Invert Level (Drainage)
PE — Polyethylene Pipe Material
UTL — Unable to Lift (Cover)

UTS — Unable to Survey
UTT — Unable to Trace (Service)
UVI — Unable to Visually Inspect (Within Cover)
WL — Water Level (Within Cover)
UD — Unable to Trace (Due to Blockage)
UNK — Unable to Trace Further
EOT — End of Trace
UTT — Unable to Trace
UTT — Unable to Trace (Capped Port)

Nonconformity Depth to Top of Service: 0.60m
Nonconformity Depth to Top of Service: 1.635m
Nonconformity Depth to Top of Service: NDA
Nonconformity: No Depth Attainable

PAS128 SURVEYS

(0.60d.SQ1) 0.60d = Depth in metres, SQ = Quality Level, P = Post processed GPR

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Q	Undefined (Gaps, desktop records search)
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FFL	Finished Floor Level	RE	Rodding Eye		
FP	Feeder Pillar	RS	Road Sign		
FH	Fire Hydrant	RWP	Riser Rainwater Pipe		

TOPOGRAPHIC LEGEND

Building; Bank Bottom; Bank Top; Canopy; Concrete; Cover with Chamber Extents; Crash Barrier; Drainage Channel; Dwg Kerb; Edge Detail; Embankment Slope; Fence; Hedge; Tree; Wall; Overhead Service; Kerb Channel; Kerb Top; Footway Kerb Top; Carriageway Kerb Top; Levels; + 10.00

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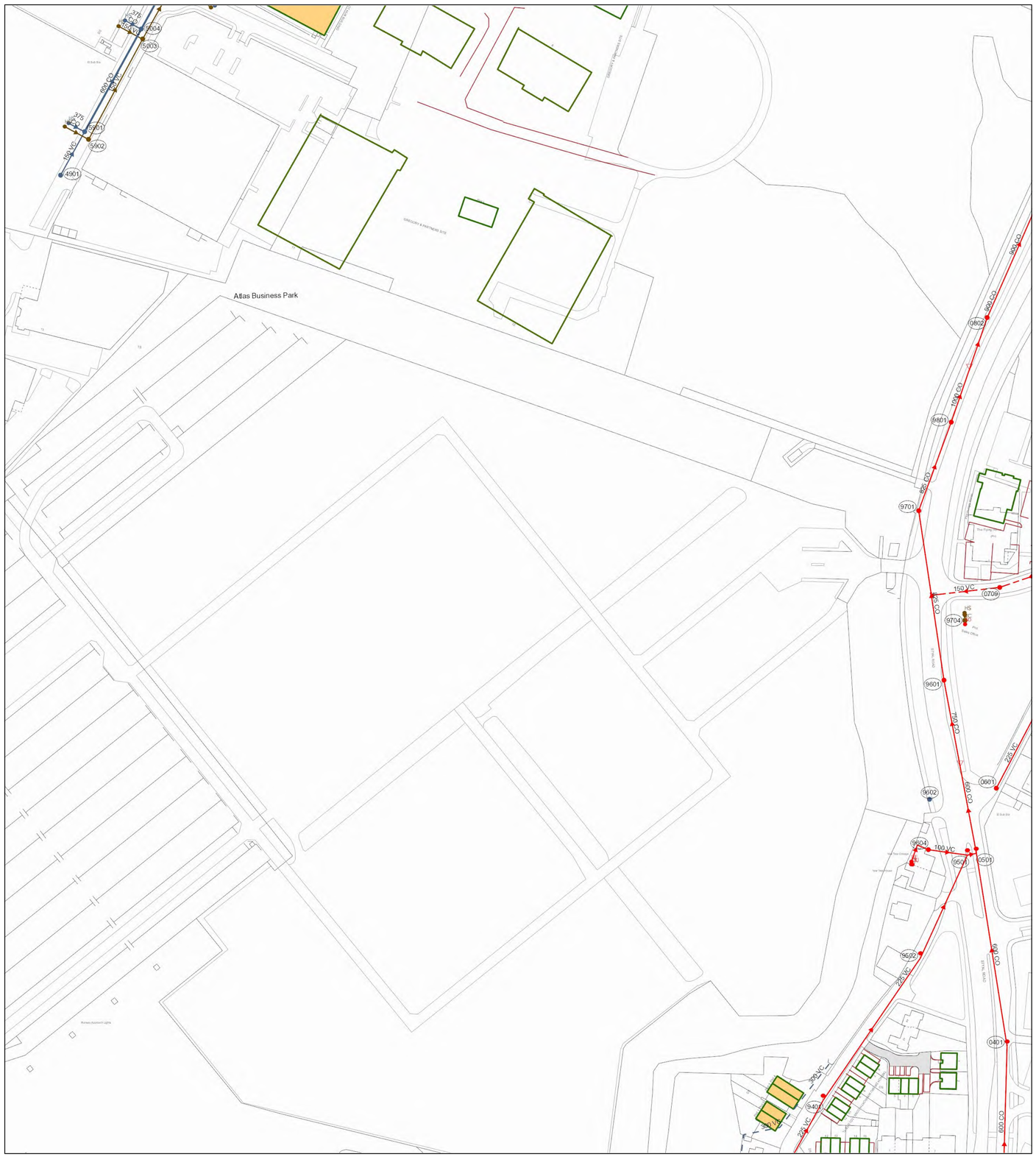
Project:

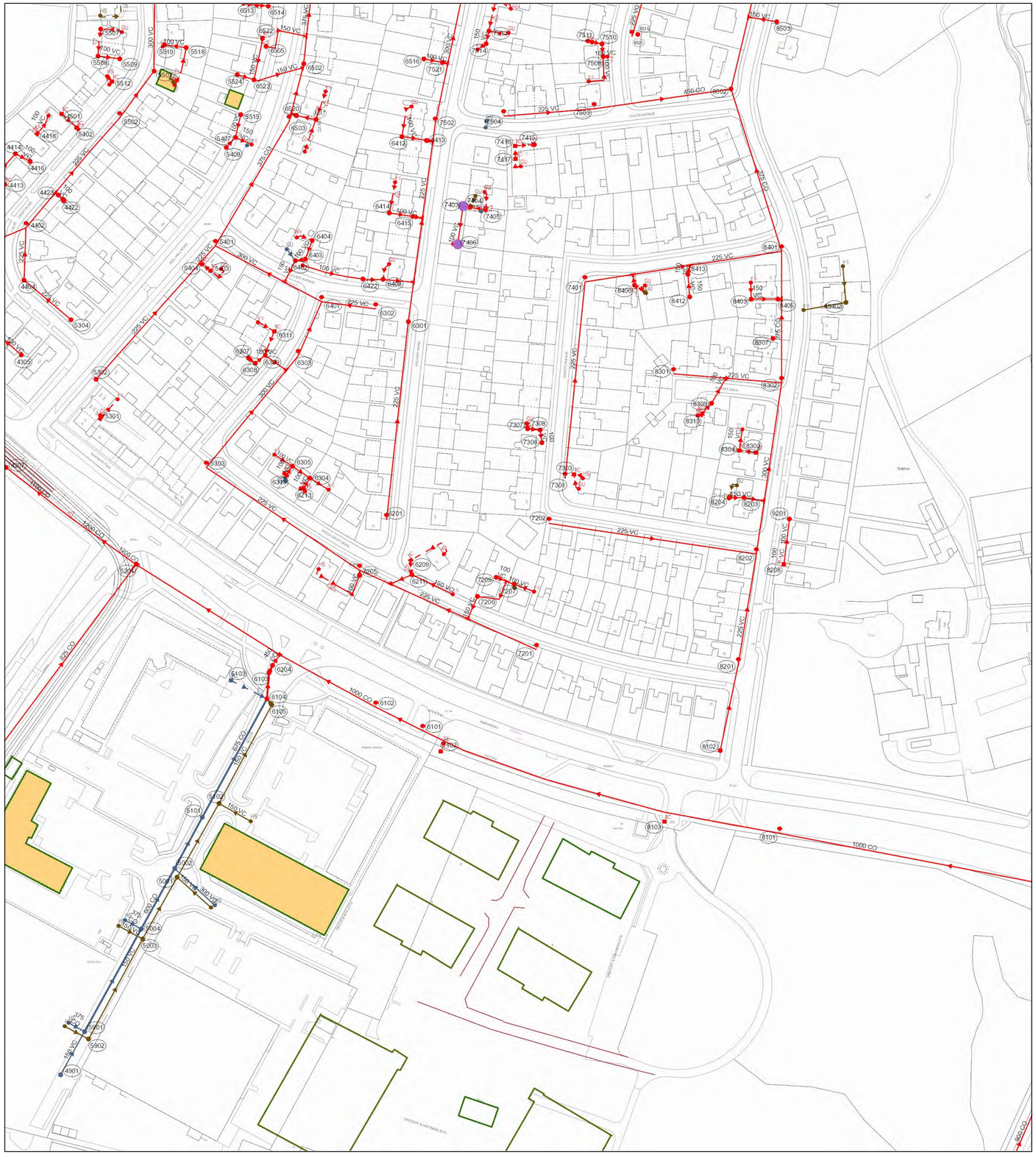
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Job No:		Sheet:	Rev:
SUMO-28484-2 & 29308		05	A


Gravel Mound
Grass
Tarmac
Dense Vegetation
Trees & Brambles
Area of Trees & Dense Vegetation & Brambles
Area of Small Trees
Small Trees & Dense Vegetation
Long Grass (Uneven Ground)
Grass - Uneven Ground
Area of small trees, vegetation and weeds
Gravel track
Bench
Hole in ground
Drain Runs Flooded
Manhole Flooded
Manhole Blocked
Manhole Cover Damaged
Manhole Cover Missing
Manhole Cover Sunken
Manhole Cover Raised
Manhole Cover Rocking
Manhole Cover Surcharged
Manhole Cover Tilted
Manhole Cover Unlocatable
Manhole Cover Unreadable
Manhole Cover Unsafe
Manhole Cover Unsealed
Manhole Cover Unstable
Manhole Cover Unsupported
Manhole Cover Unsurveyed
Manhole Cover Unsurveyable

APPENDIX C – UNITED UTILITIES PUBLIC SEWER RECORDS


Atlas Business Park
9704
5904
5903
5901
5902
4901
9602
9801
9701
9601
0601
9604
9501
0501
0401
9402
0709
150 VC
225 VC
300 VC
600 CO
900 CO
100 VC
150 CO
HS
Pol
Valve Office
Pol
Pump House
Pol
Sub Station
Pol
Sub Station
Pol
Sub Station



The position of the underground apparatus shown on this plan is approximate only and is given in accordance with the best information currently available. United Utilities Water will not accept liability for any loss or damage caused by the actual position being different from those shown.

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Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
8401	61.39	CO	58.69	375			CO	94.25497	
6303	62.97	CO	60.73	300			VC	32.69556	
6401	65.07	CO	62.85	300			VC	66.64833	1 in 72
7207		CO		100			VC	27.61403	
7513		CO		150			VC	7.246846	
7406		CO		100			VC	2.588112	
6513		CO		100			VC	6.341948	
6514		CO		100			VC	18.24146	
5518		CO		100			VC	12.24131	
7503	64.62	CO	0	450			VC	76.79192	
8201	65.87	CO	0	225			VC	61.81424	
5901	68.2	SW	65.58	600			CO	65.02233	1 in 296
5901	68.2	SW	65.58	600			CO	65.02233	1 in 296
5901	68.2	SW	65.58	600			CO	65.02233	1 in 296
5901	68.2	SW	65.58	600			CO	65.02233	1 in 296
8405		CO		150			VC	1.991395	
8403		CO		150			VC	14.873	
5501		CO	0	300			VC	115.0043	
6403		CO		100			VC	5.64489	
6307		CO		100			VC	4.717009	
6301	65.17	CO	63.29	225			VC	111.0182	1 in 300
7201	64.65	CO	62.72	225			VC	107.4244	1 in 121
8102		CO	0	225			VC	49.0306	
8203		CO		150			VC	11.46593	
6502		CO	0	375			VC	55.32771	
7511		CO		100			VC	5.584937	
6408		CO		100			VC	16.91582	
7301	63.72	CO	61.62	225			VC	109.5536	1 in 183
7206		CO		150			VC	13.50723	
6414		CO		100			VC	13.10419	
7202	63.81	CO	61.66	225			VC	116.2497	1 in 117
7403		CO		100			VC	21.38492	
6204	67	CO	59.3	450			VC	7.043701	
7405		CO		100			VC	8.610455	
7508		CO		100			VC	2.507909	
5201	66.15	CO	59.03	1200			CO	44.30105	
4307		CO	0	1100			CO	86.27	
4307		CO	0	1100			CO	86.27	
6105	67	FO	64.94	150			VC	4.299837	1 in 8
7401	63.03	CO	61	225			VC	110.3196	1 in 51
6315		CO		100			VC	5.989707	
5004	68.2	SW	65.36	600			CO	38.29696	1 in 191
5004	68.2	SW	65.36	600			CO	38.29696	1 in 191
7209		CO		100			VC	6.001639	
8406		CO		100			VC	6.082156	
5002	67.8	CO	65.16	600			CO	32.34964	1 in 112
8302	61.66	CO	59.21	375			CO	73	1 in 162
6404		CO		100			VC	10.98073	
8402		FO		0			UN	23.71716	
5102	67.4	FO	65.57	150			VC	62.10414	1 in 99
4901	68.45	SW	67	150			VC	27.46501	1 in 19
4901	68.45	SW	67	150			VC	27.46501	1 in 19
4901	68.45	SW	67	150			VC	27.46501	1 in 19
4901	68.45	SW	67	150			VC	27.46501	1 in 19
5902	68.21	FO	66.86	150			VC	63.15295	1 in 150
5902	68.21	FO	66.86	150			VC	63.15295	1 in 150
5902	68.21	FO	66.86	150			VC	63.15295	1 in 150
5902	68.21	FO	66.86	150			VC	63.15295	1 in 150
6304		CO		100			VC	12.26005	
5515		CO		100			VC	13.09888	
8413		CO		150			VC	5.057271	
8503		CO		150			VC	15.91536	
5508		CO		100			VC	12.23191	
5508		CO		100			VC	12.23191	
6102	59.51	CO	51.88	1000			CO	60.71264	
6413		CO		100			VC	3.734877	
7404		CO		100			VC	3.988855	
5408		CO		100			VC	7.497238	
8502		CO	0	450			VC	116.1809	
7510		CO		100			VC	7.07082	
5302	65.29	CO	63.15	225			VC	99.15644	1 in 85.4796914
5302	65.29	CO	63.15	225			VC	99.15644	1 in 85.4796914
6104	67	CO	64.39	675			CO	14.57598	1 in 133
6213		CO		100			VC	6.657497	
8412		CO		150			VC	12.47098	
6308		CO		100			VC	7.034209	
5502	63.64	CO	60.75	225			VC	32.20248	
5502	63.64	CO	60.75	225			VC	32.20248	
6101	59.64	CO	52.05	1000			CO	29.06888	1 in 194
6415		CO		100			VC	5.422707	
6309		CO		100			VC	14.36506	
4101	67.31	CO	63.11	825			CO	137.4081	1 in 286
6402		CO		150			VC	13.26106	
6103	67.1	CO	64.28	675			CO	4.511602	1 in 150
5303	65.9	CO	63.73	300			VC	80.28075	1 in 27
5304		CO	0	225			VC	34.05877	
5304		CO	0	225			VC	34.05877	
6302	63.67	CO	62.07	225			VC	30.26549	
5001	67.8	FO	66.05	150			VC	47.0741	1 in 98
5003	68.2	FO	66.44	150			VC	39.19139	1 in 100
5003	68.2	FO	66.44	150			VC	39.19139	1 in 100
6205		CO		100			VC	2.831256	
6202	64.03	CO	61.81	225			VC	102.3426	
6305		CO		100			VC	11.72873	
6211		CO		150			VC	13.03519	
8501	63.86	CO	61.03	225			VC	103.1601	1 in 83
7504	64.51	CO	62.64	225			VC	50.15974	
8202	62.93	CO	60.64	300			CO	96.02604	1 in 69
8101	60.37	CO	53.67	1000			CO	206.7996	1 in 129
5101	67.45	SW	64.87	675			CO	74.82241	1 in 156
6201	63.94	CO	61.87	225			VC	110.6526	
6204		CO		150			VC	8.233979	
6412		CO		100			VC	13.58344	
0802	68.52	CO	64.29	900			CO	89.55445	1 in 299
6516		CO		100			VC	10.39456	
4406		CO	0	225			VC	26	
6520		CO		100			VC	3.209226	
4305		CO		100			VC	21.20441	
4305		CO		100			VC	21.20441	
4422		CO		100			VC	4.636023	
4422		CO		100			VC	4.636023	
5401	64.78	CO	61.91	375			CO	80.26207	
8301	62.87	CO	60.49	225			VC	60.20797	1 in 52
6505		CO		150			VC	31.01465	
6517		CO		100			VC	10.83909	
5407		CO		150			VC	9.673423	
5524		CO		150			VC	9.719399	
7514		CO		150			VC	5.681364	
4414		CO		100			VC	9.127616	
4414		CO		100			VC	9.127616	
4402	64.16	CO	61.92	225			VC	80.16349	1 in 72
4402	64.16	CO	61.92	225			VC	80.16349	1 in 72
6422		CO		100			VC	11.19291	
6523		CO		150			VC	28.18944	
5519		CO		100			VC	1.264043	
7502	65.08	CO	62.9	300			VC	97.08261	1 in 107
4423		CO		100			VC	1.997853	
4423		CO		100			VC	1.997853	
8309		CO		100			VC	16.0225	
7521		CO		100			VC	3.119579	
7307		CO		100			VC	7.054114	
4404		CO	0	225			VC	29.01724	
4404		CO	0	225			VC	29.01724	
7308		CO		100			VC	7.058362	
6503	65.39	CO	62.1	375			CO	32.99054	

Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad

LEGEND

Abandoned | Foul | Surface Water | Combined

- Public Sewer
- Private Sewer
- Section 104
- Rising Main
- Sludge Main
- Overflow
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All point assets follow the standard colour convention:
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- Penstock
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- Valve
- Air Valve
- Non Return Valve
- Soakaway
- Gully
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- Drop Shaft
- Orifice Plate
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- Outfall
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- Bifurcation Chamber
- Lamp Hole
- T Junction / Saddle
- Catchpit
- Valve Chamber
- Vent Column
- Vortex Chamber
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- Network Storage Tank
- Sewer Overflow
- Ww Treatment Works
- Ww Pumping Station
- Septic Tank
- Control Kiosk
- DNM Network Monitoring Point
- Change of Characteristic

MANHOLE FUNCTION

FO	Foul
SW	Surface Water
CO	Combined
OV	Overflow

SEWER SHAPE

CI	Circular	TR	Trapezoidal
EG	Egg	AR	Arch
OV	Oval	BA	Barrel
FT	Flat Top	HO	HorseShoe
RE	Rectangular	UN	Unspecified
SQ	Square		

SEWER MATERIAL

AC	Asbestos Cement
BR	Brick
PE	Polyethylene
RP	Reinforced Plastic Matrix
CO	Concrete
CSB	Concrete Segment Bolted
CSU	Concrete Segment Unbolted
CC	Concrete Box Culverted
PSC	Plastic / Steel Composite
GRC	Glass Reinforecd Plastic
DI	Ductile Iron
PVC	Polyvinyl Chloride
CI	Cast Iron
SI	Spun Iron
ST	Steel
VC	Vitrified Clay
PP	Polypropylene
PF	Pitch Fibre
MAC	Masonry, Coursed
MAR	Masonry, Random
U	Unspecified

Address or Site Reference:

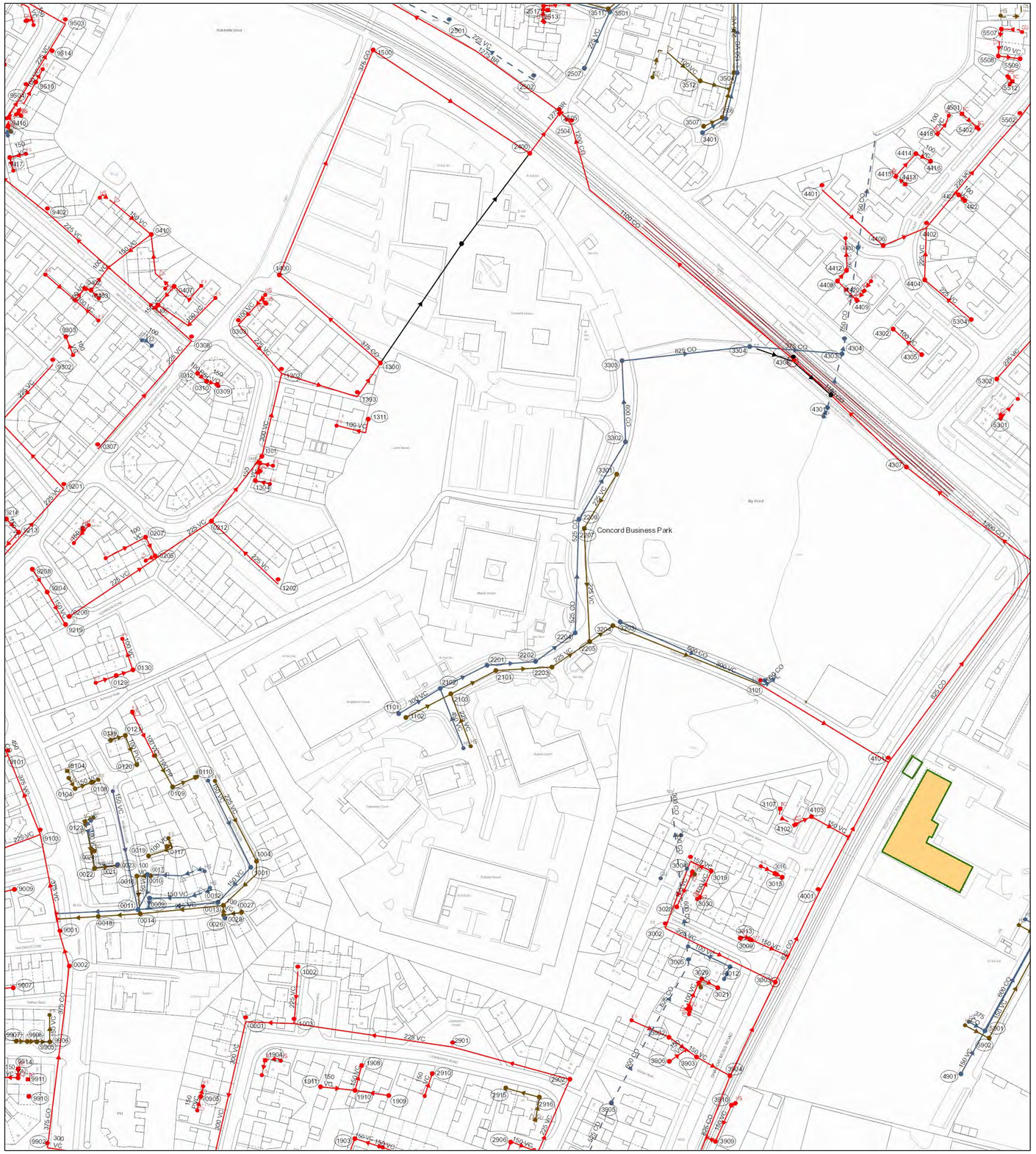
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SIMONSWAY,
MANCHESTER,
M22 5PR

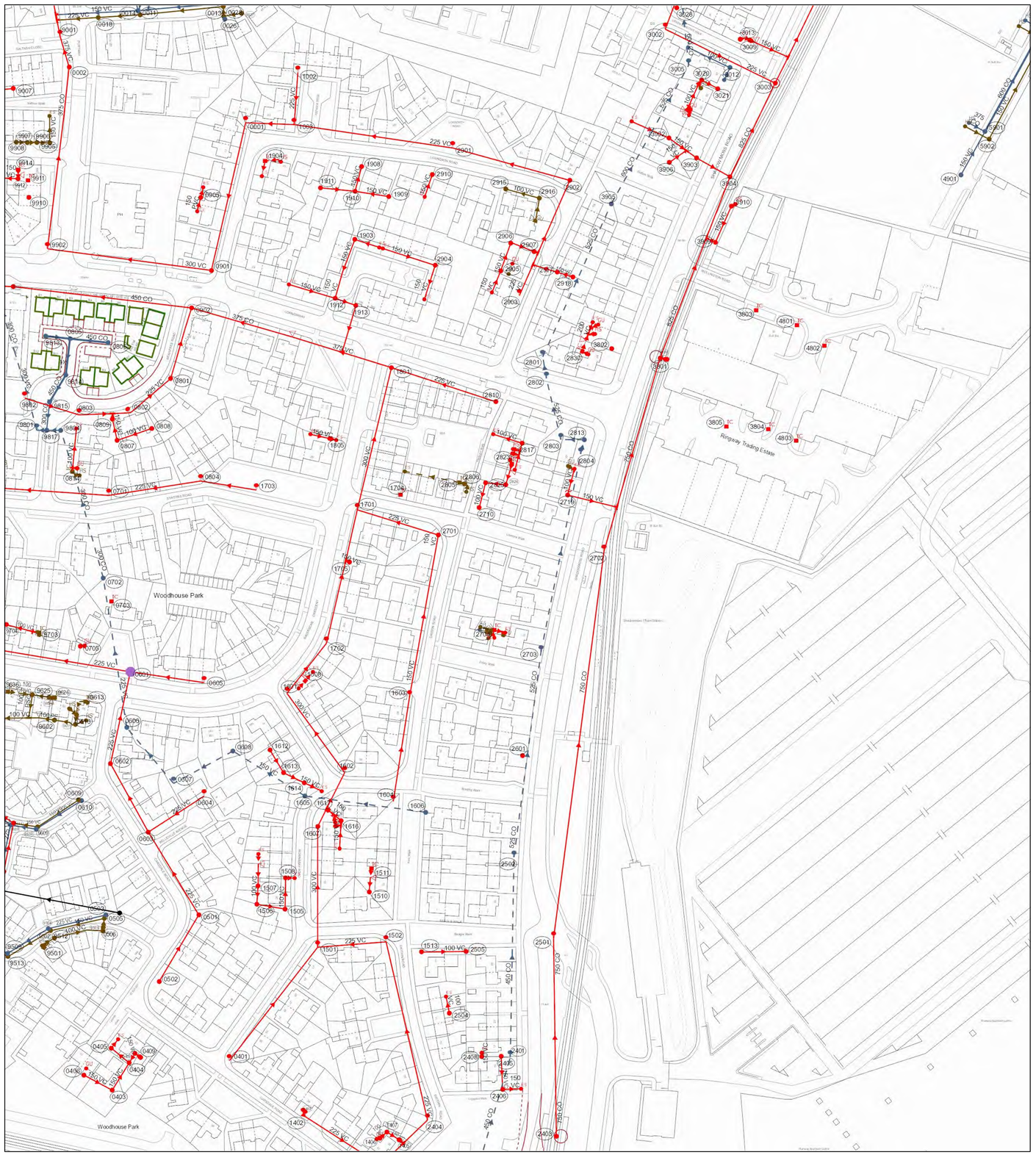
OS sheet Number: SJ8386SE
Scale: 1:1250 **Date:** 07/07/2026
Nodes: 135
Sheet: 2 of 4

Printed by: Property Searches

SEWER RECORDS

United Utilities
Water for the North West


Concord Business Park
Hutchinette Wood
Big Wood
Concord Station
Lime Wood
Maple House
Singleton House
Rowland Court
Clarendon Court
Dunkirk Mount
Dunkirk Ground
Dunkirk Lane
Dunkirk Cottages
Dunkirk Farm
Dunkirk Barn
Dunkirk Bungalow
Dunkirk Cottage
Dunkirk Lodge
Dunkirk Mill
Dunkirk Mill Cottage
Dunkirk Mill Barn
Dunkirk Mill Lodge



Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
2403	74.15	CO	67.55	750			CO	110.0007	1 in 216
9906		FO		150			VC	14.91401	
9906		FO		150			VC	14.91401	
1603	71.98	FO	0	150			VC	91.41116	
9610	71.44	SW	69.27	225			VC	14.4373	1 in 72
9602		FO		225			PE	8.59698	
1002	68.92	CO	66.48	225			VC	29.08888	1 in 5
1002	68.92	CO	66.48	225			VC	29.08888	1 in 5
2405		CO		150			VC	18.31948	
1003	65.07	CO	60.89	225			VC	27.01851	1 in 82
1003	65.07	CO	60.89	225			VC	27.01851	1 in 82
0016		FO		225			VC	20.97428	
3801	69.81	CO		150			CO	1.3973813	
0902	69.96	CO	66.69	450			CO	99.70279	1 in 100
9912		CO		150			VC	9.618885	
9912		CO		150			VC	9.618885	
0905		CO		150			PVC	5.884212	
0905		CO		150			PVC	5.884212	
1508		CO		150			VC	5.04505	
0009		SW		150			VC	5.813673	
0018		FO		225			VC	22.98763	
0018		FO		225			VC	22.98763	
2803		SW		525			CO	34.9285	
1903		CO		150			VC	34.50711	
1903		CO		150			VC	34.50711	
9609	71.49	FO	68.85	150			VC	13.6053	1 in 54
0809		CO		150			VC	3.112827	
3906		CO		150			VC	11.40806	
3906		CO		150			VC	11.40806	
0401	75.68	CO	72.51	225			VC	79.81228	1 in 123
0001	64.91	CO	60.54	300			VC	84.17244	
0001	64.91	CO	60.54	300			VC	84.17244	
3905		SW		600			CO	44.77723	
3905		SW		600			CO	44.77723	
0802	70.46	CO	67.2	225			VC	29.10506	1 in 162
2504		CO		100			VC	9.460517	
0011		SW		150			VC	45.63586	
0011		SW		150			VC	45.63586	
9608	71.58	CO	68.6	225			VC	11.63206	1 in 145
1507		FO		100			VC	10.23364	
9905		FO		150			VC	7.060663	
9905		FO		150			VC	7.060663	
1913		CO		150			VC	27.12692	
0604	71.83	CO	69.36	225			VC	36.89174	1 in 97
1912		CO		150			VC	12.19762	
0503	73.57	SW	71.94	225			VC	32.71663	1 in 74
2904		CO		150			VC	19.79427	
0616		FO		100			PE	5.421527	
2905		CO		150			VC	16.56623	
3003	68.16	CO	63.3	825			CO	54.5629	1 in 273
3003	68.16	CO	63.3	825			CO	54.5629	1 in 273
4901	68.45	SW	67	150			VC	27.46501	1 in 19
4901	68.45	SW	67	150			VC	27.46501	1 in 19
4901	68.45	SW	67	150			VC	27.46501	1 in 19
4901	68.45	SW	67	150			VC	27.46501	1 in 19
2801	69.74	SW	67.87	525			CO	93.10747	
2401	73.89	SW	71.65	450			CO	111.018	1 in 122
0609	70.87	FO	69.1	150			VC	27.16649	1 in 109
1505		CO		150			VC	17.23985	
9908		FO		150			VC	5.317281	
9908		FO		150			VC	5.317281	
1604	72.86	CO	70.5	150			VC	58.69412	
1601	71.34	CO	68.95	300			VC	35.60899	1 in 209
2802	69.67	SW	68.03	525			CO	12.16553	1 in 87
9813	69.66	SW	68.32	450			CO	13.63334	1 in 454
3012		SW		100			VC	25.90178	
3012		SW		100			VC	25.90178	
1403	75.84	CO	73.53	150			VC	1.414214	1 in 47
2903	69.28	CO	67.02	225			VC	69.85699	1 in 109
2804	70.47	SW	68.65	525			CO	8.246211	
9804	70.21	SW	68.19	300			VC	7.923929	
1703	70.55	CO	68.19	225			VC	31.40064	1 in 196
9907		FO		150			VC	6.10971	
9907		FO		150			VC	6.10971	
0502	74.99	CO	0	225			VC	43.04649	
9909	73.3	SW	71.11	225			VC	15.17418	1 in 63
0901	70.06	CO	64.5	300			VC	91.7878	1 in 270
0611		FO		100			PE	12.34408	
9512	73.62	FO	71.05	150			VC	27.75175	1 in 71
0506		FO		100			VC	5.108209	
3009		CO		150			VC	3.9216	
3009		CO		150			VC	3.9216	
3902		CO		150			VC	18.90815	
3902		CO		150			VC	18.90815	
1607		CO	0	300			VC	33.54106	
9902	69.08	CO	64.14	375			CO	101.713	
9902	69.08	CO	64.14	375			CO	101.713	
2902	68.86	CO	66.09	225			VC	67.44627	1 in 173
2902	68.86	CO	66.09	225			VC	67.44627	1 in 173
1613		CO		150			VC	12.83295	
1602	72.03	CO	69.3	300			VC	54.40588	1 in 209
1506		CO		150			VC	15.92018	
9001	68.77	CO	63.87	375			VC	57.07013	1 in 136
9001	68.77	CO	63.87	375			VC	57.07013	1 in 136
3809	69.49	CO	64.73	825			CO	107.9466	1 in 348
1911		CO		150			VC	19.29062	
1911		CO		150			VC	19.29062	
1801	69.94	CO	67.12	375			VC	57.56735	1 in 288
0601	70.65	CO	68.11	225			VC	72.99315	1 in 107
0803	70.3	CO	67.43	225			VC	28.77078	1 in 137
1909		CO		150			VC	19.02827	
1909		CO		150			VC	19.02827	
1701	70.7	CO	68.4	300			VC	81.25269	1 in 129
1612		CO		150			VC	14.67751	
3004	67.23	CO	64.7	225			VC	39.56008	1 in 158
1502	74.58	CO	71.69	225			VC	38.11824	1 in 100
3909		CO		150			VC	5.548516	
3909		CO		150			VC	5.548516	
0607	71.26	SW	69.14	225			VC	40.45986	1 in 225
1617		CO		150			VC	1.107323	
0808		CO		100			VC	20.41278	
5901	68.2	SW	65.58	600			CO	65.02233	1 in 296
5901	68.2	SW	65.58	600			CO	65.02233	1 in 296
5901	68.2	SW	65.58	600			CO	65.02233	1 in 296
5901	68.2	SW	65.58	600			CO	65.02233	1 in 296
3910		CO		150			VC	21.97636	
3910		CO		150			VC	21.97636	
9801	70.4	SW	68.17	300			VC	44.40371	1 in 193
9513	73.27	FO	71.11	150			VC	16.36872	1 in 20
0606	70.57	SW	68.93	225			VC	84.0119	1 in 168
0010		SW		150			VC	20.77204	
0605	70.96	CO	68.53	225			VC	41.4367	1 in 104
1702	71.59	CO	68.76	300			VC	75.92845	1 in 223
0602	70.74	CO	68.57	225			VC	52.17279	1 in 121
1705		CO		150			VC	2.356874	
2906		CO		150			VC	13.9488	
2906		CO		150			VC	13.9488	
0002		CO	0	375			VC	17.72005	
0002		CO	0	375			VC	17.72005	
9903	68.98	CO	65.69	450			CO	77.00517	1 in 220
0610	70.91	SW	69.48	225			VC	29.72202	1 in 142
9508	73.61	SW	71.5	225			VC	26.61387	1 in 68
2901	69.02	CO	65.68	225			VC	88.95505	1 in 19
2901	69.02	CO	65.68	225			VC	88.95505	1 in 19
0014		FO		225			VC	23.24434	
0014		FO		225			VC	23.24434	
3013		CO		150			VC	2.843168	
3013		CO		150			VC	2.843168	
1805		CO		150			VC	3.649154	
0701	70.41	CO	67.65	225			VC	89.20202	
0806	69.92	SW	68.36	450			CO	21.43554	1 in 306
5902	68.21	FO	66.86	150			VC	63.15295	1 in 150
5902	68.21	FO	66.86	150			VC	63.15295	1 in 150
5902	68.21	FO	66.86	150			VC	63.15295	1 in 150
5902	68.21	FO	66.86	150			VC	63.15295	1 in 150
9502		FO		100			VC	27.43905	
0504		FO		100			VC	1.821391	
0608		SW		150			VC	37.58989	
2406		CO		150			VC	10.22065	
2701		CO	0	225			VC	47.12749	
9814	70.06	SW	68.25	450			CO	17.42433	1 in 436
2907		CO		150			VC	2.429393	
3904	68.66	CO	64.35	825			CO	57.72749	1 in 101
3904	68.66	CO	64.35	825			CO	57.72749	1 in 101
2501	72.85	CO	67	750			CO	216.8156	1 in 203
0501	73.7	CO	70.28	225			VC	53.85165	1 in 85
2404	75.02	CO	72.65	225			VC	101.6366	1 in 108
9611	71.54	SW	69.07	300			CO	12.2867	1 in 123
2917		CO		150			VC	14.05574	
9817	70.09	SW		300			VC	5.493869	
2502	72.5	SW	70.67	525			CO	114.9826	1 in 111
0406		CO		150			VC	17.80006	
3903		CO		150			VC	21.30687	
3903		CO		150			VC	21.30687	
3005	68.06	SW	65.46	600			CO	48.25971	1 in 322
3005	68.06	SW	65.46	600			CO	48.25971	1 in 322
9802	70.22	CO	67.64	225			VC	31.5727	1 in 166
0804	70.33	CO	67.98	225			VC	51.62364	1 in 167
0807		CO		150			VC	12.02558	
2916		FO		100			VC	19.25355	
2916		FO		100			VC	19.25355	
1614		CO		150			VC	10.75411	
0805	69.77	SW	68.29	450			CO	20.28929	1 in 507
1910		CO		150			VC	14.35089	
1910		CO		150			VC	14.35089	
0801	70.38	CO	67	225			VC	40.92362	1 in 227
0505	73.57	FO	71.47	150			VC	30.54023	1 in 73
9815	70.1	SW	0				CO	0.2226948	
2810	69.84	CO	0	225			VC	61.03278	
0603	71.99	CO	68.96	225			VC	43.41659	1 in 117
2918		CO		150			VC	9.208687	
2702	70.65	CO	65.33	750			CO	111.693	1 in 272
2824		CO		100			VC	11.22123	
0409		CO		150			VC	3.874804	
2813		SW		525			CO	13	
1402	75.78	CO	73.42	225			VC	49.92995	1 in 122
1407		CO		150			VC	8.11649	
1616		CO		150			VC	9.422802	
3002	67.69	CO	64.4	225			VC	67.97794	1 in 174
3002	67.69	CO	64.4	225			VC	67.97794	1 in 174
0027		FO		100			VC	10.05347	
0027		FO		100			VC	10.05347	
1406		CO		100			VC	5.092375	
0702	70.46	SW	68.43	300			CO	85.47147	1 in 356
0404		CO		150			VC	12.83337	
0028		FO		100			VC	5.44633	
0028		FO		100			VC	5.44633	
9625		FO		100			PSC	12.96655	
1513		CO		100			VC	24.67552	
1605		SW		150			VC	47.16991	
0403		CO		150			VC	17.87203	

Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
0012		SW		150			VC	44.63545	
0405		CO		150			VC	6.217504	
3020		CO		150			VC	10.23957	
3020		CO		150			VC	10.23957	
9624		FO		100			PSC	9.480327	
2825		CO		100			VC	14.13041	
0408		CO		150			VC	6.180535	
1606		SW		150			VC	67.60178	
1405		CO		150			VC	3.061168	
1004		FO		225			VC	32.63143	
2719		CO		150			VC	28.10436	
1501	74.86	CO	71.21	300			VC	67	
2703	71.39	SW	69.61	525			CO	112.1784	1 in 119
0013		FO		225			VC	46.40276	
0013		FO		225			VC	46.40276	
2817		CO		100			VC	16.68053	

LEGEND

Abandoned | Foul | Surface Water | Combined

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- Inlet
- Discharge Point
- Vortex
- Penstock
- Washout Chamber
- Valve
- Air Valve
- Non Return Valve
- Soakaway
- Gully
- Cascade
- Flow Meter
- Hatch Box
- Oil Interceptor
- Summit
- Drop Shaft
- Orifice Plate
- Side Entry Manhole
- Outfall
- Screen Chamber
- Inspection Chamber
- Bifurcation Chamber
- Lamp Hole
- T Junction / Saddle
- Catchpit
- Valve Chamber
- Vent Column
- Vortex Chamber
- Penstock Chamber
- Network Storage Tank
- Sewer Overflow
- Ww Treatment Works
- Ww Pumping Station
- Septic Tank
- Control Kiosk
- DNM Network Monitoring Point
- Change of Characteristic

MANHOLE FUNCTION

FO	Foul
SW	Surface Water
CO	Combined
OV	Overflow

SEWER SHAPE

CI	Circular	TR	Trapezoidal
EG	Egg	AR	Arch
OV	Oval	BA	Barrel
FT	Flat Top	HO	HorseShoe
RE	Rectangular	UN	Unspecified
SQ	Square		

SEWER MATERIAL

AC	Asbestos Cement
BR	Brick
PE	Polyethylene
RP	Reinforced Plastic Matrix
CO	Concrete
CSB	Concrete Segment Bolted
CSU	Concrete Segment Unbolted
CC	Concrete Box Culverted
PSC	Plastic / Steel Composite
GRC	Glass Reinforced Plastic
DI	Ductile Iron
PVC	Polyvinyl Chloride
CI	Cast Iron
SI	Spun Iron
ST	Steel
VC	Vitrified Clay
PP	Polypropylene
PF	Pitch Fibre
MAC	Masonry, Coursed
MAR	Masonry, Random
U	Unspecified

Address or Site Reference:

J X T ALTITUDE ATLAS BUSINESS PARK
SIMONSWAY,
MANCHESTER,
M22 5PR

OS sheet Number: SJ8385NW
Scale: 1:1250 **Date:** 07/07/2026
Nodes: 217
Sheet: 4 of 4

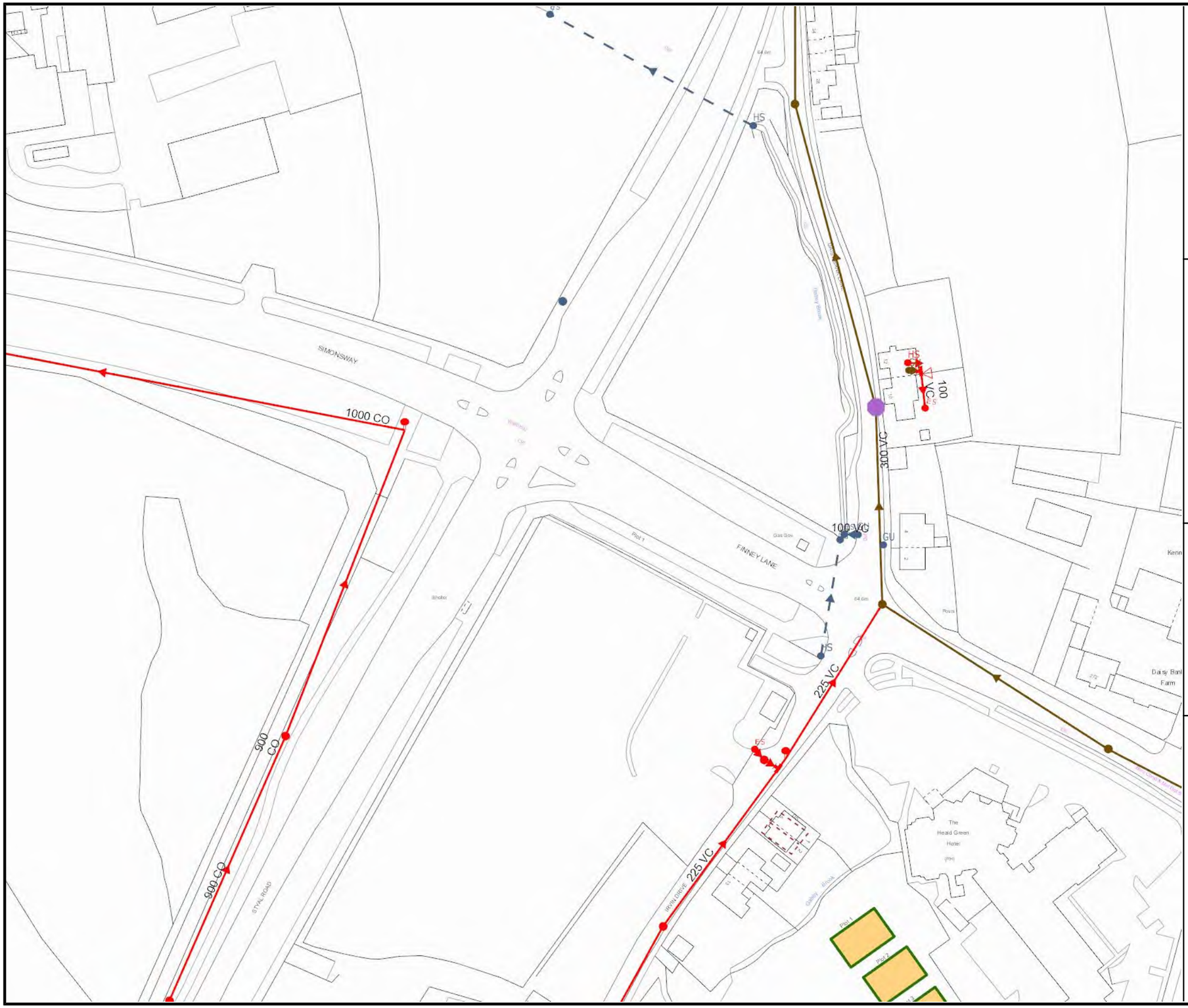
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SEWER RECORDS

United Utilities
Water for the North West

The position of the underground apparatus shown on this plan is approximate only and is given in accordance with the best information currently available. United Utilities Water will not accept liability for any loss or damage caused by the actual position being different from those shown.

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Water for the North West

SEWER RECORDS

Address or Site Reference

DAISY BANK FARM 272 FINNEY LANE,
HEALD GREEN,
CHEADLE,
SK8 3QH

Scale: 1:1250

Date: 10/08/2026

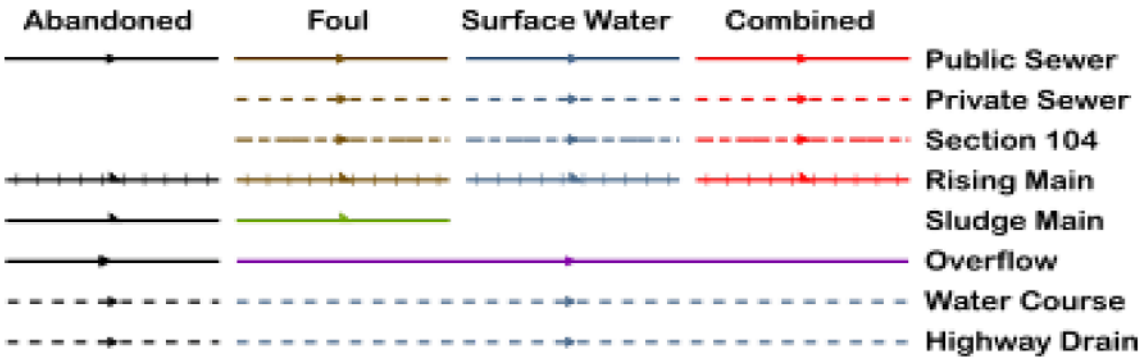
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Wastewater Symbology



All point assets follow the standard colour convention: red – combined, brown - foul, blue – surface water, purple - overflow

- Manhole
- HS Head of System
- ES Extent of Survey
- RE Rodding Eye
- IN Inlet
- DP Discharge Point
- HY Vortex
- PE Penstock
- WO Washout Chamber
- VA Valve
- AV Air Valve
- NRV Non Return Valve
- SO Soakaway
- GU Gully
- CA Cascade
- FM Flow Meter
- HA Hatch Box
- OI Oil Interceptor
- SM Summit
- DS Drop Shaft
- OP Orifice Plate
- Side Entry Manhole
- Outfall
- Screen Chamber
- IC Inspection Chamber
- Bifurcation Chamber
- LH Lamp Hole
- T Junction / Saddle
- CA Catchpit
- VC Valve Chamber
- Vent Column
- Vortex Chamber
- Penstock Chamber
- T Network Storage Tank
- V Sewer Overflow
- WwTW Ww Treatment Works
- Ww Pumping Station
- ST Septic Tank
- CK Control Kiosk
- DNM Network Monitoring Point
- Change of Characteristic

APPENDIX D – DRAINAGE STRATEGY

Siphonic discharge locations shown indicatively. Final locations tbc subject to siphonic design.

Internal foul drainage popups tbc, subject to setting out plan.

LEGEND

- Proposed Surface Water
- Proposed Attenuation Tank
- Proposed Permeable Paving
- Proposed Siphonic
- Proposed Slot Drain
- Proposed Channel Drain
- Proposed Road Gully
- Proposed Kerb Drain
- Proposed Outlet Unit
- Proposed Access Unit
- Proposed Oil Separator
- Proposed Foul Drainage
- UU Surface Water Drainage
- UU Foul Water Drainage
- UU Combined Drainage

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SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

IN ADDITION TO THE HAZARDS/RISKS NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING, NOTE THE FOLLOWING

CONSTRUCTION

MAINTENANCE

DEMOLITION

IT IS ASSUMED THAT ALL WORKS WILL BE CARRIED OUT BY A COMPETENT CONTRACTOR WORKING, WHERE APPROPRIATE, TO AN APPROVED METHOD STATEMENT

GENERAL NOTES:

1. This drawing shall be read in conjunction with all the relevant architects, engineers' and service engineers drawings & specifications.
2. All units in millimeters U.O.N. on the drawing.
3. Do Not Scale off the drawing.

REV	DATE	BY	DESCRIPTION	CHKD
P01	07.09.26	JB	Issued for Information	JW

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CLIENT

AVIVA INVESTORS

PROJECT

ATLAS PARK DEVELOPMENT

DRAWING TITLE

DRAINAGE STRATEGY

BGL PROJECT NUMBER	DRAWING STATUS	OFFICE
30460	PRELIMINARY	NORTH

SCALE @ A0	DATE	DRAWN BY	CHECKED BY
1:500	07.09.2026	JB	JW

DRAWING No: 30460-BGL-XX-XX-DR-C-00250 REV: P01

SCALE BAR 1:500 (0, 10, 20, 30, 40, 50)

APPENDIX E – HYDRAULIC CALCULATIONS

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	2	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	20.000	Minimum Backdrop Height (m)	0.200
Ratio-R	0.400	Preferred Cover Depth (m)	1.200
CV	0.750	Include Intermediate Ground	✓
Time of Entry (mins)	5.00	Enforce best practice design rules	x

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
SWM01	0.064	5.00	69.200	1200	383868.174	386045.876	1.425
SWM02			69.200	1200	383871.403	386052.642	1.469
SWM03			69.026	1200	383838.515	386068.334	1.509
SWM04	0.151	5.00	69.074	1200	383834.230	386059.353	1.691
SWM05	0.077	5.00	68.691	1200	383822.759	386082.000	1.500
SWM06	0.037	5.00	68.691	1200	383785.174	386003.227	1.426
SWM07	0.326	5.00	68.729	1350	383799.716	386033.705	1.928
SWM08	0.050	5.00	69.202	1200	383835.271	385977.143	0.752
SWM09			69.200	1200	383831.740	385969.743	0.832
SWM10			69.030	1200	383799.166	385985.283	1.425
SWM11	0.126	5.00	69.030	1200	383805.155	385997.834	1.507
Unit 2/3 Attenuation Tank			68.855		383798.701	386009.975	2.443
SWM12			68.737	1350	383785.460	385982.091	2.414
SWM13	0.078	5.00	69.406	1200	383790.074	385899.181	1.425
SWM14	0.082	5.00	69.134	1200	383808.153	385954.911	1.498
SWM15	0.315	5.00	68.875	1350	383719.964	385983.886	1.650
Unit 4 Dock		5.00	68.450	1200	383752.699	385950.930	1.000
SWM16	0.177	5.00	68.880	1350	383759.162	385970.803	1.939
SWM17	0.293	5.00	69.527	1200	383765.899	385948.641	1.555
U4 Tank In 2			68.819		383772.437	385968.746	1.648
SWM18	0.204	5.00	69.528	1200	383717.156	385964.492	1.511
U4 Tank In 1			68.828		383723.694	385984.596	1.500
Unit 4 Attenuation Tank			68.580		383728.660	385993.497	2.000
SWM19			68.641	1500	383731.386	386001.215	2.634
SWM20	0.179	5.00	69.475	1200	383618.774	385966.215	1.500
SWM21	0.046	5.00	69.013	1200	383635.406	386013.146	1.500
SWM22	0.082	5.00	69.019	1200	383658.199	386005.068	1.755
Unit 5 Dock		5.00	68.450	1200	383691.282	385971.448	1.000
SWM23	0.189	5.00	68.890	1200	383713.409	385985.505	1.425
SWM24	0.119	5.00	68.892	1350	383698.177	385990.902	1.947
SWM25	0.081	5.00	69.632	1200	383659.167	385983.311	1.500
SWM26	0.134	5.00	69.564	1200	383671.163	385979.060	1.727
U5 Tank In 1			68.828		383678.937	386001.005	1.500
SWM27	0.136	5.00	69.564	1200	383697.333	385969.789	1.519
U5 Tank In 2			68.812		383705.108	385991.733	1.425
Unit 5 Attenuation Tank			68.545		383715.205	385999.917	2.000
SWM28	0.258	5.00	68.922	1350	383699.048	386018.821	1.650
SWM29	0.258	5.00	68.892	1350	383739.219	386004.595	1.650
SWM30	0.253	5.00	68.892	1350	383719.354	386011.630	1.711
SWM31			68.639	1500	383717.382	386006.062	2.662
SWM32	0.015	5.00	67.441	1350	383835.360	386108.135	2.341
SWM33	0.053	5.00	68.116	1350	383824.668	386094.695	2.866
SWM34	0.062	5.00	68.368	1350	383767.560	386114.973	2.968
SWM35	0.133	5.00	67.299	1350	383707.608	386136.212	1.649
SWM36	0.237	5.00	68.128	1350	383703.668	386125.268	2.228

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Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
SWM37	0.235	5.00	68.188	1350	383677.930	386052.439	2.018
Unit 1 Dock		5.00	67.750	1200	383699.729	386044.716	1.350
Unit 1 Attenuation Tank		5.00	67.700		383664.715	386041.569	1.500
SWM38			68.405	1500	383665.038	386025.556	2.540
SWM39			68.683	1500	383648.344	386019.246	2.854
SWM40			68.378	1500	383569.234	386062.160	2.729
SWM41			68.211	1500	383554.863	386061.511	2.591
SWM42	0.287	5.00	69.368	1200	383555.303	385932.591	1.500
SWM43	0.287	5.00	69.495	1200	383533.820	385944.247	1.877
SWM44			68.691	1350	383510.049	385957.128	1.668
SWM45	0.059	5.00	68.897	1200	383567.247	386050.318	1.425
SWM46	0.031	5.00	68.802	1200	383526.572	385975.264	1.352
Unit 6 Dock	0.079	5.00	68.350	1200	383560.154	385994.932	1.000
SWM47	0.094	5.00	68.803	1200	383542.433	386004.533	1.761
SWM48	0.034	5.00	69.374	1200	383562.048	386006.903	1.468
U6 Tank In 1			68.706		383544.470	386016.438	1.350
Unit 6 Attenuation Tank			68.330		383534.976	386024.848	2.800
SWM49			68.467	1500	383544.225	386041.816	2.974
Unlt 7 Dock	0.059	5.00	67.900	1200	383454.167	385976.344	1.000
SWM50	0.064	5.00	68.360	1200	383472.115	385966.597	1.664
SWM51	0.010	5.00	68.543	1200	383500.053	386018.089	1.350
SWM52	0.070	5.00	68.544	1200	383489.933	385999.416	2.294
SWM53	0.171	5.00	68.147	1200	383521.634	386021.456	1.500
SWM54	0.302	5.00	68.145	1200	383500.495	385982.421	1.500
SWM55	0.131	5.00	68.145	1350	383505.216	385991.125	1.927
SWM56			68.330	1350	383496.520	385995.842	2.349
SWM57	0.247	5.00	69.075	1200	383451.598	386074.364	1.500
SWM58	0.245	5.00	69.075	1350	383472.544	386063.002	1.747
SWM59	0.036	5.00	69.063	1350	383493.347	386051.717	1.804
Unit 7 Attenuation Tank			68.170		383523.315	386033.498	2.500
SWM61			68.176	1500	383528.083	386030.912	2.516
FC01			68.151	2400	383536.359	386046.168	2.676
Ex.MH			68.100	1500	383541.465	386055.581	2.730
SWM60			68.670	1350	383506.442	386039.131	1.650
Ex Combined			67.000	1200	383834.955	386119.290	1.966

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.000	SWM01	SWM02	7.497	0.600	67.775	67.731	0.044	170.0	225	5.12	50.0
1.001	SWM02	SWM03	36.440	0.600	67.731	67.517	0.214	170.0	225	5.73	50.0
1.002	SWM03	SWM04	9.951	0.600	67.517	67.458	0.059	170.0	225	5.90	50.0
1.003	SWM04	Unit 2/3 Attenuation Tank	60.832	0.600	67.383	66.562	0.821	74.1	300	6.45	50.0
2.000	SWM05	SWM07	53.511	0.600	67.191	66.951	0.240	223.0	300	5.85	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	1.000	39.7	8.6	1.200	1.244	0.064	0.0	71	0.800
1.001	1.000	39.7	8.6	1.244	1.284	0.064	0.0	71	0.800
1.002	1.000	39.7	8.6	1.284	1.391	0.064	0.0	71	0.800
1.003	1.828	129.2	29.0	1.391	1.993	0.214	0.0	96	1.485
2.000	1.049	74.1	10.4	1.200	1.478	0.077	0.0	75	0.744

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Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
3.000	SWM06	SWM07	33.769	0.600	67.265	67.026	0.239	141.3	225	5.51	50.0
2.001	SWM07	Unit 2/3 Attenuation Tank	23.752	0.600	66.801	66.742	0.059	402.6	450	6.24	50.0
4.000	SWM08	SWM09	8.199	0.600	68.450	68.368	0.082	100.0	150	5.14	50.0
4.001	SWM09	SWM10	36.091	0.600	68.368	67.605	0.763	47.3	225	5.45	50.0
4.002	SWM10	SWM11	13.907	0.600	67.605	67.523	0.082	169.6	225	5.68	50.0
4.003	SWM11	Unit 2/3 Attenuation Tank	13.750	0.600	67.523	67.430	0.093	147.8	225	5.90	50.0
1.004	Unit 2/3 Attenuation Tank	SWM12	30.868	0.600	66.412	66.323	0.089	345.0	450	6.93	50.0
1.005	SWM12	SWM19	57.356	0.600	66.323	66.157	0.166	345.0	450	7.80	50.0
5.000	SWM13	SWM14	58.589	0.600	67.981	67.636	0.345	169.8	225	5.98	50.0
5.001	SWM14	SWM16	51.504	0.600	67.636	67.166	0.470	109.6	225	6.66	50.0
6.000	SWM15	SWM16	41.324	0.600	67.225	66.941	0.284	145.5	450	5.41	50.0
7.000	Unit 4 Dock	SWM16	20.898	0.600	67.450	67.241	0.209	100.0	150	5.35	50.0
5.002	SWM16	Unit 4 Attenuation Tank	38.018	0.600	66.941	66.580	0.361	105.3	450	6.98	50.0
8.000	SWM17	U4 Tank In 2	21.141	0.600	67.972	67.171	0.801	26.4	300	5.11	50.0
8.001	U4 Tank In 2	Unit 4 Attenuation Tank	50.290	0.600	67.171	66.965	0.206	244.1	300	5.95	50.0
9.000	SWM18	U4 Tank In 1	21.140	0.600	68.017	67.328	0.689	30.7	300	5.12	50.0
9.001	U4 Tank In 1	Unit 4 Attenuation Tank	10.193	0.600	67.328	67.080	0.248	41.1	300	5.19	50.0
5.003	Unit 4 Attenuation Tank	SWM19	8.185	0.600	66.580	66.307	0.273	30.0	450	7.02	50.0
1.006	SWM19	SWM31	14.823	0.600	66.007	65.977	0.030	500.0	600	8.03	50.0
10.000	SWM20	SWM21	49.791	0.600	67.975	67.513	0.462	107.8	300	5.55	50.0
10.001	SWM21	SWM22	24.182	0.600	67.513	67.414	0.099	244.3	300	5.95	50.0
10.002	SWM22	SWM24	42.414	0.600	67.264	66.945	0.319	133.0	450	6.35	50.0
11.000	Unit 5 Dock	SWM24	20.640	0.600	67.450	67.245	0.205	100.7	150	5.34	50.0
12.000	SWM23	SWM24	16.160	0.600	67.465	67.271	0.194	83.3	225	5.19	50.0
10.003	SWM24	Unit 5 Attenuation Tank	19.267	0.600	66.945	66.545	0.400	48.2	450	6.46	50.0
13.000	SWM25	SWM26	12.727	0.600	68.132	67.837	0.295	43.1	300	5.09	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
3.000	1.098	43.6	5.0	1.201	1.478	0.037	0.0	51	0.736
2.001	1.007	160.1	59.6	1.478	1.663	0.440	0.0	189	0.935
4.000	1.005	17.8	6.8	0.602	0.682	0.050	0.0	65	0.941
4.001	1.906	75.8	6.8	0.607	1.200	0.050	0.0	45	1.190
4.002	1.001	39.8	6.8	1.200	1.282	0.050	0.0	63	0.752
4.003	1.073	42.7	23.9	1.282	1.200	0.176	0.0	120	1.101
1.004	1.089	173.1	112.5	1.993	1.964	0.830	0.0	265	1.156
1.005	1.089	173.1	112.5	1.964	2.034	0.830	0.0	265	1.156
5.000	1.000	39.8	10.6	1.200	1.273	0.078	0.0	80	0.851
5.001	1.248	49.6	21.8	1.273	1.489	0.161	0.0	104	1.208
6.000	1.683	267.7	42.7	1.200	1.489	0.315	0.0	121	1.246
7.000	1.005	17.8	0.0	0.850	1.489	0.000	0.0	0	0.000
5.002	1.980	315.0	88.5	1.489	1.550	0.653	0.0	162	1.709
8.000	3.072	217.1	39.7	1.255	1.348	0.293	0.0	86	2.358
8.001	1.002	70.8	39.7	1.348	1.315	0.293	0.0	161	1.030
9.000	2.848	201.3	27.7	1.211	1.200	0.204	0.0	75	2.018
9.001	2.459	173.8	27.7	1.200	1.200	0.204	0.0	81	1.816
5.003	3.723	592.1	155.8	1.550	1.884	1.150	0.0	157	3.161
1.006	1.082	305.9	268.3	2.034	2.062	1.980	0.0	438	1.213
10.000	1.514	107.0	24.2	1.200	1.200	0.179	0.0	97	1.233
10.001	1.001	70.8	30.5	1.200	1.305	0.225	0.0	137	0.965
10.002	1.761	280.1	41.6	1.305	1.497	0.307	0.0	116	1.278
11.000	1.001	17.7	0.0	0.850	1.497	0.000	0.0	0	0.000
12.000	1.433	57.0	25.6	1.200	1.396	0.189	0.0	106	1.397
10.003	2.935	466.7	83.3	1.497	1.550	0.615	0.0	128	2.242
13.000	2.400	169.7	11.0	1.200	1.427	0.081	0.0	51	1.368

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Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
13.001	SWM26	U5 Tank In 1	23.281	0.600	67.837	67.328	0.509	45.7	300	5.25	50.0
13.002	U5 Tank In 1	Unit 5 Attenuation Tank	36.284	0.600	67.328	67.045	0.283	128.2	300	5.69	50.0
14.000	SWM27	U5 Tank In 2	23.281	0.600	68.045	67.387	0.658	35.4	225	5.18	50.0
14.001	U5 Tank In 2	Unit 5 Attenuation Tank	12.997	0.600	67.387	67.120	0.267	48.7	225	5.29	50.0
10.004	Unit 5 Attenuation Tank	SWM31	6.519	0.600	66.545	66.529	0.016	407.5	450	6.57	50.0
15.000	SWM28	SWM30	21.542	0.600	67.272	67.181	0.091	236.7	450	5.27	50.0
16.000	SWM29	SWM30	21.074	0.600	67.242	67.181	0.061	345.0	450	5.32	50.0
15.001	SWM30	SWM31	5.908	0.600	67.181	66.989	0.192	30.8	450	5.35	50.0
1.007	SWM31	SWM38	55.860	0.600	65.977	65.865	0.112	500.0	600	8.89	50.0
27.005	SWM33	SWM32	17.174	0.600	65.250	65.100	0.150	114.5	450	8.52	50.0
27.004	SWM34	SWM33	60.601	0.600	65.400	65.250	0.150	404.0	450	8.37	50.0
27.003	SWM35	SWM34	63.603	0.600	65.650	65.400	0.250	254.4	450	7.36	50.0
27.002	SWM36	SWM35	11.632	0.600	65.900	65.650	0.250	46.5	450	6.53	50.0
27.001	SWM37	SWM36	77.243	0.600	66.170	65.900	0.270	286.1	450	6.46	50.0
27.000	Unit 1 Dock	SWM37	23.127	0.600	66.400	66.170	0.230	100.6	150	5.38	50.0
28.000	Unit 1 Attenuation Tank	SWM37	17.111	0.600	66.200	66.170	0.030	570.4	450	5.34	50.0
1.008	SWM38	SWM39	17.847	0.600	65.865	65.829	0.036	500.0	600	9.17	50.0
1.009	SWM39	SWM40	90.000	0.600	65.829	65.649	0.180	500.0	600	10.55	48.8
1.010	SWM40	SWM41	14.386	0.600	65.649	65.620	0.029	500.0	600	10.78	48.3
1.011	SWM41	SWM49	22.384	0.600	65.620	65.575	0.045	500.0	600	11.12	47.5
17.000	SWM42	SWM43	24.441	0.600	67.868	67.768	0.100	244.4	300	5.41	50.0
17.001	SWM43	SWM44	27.037	0.600	67.618	67.023	0.595	45.5	450	5.56	50.0
17.002	SWM44	Unit 6 Attenuation Tank	72.162	0.600	67.023	66.680	0.343	210.2	450	6.42	50.0
18.000	SWM45	SWM47	52.077	0.600	67.472	67.042	0.430	121.1	225	5.73	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
13.001	2.330	164.7	29.1	1.427	1.200	0.215	0.0	85	1.768
13.002	1.387	98.0	29.1	1.200	1.200	0.215	0.0	112	1.213
14.000	2.206	87.7	18.4	1.294	1.200	0.136	0.0	70	1.758
14.001	1.879	74.7	18.4	1.200	1.200	0.136	0.0	76	1.564
10.004	1.001	159.2	130.8	1.550	1.660	0.965	0.0	312	1.112
15.000	1.317	209.4	35.0	1.200	1.261	0.258	0.0	123	0.986
16.000	1.089	173.1	35.0	1.200	1.261	0.258	0.0	137	0.860
15.001	3.675	584.4	104.3	1.261	1.200	0.769	0.0	128	2.809
1.007	1.082	305.9	503.4	2.062	1.940	3.715	0.0	600	1.092
27.005	1.899	302.0	97.5	2.416	1.891	0.720	0.0	175	1.701
27.004	1.005	159.8	90.4	2.518	2.416	0.667	0.0	242	1.034
27.003	1.270	201.9	82.0	1.199	2.518	0.605	0.0	199	1.206
27.002	2.986	474.9	64.0	1.778	1.199	0.472	0.0	110	2.106
27.001	1.197	190.3	31.9	1.568	1.778	0.235	0.0	123	0.896
27.000	1.002	17.7	0.0	1.200	1.868	0.000	0.0	0	0.000
28.000	0.844	134.2	0.0	1.050	1.568	0.000	0.0	0	0.000
1.008	1.082	305.9	503.4	1.940	2.254	3.715	0.0	600	1.092
1.009	1.082	305.9	491.9	2.254	2.129	3.715	0.0	600	1.092
1.010	1.082	305.9	486.4	2.129	1.991	3.715	0.0	600	1.092
1.011	1.082	305.9	478.1	1.991	2.292	3.715	0.0	600	1.092
17.000	1.001	70.8	38.9	1.200	1.427	0.287	0.0	159	1.025
17.001	3.021	480.5	77.8	1.427	1.218	0.574	0.0	122	2.248
17.002	1.398	222.4	77.8	1.218	1.200	0.574	0.0	183	1.279
18.000	1.187	47.2	8.0	1.200	1.536	0.059	0.0	63	0.892

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Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
19.000	SWM46	SWM47	33.290	0.600	67.450	67.117	0.333	100.0	150	5.55	50.0
20.000	Unit 6 Dock	SWM47	20.155	0.600	67.350	67.148	0.202	100.0	150	5.33	50.0
18.001	SWM47	Unit 6 Attenuation Tank	21.640	0.600	67.042	66.905	0.137	158.0	225	6.08	50.0
21.000	SWM48	U6 Tank In 1	19.998	0.600	67.906	67.356	0.550	36.4	150	5.20	50.0
21.001	U6 Tank In 1	Unit 6 Attenuation Tank	12.683	0.600	67.356	66.980	0.376	33.7	150	5.32	50.0
17.003	Unit 6 Attenuation Tank	SWM49	19.325	0.600	65.530	65.493	0.037	522.3	600	6.72	50.0
1.012	SWM49	FC01	8.990	0.600	65.493	65.475	0.018	500.0	600	11.26	47.2
22.000	UnIt 7 Dock	SWM50	20.424	0.600	66.900	66.696	0.204	100.0	150	5.34	50.0
22.001	SWM50	SWM52	37.344	0.600	66.696	66.325	0.371	100.7	150	5.96	50.0
23.000	SWM51	SWM52	21.239	0.600	67.193	66.325	0.868	24.5	150	5.17	50.0
22.002	SWM52	SWM56	7.494	0.600	66.250	66.206	0.044	170.0	225	6.09	50.0
24.000	SWM53	SWM55	34.489	0.600	66.647	66.368	0.279	123.6	300	5.41	50.0
25.000	SWM54	SWM55	9.902	0.600	66.645	66.443	0.202	49.0	300	5.07	50.0
24.001	SWM55	SWM56	9.893	0.600	66.218	65.981	0.237	41.7	450	5.46	50.0
22.003	SWM56	Unit 7 Attenuation Tank	46.216	0.600	65.981	65.847	0.134	345.0	450	6.79	50.0
26.000	SWM57	SWM58	23.829	0.600	67.575	67.478	0.097	245.0	300	5.40	50.0
26.001	SWM58	SWM59	23.667	0.600	67.328	67.259	0.069	345.0	450	5.76	50.0
22.004	Unit 7 Attenuation Tank	SWM61	5.424	0.600	65.670	65.660	0.010	542.4	600	6.88	50.0
22.005	SWM61	FC01	17.356	0.600	65.660	65.628	0.032	542.4	600	7.16	50.0
1.013	FC01	Ex.MH	10.709	0.600	65.475	65.370	0.105	102.0	675	11.33	47.0
26.002	SWM59	SWM60	18.163	0.600	67.259	67.020	0.239	76.0	450	5.89	50.0
26.003	SWM60	Unit 7 Attenuation Tank	17.788	0.600	67.020	66.520	0.500	35.6	450	5.98	50.0
27.006	SWM32	Ex Combined	11.162	0.600	65.100	65.034	0.066	169.1	225	8.70	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
19.000	1.005	17.8	4.2	1.202	1.536	0.031	0.0	50	0.823
20.000	1.005	17.8	10.7	0.850	1.505	0.079	0.0	84	1.051
18.001	1.038	41.3	35.7	1.536	1.200	0.263	0.0	162	1.164
21.000	1.674	29.6	4.6	1.318	1.200	0.034	0.0	40	1.215
21.001	1.739	30.7	4.6	1.200	1.200	0.034	0.0	39	1.251
17.003	1.058	299.2	118.1	2.200	2.374	0.871	0.0	262	0.999
1.012	1.082	305.9	586.2	2.374	2.076	4.586	0.0	600	1.092
22.000	1.005	17.8	8.0	0.850	1.514	0.059	0.0	71	0.979
22.001	1.001	17.7	16.8	1.514	2.069	0.124	0.0	117	1.136
23.000	2.044	36.1	1.4	1.200	2.069	0.010	0.0	20	0.990
22.002	1.000	39.7	27.7	2.069	1.899	0.204	0.0	138	1.078
24.000	1.413	99.8	23.2	1.200	1.477	0.171	0.0	98	1.158
25.000	2.251	159.1	40.9	1.200	1.402	0.302	0.0	103	1.896
24.001	3.153	501.5	81.8	1.477	1.899	0.604	0.0	122	2.347
22.003	1.089	173.1	109.5	1.899	1.873	0.808	0.0	260	1.148
26.000	1.000	70.7	33.5	1.200	1.297	0.247	0.0	146	0.988
26.001	1.089	173.1	66.7	1.297	1.354	0.492	0.0	194	1.021
22.004	1.038	293.6	181.0	1.900	1.916	1.336	0.0	341	1.090
22.005	1.038	293.6	181.0	1.916	1.923	1.336	0.0	341	1.090
1.013	2.595	928.6	754.4	2.001	2.055	5.922	0.0	464	2.873
26.002	2.334	371.2	71.5	1.354	1.200	0.528	0.0	133	1.821
26.003	3.417	543.4	71.5	1.200	1.200	0.528	0.0	109	2.400
27.006	1.002	39.9	99.5	2.116	1.741	0.735	0.0	225	1.021

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Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	7.497	170.0	225	Circular	69.200	67.775	1.200	69.200	67.731	1.244
1.001	36.440	170.0	225	Circular	69.200	67.731	1.244	69.026	67.517	1.284
1.002	9.951	170.0	225	Circular	69.026	67.517	1.284	69.074	67.458	1.391
1.003	60.832	74.1	300	Circular	69.074	67.383	1.391	68.855	66.562	1.993
2.000	53.511	223.0	300	Circular	68.691	67.191	1.200	68.729	66.951	1.478
3.000	33.769	141.3	225	Circular	68.691	67.265	1.201	68.729	67.026	1.478
2.001	23.752	402.6	450	Circular	68.729	66.801	1.478	68.855	66.742	1.663
4.000	8.199	100.0	150	Circular	69.202	68.450	0.602	69.200	68.368	0.682
4.001	36.091	47.3	225	Circular	69.200	68.368	0.607	69.030	67.605	1.200
4.002	13.907	169.6	225	Circular	69.030	67.605	1.200	69.030	67.523	1.282
4.003	13.750	147.8	225	Circular	69.030	67.523	1.282	68.855	67.430	1.200
1.004	30.868	345.0	450	Circular	68.855	66.412	1.993	68.737	66.323	1.964
1.005	57.356	345.0	450	Circular	68.737	66.323	1.964	68.641	66.157	2.034
5.000	58.589	169.8	225	Circular	69.406	67.981	1.200	69.134	67.636	1.273
5.001	51.504	109.6	225	Circular	69.134	67.636	1.273	68.880	67.166	1.489
6.000	41.324	145.5	450	Circular	68.875	67.225	1.200	68.880	66.941	1.489
7.000	20.898	100.0	150	Circular	68.450	67.450	0.850	68.880	67.241	1.489
5.002	38.018	105.3	450	Circular	68.880	66.941	1.489	68.580	66.580	1.550
8.000	21.141	26.4	300	Circular	69.527	67.972	1.255	68.819	67.171	1.348
8.001	50.290	244.1	300	Circular	68.819	67.171	1.348	68.580	66.965	1.315
9.000	21.140	30.7	300	Circular	69.528	68.017	1.211	68.828	67.328	1.200
9.001	10.193	41.1	300	Circular	68.828	67.328	1.200	68.580	67.080	1.200
5.003	8.185	30.0	450	Circular	68.580	66.580	1.550	68.641	66.307	1.884
1.006	14.823	500.0	600	Circular	68.641	66.007	2.034	68.639	65.977	2.062
10.000	49.791	107.8	300	Circular	69.475	67.975	1.200	69.013	67.513	1.200
10.001	24.182	244.3	300	Circular	69.013	67.513	1.200	69.019	67.414	1.305
10.002	42.414	133.0	450	Circular	69.019	67.264	1.305	68.892	66.945	1.497

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	SWM01	1200	Manhole	Adoptable	SWM02	1200	Manhole	Adoptable
1.001	SWM02	1200	Manhole	Adoptable	SWM03	1200	Manhole	Adoptable
1.002	SWM03	1200	Manhole	Adoptable	SWM04	1200	Manhole	Adoptable
1.003	SWM04	1200	Manhole	Adoptable	Unit 2/3 Attenuation Tank		Junction	
2.000	SWM05	1200	Manhole	Adoptable	SWM07	1350	Manhole	Adoptable
3.000	SWM06	1200	Manhole	Adoptable	SWM07	1350	Manhole	Adoptable
2.001	SWM07	1350	Manhole	Adoptable	Unit 2/3 Attenuation Tank		Junction	
4.000	SWM08	1200	Manhole	Adoptable	SWM09	1200	Manhole	Adoptable
4.001	SWM09	1200	Manhole	Adoptable	SWM10	1200	Manhole	Adoptable
4.002	SWM10	1200	Manhole	Adoptable	SWM11	1200	Manhole	Adoptable
4.003	SWM11	1200	Manhole	Adoptable	Unit 2/3 Attenuation Tank		Junction	
1.004	Unit 2/3 Attenuation Tank		Junction		SWM12	1350	Manhole	Adoptable
1.005	SWM12	1350	Manhole	Adoptable	SWM19	1500	Manhole	Adoptable
5.000	SWM13	1200	Manhole	Adoptable	SWM14	1200	Manhole	Adoptable
5.001	SWM14	1200	Manhole	Adoptable	SWM16	1350	Manhole	Adoptable
6.000	SWM15	1350	Manhole	Adoptable	SWM16	1350	Manhole	Adoptable
7.000	Unit 4 Dock	1200	Manhole	Adoptable	SWM16	1350	Manhole	Adoptable
5.002	SWM16	1350	Manhole	Adoptable	Unit 4 Attenuation Tank		Junction	
8.000	SWM17	1200	Manhole	Adoptable	U4 Tank In 2		Junction	
8.001	U4 Tank In 2		Junction		Unit 4 Attenuation Tank		Junction	
9.000	SWM18	1200	Manhole	Adoptable	U4 Tank In 1		Junction	
9.001	U4 Tank In 1		Junction		Unit 4 Attenuation Tank		Junction	
5.003	Unit 4 Attenuation Tank		Junction		SWM19	1500	Manhole	Adoptable
1.006	SWM19	1500	Manhole	Adoptable	SWM31	1500	Manhole	Adoptable
10.000	SWM20	1200	Manhole	Adoptable	SWM21	1200	Manhole	Adoptable
10.001	SWM21	1200	Manhole	Adoptable	SWM22	1200	Manhole	Adoptable
10.002	SWM22	1200	Manhole	Adoptable	SWM24	1350	Manhole	Adoptable

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Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
11.000	20.640	100.7	150	Circular	68.450	67.450	0.850	68.892	67.245	1.497
12.000	16.160	83.3	225	Circular	68.890	67.465	1.200	68.892	67.271	1.396
10.003	19.267	48.2	450	Circular	68.892	66.945	1.497	68.545	66.545	1.550
13.000	12.727	43.1	300	Circular	69.632	68.132	1.200	69.564	67.837	1.427
13.001	23.281	45.7	300	Circular	69.564	67.837	1.427	68.828	67.328	1.200
13.002	36.284	128.2	300	Circular	68.828	67.328	1.200	68.545	67.045	1.200
14.000	23.281	35.4	225	Circular	69.564	68.045	1.294	68.812	67.387	1.200
14.001	12.997	48.7	225	Circular	68.812	67.387	1.200	68.545	67.120	1.200
10.004	6.519	407.5	450	Circular	68.545	66.545	1.550	68.639	66.529	1.660
15.000	21.542	236.7	450	Circular	68.922	67.272	1.200	68.892	67.181	1.261
16.000	21.074	345.0	450	Circular	68.892	67.242	1.200	68.892	67.181	1.261
15.001	5.908	30.8	450	Circular	68.892	67.181	1.261	68.639	66.989	1.200
1.007	55.860	500.0	600	Circular	68.639	65.977	2.062	68.405	65.865	1.940
27.005	17.174	114.5	450	Circular	68.116	65.250	2.416	67.441	65.100	1.891
27.004	60.601	404.0	450	Circular	68.368	65.400	2.518	68.116	65.250	2.416
27.003	63.603	254.4	450	Circular	67.299	65.650	1.199	68.368	65.400	2.518
27.002	11.632	46.5	450	Circular	68.128	65.900	1.778	67.299	65.650	1.199
27.001	77.243	286.1	450	Circular	68.188	66.170	1.568	68.128	65.900	1.778
27.000	23.127	100.6	150	Circular	67.750	66.400	1.200	68.188	66.170	1.868
28.000	17.111	570.4	450	Circular	67.700	66.200	1.050	68.188	66.170	1.568
1.008	17.847	500.0	600	Circular	68.405	65.865	1.940	68.683	65.829	2.254
1.009	90.000	500.0	600	Circular	68.683	65.829	2.254	68.378	65.649	2.129
1.010	14.386	500.0	600	Circular	68.378	65.649	2.129	68.211	65.620	1.991
1.011	22.384	500.0	600	Circular	68.211	65.620	1.991	68.467	65.575	2.292
17.000	24.441	244.4	300	Circular	69.368	67.868	1.200	69.495	67.768	1.427

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
11.000	Unit 5 Dock	1200	Manhole	Adoptable	SWM24	1350	Manhole	Adoptable
12.000	SWM23	1200	Manhole	Adoptable	SWM24	1350	Manhole	Adoptable
10.003	SWM24	1350	Manhole	Adoptable	Unit 5 Attenuation Tank		Junction	
13.000	SWM25	1200	Manhole	Adoptable	SWM26	1200	Manhole	Adoptable
13.001	SWM26	1200	Manhole	Adoptable	U5 Tank In 1		Junction	
13.002	U5 Tank In 1		Junction		Unit 5 Attenuation Tank		Junction	
14.000	SWM27	1200	Manhole	Adoptable	U5 Tank In 2		Junction	
14.001	U5 Tank In 2		Junction		Unit 5 Attenuation Tank		Junction	
10.004	Unit 5 Attenuation Tank		Junction		SWM31	1500	Manhole	Adoptable
15.000	SWM28	1350	Manhole	Adoptable	SWM30	1350	Manhole	Adoptable
16.000	SWM29	1350	Manhole	Adoptable	SWM30	1350	Manhole	Adoptable
15.001	SWM30	1350	Manhole	Adoptable	SWM31	1500	Manhole	Adoptable
1.007	SWM31	1500	Manhole	Adoptable	SWM38	1500	Manhole	Adoptable
27.005	SWM33	1350	Manhole	Adoptable	SWM32	1350	Manhole	Adoptable
27.004	SWM34	1350	Manhole	Adoptable	SWM33	1350	Manhole	Adoptable
27.003	SWM35	1350	Manhole	Adoptable	SWM34	1350	Manhole	Adoptable
27.002	SWM36	1350	Manhole	Adoptable	SWM35	1350	Manhole	Adoptable
27.001	SWM37	1350	Manhole	Adoptable	SWM36	1350	Manhole	Adoptable
27.000	Unit 1 Dock	1200	Manhole	Adoptable	SWM37	1350	Manhole	Adoptable
28.000	Unit 1 Attenuation Tank		Junction		SWM37	1350	Manhole	Adoptable
1.008	SWM38	1500	Manhole	Adoptable	SWM39	1500	Manhole	Adoptable
1.009	SWM39	1500	Manhole	Adoptable	SWM40	1500	Manhole	Adoptable
1.010	SWM40	1500	Manhole	Adoptable	SWM41	1500	Manhole	Adoptable
1.011	SWM41	1500	Manhole	Adoptable	SWM49	1500	Manhole	Adoptable
17.000	SWM42	1200	Manhole	Adoptable	SWM43	1200	Manhole	Adoptable

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Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
17.001	27.037	45.5	450	Circular	69.495	67.618	1.427	68.691	67.023	1.218
17.002	72.162	210.2	450	Circular	68.691	67.023	1.218	68.330	66.680	1.200
18.000	52.077	121.1	225	Circular	68.897	67.472	1.200	68.803	67.042	1.536
19.000	33.290	100.0	150	Circular	68.802	67.450	1.202	68.803	67.117	1.536
20.000	20.155	100.0	150	Circular	68.350	67.350	0.850	68.803	67.148	1.505
18.001	21.640	158.0	225	Circular	68.803	67.042	1.536	68.330	66.905	1.200
21.000	19.998	36.4	150	Circular	69.374	67.906	1.318	68.706	67.356	1.200
21.001	12.683	33.7	150	Circular	68.706	67.356	1.200	68.330	66.980	1.200
17.003	19.325	522.3	600	Circular	68.330	65.530	2.200	68.467	65.493	2.374
1.012	8.990	500.0	600	Circular	68.467	65.493	2.374	68.151	65.475	2.076
22.000	20.424	100.0	150	Circular	67.900	66.900	0.850	68.360	66.696	1.514
22.001	37.344	100.7	150	Circular	68.360	66.696	1.514	68.544	66.325	2.069
23.000	21.239	24.5	150	Circular	68.543	67.193	1.200	68.544	66.325	2.069
22.002	7.494	170.0	225	Circular	68.544	66.250	2.069	68.330	66.206	1.899
24.000	34.489	123.6	300	Circular	68.147	66.647	1.200	68.145	66.368	1.477
25.000	9.902	49.0	300	Circular	68.145	66.645	1.200	68.145	66.443	1.402
24.001	9.893	41.7	450	Circular	68.145	66.218	1.477	68.330	65.981	1.899
22.003	46.216	345.0	450	Circular	68.330	65.981	1.899	68.170	65.847	1.873
26.000	23.829	245.0	300	Circular	69.075	67.575	1.200	69.075	67.478	1.297
26.001	23.667	345.0	450	Circular	69.075	67.328	1.297	69.063	67.259	1.354
22.004	5.424	542.4	600	Circular	68.170	65.670	1.900	68.176	65.660	1.916
22.005	17.356	542.4	600	Circular	68.176	65.660	1.916	68.151	65.628	1.923
1.013	10.709	102.0	675	Circular	68.151	65.475	2.001	68.100	65.370	2.055
26.002	18.163	76.0	450	Circular	69.063	67.259	1.354	68.670	67.020	1.200
26.003	17.788	35.6	450	Circular	68.670	67.020	1.200	68.170	66.520	1.200

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
17.001	SWM43	1200	Manhole	Adoptable	SWM44	1350	Manhole	Adoptable
17.002	SWM44	1350	Manhole	Adoptable	Unit 6 Attenuation Tank		Junction	
18.000	SWM45	1200	Manhole	Adoptable	SWM47	1200	Manhole	Adoptable
19.000	SWM46	1200	Manhole	Adoptable	SWM47	1200	Manhole	Adoptable
20.000	Unit 6 Dock	1200	Manhole	Adoptable	SWM47	1200	Manhole	Adoptable
18.001	SWM47	1200	Manhole	Adoptable	Unit 6 Attenuation Tank		Junction	
21.000	SWM48	1200	Manhole	Adoptable	U6 Tank In 1		Junction	
21.001	U6 Tank In 1		Junction		Unit 6 Attenuation Tank		Junction	
17.003	Unit 6 Attenuation Tank		Junction		SWM49	1500	Manhole	Adoptable
1.012	SWM49	1500	Manhole	Adoptable	FC01	2400	Manhole	Adoptable
22.000	Unlt 7 Dock	1200	Manhole	Adoptable	SWM50	1200	Manhole	Adoptable
22.001	SWM50	1200	Manhole	Adoptable	SWM52	1200	Manhole	Adoptable
23.000	SWM51	1200	Manhole	Adoptable	SWM52	1200	Manhole	Adoptable
22.002	SWM52	1200	Manhole	Adoptable	SWM56	1350	Manhole	Adoptable
24.000	SWM53	1200	Manhole	Adoptable	SWM55	1350	Manhole	Adoptable
25.000	SWM54	1200	Manhole	Adoptable	SWM55	1350	Manhole	Adoptable
24.001	SWM55	1350	Manhole	Adoptable	SWM56	1350	Manhole	Adoptable
22.003	SWM56	1350	Manhole	Adoptable	Unit 7 Attenuation Tank		Junction	
26.000	SWM57	1200	Manhole	Adoptable	SWM58	1350	Manhole	Adoptable
26.001	SWM58	1350	Manhole	Adoptable	SWM59	1350	Manhole	Adoptable
22.004	Unit 7 Attenuation Tank		Junction		SWM61	1500	Manhole	Adoptable
22.005	SWM61	1500	Manhole	Adoptable	FC01	2400	Manhole	Adoptable
1.013	FC01	2400	Manhole	Adoptable	Ex.MH	1500	Manhole	Adoptable
26.002	SWM59	1350	Manhole	Adoptable	SWM60	1350	Manhole	Adoptable
26.003	SWM60	1350	Manhole	Adoptable	Unit 7 Attenuation Tank		Junction	

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Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
27.006	11.162	169.1	225	Circular	67.441	65.100	2.116	67.000	65.034	1.741

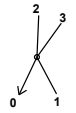
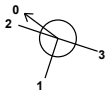
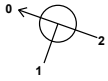
Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
27.006	SWM32	1350	Manhole	Adoptable	Ex Combined	1200	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
SWM01	383868.174	386045.876	69.200	1.425	1200		0	1.000	67.775	225
SWM02	383871.403	386052.642	69.200	1.469	1200		1 0	1.000 1.001	67.731 67.731	225 225
SWM03	383838.515	386068.334	69.026	1.509	1200		1 0	1.001 1.002	67.517 67.517	225 225
SWM04	383834.230	386059.353	69.074	1.691	1200		1 0	1.002 1.003	67.458 67.383	225 300
SWM05	383822.759	386082.000	68.691	1.500	1200		0	2.000	67.191	300
SWM06	383785.174	386003.227	68.691	1.426	1200		0	3.000	67.265	225
SWM07	383799.716	386033.705	68.729	1.928	1350		1 2 0	3.000 2.000 2.001	67.026 66.951 66.801	225 300 450
SWM08	383835.271	385977.143	69.202	0.752	1200		0	4.000	68.450	150
SWM09	383831.740	385969.743	69.200	0.832	1200		1 0	4.000 4.001	68.368 68.368	150 225
SWM10	383799.166	385985.283	69.030	1.425	1200		1 0	4.001 4.002	67.605 67.605	225 225
SWM11	383805.155	385997.834	69.030	1.507	1200		1 0	4.002 4.003	67.523 67.523	225 225

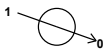
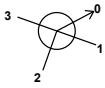
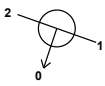
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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
Unit 2/3 Attenuation Tank	383798.701	386009.975	68.855	2.443			1	4.003	67.430	225
							2	2.001	66.742	450
							3	1.003	66.562	300
							0	1.004	66.412	450
SWM12	383785.460	385982.091	68.737	2.414	1350		1	1.004	66.323	450
							0	1.005	66.323	450
SWM13	383790.074	385899.181	69.406	1.425	1200		0	5.000	67.981	225
SWM14	383808.153	385954.911	69.134	1.498	1200		1	5.000	67.636	225
							0	5.001	67.636	225
SWM15	383719.964	385983.886	68.875	1.650	1350		0	6.000	67.225	450
Unit 4 Dock	383752.699	385950.930	68.450	1.000	1200		0	7.000	67.450	150
SWM16	383759.162	385970.803	68.880	1.939	1350		1	7.000	67.241	150
							2	6.000	66.941	450
							3	5.001	67.166	225
							0	5.002	66.941	450
SWM17	383765.899	385948.641	69.527	1.555	1200		0	8.000	67.972	300
U4 Tank In 2	383772.437	385968.746	68.819	1.648			1	8.000	67.171	300
							0	8.001	67.171	300
SWM18	383717.156	385964.492	69.528	1.511	1200		0	9.000	68.017	300
U4 Tank In 1	383723.694	385984.596	68.828	1.500			1	9.000	67.328	300
							0	9.001	67.328	300
Unit 4 Attenuation Tank	383728.660	385993.497	68.580	2.000			1	9.001	67.080	300
							2	8.001	66.965	300
							3	5.002	66.580	450
							0	5.003	66.580	450
SWM19	383731.386	386001.215	68.641	2.634	1500		1	5.003	66.307	450
							2	1.005	66.157	450
							0	1.006	66.007	600
SWM20	383618.774	385966.215	69.475	1.500	1200		0	10.000	67.975	300

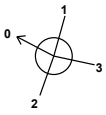
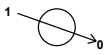
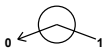
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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
SWM21	383635.406	386013.146	69.013	1.500	1200		1	10.000	67.513	300
							0	10.001	67.513	300
SWM22	383658.199	386005.068	69.019	1.755	1200		1	10.001	67.414	300
							0	10.002	67.264	450
Unit 5 Dock	383691.282	385971.448	68.450	1.000	1200		0	11.000	67.450	150
SWM23	383713.409	385985.505	68.890	1.425	1200		0	12.000	67.465	225
SWM24	383698.177	385990.902	68.892	1.947	1350		1	12.000	67.271	225
							2	11.000	67.245	150
							3	10.002	66.945	450
							0	10.003	66.945	450
SWM25	383659.167	385983.311	69.632	1.500	1200		0	13.000	68.132	300
SWM26	383671.163	385979.060	69.564	1.727	1200		1	13.000	67.837	300
							0	13.001	67.837	300
U5 Tank In 1	383678.937	386001.005	68.828	1.500			1	13.001	67.328	300
							0	13.002	67.328	300
SWM27	383697.333	385969.789	69.564	1.519	1200		0	14.000	68.045	225
U5 Tank In 2	383705.108	385991.733	68.812	1.425			1	14.000	67.387	225
							0	14.001	67.387	225
Unit 5 Attenuation Tank	383715.205	385999.917	68.545	2.000			1	14.001	67.120	225
							2	13.002	67.045	300
							3	10.003	66.545	450
							0	10.004	66.545	450
SWM28	383699.048	386018.821	68.922	1.650	1350		0	15.000	67.272	450
SWM29	383739.219	386004.595	68.892	1.650	1350		0	16.000	67.242	450
SWM30	383719.354	386011.630	68.892	1.711	1350		1	16.000	67.181	450
							2	15.000	67.181	450
							0	15.001	67.181	450

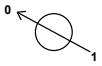
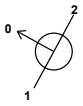
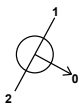
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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
SWM31	383717.382	386006.062	68.639	2.662	1500		1	15.001	66.989	450
							2	10.004	66.529	450
							3	1.006	65.977	600
							0	1.007	65.977	600
SWM32	383835.360	386108.135	67.441	2.341	1350		1	27.005	65.100	450
							0	27.006	65.100	225
SWM33	383824.668	386094.695	68.116	2.866	1350		1	27.004	65.250	450
							0	27.005	65.250	450
SWM34	383767.560	386114.973	68.368	2.968	1350		1	27.003	65.400	450
							0	27.004	65.400	450
SWM35	383707.608	386136.212	67.299	1.649	1350		1	27.002	65.650	450
							0	27.003	65.650	450
SWM36	383703.668	386125.268	68.128	2.228	1350		1	27.001	65.900	450
							0	27.002	65.900	450
SWM37	383677.930	386052.439	68.188	2.018	1350		1	28.000	66.170	450
							2	27.000	66.170	150
							0	27.001	66.170	450
Unit 1 Dock	383699.729	386044.716	67.750	1.350	1200		0	27.000	66.400	150
Unit 1 Attenuation Tank	383664.715	386041.569	67.700	1.500			0	28.000	66.200	450
SWM38	383665.038	386025.556	68.405	2.540	1500		1	1.007	65.865	600
							0	1.008	65.865	600
SWM39	383648.344	386019.246	68.683	2.854	1500		1	1.008	65.829	600
							0	1.009	65.829	600
SWM40	383569.234	386062.160	68.378	2.729	1500		1	1.009	65.649	600
							0	1.010	65.649	600
SWM41	383554.863	386061.511	68.211	2.591	1500		1	1.010	65.620	600
							0	1.011	65.620	600
SWM42	383555.303	385932.591	69.368	1.500	1200		0	17.000	67.868	300

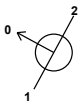
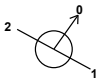
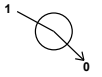
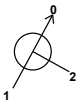
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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
SWM43	383533.820	385944.247	69.495	1.877	1200		1	17.000	67.768	300
							0	17.001	67.618	450
SWM44	383510.049	385957.128	68.691	1.668	1350		1	17.001	67.023	450
							0	17.002	67.023	450
SWM45	383567.247	386050.318	68.897	1.425	1200		0	18.000	67.472	225
SWM46	383526.572	385975.264	68.802	1.352	1200		0	19.000	67.450	150
Unit 6 Dock	383560.154	385994.932	68.350	1.000	1200		0	20.000	67.350	150
SWM47	383542.433	386004.533	68.803	1.761	1200		1	20.000	67.148	150
							2	19.000	67.117	150
							3	18.000	67.042	225
							0	18.001	67.042	225
SWM48	383562.048	386006.903	69.374	1.468	1200		0	21.000	67.906	150
U6 Tank In 1	383544.470	386016.438	68.706	1.350			1	21.000	67.356	150
							0	21.001	67.356	150
Unit 6 Attenuation Tank	383534.976	386024.848	68.330	2.800			1	21.001	66.980	150
							2	18.001	66.905	225
							3	17.002	66.680	450
							0	17.003	65.530	600
SWM49	383544.225	386041.816	68.467	2.974	1500		1	17.003	65.493	600
							2	1.011	65.575	600
							0	1.012	65.493	600
Unlt 7 Dock	383454.167	385976.344	67.900	1.000	1200		0	22.000	66.900	150
SWM50	383472.115	385966.597	68.360	1.664	1200		1	22.000	66.696	150
							0	22.001	66.696	150
SWM51	383500.053	386018.089	68.543	1.350	1200		0	23.000	67.193	150
SWM52	383489.933	385999.416	68.544	2.294	1200		1	23.000	66.325	150
							2	22.001	66.325	150
							0	22.002	66.250	225

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
SWM53	383521.634	386021.456	68.147	1.500	1200		0	24.000	66.647	300
SWM54	383500.495	385982.421	68.145	1.500	1200		0	25.000	66.645	300
SWM55	383505.216	385991.125	68.145	1.927	1350		1	25.000	66.443	300
							2	24.000	66.368	300
							0	24.001	66.218	450
SWM56	383496.520	385995.842	68.330	2.349	1350		1	24.001	65.981	450
							2	22.002	66.206	225
							0	22.003	65.981	450
SWM57	383451.598	386074.364	69.075	1.500	1200		0	26.000	67.575	300
SWM58	383472.544	386063.002	69.075	1.747	1350		1	26.000	67.478	300
							0	26.001	67.328	450
SWM59	383493.347	386051.717	69.063	1.804	1350		1	26.001	67.259	450
							0	26.002	67.259	450
Unit 7 Attenuation Tank	383523.315	386033.498	68.170	2.500			1	26.003	66.520	450
							2	22.003	65.847	450
							0	22.004	65.670	600
SWM61	383528.083	386030.912	68.176	2.516	1500		1	22.004	65.660	600
							0	22.005	65.660	600
FC01	383536.359	386046.168	68.151	2.676	2400		1	22.005	65.628	600
							2	1.012	65.475	600
							0	1.013	65.475	675
Ex.MH	383541.465	386055.581	68.100	2.730	1500		1	1.013	65.370	675
SWM60	383506.442	386039.131	68.670	1.650	1350		1	26.002	67.020	450
							0	26.003	67.020	450
Ex Combined	383834.955	386119.290	67.000	1.966	1200		1	27.006	65.034	225

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Simulation Settings

Rainfall Methodology	FSR	Analysis Speed	Normal
Rainfall Events	Singular	Skip Steady State	x
FSR Region	England and Wales	Drain Down Time (mins)	240
M5-60 (mm)	20.000	Additional Storage (m³/ha)	20.0
Ratio-R	0.400	Starting Level (m)	
Summer CV	0.750	Check Discharge Rate(s)	x
Winter CV	0.840	Check Discharge Volume	x

Storm Durations

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

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)	Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	0	0	100	45	0	0
30	40	0	0				

Node FC01 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	65.475	Product Number	CTL-SHE-0229-3400-2500-3400
Design Depth (m)	2.500	Min Outlet Diameter (m)	0.300
Design Flow (l/s)	34.0	Min Node Diameter (mm)	2400

Node SWM32 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	65.100	Product Number	CTL-SHE-0092-5000-2000-5000
Design Depth (m)	2.000	Min Outlet Diameter (m)	0.150
Design Flow (l/s)	5.0	Min Node Diameter (mm)	1200

Node Unit 1 Attenuation Tank Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	66.200
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	1175.0	1175.0	0.400	1175.0	1223.6	0.401	0.0	1223.6

Node Unit 2/3 Attenuation Tank Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	66.412
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	450.0	450.0	1.200	450.0	540.2	1.201	0.0	540.2

Node Unit 4 Attenuation Tank Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	66.580
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	500.0	500.0	1.000	500.0	579.3	1.001	0.0	579.3

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Node Unit 5 Attenuation Tank Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	66.545
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	400.0	400.0	1.000	400.0	470.9	1.001	0.0	470.9

Node Unit 6 Attenuation Tank Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	65.530
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	1000.0	1000.0	1.800	1000.0	1201.8	1.801	0.0	1201.8

Node Unit 7 Attenuation Tank Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	65.670
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	475.0	475.0	1.500	475.0	590.9	1.501	0.0	590.9

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Results for 1 year Critical Storm Duration. Lowest mass balance: 99.93%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	SWM01	10	67.852	0.077	9.0	0.1568	0.0000	OK
15 minute winter	SWM02	10	67.803	0.072	8.8	0.0818	0.0000	OK
15 minute winter	SWM03	11	67.592	0.075	8.8	0.0853	0.0000	OK
15 minute winter	SWM04	11	67.479	0.096	29.1	0.2809	0.0000	OK
15 minute winter	SWM05	11	67.267	0.076	10.8	0.1632	0.0000	OK
15 minute winter	SWM06	11	67.317	0.052	5.2	0.0859	0.0000	OK
15 minute winter	SWM07	10	66.988	0.187	60.3	0.8986	0.0000	OK
15 minute winter	SWM08	10	68.521	0.071	7.1	0.1742	0.0000	OK
15 minute winter	SWM09	11	68.414	0.046	7.0	0.0517	0.0000	OK
15 minute winter	SWM10	11	67.668	0.063	6.9	0.0711	0.0000	OK
15 minute winter	SWM11	11	67.647	0.124	24.1	0.3468	0.0000	OK
60 minute winter	Unit 2/3 Attenuation Tank	44	66.536	0.124	60.4	52.9926	0.0000	OK
60 minute winter	SWM12	48	66.445	0.122	28.3	0.1739	0.0000	OK
15 minute winter	SWM13	11	68.060	0.079	11.1	0.1760	0.0000	OK
15 minute winter	SWM14	11	67.741	0.105	22.2	0.2337	0.0000	OK
15 minute winter	SWM15	10	67.346	0.121	44.3	0.6338	0.0000	OK
15 minute summer	Unit 4 Dock	1	67.450	0.000	0.0	0.0000	0.0000	OK
15 minute winter	SWM16	10	67.116	0.175	87.9	0.5697	0.0000	OK
15 minute winter	SWM17	10	68.060	0.088	41.2	0.4288	0.0000	OK
15 minute winter	U4 Tank In 2	11	67.330	0.159	40.9	0.0000	0.0000	OK
15 minute winter	SWM18	10	68.094	0.077	28.8	0.2942	0.0000	OK
15 minute winter	U4 Tank In 1	10	67.409	0.081	28.5	0.0000	0.0000	OK
30 minute winter	Unit 4 Attenuation Tank	23	66.690	0.110	123.8	52.2587	0.0000	OK
30 minute winter	SWM19	23	66.329	0.322	90.6	0.5684	0.0000	OK
15 minute winter	SWM20	10	68.072	0.097	25.2	0.3404	0.0000	OK
15 minute winter	SWM21	11	67.657	0.144	31.0	0.2514	0.0000	OK
15 minute winter	SWM22	11	67.381	0.117	41.4	0.2423	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	SWM01	1.000	SWM02	8.8	0.767	0.223	0.0865	
15 minute winter	SWM02	1.001	SWM03	8.8	0.782	0.221	0.4128	
15 minute winter	SWM03	1.002	SWM04	8.7	0.780	0.219	0.1112	
15 minute winter	SWM04	1.003	Unit 2/3 Attenuation Tank	28.8	1.486	0.223	1.1792	
15 minute winter	SWM05	2.000	SWM07	10.3	0.743	0.138	0.7389	
15 minute winter	SWM06	3.000	SWM07	5.0	0.733	0.115	0.2311	
15 minute winter	SWM07	2.001	Unit 2/3 Attenuation Tank	59.7	1.029	0.373	1.3776	
15 minute winter	SWM08	4.000	SWM09	7.0	1.110	0.393	0.0518	
15 minute winter	SWM09	4.001	SWM10	6.9	0.959	0.091	0.2674	
15 minute winter	SWM10	4.002	SWM11	6.9	0.452	0.173	0.2187	
15 minute winter	SWM11	4.003	Unit 2/3 Attenuation Tank	23.9	1.092	0.560	0.3006	
60 minute winter	Unit 2/3 Attenuation Tank	1.004	SWM12	28.3	0.815	0.164	1.0737	
60 minute winter	SWM12	1.005	SWM19	28.3	0.827	0.163	2.4176	
15 minute winter	SWM13	5.000	SWM14	10.7	0.720	0.268	0.8928	
15 minute winter	SWM14	5.001	SWM16	21.2	1.193	0.427	0.9152	
15 minute winter	SWM15	6.000	SWM16	43.5	0.961	0.163	1.8823	
15 minute summer	Unit 4 Dock	7.000	SWM16	0.0	0.000	0.000	0.0000	
15 minute winter	SWM16	5.002	Unit 4 Attenuation Tank	89.0	2.743	0.283	1.3841	
15 minute winter	SWM17	8.000	U4 Tank In 2	40.9	1.539	0.188	0.5771	
15 minute winter	U4 Tank In 2	8.001	Unit 4 Attenuation Tank	40.3	1.079	0.569	1.8778	
15 minute winter	SWM18	9.000	U4 Tank In 1	28.5	1.926	0.142	0.3130	
15 minute winter	U4 Tank In 1	9.001	Unit 4 Attenuation Tank	28.3	1.836	0.163	0.1569	
30 minute winter	Unit 4 Attenuation Tank	5.003	SWM19	67.7	2.393	0.114	0.2317	
30 minute winter	SWM19	1.006	SWM31	92.3	0.614	0.302	2.3538	
15 minute winter	SWM20	10.000	SWM21	24.6	0.956	0.229	1.3155	
15 minute winter	SWM21	10.001	SWM22	30.5	0.956	0.431	0.7718	
15 minute winter	SWM22	10.002	SWM24	41.4	1.139	0.148	1.5729	

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Results for 1 year Critical Storm Duration. Lowest mass balance: 99.93%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	Unit 5 Dock	1	67.450	0.000	0.0	0.0000	0.0000	OK
15 minute winter	SWM23	10	67.580	0.115	26.7	0.4341	0.0000	OK
15 minute winter	SWM24	10	67.084	0.139	82.9	0.3679	0.0000	OK
15 minute winter	SWM25	10	68.184	0.052	11.4	0.1154	0.0000	OK
15 minute winter	SWM26	10	67.923	0.086	30.1	0.2295	0.0000	OK
15 minute winter	U5 Tank In 1	11	67.439	0.111	29.8	0.0000	0.0000	OK
15 minute winter	SWM27	10	68.116	0.071	19.2	0.2082	0.0000	OK
15 minute winter	U5 Tank In 2	10	67.464	0.077	19.0	0.0000	0.0000	OK
60 minute winter	Unit 5 Attenuation Tank	43	66.693	0.148	70.6	56.1355	0.0000	OK
15 minute winter	SWM28	10	67.405	0.133	36.4	0.6081	0.0000	OK
15 minute winter	SWM29	10	67.391	0.149	36.4	0.6807	0.0000	OK
15 minute winter	SWM30	10	67.341	0.160	106.9	0.7033	0.0000	OK
30 minute winter	SWM31	23	66.315	0.338	169.7	0.5980	0.0000	OK
60 minute winter	SWM32	39	66.409	1.309	23.6	2.0400	0.0000	SURCHARGED
60 minute winter	SWM33	39	66.398	1.148	25.2	2.0646	0.0000	SURCHARGED
30 minute winter	SWM34	22	66.434	1.034	68.1	1.9111	0.0000	SURCHARGED
60 minute winter	SWM35	40	66.371	0.721	40.1	2.1934	0.0000	SURCHARGED
60 minute winter	SWM36	40	66.374	0.474	34.1	1.6875	0.0000	SURCHARGED
60 minute winter	SWM37	40	66.364	0.194	45.5	0.7285	0.0000	OK
15 minute summer	Unit 1 Dock	1	66.400	0.000	0.0	0.0000	0.0000	OK
180 minute winter	Unit 1 Attenuation Tank	176	66.231	0.031	18.4	34.8069	0.0000	OK
30 minute winter	SWM38	23	66.213	0.348	169.0	0.6150	0.0000	OK
30 minute winter	SWM39	24	66.154	0.325	168.2	0.5735	0.0000	OK
360 minute winter	SWM40	288	66.004	0.355	73.7	0.6275	0.0000	OK
360 minute winter	SWM41	296	66.004	0.384	72.7	0.6777	0.0000	OK
15 minute winter	SWM42	10	68.036	0.168	40.4	0.8343	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	Unit 5 Dock	11.000	SWM24	0.0	0.000	0.000	0.0000	
15 minute winter	SWM23	12.000	SWM24	26.1	1.350	0.458	0.3130	
15 minute winter	SWM24	10.003	Unit 5 Attenuation Tank	83.9	3.255	0.180	0.5996	
15 minute winter	SWM25	13.000	SWM26	11.3	0.927	0.067	0.1575	
15 minute winter	SWM26	13.001	U5 Tank In 1	29.8	1.485	0.181	0.4680	
15 minute winter	U5 Tank In 1	13.002	Unit 5 Attenuation Tank	29.6	1.240	0.302	0.8653	
15 minute winter	SWM27	14.000	U5 Tank In 2	19.0	1.673	0.216	0.2642	
15 minute winter	U5 Tank In 2	14.001	Unit 5 Attenuation Tank	18.8	1.578	0.251	0.1547	
60 minute winter	Unit 5 Attenuation Tank	10.004	SWM31	38.4	0.907	0.241	0.2759	
15 minute winter	SWM28	15.000	SWM30	35.7	0.797	0.171	0.9673	
15 minute winter	SWM29	16.000	SWM30	35.6	0.738	0.205	1.0162	
15 minute winter	SWM30	15.001	SWM31	105.2	2.421	0.180	0.2581	
30 minute winter	SWM31	1.007	SWM38	169.0	1.023	0.552	9.3071	
30 minute summer	SWM32	27.006	Ex Combined	4.1	0.640	0.104	0.0724	46.4
15 minute summer	SWM33	27.005	SWM32	43.2	0.374	0.143	2.7211	
15 minute summer	SWM34	27.004	SWM33	57.6	0.752	0.360	9.6018	
15 minute winter	SWM35	27.003	SWM34	76.1	1.032	0.377	10.0775	
30 minute summer	SWM36	27.002	SWM35	83.7	1.215	0.176	1.8098	
60 minute winter	SWM37	27.001	SWM36	-31.0	0.741	-0.163	8.6386	
15 minute summer	Unit 1 Dock	27.000	SWM37	0.0	0.000	0.000	0.1589	
60 minute winter	Unit 1 Attenuation Tank	28.000	SWM37	-33.3	-1.268	-0.248	0.5622	
30 minute winter	SWM38	1.008	SWM39	168.2	1.041	0.550	2.8990	
30 minute winter	SWM39	1.009	SWM40	167.9	1.045	0.549	14.4972	
30 minute winter	SWM40	1.010	SWM41	166.8	1.054	0.545	2.2785	
30 minute winter	SWM41	1.011	SWM49	167.0	1.244	0.546	3.0067	
15 minute winter	SWM42	17.000	SWM43	39.3	1.029	0.555	0.9351	

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Results for 1 year Critical Storm Duration. Lowest mass balance: 99.93%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	SWM43	10	67.741	0.123	79.4	0.5153	0.0000	OK
15 minute winter	SWM44	11	67.207	0.184	78.8	0.2635	0.0000	OK
15 minute winter	SWM45	10	67.534	0.062	8.3	0.1220	0.0000	OK
15 minute winter	SWM46	10	67.500	0.050	4.4	0.0794	0.0000	OK
15 minute winter	Unit 6 Dock	10	67.438	0.088	11.1	0.2386	0.0000	OK
15 minute winter	SWM47	11	67.206	0.164	36.2	0.3617	0.0000	OK
15 minute winter	SWM48	10	67.947	0.041	4.8	0.0656	0.0000	OK
15 minute winter	U6 Tank In 1	10	67.396	0.040	4.7	0.0000	0.0000	OK
360 minute winter	Unit 6 Attenuation Tank	296	66.003	0.473	72.8	449.4581	0.0000	OK
360 minute winter	SWM49	296	66.003	0.510	72.2	0.9013	0.0000	OK
15 minute winter	Unlt 7 Dock	10	66.972	0.072	8.4	0.1658	0.0000	OK
15 minute winter	SWM50	11	66.817	0.121	17.3	0.2300	0.0000	OK
15 minute winter	SWM51	10	67.214	0.021	1.5	0.0266	0.0000	OK
15 minute winter	SWM52	11	66.403	0.153	27.4	0.2671	0.0000	OK
15 minute winter	SWM53	10	66.749	0.102	24.1	0.3463	0.0000	OK
15 minute winter	SWM54	10	66.763	0.118	42.5	0.6071	0.0000	OK
15 minute winter	SWM55	10	66.367	0.149	83.6	0.4159	0.0000	OK
15 minute winter	SWM56	11	66.241	0.260	109.7	0.3719	0.0000	OK
15 minute winter	SWM57	10	67.729	0.154	34.9	0.6817	0.0000	OK
15 minute winter	SWM58	10	67.520	0.192	68.1	0.8138	0.0000	OK
15 minute winter	SWM59	11	67.406	0.147	72.0	0.2680	0.0000	OK
360 minute winter	Unit 7 Attenuation Tank	296	66.003	0.333	28.6	150.1807	0.0000	OK
360 minute winter	SWM61	296	66.003	0.343	18.8	0.6057	0.0000	OK
360 minute winter	FC01	296	66.003	0.528	32.5	2.3875	0.0000	OK
360 minute winter	Ex.MH	296	65.455	0.085	32.5	0.0000	0.0000	OK
15 minute winter	SWM60	11	67.134	0.114	72.7	0.1637	0.0000	OK
30 minute summer	Ex Combined	15	65.083	0.049	4.1	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	SWM43	17.001	SWM44	78.8	1.715	0.164	1.2866	
15 minute winter	SWM44	17.002	Unit 6 Attenuation Tank	77.6	1.298	0.349	4.3361	
15 minute winter	SWM45	18.000	SWM47	8.0	0.418	0.169	1.0420	
15 minute winter	SWM46	19.000	SWM47	4.3	0.698	0.240	0.2668	
15 minute winter	Unit 6 Dock	20.000	SWM47	10.8	1.034	0.606	0.2102	
15 minute winter	SWM47	18.001	Unit 6 Attenuation Tank	35.2	1.160	0.854	0.6574	
15 minute winter	SWM48	21.000	U6 Tank In 1	4.7	1.238	0.160	0.0764	
15 minute winter	U6 Tank In 1	21.001	Unit 6 Attenuation Tank	4.7	1.259	0.152	0.0470	
30 minute winter	Unit 6 Attenuation Tank	17.003	SWM49	-178.9	-1.874	-0.598	2.7746	
120 minute winter	SWM49	1.012	FC01	40.9	0.465	0.134	2.1375	
15 minute winter	Unlt 7 Dock	22.000	SWM50	8.2	0.719	0.463	0.2384	
15 minute winter	SWM50	22.001	SWM52	16.7	1.124	0.943	0.5550	
15 minute winter	SWM51	23.000	SWM52	1.5	0.709	0.041	0.1140	
15 minute winter	SWM52	22.002	SWM56	27.5	1.020	0.692	0.2021	
15 minute winter	SWM53	24.000	SWM55	23.4	1.148	0.234	0.7034	
15 minute winter	SWM54	25.000	SWM55	42.0	1.774	0.264	0.2346	
15 minute winter	SWM55	24.001	SWM56	83.3	1.226	0.166	0.6856	
15 minute winter	SWM56	22.003	Unit 7 Attenuation Tank	110.9	1.251	0.640	4.0959	
15 minute winter	SWM57	26.000	SWM58	33.8	0.986	0.479	0.8208	
15 minute winter	SWM58	26.001	SWM59	67.3	1.241	0.389	1.2894	
15 minute winter	SWM59	26.002	SWM60	72.7	1.908	0.196	0.6941	
60 minute winter	Unit 7 Attenuation Tank	22.004	SWM61	44.7	0.629	0.152	0.5150	
60 minute winter	SWM61	22.005	FC01	44.5	0.602	0.152	1.8607	
360 minute winter	FC01	1.013	Ex.MH	32.5	1.186	0.035	0.2936	838.9
15 minute winter	SWM60	26.003	Unit 7 Attenuation Tank	73.1	2.373	0.134	0.5477	

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Results for 30 year +40% CC Critical Storm Duration. Lowest mass balance: 99.58%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	SWM01	10	67.944	0.169	30.8	0.3422	0.0000	OK
15 minute winter	SWM02	10	67.882	0.151	30.4	0.1713	0.0000	OK
15 minute winter	SWM03	11	67.678	0.161	30.0	0.1825	0.0000	OK
15 minute winter	SWM04	11	67.583	0.200	101.3	0.5839	0.0000	OK
15 minute winter	SWM05	10	67.337	0.146	37.1	0.3133	0.0000	OK
15 minute winter	SWM06	10	67.364	0.099	18.0	0.1634	0.0000	OK
15 minute winter	SWM07	11	67.197	0.396	211.4	1.9071	0.0000	OK
15 minute winter	SWM08	11	68.685	0.235	24.4	0.5796	0.0000	SURCHARGED
15 minute winter	SWM09	11	68.453	0.085	23.4	0.0964	0.0000	OK
15 minute winter	SWM10	11	68.057	0.452	23.4	0.5114	0.0000	SURCHARGED
15 minute winter	SWM11	11	68.020	0.497	79.9	1.3905	0.0000	SURCHARGED
600 minute winter	Unit 2/3 Attenuation Tank	585	67.040	0.628	69.9	268.4685	0.0000	SURCHARGED
600 minute winter	SWM12	585	67.040	0.717	38.9	1.0263	0.0000	SURCHARGED
15 minute winter	SWM13	12	68.439	0.458	38.0	1.0218	0.0000	SURCHARGED
15 minute winter	SWM14	12	68.198	0.562	70.4	1.2531	0.0000	SURCHARGED
15 minute winter	SWM15	10	67.482	0.257	152.4	1.3474	0.0000	OK
15 minute summer	Unit 4 Dock	1	67.450	0.000	0.0	0.0000	0.0000	OK
15 minute winter	SWM16	11	67.284	0.343	295.1	1.1167	0.0000	OK
15 minute winter	SWM17	11	68.277	0.305	141.7	1.4925	0.0000	SURCHARGED
15 minute winter	U4 Tank In 2	10	67.933	0.762	134.1	0.0000	0.0000	SURCHARGED
15 minute winter	SWM18	10	68.170	0.153	98.9	0.5858	0.0000	OK
15 minute winter	U4 Tank In 1	10	67.488	0.160	98.3	0.0000	0.0000	OK
600 minute winter	Unit 4 Attenuation Tank	585	67.040	0.460	50.7	218.4172	0.0000	SURCHARGED
600 minute winter	SWM19	585	67.039	1.032	107.4	1.8240	0.0000	SURCHARGED
15 minute winter	SWM20	11	68.191	0.216	86.5	0.7581	0.0000	OK
15 minute winter	SWM21	11	67.931	0.418	104.3	0.7302	0.0000	SURCHARGED
15 minute winter	SWM22	11	67.505	0.241	141.8	0.4981	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	SWM01	1.000	SWM02	30.4	1.005	0.765	0.2266	
15 minute winter	SWM02	1.001	SWM03	30.0	1.033	0.755	1.0687	
15 minute winter	SWM03	1.002	SWM04	30.1	1.050	0.758	0.2854	
15 minute winter	SWM04	1.003	Unit 2/3 Attenuation Tank	100.2	2.030	0.775	3.0025	
15 minute winter	SWM05	2.000	SWM07	36.1	0.855	0.487	2.5549	
15 minute winter	SWM06	3.000	SWM07	17.7	0.880	0.405	0.8261	
15 minute winter	SWM07	2.001	Unit 2/3 Attenuation Tank	206.7	1.526	1.291	3.1910	
15 minute winter	SWM08	4.000	SWM09	23.4	1.488	1.316	0.1145	
15 minute winter	SWM09	4.001	SWM10	23.4	1.061	0.308	0.9662	
15 minute winter	SWM10	4.002	SWM11	25.3	0.637	0.637	0.5531	
15 minute winter	SWM11	4.003	Unit 2/3 Attenuation Tank	79.5	1.999	1.864	0.5413	
15 minute summer	Unit 2/3 Attenuation Tank	1.004	SWM12	143.3	1.096	0.828	4.8908	
15 minute summer	SWM12	1.005	SWM19	149.5	1.191	0.864	9.0877	
15 minute winter	SWM13	5.000	SWM14	32.9	0.910	0.828	2.3301	
15 minute winter	SWM14	5.001	SWM16	64.6	1.624	1.301	2.0012	
15 minute winter	SWM15	6.000	SWM16	150.2	1.339	0.561	4.6074	
15 minute summer	Unit 4 Dock	7.000	SWM16	0.0	0.000	0.000	0.0296	
15 minute winter	SWM16	5.002	Unit 4 Attenuation Tank	293.7	3.254	0.932	4.1990	
15 minute winter	SWM17	8.000	U4 Tank In 2	134.1	1.921	0.618	1.4887	
15 minute winter	U4 Tank In 2	8.001	Unit 4 Attenuation Tank	132.5	1.883	1.872	3.4617	
15 minute winter	SWM18	9.000	U4 Tank In 1	98.3	2.651	0.488	0.7838	
15 minute winter	U4 Tank In 1	9.001	Unit 4 Attenuation Tank	97.7	2.567	0.562	0.3878	
15 minute summer	Unit 4 Attenuation Tank	5.003	SWM19	201.4	1.899	0.340	1.0961	
15 minute winter	SWM19	1.006	SWM31	241.3	0.857	0.789	4.1753	
15 minute winter	SWM20	10.000	SWM21	83.0	1.234	0.775	3.1025	
15 minute winter	SWM21	10.001	SWM22	104.5	1.498	1.476	1.6102	
15 minute winter	SWM22	10.002	SWM24	142.3	1.519	0.508	3.9730	

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Results for 30 year +40% CC Critical Storm Duration. Lowest mass balance: 99.58%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	Unit 5 Dock	1	67.450	0.000	0.0	0.0000	0.0000	OK
15 minute winter	SWM23	11	68.073	0.608	91.5	2.3002	0.0000	SURCHARGED
15 minute winter	SWM24	11	67.218	0.273	284.4	0.7251	0.0000	OK
15 minute winter	SWM25	10	68.235	0.103	39.2	0.2276	0.0000	OK
15 minute winter	SWM26	10	68.014	0.177	103.5	0.4738	0.0000	OK
15 minute winter	U5 Tank In 1	11	67.576	0.248	102.5	0.0000	0.0000	OK
15 minute winter	SWM27	10	68.193	0.148	65.8	0.4338	0.0000	OK
15 minute winter	U5 Tank In 2	10	67.548	0.161	65.3	0.0000	0.0000	OK
600 minute winter	Unit 5 Attenuation Tank	585	67.040	0.495	54.3	188.0361	0.0000	SURCHARGED
15 minute winter	SWM28	10	67.591	0.319	124.9	1.4548	0.0000	OK
15 minute winter	SWM29	10	67.594	0.352	124.9	1.6054	0.0000	OK
15 minute winter	SWM30	10	67.546	0.365	366.3	1.6035	0.0000	OK
600 minute winter	SWM31	585	67.039	1.062	152.3	1.8772	0.0000	SURCHARGED
15 minute winter	SWM32	11	67.283	2.183	42.6	3.4031	0.0000	FLOOD RISK
15 minute winter	SWM33	11	67.225	1.975	101.4	3.5524	0.0000	SURCHARGED
15 minute winter	SWM34	11	67.188	1.788	125.8	3.3046	0.0000	SURCHARGED
15 minute winter	SWM35	11	67.147	1.497	195.4	4.5557	0.0000	FLOOD RISK
15 minute winter	SWM36	11	67.130	1.230	219.3	4.3766	0.0000	SURCHARGED
15 minute winter	SWM37	11	66.729	0.559	325.0	2.1029	0.0000	SURCHARGED
15 minute winter	Unit 1 Dock	11	66.748	0.348	9.4	0.3940	0.0000	SURCHARGED
480 minute winter	Unit 1 Attenuation Tank	464	66.455	0.255	34.4	284.6002	0.0000	OK
600 minute winter	SWM38	585	67.040	1.175	150.2	2.0755	0.0000	SURCHARGED
600 minute winter	SWM39	585	67.039	1.210	149.6	2.1381	0.0000	SURCHARGED
600 minute winter	SWM40	585	67.037	1.388	149.3	2.4534	0.0000	SURCHARGED
600 minute winter	SWM41	585	67.038	1.418	149.1	2.5063	0.0000	SURCHARGED
15 minute winter	SWM42	11	68.487	0.619	139.0	3.0714	0.0000	SURCHARGED

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	Unit 5 Dock	11.000	SWM24	0.0	0.000	0.000	0.0000	
15 minute winter	SWM23	12.000	SWM24	87.8	2.208	1.541	0.6362	
15 minute winter	SWM24	10.003	Unit 5 Attenuation Tank	283.9	3.759	0.608	2.2375	
15 minute winter	SWM25	13.000	SWM26	38.9	1.209	0.229	0.4109	
15 minute winter	SWM26	13.001	U5 Tank In 1	102.5	1.942	0.622	1.2258	
15 minute winter	U5 Tank In 1	13.002	Unit 5 Attenuation Tank	101.8	1.637	1.039	2.2577	
15 minute winter	SWM27	14.000	U5 Tank In 2	65.3	2.246	0.744	0.6763	
15 minute winter	U5 Tank In 2	14.001	Unit 5 Attenuation Tank	64.6	2.139	0.865	0.3931	
15 minute winter	Unit 5 Attenuation Tank	10.004	SWM31	186.0	1.271	1.169	0.9640	
15 minute winter	SWM28	15.000	SWM30	121.9	0.943	0.582	2.7786	
15 minute winter	SWM29	16.000	SWM30	121.9	0.900	0.704	2.8540	
15 minute winter	SWM30	15.001	SWM31	361.5	3.129	0.618	0.6758	
15 minute winter	SWM31	1.007	SWM38	415.7	1.476	1.359	15.7345	
15 minute winter	SWM32	27.006	Ex Combined	5.1	0.678	0.128	0.0840	58.1
15 minute summer	SWM33	27.005	SWM32	40.9	0.442	0.135	2.7211	
15 minute winter	SWM34	27.004	SWM33	82.6	0.895	0.517	9.6018	
15 minute summer	SWM35	27.003	SWM34	146.9	1.103	0.727	10.0775	
15 minute winter	SWM36	27.002	SWM35	145.3	1.275	0.306	1.8430	
15 minute winter	SWM37	27.001	SWM36	-221.0	-1.395	-1.161	12.2386	
15 minute summer	Unit 1 Dock	27.000	SWM37	-11.0	-0.811	-0.622	0.4071	
15 minute winter	Unit 1 Attenuation Tank	28.000	SWM37	-333.3	-3.470	-2.483	1.4569	
15 minute winter	SWM38	1.008	SWM39	418.4	1.485	1.368	5.0271	
15 minute winter	SWM39	1.009	SWM40	382.5	1.358	1.250	25.3510	
15 minute winter	SWM40	1.010	SWM41	381.9	1.394	1.248	4.0522	
15 minute winter	SWM41	1.011	SWM49	380.7	1.614	1.244	6.3051	
15 minute winter	SWM42	17.000	SWM43	134.2	1.906	1.896	1.6846	

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Results for 30 year +40% CC Critical Storm Duration. Lowest mass balance: 99.58%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	SWM43	10	67.890	0.272	270.9	1.1396	0.0000	OK
15 minute winter	SWM44	11	67.514	0.490	270.5	0.7018	0.0000	SURCHARGED
15 minute winter	SWM45	11	68.108	0.636	28.6	1.2470	0.0000	SURCHARGED
15 minute winter	SWM46	12	68.165	0.715	15.1	1.1388	0.0000	SURCHARGED
15 minute winter	Unit 6 Dock	11	68.350	1.000	38.2	2.7100	1.2841	FLOOD
15 minute winter	SWM47	11	67.972	0.930	100.5	2.0458	0.0000	SURCHARGED
15 minute winter	SWM48	10	67.988	0.082	16.4	0.1299	0.0000	OK
15 minute winter	U6 Tank In 1	10	67.433	0.077	16.2	0.0000	0.0000	OK
600 minute winter	Unit 6 Attenuation Tank	585	67.038	1.508	142.9	1432.4910	0.0000	SURCHARGED
600 minute winter	SWM49	600	67.038	1.545	148.9	2.7303	0.0000	SURCHARGED
15 minute winter	Unlt 7 Dock	10	67.900	1.000	30.1	2.3180	5.2846	FLOOD
15 minute winter	SWM50	10	67.962	1.266	38.9	2.4111	0.0000	SURCHARGED
15 minute winter	SWM51	10	67.231	0.038	5.0	0.0483	0.0000	OK
600 minute winter	SWM52	585	67.038	0.788	9.0	1.3725	0.0000	SURCHARGED
15 minute winter	SWM53	11	67.116	0.469	82.8	1.6001	0.0000	SURCHARGED
15 minute winter	SWM54	11	67.162	0.517	146.2	2.6655	0.0000	SURCHARGED
600 minute winter	SWM55	585	67.038	0.820	34.9	2.2841	0.0000	SURCHARGED
600 minute winter	SWM56	585	67.038	1.057	34.7	1.5123	0.0000	SURCHARGED
15 minute winter	SWM57	11	68.105	0.530	119.7	2.3467	0.0000	SURCHARGED
15 minute winter	SWM58	11	67.779	0.451	231.7	1.9087	0.0000	SURCHARGED
15 minute winter	SWM59	11	67.566	0.307	245.8	0.5608	0.0000	OK
600 minute winter	Unit 7 Attenuation Tank	585	67.038	1.368	72.4	617.2300	0.0000	SURCHARGED
600 minute winter	SWM61	585	67.038	1.378	15.7	2.4356	0.0000	SURCHARGED
600 minute winter	FC01	585	67.038	1.563	44.0	7.0702	0.0000	SURCHARGED
120 minute summer	Ex.MH	72	65.456	0.086	34.0	0.0000	0.0000	OK
15 minute winter	SWM60	11	67.247	0.227	246.5	0.3246	0.0000	OK
15 minute winter	Ex Combined	10	65.088	0.054	5.1	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	SWM43	17.001	SWM44	270.5	2.128	0.563	3.4543	
15 minute winter	SWM44	17.002	Unit 6 Attenuation Tank	260.4	1.732	1.171	10.6024	
15 minute winter	SWM45	18.000	SWM47	25.1	0.631	0.531	2.0712	
15 minute winter	SWM46	19.000	SWM47	13.0	0.741	0.734	0.5861	
30 minute summer	Unit 6 Dock	20.000	SWM47	26.1	1.486	1.473	0.3548	
15 minute winter	SWM47	18.001	Unit 6 Attenuation Tank	98.2	2.469	2.380	0.8519	
15 minute winter	SWM48	21.000	U6 Tank In 1	16.2	1.715	0.548	0.1892	
15 minute winter	U6 Tank In 1	21.001	Unit 6 Attenuation Tank	16.1	1.763	0.523	0.1156	
15 minute winter	Unit 6 Attenuation Tank	17.003	SWM49	-545.7	-2.742	-1.824	5.4434	
15 minute winter	SWM49	1.012	FC01	-167.4	0.640	-0.547	2.5323	
15 minute winter	Unlt 7 Dock	22.000	SWM50	15.0	0.852	0.845	0.3596	
30 minute winter	SWM50	22.001	SWM52	30.1	1.710	1.701	0.6574	
15 minute winter	SWM51	23.000	SWM52	4.9	0.779	0.137	0.2235	
15 minute winter	SWM52	22.002	SWM56	62.7	1.576	1.577	0.2980	
15 minute winter	SWM53	24.000	SWM55	77.2	1.406	0.773	2.4287	
15 minute winter	SWM54	25.000	SWM55	136.2	2.162	0.856	0.6973	
15 minute winter	SWM55	24.001	SWM56	272.2	1.718	0.543	1.5675	
15 minute winter	SWM56	22.003	Unit 7 Attenuation Tank	334.0	2.111	1.929	7.0880	
15 minute winter	SWM57	26.000	SWM58	115.5	1.640	1.634	1.6775	
15 minute winter	SWM58	26.001	SWM59	229.5	1.642	1.325	3.2360	
15 minute winter	SWM59	26.002	SWM60	246.5	2.518	0.664	1.7726	
30 minute winter	Unit 7 Attenuation Tank	22.004	SWM61	204.7	0.881	0.697	1.5278	
15 minute winter	SWM61	22.005	FC01	203.0	0.908	0.692	4.8888	
120 minute summer	FC01	1.013	Ex.MH	34.0	1.201	0.037	0.3034	640.1
15 minute winter	SWM60	26.003	Unit 7 Attenuation Tank	246.9	3.246	0.454	1.3532	

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Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 97.18%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	SWM01	10	68.002	0.227	41.4	0.4593	0.0000	SURCHARGED
15 minute winter	SWM02	11	67.933	0.202	40.6	0.2284	0.0000	OK
720 minute winter	SWM03	690	67.869	0.352	3.3	0.3978	0.0000	SURCHARGED
720 minute winter	SWM04	690	67.868	0.485	11.0	1.4120	0.0000	SURCHARGED
720 minute winter	SWM05	690	67.860	0.669	3.9	1.4393	0.0000	SURCHARGED
720 minute winter	SWM06	690	67.860	0.595	1.9	0.9842	0.0000	SURCHARGED
720 minute winter	SWM07	690	67.862	1.061	22.4	5.1062	0.0000	SURCHARGED
15 minute winter	SWM08	11	68.852	0.402	32.8	0.9920	0.0000	SURCHARGED
15 minute winter	SWM09	12	68.483	0.115	31.2	0.1298	0.0000	OK
15 minute winter	SWM10	11	68.346	0.741	30.8	0.8384	0.0000	SURCHARGED
15 minute winter	SWM11	11	68.289	0.766	105.0	2.1440	0.0000	SURCHARGED
720 minute winter	Unit 2/3 Attenuation Tank	690	67.862	1.450	58.5	513.2137	0.0000	SURCHARGED
720 minute winter	SWM12	690	67.859	1.536	36.4	2.1986	0.0000	SURCHARGED
15 minute winter	SWM13	12	69.367	1.386	51.1	3.0943	0.0000	FLOOD RISK
15 minute winter	SWM14	12	68.970	1.333	88.2	2.9750	0.0000	FLOOD RISK
720 minute winter	SWM15	690	67.875	0.650	16.1	3.4092	0.0000	SURCHARGED
720 minute winter	Unit 4 Dock	690	67.874	0.424	0.7	0.4801	0.0000	SURCHARGED
720 minute winter	SWM16	690	67.869	0.928	33.3	3.0223	0.0000	SURCHARGED
15 minute winter	SWM17	11	69.054	1.082	190.5	5.2974	0.0000	SURCHARGED
15 minute winter	U4 Tank In 2	11	68.443	1.272	172.6	0.0000	0.0000	SURCHARGED
15 minute winter	SWM18	10	68.202	0.185	133.0	0.7109	0.0000	OK
720 minute winter	U4 Tank In 1	690	67.858	0.530	10.4	0.0000	0.0000	SURCHARGED
720 minute winter	Unit 4 Attenuation Tank	705	67.859	1.279	58.6	475.2375	0.0000	SURCHARGED
720 minute winter	SWM19	705	67.857	1.850	78.5	3.2698	0.0000	SURCHARGED
15 minute winter	SWM20	11	68.722	0.747	116.4	2.6274	0.0000	SURCHARGED
15 minute winter	SWM21	11	68.158	0.645	137.5	1.1270	0.0000	SURCHARGED
720 minute winter	SWM22	705	67.862	0.598	15.7	1.2332	0.0000	SURCHARGED

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	SWM01	1.000	SWM02	40.6	1.049	1.021	0.2899	
15 minute winter	SWM02	1.001	SWM03	39.8	1.070	1.001	1.3966	
15 minute winter	SWM03	1.002	SWM04	39.8	1.139	1.002	0.3685	
15 minute winter	SWM04	1.003	Unit 2/3 Attenuation Tank	133.3	2.039	1.032	4.0231	
15 minute winter	SWM05	2.000	SWM07	49.4	0.864	0.666	3.3984	
15 minute winter	SWM06	3.000	SWM07	23.7	0.900	0.544	1.0264	
15 minute winter	SWM07	2.001	Unit 2/3 Attenuation Tank	273.7	1.753	1.709	3.5240	
15 minute winter	SWM08	4.000	SWM09	31.2	1.836	1.757	0.1315	
15 minute winter	SWM09	4.001	SWM10	30.8	1.094	0.407	1.0850	
15 minute winter	SWM10	4.002	SWM11	35.0	0.880	0.879	0.5531	
15 minute winter	SWM11	4.003	Unit 2/3 Attenuation Tank	104.1	2.619	2.441	0.5413	
15 minute summer	Unit 2/3 Attenuation Tank	1.004	SWM12	-126.8	-1.072	-0.732	4.8908	
15 minute winter	SWM12	1.005	SWM19	-129.7	-0.819	-0.749	9.0877	
15 minute winter	SWM13	5.000	SWM14	40.3	1.015	1.015	2.3301	
15 minute winter	SWM14	5.001	SWM16	83.3	2.094	1.678	2.0484	
15 minute winter	SWM15	6.000	SWM16	200.2	1.398	0.748	6.3050	
15 minute winter	Unit 4 Dock	7.000	SWM16	-1.6	0.246	-0.088	0.2268	
15 minute winter	SWM16	5.002	Unit 4 Attenuation Tank	365.2	3.325	1.159	6.0237	
15 minute winter	SWM17	8.000	U4 Tank In 2	172.6	2.452	0.795	1.4887	
15 minute winter	U4 Tank In 2	8.001	Unit 4 Attenuation Tank	171.6	2.437	2.423	3.5056	
15 minute winter	SWM18	9.000	U4 Tank In 1	132.1	2.821	0.656	0.9901	
15 minute winter	U4 Tank In 1	9.001	Unit 4 Attenuation Tank	131.3	2.744	0.755	0.4879	
15 minute winter	Unit 4 Attenuation Tank	5.003	SWM19	192.7	1.972	0.325	1.2969	
15 minute summer	SWM19	1.006	SWM31	241.5	0.857	0.789	4.1753	
15 minute winter	SWM20	10.000	SWM21	109.1	1.550	1.020	3.5062	
15 minute winter	SWM21	10.001	SWM22	137.2	1.949	1.939	1.6708	
15 minute winter	SWM22	10.002	SWM24	187.9	1.554	0.671	5.1121	

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Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 97.18%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
720 minute winter	Unit 5 Dock	705	67.856	0.406	0.5	0.4590	0.0000	SURCHARGED
15 minute winter	SWM23	11	68.521	1.056	123.0	3.9988	0.0000	SURCHARGED
720 minute winter	SWM24	705	67.859	0.914	31.5	2.4240	0.0000	SURCHARGED
15 minute winter	SWM25	9	68.253	0.121	52.7	0.2667	0.0000	OK
15 minute winter	SWM26	11	68.208	0.371	139.7	0.9942	0.0000	SURCHARGED
720 minute winter	U5 Tank In 1	705	67.858	0.530	10.9	0.0000	0.0000	SURCHARGED
15 minute winter	SWM27	11	68.348	0.303	88.5	0.8840	0.0000	SURCHARGED
720 minute winter	U5 Tank In 2	705	67.857	0.470	6.9	0.0000	0.0000	SURCHARGED
720 minute winter	Unit 5 Attenuation Tank	705	67.861	1.316	56.1	380.1900	0.0000	SURCHARGED
720 minute winter	SWM28	705	67.857	0.585	13.2	2.6673	0.0000	SURCHARGED
720 minute winter	SWM29	705	67.857	0.615	13.2	2.8034	0.0000	SURCHARGED
720 minute winter	SWM30	705	67.857	0.676	39.3	2.9689	0.0000	SURCHARGED
720 minute winter	SWM31	705	67.854	1.877	145.3	3.3175	0.0000	SURCHARGED
15 minute summer	SWM32	10	67.415	2.314	27.1	3.6083	0.0000	FLOOD RISK
15 minute summer	SWM33	10	67.436	2.186	78.3	3.9335	0.0000	SURCHARGED
15 minute summer	SWM34	10	67.375	1.975	130.6	3.6502	0.0000	SURCHARGED
15 minute winter	SWM35	10	67.299	1.649	176.8	5.0196	12.3296	FLOOD
15 minute winter	SWM36	10	67.287	1.387	303.5	4.9359	0.0000	SURCHARGED
15 minute winter	SWM37	10	66.878	0.708	377.3	2.6635	0.0000	SURCHARGED
15 minute winter	Unit 1 Dock	10	66.910	0.510	18.0	0.5773	0.0000	SURCHARGED
480 minute winter	Unit 1 Attenuation Tank	472	66.583	0.383	47.0	427.4693	0.0000	OK
720 minute winter	SWM38	705	67.858	1.993	142.9	3.5209	0.0000	SURCHARGED
720 minute winter	SWM39	705	67.857	2.028	141.0	3.5830	0.0000	SURCHARGED
720 minute winter	SWM40	705	67.849	2.200	139.8	3.8868	0.0000	SURCHARGED
720 minute winter	SWM41	705	67.845	2.225	139.6	3.9324	0.0000	SURCHARGED
15 minute winter	SWM42	11	69.057	1.189	186.9	5.8952	0.0000	SURCHARGED

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
960 minute winter	Unit 5 Dock	11.000	SWM24	1.3	0.078	0.075	0.3634	
15 minute winter	SWM23	12.000	SWM24	116.5	2.929	2.044	0.6362	
15 minute winter	SWM24	10.003	Unit 5 Attenuation Tank	372.7	3.849	0.798	2.8046	
15 minute winter	SWM25	13.000	SWM26	52.8	1.207	0.311	0.5994	
15 minute winter	SWM26	13.001	U5 Tank In 1	132.4	1.988	0.804	1.6394	
15 minute winter	U5 Tank In 1	13.002	Unit 5 Attenuation Tank	132.4	1.881	1.350	2.4973	
15 minute summer	SWM27	14.000	U5 Tank In 2	83.1	2.277	0.947	0.8665	
15 minute winter	U5 Tank In 2	14.001	Unit 5 Attenuation Tank	83.1	2.111	1.113	0.5149	
15 minute summer	Unit 5 Attenuation Tank	10.004	SWM31	194.4	1.227	1.221	1.0329	
15 minute winter	SWM28	15.000	SWM30	162.1	1.023	0.774	3.4132	
15 minute winter	SWM29	16.000	SWM30	162.0	1.023	0.936	3.3390	
15 minute winter	SWM30	15.001	SWM31	482.9	3.245	0.826	0.8055	
15 minute winter	SWM31	1.007	SWM38	423.4	1.503	1.384	15.7345	
15 minute summer	SWM32	27.006	Ex Combined	5.3	0.685	0.133	0.0866	58.7
60 minute winter	SWM33	27.005	SWM32	35.3	0.386	0.117	2.7211	
15 minute winter	SWM34	27.004	SWM33	85.7	0.938	0.536	9.6018	
15 minute winter	SWM35	27.003	SWM34	158.5	1.154	0.785	10.0775	
15 minute winter	SWM36	27.002	SWM35	-134.1	1.373	-0.282	1.8430	
30 minute summer	SWM37	27.001	SWM36	-243.0	-1.534	-1.277	12.2386	
15 minute winter	Unit 1 Dock	27.000	SWM37	-18.0	-1.024	-1.018	0.4071	
15 minute winter	Unit 1 Attenuation Tank	28.000	SWM37	-376.1	-3.915	-2.802	1.5656	
15 minute winter	SWM38	1.008	SWM39	425.2	1.510	1.390	5.0271	
15 minute winter	SWM39	1.009	SWM40	406.7	1.444	1.329	25.3510	
15 minute winter	SWM40	1.010	SWM41	405.7	1.441	1.326	4.0522	
15 minute winter	SWM41	1.011	SWM49	404.4	1.609	1.322	6.3051	
15 minute winter	SWM42	17.000	SWM43	169.8	2.412	2.400	1.7211	

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Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 97.18%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	SWM43	11	68.310	0.692	349.1	2.8995	0.0000	SURCHARGED
15 minute winter	SWM44	11	67.881	0.857	343.0	1.2269	0.0000	SURCHARGED
15 minute winter	SWM45	11	68.570	1.098	38.5	2.1532	0.0000	SURCHARGED
15 minute winter	SWM46	12	68.641	1.191	20.3	1.8960	0.0000	FLOOD RISK
15 minute winter	Unit 6 Dock	9	68.350	1.000	51.4	2.7100	8.7438	FLOOD
15 minute winter	SWM47	11	68.302	1.260	117.7	2.7711	0.0000	SURCHARGED
15 minute winter	SWM48	10	68.005	0.099	22.0	0.1579	0.0000	OK
720 minute winter	U6 Tank In 1	705	67.840	0.484	2.9	0.0000	0.0000	SURCHARGED
720 minute winter	Unit 6 Attenuation Tank	705	67.839	2.309	133.0	1710.4750	0.0000	SURCHARGED
720 minute winter	SWM49	705	67.838	2.345	139.4	4.1443	0.0000	SURCHARGED
15 minute winter	UnIt 7 Dock	9	67.900	1.000	53.4	2.3180	13.8619	FLOOD
15 minute winter	SWM50	11	68.103	1.407	41.9	2.6801	0.0000	FLOOD RISK
720 minute winter	SWM51	690	67.854	0.661	7.5	0.8488	0.0000	SURCHARGED
720 minute winter	SWM52	690	67.862	1.612	11.6	2.8088	0.0000	SURCHARGED
720 minute winter	SWM53	690	67.854	1.207	11.8	4.1172	0.0000	FLOOD RISK
720 minute winter	SWM54	690	67.855	1.210	15.4	6.2408	0.0000	FLOOD RISK
720 minute winter	SWM55	690	67.860	1.642	31.0	4.5746	0.0000	FLOOD RISK
720 minute winter	SWM56	690	67.864	1.883	45.4	2.6944	0.0000	SURCHARGED
15 minute winter	SWM57	11	68.565	0.990	160.9	4.3826	0.0000	SURCHARGED
15 minute winter	SWM58	11	67.958	0.630	308.7	2.6686	0.0000	SURCHARGED
720 minute winter	SWM59	705	67.865	0.606	46.2	1.1075	0.0000	SURCHARGED
600 minute winter	Unit 7 Attenuation Tank	585	68.030	2.360	367.1	677.1006	0.0000	FLOOD RISK
720 minute winter	SWM61	660	68.026	2.366	252.4	4.1813	0.0000	FLOOD RISK
720 minute winter	FC01	705	67.838	2.363	136.6	10.6914	0.0000	SURCHARGED
15 minute summer	Ex.MH	33	65.456	0.086	34.0	0.0000	0.0000	OK
720 minute winter	SWM60	690	67.881	0.861	33.0	1.2315	0.0000	SURCHARGED
15 minute summer	Ex Combined	10	65.089	0.055	5.3	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	SWM43	17.001	SWM44	343.0	2.195	0.714	4.2838	
15 minute winter	SWM44	17.002	Unit 6 Attenuation Tank	340.6	2.152	1.532	11.0910	
15 minute winter	SWM45	18.000	SWM47	34.7	0.873	0.736	2.0712	
15 minute winter	SWM46	19.000	SWM47	17.7	1.006	0.998	0.5861	
60 minute summer	Unit 6 Dock	20.000	SWM47	26.0	1.475	1.463	0.3548	
15 minute winter	SWM47	18.001	Unit 6 Attenuation Tank	115.8	2.912	2.807	0.8519	
15 minute winter	SWM48	21.000	U6 Tank In 1	21.8	1.829	0.736	0.2381	
15 minute winter	U6 Tank In 1	21.001	Unit 6 Attenuation Tank	21.6	1.887	0.702	0.1450	
15 minute winter	Unit 6 Attenuation Tank	17.003	SWM49	-640.4	-2.818	-2.140	5.4434	
600 minute winter	SWM49	1.012	FC01	250.3	0.889	0.818	2.5323	
15 minute winter	UnIt 7 Dock	22.000	SWM50	-16.2	-0.918	-0.910	0.3596	
30 minute summer	SWM50	22.001	SWM52	29.8	1.693	1.685	0.6574	
15 minute winter	SWM51	23.000	SWM52	9.7	0.749	0.270	0.3739	
15 minute winter	SWM52	22.002	SWM56	69.9	1.759	1.760	0.2980	
15 minute winter	SWM53	24.000	SWM55	102.0	1.449	1.022	2.4287	
15 minute winter	SWM54	25.000	SWM55	180.7	2.566	1.136	0.6973	
15 minute winter	SWM55	24.001	SWM56	360.1	2.273	0.718	1.5675	
15 minute winter	SWM56	22.003	Unit 7 Attenuation Tank	426.9	2.695	2.466	7.3226	
15 minute winter	SWM57	26.000	SWM58	155.0	2.202	2.194	1.6780	
15 minute winter	SWM58	26.001	SWM59	307.4	1.950	1.776	3.5895	
15 minute winter	SWM59	26.002	SWM60	330.6	2.650	0.891	2.2352	
480 minute winter	Unit 7 Attenuation Tank	22.004	SWM61	-287.3	-1.020	-0.979	1.5278	
15 minute winter	SWM61	22.005	FC01	276.9	1.048	0.943	4.8888	
15 minute summer	FC01	1.013	Ex.MH	34.0	1.201	0.037	0.3034	500.9
15 minute winter	SWM60	26.003	Unit 7 Attenuation Tank	331.6	3.467	0.610	1.7008	

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APPENDIX F – DRAINAGE INSPECTION AND MAINTENANCE SCHEDULE

Maintenance Schedule	Required Action	Typical Frequency
Below Ground Drainage Pipes, Manholes, Outfall headwalls, ditches, trash screens etc		
Regular Maintenance	Lift covers and inspect manholes for evidence of debris and silt deposits and evidence of blockages (standing water). Carry out CCTV survey if required. Inspect ditches, trash screens, headwalls etc. and clear debris and silt deposits to avoid restriction to flow.	Quarterly or following significant rainfall events.
Remedial Actions	High pressure jetting and/or remove minor blockages and silt build up	As required – 20% loss of pipe cross-section
	Replace broken access covers, remove major blockages, repair structurally defective pipework	As required
Flow control chamber		
Regular Maintenance	Lift covers and inspect chamber fore evidence of debris and silt deposits and evidence of blockages. Test bypass door operating correctly.	Quarterly or following significant rainfall events.
Remedial Actions	High pressure jetting and or remove minor blockages and silt build up	As required
	Replace broken access covers, remove major blockages, repair/replace defective flow control devices	As required
Linear channel drains and gullies		
Regular Maintenance	Lift access covers and inspect for silt/debris accumulation	Quarterly or following significant rainfall events.
Remedial Actions	Replace broken access covers, gratings	Annually
	High pressure jetting and/or remove minor blockages and silt build up	As required
Rainwater pipes		
Regular Maintenance	Inspect rainwater goods for evidence of leaking pipework	Monthly (or as required)
Occasional Maintenance	Remove rodding eyes and carry out high pressure jetting to remove any debris	Quarterly
Remedial Actions	Replace cracked / leaking pipework	As required
Attenuation Tank (Maintenance activities recommended by the manufacturer should be added to this schedule where not included)		
Regular maintenance	Remove litter and debris and inspect for sediment, oil and grease accumulation.	Six monthly
	Change the filter media	As recommended by manufacturer

Maintenance Schedule	Required Action	Typical Frequency
Remedial actions	Replace malfunctioning parts or structures	As required
Monitoring	Inspect for evidence of poor performance	Six monthly
	Inspect sediment accumulation rates and filter media, and establish appropriate replacement frequencies.	Monthly during first half of the year, then every six months