



## **TECHNICAL APPENDIX 3.1: DRAINAGE STRATEGY**



# Drainage Strategy

Netherton Hub Phase 1

Scottish and Southern Electricity Networks (SSEN)

Prepared by:

**SLR Consulting Limited**

5th Floor, 35 Dale Street, Manchester, M1 2HF

SLR Project No.: 405.065170.00001

Client Reference No: LT000052

10 April 2024

Revision: 00

## Revision Record

Revision	Date	Prepared By	Checked By	Authorised By
00	10 April 2024	Eloise Moir-Mattox	Dan Eddon	Cameron Paul

## Basis of Report

This document has been prepared by SLR Consulting Limited (SLR) with reasonable skill, care and diligence, and taking account of the timescales and resources devoted to it by agreement with Scottish and Southern Electricity Networks (SSEN) (the Client) as part or all of the services it has been appointed by the Client to carry out. It is subject to the terms and conditions of that appointment.

SLR shall not be liable for the use of or reliance on any information, advice, recommendations and opinions in this document for any purpose by any person other than the Client. Reliance may be granted to a third party only in the event that SLR and the third party have executed a reliance agreement or collateral warranty.

Information reported herein may be based on the interpretation of public domain data collected by SLR, and/or information supplied by the Client and/or its other advisors and associates. These data have been accepted in good faith as being accurate and valid.

The copyright and intellectual property in all drawings, reports, specifications, bills of quantities, calculations and other information set out in this report remain vested in SLR unless the terms of appointment state otherwise.

This document may contain information of a specialised and/or highly technical nature and the Client is advised to seek clarification on any elements which may be unclear to it.

Information, advice, recommendations and opinions in this document should only be relied upon in the context of the whole document and any documents referenced explicitly herein and should then only be used within the context of the appointment.



## Table of Contents

<b>1.0 Introduction</b> .....	<b>1</b>
1.1 Project Background .....	1
1.2 Site Location .....	1
1.3 Proposed Development.....	1
1.4 Purpose of this Report.....	1
<b>2.0 Existing Site Details</b> .....	<b>3</b>
2.1 History and Current Use .....	3
2.2 Existing Watercourses and Other Waterbodies .....	3
2.3 Existing Utilities .....	4
2.4 Topography .....	4
2.5 Geology.....	5
<b>3.0 Surface Water Strategy</b> .....	<b>6</b>
3.1 Pre-development Runoff.....	6
3.2 Post-development Runoff .....	7
3.3 Post-development Attenuation Volume.....	7
3.4 Sustainable Drainage Systems (SuDS) .....	10
3.5 Drainage Hierarchy .....	12
3.6 Treatment/Water Quality .....	13
3.7 Proposed Surface Water Drainage.....	16
3.8 Maintenance.....	19
<b>4.0 Foul Water Strategy</b> .....	<b>22</b>
<b>5.0 Conclusion</b> .....	<b>23</b>

## Appendices

<b>Appendix A</b>	<b>Proposed Development Plan (LT000052-SLR-CIV-LAY-019-01)</b>
<b>Appendix B</b>	<b>Admore Point Utility Survey (AP2555/GPR/01)</b>
<b>Appendix C</b>	<b>Proposed Site Drainage General Arrangement</b>
<b>Appendix D</b>	<b>Causeway Flow Drainage Model Reports</b>



## Acronyms and Abbreviations

DS	Drainage Strategy
SSEN	Scottish and Southern Electricity Networks
DCSS	Direct Current Sub-Station
HVDC	High Voltage Direct Current
AC	Alternating Current
SEPA	Scottish Environment Protection Agency
NPF4	National Planning Framework 4



## 1.0 Introduction

SLR Consulting Limited (SLR) have been appointed by Scottish and Southern Electricity Networks ('SSEN') to provide a Drainage Strategy (DS), to support an outline planning application for the Netherton Hub Phase 1 hereafter known as the 'Site', on land at Flushing, Netherton, Aberdeenshire.

### 1.1 Project Background

The proposal is for the site to become a new Direct Current Sub-Station (DCSS), High Voltage Direct Current (HVDC) Converter Station and Alternating Current (AC) Sub-Station as part of the SSEN Netherton Hub allocation.

A Flood Risk Assessment has previously been undertaken for the site by Stantec (LT0000520STA-CIV-RPT-001, Jan 2024).

### 1.2 Site Location

The Site is located near the village of Flushing, adjacent to the A950 Longside Road, approximately 5.3km west of Peterhead. The Site is centred on an approximate Easting and Northing of 405439, 845891 and the nearest postcode is AB42 4TR.

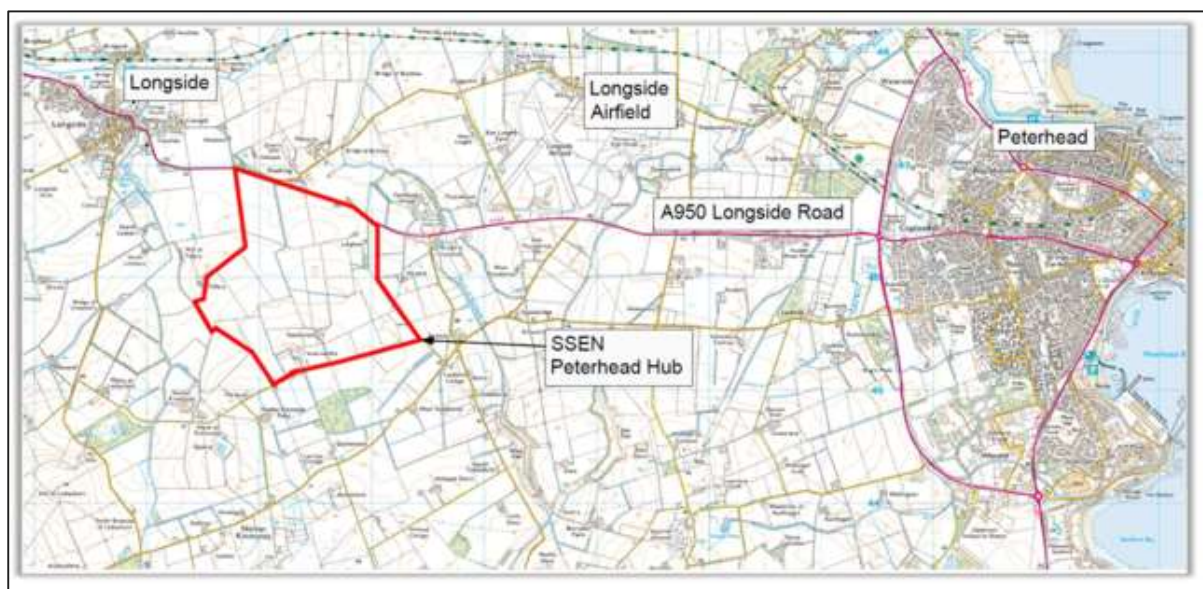


Figure 1 – Netherton Interconnector Hub Site Location Plan

### 1.3 Proposed Development

The proposed development plan (LT000052-SLR-CIV-LAY-019-01) shows the development to comprise 4 No. substation units of varying sizes constructed on development platforms at finished formation levels of between 44m AOD and 51m AOD. The scheme will include SUDS and landscape bunds, as well as general access infrastructure and other smaller ancillary structural units.

The Proposed Development Plan is enclosed within *Appendix A*.

### 1.4 Purpose of this Report

This assessment is to be undertaken in accordance with the standing advice and requirements of the Scottish Environment Protection Agency (SEPA) and the National Planning Framework 4 (NPF4).



Where the proposed works to which this report refers are materially changed following the issue of the report, SLR shall reserve the right to re-validate the findings and conclusions by undertaking appropriate further investigations at no cost to SLR.

The assessment will:

- Consider the impact the development may have elsewhere with regards to flooding,
- Consider design proposals to mitigate any potential risk of flooding determined to be present,
- Consider detailed drainage proposals to mitigate flood risk from the site;

The following documents, provided by the Client, have been reviewed;

- Drainage Strategy Report (December 2023) – LT000052-STA-CIV-RPT-001
- Flood Risk Assessment (July 2023) - LT000052-STA-CIV-RPT-002
- Drainage (Surface Water) plan “331201430-STN-18-XX-LAY-OD-003”
- Drainage (Foul) plan “331201430-STN-18-XX-LAY-OD-002”
- Envirocheck Reports, April 2023
- Mott Macdonald (Converter Platform) Outline Drainage Strategy, August 2023 – 103995-MMD-STND-XX-TN-C-0006-Rev 1
- SSEN Drainage Specification – SP-NET-CIV-502, July 2020
- Ardmore Point Utility Location Survey (September 2023) – AP2555/GPR/01

The following policy documents and government web publications have been consulted;

- Water Assessment and Drainage Assessment Guide by the Sustainable Urban Drainage Scottish Working party (SUDSWP)
- National Planning Framework 4 (NPF4)
- Aberdeenshire Local Development Plan
- SEPA Technical Flood Risk Guidance for Stakeholders
- SEPA Online Flood Maps
- Local Flood Risk Management Plan 2022
- CIRIA SuDS Design Manual, C753, 2015



## 2.0 Existing Site Details

### 2.1 History and Current Use

The Site encompasses 222 hectares of land, and is located west of Peterhead, to the southern edge of Flushing, Aberdeenshire, Scotland. The Site is centred on an approximate Easting and Northing of 405439, 845891 and the nearest postcode is AB42 4TR.

The Site is predominantly undeveloped greenfield land used for agriculture. Aberdeenshire Council classifies the Site as private farmland.

The northern site boundary sits adjacent the A950 Longside Road, while the rest of the site is bounded by other private agricultural properties.

Historic Map data from 1899, obtained as part of Envirocheck Landmark Report, April 2023 shows the site has predominantly remained undeveloped, with a small parcel of land along the southern boundary being developed into agricultural stores.



Figure 2 – Aerial Photograph (© Google 2024)

### 2.2 Existing Watercourses and Other Waterbodies

The following waterbodies have been identified within the Site and the surrounding area:

- An existing ditch, that runs from the centre of the Site to the northern boundary, has been identified by SEPA as a watercourse. This crosses the A950 via a 900mm sewer to a drain, which ultimately discharges to the Burn of Faichfield,
- The Burn of Faichfield, runs west to east adjacent, the northern most boundary. The burn is approximately 360m north of the main site area; and,
- The Burn of Ludquharn runs south to north, adjacent the western most boundary. The burn is approximately 500m west of the main site area.





## 2.3 Existing Utilities

A utility search was conducted by Atkins on behalf of the client in January 2023. The search identified the following infrastructure within the site;

- A SSEN Overhead electricity line runs through the south area of the site to the existing buildings.
- A National Grid Gas Transmission National-High Pressure main runs through the north area of the site, crossing the north and northwest site boundary line.
- Two BT overhead cables supply the farm buildings to the south of the site.

The SSEN and BT overhead electricity lines will be removed as part of the works. The gas main will be maintained with an easement.

No public foul, surface or combined sewers were identified within the site.

## 2.4 Topography

A Utility and Topographical Survey was conducted by Admore Point in September 2023, and is enclosed within *Appendix B*.

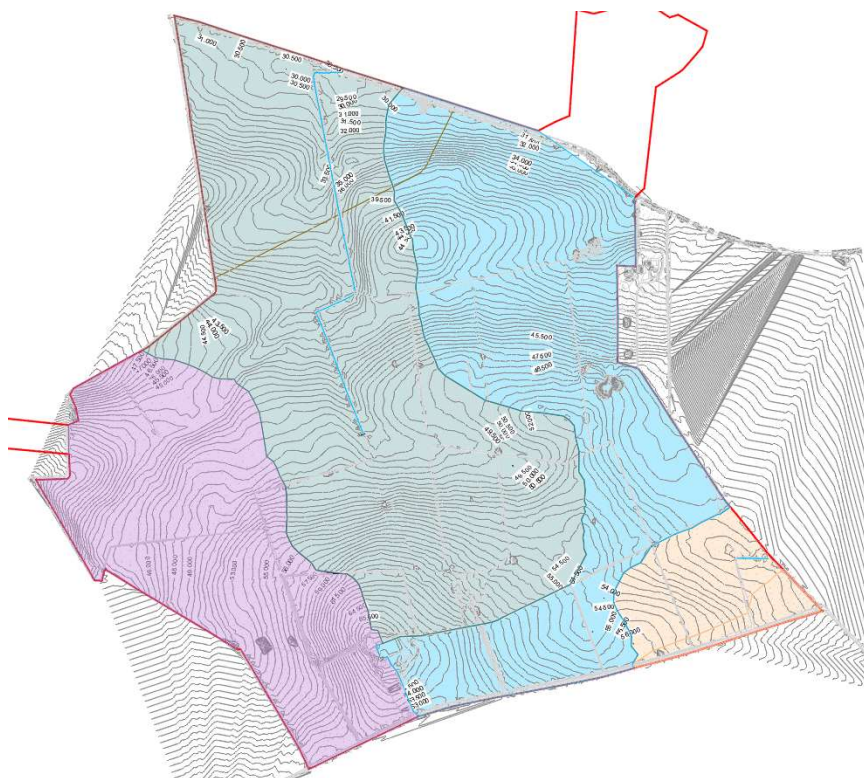
The survey indicates the site topography generally falls towards the north of the site. From a levels perspective the site has two distinct areas. The western area to the south of site decreases down slope with a gradient towards the Burn of Ludquharn. The elevation change in this part of the site is from approximately 65.5m AOD at the top of the hill in the southwest corner of the site, to 35.0m AOD at a central point of the west boundary.

The central and eastern areas of the site grade from the hill in the southwest corner, at approximately 65.5m AOD, to the north boundary with levels varying between 30.5m and 31.5m AOD across the site boundary.

There is a small area in the southeastern corner of the site that does not follow the general site convention. This area grades easterly from a localised high point near the southern boundary, approximately central, at 56.0m AOD, to the southeast corner with an approximate level 48.5mAOD.

The existing contours and estimated existing watersheds are shown below within Figure 3.





**Figure 3 – Topographical Survey with demarcation of assumed existing watersheds**

The site is bound to the North by the A950, to the south by an unnamed local road and by fields to the eastern and western boundaries. There are several existing properties/buildings within the site boundary which are to be demolished as part of the works.

## 2.5 Geology

The British Geological Survey (BGS) information available online has identified the following geological succession underlying the site:

- Superficial Deposits – Banchory Tilly (Gravelly and sandy Diamicton)
- Bedrock – Forest of Deer Pluton (Melagranite, Biotite), Crinan Subgroup and Tayyalich Subgroup (Undifferentiated – Sempelite, Pelite and Psammite)

The geological strata underlying the site has been discussed in detail in the SLR Earthworks Strategy Report.



### 3.0 Surface Water Strategy

#### 3.1 Pre-development Runoff

The site is predominantly undeveloped field land and as such is classified as ‘greenfield’. Rainfall will currently infiltrate into the ground where geological and hydrogeological conditions allow, and then runoff once the infiltration capacity of the ground has been exceeded. The runoff will then flow across the Site, directed by the existing terrain, and discharge out of site.

Based on topographic survey levels the Site currently discharges in four main directions. These existing watersheds are detailed below in Table 1 and within Figure 4.

Watershed	Area (Hectares)	Discharge Summary
A	64.646	Runoff will flow across the north boundary and will ultimately discharge to the Burn of Faichfield.
B	89.955	Overland flows, collected by an existing ditch running through the site, discharge via a 900mm diameter sewer crossing the A950. This ultimately discharges to the Burn of Faichfield.
C	46.645	Runoff is directed across the west boundary to a tributary ditch of the Burn of Ludquharn.
D	12.044	Runoff is directed across the southeast site boundary. Based on currently available level information it is believed these flows would ultimately discharge to the Burn of Faichfield at a point east of the Site

Table 1: Existing Watershed Summary

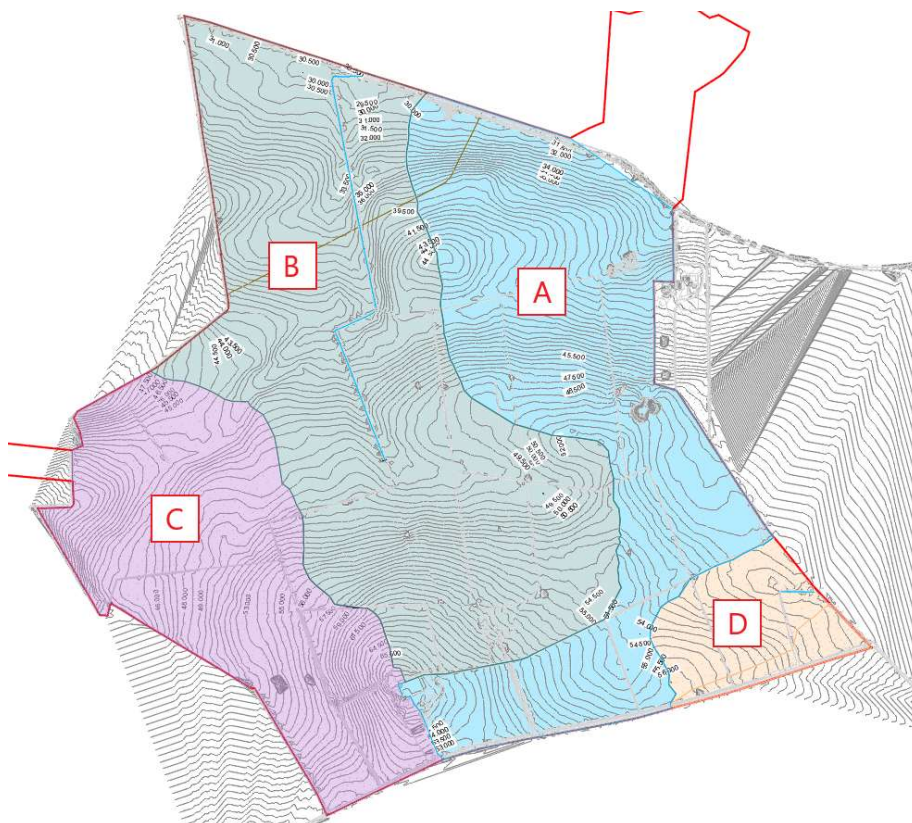


Figure 4 –Existing Watersheds



The existing QBar rate has been calculated, using FEH point data within Causeway Flow modelling software, for each watershed and is detailed in Table 2 below.

Watershed	Area (Hectares)	Qbar (L/s)
A	64.646	242.3
B	89.955	320.9
C	46.78	181.6
D	12.044	46.9
Developed Site Area	213.29	669

**Table 2: Qbar Summary**

### 3.2 Post-development Runoff

In accordance with the NPF4, local guidance, consultation with relevant stakeholders and based on the Greenfield designation, as stated in the existing site description, the proposed site discharge rate will be restricted to the 'Greenfield' Qbar rates.

Discharge rates are subject to discussion and approval by SEPA.

The SEPA "Climate change allowances for flood risk assessment in land use planning- Version 4" publication has been reviewed, which advises the Site is within the 'North-East Scotland' River Basin Region. As the catchment is less than 30km<sup>2</sup>, the 'Peak Rainfall Intensity' allowance should be used, which for this region is 37% (Table 2: Peak rainfall intensity allowances by River Basin Region).

The publication advises that for developments that are likely to be 'particularly vulnerable to climate change', additional sensitivity testing should be carried out. For the region, an increased climate change allowance of 55% would be advised.

Although the development is 'vulnerable' from a planning designation perspective, it is not considered to be 'particularly vulnerable to climate change' as there are no tidal waterbodies within the vicinity.

### 3.3 Post-development Attenuation Volume

In restricting the flows from the development to greenfield rates, there will be a requirement to provide attenuation to accommodate flows for the required storm periods.

The SSEN Drainage Specification (SP-NET-CIV-502), with reference to the ENA Technical Report 138, identifies that the levels of flood protections for the site, as a minimum shall include,

- 1 in 200-year rain-fall return period protection for 'operational' areas
- 1 in 1000-year rain-fall return period protection for 'critical equipment'
- 1 in 200-year rain-fall return period protection for off-site flooding.

Then SSEN Specification does not identify the requirement for the 1 in 30-year event, however it is a planning requirement and considered robust to design for no flooding in the 1 in 30-year event.

Based on this, the development will be designed to provide attenuation to accommodate flows for up to the 1 in 200-year event with a climate change allowance of 37%.

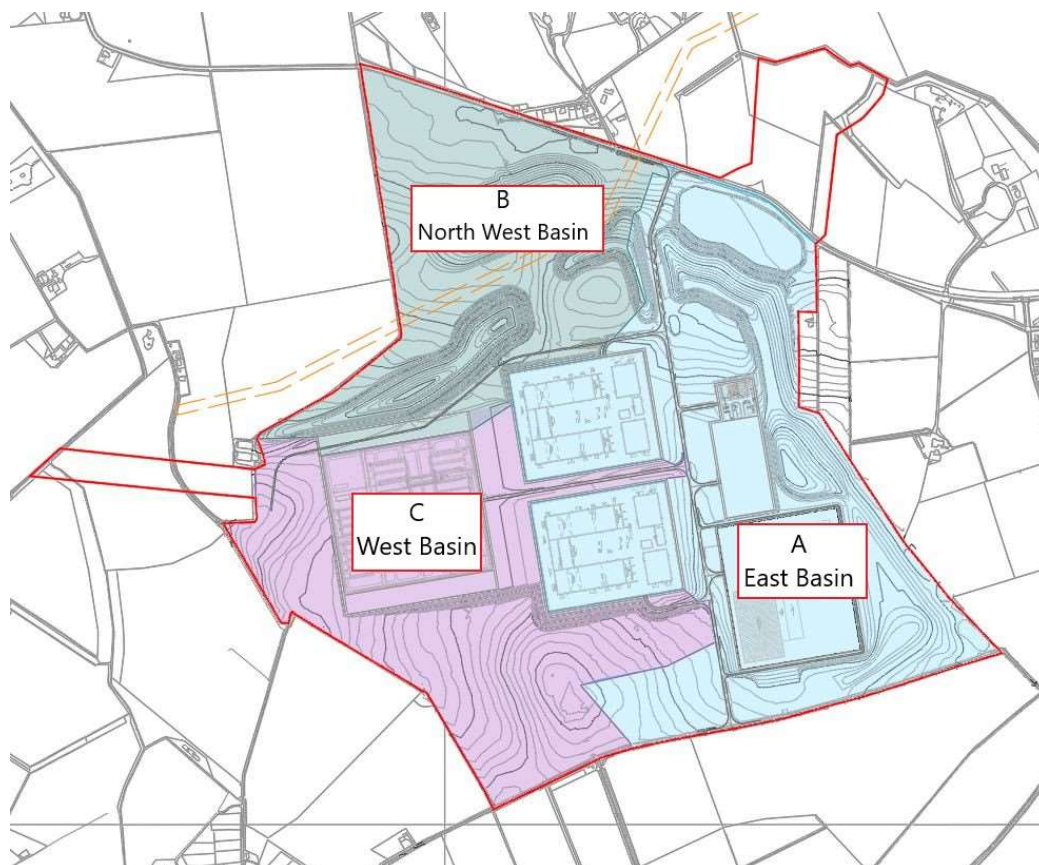
The 1 in 1000-year return period will be also be simulated and reviewed to ensure no flooding occurs to areas containing critical equipment.



The required volume of attenuation for each catchment has been calculated using Causeway Flow, based on areas measured from the proposed development plan. A summary of the required attenuation and assumed variables are detailed in Table 4 and within Figure 5 below.

Watershed	Basin ID	Proposed Catchment Area	Equivalent Impermeable Area (Ha)	Qbar (L/s)	Required Attenuation Volume (m <sup>3</sup> )
A	East Basin	96.358	65.462	242.3	89,500
B	North West Basin	53.178	25.394	320.9	27,500
C	West Basin	63.752	38.239	181.6	39,500
D	The runoff from Watershed D will be collected and combined with runoff from Watershed A and attenuated within the East Basin				

**Table 3: Attenuation Volumes Summary**



**Figure 5 –Proposed Catchments**

The ‘Equivalent Impermeable Area’ values have been determined based on applying a runoff percentage to each of the land types within the proposed catchments. The runoff percentages for each land type are as follows.

- 100% - Roads and platforms

Although the platforms are proposed to be constructed from permeable aggregate, it was advised by the Operations Manager for the development that these areas should be considered impermeable.



- 47% - Landscape areas

HR Wallingford advises a 'Soil Percentage Runoff (SPR)' value of 47% for this area. SPR is 'assumed to be the proportion of rainfall that contributes to surface water runoff and is based on analysis of data from flood events and adjusted for rainfall and catchment properties'.

It is considered a conservative approach to use SPR values as it does not account for absorption of runoff by proposed vegetation. The landscape proposals have not been developed at this stage so the SPR value will be applied. Once the proposed vegetation plan is known, the runoff assumption will be revised, which will impact the required attenuation volume.

Any phasing proposed for the development may require temporary or staged flow restriction and attenuation.

The SEPA online Flood Maps identify that there is an area within the 'North West' catchment (Existing Watershed B) that is at high risk of pluvial flooding, meaning this area has a 10% chance of flooding each year. Figure 5 below shows the extent of high risk flooding in relation to the site extents.

The flooding area occurs along the north boundary of the Site and the A590 highway, and based on the topographic survey the area is a low point which coincides with an existing discharge point off site, the existing 900mm diameter pipe.

The drainage strategy proposes to significantly reduce the catchment size upstream of the potential flooding zone from 90.18Ha (Table 2) to 53.29Ha (Table 3) as well as provide an attenuation feature to formally contain flows for the 1 in 200-year plus climate change event.

This should not only significantly reduce pluvial flooding to the existing area but will ease the demand on the Burn of Faichfield downstream that is currently shown to have fluvial flooding.

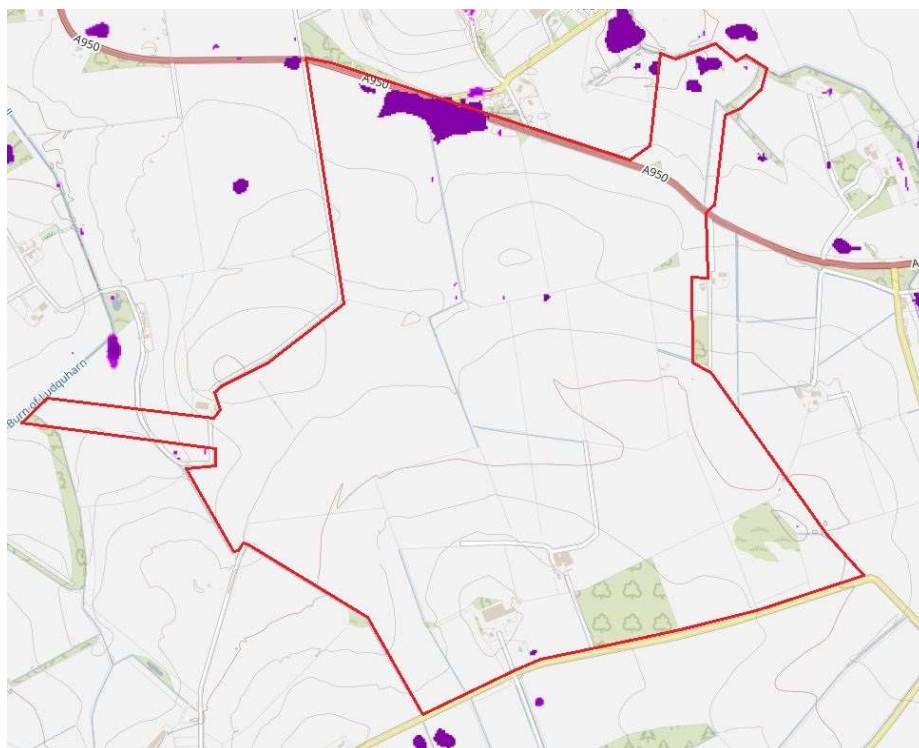


Figure 5 –SEPA Pluvial Flood Map (2024)



## 3.4 Sustainable Drainage Systems (SuDS)

Recent changes to guidance and opinion within the industry have led to greater focus on Sustainable Drainage Systems (SuDS) and long-term sustainable development. In addition, the industry is well versed to controlling the volume of runoff via managed outfalls, the use of SuDS systems creates an environment where the quality of the water is also managed and improved.

CIRIA C753 – the SuDS Manual has set out objectives to minimise the impacts from the development on the quantity and quality of the runoff. The guidance refers to the SuDS Management Train.

### 3.4.1.1 The SuDS Management Train

The 'Management Train Approach' should be central to the surface water drainage strategy of a proposed site. The main objective is treatment and control of runoff as near to source as possible, thus protecting downstream habitats and further enhancing the amenity value of the site. This concept uses a hierarchy of drainage techniques to incrementally reduce pollution, flow rates and volumes of storm water discharge from the site, and is as follows:

- i. **Prevention** – The use of good site design and housekeeping measures to prevent runoff and pollution and includes rainwater reuse.
- ii. **Source Control** – Control of runoff at source or as close to source as possible (e.g., cellular storage, petrol interceptors, flow attenuation devices).
- iii. **Site Control** – Management of water in a local area and can include below ground storage/attenuation, detention basins, tanks, oversized pipes.
- iv. **Regional Control** – Management of water from a site or various sites and can include wetlands and balancing ponds.

The drainage techniques for this development will seek to include, where possible, prevention, source control and site control measures.

### 3.4.1.2 The SuDS Design Philosophy

The SuDS philosophy for a development site is the promotion of Prevention, Source Control and Site Control Techniques.

The following design philosophy is proposed:

- Surface water treatment using the 'Management Train' approach to remove and isolate contamination at all SuDS facilities prior to conveyance to the proposed end of site attenuation feature.
- Surface water discharge to be attenuated to greenfield runoff rate (defined as  $Q_{bar}$ ).
- Prevention measures, for example the inclusion of water butts.
- Site Control features, in the form of above-ground attenuation storage, to accommodate the additional surface water runoff generated by the development site.
- Provision of suitable treatment features in line with Pollution Prevention Guidance 3 criteria (where applicable).

Varied SuDS methods are summarised in the table below to assess and establish which are most feasible for the proposed post development site.



**Table 4: SuDS Feasibility Assessment**

SuDS Method	Feasibility, Given Site and Project
Green & Blue Roofs	Green roofs are areas of living vegetation, installed on the top of buildings, for a range of reasons including visual benefit, ecological value, enhanced building performance and the reduction of surface water runoff. A Blue roof is a roof design that is explicitly intended to store water. These features provide source control and assist in pollution prevention, however they do require comparatively more maintenance than other SUDS while providing less storage capacity per square meter. Green & Blue roofs could be incorporated on buildings where roof pitch and available space allows, at the detailed design stage. For now, the strategy focuses on using other SUDS features, such as basins and swales.
Basins and Ponds – Above Ground Storage	Basins and ponds increase biodiversity and amenity of the area; provide attenuation; and improve water quality. This method does occupy large areas of developable land and needs to be constructed at the lower levels of the site. Detention basins will be incorporated within the landscape areas to attenuate runoff from surrounding areas and for exceedance flows.
Swales	Swales are shallow, flat bottomed, vegetated open channels designed to convey and treat surface water runoff. When incorporated into the site design they can be used to enhance the natural landscape and provide aesthetic and biodiversity benefits. Swales are proposed throughout the Site to capture, convey, and attenuate runoff from the highways and landscape areas and for exceedance flows. Standard swales are proposed where grades allow and under-drained swales with filter systems are proposed where the site levels are flat.
Filter Strips	Filter strips are uniformly graded and gently sloping strips of grass or other dense vegetation that are designed to treat runoff from adjacent impermeable area by promoting sedimentation, filtration and infiltration (where acceptable). At low to moderate velocities, filter strips effectively reduce particulate pollutant levels. Without infiltration, filter strips require an underground, perforated pipe network. In order to minimise the amount of buried systems, swales have been proposed adjacent highways to keep runoff flowing overland. Where levels dictate, the swale systems will be under-drained and a filter strip system will be incorporated beneath.
Bioretention Systems (Incl. Raingardens)	Bioretention systems (including rain gardens) are shallow landscaped depressions that can reduce runoff rates and volumes and treat pollution through the use of engineered soils and vegetation. They are generally used for managing and treating runoff from frequent rainfall events. Where larger events are directed to the system, consideration of the impact of design velocities on the system will be required. It is often more appropriate to pass runoff from extreme events directly to drainage components further downstream. As the development is being designed for extreme events and due to the high maintenance requirements, it is not considered feasible to incorporate these systems.
Permeable Paving	Permeable paving is a form of pavement construction that allows road runoff to infiltrate through the surface layer to underlying treatment and storage media. They are an efficient means of managing and treating surface water runoff close to its source. Permeable paving is most commonly proposed within parking areas, and it is recommended that it





SuDS Method	Feasibility, Given Site and Project
	is incorporated when developing the drainage design for Operations Building carpark at the detailed design stage.
Infiltration Devices	Soakaway testing was conducted on site but was not able to be completed due to poor infiltration rates. As such infiltration devices will not be feasible.
Tanked/Geocellular Attenuation Systems	Tanked/geocellular attenuation systems provide high storage capacity and can be incorporated within road pavements and under landscaping. However, they do not provide runoff treatment or improve amenity and biodiversity so other forms of SUDS should be used where possible.

### 3.5 Drainage Hierarchy

Current guidance (CIRA SuDS Manual) recommends the use of the Drainage Hierarchy when developing a surface water strategy for any site. The purpose of the Drainage hierarchy is to ensure consideration is firstly given to sustainable methods of discharge of surface water runoff by sustainable methods such as infiltration with promotes the ‘at source’ methodology set out in the SuDS Management Train principals.

“Generally the aim should be to discharge surface runoff as high up the following hierarchy of drainage options as reasonably practicable:

- 1 into the ground (infiltration)
- 2 to a surface water body,
- 3 to a surface water sewer, highway drain, or another drainage system,
- 4 to a combined water sewer”

As part of this drainage strategy each management method is assessed for suitability.

Table 5 summarises the options for the surface water disposal:

**Table 5: Surface Water Disposal**

Surface Water Disposal	Potential	Description
Infiltration	X	As part of the Site ground investigation, soakaway testing was conducted. Tests must be carried out in accordance with BRE 365 and the test were not able to be completed. Water within the test holes did not drain within the given timeframe and infiltration rates were not able to be determined. Infiltration as a discharge method is therefore deemed unfeasible for this site.
Water body	✓	The site currently discharges to two waterbodies, the Burn of Ludquharn and the Burn of Faichfield. Discharge or change of discharge condition is subject to approval by SEPA
Public Surface Water Sewer	X	A utility search was conducted by Atkins on behalf of the client in January 2023. The search identified that there were no public surface water sewers within the vicinity of the site
Public Combined Water Sewer	X	The Atkins utility search identified that there were no public combined sewers within the vicinity of the site

Based on the information provided above the preferred method of surface water disposal is to a waterbody, subject to approval by SEPA, and will be the basis of the Proposed Surface Water Drainage Strategy.



### 3.6 Treatment/Water Quality

Treatment of surface runoff that discharges to the water environment is a SEPA requirement in accordance with Regulatory Method (WAT-RM-08) for the regulation of urban drainage.

As discussed above, there has been a recent push to improve the quality of water discharge. The CIRIA SuDS Manual C753 (2015) provides a simple framework named the 'SuDS Indices Method' to provide guidance on the level and method of treatment recommended for different scenarios. This approach can be categorised into three key steps:

- Allocate suitable pollution hazard indices for the proposed land use (Figure 5),
- Select SuDS with a total pollution mitigation index (Figure 6) that equals or exceeds the pollution hazard index,
- Where the discharge is to protected surface waters or groundwater, consider the need for a more precautionary approach.

Where the mitigation index of an individual component is insufficient, two components (or more) in series will be required, where:

$$\text{Total SuDS mitigation index} = \text{mitigation index}_1 + 0.5 (\text{mitigation index}_2)$$

A factor of 0.5 is used to account for the reduced performance of secondary or tertiary components associated with already reduced inflow concentrations.



<b>TABLE 26.2 Pollution hazard indices for different land use classifications</b>				
<b>Land use</b>	<b>Pollution hazard level</b>	<b>Total suspended solids (TSS)</b>	<b>Metals</b>	<b>Hydro-carbons</b>
Residential roofs	Very low	0.2	0.2	0.05
Other roofs (typically commercial/ industrial roofs)	Low	0.3	0.2 (up to 0.8 where there is potential for metals to leach from the roof)	0.05
Individual property driveways, residential car parks, low traffic roads (eg cul de sacs, homezones and general access roads) and non-residential car parking with infrequent change (eg schools, offices) ie < 300 traffic movements/day	Low	0.5	0.4	0.4
Commercial yard and delivery areas, non-residential car parking with frequent change (eg hospitals, retail), all roads except low traffic roads and trunk roads/motorways <sup>1</sup>	Medium	0.7	0.6	0.7
Sites with heavy pollution (eg haulage yards, lorry parks, highly frequented lorry approaches to industrial estates, waste sites), sites where chemicals and fuels (other than domestic fuel oil) are to be delivered, handled, stored, used or manufactured; industrial sites; trunk roads and motorways <sup>1</sup>	High	0.8 <sup>2</sup>	0.8 <sup>2</sup>	0.9 <sup>2</sup>

**Notes**

- 1 Motorways and trunk roads should follow the guidance and risk assessment process set out in Highways Agency (2009).
- 2 These should only be used if considered appropriate as part of a detailed risk assessment – required for all these land use types (Table 4.3). When dealing with high hazard sites, the environmental regulator should first be consulted for pre-permitting advice. This will help determine the most appropriate approach to the development of a design solution.

**Figure 5: Pollution Hazard Indices for land use classification (Table 26.2 the CIRIA SuDS Manual 2015)**



TABLE 26.3 Indicative SuDS mitigation indices for discharges to surface waters			
Type of SuDS component	Mitigation indices <sup>1</sup>		
	TSS	Metals	Hydrocarbons
Filter strip	0.4	0.4	0.5
Filter drain	0.4 <sup>2</sup>	0.4	0.4
Swale	0.5	0.6	0.6
Bioretention system	0.8	0.8	0.8
Permeable pavement	0.7	0.6	0.7
Detention basin	0.5	0.5	0.6
Pond <sup>4</sup>	0.7 <sup>3</sup>	0.7	0.5
Wetland	0.8 <sup>3</sup>	0.8	0.8
Proprietary treatment systems <sup>5,6</sup>	These must demonstrate that they can address each of the contaminant types to acceptable levels for frequent events up to approximately the 1 in 1 year return period event, for inflow concentrations relevant to the contributing drainage area.		

**Notes**

- 1 SuDS components only deliver these indices if they follow design guidance with respect to hydraulics and treatment set out in the relevant technical component chapters.
- 2 Filter drains can remove coarse sediments, but their use for this purpose will have significant implications with respect to maintenance requirements, and this should be taken into account in the design and Maintenance Plan.
- 3 Ponds and wetlands can remove coarse sediments, but their use for this purpose will have significant implications with respect to the maintenance requirements and amenity value of the system. Sediment should normally be removed upstream, unless they are specifically designed to retain sediment in a separate part of the component, where it cannot easily migrate to the main body of water.
- 4 Where a wetland is not specifically designed to provide significantly enhanced treatment, it should be considered as having the same mitigation indices as a pond.
- 5 See Chapter 14 for approaches to demonstrate product performance. A British Water/Environment Agency assessment code of practice is currently under development that will allow manufacturers to complete an agreed test protocol for systems intended to treat contaminated surface water runoff. Full details can be found at: <http://tinyurl.com/qf7yuj7>
- 6 SEPA only considers proprietary treatment systems as appropriate in exceptional circumstances where other types of SuDS component are not practicable. Proprietary treatment systems may also be considered appropriate for existing sites that are causing pollution where there is a requirement to retrofit treatment. SEPA (2014) also provides a flowchart with a summary of checks on suitability of a proprietary system.

**Figure 6: Indicative SuDS Mitigation indices (Table 26.3 the CIRIA SuDS Manual 2015)**

The Simple Index Approach (SIA) Tool (MS Excel) can be used to determine the effectiveness of the proposed SuDS in providing suitable mitigation indices to exceed that of the pollution hazard index. Table 6 shows how the proposed SuDS satisfy the requirements.

**Table 6: Simple Index Approach Summary**

Land Use	Pollution Index			Mitigation Index			Suitability	
	TSS	Metals	Hydrocarbons	Prop. SuDS	TSS	Metals		Hydro.
Non-residential parking with infrequent changes	0.5	0.4	0.4	Permeable Paving	0.7	0.6	0.7	Sufficient
Other roofs (Typically commercial/industrial roofs)	0.5	0.4	0.4	Swale	0.5	0.6	0.6	Sufficient
Commercial yard and delivery areas, non-residential car parking with frequent change (eg. Hospitals, retail) all roads except low traffic roads and trunk roads/motorways	0.7	0.6	0.7	Swale + Detention Basin	0.5 + 0.5(0.5) = 0.75	0.6 + 0.5(0.5) = 0.85	0.6 + 0.5(0.6) = 0.9	Sufficient



The SSEN Drainage specification advises additional measures for pollution control specific to the substation platforms.

- An interceptor will be required downstream of the oil sump required on the platform,
- Swales and basins receiving discharge from an oily water mitigation system need to be lined to prevent infiltration,
- Swales need to be visible from the platform in order to monitor pollution,
- Sampling points need to be incorporated downstream of the swale or basin prior to discharge entering the water environment.

The above criteria will need to be considered, in conjunction with the proposed levels strategy and platform designs within the detailed design stage.

It is recommended that shutdown valves be included in the basin design in order to prevent contaminated runoff leaving site in the event of a pollution incident. This will be included in detailed design.

### 3.7 Proposed Surface Water Drainage

The proposed Drainage Strategy General Arrangement Plan is enclosed within *Appendix C*.

The development shall be designed in accordance with current best practice to provide adequate capacity to not allow flooding out of the network for the critical 1 in 30-year storm event and flood water generated for up to the critical 1 in 200-year plus climate change storm event shall be constrained within the areas on site so as not to cause damage to buildings, essential services, adjoining developments and services.

Runoff from highways and landscaped area will be collected and conveyed by a series of swales. Where flat levels dictate, sections of the swale network will need to be under-drained in order to convey flows at a self-cleansing velocity.

The platforms will be drained by a separate system, designed by others, and runoff will be conveyed to a single point where it will discharge to the site wide drainage system. Due to the deep level constraint imposed by the platform infrastructure, the runoff will need to be conveyed across site in a below ground pipe network. North of the platform development area, the topography allows for the 'East' below ground network to arise and combine with the overland swale network.

Runoff from each catchment is conveyed to a final detention basin for attenuation prior to a flow restriction device. Due to its efficiency in reducing upstream storage requirements, a proprietary vortex flow device is recommended. A 'Hydro-Brake' (Hydro International) is currently used for modelling purposes.

Alternative flow restriction devices, such as V-notch weirs, will be investigated at detailed design stage and a comparison of required storage volumes will be presented.

Following restriction, runoff from the 'East' and 'West' catchments will be conveyed across land to their respective discharge points into the Burns of Faichfield and Ludquharn. Restricted runoff from the 'North West' catchment will discharge to the existing 900dia road crossing south of the A590, as per existing conditions.

The SSEN Drainage Specification (SP-NET-CIV-502) advises that the system shall be designed such that 'operational' areas are protected, and off-site flooding does not occur for the 1 in 200-year rain-fall return period.



The current drainage models shows that;

- no flooding occurs for the 1 in 30-year return period
- no flooding occurs off-site occurs for the 1 in 200-year return period
- no flooding occurs to the operation areas for the 1 in 200-year return period.

The 'East' network experiences a volume of flooding (circa 600 cubic meters) in an area south of the 400KV AC Substation platform. This is due to the steep change in elevation in the swale adjacent the entry of the access road, meeting a long flat section. The change point is vulnerable to overtopping due to a build-up of head and its level relative to the surrounding area. This flood volume will overtop the swale in extreme events and spill out over the landscape area to the south where it is constrained by the proposed topography. It is deemed that the area south of the swale and between the red line boundary has sufficient space to enable the above flood volume to be spread over an acceptable area and depth. Allowing for a suitably controlled flooding area in the most extreme events. Additional capacity could be provided in the form of basins or depressions to mitigate the flooding in this area.

The 'North West' network experiences a volume of flooding (circa 300 cubic meters) in the middle of the catchment, south of northern bund where the existing ditch is diverted to the east. The quick change in direction to navigate around the proposed bund creates a point vulnerable to overtopping from high velocities experienced during extreme return periods. The flood volume will overtop the existing ditch and will be conveyed by the proposed terrain to a downstream swale or the detention basin. The point of flooding and its overland flood path does not affect any proposed development area, platforms or highways.

The drainage design has currently been based on point loading high level catchments into the network which demonstrates a 'worse case' scenario. At detailed design stage the catchments and network will be further developed to improve efficiencies and in principle, reduce the burden on the downstream network and alleviate flooding where possible.

### 3.7.1 Proposed SuDS/Attenuation Features

Based on consultation with the client and foreseen maintenance issues, there is a preference for each catchment to be attenuated within a single feature.

Due to the required proposed site levels and large volumes generated by overland subcatchments, a single feature is not feasible for the 'East' and 'West' networks. Relatively small intermediate detention basins are proposed at key points in the network to slow and attenuate runoff and contain flooding that would otherwise occur at low points and points of restriction. This practice reduces velocities and the diameters of the downstream pipe network.

The final attenuation feature for each catchment is a large detention basin.

Detention basins are landscaped depressions that are normally dry except during and immediately following storm events. Detention basins can be vegetated depressions that can provide treatment when designed to manage regular flows. Where the basin is vegetated, the soil surface can absorb some runoff, so can be used to support the prevention of runoff from the site for small rainfall events. The principal water quality benefits of vegetated detention basins are associated with the removal of sediment and buoyant materials, but levels of nutrients, heavy metals, toxic materials and oxygen-demanding materials may also be significantly reduced. (CIRIA 2015).

Each basin is designed to be a maximum 2.6m deep, with 1 in 3 side slopes in line with CIRIA guidance. The basins have been sized such that the water level does not exceed 2m for the 1 in 200-year + 37% climate change event and a 600mm freeboard is allowed. Due to groundwater level issues on the site, it is proposed that the basins are lined to prevent ingress.



Due to the size of the 'East' basins and required relatively flat invert level grade (1 in 500), it is recommended that low flow channels be incorporated at detailed design to ensure flows are conveyed to the outfall during low rainfall events.

The current strategy for the 'West' network shows a large final detention basin adjacent the west site boundary. Due to the level difference between the DC Switching Station platform and the site boundary, a terraced feature is proposed. This not only allows more runoff to be attenuated across a steep grade but provides additional treatment as runoff will flow through a series of features. The design of this will be coordinated with the earthworks design during the detailed design stage. Additional intermediate basins or swale widening can also be proposed upstream in order to reduce the volume required at the discharge point.

Building roof runoff forms a significant portion of the runoff produced on the Converter Station platforms. Consideration should be given to the inclusion of a rainwater harvesting systems at detailed design stage in order to provide additional attenuation and to increase the time of entry into the downstream network.

### **3.7.2 Exceedance**

The surface water drainage network has been designed to accommodate runoff for up to the 1 in 200-year plus climate change event, within the site boundary.

In the event of rare extreme rainfall events, the capacities of the sewers, waterbodies and other drainage systems may become exceeded.

An overland flow analysis should be undertaken at the detailed design state using finished site levels to determine where overland flows will be routed in extreme flood events. This analysis should conclude that proposed buildings are not at risk of flooding.

### **3.7.3 Proposed Outfalls**

The current drainage strategy is based on the feasibility of discharging to three locations, the existing 900mm diameter pipe crossing the A590; the Burn of Faichfield at a point north of the Site; and the Burn of Ludquharn at a point west of the Site.

The 'North West' network is proposed to discharge to the existing 900mm diameter pipe crossing the A590. An asset survey (Nov 2002) was provided by Aberdeenshire Council which showed a 900mm diameter pipe crossing the A590 highway. The survey indicates the crossing is 1000mm deep but does not specify whether this depth is to the soffit or invert of the 900mm pipe. As it is unlikely the crossing was constructed with 100mm cover, it is assumed that the invert of the pipe is 1.9m deep. Based on topographic levels for the area, the IL would be approximately 27.99m AOD. Prior to detailed design the existing crossing will need to be surveyed to accurately determine the location; invert; diameter; and grade of the crossing.

The 'East' network is proposed to discharge to the Burn of Faichfield at a point north of the Site. Level information for the connection point is currently unknown. Based on SEPA flood map information a connection level of 24.0m AOD has been proposed. This level will need to be confirmed prior to detailed design.

SEPA flood maps for the area indicate that the point of connection proposed for the 'East' network is subject to fluvial flooding. Initial investigation of the flood maps indicates a flood level of approximately 25.5m AOD and as such, the network model has been designed with



a fully surcharged outfall. Due to the Site being significantly higher than the proposed Burn connection point, there will be sufficient head generated within the development to ensure continued discharge from the site during all storm events.

It is recommended that further hydrological investigations are undertaken for the wider area to accurately determine the anticipated flood level of the Burn of Faichfield for the 1 in 200-year rainfall event, prior to detailed design.

The 'West' network is proposed to discharge to the Burn of Ludquharn at a point west of the Site. Based on level information from Google Earth, the connection point to the Burn of Ludquharn is approximately 10m lower than the Site development area. This assumption has been used for modelling purposes but levels will need to be confirmed prior to detailed design.

### 3.7.4 Approvals

Approval will need to be sought from SEPA for the following items;

- Discharge rate and location to the Burn of Faichfield and Burn of Ludquharn
- Discharge of treated foul runoff to the Burn of Ludquharn
- Attenuation Strategy including Detention basin design
- Diversion and or realignment of the existing ditch within the 'North West' catchment

It is recommended that consultation be undertaken with SEPA at the earliest opportunity to ascertain an agreement in principle in order to avoid delays to the design schedule.

## 3.8 Maintenance

A full SUDS maintenance plan should be produced as part of the detailed drainage design and the precise requirements would depend on manufacture specification of the final design.

The maintenance of the drainage network will be the responsibility of SSEN.

An outline of the typical maintenance requirements of each proposed SUDS feature is provided below.

### 3.8.1 Detention Basins, Swales and Vortex Flow Control Devices

The anticipated maintenance and management for the detention basin and vortex flow control (VFC) associated with the basin is outlined in Table 7.

**Table 7: Typical Detention Basin, Swale and VFC Maintenance Requirements**

Maintenance Schedule	Required Actions	Minimum Frequency
Regular Maintenance	Remove litter and debris removal	Monthly
	Cut grass in and around basin	Half yearly (Spring – before nesting, and autumn)
	Manage other vegetation and remove nuisance plants	Monthly (or as required)
	Inspect inlets, outlets and overflows for blockages, and clear if required.	Monthly





Maintenance Schedule	Required Actions	Minimum Frequency
	Inspect banksides, liner, structures, pipework etc. for evidence of physical damage.	Monthly
	Inspect inlets and facility surface for silt accumulation. Establish appropriate silt removal frequencies.	Monthly (for first year), then annually or as required
	Check any penstocks and other mechanical devices.	Annually
	Tidy all dead growth before start of growing season.	Annually
	Remove sediment from inlet, outlets and forebay.	Annually (or as required)
	Manage wetland plants in outlet pool – where provided.	Annually
	Removing sedimentation that has become entrained into the outflow	Six monthly or as required
	Ensure there are no leakage issues associated with the VFC	Six monthly or as required
	Check VFC for sedimentation, or other blockages and flow bypassing	Six monthly
Occasional Maintenance	Re-seed areas of poor vegetation growth.	As required
	Prune and trim any trees and remove cuttings.	Every 2 years or as required
	Remove sediment from inlets, outlets, forebay and main basin when required.	Every 5 years or as required
	Periodic measuring of the bore size	Every 3 years or as required
Remedial Actions	Repair erosion or other damage by reseeding or re-turfing.	As required
	Realignment of rock armour	As required
	Repair/rehabilitation of inlets, outlets and overflows.	As required
	Relevel uneven surfaces and reinstate design levels.	As required

A Vortex Flow Control device is a proprietary product and therefore information regarding operations and maintenance shall be provided within the manufacturer’s specification and included in the hand over documentation.

### 3.8.2 Pipes and Chambers.

Access points have been located at the head of each run, at a change in direction, at change of pipe size, and at regular intervals as per relevant guidance.

The appropriate health and safety equipment must be used when accessing chambers. Confined space certificates must be held by any personnel entering a chamber and appropriate permits should be obtained from the maintenance manager prior to any access. Double locked and sealed chambers must be sealed and locked correctly post maintenance operation.



The anticipated maintenance and management for pipes and chambers are outlined in Table 8.

**Table 8: Typical Pipes and Chambers Maintenance Requirements**

Maintenance Schedule	Required Actions	Minimum Frequency
Monitoring (To be undertaken more regularly within the first year of operation and adjusted as required)	Initial inspection should be provided as post construction CCTV survey	As required and after large rainfall events
Regular Maintenance	Inspection for evidence of poor operation via water level in chambers. If required, take remedial action.	3 monthly and 48 hours after large rainfall events.
	Check and remove large vegetation growth near pipe runs	Monthly or as required
Remedial Actions	Rod through poorly performing runs as initial remediation	As required
	If continued poor performance jet and CCTV survey poorly performing runs.	As required
	Seek advice as to remediation techniques suitable for the type of performance issue and location	As required if above does not improve performance.

Pipes are proprietary products, and the materials can vary across the site and as such where used the manufacturer’s recommendations should be followed.



## 4.0 Foul Water Strategy

The current strategy proposes that domestic flows, from offices and welfare facilities, will be conveyed across site via a below ground pipe network to a package treatment plant, located close to the western side of the Red Line Boundary. The treated runoff will then combine with the surface water network and discharge to the Burn of Ludquharn.

The proposed rate will be determined at the detailed design phase once personnel numbers are confirmed and the package treatment plant will be designed by a specialist consultant.

All discharge is subject to approval by SEPA and it is recommended that consultation be held prior to detailed design to ascertain approval in principle.

The proposed drainage strategy plan is enclosed within *Appendix C*.



## 5.0 Conclusion

SLR have been appointed by SSEN to provide a Drainage Strategy, to support an outline planning application for the Netherton Hub Phase 1 development, on land at Flushing, Netherton, Aberdeenshire.

The Site is located near the village of Flushing, adjacent to the A950 Longside Road, and the nearest postcode is AB42 4TR.

Three waterbodies were identified within the site and surrounding area, including an existing unnamed ditch, the Burn of Faichfield and the Burn of Ludquharn. No public foul, surface or combined water sewers were identified within the site.

The Site is classified as greenfield and as such proposed discharge will be restricted to the Qbar rates calculated using FEH point data within Causeway Flow, based on the existing watersheds. The proposed discharge method is to the existing water bodies, identified above. The discharge locations and rates are subject to approval by SEPA.

The development has been designed in accordance with current best practice to provide adequate capacity to not allow flooding out of the network for the 1 in 30-year storm event and flood water generated for up to the critical 1 in 200-year plus 37% climate change storm event shall be constrained within the areas on site so as not to cause damage to buildings, essential services, adjoining developments and services.

Surface water runoff from highways and landscaped area will be collected and conveyed by a series of swales. This will combine with runoff from the platform below ground networks and be attenuate within detention basins prior to discharge.

The current drainage strategy is based on the feasibility of discharging to three locations, the existing 900mm diameter pipe crossing the A590; the Burn of Faichfield at a point north of the Site; and the Burn of Ludquharn at a point west of the Site. Prior to detailed design the location and level of each discharge point will need to be confirmed.

Further hydrological investigations could be undertaken for the wider area in order to confirm flood levels of the Burn of Faichfield, for now publicly available SEPA information has been used for modelling purposes.

Domestic foul flows will be conveyed across site in a below ground pipe network to a package treatment plant before combining with surface water flows to discharge to the Burn of Ludquharn. The treatment plant is to be designed by others and is subject to approval by SEPA.

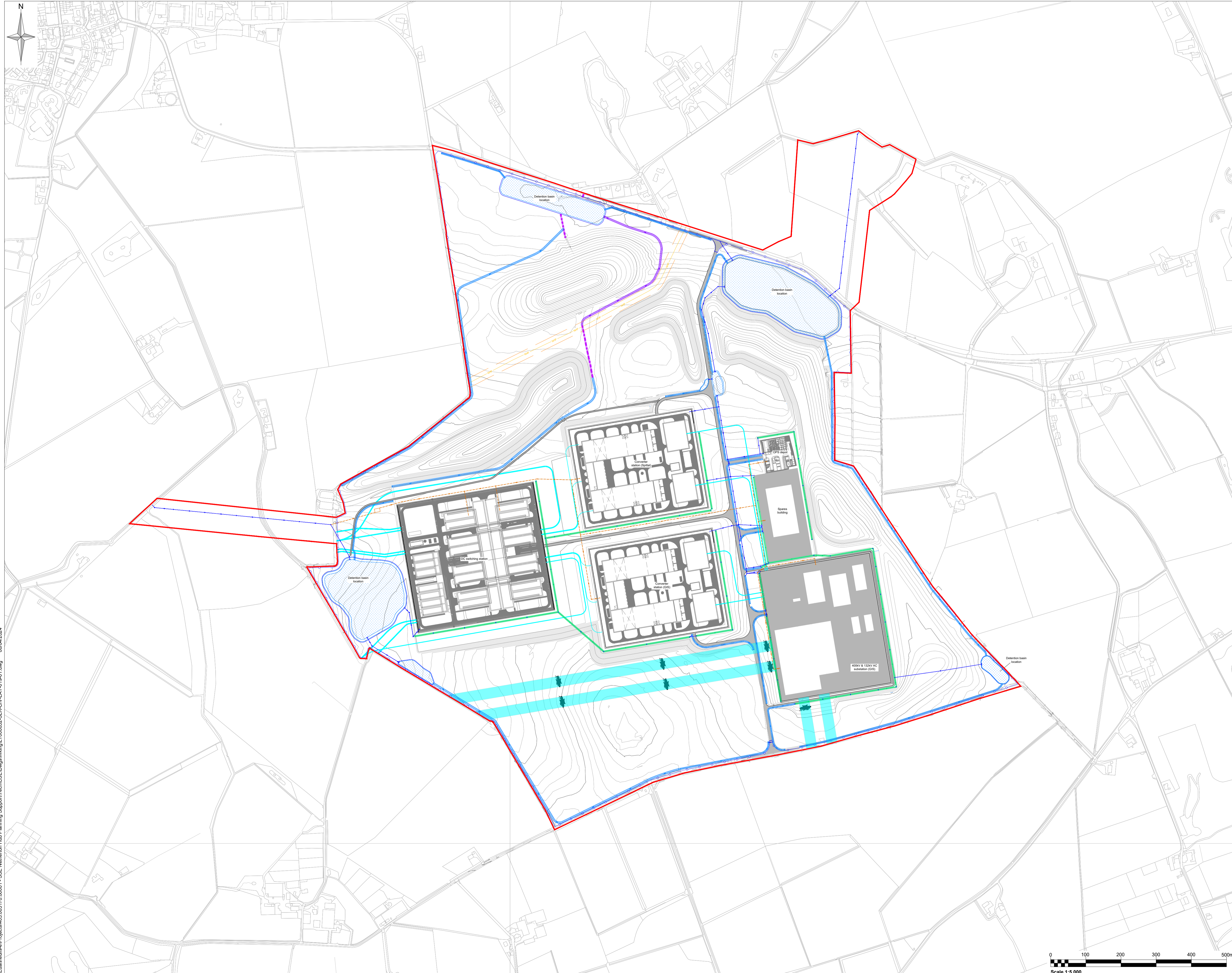
It is recommended that consultation be undertaken with SEPA early on during the detailed design stage to obtain their approval for the proposed developments, drainage strategy and final discharge methods.





# Appendix A Proposed Development Layout

LT000052-SLR-CIV-LAY-019-01



**Notes:**

**Legend:**

- Site boundary
- Proposed post and wire fence
- Proposed access gate
- Indicative proposed cable route
- Indicative proposed 400kv overhead cable
- Proposed access track
- Proposed vehicle queue layby
- Gas pipeline
- Contours 5m
- Contours 1m
- Surface water drainage
- Surface water swale
- Surface water swale under drain
- Foul drainage
- Existing watercourse
- Existing watercourse ditch realignment

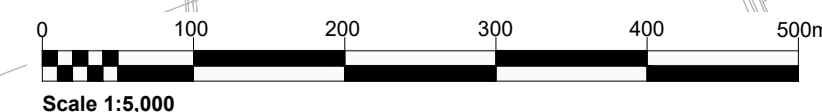
00	Initial Issue	02/04/24	LB	CP
Rev	Amendments	Date	By	Chk Auth



Project  
SSEN Netherton Hub

Drawing Title  
Overall Site Plan - Permanent Works

Scale 1:5,000 @ A1		SLR Project No. 405.065170.00001	
Designed LB	Drawn LB	Checked CP	Authorised
Date 02/04/2024	Date 02/04/2024	Date 02/04/2024	Date
Drawing Number LT000052-SLR-CIV-LAY-019-01	Sheet No. 1 of 1	Rev. 00	



I:\Ea\Projects\405.065170.00001 - SSEN Netherton Hub Planning Support\Tech\CSE\Drawings\Wkg\LT000052-SLR-CIV-LAY-019-01.dwg 08/04/2024



# Appendix B Utility Survey

Admore Point Utility Location Survey

AP2555/GPR/01

10 April 2024



**LEGEND**

	B.T. Cable
	Communications Cable
	Cable Television Cable
	Combined Water Drainage
	Electricity Cable
	Fibre Optics Cable
	Foul Water Drainage
	Ground Penetrating Radar
	Gas Pipe
	Mains Water Pipe
	Surface Water Drainage
	Unknown Service
	Fuel and Venting

I	End of Trace	AL	Aluminium
ED	Empty Ducting	BR	Brick (Culvert)
ECR	End of Records	CI	Cast Iron
NPV	No Pipes Visible	CO	Concrete
SE	Survey Extents	DI	Ductile Iron
TFR	Taken From Records	PVC	Plastic
UTL	Unable to Locate	SI	Spun Iron
UTT	Unable to Trace	ST	Steel
UTR	Unable to Raise	VC	Vertified Clay
UTS	Unable to Survey		

Flow Direction

GPR and Underground Utility Location Surveys are intrinsically surface based and therefore the collection and analysis of information is limited by the substrate present. Every endeavour has been made to remove covers when required allowing for identification and measurements of the services therein. The size and nature of services cannot be guaranteed. The location and/or identification of a service will not necessarily indicate whether it is live or dead.

Errors on the survey drawing may occur in relation to positions and depths in excess of 20% of the stated value. There may be services present that could not be located due to the limitations in the equipment used or site related factors which were not evident at the time of survey.

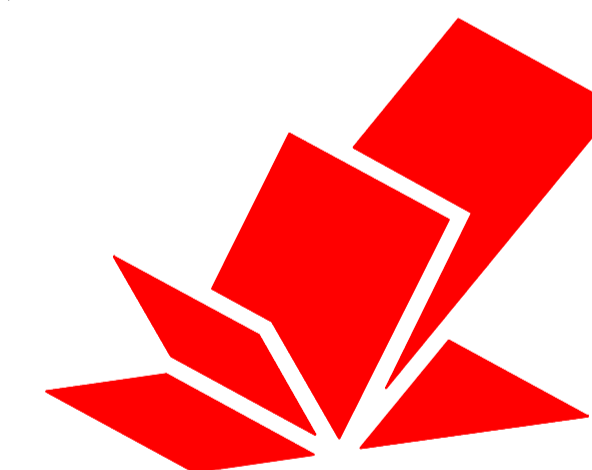
Ardmore Point advise observance to HSG47 before excavating on the site.

No liability for errors omissions or exceptions will be accepted by Ardmore Point.

Ardmore Point are not liable for any topographical survey or background mapping used in the survey drawings that has not been carried out by us. Any inaccuracies relating to background mapping that we have no control of are the liability of the client.

Be advised: the term end of trace signifies the last possible point of location and not the termination of the service. In these instances please proceed with caution.

- All depths are in metres unless otherwise specified.  
- All dimensions are in metres unless otherwise specified.



**ardmore point**

geomatics.geotechnics.droneUAV  
Glasgow Perth Kendal  
t:0330 800 1060  
e:quotes@ardmorepoint.com

Client :  
**Stantec**

Site :  
**SSEN Peterhead Hub  
Peterhead**

Drawing :  
**Utility Location Survey**

Scale :      Date :      Surveyor  
                 25/09/2023    CJ

Drawing Number :  
**AP2555/GPR/01**

Revision Number :      Sheet 1 of 1

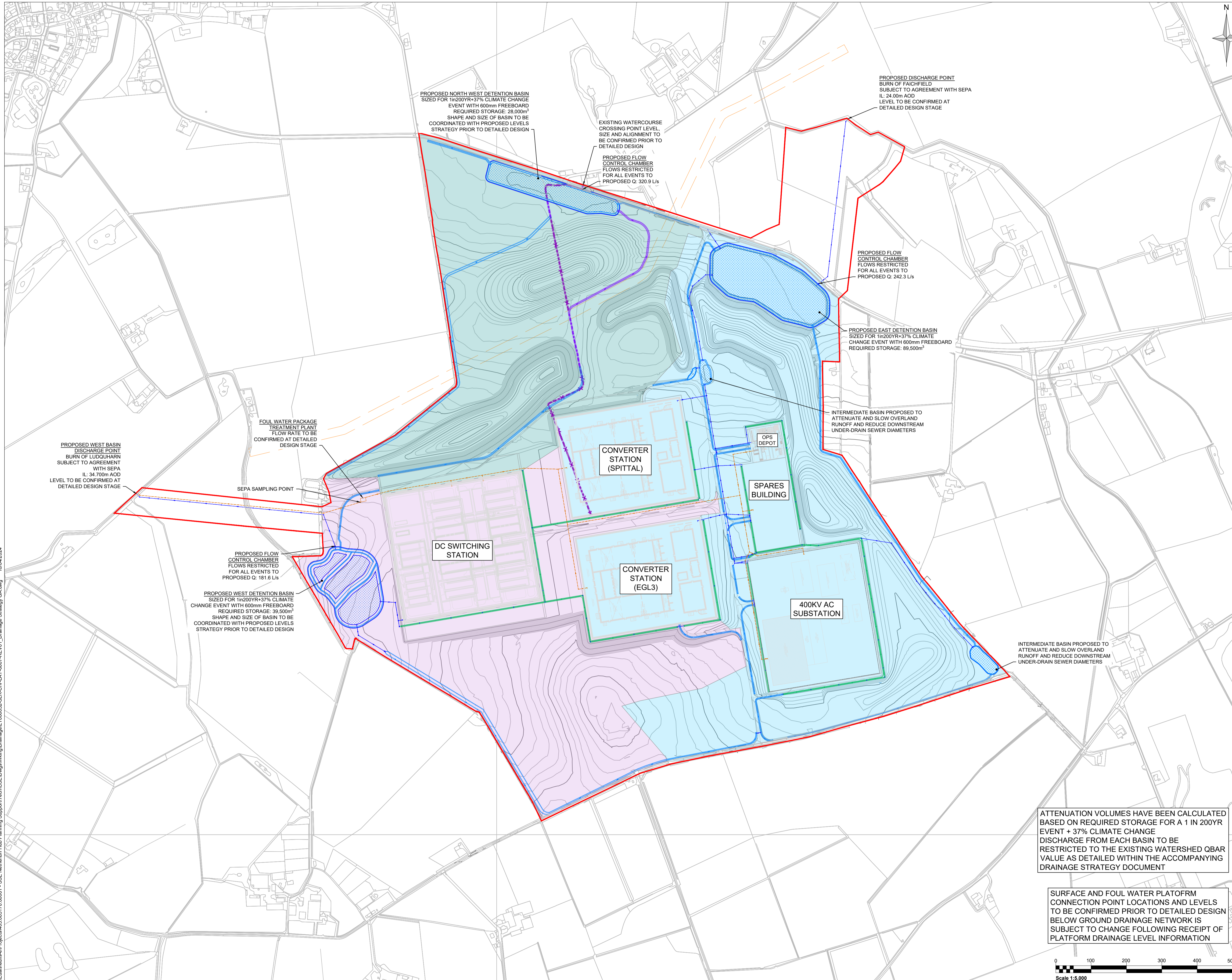
[www.ardmorepoint.com](http://www.ardmorepoint.com)





# Appendix C Proposed Site Drainage General Arrangement

LT000052-SLR-CIV-LAY-007-01-REV00



**Notes:**

- DO NOT SCALE FROM THIS DRAWING. USE ONLY PRINTED DIMENSIONS.
- NO PART OF THIS DRAWING MAY BE COPIED, TRANSFERRED OR MADE AVAILABLE TO USERS OTHER THAN THE ORIGINAL RECIPIENT, INCLUDING ELECTRONICALLY, WITHOUT PRIOR PERMISSION FROM SSEN.
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ENGINEERS AND SPECIALISTS DRAWINGS, THE SPECIFICATION AND CONTRACT DOCUMENTS.
- ANY DISCREPANCIES SHALL BE REPORTED TO THE ENGINEER FOR ACTION.

**Legend:**

- SITE BOUNDARY
- EXISTING WATERCOURSE
- EXISTING WATERCOURSE TO BE DIVERTED
- PROPOSED SURFACE WATER SEWER
- PROPOSED SURFACE WATER CHAMBER
- PROPOSED SURFACE WATER FLOW CONTROL CHAMBER
- PROPOSED SURFACE WATER SWALE
- PROPOSED SURFACE WATER UNDER-DRAINED SWALE
- PROPOSED FOUL WATER SEWER
- EAST BASIN CATCHMENT  
TOTAL AREA: 96.74 Ha  
EQUIVALENT IMPERMEABLE AREA: 66.37 Ha
- NORTH WEST BASIN CATCHMENT  
TOTAL AREA: 51.26 Ha  
EQUIVALENT IMPERMEABLE AREA: 24.09 Ha
- WEST BASIN CATCHMENT  
TOTAL AREA: 41.68 Ha  
EQUIVALENT IMPERMEABLE AREA: 41.68 Ha

**AWAITING TECHNICAL APPROVAL**

This drawing has NOT been technically approved by Local Authority and/or Water Authority. All works subject to change through technical review process with relevant approving authorities.

00	Initial Issue	10.04.24	EMM	DE	DE
Rev	Amendments	Date	By	Chk	Auth



Drawing Status & Suitability Code  
**IF1 - Issued for Information**

Client  
**Scottish & Southern Electricity Networks**

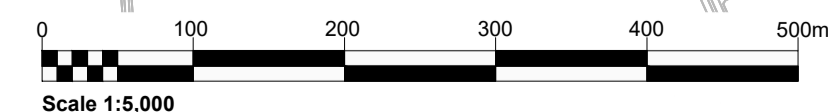
Project  
SSEN Netherton Hub

Drawing Title  
Proposed Site Drainage General Arrangement (Sheet 1 of 1)

Scale	1:5000	@ A1	SLR Project No.	405.065170.00001			
Designed	EMM	Drawn	EMM	Checked	DE	Authorized	DE
Date	05/04/2024	Date	10/04/2024	Date	10/04/2024	Date	10/04/2024
Drawing Number	LT000052-SLR-CIV-LAY-007-01	Sheet No.	1 of 1	Rev.	00		

ATTENUATION VOLUMES HAVE BEEN CALCULATED BASED ON REQUIRED STORAGE FOR A 1 IN 200YR EVENT + 37% CLIMATE CHANGE DISCHARGE FROM EACH BASIN TO BE RESTRICTED TO THE EXISTING WATERSHED QBAR VALUE AS DETAILED WITHIN THE ACCOMPANYING DRAINAGE STRATEGY DOCUMENT

SURFACE AND FOUL WATER PLATFORM CONNECTION POINT LOCATIONS AND LEVELS TO BE CONFIRMED PRIOR TO DETAILED DESIGN BELOW GROUND DRAINAGE NETWORK IS SUBJECT TO CHANGE FOLLOWING RECEIPT OF PLATFORM DRAINAGE LEVEL INFORMATION



I:\Ea\Projects\05\065170\00001 - SSEN Netherton Hub Planning Support\Tech\CSSE\Drawings\Wkg\Drainage\LT000052-SLR-CIV-LAY-007-REV01\_Drainage Strategy GA.dwg 10/04/2024



## Appendix D Causeway Flow Drainage Model Reports

LT000052-SLR-CIV-RP-FLOW-0001

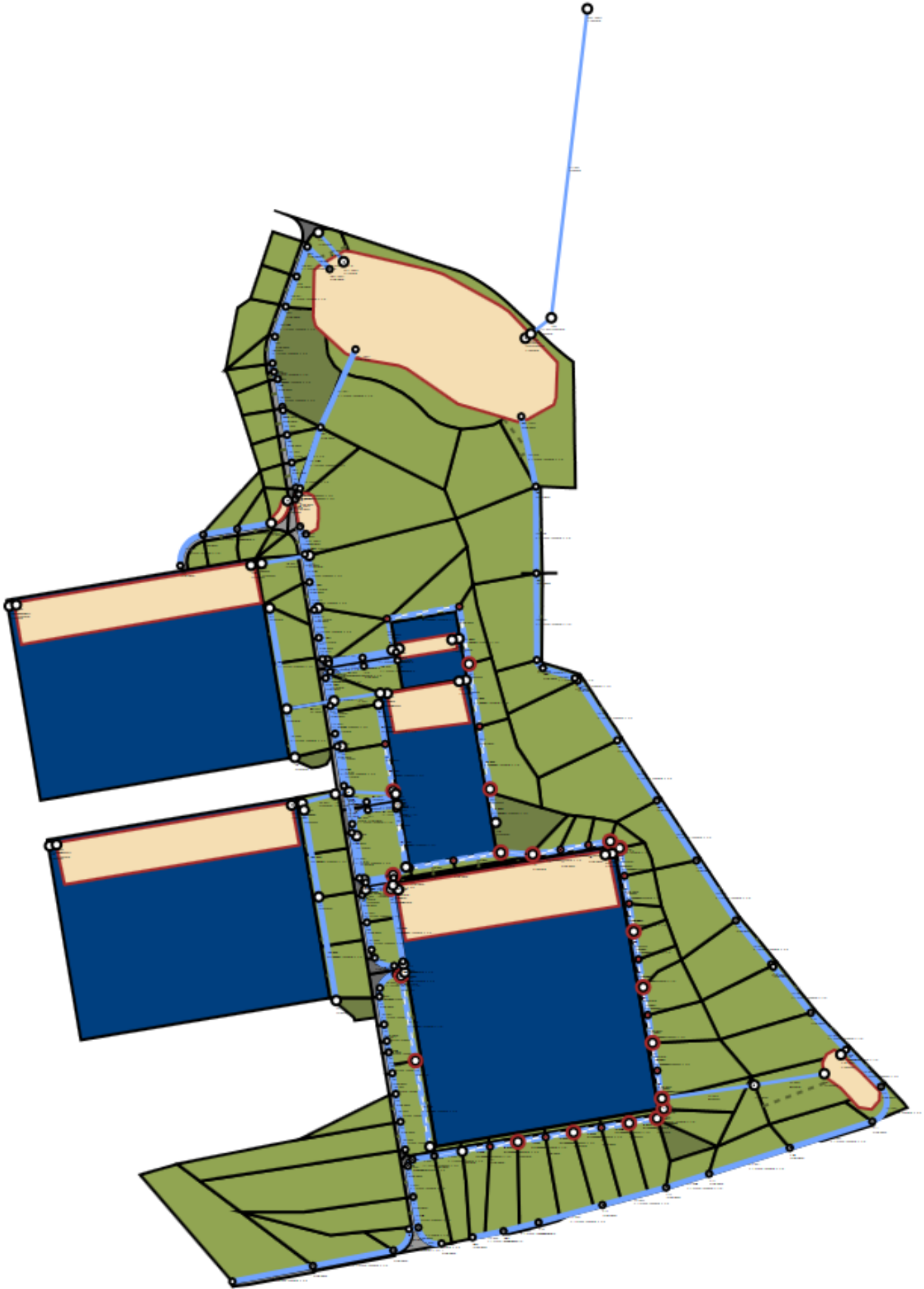
East Basin

LT000052-SLR-CIV-RP-FLOW-0002

West Basin

LT000052-SLR-CIV-RP-FLOW-0003

North West Basin



**Design Settings**

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	100	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.600
CV	0.750	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	x
Maximum Rainfall (mm/hr)	50.0		

**Simulation Settings**

Rainfall Methodology	FEH-22	Skip Steady State	x	1 year (l/s)	442.9
Summer CV	0.750	Drain Down Time (mins)	240	30 year (l/s)	1016.1
Winter CV	0.840	Additional Storage (m <sup>3</sup> /ha)	20.0	100 year (l/s)	1292.2
Analysis Speed	Normal	Check Discharge Rate(s)	✓	Check Discharge Volume	x

**Storm Durations**

15	30	60	120	180	240	360	480	960	1440
----	----	----	-----	-----	-----	-----	-----	-----	------

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
30	0	0	0
200	37	0	0
1000	0	0	0

**Pre-development Discharge Rate**

Site Makeup	Greenfield	Growth Factor 30 year	1.95
Greenfield Method	FEH	Growth Factor 100 year	2.48
Positively Drained Area (ha)	159.000	Betterment (%)	0
SAAR (mm)	770	QMed	469.0
Host	1	QBar	521.1
BFIHost	0.521	Q 1 year (l/s)	442.9
Region	1	Q 30 year (l/s)	1016.1
QBar/QMed conversion factor	1.111	Q 100 year (l/s)	1292.2
Growth Factor 1 year	0.85		

**Node 180 Online Hydro-Brake® Control**

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	29.000	Product Number	CTL-SHE-0556-2423-2100-2423
Design Depth (m)	2.100	Min Outlet Diameter (m)	
Design Flow (l/s)	242.3	Min Node Diameter (mm)	

**Node 205\_OUT Online Orifice Control**

Flap Valve	✓	Invert Level (m)	29.256	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	0.450		

**Node 190\_OUT Online Orifice Control**

Flap Valve	✓	Invert Level (m)	29.256	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	1.400		

**Node 111 Online Orifice Control**

Flap Valve	✓	Invert Level (m)	43.000	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	1.200		

**Node 2 Online Orifice Control**

Flap Valve	x	Invert Level (m)	61.120	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	1.400		

**Node 3 Online Orifice Control**

Flap Valve	x	Invert Level (m)	58.890	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	1.400		

**Node 6 Online Orifice Control**

Flap Valve	x	Invert Level (m)	57.352	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	1.400		

**Node 7 Online Orifice Control**

Flap Valve	x	Invert Level (m)	56.709	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	1.800		

**Node 8 Online Orifice Control**

Flap Valve	x	Invert Level (m)	55.958	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	2.500		

**Node 9 Online Orifice Control**

Flap Valve	x	Invert Level (m)	54.902	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	2.000		

**Node 10 Online Orifice Control**

Flap Valve	x	Replaces Downstream Link	x	Diameter (m)	2.500
Downstream Link	1.008	Invert Level (m)	52.415	Discharge Coefficient	0.600

**Node 56 Online Orifice Control**

Flap Valve	x	Replaces Downstream Link	x	Diameter (m)	0.800
Downstream Link	25.000	Invert Level (m)	49.853	Discharge Coefficient	0.600

**Node 58 Online Orifice Control**

Flap Valve	x	Replaces Downstream Link	x	Diameter (m)	1.300
Downstream Link	26.000	Invert Level (m)	49.853	Discharge Coefficient	0.600

**Node 58 Online Orifice Control**

Flap Valve	✓	Invert Level (m)	46.412	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	0.450		

**Node 65 Online Orifice Control**

Flap Valve	✓	Invert Level (m)	45.013	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	1.200		

**Node 136\_OUT Online Orifice Control**

Flap Valve	x	Invert Level (m)	39.570	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	1.350		

**Node 204\_OUT Online Orifice Control**

Flap Valve	x	Invert Level (m)	39.570	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	0.300		

**Node 179\_OUT Online Orifice Control**

Flap Valve	x	Invert Level (m)	39.570	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	1.200		

**Node 138 Online Orifice Control**

Flap Valve	x	Invert Level (m)	49.340	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	1.000		

**Node 139 Online Orifice Control**

Flap Valve	x	Invert Level (m)	48.600	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	1.200		

**Node 140 Online Orifice Control**

Flap Valve	x	Invert Level (m)	47.670	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	1.300		

**Node 199 Online Orifice Control**

Flap Valve	x	Invert Level (m)	44.051	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	0.150		

**Node 201 Online Orifice Control**

Flap Valve	x	Invert Level (m)	42.910	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	0.350		

**Node 204 Online Orifice Control**

Flap Valve	x	Invert Level (m)	39.752	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	0.225		

**Node 149 Online Orifice Control**

Flap Valve	x	Invert Level (m)	56.886	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	0.050		

**Node 150 Online Orifice Control**

Flap Valve	x	Invert Level (m)	56.630	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	0.050		

**Node 151 Online Orifice Control**

Flap Valve	x	Invert Level (m)	56.161	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	0.050		

**Node 152 Online Orifice Control**

Flap Valve	x	Invert Level (m)	53.921	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	0.100		

**Node 153 Online Orifice Control**

Flap Valve	x	Invert Level (m)	53.161	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	0.600		

**Node 154 Online Orifice Control**

Flap Valve	x	Invert Level (m)	50.621	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	0.800		

**Node 155 Online Orifice Control**

Flap Valve	x	Invert Level (m)	49.302	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	1.400		

**Node 156 Online Orifice Control**

Flap Valve	x	Invert Level (m)	48.898	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	1.400		

**Node 158 Online Orifice Control**

Flap Valve	x	Invert Level (m)	48.919	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	1.400		

**Node 30 Online Orifice Control**

Flap Valve	✓	Invert Level (m)	47.722	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	0.850		

**Node 130 Flow through Pond Storage Structure**

Base Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Main Channel Length (m)	76.000
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	45.020	Main Channel Slope (1:X)	500.0
Safety Factor	2.0	Time to half empty (mins)	16	Main Channel n	0.030

**Inlets**

207\_OUT



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	1792.0	0.0	1.000	1792.0	0.0

**Node 116 Flow through Pond Storage Structure**

Base Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Main Channel Length (m)	103.000
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	44.020	Main Channel Slope (1:X)	500.0
Safety Factor	2.0	Time to half empty (mins)	68	Main Channel n	0.030

**Inlets**  
211\_OUT

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	6250.0	0.0	1.000	6250.0	0.0

**Node 180 Flow through Pond Storage Structure**

Base Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Main Channel Length (m)	256.000
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	29.000	Main Channel Slope (1:X)	1000.0
Safety Factor	2.0	Time to half empty (mins)		Main Channel n	0.350

**Inlets**

190\_OUT | 205\_OUT | 197\_OUT | 147\_OUT

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	42068.0	0.0	2.000	47344.0	0.0	2.600	48971.0	0.0

**Node 134 Flow through Pond Storage Structure**

Base Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Main Channel Length (m)	337.000
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	42.000	Main Channel Slope (1:X)	500.0
Safety Factor	2.0	Time to half empty (mins)	26	Main Channel n	0.030

**Inlets**  
210\_OUT

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	20544.1	0.0	1.000	20544.1	0.0

**Node 111 Flow through Pond Storage Structure**

Base Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Main Channel Length (m)	337.000
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	45.226	Main Channel Slope (1:X)	500.0
Safety Factor	2.0	Time to half empty (mins)	64	Main Channel n	0.030

**Inlets**  
209\_OUT

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	20592.0	0.0	1.000	20592.0	0.0

**Node 78 Link Surround Storage Structure**

Base Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	45
Side Inf Coefficient (m/hr)	0.00000	Link	31.000
Safety Factor	2.0	Surround Shape	Rectangular-600h
Porosity	0.30	Diameter (mm)	600
Invert Level (m)	49.352		

**Node 80 Link Surround Storage Structure**

Base Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	36
Side Inf Coefficient (m/hr)	0.00000	Link	31.001
Safety Factor	2.0	Surround Shape	Rectangular-600w
Porosity	0.30	Diameter (mm)	1300
Invert Level (m)	48.541		

**Node 98 Link Surround Storage Structure**

Base Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	120
Side Inf Coefficient (m/hr)	0.00000	Link	43.000
Safety Factor	2.0	Surround Shape	Rectangular-600w
Porosity	0.30	Diameter (mm)	800
Invert Level (m)	46.389		

**Node 100 Link Surround Storage Structure**

Base Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	116
Side Inf Coefficient (m/hr)	0.00000	Link	42.001
Safety Factor	2.0	Surround Shape	Rectangular-600w
Porosity	0.30	Diameter (mm)	1100
Invert Level (m)	46.053		

**Node 103 Link Surround Storage Structure**

Base Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	112
Side Inf Coefficient (m/hr)	0.00000	Link	45.000
Safety Factor	2.0	Surround Shape	Rectangular-600w
Porosity	0.30	Diameter (mm)	800
Invert Level (m)	46.257		

**Node 13 Link Surround Storage Structure**

Base Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	58
Side Inf Coefficient (m/hr)	0.00000	Link	1.009
Safety Factor	2.0	Surround Shape	Rectangular-2000w
Porosity	0.30	Diameter (mm)	1600
Invert Level (m)	48.237		

**Node 16 Link Surround Storage Structure**

Base Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	110
Side Inf Coefficient (m/hr)	0.00000	Link	1.010
Safety Factor	2.0	Surround Shape	Rectangular-2000w
Porosity	0.30	Diameter (mm)	1600
Invert Level (m)	48.157		

**Node 18 Link Surround Storage Structure**

Base Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	120
Side Inf Coefficient (m/hr)	0.00000	Link	1.011
Safety Factor	2.0	Surround Shape	Rectangular-2000w
Porosity	0.30	Diameter (mm)	1700
Invert Level (m)	48.077		

**Node 20 Link Surround Storage Structure**

Base Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	120
Side Inf Coefficient (m/hr)	0.00000	Link	1.012
Safety Factor	2.0	Surround Shape	Rectangular-2000w
Porosity	0.30	Diameter (mm)	1800
Invert Level (m)	47.997		

**Node 22 Link Surround Storage Structure**

Base Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	124
Side Inf Coefficient (m/hr)	0.00000	Link	1.013
Safety Factor	2.0	Surround Shape	Rectangular-2000w
Porosity	0.30	Diameter (mm)	1800
Invert Level (m)	47.917		

**Node 24 Link Surround Storage Structure**

Base Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	120
Side Inf Coefficient (m/hr)	0.00000	Link	1.014
Safety Factor	2.0	Surround Shape	Rectangular-2000w
Porosity	0.30	Diameter (mm)	1900
Invert Level (m)	47.837		

**Node 26 Link Surround Storage Structure**

Base Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	124
Side Inf Coefficient (m/hr)	0.00000	Link	1.015
Safety Factor	2.0	Surround Shape	Rectangular-2000w
Porosity	0.30	Diameter (mm)	1900
Invert Level (m)	47.757		

**Node 28 Link Surround Storage Structure**

Base Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	124
Side Inf Coefficient (m/hr)	0.00000	Link	1.016
Safety Factor	2.0	Surround Shape	Rectangular-2000w
Porosity	0.30	Diameter (mm)	1900
Invert Level (m)	47.721		

**Node 32 Link Surround Storage Structure**

Base Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	124
Side Inf Coefficient (m/hr)	0.00000	Link	1.017
Safety Factor	2.0	Surround Shape	Rectangular-2000w
Porosity	0.30	Diameter (mm)	2000
Invert Level (m)	47.691		

**Node 34 Link Surround Storage Structure**

Base Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	124
Side Inf Coefficient (m/hr)	0.00000	Link	1.018
Safety Factor	2.0	Surround Shape	Rectangular-2000w
Porosity	0.30	Diameter (mm)	2000
Invert Level (m)	47.311		

**Node 36 Link Surround Storage Structure**

Base Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	120
Side Inf Coefficient (m/hr)	0.00000	Link	1.019
Safety Factor	2.0	Surround Shape	Rectangular-2000w
Porosity	0.30	Diameter (mm)	2000
Invert Level (m)	47.231		

**Node 38 Link Surround Storage Structure**

Base Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	120
Side Inf Coefficient (m/hr)	0.00000	Link	1.020
Safety Factor	2.0	Surround Shape	Rectangular-2000w
Porosity	0.30	Diameter (mm)	2000
Invert Level (m)	47.151		

**Node 40 Link Surround Storage Structure**

Base Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	120
Side Inf Coefficient (m/hr)	0.00000	Link	1.021
Safety Factor	2.0	Surround Shape	Rectangular-2000w
Porosity	0.30	Diameter (mm)	2000
Invert Level (m)	47.071		

**Node 42 Link Surround Storage Structure**

Base Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	120
Side Inf Coefficient (m/hr)	0.00000	Link	1.022
Safety Factor	2.0	Surround Shape	Rectangular-2000w
Porosity	0.30	Diameter (mm)	2000
Invert Level (m)	46.991		

**Node 44 Link Surround Storage Structure**

Base Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	112
Side Inf Coefficient (m/hr)	0.00000	Link	1.023
Safety Factor	2.0	Surround Shape	Rectangular-2000w
Porosity	0.30	Diameter (mm)	2000
Invert Level (m)	46.911		

**Node 46 Link Surround Storage Structure**

Base Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	108
Side Inf Coefficient (m/hr)	0.00000	Link	1.024
Safety Factor	2.0	Surround Shape	Rectangular-2000w
Porosity	0.30	Diameter (mm)	2000
Invert Level (m)	46.831		

**Node 48 Link Surround Storage Structure**

Base Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	104
Side Inf Coefficient (m/hr)	0.00000	Link	1.025
Safety Factor	2.0	Surround Shape	Rectangular-1450w
Porosity	0.30	Diameter (mm)	2000
Invert Level (m)	46.751		

**Node 50 Link Surround Storage Structure**

Base Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	100
Side Inf Coefficient (m/hr)	0.00000	Link	1.026
Safety Factor	2.0	Surround Shape	Rectangular-1450w
Porosity	0.30	Diameter (mm)	2000
Invert Level (m)	46.671		

**Node 52 Link Surround Storage Structure**

Base Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	96
Side Inf Coefficient (m/hr)	0.00000	Link	1.027
Safety Factor	2.0	Surround Shape	Rectangular-1450w
Porosity	0.30	Diameter (mm)	2000
Invert Level (m)	46.635		

**Node 54 Link Surround Storage Structure**

Base Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	92
Side Inf Coefficient (m/hr)	0.00000	Link	1.028
Safety Factor	2.0	Surround Shape	Rectangular-1450w
Porosity	0.30	Diameter (mm)	2000
Invert Level (m)	46.572		

**Node 56 Link Surround Storage Structure**

Base Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	88
Side Inf Coefficient (m/hr)	0.00000	Link	1.029
Safety Factor	2.0	Surround Shape	Rectangular-1450w
Porosity	0.30	Diameter (mm)	2000
Invert Level (m)	46.492		

**Node 58 Link Surround Storage Structure**

Base Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	76
Side Inf Coefficient (m/hr)	0.00000	Link	1.030
Safety Factor	2.0	Surround Shape	Rectangular-1450w
Porosity	0.30	Diameter (mm)	2000
Invert Level (m)	46.412		

**Node 59 Link Surround Storage Structure**

Base Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	52
Side Inf Coefficient (m/hr)	0.00000	Link	1.031
Safety Factor	2.0	Surround Shape	Rectangular-1450w
Porosity	0.30	Diameter (mm)	1800
Invert Level (m)	46.299		

**Node 61 Link Surround Storage Structure**

Base Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	48
Side Inf Coefficient (m/hr)	0.00000	Link	1.032
Safety Factor	2.0	Surround Shape	Rectangular-2000w
Porosity	0.30	Diameter (mm)	2000
Invert Level (m)	46.027		

**Node 63 Link Surround Storage Structure**

Base Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	36
Side Inf Coefficient (m/hr)	0.00000	Link	1.033
Safety Factor	2.0	Surround Shape	Rectangular-2000w
Porosity	0.30	Diameter (mm)	2000
Invert Level (m)	45.777		

**Node 65 Link Surround Storage Structure**

Base Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	44
Side Inf Coefficient (m/hr)	0.00000	Link	1.034
Safety Factor	2.0	Surround Shape	Rectangular-2000w
Porosity	0.30	Diameter (mm)	2000
Invert Level (m)	45.013		

**Node 204 Flow through Pond Storage Structure**

Base Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Main Channel Length (m)	40.700
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	40.350	Main Channel Slope (1:X)	500.0
Safety Factor	2.0	Time to half empty (mins)	38	Main Channel n	0.030

**Inlets**

202

Depth (m)	Area (m <sup>2</sup> )	Inf Area (m <sup>2</sup> )
0.000	431.2	0.0

**Node 121 Link Surround Storage Structure**

Base Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	15
Side Inf Coefficient (m/hr)	0.00000	Link	52.000
Safety Factor	2.0	Surround Shape	Rectangular-600w
Porosity	0.30	Diameter (mm)	400
Invert Level (m)	47.033		

**Node 123 Link Surround Storage Structure**

Base Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	11
Side Inf Coefficient (m/hr)	0.00000	Link	52.001
Safety Factor	2.0	Surround Shape	Rectangular-600w
Porosity	0.30	Diameter (mm)	600
Invert Level (m)	46.673		

**Node 125 Link Surround Storage Structure**

Base Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	11
Side Inf Coefficient (m/hr)	0.00000	Link	52.002
Safety Factor	2.0	Surround Shape	Rectangular-600w
Porosity	0.30	Diameter (mm)	900
Invert Level (m)	46.238		

**Node 127 Link Surround Storage Structure**

Base Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	8
Side Inf Coefficient (m/hr)	0.00000	Link	52.003
Safety Factor	2.0	Surround Shape	Rectangular-600w
Porosity	0.30	Diameter (mm)	800
Invert Level (m)	45.909		

**Node 129 Link Surround Storage Structure**

Base Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	11
Side Inf Coefficient (m/hr)	0.00000	Link	52.004
Safety Factor	2.0	Surround Shape	Rectangular-600w
Porosity	0.30	Diameter (mm)	1200
Invert Level (m)	45.418		

**Node 87 Link Surround Storage Structure**

Base Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	21
Side Inf Coefficient (m/hr)	0.00000	Link	35.000
Safety Factor	2.0	Surround Shape	Rectangular-600w
Porosity	0.30	Diameter (mm)	2000
Invert Level (m)	47.456		

**Node 91 Flow through Pond Storage Structure**

Base Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Main Channel Length (m)	297.000
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	48.020	Main Channel Slope (1:X)	500.0
Safety Factor	2.0	Time to half empty (mins)	35	Main Channel n	0.030

**Inlets**

208\_OUT

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	24192.8	0.0	1.000	24192.8	0.0

**Node 29 Flow through Pond Storage Structure**

Base Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Main Channel Length (m)	37.000
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	48.480	Main Channel Slope (1:X)	500.0
Safety Factor	2.0	Time to half empty (mins)	80	Main Channel n	0.350

**Inlets**

159\_OUT

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	3400.4	0.0	0.500	3400.4	0.0

**Node 195 Flow through Pond Storage Structure**

Base Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Main Channel Length (m)	60.000
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	39.450	Main Channel Slope (1:X)	500.0
Safety Factor	2.0	Time to half empty (mins)	135	Main Channel n	0.035

**Inlets**

136\_OUT | 179\_OUT | 204\_OUT

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	1526.2	0.0	0.500	1526.2	0.0



**Results for 30 year Critical Storm Duration. Lowest mass balance: 98.81%**

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	1	1	62.520	0.000	0.0	0.0000	0.0000	OK
30 minute winter	1.000:50%	21	61.986	0.166	159.2	0.0000	0.0000	OK
30 minute winter	2	22	61.335	0.215	155.5	0.0000	0.0000	OK
30 minute winter	1.001:50%	22	60.178	0.173	215.2	0.0000	0.0000	OK
30 minute winter	3	23	59.130	0.240	212.1	0.0000	0.0000	OK
30 minute winter	1.002:50%	23	58.303	0.113	216.8	0.0000	0.0000	OK
30 minute winter	4	24	57.648	0.158	216.5	0.0000	0.0000	SURCHARGED
30 minute winter	5	25	57.627	0.127	9.0	0.0000	0.0000	OK
30 minute winter	2.000:50%	25	57.627	0.201	23.5	0.0000	0.0000	OK
30 minute winter	6	25	57.626	0.274	216.3	0.0000	0.0000	OK
30 minute winter	1.004:50%	24	57.239	0.209	261.3	1.9610	0.0000	OK
30 minute winter	7	24	56.959	0.250	261.0	0.0000	0.0000	OK
30 minute winter	1.005:50%	21	56.514	0.181	360.5	3.2714	0.0000	OK
30 minute winter	8	21	56.194	0.236	362.4	0.1511	0.0000	OK
30 minute winter	9	21	55.172	0.270	362.6	0.0000	0.0000	OK
30 minute winter	1.007:50%	21	53.787	0.128	414.5	1.6272	0.0000	OK
30 minute winter	10	21	52.669	0.254	414.5	0.0000	0.0000	OK
30 minute winter	1.008:50%	21	51.486	0.119	459.3	0.0000	0.0000	OK
60 minute winter	11	41	50.273	1.956	410.3	4.9781	0.0000	SURCHARGED
15 minute winter	3.000:50%	13	50.130	0.050	42.4	0.0000	0.0000	OK
60 minute winter	13	46	50.068	1.831	463.0	36.2108	0.0000	FLOOD RISK
60 minute winter	4.000:50%	46	50.054	0.201	177.1	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	1	1.000	1.000:50%	0.0	0.000	0.000	7.5476	
15 minute summer	1	1.000	2	137.8	0.513	0.102	17.8941	
30 minute winter	2	1.001	1.001:50%	151.7	0.570	0.089	15.4937	
30 minute winter	2	1.001	3	212.1	0.577	0.124	21.9960	
30 minute winter	3	1.002	1.002:50%	209.4	1.218	0.055	3.5275	
30 minute winter	3	1.002	4	216.5	0.995	0.057	4.4960	
30 minute winter	4	1.003	6	215.9	0.562	1.100	5.5710	
30 minute winter	5	2.000	2.000:50%	-9.0	-0.089	-0.008	6.2625	
30 minute winter	5	2.000	6	17.6	0.123	0.015	10.2039	
30 minute winter	6	1.004	1.004:50%	215.0	0.608	0.144	7.8637	
30 minute winter	6	1.004	7	261.0	0.603	0.175	9.6111	
30 minute winter	7	1.005	1.005:50%	260.2	0.964	0.097	6.1263	
30 minute winter	7	1.005	8	359.7	0.946	0.134	8.4630	
30 minute winter	8	1.006	9	362.6	1.067	0.057	3.9527	
30 minute winter	9	1.007	1.007:50%	362.6	1.865	0.063	3.0584	
30 minute winter	9	1.007	10	414.5	1.223	0.072	5.5190	
30 minute winter	10	1.008	1.008:50%	414.3	1.535	0.064	5.3996	
30 minute winter	10	1.008	11	459.0	1.645	0.071	5.5803	
60 minute winter	11	1.009	13	407.8	0.724	1.714	22.5342	
60 minute winter	11	3.000	3.000:50%	0.0	0.000	0.000	0.9323	
60 minute winter	11	3.000	13	33.1	0.426	0.011	6.2512	
60 minute winter	13	1.010	16	403.2	0.716	1.694	22.5342	
60 minute winter	13	4.000	4.000:50%	151.5	0.285	0.087	10.9314	
60 minute winter	13	4.000	16	171.1	0.449	0.098	9.4762	

**Results for 30 year Critical Storm Duration. Lowest mass balance: 98.81%**

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
60 minute winter	16	47	50.024	1.867	447.6	41.7906	0.0000	SURCHARGED
60 minute winter	1.011:50%	49	49.986	1.869	396.4	18.7925	0.0000	SURCHARGED
60 minute winter	5.000:50%	47	50.007	0.154	112.6	0.0000	0.0000	OK
60 minute winter	18	49	49.955	1.878	414.6	18.9020	0.0000	SURCHARGED
120 minute winter	1.012:50%	88	49.900	1.863	315.2	18.7211	0.0000	SURCHARGED
60 minute winter	6.000:50%	50	49.949	0.096	41.7	0.0000	0.0000	OK
120 minute winter	20	88	49.860	1.863	325.1	23.4660	0.0000	SURCHARGED
120 minute winter	1.013:50%	88	49.808	1.851	311.2	18.5862	0.0000	SURCHARGED
30 minute winter	7.000:50%	21	49.927	0.074	43.0	0.0000	0.0000	OK
120 minute winter	22	88	49.759	1.842	320.4	18.4642	0.0000	SURCHARGED
120 minute winter	1.014:50%	90	49.705	1.828	307.6	18.3030	0.0000	SURCHARGED
30 minute winter	8.000:50%	21	49.926	0.073	41.4	0.0000	0.0000	OK
120 minute winter	24	90	49.650	1.813	316.5	22.7430	0.0000	SURCHARGED
120 minute winter	1.015:50%	90	49.591	1.794	302.6	17.8993	0.0000	SURCHARGED
30 minute winter	9.000:50%	21	49.926	0.073	40.7	0.0000	0.0000	OK
120 minute winter	26	90	49.532	1.775	320.9	23.6548	0.0000	SURCHARGED
15 minute winter	10.000:50%	10	49.914	0.061	43.4	0.0000	0.0000	OK
120 minute winter	28	92	49.470	1.749	328.0	20.3544	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> )
60 minute winter	16	1.011	1.011:50%	392.6	0.697	1.650	11.2671	
60 minute winter	16	5.000	5.000:50%	95.2	0.236	0.054	8.0880	
60 minute winter	16	1.011	18	372.0	0.660	1.563	11.2671	
60 minute winter	16	5.000	18	112.7	0.404	0.064	6.0344	
60 minute winter	18	1.012	1.012:50%	391.8	0.696	1.646	11.2671	
60 minute winter	18	6.000	6.000:50%	26.5	-0.203	0.015	4.5294	
60 minute winter	18	1.012	20	373.9	0.664	1.571	11.2671	
60 minute winter	18	6.000	20	36.8	0.262	0.021	2.8690	
120 minute winter	20	1.013	1.013:50%	308.7	0.548	1.297	11.2671	
120 minute winter	20	7.000	7.000:50%	-11.6	-0.153	-0.007	1.5382	
120 minute winter	20	1.013	22	298.8	0.530	1.256	11.2671	
120 minute winter	20	7.000	22	11.7	0.154	0.007	1.5403	
120 minute winter	22	1.014	1.014:50%	305.1	0.542	1.282	11.2671	
120 minute winter	22	8.000	8.000:50%	-11.3	-0.152	-0.006	1.5120	
120 minute winter	22	1.014	24	296.5	0.526	1.246	11.2671	
120 minute winter	22	8.000	24	11.2	0.150	0.006	1.5100	
120 minute winter	24	1.015	1.015:50%	301.4	0.551	1.267	11.2671	
120 minute winter	24	9.000	9.000:50%	-11.0	-0.150	-0.006	1.4997	
120 minute winter	24	1.015	26	292.2	0.559	1.228	11.2671	
120 minute winter	24	9.000	26	11.0	0.150	0.006	1.4997	
120 minute winter	26	1.016	28	309.7	0.640	1.301	10.2649	
120 minute winter	26	10.000	10.000:50%	-8.6	-0.158	-0.005	0.4545	
120 minute winter	26	10.000	28	8.6	0.158	0.005	0.4545	
120 minute winter	28	1.017	32	314.2	0.881	1.322	8.4729	
120 minute winter	28	12.000	12.000:50%	-9.7	-0.169	-0.006	0.4356	

**Results for 30 year Critical Storm Duration. Lowest mass balance: 98.81%**

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 winter	12.000:50%	10	49.916	0.063	48.4	0.0000	0.0000	OK
180 minute winter	29	160	48.700	0.727	165.0	0.8218	0.0000	OK
120 minute winter	30	106	48.713	0.991	221.5	1.7512	0.0000	SURCHARGED
120 minute winter	32	92	49.417	2.026	339.4	20.1024	0.0000	SURCHARGED
15 minute winter	13.000:75%	12	49.949	0.096	83.8	0.0000	0.0000	OK
120 minute winter	34	92	49.283	1.972	340.4	39.7718	0.0000	SURCHARGED
120 minute summer	14.000:50%	74	49.861	0.008	0.6	0.0000	0.0000	OK
120 minute winter	36	94	49.144	1.913	332.2	43.2069	0.0000	SURCHARGED
15 minute winter	15.000:50%	13	49.929	0.076	45.8	0.0000	0.0000	OK
120 minute winter	38	96	49.002	1.851	331.3	36.8467	0.0000	SURCHARGED
120 minute winter	1.021:50%	96	48.931	1.820	318.1	18.2087	0.0000	SURCHARGED
15 minute winter	16.000:50%	11	49.932	0.079	53.1	0.0000	0.0000	OK
120 minute winter	40	96	48.856	1.785	322.5	24.1240	0.0000	SURCHARGED
120 minute winter	1.022:50%	96	48.780	1.749	315.9	17.3478	0.0000	SURCHARGED
15 minute winter	17.000:50%	12	49.903	0.050	22.5	0.0000	0.0000	OK
120 minute winter	42	98	48.707	1.716	318.1	17.1068	0.0000	SURCHARGED
120 minute winter	1.023:50%	98	48.634	1.683	314.6	16.5553	0.0000	SURCHARGED
15 minute winter	18.000:50%	12	49.910	0.057	28.8	0.0000	0.0000	OK
120 minute winter	44	98	48.556	1.645	316.4	21.9366	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> )
120 minute winter	28	12.000	32	9.7	0.169	0.006	0.4356	
180 minute winter	29	11.000	30	213.3	0.730	0.215	59.4135	
120 minute winter	30	11.001	32	224.5	0.354	0.226	83.8736	
120 minute winter	32	1.018	34	317.5	0.564	1.334	22.5342	
120 minute winter	32	13.000	13.000:75%	-15.3	-0.161	-0.009	2.9059	
120 minute winter	32	13.000	34	27.1	0.261	0.016	1.0568	
120 minute winter	34	1.019	36	322.4	0.572	1.355	22.5342	
120 minute winter	34	14.000	14.000:50%	-0.1	-0.016	0.000	0.1674	
120 minute winter	34	14.000	36	0.1	0.016	0.000	0.1674	
120 minute winter	36	1.020	38	315.3	0.560	1.325	22.5347	
120 minute winter	36	15.000	15.000:50%	-11.5	-0.153	-0.007	1.5349	
120 minute winter	36	15.000	38	11.6	0.154	0.007	1.5370	
120 minute winter	38	1.021	1.021:50%	317.9	0.564	1.336	11.2671	
120 minute winter	38	16.000	16.000:50%	-10.6	-0.147	-0.006	1.4614	
120 minute winter	38	1.021	40	312.9	0.555	1.315	11.2671	
120 minute winter	38	16.000	40	10.5	0.146	0.006	1.4595	
120 minute winter	40	1.022	1.022:50%	315.7	0.560	1.326	11.2671	
120 minute winter	40	17.000	17.000:50%	-4.4	-0.096	-0.003	0.9343	
120 minute winter	40	1.022	42	312.2	0.554	1.312	11.2671	
120 minute winter	40	17.000	42	4.4	0.096	0.003	0.9350	
120 minute winter	42	1.023	1.023:50%	314.4	0.558	1.321	11.2671	
120 minute winter	42	18.000	18.000:50%	-5.7	-0.109	-0.003	1.0623	
120 minute winter	42	1.023	44	311.9	0.554	1.311	11.2671	
120 minute winter	42	18.000	44	5.7	0.108	0.003	1.0614	
120 minute winter	44	1.024	1.024:50%	313.6	0.557	1.318	11.2671	

**Results for 30 year Critical Storm Duration. Lowest mass balance: 98.81%**

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
120 minute winter	1.024:50%	98	48.477	1.606	313.7	15.6391	0.0000	SURCHARGED
15 minute winter	19.000:50%	12	49.899	0.046	19.5	0.0000	0.0000	OK
120 minute winter	46	98	48.402	1.571	316.1	15.3489	0.0000	SURCHARGED
120 minute winter	1.025:50%	100	48.326	1.535	314.6	9.7918	0.0000	SURCHARGED
15 minute winter	20.000:50%	12	49.910	0.057	28.2	0.0000	0.0000	OK
120 minute winter	48	100	48.250	1.499	317.6	9.5928	0.0000	SURCHARGED
120 minute winter	1.026:50%	100	48.173	1.462	316.9	9.1489	0.0000	SURCHARGED
15 minute winter	21.000:50%	12	49.903	0.050	22.6	0.0000	0.0000	OK
120 minute winter	50	100	48.091	1.420	318.3	13.7107	0.0000	SURCHARGED
120 minute winter	1.027:50%	100	48.052	1.399	317.8	3.9623	0.0000	SURCHARGED
15 minute winter	22.000:50%	11	49.886	0.033	11.8	0.0000	0.0000	OK
120 minute winter	52	100	48.012	1.377	319.2	8.6772	0.0000	SURCHARGED
30 minute winter	23.000:50%	21	49.891	0.038	11.8	0.0000	0.0000	OK
120 minute winter	54	100	47.884	1.312	321.6	12.3603	0.0000	SURCHARGED
15 minute winter	24.000:50%	12	49.901	0.048	21.0	0.0000	0.0000	OK
120 minute winter	56	100	47.724	1.232	323.8	14.0514	0.0000	SURCHARGED
30 minute winter	25.000:50%	21	49.896	0.043	13.9	0.0000	0.0000	OK
120 minute winter	58	100	47.557	1.145	324.6	16.4883	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> )
120 minute winter	44	19.000	19.000:50%	-3.8	-0.089	-0.002	0.8671	
120 minute winter	44	1.024	46	312.3	0.554	1.312	11.2671	
120 minute winter	44	19.000	46	3.8	0.089	0.002	0.8677	
120 minute winter	46	1.025	1.025:50%	314.5	0.558	1.322	11.2671	
120 minute winter	46	20.000	20.000:50%	-5.6	-0.107	-0.003	1.0488	
120 minute winter	46	1.025	48	314.0	0.557	1.319	11.2671	
120 minute winter	46	20.000	48	5.6	0.107	0.003	1.0488	
120 minute winter	48	1.026	1.026:50%	316.8	0.562	1.331	11.2671	
120 minute winter	48	21.000	21.000:50%	-4.4	-0.096	-0.003	0.9350	
120 minute winter	48	1.026	50	316.4	0.562	1.329	11.2671	
120 minute winter	48	21.000	50	4.4	0.096	0.003	0.9343	
120 minute winter	50	1.027	1.027:50%	317.8	0.564	1.335	5.1327	
120 minute winter	50	22.000	22.000:50%	-2.3	-0.084	-0.001	0.2318	
120 minute winter	50	1.027	52	317.7	0.564	1.335	5.1327	
120 minute winter	50	22.000	52	2.3	0.084	0.001	0.2318	
120 minute winter	52	1.028	54	319.0	0.566	1.340	17.7175	
120 minute winter	52	23.000	23.000:50%	-3.1	-0.084	-0.002	0.5809	
120 minute winter	52	23.000	54	3.1	0.084	0.002	0.5813	
120 minute winter	54	1.029	56	321.2	0.570	1.350	22.5342	
120 minute winter	54	24.000	24.000:50%	-4.1	-0.093	-0.002	0.9005	
120 minute winter	54	24.000	56	4.1	0.093	0.002	0.9005	
120 minute winter	56	1.030	58	323.4	0.574	1.359	22.5342	
120 minute winter	56	25.000	25.000:50%	-4.0	-0.082	-0.002	1.1380	
120 minute winter	56	25.000	58	3.4	0.084	0.002	0.8197	
120 minute winter	58	1.031	1.031:50%	324.4	0.609	1.219	12.0563	

**Results for 30 year Critical Storm Duration. Lowest mass balance: 98.81%**

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
120 minute winter	1.031:50%	102	46.881	0.525	324.8	1.5029	0.0000	OK
15 minute winter	119	10	47.584	0.230	82.3	1.6220	0.0000	OK
120 minute winter	59	102	46.793	0.494	325.9	3.1624	0.0000	OK
120 minute winter	1.032:50%	102	46.661	0.498	326.3	4.3918	0.0000	OK
60 minute summer	27.000:50%	37	48.325	0.035	10.0	0.0000	0.0000	OK
120 minute winter	61	102	46.538	0.511	328.1	4.5728	0.0000	OK
30 minute winter	28.000:50%	21	48.336	0.046	10.1	0.0000	0.0000	OK
120 minute winter	63	102	46.027	0.250	329.3	2.6211	0.0000	OK
120 minute winter	1.034:50%	88	45.999	0.604	329.4	1.7436	0.0000	SURCHARGED
15 minute winter	29.000:50%	11	49.016	0.008	3.3	0.0000	0.0000	OK
120 minute winter	65	86	45.945	0.932	335.5	5.9998	0.0000	OK
15 minute winter	66	11	55.568	0.010	2.5	0.0034	0.0000	OK
15 minute winter	30.000:50%	10	55.325	0.112	152.2	0.0000	0.0000	OK
15 minute winter	67	11	54.980	0.111	150.0	0.0000	0.0000	OK
15 minute winter	30.001:50%	11	54.657	0.128	191.6	0.0000	0.0000	OK
15 minute winter	68	11	54.317	0.128	191.3	0.0000	0.0000	OK
15 minute winter	30.002:50%	11	54.066	0.131	197.9	0.0000	0.0000	OK
15 minute winter	69	11	53.811	0.130	198.2	0.0000	0.0000	OK
15 minute winter	30.003:50%	11	53.559	0.132	203.2	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> )
120 minute winter	58	26.000	59	0.0	0.000	0.000	0.0028	
120 minute winter	58	1.031	59	324.7	0.637	1.220	11.5486	
15 minute winter	119	52.000	121	80.4	1.334	0.887	3.0715	
15 minute winter	119	53.000	121	0.0	0.000	0.000	0.0018	
120 minute winter	59	1.032	1.032:50%	325.9	0.654	0.968	16.9373	
120 minute winter	59	27.000	27.000:50%	-2.4	-0.063	-0.001	1.3113	
120 minute winter	59	1.032	61	326.2	0.645	0.969	17.1877	
120 minute winter	59	27.000	61	2.4	0.063	0.001	1.3118	
120 minute winter	61	1.033	63	328.1	0.871	0.975	22.9216	
120 minute winter	61	28.000	28.000:50%	-2.3	-0.080	-0.002	0.9206	
120 minute winter	61	28.000	63	2.3	0.080	0.002	0.9206	
120 minute winter	63	1.034	1.034:50%	329.3	1.480	0.361	5.0796	
120 minute winter	63	29.000	29.000:50%	-1.3	-0.222	-0.001	0.0763	
120 minute winter	63	1.034	65	335.5	0.812	0.368	7.3284	
120 minute winter	63	29.000	65	0.0	0.000	0.000	0.0384	
120 minute winter	65	1.035	94	350.0	0.806	0.328	41.4747	
15 minute winter	66	30.000	30.000:50%	2.4	0.029	0.001	1.8347	
15 minute winter	66	30.000	67	150.0	0.880	0.056	3.4119	
15 minute winter	67	30.001	30.001:50%	147.6	0.794	0.055	3.7283	
15 minute winter	67	30.001	68	191.3	0.941	0.071	4.0661	
15 minute winter	68	30.002	30.002:50%	192.1	0.933	0.072	3.0808	
15 minute winter	68	30.002	69	198.2	0.954	0.074	3.1101	
15 minute winter	69	30.003	30.003:50%	197.4	0.943	0.074	3.1327	
15 minute winter	69	30.003	70	201.9	0.959	0.075	3.1499	

**Results for 30 year Critical Storm Duration. Lowest mass balance: 98.81%**

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 winter	70	11	53.305	0.132	201.9	0.0000	0.0000	OK
15 minute winter	30.004:50%	12	53.167	0.132	203.4	0.0000	0.0000	OK
15 minute winter	71	12	53.030	0.133	203.4	0.0000	0.0000	OK
15 minute winter	30.005:50%	12	52.830	0.135	208.4	0.0000	0.0000	OK
15 minute winter	72	12	52.628	0.135	209.3	0.0000	0.0000	OK
15 minute winter	30.006:50%	12	52.292	0.138	216.2	1.8751	0.0000	OK
15 minute winter	73	12	51.923	0.109	213.5	0.0000	0.0000	OK
15 minute winter	74	13	51.478	0.113	223.7	0.2433	0.0000	OK
15 minute winter	75	13	50.426	0.196	223.3	0.0438	0.0000	OK
60 minute winter	76	50	50.606	0.430	6.9	0.4867	0.0000	SURCHARGED
30 minute winter	32.000:50%	21	50.953	0.131	65.3	0.0000	0.0000	OK
60 minute winter	78	50	50.599	1.247	42.4	19.3289	0.0000	SURCHARGED
30 minute winter	33.000:50%	21	50.743	0.131	61.6	0.0000	0.0000	OK
60 minute winter	80	43	49.330	0.789	52.1	8.9840	0.0000	SURCHARGED
15 minute winter	81	13	48.592	0.537	260.0	0.6071	0.0000	OK
15 minute winter	82	11	50.575	0.031	12.9	0.0549	0.0000	OK
15 minute winter	83	12	50.277	0.048	13.9	0.0108	0.0000	OK
15 minute winter	84	13	48.413	0.417	271.2	0.4713	0.0000	OK
15 minute winter	85	13	48.295	0.319	270.7	0.0000	0.0000	OK
15 minute winter	35.000:50%	14	48.062	0.346	291.7	0.5079	0.0000	OK
15 minute winter	87	14	47.846	0.390	291.4	1.0060	0.0000	OK
15 minute summer	88	1	50.680	0.000	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 winter	70	30.004	30.004:50%	200.2	0.951	0.075	1.7077	
15 minute winter	70	30.004	71	203.4	0.960	0.076	1.7202	
15 minute winter	71	30.005	30.005:50%	204.4	0.954	0.076	2.5474	
15 minute winter	71	30.005	72	209.3	0.968	0.078	2.5708	
15 minute winter	72	30.006	30.006:50%	209.6	0.953	0.078	4.4008	
15 minute winter	72	30.006	73	213.5	1.097	0.080	3.9048	
15 minute winter	73	30.007	74	211.5	1.247	0.054	2.0734	
15 minute winter	74	30.008	75	222.4	0.884	0.057	8.2055	
15 minute winter	75	30.009	81	223.3	0.796	0.153	3.7752	
60 minute winter	76	31.000	78	6.4	0.432	0.445	2.1759	
60 minute winter	76	32.000	32.000:50%	-6.9	-0.072	-0.009	6.5130	
60 minute winter	76	32.000	78	34.4	0.288	0.043	7.6707	
60 minute winter	78	31.001	80	18.8	1.066	1.298	2.1421	
60 minute winter	78	33.000	33.000:50%	-1.6	-0.018	-0.002	6.0438	
60 minute winter	78	33.000	80	37.5	0.310	0.042	7.6515	
60 minute winter	80	31.002	81	46.2	2.626	3.701	0.1252	
15 minute winter	81	30.010	84	259.5	1.081	1.379	2.7897	
15 minute winter	82	34.000	83	12.4	0.281	0.006	1.6099	
15 minute winter	83	34.001	84	12.4	0.271	0.008	0.6161	
15 minute winter	84	30.011	85	270.7	1.496	1.457	0.7404	
15 minute winter	85	30.012	87	0.0	0.000	0.000	0.0038	
15 minute winter	85	35.000	35.000:50%	269.8	1.698	0.555	8.3238	
15 minute winter	85	35.000	87	291.4	1.654	0.600	9.4210	
15 minute winter	87	30.013	93	285.4	1.568	0.710	6.4320	
15 minute summer	88	36.000	36.000:50%	0.0	0.000	0.000	0.2813	

**Results for 30 year Critical Storm Duration. Lowest mass balance: 98.81%**

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 winter	36.000:50%	11	50.337	0.023	10.8	0.0476	0.0000	OK
15 minute winter	89	11	49.973	0.026	10.4	0.0000	0.0000	OK
15 minute winter	36.001:50%	11	49.773	0.063	47.4	0.0000	0.0000	OK
15 minute winter	90	12	49.646	0.173	46.4	0.0000	0.0000	OK
120 minute winter	91	84	48.530	0.510	1321.6	1.7682	0.0000	OK
120 minute winter	92	86	48.236	0.236	857.3	0.8160	0.0000	OK
120 minute winter	93	82	46.409	0.361	952.8	1.2494	0.0000	OK
120 minute winter	94	86	45.919	1.073	1251.7	3.7165	0.0000	OK
120 minute winter	95	86	45.564	1.710	1245.7	6.7988	0.0000	SURCHARGED
60 minute winter	96	42	47.624	0.949	17.8	1.0738	0.0000	OK
60 minute winter	42.000:50%	42	47.624	0.134	34.0	0.0000	0.0000	OK
60 minute winter	98	42	47.622	1.233	47.8	10.5534	0.0000	SURCHARGED
60 minute winter	44.000:50%	42	47.620	0.130	45.1	0.0000	0.0000	OK
60 minute winter	100	47	47.564	1.586	44.1	17.2463	0.0000	SURCHARGED
60 minute winter	101	43	47.586	0.911	27.8	1.0300	0.0000	SURCHARGED
15 minute winter	46.000:50%	12	47.633	0.143	98.9	0.0000	0.0000	OK
60 minute winter	103	47	47.571	1.314	54.1	15.6310	0.0000	SURCHARGED
15 minute winter	104	10	48.556	0.027	15.5	0.0587	0.0000	OK
15 minute winter	105	13	47.844	0.049	19.7	0.0314	0.0000	OK
60 minute winter	106	47	47.559	1.331	42.5	1.5051	0.0000	SURCHARGED
15 minute winter	107	11	48.168	0.030	13.2	0.0555	0.0000	OK
15 minute winter	108	11	47.832	0.040	17.3	0.0266	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	88	36.000	89	10.0	0.340	0.004	0.5967	
15 minute winter	89	36.001	36.001:50%	10.1	0.175	0.004	1.1892	
15 minute winter	89	36.001	90	46.4	0.264	0.021	3.7785	
15 minute winter	90	36.002	93	44.4	0.891	0.297	0.4483	
120 minute winter	91	37.000	92	857.3	2.885	0.455	3.0621	
120 minute winter	92	37.001	93	824.5	3.797	0.087	8.5835	
120 minute winter	93	30.014	94	953.7	1.850	0.195	9.6822	
120 minute winter	94	1.036	95	1245.7	1.701	0.639	69.1136	
120 minute winter	95	1.037	114	1390.8	1.009	0.442	90.3679	
60 minute winter	96	42.000	42.000:50%	-17.8	-0.200	-0.013	6.1729	
60 minute winter	96	43.000	98	12.3	0.309	0.336	2.2775	
60 minute winter	96	42.000	98	17.9	0.202	0.013	6.1054	
60 minute winter	98	42.001	100	19.4	0.489	1.412	2.6752	
60 minute winter	98	44.000	44.000:50%	-23.9	-0.221	-0.018	7.0260	
60 minute winter	98	44.000	100	35.5	0.275	0.026	4.8877	
60 minute winter	100	42.002	110	35.5	0.504	1.199	0.4117	
60 minute winter	101	45.000	103	26.0	0.654	0.710	3.3254	
60 minute winter	101	46.000	46.000:50%	-27.8	-0.240	-0.021	6.1647	
60 minute winter	101	46.000	103	28.2	0.242	0.021	5.3815	
60 minute winter	103	45.001	106	31.5	1.047	0.862	0.2335	
15 minute winter	104	47.000	105	15.1	0.385	0.005	1.5078	
15 minute winter	105	47.001	106	14.6	0.306	0.008	2.0624	
60 minute winter	106	45.002	110	41.0	1.031	0.695	0.6304	
15 minute winter	107	48.000	108	12.7	0.282	0.006	1.4640	
15 minute winter	108	48.001	109	16.4	0.269	0.009	5.2200	

**Results for 30 year Critical Storm Duration. Lowest mass balance: 98.81%**

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
30 minute winter	109	24	47.644	0.154	13.9	0.0000	0.0000	SURCHARGED
60 minute winter	110	47	47.511	1.562	72.3	1.7667	0.0000	SURCHARGED
120 minute winter	111	90	45.486	2.486	1039.5	8.6124	0.0000	SURCHARGED
120 minute winter	112	88	45.447	2.478	975.4	8.5830	0.0000	SURCHARGED
120 minute winter	113	88	45.376	2.505	966.1	8.6772	0.0000	SURCHARGED
120 minute winter	114	88	45.343	2.662	1893.0	10.5835	0.0000	SURCHARGED
120 minute winter	115	86	44.820	2.269	1893.3	9.0204	0.0000	SURCHARGED
120 minute winter	116	84	44.371	0.351	310.5	0.6199	0.0000	OK
120 minute winter	117	84	44.323	0.323	213.9	0.8218	0.0000	OK
120 minute winter	118	84	44.298	1.877	2084.2	7.4610	0.0000	SURCHARGED
15 minute winter	121	13	47.466	0.433	107.4	2.1673	0.0000	SURCHARGED
15 minute winter	54.000:50%	12	47.960	0.137	92.7	0.0000	0.0000	OK
15 minute winter	123	13	46.889	0.291	123.2	0.6082	0.0000	OK
15 minute winter	55.000:50%	12	47.573	0.083	52.3	0.0000	0.0000	OK
30 minute winter	125	22	46.656	0.418	163.2	2.6929	0.0000	SURCHARGED
30 minute summer	56.000:50%	20	47.185	0.094	38.0	0.0000	0.0000	OK
30 minute winter	127	22	46.149	0.315	172.9	0.6264	0.0000	OK
30 minute winter	52.004:50%	21	45.981	0.355	212.4	0.9445	0.0000	OK
30 minute winter	129	21	45.741	0.323	211.3	0.8503	0.0000	OK
30 minute winter	130	23	45.280	0.260	198.1	0.4591	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 winter	109	48.002	110	8.3	0.556	1.542	0.0633	
60 minute winter	110	42.003	114	67.2	1.017	2.535	3.9937	
120 minute winter	111	41.000	112	907.9	0.806	0.478	17.1834	
120 minute winter	112	38.003	113	966.1	0.858	1.275	54.9338	
120 minute winter	113	38.004	114	957.3	0.850	1.267	22.5342	
120 minute winter	114	1.038	115	1893.3	1.328	1.833	92.9518	
120 minute winter	115	1.039	118	1893.5	1.328	1.834	93.0416	
120 minute winter	116	51.000	117	213.9	1.842	0.699	1.6284	
120 minute winter	117	51.001	118	212.7	1.930	0.277	14.5047	
120 minute winter	118	1.040	132	2084.8	1.462	2.019	82.2526	
15 minute winter	121	52.001	123	90.1	1.311	1.287	5.8178	
15 minute winter	121	54.000	54.000:50%	-33.5	-0.256	-0.025	6.2054	
15 minute winter	121	54.000	123	33.9	0.258	0.025	6.2160	
15 minute winter	123	52.002	125	122.9	1.247	0.975	9.0891	
15 minute winter	123	55.000	55.000:50%	0.0	0.000	0.000	2.7126	
15 minute winter	123	55.000	125	43.7	0.472	0.025	4.2029	
30 minute winter	125	52.003	127	151.6	1.436	1.204	8.2705	
30 minute winter	125	56.000	56.000:50%	-5.7	-0.079	-0.007	3.1760	
30 minute winter	125	56.000	127	22.5	0.258	0.027	3.6968	
30 minute winter	127	52.004	52.004:50%	172.9	1.404	0.848	6.5531	
30 minute winter	127	57.000	129	0.0	0.000	0.000	0.0038	
30 minute winter	127	52.004	129	211.3	1.653	1.037	6.6571	
30 minute winter	129	52.005	131	210.6	1.774	0.843	5.3056	
30 minute winter	130	58.000	131	109.4	1.210	0.358	1.0756	



**Results for 30 year Critical Storm Duration. Lowest mass balance: 98.81%**

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
30 minute winter	131	21	45.232	0.232	317.9	0.4108	0.0000	OK
60 minute winter	132	43	43.751	1.445	2257.8	5.7461	0.0000	SURCHARGED
60 minute winter	133	44	42.772	0.769	2257.5	3.0567	0.0000	OK
60 minute winter	134	44	42.333	0.333	1764.8	1.1549	0.0000	OK
60 minute winter	135	45	41.763	0.526	1088.6	1.8237	0.0000	OK
60 minute winter	136	45	41.769	1.669	3340.8	5.7798	0.0000	SURCHARGED
60 minute winter	136_OUT	45	41.016	1.446	3340.7	0.0000	0.0000	OK
15 minute summer	137	1	49.940	0.000	0.0	0.0000	0.0000	OK
15 minute winter	60.000:50%	11	49.755	0.115	109.4	0.0000	0.0000	OK
15 minute winter	138	12	49.531	0.191	104.5	0.0000	0.0000	OK
15 minute winter	60.001:50%	12	49.138	0.168	214.9	0.0000	0.0000	OK
15 minute winter	139	13	48.866	0.266	205.7	0.0000	0.0000	OK
15 minute winter	60.002:50%	13	48.306	0.171	243.9	0.0000	0.0000	OK
15 minute winter	140	14	47.964	0.294	238.4	0.0000	0.0000	OK
30 minute winter	60.003:50%	21	47.652	0.236	319.8	0.0000	0.0000	OK
30 minute winter	141	22	47.395	0.234	320.1	0.0000	0.0000	OK
30 minute winter	60.004:50%	21	47.174	0.268	415.4	1.8661	0.0000	OK
30 minute winter	142	22	46.930	0.278	410.7	0.0000	0.0000	OK
30 minute winter	143	22	46.910	0.285	408.6	0.0000	0.0000	OK
30 minute winter	144	22	46.584	0.197	408.4	0.0000	0.0000	OK
30 minute winter	60.007:50%	22	46.466	0.203	439.6	0.0000	0.0000	OK
30 minute winter	145	22	46.292	0.152	442.7	0.0000	0.0000	OK
30 minute winter	60.008:50%	22	43.365	0.165	512.2	0.0000	0.0000	OK
30 minute winter	146	22	40.455	0.195	510.1	0.0000	0.0000	OK
30 minute winter	60.009:50%	22	38.904	0.221	594.4	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> )
30 minute winter	131	52.006	132	318.2	3.040	0.320	17.6894	
60 minute winter	132	1.041	133	2257.5	1.803	1.543	85.8103	
60 minute winter	133	1.042	136	2257.3	1.807	0.616	85.8103	
60 minute winter	134	59.000	135	1088.6	3.880	0.115	5.5654	
60 minute winter	135	59.001	136	1084.3	1.166	0.214	54.9949	
60 minute winter	136	1.043	136_OUT	3340.7	2.422	2.531	39.5659	
60 minute winter	136_OUT	Flow through pond	195	3568.9	0.257	0.048	940.9434	
15 minute summer	137	60.000	60.000:50%	0.0	0.000	0.000	3.4352	
15 minute summer	137	60.000	138	100.0	0.453	0.056	9.7331	
15 minute winter	138	60.001	60.001:50%	97.5	0.434	0.056	11.6598	
15 minute winter	138	60.001	139	205.7	0.564	0.117	20.5907	
15 minute winter	139	60.002	60.002:50%	194.8	0.711	0.099	13.9709	
15 minute winter	139	60.002	140	238.4	0.601	0.121	22.9030	
15 minute winter	140	60.003	60.003:50%	224.2	0.589	0.154	19.8256	
15 minute winter	140	60.003	141	303.1	0.715	0.208	21.8089	
30 minute winter	141	60.004	60.004:50%	316.0	0.647	0.217	24.9011	
30 minute winter	141	60.004	142	410.7	0.749	0.282	28.0122	
30 minute winter	142	60.005	143	408.6	0.710	0.281	3.1214	
30 minute winter	143	60.006	144	408.4	0.880	0.280	22.3526	
30 minute winter	144	60.007	60.007:50%	407.0	1.138	0.155	2.7431	
30 minute winter	144	60.007	145	442.7	1.442	0.169	2.3585	
30 minute winter	145	60.008	60.008:50%	438.9	1.657	0.097	16.3527	
30 minute winter	145	60.008	146	510.1	1.636	0.113	19.3127	
30 minute winter	146	60.009	60.009:50%	509.2	1.345	0.154	23.3791	
30 minute winter	146	60.009	147	591.9	1.779	0.179	20.6505	

**Results for 30 year Critical Storm Duration. Lowest mass balance: 98.81%**

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
30 minute winter	147	22	37.262	0.156	591.9	0.0000	0.0000	OK
30 minute summer	60.010:50%	19	33.287	0.234	1273.6	0.0000	0.0000	OK
960 minute winter	147_OUT	960	30.081	1.081	538.4	0.0000	0.0000	OK
15 minute summer	148	1	57.110	0.000	0.0	0.0000	0.0000	OK
60 minute winter	61.000:90%	41	56.930	0.022	1.3	0.0000	0.0000	OK
60 minute winter	149	41	56.930	0.044	0.7	0.0000	0.0000	OK
15 minute winter	61.001:50%	11	56.773	0.015	2.9	0.0000	0.0000	OK
60 minute winter	150	48	56.709	0.079	2.1	0.0000	0.0000	OK
15 minute winter	61.002:50%	13	56.411	0.015	3.1	0.0000	0.0000	OK
180 minute winter	151	140	56.250	0.089	1.8	0.0000	0.0000	OK
180 minute winter	152	176	53.962	0.041	1.3	0.0000	0.0000	OK
15 minute winter	61.004:50%	11	53.590	0.049	31.6	0.0000	0.0000	OK
15 minute winter	153	12	53.267	0.106	30.2	0.0000	0.0000	OK
15 minute winter	61.005:50%	12	51.959	0.068	73.0	0.0000	0.0000	OK
15 minute winter	154	13	50.775	0.154	69.3	0.0000	0.0000	OK
30 minute winter	61.006:50%	20	50.065	0.103	105.8	0.0000	0.0000	OK
30 minute winter	155	22	49.469	0.167	103.1	0.0000	0.0000	OK
30 minute winter	61.007:50%	22	49.226	0.126	117.9	0.0000	0.0000	OK
30 minute winter	156	23	49.091	0.193	116.9	0.0000	0.0000	OK
30 minute winter	61.008:50%	20	48.977	0.213	231.5	0.0000	0.0000	OK
15 minute summer	157	1	49.940	0.000	0.0	0.0000	0.0000	OK
15 minute winter	62.000:50%	12	49.526	0.096	97.6	0.0000	0.0000	OK
15 minute winter	158	13	49.088	0.169	96.7	0.0000	0.0000	OK
15 minute winter	62.001:50%	13	48.961	0.186	187.7	0.0000	0.0000	OK
30 minute winter	159	21	48.883	0.253	406.7	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> )
30 minute winter	147	60.010	60.010:50%	592.2	1.907	0.102	17.2926	
30 minute winter	147	60.010	147_OUT	1242.0	1.604	0.213	51.7897	
960 minute winter	147_OUT	Flow through pond	180	1347.3	0.028	0.028	41294.1758	
15 minute summer	148	61.000	61.000:90%	0.0	0.000	0.000	0.4198	
15 minute summer	148	61.000	149	1.2	0.056	0.001	0.1601	
60 minute winter	149	61.001	61.001:50%	0.7	0.065	0.000	0.3016	
60 minute winter	149	61.001	150	2.1	0.062	0.001	1.5995	
60 minute winter	150	61.002	61.002:50%	1.2	0.095	0.001	0.6395	
60 minute winter	150	61.002	151	2.2	0.093	0.001	2.7246	
180 minute winter	151	61.003	152	1.3	0.088	0.000	2.8570	
180 minute winter	152	61.004	61.004:50%	1.2	0.131	0.001	0.5582	
180 minute winter	152	61.004	153	9.8	0.189	0.004	1.6812	
15 minute winter	153	61.005	61.005:50%	27.0	0.383	0.009	4.3883	
15 minute winter	153	61.005	154	69.3	0.494	0.023	10.3893	
15 minute winter	154	61.006	61.006:50%	60.2	0.474	0.028	7.9288	
15 minute winter	154	61.006	155	100.6	0.537	0.047	12.9046	
30 minute winter	155	61.007	61.007:50%	100.4	0.529	0.060	5.7567	
30 minute winter	155	61.007	156	116.9	0.443	0.070	8.2460	
30 minute winter	156	61.008	61.008:50%	115.5	0.397	0.092	11.2031	
30 minute winter	156	61.008	159	228.8	0.523	0.182	15.9675	
15 minute summer	157	62.000	62.000:50%	0.0	0.000	0.000	2.8072	
15 minute summer	157	62.000	158	87.0	0.497	0.038	8.3936	
15 minute winter	158	62.001	62.001:50%	93.6	0.356	0.072	9.5852	
15 minute winter	158	62.001	159	184.4	0.458	0.142	14.7338	
30 minute winter	159	61.009	159_OUT	405.2	0.976	0.278	4.1816	

**Results for 30 year Critical Storm Duration. Lowest mass balance: 98.81%**

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
180 minute winter	159_OUT	160	48.700	0.146	187.7	0.2582	0.0000	OK
15 minute summer	160	1	49.863	0.000	0.0	0.0000	0.0000	OK
15 minute winter	63.000:50%	11	49.701	0.016	4.1	0.0006	0.0000	OK
15 minute winter	161	11	49.532	0.025	10.8	0.0256	0.0000	OK
15 minute winter	162	12	49.370	0.039	10.7	0.0000	0.0000	OK
15 minute winter	63.002:50%	12	49.120	0.045	22.4	0.0000	0.0000	OK
30 minute winter	163	25	49.014	0.204	18.9	0.0000	0.0000	OK
30 minute winter	164	26	48.311	0.030	10.7	0.0000	0.0000	OK
30 minute summer	63.004:50%	19	48.091	0.041	18.3	0.0000	0.0000	OK
30 minute winter	165	21	47.860	0.041	18.1	0.0000	0.0000	OK
30 minute winter	63.005:50%	20	47.790	0.044	20.4	0.1916	0.0000	OK
30 minute winter	166	21	47.716	0.044	20.4	0.0000	0.0000	OK
15 minute winter	63.006:50%	12	47.563	0.051	24.5	0.0000	0.0000	OK
30 minute winter	167	22	47.402	0.050	25.4	0.0000	0.0000	OK
30 minute winter	63.007:50%	22	47.251	0.059	29.8	0.0000	0.0000	OK
30 minute winter	168	22	47.080	0.048	31.9	0.0297	0.0000	OK
15 minute summer	169	1	47.500	0.000	0.0	0.0000	0.0000	OK
15 minute winter	64.000:50%	10	47.419	0.077	46.2	0.0000	0.0000	OK
15 minute winter	170	11	47.257	0.073	45.7	0.0000	0.0000	OK
15 minute winter	64.001:50%	11	47.123	0.103	83.5	0.2286	0.0000	OK
15 minute winter	171	12	46.976	0.121	106.9	0.0000	0.0000	OK
15 minute summer	172	1	47.500	0.000	0.0	0.0000	0.0000	OK
15 minute winter	65.000:50%	11	47.366	0.024	5.0	0.0091	0.0000	OK
15 minute winter	173	13	47.202	0.018	4.9	0.0000	0.0000	OK
15 minute winter	65.001:28%	11	47.134	0.064	41.2	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> )
180 minute winter	159_OUT	Flow through pond	29	160.8	0.021	0.045	621.9493	
15 minute summer	160	63.000	63.000:50%	0.0	0.000	0.000	0.1905	
15 minute summer	160	63.000	161	3.6	0.143	0.002	0.5025	
15 minute winter	161	63.001	162	10.7	0.263	0.004	0.5072	
15 minute winter	162	63.002	63.002:50%	10.2	0.210	0.005	1.5823	
15 minute winter	162	63.002	163	21.1	0.254	0.011	5.7183	
30 minute winter	163	63.003	164	10.7	0.680	0.618	1.3799	
30 minute winter	164	63.004	63.004:50%	10.6	0.252	0.006	1.2290	
30 minute winter	164	63.004	165	18.1	0.335	0.010	1.5278	
30 minute winter	165	63.005	63.005:50%	17.8	0.316	0.010	0.5193	
30 minute winter	165	63.005	166	20.4	0.348	0.011	0.5401	
30 minute winter	166	63.006	63.006:50%	20.3	0.321	0.011	1.2709	
30 minute winter	166	63.006	167	25.4	0.376	0.014	1.3511	
30 minute winter	167	63.007	63.007:50%	25.1	0.341	0.014	1.4777	
30 minute winter	167	63.007	168	29.5	0.407	0.016	1.4524	
30 minute winter	168	63.008	171	31.8	0.284	0.013	1.4866	
15 minute summer	169	64.000	64.000:50%	0.0	0.000	0.000	1.3179	
15 minute summer	169	64.000	170	44.1	0.430	0.026	2.4995	
15 minute winter	170	64.001	64.001:50%	44.8	0.348	0.026	3.1398	
15 minute winter	170	64.001	171	82.1	0.492	0.048	4.1324	
15 minute winter	171	63.009	174	105.7	0.588	0.664	2.1145	
15 minute summer	172	65.000	65.000:50%	0.0	0.000	0.000	0.3566	
15 minute summer	172	65.000	173	4.6	0.191	0.003	0.5875	
15 minute winter	173	65.001	65.001:28%	4.6	0.091	0.002	0.7530	
15 minute winter	173	65.001	174	39.9	0.337	0.021	4.5370	

**Results for 30 year Critical Storm Duration. Lowest mass balance: 98.81%**

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 winter	174	12	46.888	0.111	149.0	0.0598	0.0000	OK
15 minute winter	175	13	46.661	0.093	147.0	0.0000	0.0000	OK
15 minute winter	63.011:50%	13	46.188	0.095	150.8	0.0000	0.0000	OK
15 minute winter	176	13	45.714	0.095	151.2	0.0000	0.0000	OK
15 minute winter	63.012:50%	12	45.111	0.111	198.9	0.0000	0.0000	OK
15 minute winter	177	12	44.492	0.110	198.3	0.0000	0.0000	OK
15 minute winter	63.013:50%	11	43.938	0.175	456.4	0.0000	0.0000	OK
15 minute winter	178	11	43.318	0.174	454.8	0.0000	0.0000	OK
15 minute winter	63.014:50%	11	42.709	0.183	500.1	3.2558	0.0000	OK
15 minute winter	179	11	42.089	0.182	495.7	0.0000	0.0000	OK
15 minute winter	63.015:50%	11	41.521	0.233	786.7	5.3057	0.0000	OK
15 minute winter	179_OUT	11	40.161	0.591	779.8	0.0000	0.0000	OK
960 minute winter	180	960	30.080	1.080	1347.3	1.9091	0.0000	SURCHARGED
960 minute winter	181	1095	29.187	0.207	241.7	0.5276	0.0000	OK
960 minute winter	182	1095	28.443	0.243	241.7	0.6179	0.0000	OK
15 minute summer	182_OUT	1	25.600	1.600	76.3	0.0000	0.0000	OK
15 minute summer	183	1	40.241	0.000	0.0	0.0000	0.0000	OK
15 minute winter	69.000:50%	10	39.710	0.042	36.7	0.0000	0.0000	OK
15 minute winter	184	11	39.140	0.045	35.9	0.0000	0.0000	OK
15 minute winter	69.001:50%	10	39.022	0.060	59.1	0.0000	0.0000	OK
15 minute winter	185	11	38.883	0.054	58.7	0.0000	0.0000	OK
15 minute winter	69.002:50%	11	38.688	0.056	61.0	0.0000	0.0000	OK
15 minute winter	186	11	38.490	0.055	61.2	0.0000	0.0000	OK
15 minute winter	69.003:50%	11	37.840	0.066	83.4	0.0000	0.0000	OK
15 minute winter	187	11	37.178	0.065	83.9	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 winter	174	63.010	175	147.0	0.956	0.055	1.8877	
15 minute winter	175	63.011	63.011:50%	146.7	1.053	0.040	2.1301	
15 minute winter	175	63.011	176	151.2	1.073	0.042	2.1559	
15 minute winter	176	63.012	63.012:50%	151.7	0.989	0.042	3.0809	
15 minute winter	176	63.012	177	198.3	1.173	0.055	3.3821	
15 minute winter	177	63.013	63.013:50%	196.9	0.929	0.054	4.6055	
15 minute winter	177	63.013	178	454.8	1.511	0.126	6.0185	
15 minute winter	178	63.014	63.014:50%	452.5	1.458	0.125	6.2094	
15 minute winter	178	63.014	179	495.7	1.551	0.137	6.3912	
15 minute winter	179	63.015	63.015:50%	491.8	1.317	0.136	7.6063	
15 minute winter	179	63.015	179_OUT	779.8	1.765	0.215	8.8363	
15 minute winter	179_OUT	Flow through pond	195	2436.2	0.271	0.033	701.1025	
960 minute winter	180	Hydro-Brake®	181	241.7				
960 minute winter	181	66.001	182	241.7	2.505	0.241	3.5485	
960 minute winter	182	66.002	182_OUT	241.7	1.063	0.360	85.6459	10962.5
15 minute summer	183	69.000	69.000:50%	0.0	0.000	0.000	0.5448	
15 minute summer	183	69.000	184	34.3	0.611	0.010	1.1221	
15 minute winter	184	69.001	69.001:50%	35.6	0.500	0.011	0.4119	
15 minute winter	184	69.001	185	58.7	0.746	0.019	0.4539	
15 minute winter	185	69.002	69.002:50%	58.6	0.777	0.016	0.4627	
15 minute winter	185	69.002	186	61.2	0.810	0.017	0.4642	
15 minute winter	186	69.003	69.003:50%	61.5	0.740	0.016	1.5868	
15 minute winter	186	69.003	187	83.9	0.922	0.022	1.7340	
15 minute winter	187	69.004	69.004:50%	83.7	0.766	0.021	2.4858	

**Results for 30 year Critical Storm Duration. Lowest mass balance: 98.81%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	69.004:50%	11	36.381	0.088	140.2	0.1502	0.0000	OK
15 minute winter	188	11	35.552	0.079	140.4	0.0000	0.0000	OK
15 minute winter	69.005:50%	11	34.434	0.090	174.0	0.0000	0.0000	OK
15 minute winter	189	11	33.311	0.096	173.4	0.0000	0.0000	OK
15 minute winter	69.006:50%	11	32.464	0.107	208.4	0.0000	0.0000	OK
960 minute winter	205	960	30.080	0.240	1.5	0.4703	0.0000	OK
960 minute winter	205_OUT	960	30.080	0.824	1.5	1.1795	0.0000	OK
15 minute summer	191	1	40.290	0.000	0.0	0.0000	0.0000	OK
15 minute winter	67.000:50%	10	40.271	0.083	47.8	0.0317	0.0000	OK
15 minute winter	192	11	40.157	0.071	46.7	0.0000	0.0000	OK
15 minute winter	67.001:50%	11	40.034	0.108	95.9	0.0000	0.0000	OK
60 minute winter	193	49	39.939	0.173	58.8	0.0000	0.0000	OK
60 minute winter	67.002:50%	47	39.936	0.303	104.8	0.0000	0.0000	OK
60 minute winter	194	48	39.937	0.437	115.4	0.1268	0.0000	OK
60 minute winter	195	48	40.124	0.674	3569.0	0.0000	0.0000	SURCHARGED
60 minute winter	196	49	39.942	0.534	4073.1	0.0000	0.0000	OK
60 minute winter	67.004:50%	48	37.950	0.463	3638.9	2.2394	0.0000	OK
60 minute winter	197	48	35.941	0.441	3601.9	0.0000	0.0000	OK
60 minute winter	67.005:50%	49	32.843	0.443	3625.3	0.0000	0.0000	OK
960 minute winter	197_OUT	930	30.094	0.838	1932.2	168.0126	0.0000	OK
15 minute summer	198	1	44.872	0.000	0.0	0.0000	0.0000	OK
15 minute winter	70.000:50%	11	44.502	0.040	23.8	0.0000	0.0000	OK
30 minute winter	199	22	44.225	0.174	19.2	0.0000	0.0000	OK
15 minute winter	70.001:50%	13	43.544	0.063	65.5	0.1823	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 winter	187	69.004	188	140.4	1.155	0.036	2.7562	
15 minute winter	188	69.005	69.005:50%	140.0	1.141	0.030	2.7814	
15 minute winter	188	69.005	189	173.4	1.262	0.038	3.1140	
15 minute winter	189	69.006	69.006:50%	172.0	1.126	0.043	3.4393	
15 minute winter	189	69.006	190	206.7	0.986	0.051	4.7644	
960 minute winter	205	71.000	205_OUT	1.5	0.408	0.005	6.7041	
960 minute winter	205_OUT	Flow through pond	180	1347.3	0.028	0.028	41294.1758	
15 minute summer	191	67.000	67.000:50%	0.0	0.000	0.000	1.0255	
15 minute summer	191	67.000	192	45.0	0.426	0.029	1.8641	
15 minute winter	192	67.001	67.001:50%	46.7	0.356	0.025	2.6473	
15 minute winter	192	67.001	193	95.9	0.581	0.052	3.3082	
60 minute winter	193	67.002	67.002:50%	94.9	0.441	0.054	8.3690	
60 minute winter	193	67.002	194	89.9	0.411	0.051	15.5288	
60 minute winter	194	67.003	196	169.2	0.357	0.124	6.5722	
60 minute winter	195	68.000	196	4031.0	2.289	2.796	15.5527	
60 minute winter	196	67.004	67.004:50%	3632.5	3.022	0.845	54.8584	
60 minute winter	196	67.004	197	3601.9	3.116	0.838	52.7583	
60 minute winter	197	67.005	67.005:50%	3591.7	3.214	0.771	67.6677	
60 minute winter	197	67.005	197_OUT	3620.5	2.601	0.777	87.7646	
960 minute winter	197_OUT	Flow through pond	180	1347.3	0.028	0.028	41294.1758	
15 minute summer	198	70.000	70.000:50%	0.0	0.000	0.000	0.7783	
15 minute summer	198	70.000	199	21.7	0.244	0.009	4.7627	
30 minute winter	199	70.001	70.001:50%	14.8	0.277	0.005	1.4674	
30 minute winter	199	70.001	201	63.5	0.263	0.020	6.9930	

**Results for 30 year Critical Storm Duration. Lowest mass balance: 98.81%**

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 winter	201	14	43.162	0.252	64.9	0.0000	0.0000	OK
15 minute winter	70.002:65%	12	42.239	0.090	122.5	0.7346	0.0000	OK
30 minute winter	202	21	40.483	0.052	116.1	0.0588	0.0000	OK
60 minute winter	204	46	40.471	0.719	93.0	0.8134	0.0000	SURCHARGED
60 minute winter	204_OUT	47	40.203	0.633	67.7	0.0000	0.0000	OK
15 minute winter	207	10	45.284	0.012	0.5	0.0211	0.0000	OK
30 minute winter	207_OUT	22	45.283	0.111	209.3	0.9010	0.0000	OK
15 minute winter	208	13	48.862	0.147	6.7	0.5103	0.0000	OK
15 minute winter	208_OUT	13	48.862	0.248	3426.0	26.0289	0.0000	OK
15 minute winter	210	13	42.938	0.163	7.1	0.5635	0.0000	OK
15 minute winter	210_OUT	13	42.936	0.262	2916.2	17.1587	0.0000	OK
30 minute winter	209	22	46.062	0.062	1.2	0.1093	0.0000	OK
30 minute winter	209_OUT	22	46.062	0.162	2403.9	30.5958	0.0000	OK
120 minute winter	211	84	44.371	0.045	0.3	0.0800	0.0000	OK
120 minute winter	211_OUT	84	44.371	0.145	354.0	2.6637	0.0000	OK
960 minute winter	190_OUT	1095	30.056	0.800	37.2	0.0000	0.0000	OK
15 minute winter	190	12	31.658	0.158	206.7	0.0000	0.0000	OK
15 minute winter	69.007:50%	11	31.520	0.225	391.2	0.0000	0.0000	OK
60 minute winter	12	44	46.655	0.980	45.3	2.0303	0.0000	OK
60 minute winter	38.000:41%	43	46.654	0.164	69.1	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 winter	201	70.002	70.002:65%	62.0	0.636	0.019	3.3403	
15 minute winter	201	70.002	202	119.5	0.908	0.038	2.2532	
30 minute winter	202	Flow through pond	204	113.4	0.193	0.004	35.0034	
60 minute winter	204	72.000	204_OUT	67.7	1.300	0.749	0.8280	
60 minute winter	204_OUT	Flow through pond	195	3568.9	0.257	0.048	940.9434	
15 minute winter	207	73.000	207_OUT	-0.5	-0.030	-0.001	0.1830	
30 minute winter	207_OUT	Flow through pond	130	198.1	0.230	0.006	99.5328	
15 minute winter	208	74.000	208_OUT	-6.7	-0.180	-0.002	1.2295	
15 minute winter	208_OUT	Flow through pond	91	2487.6	0.516	0.019	1507.6182	
15 minute winter	210	76.000	210_OUT	-7.1	-0.180	-0.002	1.3598	
15 minute winter	210_OUT	Flow through pond	134	1868.5	0.521	0.012	1228.4651	
30 minute winter	209	75.000	209_OUT	-1.2	-0.080	-0.002	0.3823	
30 minute winter	209_OUT	Flow through pond	111	1290.7	0.436	0.031	998.2274	
120 minute winter	211	77.000	211_OUT	-0.3	-0.025	0.000	0.3097	
120 minute winter	211_OUT	Flow through pond	116	310.5	0.144	0.002	465.1607	
960 minute winter	190_OUT	Flow through pond	180	1347.3	0.028	0.028	41294.1758	
15 minute winter	190	69.007	69.007:50%	204.8	0.612	0.104	7.6469	
15 minute winter	190	69.007	190_OUT	386.0	1.034	0.196	8.3966	
60 minute winter	12	38.000	38.000:41%	-35.4	-0.218	-0.026	16.9390	
60 minute winter	12	39.000	15	28.0	0.748	0.765	5.9171	
60 minute winter	12	38.000	15	38.2	0.195	0.028	22.3928	

**Results for 30 year Critical Storm Duration. Lowest mass balance: 98.81%**

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
60 minute winter	15	43	46.633	1.702	81.8	1.9246	0.0000	OK
30 minute winter	38.001:45%	21	46.651	0.151	93.0	0.0000	0.0000	OK
60 minute winter	17	46	45.704	1.398	86.5	1.5812	0.0000	SURCHARGED
30 minute summer	19	20	45.585	0.095	10.7	0.2618	0.0000	OK
30 minute summer	50.000:25%	20	45.584	0.129	56.6	0.3823	0.0000	OK
60 minute winter	21	48	45.555	0.980	107.6	1.1085	0.0000	SURCHARGED
60 minute winter	23	48	45.556	0.066	9.8	0.0748	0.0000	OK
60 minute winter	49.000:37%	49	45.555	0.173	63.0	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> )
60 minute winter	15	38.001	38.001:45%	-35.1	-0.238	-0.026	11.8709	
60 minute winter	15	40.000	17	59.5	1.496	1.625	4.9703	
60 minute winter	15	38.001	17	28.6	0.219	0.021	9.5404	
60 minute winter	17	38.002	112	81.6	1.373	0.932	0.7048	
30 minute summer	19	50.000	50.000:25%	10.1	0.068	0.011	3.0121	
30 minute summer	19	50.000	21	54.3	0.338	0.059	10.1618	
60 minute winter	21	49.001	118	33.6	0.874	1.401	2.7005	
60 minute winter	23	49.000	49.000:37%	-9.8	-0.071	-0.011	10.4137	
60 minute winter	23	49.000	21	60.8	0.304	0.066	50.2539	

**Results for 200 year +37% CC Critical Storm Duration. Lowest mass balance: 98.81%**

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	1	1	62.520	0.000	0.0	0.0000	0.0000	OK
30 minute winter	1.000:50%	21	62.078	0.258	361.7	0.0000	0.0000	OK
30 minute winter	2	22	61.484	0.364	356.0	0.0000	0.0000	OK
30 minute winter	1.001:50%	22	60.276	0.271	498.2	0.0000	0.0000	OK
30 minute winter	3	23	59.305	0.415	493.2	0.0000	0.0000	OK
30 minute winter	1.002:50%	23	58.370	0.180	503.8	0.0000	0.0000	OK
30 minute winter	4	25	57.818	0.328	504.3	0.0000	0.0000	FLOOD RISK
30 minute winter	5	25	57.812	0.312	15.8	0.0000	0.0000	OK
30 minute winter	2.000:50%	25	57.812	0.386	51.6	0.0000	0.0000	OK
30 minute winter	6	25	57.812	0.460	496.3	0.0000	0.0000	OK
30 minute winter	1.004:50%	24	57.352	0.322	605.4	4.6596	0.0000	OK
30 minute winter	7	24	57.136	0.427	603.8	0.0000	0.0000	OK
30 minute winter	1.005:50%	20	56.618	0.284	854.8	8.0765	0.0000	OK
30 minute winter	8	21	56.371	0.413	858.7	0.2642	0.0000	OK
30 minute winter	9	21	55.375	0.473	857.8	0.0000	0.0000	OK
30 minute winter	1.007:50%	21	53.863	0.204	976.5	4.1315	0.0000	OK
30 minute winter	10	21	52.861	0.446	977.6	0.0000	0.0000	OK
30 minute winter	1.008:50%	21	51.558	0.192	1080.3	0.0000	0.0000	OK
30 minute winter	11	21	50.546	2.229	1080.7	5.6722	0.0000	FLOOD RISK
30 minute winter	3.000:50%	21	50.377	0.296	834.1	0.0000	0.0000	OK
120 minute winter	13	66	50.363	2.126	780.8	43.2542	606.9103	FLOOD
120 minute winter	4.000:50%	76	50.363	0.510	646.1	0.0000	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	1	1.000	1.000:50%	0.0	0.000	0.000	13.1820	
15 minute summer	1	1.000	2	303.2	0.608	0.224	34.0769	
30 minute winter	2	1.001	1.001:50%	347.9	0.725	0.203	28.1321	
30 minute winter	2	1.001	3	493.2	0.668	0.288	45.0548	
30 minute winter	3	1.002	1.002:50%	486.9	1.576	0.128	6.3386	
30 minute winter	3	1.002	4	504.3	1.140	0.133	10.4971	
30 minute winter	4	1.003	6	495.9	0.637	2.526	12.9940	
30 minute winter	5	2.000	2.000:50%	-15.8	-0.117	-0.013	17.5596	
30 minute winter	5	2.000	6	44.2	0.161	0.037	23.3235	
30 minute winter	6	1.004	1.004:50%	493.1	0.767	0.331	14.3220	
30 minute winter	6	1.004	7	603.8	0.696	0.405	19.4259	
30 minute winter	7	1.005	1.005:50%	603.6	1.227	0.225	11.2118	
30 minute winter	7	1.005	8	851.5	1.089	0.317	17.5635	
30 minute winter	8	1.006	9	857.8	1.203	0.135	8.5855	
30 minute winter	9	1.007	1.007:50%	858.7	2.423	0.148	5.5763	
30 minute winter	9	1.007	10	977.6	1.385	0.169	11.8047	
30 minute winter	10	1.008	1.008:50%	978.2	2.051	0.151	9.5429	
30 minute winter	10	1.008	11	1080.7	2.067	0.166	11.0453	
30 minute winter	11	1.009	13	565.1	1.003	2.375	22.5342	
30 minute winter	11	3.000	3.000:50%	741.5	1.035	0.245	15.0049	
30 minute winter	11	3.000	13	835.2	0.713	0.276	26.5580	
120 minute winter	13	1.010	16	378.2	0.671	1.589	22.5342	
120 minute winter	13	4.000	4.000:50%	571.9	0.374	0.327	35.9876	
120 minute winter	13	4.000	16	610.8	0.478	0.349	35.9131	



**Results for 200 year +37% CC Critical Storm Duration. Lowest mass balance: 98.81%**

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
180 minute winter	16	116	50.362	2.205	596.3	50.7562	0.0000	FLOOD RISK
180 minute winter	1.011:50%	116	50.361	2.244	327.3	23.2858	0.0000	SURCHARGED
180 minute winter	5.000:50%	116	50.361	0.508	543.6	0.0000	0.0000	SURCHARGED
180 minute winter	18	116	50.360	2.283	618.1	23.7549	0.0000	FLOOD RISK
180 minute winter	1.012:50%	116	50.358	2.321	318.4	24.2214	0.0000	SURCHARGED
180 minute winter	6.000:50%	116	50.359	0.506	549.4	0.0000	0.0000	SURCHARGED
180 minute winter	20	116	50.357	2.360	629.2	30.6908	0.0000	FLOOD RISK
180 minute winter	1.013:50%	116	50.355	2.398	304.2	25.1480	0.0000	SURCHARGED
180 minute winter	7.000:50%	116	50.355	0.502	542.2	0.0000	0.0000	SURCHARGED
180 minute winter	22	116	50.353	2.436	629.7	25.6072	0.0000	FLOOD RISK
180 minute winter	1.014:50%	120	50.351	2.474	299.5	26.0634	0.0000	SURCHARGED
180 minute winter	8.000:50%	116	50.352	0.499	531.3	0.0000	0.0000	OK
180 minute winter	24	120	50.349	2.512	625.6	32.9078	0.0000	FLOOD RISK
180 minute winter	1.015:50%	120	50.346	2.549	293.7	26.9601	0.0000	SURCHARGED
180 minute winter	9.000:50%	120	50.347	0.494	510.9	0.0000	0.0000	OK
240 minute winter	26	160	50.344	2.587	581.0	36.1330	0.0000	FLOOD RISK
240 minute winter	10.000:50%	160	50.342	0.489	489.5	0.0000	0.0000	OK
240 minute winter	28	160	50.341	2.620	597.4	32.1225	0.0000	FLOOD RISK

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> )
180 minute winter	16	1.011	1.011:50%	323.4	0.574	1.359	11.2671	
180 minute winter	16	5.000	5.000:50%	487.9	0.331	0.279	35.8262	
180 minute winter	16	1.011	18	303.7	0.539	1.276	11.2671	
180 minute winter	16	5.000	18	520.5	0.394	0.297	35.7274	
180 minute winter	18	1.012	1.012:50%	316.3	0.562	1.329	11.2671	
180 minute winter	18	6.000	6.000:50%	497.7	0.338	0.284	35.6192	
180 minute winter	18	1.012	20	296.1	0.526	1.244	11.2671	
180 minute winter	18	6.000	20	524.7	0.410	0.300	35.4800	
180 minute winter	20	1.013	1.013:50%	300.3	0.533	1.262	11.2671	
180 minute winter	20	7.000	7.000:50%	500.2	0.354	0.286	35.3093	
180 minute winter	20	1.013	22	283.2	0.503	1.190	11.2671	
180 minute winter	20	7.000	22	516.5	0.396	0.295	35.1330	
180 minute winter	22	1.014	1.014:50%	295.1	0.524	1.240	11.2671	
180 minute winter	22	8.000	8.000:50%	490.8	0.352	0.280	34.9509	
180 minute winter	22	1.014	24	283.0	0.502	1.189	11.2671	
180 minute winter	22	8.000	24	504.1	0.404	0.288	34.7360	
180 minute winter	24	1.015	1.015:50%	291.4	0.517	1.225	11.2671	
180 minute winter	24	9.000	9.000:50%	471.1	0.356	0.269	34.4923	
180 minute winter	24	1.015	26	275.5	0.516	1.158	11.2671	
180 minute winter	24	9.000	26	483.8	0.392	0.276	34.2262	
240 minute winter	26	1.016	28	290.8	0.558	1.222	10.2649	
240 minute winter	26	10.000	10.000:50%	465.3	0.360	0.266	13.9515	
240 minute winter	26	10.000	28	485.3	0.400	0.277	13.8928	
240 minute winter	28	1.017	32	300.1	0.789	1.263	8.4729	
240 minute winter	28	12.000	12.000:50%	469.5	0.364	0.268	12.6836	

**Results for 200 year +37% CC Critical Storm Duration. Lowest mass balance: 98.81%**

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
240 minute winter	12.000:50%	160	50.340	0.486	496.5	0.0000	0.0000	OK
360 minute winter	29	368	49.113	1.140	170.9	1.2899	0.0000	FLOOD RISK
360 minute winter	30	360	49.115	1.393	274.0	2.4608	0.0000	SURCHARGED
240 minute winter	32	160	50.338	2.947	618.2	31.6843	0.0000	FLOOD RISK
240 minute winter	13.000:75%	160	50.333	0.480	539.8	0.0000	0.0000	OK
240 minute winter	34	164	50.331	3.020	654.1	65.0144	0.0000	FLOOD RISK
240 minute winter	14.000:50%	164	50.328	0.475	496.3	0.0000	0.0000	OK
240 minute winter	36	164	50.323	3.092	625.3	74.6244	0.0000	FLOOD RISK
240 minute winter	15.000:50%	164	50.319	0.466	486.1	0.0000	0.0000	OK
240 minute winter	38	164	50.315	3.164	617.8	68.4522	0.0000	FLOOD RISK
240 minute winter	1.021:50%	164	50.310	3.199	367.0	34.7557	0.0000	SURCHARGED
240 minute winter	16.000:50%	164	50.310	0.457	472.7	0.0000	0.0000	OK
240 minute winter	40	164	50.305	3.234	607.5	46.6513	0.0000	FLOOD RISK
240 minute winter	1.022:50%	164	50.299	3.268	361.1	35.5806	0.0000	SURCHARGED
240 minute winter	17.000:50%	164	50.299	0.446	447.9	0.0000	0.0000	OK
240 minute winter	42	164	50.293	3.302	581.9	36.2680	0.0000	FLOOD RISK
240 minute winter	1.023:50%	168	50.287	3.336	360.2	36.4058	0.0000	SURCHARGED
240 minute winter	18.000:50%	164	50.288	0.435	429.4	0.0000	0.0000	OK
240 minute winter	44	168	50.281	3.370	564.9	48.7495	0.0000	FLOOD RISK

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> )
240 minute winter	28	12.000	32	492.1	0.416	0.281	12.6291	
360 minute winter	29	11.000	30	274.0	0.759	0.276	63.6981	
360 minute winter	30	11.001	32	273.9	0.432	0.276	83.8736	
240 minute winter	32	1.018	34	318.9	0.566	1.340	22.5342	
240 minute winter	32	13.000	13.000:75%	479.9	0.385	0.274	49.9018	
240 minute winter	32	13.000	34	525.2	0.548	0.300	16.4689	
240 minute winter	34	1.019	36	342.2	0.608	1.438	22.5342	
240 minute winter	34	14.000	14.000:50%	495.7	0.418	0.283	32.6792	
240 minute winter	34	14.000	36	478.5	0.472	0.273	32.3014	
240 minute winter	36	1.020	38	340.1	0.604	1.429	22.5347	
240 minute winter	36	15.000	15.000:50%	455.0	0.405	0.260	31.8869	
240 minute winter	36	15.000	38	474.4	0.473	0.271	31.4735	
240 minute winter	38	1.021	1.021:50%	366.4	0.650	1.540	11.2671	
240 minute winter	38	16.000	16.000:50%	444.5	0.410	0.254	31.0628	
240 minute winter	38	1.021	40	354.8	0.630	1.491	11.2671	
240 minute winter	38	16.000	40	458.1	0.518	0.262	30.5889	
240 minute winter	40	1.022	1.022:50%	360.5	0.640	1.515	11.2671	
240 minute winter	40	17.000	17.000:50%	436.7	0.428	0.250	30.0483	
240 minute winter	40	1.022	42	347.6	0.617	1.461	11.2671	
240 minute winter	40	17.000	42	436.1	0.503	0.249	29.5192	
240 minute winter	42	1.023	1.023:50%	359.6	0.638	1.511	11.2671	
240 minute winter	42	18.000	18.000:50%	416.0	0.411	0.238	29.0013	
240 minute winter	42	1.023	44	345.0	0.613	1.450	11.2671	
240 minute winter	42	18.000	44	420.3	0.458	0.240	28.4188	
240 minute winter	44	1.024	1.024:50%	356.2	0.632	1.497	11.2671	

**Results for 200 year +37% CC Critical Storm Duration. Lowest mass balance: 98.81%**

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
240 minute winter	1.024:50%	168	50.274	3.403	356.8	37.1953	0.0000	SURCHARGED
240 minute winter	19.000:50%	168	50.274	0.421	410.2	0.0000	0.0000	OK
240 minute winter	46	168	50.267	3.436	542.0	37.8705	0.0000	FLOOD RISK
240 minute winter	1.025:50%	168	50.259	3.468	342.6	26.6018	0.0000	SURCHARGED
240 minute winter	20.000:50%	168	50.259	0.406	396.1	0.0000	0.0000	OK
240 minute winter	48	168	50.251	3.500	528.9	27.1557	0.0000	FLOOD RISK
240 minute winter	1.026:50%	168	50.242	3.531	359.1	27.1524	0.0000	SURCHARGED
240 minute winter	21.000:50%	168	50.243	0.390	377.3	0.0000	0.0000	OK
240 minute winter	50	168	50.232	3.561	515.4	39.7461	0.0000	FLOOD RISK
240 minute winter	1.027:50%	168	50.226	3.573	377.4	12.5800	0.0000	SURCHARGED
240 minute winter	22.000:50%	168	50.227	0.374	364.4	0.0000	0.0000	OK
240 minute winter	52	168	50.221	3.586	503.5	25.1297	0.0000	FLOOD RISK
240 minute winter	23.000:50%	168	50.211	0.358	359.6	0.0000	0.0000	OK
240 minute winter	54	168	50.201	3.629	489.6	44.3515	0.0000	FLOOD RISK
240 minute winter	24.000:50%	168	50.187	0.334	351.2	0.0000	0.0000	OK
240 minute winter	56	168	50.170	3.678	492.6	56.7903	0.0000	FLOOD RISK
240 minute winter	25.000:50%	168	50.041	0.188	161.6	0.0000	0.0000	OK
180 minute winter	58	136	49.992	3.580	493.7	67.4614	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> )
240 minute winter	44	19.000	19.000:50%	401.9	0.399	0.230	27.7719	
240 minute winter	44	1.024	46	339.7	0.603	1.428	11.2671	
240 minute winter	44	19.000	46	402.6	0.494	0.230	27.1304	
240 minute winter	46	1.025	1.025:50%	342.6	0.608	1.439	11.2671	
240 minute winter	46	20.000	20.000:50%	384.7	0.404	0.220	26.4914	
240 minute winter	46	1.025	48	348.7	0.619	1.465	11.2671	
240 minute winter	46	20.000	48	388.8	0.463	0.222	25.8049	
240 minute winter	48	1.026	1.026:50%	359.1	0.637	1.509	11.2671	
240 minute winter	48	21.000	21.000:50%	368.6	0.392	0.211	25.0748	
240 minute winter	48	1.026	50	363.5	0.645	1.527	11.2671	
240 minute winter	48	21.000	50	370.4	0.456	0.212	24.2381	
240 minute winter	50	1.027	1.027:50%	377.4	0.670	1.586	5.1327	
240 minute winter	50	22.000	22.000:50%	361.1	0.419	0.206	9.6554	
240 minute winter	50	1.027	52	379.3	0.673	1.594	5.1327	
240 minute winter	50	22.000	52	363.9	0.461	0.208	9.4633	
240 minute winter	52	1.028	54	384.5	0.683	1.616	17.7175	
240 minute winter	52	23.000	23.000:50%	355.3	0.398	0.203	17.6204	
240 minute winter	52	23.000	54	358.4	0.475	0.205	16.9622	
240 minute winter	54	1.029	56	398.5	0.707	1.674	22.5342	
240 minute winter	54	24.000	24.000:50%	346.1	0.378	0.198	20.6067	
240 minute winter	54	24.000	56	351.0	0.491	0.201	19.3883	
240 minute winter	56	1.030	58	414.3	0.736	1.741	22.5342	
240 minute winter	56	25.000	25.000:50%	157.1	0.305	0.090	10.3074	
240 minute winter	56	25.000	58	161.3	0.414	0.092	8.1735	
180 minute winter	58	1.031	1.031:50%	416.7	0.740	1.566	12.7645	

**Results for 200 year +37% CC Critical Storm Duration. Lowest mass balance: 98.81%**

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
180 minute winter	1.031:50%	144	48.941	2.586	416.7	21.3654	0.0000	SURCHARGED
30 minute winter	119	22	48.080	0.726	154.1	5.1324	0.0000	FLOOD RISK
180 minute winter	59	144	48.795	2.496	493.5	29.4088	0.0000	FLOOD RISK
180 minute winter	1.032:50%	144	48.788	2.625	453.9	46.3921	0.0000	SURCHARGED
180 minute winter	27.000:50%	144	48.788	0.498	411.1	0.0000	0.0000	OK
180 minute winter	61	144	48.780	2.753	535.7	49.2899	0.0000	FLOOD RISK
180 minute winter	28.000:50%	144	48.767	0.477	388.9	0.0000	0.0000	OK
180 minute winter	63	144	48.753	2.976	593.2	96.5657	0.0000	FLOOD RISK
180 minute winter	1.034:50%	140	48.634	3.239	644.8	21.5886	0.0000	SURCHARGED
15 minute winter	29.000:50%	10	49.021	0.013	7.3	0.0000	0.0000	OK
120 minute winter	65	98	48.523	3.510	646.2	32.6390	0.0000	SURCHARGED
15 minute winter	66	10	55.574	0.016	5.5	0.0056	0.0000	OK
15 minute winter	30.000:50%	10	55.387	0.174	338.3	0.0000	0.0000	OK
15 minute winter	67	10	55.042	0.173	334.3	0.0000	0.0000	OK
15 minute winter	30.001:50%	10	54.727	0.198	428.3	0.0000	0.0000	OK
15 minute winter	68	11	54.387	0.198	423.7	0.0000	0.0000	OK
15 minute winter	30.002:50%	11	54.137	0.202	439.5	0.0000	0.0000	OK
15 minute winter	69	11	53.883	0.202	441.4	0.0000	0.0000	OK
15 minute winter	30.003:50%	11	53.632	0.205	455.6	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> )
180 minute winter	58	26.000	59	90.0	0.121	0.017	42.6890	
180 minute winter	58	1.031	59	425.0	0.754	1.597	12.7645	
30 minute winter	119	52.000	121	82.5	1.254	0.911	3.3872	
30 minute winter	119	53.000	121	95.6	0.304	0.071	23.9261	
180 minute winter	59	1.032	1.032:50%	453.8	0.806	1.348	19.1552	
180 minute winter	59	27.000	27.000:50%	408.8	0.324	0.234	59.7677	
180 minute winter	59	1.032	61	464.1	0.824	1.379	19.1552	
180 minute winter	59	27.000	61	434.4	0.505	0.248	58.4683	
180 minute winter	61	1.033	63	524.1	0.930	1.557	35.2102	
180 minute winter	61	28.000	28.000:50%	387.3	0.390	0.287	40.0917	
180 minute winter	61	28.000	63	420.2	0.605	0.311	38.3841	
180 minute winter	63	1.034	1.034:50%	644.6	1.512	0.707	7.3298	
180 minute winter	63	29.000	29.000:50%	-2.3	-0.278	-0.002	7.8255	
180 minute winter	63	1.034	65	649.7	1.153	0.713	7.3298	
180 minute winter	63	29.000	65	0.0	0.000	0.000	0.0542	
120 minute winter	65	1.035	94	663.6	0.889	0.621	46.9083	
15 minute winter	66	30.000	30.000:50%	5.3	0.039	0.002	3.1855	
15 minute winter	66	30.000	67	334.3	1.123	0.124	5.9542	
15 minute winter	67	30.001	30.001:50%	329.8	1.014	0.123	6.5126	
15 minute winter	67	30.001	68	423.7	1.198	0.158	7.0970	
15 minute winter	68	30.002	30.002:50%	426.6	1.185	0.159	5.3880	
15 minute winter	68	30.002	69	441.4	1.210	0.165	5.4591	
15 minute winter	69	30.003	30.003:50%	442.7	1.199	0.165	5.5227	
15 minute winter	69	30.003	70	455.6	1.222	0.170	5.5798	

**Results for 200 year +37% CC Critical Storm Duration. Lowest mass balance: 98.81%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	70	11	53.378	0.205	455.6	0.0000	0.0000	OK
15 minute winter	30.004:50%	11	53.242	0.206	461.4	0.0000	0.0000	OK
15 minute winter	71	11	53.103	0.206	460.1	0.0000	0.0000	OK
15 minute winter	30.005:50%	11	52.903	0.208	468.7	0.0000	0.0000	OK
15 minute winter	72	12	52.701	0.208	465.7	0.0000	0.0000	OK
15 minute winter	30.006:50%	12	52.367	0.213	480.8	4.4456	0.0000	OK
15 minute winter	73	12	51.986	0.172	484.7	0.0000	0.0000	OK
15 minute winter	74	12	51.543	0.178	511.8	0.3845	0.0000	OK
15 minute winter	75	12	50.518	0.288	513.7	0.0646	0.0000	OK
30 minute winter	76	21	51.025	0.849	31.5	0.9606	0.0000	SURCHARGED
30 minute summer	32.000:50%	20	51.021	0.199	163.9	0.0000	0.0000	OK
60 minute winter	78	47	50.903	1.551	104.8	26.4387	0.0000	SURCHARGED
60 minute winter	33.000:50%	47	50.898	0.285	163.0	0.0000	0.0000	OK
60 minute winter	80	48	50.896	2.355	191.2	44.7086	0.0000	FLOOD RISK
60 minute winter	81	40	50.028	1.973	385.0	2.2312	0.0000	SURCHARGED
15 minute winter	82	10	50.593	0.049	28.7	0.0883	0.0000	OK
15 minute winter	83	11	50.303	0.074	31.3	0.0167	0.0000	OK
60 minute winter	84	40	49.808	1.812	403.8	2.0497	0.0000	SURCHARGED
60 minute winter	85	40	49.719	1.743	403.4	0.0000	0.0000	OK
60 minute winter	35.000:50%	41	49.610	1.894	451.8	12.0942	0.0000	SURCHARGED
60 minute winter	87	41	49.455	1.999	433.0	15.3417	0.0000	SURCHARGED
15 minute summer	88	1	50.680	0.000	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 (m³)	Discharge Vol (m³)
15 minute winter	70	30.004	30.004:50%	454.4	1.214	0.169	3.0363	
15 minute winter	70	30.004	71	460.1	1.225	0.171	3.0461	
15 minute winter	71	30.005	30.005:50%	458.0	1.214	0.171	4.4869	
15 minute winter	71	30.005	72	465.7	1.231	0.174	4.4981	
15 minute winter	72	30.006	30.006:50%	466.2	1.216	0.174	7.7117	
15 minute winter	72	30.006	73	484.7	1.413	0.181	6.8842	
15 minute winter	73	30.007	74	484.8	1.601	0.123	3.6919	
15 minute winter	74	30.008	75	511.0	1.153	0.131	14.1986	
15 minute winter	75	30.009	81	504.2	1.020	0.345	6.6460	
30 minute winter	76	31.000	78	12.5	0.709	0.864	2.1759	
30 minute winter	76	32.000	32.000:50%	-31.5	-0.170	-0.039	15.9395	
30 minute winter	76	32.000	78	114.1	0.417	0.142	18.3755	
60 minute winter	78	31.001	80	17.7	1.007	1.226	2.1421	
60 minute winter	78	33.000	33.000:50%	90.6	0.269	0.101	26.9692	
60 minute winter	78	33.000	80	184.9	0.500	0.205	46.9789	
60 minute winter	80	31.002	81	80.8	4.588	6.466	0.1265	
60 minute winter	81	30.010	84	384.6	1.366	2.044	3.3097	
15 minute winter	82	34.000	83	27.8	0.337	0.013	2.7017	
15 minute winter	83	34.001	84	29.6	0.384	0.020	1.0399	
60 minute winter	84	30.011	85	403.4	1.629	2.171	1.1546	
60 minute winter	85	30.012	87	0.0	0.000	0.000	0.0038	
60 minute winter	85	35.000	35.000:50%	401.5	1.723	0.827	14.6399	
60 minute winter	85	35.000	87	433.0	1.673	0.891	14.6399	
60 minute winter	87	30.013	93	417.9	1.671	1.039	9.9587	
15 minute summer	88	36.000	36.000:50%	0.0	0.000	0.000	0.4654	

**Results for 200 year +37% CC Critical Storm Duration. Lowest mass balance: 98.81%**

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 winter	36.000:50%	11	50.350	0.037	24.0	0.1222	0.0000	OK
15 minute winter	89	11	49.989	0.042	23.1	0.0000	0.0000	OK
15 minute winter	36.001:50%	11	49.810	0.100	106.3	0.0000	0.0000	OK
15 minute winter	90	11	49.748	0.275	103.9	0.0000	0.0000	OK
60 minute winter	91	46	48.915	0.895	4425.1	3.1015	0.0000	OK
120 minute winter	92	82	48.769	0.769	2004.6	2.6637	0.0000	OK
120 minute winter	93	84	48.742	2.694	2226.9	9.3326	0.0000	SURCHARGED
120 minute winter	94	90	48.489	3.643	2171.2	12.6187	0.0000	SURCHARGED
120 minute winter	95	116	47.349	3.495	2149.4	13.8979	0.0000	SURCHARGED
120 minute winter	96	94	47.963	1.288	14.8	1.4568	0.0000	OK
120 minute winter	42.000:50%	94	47.963	0.473	52.6	0.0000	0.0000	OK
120 minute winter	98	94	47.963	1.574	38.5	14.0680	0.0000	FLOOD RISK
120 minute winter	44.000:50%	94	47.963	0.473	81.8	0.0000	0.0000	OK
120 minute winter	100	94	47.963	1.985	70.7	22.5338	0.0000	FLOOD RISK
120 minute winter	101	96	47.986	1.311	34.5	1.4829	0.0000	FLOOD RISK
120 minute winter	46.000:50%	96	47.986	0.496	91.2	0.0000	0.0000	OK
120 minute winter	103	94	47.986	1.729	54.0	21.8811	0.0000	FLOOD RISK
15 minute winter	104	10	48.572	0.043	34.4	0.0944	0.0000	OK
120 minute winter	105	98	47.974	0.179	18.5	0.1155	0.0000	OK
120 minute winter	106	98	47.973	1.745	43.7	1.9740	0.0000	FLOOD RISK
15 minute winter	107	10	48.186	0.049	29.2	0.0890	0.0000	OK
120 minute winter	108	108	47.936	0.144	16.4	0.0962	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	88	36.000	89	22.2	0.447	0.008	0.9968	
15 minute winter	89	36.001	36.001:50%	23.0	0.231	0.010	2.0267	
15 minute winter	89	36.001	90	103.9	0.334	0.046	6.9465	
15 minute winter	90	36.002	93	100.7	1.127	0.673	0.8027	
60 minute winter	91	37.000	92	2168.5	3.313	1.151	8.1667	
120 minute winter	92	37.001	93	1962.0	3.891	0.207	36.8776	
120 minute winter	93	30.014	94	2171.2	1.927	0.445	16.2336	
120 minute winter	94	1.036	95	2149.4	1.908	1.102	71.1134	
120 minute winter	95	1.037	114	2137.5	1.499	0.679	90.3679	
120 minute winter	96	42.000	42.000:50%	-14.8	-0.175	-0.011	35.4760	
120 minute winter	96	43.000	98	9.5	0.276	0.260	2.2775	
120 minute winter	96	42.000	98	30.1	0.177	0.022	35.4767	
120 minute winter	98	42.001	100	18.6	0.468	1.352	2.6752	
120 minute winter	98	44.000	44.000:50%	24.1	-0.194	0.018	41.6737	
120 minute winter	98	44.000	100	66.5	0.325	0.049	41.6690	
120 minute winter	100	42.002	110	40.9	0.581	1.382	0.4117	
120 minute winter	101	45.000	103	25.7	0.647	0.703	3.3254	
120 minute winter	101	46.000	46.000:50%	-34.5	-0.240	-0.026	55.7722	
120 minute winter	101	46.000	103	42.4	0.255	0.031	55.7598	
120 minute winter	103	45.001	106	37.1	0.974	1.014	0.2335	
15 minute winter	104	47.000	105	33.7	0.454	0.011	2.5977	
120 minute winter	105	47.001	106	19.3	0.292	0.011	34.1641	
120 minute winter	106	45.002	110	39.8	1.017	0.674	0.6304	
15 minute winter	107	48.000	108	28.3	0.379	0.013	2.4540	
120 minute winter	108	48.001	109	16.3	0.161	0.009	27.7600	

**Results for 200 year +37% CC Critical Storm Duration. Lowest mass balance: 98.81%**

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
120 minute winter	109	110	47.936	0.446	16.3	0.0000	0.0000	FLOOD RISK
120 minute winter	110	98	47.929	1.980	75.2	2.2390	0.0000	FLOOD RISK
180 minute winter	111	160	46.790	3.790	2040.4	13.1273	0.0000	FLOOD RISK
120 minute winter	112	116	46.805	3.836	1251.7	13.2888	0.0000	SURCHARGED
120 minute winter	113	116	46.787	3.916	1252.7	13.5654	0.0000	SURCHARGED
120 minute winter	114	116	46.777	4.096	2360.4	16.2871	0.0000	SURCHARGED
120 minute winter	115	112	45.993	3.442	2361.5	13.6851	0.0000	SURCHARGED
120 minute winter	116	108	45.298	1.278	519.3	2.2584	0.0000	SURCHARGED
120 minute winter	117	102	45.288	1.288	341.9	3.2784	0.0000	SURCHARGED
120 minute winter	118	98	45.271	2.850	2665.6	11.3300	0.0000	SURCHARGED
30 minute winter	121	22	48.073	1.040	215.1	7.7703	0.0000	FLOOD RISK
30 minute winter	54.000:50%	22	48.071	0.248	175.7	0.0000	0.0000	OK
30 minute winter	123	23	47.876	1.278	186.8	14.6578	0.0000	SURCHARGED
15 minute winter	55.000:50%	11	47.620	0.130	116.2	0.0000	0.0000	OK
30 minute winter	125	24	47.318	1.080	232.9	12.8231	0.0000	SURCHARGED
30 minute winter	56.000:50%	24	47.285	0.194	114.8	0.0000	0.0000	OK
30 minute winter	127	23	46.835	1.001	254.6	8.5718	0.0000	SURCHARGED
30 minute winter	52.004:50%	21	46.534	0.908	323.7	5.0451	0.0000	SURCHARGED
30 minute winter	129	22	46.011	0.593	321.9	2.2038	0.0000	SURCHARGED
30 minute winter	130	23	45.443	0.423	356.7	0.7474	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> )
120 minute winter	109	48.002	110	9.4	0.567	1.736	0.0803	
120 minute winter	110	42.003	114	73.8	1.083	2.785	4.6513	
180 minute winter	111	41.000	112	1219.7	1.083	0.642	17.1834	
120 minute winter	112	38.003	113	1252.7	1.112	1.654	54.9338	
120 minute winter	113	38.004	114	1253.5	1.113	1.659	22.5342	
120 minute winter	114	1.038	115	2361.5	1.656	2.286	92.9518	
120 minute winter	115	1.039	118	2362.6	1.657	2.288	93.0416	
120 minute winter	116	51.000	117	341.9	1.970	1.118	2.8171	
120 minute winter	117	51.001	118	342.4	1.981	0.445	18.7318	
120 minute winter	118	1.040	132	2666.4	1.870	2.582	82.2526	
30 minute winter	121	52.001	123	97.8	1.407	1.399	6.3365	
30 minute winter	121	54.000	54.000:50%	-87.3	-0.346	-0.065	21.7880	
30 minute winter	121	54.000	123	134.7	0.451	0.100	14.1838	
30 minute winter	123	52.002	125	152.7	1.384	1.211	9.9267	
30 minute winter	123	55.000	55.000:50%	27.0	0.254	0.015	4.8733	
30 minute winter	123	55.000	125	98.9	0.611	0.056	9.2406	
30 minute winter	125	52.003	127	189.0	1.714	1.501	9.0842	
30 minute winter	125	56.000	56.000:50%	75.6	0.246	0.092	12.6929	
30 minute winter	125	56.000	127	104.2	0.462	0.127	9.6476	
30 minute winter	127	52.004	52.004:50%	263.1	1.661	1.291	8.2375	
30 minute winter	127	57.000	129	0.0	0.000	0.000	0.0038	
30 minute winter	127	52.004	129	321.9	2.032	1.580	8.2375	
30 minute winter	129	52.005	131	322.0	2.038	1.288	6.8178	
30 minute winter	130	58.000	131	276.7	1.494	0.905	1.9632	

**Results for 200 year +37% CC Critical Storm Duration. Lowest mass balance: 98.81%**

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
30 minute winter	131	23	45.366	0.366	597.7	0.6474	0.0000	OK
120 minute winter	132	84	44.644	2.338	2747.1	9.2965	0.0000	SURCHARGED
60 minute winter	133	47	43.638	1.635	2613.2	6.4995	0.0000	SURCHARGED
60 minute winter	134	47	42.828	0.828	3755.7	2.8686	0.0000	OK
60 minute winter	135	47	42.809	1.572	1795.6	5.4448	0.0000	SURCHARGED
60 minute winter	136	47	42.641	2.541	4171.2	8.8008	0.0000	SURCHARGED
60 minute winter	136_OUT	47	41.447	1.877	4171.3	0.0000	0.0000	OK
15 minute summer	137	1	49.940	0.000	0.0	0.0000	0.0000	OK
15 minute winter	60.000:50%	11	49.819	0.179	243.1	0.0000	0.0000	OK
15 minute winter	138	12	49.661	0.321	233.5	0.0000	0.0000	OK
15 minute winter	60.001:50%	11	49.231	0.261	489.0	0.0000	0.0000	OK
15 minute winter	139	12	49.053	0.453	471.1	0.0000	0.0000	OK
15 minute winter	60.002:50%	13	48.403	0.268	572.1	0.0000	0.0000	OK
15 minute winter	140	14	48.174	0.504	558.6	0.0000	0.0000	FLOOD RISK
30 minute winter	60.003:50%	20	47.781	0.365	762.8	0.0000	0.0000	OK
30 minute winter	141	21	47.525	0.364	758.5	0.0000	0.0000	OK
30 minute winter	60.004:50%	21	47.323	0.416	1004.4	4.5159	0.0000	OK
30 minute winter	142	21	47.075	0.423	994.3	0.0000	0.0000	OK
30 minute winter	143	21	47.050	0.425	992.8	0.0000	0.0000	OK
30 minute winter	144	21	46.702	0.315	990.7	0.0000	0.0000	OK
30 minute winter	60.007:50%	21	46.587	0.324	1077.2	0.0000	0.0000	OK
30 minute winter	145	21	46.385	0.245	1076.8	0.0000	0.0000	OK
30 minute winter	60.008:50%	21	43.467	0.267	1264.5	0.0000	0.0000	OK
30 minute winter	146	21	40.573	0.313	1266.5	0.0000	0.0000	OK
30 minute winter	60.009:50%	21	39.036	0.353	1480.1	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> )
30 minute winter	131	52.006	132	593.4	3.226	0.597	21.5958	
120 minute winter	132	1.041	133	2754.2	2.063	1.883	108.0530	
60 minute winter	133	1.042	136	2722.0	2.048	0.743	108.0530	
60 minute winter	134	59.000	135	1795.6	4.006	0.189	14.9191	
60 minute winter	135	59.001	136	1736.5	1.541	0.342	77.3396	
60 minute winter	136	1.043	136_OUT	4171.3	2.925	3.160	43.7765	
60 minute winter	136_OUT	Flow through pond	195	5218.1	0.281	0.070	1137.8615	
15 minute summer	137	60.000	60.000:50%	0.0	0.000	0.000	6.0041	
15 minute summer	137	60.000	138	223.7	0.533	0.125	19.1580	
15 minute winter	138	60.001	60.001:50%	221.9	0.550	0.126	20.8168	
15 minute winter	138	60.001	139	471.1	0.647	0.268	42.6370	
15 minute winter	139	60.002	60.002:50%	449.6	0.901	0.229	25.4369	
15 minute winter	139	60.002	140	558.6	0.692	0.284	48.0258	
15 minute winter	140	60.003	60.003:50%	535.6	0.744	0.368	37.1034	
15 minute winter	140	60.003	141	743.1	0.916	0.510	41.5757	
30 minute winter	141	60.004	60.004:50%	752.8	0.819	0.517	47.1610	
30 minute winter	141	60.004	142	994.3	0.968	0.683	52.5040	
30 minute winter	142	60.005	143	992.8	0.948	0.683	5.6708	
30 minute winter	143	60.006	144	990.7	1.159	0.680	41.0954	
30 minute winter	144	60.007	60.007:50%	989.9	1.445	0.378	5.2556	
30 minute winter	144	60.007	145	1076.8	1.843	0.411	4.4937	
30 minute winter	145	60.008	60.008:50%	1074.3	2.141	0.239	31.0282	
30 minute winter	145	60.008	146	1266.5	2.115	0.281	36.9622	
30 minute winter	146	60.009	60.009:50%	1261.9	1.734	0.383	44.9941	
30 minute winter	146	60.009	147	1483.5	2.320	0.450	39.7504	



**Results for 200 year +37% CC Critical Storm Duration. Lowest mass balance: 98.81%**

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
30 minute winter	147	21	37.360	0.254	1483.5	0.0000	0.0000	OK
30 minute summer	60.010:50%	19	33.422	0.369	3113.8	0.0000	0.0000	OK
960 minute winter	147_OUT	990	31.254	2.254	1053.8	0.0000	0.0000	OK
15 minute summer	148	1	57.110	0.000	0.0	0.0000	0.0000	OK
60 minute winter	61.000:90%	44	56.965	0.057	2.8	0.0000	0.0000	OK
60 minute winter	149	44	56.965	0.079	1.3	0.0000	0.0000	OK
120 minute winter	61.001:50%	90	56.792	0.034	3.6	0.0000	0.0000	OK
120 minute winter	150	90	56.792	0.162	3.5	0.0000	0.0000	OK
15 minute winter	61.002:50%	12	56.421	0.026	6.8	0.0000	0.0000	OK
180 minute winter	151	168	56.358	0.197	3.8	0.0000	0.0000	OK
180 minute winter	152	192	53.981	0.060	2.2	0.0000	0.0000	OK
15 minute winter	61.004:50%	11	53.620	0.079	70.3	0.0000	0.0000	OK
15 minute winter	153	12	53.344	0.183	67.5	0.0000	0.0000	OK
15 minute winter	61.005:50%	11	52.001	0.110	168.2	0.0000	0.0000	OK
15 minute winter	154	13	50.894	0.273	161.8	0.0000	0.0000	OK
30 minute summer	61.006:50%	20	50.130	0.168	258.5	0.0000	0.0000	OK
30 minute winter	155	21	49.592	0.290	248.4	0.0000	0.0000	OK
30 minute winter	61.007:50%	21	49.305	0.205	285.3	0.0000	0.0000	OK
30 minute winter	156	21	49.242	0.344	285.2	0.0000	0.0000	OK
360 minute winter	61.008:50%	368	49.114	0.350	159.7	0.0000	0.0000	OK
15 minute summer	157	1	49.940	0.000	0.0	0.0000	0.0000	OK
15 minute winter	62.000:50%	12	49.580	0.150	216.8	0.0000	0.0000	OK
15 minute winter	158	13	49.199	0.280	215.8	0.0000	0.0000	OK
360 minute winter	62.001:50%	368	49.114	0.339	108.1	0.0000	0.0000	OK
360 minute winter	159	368	49.114	0.484	267.0	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> )
30 minute winter	147	60.010	60.010:50%	1482.2	2.440	0.255	33.3371	
30 minute winter	147	60.010	147_OUT	3040.0	2.059	0.522	105.6761	
960 minute winter	147_OUT	Flow through pond	180	2337.4	0.031	0.049	95455.3125	
15 minute summer	148	61.000	61.000:90%	0.0	0.000	0.000	1.0352	
15 minute summer	148	61.000	149	1.6	0.059	0.001	0.3037	
60 minute winter	149	61.001	61.001:50%	1.2	0.066	0.001	0.6145	
60 minute winter	149	61.001	150	4.6	0.084	0.003	3.8055	
120 minute winter	150	61.002	61.002:50%	1.9	0.119	0.001	0.9435	
120 minute winter	150	61.002	151	4.3	0.076	0.003	8.2390	
180 minute winter	151	61.003	152	2.2	0.107	0.001	4.3634	
180 minute winter	152	61.004	61.004:50%	2.1	0.168	0.001	0.9894	
180 minute winter	152	61.004	153	23.0	0.242	0.010	3.1123	
15 minute winter	153	61.005	61.005:50%	62.8	0.505	0.021	7.6799	
15 minute winter	153	61.005	154	161.8	0.583	0.054	21.1819	
15 minute winter	154	61.006	61.006:50%	143.8	0.620	0.067	14.6888	
15 minute winter	154	61.006	155	249.3	0.641	0.117	26.7052	
30 minute winter	155	61.007	61.007:50%	241.6	0.688	0.144	10.6798	
30 minute winter	155	61.007	156	285.2	0.515	0.170	17.2984	
30 minute winter	156	61.008	61.008:50%	288.2	0.504	0.230	22.5787	
30 minute winter	156	61.008	159	559.1	0.684	0.446	29.8145	
15 minute summer	157	62.000	62.000:50%	0.0	0.000	0.000	4.8580	
15 minute summer	157	62.000	158	193.9	0.593	0.086	15.7985	
15 minute winter	158	62.001	62.001:50%	210.0	0.440	0.161	17.9290	
15 minute winter	158	62.001	159	417.0	0.566	0.320	27.2031	
360 minute winter	159	61.009	159_OUT	265.1	0.848	0.182	13.8840	

**Results for 200 year +37% CC Critical Storm Duration. Lowest mass balance: 98.81%**

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
360 minute winter	159_OUT	368	49.114	0.560	265.1	0.9887	0.0000	OK
15 minute summer	160	1	49.863	0.000	0.0	0.0000	0.0000	OK
15 minute winter	63.000:50%	11	49.711	0.026	9.2	0.0015	0.0000	OK
15 minute winter	161	11	49.548	0.041	24.6	0.0415	0.0000	OK
15 minute winter	162	11	49.389	0.058	24.2	0.0000	0.0000	OK
60 minute winter	63.002:50%	44	49.188	0.113	33.4	0.0000	0.0000	OK
60 minute winter	163	45	49.188	0.378	32.7	0.0000	0.0000	FLOOD RISK
60 minute winter	164	45	48.319	0.038	15.9	0.0000	0.0000	OK
30 minute summer	63.004:50%	19	48.117	0.067	42.1	0.0000	0.0000	OK
30 minute summer	165	19	47.886	0.067	42.2	0.0000	0.0000	OK
30 minute summer	63.005:50%	19	47.818	0.073	48.6	0.5158	0.0000	OK
30 minute summer	166	20	47.745	0.073	47.9	0.0000	0.0000	OK
30 minute summer	63.006:50%	19	47.596	0.084	62.1	0.0000	0.0000	OK
30 minute summer	167	20	47.436	0.084	62.0	0.0000	0.0000	OK
30 minute summer	63.007:50%	20	47.289	0.097	74.3	0.0000	0.0000	OK
30 minute summer	168	20	47.115	0.083	81.1	0.0510	0.0000	OK
15 minute summer	169	1	47.500	0.000	0.0	0.0000	0.0000	OK
15 minute winter	64.000:50%	10	47.461	0.119	102.6	0.0000	0.0000	OK
15 minute winter	170	11	47.299	0.115	100.2	0.0000	0.0000	OK
15 minute winter	64.001:50%	11	47.181	0.162	186.2	0.5682	0.0000	OK
15 minute winter	171	12	47.048	0.193	254.4	0.0000	0.0000	SURCHARGED
15 minute summer	172	1	47.500	0.000	0.0	0.0000	0.0000	OK
15 minute winter	65.000:50%	10	47.379	0.037	11.1	0.0214	0.0000	OK
15 minute winter	173	12	47.214	0.030	11.2	0.0000	0.0000	OK
15 minute winter	65.001:28%	11	47.174	0.104	94.0	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> )
360 minute winter	159_OUT	Flow through pond	29	170.9	0.020	0.048	2028.5903	
15 minute summer	160	63.000	63.000:50%	0.0	0.000	0.000	0.3210	
15 minute summer	160	63.000	161	8.3	0.196	0.004	0.8480	
15 minute winter	161	63.001	162	24.2	0.370	0.010	0.8178	
15 minute winter	162	63.002	63.002:50%	23.4	0.280	0.013	2.7414	
15 minute winter	162	63.002	163	49.5	0.318	0.027	14.0630	
60 minute winter	163	63.003	164	15.9	0.619	0.922	1.4872	
60 minute winter	164	63.004	63.004:50%	15.9	0.309	0.009	1.8553	
60 minute winter	164	63.004	165	35.1	0.422	0.019	2.3582	
30 minute summer	165	63.005	63.005:50%	41.4	0.421	0.022	0.9038	
30 minute summer	165	63.005	166	47.9	0.469	0.026	0.9451	
30 minute summer	166	63.006	63.006:50%	48.1	0.428	0.026	2.2493	
30 minute summer	166	63.006	167	62.0	0.510	0.034	2.4347	
30 minute summer	167	63.007	63.007:50%	61.7	0.463	0.033	2.6683	
30 minute summer	167	63.007	168	74.4	0.562	0.040	2.6495	
30 minute summer	168	63.008	171	81.0	0.379	0.033	2.7773	
15 minute summer	169	64.000	64.000:50%	0.0	0.000	0.000	2.1888	
15 minute summer	169	64.000	170	96.4	0.556	0.058	4.2334	
15 minute winter	170	64.001	64.001:50%	100.1	0.447	0.059	5.4628	
15 minute winter	170	64.001	171	185.5	0.620	0.109	7.3716	
15 minute winter	171	63.009	174	254.8	0.782	1.601	3.8318	
15 minute summer	172	65.000	65.000:50%	0.0	0.000	0.000	0.5711	
15 minute summer	172	65.000	173	10.7	0.261	0.006	0.9931	
15 minute winter	173	65.001	65.001:28%	10.8	0.117	0.006	1.3173	
15 minute winter	173	65.001	174	92.5	0.417	0.049	8.0957	

**Results for 200 year +37% CC Critical Storm Duration. Lowest mass balance: 98.81%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	174	12	46.955	0.178	352.8	0.0959	0.0000	OK
15 minute winter	175	12	46.720	0.152	354.3	0.0000	0.0000	OK
15 minute winter	63.011:50%	12	46.248	0.155	365.2	0.0000	0.0000	OK
15 minute winter	176	12	45.774	0.155	365.0	0.0000	0.0000	OK
15 minute winter	63.012:50%	12	45.180	0.180	478.5	0.0000	0.0000	OK
15 minute winter	177	12	44.562	0.180	479.8	0.0000	0.0000	OK
15 minute winter	63.013:50%	11	44.037	0.274	1069.5	0.0000	0.0000	OK
15 minute winter	178	11	43.418	0.274	1067.8	0.0000	0.0000	OK
15 minute winter	63.014:50%	11	42.812	0.287	1170.8	7.9951	0.0000	OK
15 minute winter	179	11	42.193	0.286	1166.2	0.0000	0.0000	OK
15 minute winter	63.015:50%	11	41.646	0.358	1817.5	12.5197	0.0000	OK
30 minute summer	179_OUT	19	40.615	1.045	1734.7	0.0000	0.0000	OK
960 minute winter	180	1005	31.254	2.254	2337.4	3.9832	0.0000	SURCHARGED
240 minute winter	181	152	29.187	0.207	241.7	0.5276	0.0000	OK
60 minute summer	182	271	28.443	0.243	241.7	0.6179	0.0000	OK
15 minute summer	182_OUT	1	25.600	1.600	191.4	0.0000	0.0000	OK
15 minute summer	183	1	40.241	0.000	0.0	0.0000	0.0000	OK
15 minute winter	69.000:50%	10	39.736	0.068	81.5	0.0000	0.0000	OK
15 minute winter	184	10	39.166	0.071	80.2	0.0000	0.0000	OK
15 minute winter	69.001:50%	10	39.057	0.095	132.4	0.0000	0.0000	OK
15 minute winter	185	10	38.916	0.087	131.7	0.0000	0.0000	OK
15 minute winter	69.002:50%	10	38.721	0.089	136.8	0.0000	0.0000	OK
15 minute winter	186	11	38.522	0.087	136.1	0.0000	0.0000	OK
15 minute winter	69.003:50%	11	37.878	0.104	186.4	0.0000	0.0000	OK
15 minute winter	187	11	37.215	0.102	186.6	0.0000	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 winter	174	63.010	175	354.3	1.263	0.132	3.4437	
15 minute winter	175	63.011	63.011:50%	354.2	1.388	0.098	3.9040	
15 minute winter	175	63.011	176	365.0	1.416	0.101	3.9420	
15 minute winter	176	63.012	63.012:50%	363.6	1.289	0.100	5.7031	
15 minute winter	176	63.012	177	479.8	1.534	0.133	6.2551	
15 minute winter	177	63.013	63.013:50%	480.1	1.191	0.133	8.5580	
15 minute winter	177	63.013	178	1067.8	1.930	0.295	11.0647	
15 minute winter	178	63.014	63.014:50%	1065.2	1.865	0.294	11.4300	
15 minute winter	178	63.014	179	1166.2	1.979	0.322	11.7892	
15 minute winter	179	63.015	63.015:50%	1162.3	1.679	0.321	14.0179	
15 minute winter	179	63.015	179_OUT	1813.5	2.231	0.501	16.2573	
30 minute summer	179_OUT	Flow through pond	195	4651.1	0.311	0.062	1076.7739	
960 minute winter	180	Hydro-Brake®	181	241.7				
240 minute winter	181	66.001	182	241.7	2.511	0.241	3.5482	
60 minute summer	182	66.002	182_OUT	241.7	1.063	0.360	85.6459	3450.4
15 minute summer	183	69.000	69.000:50%	0.0	0.000	0.000	0.9188	
15 minute summer	183	69.000	184	76.6	0.807	0.022	1.8985	
15 minute winter	184	69.001	69.001:50%	79.2	0.657	0.025	0.7006	
15 minute winter	184	69.001	185	131.7	0.982	0.042	0.7745	
15 minute winter	185	69.002	69.002:50%	131.1	1.022	0.036	0.7880	
15 minute winter	185	69.002	186	136.1	1.065	0.037	0.7859	
15 minute winter	186	69.003	69.003:50%	136.4	0.966	0.036	2.6988	
15 minute winter	186	69.003	187	186.6	1.201	0.049	2.9653	
15 minute winter	187	69.004	69.004:50%	187.4	0.996	0.048	4.2841	

**Results for 200 year +37% CC Critical Storm Duration. Lowest mass balance: 98.81%**

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 winter	69.004:50%	11	36.432	0.139	313.0	0.3695	0.0000	OK
15 minute winter	188	11	35.598	0.125	314.5	0.0000	0.0000	OK
15 minute winter	69.005:50%	11	34.485	0.141	390.7	0.0000	0.0000	OK
15 minute winter	189	11	33.367	0.152	391.3	0.0000	0.0000	OK
15 minute winter	69.006:50%	11	32.526	0.168	471.8	0.0000	0.0000	OK
960 minute winter	205	975	31.250	1.410	3.2	2.7601	0.0000	FLOOD RISK
960 minute winter	205_OUT	1005	31.250	1.994	2.8	2.8539	0.0000	OK
15 minute winter	191	10	40.314	0.024	2.6	0.0000	0.0000	OK
15 minute winter	67.000:50%	10	40.314	0.126	106.2	0.0738	0.0000	OK
15 minute winter	192	11	40.198	0.112	103.0	0.0000	0.0000	OK
15 minute winter	67.001:50%	11	40.093	0.167	213.2	0.0000	0.0000	OK
60 minute winter	193	39	40.031	0.265	134.2	0.0000	0.0000	OK
60 minute winter	67.002:50%	39	40.031	0.398	182.4	0.0000	0.0000	OK
60 minute winter	194	38	40.032	0.532	253.1	0.1541	0.0000	SURCHARGED
60 minute winter	195	38	40.252	0.802	5218.1	0.0000	0.0000	FLOOD RISK
60 minute winter	196	38	40.034	0.626	6265.3	0.0000	0.0000	SURCHARGED
60 minute winter	67.004:50%	39	38.047	0.560	5409.9	3.2764	0.0000	SURCHARGED
60 minute winter	197	39	36.036	0.536	5401.6	0.0000	0.0000	SURCHARGED
60 minute winter	67.005:50%	39	32.946	0.546	5618.8	0.0000	0.0000	SURCHARGED
960 minute winter	197_OUT	945	31.272	2.016	3991.7	404.1732	0.0000	OK
15 minute summer	198	1	44.872	0.000	0.0	0.0000	0.0000	OK
15 minute winter	70.000:50%	11	44.526	0.064	52.8	0.0000	0.0000	OK
30 minute winter	199	23	44.432	0.381	44.1	0.0000	0.0000	OK
15 minute winter	70.001:50%	12	43.578	0.097	138.6	0.4321	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 winter	187	69.004	188	314.5	1.494	0.080	4.7722	
15 minute winter	188	69.005	69.005:50%	315.1	1.477	0.069	4.8364	
15 minute winter	188	69.005	189	391.3	1.627	0.085	5.4514	
15 minute winter	189	69.006	69.006:50%	391.0	1.452	0.097	6.0619	
15 minute winter	189	69.006	190	471.2	1.255	0.117	8.5501	
960 minute winter	205	71.000	205_OUT	2.8	0.412	0.009	8.6876	
960 minute winter	205_OUT	Flow through pond	180	2337.4	0.031	0.049	95455.3125	
15 minute winter	191	67.000	67.000:50%	2.8	0.031	0.002	2.0175	
15 minute winter	191	67.000	192	103.0	0.562	0.066	3.2430	
15 minute winter	192	67.001	67.001:50%	103.3	0.457	0.056	4.5627	
15 minute winter	192	67.001	193	212.7	0.742	0.115	5.7514	
60 minute winter	193	67.002	67.002:50%	143.4	0.489	0.081	13.2688	
60 minute winter	193	67.002	194	247.6	0.413	0.140	21.7448	
60 minute winter	194	67.003	196	212.8	0.435	0.156	8.8213	
60 minute winter	195	68.000	196	6113.2	2.562	4.240	20.5491	
60 minute winter	196	67.004	67.004:50%	5363.7	3.344	1.248	73.3502	
60 minute winter	196	67.004	197	5401.6	3.468	1.257	71.0946	
60 minute winter	197	67.005	67.005:50%	5399.5	3.537	1.159	92.4588	
60 minute winter	197	67.005	197_OUT	5614.6	2.130	1.205	220.3385	
960 minute winter	197_OUT	Flow through pond	180	2337.4	0.031	0.049	95455.3125	
15 minute summer	198	70.000	70.000:50%	0.0	0.000	0.000	1.3125	
15 minute summer	198	70.000	199	48.5	0.287	0.020	11.7654	
30 minute winter	199	70.001	70.001:50%	26.0	0.383	0.008	2.3396	
30 minute winter	199	70.001	201	136.7	0.299	0.043	14.7770	

**Results for 200 year +37% CC Critical Storm Duration. Lowest mass balance: 98.81%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
30 minute winter	201	22	43.339	0.429	136.7	0.0000	0.0000	OK
15 minute winter	70.002:65%	11	42.294	0.144	279.4	1.8921	0.0000	OK
120 minute winter	202	88	40.800	0.369	152.3	0.4169	0.0000	OK
120 minute winter	204	88	40.800	1.048	111.2	1.1848	0.0000	FLOOD RISK
120 minute winter	204_OUT	82	40.355	0.785	66.7	0.0000	0.0000	OK
30 minute winter	207	22	45.445	0.173	2.2	0.3056	0.0000	OK
30 minute winter	207_OUT	22	45.445	0.273	475.5	2.2130	0.0000	OK
15 minute winter	208	12	49.040	0.325	11.8	1.1272	0.0000	OK
15 minute winter	208_OUT	12	49.042	0.428	7612.8	44.8392	0.0000	OK
15 minute winter	210	12	43.137	0.362	13.4	1.2530	0.0000	OK
15 minute winter	210_OUT	12	43.137	0.463	6479.9	30.2843	0.0000	OK
180 minute winter	209	160	46.772	0.772	2.3	1.3645	0.0000	FLOOD RISK
180 minute winter	209_OUT	160	46.772	0.872	2070.1	164.8205	0.0000	OK
120 minute winter	211	108	45.298	0.972	2.5	1.7174	0.0000	SURCHARGED
120 minute winter	211_OUT	108	45.298	1.072	816.5	19.6463	0.0000	OK
960 minute winter	190_OUT	1005	31.253	1.997	78.9	0.0000	0.0000	OK
15 minute winter	190	11	31.745	0.245	471.2	0.0000	0.0000	OK
15 minute winter	69.007:50%	11	31.632	0.337	888.7	0.0000	0.0000	OK
120 minute winter	12	92	46.940	1.265	43.7	2.6205	0.0000	OK
120 minute winter	38.000:41%	92	46.941	0.451	109.2	0.0000	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)
30 minute winter	201	70.002	70.002:65%	129.1	0.778	0.041	5.7149	
30 minute winter	201	70.002	202	262.4	1.161	0.082	3.8690	
120 minute winter	202	Flow through pond	204	111.2	0.169	0.004	176.4122	
120 minute winter	204	72.000	204_OUT	66.7	1.135	0.738	0.8280	
120 minute winter	204_OUT	Flow through pond	195	4927.9	0.266	0.066	1112.4871	
30 minute winter	207	73.000	207_OUT	-2.2	-0.073	-0.003	0.9595	
30 minute winter	207_OUT	Flow through pond	130	356.7	0.257	0.011	187.1180	
15 minute winter	208	74.000	208_OUT	-11.8	-0.222	-0.003	3.0276	
15 minute winter	208_OUT	Flow through pond	91	7432.6	0.784	0.057	3154.7637	
15 minute winter	210	76.000	210_OUT	-13.4	-0.225	-0.003	3.4292	
15 minute winter	210_OUT	Flow through pond	134	5659.1	0.811	0.037	2508.4255	
180 minute winter	209	75.000	209_OUT	-2.3	0.036	-0.003	2.8165	
180 minute winter	209_OUT	Flow through pond	111	2040.4	0.413	0.048	7523.1455	
120 minute winter	211	77.000	211_OUT	-2.5	-0.041	-0.004	2.8072	
120 minute winter	211_OUT	Flow through pond	116	458.1	0.185	0.003	2203.3403	
960 minute winter	190_OUT	Flow through pond	180	2337.4	0.031	0.049	95455.3125	
15 minute winter	190	69.007	69.007:50%	466.4	0.783	0.237	13.6709	
15 minute winter	190	69.007	190_OUT	887.4	1.301	0.451	15.3288	
120 minute winter	12	38.000	38.000:41%	-33.4	-0.208	-0.025	70.0626	
120 minute winter	12	39.000	15	24.8	0.674	0.676	5.9171	
120 minute winter	12	38.000	15	86.5	0.194	0.064	100.9531	

**Results for 200 year +37% CC Critical Storm Duration. Lowest mass balance: 98.81%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute winter	15	92	46.940	2.009	94.8	2.2727	0.0000	OK
120 minute winter	38.001:45%	92	46.940	0.440	166.0	0.0000	0.0000	OK
120 minute winter	17	92	46.938	2.632	153.4	2.9773	0.0000	FLOOD RISK
180 minute winter	19	168	45.882	0.392	8.3	1.0773	0.0000	OK
180 minute winter	50.000:25%	168	45.882	0.427	43.0	4.1743	0.0000	OK
180 minute winter	21	164	45.882	1.307	74.7	1.4778	0.0000	FLOOD RISK
180 minute winter	23	168	45.882	0.392	10.0	0.4429	0.0000	OK
180 minute winter	49.000:37%	164	45.881	0.499	74.4	0.0000	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)
120 minute winter	15	38.001	38.001:45%	62.0	-0.232	0.046	62.4098	
120 minute winter	15	40.000	17	48.9	1.229	1.335	4.9703	
120 minute winter	15	38.001	17	137.1	0.375	0.102	76.0072	
120 minute winter	17	38.002	112	109.2	1.550	1.247	0.7048	
180 minute winter	19	50.000	50.000:25%	5.8	0.059	0.006	17.2913	
180 minute winter	19	50.000	21	32.3	0.262	0.035	66.2579	
180 minute winter	21	49.001	118	34.6	0.920	1.444	2.7005	
180 minute winter	23	49.000	49.000:37%	-10.0	-0.072	-0.011	61.0045	
180 minute winter	23	49.000	21	43.6	0.251	0.047	162.4116	

**Results for 1000 year Critical Storm Duration. Lowest mass balance: 98.81%**

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	1	1	62.520	0.000	0.0	0.0000	0.0000	OK
30 minute winter	1.000:50%	21	62.082	0.262	372.1	0.0000	0.0000	OK
30 minute winter	2	22	61.490	0.370	366.4	0.0000	0.0000	OK
30 minute winter	1.001:50%	22	60.280	0.275	512.9	0.0000	0.0000	OK
30 minute winter	3	23	59.313	0.423	507.8	0.0000	0.0000	OK
30 minute winter	1.002:50%	23	58.373	0.183	518.7	0.0000	0.0000	OK
30 minute winter	4	25	57.826	0.336	519.3	0.0000	0.0000	FLOOD RISK
30 minute winter	5	25	57.821	0.321	16.0	0.0000	0.0000	OK
30 minute winter	2.000:50%	25	57.821	0.395	52.5	0.0000	0.0000	OK
30 minute winter	6	25	57.820	0.468	510.7	0.0000	0.0000	OK
30 minute winter	1.004:50%	24	57.357	0.326	623.3	4.7979	0.0000	OK
30 minute winter	7	24	57.144	0.435	621.7	0.0000	0.0000	OK
30 minute winter	1.005:50%	20	56.622	0.288	880.5	8.3227	0.0000	OK
30 minute winter	8	21	56.379	0.421	884.4	0.2692	0.0000	OK
30 minute winter	9	21	55.385	0.483	883.3	0.0000	0.0000	OK
30 minute winter	1.007:50%	21	53.866	0.208	1005.6	4.2618	0.0000	OK
30 minute winter	10	21	52.869	0.454	1006.6	0.0000	0.0000	OK
30 minute winter	1.008:50%	21	51.561	0.195	1112.4	0.0000	0.0000	OK
30 minute winter	11	21	50.551	2.234	1112.9	5.6848	0.0000	FLOOD RISK
30 minute winter	3.000:50%	22	50.372	0.292	864.5	0.0000	0.0000	OK
120 minute winter	13	64	50.363	2.126	789.8	43.2542	650.0095	FLOOD
120 minute winter	4.000:50%	76	50.363	0.510	625.2	0.0000	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	1	1.000	1.000:50%	0.0	0.000	0.000	13.3296	
15 minute summer	1	1.000	2	307.9	0.611	0.227	34.5255	
30 minute winter	2	1.001	1.001:50%	358.2	0.731	0.209	28.7269	
30 minute winter	2	1.001	3	507.8	0.670	0.297	46.2374	
30 minute winter	3	1.002	1.002:50%	501.3	1.589	0.132	6.4702	
30 minute winter	3	1.002	4	519.3	1.141	0.137	10.8285	
30 minute winter	4	1.003	6	510.6	0.639	2.601	13.3972	
30 minute winter	5	2.000	2.000:50%	-16.0	-0.119	-0.013	18.1759	
30 minute winter	5	2.000	6	45.6	0.160	0.038	24.0225	
30 minute winter	6	1.004	1.004:50%	507.6	0.773	0.341	14.6279	
30 minute winter	6	1.004	7	621.7	0.699	0.417	19.9254	
30 minute winter	7	1.005	1.005:50%	621.4	1.237	0.232	11.4508	
30 minute winter	7	1.005	8	877.0	1.093	0.327	18.0262	
30 minute winter	8	1.006	9	883.3	1.207	0.139	8.8273	
30 minute winter	9	1.007	1.007:50%	884.3	2.444	0.153	5.6936	
30 minute winter	9	1.007	10	1006.6	1.389	0.174	12.1305	
30 minute winter	10	1.008	1.008:50%	1007.3	2.070	0.155	9.7359	
30 minute winter	10	1.008	11	1112.9	2.060	0.171	11.3127	
30 minute winter	11	1.009	13	582.5	1.034	2.448	22.5342	
30 minute winter	11	3.000	3.000:50%	769.3	1.051	0.254	14.9981	
30 minute winter	11	3.000	13	891.8	0.723	0.295	26.3853	
120 minute winter	13	1.010	16	382.4	0.679	1.607	22.5342	
120 minute winter	13	4.000	4.000:50%	550.1	0.375	0.314	35.9910	
120 minute winter	13	4.000	16	614.8	0.481	0.351	35.9243	

**Results for 1000 year Critical Storm Duration. Lowest mass balance: 98.81%**

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
120 minute winter	16	78	50.362	2.205	721.1	50.7579	0.0000	FLOOD RISK
120 minute winter	1.011:50%	78	50.361	2.244	362.2	23.2865	0.0000	SURCHARGED
120 minute winter	5.000:50%	78	50.361	0.508	654.0	0.0000	0.0000	SURCHARGED
120 minute winter	18	78	50.360	2.283	738.1	23.7547	0.0000	FLOOD RISK
120 minute winter	1.012:50%	78	50.358	2.321	357.5	24.2193	0.0000	SURCHARGED
120 minute winter	6.000:50%	78	50.358	0.505	647.0	0.0000	0.0000	SURCHARGED
180 minute winter	20	116	50.357	2.360	623.9	30.6872	0.0000	FLOOD RISK
180 minute winter	1.013:50%	116	50.355	2.398	302.8	25.1443	0.0000	SURCHARGED
180 minute winter	7.000:50%	116	50.355	0.502	535.8	0.0000	0.0000	SURCHARGED
180 minute winter	22	116	50.353	2.436	624.1	25.6026	0.0000	FLOOD RISK
180 minute winter	1.014:50%	120	50.351	2.474	300.6	26.0588	0.0000	SURCHARGED
180 minute winter	8.000:50%	120	50.351	0.498	524.3	0.0000	0.0000	OK
180 minute winter	24	120	50.349	2.512	618.7	32.9013	0.0000	FLOOD RISK
180 minute winter	1.015:50%	120	50.346	2.549	293.8	26.9536	0.0000	SURCHARGED
180 minute winter	9.000:50%	120	50.346	0.493	502.3	0.0000	0.0000	OK
180 minute winter	26	120	50.343	2.586	627.1	36.1232	0.0000	FLOOD RISK
180 minute winter	10.000:50%	124	50.342	0.489	518.8	0.0000	0.0000	OK
180 minute winter	28	124	50.340	2.619	634.1	32.1100	0.0000	FLOOD RISK

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> )
120 minute winter	16	1.011	1.011:50%	357.2	0.634	1.501	11.2671	
120 minute winter	16	5.000	5.000:50%	581.5	0.379	0.332	35.8344	
120 minute winter	16	1.011	18	333.8	0.593	1.403	11.2671	
120 minute winter	16	5.000	18	617.4	0.477	0.353	35.7308	
120 minute winter	18	1.012	1.012:50%	354.7	0.630	1.490	11.2671	
120 minute winter	18	6.000	6.000:50%	579.6	0.389	0.331	35.6125	
120 minute winter	18	1.012	20	331.1	0.588	1.391	11.2671	
120 minute winter	18	6.000	20	603.7	0.464	0.345	35.4522	
180 minute winter	20	1.013	1.013:50%	298.9	0.531	1.256	11.2671	
180 minute winter	20	7.000	7.000:50%	494.1	0.354	0.282	35.2783	
180 minute winter	20	1.013	22	283.3	0.503	1.190	11.2671	
180 minute winter	20	7.000	22	510.1	0.398	0.292	35.0963	
180 minute winter	22	1.014	1.014:50%	296.2	0.526	1.245	11.2671	
180 minute winter	22	8.000	8.000:50%	484.1	0.352	0.277	34.9114	
180 minute winter	22	1.014	24	283.4	0.503	1.191	11.2671	
180 minute winter	22	8.000	24	496.3	0.404	0.284	34.6969	
180 minute winter	24	1.015	1.015:50%	291.5	0.517	1.225	11.2671	
180 minute winter	24	9.000	9.000:50%	462.8	0.358	0.264	34.4475	
180 minute winter	24	1.015	26	275.6	0.516	1.158	11.2671	
180 minute winter	24	9.000	26	487.9	0.391	0.279	34.1750	
180 minute winter	26	1.016	28	297.9	0.584	1.252	10.2649	
180 minute winter	26	10.000	10.000:50%	489.5	0.385	0.280	13.9227	
180 minute winter	26	10.000	28	513.4	0.425	0.293	13.8588	
180 minute winter	28	1.017	32	306.4	0.812	1.289	8.4729	
180 minute winter	28	12.000	12.000:50%	494.6	0.388	0.283	12.6486	



**Results for 1000 year Critical Storm Duration. Lowest mass balance: 98.81%**

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
180 minute winter	12.000:50%	124	50.339	0.486	527.3	0.0000	0.0000	OK
360 minute winter	29	360	49.092	1.119	156.9	1.2651	0.0000	FLOOD RISK
360 minute winter	30	360	49.093	1.371	257.9	2.4224	0.0000	SURCHARGED
180 minute winter	32	124	50.337	2.946	658.4	31.6704	0.0000	FLOOD RISK
180 minute winter	13.000:75%	128	50.332	0.479	576.3	0.0000	0.0000	OK
180 minute winter	34	128	50.330	3.019	699.1	64.9878	0.0000	FLOOD RISK
180 minute winter	14.000:50%	128	50.326	0.473	519.1	0.0000	0.0000	OK
180 minute winter	36	128	50.322	3.091	661.1	74.5749	0.0000	FLOOD RISK
180 minute winter	15.000:50%	128	50.317	0.464	509.6	0.0000	0.0000	OK
180 minute winter	38	128	50.313	3.162	643.6	68.4050	0.0000	FLOOD RISK
180 minute winter	1.021:50%	132	50.308	3.197	378.6	34.7294	0.0000	SURCHARGED
180 minute winter	16.000:50%	128	50.308	0.455	488.6	0.0000	0.0000	OK
180 minute winter	40	132	50.302	3.231	633.2	46.6128	0.0000	FLOOD RISK
180 minute winter	1.022:50%	132	50.297	3.266	370.2	35.5512	0.0000	SURCHARGED
180 minute winter	17.000:50%	132	50.297	0.444	462.7	0.0000	0.0000	OK
180 minute winter	42	132	50.291	3.300	596.6	36.2424	0.0000	FLOOD RISK
180 minute winter	1.023:50%	132	50.285	3.334	376.0	36.3779	0.0000	SURCHARGED
180 minute winter	18.000:50%	132	50.285	0.432	440.6	0.0000	0.0000	OK
180 minute winter	44	132	50.278	3.367	577.6	48.7079	0.0000	FLOOD RISK

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> )
180 minute winter	28	12.000	32	521.4	0.441	0.298	12.5901	
360 minute winter	29	11.000	30	257.9	0.752	0.260	63.6981	
360 minute winter	30	11.001	32	257.7	0.407	0.260	83.8736	
180 minute winter	32	1.018	34	331.3	0.588	1.392	22.5342	
180 minute winter	32	13.000	13.000:75%	503.8	0.413	0.288	49.7274	
180 minute winter	32	13.000	34	556.9	0.577	0.318	16.4077	
180 minute winter	34	1.019	36	353.6	0.628	1.486	22.5342	
180 minute winter	34	14.000	14.000:50%	518.4	0.458	0.296	32.5448	
180 minute winter	34	14.000	36	496.6	0.492	0.284	32.1491	
180 minute winter	36	1.020	38	348.2	0.618	1.463	22.5347	
180 minute winter	36	15.000	15.000:50%	472.5	0.423	0.270	31.7147	
180 minute winter	36	15.000	38	493.3	0.507	0.282	31.2813	
180 minute winter	38	1.021	1.021:50%	377.8	0.671	1.587	11.2671	
180 minute winter	38	16.000	16.000:50%	456.8	0.434	0.261	30.8507	
180 minute winter	38	1.021	40	363.9	0.646	1.529	11.2671	
180 minute winter	38	16.000	40	476.1	0.534	0.272	30.3650	
180 minute winter	40	1.022	1.022:50%	369.4	0.656	1.552	11.2671	
180 minute winter	40	17.000	17.000:50%	449.7	0.428	0.257	29.8274	
180 minute winter	40	1.022	42	352.6	0.626	1.482	11.2671	
180 minute winter	40	17.000	42	447.2	0.468	0.256	29.3008	
180 minute winter	42	1.023	1.023:50%	375.3	0.666	1.577	11.2671	
180 minute winter	42	18.000	18.000:50%	425.7	0.424	0.243	28.7851	
180 minute winter	42	1.023	44	355.2	0.631	1.492	11.2671	
180 minute winter	42	18.000	44	429.5	0.506	0.245	28.1985	
180 minute winter	44	1.024	1.024:50%	349.6	0.621	1.469	11.2671	

**Results for 1000 year Critical Storm Duration. Lowest mass balance: 98.81%**

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
180 minute winter	1.024:50%	132	50.271	3.400	350.3	37.1663	0.0000	SURCHARGED
180 minute winter	19.000:50%	132	50.271	0.418	417.2	0.0000	0.0000	OK
180 minute winter	46	132	50.264	3.433	552.8	37.8354	0.0000	FLOOD RISK
180 minute winter	1.025:50%	132	50.256	3.465	339.4	26.5740	0.0000	SURCHARGED
180 minute winter	20.000:50%	132	50.256	0.403	402.1	0.0000	0.0000	OK
180 minute winter	48	132	50.248	3.497	537.2	27.1309	0.0000	FLOOD RISK
180 minute winter	1.026:50%	132	50.238	3.527	346.2	27.1182	0.0000	SURCHARGED
180 minute winter	21.000:50%	132	50.239	0.386	380.8	0.0000	0.0000	OK
180 minute winter	50	132	50.228	3.557	522.2	39.7058	0.0000	FLOOD RISK
180 minute winter	1.027:50%	132	50.223	3.570	361.8	12.5650	0.0000	SURCHARGED
180 minute winter	22.000:50%	132	50.223	0.370	361.5	0.0000	0.0000	OK
180 minute winter	52	132	50.217	3.582	507.8	25.1005	0.0000	FLOOD RISK
180 minute winter	23.000:50%	136	50.207	0.354	354.8	0.0000	0.0000	OK
180 minute winter	54	136	50.197	3.625	492.7	44.2925	0.0000	FLOOD RISK
180 minute winter	24.000:50%	136	50.183	0.330	346.3	0.0000	0.0000	OK
180 minute winter	56	136	50.166	3.674	488.3	56.7176	0.0000	FLOOD RISK
180 minute winter	25.000:50%	136	50.039	0.186	157.4	0.0000	0.0000	OK
180 minute winter	58	136	49.990	3.578	491.9	67.4224	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> )
180 minute winter	44	19.000	19.000:50%	408.4	0.411	0.233	27.5374	
180 minute winter	44	1.024	46	332.3	0.590	1.396	11.2671	
180 minute winter	44	19.000	46	409.2	0.451	0.234	26.8821	
180 minute winter	46	1.025	1.025:50%	338.7	0.601	1.423	11.2671	
180 minute winter	46	20.000	20.000:50%	389.3	0.398	0.222	26.2297	
180 minute winter	46	1.025	48	337.2	0.599	1.417	11.2671	
180 minute winter	46	20.000	48	392.4	0.486	0.224	25.5293	
180 minute winter	48	1.026	1.026:50%	346.2	0.615	1.455	11.2671	
180 minute winter	48	21.000	21.000:50%	371.9	0.399	0.212	24.7852	
180 minute winter	48	1.026	50	351.4	0.624	1.477	11.2671	
180 minute winter	48	21.000	50	371.4	0.456	0.212	23.9333	
180 minute winter	50	1.027	1.027:50%	361.8	0.642	1.520	5.1327	
180 minute winter	50	22.000	22.000:50%	358.2	0.420	0.205	9.5255	
180 minute winter	50	1.027	52	364.7	0.648	1.533	5.1327	
180 minute winter	50	22.000	52	360.3	0.475	0.206	9.3302	
180 minute winter	52	1.028	54	370.7	0.658	1.558	17.7175	
180 minute winter	52	23.000	23.000:50%	351.1	0.403	0.201	17.3616	
180 minute winter	52	23.000	54	354.2	0.452	0.202	16.7032	
180 minute winter	54	1.029	56	384.4	0.682	1.615	22.5342	
180 minute winter	54	24.000	24.000:50%	341.3	0.380	0.195	20.2756	
180 minute winter	54	24.000	56	345.4	0.464	0.197	19.0529	
180 minute winter	56	1.030	58	401.5	0.713	1.687	22.5342	
180 minute winter	56	25.000	25.000:50%	153.7	0.303	0.088	10.1686	
180 minute winter	56	25.000	58	157.5	0.409	0.090	8.0502	
180 minute winter	58	1.031	1.031:50%	418.3	0.743	1.572	12.7645	

**Results for 1000 year Critical Storm Duration. Lowest mass balance: 98.81%**

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
120 minute winter	1.031:50%	110	48.936	2.581	405.3	21.3154	0.0000	SURCHARGED
30 minute winter	119	22	48.089	0.735	158.6	5.1954	0.0000	FLOOD RISK
120 minute winter	59	112	48.792	2.493	474.1	29.3663	0.0000	FLOOD RISK
120 minute winter	1.032:50%	112	48.785	2.622	455.7	46.3367	0.0000	SURCHARGED
120 minute winter	27.000:50%	112	48.785	0.495	394.6	0.0000	0.0000	OK
120 minute winter	61	110	48.778	2.751	507.1	49.2456	0.0000	FLOOD RISK
120 minute winter	28.000:50%	110	48.766	0.476	369.3	0.0000	0.0000	OK
120 minute winter	63	110	48.752	2.975	575.4	96.5346	0.0000	FLOOD RISK
120 minute winter	1.034:50%	106	48.646	3.251	642.0	21.6812	0.0000	SURCHARGED
15 minute winter	29.000:50%	10	49.021	0.013	7.4	0.0000	0.0000	OK
120 minute winter	65	100	48.537	3.524	655.9	32.7814	0.0000	SURCHARGED
15 minute winter	66	10	55.574	0.016	5.6	0.0056	0.0000	OK
15 minute winter	30.000:50%	10	55.389	0.175	343.6	0.0000	0.0000	OK
15 minute winter	67	10	55.043	0.174	339.7	0.0000	0.0000	OK
15 minute winter	30.001:50%	10	54.728	0.199	435.2	0.0000	0.0000	OK
15 minute winter	68	11	54.389	0.200	430.3	0.0000	0.0000	OK
15 minute winter	30.002:50%	11	54.139	0.204	446.4	0.0000	0.0000	OK
15 minute winter	69	11	53.885	0.204	448.4	0.0000	0.0000	OK
15 minute winter	30.003:50%	11	53.634	0.207	462.9	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> )
180 minute winter	58	26.000	59	87.8	0.119	0.017	41.8938	
180 minute winter	58	1.031	59	426.1	0.756	1.601	12.7645	
30 minute winter	119	52.000	121	84.5	1.251	0.932	3.3872	
30 minute winter	119	53.000	121	96.7	0.301	0.072	25.0458	
120 minute winter	59	1.032	1.032:50%	455.7	0.809	1.354	19.1552	
120 minute winter	59	27.000	27.000:50%	392.3	0.313	0.224	59.2730	
120 minute winter	59	1.032	61	479.3	0.851	1.424	19.1552	
120 minute winter	59	27.000	61	402.7	0.499	0.230	58.0610	
120 minute winter	61	1.033	63	540.1	0.959	1.605	35.2102	
120 minute winter	61	28.000	28.000:50%	367.4	0.387	0.272	39.8800	
120 minute winter	61	28.000	63	392.9	0.623	0.291	38.2610	
120 minute winter	63	1.034	1.034:50%	642.0	1.509	0.704	7.3298	
120 minute winter	63	29.000	29.000:50%	-3.1	-0.312	-0.002	7.8042	
120 minute winter	63	1.034	65	655.9	1.164	0.719	7.3298	
120 minute winter	63	29.000	65	0.0	0.000	0.000	0.0649	
120 minute winter	65	1.035	94	672.0	0.885	0.629	46.9083	
15 minute winter	66	30.000	30.000:50%	5.4	0.039	0.002	3.2213	
15 minute winter	66	30.000	67	339.7	1.128	0.126	6.0210	
15 minute winter	67	30.001	30.001:50%	335.0	1.019	0.125	6.5861	
15 minute winter	67	30.001	68	430.3	1.203	0.160	7.1758	
15 minute winter	68	30.002	30.002:50%	433.3	1.190	0.162	5.4482	
15 minute winter	68	30.002	69	448.4	1.215	0.167	5.5206	
15 minute winter	69	30.003	30.003:50%	449.8	1.205	0.168	5.5855	
15 minute winter	69	30.003	70	462.9	1.227	0.173	5.6438	

**Results for 1000 year Critical Storm Duration. Lowest mass balance: 98.81%**

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 winter	70	11	53.380	0.207	462.9	0.0000	0.0000	OK
15 minute winter	30.004:50%	11	53.243	0.208	468.9	0.0000	0.0000	OK
15 minute winter	71	11	53.105	0.208	467.6	0.0000	0.0000	OK
15 minute winter	30.005:50%	11	52.905	0.210	476.5	0.0000	0.0000	OK
15 minute winter	72	12	52.703	0.210	473.4	0.0000	0.0000	OK
15 minute winter	30.006:50%	12	52.368	0.215	488.3	4.5190	0.0000	OK
15 minute winter	73	12	51.988	0.174	492.5	0.0000	0.0000	OK
15 minute winter	74	12	51.545	0.180	520.2	0.3879	0.0000	OK
15 minute winter	75	12	50.521	0.291	522.3	0.0651	0.0000	OK
30 minute winter	76	21	51.028	0.852	32.7	0.9641	0.0000	SURCHARGED
30 minute summer	32.000:50%	20	51.024	0.202	168.7	0.0000	0.0000	OK
60 minute winter	78	47	50.924	1.572	109.6	26.9373	0.0000	SURCHARGED
60 minute winter	33.000:50%	48	50.921	0.308	173.8	0.0000	0.0000	OK
60 minute winter	80	47	50.920	2.379	206.9	45.2694	0.0000	FLOOD RISK
60 minute winter	81	40	50.186	2.131	399.2	2.4105	0.0000	SURCHARGED
15 minute winter	82	10	50.594	0.050	29.1	0.0891	0.0000	OK
15 minute winter	83	11	50.304	0.075	31.8	0.0168	0.0000	OK
60 minute winter	84	40	49.956	1.960	415.3	2.2166	0.0000	SURCHARGED
60 minute winter	85	40	49.862	1.886	411.1	0.0000	0.0000	OK
60 minute winter	35.000:50%	40	49.738	2.022	460.8	13.2887	0.0000	SURCHARGED
60 minute winter	87	40	49.561	2.105	436.2	16.4472	0.0000	SURCHARGED
15 minute summer	88	1	50.680	0.000	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 winter	70	30.004	30.004:50%	461.8	1.220	0.172	3.0715	
15 minute winter	70	30.004	71	467.6	1.231	0.174	3.0816	
15 minute winter	71	30.005	30.005:50%	465.6	1.219	0.173	4.5395	
15 minute winter	71	30.005	72	473.4	1.237	0.176	4.5513	
15 minute winter	72	30.006	30.006:50%	473.5	1.222	0.177	7.7974	
15 minute winter	72	30.006	73	492.5	1.420	0.184	6.9614	
15 minute winter	73	30.007	74	492.7	1.609	0.125	3.7345	
15 minute winter	74	30.008	75	519.5	1.158	0.133	14.3625	
15 minute winter	75	30.009	81	513.0	1.025	0.351	6.7270	
30 minute winter	76	31.000	78	12.3	0.701	0.854	2.1759	
30 minute winter	76	32.000	32.000:50%	-32.7	-0.164	-0.041	16.3425	
30 minute winter	76	32.000	78	119.3	0.420	0.149	19.0502	
60 minute winter	78	31.001	80	17.7	1.006	1.225	2.1421	
60 minute winter	78	33.000	33.000:50%	96.7	0.274	0.107	30.5383	
60 minute winter	78	33.000	80	200.0	0.503	0.222	51.8102	
60 minute winter	80	31.002	81	81.1	4.608	6.495	0.1265	
60 minute winter	81	30.010	84	395.3	1.404	2.101	3.3097	
15 minute winter	82	34.000	83	28.2	0.338	0.014	2.7273	
15 minute winter	83	34.001	84	30.1	0.387	0.021	1.0507	
60 minute winter	84	30.011	85	411.1	1.635	2.212	1.1546	
60 minute winter	85	30.012	87	0.0	0.000	0.000	0.0038	
60 minute winter	85	35.000	35.000:50%	406.5	1.720	0.837	14.6399	
60 minute winter	85	35.000	87	436.2	1.676	0.898	14.6399	
60 minute winter	87	30.013	93	427.7	1.671	1.063	9.9587	
15 minute summer	88	36.000	36.000:50%	0.0	0.000	0.000	0.4703	

**Results for 1000 year Critical Storm Duration. Lowest mass balance: 98.81%**

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 winter	36.000:50%	11	50.351	0.037	24.4	0.1247	0.0000	OK
15 minute winter	89	11	49.989	0.042	23.5	0.0000	0.0000	OK
15 minute winter	36.001:50%	11	49.811	0.101	108.0	0.0000	0.0000	OK
15 minute winter	90	11	49.750	0.277	105.7	0.0000	0.0000	OK
60 minute winter	91	46	48.946	0.926	4608.2	3.2069	0.0000	OK
120 minute winter	92	82	48.783	0.783	1866.1	2.7126	0.0000	OK
120 minute winter	93	82	48.751	2.703	2144.0	9.3629	0.0000	SURCHARGED
120 minute winter	94	88	48.499	3.653	2144.6	12.6544	0.0000	SURCHARGED
120 minute winter	95	110	47.375	3.521	2144.4	13.9983	0.0000	SURCHARGED
120 minute winter	96	96	47.970	1.295	14.9	1.4644	0.0000	OK
120 minute winter	42.000:50%	94	47.970	0.480	53.3	0.0000	0.0000	OK
120 minute winter	98	94	47.970	1.581	38.7	14.1379	0.0000	FLOOD RISK
120 minute winter	44.000:50%	94	47.970	0.480	82.0	0.0000	0.0000	OK
120 minute winter	100	94	47.970	1.992	68.0	22.6227	0.0000	FLOOD RISK
120 minute winter	101	96	47.993	1.318	35.3	1.4904	0.0000	FLOOD RISK
120 minute winter	46.000:50%	96	47.993	0.503	92.3	0.0000	0.0000	SURCHARGED
120 minute winter	103	96	47.993	1.736	54.7	21.9814	0.0000	FLOOD RISK
15 minute winter	104	10	48.573	0.044	35.0	0.0954	0.0000	OK
120 minute winter	105	98	47.980	0.185	18.8	0.1198	0.0000	OK
120 minute winter	106	98	47.980	1.752	43.7	1.9818	0.0000	FLOOD RISK
15 minute winter	107	10	48.186	0.049	29.7	0.0899	0.0000	OK
120 minute winter	108	112	47.943	0.151	16.7	0.1013	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	88	36.000	89	22.5	0.449	0.008	1.0070	
15 minute winter	89	36.001	36.001:50%	23.4	0.233	0.010	2.0494	
15 minute winter	89	36.001	90	105.7	0.336	0.047	7.0419	
15 minute winter	90	36.002	93	102.4	1.132	0.684	0.8120	
60 minute winter	91	37.000	92	1811.1	3.417	0.961	8.5414	
120 minute winter	92	37.001	93	1853.6	3.747	0.196	37.1926	
120 minute winter	93	30.014	94	2144.6	1.904	0.439	16.2336	
120 minute winter	94	1.036	95	2144.4	1.903	1.099	71.1134	
120 minute winter	95	1.037	114	2140.0	1.501	0.680	90.3679	
120 minute winter	96	42.000	42.000:50%	-14.9	-0.176	-0.011	36.2589	
120 minute winter	96	43.000	98	9.6	0.278	0.264	2.2775	
120 minute winter	96	42.000	98	30.8	0.178	0.023	36.2638	
120 minute winter	98	42.001	100	18.5	0.466	1.347	2.6752	
120 minute winter	98	44.000	44.000:50%	23.8	-0.195	0.018	42.5984	
120 minute winter	98	44.000	100	64.2	0.329	0.048	42.5851	
120 minute winter	100	42.002	110	41.2	0.585	1.389	0.4117	
120 minute winter	101	45.000	103	26.0	0.655	0.711	3.3254	
120 minute winter	101	46.000	46.000:50%	-35.3	-0.241	-0.026	56.9332	
120 minute winter	101	46.000	103	41.2	0.256	0.030	56.9201	
120 minute winter	103	45.001	106	32.6	0.978	0.889	0.2335	
15 minute winter	104	47.000	105	34.3	0.456	0.011	2.6246	
120 minute winter	105	47.001	106	18.7	0.287	0.011	35.0955	
120 minute winter	106	45.002	110	39.7	1.013	0.672	0.6304	
15 minute winter	107	48.000	108	28.8	0.381	0.013	2.4807	
120 minute winter	108	48.001	109	16.6	0.164	0.009	28.6640	

**Results for 1000 year Critical Storm Duration. Lowest mass balance: 98.81%**

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
120 minute winter	109	114	47.943	0.453	16.6	0.0000	0.0000	FLOOD RISK
120 minute winter	110	98	47.936	1.987	75.8	2.2471	0.0000	FLOOD RISK
120 minute winter	111	124	46.814	3.814	2657.2	13.2118	0.0000	FLOOD RISK
120 minute winter	112	120	46.805	3.836	1263.0	13.2872	0.0000	SURCHARGED
120 minute winter	113	110	46.790	3.919	1264.0	13.5759	0.0000	SURCHARGED
120 minute winter	114	110	46.787	4.106	2377.1	16.3244	0.0000	SURCHARGED
120 minute winter	115	110	46.034	3.483	2378.1	13.8504	0.0000	SURCHARGED
120 minute winter	116	110	45.322	1.302	507.3	2.3010	0.0000	SURCHARGED
120 minute winter	117	106	45.313	1.313	344.7	3.3416	0.0000	SURCHARGED
120 minute winter	118	96	45.291	2.870	2684.4	11.4113	0.0000	SURCHARGED
30 minute winter	121	22	48.081	1.048	222.4	7.8458	0.0000	FLOOD RISK
30 minute winter	54.000:50%	22	48.078	0.255	193.7	0.0000	0.0000	OK
30 minute winter	123	23	47.887	1.289	195.8	14.8512	0.0000	SURCHARGED
15 minute winter	55.000:50%	11	47.621	0.131	118.1	0.0000	0.0000	OK
30 minute winter	125	24	47.333	1.095	240.7	13.0897	0.0000	SURCHARGED
30 minute winter	56.000:50%	24	47.296	0.205	125.0	0.0000	0.0000	OK
30 minute winter	127	23	46.887	1.053	262.2	9.3217	0.0000	SURCHARGED
30 minute winter	52.004:50%	22	46.570	0.944	329.4	5.3813	0.0000	SURCHARGED
30 minute winter	129	22	46.030	0.612	327.3	2.3348	0.0000	SURCHARGED
30 minute winter	130	23	45.452	0.432	367.6	0.7641	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> )
120 minute winter	109	48.002	110	9.2	0.570	1.706	0.0803	
120 minute winter	110	42.003	114	73.9	1.084	2.789	4.6513	
120 minute winter	111	41.000	112	1242.6	1.103	0.654	17.1834	
120 minute winter	112	38.003	113	1264.0	1.122	1.669	54.9338	
120 minute winter	113	38.004	114	1264.9	1.123	1.674	22.5342	
120 minute winter	114	1.038	115	2378.1	1.668	2.302	92.9518	
120 minute winter	115	1.039	118	2378.8	1.668	2.304	93.0416	
120 minute winter	116	51.000	117	344.7	1.983	1.127	2.8171	
120 minute winter	117	51.001	118	345.2	1.960	0.449	18.7318	
120 minute winter	118	1.040	132	2685.0	1.883	2.600	82.2526	
30 minute winter	121	52.001	123	99.7	1.425	1.425	6.3365	
30 minute winter	121	54.000	54.000:50%	-89.0	-0.349	-0.066	22.7414	
30 minute winter	121	54.000	123	144.7	0.463	0.107	14.8279	
30 minute winter	123	52.002	125	152.4	1.382	1.209	9.9267	
30 minute winter	123	55.000	55.000:50%	37.4	0.304	0.021	5.5886	
30 minute winter	123	55.000	125	106.7	0.618	0.060	10.2586	
30 minute winter	125	52.003	127	189.8	1.721	1.507	9.0842	
30 minute winter	125	56.000	56.000:50%	90.9	0.269	0.111	13.9252	
30 minute winter	125	56.000	127	117.6	0.483	0.143	10.4344	
30 minute winter	127	52.004	52.004:50%	270.0	1.704	1.325	8.2375	
30 minute winter	127	57.000	129	0.0	0.000	0.000	0.0038	
30 minute winter	127	52.004	129	327.3	2.066	1.606	8.2375	
30 minute winter	129	52.005	131	327.5	2.071	1.310	6.8366	
30 minute winter	130	58.000	131	283.2	1.488	0.926	2.0146	

**Results for 1000 year Critical Storm Duration. Lowest mass balance: 98.81%**

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
30 minute winter	131	24	45.377	0.377	609.3	0.6655	0.0000	OK
60 minute winter	132	46	44.682	2.376	2620.2	9.4450	0.0000	SURCHARGED
60 minute winter	133	46	43.677	1.674	2631.2	6.6567	0.0000	SURCHARGED
60 minute winter	134	46	42.876	0.876	3909.9	3.0350	0.0000	OK
60 minute winter	135	46	42.844	1.607	1861.5	5.5672	0.0000	SURCHARGED
60 minute winter	136	46	42.673	2.573	4194.7	8.9125	0.0000	SURCHARGED
60 minute winter	136_OUT	45	41.462	1.892	4194.9	0.0000	0.0000	OK
15 minute summer	137	1	49.940	0.000	0.0	0.0000	0.0000	OK
15 minute winter	60.000:50%	11	49.820	0.180	246.8	0.0000	0.0000	OK
15 minute winter	138	12	49.665	0.325	237.1	0.0000	0.0000	OK
15 minute winter	60.001:50%	11	49.233	0.263	496.9	0.0000	0.0000	OK
15 minute winter	139	12	49.058	0.458	478.9	0.0000	0.0000	OK
15 minute winter	60.002:50%	13	48.406	0.271	581.6	0.0000	0.0000	OK
30 minute summer	140	21	48.180	0.509	566.2	0.0000	0.0000	FLOOD RISK
30 minute winter	60.003:50%	20	47.786	0.371	785.9	0.0000	0.0000	OK
30 minute winter	141	21	47.530	0.369	781.2	0.0000	0.0000	OK
30 minute winter	60.004:50%	21	47.329	0.422	1035.2	4.6499	0.0000	OK
30 minute winter	142	21	47.080	0.428	1024.7	0.0000	0.0000	OK
30 minute winter	143	21	47.056	0.431	1023.5	0.0000	0.0000	OK
30 minute winter	144	21	46.707	0.320	1021.6	0.0000	0.0000	OK
30 minute winter	60.007:50%	21	46.592	0.329	1111.0	0.0000	0.0000	OK
30 minute winter	145	21	46.389	0.249	1110.6	0.0000	0.0000	OK
30 minute winter	60.008:50%	21	43.471	0.271	1304.0	0.0000	0.0000	OK
30 minute winter	146	21	40.578	0.318	1306.3	0.0000	0.0000	OK
30 minute winter	60.009:50%	21	39.041	0.358	1527.5	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> )
30 minute winter	131	52.006	132	603.6	3.249	0.607	21.8725	
60 minute winter	132	1.041	133	2631.2	1.996	1.799	108.0530	
60 minute winter	133	1.042	136	2739.7	2.046	0.747	108.0530	
60 minute winter	134	59.000	135	1861.5	3.926	0.196	15.3167	
60 minute winter	135	59.001	136	1752.2	1.555	0.345	77.3396	
60 minute winter	136	1.043	136_OUT	4194.9	2.942	3.178	43.7765	
60 minute winter	136_OUT	Flow through pond	195	5300.3	0.285	0.071	1152.9508	
15 minute summer	137	60.000	60.000:50%	0.0	0.000	0.000	6.0708	
15 minute summer	137	60.000	138	227.2	0.534	0.127	19.4221	
15 minute winter	138	60.001	60.001:50%	225.5	0.553	0.128	21.0546	
15 minute winter	138	60.001	139	478.9	0.649	0.273	43.2662	
15 minute winter	139	60.002	60.002:50%	456.8	0.905	0.232	25.7349	
15 minute winter	139	60.002	140	567.7	0.694	0.289	48.7594	
30 minute summer	140	60.003	60.003:50%	540.8	0.743	0.371	37.8927	
30 minute summer	140	60.003	141	770.8	0.920	0.529	42.6350	
30 minute winter	141	60.004	60.004:50%	775.8	0.825	0.533	48.2118	
30 minute winter	141	60.004	142	1024.7	0.977	0.704	53.6477	
30 minute winter	142	60.005	143	1023.5	0.957	0.704	5.7894	
30 minute winter	143	60.006	144	1021.6	1.170	0.702	41.9814	
30 minute winter	144	60.007	60.007:50%	1020.1	1.456	0.389	5.3758	
30 minute winter	144	60.007	145	1110.6	1.859	0.424	4.5954	
30 minute winter	145	60.008	60.008:50%	1108.2	2.159	0.246	31.7275	
30 minute winter	145	60.008	146	1306.3	2.134	0.290	37.8032	
30 minute winter	146	60.009	60.009:50%	1301.9	1.749	0.395	46.0180	
30 minute winter	146	60.009	147	1530.4	2.340	0.464	40.6512	

**Results for 1000 year Critical Storm Duration. Lowest mass balance: 98.81%**

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
30 minute winter	147	21	37.364	0.258	1530.4	0.0000	0.0000	OK
30 minute summer	60.010:50%	19	33.428	0.375	3211.8	0.0000	0.0000	OK
960 minute winter	147_OUT	990	31.140	2.140	539.2	0.0000	0.0000	OK
15 minute summer	148	1	57.110	0.000	0.0	0.0000	0.0000	OK
60 minute winter	61.000:90%	44	56.968	0.059	3.0	0.0000	0.0000	OK
60 minute winter	149	44	56.967	0.081	1.3	0.0000	0.0000	OK
120 minute winter	61.001:50%	90	56.793	0.035	3.6	0.0000	0.0000	OK
120 minute winter	150	90	56.793	0.163	3.6	0.0000	0.0000	OK
15 minute winter	61.002:50%	12	56.421	0.026	6.9	0.0000	0.0000	OK
180 minute winter	151	168	56.358	0.197	3.8	0.0000	0.0000	OK
180 minute winter	152	192	53.981	0.060	2.2	0.0000	0.0000	OK
15 minute winter	61.004:50%	11	53.620	0.079	71.4	0.0000	0.0000	OK
15 minute winter	153	12	53.346	0.185	68.6	0.0000	0.0000	OK
15 minute winter	61.005:50%	11	52.002	0.111	171.0	0.0000	0.0000	OK
15 minute winter	154	13	50.897	0.276	164.6	0.0000	0.0000	OK
30 minute summer	61.006:50%	20	50.133	0.171	266.4	0.0000	0.0000	OK
30 minute winter	155	21	49.597	0.295	256.0	0.0000	0.0000	OK
30 minute winter	61.007:50%	21	49.309	0.209	294.0	0.0000	0.0000	OK
30 minute winter	156	21	49.249	0.351	293.9	0.0000	0.0000	OK
30 minute winter	61.008:50%	20	49.110	0.346	583.2	0.0000	0.0000	OK
15 minute summer	157	1	49.940	0.000	0.0	0.0000	0.0000	OK
15 minute winter	62.000:50%	12	49.581	0.152	220.3	0.0000	0.0000	OK
15 minute winter	158	13	49.203	0.284	219.3	0.0000	0.0000	OK
360 minute winter	62.001:50%	360	49.091	0.316	104.7	0.0000	0.0000	OK
360 minute winter	159	360	49.092	0.462	258.5	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> )
30 minute winter	147	60.010	60.010:50%	1529.3	2.460	0.263	34.0961	
30 minute winter	147	60.010	147_OUT	3134.8	2.071	0.539	108.7817	
960 minute winter	147_OUT	Flow through pond	180	2223.7	0.030	0.047	90031.7813	
15 minute summer	148	61.000	61.000:90%	0.0	0.000	0.000	1.0639	
15 minute summer	148	61.000	149	1.6	0.060	0.001	0.3103	
60 minute winter	149	61.001	61.001:50%	1.2	0.064	0.001	0.6700	
60 minute winter	149	61.001	150	4.8	0.082	0.003	3.9429	
120 minute winter	150	61.002	61.002:50%	1.9	0.119	0.001	0.9499	
120 minute winter	150	61.002	151	4.4	0.076	0.003	8.3377	
180 minute winter	151	61.003	152	2.2	0.107	0.001	4.3602	
180 minute winter	152	61.004	61.004:50%	2.1	0.168	0.001	0.9868	
180 minute winter	152	61.004	153	22.9	0.242	0.010	3.1021	
15 minute winter	153	61.005	61.005:50%	63.9	0.508	0.021	7.7656	
15 minute winter	153	61.005	154	164.6	0.585	0.055	21.4874	
15 minute winter	154	61.006	61.006:50%	146.3	0.623	0.069	14.8654	
15 minute winter	154	61.006	155	253.7	0.643	0.119	27.0988	
30 minute winter	155	61.007	61.007:50%	249.1	0.694	0.148	10.9110	
30 minute winter	155	61.007	156	293.9	0.517	0.175	17.7667	
30 minute winter	156	61.008	61.008:50%	297.2	0.508	0.237	23.1489	
30 minute winter	156	61.008	159	576.3	0.690	0.460	30.4714	
15 minute summer	157	62.000	62.000:50%	0.0	0.000	0.000	4.9117	
15 minute summer	157	62.000	158	197.0	0.595	0.087	16.0146	
15 minute winter	158	62.001	62.001:50%	213.4	0.441	0.164	18.1839	
15 minute winter	158	62.001	159	423.7	0.568	0.325	27.5425	
360 minute winter	159	61.009	159_OUT	256.4	0.840	0.176	12.9609	



**Results for 1000 year Critical Storm Duration. Lowest mass balance: 98.81%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
360 minute winter	159_OUT	360	49.092	0.538	256.4	0.9499	0.0000	OK
15 minute summer	160	1	49.863	0.000	0.0	0.0000	0.0000	OK
15 minute winter	63.000:50%	11	49.711	0.026	9.3	0.0016	0.0000	OK
15 minute winter	161	11	49.548	0.041	25.0	0.0419	0.0000	OK
15 minute winter	162	11	49.389	0.058	24.6	0.0000	0.0000	OK
60 minute winter	63.002:50%	45	49.198	0.123	34.7	0.0000	0.0000	OK
60 minute winter	163	44	49.199	0.389	34.0	0.0000	0.0000	FLOOD RISK
60 minute winter	164	45	48.319	0.038	16.0	0.0000	0.0000	OK
30 minute summer	63.004:50%	19	48.118	0.068	43.5	0.0000	0.0000	OK
30 minute summer	165	19	47.887	0.068	43.4	0.0000	0.0000	OK
30 minute summer	63.005:50%	19	47.819	0.074	50.0	0.5333	0.0000	OK
30 minute summer	166	20	47.746	0.074	49.2	0.0000	0.0000	OK
30 minute summer	63.006:50%	19	47.598	0.086	63.9	0.0000	0.0000	OK
30 minute summer	167	20	47.437	0.085	63.8	0.0000	0.0000	OK
30 minute summer	63.007:50%	20	47.291	0.099	76.4	0.0000	0.0000	OK
30 minute summer	168	20	47.116	0.084	83.5	0.0519	0.0000	OK
15 minute summer	169	1	47.500	0.000	0.0	0.0000	0.0000	OK
15 minute winter	64.000:50%	10	47.462	0.120	104.2	0.0000	0.0000	OK
15 minute winter	170	11	47.300	0.116	101.8	0.0000	0.0000	OK
15 minute winter	64.001:50%	11	47.183	0.163	189.1	0.5782	0.0000	OK
15 minute winter	171	12	47.049	0.194	258.8	0.0000	0.0000	SURCHARGED
15 minute summer	172	1	47.500	0.000	0.0	0.0000	0.0000	OK
15 minute winter	65.000:50%	10	47.379	0.037	11.3	0.0217	0.0000	OK
15 minute winter	173	12	47.214	0.030	11.4	0.0000	0.0000	OK
15 minute winter	65.001:28%	11	47.175	0.105	95.5	0.0000	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)
360 minute winter	159_OUT	Flow through pond	29	156.9	0.020	0.044	1953.9598	
15 minute summer	160	63.000	63.000:50%	0.0	0.000	0.000	0.3259	
15 minute summer	160	63.000	161	8.5	0.198	0.004	0.8601	
15 minute winter	161	63.001	162	24.6	0.373	0.010	0.8255	
15 minute winter	162	63.002	63.002:50%	23.8	0.282	0.013	2.7721	
15 minute winter	162	63.002	163	50.3	0.319	0.027	14.2282	
60 minute winter	163	63.003	164	16.0	0.623	0.929	1.4882	
60 minute winter	164	63.004	63.004:50%	16.0	0.310	0.009	1.8798	
60 minute winter	164	63.004	165	36.1	0.426	0.019	2.4020	
30 minute summer	165	63.005	63.005:50%	42.6	0.426	0.023	0.9215	
30 minute summer	165	63.005	166	49.2	0.474	0.027	0.9618	
30 minute summer	166	63.006	63.006:50%	49.5	0.432	0.027	2.2912	
30 minute summer	166	63.006	167	63.8	0.515	0.035	2.4818	
30 minute summer	167	63.007	63.007:50%	63.5	0.467	0.034	2.7198	
30 minute summer	167	63.007	168	76.6	0.568	0.042	2.7011	
30 minute summer	168	63.008	171	83.4	0.382	0.034	2.8376	
15 minute summer	169	64.000	64.000:50%	0.0	0.000	0.000	2.2105	
15 minute summer	169	64.000	170	97.9	0.559	0.059	4.2766	
15 minute winter	170	64.001	64.001:50%	101.7	0.449	0.060	5.5237	
15 minute winter	170	64.001	171	188.5	0.622	0.111	7.4582	
15 minute winter	171	63.009	174	259.1	0.786	1.628	3.8761	
15 minute summer	172	65.000	65.000:50%	0.0	0.000	0.000	0.5771	
15 minute summer	172	65.000	173	10.9	0.263	0.007	1.0051	
15 minute winter	173	65.001	65.001:28%	10.9	0.117	0.006	1.3320	
15 minute winter	173	65.001	174	94.0	0.419	0.050	8.1867	

**Results for 1000 year Critical Storm Duration. Lowest mass balance: 98.81%**

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 winter	174	12	46.957	0.180	358.7	0.0968	0.0000	OK
15 minute winter	175	12	46.722	0.154	360.3	0.0000	0.0000	OK
15 minute winter	63.011:50%	12	46.250	0.156	371.4	0.0000	0.0000	OK
15 minute winter	176	12	45.775	0.156	371.3	0.0000	0.0000	OK
15 minute winter	63.012:50%	12	45.182	0.181	486.6	0.0000	0.0000	OK
15 minute winter	177	12	44.563	0.181	488.0	0.0000	0.0000	OK
15 minute winter	63.013:50%	11	44.039	0.276	1087.4	0.0000	0.0000	OK
15 minute winter	178	11	43.420	0.276	1085.7	0.0000	0.0000	OK
15 minute winter	63.014:50%	11	42.815	0.289	1190.4	8.1323	0.0000	OK
15 minute winter	179	11	42.195	0.288	1185.7	0.0000	0.0000	OK
15 minute winter	63.015:50%	11	41.649	0.361	1847.4	12.7250	0.0000	OK
30 minute summer	179_OUT	19	40.638	1.068	1786.6	0.0000	0.0000	OK
960 minute winter	180	1005	31.140	2.140	2223.7	3.7817	0.0000	SURCHARGED
180 minute winter	181	128	29.187	0.207	241.7	0.5276	0.0000	OK
60 minute summer	182	160	28.443	0.243	241.7	0.6179	0.0000	OK
15 minute summer	182_OUT	1	25.600	1.600	194.5	0.0000	0.0000	OK
15 minute summer	183	1	40.241	0.000	0.0	0.0000	0.0000	OK
15 minute winter	69.000:50%	10	39.736	0.068	82.8	0.0000	0.0000	OK
15 minute winter	184	10	39.167	0.072	81.5	0.0000	0.0000	OK
15 minute winter	69.001:50%	10	39.058	0.096	134.5	0.0000	0.0000	OK
15 minute winter	185	10	38.916	0.087	133.8	0.0000	0.0000	OK
15 minute winter	69.002:50%	10	38.722	0.090	139.0	0.0000	0.0000	OK
15 minute winter	186	11	38.522	0.087	138.3	0.0000	0.0000	OK
15 minute winter	69.003:50%	11	37.879	0.105	189.4	0.0000	0.0000	OK
15 minute winter	187	11	37.216	0.103	189.6	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 winter	174	63.010	175	360.3	1.270	0.134	3.4838	
15 minute winter	175	63.011	63.011:50%	360.2	1.395	0.099	3.9502	
15 minute winter	175	63.011	176	371.3	1.423	0.102	3.9892	
15 minute winter	176	63.012	63.012:50%	369.9	1.295	0.102	5.7716	
15 minute winter	176	63.012	177	488.0	1.542	0.135	6.3304	
15 minute winter	177	63.013	63.013:50%	488.3	1.196	0.135	8.6629	
15 minute winter	177	63.013	178	1085.7	1.939	0.300	11.1983	
15 minute winter	178	63.014	63.014:50%	1083.1	1.873	0.299	11.5682	
15 minute winter	178	63.014	179	1185.7	1.988	0.327	11.9320	
15 minute winter	179	63.015	63.015:50%	1181.8	1.687	0.326	14.1874	
15 minute winter	179	63.015	179_OUT	1843.6	2.241	0.509	16.4533	
30 minute summer	179_OUT	Flow through pond	195	4683.3	0.314	0.063	1082.9441	
960 minute winter	180	Hydro-Brake®	181	241.6				
180 minute winter	181	66.001	182	241.7	2.506	0.241	3.5482	
60 minute summer	182	66.002	182_OUT	241.7	1.063	0.360	85.6459	3470.2
15 minute summer	183	69.000	69.000:50%	0.0	0.000	0.000	0.9283	
15 minute summer	183	69.000	184	77.8	0.811	0.022	1.9183	
15 minute winter	184	69.001	69.001:50%	80.5	0.660	0.026	0.7082	
15 minute winter	184	69.001	185	133.8	0.987	0.043	0.7829	
15 minute winter	185	69.002	69.002:50%	133.2	1.027	0.036	0.7966	
15 minute winter	185	69.002	186	138.3	1.071	0.038	0.7944	
15 minute winter	186	69.003	69.003:50%	138.6	0.971	0.036	2.7280	
15 minute winter	186	69.003	187	189.6	1.207	0.049	2.9975	
15 minute winter	187	69.004	69.004:50%	190.4	1.001	0.049	4.3311	

**Results for 1000 year Critical Storm Duration. Lowest mass balance: 98.81%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	69.004:50%	11	36.433	0.140	318.1	0.3760	0.0000	OK
15 minute winter	188	11	35.599	0.126	319.6	0.0000	0.0000	OK
15 minute winter	69.005:50%	11	34.487	0.143	397.0	0.0000	0.0000	OK
15 minute winter	189	11	33.368	0.153	397.6	0.0000	0.0000	OK
15 minute winter	69.006:50%	11	32.527	0.170	479.5	0.0000	0.0000	OK
960 minute winter	205	960	31.134	1.294	3.0	2.5330	0.0000	FLOOD RISK
960 minute winter	205_OUT	1005	31.134	1.878	2.7	2.6869	0.0000	OK
15 minute winter	191	10	40.315	0.025	2.6	0.0000	0.0000	OK
15 minute winter	67.000:50%	10	40.315	0.127	107.9	0.0750	0.0000	OK
15 minute winter	192	11	40.199	0.113	104.7	0.0000	0.0000	OK
15 minute winter	67.001:50%	11	40.094	0.168	216.6	0.0000	0.0000	OK
60 minute winter	193	38	40.036	0.270	139.7	0.0000	0.0000	OK
60 minute winter	67.002:50%	37	40.034	0.401	209.9	0.0000	0.0000	OK
60 minute summer	194	38	40.038	0.538	236.0	0.1559	0.0000	SURCHARGED
60 minute winter	195	39	40.262	0.812	5300.3	0.0000	0.0000	FLOOD RISK
60 minute winter	196	37	40.039	0.631	5965.2	0.0000	0.0000	SURCHARGED
60 minute winter	67.004:50%	37	38.048	0.561	5435.7	3.2861	0.0000	SURCHARGED
60 minute winter	197	37	36.037	0.537	5432.6	0.0000	0.0000	SURCHARGED
60 minute winter	67.005:50%	38	32.949	0.549	5694.4	0.0000	0.0000	SURCHARGED
960 minute winter	197_OUT	945	31.157	1.901	3785.3	381.1674	0.0000	OK
15 minute summer	198	1	44.872	0.000	0.0	0.0000	0.0000	OK
15 minute winter	70.000:50%	11	44.526	0.065	53.6	0.0000	0.0000	OK
30 minute winter	199	23	44.442	0.391	45.4	0.0000	0.0000	OK
30 minute winter	70.001:50%	20	43.579	0.099	141.1	0.4411	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 winter	187	69.004	188	319.6	1.501	0.082	4.8248	
15 minute winter	188	69.005	69.005:50%	320.2	1.485	0.070	4.8901	
15 minute winter	188	69.005	189	397.6	1.635	0.087	5.5126	
15 minute winter	189	69.006	69.006:50%	397.3	1.459	0.099	6.1307	
15 minute winter	189	69.006	190	478.9	1.261	0.119	8.6499	
960 minute winter	205	71.000	205_OUT	2.7	0.412	0.008	8.6876	
960 minute winter	205_OUT	Flow through pond	180	2223.7	0.030	0.047	90031.7813	
15 minute winter	191	67.000	67.000:50%	2.9	-0.035	0.002	2.0490	
15 minute winter	191	67.000	192	104.7	0.565	0.067	3.2777	
15 minute winter	192	67.001	67.001:50%	105.0	0.460	0.057	4.6137	
15 minute winter	192	67.001	193	216.1	0.746	0.117	5.8167	
60 minute winter	193	67.002	67.002:50%	165.5	0.486	0.093	13.4532	
60 minute winter	193	67.002	194	195.2	0.414	0.110	21.9921	
60 minute summer	194	67.003	196	226.8	0.403	0.166	8.8680	
60 minute winter	195	68.000	196	5706.9	2.471	3.958	20.7200	
60 minute winter	196	67.004	67.004:50%	5379.1	3.354	1.252	74.0577	
60 minute winter	196	67.004	197	5432.6	3.477	1.264	71.3043	
60 minute winter	197	67.005	67.005:50%	5425.8	3.534	1.165	93.0921	
60 minute winter	197	67.005	197_OUT	5695.0	2.113	1.223	231.1764	
960 minute winter	197_OUT	Flow through pond	180	2223.7	0.030	0.047	90031.7813	
15 minute summer	198	70.000	70.000:50%	0.0	0.000	0.000	1.3267	
15 minute summer	198	70.000	199	49.3	0.286	0.021	12.0138	
30 minute winter	199	70.001	70.001:50%	26.4	0.388	0.008	2.3775	
30 minute winter	199	70.001	201	140.3	0.300	0.045	15.3392	

**Results for 1000 year Critical Storm Duration. Lowest mass balance: 98.81%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
30 minute winter	201	22	43.351	0.441	140.3	0.0000	0.0000	OK
15 minute winter	70.002:65%	11	42.295	0.146	283.3	1.9255	0.0000	OK
60 minute winter	202	47	40.802	0.370	220.3	0.4189	0.0000	OK
60 minute winter	204	47	40.800	1.048	157.6	1.1853	5.6631	FLOOD
60 minute winter	204_OUT	42	40.369	0.799	68.2	0.0000	0.0000	OK
30 minute winter	207	22	45.454	0.182	2.2	0.3213	0.0000	OK
30 minute winter	207_OUT	22	45.454	0.282	489.3	2.2829	0.0000	OK
15 minute winter	208	12	49.044	0.329	12.6	1.1406	0.0000	OK
15 minute winter	208_OUT	12	49.046	0.432	7731.6	45.2588	0.0000	OK
15 minute winter	210	12	43.143	0.368	14.1	1.2732	0.0000	OK
15 minute winter	210_OUT	12	43.142	0.468	6581.0	30.6018	0.0000	OK
120 minute winter	209	122	46.812	0.812	3.9	1.4341	0.0000	FLOOD RISK
120 minute winter	209_OUT	122	46.812	0.912	2721.6	172.2568	0.0000	OK
120 minute winter	211	108	45.322	0.996	2.6	1.7604	0.0000	SURCHARGED
120 minute winter	211_OUT	108	45.322	1.096	826.1	20.0918	0.0000	OK
960 minute winter	190_OUT	990	31.140	1.884	74.8	0.0000	0.0000	OK
15 minute winter	190	11	31.747	0.247	478.9	0.0000	0.0000	OK
15 minute winter	69.007:50%	11	31.635	0.340	903.1	0.0000	0.0000	OK
120 minute winter	12	92	46.951	1.276	44.4	2.6448	0.0000	OK
120 minute winter	38.000:41%	94	46.951	0.461	109.9	0.0000	0.0000	OK

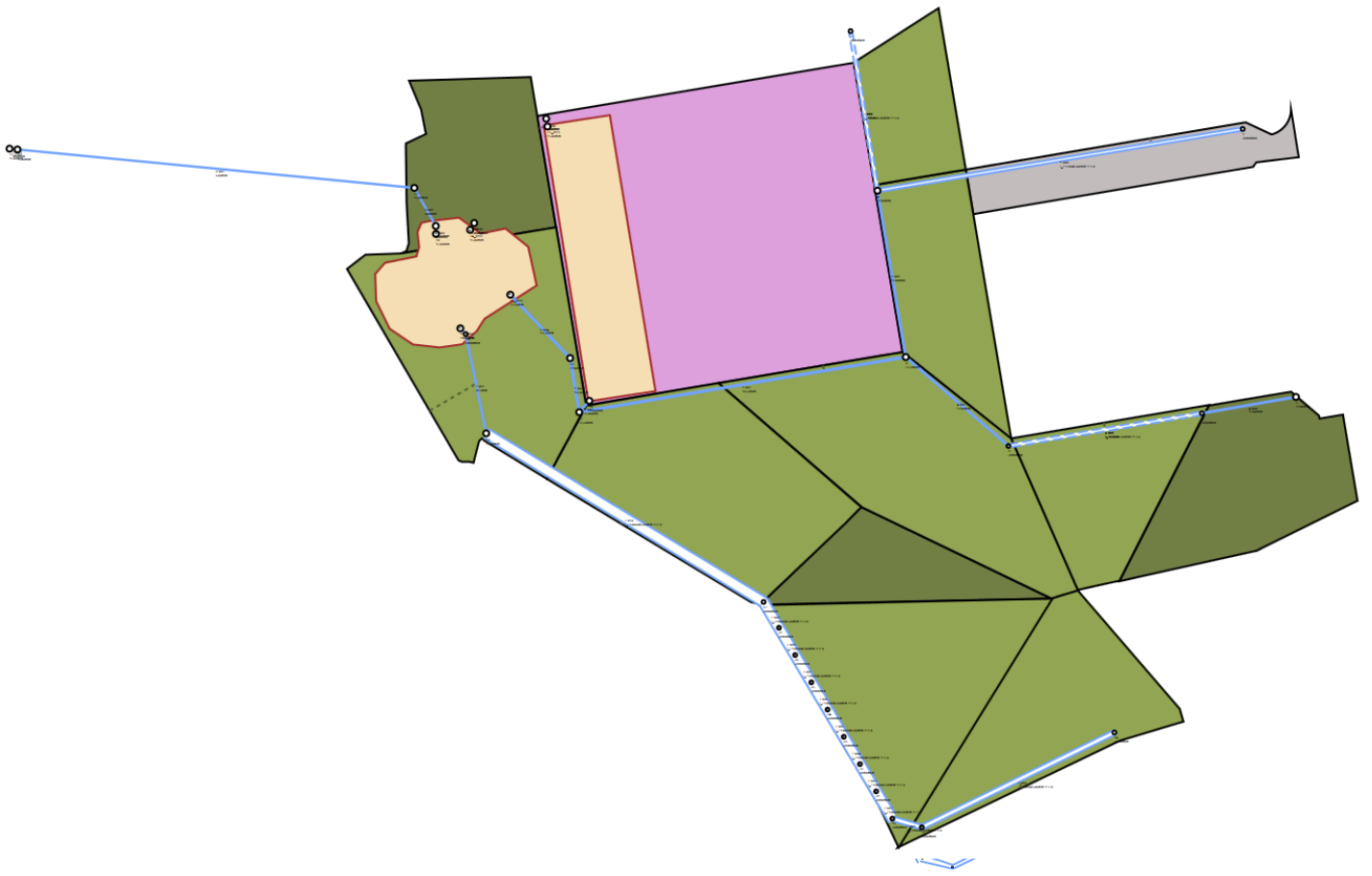
Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
30 minute winter	201	70.002	70.002:65%	132.1	0.785	0.041	5.8078	
30 minute winter	201	70.002	202	268.8	1.169	0.084	3.9351	
60 minute winter	202	Flow through pond	204	157.6	0.191	0.006	176.8865	
60 minute winter	204	72.000	204_OUT	68.2	1.334	0.755	0.8280	
60 minute winter	204_OUT	Flow through pond	195	5300.3	0.285	0.071	1152.9508	
30 minute winter	207	73.000	207_OUT	-2.2	-0.072	-0.003	1.0094	
30 minute winter	207_OUT	Flow through pond	130	367.6	0.260	0.011	191.8380	
15 minute winter	208	74.000	208_OUT	-12.6	-0.224	-0.003	3.0712	
15 minute winter	208_OUT	Flow through pond	91	7594.9	0.789	0.058	3199.7322	
15 minute winter	210	76.000	210_OUT	-14.1	-0.227	-0.003	3.4894	
15 minute winter	210_OUT	Flow through pond	134	5780.2	0.817	0.038	2544.6973	
120 minute winter	209	75.000	209_OUT	-3.9	0.032	-0.006	2.8165	
120 minute winter	209_OUT	Flow through pond	111	2657.2	0.408	0.063	7652.4883	
120 minute winter	211	77.000	211_OUT	-2.6	-0.033	-0.004	2.8072	
120 minute winter	211_OUT	Flow through pond	116	455.4	0.185	0.003	2248.4741	
960 minute winter	190_OUT	Flow through pond	180	2223.7	0.030	0.047	90031.7813	
15 minute winter	190	69.007	69.007:50%	474.1	0.786	0.241	13.8294	
15 minute winter	190	69.007	190_OUT	902.0	1.307	0.458	15.5128	
120 minute winter	12	38.000	38.000:41%	-33.9	-0.210	-0.025	72.6357	
120 minute winter	12	39.000	15	24.4	0.682	0.668	5.9171	
120 minute winter	12	38.000	15	87.0	0.192	0.064	104.4591	

**Results for 1000 year Critical Storm Duration. Lowest mass balance: 98.81%**

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
120 minute winter	15	94	46.951	2.020	95.4	2.2844	0.0000	OK
120 minute winter	38.001:45%	92	46.951	0.451	163.6	0.0000	0.0000	OK
120 minute winter	17	92	46.950	2.644	157.2	2.9907	0.0000	FLOOD RISK
120 minute winter	19	118	45.884	0.394	10.9	1.0850	0.0000	OK
120 minute winter	50.000:25%	118	45.885	0.429	56.3	4.2289	0.0000	OK
120 minute winter	21	118	45.884	1.309	93.1	1.4809	0.0000	FLOOD RISK
120 minute winter	23	118	45.884	0.394	13.9	0.4460	0.0000	OK
120 minute winter	49.000:37%	118	45.884	0.501	97.8	0.0000	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> )
120 minute winter	15	38.001	38.001:45%	58.3	-0.231	0.043	64.6472	
120 minute winter	15	40.000	17	49.3	1.240	1.347	4.9703	
120 minute winter	15	38.001	17	142.3	0.378	0.105	79.0001	
120 minute winter	17	38.002	112	107.3	1.524	1.226	0.7048	
120 minute winter	19	50.000	50.000:25%	7.2	0.061	0.008	17.4684	
120 minute winter	19	50.000	21	40.5	0.286	0.044	66.8512	
120 minute winter	21	49.001	118	34.4	0.916	1.436	2.7005	
120 minute winter	23	49.000	49.000:37%	-13.9	-0.087	-0.015	61.5751	
120 minute winter	23	49.000	21	53.6	0.281	0.058	163.6172	



**Design Settings**

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	100	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	0.750	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	x
Maximum Rainfall (mm/hr)	50.0		

**Simulation Settings**

Rainfall Methodology	FEH-22	Skip Steady State	x	1 year (l/s)	442.9
Summer CV	0.750	Drain Down Time (mins)	240	30 year (l/s)	1016.1
Winter CV	0.840	Additional Storage (m <sup>3</sup> /ha)	20.0	100 year (l/s)	1292.2
Analysis Speed	Normal	Check Discharge Rate(s)	✓	Check Discharge Volume	x

**Storm Durations**

15	30	60	120	180	240	360	480	960	1440
----	----	----	-----	-----	-----	-----	-----	-----	------

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
30	0	0	0
200	37	0	0
1000	0	0	0

**Pre-development Discharge Rate**

Site Makeup	Greenfield	Growth Factor 30 year	1.95
Greenfield Method	FEH	Growth Factor 100 year	2.48
Positively Drained Area (ha)	159.000	Betterment (%)	0
SAAR (mm)	770	QMed	469.0
Host	1	QBar	521.1
BFIHost	0.521	Q 1 year (l/s)	442.9
Region	1	Q 30 year (l/s)	1016.1
QBar/QMed conversion factor	1.111	Q 100 year (l/s)	1292.2
Growth Factor 1 year	0.85		

**Node 20 Online Hydro-Brake® Control**

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	36.000	Product Number	CTL-SHE-0494-1816-2000-1816
Design Depth (m)	2.000	Min Outlet Diameter (m)	
Design Flow (l/s)	181.6	Min Node Diameter (mm)	

**Node 19 OUT Online Orifice Control**

Flap Valve	✓	Invert Level (m)	36.246	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	0.975		

**Node 24 OUT Online Orifice Control**

Flap Valve	x	Invert Level (m)	36.246	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	0.600		

**Node 8 Online Orifice Control**

Flap Valve	✓	Invert Level (m)	42.008	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	0.500		

**Node 13 OUT Online Orifice Control**

Flap Valve	✓	Invert Level (m)	36.246	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	1.350		

**Node 15 Online Orifice Control**

Flap Valve	x	Invert Level (m)	60.990	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	1.750		

**Node 16 Online Orifice Control**

Flap Valve	x	Invert Level (m)	60.090	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Diameter (m)	1.600		

**Node J1 Online Orifice Control**

Flap Valve	x	Invert Level (m)	58.890	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	3.900		

**Node J2 Online Orifice Control**

Flap Valve	x	Invert Level (m)	57.510	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	3.650		

**Node J3 Online Orifice Control**

Flap Valve	x	Invert Level (m)	56.010	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	3.650		

**Node J4 Online Orifice Control**

Flap Valve	x	Invert Level (m)	55.110	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	3.600		

**Node J5 Online Orifice Control**

Flap Valve	x	Invert Level (m)	54.130	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	3.600		

**Node J6 Online Orifice Control**

Flap Valve	x	Invert Level (m)	53.030	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	3.600		

**Node J7 Online Orifice Control**

Flap Valve	x	Invert Level (m)	52.260	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	3.600		



**Node 10 Flow through Pond Storage Structure**

Base Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Main Channel Length (m)	445.550
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	41.000	Main Channel Slope (1:X)	500.0
Safety Factor	2.0	Time to half empty (mins)	28	Main Channel n	0.030

**Inlets**

25\_OUT

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	29991.0	0.0	1.000	29991.0	0.0

**Node 20 Flow through Pond Storage Structure**

Base Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Main Channel Length (m)	123.000
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	36.000	Main Channel Slope (1:X)	500.0
Safety Factor	2.0	Time to half empty (mins)		Main Channel n	0.350

**Inlets**

19\_OUT | 13\_OUT | 24\_OUT

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	18125.0	0.0	2.000	21400.0	0.0	2.600	22425.0	0.0

**Results for 30 year Critical Storm Duration. Lowest mass balance: 98.87%**

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	1	1	45.931	0.000	0.0	0.0000	0.0000	OK
30 minute winter	1.000:25%	23	45.525	0.202	320.4	0.6024	0.0000	OK
30 minute winter	2	24	42.418	0.172	78.3	0.0000	0.0000	OK
30 minute winter	3.000:50%	21	43.772	0.236	233.1	0.0000	0.0000	OK
30 minute winter	4	23	41.436	0.606	309.1	2.1005	0.0000	OK
30 minute winter	1.001:50%	22	41.333	0.716	525.9	0.7505	0.0000	OK
15 minute winter	5	11	44.743	0.281	428.1	4.8111	0.0000	OK
15 minute winter	6	13	43.944	0.285	469.8	0.0000	0.0000	OK
30 minute winter	5.000:50%	23	46.648	0.282	317.8	0.0000	0.0000	OK
30 minute winter	8	25	43.063	1.055	599.9	0.0000	0.0000	OK
60 minute winter	9	43	41.039	1.085	912.3	5.5399	0.0000	OK
60 minute winter	1.002:25%	43	40.957	1.142	1211.2	0.0000	0.0000	OK
60 minute winter	10	45	41.331	0.331	2689.9	1.1450	0.0000	OK
60 minute winter	12	46	40.681	1.386	2641.3	7.0804	0.0000	OK
15 minute summer	14	1	62.090	0.000	0.0	0.0000	0.0000	OK
15 minute winter	7.000:50%	13	61.739	0.199	450.5	0.0000	0.0000	OK
30 minute winter	15	24	61.277	0.287	402.9	0.0000	0.0000	OK
30 minute winter	16	25	60.374	0.284	361.5	0.0000	0.0000	OK
30 minute winter	7.002:50%	21	59.567	0.077	811.4	0.0000	0.0000	OK
30 minute winter	17	32	51.473	0.083	748.5	3.3879	0.0000	OK
60 minute winter	7.010:50%	46	47.736	0.096	947.4	0.0000	0.0000	OK
60 minute winter	18	46	41.492	0.492	911.2	1.7042	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	1	1.000	1.000:25%	0.0	0.000	0.000	17.1806	
15 minute summer	1	1.000	4	115.5	0.553	0.078	74.9079	
30 minute winter	2	2.000	4	73.1	1.106	0.185	13.4945	
30 minute winter	2	3.000	3.000:50%	-78.3	-0.308	-0.058	28.0755	
30 minute winter	2	3.000	4	77.5	0.305	0.057	28.0359	
30 minute winter	4	1.001	1.001:50%	317.1	0.525	0.420	67.7014	
30 minute winter	4	1.001	9	524.3	0.914	0.694	65.0409	
15 minute winter	5	4.000	6	430.4	2.205	0.125	24.0314	
15 minute winter	6	4.001	8	459.7	1.606	0.133	135.9475	
15 minute winter	6	5.000	5.000:50%	-58.0	-0.209	-0.089	38.4719	
15 minute winter	6	5.000	8	133.9	0.415	0.206	42.6493	
30 minute winter	8	4.002	9	462.0	1.914	0.113	63.1829	
60 minute winter	9	1.002	1.002:25%	877.2	0.580	0.608	159.8430	
60 minute winter	9	1.002	12	1121.9	0.806	0.778	524.1087	
60 minute winter	10	6.000	12	1590.3	3.072	0.139	12.7356	
60 minute winter	12	1.003	13	2613.7	1.732	1.480	102.2694	
15 minute summer	14	7.000	7.000:50%	0.0	0.000	0.000	45.9295	
15 minute summer	14	7.000	15	419.8	0.625	0.172	107.2018	
30 minute winter	15	7.001	16	361.5	0.530	0.062	27.8587	
30 minute winter	16	Orifice	7.002:50%	357.6				
30 minute winter	16	7.002	J1	810.7	0.448	0.042	37.8540	
30 minute winter	17	7.010	7.010:50%	719.6	0.836	0.048	176.7281	
30 minute winter	17	7.010	18	750.4	0.870	0.050	176.7230	
60 minute winter	18	7.011	7.011:50%	911.1	2.293	0.505	25.6844	

**Results for 30 year Critical Storm Duration. Lowest mass balance: 98.87%**

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
60 minute winter	7.011:50%	42	39.350	0.553	1102.5	0.0000	0.0000	OK
60 minute winter	19	43	37.254	0.660	1102.7	0.0000	0.0000	OK
480 minute winter	20	488	36.944	0.944	1098.1	1.6684	0.0000	SURCHARGED
480 minute winter	21	488	36.186	0.236	181.2	0.4177	0.0000	OK
480 minute winter	22	488	35.929	0.347	181.2	0.6135	0.0000	OK
480 minute winter	23	496	35.049	0.329	181.2	0.5817	0.0000	OK
480 minute winter	23_OUT	496	34.977	0.275	181.2	0.0000	0.0000	OK
15 minute winter	24	12	37.410	0.210	354.5	4.1107	0.0000	OK
480 minute winter	24_OUT	480	36.949	0.703	69.5	1.2419	0.0000	OK
30 minute winter	25	22	42.191	0.191	3.5	0.3380	0.0000	OK
30 minute winter	25_OUT	21	42.191	0.300	3499.7	43.1314	0.0000	OK
60 minute winter	19_OUT	44	37.149	0.903	1101.3	2.4942	0.0000	OK
60 minute winter	13	46	39.900	0.846	2613.7	2.9319	0.0000	OK
60 minute winter	13_OUT	47	37.525	1.279	2612.1	5.0862	0.0000	OK
30 minute winter	J1	22	59.167	0.277	810.7	42.0976	0.0000	OK
30 minute winter	J2	24	57.791	0.281	794.4	42.6754	0.0000	OK
30 minute winter	J3	25	56.291	0.281	763.9	0.0000	0.0000	OK
30 minute winter	J4	26	55.390	0.280	751.5	0.0000	0.0000	OK
30 minute winter	J5	28	54.406	0.276	739.2	0.0000	0.0000	OK
30 minute winter	J6	29	53.306	0.276	729.7	0.0000	0.0000	OK
30 minute winter	J7	30	52.532	0.272	717.9	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> )
60 minute winter	18	7.011	19	1102.7	2.292	0.611	30.9952	
60 minute winter	19	7.012	19_OUT	1101.3	1.736	0.608	6.2768	
480 minute winter	20	Hydro-Brake®	21	181.2				
480 minute winter	21	8.001	22	181.2	1.333	0.323	7.5061	
480 minute winter	22	8.002	23	181.2	1.107	0.641	82.3383	
480 minute winter	23	8.003	23_OUT	181.2	1.276	0.625	1.4200	5230.3
15 minute winter	24	10.000	24_OUT	354.5	3.831	0.194	1.1196	
480 minute winter	24_OUT	Flow through pond	20	1098.1	0.030	0.014	15446.0088	
30 minute winter	25	9.000	25_OUT	3.8	-0.292	0.018	0.7888	
30 minute winter	25_OUT	Flow through pond	10	2872.5	0.585	0.027	2211.1458	
60 minute winter	19_OUT	Flow through pond	20	3339.0	0.072	0.042	8437.2227	
60 minute winter	13	1.004	13_OUT	2612.1	2.228	0.714	126.5295	
60 minute winter	13_OUT	Flow through pond	20	3339.0	0.072	0.042	8437.2227	
30 minute winter	J1	7.003	J2	794.4	0.457	0.039	75.4945	
30 minute winter	J2	7.004	J3	763.9	0.426	0.036	75.0326	
30 minute winter	J3	7.005	J4	751.5	0.408	0.045	77.0381	
30 minute winter	J4	7.006	J5	739.2	0.412	0.043	75.5443	
30 minute winter	J5	7.007	J6	729.7	0.461	0.040	74.7344	
30 minute winter	J6	7.008	J7	717.9	0.458	0.047	75.4255	
30 minute winter	J7	7.009	17	705.2	0.883	0.042	30.9050	

**Results for 200 year +37% CC Critical Storm Duration. Lowest mass balance: 98.87%**

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	1	1	45.931	0.000	0.0	0.0000	0.0000	OK
30 minute winter	1.000:25%	22	45.650	0.326	727.8	1.5760	0.0000	OK
30 minute summer	2	22	44.033	1.787	211.6	0.0000	0.0000	FLOOD RISK
60 minute summer	3.000:50%	37	43.922	0.386	602.4	0.0000	0.0000	OK
60 minute winter	4	41	43.872	3.042	943.6	10.5374	0.0000	FLOOD RISK
60 minute winter	1.001:50%	40	43.735	3.118	1267.8	14.2319	0.0000	SURCHARGED
60 minute winter	5	43	45.989	1.527	720.0	26.1070	0.0000	SURCHARGED
60 minute winter	6	43	45.963	2.304	883.2	0.0000	0.0000	SURCHARGED
30 minute winter	5.000:50%	22	46.782	0.416	722.0	0.0000	0.0000	OK
60 minute winter	8	43	45.925	3.917	1041.1	0.0000	0.0000	SURCHARGED
60 minute winter	9	41	43.365	3.411	1767.7	17.4222	0.0000	SURCHARGED
60 minute winter	1.002:25%	38	43.135	3.320	2548.8	0.0000	0.0000	SURCHARGED
60 minute winter	10	51	42.042	1.042	5536.0	3.6111	0.0000	OK
60 minute winter	12	50	41.965	2.670	3862.3	13.6379	0.0000	SURCHARGED
15 minute summer	14	1	62.090	0.000	0.0	0.0000	0.0000	OK
15 minute winter	7.000:50%	13	61.842	0.302	999.8	0.0000	0.0000	OK
30 minute winter	15	23	61.494	0.504	927.7	0.0000	0.0000	FLOOD RISK
30 minute winter	16	24	60.593	0.503	848.8	0.0000	0.0000	FLOOD RISK
30 minute winter	7.002:50%	21	59.619	0.129	1921.6	0.0000	0.0000	OK
30 minute winter	17	29	51.538	0.148	1920.6	6.0268	0.0000	OK
60 minute winter	7.010:50%	42	47.813	0.173	2479.2	0.0000	0.0000	OK
60 minute winter	18	50	44.394	3.394	2448.6	11.7561	0.0000	FLOOD RISK

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	1	1.000	1.000:25%	0.0	0.000	0.000	34.6583	
15 minute summer	1	1.000	4	341.3	0.784	0.230	156.2871	
30 minute summer	2	2.000	4	287.9	1.116	0.727	57.4903	
30 minute summer	2	3.000	3.000:50%	-211.6	-0.452	-0.157	105.2784	
30 minute summer	2	3.000	4	211.2	0.448	0.156	52.0535	
60 minute winter	4	1.001	1.001:50%	819.5	0.727	1.085	119.9393	
60 minute winter	4	1.001	9	1194.0	1.060	1.580	119.9393	
60 minute winter	5	4.000	6	719.9	2.362	0.209	135.7279	
60 minute winter	6	4.001	8	782.5	1.316	0.227	278.9619	
60 minute winter	6	5.000	5.000:50%	-170.7	-0.345	-0.262	68.3665	
60 minute winter	6	5.000	8	314.7	0.556	0.483	74.7493	
60 minute winter	8	4.002	9	977.5	1.905	0.239	193.0672	
60 minute winter	9	1.002	1.002:25%	1771.8	0.832	1.229	222.5638	
60 minute winter	9	1.002	12	2560.1	1.202	1.775	667.6892	
60 minute winter	10	6.000	12	2879.8	3.138	0.251	20.8080	
60 minute winter	12	1.003	13	3729.5	1.974	2.111	147.3363	
15 minute summer	14	7.000	7.000:50%	0.0	0.000	0.000	75.0371	
15 minute summer	14	7.000	15	883.5	0.780	0.362	208.5365	
30 minute winter	15	7.001	16	848.8	0.640	0.145	55.4835	
30 minute winter	16	Orifice	7.002:50%	842.5				
30 minute winter	16	7.002	J1	1921.9	0.574	0.101	70.0860	
30 minute winter	17	7.010	7.010:50%	1890.9	1.156	0.127	335.1509	
30 minute winter	17	7.010	18	2264.3	1.207	0.152	549.7151	
60 minute winter	18	7.011	7.011:50%	1842.7	2.475	1.022	47.5652	

**Results for 200 year +37% CC Critical Storm Duration. Lowest mass balance: 98.87%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute winter	7.011:50%	48	41.795	2.998	2750.8	447.0908	0.0000	PONDING
120 minute winter	19	98	38.722	2.128	2100.8	0.0000	0.0000	FLOOD RISK
960 minute winter	20	975	38.075	2.075	1092.7	3.6666	0.0000	SURCHARGED
60 minute winter	21	56	36.187	0.237	181.2	0.4190	0.0000	OK
60 minute winter	22	64	35.933	0.351	181.2	0.6203	0.0000	OK
60 minute winter	23	74	35.050	0.330	182.2	0.5826	0.0000	OK
60 minute winter	23_OUT	74	34.977	0.275	181.7	0.0000	0.0000	OK
960 minute winter	24	960	38.074	0.874	84.8	17.1067	0.0000	SURCHARGED
960 minute winter	24_OUT	960	38.078	1.832	84.8	3.2366	0.0000	OK
15 minute winter	25	13	42.416	0.416	14.4	0.7345	0.0000	OK
15 minute winter	25_OUT	13	42.414	0.523	9431.7	75.2662	0.0000	OK
120 minute winter	19_OUT	98	38.157	1.911	2100.8	5.2771	0.0000	OK
60 minute winter	13	50	41.210	2.156	3729.5	7.4669	0.0000	SURCHARGED
240 minute winter	13_OUT	172	38.153	1.907	3505.9	7.5805	0.0000	OK
30 minute winter	J1	21	59.384	0.494	1921.9	74.9207	0.0000	OK
30 minute winter	J2	23	58.018	0.508	1900.0	77.0179	0.0000	FLOOD RISK
30 minute winter	J3	24	56.518	0.508	1861.0	0.0000	0.0000	FLOOD RISK
30 minute winter	J4	25	55.619	0.509	1843.6	0.0000	0.0000	FLOOD RISK
30 minute winter	J5	26	54.635	0.505	1825.9	0.0000	0.0000	FLOOD RISK
30 minute winter	J6	27	53.534	0.504	1808.4	0.0000	0.0000	FLOOD RISK
30 minute winter	J7	28	52.760	0.500	1790.8	0.0000	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)
60 minute winter	18	7.011	19	2107.4	2.831	1.169	47.5652	
120 minute winter	19	7.012	19_OUT	2100.8	2.822	1.160	7.4442	
960 minute winter	20	Hydro-Brake®	21	181.2				
60 minute winter	21	8.001	22	181.2	1.405	0.323	7.5389	
60 minute winter	22	8.002	23	182.2	1.125	0.644	82.5567	
60 minute winter	23	8.003	23_OUT	181.7	1.277	0.626	1.4227	2630.0
960 minute winter	24	10.000	24_OUT	84.8	2.737	0.046	2.8168	
960 minute winter	24_OUT	Flow through pond	20	1092.7	0.027	0.014	38504.6055	
15 minute winter	25	9.000	25_OUT	-14.4	-0.332	-0.067	2.1072	
15 minute winter	25_OUT	Flow through pond	10	6977.2	0.852	0.065	3741.1414	
120 minute winter	19_OUT	Flow through pond	20	5764.3	0.086	0.073	27084.5508	
60 minute winter	13	1.004	13_OUT	3729.6	2.616	1.019	156.8148	
240 minute winter	13_OUT	Flow through pond	20	3043.0	0.055	0.039	33760.0391	
30 minute winter	J1	7.003	J2	1900.0	0.579	0.093	142.0267	
30 minute winter	J2	7.004	J3	1861.0	0.552	0.087	141.4908	
30 minute winter	J3	7.005	J4	1843.6	0.530	0.111	145.5509	
30 minute winter	J4	7.006	J5	1825.9	0.534	0.106	143.5494	
30 minute winter	J5	7.007	J6	1808.4	0.534	0.099	142.3828	
30 minute winter	J6	7.008	J7	1790.8	0.539	0.117	144.0366	
30 minute winter	J7	7.009	17	1773.6	1.212	0.106	55.5053	

**Results for 1000 year Critical Storm Duration. Lowest mass balance: 89.43%**

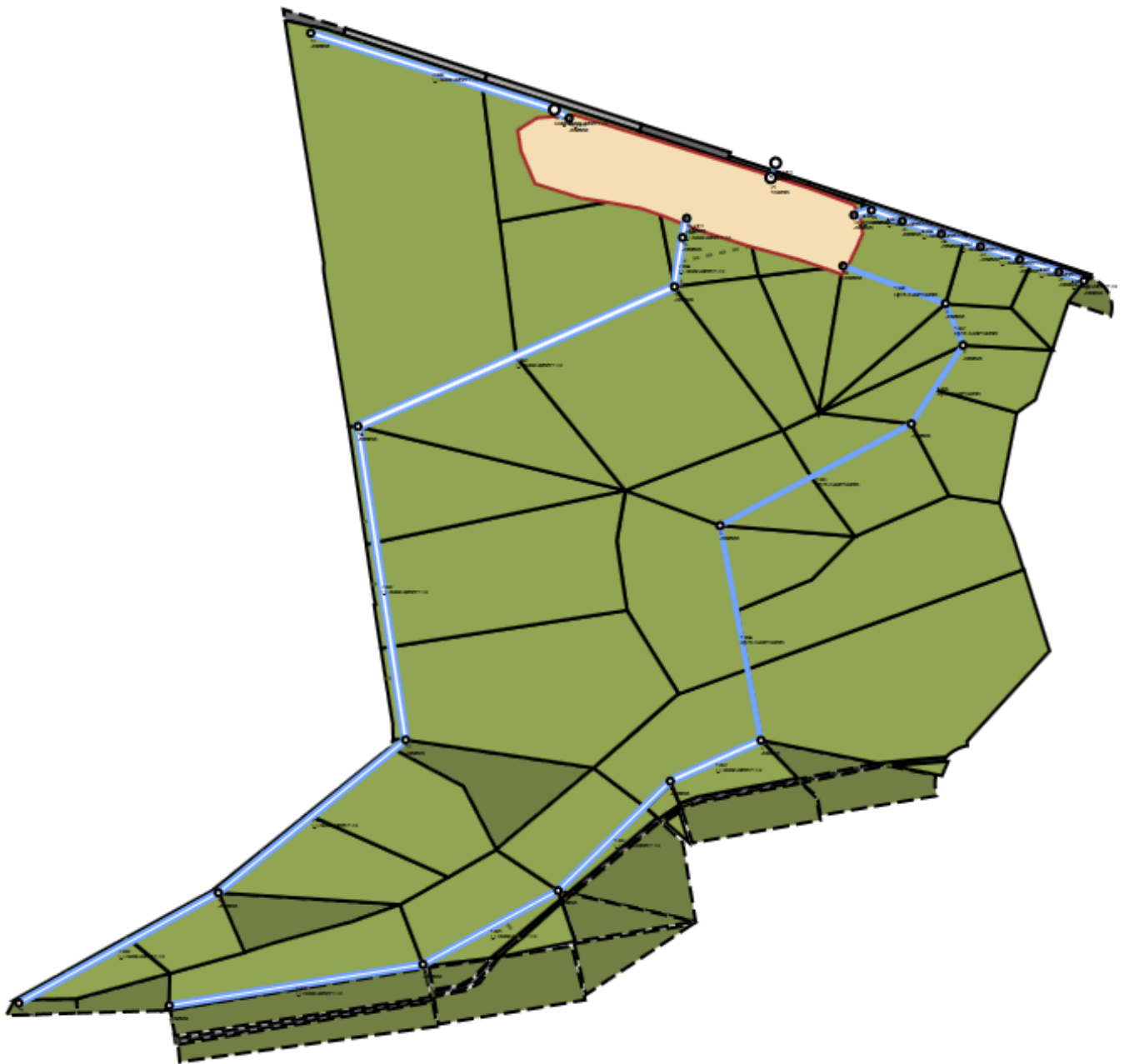
Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m <sup>3</sup> )	Flood (m <sup>3</sup> )	Status
15 minute summer	1	1	45.931	0.000	0.0	0.0000	0.0000	OK
30 minute winter	1.000:25%	22	45.655	0.331	749.0	1.6243	0.0000	OK
60 minute summer	2	35	44.020	1.774	235.8	0.0000	0.0000	FLOOD RISK
60 minute summer	3.000:50%	36	43.932	0.396	600.6	0.0000	0.0000	OK
60 minute winter	4	42	43.903	3.073	850.3	10.6445	0.0000	FLOOD RISK
30 minute winter	1.001:50%	22	43.922	3.305	1255.3	15.9893	0.0000	SURCHARGED
60 minute winter	5	41	46.647	2.185	749.0	37.3695	0.0000	SURCHARGED
60 minute winter	6	41	46.588	2.929	930.4	0.0000	0.0000	SURCHARGED
30 minute winter	5.000:50%	22	46.788	0.422	742.9	0.0000	0.0000	OK
60 minute winter	8	42	46.502	4.494	1015.1	0.0000	0.0000	SURCHARGED
60 minute winter	9	40	43.467	3.513	1801.3	17.9385	0.0000	SURCHARGED
60 minute winter	1.002:25%	40	43.229	3.414	2563.8	0.0000	0.0000	SURCHARGED
60 minute winter	10	50	42.107	1.107	5743.1	3.8348	0.0000	OK
60 minute winter	12	49	42.019	2.724	4068.8	13.9091	0.0000	SURCHARGED
15 minute summer	14	1	62.090	0.000	0.0	0.0000	0.0000	OK
15 minute winter	7.000:50%	13	61.845	0.305	1016.3	0.0000	0.0000	OK
30 minute winter	15	23	61.500	0.510	955.2	0.0000	0.4479	FLOOD
30 minute winter	16	24	60.600	0.510	864.8	0.0000	0.0000	FLOOD RISK
30 minute winter	7.002:50%	21	59.621	0.131	1979.8	0.0000	0.0000	OK
30 minute winter	17	28	51.539	0.149	1952.8	6.0900	0.0000	OK
60 minute winter	7.010:50%	41	47.817	0.177	2591.3	0.0000	0.0000	OK
60 minute winter	18	46	44.400	3.400	2560.6	11.7776	95.4430	FLOOD

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	1	1.000	1.000:25%	0.0	0.000	0.000	35.1422	
15 minute summer	1	1.000	4	348.5	0.789	0.235	158.5786	
60 minute summer	2	2.000	4	345.7	1.228	0.873	57.4903	
60 minute summer	2	3.000	3.000:50%	241.3	-0.439	0.179	103.5919	
60 minute summer	2	3.000	4	319.6	0.466	0.237	81.3906	
60 minute winter	4	1.001	1.001:50%	828.4	0.735	1.096	119.9393	
60 minute winter	4	1.001	9	1081.6	0.960	1.432	119.9393	
60 minute winter	5	4.000	6	766.7	2.369	0.222	135.7279	
60 minute winter	6	4.001	8	765.9	1.325	0.222	278.9619	
60 minute winter	6	5.000	5.000:50%	-179.0	-0.352	-0.275	70.2343	
60 minute winter	6	5.000	8	343.0	0.564	0.527	84.4117	
60 minute winter	8	4.002	9	979.2	1.899	0.239	193.0672	
60 minute winter	9	1.002	1.002:25%	1805.0	0.847	1.252	222.5638	
60 minute winter	9	1.002	12	2559.4	1.202	1.775	667.6892	
60 minute winter	10	6.000	12	2944.9	3.138	0.257	21.2618	
60 minute winter	12	1.003	13	3988.4	2.012	2.258	147.3363	
15 minute summer	14	7.000	7.000:50%	0.0	0.000	0.000	75.8131	
15 minute summer	14	7.000	15	896.9	0.784	0.367	211.3012	
30 minute winter	15	7.001	16	864.8	0.644	0.148	56.4570	
30 minute winter	16	Orifice	7.002:50%	860.0				
30 minute winter	16	7.002	J1	1979.9	0.579	0.104	71.6278	
30 minute winter	17	7.010	7.010:50%	1923.6	1.160	0.129	340.3194	
30 minute winter	17	7.010	18	2334.1	1.208	0.156	598.8323	
60 minute winter	18	7.011	7.011:50%	1846.6	2.481	1.024	47.5652	

**Results for 1000 year Critical Storm Duration. Lowest mass balance: 89.43%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	7.011:50%	15	41.880	3.083	2686.3	1300.0390	0.0000	PONDING
120 minute winter	19	98	38.730	2.136	2101.1	0.0000	0.0000	FLOOD RISK
480 minute winter	20	512	37.973	1.973	1841.5	3.4856	0.0000	SURCHARGED
60 minute winter	21	55	36.188	0.238	181.2	0.4205	0.0000	OK
60 minute winter	22	63	35.933	0.351	181.2	0.6204	0.0000	OK
60 minute winter	23	74	35.050	0.330	182.3	0.5826	0.0000	OK
60 minute winter	23_OUT	74	34.977	0.275	181.7	0.0000	0.0000	OK
480 minute winter	24	520	37.974	0.774	148.5	15.1483	0.0000	SURCHARGED
480 minute winter	24_OUT	512	37.979	1.733	148.5	3.0629	0.0000	OK
15 minute winter	25	13	42.422	0.422	13.9	0.7465	0.0000	OK
15 minute winter	25_OUT	13	42.420	0.529	9583.0	76.0787	0.0000	OK
15 minute winter	19_OUT	11	38.362	2.116	2515.7	5.8427	0.0000	OK
60 minute winter	13	49	41.255	2.201	3988.4	7.6231	0.0000	SURCHARGED
180 minute winter	13_OUT	148	38.176	1.930	3613.0	7.6725	0.0000	OK
30 minute winter	J1	21	59.394	0.504	1979.9	76.4306	0.0000	FLOOD RISK
30 minute winter	J2	22	58.020	0.510	1957.7	77.3910	6.7932	FLOOD
30 minute winter	J3	23	56.520	0.510	1874.4	0.0000	2.0889	FLOOD
30 minute winter	J4	24	55.620	0.510	1852.0	0.0000	1.6833	FLOOD
30 minute winter	J5	26	54.638	0.508	1831.9	0.0000	0.0000	FLOOD RISK
30 minute winter	J6	27	53.538	0.508	1824.1	0.0000	0.0000	FLOOD RISK
30 minute winter	J7	28	52.764	0.504	1811.4	0.0000	0.0000	FLOOD RISK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
60 minute winter	18	7.011	19	2106.1	2.829	1.168	47.5652	
120 minute winter	19	7.012	19_OUT	2101.1	2.822	1.160	7.4442	
480 minute winter	20	Hydro-Brake®	21	181.2				
60 minute winter	21	8.001	22	181.2	1.407	0.323	7.5400	
60 minute winter	22	8.002	23	182.3	1.125	0.644	82.5627	
60 minute winter	23	8.003	23_OUT	181.7	1.277	0.627	1.4228	2628.1
480 minute winter	24	10.000	24_OUT	148.5	3.282	0.081	2.8168	
480 minute winter	24_OUT	Flow through pond	20	1841.5	0.035	0.023	36328.6641	
15 minute winter	25	9.000	25_OUT	-13.9	-0.301	-0.065	2.1405	
15 minute winter	25_OUT	Flow through pond	10	7139.9	0.859	0.066	3796.8474	
15 minute winter	19_OUT	Flow through pond	20	5618.8	0.089	0.071	11281.3535	
60 minute winter	13	1.004	13_OUT	3749.1	2.629	1.024	156.8148	
180 minute winter	13_OUT	Flow through pond	20	4491.5	0.069	0.057	30921.9590	
30 minute winter	J1	7.003	J2	1957.7	0.583	0.096	143.5555	
30 minute winter	J2	7.004	J3	1874.4	0.557	0.088	142.2537	
30 minute winter	J3	7.005	J4	1852.0	0.534	0.112	146.2414	
30 minute winter	J4	7.006	J5	1831.9	0.537	0.106	144.5565	
30 minute winter	J5	7.007	J6	1824.1	0.538	0.100	143.6175	
30 minute winter	J6	7.008	J7	1811.4	0.536	0.118	145.4433	
30 minute winter	J7	7.009	17	1797.2	1.215	0.108	56.0710	





**Design Settings**

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	100	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	0.750	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	x
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	x
Maximum Rainfall (mm/hr)	50.0		

**Simulation Settings**

Rainfall Methodology	FEH-22	Analysis Speed	Normal	Additional Storage (m <sup>3</sup> /ha)	20.0
Summer CV	0.750	Skip Steady State	x	Check Discharge Rate(s)	x
Winter CV	0.840	Drain Down Time (mins)	240	Check Discharge Volume	x

**Storm Durations**

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

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
30	0	0	0
200	37	0	0
1000	0	0	0

**Node 21 Online Hydro-Brake® Control**

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	27.990	Product Number	CTL-CHE-0570-3209-1450-3209
Design Depth (m)	1.450	Min Outlet Diameter (m)	
Design Flow (l/s)	320.9	Min Node Diameter (mm)	

**Node 20 OUT Online Orifice Control**

Flap Valve	✓	Invert Level (m)	28.110	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	3.000		

**Node 18 OUT Online Orifice Control**

Flap Valve	✓	Invert Level (m)	28.110	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	3.000		

**Node 16 OUT Online Orifice Control**

Flap Valve	✓	Invert Level (m)	28.110	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	3.000		

**Node 10 Online Orifice Control**

Flap Valve	✓	Invert Level (m)	28.110	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	3.000		

**Node J1 Online Orifice Control**

Flap Valve	x	Invert Level (m)	29.771	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	0.300		

**Node J2 Online Orifice Control**

Flap Valve	x	Invert Level (m)	29.611	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	0.300		

**Node J3 Online Orifice Control**

Flap Valve	x	Invert Level (m)	29.451	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	0.300		

**Node J4 Online Orifice Control**

Flap Valve	x	Invert Level (m)	29.291	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	0.450		

**Node J5 Online Orifice Control**

Flap Valve	x	Invert Level (m)	29.131	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	0.450		

**Node 21 Flow through Pond Storage Structure**

Base Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Main Channel Length (m)	60.000
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	27.990	Main Channel Slope (1:X)	500.0
Safety Factor	2.0	Time to half empty (mins)		Main Channel n	0.030

**Inlets**

18\_OUT | 10 | 16\_OUT | 20\_OUT

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	18665.8	0.0	1.300	21937.6	0.0	1.900	23479.9	0.0

**Results for 30 year Critical Storm Duration. Lowest mass balance: 98.81%**

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 winter	1	11	45.562	0.162	426.2	11.9084	0.0000	OK
15 minute winter	1.000:25%	12	44.735	0.185	564.4	0.0000	0.0000	OK
15 minute winter	2	13	42.242	0.242	701.5	6.7704	0.0000	OK
15 minute winter	1.001:34%	13	41.879	0.260	736.4	0.9148	0.0000	OK
30 minute winter	3	21	41.161	0.281	911.9	13.4700	0.0000	OK
30 minute winter	1.002:49%	21	40.518	0.303	972.2	0.0000	0.0000	OK
30 minute winter	4	21	39.773	0.251	1057.6	4.9881	0.0000	OK
30 minute winter	1.003:31%	22	39.519	0.272	1158.6	2.7973	0.0000	OK
30 minute winter	5	22	38.705	0.675	1230.7	7.2036	0.0000	OK
30 minute winter	1.004:43%	21	37.905	0.812	1840.6	0.0000	0.0000	OK
30 minute winter	6	21	36.687	0.837	1820.7	0.0000	0.0000	OK
30 minute winter	1.005:44%	22	35.938	0.902	2014.2	0.0000	0.0000	OK
30 minute winter	7	22	34.707	0.707	2004.7	0.0000	0.0000	OK
30 minute winter	1.006:42%	22	33.876	0.729	2100.4	0.0000	0.0000	OK
30 minute winter	8	22	32.593	0.625	2095.6	0.0000	0.0000	OK
30 minute winter	1.007:38%	23	31.916	0.630	2131.9	10.1335	0.0000	OK
30 minute winter	9	23	30.928	0.754	2132.5	0.0000	0.0000	OK
30 minute winter	1.008:38%	23	30.165	0.775	2222.0	0.0000	0.0000	OK
30 minute winter	10	23	28.769	0.659	2238.1	0.4131	0.0000	OK
15 minute winter	11	11	48.636	0.032	24.9	0.1112	0.0000	OK
15 minute winter	2.000:39%	12	47.841	0.085	138.4	0.0000	0.0000	OK
15 minute winter	12	12	46.527	0.098	237.3	1.8650	0.0000	OK
15 minute winter	2.001:38%	12	44.623	0.151	487.0	0.0000	0.0000	OK
15 minute winter	13	13	41.461	0.183	646.0	5.5018	0.0000	OK
15 minute winter	2.002:41%	14	40.517	0.298	1273.1	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 winter	1	1.000	1.000:25%	411.1	0.987	0.124	27.1869	
15 minute winter	1	1.000	2	516.6	0.966	0.156	105.0508	
15 minute winter	2	1.001	1.001:34%	621.8	0.908	0.253	35.1227	
15 minute winter	2	1.001	3	707.1	0.934	0.288	74.7468	
30 minute winter	3	1.002	1.002:49%	891.2	1.061	0.333	62.7553	
30 minute winter	3	1.002	4	967.1	1.232	0.361	61.1883	
30 minute winter	4	1.003	1.003:31%	1048.7	1.063	0.286	29.6324	
30 minute winter	4	1.003	5	1146.6	1.226	0.312	62.4553	
30 minute winter	5	1.004	1.004:43%	1231.4	1.396	0.348	82.2295	
30 minute winter	5	1.004	6	1820.7	1.735	0.515	128.6183	
30 minute winter	6	1.005	1.005:44%	1798.1	1.562	0.549	107.1919	
30 minute winter	6	1.005	7	2004.7	1.965	0.613	121.3207	
30 minute winter	7	1.006	1.006:42%	1993.5	2.349	0.383	32.7068	
30 minute winter	7	1.006	8	2095.6	2.701	0.403	41.2938	
30 minute winter	8	1.007	1.007:38%	2094.5	3.039	0.297	11.5283	
30 minute winter	8	1.007	9	2132.5	2.655	0.303	22.0177	
30 minute winter	9	1.008	1.008:38%	2136.8	2.273	0.439	37.9288	
30 minute winter	9	1.008	10	2229.0	2.625	0.458	56.0924	
30 minute winter	10	Flow through pond	21	4553.4	0.204	0.003	4900.6035	
15 minute winter	11	2.000	2.000:39%	21.8	0.175	0.008	11.2286	
15 minute winter	11	2.000	12	114.2	0.548	0.041	28.2007	
15 minute winter	12	2.001	2.001:38%	215.2	0.731	0.051	26.6092	
15 minute winter	12	2.001	13	459.9	1.136	0.110	60.4121	
15 minute winter	13	2.002	2.002:41%	575.7	0.663	0.164	112.8025	
15 minute winter	13	2.002	14	1207.9	1.421	0.345	157.2193	

**Results for 30 year Critical Storm Duration. Lowest mass balance: 98.81%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
30 minute winter	14	23	38.868	0.171	1210.4	0.0000	0.0000	OK
30 minute winter	2.003:42%	23	35.150	0.189	1448.6	0.0000	0.0000	OK
30 minute winter	15	24	30.121	0.321	1421.5	0.0000	0.0000	OK
30 minute winter	2.004:51%	23	29.949	0.314	1562.4	2.8626	0.0000	OK
30 minute winter	16	23	29.659	0.182	1604.9	1.9513	0.0000	OK
30 minute winter	16_OUT	23	28.636	0.526	1608.2	0.1677	0.0000	OK
15 minute winter	17	12	30.882	0.033	32.3	0.1474	0.0000	OK
15 minute winter	3.000:35%	11	30.631	0.303	1073.1	0.0000	0.0000	OK
15 minute winter	18	12	29.494	0.132	988.3	5.4166	0.0000	OK
600 minute winter	18_OUT	480	28.595	0.485	144.3	0.3664	0.0000	OK
15 minute winter	19	13	29.993	0.118	24.4	0.3983	0.0000	OK
15 minute winter	4.000:50%	13	29.993	0.170	61.3	1.1640	0.0000	OK
60 minute winter	20	40	29.039	0.035	86.9	0.0576	0.0000	OK
600 minute winter	20_OUT	480	28.595	0.485	41.4	1.3125	0.0000	OK
600 minute winter	21	480	28.596	0.606	598.3	1.5411	0.0000	OK
15 minute summer	21_OUT	1	27.929	0.000	59.1	0.0000	0.0000	OK
15 minute winter	J1	13	29.992	0.221	46.1	0.0000	0.0000	OK
30 minute winter	4.001:15%	25	29.811	0.064	46.4	0.0000	0.0000	OK
30 minute winter	J2	25	29.808	0.197	46.1	0.0000	0.0000	OK
60 minute winter	4.002:34%	42	29.694	0.138	59.1	0.0000	0.0000	OK
60 minute winter	J3	42	29.694	0.243	52.2	0.0000	0.0000	OK
60 minute winter	J4	46	29.489	0.198	50.6	0.0000	0.0000	OK
60 minute winter	4.004:30%	41	29.391	0.148	85.4	0.0000	0.0000	OK
60 minute winter	J5	41	29.389	0.258	80.3	0.0000	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)
30 minute winter	14	2.003	2.003:42%	1187.3	1.452	0.151	115.5036	
30 minute winter	14	2.003	15	1421.5	1.207	0.180	238.5810	
30 minute winter	15	2.004	2.004:51%	1388.2	1.109	0.444	30.9681	
30 minute winter	15	2.004	16	1561.1	1.682	0.499	22.3447	
30 minute winter	16	2.005	16_OUT	1604.5	1.325	0.162	24.1328	
30 minute winter	16_OUT	Flow through pond	21	4553.4	0.204	0.003	4900.6035	
15 minute winter	17	3.000	3.000:35%	26.5	0.046	0.009	55.7443	
15 minute winter	17	3.000	18	963.2	1.227	0.325	130.3517	
15 minute winter	18	3.001	18_OUT	981.6	1.019	0.093	16.7493	
600 minute winter	18_OUT	Flow through pond	21	598.3	0.056	0.000	10562.9580	
15 minute winter	19	4.000	4.000:50%	17.7	0.124	0.010	4.5655	
15 minute winter	19	4.000	J1	46.1	0.162	0.026	6.5842	
60 minute winter	20	4.006	20_OUT	86.9	0.367	0.010	10.0518	
600 minute winter	20_OUT	Flow through pond	21	598.3	0.056	0.000	10562.9580	
600 minute winter	21	Hydro-Brake®	21_OUT	254.8				7766.5
15 minute winter	J1	4.001	4.001:15%	44.2	0.272	0.018	0.9730	
15 minute winter	J1	4.001	J2	47.0	0.232	0.019	13.8995	
30 minute winter	J2	4.002	4.002:34%	34.9	0.109	0.014	4.8233	
30 minute winter	J2	4.002	J3	52.3	0.147	0.022	17.5383	
60 minute winter	J3	4.003	J4	50.6	0.132	0.021	17.6413	
60 minute winter	J4	4.004	4.004:30%	50.9	0.200	0.021	5.0982	
60 minute winter	J4	4.004	J5	80.3	0.160	0.033	20.8000	
60 minute winter	J5	4.005	20	79.0	0.380	0.033	6.6817	

**Results for 200 year +37% CC Critical Storm Duration. Lowest mass balance: 98.81%**

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 winter	1	10	45.654	0.254	947.2	18.6493	0.0000	OK
15 minute winter	1.000:25%	11	44.842	0.292	1262.6	0.0000	0.0000	OK
15 minute winter	2	12	42.388	0.388	1620.0	10.8659	0.0000	OK
15 minute winter	1.001:34%	12	42.036	0.417	1787.7	2.3596	0.0000	OK
15 minute winter	3	13	41.335	0.455	2312.4	21.8375	0.0000	OK
15 minute winter	1.002:49%	13	40.697	0.482	2444.1	0.0000	0.0000	OK
15 minute winter	4	13	39.940	0.418	2626.3	8.3046	0.0000	OK
15 minute winter	1.003:31%	13	39.689	0.442	2864.2	7.3938	0.0000	OK
30 minute winter	5	21	39.075	1.045	3106.4	11.1623	0.0000	OK
30 minute winter	1.004:43%	23	38.266	1.173	4558.7	253.0788	0.0000	PONDING
30 minute winter	6	17	36.950	1.100	3629.5	0.0000	309.9016	FLOOD
30 minute winter	1.005:44%	28	36.197	1.161	3708.2	186.3532	0.0000	PONDING
30 minute winter	7	28	34.895	0.895	3291.6	0.0000	0.0000	OK
30 minute summer	1.006:42%	19	34.085	0.939	3637.1	0.0000	0.0000	OK
30 minute summer	8	19	32.783	0.815	3642.5	0.0000	0.0000	OK
30 minute summer	1.007:38%	19	32.118	0.832	3805.0	17.6699	0.0000	OK
30 minute summer	9	19	31.166	0.992	3811.8	0.0000	0.0000	OK
30 minute summer	1.008:38%	19	30.425	1.035	4228.0	0.0000	0.0000	OK
480 minute winter	10	480	29.324	1.214	1279.3	0.7609	0.0000	OK
15 minute winter	11	11	48.657	0.053	55.4	0.1843	0.0000	OK
15 minute winter	2.000:39%	12	47.897	0.141	311.7	0.0000	0.0000	OK
15 minute winter	12	12	46.592	0.163	557.4	3.1087	0.0000	OK
15 minute winter	2.001:38%	12	44.718	0.246	1149.0	0.0000	0.0000	OK
15 minute winter	13	12	41.584	0.306	1542.1	9.1873	0.0000	OK
15 minute winter	2.002:41%	13	40.694	0.474	2985.5	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 winter	1	1.000	1.000:25%	918.1	1.240	0.277	48.0841	
15 minute winter	1	1.000	2	1186.8	1.195	0.359	192.7945	
15 minute winter	2	1.001	1.001:34%	1501.0	1.162	0.612	65.7324	
15 minute winter	2	1.001	3	1722.8	1.196	0.702	142.5624	
15 minute winter	3	1.002	1.002:49%	2228.9	1.401	0.832	119.2400	
15 minute winter	3	1.002	4	2432.8	1.613	0.909	117.4781	
15 minute winter	4	1.003	1.003:31%	2629.3	1.425	0.716	55.2993	
15 minute winter	4	1.003	5	2874.0	1.569	0.783	122.1793	
30 minute winter	5	1.004	1.004:43%	3089.0	1.890	0.874	149.4644	
30 minute winter	5	1.004	6	3629.5	2.129	1.026	206.5684	
30 minute winter	6	1.005	1.005:44%	3217.4	1.887	0.983	157.9296	
30 minute winter	6	1.005	7	3291.6	2.273	1.006	171.8952	
30 minute winter	7	1.006	1.006:42%	3291.8	2.693	0.633	48.1478	
30 minute winter	7	1.006	8	3623.2	3.103	0.696	62.1460	
30 minute summer	8	1.007	1.007:38%	3646.0	3.442	0.517	17.7165	
30 minute summer	8	1.007	9	3811.8	3.051	0.541	34.2582	
30 minute summer	9	1.008	1.008:38%	3819.3	2.584	0.785	60.0057	
30 minute summer	9	1.008	10	4225.1	2.786	0.868	99.8314	
480 minute winter	10	Flow through pond	21	1530.0	0.076	0.001	25861.5820	
15 minute winter	11	2.000	2.000:39%	51.2	0.231	0.018	19.6876	
15 minute winter	11	2.000	12	272.9	0.731	0.097	50.5849	
15 minute winter	12	2.001	2.001:38%	524.8	0.982	0.125	48.2036	
15 minute winter	12	2.001	13	1097.0	1.445	0.261	114.0793	
15 minute winter	13	2.002	2.002:41%	1421.6	0.893	0.405	207.0597	
15 minute winter	13	2.002	14	2883.9	1.872	0.823	287.5420	

**Results for 200 year +37% CC Critical Storm Duration. Lowest mass balance: 98.81%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
30 minute winter	14	22	38.980	0.283	2889.7	0.0000	0.0000	OK
30 minute winter	2.003:42%	22	35.278	0.318	3555.7	0.0000	0.0000	OK
30 minute winter	15	22	30.323	0.523	3504.3	0.0000	0.0000	FLOOD RISK
30 minute winter	2.004:51%	22	30.135	0.500	4035.7	7.2577	0.0000	SURCHARGED
30 minute winter	16	22	29.789	0.312	4166.7	3.3511	0.0000	OK
480 minute winter	16_OUT	480	29.324	1.214	996.9	0.3874	0.0000	OK
15 minute winter	17	11	30.904	0.055	71.7	0.2461	0.0000	OK
15 minute winter	3.000:35%	11	30.785	0.456	2391.7	0.0000	0.0000	OK
15 minute winter	18	12	29.575	0.213	2302.1	8.7554	0.0000	OK
480 minute winter	18_OUT	480	29.324	1.214	384.7	0.9163	0.0000	OK
30 minute winter	19	21	30.149	0.274	45.6	0.9239	0.0000	OK
30 minute winter	4.000:50%	21	30.149	0.326	118.7	4.2853	0.0000	OK
480 minute winter	20	480	29.325	0.321	84.7	0.5221	0.0000	OK
480 minute winter	20_OUT	472	29.323	1.213	107.6	3.2848	0.0000	OK
480 minute winter	21	472	29.326	1.336	1530.0	3.3990	0.0000	SURCHARGED
15 minute summer	21_OUT	1	27.929	0.000	165.8	0.0000	0.0000	OK
30 minute winter	J1	21	30.149	0.378	93.4	0.0000	0.0000	OK
60 minute winter	4.001:15%	43	29.959	0.212	83.7	0.0000	0.0000	OK
60 minute winter	J2	43	29.959	0.348	69.7	0.0000	0.0000	OK
60 minute winter	4.002:34%	44	29.864	0.307	118.1	0.0000	0.0000	OK
60 minute winter	J3	44	29.864	0.413	100.5	0.0000	0.0000	OK
60 minute winter	J4	46	29.627	0.336	91.5	0.0000	0.0000	OK
60 minute winter	4.004:30%	40	29.548	0.305	178.5	0.0000	0.0000	OK
60 minute winter	J5	40	29.547	0.416	167.2	0.0000	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)
30 minute winter	14	2.003	2.003:42%	2850.6	1.935	0.362	208.2506	
30 minute winter	14	2.003	15	3504.3	1.598	0.445	437.8118	
30 minute winter	15	2.004	2.004:51%	3478.1	1.514	1.112	57.3254	
30 minute winter	15	2.004	16	4042.3	2.359	1.292	41.2986	
30 minute winter	16	2.005	16_OUT	4170.3	1.401	0.421	64.0108	
480 minute winter	16_OUT	Flow through pond	21	1530.0	0.076	0.001	25861.5820	
15 minute winter	17	3.000	3.000:35%	62.6	0.067	0.021	94.1349	
15 minute winter	17	3.000	18	2246.4	1.677	0.757	223.2226	
15 minute winter	18	3.001	18_OUT	2257.3	1.184	0.214	34.6318	
480 minute winter	18_OUT	Flow through pond	21	1530.0	0.076	0.001	25861.5820	
30 minute winter	19	4.000	4.000:50%	36.7	0.114	0.020	11.3015	
30 minute winter	19	4.000	J1	93.4	0.183	0.052	13.9647	
480 minute winter	20	4.006	20_OUT	84.6	0.231	0.010	82.3848	
480 minute winter	20_OUT	Flow through pond	21	1530.0	0.076	0.001	25861.5820	
480 minute winter	21	Hydro-Brake®	21_OUT	319.4				9724.7
30 minute winter	J1	4.001	4.001:15%	86.7	0.316	0.036	4.2207	
30 minute winter	J1	4.001	J2	74.9	0.211	0.031	36.3128	
60 minute winter	J2	4.002	4.002:34%	59.0	0.125	0.024	14.6551	
60 minute winter	J2	4.002	J3	100.5	0.162	0.041	38.9716	
60 minute winter	J3	4.003	J4	91.5	0.167	0.038	39.5338	
60 minute winter	J4	4.004	4.004:30%	97.0	0.182	0.040	13.0131	
60 minute winter	J4	4.004	J5	167.2	0.195	0.069	41.5056	
60 minute winter	J5	4.005	20	165.1	0.532	0.068	10.0027	

**Results for 1000 year Critical Storm Duration. Lowest mass balance: 98.81%**

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 winter	1	10	45.657	0.257	962.4	18.8128	0.0000	OK
15 minute winter	1.000:25%	11	44.845	0.295	1282.8	0.0000	0.0000	OK
15 minute winter	2	12	42.392	0.392	1647.0	10.9635	0.0000	OK
15 minute winter	1.001:34%	12	42.040	0.421	1818.3	2.4037	0.0000	OK
30 minute summer	3	20	41.341	0.461	2341.5	22.1197	0.0000	OK
30 minute summer	1.002:49%	20	40.702	0.487	2494.4	0.0000	0.0000	OK
30 minute summer	4	20	39.945	0.423	2709.8	8.4068	0.0000	OK
30 minute summer	1.003:31%	20	39.694	0.447	2966.0	7.5656	0.0000	OK
30 minute winter	5	21	39.091	1.061	3210.7	11.3339	0.0000	OK
30 minute winter	1.004:43%	24	38.273	1.180	4724.9	304.3524	0.0000	PONDING
30 minute winter	6	17	36.950	1.100	3639.6	0.0000	319.4407	FLOOD
30 minute winter	1.005:44%	29	36.198	1.162	3718.2	195.2775	0.0000	PONDING
60 minute winter	7	43	34.895	0.895	3291.4	0.0000	0.0000	OK
30 minute summer	1.006:42%	19	34.087	0.940	3651.8	0.0000	0.0000	OK
30 minute summer	8	19	32.785	0.817	3657.2	0.0000	0.0000	OK
30 minute summer	1.007:38%	19	32.120	0.834	3824.7	17.7566	0.0000	OK
30 minute summer	9	19	31.168	0.994	3832.4	0.0000	0.0000	OK
30 minute summer	1.008:38%	19	30.429	1.040	4263.0	0.0000	0.0000	OK
480 minute winter	10	472	29.272	1.162	1228.7	0.7287	0.0000	OK
15 minute winter	11	11	48.658	0.054	56.3	0.1862	0.0000	OK
15 minute winter	2.000:39%	12	47.898	0.143	316.8	0.0000	0.0000	OK
15 minute winter	12	12	46.594	0.165	566.9	3.1388	0.0000	OK
15 minute winter	2.001:38%	12	44.720	0.248	1168.8	0.0000	0.0000	OK
15 minute winter	13	12	41.587	0.309	1568.7	9.2783	0.0000	OK
30 minute winter	2.002:41%	21	40.700	0.480	3033.8	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 winter	1	1.000	1.000:25%	932.9	1.246	0.282	48.6313	
15 minute winter	1	1.000	2	1206.5	1.200	0.365	195.0832	
15 minute winter	2	1.001	1.001:34%	1526.9	1.167	0.622	66.5626	
15 minute winter	2	1.001	3	1751.9	1.202	0.714	144.3205	
30 minute summer	3	1.002	1.002:49%	2283.8	1.407	0.853	121.2335	
30 minute summer	3	1.002	4	2474.0	1.614	0.924	119.3724	
30 minute summer	4	1.003	1.003:31%	2679.7	1.437	0.730	56.1586	
30 minute summer	4	1.003	5	2960.5	1.565	0.807	129.8110	
30 minute winter	5	1.004	1.004:43%	3165.5	1.913	0.895	151.3065	
30 minute winter	5	1.004	6	3639.6	2.135	1.029	206.5684	
30 minute winter	6	1.005	1.005:44%	3226.1	1.892	0.986	157.9296	
30 minute winter	6	1.005	7	3294.2	2.274	1.007	171.9367	
60 minute winter	7	1.006	1.006:42%	3291.3	2.679	0.632	47.7909	
60 minute winter	7	1.006	8	3541.9	3.086	0.681	61.0854	
30 minute summer	8	1.007	1.007:38%	3661.1	3.444	0.519	17.7793	
30 minute summer	8	1.007	9	3832.4	3.055	0.544	34.3951	
30 minute summer	9	1.008	1.008:38%	3842.4	2.584	0.789	60.3383	
30 minute summer	9	1.008	10	4278.7	2.782	0.879	101.2556	
480 minute winter	10	Flow through pond	21	1472.0	0.073	0.001	24748.0820	
15 minute winter	11	2.000	2.000:39%	52.1	0.232	0.019	19.9149	
15 minute winter	11	2.000	12	277.5	0.735	0.099	51.1637	
15 minute winter	12	2.001	2.001:38%	533.8	0.987	0.127	48.7667	
15 minute winter	12	2.001	13	1115.6	1.451	0.266	115.5035	
15 minute winter	13	2.002	2.002:41%	1447.0	0.898	0.413	209.4977	
15 minute winter	13	2.002	14	2932.0	1.882	0.836	290.8871	

**Results for 1000 year Critical Storm Duration. Lowest mass balance: 98.81%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
30 minute winter	14	22	38.985	0.288	2977.1	0.0000	0.0000	OK
30 minute winter	2.003:42%	22	35.284	0.324	3665.5	0.0000	0.0000	OK
30 minute winter	15	22	30.332	0.532	3612.5	0.0000	0.0000	FLOOD RISK
30 minute winter	2.004:51%	22	30.143	0.508	4165.6	7.4809	0.0000	SURCHARGED
30 minute winter	16	22	29.795	0.318	4301.4	3.4110	0.0000	OK
480 minute winter	16_OUT	480	29.273	1.163	957.3	0.3711	0.0000	OK
15 minute winter	17	11	30.905	0.056	72.9	0.2486	0.0000	OK
15 minute winter	3.000:35%	11	30.789	0.460	2429.9	0.0000	0.0000	OK
15 minute winter	18	12	29.577	0.215	2340.0	8.8357	0.0000	OK
480 minute winter	18_OUT	480	29.272	1.162	369.5	0.8776	0.0000	OK
30 minute winter	19	21	30.158	0.283	47.0	0.9530	0.0000	OK
30 minute winter	4.000:50%	21	30.158	0.335	122.8	4.5148	0.0000	OK
480 minute winter	20	480	29.272	0.268	81.3	0.4368	0.0000	OK
480 minute winter	20_OUT	472	29.273	1.163	103.4	3.1477	0.0000	OK
480 minute winter	21	472	29.274	1.284	1472.0	3.2689	0.0000	SURCHARGED
15 minute summer	21_OUT	1	27.929	0.000	168.9	0.0000	0.0000	OK
30 minute winter	J1	21	30.157	0.386	95.5	0.0000	0.0000	OK
60 minute winter	4.001:15%	44	29.973	0.226	86.6	0.0000	0.0000	OK
60 minute winter	J2	44	29.973	0.362	72.3	0.0000	0.0000	OK
60 minute winter	4.002:34%	44	29.875	0.319	122.2	0.0000	0.0000	OK
60 minute winter	J3	44	29.875	0.424	105.1	0.0000	0.0000	OK
60 minute winter	J4	45	29.633	0.342	93.1	0.0000	0.0000	OK
60 minute winter	4.004:30%	40	29.557	0.314	184.4	0.0000	0.0000	OK
60 minute winter	J5	40	29.556	0.425	172.8	0.0000	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)
30 minute winter	14	2.003	2.003:42%	2936.9	1.953	0.373	212.5198	
30 minute winter	14	2.003	15	3612.5	1.614	0.459	446.9567	
30 minute winter	15	2.004	2.004:51%	3586.3	1.530	1.146	58.5417	
30 minute winter	15	2.004	16	4173.4	2.386	1.334	42.1677	
30 minute winter	16	2.005	16_OUT	4305.5	1.403	0.435	66.2396	
480 minute winter	16_OUT	Flow through pond	21	1472.0	0.073	0.001	24748.0820	
15 minute winter	17	3.000	3.000:35%	63.7	0.067	0.021	95.1829	
15 minute winter	17	3.000	18	2283.4	1.686	0.770	225.7176	
15 minute winter	18	3.001	18_OUT	2293.7	1.187	0.218	35.1436	
480 minute winter	18_OUT	Flow through pond	21	1472.0	0.073	0.001	24748.0820	
30 minute winter	19	4.000	4.000:50%	37.6	0.114	0.021	11.7293	
30 minute winter	19	4.000	J1	95.5	0.186	0.053	14.4220	
480 minute winter	20	4.006	20_OUT	81.3	0.229	0.009	75.6591	
480 minute winter	20_OUT	Flow through pond	21	1472.0	0.073	0.001	24748.0820	
480 minute winter	21	Hydro-Brake®	21_OUT	320.6				9536.7
30 minute winter	J1	4.001	4.001:15%	88.1	0.319	0.036	4.3981	
30 minute winter	J1	4.001	J2	76.0	0.214	0.031	37.4347	
60 minute winter	J2	4.002	4.002:34%	59.9	0.124	0.025	15.4030	
60 minute winter	J2	4.002	J3	105.1	0.166	0.043	40.5750	
60 minute winter	J3	4.003	J4	93.1	0.171	0.038	40.6845	
60 minute winter	J4	4.004	4.004:30%	98.8	0.182	0.041	13.5146	
60 minute winter	J4	4.004	J5	172.8	0.194	0.071	42.7980	
60 minute winter	J5	4.005	20	170.6	0.540	0.070	10.1816	





Making Sustainability Happen