

# APPENDIX E

## SITE VISIT PHOTOS AND NOTES

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	Report No: 681333	PHOTOGRAPHIC LOG
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<b>Client name:</b> Wates Developments Limited and the Licence Trade Charity	<b>Site Location:</b> LVS Hassocks School, Sayers Common, BN6 9HT NGR: 526515 E, 118767 N
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<b>Photo No.</b> 1	<b>Date:</b> 29/05/24	 <p data-bbox="167 712 432 898"><b>Description:</b> Surface water drainage channel running along the northern side of the access road (near the centre of the site).</p>
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<b>Photo No.</b> 2	<b>Date:</b> 29/05/24	 <p data-bbox="167 1572 432 1758"><b>Description:</b> Surface water drainage channel running along the northern side of the access road (near the site entrance).</p>
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	Report No: 681333	PHOTOGRAPHIC LOG
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<b>Client name:</b> Wates Developments Limited and the Licence Trade Charity	<b>Site Location:</b> LVS Hassocks School, Sayers Common, BN6 9HT NGR: 526515 E, 118767 N
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<b>Photo No.</b> 3	<b>Date:</b> 29/05/24	 <p><b>Description:</b> Culvert connecting the two ends of the surface water drainage channel present on the eastern site boundary which receives flows from the drainage channel along the site access road.</p>
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<b>Photo No.</b> 4	<b>Date:</b> 29/05/24	 <p><b>Description:</b> Surface water drainage channel present on the eastern site boundary which receives flows from the drainage channel along the site access road.</p>
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	Report No: 681333	PHOTOGRAPHIC LOG
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<b>Client name:</b> Wates Developments Limited and the Licence Trade Charity	<b>Site Location:</b> LVS Hassocks School, Sayers Common, BN6 9HT NGR: 526515 E, 118767 N
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<b>Photo No.</b> 5	<b>Date:</b> 29/05/24	
<b>Description:</b> Ordinary Watercourse present on the site's southern boundary (near the ponded region in the southeast corner).		

<b>Photo No.</b> 6	<b>Date:</b> 29/05/24	
<b>Description:</b> Ordinary Watercourse present on the site's southern boundary (near the southwest corner where it leaves the site).		

	Report No: 681333	PHOTOGRAPHIC LOG
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<b>Photo No.</b> 7	<b>Date:</b> 29/05/24
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**Description:** Man-made ponded region located in the west of the central region of the site.



<b>Photo No.</b> 8	<b>Date:</b> 29/05/24
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**Description:** Man-made ponded region located in the central area of the site.



	Report No: 681333	PHOTOGRAPHIC LOG
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<b>Client name:</b> Wates Developments Limited and the Licence Trade Charity	<b>Site Location:</b> LVS Hassocks School, Sayers Common, BN6 9HT NGR: 526515 E, 118767 N
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<b>Photo No.</b> 9	<b>Date:</b> 29/05/24	
<b>Description:</b> Localised minor ponding near southern boundary.		

<b>Photo No.</b> 10	<b>Date:</b> 29/05/24	
<b>Description:</b> Localised minor ponding near centre of western boundary.		

	Report No: 681333	PHOTOGRAPHIC LOG
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<b>Client name:</b> Wates Developments Limited and the Licence Trade Charity	<b>Site Location:</b> LVS Hassocks School, Sayers Common, BN6 9HT NGR: 526515 E, 118767 N
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<b>Photo No.</b> 11	<b>Date:</b> 29/05/24	
<b>Description:</b> Surface water drainage channel located off site (near the centre of the western boundary).		

<b>Photo No.</b> 12	<b>Date:</b> 29/05/24	
<b>Description:</b> Surface water drainage channel that runs through the centre of the school (underneath the hedge on the right).		

	Report No: 681333	PHOTOGRAPHIC LOG
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<b>Photo No.</b> 13	<b>Date:</b> 29/05/24	
<b>Description:</b> Ordinary Watercourse located within the housing estate to the south of the site.		

<b>Photo No.</b> 14	<b>Date:</b> 29/05/24	
<b>Description:</b> Poned region which the Ordinary Watercourse in Photo 13 discharges into (potentially an attenuation feature for the housing to the south of the site).		

Report No: 681333

PHOTOGRAPHIC LOG

**Client name:**  
Wates Developments Limited  
and the Licence Trade Charity

**Site Location:** LVS Hassocks School, Sayers Common, BN6 9HT  
NGR: 526515 E, 118767 N

**Photo No.**  
15

**Date:**  
29/05/24

**Description:** Where the culverted watercourse reappears after flowing through the 750mm surface water sewer (located within the housing to the south of the site).



**Photo No.**  
16

**Date:**  
29/05/24

**Description:** Large ponded area located off the southeastern corner of the site.



# APPENDIX F

## DRAINAGE TRACING SURVEY

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# PAS 128 SURVEY REPORT

LVS HAS SOCKS  
LONDON ROAD  
SAYERS COMMON, HAS SOCKS  
BN6 9HT

Prepared by  
KB

Date  
14-10-2024

Prepared for  
CD Surveys





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## 1. Introduction

This report outlines the utility survey methods used and draws conclusions to the success or otherwise of the survey results. This document is designed to be read in conjunction with the survey deliverables; aiming to clarify any issues, inform our clients and offer recommendations of where further survey work or verification may be needed.

### 1.1. Scope of Works

SVS Ltd. were instructed by their client CD Surveys to undertake a PAS128 Survey within a predetermined survey boundary at LVS Hassocks, London Road, Sayers Common, Hassocks, BN6 9HT.

The survey was conducted to establish accurate position and depth of buried services that exist within the specified survey area by:

- Statutory Record / Guide drawing verification
- Visual identification
- Access gained to manhole and inspection chambers
- Electro-magnetic location
- Ground Penetrating Radar acquisition

Utility location data was recorded using GNSS and/or Total Station and tied into a topographical baseplan supplied by CD Surveys. In some circumstances, utility locations may be recorded by creating a to-scale drawing onsite and transferring the information to the baseplan.

All located / identified utilities were marked on the ground using either wax marker or temporary site marking paint and sub categorised to the relevant quality level dependant on the accuracy of the location. The quality levels associated with a PAS128 QL-B survey are listed within section 3.1 of this report.

This report is to be read in conjunction with planimetric information supplied by Site Vision Surveys Ltd. drawing number: 0924-CDS-17113

## 1.2. Survey Area



## 1.3. Deliverables

	Drawing Name	Content	Filetype	Date Issued	Authorised by
No. 1	0924-CDS-17113	2D Utility Survey	.dwg CAD file	01-11-2024	NC
No. 2	0924-CDS-17113	2D Utility Survey	PDF	01-11-2024	NC

## 2. Detection Methods

### 2.1. Electromagnetic Location (EML) Survey Method

Electromagnetic Location technology was used to locate the majority of metallic buried pipes and cables within the defined survey boundary by detecting radiating electromagnetic signals emitting from conductive materials.



The EML kit comprises of a signal emitting transmitter and handheld receiver, the former used to transmit signals which are then received by the handheld receiver. The handheld receiver is also capable of detecting signals without the use of the transmitter, this is referred to as passive location.

The three main EML detection methods and descriptions are as follows:

### Passive Detection

This refers to the detection of electromagnetic signals emitting from conductive materials which are energized by nearby power/radio sources, these signals are picked up using the handheld receiver only.

### Signal Generation

The transmitter is placed over a suspected conductive property, emitting a set signal, and detected using the handheld receiver.

### Direct Connection

This is the process of connecting the transmitter directly to a service or service feature using a direct connection lead and/or signal clamp.

All the above techniques were deployed on this project; direct connection was used to trace all encountered conductive services from above or below ground apparatus such as manholes, inspection chambers, lampposts, valves, hydrants etc. Empty ducts/nonconductive service ducts were located by inserting a flexible tracing wire into the ducting, connecting the transmitter to the tracing wire apparatus, and locating the ducting from above ground. Passive detection checks were conducted to search the area for conductive utilities, results were induced using signal generation techniques and if possible, traced. In addition, signal generation checks were carried out across the survey area. This survey was to **M2P specification** and therefore orthogonal search transects were carried out at <5m intervals and when following a utility trace, search transects at <2m intervals. All located utilities were marked on the grounds surface using wax marker or temporary site marking paint, prior to being geographically positioned by GNSS and/or Total Station, unless stated otherwise. All techniques were deployed providing areas were accessible, free of debris, obstruction and where ground conditions would allow; any areas that were unable to be surveyed have been clearly marked or noted on the supplied survey drawing.

## 2.2. EML Known Limitations

- Unable to detect non-conductive/metallic utilities.
- Unable to determine whether a utility is live or redundant.
- May not detect well balanced or pot ended/cut cables.
- May not be able to determine if a utility is singular or several in close proximity.
- Depth indications are subject to ground conditions, as a rule, we would not expect to accurately locate services beyond 2.50m deep.
- Signals are prone to interference, particularly when conductive materials are within close proximity to each other, this can sometimes lead to a poor trace.



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### 2.3. Appraisal of EML Results

Overall, on site the EML went well. Most Services found on site were located with minimal issues, however due to there being no desktop utility search a number of Unknown services were located.

### 2.4. Ground Penetrating Radar (GPR) Survey Method

GPR was deployed in an attempt to locate any non-conductive pipes/cables, locate conductive pipes/cables not located via EML and upgrade the quality level of already established electromagnetic locates.

GPR transmits high frequency, short duration pulses of energy into the ground from a coupled antenna. Transient electromagnetic waves are reflected, refracted, and diffracted to create a high-resolution, cross-sectional image of the grounds subsurface. This geophysical data alone does not allow for the identification of subsurface utilities, the identification of utilities is achieved through a combination of on-site interpretation from both GPR and EML surveys together with on-site reconnaissance and correlation to statutory utility records.

It is possible that GPR may detect buried features and obstructions beyond utilities. The type of features that can be detected include, but are not limited to voids, foundations, thrust blocks, tanks, chambers, basement extents, ducts (not linked to any street furniture); and reinforced concrete. Where the purpose of the survey is to identify and record such features, the survey should be undertaken in accordance with BS 5930.

On this project, GPR was deployed across the specified survey boundary in all accessible areas free of debris, obstruction and where ground conditions would allow. In addition, GPR was deployed in targeted areas of concern or where statutory utility records indicate the location of a service and/or services. Each significant GPR locate was marked on the grounds surface using wax marker or temporary site marking paint, prior to being geographically positioned by GNSS and/or Total Station, unless stated otherwise. Any areas that were unable to be surveyed have been clearly marked or noted on the supplied survey drawing.

This project was performed to **M2P specification** by GPR scanning within the specified survey area using either a <2m orthogonal grid; or using a multiple antenna array. This was performed providing areas were accessible, free of debris/obstruction and where ground conditions would allow. In addition, GPR was deployed in targeted areas of concern or where statutory utility records indicate the location of a service and/or services. GPR data scheduled to be post-processed was geographically positioned on-site and post-processed using IQ Maps software. The results of the positioned data, once analysed, were transferred onto the baseplan. Real-time GPR locates were marked on the ground using wax marker or temporary site marking paint and individually geographically positioned using GNSS and/or Total Station, unless stated otherwise. Any areas that were unable to be surveyed have been clearly marked or noted on the supplied survey drawing.

## 2.5. GPR Known Limitations

- Generally, GPR is unable to detect services with a diameter that is less than 10% of their depth. Therefore, deep services, small diameter pipes and un-ducted cables may not be detectable.
- Ground conditions such as wet clay, reinforced concrete, foam filled concrete etc. will limit the GPR signal penetration and greatly reduce its detection capability.
- Uneven terrain can affect GPR results.
- Utility identification is not always possible using geophysical data alone.
- Unable to accurately determine sizes of detected utilities.

## 2.6. Appraisal of GPR Results

Overall, GPR yielded poor results. Some small linear anomalies were located but were not able to be continued a sufficient distance to allow identification. Very limited services located were upgraded by GPR and a large portion of the survey area was grassed areas, which at the time of survey, were heavily waterlogged. This greatly reduced the effectiveness of our GPR systems, both in the ability to maintain constant contact with the ground when pushing/pulling, and also, when the ground is heavily saturated, this causes large amounts of reflected data to appear within the data collection. These reflections can mask data, that otherwise, may have been possible to locate.

## 3. Survey Outcomes

### 3.1. Planimetric Information, Metadata and Attribute Data

Planimetric information for this project has been submitted as per the deliverables table set out in section 1.3 of this report.

Metadata provided as part of the deliverables includes:

- a) Survey date, stated within the submitted drawing title block and within this report (Section 1.3)
- b) Utility type and quality level, displayed within the line-types generated via SVS Ltd.'s CAD template
- c) Detection method in accordance with Table 2 of the PAS128:2022 document, specified within the drawing title block and within this report (Section 1.1)

In addition to the above metadata, attribute data is supplied including the following:

- a) Utilities, excluding drainage: depth (top of utility)
- b) Drainage: depth to invert, pipe size, flow direction



- c) Manholes/ Inspection Chambers: cover level, chamber size, depth to invert, depth to top of ducts, duct configuration, duct sizes, inspection chamber depth, condition i.e Flooded, No Visible Ducts (NVD) etc.
- d) Utility features: condition or elements related to the survey i.e Unable to Trace (UTT), Cut Cables – UTT etc.

The PAS128 quality levels are defined within the PAS128:2022 as the following:

QL-B1 – The utility or service has been located using electromagnetic locating equipment. The electromagnetic field has been confirmed as round. Depth validation confirmed. The location has also been verified with Ground penetrating radar. (Please note both Electromagnetic and Ground Radar have to agree to achieve a B1 status). Tolerances associated with a B1 status are +/- 150mm Horizontally and +/- 15% of the detected depth.

QL-B2 – The utility or service has been located using electromagnetic locating equipment. The electromagnetic field has been confirmed as round. Depth validation confirmed. Or the location has been located with Ground Radar (please note that a B2 status means the utility or service has only been able to be located with either EML or GPR not both). Tolerances associated with a B2 status are +/- 250mm Horizontally and +/- 40% of the detected depth.

QL-B3 – The utility or service has been located using Electromagnetic locating equipment however the locate has been deemed bad or poor, this may occur when the electromagnetic field has been deemed as not being round possibly indicating that there may be other conductors within the ground creating electromagnetic interference or the target utility may be a poor conductor. If the utility has been located with Ground Radar then the image or reflection that has been received may be poor. Tolerances associated with a B3 status are +/- 500mm Horizontally with no depth information available.

QL-B4 – The utility or service has been unable to be located however is believed to exist, this quality level covers aspects such as assumed routes, historical data and record information. There are no tolerances associated with a B4 status and must be treated with little to no confidence, further investigations with alternative methods may be advised.

### 3.2. Appraisal of Survey Results Per Service Type

Service Type	Located	Located via
Electric	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	EML <input checked="" type="checkbox"/> GPR <input type="checkbox"/> Other <input type="checkbox"/>
Gas	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	EML <input type="checkbox"/> GPR <input type="checkbox"/> Other <input type="checkbox"/>
Water	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	EML <input checked="" type="checkbox"/> GPR <input type="checkbox"/> Other <input type="checkbox"/>
BT	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	EML <input checked="" type="checkbox"/> GPR <input type="checkbox"/> Other <input type="checkbox"/>
Foul Drainage	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	EML <input checked="" type="checkbox"/> GPR <input type="checkbox"/> Other <input type="checkbox"/>
Surface Water Drainage	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	EML <input checked="" type="checkbox"/> GPR <input type="checkbox"/> Other <input type="checkbox"/>
Combined Drainage	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	EML <input type="checkbox"/> GPR <input type="checkbox"/> Other <input type="checkbox"/>
Communications	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	EML <input type="checkbox"/> GPR <input type="checkbox"/> Other <input type="checkbox"/>



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Cable TV	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	EML <input type="checkbox"/> GPR <input type="checkbox"/> Other <input type="checkbox"/>
Fibre Optics	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	EML <input type="checkbox"/> GPR <input type="checkbox"/> Other <input type="checkbox"/>
Traffic Signals	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	EML <input type="checkbox"/> GPR <input type="checkbox"/> Other <input type="checkbox"/>
Unknown	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	EML <input checked="" type="checkbox"/> GPR <input type="checkbox"/> Other <input type="checkbox"/>
Other	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	EML <input checked="" type="checkbox"/> GPR <input type="checkbox"/> Other <input type="checkbox"/>

### 3.2.1. Electric

Overall, the Electric found on site was located with minimal issues. On site the HV was located from the Electric Pole on the Southeast area of the site through the site to the Electric Pole/ Transformer on the West area of site. The Main LV was located from the Electric Pole on the West area of site into the Main Plant room. The Illuminated Bollards in the car park were located with minimal issues however they were located to an EOT (End Of Trace) into vegetation and was unable to be located any further. On the road section of the site which is the Southeast area of site some of the Electric located on the East and west side of the road was located into vegetation, therefore has been added as an EOT on the drawing.

### 3.2.2. Gas

On site the Gas discovered was next to the carpark on the East of site in a series of tanks, however, was unable to be located out of the tanks due to the material of the pipes being PE. The Gas discovered within the school area of the site was found within two Gas cabinets next to each plant room was also unable to be located due to the material of the pipes being PE.

### 3.2.3. Water

On the road section of the site which is the Southeast area of the site a number of FH (fire hydrant) SV (stop valve) WO (wash out) were discovered however most of them were UTT (unable to locate) possibly due to the material of the pipes being plastic, however due to no Desktop Utility Search the material of the pipes are unknown. A Water Pipe was located on the east side of the road section of the site to an EOT due to loss of signal. A Water Pipe on the west side of the road section of site was located to an EOT due to loss of signal. A 25mm PE Water riser inside the plant room on the north west area of the site was unable to be located due to the material of the pipe being PE. A 25mm PE water riser in the allotment/ gardening area of site which is southwest of the site was unable to be located due to the material of the pipe being PE. A Water Pipe on the north section of the site was located from the plant room into vegetation, however it was located on the other side of the vegetation into a building. A Fire hydrant on the north side of the site was UTT.

### 3.2.4. BT

On the road section the site two deep BT trunk mains were discovered in some BT manholes however were unable to be surveyed fully due to both of the manholes being relatively flooded and the number of ducts being unknown. Some routes were located from the chamber, these manholes would require Man-Entry to be surveyed fully. The BT located on the south side of the site was located with no issues from an manhole on the verge of the road to across the site to a cable riser on one of the school buildings. The BT on the north section of the site was located from a deep BT manhole to an EOT due to vegetation.

### 3.2.5. Foul Drainage

On site the majority of the foul drainage was located with no issues however due to a number of seized Manholes some questions the drainage could potentially not be answered.

The drainage for the newer school building on the site flows into a pumping chamber, from the pumping chamber it flows into a manhole where the Exit Pipe goes under a building therefore being unable to be located any further.

The foul drainage located on the road section of the site was located with minimal issues, however a pipe going towards the school area of the site was located to an EOT due to the Flexi-Reel ending.

Rising main from pumping chamber at north-east of main building was unable to be located. No logical assumptions can be made to allow the accurate addition of an assumed route.

### 3.2.6. Surface Water Drainage

Majority of on site surface water all flows towards the south of site towards an outfall at the headwall located.

The surface water drainage discovered on the road section of the site was unable to be located fully due to the size and depth of the pipes.

Surface water drainage from cattle grid, crosses road heading south. This pipe was exposed via trial holes, once north of the fence line which located the pipe directly. The second trial hole was carried out south of the fence line, which uncovered a large boulder which is believed to have collapsed the pipe as we were unable to rod past this point.

### 3.2.7. Combined Drainage

Combined drainage route converges into a pumping chamber on the north side of the site near to front entrance of the school, however the rising main was unable to be located from where it exits possibly due to the rising main being plastic. The drainage for the newer school building on the site flows into a pumping chamber, from the pumping chamber it flows into a manhole where the Exit Pipe goes under a building therefore being unable to be located any further.

### 3.2.8. Communications

The only communications located on site was located in and around the electric gates, all located with no issues.

### 3.2.9. Cable TV

No Cable TV found on site.

### 3.2.10. Fibre Optics

No Fibre Optics found on site.

### 3.2.11. Traffic Signal Cables

No Traffic Signals Cables found on site.

### 3.2.12. Unknown



On site various Unknown services were located with one being on the north side of the site in a field, it was located to an EOT. An Unknown service was located from the road section of the site to school with an EOT each end due to loss of signal. An unknown service was located on the road section of the site towards the south it was located to an EOT due to loss of signal.

MH within grassed area near barn has been lifted and identified as an empty chamber. No visible incomings or outgoings are visible. This chamber is partially flooded, having at time of survey, nearly 1m of standing water within. There is a large amount of silt present beneath the water level. There is a possibility that incoming connections exist beneath the water line that are obscured. Removal of water / silt is recommended if contents of this chamber is vital to the project.

### 3.2.13. Other

Other Services found on site were some heating pipes located on the north side of the site into some vegetation, however they were located out of the vegetation to an EOT. Some more heating pipes were discovered in a service tunnel on the north of the site going into the buildings each way.

## 3.3. Appraisal of Desktop Utility Records

No record information available at time of survey.

## 3.4. Site Specific Conditions and Survey Limitations

Unable to locate Rising Main outside of the site boundary. Heavily saturated ground caused poor GPR results in grassed areas.

## 3.5. GPR Buried Features and Obstructions

None found on site.

## 3.6. Conclusions and Recommendations

A further site visit to GPR grassed areas once the ground has had time to lose its water content is advised if data in these areas are essential to planning.

## 4. Cautionary Notes

1. No utility mapping survey can be considered as a 100% accurate depiction of the sub-surface environment, the use of SVS Ltd's survey drawings does not remove the requirement for the use of safe digging practices, in line with the requirements set out within HSG-47 and current CDM regulations.
2. The survey drawings and report should be read in conjunction with PAS128:2022 Client Specification Guide for underground utility detection, verification, and location.

3. EML & GPR techniques used to obtain the information shown on SVS Ltd. survey drawings can be subject to varying ground conditions. Always Exercise Caution When Excavating. See HSG-47.
4. If the location or depth of services/features is of importance to a project, then it is recommended that discussions are held with SVS Ltd. regarding any possible limitations or anomalies.
5. It is also advised that trial excavations should be undertaken to verify survey results within key areas of importance.
6. Information depicted QL-B4TFR, cannot be guaranteed as it is based on historic utility records or assumed routes which can be inaccurate and incomplete.
7. Depicted service routes may reflect the routes of multiple cables or pipes. It is not always possible to differentiate between buried construction features, utilities, and other subsurface linear features therefore it is possible that some features shown are not utility related, and due to the limitations of electromagnetic techniques all utility identifications should be treated with caution and verified prior to any design/building works.
8. Water and Gas utilities to individual properties are often of a size that cannot be detected using EML or GPR investigation, whenever possible the route has been added from surface evidence (pipe risers, valves, etc), but this should be viewed as a guide only.
9. Unloaded, perfectly balanced or pot ended electric cables may not be detectable using Electromagnetic Locators.
10. Fibre optic cables are often difficult to detect, and commonly access chambers can be locked and thereby made inaccessible by the utility provider. All reasonable efforts have been made to locate these ducts using GPR. Cables not located have been transposed from records.
11. Wherever possible we have attempted to locate the routes of sewers. Issues such as blockages, surcharging, flooding, sedimentation, sewer collapse, root ingress, excessive depth, obstructions, or heavy traffic flow may have affected our ability to obtain meaningful results. In these cases, recommendations have been made for further survey work.
12. All pipe / duct sizes have been recorded from surface inspection or taken from record information and are assumed to be correct, however due to non-entry to chambers, these should be verified before any works commence.
13. The correct identification of the utility types cannot be 100% guaranteed, therefore these should be independently verified prior to use in any design/ building works.
14. Where possible, the ownership of inspection covers has been derived from information on the covers

or from cable tags. This does not necessarily mean that they use or are sole users of the apparatus.

15. It is possible that GPR may detect buried features and obstructions beyond utilities. The type of features that can be detected include, but are not limited to voids, foundations, thrust blocks, tanks, chambers, basement extents, ducts (not linked to any street furniture), and reinforced concrete. Where the purpose of the survey is to identify and record such features, the survey should be undertaken in accordance with BS 5930.
16. All utilities detected by SVS Ltd. should be considered live unless stated or confirmed otherwise by client or service provider.
17. This report is for the private and confidential use of the client for whom the report is undertaken and should not be reproduced in whole or in part or relied upon by third parties for any use whatsoever without the express authority of SVS Ltd.

## 5. Supporting Images/ Documents

Headwall / outfall:



Northern Trial Hole:



Southern Trial Hole:











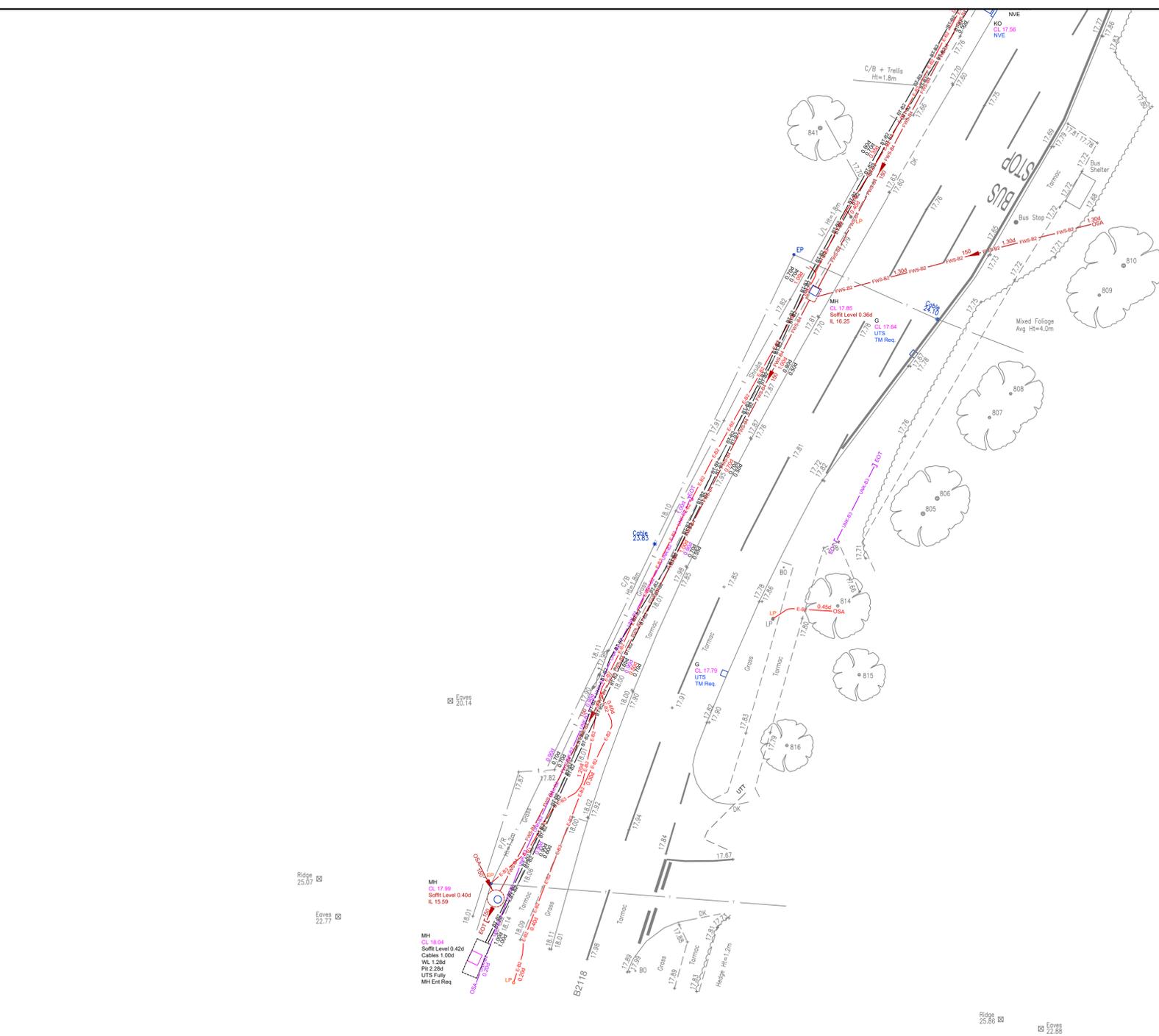




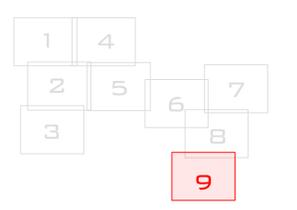








**SHEET LAYOUT**



**ABBREVIATIONS**

Abbreviation	Description	Abbreviation	Description
AVC	AIR CONDITIONING	NVD	NO VISIBLE DUCTS
AV	AIR VALVE	NVP	NO VISIBLE PIPES
BB	BELIEF BEACON	OH	OVERHEAD
BD	BOREROLE	OSA	OFF SURVEY AREA
BOLL	BOLLARD	PF	POST & RAIL FENCE
BS	BUS STOP	RF	RETAINING WALL
BTIC	BRITISH TELECOM COVER	RS	ROAD SIGN
CB	CABLE BOX	SC	SECURITY FENCE
CF	CLOSED FENCE	SCC	SECURITY FENCE
CG	COVER LEVEL	SL	SOIL CONNECTED
CH	CHIMNEY	SP	SPOT LIGHT
CI	CABLE RIBBER	ST	STOP LEVEL
CR	CABLE TV	STN	STATION DATUM POINT
D	DEPTH - DEEP	SV	STOP VALVE
D.I.	DEPTH TO INVERT	SVF	SOIL VENT PIPE
DCHAN	DRAINAGE CHANNEL	T	TOP OF FINISH ELEMENT
ED	END OF TRACE	T.C.P.	TREE CANOPY
EP	ELECTRICITY POLE	TCL	THRESHOLD LEVEL
EPD	EARTH POINT	TFL	TAKEN FROM RECORDS
FIBED	FIBRE OPTIC	THL	THRESHOLD LEVEL
FB	FLOWER BED	TLM	TOP OF WALL LEVEL
FBI	FIRE BREAK	TLP	TELEPHONE POLE
FW	FIRE SWITCH	TR	TRIMMER POST & RAIL
FWH	FLOWER HUT	UL	UNDERGROUND
GA	GAS VALVE	ULC	UNABLE TO LOCATE
GE	HEIGHT	ULS	UNABLE TO SURVEY
ID	INSPECTION COVER	ULU	UNABLE TO TRACE
ILLI	ILLUMINATED BOLLARD	ULV	UNABLE TO VERIFY
IS	ISLAND	UP	UPPER
LD	LETTER BOX	VP	VENT PIPE
LE	LAMP POST	VM	VACUUM RECOVERY
MB	MULTI-BOLLE	WM	WATER METER
MA	MANHOLE	WD	WASH OUT
MTR	METER	Ø	DIAMETER
MTR	METER		
MW	MONITORING WELL		

**UTILITY LEGEND**

EA	ELECTRICITY	EDR	EFFLUENT DRAINAGE
EA1	HIGH VOLTAGE ELECTRICITY	EDR1	SURFACE DRAINAGE
EA2	LOW VOLTAGE ELECTRICITY	EDR2	COMBINED DRAINAGE
EA3	GROUND PENETRATING RADAR	EDR3	FOUL DRAINAGE
EA4	ADJUSTIVE PULSE EQUIPMENT	EDR4	WATER
EA5	ADJUSTIVE PULSE EQUIPMENT	EDR5	SEWAGE
EA6	ADJUSTIVE PULSE EQUIPMENT	EDR6	SEWAGE
EA7	ADJUSTIVE PULSE EQUIPMENT	EDR7	SEWAGE
EA8	ADJUSTIVE PULSE EQUIPMENT	EDR8	SEWAGE
EA9	ADJUSTIVE PULSE EQUIPMENT	EDR9	SEWAGE
EA10	ADJUSTIVE PULSE EQUIPMENT	EDR10	SEWAGE
EA11	ADJUSTIVE PULSE EQUIPMENT	EDR11	SEWAGE
EA12	ADJUSTIVE PULSE EQUIPMENT	EDR12	SEWAGE
EA13	ADJUSTIVE PULSE EQUIPMENT	EDR13	SEWAGE
EA14	ADJUSTIVE PULSE EQUIPMENT	EDR14	SEWAGE
EA15	ADJUSTIVE PULSE EQUIPMENT	EDR15	SEWAGE
EA16	ADJUSTIVE PULSE EQUIPMENT	EDR16	SEWAGE
EA17	ADJUSTIVE PULSE EQUIPMENT	EDR17	SEWAGE
EA18	ADJUSTIVE PULSE EQUIPMENT	EDR18	SEWAGE
EA19	ADJUSTIVE PULSE EQUIPMENT	EDR19	SEWAGE
EA20	ADJUSTIVE PULSE EQUIPMENT	EDR20	SEWAGE

**DUCT CONFIGURATION SYMBOLS**



**PAS 128 CLASSIFICATIONS**

QUALITY LEVEL LABELING OF UTILITY INFORMATION BY A CLASSIFICATION CODE ALLOWS THE USER OF THIS INFORMATION TO UNDERSTAND CLEARLY HOW THE INFORMATION WAS RELATED TO UNDERGROUND UTILITIES CAN THEN BE PROPERLY MANAGED.

**SL 0** INFORMATION IS DERIVED BY EXAMINING THE UNDERGROUND UTILITY USING A NON DESTRUCTIVE EXCAVATION TECHNIQUE. THE VERTICAL INFORMATION FOR THIS LOCATION METHOD IS TO THE TOP OF THE UTILITY. THE HORIZONTAL INFORMATION FOR THIS LOCATION METHOD IS TO THE CENTERLINE OF THE UTILITY. THE TOLERANCES FOR THIS CLASSIFICATION ARE +/- 300mm HORIZONTALLY AND +/- 25mm VERTICALLY.

**SL 1** INFORMATION IS COLLECTED BY DESIGNATING THE HORIZONTAL AND VERTICAL LOCATION OF UNDERGROUND UTILITIES BY USING ELECTROMAGNETIC PIPE AND CABLE LOCATORS, BONDERS OR FLUX TRACE, GROUND PENETRATING RADAR AND ADJUSTIVE PULSE EQUIPMENT. TOLERANCES FOR SL CLASSIFICATIONS ARE +/- 300mm HORIZONTALLY AND +/- 25% OF 250mm VERTICALLY.

**SL 2** INFORMATION IS COLLECTED BY DESIGNATING THE HORIZONTAL AND VERTICAL LOCATION OF UNDERGROUND UTILITIES BY USING ELECTROMAGNETIC PIPE AND CABLE LOCATORS, BONDERS OR FLUX TRACE, GROUND PENETRATING RADAR AND ADJUSTIVE PULSE EQUIPMENT. TOLERANCES FOR SL CLASSIFICATIONS ARE +/- 300mm HORIZONTALLY AND +/- 25% OF 250mm VERTICALLY.

**SL 3** INFORMATION IS COLLECTED BY DESIGNATING THE HORIZONTAL LOCATION ONLY OF UNDERGROUND UTILITIES BY USING ELECTROMAGNETIC PIPE AND CABLE LOCATORS, BONDERS OR FLUX TRACE, GROUND PENETRATING RADAR AND ADJUSTIVE PULSE EQUIPMENT. TOLERANCES FOR SL CLASSIFICATIONS ARE +/- 300mm HORIZONTALLY WITH NO DEPTH GIVEN.

**SL 4** INFORMATION IS ADDED AS AN ASSUMED ROUTE. THE UNDERGROUND UTILITIES HAVE BEEN IDENTIFIED BY VISUAL SURVEY AND GROUND PENETRATING RADAR AND ADJUSTIVE PULSE EQUIPMENT. TOLERANCES FOR SL CLASSIFICATIONS ARE +/- 300mm HORIZONTALLY WITH NO DEPTH GIVEN.

**SL 5** INFORMATION IS COLLECTED BY CORRELATING THE SURVEY OF VISIBLE UTILITY SURFACE FEATURES SUCH AS MANHOLE PLATES OR MANHOLES WITH EXISTING DRAWINGS AND RECORDS INFORMATION TO DRAW A STRONG WHICH SHOWS THE APPROXIMATE POSITION OF SERVICES. THIS METHOD DOES NOT USUALLY SHOW MULTIPLE BANKS OF CABLES AND CABLES.

**SL 6** INFORMATION IS THE MOST BASIC LEVEL OF UTILITY LOCATIONS USING ONLY VISUAL SURVEY OF VISIBLE UTILITY SURFACE FEATURES AND RECORDS INFORMATION OFFSETS ETC. THIS METHOD OF UTILITY LOCATION SHOULD ALWAYS BE TREATED AS AN ASSUMED ROUTE OF A SERVICE ONLY AND SHOULD NOT BE USED FOR DESIGN.

**DRAWING NOTES**

PLEASE REFER TO WRITTEN REPORT FOR IN DEPTH SURVEY ANALYSIS.

**REVISION TABLE**

REV	DATE	DESCRIPTION	BY
1	25-02-25	DRAINAGE AMENDED	MB

**SITE VISION SURVEYS**

BLOXAM COURT  
CORPORATION STREET  
RUGBY  
CV21 2DU

WWW.SVSLTD.NET

CLIENT:  
**CD SURVEYS LTD**  
LAND SURVEYING & SITE ENGINEERING

SITE LOCATION:  
SAYERS COMMON  
HASSACKS  
BN6 9HT

DRAWING TITLE:  
**PAS 128 UTILITY SURVEY**

SURVEYED BY: **KB/TH/MB** DRAWN BY: **AW/MB** APPROVED BY: **NC**

DRAWING NO: **0924-CDS-17113-R1** SURVEY DATE: **02-10-2024**

SCALE: **1:200 @ A1** SHEET NO: **9 OF 9** REV: **1**

DISCLAIMER: THE LOCATION OF UNDER GROUND SERVICES SHOWN ON THIS DRAWING HAS BEEN DETERMINED USING ELECTRO-MAGNETIC (AND/OR GROUND PROBING RADAR, WHERE REQUESTED) TECHNIQUES AND VISUAL OBSERVATIONS. THE LIMITATIONS OF THIS DRAWING SHOULD BE REALISED AND NO GUARANTEE CAN BE GIVEN THAT ALL SERVICES HAVE BEEN IDENTIFIED. THIS DRAWING MAY NOT INCLUDE THE LOCATION OF ALL PUBLIC SERVICES THAT MAY CROSS THE SITE AND THEREFORE THE RELEVANT SERVICE DRAWINGS SHOULD BE OBTAINED FROM THE APPROPRIATE UTILITY COMPANY AND USED IN CONJUNCTION WITH THIS DRAWING. ADDITIONAL SERVICES, STRUCTURES OR OTHER BELOW GROUND OBSTRUCTIONS NOT INDICATED ON THIS DRAWING MAY BE PRESENT ON SITE. REFERENCE SHOULD BE MADE TO HISTORICAL PLANS AND AS BUILT DRAWINGS. EXCAVATIONS IN THE VICINITY OF SERVICES SHOULD BE CARRIED OUT WITH DUE DILIGENCE REF: HSG47 DOCUMENT AVOIDING DANGERS FROM UNDERGROUND SERVICES. LOCATION ACCURACY IS DETERMINED BY REFERRING TO MANUFACTURERS GUIDELINES FOR THE SYSTEMS DEPLOYED. REFERENCE SHOULD BE MADE TO THE LATEST VERSION OF SVS LTD SITE PROCEDURES DOCUMENT FOR UTILITY LOCATION SURVEYS.



# APPENDIX G

## GREENFIELD RUNOFF CALCULATIONS

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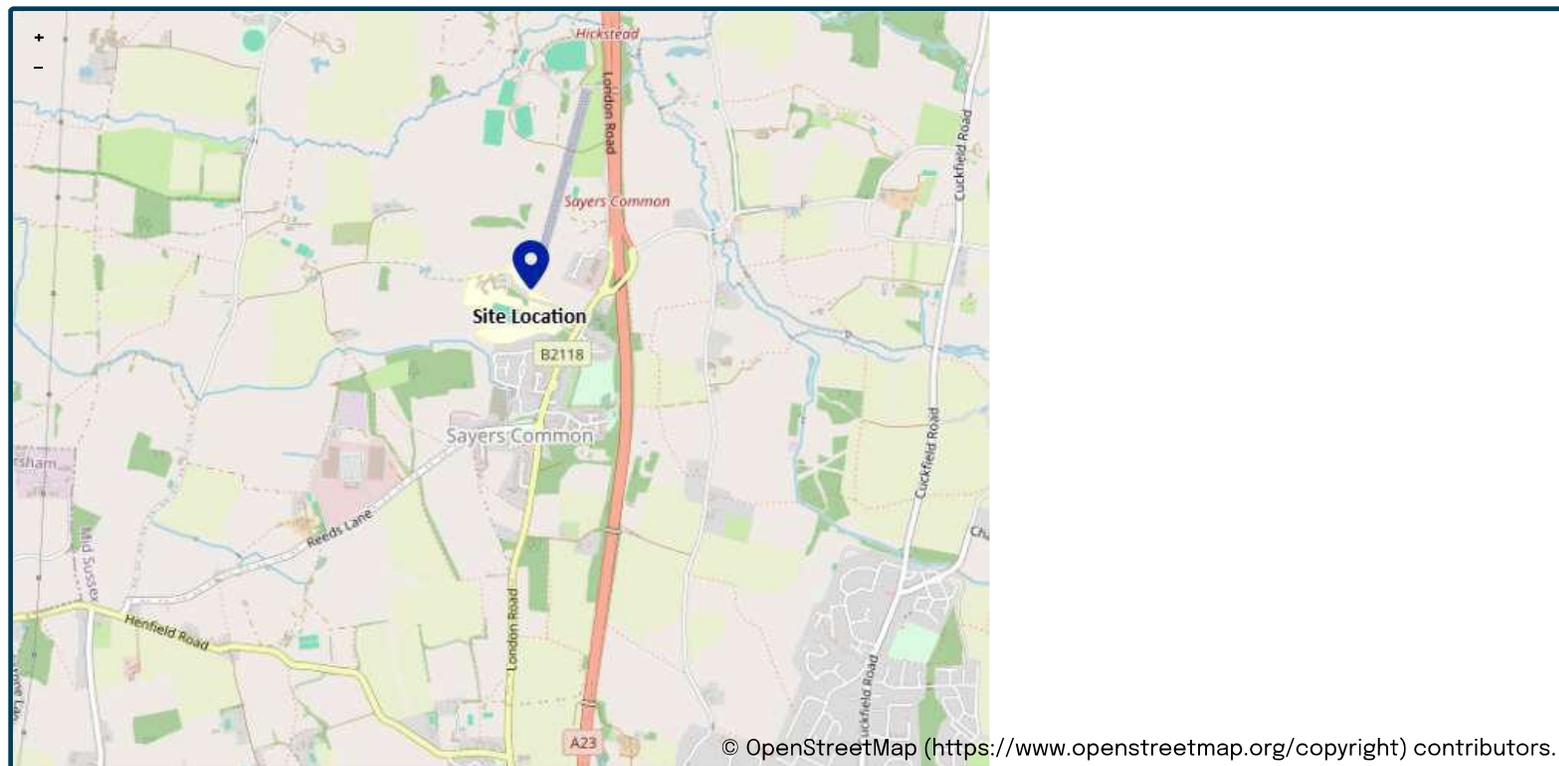
This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance “Rainfall runoff management for developments”, SC030219 (2013), the SuDS Manual C753 (CIRIA, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

## Project details

Date	<input type="text" value="28/11/2025"/>
Calculated by	<input type="text" value="Andrew Muthusami"/>
Reference	<input type="text" value="Sayers Common"/>
Model version	<input type="text" value="2.2.2"/>

## Location

Site name	<input type="text" value="Sayers Common"/>
Site location	<input type="text" value="Hassocks"/>



Site easting (British National Grid)	<input type="text" value="526636"/>
Site northing (British National Grid)	<input type="text" value="118663"/>

## Site details

Total site area (ha)	<input type="text" value="4.3"/>	ha
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# Greenfield runoff

## Method

Method

## FEH statistical (2025)

	<u>My value</u>	<u>Map value</u>
SAAR9120 (mm)	<input type="text" value="845"/> mm	
BFIHOST19scaled	<input type="text" value=".236"/>	
QMed-QBar conversion	<input type="text" value="1.111"/> <input type="radio"/>	<input type="text" value="1.136"/>
QMed (l/s)	<input type="text" value="34.9"/> l/s	
QBar (FEH statistical 2025) (l/s)	<input type="text" value="38.7"/> l/s	

## Growth curve factors

	<u>My value</u>	<u>Map value</u>
Hydrological region	<input type="text" value="7"/>	<input type="radio"/> <input type="text" value="7"/>
1 year growth factor	<input type="text" value="0.85"/>	
2 year growth factor	<input type="text" value="0.9"/>	
10 year growth factor	<input type="text" value="1.62"/>	
30 year growth factor	<input type="text" value="2.3"/>	
100 year growth factor	<input type="text" value="3.19"/>	
200 year growth factor	<input type="text" value="3.74"/>	

# Results

Method	FEH statistical (2025)	
Flow rate 1 year (l/s)	32.9	l/s
Flow rate 2 year (l/s)	34.9	l/s
Flow rate 10 years (l/s)	62.8	l/s
Flow rate 30 years (l/s)	89.1	l/s
Flow rate 100 years (l/s)	123.6	l/s
Flow rate 200 years (l/s)	144.9	l/s

Please note runoff estimation is subject to significant uncertainty. Results are therefore normally reported to only 1 decimal place. Where 2 decimal places are provided, this does not indicate accuracy to this level, it has been adopted to prevent 'zero' figures from being reported. Outputs less than 0.01 l/s are reported as 0.01 l/s.

## Disclaimer

This report was produced using the Greenfield runoff rate estimation tool (2.2.2) developed by HR Wallingford and available at [uksuds.com](https://www.uksuds.com/) (<https://www.uksuds.com/>). The use of this tool is subject to the UK SuDS terms and conditions and licence agreement, which can both be found at [uksuds.com/terms-conditions](https://www.uksuds.com/terms-conditions) (<https://www.uksuds.com/terms-conditions>). The outputs from this tool have been used to estimate Greenfield runoff rates. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, Centre for Ecology and Hydrology, Wallingford Hydrosolutions or any other organisation for the use of these data in the design or operational characteristics of any drainage scheme.

# APPENDIX H

# DRAINAGE CALCULATIONS

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**Design Settings**

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	2	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	5.000
CV	1.000	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	50.0		

**Nodes**

Name	Area (ha)	T of E (mins)	Cover Level (m)	Node Type	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)	Invert Level (m)	Notes
S1	0.051	5.00	22.300	Manhole	1350	526481.039	118919.962	1.350	20.950	Auto-design is off
S2	0.000	5.00	21.500	Manhole	1350	526460.000	118911.226	1.600	19.900	Auto-design is off
S3	0.095	5.00	21.500	Manhole	1350	526450.357	118901.293	1.700	19.800	Auto-design is off
S4	0.022	5.00	21.700	Manhole	1350	526465.559	118874.173	2.050	19.650	Auto-design is off
S5	0.000	5.00	21.400	Manhole	1350	526447.451	118863.093	1.850	19.550	Auto-design is off
S6	0.152	5.00	21.500	Manhole	1350	526426.869	118872.403	1.750	19.750	Auto-design is off
S7	0.022	5.00	21.200	Manhole	1350	526428.348	118860.728	1.750	19.450	Auto-design is off
S8	0.146	5.00	21.100	Manhole	1350	526419.581	118856.905	1.820	19.280	Auto-design is off
S9	0.071	5.00	22.100	Manhole	1350	526491.732	118876.829	1.300	20.800	Auto-design is off
S10	0.000		22.050	Manhole	1350	526498.896	118836.265	1.525	20.525	Auto-design is off
S11	0.012	5.00	22.000	Manhole	1350	526494.353	118827.555	1.544	20.456	Auto-design is off
S12	0.025	5.00	21.200	Manhole	1350	526426.552	118819.205	1.210	19.990	Auto-design is off
S13	0.017	5.00	21.100	Manhole	1350	526419.136	118825.634	1.928	19.172	Auto-design is off
Basin 1	0.000		20.723	Junction	1350	526405.270	118824.912	1.600	19.123	Auto-design is off
S14	0.000		20.773	Manhole	1350	526415.182	118817.054	1.713	19.060	Auto-design is off
S15	0.000		21.200	Manhole	1200	526427.696	118817.501	2.249	18.951	Auto-design is off
S16	0.000		21.950	Manhole	1200	526489.816	118825.602	3.305	18.645	Auto-design is off
S17	0.130	5.00	23.200	Manhole	1200	526567.502	118975.204	2.050	21.150	Auto-design is off
S18	0.063	5.00	23.600	Manhole	1350	526581.720	118894.963	3.010	20.590	Auto-design is off
S19	0.129	5.00	23.300	Manhole	1350	526512.504	118972.901	1.850	21.450	Auto-design is off
S20	0.185	5.00	22.300	Manhole	1350	526528.030	118885.767	2.300	20.000	Auto-design is off
S21	0.000	5.00	22.000	Manhole	1350	526520.318	118875.088	2.140	19.860	Auto-design is off
S22	0.054	5.00	22.150	Manhole	1350	526516.091	118855.585	2.390	19.760	Auto-design is off
S23	0.064	5.00	23.100	Manhole	1350	526598.096	118839.376	2.370	20.730	Auto-design is off
S24	0.119	5.00	22.450	Manhole	1350	526523.137	118836.677	2.250	20.200	Auto-design is off
S25	0.028	5.00	22.350	Manhole	1350	526514.756	118834.524	2.695	19.655	Auto-design is off
S26	0.000		22.500	Manhole	1350	526516.313	118817.913	4.060	18.440	Auto-design is off
S27	0.085	5.00	22.800	Manhole	1350	526522.839	118785.358	4.479	18.321	Auto-design is off
S28	0.050	5.00	22.300	Manhole	1350	526581.858	118805.243	1.525	20.775	Auto-design is off
S29	0.073	5.00	22.100	Manhole	1350	526581.932	118779.659	1.550	20.550	Auto-design is off
S30	0.057	5.00	21.900	Manhole	1350	526580.598	118745.546	1.300	20.600	Auto-design is off
S31	0.000	5.00	22.200	Manhole	1350	526565.989	118755.706	1.721	20.479	Auto-design is off
S32	0.000	5.00	22.500	Manhole	1350	526550.786	118766.533	2.067	20.433	Auto-design is off
S33	0.050	5.00	22.750	Manhole	1350	526533.878	118770.760	2.360	20.390	Auto-design is off
S34	0.030	5.00	22.900	Manhole	1500	526523.951	118768.005	4.720	18.180	Auto-design is off
S35	0.113	5.00	22.500	Manhole	1500	526519.724	118730.778	4.454	18.046	Auto-design is off
S36	0.016	5.00	22.250	Manhole	1500	526516.610	118715.131	4.261	17.989	Auto-design is off
S37	0.051	5.00	22.200	Manhole	1350	526505.719	118702.493	2.000	20.200	Auto-design is off
S38	0.057	5.00	22.050	Manhole	1500	526519.205	118702.302	4.110	17.940	Auto-design is off
S39	0.000		22.000	Manhole	1500	526521.356	118698.446	4.076	17.924	Auto-design is off
S40	0.000		20.600	Manhole	1500	526509.268	118670.933	2.783	17.817	Auto-design is off
S41	0.088	5.00	20.100	Manhole	1500	526497.032	118656.843	2.350	17.750	Auto-design is off

**Nodes**

Name	Area (ha)	T of E (mins)	Cover Level (m)	Node Type	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)	Invert Level (m)	Notes
S42	0.122	5.00	18.300	Manhole	1500	526495.638	118617.347	2.075	16.225	Auto-design is off
S43	0.073	5.00	17.600	Manhole	1350	526525.215	118601.058	1.350	16.250	Auto-design is off
S44	0.035	5.00	17.500	Manhole	1350	526496.676	118598.763	2.225	15.275	Auto-design is off
S45	0.094	5.00	20.800	Manhole	1350	526408.239	118773.467	1.700	19.100	Auto-design is off
S46	0.046	5.00	21.000	Manhole	1200	526459.630	118781.550	2.335	18.665	Auto-design is off
S47	0.000		21.200	Manhole	1350	526471.791	118778.510	2.790	18.410	Auto-design is off
S48	0.052	5.00	21.400	Manhole	1350	526478.688	118769.611	3.085	18.315	Auto-design is off
S49	0.053	5.00	21.600	Manhole	1350	526479.356	118758.932	3.374	18.226	Auto-design is off
S50	0.011	5.00	22.300	Manhole	1350	526476.658	118734.206	4.281	18.019	Auto-design is off
S51	0.044	5.00	22.300	Manhole	1350	526473.586	118717.786	4.425	17.875	Auto-design is off
S52	0.000	5.00	22.000	Manhole	1350	526448.002	118715.614	4.270	17.730	Auto-design is off
S53	0.083	5.00	20.300	Manhole	1350	526446.348	118657.639	2.800	17.500	Auto-design is off
S54	0.073	5.00	17.600	Manhole	1500	526442.710	118599.532	2.080	15.520	Auto-design is off
S55	0.084	5.00	17.500	Manhole	1200	526434.093	118596.783	2.011	15.489	Auto-design is off
S56	0.000		17.450	Manhole	1200	526417.102	118599.064	2.018	15.432	Auto-design is off
S57	0.067	5.00	20.000	Manhole	1350	526373.042	118673.485	1.500	18.500	Auto-design is off
S58	0.000	5.00	18.300	Manhole	1350	526362.067	118626.825	1.500	16.800	Auto-design is off
S59	0.038	5.00	17.800	Manhole	1350	526370.224	118618.001	1.650	16.150	Auto-design is off
S60	0.046	5.00	19.300	Manhole	1350	526395.198	118643.116	1.300	18.000	Auto-design is off
S61	0.011	5.00	18.300	Manhole	1350	526396.093	118618.774	2.350	15.950	Auto-design is off
S62	0.018	5.00	17.400	Manhole	1500	526408.464	118603.346	2.000	15.400	Auto-design is off
S63	0.000		17.375	Manhole	1200	526405.759	118600.219	1.992	15.383	Auto-design is off
Basin 2	0.000		16.800	Junction	1500	526387.462	118590.200	1.500	15.300	Auto-design is off
S64	0.000		16.850	Manhole	1500	526396.248	118592.241	1.600	15.250	Auto-design is off
S65	0.000		17.250	Manhole	1200	526423.770	118595.968	2.093	15.157	Auto-design is off
S66	0.000		17.450	Manhole	1200	526442.378	118594.507	2.355	15.095	Auto-design is off
S67	0.124	5.00	18.050	Manhole	1200	526794.132	118599.647	1.650	16.400	Auto-design is off
S68	0.069	5.00	17.620	Manhole	1200	526777.732	118611.634	1.322	16.298	Auto-design is off
S69	0.000	5.00	17.850	Manhole	1200	526761.629	118614.547	1.710	16.140	Auto-design is off
S70	0.081	5.00	18.500	Manhole	1350	526740.377	118637.282	1.700	16.800	Auto-design is off
S71	0.034	5.00	18.000	Manhole	1350	526729.423	118611.899	1.950	16.050	Auto-design is off
S72	0.038	5.00	18.100	Manhole	1350	526705.979	118615.469	2.193	15.907	Auto-design is off
S73	0.032	5.00	18.300	Manhole	1350	526678.912	118627.037	2.477	15.823	Auto-design is off
S74	0.088	5.00	20.000	Manhole	1350	526683.651	118677.845	1.550	18.450	Auto-design is off
S75	0.029	5.00	18.650	Manhole	1350	526663.976	118633.765	2.874	15.776	Auto-design is off
S76	0.144	5.00	19.600	Manhole	1350	526635.436	118646.171	3.913	15.687	Auto-design is off
S77	0.053	5.00	21.000	Manhole	1350	526633.871	118690.192	1.500	19.500	Auto-design is off
S78	0.030	5.00	20.100	Manhole	1350	526616.323	118654.679	4.472	15.628	Auto-design is off
S89	0.040	5.00	19.200	Manhole	1350	526602.979	118626.389	3.700	15.500	Auto-design is off
S79	0.229	5.00	21.600	Manhole	1350	526546.224	118685.743	1.530	20.070	Auto-design is off
S80	0.073	5.00	21.000	Manhole	1350	526583.155	118669.318	1.950	19.050	Auto-design is off
S90	0.000		19.050	Manhole	1350	526568.192	118635.565	3.700	15.350	Auto-design is off
S86	0.105	5.00	18.000	Manhole	1500	526554.437	118606.058	2.930	15.070	Auto-design is off
S81	0.032	5.00	17.100	Manhole	1350	526660.709	118595.246	1.400	15.700	Auto-design is off
S82	0.051	5.00	16.675	Manhole	1350	526645.055	118585.439	1.085	15.590	Auto-design is off
S83	0.087	5.00	16.675	Manhole	1350	526617.994	118582.217	1.210	15.465	Auto-design is off
S84	0.000	5.00	16.800	Manhole	1350	526587.336	118587.378	1.450	15.350	Auto-design is off
S85	0.000		17.700	Manhole	1500	526580.291	118599.837	2.400	15.300	Auto-design is off
S88	0.000		18.100	Manhole	1200	526561.671	118606.029	2.900	15.200	Auto-design is off
Basin 3	0.000		16.650	Junction	1950	526479.081	118567.446	1.650	15.000	Auto-design is off
S87	0.000		16.650	Manhole	2100	526456.945	118556.481	1.700	14.950	
Outfall			16.650	Manhole	1200	526453.920	118551.645	1.730	14.920	

Links (Input)

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)
1.000	S1	S2	22.780	0.600	20.950	19.900	1.050	21.7	450	5.09
1.001	S2	S3	13.844	0.600	19.900	19.800	0.100	138.4	450	5.22
1.002	S3	S4	31.090	0.600	19.800	19.650	0.150	207.3	450	5.59
1.003	S4	S5	21.229	0.600	19.650	19.550	0.100	212.3	450	5.84
1.004	S5	S7	19.249	0.600	19.550	19.450	0.100	192.5	450	6.06
2.000	S6	S7	11.769	0.600	19.750	19.600	0.150	78.5	300	5.11
1.005	S7	S8	9.565	0.600	19.450	19.280	0.170	56.3	450	6.12
1.006	S8	S13	31.274	0.600	19.280	19.172	0.108	289.6	450	6.56
3.000	S9	S10	41.192	0.600	20.800	20.525	0.275	149.8	450	5.41
3.001	S10	S11	8.903	0.600	20.525	20.456	0.069	129.0	450	5.50
3.002	S11	S12	69.719	0.600	20.456	19.990	0.466	149.6	450	6.20
3.003	S12	S13	9.617	0.600	19.990	19.172	0.818	11.8	450	6.22
1.007	S13	Basin 1	15.014	0.600	19.172	19.135	0.037	405.8	450	6.81
1.008	Basin 1	S14	14.980	0.600	19.123	19.060	0.063	237.8	450	7.00
1.009	S14	S15	8.486	0.600	19.060	19.026	0.034	249.6	450	7.11
1.010	S15	S16	64.074	0.600	18.951	18.645	0.306	209.4	525	7.80
1.011	S16	S26	25.819	0.600	18.645	18.515	0.130	198.6	525	8.07
4.000	S17	S18	81.491	0.600	21.150	20.740	0.410	198.8	300	6.22
4.001	S18	S20	54.472	0.600	20.590	20.000	0.590	92.3	450	6.65
5.000	S19	S20	88.506	0.600	21.450	20.150	1.300	68.1	300	5.77
4.002	S20	S21	13.173	0.600	20.000	19.935	0.065	202.7	450	6.81
4.003	S21	S22	19.956	0.600	19.860	19.760	0.100	199.6	525	7.02
4.004	S22	S25	21.103	0.600	19.760	19.655	0.105	201.0	525	7.24
6.000	S23	S24	75.008	0.600	20.730	20.200	0.530	141.5	450	5.73
6.001	S24	S25	8.653	0.600	20.200	19.730	0.470	18.4	450	5.76
4.005	S25	S26	16.684	0.600	19.655	19.446	0.209	79.8	525	7.35
1.012	S26	S27	33.203	0.600	18.440	18.321	0.119	279.0	600	8.45
1.013	S27	S34	17.389	0.600	18.321	18.180	0.141	123.3	600	8.59
7.000	S28	S29	25.584	0.600	20.775	20.550	0.225	113.7	450	5.22
7.001	S29	S31	28.774	0.600	20.550	20.479	0.071	405.3	450	5.70
8.000	S30	S31	17.795	0.600	20.600	20.479	0.121	147.1	450	5.18
7.002	S31	S32	18.664	0.600	20.479	20.433	0.046	405.7	450	6.01
7.003	S32	S33	17.428	0.600	20.433	20.390	0.043	405.3	450	6.30
7.004	S33	S34	10.302	0.600	20.390	19.875	0.515	20.0	450	6.34
1.014	S34	S35	37.466	0.600	18.180	18.046	0.134	279.6	600	9.02
1.015	S35	S36	15.954	0.600	18.046	17.989	0.057	279.9	600	9.20
1.016	S36	S38	13.089	0.600	17.989	17.940	0.049	267.1	600	9.35
9.000	S37	S38	13.487	0.600	20.200	19.163	1.037	13.0	450	5.04
1.017	S38	S39	4.415	0.600	17.940	17.924	0.016	275.9	600	9.40
1.018	S39	S40	30.051	0.600	17.924	17.817	0.107	280.9	600	9.74
1.019	S40	S41	18.661	0.600	17.817	17.750	0.067	278.5	600	9.96
1.020	S41	S42	39.521	0.600	17.750	16.225	1.525	25.9	600	10.09
1.021	S42	S44	18.613	0.600	16.225	15.425	0.800	23.3	600	10.15
10.000	S43	S44	28.631	0.600	16.250	15.575	0.675	42.4	450	5.15
1.022	S44	Basin 3	35.921	0.600	15.275	15.000	0.275	130.6	750	10.40
11.000	S45	S46	52.023	0.600	19.100	18.665	0.435	119.6	300	5.60
11.001	S46	S47	12.535	0.600	18.665	18.560	0.105	119.4	300	5.75
11.002	S47	S48	11.259	0.600	18.410	18.315	0.095	118.5	450	5.85
11.003	S48	S49	10.700	0.600	18.315	18.226	0.089	120.2	450	5.95
11.004	S49	S50	24.873	0.600	18.226	18.019	0.207	120.2	450	6.17
11.005	S50	S51	16.705	0.600	18.019	17.875	0.144	116.0	450	6.32
11.006	S51	S52	25.676	0.600	17.875	17.730	0.145	177.1	450	6.60
11.007	S52	S53	57.999	0.600	17.730	17.500	0.230	252.2	450	7.36

Links (Input)

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)
11.008	S53	S54	58.221	0.600	17.500	15.595	1.905	30.6	450	7.62
11.009	S54	S55	9.044	0.600	15.520	15.489	0.031	291.7	525	7.73
11.010	S55	S56	17.144	0.600	15.489	15.432	0.057	300.8	525	7.96
11.011	S56	S62	9.641	0.600	15.432	15.400	0.032	301.3	525	8.08
12.000	S57	S58	47.933	0.600	18.500	16.800	1.700	28.2	300	5.27
12.001	S58	S59	12.017	0.600	16.800	16.300	0.500	24.0	300	5.33
12.002	S59	S61	25.881	0.600	16.150	15.950	0.200	129.4	450	5.57
13.000	S60	S61	24.358	0.600	18.000	15.950	2.050	11.9	450	5.07
12.003	S61	S62	19.775	0.600	15.950	15.475	0.475	41.6	450	5.68
11.012	S62	S63	4.135	0.600	15.400	15.383	0.017	243.2	525	8.13
11.013	S63	Basin 2	20.860	0.600	15.383	15.300	0.083	251.3	525	8.38
11.014	Basin 2	S64	9.019	0.600	15.300	15.250	0.050	180.4	525	8.47
11.015	S64	S65	27.774	0.600	15.250	15.157	0.093	298.6	375	8.91
11.016	S65	S66	18.665	0.600	15.157	15.095	0.062	301.0	375	9.21
11.017	S66	Basin 3	45.600	0.600	15.095	15.000	0.095	480.0	450	10.04
14.000	S67	S68	20.314	0.600	16.400	16.298	0.102	199.2	450	5.24
14.001	S68	S69	16.364	0.600	16.298	16.215	0.083	197.2	450	5.42
14.002	S69	S71	32.315	0.600	16.140	16.050	0.090	359.1	525	5.88
15.000	S70	S71	27.646	0.600	16.800	16.275	0.525	52.7	300	5.21
14.003	S71	S72	23.714	0.600	16.050	15.982	0.068	348.7	525	6.21
14.004	S72	S73	29.435	0.600	15.907	15.823	0.084	350.4	600	6.59
14.005	S73	S75	16.381	0.600	15.823	15.776	0.047	348.5	600	6.80
16.000	S74	S75	48.272	0.600	18.450	17.200	1.250	38.6	300	5.32
14.006	S75	S76	31.120	0.600	15.776	15.687	0.089	349.7	600	7.20
14.007	S76	S78	20.921	0.600	15.687	15.628	0.059	354.6	600	7.47
17.000	S77	S78	39.612	0.600	19.500	17.100	2.400	16.5	300	5.17
14.008	S78	S89	31.279	0.600	15.628	15.500	0.128	244.4	600	7.81
14.009	S89	S90	35.978	0.600	15.500	15.350	0.150	239.9	600	8.19
18.000	S79	S80	40.419	0.600	20.070	19.200	0.870	46.5	300	5.29
18.001	S80	S90	36.921	0.600	19.050	16.878	2.172	17.0	450	5.42
14.010	S90	S86	32.556	0.600	15.350	15.220	0.130	250.4	600	8.55
14.011	S86	Basin 3	84.673	0.600	15.070	15.000	0.070	1209.6	750	10.32
19.000	S81	S82	18.472	0.600	15.700	15.590	0.110	167.9	450	5.20
19.001	S82	S83	27.252	0.600	15.590	15.465	0.125	218.0	450	5.53
19.002	S83	S84	31.090	0.600	15.465	15.350	0.115	270.3	450	5.95
19.003	S84	S85	14.313	0.600	15.350	15.300	0.050	286.3	450	6.15
19.004	S85	S88	19.622	0.600	15.300	15.200	0.100	196.2	450	6.37
19.005	S88	Basin 3	91.158	0.600	15.200	15.000	0.200	455.8	450	7.98
1.023	Basin 3	S87	24.703	0.600	15.000	14.950	0.050	494.1	750	10.73
1.024	S87	Outfall	5.704	0.600	14.950	14.920	0.030	190.1	300	11.62

**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	22.780	21.7	450	Circular_Default Sewer Type	22.300	20.950	0.900	21.500	19.900	1.150
1.001	13.844	138.4	450	Circular_Default Sewer Type	21.500	19.900	1.150	21.500	19.800	1.250
1.002	31.090	207.3	450	Circular_Default Sewer Type	21.500	19.800	1.250	21.700	19.650	1.600
1.003	21.229	212.3	450	Circular_Default Sewer Type	21.700	19.650	1.600	21.400	19.550	1.400
1.004	19.249	192.5	450	Circular_Default Sewer Type	21.400	19.550	1.400	21.200	19.450	1.300
2.000	11.769	78.5	300	Circular_Default Sewer Type	21.500	19.750	1.450	21.200	19.600	1.300
1.005	9.565	56.3	450	Circular_Default Sewer Type	21.200	19.450	1.300	21.100	19.280	1.370
1.006	31.274	289.6	450	Circular_Default Sewer Type	21.100	19.280	1.370	21.100	19.172	1.478
3.000	41.192	149.8	450	Circular_Default Sewer Type	22.100	20.800	0.850	22.050	20.525	1.075
3.001	8.903	129.0	450	Circular_Default Sewer Type	22.050	20.525	1.075	22.000	20.456	1.094
3.002	69.719	149.6	450	Circular_Default Sewer Type	22.000	20.456	1.094	21.200	19.990	0.760
3.003	9.617	11.8	450	Circular_Default Sewer Type	21.200	19.990	0.760	21.100	19.172	1.478
1.007	15.014	405.8	450	Circular_Default Sewer Type	21.100	19.172	1.478	20.723	19.135	1.138
1.008	14.980	237.8	450	Circular_Default Sewer Type	20.723	19.123	1.150	20.773	19.060	1.263
1.009	8.486	249.6	450	Circular_Default Sewer Type	20.773	19.060	1.263	21.200	19.026	1.724
1.010	64.074	209.4	525	Circular_Default Sewer Type	21.200	18.951	1.724	21.950	18.645	2.780
1.011	25.819	198.6	525	Circular_Default Sewer Type	21.950	18.645	2.780	22.500	18.515	3.460
4.000	81.491	198.8	300	Circular_Default Sewer Type	23.200	21.150	1.750	23.600	20.740	2.560
4.001	54.472	92.3	450	Circular_Default Sewer Type	23.600	20.590	2.560	22.300	20.000	1.850
5.000	88.506	68.1	300	Circular_Default Sewer Type	23.300	21.450	1.550	22.300	20.150	1.850
4.002	13.173	202.7	450	Circular_Default Sewer Type	22.300	20.000	1.850	22.000	19.935	1.615
4.003	19.956	199.6	525	Circular_Default Sewer Type	22.000	19.860	1.615	22.150	19.760	1.865
4.004	21.103	201.0	525	Circular_Default Sewer Type	22.150	19.760	1.865	22.350	19.655	2.170
6.000	75.008	141.5	450	Circular_Default Sewer Type	23.100	20.730	1.920	22.450	20.200	1.800
6.001	8.653	18.4	450	Circular_Default Sewer Type	22.450	20.200	1.800	22.350	19.730	2.170

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	S1	1350	Manhole	Adoptable	S2	1350	Manhole	Adoptable
1.001	S2	1350	Manhole	Adoptable	S3	1350	Manhole	Adoptable
1.002	S3	1350	Manhole	Adoptable	S4	1350	Manhole	Adoptable
1.003	S4	1350	Manhole	Adoptable	S5	1350	Manhole	Adoptable
1.004	S5	1350	Manhole	Adoptable	S7	1350	Manhole	Adoptable
2.000	S6	1350	Manhole	Adoptable	S7	1350	Manhole	Adoptable
1.005	S7	1350	Manhole	Adoptable	S8	1350	Manhole	Adoptable
1.006	S8	1350	Manhole	Adoptable	S13	1350	Manhole	Adoptable
3.000	S9	1350	Manhole	Adoptable	S10	1350	Manhole	Adoptable
3.001	S10	1350	Manhole	Adoptable	S11	1350	Manhole	Adoptable
3.002	S11	1350	Manhole	Adoptable	S12	1350	Manhole	Adoptable
3.003	S12	1350	Manhole	Adoptable	S13	1350	Manhole	Adoptable
1.007	S13	1350	Manhole	Adoptable	Basin 1	1350	Junction	
1.008	Basin 1	1350	Junction		S14	1350	Manhole	Adoptable
1.009	S14	1350	Manhole	Adoptable	S15	1200	Manhole	Adoptable
1.010	S15	1200	Manhole	Adoptable	S16	1200	Manhole	Adoptable
1.011	S16	1200	Manhole	Adoptable	S26	1350	Manhole	Adoptable
4.000	S17	1200	Manhole	Adoptable	S18	1350	Manhole	Adoptable
4.001	S18	1350	Manhole	Adoptable	S20	1350	Manhole	Adoptable
5.000	S19	1350	Manhole	Adoptable	S20	1350	Manhole	Adoptable
4.002	S20	1350	Manhole	Adoptable	S21	1350	Manhole	Adoptable
4.003	S21	1350	Manhole	Adoptable	S22	1350	Manhole	Adoptable
4.004	S22	1350	Manhole	Adoptable	S25	1350	Manhole	Adoptable
6.000	S23	1350	Manhole	Adoptable	S24	1350	Manhole	Adoptable
6.001	S24	1350	Manhole	Adoptable	S25	1350	Manhole	Adoptable

**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)
4.005	16.684	79.8	525	Circular_Default Sewer Type	22.350	19.655	2.170	22.500	19.446	2.529
1.012	33.203	279.0	600	Circular_Default Sewer Type	22.500	18.440	3.460	22.800	18.321	3.879
1.013	17.389	123.3	600	Circular_Default Sewer Type	22.800	18.321	3.879	22.900	18.180	4.120
7.000	25.584	113.7	450	Circular_Default Sewer Type	22.300	20.775	1.075	22.100	20.550	1.100
7.001	28.774	405.3	450	Circular_Default Sewer Type	22.100	20.550	1.100	22.200	20.479	1.271
8.000	17.795	147.1	450	Circular_Default Sewer Type	21.900	20.600	0.850	22.200	20.479	1.271
7.002	18.664	405.7	450	Circular_Default Sewer Type	22.200	20.479	1.271	22.500	20.433	1.617
7.003	17.428	405.3	450	Circular_Default Sewer Type	22.500	20.433	1.617	22.750	20.390	1.910
7.004	10.302	20.0	450	Circular_Default Sewer Type	22.750	20.390	1.910	22.900	19.875	2.575
1.014	37.466	279.6	600	Circular_Default Sewer Type	22.900	18.180	4.120	22.500	18.046	3.854
1.015	15.954	279.9	600	Circular_Default Sewer Type	22.500	18.046	3.854	22.250	17.989	3.661
1.016	13.089	267.1	600	Circular_Default Sewer Type	22.250	17.989	3.661	22.050	17.940	3.510
9.000	13.487	13.0	450	Circular_Default Sewer Type	22.200	20.200	1.550	22.050	19.163	2.437
1.017	4.415	275.9	600	Circular_Default Sewer Type	22.050	17.940	3.510	22.000	17.924	3.476
1.018	30.051	280.9	600	Circular_Default Sewer Type	22.000	17.924	3.476	20.600	17.817	2.183
1.019	18.661	278.5	600	Circular_Default Sewer Type	20.600	17.817	2.183	20.100	17.750	1.750
1.020	39.521	25.9	600	Circular_Default Sewer Type	20.100	17.750	1.750	18.300	16.225	1.475
1.021	18.613	23.3	600	Circular_Default Sewer Type	18.300	16.225	1.475	17.500	15.425	1.475
10.000	28.631	42.4	450	Circular_Default Sewer Type	17.600	16.250	0.900	17.500	15.575	1.475
1.022	35.921	130.6	750	Circular_Default Sewer Type	17.500	15.275	1.475	16.650	15.000	0.900
11.000	52.023	119.6	300	Circular_Default Sewer Type	20.800	19.100	1.400	21.000	18.665	2.035
11.001	12.535	119.4	300	Circular_Default Sewer Type	21.000	18.665	2.035	21.200	18.560	2.340
11.002	11.259	118.5	450	Circular_Default Sewer Type	21.200	18.410	2.340	21.400	18.315	2.635
11.003	10.700	120.2	450	Circular_Default Sewer Type	21.400	18.315	2.635	21.600	18.226	2.924
11.004	24.873	120.2	450	Circular_Default Sewer Type	21.600	18.226	2.924	22.300	18.019	3.831

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
4.005	S25	1350	Manhole	Adoptable	S26	1350	Manhole	Adoptable
1.012	S26	1350	Manhole	Adoptable	S27	1350	Manhole	Adoptable
1.013	S27	1350	Manhole	Adoptable	S34	1500	Manhole	Adoptable
7.000	S28	1350	Manhole	Adoptable	S29	1350	Manhole	Adoptable
7.001	S29	1350	Manhole	Adoptable	S31	1350	Manhole	Adoptable
8.000	S30	1350	Manhole	Adoptable	S31	1350	Manhole	Adoptable
7.002	S31	1350	Manhole	Adoptable	S32	1350	Manhole	Adoptable
7.003	S32	1350	Manhole	Adoptable	S33	1350	Manhole	Adoptable
7.004	S33	1350	Manhole	Adoptable	S34	1500	Manhole	Adoptable
1.014	S34	1500	Manhole	Adoptable	S35	1500	Manhole	Adoptable
1.015	S35	1500	Manhole	Adoptable	S36	1500	Manhole	Adoptable
1.016	S36	1500	Manhole	Adoptable	S38	1500	Manhole	Adoptable
9.000	S37	1350	Manhole	Adoptable	S38	1500	Manhole	Adoptable
1.017	S38	1500	Manhole	Adoptable	S39	1500	Manhole	Adoptable
1.018	S39	1500	Manhole	Adoptable	S40	1500	Manhole	Adoptable
1.019	S40	1500	Manhole	Adoptable	S41	1500	Manhole	Adoptable
1.020	S41	1500	Manhole	Adoptable	S42	1500	Manhole	Adoptable
1.021	S42	1500	Manhole	Adoptable	S44	1350	Manhole	Adoptable
10.000	S43	1350	Manhole	Adoptable	S44	1350	Manhole	Adoptable
1.022	S44	1350	Manhole	Adoptable	Basin 3	1950	Junction	
11.000	S45	1350	Manhole	Adoptable	S46	1200	Manhole	Adoptable
11.001	S46	1200	Manhole	Adoptable	S47	1350	Manhole	Adoptable
11.002	S47	1350	Manhole	Adoptable	S48	1350	Manhole	Adoptable
11.003	S48	1350	Manhole	Adoptable	S49	1350	Manhole	Adoptable
11.004	S49	1350	Manhole	Adoptable	S50	1350	Manhole	Adoptable

**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)
11.005	16.705	116.0	450	Circular_Default Sewer Type	22.300	18.019	3.831	22.300	17.875	3.975
11.006	25.676	177.1	450	Circular_Default Sewer Type	22.300	17.875	3.975	22.000	17.730	3.820
11.007	57.999	252.2	450	Circular_Default Sewer Type	22.000	17.730	3.820	20.300	17.500	2.350
11.008	58.221	30.6	450	Circular_Default Sewer Type	20.300	17.500	2.350	17.600	15.595	1.555
11.009	9.044	291.7	525	Circular_Default Sewer Type	17.600	15.520	1.555	17.500	15.489	1.486
11.010	17.144	300.8	525	Circular_Default Sewer Type	17.500	15.489	1.486	17.450	15.432	1.493
11.011	9.641	301.3	525	Circular_Default Sewer Type	17.450	15.432	1.493	17.400	15.400	1.475
12.000	47.933	28.2	300	Circular_Default Sewer Type	20.000	18.500	1.200	18.300	16.800	1.200
12.001	12.017	24.0	300	Circular_Default Sewer Type	18.300	16.800	1.200	17.800	16.300	1.200
12.002	25.881	129.4	450	Circular_Default Sewer Type	17.800	16.150	1.200	18.300	15.950	1.900
13.000	24.358	11.9	450	Circular_Default Sewer Type	19.300	18.000	0.850	18.300	15.950	1.900
12.003	19.775	41.6	450	Circular_Default Sewer Type	18.300	15.950	1.900	17.400	15.475	1.475
11.012	4.135	243.2	525	Circular_Default Sewer Type	17.400	15.400	1.475	17.375	15.383	1.467
11.013	20.860	251.3	525	Circular_Default Sewer Type	17.375	15.383	1.467	16.800	15.300	0.975
11.014	9.019	180.4	525	Circular_Default Sewer Type	16.800	15.300	0.975	16.850	15.250	1.075
11.015	27.774	298.6	375	Circular_Default Sewer Type	16.850	15.250	1.225	17.250	15.157	1.718
11.016	18.665	301.0	375	Circular_Default Sewer Type	17.250	15.157	1.718	17.450	15.095	1.980
11.017	45.600	480.0	450	Circular_Default Sewer Type	17.450	15.095	1.905	16.650	15.000	1.200
14.000	20.314	199.2	450	Circular_Default Sewer Type	18.050	16.400	1.200	17.620	16.298	0.872
14.001	16.364	197.2	450	Circular_Default Sewer Type	17.620	16.298	0.872	17.850	16.215	1.185
14.002	32.315	359.1	525	Circular_Default Sewer Type	17.850	16.140	1.185	18.000	16.050	1.425
15.000	27.646	52.7	300	Circular_Default Sewer Type	18.500	16.800	1.400	18.000	16.275	1.425
14.003	23.714	348.7	525	Circular_Default Sewer Type	18.000	16.050	1.425	18.100	15.982	1.593
14.004	29.435	350.4	600	Circular_Default Sewer Type	18.100	15.907	1.593	18.300	15.823	1.877
14.005	16.381	348.5	600	Circular_Default Sewer Type	18.300	15.823	1.877	18.650	15.776	2.274

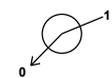
Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
11.005	S50	1350	Manhole	Adoptable	S51	1350	Manhole	Adoptable
11.006	S51	1350	Manhole	Adoptable	S52	1350	Manhole	Adoptable
11.007	S52	1350	Manhole	Adoptable	S53	1350	Manhole	Adoptable
11.008	S53	1350	Manhole	Adoptable	S54	1500	Manhole	Adoptable
11.009	S54	1500	Manhole	Adoptable	S55	1200	Manhole	Adoptable
11.010	S55	1200	Manhole	Adoptable	S56	1200	Manhole	Adoptable
11.011	S56	1200	Manhole	Adoptable	S62	1500	Manhole	Adoptable
12.000	S57	1350	Manhole	Adoptable	S58	1350	Manhole	Adoptable
12.001	S58	1350	Manhole	Adoptable	S59	1350	Manhole	Adoptable
12.002	S59	1350	Manhole	Adoptable	S61	1350	Manhole	Adoptable
13.000	S60	1350	Manhole	Adoptable	S61	1350	Manhole	Adoptable
12.003	S61	1350	Manhole	Adoptable	S62	1500	Manhole	Adoptable
11.012	S62	1500	Manhole	Adoptable	S63	1200	Manhole	Adoptable
11.013	S63	1200	Manhole	Adoptable	Basin 2	1500	Junction	
11.014	Basin 2	1500	Junction		S64	1500	Manhole	Adoptable
11.015	S64	1500	Manhole	Adoptable	S65	1200	Manhole	Adoptable
11.016	S65	1200	Manhole	Adoptable	S66	1200	Manhole	Adoptable
11.017	S66	1200	Manhole	Adoptable	Basin 3	1950	Junction	
14.000	S67	1200	Manhole	Adoptable	S68	1200	Manhole	Adoptable
14.001	S68	1200	Manhole	Adoptable	S69	1200	Manhole	Adoptable
14.002	S69	1200	Manhole	Adoptable	S71	1350	Manhole	Adoptable
15.000	S70	1350	Manhole	Adoptable	S71	1350	Manhole	Adoptable
14.003	S71	1350	Manhole	Adoptable	S72	1350	Manhole	Adoptable
14.004	S72	1350	Manhole	Adoptable	S73	1350	Manhole	Adoptable
14.005	S73	1350	Manhole	Adoptable	S75	1350	Manhole	Adoptable

**Pipeline Schedule**

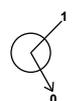
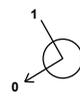
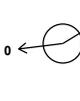
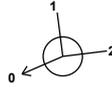
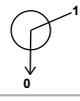
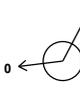
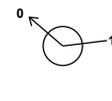
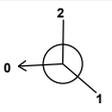
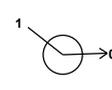
Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
16.000	48.272	38.6	300	Circular_Default Sewer Type	20.000	18.450	1.250	18.650	17.200	1.150
14.006	31.120	349.7	600	Circular_Default Sewer Type	18.650	15.776	2.274	19.600	15.687	3.313
14.007	20.921	354.6	600	Circular_Default Sewer Type	19.600	15.687	3.313	20.100	15.628	3.872
17.000	39.612	16.5	300	Circular_Default Sewer Type	21.000	19.500	1.200	20.100	17.100	2.700
14.008	31.279	244.4	600	Circular_Default Sewer Type	20.100	15.628	3.872	19.200	15.500	3.100
14.009	35.978	239.9	600	Circular_Default Sewer Type	19.200	15.500	3.100	19.050	15.350	3.100
18.000	40.419	46.5	300	Circular_Default Sewer Type	21.600	20.070	1.230	21.000	19.200	1.500
18.001	36.921	17.0	450	Circular_Default Sewer Type	21.000	19.050	1.500	19.050	16.878	1.722
14.010	32.556	250.4	600	Circular_Default Sewer Type	19.050	15.350	3.100	18.000	15.220	2.180
14.011	84.673	1209.6	750	Circular_Default Sewer Type	18.000	15.070	2.180	16.650	15.000	0.900
19.000	18.472	167.9	450	Circular_Default Sewer Type	17.100	15.700	0.950	16.675	15.590	0.635
19.001	27.252	218.0	450	Circular_Default Sewer Type	16.675	15.590	0.635	16.675	15.465	0.760
19.002	31.090	270.3	450	Circular_Default Sewer Type	16.675	15.465	0.760	16.800	15.350	1.000
19.003	14.313	286.3	450	Circular_Default Sewer Type	16.800	15.350	1.000	17.700	15.300	1.950
19.004	19.622	196.2	450	Circular_Default Sewer Type	17.700	15.300	1.950	18.100	15.200	2.450
19.005	91.158	455.8	450	Circular_Default Sewer Type	18.100	15.200	2.450	16.650	15.000	1.200
1.023	24.703	494.1	750	Circular_Default Sewer Type	16.650	15.000	0.900	16.650	14.950	0.950
1.024	5.704	190.1	300	Circular_Default Sewer Type	16.650	14.950	1.400	16.650	14.920	1.430

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
16.000	S74	1350	Manhole	Adoptable	S75	1350	Manhole	Adoptable
14.006	S75	1350	Manhole	Adoptable	S76	1350	Manhole	Adoptable
14.007	S76	1350	Manhole	Adoptable	S78	1350	Manhole	Adoptable
17.000	S77	1350	Manhole	Adoptable	S78	1350	Manhole	Adoptable
14.008	S78	1350	Manhole	Adoptable	S89	1350	Manhole	Adoptable
14.009	S89	1350	Manhole	Adoptable	S90	1350	Manhole	Adoptable
18.000	S79	1350	Manhole	Adoptable	S80	1350	Manhole	Adoptable
18.001	S80	1350	Manhole	Adoptable	S90	1350	Manhole	Adoptable
14.010	S90	1350	Manhole	Adoptable	S86	1500	Manhole	Adoptable
14.011	S86	1500	Manhole	Adoptable	Basin 3	1950	Junction	
19.000	S81	1350	Manhole	Adoptable	S82	1350	Manhole	Adoptable
19.001	S82	1350	Manhole	Adoptable	S83	1350	Manhole	Adoptable
19.002	S83	1350	Manhole	Adoptable	S84	1350	Manhole	Adoptable
19.003	S84	1350	Manhole	Adoptable	S85	1500	Manhole	Adoptable
19.004	S85	1500	Manhole	Adoptable	S88	1200	Manhole	Adoptable
19.005	S88	1200	Manhole	Adoptable	Basin 3	1950	Junction	
1.023	Basin 3	1950	Junction		S87	2100	Manhole	Adoptable
1.024	S87	2100	Manhole	Adoptable	Outfall	1200	Manhole	Adoptable

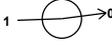
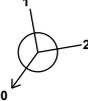
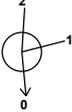
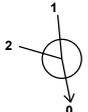
**Manhole Schedule**

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Node Type	Connections	Link	IL (m)	Dia (mm)
S1	526481.039	118919.962	22.300	1.350	1350	Manhole				
							0	1.000	20.950	450
S2	526460.000	118911.226	21.500	1.600	1350	Manhole				
							0	1.001	19.900	450

**Manhole Schedule**

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Node Type	Connections	Link	IL (m)	Dia (mm)	
S3	526450.357	118901.293	21.500	1.700	1350	Manhole		1	1.001	19.800	450
								0	1.002	19.800	450
S4	526465.559	118874.173	21.700	2.050	1350	Manhole		1	1.002	19.650	450
								0	1.003	19.650	450
S5	526447.451	118863.093	21.400	1.850	1350	Manhole		1	1.003	19.550	450
								0	1.004	19.550	450
S6	526426.869	118872.403	21.500	1.750	1350	Manhole		0	2.000	19.750	300
S7	526428.348	118860.728	21.200	1.750	1350	Manhole		1	2.000	19.600	300
								2	1.004	19.450	450
								0	1.005	19.450	450
S8	526419.581	118856.905	21.100	1.820	1350	Manhole		1	1.005	19.280	450
								0	1.006	19.280	450
S9	526491.732	118876.829	22.100	1.300	1350	Manhole		0	3.000	20.800	450
S10	526498.896	118836.265	22.050	1.525	1350	Manhole		1	3.000	20.525	450
								0	3.001	20.525	450
S11	526494.353	118827.555	22.000	1.544	1350	Manhole		1	3.001	20.456	450
								0	3.002	20.456	450
S12	526426.552	118819.205	21.200	1.210	1350	Manhole		1	3.002	19.990	450
								0	3.003	19.990	450
S13	526419.136	118825.634	21.100	1.928	1350	Manhole		1	3.003	19.172	450
								2	1.006	19.172	450
								0	1.007	19.172	450
Basin 1	526405.270	118824.912	20.723	1.600	1350	Junction		1	1.007	19.135	450
								0	1.008	19.123	450
S14	526415.182	118817.054	20.773	1.713	1350	Manhole		1	1.008	19.060	450
								0	1.009	19.060	450

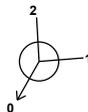
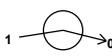
**Manhole Schedule**

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Node Type	Connections	Link	IL (m)	Dia (mm)	
S15	526427.696	118817.501	21.200	2.249	1200	Manhole		1	1.009	19.026	450
								0	1.010	18.951	525
S16	526489.816	118825.602	21.950	3.305	1200	Manhole		1	1.010	18.645	525
								0	1.011	18.645	525
S17	526567.502	118975.204	23.200	2.050	1200	Manhole		0	4.000	21.150	300
S18	526581.720	118894.963	23.600	3.010	1350	Manhole		1	4.000	20.740	300
								0	4.001	20.590	450
S19	526512.504	118972.901	23.300	1.850	1350	Manhole		0	5.000	21.450	300
S20	526528.030	118885.767	22.300	2.300	1350	Manhole		1	5.000	20.150	300
								2	4.001	20.000	450
								0	4.002	20.000	450
S21	526520.318	118875.088	22.000	2.140	1350	Manhole		1	4.002	19.935	450
								0	4.003	19.860	525
S22	526516.091	118855.585	22.150	2.390	1350	Manhole		1	4.003	19.760	525
								0	4.004	19.760	525
S23	526598.096	118839.376	23.100	2.370	1350	Manhole		0	6.000	20.730	450
S24	526523.137	118836.677	22.450	2.250	1350	Manhole		1	6.000	20.200	450
								0	6.001	20.200	450
S25	526514.756	118834.524	22.350	2.695	1350	Manhole		1	6.001	19.730	450
								2	4.004	19.655	525
								0	4.005	19.655	525
S26	526516.313	118817.913	22.500	4.060	1350	Manhole		1	4.005	19.446	525
								2	1.011	18.515	525
								0	1.012	18.440	600
S27	526522.839	118785.358	22.800	4.479	1350	Manhole		1	1.012	18.321	600
								0	1.013	18.321	600

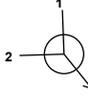
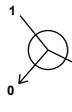
**Manhole Schedule**

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Node Type	Connections	Link	IL (m)	Dia (mm)	
S28	526581.858	118805.243	22.300	1.525	1350	Manhole		0	7.000	20.775	450
S29	526581.932	118779.659	22.100	1.550	1350	Manhole		1	7.000	20.550	450
S30	526580.598	118745.546	21.900	1.300	1350	Manhole		0	8.000	20.600	450
S31	526565.989	118755.706	22.200	1.721	1350	Manhole		1	8.000	20.479	450
S32	526550.786	118766.533	22.500	2.067	1350	Manhole		1	7.002	20.433	450
S33	526533.878	118770.760	22.750	2.360	1350	Manhole		1	7.003	20.390	450
S34	526523.951	118768.005	22.900	4.720	1500	Manhole		1	7.004	19.875	450
S35	526519.724	118730.778	22.500	4.454	1500	Manhole		1	1.014	18.046	600
S36	526516.610	118715.131	22.250	4.261	1500	Manhole		1	1.015	17.989	600
S37	526505.719	118702.493	22.200	2.000	1350	Manhole		0	9.000	20.200	450
S38	526519.205	118702.302	22.050	4.110	1500	Manhole		1	9.000	19.163	450
S39	526521.356	118698.446	22.000	4.076	1500	Manhole		1	1.017	17.940	600
S40	526509.268	118670.933	20.600	2.783	1500	Manhole		1	1.018	17.924	600
								0	1.019	17.817	600

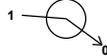
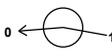
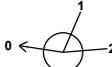
**Manhole Schedule**

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Node Type	Connections	Link	IL (m)	Dia (mm)	
S41	526497.032	118656.843	20.100	2.350	1500	Manhole		1	1.019	17.750	600
S42	526495.638	118617.347	18.300	2.075	1500	Manhole		0	1.020	17.750	600
S43	526525.215	118601.058	17.600	1.350	1350	Manhole		1	1.020	16.225	600
S44	526496.676	118598.763	17.500	2.225	1350	Manhole		0	1.021	16.225	600
S45	526408.239	118773.467	20.800	1.700	1350	Manhole		0	10.000	16.250	450
S46	526459.630	118781.550	21.000	2.335	1200	Manhole		1	10.000	15.575	450
S47	526471.791	118778.510	21.200	2.790	1350	Manhole		2	1.021	15.425	600
S48	526478.688	118769.611	21.400	3.085	1350	Manhole		0	1.022	15.275	750
S49	526479.356	118758.932	21.600	3.374	1350	Manhole		0	11.000	19.100	300
S50	526476.658	118734.206	22.300	4.281	1350	Manhole		1	11.000	18.665	300
S51	526473.586	118717.786	22.300	4.425	1350	Manhole		1	11.001	18.665	300
S52	526448.002	118715.614	22.000	4.270	1350	Manhole		1	11.001	18.560	300
S53	526446.348	118657.639	20.300	2.800	1350	Manhole		0	11.002	18.410	450
								0	11.002	18.315	450
								0	11.003	18.315	450
								0	11.003	18.226	450
								0	11.004	18.226	450
								0	11.004	18.019	450
								0	11.005	18.019	450
								0	11.005	17.875	450
								0	11.006	17.875	450
								0	11.006	17.730	450
								0	11.007	17.730	450
								0	11.007	17.500	450
								0	11.008	17.500	450

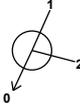
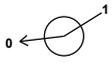
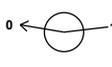
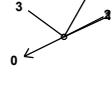
**Manhole Schedule**

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Node Type	Connections	Link	IL (m)	Dia (mm)	
S54	526442.710	118599.532	17.600	2.080	1500	Manhole		1	11.008	15.595	450
								0	11.009	15.520	525
S55	526434.093	118596.783	17.500	2.011	1200	Manhole		1	11.009	15.489	525
								0	11.010	15.489	525
S56	526417.102	118599.064	17.450	2.018	1200	Manhole		1	11.010	15.432	525
								0	11.011	15.432	525
S57	526373.042	118673.485	20.000	1.500	1350	Manhole		0	12.000	18.500	300
S58	526362.067	118626.825	18.300	1.500	1350	Manhole		1	12.000	16.800	300
								0	12.001	16.800	300
S59	526370.224	118618.001	17.800	1.650	1350	Manhole		1	12.001	16.300	300
								0	12.002	16.150	450
S60	526395.198	118643.116	19.300	1.300	1350	Manhole		0	13.000	18.000	450
S61	526396.093	118618.774	18.300	2.350	1350	Manhole		1	13.000	15.950	450
								2	12.002	15.950	450
								0	12.003	15.950	450
S62	526408.464	118603.346	17.400	2.000	1500	Manhole		1	12.003	15.475	450
								2	11.011	15.400	525
								0	11.012	15.400	525
S63	526405.759	118600.219	17.375	1.992	1200	Manhole		1	11.012	15.383	525
								0	11.013	15.383	525
Basin 2	526387.462	118590.200	16.800	1.500	1500	Junction		1	11.013	15.300	525
								0	11.014	15.300	525
S64	526396.248	118592.241	16.850	1.600	1500	Manhole		1	11.014	15.250	525
								0	11.015	15.250	375
S65	526423.770	118595.968	17.250	2.093	1200	Manhole		1	11.015	15.157	375
								0	11.016	15.157	375

**Manhole Schedule**

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Node Type	Connections	Link	IL (m)	Dia (mm)	
S66	526442.378	118594.507	17.450	2.355	1200	Manhole		1	11.016	15.095	375
								0	11.017	15.095	450
S67	526794.132	118599.647	18.050	1.650	1200	Manhole		0	14.000	16.400	450
								1	14.000	16.298	450
S68	526777.732	118611.634	17.620	1.322	1200	Manhole		0	14.001	16.298	450
								1	14.001	16.215	450
S69	526761.629	118614.547	17.850	1.710	1200	Manhole		0	14.002	16.140	525
								1	15.000	16.800	300
S70	526740.377	118637.282	18.500	1.700	1350	Manhole		0	15.000	16.275	300
								1	14.002	16.050	525
S71	526729.423	118611.899	18.000	1.950	1350	Manhole		0	14.003	16.050	525
								1	14.003	15.982	525
S72	526705.979	118615.469	18.100	2.193	1350	Manhole		0	14.004	15.907	600
								1	14.004	15.823	600
S73	526678.912	118627.037	18.300	2.477	1350	Manhole		0	14.005	15.823	600
								1	16.000	18.450	300
S74	526683.651	118677.845	20.000	1.550	1350	Manhole		0	16.000	17.200	300
								1	14.005	15.776	600
S75	526663.976	118633.765	18.650	2.874	1350	Manhole		0	14.006	15.776	600
								1	14.006	15.687	600
S76	526635.436	118646.171	19.600	3.913	1350	Manhole		0	14.007	15.687	600
								1	17.000	19.500	300
S77	526633.871	118690.192	21.000	1.500	1350	Manhole		0	17.000	17.100	300
								1	14.007	15.628	600
S78	526616.323	118654.679	20.100	4.472	1350	Manhole		0	14.008	15.628	600

**Manhole Schedule**

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Node Type	Connections	Link	IL (m)	Dia (mm)	
S89	526602.979	118626.389	19.200	3.700	1350	Manhole		1	14.008	15.500	600
								0	14.009	15.500	600
S79	526546.224	118685.743	21.600	1.530	1350	Manhole		0	18.000	20.070	300
S80	526583.155	118669.318	21.000	1.950	1350	Manhole		1	18.000	19.200	300
								0	18.001	19.050	450
S90	526568.192	118635.565	19.050	3.700	1350	Manhole		1	18.001	16.878	450
								2	14.009	15.350	600
								0	14.010	15.350	600
S86	526554.437	118606.058	18.000	2.930	1500	Manhole		1	14.010	15.220	600
								0	14.011	15.070	750
S81	526660.709	118595.246	17.100	1.400	1350	Manhole		0	19.000	15.700	450
S82	526645.055	118585.439	16.675	1.085	1350	Manhole		1	19.000	15.590	450
								0	19.001	15.590	450
S83	526617.994	118582.217	16.675	1.210	1350	Manhole		1	19.001	15.465	450
								0	19.002	15.465	450
S84	526587.336	118587.378	16.800	1.450	1350	Manhole		1	19.002	15.350	450
								0	19.003	15.350	450
S85	526580.291	118599.837	17.700	2.400	1500	Manhole		1	19.003	15.300	450
								0	19.004	15.300	450
S88	526561.671	118606.029	18.100	2.900	1200	Manhole		1	19.004	15.200	450
								0	19.005	15.200	450
Basin 3	526479.081	118567.446	16.650	1.650	1950	Junction		1	19.005	15.000	450
								2	14.011	15.000	750
								3	11.017	15.000	450
								4	1.022	15.000	750
								0	1.023	15.000	750
S87	526456.945	118556.481	16.650	1.700	2100	Manhole		1	1.023	14.950	750
								0	1.024	14.950	300

**Manhole Schedule**

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Node Type	Connections	Link	IL (m)	Dia (mm)	
Outfall	526453.920	118551.645	16.650	1.730	1200	Manhole		1	1.024	14.920	300

**Simulation Settings**

Rainfall Methodology	FEH-22	Analysis Speed	Normal	Starting Level (m)	
Rainfall Events	Singular	Skip Steady State	x	Check Discharge Rate(s)	x
Summer CV	1.000	Drain Down Time (mins)	1440	Check Discharge Volume	x
Winter CV	1.000	Additional Storage (m³/ha)	0.0		

**Storm Durations**

15	30	60	120	180	240	360	480	600	720	960	1440
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Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0
5	0	0	0
30	0	0	0
30	40	0	0
100	0	0	0
100	45	0	0

**Node Outfall Surcharged Outfall**

Overrides Design Area	x	Depression Storage Area (m²)	0	Evapo-transpiration (mm/day)	0
Overrides Design Additional Inflow	x	Depression Storage Depth (mm)	0		

Applies to All storms

Time (mins)	Depth (m)								
0	0.580	300	0.580	600	0.580	900	0.580	1200	0.580
60	0.580	360	0.580	660	0.580	960	0.580	1260	0.580
120	0.580	420	0.580	720	0.580	1020	0.580	1320	0.580
180	0.580	480	0.580	780	0.580	1080	0.580	1380	0.580
240	0.580	540	0.580	840	0.580	1140	0.580	1440	0.580

**Node S14 Online Hydro-Brake® Control**

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	19.060	Product Number	CTL-SHE-0064-2000-1200-2000
Design Depth (m)	1.200	Min Outlet Diameter (m)	0.100
Design Flow (l/s)	2.0	Min Node Diameter (mm)	1200

**Node S64 Online Hydro-Brake® Control**

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	15.250	Product Number	CTL-SHE-0146-1050-1200-1050
Design Depth (m)	1.200	Min Outlet Diameter (m)	0.225
Design Flow (l/s)	10.5	Min Node Diameter (mm)	1500

### Node S87 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	14.950	Product Number	CTL-SHE-0260-3870-1300-3870
Design Depth (m)	1.300	Min Outlet Diameter (m)	0.300
Design Flow (l/s)	38.7	Min Node Diameter (mm)	2100

### Node Basin 3 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	15.000
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	870

Depth (m)	Area (m <sup>2</sup> )	Inf Area (m <sup>2</sup> )	Depth (m)	Area (m <sup>2</sup> )	Inf Area (m <sup>2</sup> )	Depth (m)	Area (m <sup>2</sup> )	Inf Area (m <sup>2</sup> )	Depth (m)	Area (m <sup>2</sup> )	Inf Area (m <sup>2</sup> )
0.000	2796.7	0.0	0.500	3155.1	0.0	1.000	3529.1	0.0	1.500	3917.2	0.0
0.100	2866.1	0.0	0.600	3228.8	0.0	1.100	3605.6	0.0	1.600	3996.5	0.0
0.200	2937.5	0.0	0.700	3303.0	0.0	1.200	3682.7	0.0	1.650	4812.7	0.0
0.300	3009.5	0.0	0.800	3377.8	0.0	1.300	3760.3	0.0			
0.400	3082.0	0.0	0.900	3453.2	0.0	1.400	3838.5	0.0			

### Node Basin 2 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	15.300
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	384

Depth (m)	Area (m <sup>2</sup> )	Inf Area (m <sup>2</sup> )	Depth (m)	Area (m <sup>2</sup> )	Inf Area (m <sup>2</sup> )	Depth (m)	Area (m <sup>2</sup> )	Inf Area (m <sup>2</sup> )	Depth (m)	Area (m <sup>2</sup> )	Inf Area (m <sup>2</sup> )
0.000	332.9	0.0	0.500	444.2	0.0	1.000	570.1	0.0	1.500	710.1	0.0
0.100	353.7	0.0	0.600	468.2	0.0	1.100	596.9	0.0	1.550	1029.1	0.0
0.200	375.5	0.0	0.700	492.8	0.0	1.200	624.4	0.0			
0.300	397.8	0.0	0.800	518.0	0.0	1.300	652.4	0.0			
0.400	420.7	0.0	0.900	543.8	0.0	1.400	680.9	0.0			

### Node Basin 1 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	19.123
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	

Depth (m)	Area (m <sup>2</sup> )	Inf Area (m <sup>2</sup> )	Depth (m)	Area (m <sup>2</sup> )	Inf Area (m <sup>2</sup> )	Depth (m)	Area (m <sup>2</sup> )	Inf Area (m <sup>2</sup> )	Depth (m)	Area (m <sup>2</sup> )	Inf Area (m <sup>2</sup> )
0.000	364.6	0.0	0.500	543.8	0.0	1.000	737.8	0.0	1.500	945.9	0.0
0.100	398.8	0.0	0.600	581.5	0.0	1.100	778.3	0.0	1.600	989.2	0.0
0.200	434.2	0.0	0.700	619.7	0.0	1.200	819.3	0.0	1.650	1448.8	0.0
0.300	470.2	0.0	0.800	658.5	0.0	1.300	861.0	0.0			
0.400	506.7	0.0	0.900	697.9	0.0	1.400	903.2	0.0			

**Results for 2 year Critical Storm Duration. Lowest mass balance: 99.81%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m <sup>3</sup> )	Flood (m <sup>3</sup> )	Status
15 minute summer	S1	10	20.986	0.036	9.3	0.0516	0.0000	OK
15 minute summer	S2	10	19.955	0.055	9.2	0.0792	0.0000	OK
15 minute summer	S3	10	19.906	0.106	26.4	0.1519	0.0000	OK
15 minute summer	S4	11	19.767	0.117	29.9	0.1673	0.0000	OK
15 minute summer	S5	11	19.666	0.116	30.1	0.1656	0.0000	OK
15 minute summer	S6	10	19.853	0.103	27.7	0.1478	0.0000	OK
15 minute summer	S7	11	19.579	0.129	60.5	0.1845	0.0000	OK
15 minute summer	S8	11	19.512	0.232	86.0	0.3320	0.0000	OK
15 minute summer	S9	10	20.868	0.068	12.9	0.0967	0.0000	OK
15 minute summer	S10	11	20.594	0.069	12.7	0.0991	0.0000	OK
15 minute summer	S11	11	20.533	0.077	14.8	0.1101	0.0000	OK
15 minute summer	S12	11	20.033	0.043	18.8	0.0620	0.0000	OK
600 minute winter	S13	585	19.459	0.287	14.1	0.4110	0.0000	OK
600 minute winter	Basin 1	585	19.459	0.336	17.4	142.3196	0.0000	OK
480 minute winter	S14	464	19.460	0.400	8.8	0.5724	0.0000	OK
30 minute winter	S15	19	18.979	0.028	1.8	0.0312	0.0000	OK
15 minute summer	S16	12	18.692	0.047	4.8	0.0532	0.0000	OK
15 minute summer	S17	11	21.261	0.111	23.7	0.1250	0.0000	OK
15 minute summer	S18	11	20.684	0.094	33.4	0.1346	0.0000	OK
15 minute summer	S19	11	21.534	0.083	23.5	0.1195	0.0000	OK
15 minute summer	S20	11	20.212	0.212	88.1	0.3039	0.0000	OK
15 minute summer	S21	11	20.061	0.201	87.7	0.2875	0.0000	OK
15 minute summer	S22	11	19.967	0.207	96.8	0.2960	0.0000	OK
15 minute summer	S23	11	20.792	0.062	11.7	0.0891	0.0000	OK
15 minute summer	S24	10	20.263	0.063	32.8	0.0898	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m <sup>3</sup> )	Discharge Vol (m <sup>3</sup> )
15 minute summer	S1	1.000	S2	9.2	1.103	0.013	0.1940	
15 minute summer	S2	1.001	S3	9.1	0.475	0.033	0.2741	
15 minute summer	S3	1.002	S4	26.0	0.858	0.116	0.9454	
15 minute summer	S4	1.003	S5	30.1	0.928	0.136	0.6882	
15 minute summer	S5	1.004	S7	30.0	0.894	0.129	0.6704	
15 minute summer	S6	2.000	S7	27.5	1.359	0.219	0.2380	
15 minute summer	S7	1.005	S8	60.5	1.020	0.140	0.5731	
15 minute summer	S8	1.006	S13	86.1	0.980	0.455	2.7491	
15 minute summer	S9	3.000	S10	12.7	0.852	0.048	0.6165	
15 minute summer	S10	3.001	S11	12.7	0.770	0.045	0.1485	
15 minute summer	S11	3.002	S12	14.5	1.159	0.055	0.8968	
15 minute summer	S12	3.003	S13	18.6	0.403	0.020	0.4866	
600 minute winter	S13	1.007	Basin 1	13.8	0.560	0.087	1.7197	
600 minute winter	Basin 1	1.008	S14	7.2	0.224	0.034	2.0609	
480 minute winter	S14	Hydro-Brake®	S15	1.8				
30 minute winter	S15	1.010	S16	1.7	0.508	0.005	0.2693	
15 minute summer	S16	1.011	S26	5.0	0.426	0.014	0.9023	
15 minute summer	S17	4.000	S18	22.4	0.965	0.285	1.8927	
15 minute summer	S18	4.001	S20	33.2	0.698	0.099	2.6568	
15 minute summer	S19	5.000	S20	22.7	1.430	0.168	1.4033	
15 minute summer	S20	4.002	S21	87.7	1.277	0.387	0.9048	
15 minute summer	S21	4.003	S22	87.4	1.134	0.255	1.5456	
15 minute summer	S22	4.004	S25	96.2	1.277	0.282	1.6119	
15 minute summer	S23	6.000	S24	11.3	0.855	0.042	0.9956	
15 minute summer	S24	6.001	S25	32.4	1.991	0.043	0.2072	

**Results for 2 year Critical Storm Duration. Lowest mass balance: 99.81%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m <sup>3</sup> )	Flood (m <sup>3</sup> )	Status
15 minute summer	S25	11	19.852	0.197	133.4	0.2815	0.0000	OK
15 minute summer	S26	12	18.685	0.245	132.4	0.3505	0.0000	OK
15 minute summer	S27	12	18.555	0.234	141.8	0.3345	0.0000	OK
15 minute summer	S28	10	20.828	0.053	9.1	0.0753	0.0000	OK
15 minute summer	S29	11	20.664	0.114	22.3	0.1631	0.0000	OK
15 minute summer	S30	10	20.660	0.060	10.4	0.0854	0.0000	OK
15 minute summer	S31	11	20.621	0.142	31.9	0.2035	0.0000	OK
15 minute summer	S32	11	20.562	0.129	31.8	0.1848	0.0000	OK
15 minute summer	S33	11	20.467	0.077	40.2	0.1104	0.0000	OK
15 minute summer	S34	12	18.499	0.319	185.4	0.5642	0.0000	OK
15 minute summer	S35	12	18.418	0.372	201.3	0.6574	0.0000	OK
15 minute summer	S36	12	18.365	0.376	201.9	0.6642	0.0000	OK
15 minute summer	S37	10	20.233	0.033	9.3	0.0470	0.0000	OK
15 minute summer	S38	12	18.314	0.374	216.3	0.6611	0.0000	OK
15 minute summer	S39	12	18.254	0.330	215.5	0.5834	0.0000	OK
15 minute summer	S40	13	18.116	0.299	214.0	0.5284	0.0000	OK
15 minute summer	S41	13	17.918	0.168	223.3	0.2966	0.0000	OK
15 minute summer	S42	12	16.409	0.184	239.1	0.3259	0.0000	OK
15 minute summer	S43	10	16.301	0.051	13.3	0.0729	0.0000	OK
15 minute summer	S44	12	15.536	0.261	252.9	0.3733	0.0000	OK
15 minute summer	S45	10	19.182	0.082	17.1	0.1169	0.0000	OK
15 minute summer	S46	11	18.773	0.108	25.2	0.1226	0.0000	OK
15 minute summer	S47	11	18.507	0.097	24.9	0.1382	0.0000	OK
15 minute summer	S48	11	18.429	0.114	34.0	0.1635	0.0000	OK
15 minute summer	S49	11	18.347	0.121	43.3	0.1735	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m <sup>3</sup> )	Discharge Vol (m <sup>3</sup> )
15 minute summer	S25	4.005	S26	132.4	1.955	0.244	1.1329	
15 minute summer	S26	1.012	S27	129.6	1.245	0.316	3.4810	
15 minute summer	S27	1.013	S34	142.2	1.124	0.230	2.2080	
15 minute summer	S28	7.000	S29	9.0	0.450	0.030	0.5329	
15 minute summer	S29	7.001	S31	21.9	0.595	0.137	1.0707	
15 minute summer	S30	8.000	S31	10.3	0.486	0.039	0.4901	
15 minute summer	S31	7.002	S32	31.8	0.790	0.199	0.7508	
15 minute summer	S32	7.003	S33	31.5	1.167	0.197	0.4841	
15 minute summer	S33	7.004	S34	40.0	2.354	0.055	0.1750	
15 minute summer	S34	1.014	S35	185.2	1.110	0.451	6.2929	
15 minute summer	S35	1.015	S36	199.6	1.081	0.487	2.9460	
15 minute summer	S36	1.016	S38	200.6	1.088	0.478	2.4250	
15 minute summer	S37	9.000	S38	9.2	1.832	0.010	0.0680	
15 minute summer	S38	1.017	S39	215.5	1.254	0.522	0.7586	
15 minute summer	S39	1.018	S40	214.0	1.439	0.523	4.4677	
15 minute summer	S40	1.019	S41	214.5	2.117	0.522	1.9100	
15 minute summer	S41	1.020	S42	223.7	3.259	0.165	2.7217	
15 minute summer	S42	1.021	S44	237.0	3.537	0.166	1.2523	
15 minute summer	S43	10.000	S44	13.1	1.356	0.026	0.2767	
15 minute summer	S44	1.022	Basin 3	252.0	4.248	0.233	2.5383	
15 minute summer	S45	11.000	S46	16.8	0.883	0.165	0.9958	
15 minute summer	S46	11.001	S47	24.9	1.145	0.245	0.2726	
15 minute summer	S47	11.002	S48	25.0	0.888	0.084	0.3182	
15 minute summer	S48	11.003	S49	34.1	1.035	0.116	0.3530	
15 minute summer	S49	11.004	S50	43.5	1.214	0.148	0.8910	

**Results for 2 year Critical Storm Duration. Lowest mass balance: 99.81%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m <sup>3</sup> )	Flood (m <sup>3</sup> )	Status
15 minute summer	S50	11	18.148	0.129	45.4	0.1839	0.0000	OK
15 minute summer	S51	11	18.026	0.151	53.0	0.2168	0.0000	OK
15 minute summer	S52	12	17.891	0.161	52.8	0.2308	0.0000	OK
15 minute summer	S53	12	17.600	0.100	65.1	0.1428	0.0000	OK
15 minute summer	S54	12	15.756	0.236	75.6	0.4166	0.0000	OK
15 minute summer	S55	12	15.729	0.240	88.2	0.2717	0.0000	OK
15 minute summer	S56	12	15.688	0.256	88.8	0.2894	0.0000	OK
15 minute summer	S57	10	18.549	0.049	12.2	0.0704	0.0000	OK
15 minute summer	S58	11	16.848	0.048	12.1	0.0692	0.0000	OK
15 minute summer	S59	10	16.230	0.080	18.7	0.1150	0.0000	OK
15 minute summer	S60	10	18.030	0.030	8.4	0.0430	0.0000	OK
15 minute summer	S61	11	16.022	0.072	28.9	0.1034	0.0000	OK
15 minute summer	S62	12	15.656	0.256	118.0	0.4530	0.0000	OK
15 minute summer	S63	12	15.605	0.222	118.4	0.2508	0.0000	OK
240 minute summer	Basin 2	168	15.558	0.258	57.3	92.8598	0.0000	OK
240 minute summer	S64	160	15.605	0.355	43.5	0.6266	0.0000	OK
1440 minute winter	S65	2640	15.531	0.374	8.6	0.4233	0.0000	OK
1440 minute winter	S66	2640	15.531	0.436	6.2	0.4934	0.0000	OK
15 minute summer	S67	10	16.497	0.097	22.6	0.1101	0.0000	OK
15 minute summer	S68	10	16.423	0.125	35.0	0.1409	0.0000	OK
15 minute summer	S69	11	16.273	0.133	34.5	0.1499	0.0000	OK
15 minute summer	S70	10	16.864	0.064	14.8	0.0913	0.0000	OK
15 minute summer	S71	11	16.221	0.171	55.0	0.2446	0.0000	OK
15 minute summer	S72	11	16.083	0.176	61.6	0.2522	0.0000	OK
15 minute summer	S73	12	16.022	0.199	66.7	0.2849	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m <sup>3</sup> )	Discharge Vol (m <sup>3</sup> )
15 minute summer	S50	11.005	S51	45.4	1.081	0.151	0.7025	
15 minute summer	S51	11.006	S52	52.8	1.083	0.218	1.2517	
15 minute summer	S52	11.007	S53	52.6	1.380	0.259	2.2361	
15 minute summer	S53	11.008	S54	65.1	1.876	0.111	2.2378	
15 minute summer	S54	11.009	S55	76.1	0.801	0.269	0.8599	
15 minute summer	S55	11.010	S56	88.8	0.888	0.319	1.7200	
15 minute summer	S56	11.011	S62	89.1	0.852	0.320	1.0080	
15 minute summer	S57	12.000	S58	12.1	1.626	0.057	0.3557	
15 minute summer	S58	12.001	S59	11.9	1.675	0.052	0.0855	
15 minute summer	S59	12.002	S61	18.7	1.055	0.066	0.4591	
15 minute summer	S60	13.000	S61	8.3	0.890	0.009	0.2528	
15 minute summer	S61	12.003	S62	28.9	1.215	0.057	0.7428	
15 minute summer	S62	11.012	S63	118.4	1.237	0.382	0.3956	
15 minute summer	S63	11.013	Basin 2	118.4	2.663	0.388	1.0950	
240 minute summer	Basin 2	11.014	S64	43.5	0.395	0.121	1.1706	
240 minute summer	S64	Hydro-Brake®	S65	10.5				
1440 minute winter	S65	11.016	S66	6.2	0.505	0.054	2.0577	
1440 minute winter	S66	11.017	Basin 3	7.0	0.348	0.048	7.1940	
15 minute summer	S67	14.000	S68	22.4	0.739	0.098	0.6184	
15 minute summer	S68	14.001	S69	34.5	1.020	0.150	0.5556	
15 minute summer	S69	14.002	S71	34.8	0.675	0.137	1.6739	
15 minute summer	S70	15.000	S71	14.6	1.362	0.095	0.2958	
15 minute summer	S71	14.003	S72	55.0	0.969	0.213	1.3461	
15 minute summer	S72	14.004	S73	61.1	0.818	0.167	2.2019	
15 minute summer	S73	14.005	S75	65.9	0.769	0.179	1.4041	

**Results for 2 year Critical Storm Duration. Lowest mass balance: 99.81%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m <sup>3</sup> )	Flood (m <sup>3</sup> )	Status
15 minute summer	S74	10	18.510	0.060	16.0	0.0865	0.0000	OK
15 minute summer	S75	12	15.989	0.213	84.9	0.3055	0.0000	OK
15 minute summer	S76	12	15.930	0.243	107.1	0.3480	0.0000	OK
15 minute summer	S77	10	19.539	0.039	9.7	0.0551	0.0000	OK
15 minute summer	S78	12	15.859	0.231	119.9	0.3307	0.0000	OK
15 minute summer	S89	12	15.736	0.236	126.6	0.3379	0.0000	OK
15 minute summer	S79	10	20.175	0.105	41.7	0.1508	0.0000	OK
15 minute summer	S80	10	19.131	0.081	54.4	0.1162	0.0000	OK
15 minute summer	S90	12	15.629	0.279	173.1	0.3986	0.0000	OK
1440 minute winter	S86	2640	15.531	0.461	14.1	0.8149	0.0000	OK
15 minute summer	S81	10	15.747	0.047	5.8	0.0668	0.0000	OK
15 minute summer	S82	11	15.668	0.078	15.0	0.1116	0.0000	OK
15 minute summer	S83	11	15.588	0.123	30.5	0.1758	0.0000	OK
1440 minute winter	S84	2670	15.531	0.181	2.0	0.2595	0.0000	OK
1440 minute winter	S85	2670	15.531	0.231	2.0	0.4087	0.0000	OK
1440 minute winter	S88	2670	15.531	0.331	2.0	0.3747	0.0000	OK
1440 minute winter	Basin 3	2640	15.531	0.531	44.1	1585.9840	0.0000	OK
1440 minute winter	S87	2640	15.531	0.581	0.9	2.0134	0.0000	SURCHARGED
15 minute summer	Outfall	1	15.500	0.580	0.0	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m <sup>3</sup> )	Discharge Vol (m <sup>3</sup> )
15 minute summer	S74	16.000	S75	15.6	1.566	0.087	0.4823	
15 minute summer	S75	14.006	S76	85.2	0.868	0.232	3.0634	
15 minute summer	S76	14.007	S78	107.4	1.038	0.295	2.1662	
15 minute summer	S77	17.000	S78	9.5	1.826	0.035	0.2067	
15 minute summer	S78	14.008	S89	120.9	1.192	0.275	3.1736	
15 minute summer	S89	14.009	S90	125.9	1.104	0.284	4.1542	
15 minute summer	S79	18.000	S80	41.1	1.908	0.251	0.8706	
15 minute summer	S80	18.001	S90	53.9	2.839	0.069	0.7015	
15 minute summer	S90	14.010	S86	171.8	1.423	0.396	3.9463	
1440 minute winter	S86	14.011	Basin 3	13.7	0.484	0.039	26.1425	
15 minute summer	S81	19.000	S82	5.7	0.434	0.023	0.2485	
15 minute summer	S82	19.001	S83	14.7	0.560	0.067	0.7264	
15 minute summer	S83	19.002	S84	30.3	0.848	0.155	1.1161	
1440 minute winter	S84	19.003	S85	2.0	0.415	0.011	1.0150	
1440 minute winter	S85	19.004	S88	2.0	0.390	0.009	2.0324	
1440 minute winter	S88	19.005	Basin 3	2.0	0.330	0.013	12.9232	
1440 minute winter	Basin 3	1.023	S87	0.9	0.061	0.002	8.6421	
1440 minute winter	S87	Hydro-Brake®	Outfall	0.9				45.9

**Results for 5 year Critical Storm Duration. Lowest mass balance: 99.84%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m <sup>3</sup> )	Flood (m <sup>3</sup> )	Status
15 minute summer	S1	10	20.995	0.045	14.6	0.0638	0.0000	OK
15 minute summer	S2	10	19.969	0.069	14.5	0.0985	0.0000	OK
15 minute summer	S3	10	19.936	0.136	41.5	0.1939	0.0000	OK
15 minute summer	S4	11	19.800	0.150	47.1	0.2147	0.0000	OK
15 minute summer	S5	11	19.700	0.150	47.3	0.2145	0.0000	OK
15 minute summer	S6	10	19.884	0.134	43.5	0.1921	0.0000	OK
15 minute summer	S7	11	19.625	0.175	95.2	0.2506	0.0000	OK
15 minute summer	S8	11	19.600	0.320	135.2	0.4583	0.0000	OK
15 minute summer	S9	10	20.885	0.085	20.3	0.1210	0.0000	OK
15 minute summer	S10	11	20.614	0.089	20.1	0.1268	0.0000	OK
15 minute summer	S11	11	20.553	0.097	23.3	0.1383	0.0000	OK
15 minute summer	S12	11	20.044	0.054	29.9	0.0775	0.0000	OK
960 minute winter	S13	930	19.585	0.413	14.0	0.5905	0.0000	OK
960 minute winter	Basin 1	930	19.583	0.460	17.1	205.1047	0.0000	SURCHARGED
600 minute winter	S14	585	19.589	0.529	6.7	0.7565	0.0000	SURCHARGED
60 minute winter	S15	43	18.979	0.028	1.8	0.0311	0.0000	OK
15 minute summer	S16	12	18.782	0.137	14.7	0.1550	0.0000	OK
15 minute summer	S17	11	21.293	0.143	37.2	0.1623	0.0000	OK
15 minute summer	S18	11	20.709	0.119	52.9	0.1697	0.0000	OK
15 minute summer	S19	10	21.556	0.106	36.9	0.1517	0.0000	OK
15 minute summer	S20	11	20.282	0.282	139.3	0.4036	0.0000	OK
15 minute summer	S21	11	20.127	0.267	138.5	0.3826	0.0000	OK
15 minute summer	S22	11	20.033	0.273	152.9	0.3911	0.0000	OK
15 minute summer	S23	10	20.808	0.078	18.3	0.1115	0.0000	OK
15 minute summer	S24	10	20.278	0.078	51.7	0.1121	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m <sup>3</sup> )	Discharge Vol (m <sup>3</sup> )
15 minute summer	S1	1.000	S2	14.5	1.260	0.021	0.2659	
15 minute summer	S2	1.001	S3	14.3	0.532	0.052	0.3836	
15 minute summer	S3	1.002	S4	40.8	0.954	0.182	1.3333	
15 minute summer	S4	1.003	S5	47.3	1.024	0.214	0.9806	
15 minute summer	S5	1.004	S7	47.3	0.979	0.204	0.9934	
15 minute summer	S6	2.000	S7	43.2	1.519	0.344	0.3344	
15 minute summer	S7	1.005	S8	95.4	1.067	0.221	0.8500	
15 minute summer	S8	1.006	S13	135.3	1.091	0.715	3.8775	
15 minute summer	S9	3.000	S10	20.1	0.952	0.076	0.8694	
15 minute summer	S10	3.001	S11	20.0	0.859	0.070	0.2089	
15 minute summer	S11	3.002	S12	23.1	1.326	0.088	1.2440	
15 minute summer	S12	3.003	S13	29.8	0.451	0.031	0.6638	
960 minute winter	S13	1.007	Basin 1	12.6	0.469	0.079	2.3311	
960 minute winter	Basin 1	1.008	S14	7.8	0.246	0.037	2.3735	
600 minute winter	S14	Hydro-Brake®	S15	1.8				
60 minute winter	S15	1.010	S16	1.8	0.440	0.005	0.2720	
15 minute summer	S16	1.011	S26	17.0	0.434	0.049	1.9421	
15 minute summer	S17	4.000	S18	35.7	1.090	0.454	2.6672	
15 minute summer	S18	4.001	S20	52.8	0.774	0.157	3.7546	
15 minute summer	S19	5.000	S20	36.7	1.518	0.272	2.2866	
15 minute summer	S20	4.002	S21	138.5	1.425	0.611	1.2800	
15 minute summer	S21	4.003	S22	138.2	1.240	0.404	2.2356	
15 minute summer	S22	4.004	S25	152.0	1.407	0.446	2.3136	
15 minute summer	S23	6.000	S24	17.9	0.977	0.066	1.3769	
15 minute summer	S24	6.001	S25	51.1	1.958	0.068	0.3415	

**Results for 5 year Critical Storm Duration. Lowest mass balance: 99.84%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m <sup>3</sup> )	Flood (m <sup>3</sup> )	Status
15 minute summer	S25	11	19.913	0.258	210.4	0.3696	0.0000	OK
15 minute summer	S26	12	18.773	0.333	208.6	0.4769	0.0000	OK
15 minute summer	S27	12	18.665	0.344	221.7	0.4925	0.0000	OK
15 minute summer	S28	10	20.840	0.065	14.3	0.0934	0.0000	OK
15 minute summer	S29	11	20.699	0.149	35.0	0.2138	0.0000	OK
15 minute summer	S30	10	20.674	0.074	16.3	0.1060	0.0000	OK
15 minute summer	S31	11	20.660	0.181	49.8	0.2590	0.0000	OK
15 minute summer	S32	11	20.595	0.162	50.0	0.2312	0.0000	OK
15 minute summer	S33	11	20.489	0.099	63.4	0.1415	0.0000	OK
15 minute summer	S34	12	18.640	0.460	284.9	0.8130	0.0000	OK
15 minute summer	S35	12	18.563	0.517	306.0	0.9130	0.0000	OK
15 minute summer	S36	12	18.499	0.510	306.0	0.9017	0.0000	OK
15 minute summer	S37	10	20.241	0.041	14.6	0.0585	0.0000	OK
15 minute summer	S38	12	18.436	0.496	328.4	0.8760	0.0000	OK
15 minute summer	S39	12	18.359	0.435	327.2	0.7688	0.0000	OK
15 minute summer	S40	13	18.195	0.378	326.0	0.6679	0.0000	OK
15 minute summer	S41	13	17.961	0.211	344.3	0.3734	0.0000	OK
15 minute summer	S42	12	16.463	0.238	366.2	0.4214	0.0000	OK
15 minute summer	S43	10	16.313	0.063	20.9	0.0908	0.0000	OK
15 minute summer	S44	12	15.594	0.319	390.2	0.4565	0.0000	OK
15 minute summer	S45	10	19.203	0.103	26.9	0.1480	0.0000	OK
15 minute summer	S46	11	18.806	0.141	39.6	0.1591	0.0000	OK
15 minute summer	S47	11	18.536	0.126	39.1	0.1800	0.0000	OK
15 minute summer	S48	11	18.464	0.149	53.5	0.2131	0.0000	OK
15 minute summer	S49	11	18.382	0.156	68.3	0.2238	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m <sup>3</sup> )	Discharge Vol (m <sup>3</sup> )
15 minute summer	S25	4.005	S26	208.6	2.180	0.384	1.6010	
15 minute summer	S26	1.012	S27	202.7	1.256	0.493	5.4437	
15 minute summer	S27	1.013	S34	217.5	1.142	0.351	3.4700	
15 minute summer	S28	7.000	S29	14.1	0.498	0.047	0.7653	
15 minute summer	S29	7.001	S31	34.2	0.653	0.214	1.5187	
15 minute summer	S30	8.000	S31	16.1	0.518	0.061	0.6783	
15 minute summer	S31	7.002	S32	50.0	0.903	0.313	1.0335	
15 minute summer	S32	7.003	S33	49.8	1.323	0.312	0.6699	
15 minute summer	S33	7.004	S34	63.3	2.651	0.087	0.2460	
15 minute summer	S34	1.014	S35	280.6	1.151	0.684	9.1799	
15 minute summer	S35	1.015	S36	302.4	1.178	0.737	4.0964	
15 minute summer	S36	1.016	S38	304.9	1.218	0.726	3.3013	
15 minute summer	S37	9.000	S38	14.5	2.099	0.016	0.0932	
15 minute summer	S38	1.017	S39	327.2	1.395	0.792	1.0329	
15 minute summer	S39	1.018	S40	326.0	1.611	0.796	6.0923	
15 minute summer	S40	1.019	S41	327.3	2.378	0.796	2.5710	
15 minute summer	S41	1.020	S42	341.6	3.567	0.252	3.8073	
15 minute summer	S42	1.021	S44	365.0	3.902	0.255	1.7468	
15 minute summer	S43	10.000	S44	20.6	1.548	0.041	0.3813	
15 minute summer	S44	1.022	Basin 3	389.5	4.694	0.360	3.4476	
15 minute summer	S45	11.000	S46	26.5	0.987	0.261	1.3978	
15 minute summer	S46	11.001	S47	39.1	1.283	0.385	0.3823	
15 minute summer	S47	11.002	S48	39.3	0.962	0.132	0.4612	
15 minute summer	S48	11.003	S49	53.7	1.135	0.182	0.5066	
15 minute summer	S49	11.004	S50	68.6	1.325	0.233	1.2880	

**Results for 5 year Critical Storm Duration. Lowest mass balance: 99.84%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m <sup>3</sup> )	Flood (m <sup>3</sup> )	Status
15 minute summer	S50	11	18.189	0.170	71.6	0.2427	0.0000	OK
15 minute summer	S51	11	18.073	0.198	83.7	0.2832	0.0000	OK
15 minute summer	S52	11	17.936	0.206	83.6	0.2951	0.0000	OK
15 minute summer	S53	12	17.626	0.126	104.5	0.1799	0.0000	OK
15 minute summer	S54	12	15.847	0.327	122.1	0.5770	0.0000	OK
15 minute summer	S55	12	15.819	0.330	139.5	0.3731	0.0000	OK
15 minute summer	S56	12	15.776	0.343	140.0	0.3885	0.0000	OK
15 minute summer	S57	10	18.562	0.062	19.2	0.0880	0.0000	OK
15 minute summer	S58	10	16.861	0.061	19.0	0.0876	0.0000	OK
15 minute summer	S59	10	16.252	0.102	29.6	0.1454	0.0000	OK
15 minute summer	S60	10	18.037	0.037	13.2	0.0528	0.0000	OK
15 minute summer	S61	11	16.040	0.090	45.6	0.1290	0.0000	OK
15 minute summer	S62	12	15.738	0.338	185.2	0.5971	0.0000	OK
15 minute summer	S63	12	15.671	0.288	185.7	0.3259	0.0000	OK
240 minute summer	Basin 2	176	15.671	0.371	61.9	138.2473	0.0000	OK
240 minute summer	S64	172	15.698	0.448	48.3	0.7924	0.0000	SURCHARGED
1440 minute summer	S65	1470	15.587	0.430	9.7	0.4864	0.0000	SURCHARGED
1440 minute summer	S66	1470	15.587	0.492	8.0	0.5565	0.0000	SURCHARGED
15 minute summer	S67	10	16.526	0.126	35.5	0.1424	0.0000	OK
15 minute summer	S68	10	16.457	0.159	54.8	0.1800	0.0000	OK
15 minute summer	S69	11	16.315	0.175	54.1	0.1976	0.0000	OK
15 minute summer	S70	10	16.881	0.081	23.2	0.1154	0.0000	OK
15 minute summer	S71	11	16.269	0.219	86.2	0.3129	0.0000	OK
15 minute summer	S72	11	16.141	0.234	96.9	0.3346	0.0000	OK
15 minute summer	S73	12	16.092	0.269	104.8	0.3849	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m <sup>3</sup> )	Discharge Vol (m <sup>3</sup> )
15 minute summer	S50	11.005	S51	71.7	1.179	0.239	1.0168	
15 minute summer	S51	11.006	S52	83.6	1.212	0.345	1.7706	
15 minute summer	S52	11.007	S53	82.8	1.571	0.408	3.0973	
15 minute summer	S53	11.008	S54	102.9	1.891	0.175	3.7047	
15 minute summer	S54	11.009	S55	120.6	0.850	0.427	1.2841	
15 minute summer	S55	11.010	S56	140.0	0.957	0.503	2.5074	
15 minute summer	S56	11.011	S62	140.3	0.947	0.505	1.4296	
15 minute summer	S57	12.000	S58	19.0	1.841	0.091	0.4954	
15 minute summer	S58	12.001	S59	18.8	1.899	0.082	0.1190	
15 minute summer	S59	12.002	S61	29.4	1.200	0.104	0.6360	
15 minute summer	S60	13.000	S61	13.1	1.014	0.014	0.3470	
15 minute summer	S61	12.003	S62	45.4	1.247	0.090	1.1580	
15 minute summer	S62	11.012	S63	185.7	1.384	0.599	0.5546	
15 minute summer	S63	11.013	Basin 2	185.9	2.829	0.610	1.6768	
240 minute summer	Basin 2	11.014	S64	48.3	0.583	0.134	1.6196	
240 minute summer	S64	Hydro-Brake®	S65	10.5				
1440 minute summer	S65	11.016	S66	8.0	0.503	0.070	2.0587	
1440 minute summer	S66	11.017	Basin 3	8.0	0.337	0.055	7.2250	
15 minute summer	S67	14.000	S68	35.2	0.816	0.154	0.8769	
15 minute summer	S68	14.001	S69	54.1	1.148	0.235	0.7742	
15 minute summer	S69	14.002	S71	54.5	0.738	0.214	2.3885	
15 minute summer	S70	15.000	S71	22.9	1.544	0.149	0.4100	
15 minute summer	S71	14.003	S72	86.5	1.098	0.335	1.8701	
15 minute summer	S72	14.004	S73	96.1	0.873	0.262	3.2843	
15 minute summer	S73	14.005	S75	102.8	0.807	0.280	2.0895	

**Results for 5 year Critical Storm Duration. Lowest mass balance: 99.84%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m <sup>3</sup> )	Flood (m <sup>3</sup> )	Status
15 minute summer	S74	10	18.526	0.076	25.2	0.1092	0.0000	OK
15 minute summer	S75	12	16.063	0.287	134.1	0.4100	0.0000	OK
15 minute summer	S76	12	16.009	0.322	170.0	0.4604	0.0000	OK
15 minute summer	S77	10	19.548	0.048	15.2	0.0688	0.0000	OK
15 minute summer	S78	12	15.935	0.307	188.4	0.4389	0.0000	OK
15 minute summer	S89	12	15.820	0.320	199.0	0.4572	0.0000	OK
15 minute summer	S79	10	20.206	0.136	65.4	0.1950	0.0000	OK
15 minute summer	S80	10	19.152	0.102	85.5	0.1466	0.0000	OK
15 minute summer	S90	12	15.723	0.373	273.1	0.5344	0.0000	OK
1440 minute summer	S86	1470	15.587	0.517	27.0	0.9136	0.0000	OK
15 minute summer	S81	10	15.758	0.058	9.2	0.0830	0.0000	OK
15 minute summer	S82	10	15.687	0.097	23.7	0.1393	0.0000	OK
15 minute summer	S83	11	15.622	0.157	48.0	0.2251	0.0000	OK
1440 minute summer	S84	1470	15.587	0.237	3.9	0.3392	0.0000	OK
1440 minute summer	S85	1470	15.587	0.287	3.9	0.5072	0.0000	OK
1440 minute summer	S88	1470	15.587	0.387	3.9	0.4378	0.0000	OK
1440 minute summer	Basin 3	1470	15.587	0.587	77.0	1764.6030	0.0000	OK
1440 minute summer	S87	1470	15.587	0.637	6.5	2.2068	0.0000	SURCHARGED
15 minute summer	Outfall	1	15.500	0.580	0.0	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m <sup>3</sup> )	Discharge Vol (m <sup>3</sup> )
15 minute summer	S74	16.000	S75	24.7	1.780	0.138	0.6695	
15 minute summer	S75	14.006	S76	133.3	0.933	0.364	4.4600	
15 minute summer	S76	14.007	S78	168.4	1.128	0.463	3.1246	
15 minute summer	S77	17.000	S78	15.0	2.088	0.055	0.2846	
15 minute summer	S78	14.008	S89	189.9	1.277	0.433	4.6512	
15 minute summer	S89	14.009	S90	199.6	1.199	0.450	6.0606	
15 minute summer	S79	18.000	S80	64.6	2.143	0.395	1.2190	
15 minute summer	S80	18.001	S90	84.9	3.226	0.108	0.9718	
15 minute summer	S90	14.010	S86	274.5	1.583	0.633	5.6459	
1440 minute summer	S86	14.011	Basin 3	26.1	0.558	0.074	29.3622	
15 minute summer	S81	19.000	S82	9.1	0.499	0.036	0.3424	
15 minute summer	S82	19.001	S83	23.1	0.630	0.106	1.0142	
15 minute summer	S83	19.002	S84	47.6	0.941	0.243	1.5790	
1440 minute summer	S84	19.003	S85	3.9	0.511	0.020	1.3695	
1440 minute summer	S85	19.004	S88	3.9	0.429	0.017	2.4702	
1440 minute summer	S88	19.005	Basin 3	3.3	0.392	0.022	13.8330	
1440 minute summer	Basin 3	1.023	S87	6.5	0.071	0.012	9.4914	
1440 minute summer	S87	Hydro-Brake®	Outfall	6.5				423.4

**Results for 30 year Critical Storm Duration. Lowest mass balance: 99.92%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m <sup>3</sup> )	Flood (m <sup>3</sup> )	Status
15 minute summer	S1	10	21.006	0.056	23.5	0.0800	0.0000	OK
15 minute summer	S2	10	19.987	0.087	23.4	0.1244	0.0000	OK
15 minute summer	S3	10	19.978	0.178	66.9	0.2545	0.0000	OK
15 minute summer	S4	12	19.864	0.214	76.1	0.3056	0.0000	OK
15 minute summer	S5	11	19.833	0.283	74.0	0.4056	0.0000	OK
15 minute summer	S6	11	19.939	0.189	70.0	0.2706	0.0000	OK
15 minute summer	S7	11	19.834	0.384	143.9	0.5500	0.0000	OK
15 minute summer	S8	11	19.804	0.524	203.2	0.7502	0.0000	SURCHARGED
15 minute summer	S9	10	20.908	0.108	32.7	0.1542	0.0000	OK
15 minute summer	S10	11	20.641	0.116	32.4	0.1655	0.0000	OK
15 minute summer	S11	11	20.579	0.123	37.4	0.1761	0.0000	OK
15 minute summer	S12	11	20.058	0.068	48.5	0.0978	0.0000	OK
960 minute winter	S13	945	19.792	0.620	32.5	0.8868	0.0000	SURCHARGED
960 minute winter	Basin 1	945	19.792	0.669	24.3	323.6528	0.0000	SURCHARGED
960 minute winter	S14	930	19.794	0.734	6.1	1.0498	0.0000	SURCHARGED
15 minute summer	S15	13	19.257	0.306	81.6	0.3464	0.0000	OK
15 minute summer	S16	13	19.215	0.570	121.7	0.6450	0.0000	SURCHARGED
15 minute summer	S17	11	21.345	0.195	59.9	0.2204	0.0000	OK
15 minute summer	S18	11	20.742	0.152	85.4	0.2175	0.0000	OK
15 minute summer	S19	10	21.587	0.137	59.5	0.1956	0.0000	OK
15 minute summer	S20	11	20.406	0.406	225.4	0.5803	0.0000	OK
15 minute summer	S21	11	20.237	0.377	222.7	0.5395	0.0000	OK
15 minute summer	S22	11	20.141	0.381	245.8	0.5457	0.0000	OK
15 minute summer	S23	10	20.829	0.099	29.5	0.1411	0.0000	OK
15 minute summer	S24	10	20.305	0.105	83.7	0.1507	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m <sup>3</sup> )	Discharge Vol (m <sup>3</sup> )
15 minute summer	S1	1.000	S2	23.4	1.451	0.034	0.3723	
15 minute summer	S2	1.001	S3	23.1	0.597	0.084	0.5512	
15 minute summer	S3	1.002	S4	66.1	1.054	0.295	2.0028	
15 minute summer	S4	1.003	S5	74.0	1.099	0.334	1.9016	
15 minute summer	S5	1.004	S7	76.3	1.028	0.328	2.3999	
15 minute summer	S6	2.000	S7	69.1	1.661	0.550	0.6227	
15 minute summer	S7	1.005	S8	147.1	1.068	0.341	1.4474	
15 minute summer	S8	1.006	S13	202.3	1.277	1.070	4.9552	
15 minute summer	S9	3.000	S10	32.4	1.064	0.123	1.2534	
15 minute summer	S10	3.001	S11	32.1	0.961	0.113	0.2993	
15 minute summer	S11	3.002	S12	37.5	1.527	0.142	1.7504	
15 minute summer	S12	3.003	S13	48.5	0.494	0.051	0.8346	
960 minute winter	S13	1.007	Basin 1	24.3	0.449	0.153	2.3789	
960 minute winter	Basin 1	1.008	S14	6.1	0.215	0.029	2.3735	
960 minute winter	S14	Hydro-Brake®	S15	1.8				
15 minute summer	S15	1.010	S16	-79.9	-0.512	-0.239	11.1097	
15 minute summer	S16	1.011	S26	-121.4	0.705	-0.354	5.5777	
15 minute summer	S17	4.000	S18	57.7	1.220	0.735	3.8540	
15 minute summer	S18	4.001	S20	85.4	0.833	0.254	5.3789	
15 minute summer	S19	5.000	S20	58.5	1.542	0.434	4.1946	
15 minute summer	S20	4.002	S21	222.7	1.600	0.983	1.8191	
15 minute summer	S21	4.003	S22	222.0	1.336	0.649	3.3328	
15 minute summer	S22	4.004	S25	244.6	1.542	0.717	3.4017	
15 minute summer	S23	6.000	S24	28.9	1.080	0.106	2.0176	
15 minute summer	S24	6.001	S25	82.4	1.888	0.109	0.5657	

**Results for 30 year Critical Storm Duration. Lowest mass balance: 99.92%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m <sup>3</sup> )	Flood (m <sup>3</sup> )	Status
15 minute summer	S25	11	20.008	0.353	338.7	0.5051	0.0000	OK
15 minute summer	S26	13	19.189	0.749	336.9	1.0715	0.0000	SURCHARGED
15 minute summer	S27	12	19.110	0.789	318.4	1.1296	0.0000	SURCHARGED
15 minute summer	S28	10	20.857	0.082	23.0	0.1178	0.0000	OK
15 minute summer	S29	11	20.753	0.203	56.4	0.2898	0.0000	OK
15 minute summer	S30	11	20.710	0.110	26.3	0.1578	0.0000	OK
15 minute summer	S31	11	20.715	0.236	79.3	0.3375	0.0000	OK
15 minute summer	S32	11	20.639	0.206	80.5	0.2953	0.0000	OK
15 minute summer	S33	11	20.520	0.130	102.3	0.1854	0.0000	OK
15 minute summer	S34	12	19.053	0.873	403.6	1.5425	0.0000	SURCHARGED
15 minute summer	S35	12	18.877	0.831	438.7	1.4688	0.0000	SURCHARGED
15 minute summer	S36	12	18.751	0.762	444.0	1.3467	0.0000	SURCHARGED
15 minute summer	S37	10	20.252	0.052	23.5	0.0740	0.0000	OK
15 minute summer	S38	12	18.634	0.694	482.9	1.2254	0.0000	SURCHARGED
15 minute summer	S39	12	18.538	0.614	482.6	1.0845	0.0000	SURCHARGED
15 minute summer	S40	12	18.289	0.472	482.0	0.8345	0.0000	OK
15 minute summer	S41	12	18.016	0.266	507.0	0.4697	0.0000	OK
15 minute summer	S42	12	16.532	0.307	545.5	0.5429	0.0000	OK
15 minute summer	S43	10	16.331	0.081	33.6	0.1155	0.0000	OK
1440 minute winter	S44	1110	15.677	0.402	38.7	0.5747	0.0000	OK
15 minute summer	S45	10	19.235	0.135	43.3	0.1926	0.0000	OK
15 minute summer	S46	10	18.855	0.190	64.1	0.2153	0.0000	OK
15 minute summer	S47	11	18.578	0.168	63.1	0.2404	0.0000	OK
15 minute summer	S48	11	18.516	0.201	86.2	0.2874	0.0000	OK
15 minute summer	S49	11	18.435	0.209	110.0	0.2995	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m <sup>3</sup> )	Discharge Vol (m <sup>3</sup> )
15 minute summer	S25	4.005	S26	336.9	2.424	0.620	2.3165	
15 minute summer	S26	1.012	S27	306.5	1.257	0.746	9.3525	
15 minute summer	S27	1.013	S34	321.8	1.143	0.519	4.8981	
15 minute summer	S28	7.000	S29	22.8	0.548	0.075	1.1332	
15 minute summer	S29	7.001	S31	54.8	0.724	0.343	2.2049	
15 minute summer	S30	8.000	S31	24.5	0.612	0.092	1.0157	
15 minute summer	S31	7.002	S32	80.5	1.039	0.505	1.4462	
15 minute summer	S32	7.003	S33	80.3	1.499	0.503	0.9462	
15 minute summer	S33	7.004	S34	101.9	2.974	0.140	0.3532	
15 minute summer	S34	1.014	S35	402.5	1.429	0.981	10.5533	
15 minute summer	S35	1.015	S36	438.1	1.556	1.068	4.4939	
15 minute summer	S36	1.016	S38	443.4	1.574	1.056	3.6869	
15 minute summer	S37	9.000	S38	23.4	2.402	0.026	0.1313	
15 minute summer	S38	1.017	S39	482.6	1.713	1.168	1.2436	
15 minute summer	S39	1.018	S40	482.0	1.797	1.177	7.8078	
15 minute summer	S40	1.019	S41	475.1	2.640	1.156	3.3442	
15 minute summer	S41	1.020	S42	501.4	3.809	0.370	5.2491	
15 minute summer	S42	1.021	S44	543.4	4.239	0.380	2.3872	
15 minute summer	S43	10.000	S44	33.2	1.774	0.067	0.5710	
1440 minute winter	S44	1.022	Basin 3	38.2	1.183	0.035	11.8206	
15 minute summer	S45	11.000	S46	42.9	1.102	0.423	2.0220	
15 minute summer	S46	11.001	S47	63.1	1.434	0.620	0.5509	
15 minute summer	S47	11.002	S48	63.3	1.039	0.213	0.6887	
15 minute summer	S48	11.003	S49	86.7	1.233	0.294	0.7523	
15 minute summer	S49	11.004	S50	110.6	1.440	0.375	1.9107	

**Results for 30 year Critical Storm Duration. Lowest mass balance: 99.92%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S50	11	18.249	0.230	115.4	0.3290	0.0000	OK
15 minute summer	S51	11	18.143	0.268	135.2	0.3841	0.0000	OK
15 minute summer	S52	11	18.002	0.272	135.3	0.3895	0.0000	OK
15 minute summer	S53	11	17.662	0.162	170.4	0.2324	0.0000	OK
15 minute summer	S54	12	16.017	0.497	200.4	0.8785	0.0000	OK
15 minute summer	S55	12	15.983	0.494	227.1	0.5587	0.0000	OK
15 minute summer	S56	12	15.923	0.491	228.3	0.5552	0.0000	OK
15 minute summer	S57	10	18.578	0.078	30.9	0.1119	0.0000	OK
15 minute summer	S58	10	16.879	0.079	30.7	0.1133	0.0000	OK
15 minute summer	S59	10	16.281	0.131	47.8	0.1869	0.0000	OK
15 minute summer	S60	10	18.046	0.046	21.2	0.0660	0.0000	OK
15 minute summer	S61	11	16.064	0.114	73.7	0.1634	0.0000	OK
180 minute winter	S62	176	15.877	0.477	76.4	0.8420	0.0000	OK
180 minute winter	S63	176	15.876	0.493	75.2	0.5581	0.0000	OK
180 minute winter	Basin 2	176	15.876	0.576	98.8	228.3039	0.0000	SURCHARGED
180 minute summer	S64	160	15.892	0.642	53.9	1.1337	0.0000	SURCHARGED
1440 minute winter	S65	1110	15.677	0.520	9.1	0.5879	0.0000	SURCHARGED
1440 minute winter	S66	1110	15.677	0.582	7.3	0.6579	0.0000	SURCHARGED
15 minute summer	S67	10	16.568	0.168	57.1	0.1901	0.0000	OK
15 minute summer	S68	10	16.507	0.209	88.4	0.2362	0.0000	OK
15 minute summer	S69	11	16.380	0.240	87.3	0.2713	0.0000	OK
15 minute summer	S70	10	16.904	0.104	37.3	0.1492	0.0000	OK
15 minute summer	S71	11	16.339	0.289	138.4	0.4137	0.0000	OK
15 minute summer	S72	12	16.244	0.337	154.4	0.4821	0.0000	OK
15 minute summer	S73	12	16.214	0.391	165.3	0.5590	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	S50	11.005	S51	115.9	1.287	0.386	1.5037	
15 minute summer	S51	11.006	S52	135.3	1.361	0.558	2.5528	
15 minute summer	S52	11.007	S53	133.9	1.788	0.660	4.4008	
15 minute summer	S53	11.008	S54	168.2	1.826	0.287	5.9784	
15 minute summer	S54	11.009	S55	196.7	0.931	0.696	1.9106	
15 minute summer	S55	11.010	S56	228.3	1.085	0.820	3.6077	
15 minute summer	S56	11.011	S62	229.5	1.107	0.825	1.9967	
15 minute summer	S57	12.000	S58	30.7	2.086	0.146	0.7046	
15 minute summer	S58	12.001	S59	30.3	2.152	0.133	0.1692	
15 minute summer	S59	12.002	S61	47.5	1.366	0.167	0.9019	
15 minute summer	S60	13.000	S61	21.1	1.147	0.022	0.4880	
15 minute summer	S61	12.003	S62	72.9	1.302	0.145	1.7479	
180 minute winter	S62	11.012	S63	75.2	0.943	0.243	0.8615	
180 minute winter	S63	11.013	Basin 2	74.1	1.404	0.243	4.4509	
180 minute winter	Basin 2	11.014	S64	44.2	0.568	0.123	1.9484	
180 minute summer	S64	Hydro-Brake®	S65	10.5				
1440 minute winter	S65	11.016	S66	7.3	0.503	0.064	2.0587	
1440 minute winter	S66	11.017	Basin 3	7.5	0.430	0.051	7.2250	
15 minute summer	S67	14.000	S68	56.6	0.899	0.248	1.2793	
15 minute summer	S68	14.001	S69	87.3	1.298	0.380	1.1042	
15 minute summer	S69	14.002	S71	87.5	0.806	0.344	3.5205	
15 minute summer	S70	15.000	S71	36.9	1.753	0.240	0.5815	
15 minute summer	S71	14.003	S72	137.7	1.228	0.533	2.7101	
15 minute summer	S72	14.004	S73	151.2	0.904	0.413	5.2558	
15 minute summer	S73	14.005	S75	160.6	0.817	0.438	3.2799	

**Results for 30 year Critical Storm Duration. Lowest mass balance: 99.92%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m <sup>3</sup> )	Flood (m <sup>3</sup> )	Status
15 minute summer	S74	10	18.548	0.098	40.6	0.1406	0.0000	OK
15 minute summer	S75	12	16.188	0.412	212.4	0.5894	0.0000	OK
15 minute summer	S76	12	16.139	0.452	270.6	0.6472	0.0000	OK
15 minute summer	S77	10	19.561	0.061	24.4	0.0871	0.0000	OK
15 minute summer	S78	12	16.067	0.439	301.5	0.6278	0.0000	OK
15 minute summer	S89	12	15.971	0.471	311.6	0.6734	0.0000	OK
15 minute summer	S79	10	20.254	0.184	105.4	0.2635	0.0000	OK
15 minute summer	S80	10	19.182	0.132	137.8	0.1888	0.0000	OK
15 minute summer	S90	12	15.876	0.526	433.3	0.7524	0.0000	OK
1440 minute winter	S86	1110	15.677	0.607	25.5	1.0719	0.0000	OK
15 minute summer	S81	10	15.773	0.073	14.7	0.1042	0.0000	OK
15 minute summer	S82	10	15.714	0.124	38.1	0.1774	0.0000	OK
1440 minute winter	S83	1110	15.677	0.212	3.7	0.3028	0.0000	OK
1440 minute winter	S84	1110	15.677	0.327	3.7	0.4674	0.0000	OK
1440 minute winter	S85	1110	15.677	0.377	3.6	0.6655	0.0000	OK
1440 minute winter	S88	1110	15.677	0.477	3.4	0.5390	0.0000	SURCHARGED
1440 minute winter	Basin 3	1110	15.677	0.677	71.6	2055.7850	0.0000	OK
1440 minute winter	S87	1110	15.677	0.727	22.2	2.5166	0.0000	SURCHARGED
15 minute summer	Outfall	1	15.500	0.580	0.0	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m <sup>3</sup> )	Discharge Vol (m <sup>3</sup> )
15 minute summer	S74	16.000	S75	39.9	2.032	0.223	0.9483	
15 minute summer	S75	14.006	S76	208.4	0.968	0.569	6.7550	
15 minute summer	S76	14.007	S78	264.7	1.198	0.727	4.6937	
15 minute summer	S77	17.000	S78	24.1	2.396	0.088	0.3990	
15 minute summer	S78	14.008	S89	297.1	1.327	0.677	7.1618	
15 minute summer	S89	14.009	S90	314.0	1.293	0.708	8.9748	
15 minute summer	S79	18.000	S80	104.2	2.391	0.637	1.7608	
15 minute summer	S80	18.001	S90	136.9	3.671	0.174	1.3776	
15 minute summer	S90	14.010	S86	437.4	1.810	1.009	7.8162	
1440 minute winter	S86	14.011	Basin 3	24.6	0.571	0.070	33.8580	
15 minute summer	S81	19.000	S82	14.6	0.570	0.059	0.4807	
15 minute summer	S82	19.001	S83	37.5	0.705	0.172	1.4609	
1440 minute winter	S83	19.002	S84	3.7	0.479	0.019	3.0540	
1440 minute winter	S84	19.003	S85	3.6	0.487	0.019	1.8961	
1440 minute winter	S85	19.004	S88	3.4	0.423	0.015	2.9447	
1440 minute winter	S88	19.005	Basin 3	2.9	0.379	0.019	14.4434	
1440 minute winter	Basin 3	1.023	S87	22.2	0.094	0.040	10.5533	
1440 minute winter	S87	Hydro-Brake®	Outfall	22.2				1225.8

**Results for 30 year +40% CC Critical Storm Duration. Lowest mass balance: 99.93%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m <sup>3</sup> )	Flood (m <sup>3</sup> )	Status
15 minute summer	S1	10	21.016	0.066	32.9	0.0939	0.0000	OK
15 minute summer	S2	12	20.195	0.295	32.8	0.4217	0.0000	OK
15 minute summer	S3	12	20.202	0.402	103.5	0.5757	0.0000	OK
15 minute summer	S4	12	20.175	0.525	98.9	0.7508	0.0000	SURCHARGED
15 minute summer	S5	12	20.138	0.588	119.2	0.8410	0.0000	SURCHARGED
15 minute summer	S6	11	20.210	0.460	98.1	0.6580	0.0000	SURCHARGED
15 minute summer	S7	12	20.104	0.654	188.1	0.9355	0.0000	SURCHARGED
1440 minute winter	S8	1410	20.037	0.757	39.6	1.0828	0.0000	SURCHARGED
15 minute summer	S9	10	20.929	0.129	45.8	0.1842	0.0000	OK
15 minute summer	S10	11	20.665	0.140	45.3	0.2006	0.0000	OK
15 minute summer	S11	11	20.602	0.146	52.3	0.2096	0.0000	OK
15 minute summer	S12	11	20.071	0.081	68.1	0.1155	0.0000	OK
1440 minute winter	S13	1410	20.037	0.865	22.5	1.2374	0.0000	SURCHARGED
1440 minute winter	Basin 1	1410	20.037	0.914	33.8	484.0486	0.0000	SURCHARGED
1440 minute winter	S14	1410	20.037	0.977	7.2	1.3976	0.0000	SURCHARGED
30 minute summer	S15	19	20.238	1.287	158.4	1.4557	0.0000	SURCHARGED
30 minute summer	S16	19	20.204	1.559	188.7	1.7628	0.0000	SURCHARGED
15 minute summer	S17	11	21.412	0.262	83.9	0.2963	0.0000	OK
15 minute summer	S18	12	20.781	0.191	118.2	0.2729	0.0000	OK
15 minute summer	S19	10	21.617	0.167	83.2	0.2390	0.0000	OK
15 minute summer	S20	12	20.783	0.783	315.4	1.1205	0.0000	SURCHARGED
15 minute summer	S21	12	20.598	0.738	307.7	1.0566	0.0000	SURCHARGED
15 minute summer	S22	12	20.509	0.749	340.7	1.0722	0.0000	SURCHARGED
15 minute summer	S23	11	20.846	0.116	41.3	0.1666	0.0000	OK
15 minute summer	S24	12	20.406	0.206	117.3	0.2954	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m <sup>3</sup> )	Discharge Vol (m <sup>3</sup> )
15 minute summer	S1	1.000	S2	32.8	1.534	0.047	1.3925	
15 minute summer	S2	1.001	S3	45.0	0.627	0.164	1.7965	
15 minute summer	S3	1.002	S4	92.0	1.106	0.411	4.7874	
15 minute summer	S4	1.003	S5	119.2	1.108	0.539	3.3636	
15 minute summer	S5	1.004	S7	123.2	1.086	0.530	3.0499	
15 minute summer	S6	2.000	S7	93.0	1.686	0.741	0.8288	
15 minute summer	S7	1.005	S8	188.4	1.189	0.436	1.5155	
1440 minute winter	S8	1.006	S13	19.0	0.403	0.100	4.9552	
15 minute summer	S9	3.000	S10	45.3	1.146	0.172	1.6294	
15 minute summer	S10	3.001	S11	44.9	1.040	0.158	0.3863	
15 minute summer	S11	3.002	S12	52.7	1.682	0.200	2.2287	
15 minute summer	S12	3.003	S13	68.1	0.636	0.072	0.8543	
1440 minute winter	S13	1.007	Basin 1	33.7	0.449	0.211	2.3789	
1440 minute winter	Basin 1	1.008	S14	7.2	0.246	0.035	2.3735	
1440 minute winter	S14	Hydro-Brake®	S15	1.8				
30 minute summer	S15	1.010	S16	-158.4	-0.733	-0.474	13.8421	
30 minute summer	S16	1.011	S26	-188.7	-0.874	-0.550	5.5777	
15 minute summer	S17	4.000	S18	79.4	1.318	1.011	4.9158	
15 minute summer	S18	4.001	S20	118.2	0.926	0.351	6.0561	
15 minute summer	S19	5.000	S20	82.0	1.507	0.608	4.8992	
15 minute summer	S20	4.002	S21	307.7	1.942	1.359	2.0872	
15 minute summer	S21	4.003	S22	307.5	1.424	0.898	4.3111	
15 minute summer	S22	4.004	S25	324.5	1.571	0.951	4.5589	
15 minute summer	S23	6.000	S24	40.6	1.225	0.149	3.7492	
15 minute summer	S24	6.001	S25	121.3	1.952	0.160	0.9922	

**Results for 30 year +40% CC Critical Storm Duration. Lowest mass balance: 99.93%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m <sup>3</sup> )	Flood (m <sup>3</sup> )	Status
15 minute summer	S25	12	20.394	0.739	458.2	1.0582	0.0000	SURCHARGED
15 minute summer	S26	12	20.209	1.769	444.7	2.5315	0.0000	SURCHARGED
15 minute summer	S27	12	20.102	1.781	500.3	2.5481	0.0000	SURCHARGED
15 minute summer	S28	10	20.872	0.097	32.3	0.1392	0.0000	OK
15 minute summer	S29	11	20.806	0.256	79.1	0.3661	0.0000	OK
15 minute summer	S30	11	20.767	0.166	36.8	0.2383	0.0000	OK
15 minute summer	S31	11	20.766	0.287	111.0	0.4113	0.0000	OK
15 minute summer	S32	11	20.680	0.247	112.1	0.3533	0.0000	OK
15 minute summer	S33	11	20.548	0.158	143.1	0.2263	0.0000	OK
15 minute summer	S34	12	19.972	1.792	602.6	3.1660	0.0000	SURCHARGED
15 minute summer	S35	12	19.655	1.609	627.8	2.8423	0.0000	SURCHARGED
15 minute summer	S36	12	19.401	1.412	641.6	2.4941	0.0000	SURCHARGED
15 minute summer	S37	10	20.261	0.061	32.9	0.0876	0.0000	OK
15 minute summer	S38	12	19.159	1.219	694.5	2.1547	0.0000	SURCHARGED
15 minute summer	S39	12	18.961	1.037	691.2	1.8330	0.0000	SURCHARGED
15 minute summer	S40	12	18.499	0.682	688.1	1.2053	0.0000	SURCHARGED
30 minute summer	S41	19	18.092	0.342	716.4	0.6039	0.0000	OK
15 minute summer	S42	12	16.627	0.402	787.2	0.7107	0.0000	OK
15 minute summer	S43	9	16.343	0.093	47.1	0.1326	0.0000	OK
1440 minute winter	S44	1050	15.819	0.544	53.1	0.7780	0.0000	OK
15 minute summer	S45	10	19.264	0.164	60.6	0.2343	0.0000	OK
15 minute summer	S46	11	18.910	0.245	89.6	0.2768	0.0000	OK
15 minute summer	S47	11	18.620	0.210	88.2	0.3012	0.0000	OK
15 minute summer	S48	11	18.568	0.253	120.6	0.3613	0.0000	OK
15 minute summer	S49	11	18.490	0.264	153.7	0.3774	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m <sup>3</sup> )	Discharge Vol (m <sup>3</sup> )
15 minute summer	S25	4.005	S26	444.7	2.541	0.819	3.6043	
15 minute summer	S26	1.012	S27	448.0	1.591	1.091	9.3525	
15 minute summer	S27	1.013	S34	441.3	1.567	0.712	4.8981	
15 minute summer	S28	7.000	S29	32.0	0.581	0.106	1.5048	
15 minute summer	S29	7.001	S31	76.5	0.774	0.479	2.8761	
15 minute summer	S30	8.000	S31	34.5	0.670	0.130	1.4251	
15 minute summer	S31	7.002	S32	112.1	1.143	0.703	1.8284	
15 minute summer	S32	7.003	S33	112.3	1.657	0.704	1.2089	
15 minute summer	S33	7.004	S34	142.8	3.216	0.197	0.4583	
15 minute summer	S34	1.014	S35	570.6	2.026	1.391	10.5533	
15 minute summer	S35	1.015	S36	633.4	2.249	1.545	4.4939	
15 minute summer	S36	1.016	S38	639.3	2.270	1.523	3.6869	
15 minute summer	S37	9.000	S38	32.8	2.645	0.036	0.1672	
15 minute summer	S38	1.017	S39	691.2	2.454	1.674	1.2436	
15 minute summer	S39	1.018	S40	688.1	2.443	1.681	8.4647	
15 minute summer	S40	1.019	S41	681.6	2.814	1.658	4.1138	
30 minute summer	S41	1.020	S42	716.4	4.035	0.528	7.1034	
15 minute summer	S42	1.021	S44	813.7	4.463	0.568	3.3892	
15 minute summer	S43	10.000	S44	46.9	1.899	0.094	1.1825	
1440 minute winter	S44	1.022	Basin 3	52.5	1.263	0.049	14.0450	
15 minute summer	S45	11.000	S46	59.9	1.180	0.590	2.6218	
15 minute summer	S46	11.001	S47	88.2	1.532	0.868	0.7202	
15 minute summer	S47	11.002	S48	88.5	1.084	0.298	0.9246	
15 minute summer	S48	11.003	S49	121.1	1.288	0.411	1.0061	
15 minute summer	S49	11.004	S50	154.6	1.502	0.524	2.5625	

**Results for 30 year +40% CC Critical Storm Duration. Lowest mass balance: 99.93%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m <sup>3</sup> )	Flood (m <sup>3</sup> )	Status
15 minute summer	S50	11	18.313	0.294	161.4	0.4202	0.0000	OK
15 minute summer	S51	11	18.219	0.344	188.9	0.4928	0.0000	OK
15 minute summer	S52	11	18.068	0.338	188.9	0.4832	0.0000	OK
15 minute summer	S53	11	17.695	0.195	238.5	0.2798	0.0000	OK
15 minute summer	S54	11	16.328	0.808	281.4	1.4276	0.0000	SURCHARGED
15 minute summer	S55	11	16.256	0.767	327.9	0.8670	0.0000	SURCHARGED
240 minute winter	S56	236	16.136	0.704	63.3	0.7961	0.0000	SURCHARGED
15 minute summer	S57	10	18.593	0.093	43.2	0.1330	0.0000	OK
15 minute summer	S58	10	16.895	0.095	42.9	0.1365	0.0000	OK
15 minute summer	S59	10	16.307	0.157	66.9	0.2243	0.0000	OK
15 minute summer	S60	10	18.054	0.054	29.7	0.0775	0.0000	OK
240 minute winter	S61	236	16.136	0.186	20.1	0.2660	0.0000	OK
240 minute winter	S62	236	16.136	0.736	84.3	1.3004	0.0000	SURCHARGED
240 minute winter	S63	236	16.136	0.753	83.0	0.8515	0.0000	SURCHARGED
240 minute winter	Basin 2	236	16.136	0.836	108.9	356.5786	0.0000	SURCHARGED
240 minute summer	S64	208	16.141	0.891	56.0	1.5743	0.0000	SURCHARGED
1440 minute winter	S65	1050	15.819	0.662	9.3	0.7492	0.0000	SURCHARGED
1440 minute winter	S66	1050	15.819	0.724	9.3	0.8188	0.0000	SURCHARGED
15 minute summer	S67	10	16.610	0.210	80.0	0.2378	0.0000	OK
15 minute summer	S68	12	16.615	0.317	123.8	0.3588	0.0000	OK
15 minute summer	S69	12	16.571	0.431	122.3	0.4878	0.0000	OK
15 minute summer	S70	10	16.925	0.125	52.3	0.1794	0.0000	OK
15 minute summer	S71	12	16.559	0.509	193.3	0.7282	0.0000	OK
15 minute summer	S72	11	16.572	0.665	205.1	0.9514	0.0000	SURCHARGED
15 minute summer	S73	12	16.479	0.656	218.3	0.9380	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m <sup>3</sup> )	Discharge Vol (m <sup>3</sup> )
15 minute summer	S50	11.005	S51	161.8	1.346	0.539	2.0022	
15 minute summer	S51	11.006	S52	188.9	1.465	0.779	3.3095	
15 minute summer	S52	11.007	S53	187.4	1.941	0.924	5.6156	
15 minute summer	S53	11.008	S54	236.5	1.891	0.403	6.5346	
15 minute summer	S54	11.009	S55	278.2	1.288	0.984	1.9538	
15 minute summer	S55	11.010	S56	327.2	1.515	1.175	3.7037	
240 minute winter	S56	11.011	S62	62.0	0.665	0.223	2.0828	
15 minute summer	S57	12.000	S58	42.9	2.268	0.204	0.9061	
15 minute summer	S58	12.001	S59	42.4	2.345	0.186	0.2175	
15 minute summer	S59	12.002	S61	66.5	1.493	0.234	1.1552	
15 minute summer	S60	13.000	S61	29.6	1.243	0.031	0.6207	
240 minute winter	S61	12.003	S62	20.0	1.034	0.040	2.1773	
240 minute winter	S62	11.012	S63	83.0	0.902	0.268	0.8933	
240 minute winter	S63	11.013	Basin 2	81.9	1.413	0.269	4.5064	
240 minute winter	Basin 2	11.014	S64	47.0	0.559	0.130	1.9484	
240 minute summer	S64	Hydro-Brake®	S65	10.5				
1440 minute winter	S65	11.016	S66	9.3	0.501	0.081	2.0587	
1440 minute winter	S66	11.017	Basin 3	9.3	0.460	0.063	7.2250	
15 minute summer	S67	14.000	S68	79.3	0.956	0.347	1.8260	
15 minute summer	S68	14.001	S69	122.3	1.401	0.532	2.0790	
15 minute summer	S69	14.002	S71	118.9	0.844	0.467	6.5270	
15 minute summer	S70	15.000	S71	52.5	1.864	0.342	1.2623	
15 minute summer	S71	14.003	S72	180.6	1.263	0.699	5.1001	
15 minute summer	S72	14.004	S73	208.3	0.922	0.569	8.2912	
15 minute summer	S73	14.005	S75	227.8	0.856	0.621	4.6142	

**Results for 30 year +40% CC Critical Storm Duration. Lowest mass balance: 99.93%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m <sup>3</sup> )	Flood (m <sup>3</sup> )	Status
15 minute summer	S74	10	18.568	0.118	56.8	0.1692	0.0000	OK
15 minute summer	S75	12	16.440	0.664	270.3	0.9507	0.0000	SURCHARGED
15 minute summer	S76	11	16.406	0.719	339.7	1.0294	0.0000	SURCHARGED
15 minute summer	S77	10	19.572	0.072	34.2	0.1036	0.0000	OK
15 minute summer	S78	11	16.313	0.685	372.6	0.9799	0.0000	SURCHARGED
15 minute summer	S89	11	16.252	0.752	389.9	1.0766	0.0000	SURCHARGED
15 minute summer	S79	10	20.310	0.240	147.6	0.3439	0.0000	OK
15 minute summer	S80	10	19.209	0.159	192.7	0.2272	0.0000	OK
15 minute summer	S90	11	16.042	0.692	570.5	0.9898	0.0000	SURCHARGED
1440 minute winter	S86	1050	15.819	0.749	35.1	1.3229	0.0000	OK
1440 minute winter	S81	1050	15.819	0.119	1.0	0.1697	0.0000	OK
1440 minute winter	S82	1050	15.819	0.229	2.6	0.3272	0.0000	OK
1440 minute winter	S83	1050	15.819	0.354	5.3	0.5061	0.0000	OK
1440 minute winter	S84	1050	15.819	0.469	5.0	0.6706	0.0000	SURCHARGED
1440 minute winter	S85	1050	15.819	0.519	4.7	0.9164	0.0000	SURCHARGED
1440 minute winter	S88	1050	15.819	0.619	4.4	0.6997	0.0000	SURCHARGED
1440 minute winter	Basin 3	1050	15.819	0.819	98.1	2529.9070	0.0000	SURCHARGED
1440 minute winter	S87	1050	15.818	0.868	37.9	3.0077	0.0000	SURCHARGED
15 minute summer	Outfall	1	15.500	0.580	0.0	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m <sup>3</sup> )	Discharge Vol (m <sup>3</sup> )
15 minute summer	S74	16.000	S75	56.0	2.224	0.312	1.2150	
15 minute summer	S75	14.006	S76	277.2	1.014	0.756	8.7658	
15 minute summer	S76	14.007	S78	325.3	1.215	0.894	5.8930	
15 minute summer	S77	17.000	S78	33.8	2.635	0.123	0.5087	
15 minute summer	S78	14.008	S89	365.3	1.339	0.832	8.8106	
15 minute summer	S89	14.009	S90	381.9	1.389	0.862	10.1342	
15 minute summer	S79	18.000	S80	145.6	2.533	0.891	2.3277	
15 minute summer	S80	18.001	S90	191.5	4.003	0.243	1.7663	
15 minute summer	S90	14.010	S86	559.5	2.017	1.290	8.5801	
1440 minute winter	S86	14.011	Basin 3	33.9	0.619	0.097	37.2504	
1440 minute winter	S81	19.000	S82	1.0	0.254	0.004	1.0546	
1440 minute winter	S82	19.001	S83	2.6	0.337	0.012	2.9229	
1440 minute winter	S83	19.002	S84	5.0	0.491	0.025	4.5404	
1440 minute winter	S84	19.003	S85	4.7	0.498	0.025	2.2678	
1440 minute winter	S85	19.004	S88	4.4	0.407	0.019	3.1090	
1440 minute winter	S88	19.005	Basin 3	4.1	0.421	0.027	14.4434	
1440 minute winter	Basin 3	1.023	S87	37.9	0.087	0.069	10.8723	
1440 minute winter	S87	Hydro-Brake®	Outfall	37.9				2377.6

**Results for 100 year Critical Storm Duration. Lowest mass balance: 99.95%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m <sup>3</sup> )	Flood (m <sup>3</sup> )	Status
15 minute summer	S1	10	21.012	0.062	29.5	0.0891	0.0000	OK
15 minute summer	S2	12	20.067	0.167	29.4	0.2394	0.0000	OK
15 minute summer	S3	12	20.076	0.276	83.6	0.3953	0.0000	OK
15 minute summer	S4	11	20.047	0.397	97.8	0.5684	0.0000	OK
15 minute summer	S5	11	20.037	0.487	96.7	0.6968	0.0000	SURCHARGED
15 minute summer	S6	11	20.131	0.381	87.8	0.5454	0.0000	SURCHARGED
15 minute summer	S7	11	20.027	0.577	169.3	0.8258	0.0000	SURCHARGED
15 minute summer	S8	11	19.976	0.696	244.4	0.9962	0.0000	SURCHARGED
15 minute summer	S9	10	20.921	0.121	41.0	0.1736	0.0000	OK
15 minute summer	S10	11	20.657	0.132	40.6	0.1882	0.0000	OK
15 minute summer	S11	11	20.594	0.138	46.8	0.1978	0.0000	OK
15 minute summer	S12	11	20.066	0.076	60.9	0.1093	0.0000	OK
1440 minute winter	S13	1410	19.966	0.794	20.2	1.1356	0.0000	SURCHARGED
1440 minute winter	Basin 1	1410	19.966	0.843	26.6	435.0121	0.0000	SURCHARGED
1440 minute winter	S14	1410	19.966	0.906	7.8	1.2958	0.0000	SURCHARGED
15 minute summer	S15	12	20.190	1.239	183.8	1.4016	0.0000	SURCHARGED
15 minute summer	S16	12	20.018	1.373	207.1	1.5524	0.0000	SURCHARGED
15 minute summer	S17	11	21.384	0.234	75.1	0.2644	0.0000	OK
15 minute summer	S18	11	20.761	0.171	106.7	0.2448	0.0000	OK
15 minute summer	S19	10	21.606	0.156	74.6	0.2234	0.0000	OK
15 minute summer	S20	11	20.522	0.522	282.9	0.7463	0.0000	SURCHARGED
15 minute summer	S21	11	20.332	0.472	280.4	0.6756	0.0000	OK
15 minute summer	S22	12	20.253	0.493	309.6	0.7048	0.0000	OK
15 minute summer	S23	10	20.840	0.110	37.0	0.1578	0.0000	OK
15 minute summer	S24	10	20.325	0.125	105.2	0.1783	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m <sup>3</sup> )	Discharge Vol (m <sup>3</sup> )
15 minute summer	S1	1.000	S2	29.4	1.524	0.042	0.7401	
15 minute summer	S2	1.001	S3	36.7	0.616	0.134	1.0775	
15 minute summer	S3	1.002	S4	85.1	1.087	0.380	3.7850	
15 minute summer	S4	1.003	S5	96.7	1.090	0.437	3.2538	
15 minute summer	S5	1.004	S7	112.1	1.035	0.482	3.0499	
15 minute summer	S6	2.000	S7	84.0	1.646	0.669	0.8288	
15 minute summer	S7	1.005	S8	176.7	1.136	0.409	1.5155	
15 minute summer	S8	1.006	S13	245.0	1.546	1.295	4.9552	
15 minute summer	S9	3.000	S10	40.6	1.119	0.154	1.4942	
15 minute summer	S10	3.001	S11	40.2	1.013	0.141	0.3550	
15 minute summer	S11	3.002	S12	47.1	1.630	0.179	2.0579	
15 minute summer	S12	3.003	S13	60.9	0.574	0.064	0.8474	
1440 minute winter	S13	1.007	Basin 1	26.6	0.447	0.167	2.3789	
1440 minute winter	Basin 1	1.008	S14	7.8	0.200	0.037	2.3735	
1440 minute winter	S14	Hydro-Brake®	S15	1.8				
15 minute summer	S15	1.010	S16	-183.8	-0.884	-0.550	13.8421	
15 minute summer	S16	1.011	S26	-207.0	-1.017	-0.603	5.5777	
15 minute summer	S17	4.000	S18	71.9	1.290	0.916	4.5389	
15 minute summer	S18	4.001	S20	106.7	0.848	0.317	5.8203	
15 minute summer	S19	5.000	S20	73.5	1.560	0.545	4.7559	
15 minute summer	S20	4.002	S21	280.4	1.772	1.238	2.0189	
15 minute summer	S21	4.003	S22	279.8	1.370	0.817	4.0925	
15 minute summer	S22	4.004	S25	308.8	1.578	0.905	4.3398	
15 minute summer	S23	6.000	S24	36.4	1.167	0.134	2.4665	
15 minute summer	S24	6.001	S25	105.4	1.965	0.139	0.7428	

**Results for 100 year Critical Storm Duration. Lowest mass balance: 99.95%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m <sup>3</sup> )	Flood (m <sup>3</sup> )	Status
15 minute summer	S25	12	20.116	0.461	429.5	0.6591	0.0000	OK
15 minute summer	S26	12	19.999	1.559	429.0	2.2314	0.0000	SURCHARGED
15 minute summer	S27	12	19.836	1.515	418.5	2.1677	0.0000	SURCHARGED
15 minute summer	S28	10	20.867	0.092	28.9	0.1318	0.0000	OK
15 minute summer	S29	11	20.787	0.237	70.8	0.3386	0.0000	OK
15 minute summer	S30	11	20.747	0.147	32.9	0.2103	0.0000	OK
15 minute summer	S31	11	20.748	0.269	100.6	0.3850	0.0000	OK
15 minute summer	S32	11	20.665	0.232	100.3	0.3315	0.0000	OK
15 minute summer	S33	11	20.538	0.148	127.6	0.2113	0.0000	OK
15 minute summer	S34	12	19.714	1.534	532.3	2.7112	0.0000	SURCHARGED
15 minute summer	S35	12	19.421	1.375	574.0	2.4298	0.0000	SURCHARGED
15 minute summer	S36	12	19.202	1.213	586.5	2.1440	0.0000	SURCHARGED
15 minute summer	S37	10	20.258	0.058	29.5	0.0828	0.0000	OK
15 minute summer	S38	12	18.998	1.058	637.9	1.8701	0.0000	SURCHARGED
15 minute summer	S39	12	18.832	0.908	640.4	1.6041	0.0000	SURCHARGED
15 minute summer	S40	12	18.471	0.654	642.1	1.1552	0.0000	SURCHARGED
15 minute summer	S41	12	18.073	0.323	686.8	0.5713	0.0000	OK
30 minute summer	S42	20	16.596	0.371	710.1	0.6563	0.0000	OK
15 minute summer	S43	10	16.339	0.089	42.2	0.1273	0.0000	OK
1440 minute winter	S44	1050	15.768	0.493	48.6	0.7057	0.0000	OK
15 minute summer	S45	10	19.253	0.153	54.3	0.2192	0.0000	OK
15 minute summer	S46	10	18.889	0.224	80.3	0.2531	0.0000	OK
15 minute summer	S47	11	18.605	0.195	79.1	0.2789	0.0000	OK
15 minute summer	S48	11	18.549	0.234	108.1	0.3344	0.0000	OK
15 minute summer	S49	11	18.470	0.244	137.8	0.3490	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m <sup>3</sup> )	Discharge Vol (m <sup>3</sup> )
15 minute summer	S25	4.005	S26	429.0	2.544	0.790	3.4775	
15 minute summer	S26	1.012	S27	394.5	1.401	0.961	9.3525	
15 minute summer	S27	1.013	S34	423.8	1.505	0.684	4.8981	
15 minute summer	S28	7.000	S29	28.7	0.570	0.095	1.3716	
15 minute summer	S29	7.001	S31	68.8	0.763	0.431	2.6376	
15 minute summer	S30	8.000	S31	31.9	0.647	0.120	1.2796	
15 minute summer	S31	7.002	S32	100.3	1.107	0.629	1.6900	
15 minute summer	S32	7.003	S33	99.9	1.590	0.626	1.1105	
15 minute summer	S33	7.004	S34	127.5	3.136	0.176	0.4195	
15 minute summer	S34	1.014	S35	531.3	1.886	1.295	10.5533	
15 minute summer	S35	1.015	S36	579.3	2.057	1.413	4.4939	
15 minute summer	S36	1.016	S38	588.4	2.089	1.402	3.6869	
15 minute summer	S37	9.000	S38	29.4	2.562	0.033	0.1545	
15 minute summer	S38	1.017	S39	640.4	2.274	1.550	1.2436	
15 minute summer	S39	1.018	S40	642.1	2.280	1.569	8.4647	
15 minute summer	S40	1.019	S41	646.8	2.783	1.573	4.0725	
15 minute summer	S41	1.020	S42	659.7	4.022	0.487	6.5428	
30 minute summer	S42	1.021	S44	726.9	4.439	0.508	3.0460	
15 minute summer	S43	10.000	S44	42.8	1.842	0.086	0.8341	
1440 minute winter	S44	1.022	Basin 3	48.1	1.234	0.045	13.4186	
15 minute summer	S45	11.000	S46	53.7	1.152	0.529	2.4072	
15 minute summer	S46	11.001	S47	79.1	1.503	0.778	0.6586	
15 minute summer	S47	11.002	S48	79.4	1.071	0.267	0.8384	
15 minute summer	S48	11.003	S49	108.6	1.272	0.369	0.9140	
15 minute summer	S49	11.004	S50	138.6	1.484	0.470	2.3232	

**Results for 100 year Critical Storm Duration. Lowest mass balance: 99.95%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m <sup>3</sup> )	Flood (m <sup>3</sup> )	Status
15 minute summer	S50	11	18.289	0.270	144.7	0.3858	0.0000	OK
15 minute summer	S51	11	18.191	0.316	169.4	0.4516	0.0000	OK
15 minute summer	S52	11	18.044	0.314	169.6	0.4491	0.0000	OK
15 minute summer	S53	11	17.684	0.184	214.0	0.2633	0.0000	OK
15 minute summer	S54	11	16.218	0.698	252.3	1.2336	0.0000	SURCHARGED
15 minute summer	S55	11	16.159	0.670	293.8	0.7576	0.0000	SURCHARGED
15 minute summer	S56	11	16.046	0.614	292.0	0.6945	0.0000	SURCHARGED
15 minute summer	S57	10	18.588	0.088	38.7	0.1256	0.0000	OK
15 minute summer	S58	10	16.890	0.090	38.4	0.1283	0.0000	OK
15 minute summer	S59	10	16.298	0.148	60.0	0.2113	0.0000	OK
15 minute summer	S60	10	18.051	0.051	26.6	0.0736	0.0000	OK
15 minute summer	S61	10	16.078	0.128	92.5	0.1834	0.0000	OK
240 minute winter	S62	232	16.033	0.633	74.8	1.1191	0.0000	SURCHARGED
240 minute winter	S63	232	16.033	0.650	73.5	0.7354	0.0000	SURCHARGED
240 minute winter	Basin 2	236	16.033	0.733	97.7	303.7852	0.0000	SURCHARGED
180 minute summer	S64	176	16.038	0.788	58.7	1.3920	0.0000	SURCHARGED
1440 minute winter	S65	1050	15.769	0.612	8.6	0.6920	0.0000	SURCHARGED
1440 minute winter	S66	1050	15.768	0.673	8.2	0.7617	0.0000	SURCHARGED
15 minute summer	S67	10	16.595	0.195	71.7	0.2206	0.0000	OK
15 minute summer	S68	10	16.537	0.239	110.9	0.2705	0.0000	OK
15 minute summer	S69	11	16.430	0.290	109.6	0.3275	0.0000	OK
15 minute summer	S70	10	16.918	0.118	46.8	0.1695	0.0000	OK
15 minute summer	S71	12	16.401	0.351	172.8	0.5026	0.0000	OK
15 minute summer	S72	12	16.385	0.478	188.8	0.6835	0.0000	OK
15 minute summer	S73	12	16.349	0.526	196.8	0.7525	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m <sup>3</sup> )	Discharge Vol (m <sup>3</sup> )
15 minute summer	S50	11.005	S51	145.1	1.330	0.484	1.8199	
15 minute summer	S51	11.006	S52	169.6	1.432	0.699	3.0402	
15 minute summer	S52	11.007	S53	168.2	1.893	0.829	5.1903	
15 minute summer	S53	11.008	S54	212.0	1.892	0.361	6.3864	
15 minute summer	S54	11.009	S55	252.7	1.170	0.894	1.9538	
15 minute summer	S55	11.010	S56	292.0	1.352	1.049	3.7037	
15 minute summer	S56	11.011	S62	291.6	1.350	1.048	2.0828	
15 minute summer	S57	12.000	S58	38.4	2.208	0.183	0.8338	
15 minute summer	S58	12.001	S59	38.0	2.281	0.167	0.2002	
15 minute summer	S59	12.002	S61	59.6	1.451	0.210	1.0656	
15 minute summer	S60	13.000	S61	26.5	1.224	0.028	0.5738	
15 minute summer	S61	12.003	S62	91.5	1.301	0.182	1.9335	
240 minute winter	S62	11.012	S63	73.5	0.902	0.237	0.8933	
240 minute winter	S63	11.013	Basin 2	72.4	1.379	0.237	4.5064	
240 minute winter	Basin 2	11.014	S64	49.7	0.531	0.138	1.9484	
180 minute summer	S64	Hydro-Brake®	S65	10.5				
1440 minute winter	S65	11.016	S66	8.2	0.492	0.072	2.0587	
1440 minute winter	S66	11.017	Basin 3	8.2	0.458	0.056	7.2250	
15 minute summer	S67	14.000	S68	71.0	0.939	0.311	1.5381	
15 minute summer	S68	14.001	S69	109.6	1.369	0.477	1.3099	
15 minute summer	S69	14.002	S71	108.1	0.827	0.425	4.4394	
15 minute summer	S70	15.000	S71	46.3	1.860	0.302	0.7224	
15 minute summer	S71	14.003	S72	167.8	1.223	0.650	3.9277	
15 minute summer	S72	14.004	S73	179.2	0.921	0.489	7.3935	
15 minute summer	S73	14.005	S75	187.7	0.811	0.511	4.3831	

**Results for 100 year Critical Storm Duration. Lowest mass balance: 99.95%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m <sup>3</sup> )	Flood (m <sup>3</sup> )	Status
15 minute summer	S74	10	18.561	0.111	50.9	0.1590	0.0000	OK
15 minute summer	S75	12	16.335	0.559	252.5	0.7996	0.0000	OK
15 minute summer	S76	12	16.287	0.600	320.9	0.8581	0.0000	OK
15 minute summer	S77	10	19.568	0.068	30.6	0.0978	0.0000	OK
15 minute summer	S78	12	16.219	0.591	347.1	0.8462	0.0000	OK
15 minute summer	S89	12	16.110	0.610	361.8	0.8733	0.0000	SURCHARGED
15 minute summer	S79	10	20.288	0.218	132.3	0.3119	0.0000	OK
15 minute summer	S80	10	19.199	0.149	172.8	0.2139	0.0000	OK
15 minute summer	S90	11	15.984	0.634	518.9	0.9071	0.0000	SURCHARGED
1440 minute winter	S86	1050	15.768	0.698	32.5	1.2337	0.0000	OK
15 minute summer	S81	10	15.781	0.081	18.5	0.1165	0.0000	OK
1440 minute winter	S82	1050	15.768	0.178	2.3	0.2550	0.0000	OK
1440 minute winter	S83	1050	15.768	0.303	4.7	0.4339	0.0000	OK
1440 minute winter	S84	1050	15.768	0.418	4.7	0.5985	0.0000	OK
1440 minute winter	S85	1050	15.768	0.468	4.4	0.8273	0.0000	SURCHARGED
1440 minute winter	S88	1050	15.768	0.568	4.2	0.6426	0.0000	SURCHARGED
1440 minute winter	Basin 3	1050	15.768	0.768	90.2	2359.8020	0.0000	SURCHARGED
1440 minute winter	S87	1050	15.768	0.818	37.0	2.8331	0.0000	SURCHARGED
15 minute summer	Outfall	1	15.500	0.580	0.0	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m <sup>3</sup> )	Discharge Vol (m <sup>3</sup> )
15 minute summer	S74	16.000	S75	50.1	2.160	0.279	1.1198	
15 minute summer	S75	14.006	S76	241.5	0.969	0.659	8.6326	
15 minute summer	S76	14.007	S78	301.1	1.221	0.827	5.8821	
15 minute summer	S77	17.000	S78	30.3	2.555	0.110	0.4695	
15 minute summer	S78	14.008	S89	343.6	1.332	0.783	8.7977	
15 minute summer	S89	14.009	S90	367.5	1.353	0.829	10.1342	
15 minute summer	S79	18.000	S80	130.7	2.496	0.799	2.1179	
15 minute summer	S80	18.001	S90	171.8	3.893	0.218	1.6296	
15 minute summer	S90	14.010	S86	512.8	1.899	1.182	8.4311	
1440 minute winter	S86	14.011	Basin 3	31.4	0.611	0.089	36.7112	
15 minute summer	S81	19.000	S82	18.3	0.598	0.074	0.5831	
1440 minute winter	S82	19.001	S83	2.3	0.336	0.011	2.3437	
1440 minute winter	S83	19.002	S84	4.7	0.491	0.024	4.1533	
1440 minute winter	S84	19.003	S85	4.4	0.498	0.023	2.2329	
1440 minute winter	S85	19.004	S88	4.2	0.418	0.018	3.1090	
1440 minute winter	S88	19.005	Basin 3	3.6	0.360	0.024	14.4434	
1440 minute winter	Basin 3	1.023	S87	37.0	0.092	0.067	10.8723	
1440 minute winter	S87	Hydro-Brake®	Outfall	37.0				2027.0

**Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 99.63%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m <sup>3</sup> )	Flood (m <sup>3</sup> )	Status
15 minute summer	S1	10	21.024	0.074	42.7	0.1066	0.0000	OK
15 minute summer	S2	11	20.802	0.902	42.5	1.2903	0.0000	SURCHARGED
15 minute summer	S3	11	20.799	0.999	123.3	1.4291	0.0000	SURCHARGED
15 minute summer	S4	11	20.753	1.103	127.4	1.5782	0.0000	SURCHARGED
15 minute summer	S5	11	20.684	1.134	134.3	1.6225	0.0000	SURCHARGED
15 minute summer	S6	11	20.865	1.115	127.4	1.5951	0.0000	SURCHARGED
15 minute summer	S7	11	20.648	1.198	255.7	1.7137	0.0000	SURCHARGED
15 minute summer	S8	11	20.531	1.251	363.4	1.7905	0.0000	SURCHARGED
15 minute summer	S9	10	20.949	0.149	59.5	0.2126	0.0000	OK
15 minute summer	S10	11	20.688	0.163	58.9	0.2340	0.0000	OK
15 minute summer	S11	11	20.624	0.168	68.0	0.2406	0.0000	OK
1440 minute winter	S12	1410	20.290	0.300	4.4	0.4294	0.0000	OK
1440 minute winter	S13	1410	20.290	1.118	23.9	1.5999	0.0000	SURCHARGED
1440 minute winter	Basin 1	1410	20.290	1.167	26.2	675.1564	0.0000	SURCHARGED
1440 minute winter	S14	1410	20.290	1.230	7.8	1.7602	0.0000	SURCHARGED
15 minute summer	S15	10	21.149	2.198	6.2	2.4864	0.0000	FLOOD RISK
15 minute summer	S16	13	20.928	2.283	301.3	2.5825	0.0000	SURCHARGED
15 minute summer	S17	12	22.483	1.333	109.0	1.5071	0.0000	SURCHARGED
15 minute summer	S18	12	21.902	1.312	146.2	1.8769	0.0000	SURCHARGED
15 minute summer	S19	12	22.422	0.972	108.1	1.3909	0.0000	SURCHARGED
15 minute summer	S20	12	21.791	1.791	371.0	2.5630	0.0000	SURCHARGED
15 minute summer	S21	12	21.519	1.659	345.6	2.3733	0.0000	SURCHARGED
15 minute summer	S22	12	21.352	1.592	382.4	2.2786	0.0000	SURCHARGED
30 minute summer	S23	20	21.493	0.763	53.2	1.0923	0.0000	SURCHARGED
30 minute summer	S24	20	21.284	1.084	143.8	1.5505	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m <sup>3</sup> )	Discharge Vol (m <sup>3</sup> )
15 minute summer	S1	1.000	S2	42.5	1.603	0.061	1.9999	
15 minute summer	S2	1.001	S3	56.0	0.619	0.204	2.1935	
15 minute summer	S3	1.002	S4	112.9	1.108	0.504	4.9260	
15 minute summer	S4	1.003	S5	134.3	1.120	0.607	3.3636	
15 minute summer	S5	1.004	S7	139.3	1.035	0.599	3.0499	
15 minute summer	S6	2.000	S7	120.2	1.707	0.957	0.8288	
15 minute summer	S7	1.005	S8	259.7	1.639	0.602	1.5155	
15 minute summer	S8	1.006	S13	363.7	2.295	1.923	4.9552	
15 minute summer	S9	3.000	S10	58.9	1.212	0.223	2.0033	
15 minute summer	S10	3.001	S11	58.4	1.104	0.205	0.4718	
15 minute summer	S11	3.002	S12	68.7	1.813	0.260	2.6897	
1440 minute winter	S12	3.003	S13	4.4	0.179	0.005	1.3018	
1440 minute winter	S13	1.007	Basin 1	25.7	0.500	0.161	2.3789	
1440 minute winter	Basin 1	1.008	S14	7.8	0.198	0.037	2.3735	
1440 minute winter	S14	Hydro-Brake®	S15	2.0				
15 minute summer	S15	1.010	S16	87.9	0.450	0.263	13.8421	
15 minute summer	S16	1.011	S26	-301.3	-1.411	-0.878	5.5777	
15 minute summer	S17	4.000	S18	95.7	1.359	1.218	5.7385	
15 minute summer	S18	4.001	S20	133.4	0.974	0.396	8.6307	
15 minute summer	S19	5.000	S20	102.1	1.568	0.757	6.2325	
15 minute summer	S20	4.002	S21	345.6	2.182	1.526	2.0872	
15 minute summer	S21	4.003	S22	346.7	1.605	1.013	4.3111	
15 minute summer	S22	4.004	S25	381.4	1.766	1.118	4.5589	
30 minute summer	S23	6.000	S24	87.2	1.255	0.321	11.8845	
30 minute summer	S24	6.001	S25	157.6	1.844	0.208	1.3710	

**Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 99.63%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m <sup>3</sup> )	Flood (m <sup>3</sup> )	Status
30 minute summer	S25	20	21.220	1.565	523.2	2.2390	0.0000	SURCHARGED
15 minute summer	S26	13	20.958	2.518	464.3	3.6038	0.0000	SURCHARGED
15 minute summer	S27	13	20.781	2.460	485.7	3.5207	0.0000	SURCHARGED
15 minute summer	S28	10	20.886	0.111	41.9	0.1587	0.0000	OK
15 minute summer	S29	11	20.863	0.313	102.8	0.4475	0.0000	OK
15 minute summer	S30	11	20.821	0.221	47.8	0.3166	0.0000	OK
15 minute summer	S31	11	20.820	0.341	146.2	0.4874	0.0000	OK
15 minute summer	S32	12	20.729	0.296	145.6	0.4233	0.0000	OK
15 minute summer	S33	13	20.645	0.255	186.1	0.3648	0.0000	OK
15 minute summer	S34	12	20.632	2.452	660.6	4.3330	0.0000	SURCHARGED
15 minute summer	S35	12	20.176	2.130	717.6	3.7634	0.0000	SURCHARGED
15 minute summer	S36	12	19.840	1.851	728.6	3.2710	0.0000	SURCHARGED
15 minute summer	S37	10	20.270	0.070	42.7	0.1001	0.0000	OK
15 minute summer	S38	12	19.526	1.586	798.8	2.8022	0.0000	SURCHARGED
15 minute summer	S39	12	19.262	1.338	798.1	2.3647	0.0000	SURCHARGED
15 minute summer	S40	12	18.655	0.838	797.8	1.4807	0.0000	SURCHARGED
15 minute summer	S41	12	18.127	0.376	855.1	0.6653	0.0000	OK
15 minute summer	S42	11	16.685	0.460	941.4	0.8137	0.0000	OK
15 minute summer	S43	10	16.355	0.105	61.2	0.1500	0.0000	OK
1440 minute summer	S44	1080	16.039	0.764	103.1	1.0930	0.0000	SURCHARGED
15 minute summer	S45	10	19.294	0.194	78.8	0.2779	0.0000	OK
15 minute summer	S46	10	19.030	0.365	116.5	0.4129	0.0000	SURCHARGED
15 minute summer	S47	11	18.668	0.258	114.4	0.3690	0.0000	OK
15 minute summer	S48	11	18.625	0.310	157.0	0.4433	0.0000	OK
15 minute summer	S49	11	18.551	0.325	199.8	0.4651	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m <sup>3</sup> )	Discharge Vol (m <sup>3</sup> )
30 minute summer	S25	4.005	S26	518.7	2.488	0.955	3.6043	
15 minute summer	S26	1.012	S27	466.6	1.657	1.136	9.3525	
15 minute summer	S27	1.013	S34	494.1	1.754	0.797	4.8981	
15 minute summer	S28	7.000	S29	41.6	0.609	0.137	1.8830	
15 minute summer	S29	7.001	S31	99.8	0.827	0.625	3.5436	
15 minute summer	S30	8.000	S31	46.6	0.711	0.175	1.8353	
15 minute summer	S31	7.002	S32	145.6	1.238	0.913	2.1884	
15 minute summer	S32	7.003	S33	146.1	1.804	0.915	1.7679	
15 minute summer	S33	7.004	S34	185.8	3.357	0.256	1.2929	
15 minute summer	S34	1.014	S35	670.8	2.382	1.635	10.5533	
15 minute summer	S35	1.015	S36	721.9	2.563	1.761	4.4939	
15 minute summer	S36	1.016	S38	731.9	2.598	1.743	3.6869	
15 minute summer	S37	9.000	S38	42.5	2.842	0.047	1.0060	
15 minute summer	S38	1.017	S39	798.1	2.834	1.932	1.2436	
15 minute summer	S39	1.018	S40	797.8	2.833	1.949	8.4647	
15 minute summer	S40	1.019	S41	797.0	3.081	1.939	4.3648	
15 minute summer	S41	1.020	S42	856.1	4.155	0.631	8.2211	
15 minute summer	S42	1.021	S44	943.1	4.483	0.659	3.9933	
15 minute summer	S43	10.000	S44	60.9	1.891	0.122	1.6341	
1440 minute summer	S44	1.022	Basin 3	102.0	1.447	0.094	15.8096	
15 minute summer	S45	11.000	S46	77.9	1.226	0.768	3.0865	
15 minute summer	S46	11.001	S47	114.4	1.632	1.126	0.8472	
15 minute summer	S47	11.002	S48	114.9	1.125	0.387	1.1838	
15 minute summer	S48	11.003	S49	157.3	1.320	0.534	1.2785	
15 minute summer	S49	11.004	S50	200.2	1.530	0.679	3.3746	

**Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 99.63%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m <sup>3</sup> )	Flood (m <sup>3</sup> )	Status
15 minute summer	S50	11	18.419	0.400	209.1	0.5717	0.0000	OK
15 minute summer	S51	11	18.330	0.455	241.3	0.6511	0.0000	SURCHARGED
15 minute summer	S52	11	18.145	0.415	240.6	0.5939	0.0000	OK
15 minute summer	S53	12	17.745	0.245	303.1	0.3511	0.0000	OK
15 minute summer	S54	12	16.650	1.130	355.3	1.9961	0.0000	SURCHARGED
15 minute summer	S55	12	16.536	1.047	411.5	1.1846	0.0000	SURCHARGED
360 minute winter	S56	432	16.460	1.028	60.6	1.1631	0.0000	SURCHARGED
15 minute summer	S57	10	18.607	0.107	56.2	0.1529	0.0000	OK
15 minute summer	S58	10	16.911	0.111	55.8	0.1589	0.0000	OK
360 minute winter	S59	352	16.389	0.239	12.4	0.3420	0.0000	OK
15 minute summer	S60	10	18.061	0.061	38.6	0.0878	0.0000	OK
360 minute winter	S61	352	16.389	0.439	19.2	0.6282	0.0000	OK
240 minute winter	S62	272	16.451	1.051	109.4	1.8574	0.0000	SURCHARGED
360 minute summer	S63	448	16.583	1.200	121.3	1.3573	0.0000	SURCHARGED
360 minute winter	Basin 2	352	16.389	1.089	85.6	498.3468	0.0000	SURCHARGED
360 minute summer	S64	328	16.392	1.142	51.1	2.0183	0.0000	SURCHARGED
1440 minute summer	S65	1080	16.040	0.883	10.4	0.9986	0.0000	SURCHARGED
1440 minute summer	S66	1110	16.039	0.944	10.4	1.0680	0.0000	SURCHARGED
15 minute summer	S67	12	17.534	1.134	103.9	1.2828	0.0000	SURCHARGED
15 minute summer	S68	12	17.514	1.216	159.6	1.3755	0.0000	FLOOD RISK
15 minute summer	S69	12	17.471	1.331	167.1	1.5055	0.0000	SURCHARGED
15 minute summer	S70	11	17.602	0.802	67.9	1.1479	0.0000	SURCHARGED
15 minute summer	S71	12	17.443	1.393	223.5	1.9935	0.0000	SURCHARGED
15 minute summer	S72	12	17.368	1.461	251.0	2.0905	0.0000	SURCHARGED
15 minute summer	S73	12	17.303	1.480	278.3	2.1174	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m <sup>3</sup> )	Discharge Vol (m <sup>3</sup> )
15 minute summer	S50	11.005	S51	206.1	1.357	0.687	2.5658	
15 minute summer	S51	11.006	S52	240.6	1.534	0.992	3.9961	
15 minute summer	S52	11.007	S53	238.6	2.012	1.176	6.9849	
15 minute summer	S53	11.008	S54	298.3	2.139	0.509	7.1842	
15 minute summer	S54	11.009	S55	350.0	1.621	1.238	1.9538	
15 minute summer	S55	11.010	S56	409.6	1.896	1.471	3.7037	
360 minute winter	S56	11.011	S62	60.4	0.624	0.217	2.0828	
15 minute summer	S57	12.000	S58	55.8	2.417	0.266	1.1067	
15 minute summer	S58	12.001	S59	55.2	2.502	0.243	0.2655	
360 minute winter	S59	12.002	S61	15.5	0.934	0.055	3.1435	
15 minute summer	S60	13.000	S61	38.5	1.324	0.041	1.1236	
360 minute winter	S61	12.003	S62	39.4	1.033	0.078	3.1231	
240 minute winter	S62	11.012	S63	108.6	0.897	0.350	0.8933	
360 minute summer	S63	11.013	Basin 2	121.0	1.391	0.397	4.5064	
360 minute winter	Basin 2	11.014	S64	50.0	0.578	0.139	1.9484	
360 minute summer	S64	Hydro-Brake®	S65	10.5				
1440 minute summer	S65	11.016	S66	10.4	0.511	0.090	2.0587	
1440 minute summer	S66	11.017	Basin 3	10.3	0.499	0.071	7.2250	
15 minute summer	S67	14.000	S68	101.8	0.986	0.446	3.2186	
15 minute summer	S68	14.001	S69	144.2	1.434	0.628	2.5928	
15 minute summer	S69	14.002	S71	152.3	0.854	0.598	6.9811	
15 minute summer	S70	15.000	S71	66.2	1.851	0.432	1.9468	
15 minute summer	S71	14.003	S72	225.8	1.245	0.874	5.1230	
15 minute summer	S72	14.004	S73	257.2	0.914	0.702	8.2912	
15 minute summer	S73	14.005	S75	282.0	1.001	0.768	4.6142	

**Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 99.63%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m <sup>3</sup> )	Flood (m <sup>3</sup> )	Status
15 minute summer	S74	10	18.587	0.137	73.8	0.1967	0.0000	OK
15 minute summer	S75	12	17.247	1.471	362.9	2.1049	0.0000	SURCHARGED
15 minute summer	S76	12	17.115	1.428	461.2	2.0439	0.0000	SURCHARGED
15 minute summer	S77	10	19.583	0.083	44.4	0.1186	0.0000	OK
15 minute summer	S78	12	16.953	1.325	520.8	1.8963	0.0000	SURCHARGED
15 minute summer	S89	12	16.687	1.187	550.8	1.6992	0.0000	SURCHARGED
15 minute summer	S79	10	20.833	0.763	191.8	1.0924	0.0000	SURCHARGED
15 minute summer	S80	10	19.234	0.184	249.7	0.2638	0.0000	OK
15 minute summer	S90	12	16.358	1.008	768.0	1.4417	0.0000	SURCHARGED
1440 minute summer	S86	1110	16.039	0.969	68.4	1.7119	0.0000	SURCHARGED
1440 minute summer	S81	1110	16.039	0.339	1.9	0.4848	0.0000	OK
1440 minute summer	S82	1110	16.039	0.449	5.0	0.6422	0.0000	OK
1440 minute summer	S83	1110	16.039	0.574	9.8	0.8211	0.0000	SURCHARGED
1440 minute summer	S84	1110	16.039	0.689	9.1	0.9857	0.0000	SURCHARGED
1440 minute summer	S85	1110	16.039	0.739	8.7	1.3054	0.0000	SURCHARGED
1440 minute summer	S88	1110	16.039	0.839	8.5	0.9487	0.0000	SURCHARGED
1440 minute summer	Basin 3	1110	16.039	1.039	187.7	3294.9600	0.0000	SURCHARGED
1440 minute summer	S87	1110	16.038	1.088	38.7	3.7703	0.0000	SURCHARGED
15 minute summer	Outfall	1	15.500	0.580	0.0	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m <sup>3</sup> )	Discharge Vol (m <sup>3</sup> )
15 minute summer	S74	16.000	S75	72.8	2.377	0.406	1.4781	
15 minute summer	S75	14.006	S76	366.1	1.300	0.999	8.7658	
15 minute summer	S76	14.007	S78	464.5	1.649	1.276	5.8930	
15 minute summer	S77	17.000	S78	44.0	2.835	0.160	0.6147	
15 minute summer	S78	14.008	S89	524.4	1.862	1.194	8.8106	
15 minute summer	S89	14.009	S90	554.2	1.968	1.250	10.1342	
15 minute summer	S79	18.000	S80	188.5	2.677	1.153	2.8198	
15 minute summer	S80	18.001	S90	248.1	4.275	0.315	2.1459	
15 minute summer	S90	14.010	S86	769.9	2.734	1.775	8.9895	
1440 minute summer	S86	14.011	Basin 3	67.4	0.727	0.192	37.2663	
1440 minute summer	S81	19.000	S82	1.9	0.292	0.008	2.6446	
1440 minute summer	S82	19.001	S83	4.5	0.376	0.020	4.3159	
1440 minute summer	S83	19.002	S84	9.1	0.518	0.047	4.9260	
1440 minute summer	S84	19.003	S85	8.7	0.476	0.046	2.2678	
1440 minute summer	S85	19.004	S88	8.5	0.379	0.037	3.1090	
1440 minute summer	S88	19.005	Basin 3	8.4	0.462	0.056	14.4434	
1440 minute summer	Basin 3	1.023	S87	38.7	0.095	0.070	10.8723	
1440 minute summer	S87	Hydro-Brake®	Outfall	38.7				3595.0