Site Infrastructure Services Limited

GLEESON HOMES CUMBRIA

Phase 2 - Ivy Mills

WHITEHAVEN

Flood Risk Assessment & Outline Surface Water Drainage Strategy

GHC-IM-W-FRA-REV A

May 2019

SIS GENERAL NOTES

Project No.:	GHC-IM-W-FRA
Site:	Ivy Mills Phase 2, Whitehaven
Title:	Flood Risk Assessment & Outline Surface Water Drainage Strategy
Client:	Gleeson Homes (Cumbria)
Date:	May 2022
Office:	Salford
Status:	Revision A

Author C Lynch

Signature

Date: May 2022

Issue No	Version/Details	Date issued	Author
-	Initial Issue	13.05.22	CML
A	Note added regarding temporary SW connection to combined sewer	13.10.22	CML

CONTENTS

APPENDICES

APPENDIX A – Existing Topographical Survey

APPENDIX B – Proposed Drainage Layout

APPENDIX C – Surface Water Simulations & Calculations

APPENDIX D – Greenfield Run-off Rate

MAY 2019

1 INTRODUCTION

1.1 Context

Site Infrastructure Services Ltd have been commissioned to carry out a Flood Risk Assessment (FRA) and drainage strategy for Gleeson Cumbria (the 'client'). The assessment is in support of the detailed planning submission for the residential development at Phase 2 Ivy Mills, Whitehaven (the 'site').

The assessment has been prepared in accordance with the National Planning Policy Framework (NPPF)[1] and its accompanying Planning Practice Guidance[2], the Interim Code of Practice for Sustainable Drainage[3], BS 8533-2011 Assessing and Managing Flood Risk in Development Code of Practice[4], BS 8582:2013 Code of practice for surface water management for development sites[5] and the Non-statutory technical standards for sustainable drainage systems[6], with site-specific advice from the Environment Agency, the Lead Local Flood Authority (LLFA), the Local Planning Authority (LPA), the architect and the client.

The NPPF sets out the criteria for development and flood risk by stating that inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk, but where development is necessary, making it safe without increasing flood risk elsewhere.

The key definitions within the PPG are:

- "Flood risk" is a combination of the probability and the potential consequences of flooding from all sources – including from rivers and the sea, directly from rainfall on the ground surface and rising groundwater, overwhelmed sewers and drainage systems, and from reservoirs, canals and lakes and other artificial sources;
- "Areas at risk of flooding" means areas at risk from all sources of flooding. For fluvial (river) and sea flooding, this is principally land within Flood Zones 2 and 3. It can also include an area within Flood Zone 1 which the Environment Agency has notified the local planning authority as having critical drainage problems.

For this site, the key aspects that require the assessment are:

- The Environment Agency 's indicative flood zone map shows that the site is located within Flood Zone 1; and
- The site area is approximately 2.186Ha therefore surface water drainage must be considered, and sustainable drainage systems (SuDS) incorporated, where possible.

[1] Communities and Local Government, 'National Planning Policy Framework', July 2019.

[2] Communities and Local Government, 'Planning Practice Guidance - Flood Risk and Coastal Change, ID 7', March 2014. http://planningguidance.planningportal.gov.uk/blog/guidance/flood-risk-and-coastal-change/

[3] DEFRA, 'Interim Code of Practice for Sustainable Drainage Systems' National SUDS Working Group, July 2004.

[4] BSI, 'BS 8533-2011 Assessing and managing flood risk in development Code of practice', October 2011.

[5] BSI, 'BS 8582:2013 Code of practice for surface water management for development sites', November 2013.

[6] DEFRA, 'Sustainable Drainage Systems - Non-statutory technical standards for sustainable drainage systems', March 2015.

1.2 Scope of work

A key element of project development is to prepare a FRA to establish the flood risk associated with the proposed development and to propose suitable mitigation, if required, to reduce the risk to a more acceptable level.

The scope of work relating to a FRA is based on the guidance provided in Section 14 of the NPPF and its accompanying Planning Practice Guidance.

A site-specific FRA must demonstrate that the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall. The scope of this assessment therefore comprises the following elements:

- To review architect plans, planning information and other studies to determine existing site conditions;
- To obtain information on the hydrology and hydrological regime in and around the site;
- To obtain the views of the Environment Agency /LLFA including scope, location and impacts;
- To determine the extent of new flooding provision and the influence on the site;
- To assess the impact on the site from climate change effects and anticipated increases in rainfall over a 100 year period for residential uses/over a 60 year period for a commercial use/over a 25 year period for the design life of the development;
- To review site surface water drainage based on the proposed layout and, if necessary, to determine the extent of infrastructure required; and
- To prepare a report including calculations and summaries of the source information and elements reviewed.

Reliance has been placed on factual and anecdotal data obtained from the sources identified.

Site Infrastructure Services Ltd cannot be held responsible for the scope of work, or any omissions, misrepresentation, errors, or inaccuracies with the supplied information. New information, revised practices or changes in legislation may necessitate the re-interpretation of the report, in whole or in part.

2 SITE DESCRIPTION

2.1 Existing site

2.1.1 Location

Site Name and Address: Ivy Mills Phase 2, Whitehaven CA28 8TP

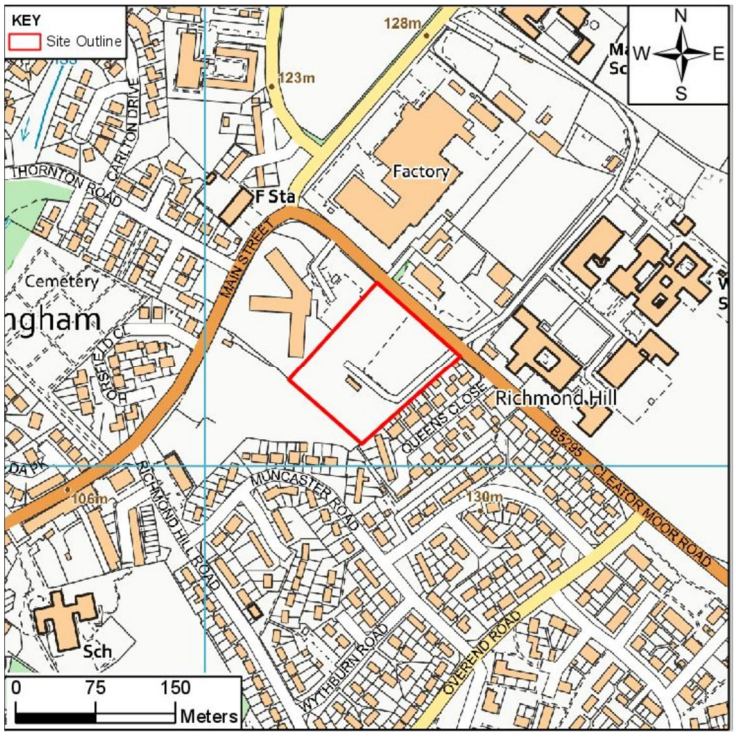
Site National Grid Reference: (E) 299018; (N) 517078

The site covers approximately 2.186 ha (21,860 m²), and at present is unused. The site is bounded by Cleator Moor Road (B5295) & Main Street to the immediate North-East, a care home to the North, Queens Close housing estate to the South-East and unused land to the South-West which has outline planning permission for residential dwellings.

Topographically the site gradually slopes from the east with levels of 129.10m, down to the west with levels of 114.30m

The site is accessed from Cleator Moor Road

Figure 2.1: Site location map



2.1.2 Land use and topography

The site covers approximately 2.186 ha (21,860 m²), and at present is unused.

Topographically the site gradually slopes from the east with levels of 129.10m, down to the west with levels of 114.30m

Appendix A.

2.1.3 Hydrology

The closest 'Main River' to the site is Snebra Beck, located approximately 400m west of the proposed site. Other 'Main Rivers' in the vicinity of the site include Midgey Gill, Pow Beck, and River Keele, all located over 1km from the proposed site. A culverted watercourse exists approximately 90m to the west of the site within Main Street.

2.1.4 Ground Investigation

Ground investigation was undertaken at the neighbouring site by GEO Environmental Engineering Ltd.

Intrusive ground investigations were carried out at the site in August 2019 where 10 mechanically excavated trial pits with in-situ geotechnical testing to depths of between 1.10m and 3.00m below ground level and 4 no. dynamic sampling boreholes to depths between 1.50m and 5.00m below ground level with gas and groundwater monitoring were carried out at various locations across the site.

As the site is on the location of the recently demolished workwear factory, made ground / crushed demolition rubble was encountered across the majority of the site area at variable depths up to 1.25m below ground level.

The ground conditions in the predominantly grassland areas to the east of the site consist of initially firm becoming stiff, occasionally soft, slightly sandy, slightly gravelly clay with occasional cobbles to a depth of 5.0m below ground level.

The strata below the made ground in the rest of the site was found to comprise of initially firm becoming stiff, slightly sandy, slightly gravelly clay with occasional cobbles to a depth of 4.2m below ground level.

No bedrock was encountered during the investigations.

Groundwater was encountered predominantly on the western side of the site in numerous trial pits at variable depths of between 0.40m and 2.20m below ground level and was noted within the demolition rubble, former foundation runs and the interface of the made ground and natural clay deposits.

Ground water monitoring recorded standing groundwater depths of between 0.35m and 2.58m below ground level at all the borehole locations with perched water most likely originating from the surface. It was also observed that the vegetated area in the east of the site was waterlogged following periods of heavy rainfall.

Based on the ground conditions encountered across the neighbouring site, the potential for permeable ground is considered negligible to very low and soakaways are not recommended as an appropriate solution and alternative methods should be considered for drainage of surface water run-off.

For reference refer to Geo Environmental Engineering Phase 2 Ground Investigation Report Ref 2019-3886

2.2 Development proposals

The proposed development is for a residential end use, details for the proposed development are included within Appendix B.

3 LEGISLATION, POLICY AND GUIDANCE

3.1 National policy

Table 3.1: National legislation and policy context

Legislation	Key provisions
National Planning Policy Framework (2019)	The aims of planning policy on development and flood risk are to ensure that flood risk is taken into account at all stages in the planning process to avoid inappropriate development in areas at risk of flooding, and to direct development away from areas at highest risk. Where new development is, exceptionally, necessary in such areas, policy aims to make it safe without increasing flood risk elsewhere and where possible, reducing flood risk overall.
Planning Practice Guidance (2014)	The NPPF is supported by an online Planning Practice Guidance, which provide additional guidance on flood risk.
Flood and Water Management Act 2010[7]	The Flood and Water Management Act (FWMA) aims to implement the findings of the 2007 Pitt Review and co-ordinate control of drainage and flood issues. There are a number of increased responsibilities within the Act that affect adoption of SuDS features and the role of the Environment Agency to expand on the mapping data they provide. The implementation of SuDS features has many beneficial impacts on the treatment of surface water during remediation works.
Water Resources Act 1991[8]	Section 24 – The Environment Agency is empowered under this Act to maintain and improve the quality of 'controlled' waters Section 85 – It is an offence to cause or knowingly permit pollution of controlled waters Section 88 – Discharge consents are required for discharges to controlled waters
Water Framework Directive (2000)[9]	The Water Framework Directive (WFD) requires all inland and coastal waters to reach 'good' chemical and biological status by 2015. Flood risk management is unlikely to have a significant impact on chemical water quality except where maintenance works disturb sediment (such as de-silting) or where pollutants are mobilised from contaminated land by floodwaters. The main impact of the WFD on flood risk management, both now and in the future, relates to the ecological quality of water bodies. Channel works, such as straightening and deepening, or flood risk management schemes that modify geomorphological processes can change river morphology. The WFD aims to protect conservation sites identified by the EC Habitats Directive and Birds Directive that have water-related features, by designating them as 'protected sites'.

[7] Flood and Water Management Act, 2010

[8] Water Resources Act, 1991

[9] EU Water Framework Directive, 2000

3.2 Local policy

Local policies ensures that flood risk is taken into account at all stages in the planning process to avoid inappropriate development in areas at risk of flooding and making development safe without increasing flood risk elsewhere and where possible, reducing flood risk.

Owing to the size of the development, it is classed as major development in accordance with The Town and Country Planning Order 2015[3], due to the development comprising more than 10 dwellings.

The area covered by the application is 1.2 ha (hectares) and by reference to the Environment Agency Flood Map, the site lies in Flood Zone 1.

Table 2 of the NPPF's Planning Practice Guidance [2] classifies each development into a vulnerability class, depending on the type of development. As residential dwellings the site is classified as 'More vulnerable'. 'More Vulnerable' development classes are deemed acceptable in terms of flood risk within Flood Zone 1. However due to the site being classed as major development a Flood Risk Assessment is required

3.3 Site-specific consultation

Discussions have been held with United Utilities pre-development Engineers & an agreed discharge rate of 10.0 litres per second for the overall site has been agreed (5.00 litres/per second for Phase 1 and 5.00 litres/per second for Phase 2).

4 SOURCES OF FLOOD RISK

4.1 Criteria

In accordance with the NPPF and advice from the Environment Agency, a prediction of the flood sources and levels is required along with the effects of climate change from the present for the design life of the development (in this case assumed to be 100 years).

Changes to climate change guidance in February 2016 indicate that increased allowances in peak river flow and rainfall intensity should now be incorporated within any assessment. The appropriate allowance for peak river flow is based on the sites location in the country, the lifetime of development, the relevant flood zone and the vulnerability of the proposed end use.

The flood risk elements that need to be considered for any site are defined in BS 8533 as the "Forms of Flooding" and are listed as:

- Flooding from rivers (fluvial flood risk);
- Flooding from the sea (tidal flood risk);
- Flooding from the land;
- Flooding from groundwater;
- Flooding from sewers (sewer and drain exceedance, pumping station failure etc); and
- Flooding from reservoirs, canals and other artificial structures.

The following section reviews each of these in respect of the subject site.

4.2 Flooding from rivers (fluvial flood risk)

4.2.1 Main river

The Environment Agency Flood Zone mapping study for England and Wales is available on their website at: https://flood-map-for-planning.service.gov.uk.

The latest published flood zone map (**Figure 4.1**), which does not take into account the effects of flood defences, shows the site to be located entirely in Flood zone 1 (representing between a greater than `a 1 in 1,000 annual probability of river flooding), indicating a **very low** risk of flooding, according to the Environment Agency maps.

In December 2013, the Environment Agency released an additional form of mapping 'Risk of Flooding from Rivers and Sea', which is available at:

https://flood-warning-information.service.gov.uk/long-term-flood-risk

The latest 'Risk of Flooding from Rivers and Sea' flood map (**Figure 4.2**), which shows the Environment Agency's assessment of the likelihood of flooding from rivers and the sea at any location and is based on the presence and effect of all flood defences, predicted flood levels, and ground levels, indicates that the site is considered to be at '**very low**' risk of flooding.

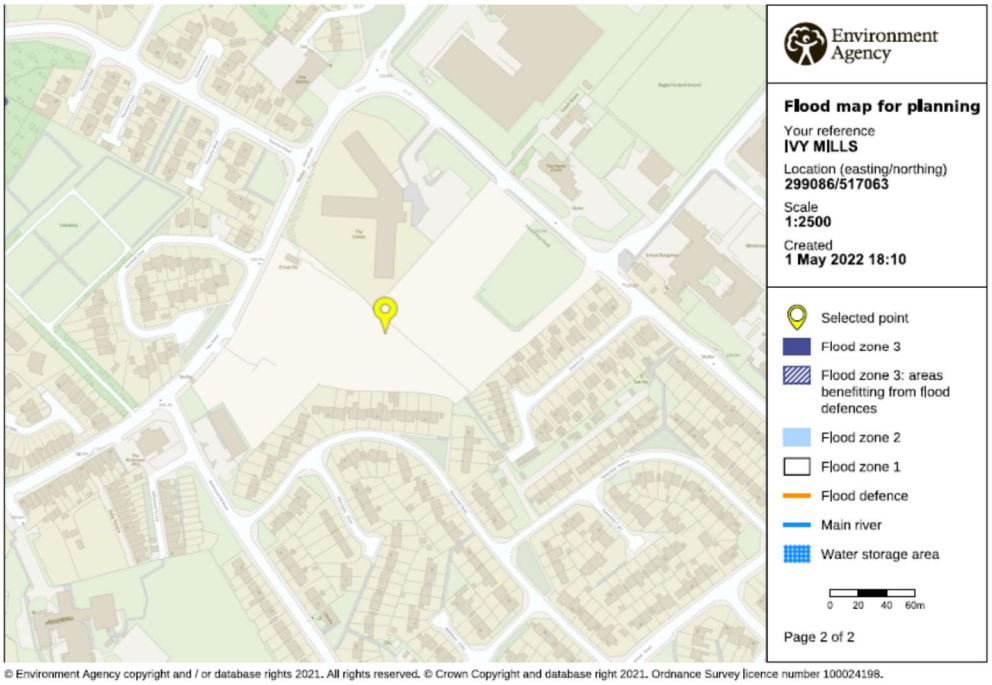


Figure 4.1 Environment Agency 'Flood map for planning'

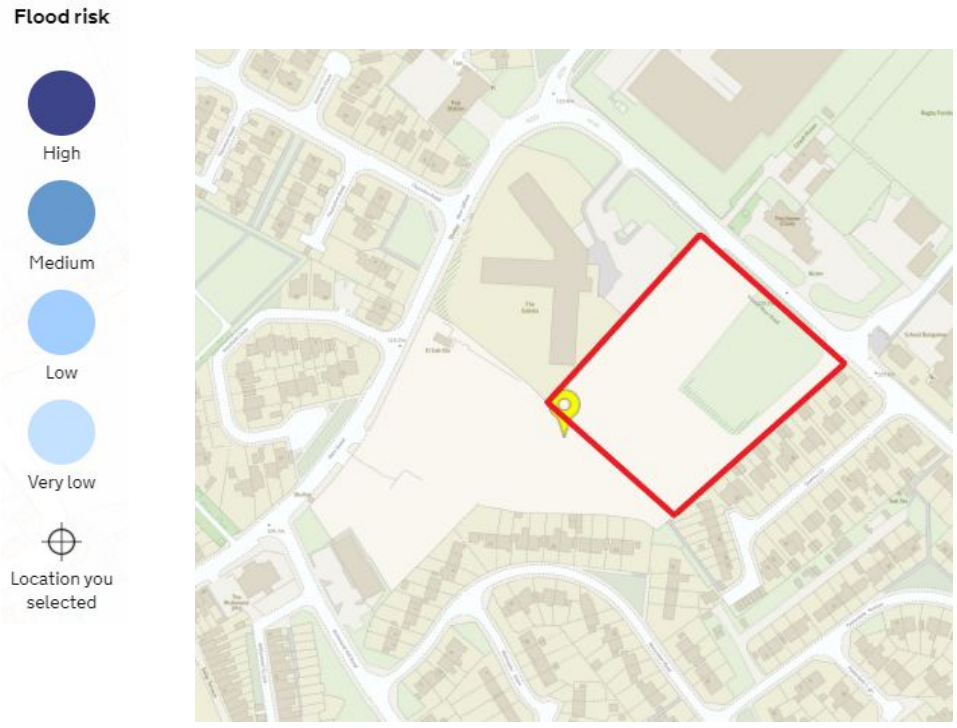


Figure 4.2 Environment Agency 'Flood risk from rivers or the sea' map (accessed May 2022)

4.2.2 Climate change

Fluvial flooding is likely to increase as a result of climate change. A greater intensity and frequency of precipitation is likely to raise river levels and increase the likelihood of a river overtopping its banks. Climate change guidance for river modelling was updated by the Environment Agency in February 2016. No model re-runs have been undertaken as part of this site-specific FRA. The impact upon the site should be negligible given its location within Flood Zone 1.

4.3 Flooding from the sea (tidal flood risk)

The site is not considered to be at risk from tidal flooding due to its inland location.

4.3.1 Climate change

Climate change is not considered to result in an increased risk of tidal flooding to the site.

4.4 Flooding from the land (overland pluvial flood risk)

If intense rain is unable to soak into the ground or be carried through manmade drainage systems, for a variety of reasons, it can run off over the surface causing localised floods before reaching a river or other watercourse.

Generally, where there is impermeable surfacing or where the ground infiltration capacity is exceeded, surface water runoff can occur. Excess surface water flows from the site are believed to drain naturally to the local water features, either by overland flow or through infiltration.

The Environment Agency 's surface water flood map (Figure 4.3) shows the site is at very low risk from pluvial flooding. There are isolated areas of low risk surface water flooding at the areas of hardstanding and at the low lying point of the western boundary.

Figure 4.3: Environment Agency 'Flood risk from surface water' map (accessed May 2022)

The risk of surface water flooding at the site is considered to be very low.

4.4.1 Climate change

Surface water flooding is likely to increase as a result of climate change in a similar ratio to fluvial flooding. Increased intensity and frequency of precipitation is likely to lead to reduced infiltration and increased overland flow. Climate change guidance for rainfall intensity has recently been updated by the Environment Agency in late February 2016. Revised allowances for climate change have been included in the indicative drainage strategy below.

4.5 Flooding from groundwater

Groundwater flooding occurs when water levels in the ground rise above the ground surface. It is most likely to occur in low lying areas underlain by permeable drift and rocks.

British Geological Survey (BGS) records (Figure 4.4) show the majority of the site lies within an area of 'Limited Potential for Groundwater Flooding to Occur'. Although the western corner of the sitelies within an area of 'Potential for Groundwater Flooding of Property Situated below Ground Level' there is no further evidence to suggest the development is at risk of groundwater flooding. In any case, there will be no development of property below the existing ground level and finished floor levels will be situated 150mm above ground level, and as such the development will be at low risk of groundwater flooding

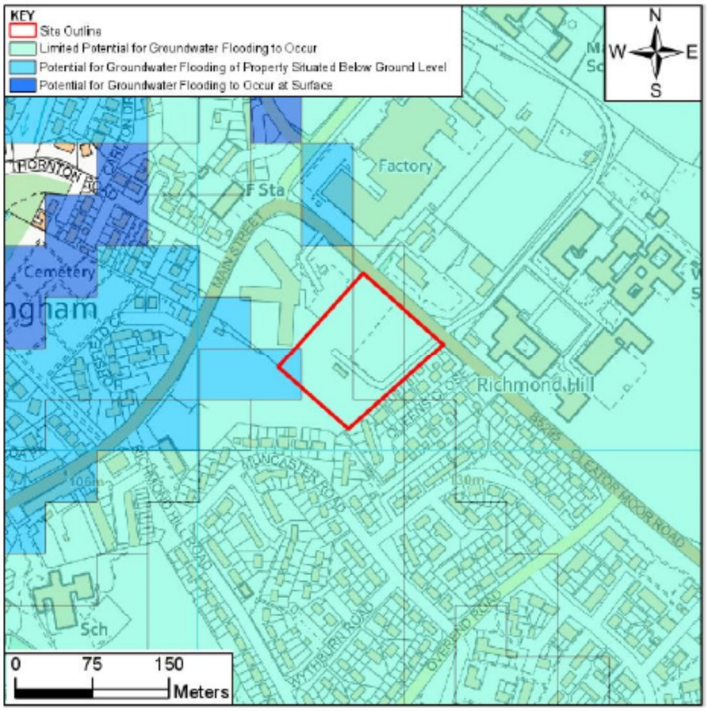


Figure 4.4: British Geological Society Ground Water Flood Map

4.5.1 Climate change

Climate change could increase the risk of groundwater flooding as a result of increased precipitation filtering into the groundwater body. If winter rainfall becomes more frequent and heavier, groundwater levels may increase. Higher winter recharge may however be balanced by lower recharge during the predicted hotter and drier summers. This is less likely to cause a significant change to flood risk than from other sources, since groundwater flow is not as confined. It is probable that any locally perched aquifers may be more affected, but these are likely to be isolated. The change in flood risk is likely to be low.

4.6 Flooding from sewers

Sewer details have been referenced from sewer record plans obtained from United Utilities The plans indicate the following network of sewers around the site:

- Combined;
  - It is known that a 225mm diameter combined sewer is located within the adopted highway to the south-west of the site adjacent to the entrance to Phase 1 and the EA mapping for reservoir flood risk does not show the site to be at risk. (Approval to discharge to the existing combined sewer has already been agreed with United Utilities).

There are no existing sewers shown onsite.

Flooding from artificial drainage systems occurs when flow entering a system, such as an urban storm water drainage system, exceeds its conveyance capacity, the system becomes blocked, or it cannot discharge due to a high-water level in the receiving watercourse. A sewer flood is often caused by surface water drains discharging into the combined sewer systems; sewer capacity is exceeded in large rainfall events causing the backing up of floodwaters within properties or discharging through manholes.

Most adopted surface water drainage networks are designed to the criteria set out in Sewers for Adoption[10]. One of the design parameters is that sewer systems be designed such that no flooding of any part of the site occurs in a 1 in 30 year rainfall event. By definition a 1 in 100 year event would exceed the capacity of the surrounding sewer network as well as any proposed drainage.

When exceeded, the surcharged pipe work could lead to flooding from backed up manholes and gully connections. This could lead to immediate flooding within highways surrounding the site.

Development has the potential to cause an increase in impermeable area, an associated increase in surface water runoff rates and volumes, and a consequent potential increase in downstream flood risk due to overloading of sewers, watercourses, culverts and other drainage infrastructure.

To ensure that sewer and surface water flooding is not exacerbated; surface water must be considered within the design of the site. This ensures that any additional surface water and overland flows are managed correctly, to minimise flood risk to the site and the surrounding area. The proposed surface water network on the site should be designed to ensure exceedance of the network has been considered.

The resultant sewer flood risk is considered to be **low**.

4.6.1 Climate change

The impact of climate change is likely to be negative regarding flooding from sewers. Increased rainfall and more frequent flooding put existing sewer and drainage systems under additional pressure resulting in the potential for more frequent surcharging and potential flooding. This would increase the frequency of local sewer flooding but would not be significant in terms of the proposed development.

[10] WRC, 'Sewers for Adoption' 7th Edition, August 2012

4.7 Other sources of flooding

4.7.1 Reservoirs

Flood events can occur from a sudden release of large volumes of water from reservoirs, canals and artificial structures.

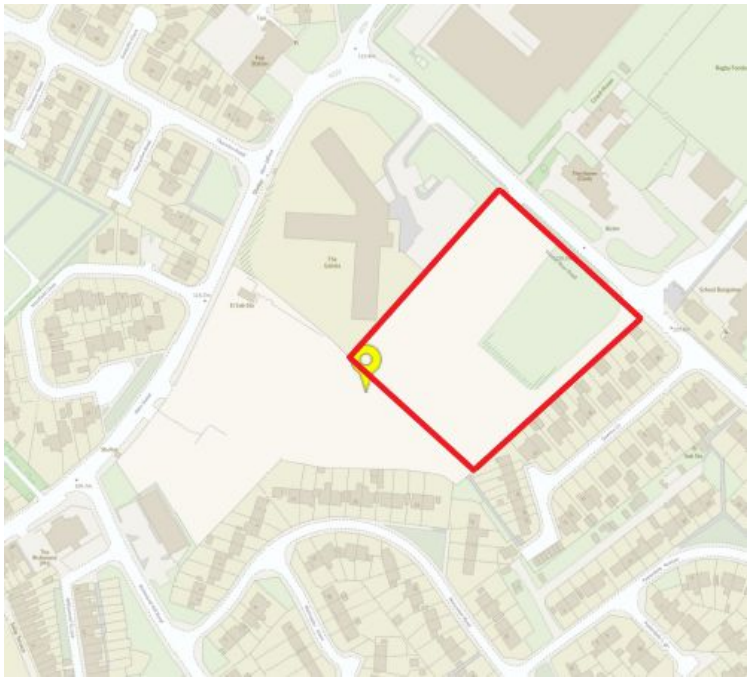


Figure 4.4) shows the largest area that might be flooded if a reservoir were to fail and release the water it holds. Since this is a prediction of a worst-case scenario, it is unlikely that any actual flood would be this large. According to the Environment Agency Reservoir flood maps the site is not at risk of flooding from reservoirs.

Figure 4.4: Environment Agency 'Flood risk from reservoirs' map (accessed May 2022)

Reservoir flooding is also extremely unlikely. There has been no loss of life in the UK from reservoir flooding since 1925. Since then reservoir safety legislation has been introduced to ensure reservoirs are maintained.

The resultant flood risk is considered to be **low**.

Reservoirs can be managed over time, controlling inflow/outflow of water and therefore there is the capacity to control the effects of climate change. Increased rainfall has the potential to increase base flow, but this should be minimal. It is unlikely that there will be a substantial change to the risk of flooding for this site.

4.7.2 Canals

There are no Canal & River Trust owned canals within the area.

4.7.3 Blockages of artificial drainage systems

There is a possibility that flooding may result due to culverts and/or sewers being blocked by debris or structural failure. This can cause water to backup and result in localised flooding, as well as placing areas with lower ground levels at risk.

Besides the existing sewers underlying the site there are no known artificial drainage systems on site.

The risk of flooding from artificial drainage systems is considered to be **low**.

Climate change is unlikely to affect the flooding risk to the site from such blockages.

5 FLOOD MITIGATION MEASURES

5.1 Overview

The developable area lies wholly within Flood Zone 1. To facilitate the development of the site a surface water drainage network will be designed.

5.2 Overland flood flow

No further overland flow control measures are proposed as all surface water runoff up to the 1 in 100 year climate change storm will be stored on site and discharged into the existing adopted combined sewer beneath Picow Farm Road. Surface flows may be generated due to drainage capacity exceedance, which can be conveyed into the open spaces via surface flows along the new roads.

5.3 Finished floor levels

As this site will not be affected by fluvial flooding there is no need to incorporate any freeboard levels into the finished floor levels of the design. Low lying areas that could lead to ponding of surface flows will be avoided by careful design of finished levels.

5.4 Safe access/egress

As the proposed site access lies outside of the 1 in 1000 year climate change flood extent, safe access and egress will be available up to this storm event. For extreme events above this, it is considered appropriate that site users should be able to safely escape to an area away from the watercourse. In addition, the proposed buildings will be set above the existing ground level and will likely contain an internal access to the first floor.

6 PLANNING CONTEXT

6.1 Application of planning policy

Section 14 of the NPPF includes measures specifically dealing with development planning and flood risk using a sequential characterisation of risk based on planning zones and the Environment Agency Flood Map. The main study requirement is to identify the flood zones and vulnerability classification relevant to the proposed development, based on an assessment of current and future conditions.

6.2 Land use vulnerability

Planning Practice Guidance (PPG) includes a list of appropriate land uses in each flood zone dependent on vulnerability to flooding. In applying the Sequential Test, reference is made to Table 6.1 below, reproduced from Table 3 of PPG.

Table 6.1: Flood risk vulnerability and flood zone 'compatibility'

Flood Risk Vulnerability Classification		Essential Infrastructure	Water Compatible	Highly Vulnerable	More Vulnerable	Less Vulnerable
Flood Zone	Zone 1	Appropriate	Appropriate	Appropriate	Appropriate	Appropriate
	Zone 2	Appropriate	Appropriate	Exception Test Required	Appropriate	Appropriate
	Zone 3a	Exception Test Required	Appropriate	Should not be permitted	Exception Test Required	Appropriate
	Zone 3b functional floodplain	Exception Test Required	Appropriate	Should not be permitted	Should not be permitted	Should not be permitted

With reference to Table 2 of the PPG, the proposed development, based on its residential use, is classed as 'More Vulnerable'. This classification of development is appropriate for areas within Flood Zone 1 and therefore appropriate for the subject site.

6.3 Sequential Test

The Sequential Test is required to assess flood risk and the PPG recommends that the test be applied at all stages of the planning process to direct new development to areas with the lowest probability of flooding (Flood Zone 1).

The site is located within Flood Zone 1 and passes the Sequential Test; therefore, there is no requirement for the Exception Test to be satisfied.

7 SURFACE AND FOUL WATER DRAINAGE ASSESSMENT

7.1 Scope

As the development will be located in Flood Zone 1 and it is greater than 1ha in size, the Environment Agency requires such development to focus on the management of surface water run-off. This section discusses the potential quantitative effects of the development on both the risk of surface water flooding on-site and elsewhere within the catchment, as well as the type of potential SuDS features that could be incorporated as part of the masterplan.

In accordance with the Defra Non-Statutory Technical Standards, the surface water drainage strategy should seek to implement a SuDS hierarchy that aspires to achieve reductions in surface water runoff rates to greenfield rates. Where a reduction to the greenfield rate is not practicable, the proposed surface water drainage strategy should not exceed the existing runoff rate.

In addition, Building Regulations Part H[11] requires that the first choice of surface water disposal should be to discharge to an adequate soakaway or infiltration system, where practicable. If this is not reasonably practicable then discharge should be to a watercourse, the least favourable option being to a sewer (surface water before combined). Infiltration techniques should therefore be applied wherever they are appropriate.

7.2 Pre-development situation

The existing site area is approximately 2.186ha.

The pro-rata IoH 124 method has been used to estimate the Greenfield surface water runoff for the existing permeable areas on the site. Calculations are contained in Appendix E.

Greenfield runoff calculations have been undertaken to predict the current rate of runoff from the site. As the site covers an area of less than 200 ha, (2.5 ha) the Greenfield calculations have been undertaken in accordance with methodology described in IoH 124[21]. For catchments of less than 50 ha the Greenfield runoff rate is scaled according to the size of the catchment in relation to a 50-hectare site.

Full details of the calculations and the methodology for deriving the Peak Rate of Runoff are in included. A summary of the results is included in Table 7.1.

Without attenuation or infiltration, the proposed development would increase the Rate of Runoff from the developed areas of the site.

A Sustainable Drainage System (SuDS) is therefore proposed to attenuate and control discharge from the both phases of the site at a rate not exceeding 10l/s as agreed with United Utilities.

[11] HM Government (2010 with 2013 amendments), 'The Building Regulations 2010: Approved Document H - Drainage and Waste Disposal (2002 Edition incorporating 2010 amendments)'

Table 7.1: IOH 124 surface water runoff (2.186 Ha of existing greenfield)

Rate of Run-Off (l/s)			
Event	Greenfield (adoptable)	Greenfield (Private)	Total Greenfield Runoff
Q1	4.7	0.5	5.2
QBAR	5.4	0.6	6.0
Q10	7.5	0.8	7.5
Q30	9.2	1.0	9.2
Q100	11.3	2.1	13.4
Q100 + 40% CC	15.8	2.9	18.7

7.3 Limiting discharge for design

The discharge from the proposed development should be restricted to QBar runoff rates.

The current proposals limit the post development runoff to & an agreed discharge rate of 10.0 litres per second for the overall site (5 litres/per second for Phase 1 and 5 litres/per second for Phase 2)

7.4 Off-site discharge options and limits

7.4.1 Infiltration

Infiltration should be considered as the primary option to discharge surface water from the developed site. The effectiveness of infiltration is completely dependent on the physical conditions at the site. Potential obstacles include:

- Local variations in permeability preventing infiltration – It is understood from the local geology that the site is situated on an area of till, which is not considered suitable for the use of soakaways due to its low permeability;
- Shallow groundwater table - For infiltration drainage devices, Building Regulation approved document H2 states that these “should not be built in ground where the water table reaches the bottom of the device at any time of the year”. Groundwater is not considered to be a limiting factor;
- Source Protection Zones - As discussed above, the site is not located within a Groundwater Source Protection Zone.

From the information available infiltration is not considered a viable option as part of the drainage strategy.

7.4.2 Discharge to watercourse

Discharging surface water directly to a local watercourse is not considered feasible as there are no watercourses within close proximity of the site.

7.4.3 Drainage Network

The proposed surface water network serving the impermeable access roads and plots has been modelled using Causeway Flow.

The drainage system has been sized to convey and attenuate a future 1% AEP event of critical duration. Future climate change (40%) is accounted for in the design

Roof water will connect directly into the surface water pipe network. This will require ground levels to fall consistently around the site in order to enable a gravity connection into the drainage system.

A series of gullies will be located within the site roads to collect and discharge highways run off into the new surface water drainage system. A shared access road and drives shall be formed.

The surface water drainage network for the positively drained areas shall be constructed to adoptable standards wherever possible despite the fact that some of the proposed network will remain private.

7.4.4 Attenuation

Due to space restrictions, it is proposed to provide separate attenuation components comprising oversized pipes and offline geo cellular tank systems to attenuate the surface water runoff from both the highways and plot drainage.

For further detail refer to the Drainage Layout Plan (GHC-IM-C2-10-01)

7.4.5 Surface Water Quality

The treatment of surface water is not a statutory requirement. Water quality remains a material consideration but there are no prescriptive standards to be imposed in terms of treatment train management. In the absence of a design standard, the SuDS manual has been used which outlines best practice.

Pollutants such as suspended solids, heavy metals and organic pollutants may be present in surface water runoff, the quantity and composition of the runoff is highly dependent upon site use. For housing developments, the pollutant load is very low.

The SuDS Manual[14] outlines best practice with regards to treatment of surface water by SuDS components prior to discharge to the environment. SuDS components can be effective in reducing the amount of pollutants within the surface water discharged and therefore environmental impact of the development. SuDS components may be installed in series to form a treatment train to treat the runoff.

The simple index approach as outlined in the SuDS manual has been used to assess the pollution hazard indices and proposed treatment components.

Table 7.2: Pollution Hazard & Mitigation Indices- Roof Areas

Indices	Suspended Solids	Metals	Hydrocarbons
Pollution Hazard	0.2	0.2	0.05
Pollution Mitigation	0.5	0.5	0.6
Treatment Suitability	ADEQUATE	ADEQUATE	ADEQUATE

Table 7.3: Pollution Hazard & Mitigation Indices- Residential Parking Areas (Detention Basin)

Indices	Suspended Solids	Metals	Hydrocarbons
Pollution Hazard	0.5	0.4	0.4
Pollution Mitigation	0.5	0.5	0.6
Treatment Suitability	ADEQUATE	ADEQUATE	ADEQUATE

Table 7.4: Pollution Hazard & Mitigation Indices- Residential Highway Areas (Detention Basin)

Indices	Suspended Solids	Metals	Hydrocarbons
Pollution Hazard	0.5	0.4	0.4
Pollution Mitigation	0.5	0.5	0.6
Treatment Suitability	ADEQUATE	ADEQUATE	ADEQUATE

Table 7.4: Pollution Hazard & Mitigation Indices- Residential Parking Areas (Permeable Paving)

Indices	Suspended Solids	Metals	Hydrocarbons
Pollution Hazard	0.5	0.4	0.4
Pollution Mitigation	0.7	0.6	0.7
Treatment Suitability	ADEQUATE	ADEQUATE	ADEQUATE

7.4.6 Operations & Maintenance Responsibility

Adoption of surface water drainage systems and SuDS components by the sewerage undertaker and/or the highways authority is intended wherever possible. During the detailed design stage a full review and consideration of UU requirements shall ensure the maximum practical extent of adoptable drainage in accordance with the Design and Construction Guidance for Foul and Surface Water Sewers[18] and subject to a Section 104 Agreement.

Any private individual plot drainage is to be maintained by the property owners. Where required a private management company will be responsible for maintenance of any non-adoptable drainage runs or storage systems. Highways gullies and associated pipework will be put forward for adoption by Cumbria County Council under a Section 38 Agreement

In addition to the above measures, where applicable, a *SuDS Operations & Maintenance Plan* will be made available to the site owners upon request detailing the requirements for future maintenance of the drainage system.

7.4.7 Discharge to surface water sewer

There is no potential to dispose of surface water within the site therefore it will be necessary to dispose of surface water in accordance with the long term storage method, attenuating runoff at a rate matching greenfield Qbar for all events up to and including the 1% AEP event plus climate change allowance design storm. Discharge rate from the site will therefore be restricted to a rate of 5.0 litres/second for Phase 1 and 5.0 litres/second for Phase 2 as agreed with United Utilities.

The drainage system shall be designed to adoptable standards to allow adoption by United Utilities under Section 104 of the Water Industry Act 1991.

7.4.8 Discharge to foul water sewer

It is proposed that foul water from the development shall be drained via gravity within the site before being connected to the proposed foul drainage within the neighbouring site to the Southwest of the site. A non-return valve shall be installed into manhole C1 as requested by United Utilities.

Under Section 106 of The Water Industry Act 1991, 'the owner / occupier of any premises shall be entitled to have his drain or sewer communicate with the public sewer of any sewerage undertaker and thereby to discharge foul water and surface water from those premises or that private sewer.' Unless 'the making of the communication would be prejudicial to the undertaker's sewerage system'.

The drainage system shall be designed to adoptable standards to allow adoption by United Utilities under Section 104 of the Water Industry Act 1991.

A drainage connection via gravity to the proposed foul drainage within the neighbouring site is achievable. For further detail refer to the Drainage Layout Plan included in Appendix B.

7.5 Post-development situation

Development of the site will increase impermeable area, which will result in an increase in surface water across the site. It will therefore be necessary to manage surface water on-site in order to limit the discharge of surface water off-site to an agreed rate (as above), to provide sufficient on-site attenuation up to the 1 in 100 year climate change rainfall event and should seek to provide improvements to water quality through appropriate source treatment.

7.5.1 Proposed drainage strategy

In principle, the strategy contains the following features and criteria:

- It is considered that infiltration techniques will not be suitable on-site due to the ground conditions beneath the site according to British Geological Survey data. Therefore, soakaways or other infiltration based SuDS will not be incorporated into the drainage design;
- The surface water discharge is proposed to discharge to the combined water sewer within Main Street at an agreed rate with United Utilities
- The proposed surface water storage will be contained within oversized pipes and a tank system for the proposed development. A copy of the proposed drainage layout is contained within Appendix B.

Please Note:

The connection to the combined sewer will be a temporary connection only, and once the new public SW sewer is installed within Main Street a new connection will be made from the proposed SW system again the flows will not exceed 10l/s.

By incorporating these attenuation and discharge features into the drainage design then the development will not increase flooding to the development or to others downstream of the development.

Temporary drainage should be established for the construction phase of development to prevent silt mobilisation, potentially impacting on flow regimes and silt pollution downstream. The construction of SuDS should be considered in the early stages of site design.

8 CONCLUSIONS AND RECOMMENDATIONS

This FRA complies with the NPPF and Planning Practice Guidance and demonstrates that flood risk from all sources has been considered in the proposed development. It is also consistent with the Local Planning Authority requirements with regard to flood risk.

The proposed development site lies in an area designated by the Environment Agency as Flood Zone 1 and is outlined to have a chance of flooding of less than 1 in 1,000 (<0.1%) in any year.

NPPF sets out a Sequential Test, which states that preference should be given to development located within Flood Zone 1. This flood risk assessment demonstrates that the requirements of the Sequential Test have been met, with the location of the site within Flood Zone 1 and 'Less Vulnerable' classification of the development.

This flood risk assessment has considered multiple sources of flooding and concluded the following:

Table 8.1: Flood risk summary

Source	Level of risk	Mitigation
Fluvial	Low/Flood Zone 1	The proposed development will remain in Flood Zone 1.
Tidal	Low/Flood Zone 1	The proposed development will remain in Flood Zone 1.
Surface water	Low	Existing risk on site is low. This will not increase as a result of the development.
Groundwater	Low	There is no known risk from Groundwater flooding.
Sewers	Low	There is no known risk from existing sewers. New sewers will be designed to ensure exceedance is considered.
Artificial sources	Low	There are no artificial sources that pose a flood risk to the site.

In consideration of the Flood Risk Assessment and proposed Drainage Strategy for the site the following conclusions and recommendations are made:

- The EA Flood Map for Planning shows the site lies within Flood Zones 1 and is therefore at low risk of fluvial and tidal flooding. National guidance states that the development of sites for 'more vulnerable' development is acceptable in Flood Zone 1.
- The EA Surface Water Flood Map indicates that the site is at very low risk of surface water flooding.
- BGS Groundwater Susceptibility mapping predicts the majority of the site has limited potential for groundwater flooding to occur with a small area in the west of the site in an area with potential for groundwater flooding of property situated below ground level.

- Below ground habitable spaces are not proposed, therefore the risk of ground water flooding is predicted to be low.

- The risk of flooding from sewers is predicted to be low, with few sewers in the vicinity of the site, and where sewers exist near the site, flooding would remain within the highway and would be unlikely to affect the proposed site due to topography.

- Ground investigations within the neighbouring site confirmed that underlying soils were unsuitable for infiltration drainage. Surface water runoff from the site shall therefore be positively drained and attenuated prior to discharge. The discharge rate will be controlled to be restricted to a rate similar to that of the pre-development Greenfield Qbar rate.

- In line with the SuDS hierarchy discharge shall be to the public combined sewer in absence of any suitable alternatives. However, the surface water drainage shall be designed to allow easy diversion of flow to a new highway drain which may be installed by Cumbria County Council in future.

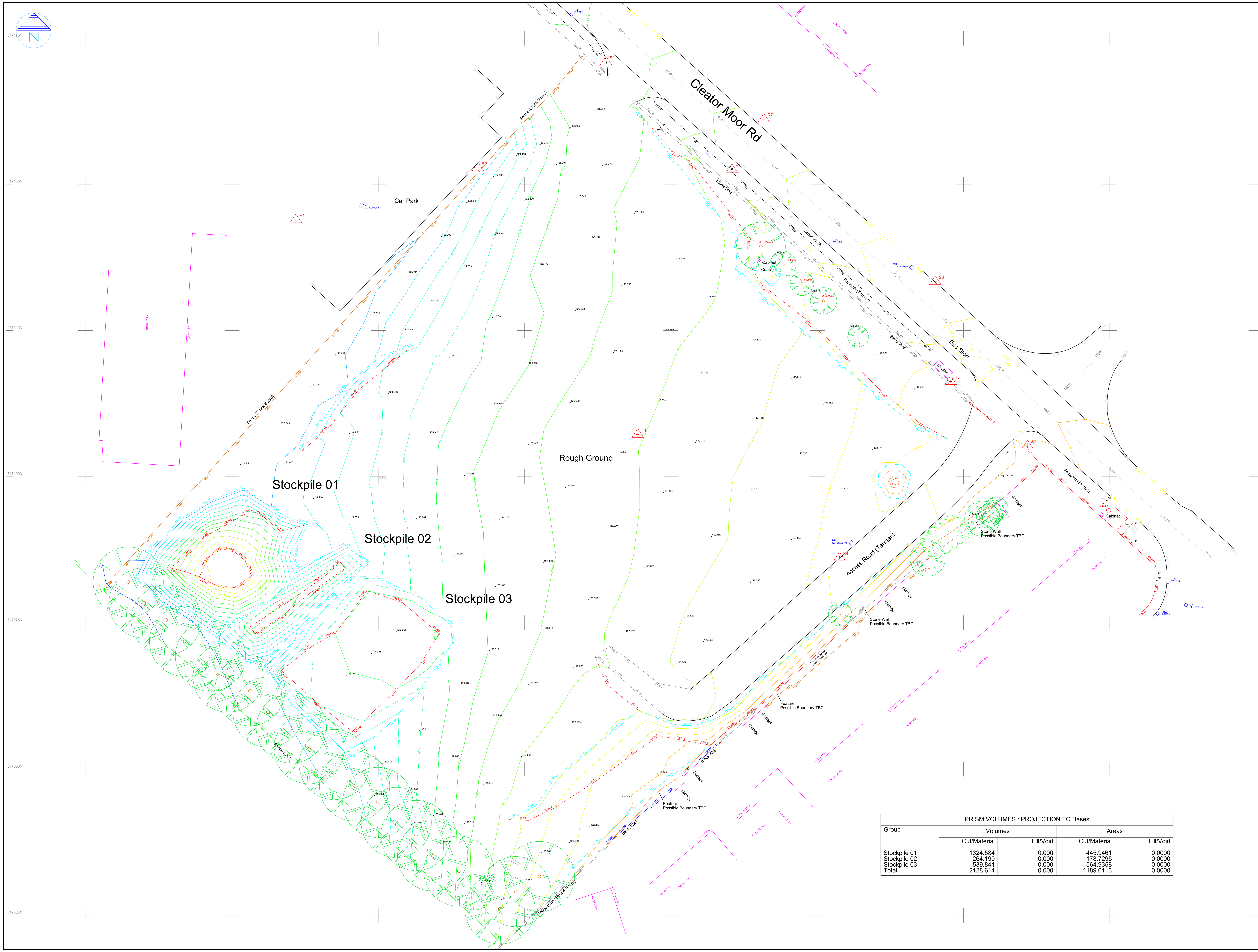
- Both foul and surface water from the site shall discharge to the proposed networks within the first phase of the clients neighbouring site.

- The drainage system will be designed to ensure that there is no increased flood risk on or off the site as a result of extreme rainfall, lack of maintenance or blockages. A series of safety features within the development and careful design of building layout will mitigate against this.

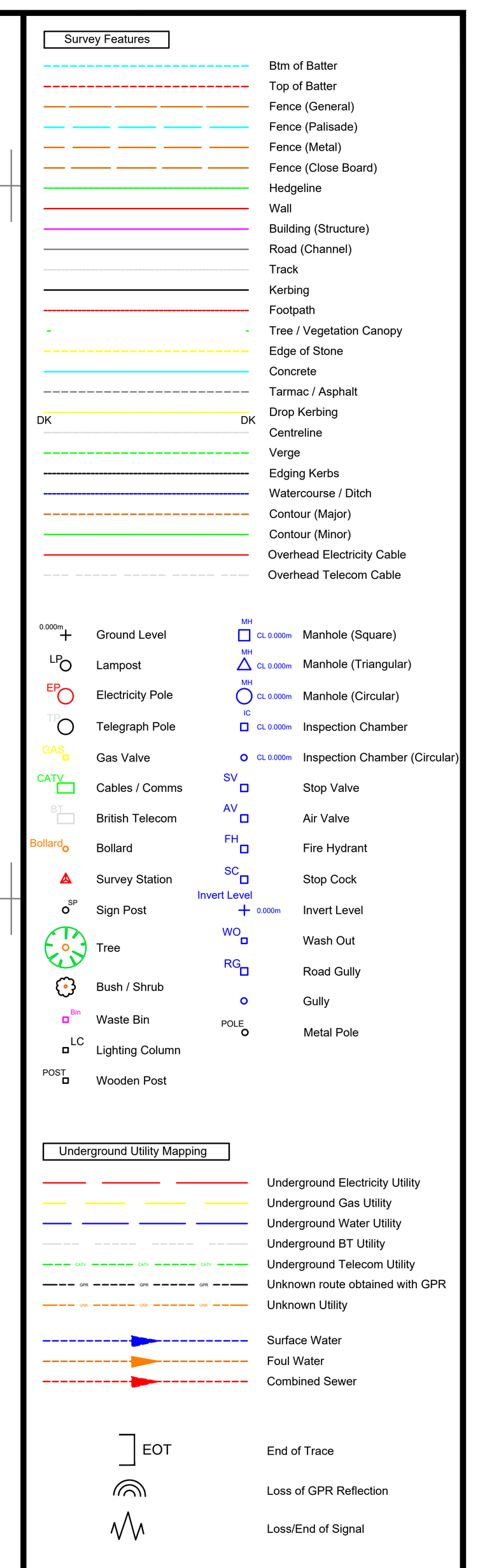
- In addition to these measures, a SuDS Operations and Maintenance Plan will be made available to the site owners detailing future maintenance requirements of all sustainable drainage systems.

APPENDIX A
TOPOGRAPHICAL SURVEY

MAY 2022


517175N
517150N
517125N
517100N
517075N
517050N
517025N
N
Car Park
Cleator Moor Rd
Stockpile 01
Stockpile 02
Stockpile 03
Rough Ground
Fence (Close Board)
Stone Wall
Grass verge
Cabinet
Conc
Footpath (Tarmac)
Bus Stop
Shelter
Access Road (Tarmac)
Garage
Stone Wall
Possible Boundary TBC
Feature
Possible Boundary TBC
Block Wall
Rough Ground
Cabinet
R1
R2
R4
R5
R7
S1
S2
S3
P1

PRISM VOLUMES : PROJECTION TO Bases				
Group	Volumes		Areas	
	Cut/Material	Fill/Void	Cut/Material	Fill/Void
Stockpile 01	1324.584	0.000	445.9461	0.0000
Stockpile 02	264.190	0.000	178.7295	0.0000
Stockpile 03	539.841	0.000	564.9358	0.0000
Total	2128.614	0.000	1189.6113	0.0000


Survey Features
Btm of Batter
Top of Batter
Fence (General)
Fence (Palisade)
Fence (Metal)
Fence (Close Board)
Hedgeline
Wall
Building (Structure)
Road (Channel)
Track
Kerbing
Footpath
Tree / Vegetation Canopy
Edge of Stone
Concrete
Tarmac / Asphalt
Drop Kerbing
Centreline
Verge
Edging Kerbs
Watercourse / Ditch
Contour (Major)
Contour (Minor)
Overhead Electricity Cable
Overhead Telecom Cable
Ground Level
Lampost
Electricity Pole
Telegraph Pole
Gas Valve
Cables / Comms
British Telecom
Bollard
Survey Station
Sign Post
Tree
Bush / Shrub
Waste Bin
Lighting Column
Wooden Post
Manhole (Square)
Manhole (Triangular)
Manhole (Circular)
Inspection Chamber
Inspection Chamber (Circular)
Stop Valve
Air Valve
Fire Hydrant
Stop Cock
Invert Level
Wash Out
Road Gully
Gully
Metal Pole
Underground Utility Mapping
Underground Electricity Utility
Underground Gas Utility
Underground Water Utility
Underground BT Utility
Underground Telecom Utility
Unknown route obtained with GPR
Unknown Utility
Surface Water
Foul Water
Combined Sewer
EOT
End of Trace
Loss of GPR Reflection
Loss/End of Signal

Notes :-
DO NOT SCALE FROM DRAWING
DIMENSIONS TO BE TAKEN ON SITE

Site Grid

Ordnance Survey Grid & Datum
(Trimble GPS System OSTN15 Transformation)
RTK Network

SURVEY STATIONS				
Name	Easting	Northing	Height	Remark
P1	299169.347	517107.213	127.076	
S1	299235.953	517105.233	129.030	
S3	299220.183	517133.347	128.414	
S2	299163.922	517170.906	126.228	
S4	299203.818	517086.120	128.148	
R1	299110.898	517143.926	124.656	
R2	299142.042	517152.781	125.567	
R3	299129.916	517202.099	127.021	
R4	299185.438	517152.489	129.513	
R5	299222.821	517116.265	130.931	
R7	299190.901	517161.122	129.458	

02/12/2020

REV	AMENDMENT	DRAWN	DATE

Cleator Moor Road Whitehaven
JOB TITLE

Gleeson Homes
CLIENT

Topographical Survey
DRAWING TITLE

1:200 @ A0 SCALE	J D Gibson DRAWN
02/12/2020 DATE	J D Gibson APPROVED

GSM
GIBSON SURVEYING & MAPPING

Gibson Surveying and Mapping Ltd
21 West View,
Crook,
County Durham.
DL159EY.
Mob. 07896698645
Tel. 01388 764106
email : info@gsmsurvey.co.uk
www.gsmsurvey.co.uk

PROJECT No.	DRG No.	REV
	GH/CMR/TS01	

APPENDIX B
PROPOSED DRAINAGE LAYOUT

MAY 2022

ALL COVER & INVERT LEVEL INFORMATION HAS BEEN TAKEN FROM AVAILABLE TOPOGRAPHICAL SURVEY DATA OR UNITED UTILITY RECORDS. EXISTING PUBLIC FOUL AND SURFACE WATER SEWERS ARE TO BE ABOVE GROUND PROBED, ROUTED AND INTERNALLY SURVEYED WITH ALL INFORMATION PASSED TO SITE INFRASTRUCTURE SERVICES LTD FOR REVIEW PRIOR TO COMMENCEMENT ON SITE

UNDER NO CIRCUMSTANCES SHALL ANY PROPOSED LEVELS BE AMENDED WITHOUT THE PRIOR CONSULTATION WITH SITE INFRASTRUCTURE SERVICES LTD

KEY:

- Foul water sewer
- Storm water sewer
- Combined sewer
- Back drop manhole (all backdrops will be in accordance with figure B16 of the DCG)
- Existing UU sewer
- Sewer Easement
- Gully (150mm connection)

NOTES:

1. No dimensions are to be measured from this drawing.
2. All levels shown are in metres unless otherwsie shown.
3. This drawing is to be read in conjunction with all relevant Architects, Planning and Infrastructure Design drawings.
4. The position and levels of all existing drains are to be confirmed on site prior to the commencement of the works and any discrepancies reported immediately to the engineer.
5. All private drainage is to constructed in accordance with th latest edition of the Building Regulations Part H (Drainage & Waste Disposal) and to BSEN752 (Building Drainage).
6. All adoptable drainage is to be in accordance with the requirements of Sewers for Adoption 6th Edition and the Sewerage Undertaker/Council.
7. All connections to existing public sewers are to be made to the satisfaction of the Sewerage Undertaker and the Local Authority.
8. Existing drains being abandoned are to be dealt with in the following manner:
   i) Within 1.0m of proposed ground levels, drains are to be grubbed out.
   ii) Deeper than 1.0m of proposed ground levels drains are to be grouted with a 1:10 cement:sand:mix.
9. Any existing gully connections being abandoned are to be sealed with a concrete plug not less than 300mm thick at a level of 1.0m below ground.
10. Concrete protection of pipework is to be provided as follows:-
    i) All pipework within pedestrian / soft areas with a cover less than 600mm.
    ii) All pipework beneath areas subject to vehicular overrun with a cover less than 1.2m.
11. All pipework within manholes are to be laid soffit to soffit.
12. Any gradients of drains are indicative only and The Contractor shall install drains to the invert levels shown for each manhole.
13. Any co-ordinate information regarding manholes is to the centre of the manhole.
14. Cover levels of the manholes are provisional and subject to adjustment to suit the finished ground levels.
15. The use of short radius bends for changes in direction is not permitted, only long radius bends or 2 No. are to be used.
16. Connections to carrier drains are to be 'Y' junctions.
17. Manhole covers and frames are to be in accordance with BS EN 124 and the following criteria:-
    Vehicular areas : Class D400 double triangular 150mm (min) deep ductile iron cover & frame with three-point cover seating.
    Pedestrian areas only : Class B125 double triangular 100mm (min) deep ductile iron cover & frame with three-point cover seating.
18. Heavy duty cover slabs are to be used with Class D400 frames.
19. Gully gratings and channel covers are to be in accordance with BS EN 124 as follows:
    i) Areas subject to vehicular overrun: Class D400 minimum. Class F900 within service yard.
    ii) Areas not subject to vehicular overrun: Class C250
20. Gully gratings are to be double triangular ductile iron with a non-rock design and a 100mm deep frame.
21. Outside of sewers to be 1.0m (min) from kerb line.
22. Outside of manholes to be 0.5m (min) from kerb line.
23. All non-adoptable foul and surface water pipes to be 100 diameter unless noted otherwise.
24. Proposed 225mm diameter inspection chambers to be laid at a maximum depth of 600mm below GL.
25. Proposed 450mm diameter inspection chambers to be laid at a maximum depth of 3000mm below GL.
26. Installation of all pipework, manholes, gullies & channels etc are to be laid to manufacturers specification.

Rev	Amendments	Date	Drawn
-	INITIAL ISSUE	09.04.2022	CML

PROVISIONAL - Subject to Approval

Client: gleeson — Building Homes. Changing Lives.

Project Title: Ivy Mills CUMBRIA

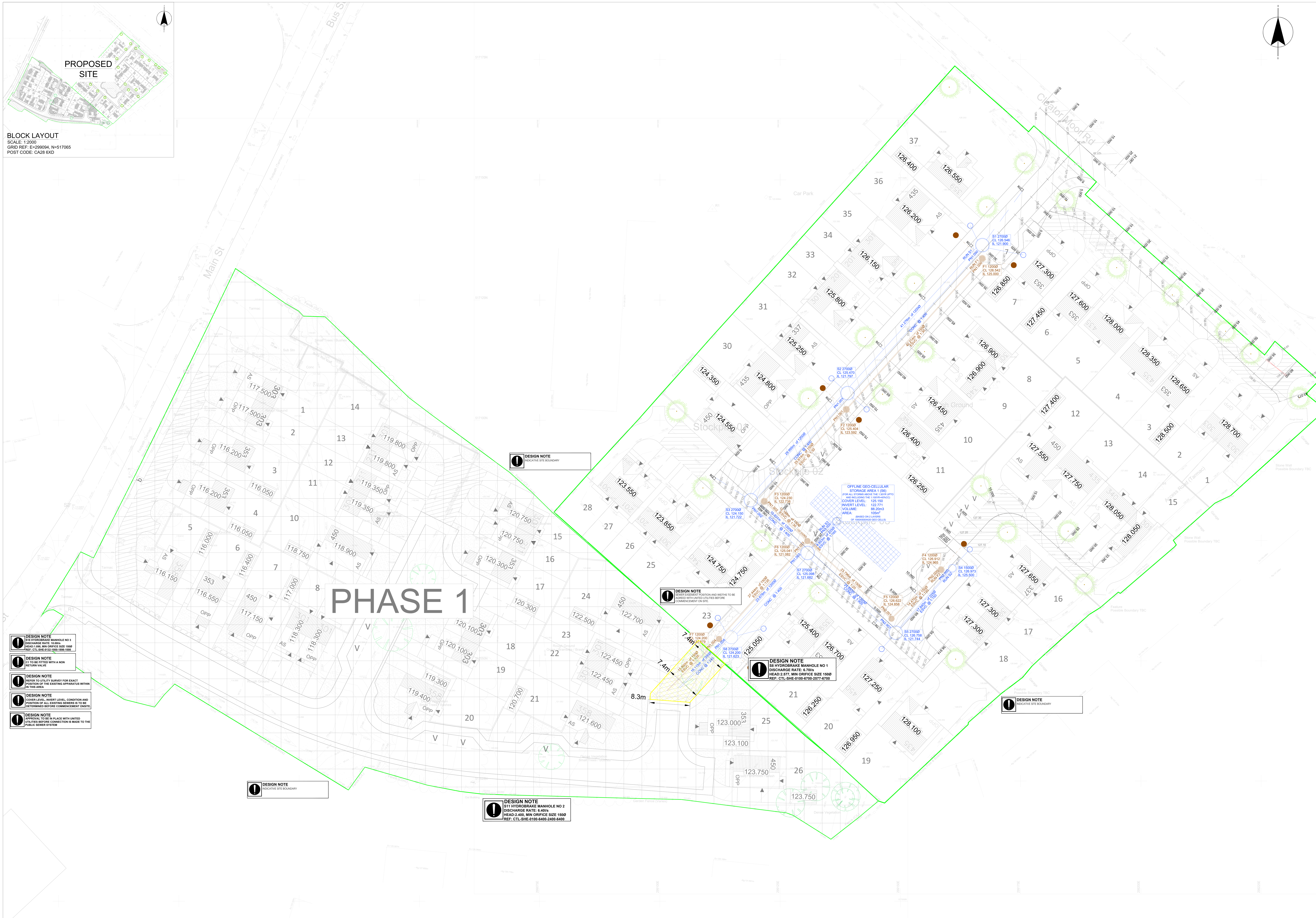
Drawing Title: S104 AGREEMENT PLAN PHASE 2

Scales: 1:250 @ A0

Drawn: CML | Date: 09.04.2022

Ref: GHC-IM-C2-10-01 | Rev: -

Site Infrastructure Services Ltd
E: chris.lynch@siteinfrastructureservices.co.uk
M: 07437016072
W: www.siteinfrastructureservices.co.uk



KEY:

NOTES:

ALL COVER & INVERT LEVEL INFORMATION HAS BEEN TAKEN FROM AVAILABLE TOPOGRAPHICAL SURVEY DATA OR UNITED UTILITY RECORDS. EXISTING PUBLIC FOUL AND SURFACE WATER SEWERS ARE TO BE ABOVE GROUND PROBED, ROUTED AND INTERNALLY SURVEYED WITH ALL INFORMATION PASSED TO SITE INFRASTRUCTURE SERVICES LTD FOR REVIEW PRIOR TO COMMENCEMENT ON SITE

UNDER NO CIRCUMSTANCES SHALL ANY PROPOSED LEVELS BE AMENDED WITHOUT THE PRIOR CONSULTATION WITH SITE INFRASTRUCTURE SERVICES LTD

SITE LAYOUT

SCALE: 1:250
GRID REF: E=299094, N=517065
NATIONAL GRID REF: NX990171
POST CODE: CA28 6XD

Rev	Amendments	Date	Drawn
A	REVISED TO NEW LAYOUT AND UU COMMENTS	13.05.2022	CML
-	INITIAL ISSUE	06.01.2022	CML

PROVISIONAL Subject to UU Approval

Client

gleeson
Building Homes. Changing Lives.

Project Title
Ivy Mills
CUMBRIA

Drawing Title
PHASE 2
S104
AGREEMENT
PLAN

Scales: 1:250 @ A0
Drawn: CML
Date: 06.01.22
Ref: GHC-IM-C-P2-10-01
Rev: A

Site Infrastructure Services Ltd
E: chris.lynch@siteinfrastructureservices.co.uk
M: 07437016072
W: www.siteinfrastructureservices.co.uk

KEY

- Foul water sewer
- Storm water sewer
- Combined sewer
- Back drop manhole (all backdrops will be in accordance with figure B16 of the DCG)
- Existing UU sewer
- Sewer Easement
- Gully (150mm connection)

SITE LAYOUT

SCALE: 1:1250
GRID REF: E=299094, N=517065
NATIONAL GRID REF: NX990171
POST CODE: CA28 6XD

Rev	Amendments	Date	Drawn
-	INITIAL ISSUE	13.05.2022	CML

Client

gleeson
Building Homes. Changing Lives.

Project Title

Ivy Mills
CUMBRIA

Drawing Title

A3 LAND REGISTRY PLAN PHASE 2

Scales: 1:1250 @ A3

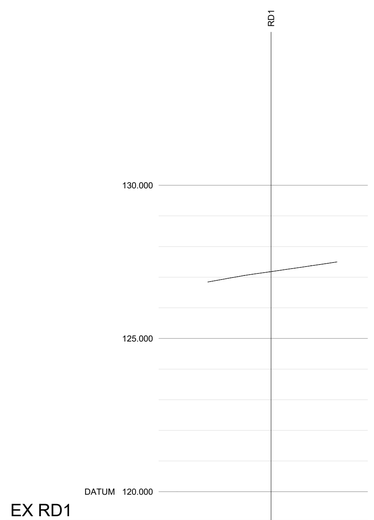
Drawn: CML

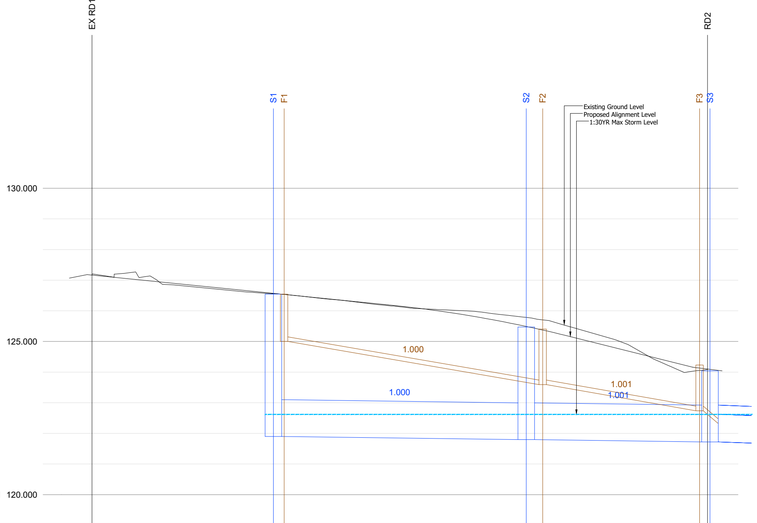
Date: 13.05.2022

Ref: GHC-IV-C-P2-10-02

Rev: -

Site Infrastructure Services Ltd
E: chris.lynch@sislimited.info
M: 07437016072





DATUM 120.000

EX RD1

CHAINAGE	0.000	10.000	20.000	21.087
EXISTING GROUND LEVEL	126.845	127.173	127.465	127.499

DATUM 120.000

RD1

CHAINAGE	0.000	3.623	10.000	20.000	29.597	30.000	31.354	40.000	48.319	50.000	60.000	70.000	70.873	73.556	78.319	80.000	90.000	99.168	100.462	100.867
EXISTING GROUND LEVEL	127.206		127.075	126.715		126.552		126.357		126.137	126.009	125.805				125.367	124.615		124.070	124.087
ALIGNMENT LEVEL		127.092	126.964	126.764		126.563		126.363	126.197	126.161	125.894	125.528			125.146	125.062	124.562		124.159	
VERTICAL ALIGNMENT		G= -2.003% 1: -49.9							L= 30.000 KF= -10.00936						G= -5.000% 1: -20.0					
HORIZONTAL ALIGNMENT																				
STORMWATER COVER LEVEL					126.546								125.470							124.039
STORMWATER INVERT					121.900					Pipe 1.000 Dia 1200 CONC 1 in 400 41.276 S BED & SURR			121.797 121.797				Pipe 1.001 Dia 1200 CONC 1 in 400 29.995 S BED & SURR			121.722
FOULWATER COVER LEVEL							126.542							125.404				124.230		
FOULWATER INVERT							125.000			Pipe 1.000 Dia 150 ESVC 1 in 30 42.214 S BED & SURR				123.592 123.592			Pipe 1.001 Dia 150 ESVC 1 in 30 25.614 S BED & SURR	122.738		

DATUM 120.000

RD2

CHAINAGE	0.000	9.005	9.750	10.000	11.228	20.000	23.415	24.935	30.000	40.000	47.211	48.952	49.828	50.000	58.914
EXISTING GROUND LEVEL	123.291			124.115		124.696			125.311	126.051				126.829	127.377
ALIGNMENT LEVEL	123.449			124.116		124.782			125.449	126.116				126.782	127.377
VERTICAL ALIGNMENT		G= 6.667% 1: 15.0													
HORIZONTAL ALIGNMENT															
STORMWATER COVER LEVEL		124.039						125.098					126.758		
STORMWATER INVERT		121.722				Pipe 1.002 Dia 1200 CONC 1 in 400 15.931 S BED & SURR		121.682 121.682		Pipe 2.001 Dia 1200 CONC 1 in 400 24.893 S BED & SURR			121.744		
FOULWATER COVER LEVEL					124.230		125.041				126.622				
FOULWATER INVERT					122.738	Pipe 1.002 Dia 150 ESVC 1 in 30 12.188 S BED & SURR	122.332 123.668			Pipe 2.001 Dia 150 ESVC 1 in 20 23.796 S BED & SURR	124.858				

NOTE:

1. No dimensions are to be measured from this drawing.
2. All levels shown are in metres unless otherwsie shown.
3. This drawing is to be read in conjunction with all relevant Architects, Planning and Infrastructure Design drawings.
4. The position and levels of all existing drains are to be confirmed on site prior to the commencement of the works and any discrepancies reported immediately to the engineer.
5. All private drainage is to constructed in accordance with th latest edition of the Building Regulations Part H (Drainage & Waste Disposal) and to BSEN752 (Building Drainage).
6. All adoptable drainage is to be in accordance with the requirements of Sewers for Adoption 6th Edition and the Sewerage Undertaker/Council.
7. All connections to existing public sewers are to be made to the satisfaction of the Sewerage Undertaker and the Local Authority.
8. Existing drains being abandoned are to be dealt with in the following manner:
   - i) Within 1.0m of proposed ground levels, drains are to be grubbed out.
   - ii) Deeper than 1.0m of proposed ground levels drains are to be grouted with a 1:10 cement:sand:mix.
9. Any existing gully connections being abandoned are to be sealed with a concrete plug not less than 300mm thick at a level of 1.0m below ground.
10. Concrete protection of pipework is to be provided as follows:-
    - i) All pipework within pedestrian / soft areas with a cover less than 600mm.
    - ii) All pipework beneath areas subject to vehicular overrun with a cover less than 1.2m.
11. All pipework within manholes are to be laid soffit to soffit.
12. Any gradients of drains are indicative only and The Contractor shall install drains to the invert levels shown for each manhole.
13. Any co-ordinate information regarding manholes is to the centre of the manhole.
14. Cover levels of the manholes are provisional and subject to adjustment to suit the finished ground levels.
15. The use of short radius bends for changes in direction is not permitted, only long radius bends or 2 No. are to be used.
16. Connections to carrier drains are to be 'Y' junctions.
17. Manhole covers and frames are to be in accordance with BS EN 124 and the following criteria:-

    Vehicular areas : Class D400 double triangular 150mm (min) deep ductile iron cover & frame with three-point cover seating.
    Pedestrian areas only : Class B125 double triangular 100mm (min) deep ductile iron cover & frame with three-point cover seating.
18. Heavy duty cover slabs are to be used with Class D400 frames.
19. Gully gratings and channel covers are to be in accordance with BS EN 124 as follows:
    - i) Areas subject to vehicular overrun: Class D400 minimum. Class F900 within service yard.
    - ii) Areas not subject to vehicular overrun: Class C250
20. Gully gratings are to be double triangular ductile iron with a non-rock design and a 100mm deep frame.
21. Outside of sewers to be 1.0m (min) from kerb line.
22. Outside of manholes to be 0.5m (min) from kerb line.
23. All non-adoptable foul and surface water pipes to be 100 diameter unless noted otherwise.
24. Proposed 225mm diameter inspection chambers to be laid at a maximum depth of 600mm below GL.
25. Proposed 450mm diameter inspection chambers to be laid at a maximum depth of 3000mm below GL.
26. Installation of all pipework, manholes, gullies & channels etc are to be laid to manufacturers specification.

ALL COVER & INVERT LEVEL INFORMATION HAS BEEN TAKEN FROM AVAILABLE TOPOGRAPHICAL SURVEY DATA OR UNITED UTILITY RECORDS AND CCTV REPORT. EXISTING PUBLIC FOUL AND SURFACE WATER SEWERS ARE TO BE ABOVE GROUND PROBED, ROUTED AND INTERNALLY SURVEYED WITH ALL INFORMATION PASSED TO SITE INFRASTRUCTURE SERVICES LTD FOR REVIEW PRIOR TO COMMENCEMENT ON SITE

UNDER NO CIRCUMSTANCES SHALL ANY PROPOSED LEVELS BE AMENDED WITHOUT THE PRIOR CONSULTATION WITH SITE INFRASTRUCTURE SERVICES LTD

DESIGN NOTE
APPROVAL TO BE IN PLACE WITH UNITED UTILITIES BEFORE CONNECTION IS MADE TO THE PUBLIC SEWER SYSTEM

DESIGN NOTE
REFER TO UTILITY SURVEY FOR EXACT POSITION OF THE EXISTING ELECTRICITY MAIN IN THIS VICINITY

DESIGN NOTE
COVER LEVEL, INVERT LEVEL, CONDITION AND POSITION OF ALL EXISTING MANHOLES TO BE DETERMINED BEFORE COMMENCEMENT ONSITE.

Rev	Amendments	Date	Drawn
-	INITIAL ISSUE	13.05.2022	CML

PROVISIONAL Subject to UU Approval

Client
Building Homes. Changing Lives.

Project Title
Ivy Mills
CUMBRIA

Drawing Title
PHASE 2
LONGITUDINAL
SECTIONS
1 OF 2

Scales
H=1:100 V=1:500 @ A1

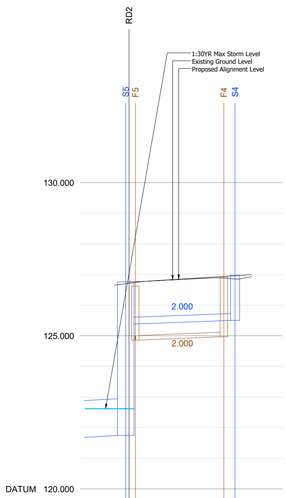
Drawn
CML

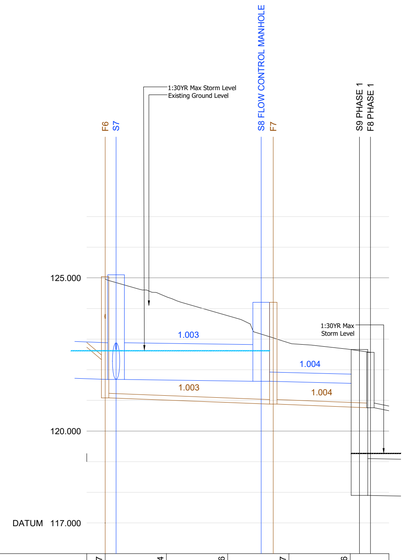
Date
13.05.22

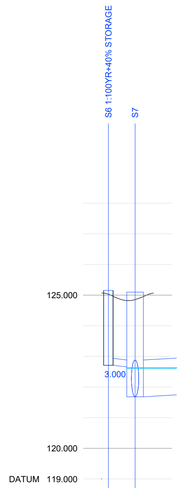
Ref
GHC-IM-C-P2-13-01

Rev
-

Site Infrastructure Services Ltd
E: chris.lynch@siteinfrastructureservices.co.uk
M: 07437016072
W: www.siteinfrastructureservices.co.uk







RD3

CHAINAGE	-0.538	0.000	0.000	2.400	10.000	15.464	17.299	20.000	20.027
EXISTING GROUND LEVEL	126.755		126.851				126.924		126.925
ALIGNMENT LEVEL	126.773		126.868				126.993		126.993
VERTICAL ALIGNMENT			G= 1.250% 1: 80.0						
HORIZONTAL ALIGNMENT									
STORMWATER COVER LEVEL	126.758						126.973		
STORMWATER INVERT		125.381	Pipe 2.000 Dia 225 ESVC 1 in 150 17.840 S BED & SURR				125.500		
FOULWATER COVER LEVEL	126.622						126.912		
FOULWATER INVERT		124.858	Pipe 2.000 Dia 150 ESVC 1 in 135 14.470 S BED & SURR				124.965		

GROUND LEVEL	124.957	124.384	123.766	122.877	122.666
STORMWATER COVER LEVEL	125.098		124.200		122.661
STORMWATER INVERT	121.682	Pipe 1.003 Dia 1200 CONC 1 in 400 23.678 S BED & SURR	121.623	121.623	Pipe 1.004 Dia 300 ESVC 1 in 240 16.115 S BED & SURR	121.556
FOULWATER COVER LEVEL	125.041		124.200		122.567
FOULWATER INVERT	121.062	Pipe 1.003 Dia 150 ESVC 1 in 135 27.444 S BED & SURR	120.879	120.879	Pipe 1.004 Dia 150 ESVC 1 in 135 15.860 S BED & SURR	120.762

GROUND LEVEL	125.665	
STORMWATER COVER LEVEL	125.150	125.098
STORMWATER INVERT	122.711	122.657

Pipe 3.000
Dia 225
ESVC
1 in 165
8.853
S BED & SURR

ALL COVER & INVERT LEVEL INFORMATION HAS BEEN TAKEN FROM AVAILABLE TOPOGRAPHICAL SURVEY DATA OR UNITED UTILITY RECORDS AND CCTV REPORT. EXISTING PUBLIC FOUL AND SURFACE WATER SEWERS ARE TO BE ABOVE GROUND PROBED, ROUTED AND INTERNALLY SURVEYED WITH ALL INFORMATION PASSED TO SITE INFRASTRUCTURE SERVICES LTD FOR REVIEW PRIOR TO COMMENCEMENT ON SITE

UNDER NO CIRCUMSTANCES SHALL ANY PROPOSED LEVELS BE AMENDED WITHOUT THE PRIOR CONSULTATION WITH SITE INFRASTRUCTURE SERVICES LTD

NOTE:

1. No dimensions are to be measured from this drawing.
2. All levels shown are in metres unless otherwise shown.
3. This drawing is to be read in conjunction with all relevant Architects, Planning and Infrastructure Design drawings.
4. The position and levels of all existing drains are to be confirmed on site prior to the commencement of the works and any discrepancies reported immediately to the engineer.
5. All private drainage is to constructed in accordance with th latest edition of the Building Regulations Part H (Drainage & Waste Disposal) and to BSEN752 (Building Drainage).
6. All adoptable drainage is to be in accordance with the requirements of Sewers for Adoption 6th Edition and the Sewerage Undertaker/Council.
7. All connections to existing public sewers are to be made to the satisfaction of the Sewerage Undertaker and the Local Authority.
8. Existing drains being abandoned are to be dealt with in the following manner:
   i) Within 1.0m of proposed ground levels, drains are to be grubbed out.
   ii) Deeper than 1.0m of proposed ground levels drains are to be grouted with a 1:10 cement:sand:mix.
9. Any existing gully connections being abandoned are to be sealed with a concrete plug not less than 300mm thick at a level of 1.0m below ground.
10. Concrete protection of pipework is to be provided as follows:-
    i) All pipework within pedestrian / soft areas with a cover less than 600mm.
    ii) All pipework beneath areas subject to vehicular overrun with a cover less than 1.2m.
11. All pipework within manholes are to be laid soffit to soffit.
12. Any gradients of drains are indicative only and The Contractor shall install drains to the invert levels shown for each manhole.
13. Any co-ordinate information regarding manholes is to the centre of the manhole.
14. Cover levels of the manholes are provisional and subject to adjustment to suit the finished ground levels.
15. The use of short radius bends for changes in direction is not permitted, only long radius bends or 2 No. are to be used.
16. Connections to carrier drains are to be 'Y' junctions.
17. Manhole covers and frames are to be in accordance with BS EN 124 and the following criteria:-
    Vehicular areas : Class D400 double triangular 150mm (min) deep ductile iron cover & frame with three-point cover seating.
    Pedestrian areas only : Class B125 double triangular 100mm (min) deep ductile iron cover & frame with three-point cover seating.
18. Heavy duty cover slabs are to be used with Class D400 frames.
19. Gully gratings and channel covers are to be in accordance with BS EN 124 as follows:
    i) Areas subject to vehicular overrun: Class D400 minimum. Class F900 within service yard.
    ii) Areas not subject to vehicular overrun: Class C250
20. Gully gratings are to be double triangular ductile iron with a non-rock design and a 100mm deep frame.
21. Outside of sewers to be 1.0m (min) from kerb line.
22. Outside of manholes to be 0.5m (min) from kerb line.
23. All non-adoptable foul and surface water pipes to be 100 diameter unless noted otherwise.
24. Proposed 225mm diameter inspection chambers to be laid at a maximum depth of 600mm below GL.
25. Proposed 450mm diameter inspection chambers to be laid at a maximum depth of 3000mm below GL.
26. Installation of all pipework, manholes, gullies & channels etc are to be laid to manufacturers specification.

DESIGN NOTE
APPROVAL TO BE IN PLACE WITH UNITED UTILITIES BEFORE CONNECTION IS MADE TO THE PUBLIC SEWER SYSTEM

DESIGN NOTE
REFER TO UTILITY SURVEY FOR EXACT POSITION OF THE EXISTING ELECTRICITY MAIN IN THIS VICINITY

DESIGN NOTE
COVER LEVEL, INVERT LEVEL, CONDITION AND POSITION OF ALL EXISTING MANHOLES TO BE DETERMINED BEFORE COMMENCEMENT ONSITE.

Rev	Amendments	Date	Drawn
-	INITIAL ISSUE	13.05.2022	CML

PROVISIONAL Subject to UU Approval

Client: gleeson — Building Homes. Changing Lives.

Project Title: Ivy Mills, CUMBRIA

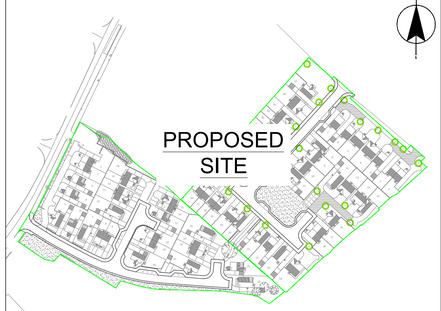
Drawing Title: PHASE 2 LONGITUDINAL SECTIONS 2 OF 2

Scales: H=1:100 V=1:500 @ A1

Drawn: CML | Date: 13.05.22

Ref: GHC-IM-C-P2-13-02 | Rev: -

Site Infrastructure Services Ltd
E: chris.lynch@siteinfrastructureservices.co.uk
M: 07437016072
W: www.siteinfrastructureservices.co.uk



BLOCK LAYOUT

SCALE: 1:2000
GRID REF: E=299094, N=517065
POST CODE: CA28 6XD

SURFACE WATER CATCHMENT AREAS

1	0.185
2	0.115
3	0.036
4	0.079
5	0.085
6	0.000
7	0.000
8	0.105
9	0.000
10	0.055
11	0.067
12	0.046
13	0.110
14	0.012
15	0.052
16	0.049
17	0.000
18	0.000
19	0.000

PHASE 1

ALL COVER & INVERT LEVEL INFORMATION HAS BEEN TAKEN FROM AVAILABLE TOPOGRAPHICAL SURVEY DATA OR UNITED UTILITY RECORDS AND CCTV REPORT. EXISTING PUBLIC FOUL AND SURFACE WATER SEWERS ARE TO BE ABOVE GROUND PROBED, ROUTED AND INTERNALLY SURVEYED WITH ALL INFORMATION PASSED TO SITE INFRASTRUCTURE SERVICES LTD FOR REVIEW PRIOR TO COMMENCEMENT ON SITE

UNDER NO CIRCUMSTANCES SHALL ANY PROPOSED LEVELS BE AMENDED WITHOUT THE PRIOR CONSULTATION WITH SITE INFRASTRUCTURE SERVICES LTD

SITE LAYOUT

SCALE: 1:500
GRID REF: E=299094, NX=517065
NATIONAL GRID REF: NX990171
POST CODE: CA28 6XD

KEY

- Foul water sewer
- Storm water sewer
- Back drop manhole
- Existing UU Storm water sewer
- Existing UU Foul water sewer
- Existing UU Storm water sewer to be abandoned
- Existing UU Foul water sewer to be abandoned
- Gully (150mm connection)

NOTES

1. No dimensions are to be measured from this drawing.
2. All levels shown are in metres unless otherwise shown.
3. This drawing is to be read in conjunction with all relevant Architects, Planning and Infrastructure Design drawings.
4. The position and levels of all existing drains are to be confirmed on site prior to the commencement of the works and any discrepancies reported immediately to the engineer.
5. All private drainage is to constructed in accordance with th latest edition of the Building Regulations Part H (Drainage & Waste Disposal) and to BSEN752 (Building Drainage).
6. All adoptable drainage is to be in accordance with the requirements of Sewers for Adoption 6th Edition and the Sewerage Undertaker/Council.
7. All connections to existing public sewers are to be made to the satisfaction of the Sewerage Undertaker and the Local Authority.
8. Existing drains being abandoned are to be dealt with in the following manner:
   i) Within 1.0m of proposed ground levels, drains are to be grubbed out.
   ii) Deeper than 1.0m of proposed ground levels drains are to be grouted with a 1:10 cement:sand:mix.
9. Any existing gully connections being abandoned are to be sealed with a concrete plug not less than 300mm thick at a level of 1.0m below ground.
10. Concrete protection of pipework is to be provided as follows:-
    i) All pipework within pedestrian / soft areas with a cover less than 600mm.
    ii) All pipework beneath areas subject to vehicular overrun with a cover less than 1.2m.
11. All pipework within manholes are to be laid soffit to soffit.
12. Any gradients of drains are indicative only and The Contractor shall install drains to the invert levels shown for each manhole.
13. Any co-ordinate information regarding manholes is to the centre of the manhole.
14. Cover levels of the manholes are provisional and subject to adjustment to suit the finished ground levels.
15. The use of short radius bends for changes in direction is not permitted, only long radius bends or 2 No. are to be used.
16. Connections to carrier drains are to be 'Y' junctions.
17. Manhole covers and frames are to be in accordance with BS EN 124 and the following criteria:-
    Vehicular areas : Class D400 double triangular 150mm (min) deep ductile iron cover & frame with three-point cover seating.
    Pedestrian areas only : Class B125 double triangular 100mm (min) deep ductile iron cover & frame with three-point cover seating.
18. Heavy duty cover slabs are to be used with Class D400 frames.
19. Gully gratings and channel covers are to be in accordance with BS EN 124 as follows:
    i) Areas subject to vehicular overrun: Class D400 minimum. Class F900 within service yard.
    ii) Areas not subject to vehicular overrun: Class C250
20. Gully gratings are to be double triangular ductile iron with a non-rock design and a 100mm deep frame.
21. Outside of sewers to be 1.0m (min) from kerb line.
22. Outside of manholes to be 0.5m (min) from kerb line.
23. All non-adoptable foul and surface water pipes to be 100 diameter unless noted otherwise.
24. Proposed 225mm diameter inspection chambers to be laid at a maximum depth of 600mm below GL.
25. Proposed 450mm diameter inspection chambers to be laid at a maximum depth of 3000mm below GL.
26. Installation of all pipework, manholes, gullies & channels etc are to be laid to manufacturers specification.

Rev	Amendments	Date	Drawn
-	INITIAL ISSUE	13.05.2022	CML

Client

gleeson
Building Homes. Changing Lives.

Project Title

Ivy Mills
CUMBRIA

Drawing Title

DRAINAGE AREA PLAN

Scales	
1:500 @ A1	
Drawn	Date
CML	13.05.22
Ref	Rev
GHC-IM-C-P2-14-01	-

Site Infrastructure Services Ltd
E: chris.lynch@siteinfrastructureservices.co.uk
M: 07437016072
W: www.siteinfrastructureservices.co.uk

PHASE 1
MANHOLE SCHEDULE
Sheet 1 of 2

Manhole Number / Coordinates	Cover Level / Depth To Soffit	Connections	Pipe: Code	Pipe: Inverts	Pipe: Diams	Manhole Size	Types: Manhole	Types: Cover
S1 E. 299166.640 N. 517136.312	126.546 3.446	RG, DO, RG, RG, 0	0	1.000	121.900	1200	2700	Type 2	D400
S2 E. 299139.018 N. 517105.641	125.470 2.473	1, DO, DO, 0	1 0	1.000 1.001	121.797 121.797	1200 1200	2700	Type 2	D400
S3 E. 299118.915 N. 517083.380	124.039 1.117	RG, 1, 0	1 0	1.001 1.002	121.722 121.722	1200 1200	2700	Type 2 Shallow	D400
S4 E. 299160.804 N. 517069.229	126.973 1.248	DO, 0	0	2.000	125.500	225	1500	Type B (DCG)	D400
S5 E. 299149.034 N. 517055.822	126.758 3.814	1, DO, 0	1 0	2.000 2.001	125.381 121.744	225 1200	2700	Type 2 Shallow	D400
S6 E. 299136.700 N. 517078.993	125.150 2.214	0	0	3.000	122.711	225	1500	Type B (DCG)	D400
S7 E. 299130.612 N. 517072.565	125.098 2.216	2, 3, 1, 0	1 2 3 0	2.001 3.000 1.002 1.003	121.682 122.657 121.682 121.682	1200 225 1200 1200	2700	Type 2	D400
S8 HYDROBRAKE MH MAX DISCHARGE 6.70l/s E. 299114.670 N. 517055.058	124.200 2.277	1, DO, DO, 0	1 0	1.003 1.004	121.623 121.623	1200 300	2700	Type 2	D400

PHASE 1
MANHOLE SCHEDULE
Sheet 1 of 2

Manhole Number / Coordinates	Cover Level / Depth To Soffit	Connections	Pipe: Code	Pipe: Inverts	Pipe: Diams	Manhole Size	Types: Manhole	Types: Cover
F1 E. 299166.390 N. 517134.166	126.542 1.392	DO, DO, 0	0	1.000	125.000	150	1200	Type B (DCG)	D400
F2 E. 299138.754 N. 517102.255	125.404 1.662	1, DO, DO, 0	1 0	1.000 1.001	123.592 123.592	150 150	1200	Type B (DCG)	D400
F3 E. 299121.702 N. 517083.143	124.230 1.342	1, 0	1 0	1.001 1.002	122.738 122.738	150 150	1200	Type B (DCG)	D400
F4 E. 299158.446 N. 517068.919	126.912 1.797	DO, 0	0	2.000	124.965	150	1200	Type B (DCG)	D400
F5 E. 299148.154 N. 517058.747	126.622 1.614	1, 0	1 0	2.000 2.001	124.858 124.858	150 150	1200	Type B (DCG)	D400
F6 E. 299130.684 N. 517074.903	125.041 3.809	2, 1, 0	1 2 0	2.001 1.002 1.003	123.668 122.332 121.082	150 150 150	1200	Type B (DCG)	D400
F7 E. 299112.288 N. 517054.538	124.200 3.171	1, DO, DO, 0	1 0	1.003 1.004	120.879 120.879	150 150	1200	Type B (DCG)	D400

ALL COVER & INVERT LEVEL INFORMATION HAS BEEN TAKEN FROM AVAILABLE TOPOGRAPHICAL SURVEY DATA OR UNITED UTILITY RECORDS AND CCTV REPORT. EXISTING PUBLIC FOUL AND SURFACE WATER SEWERS ARE TO BE ABOVE GROUND PROBED, ROUTED AND INTERNALLY SURVEYED WITH ALL INFORMATION PASSED TO SITE INFRASTRUCTURE SERVICES LTD FOR REVIEW PRIOR TO COMMENCEMENT ON SITE

UNDER NO CIRCUMSTANCES SHALL ANY PROPOSED LEVELS BE AMENDED WITHOUT THE PRIOR CONSULTATION WITH SITE INFRASTRUCTURE SERVICES LTD

NOTE:

1. No dimensions are to be measured from this drawing.
2. All levels shown are in metres unless otherwise shown.
3. This drawing is to be read in conjunction with all relevant Architects, Planning and Infrastructure Design drawings.
4. The position and levels of all existing drains are to be confirmed on site prior to the commencement of the works and any discrepancies reported immediately to the engineer.
5. All private drainage is to constructed in accordance with th latest edition of the Building Regulations Part H (Drainage & Waste Disposal) and to BSEN752 (Building Drainage).
6. All adoptable drainage is to be in accordance with the requirements of Sewers for Adoption 6th Edition and the Sewerage Undertaker/Council.
7. All connections to existing public sewers are to be made to the satisfaction of the Sewerage Undertaker and the Local Authority.
8. Existing drains being abandoned are to be dealt with in the following manner:
   i) Within 1.0m of proposed ground levels, drains are to be grubbed out.
   ii) Deeper than 1.0m of proposed ground levels drains are to be grouted with a 1:10 cement:sand:mix.
9. Any existing gully connections being abandoned are to be sealed with a concrete plug not less than 300mm thick at a level of 1.0m below ground.
10. Concrete protection of pipework is to be provided as follows:-
    i) All pipework within pedestrian / soft areas with a cover less than 600mm.
    ii) All pipework beneath areas subject to vehicular overrun with a cover less than 1.2m.
11. All pipework within manholes are to be laid soffit to soffit.
12. Any gradients of drains are indicative only and The Contractor shall install drains to the invert levels shown for each manhole.
13. Any co-ordinate information regarding manholes is to the centre of the manhole.
14. Cover levels of the manholes are provisional and subject to adjustment to suit the finished ground levels.
15. The use of short radius bends for changes in direction is not permitted, only long radius bends or 2 No. are to be used.
16. Connections to carrier drains are to be 'Y' junctions.
17. Manhole covers and frames are to be in accordance with BS EN 124 and the following criteria:-
    Vehicular areas : Class D400 double triangular 150mm (min) deep ductile iron cover & frame with three-point cover seating.
    Pedestrian areas only : Class B125 double triangular 100mm (min) deep ductile iron cover & frame with three-point cover seating.
18. Heavy duty cover slabs are to be used with Class D400 frames.
19. Gully gratings and channel covers are to be in accordance with BS EN 124 as follows:
    i) Areas subject to vehicular overrun: Class D400 minimum. Class F900 within service yard.
    ii) Areas not subject to vehicular overrun: Class C250
20. Gully gratings are to be double triangular ductile iron with a non-rock design and a 100mm deep frame.
21. Outside of sewers to be 1.0m (min) from kerb line.
22. Outside of manholes to be 0.5m (min) from kerb line.
23. All non-adoptable foul and surface water pipes to be 100 diameter unless noted otherwise.
24. Proposed 225mm diameter inspection chambers to be laid at a maximum depth of 600mm below GL.
25. Proposed 450mm diameter inspection chambers to be laid at a maximum depth of 3000mm below GL.
26. Installation of all pipework, manholes, gullies & channels etc are to be laid to manufacturers specification.

Rev	Amendments	Date	Drawn
-	INITIAL ISSUE	13.05.22	CML

PROVISIONAL Subject to UU Approval

Client

gleeson
Building Homes. Changing Lives.

Project Title

Ivy Mills
CUMBRIA

Drawing Title

PHASE 2
MANHOLE
SCHEDULES

Scales	
NTS @ A1	
Drawn	Date
CML	13.05.22
Ref	Rev
GHC-IM-C-P2-15-01	-

Site Infrastructure Services Ltd
E: chris.lynch@siteinfrastructureservices.co.uk
M: 07437016072
W: www.siteinfrastructureservices.co.uk

APPENDIX C
SURFACE WATER SIMULATIONS & CALCULATIONS.

MAY 2022

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	2	Maximum Rainfall (mm/hr)	0.0
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	17.000	Minimum Backdrop Height (m)	0.600
Ratio-R	0.300	Preferred Cover Depth (m)	1.200
CV	0.750	Include Intermediate Ground	✓
Time of Entry (mins)	5.00	Enforce best practice design rules	✓

Adoptable Manhole Type

Max Width (mm)	Diameter (mm)	Max Width (mm)	Diameter (mm)	Max Width (mm)	Diameter (mm)	Max Width (mm)	Diameter (mm)
374	1200	499	1350	749	1500	900	1800

>900 Link+900 mm

Max Depth (m)	Diameter (mm)	Max Depth (m)	Diameter (mm)
1.500	1050	99.999	1200

Circular_Default Sewer Type Link Type

Shape	Circular	Barrels	1	Auto Increment (mm)	75	Follow Ground	x

Available Diameters (mm)

100 | 150

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
1	0.185	5.00	126.546	2700	299166.640	517136.312	4.646
2	0.115	5.00	125.470	2700	299139.018	517105.641	3.673
3	0.036	5.00	124.039	2700	299118.915	517083.380	2.317
4	0.079	5.00	126.973	1500	299160.804	517069.229	1.473
5	0.085	5.00	126.758	2700	299149.034	517055.822	5.014
6	0.000	5.00	125.150	1500	299136.700	517078.993	2.439
7	0.000		125.098	2700	299130.612	517072.565	3.416
8	0.105	5.00	124.200	2700	299114.670	517055.058	2.577
9	0.000		122.661	2700	299103.283	517043.655	4.761
10	0.055	5.00	122.420	3000	299101.549	517025.387	4.566
11	0.067	5.00	120.565	2700	299073.816	517027.456	2.781
12	0.046	5.00	118.871	1500	299048.579	517029.933	2.355
13	0.110	5.00	119.507	1500	299051.026	517073.319	3.133
14	0.012	5.00	117.695	2700	299031.409	517035.187	5.333
15	0.052	5.00	116.332	2700	299009.883	517044.734	4.029
16	0.049	5.00	114.956	2700	298985.910	517058.417	2.722
17	0.000	5.00	114.500	2700	298976.186	517063.882	2.294
18	0.000		114.176	1500	298972.319	517063.914	1.993
19			113.957	1200	298965.066	517063.976	1.818

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.000	1	2	41.276	0.600	121.900	121.797	0.103	400.0	1200	5.37	0.0
1.001	2	3	29.995	0.600	121.797	121.722	0.075	400.0	1200	5.64	0.0
1.002	3	7	15.931	0.600	121.722	121.682	0.040	400.0	1200	5.78	0.0
2.000	4	5	17.840	0.600	125.500	125.381	0.119	150.0	225	5.28	0.0
2.001	5	7	24.894	0.600	121.744	121.682	0.062	400.0	1200	5.50	0.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	1.864	2108.2	0.0	3.446	2.473	0.185	0.0	0	0.000
1.001	1.864	2108.2	0.0	2.473	1.117	0.300	0.0	0	0.000
1.002	1.864	2108.2	0.0	1.117	2.216	0.336	0.0	0	0.000
2.000	1.065	42.3	0.0	1.248	1.152	0.079	0.0	0	0.000
2.001	1.864	2108.2	0.0	3.814	2.216	0.164	0.0	0	0.000

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
3.000	6	7	8.853	0.600	122.711	122.657	0.054	165.0	225	5.15	0.0
1.003	7	8	23.678	0.600	121.682	121.623	0.059	400.0	1200	5.99	0.0
1.004	8	9	16.115	0.600	121.623	121.556	0.067	240.0	300	6.26	0.0
1.005	9	10	18.350	0.600	117.900	117.854	0.046	400.0	1200	6.42	0.0
1.006	10	11	27.810	0.600	117.854	117.784	0.070	400.0	1200	6.67	0.0
1.007	11	12	25.358	0.600	117.784	116.516	1.268	20.0	300	6.79	0.0
1.008	12	14	17.956	0.600	116.516	115.618	0.898	20.0	300	6.87	0.0
4.000	13	14	42.882	0.600	116.374	115.618	0.756	56.7	300	5.34	0.0
1.009	14	15	23.548	0.600	112.362	112.303	0.059	400.0	1200	7.08	0.0
1.010	15	16	27.603	0.600	112.303	112.234	0.069	400.0	1200	7.33	0.0
1.011	16	17	11.154	0.600	112.234	112.206	0.028	400.0	1200	7.43	0.0
1.012	17	18	3.867	0.600	112.206	112.183	0.023	165.0	225	7.50	0.0
1.013	18	19	7.253	0.600	112.183	112.139	0.044	165.0	225	7.61	0.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
3.000	1.015	40.4	0.0	2.214	2.216	0.000	0.0	0	0.000
1.003	1.864	2108.2	0.0	2.216	1.377	0.500	0.0	0	0.000
1.004	1.010	71.4	0.0	2.277	0.805	0.605	0.0	0	0.000
1.005	1.864	2108.2	0.0	3.561	3.366	0.605	0.0	0	0.000
1.006	1.864	2108.2	0.0	3.366	1.581	0.660	0.0	0	0.000
1.007	3.531	249.6	0.0	2.481	2.055	0.727	0.0	0	0.000
1.008	3.531	249.6	0.0	2.055	1.777	0.773	0.0	0	0.000
4.000	2.091	147.8	0.0	2.833	1.777	0.110	0.0	0	0.000
1.009	1.864	2108.2	0.0	4.133	2.829	0.895	0.0	0	0.000
1.010	1.864	2108.2	0.0	2.829	1.522	0.947	0.0	0	0.000
1.011	1.864	2108.2	0.0	1.522	1.094	0.996	0.0	0	0.000
1.012	1.015	40.4	0.0	2.069	1.768	0.996	0.0	0	0.000
1.013	1.015	40.4	0.0	1.768	1.593	0.996	0.0	0	0.000

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	41.276	400.0	1200	Circular_Default Sewer Type	126.546	121.900	3.446	125.470	121.797	2.473
1.001	29.995	400.0	1200	Circular_Default Sewer Type	125.470	121.797	2.473	124.039	121.722	1.117
1.002	15.931	400.0	1200	Circular_Default Sewer Type	124.039	121.722	1.117	125.098	121.682	2.216
2.000	17.840	150.0	225	Circular_Default Sewer Type	126.973	125.500	1.248	126.758	125.381	1.152
2.001	24.894	400.0	1200	Circular_Default Sewer Type	126.758	121.744	3.814	125.098	121.682	2.216
3.000	8.853	165.0	225	Circular_Default Sewer Type	125.150	122.711	2.214	125.098	122.657	2.216
1.003	23.678	400.0	1200	Circular_Default Sewer Type	125.098	121.682	2.216	124.200	121.623	1.377
1.004	16.115	240.0	300	Circular_Default Sewer Type	124.200	121.623	2.277	122.661	121.556	0.805
1.005	18.350	400.0	1200	Circular_Default Sewer Type	122.661	117.900	3.561	122.420	117.854	3.366
1.006	27.810	400.0	1200	Circular_Default Sewer Type	122.420	117.854	3.366	120.565	117.784	1.581
1.007	25.358	20.0	300	Circular_Default Sewer Type	120.565	117.784	2.481	118.871	116.516	2.055
1.008	17.956	20.0	300	Circular_Default Sewer Type	118.871	116.516	2.055	117.695	115.618	1.777
4.000	42.882	56.7	300	Circular_Default Sewer Type	119.507	116.374	2.833	117.695	115.618	1.777
1.009	23.548	400.0	1200	Circular_Default Sewer Type	117.695	112.362	4.133	116.332	112.303	2.829

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	1	2700	Manhole	Adoptable	2	2700	Manhole	Adoptable
1.001	2	2700	Manhole	Adoptable	3	2700	Manhole	Adoptable
1.002	3	2700	Manhole	Adoptable	7	2700	Manhole	Adoptable
2.000	4	1500	Manhole	Adoptable	5	2700	Manhole	Adoptable
2.001	5	2700	Manhole	Adoptable	7	2700	Manhole	Adoptable
3.000	6	1500	Manhole	Adoptable	7	2700	Manhole	Adoptable
1.003	7	2700	Manhole	Adoptable	8	2700	Manhole	Adoptable
1.004	8	2700	Manhole	Adoptable	9	2700	Manhole	Adoptable
1.005	9	2700	Manhole	Adoptable	10	3000	Manhole	Adoptable
1.006	10	3000	Manhole	Adoptable	11	2700	Manhole	Adoptable
1.007	11	2700	Manhole	Adoptable	12	1500	Manhole	Adoptable
1.008	12	1500	Manhole	Adoptable	14	2700	Manhole	Adoptable
4.000	13	1500	Manhole	Adoptable	14	2700	Manhole	Adoptable
1.009	14	2700	Manhole	Adoptable	15	2700	Manhole	Adoptable

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.010	27.603	400.0	1200	Circular_Default Sewer Type	116.332	112.303	2.829	114.956	112.234	1.522
1.011	11.154	400.0	1200	Circular_Default Sewer Type	114.956	112.234	1.522	114.500	112.206	1.094
1.012	3.867	165.0	225	Circular_Default Sewer Type	114.500	112.206	2.069	114.176	112.183	1.768
1.013	7.253	165.0	225	Circular_Default Sewer Type	114.176	112.183	1.768	113.957	112.139	1.593

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.010	15	2700	Manhole	Adoptable	16	2700	Manhole	Adoptable
1.011	16	2700	Manhole	Adoptable	17	2700	Manhole	Adoptable
1.012	17	2700	Manhole	Adoptable	18	1500	Manhole	Adoptable
1.013	18	1500	Manhole	Adoptable	19	1200	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
1	299166.640	517136.312	126.546	4.646	2700		0	1.000	121.900	1200
2	299139.018	517105.641	125.470	3.673	2700		1	1.000	121.797	1200
							0	1.001	121.797	1200
3	299118.915	517083.380	124.039	2.317	2700		1	1.001	121.722	1200
							0	1.002	121.722	1200
4	299160.804	517069.229	126.973	1.473	1500		0	2.000	125.500	225
5	299149.034	517055.822	126.758	5.014	2700		1	2.000	125.381	225
							0	2.001	121.744	1200
6	299136.700	517078.993	125.150	2.439	1500		0	3.000	122.711	225
7	299130.612	517072.565	125.098	3.416	2700		1	3.000	122.657	225
							2	2.001	121.682	1200
							3	1.002	121.682	1200
							0	1.003	121.682	1200
8	299114.670	517055.058	124.200	2.577	2700		1	1.003	121.623	1200
							0	1.004	121.623	300
9	299103.283	517043.655	122.661	4.761	2700		1	1.004	121.556	300
							0	1.005	117.900	1200
10	299101.549	517025.387	122.420	4.566	3000		1	1.005	117.854	1200
							0	1.006	117.854	1200
11	299073.816	517027.456	120.565	2.781	2700		1	1.006	117.784	1200
							0	1.007	117.784	300
12	299048.579	517029.933	118.871	2.355	1500		1	1.007	116.516	300
							0	1.008	116.516	300

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
13	299051.026	517073.319	119.507	3.133	1500		0	4.000	116.374	300
14	299031.409	517035.187	117.695	5.333	2700		1	4.000	115.618	300
							2	1.008	115.618	300
							0	1.009	112.362	1200
15	299009.883	517044.734	116.332	4.029	2700		1	1.009	112.303	1200
							0	1.010	112.303	1200
16	298985.910	517058.417	114.956	2.722	2700		1	1.010	112.234	1200
							0	1.011	112.234	1200
17	298976.186	517063.882	114.500	2.294	2700		1	1.011	112.206	1200
							0	1.012	112.206	225
18	298972.319	517063.914	114.176	1.993	1500		1	1.012	112.183	225
							0	1.013	112.183	225
19	298965.066	517063.976	113.957	1.818	1200		1	1.013	112.139	225

Node 19 Surcharged Outfall

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

Applies to All storms

Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
0	1.000	200	1.000	400	1.000	600	1.000	800	1.000	1000	1.000	1200	1.000	1400	1.000
100	1.000	300	1.000	500	1.000	700	1.000	900	1.000	1100	1.000	1300	1.000	1500	1.000

Node 8 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	121.623	Product Number	CTL-SHE-0100-6700-2577-6700
Design Depth (m)	2.577	Min Outlet Diameter (m)	0.150
Design Flow (l/s)	6.7	Min Node Diameter (mm)	1200

Node 11 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	117.784	Product Number	CTL-SHE-0100-6400-2400-6400
Design Depth (m)	2.400	Min Outlet Diameter (m)	0.150
Design Flow (l/s)	6.4	Min Node Diameter (mm)	1200

Node 17 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	112.206	Product Number	CTL-SHE-0132-1000-1898-1000
Design Depth (m)	1.898	Min Outlet Diameter (m)	0.150
Design Flow (l/s)	10.0	Min Node Diameter (mm)	1500

Node 18 Online Orifice Control

Flap Valve	x	Invert Level (m)	112.183	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Diameter (m)	0.225		

Node 6 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	122.711
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	0

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	105.0	0.0	0.840	105.0	0.0	0.841	0.0	0.0

Node 16 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	114.000
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	0

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	210.0	0.0	0.420	210.0	0.0	0.421	0.0	0.0

Other (defaults)

Entry Loss (manhole)	0.250	Entry Loss (junction)	0.000	Apply Recommended Losses	x
Exit Loss (manhole)	0.250	Exit Loss (junction)	0.000	Flood Risk (m)	0.300

Approval Settings

Node Size	✓	Backdrops	✓	Maximum Surcharged Depth (m)	0.100
Node Losses	✓	Minimum Backdrop Height (m)	0.600	Flooding	✓
Link Size	✓	Maximum Backdrop Height (m)	1.500	Return Period (years)	30
Minimum Diameter (mm)	150	Full Bore Velocity	✓	Time to Half Empty	✓
Link Length	✓	Minimum Full Bore Velocity (m/s)	1.000	Return Period (years)	2
Maximum Length (m)	100.000	Maximum Full Bore Velocity (m/s)	3.000	Discharge Rates	✓
Coordinates	✓	Proportional Velocity	✓	1 year (l/s)	10.0
Accuracy (m)	1.000	Return Period (years)	2	2 year (l/s)	10.0
Crossings	✓	Minimum Proportional Velocity (m/s)	0.750	30 year (l/s)	10.0
Cover Depth	✓	Maximum Proportional Velocity (m/s)	3.000	100 year (l/s)	10.0
Minimum Cover Depth (m)	1.200	Surcharged Depth	✓	Discharge Volume	x
Maximum Cover Depth (m)	3.000	Return Period (years)	2		

Approval Results

The network has been designed for a 1 in 2 year storm using FSR rainfall
It contains 19 nodes (1 outfall) and 18 links
The total impermeable area is 0.996 ha
A surcharged outfall has been defined
4 online controls have been defined
2 structures have been defined, providing 177m³ of storage below the flood risk level
Infiltration has not been utilised
Simulations have been completed using FSR summer and winter storms from 15 to 1440 minute duration

No manholes are smaller than that required by the library

6 connections have combined exit and entry losses less than the recomended total

Node	US Link	DS Link	US Exit Loss	DS Entry Loss	Angle (degrees)	Recommended Node Losses
3	1.001	1.002	0.250	0.250	89	0.900
5	2.000	2.001	0.250	0.250	91	1.200
7	2.001	1.003	0.250	0.250	90	0.900
7	1.002	1.003	0.250	0.250	90	0.900
10	1.005	1.006	0.250	0.250	89	0.900
14	4.000	1.009	0.250	0.250	87	0.900

No circular links have diameters < 150mm

No links have lengths > 100.000m

No links have lengths that differ from their coordinated length by more than 1.000m

3 links cross one or more other links

US Node	DS Node	Link	Network	Link	Easting (m)	Northing (m)
3	7	1.002	Foul Network 1	1.004	299129.500	517073.593
6	7	3.000	Foul Network 1	2.001	299131.826	517073.847
13	14	4.000	Foul Network 1	1.010	299032.137	517036.602

11 links have cover depth outside the range 1.200-3.000m

US Node	DS Node	Link	Minimum Depth (m)	Maximum Depth (m)
1	2	1.000	2.473	3.446
2	3	1.001	1.117	2.473
3	7	1.002	1.117	2.216
4	5	2.000	1.152	1.248
5	7	2.001	2.216	3.814
7	8	1.003	0.435	2.216
8	9	1.004	0.805	2.277
9	10	1.005	3.366	3.638
10	11	1.006	1.581	3.366
14	15	1.009	2.829	4.133
16	17	1.011	1.037	1.522

4 nodes have backdrops outside the range 0.600-1.500m

Node	US Link	DS Link	Backdrop (m)
5	2.000	2.001	2.662
9	1.004	1.005	2.756
14	1.008	1.009	2.356
14	4.000	1.009	2.356

2 links have full bore velocity outside the range 1.000-3.000m/s

US Node	DS Node	Link	Velocity (m/s)
11	12	1.007	3.531
12	14	1.008	3.531

10 links have peak proportional velocity outside the range 0.750-3.000m/s during the 2 year return period

US Node	DS Node	Link	Velocity (m/s)	Event
1	2	1.000	0.564	2 year 15 minute winter
2	3	1.001	0.636	2 year 15 minute summer
3	7	1.002	0.483	2 year 15 minute summer
5	7	2.001	0.530	2 year 15 minute winter
7	8	1.003	0.265	2 year 15 minute winter
9	10	1.005	0.371	2 year 60 minute winter
10	11	1.006	0.206	2 year 60 minute winter
14	15	1.009	0.612	2 year 15 minute summer
15	16	1.010	0.533	2 year 15 minute winter
16	17	1.011	0.462	2 year 15 minute winter

No links have a surcharged depth greater than 0.100m during the 2 year return period

No nodes flood during the 30 year return period

No infiltrating structures failed to half empty in 1440 minutes during the 2 year return period

No outfalls have a discharge rate greater than 10.0l/s during the 1 year return period

No outfalls have a discharge rate greater than 10.0l/s during the 2 year return period

No outfalls have a discharge rate greater than 10.0l/s during the 30 year return period

No outfalls have a discharge rate greater than 10.0l/s during the 100 year return period

The discharge volume test has not been completed

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
1 year 15 minute summer	84.280	23.848	30 year 15 minute summer	205.071	58.028
1 year 15 minute winter	59.144	23.848	30 year 15 minute winter	143.910	58.028
1 year 30 minute summer	57.102	16.158	30 year 30 minute summer	140.191	39.669
1 year 30 minute winter	40.072	16.158	30 year 30 minute winter	98.380	39.669
1 year 60 minute summer	40.398	10.676	30 year 60 minute summer	98.615	26.061
1 year 60 minute winter	26.839	10.676	30 year 60 minute winter	65.517	26.061
1 year 120 minute summer	26.432	6.985	30 year 120 minute summer	63.038	16.659
1 year 120 minute winter	17.561	6.985	30 year 120 minute winter	41.881	16.659
1 year 180 minute summer	21.115	5.434	30 year 180 minute summer	49.285	12.683
1 year 180 minute winter	13.725	5.434	30 year 180 minute winter	32.037	12.683
1 year 240 minute summer	17.197	4.545	30 year 240 minute summer	39.344	10.398
1 year 240 minute winter	11.425	4.545	30 year 240 minute winter	26.139	10.398
1 year 360 minute summer	13.694	3.524	30 year 360 minute summer	30.343	7.808
1 year 360 minute winter	8.901	3.524	30 year 360 minute winter	19.724	7.808
1 year 480 minute summer	11.066	2.925	30 year 480 minute summer	24.111	6.372
1 year 480 minute winter	7.352	2.925	30 year 480 minute winter	16.019	6.372
1 year 600 minute summer	9.254	2.531	30 year 600 minute summer	19.882	5.438
1 year 600 minute winter	6.323	2.531	30 year 600 minute winter	13.585	5.438
1 year 720 minute summer	8.394	2.250	30 year 720 minute summer	17.819	4.776
1 year 720 minute winter	5.641	2.250	30 year 720 minute winter	11.975	4.776
1 year 960 minute summer	7.097	1.869	30 year 960 minute summer	14.763	3.887
1 year 960 minute winter	4.701	1.869	30 year 960 minute winter	9.779	3.887
1 year 1440 minute summer	5.374	1.440	30 year 1440 minute summer	10.836	2.904
1 year 1440 minute winter	3.611	1.440	30 year 1440 minute winter	7.282	2.904
2 year 15 minute summer	109.066	30.862	100 year +40% CC 15 minute summer	368.854	104.373
2 year 15 minute winter	76.538	30.862	100 year +40% CC 15 minute winter	258.845	104.373
2 year 30 minute summer	73.782	20.878	100 year +40% CC 30 minute summer	255.101	72.185
2 year 30 minute winter	51.777	20.878	100 year +40% CC 30 minute winter	179.018	72.185
2 year 60 minute summer	51.720	13.668	100 year +40% CC 60 minute summer	180.954	47.821
2 year 60 minute winter	34.361	13.668	100 year +40% CC 60 minute winter	120.222	47.821
2 year 120 minute summer	33.252	8.787	100 year +40% CC 120 minute summer	116.088	30.679
2 year 120 minute winter	22.092	8.787	100 year +40% CC 120 minute winter	77.126	30.679
2 year 180 minute summer	26.258	6.757	100 year +40% CC 180 minute summer	90.626	23.321
2 year 180 minute winter	17.069	6.757	100 year +40% CC 180 minute winter	58.909	23.321
2 year 240 minute summer	21.199	5.602	100 year +40% CC 240 minute summer	72.104	19.055
2 year 240 minute winter	14.084	5.602	100 year +40% CC 240 minute winter	47.904	19.055
2 year 360 minute summer	16.686	4.294	100 year +40% CC 360 minute summer	55.175	14.198
2 year 360 minute winter	10.846	4.294	100 year +40% CC 360 minute winter	35.865	14.198
2 year 480 minute summer	13.415	3.545	100 year +40% CC 480 minute summer	43.619	11.527
2 year 480 minute winter	8.912	3.545	100 year +40% CC 480 minute winter	28.979	11.527
2 year 600 minute summer	11.170	3.055	100 year +40% CC 600 minute summer	35.816	9.797
2 year 600 minute winter	7.632	3.055	100 year +40% CC 600 minute winter	24.472	9.797
2 year 720 minute summer	10.095	2.706	100 year +40% CC 720 minute summer	31.983	8.572
2 year 720 minute winter	6.784	2.706	100 year +40% CC 720 minute winter	21.495	8.572
2 year 960 minute summer	8.482	2.233	100 year +40% CC 960 minute summer	26.337	6.935
2 year 960 minute winter	5.619	2.233	100 year +40% CC 960 minute winter	17.446	6.935
2 year 1440 minute summer	6.362	1.705	100 year +40% CC 1440 minute summer	19.151	5.133
2 year 1440 minute winter	4.276	1.705	100 year +40% CC 1440 minute winter	12.870	5.133

Results for 1 year Critical Storm Duration. Lowest mass balance: 96.39%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute winter	1	96	122.061	0.161	7.5	1.0504	0.0000	OK
180 minute winter	2	136	122.060	0.263	9.3	1.6677	0.0000	OK
120 minute winter	3	98	122.060	0.338	9.6	2.0384	0.0000	OK
15 minute winter	4	10	125.570	0.070	8.6	0.1992	0.0000	OK
120 minute winter	5	98	122.060	0.316	6.7	1.9191	0.0000	OK
15 minute summer	6	1	122.711	0.000	0.0	0.0000	0.0000	OK
120 minute winter	7	98	122.060	0.378	9.5	2.1653	0.0000	OK
120 minute winter	8	98	122.060	0.437	8.0	2.8601	0.0000	SURCHARGED
480 minute winter	9	464	118.233	0.333	5.1	1.9091	0.0000	OK
480 minute winter	10	464	118.233	0.379	5.5	2.7731	0.0000	OK
480 minute winter	11	464	118.233	0.449	5.7	2.7894	0.0000	SURCHARGED
15 minute winter	12	10	116.556	0.040	9.2	0.0865	0.0000	OK
15 minute winter	13	10	116.431	0.057	11.9	0.1413	0.0000	OK
720 minute winter	14	435	113.299	0.937	7.2	5.4055	0.0000	OK
720 minute winter	15	435	113.299	0.996	7.5	5.9581	0.0000	OK
720 minute winter	16	435	113.299	1.065	7.8	6.4795	0.0000	OK
720 minute winter	17	435	113.299	1.093	7.7	6.2566	0.0000	SURCHARGED
720 minute winter	18	435	113.144	0.961	7.7	1.6986	0.0000	SURCHARGED
15 minute summer	19	1	113.139	1.000	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)
120 minute winter	1	1.000	2	7.5	0.360	0.004	5.6064	
180 minute winter	2	1.001	3	6.6	0.352	0.003	6.6216	
120 minute winter	3	1.002	7	6.5	0.286	0.003	4.4911	
15 minute winter	4	2.000	5	8.3	0.818	0.197	0.1824	
120 minute winter	5	2.001	7	4.8	0.265	0.002	6.7350	
15 minute summer	6	3.000	7	0.0	0.000	0.000	0.0000	
120 minute winter	7	1.003	8	4.6	0.201	0.002	7.9944	
120 minute winter	8	Hydro-Brake®	9	5.1				
480 minute winter	9	1.005	10	5.0	0.338	0.002	5.1438	
480 minute winter	10	1.006	11	5.0	0.156	0.002	9.6022	
480 minute winter	11	Hydro-Brake®	12	5.1				
15 minute winter	12	1.008	14	9.1	1.672	0.037	0.0982	
15 minute winter	13	4.000	14	11.5	1.250	0.078	0.3952	
720 minute winter	14	1.009	15	6.8	0.296	0.003	22.8876	
720 minute winter	15	1.010	16	7.3	0.187	0.003	28.3904	
720 minute winter	16	1.011	17	7.7	0.112	0.004	11.9044	
720 minute winter	17	Hydro-Brake®	18	7.7				
720 minute winter	18	Orifice	19	7.7				147.3

Results for 2 year Critical Storm Duration. Lowest mass balance: 96.39%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
180 minute winter	1	144	122.152	0.252	7.3	1.6456	0.0000	OK
180 minute winter	2	144	122.152	0.355	10.4	2.2541	0.0000	OK
180 minute winter	3	144	122.152	0.430	7.8	2.5939	0.0000	OK
15 minute winter	4	10	125.581	0.081	11.1	0.2289	0.0000	OK
180 minute winter	5	140	122.152	0.408	6.4	2.4725	0.0000	OK
15 minute summer	6	1	122.711	0.000	0.0	0.0000	0.0000	OK
180 minute winter	7	144	122.152	0.470	8.1	2.6892	0.0000	OK
180 minute winter	8	140	122.152	0.529	7.4	3.4570	0.0000	SURCHARGED
600 minute winter	9	600	118.333	0.433	5.1	2.4807	0.0000	OK
600 minute winter	10	600	118.333	0.479	5.6	3.5028	0.0000	OK
600 minute winter	11	600	118.333	0.549	5.8	3.4091	0.0000	SURCHARGED
15 minute winter	12	10	116.559	0.043	10.8	0.0935	0.0000	OK
15 minute winter	13	10	116.439	0.065	15.4	0.1611	0.0000	OK
960 minute summer	14	540	113.334	0.972	7.9	5.6082	0.0000	OK
960 minute summer	15	540	113.334	1.031	8.4	6.1687	0.0000	OK
960 minute summer	16	540	113.334	1.100	9.2	6.6972	0.0000	OK
960 minute summer	17	540	113.334	1.128	12.9	6.4574	0.0000	SURCHARGED
960 minute summer	18	540	113.145	0.962	8.3	1.7002	0.0000	SURCHARGED
15 minute summer	19	1	113.139	1.000	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)
180 minute winter	1	1.000	2	6.4	0.329	0.003	9.2945	
180 minute winter	2	1.001	3	6.6	0.330	0.003	9.6112	
180 minute winter	3	1.002	7	4.9	0.280	0.002	6.1424	
15 minute winter	4	2.000	5	10.8	0.875	0.254	0.2203	
180 minute winter	5	2.001	7	4.4	0.243	0.002	9.2842	
15 minute summer	6	3.000	7	0.0	0.000	0.000	0.0000	
180 minute winter	7	1.003	8	4.7	0.181	0.002	10.4992	
180 minute winter	8	Hydro-Brake®	9	5.1				
600 minute winter	9	1.005	10	5.0	0.335	0.002	7.2151	
600 minute winter	10	1.006	11	5.0	0.158	0.002	12.8291	
600 minute winter	11	Hydro-Brake®	12	5.1				
15 minute winter	12	1.008	14	10.7	1.751	0.043	0.1101	
15 minute winter	13	4.000	14	14.9	1.347	0.101	0.4762	
960 minute summer	14	1.009	15	7.5	0.275	0.004	23.6453	
960 minute summer	15	1.010	16	8.7	0.171	0.004	29.1725	
960 minute summer	16	1.011	17	12.9	0.197	0.006	12.1679	
960 minute summer	17	Hydro-Brake®	18	8.3				
960 minute summer	18	Orifice	19	8.3				189.5

Results for 30 year Critical Storm Duration. Lowest mass balance: 96.39%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
240 minute winter	1	236	122.621	0.721	11.3	4.7014	0.0000	OK
240 minute winter	2	236	122.621	0.824	13.9	5.2327	0.0000	OK
240 minute winter	3	232	122.621	0.899	9.5	5.4255	0.0000	OK
15 minute winter	4	10	125.617	0.117	20.9	0.3310	0.0000	OK
240 minute winter	5	232	122.621	0.877	10.0	5.3192	0.0000	OK
15 minute summer	6	1	122.711	0.000	0.0	0.0000	0.0000	OK
240 minute winter	7	232	122.621	0.939	10.1	5.3766	0.0000	OK
240 minute winter	8	232	122.621	0.998	8.7	6.5271	0.0000	SURCHARGED
1440 minute winter	9	1440	119.226	1.326	5.2	7.5911	0.0000	SURCHARGED
1440 minute winter	10	1440	119.227	1.373	5.6	10.0349	0.0000	SURCHARGED
1440 minute winter	11	1440	119.224	1.440	8.0	8.9364	0.0000	SURCHARGED
15 minute winter	12	10	116.570	0.054	16.8	0.1168	0.0000	OK
15 minute winter	13	10	116.465	0.091	29.0	0.2246	0.0000	OK
600 minute winter	14	390	113.953	1.591	10.5	9.1823	0.0000	SURCHARGED
600 minute winter	15	390	113.953	1.650	13.7	9.8725	0.0000	SURCHARGED
600 minute winter	16	390	113.953	1.719	13.5	10.4595	0.0000	SURCHARGED
600 minute winter	17	390	113.954	1.748	16.8	10.0068	0.0000	SURCHARGED
960 minute summer	18	585	113.148	0.965	10.0	1.7051	0.0000	SURCHARGED
15 minute summer	19	1	113.139	1.000	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)
240 minute winter	1	1.000	2	7.0	0.289	0.003	31.6181	
240 minute winter	2	1.001	3	7.5	0.342	0.004	25.9550	
240 minute winter	3	1.002	7	4.5	0.299	0.002	14.7531	
15 minute winter	4	2.000	5	20.4	1.028	0.481	0.3548	
240 minute winter	5	2.001	7	6.7	0.303	0.003	22.7675	
15 minute summer	6	3.000	7	0.0	0.000	0.000	0.0000	
240 minute winter	7	1.003	8	4.5	0.189	0.002	23.0665	
240 minute winter	8	Hydro-Brake®	9	5.1				
1440 minute winter	9	1.005	10	4.9	0.325	0.002	20.6751	
1440 minute winter	10	1.006	11	7.9	0.136	0.004	31.3338	
1440 minute winter	11	Hydro-Brake®	12	5.1				
15 minute winter	12	1.008	14	16.7	1.985	0.067	0.1510	
15 minute winter	13	4.000	14	28.3	1.607	0.191	0.7559	
600 minute winter	14	1.009	15	12.1	0.331	0.006	26.5317	
600 minute winter	15	1.010	16	12.0	0.206	0.006	31.1005	
600 minute winter	16	1.011	17	16.8	0.216	0.008	12.5673	
600 minute winter	17	Hydro-Brake®	18	10.0				
960 minute summer	18	Orifice	19	10.0				326.0

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 96.39%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
480 minute winter	1	456	123.934	2.034	12.5	13.2653	0.0000	SURCHARGED
480 minute winter	2	456	123.934	2.137	18.2	13.5762	0.0000	SURCHARGED
480 minute winter	3	464	123.936	2.214	18.9	13.3650	0.0000	FLOOD RISK
15 minute winter	4	10	125.676	0.176	37.4	0.4993	0.0000	OK
480 minute winter	5	456	123.937	2.193	11.0	13.3033	0.0000	SURCHARGED
480 minute winter	6	456	123.940	1.229	29.3	90.4236	0.0000	SURCHARGED
480 minute winter	7	456	123.935	2.253	30.0	12.9009	0.0000	SURCHARGED
480 minute winter	8	456	123.937	2.314	18.5	15.1308	0.0000	FLOOD RISK
720 minute winter	9	705	120.406	2.506	7.0	14.3474	0.0000	SURCHARGED
720 minute winter	10	705	120.404	2.550	11.1	18.6387	0.0000	SURCHARGED
720 minute winter	11	705	120.404	2.620	11.0	16.2609	0.0000	FLOOD RISK
15 minute winter	12	10	116.585	0.069	26.8	0.1486	0.0000	OK
15 minute winter	13	10	116.500	0.126	52.1	0.3109	0.0000	OK
600 minute winter	14	600	114.370	2.008	14.2	11.5882	0.0000	SURCHARGED
720 minute winter	15	690	114.370	2.067	17.0	12.3699	0.0000	SURCHARGED
720 minute winter	16	705	114.370	2.136	18.0	90.7812	0.0000	SURCHARGED
720 minute winter	17	690	114.370	2.164	31.3	12.3909	0.0000	FLOOD RISK
1440 minute summer	18	690	113.148	0.965	10.0	1.7051	0.0000	SURCHARGED
15 minute summer	19	1	113.139	1.000	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)
480 minute winter	1	1.000	2	10.6	0.268	0.005	46.5060	
480 minute winter	2	1.001	3	16.5	0.335	0.008	33.7956	
480 minute winter	3	1.002	7	18.8	0.284	0.009	17.9496	
15 minute winter	4	2.000	5	36.5	1.158	0.861	0.5639	
480 minute winter	5	2.001	7	10.3	0.252	0.005	28.0483	
480 minute winter	6	3.000	7	-29.3	-1.111	-0.727	0.3521	
480 minute winter	7	1.003	8	18.3	0.171	0.009	26.6782	
480 minute winter	8	Hydro-Brake®	9	6.4				
720 minute winter	9	1.005	10	10.6	0.342	0.005	20.6751	
720 minute winter	10	1.006	11	11.0	0.148	0.005	31.3338	
720 minute winter	11	Hydro-Brake®	12	6.7				
15 minute winter	12	1.008	14	26.6	2.260	0.107	0.2115	
15 minute winter	13	4.000	14	51.2	1.879	0.346	1.1685	
600 minute winter	14	1.009	15	13.9	0.309	0.007	26.5317	
720 minute winter	15	1.010	16	15.8	0.248	0.007	31.1005	
720 minute winter	16	1.011	17	31.3	0.209	0.015	12.5673	
720 minute winter	17	Hydro-Brake®	18	9.9				
1440 minute summer	18	Orifice	19	10.0				623.8

Results for 1 year 15 minute summer. 255 minute analysis at 1 minute timestep. Mass balance: 98.95%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	1	11	121.978	0.078	19.1	0.5083	0.0000	OK
15 minute summer	2	18	121.946	0.148	30.0	0.9431	0.0000	OK
15 minute summer	3	16	121.948	0.226	33.6	1.3623	0.0000	OK
15 minute summer	4	10	125.569	0.068	8.2	0.1944	0.0000	OK
15 minute summer	5	17	121.948	0.204	18.2	1.2345	0.0000	OK
15 minute summer	6	1	122.711	0.000	0.0	0.0000	0.0000	OK
15 minute summer	7	16	121.942	0.260	35.9	1.4884	0.0000	OK
15 minute summer	8	16	121.947	0.324	25.1	2.1169	0.0000	SURCHARGED
15 minute summer	9	19	117.984	0.084	5.1	0.4831	0.0000	OK
15 minute summer	10	20	117.984	0.130	10.4	0.9468	0.0000	OK
15 minute summer	11	19	117.983	0.199	12.5	1.2325	0.0000	OK
15 minute summer	12	10	116.555	0.039	8.9	0.0846	0.0000	OK
15 minute summer	13	10	116.430	0.056	11.4	0.1383	0.0000	OK
15 minute summer	14	19	112.505	0.143	21.0	0.8225	0.0000	OK
15 minute summer	15	20	112.513	0.210	26.6	1.2550	0.0000	OK
15 minute summer	16	20	112.506	0.271	27.8	1.6523	0.0000	OK
15 minute summer	17	20	112.506	0.300	14.7	1.7173	0.0000	SURCHARGED
15 minute summer	18	20	112.494	0.311	1.6	0.5490	0.0000	SURCHARGED
15 minute summer	19	1	113.139	1.000	0.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	1	1.000	2	18.5	0.506	0.009	1.9010	
15 minute summer	2	1.001	3	30.1	0.602	0.014	3.3111	
15 minute summer	3	1.002	7	23.2	0.460	0.011	2.5964	
15 minute summer	4	2.000	5	8.0	0.809	0.188	0.1766	
15 minute summer	5	2.001	7	16.3	0.475	0.008	3.7542	
15 minute summer	6	3.000	7	0.0	0.000	0.000	0.0000	
15 minute summer	7	1.003	8	14.3	0.255	0.007	5.0220	
15 minute summer	8	Hydro-Brake®	9	5.1				
15 minute summer	9	1.005	10	6.3	0.311	0.003	0.8867	
15 minute summer	10	1.006	11	7.5	0.203	0.004	2.5831	
15 minute summer	11	Hydro-Brake®	12	4.6				
15 minute summer	12	1.008	14	8.8	1.653	0.035	0.0954	
15 minute summer	13	4.000	14	11.0	1.235	0.075	0.3837	
15 minute summer	14	1.009	15	21.5	0.574	0.010	2.4344	
15 minute summer	15	1.010	16	22.7	0.520	0.011	4.4528	
15 minute summer	16	1.011	17	14.7	0.429	0.007	2.2902	
15 minute summer	17	Hydro-Brake®	18	1.6				
15 minute summer	18	Orifice	19	0.0				0.0

Results for 1 year 15 minute winter. 255 minute analysis at 1 minute timestep. Mass balance: 99.10%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1	11	121.980	0.080	20.1	0.5190	0.0000	OK
15 minute winter	2	19	121.967	0.170	31.5	1.0808	0.0000	OK
15 minute winter	3	17	121.965	0.243	34.7	1.4694	0.0000	OK
15 minute winter	4	10	125.570	0.070	8.6	0.1992	0.0000	OK
15 minute winter	5	16	121.969	0.225	17.5	1.3626	0.0000	OK
15 minute winter	6	1	122.711	0.000	0.0	0.0000	0.0000	OK
15 minute winter	7	16	121.964	0.282	34.0	1.6171	0.0000	OK
15 minute winter	8	20	121.966	0.343	25.7	2.2431	0.0000	SURCHARGED
15 minute winter	9	20	117.998	0.098	5.1	0.5615	0.0000	OK
15 minute winter	10	19	117.996	0.142	11.1	1.0355	0.0000	OK
15 minute winter	11	20	117.993	0.209	13.7	1.2991	0.0000	OK
15 minute winter	12	10	116.556	0.040	9.2	0.0865	0.0000	OK
15 minute winter	13	10	116.431	0.057	11.9	0.1413	0.0000	OK
15 minute winter	14	20	112.528	0.166	21.9	0.9590	0.0000	OK
15 minute winter	15	19	112.524	0.221	28.2	1.3206	0.0000	OK
15 minute winter	16	20	112.529	0.295	29.4	1.7960	0.0000	OK
15 minute winter	17	20	112.533	0.327	10.6	1.8708	0.0000	SURCHARGED
15 minute winter	18	20	112.513	0.330	1.5	0.5834	0.0000	SURCHARGED
15 minute winter	19	1	113.139	1.000	0.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	1	1.000	2	19.3	0.514	0.009	2.4767	
15 minute winter	2	1.001	3	31.0	0.607	0.015	3.8880	
15 minute winter	3	1.002	7	21.2	0.485	0.010	2.8937	
15 minute winter	4	2.000	5	8.3	0.818	0.197	0.1824	
15 minute winter	5	2.001	7	14.4	0.505	0.007	4.3248	
15 minute winter	6	3.000	7	0.0	0.000	0.000	0.0000	
15 minute winter	7	1.003	8	20.3	0.246	0.010	5.5104	
15 minute winter	8	Hydro-Brake®	9	5.1				
15 minute winter	9	1.005	10	7.9	0.313	0.004	1.0571	
15 minute winter	10	1.006	11	8.0	0.196	0.004	2.8599	
15 minute winter	11	Hydro-Brake®	12	4.7				
15 minute winter	12	1.008	14	9.1	1.672	0.037	0.0982	
15 minute winter	13	4.000	14	11.5	1.250	0.078	0.3952	
15 minute winter	14	1.009	15	22.9	0.582	0.011	2.7552	
15 minute winter	15	1.010	16	24.1	0.499	0.011	4.8965	
15 minute winter	16	1.011	17	10.6	0.458	0.005	2.5812	
15 minute winter	17	Hydro-Brake®	18	1.5				
15 minute winter	18	Orifice	19	0.0				0.0

Results for 1 year 30 minute summer. 270 minute analysis at 1 minute timestep. Mass balance: 99.29%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
30 minute summer	1	29	121.988	0.088	17.7	0.5751	0.0000	OK
30 minute summer	2	33	121.985	0.188	28.4	1.1939	0.0000	OK
30 minute summer	3	31	121.985	0.263	29.5	1.5852	0.0000	OK
30 minute summer	4	18	125.566	0.066	7.6	0.1886	0.0000	OK
30 minute summer	5	32	121.986	0.242	15.8	1.4650	0.0000	OK
30 minute summer	6	1	122.711	0.000	0.0	0.0000	0.0000	OK
30 minute summer	7	32	121.982	0.300	21.2	1.7185	0.0000	OK
30 minute summer	8	30	121.983	0.360	17.7	2.3562	0.0000	SURCHARGED
30 minute summer	9	34	118.026	0.126	5.1	0.7192	0.0000	OK
30 minute summer	10	34	118.025	0.171	9.4	1.2483	0.0000	OK
30 minute summer	11	35	118.026	0.242	13.1	1.5040	0.0000	OK
30 minute summer	12	18	116.555	0.039	8.9	0.0851	0.0000	OK
30 minute summer	13	18	116.429	0.055	10.6	0.1351	0.0000	OK
30 minute summer	14	35	112.594	0.232	20.6	1.3372	0.0000	OK
30 minute summer	15	35	112.594	0.291	24.5	1.7387	0.0000	OK
30 minute summer	16	35	112.594	0.360	21.8	2.1926	0.0000	OK
30 minute summer	17	35	112.594	0.388	9.3	2.2235	0.0000	SURCHARGED
30 minute summer	18	35	112.581	0.398	0.9	0.7029	0.0000	SURCHARGED
30 minute summer	19	1	113.139	1.000	0.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
30 minute summer	1	1.000	2	17.4	0.508	0.008	3.0285	
30 minute summer	2	1.001	3	26.0	0.503	0.012	4.3777	
30 minute summer	3	1.002	7	14.6	0.375	0.007	3.1956	
30 minute summer	4	2.000	5	7.6	0.796	0.179	0.1699	
30 minute summer	5	2.001	7	9.1	0.407	0.004	4.7496	
30 minute summer	6	3.000	7	0.0	0.000	0.000	0.0000	
30 minute summer	7	1.003	8	9.4	0.233	0.004	5.9625	
30 minute summer	8	Hydro-Brake®	9	5.1				
30 minute summer	9	1.005	10	7.8	0.365	0.004	1.4699	
30 minute summer	10	1.006	11	8.5	0.208	0.004	3.6059	
30 minute summer	11	Hydro-Brake®	12	4.8				
30 minute summer	12	1.008	14	8.9	1.657	0.035	0.0960	
30 minute summer	13	4.000	14	10.5	1.217	0.071	0.3716	
30 minute summer	14	1.009	15	19.5	0.537	0.009	4.2654	
30 minute summer	15	1.010	16	17.1	0.380	0.008	6.8231	
30 minute summer	16	1.011	17	9.3	0.374	0.004	3.3447	
30 minute summer	17	Hydro-Brake®	18	0.9				
30 minute summer	18	Orifice	19	0.0				0.0

Results for 1 year 30 minute winter. 270 minute analysis at 1 minute timestep. Mass balance: 99.43%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
30 minute winter	1	28	122.013	0.113	16.1	0.7392	0.0000	OK
30 minute winter	2	32	122.011	0.213	25.9	1.3558	0.0000	OK
30 minute winter	3	31	122.009	0.287	25.5	1.7307	0.0000	OK
30 minute winter	4	18	125.563	0.063	6.9	0.1792	0.0000	OK
30 minute winter	5	30	122.011	0.267	14.3	1.6164	0.0000	OK
30 minute winter	6	1	122.711	0.000	0.0	0.0000	0.0000	OK
30 minute winter	7	33	122.009	0.327	19.9	1.8735	0.0000	OK
30 minute winter	8	30	122.012	0.389	15.8	2.5426	0.0000	SURCHARGED
30 minute winter	9	35	118.039	0.139	5.1	0.7983	0.0000	OK
30 minute winter	10	34	118.040	0.186	10.1	1.3560	0.0000	OK
30 minute winter	11	35	118.040	0.256	12.0	1.5880	0.0000	OK
30 minute winter	12	18	116.555	0.039	8.5	0.0831	0.0000	OK
30 minute winter	13	18	116.426	0.052	9.5	0.1281	0.0000	OK
30 minute winter	14	35	112.622	0.260	18.9	1.5027	0.0000	OK
30 minute winter	15	35	112.619	0.316	22.0	1.8892	0.0000	OK
30 minute winter	16	35	112.618	0.384	20.4	2.3345	0.0000	OK
30 minute winter	17	34	112.618	0.411	7.1	2.3562	0.0000	SURCHARGED
30 minute winter	18	35	112.606	0.423	0.9	0.7482	0.0000	SURCHARGED
30 minute winter	19	1	113.139	1.000	0.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
30 minute winter	1	1.000	2	15.9	0.491	0.008	3.8871	
30 minute winter	2	1.001	3	22.4	0.499	0.011	5.1159	
30 minute winter	3	1.002	7	14.3	0.401	0.007	3.6204	
30 minute winter	4	2.000	5	6.9	0.775	0.163	0.1584	
30 minute winter	5	2.001	7	9.5	0.433	0.005	5.4010	
30 minute winter	6	3.000	7	0.0	0.000	0.000	0.0000	
30 minute winter	7	1.003	8	10.5	0.244	0.005	6.6773	
30 minute winter	8	Hydro-Brake®	9	5.1				
30 minute winter	9	1.005	10	7.3	0.365	0.003	1.6716	
30 minute winter	10	1.006	11	7.5	0.206	0.004	3.9617	
30 minute winter	11	Hydro-Brake®	12	4.9				
30 minute winter	12	1.008	14	8.5	1.634	0.034	0.0929	
30 minute winter	13	4.000	14	9.5	1.179	0.064	0.3442	
30 minute winter	14	1.009	15	17.5	0.520	0.008	4.8993	
30 minute winter	15	1.010	16	16.1	0.406	0.008	7.5416	
30 minute winter	16	1.011	17	7.1	0.384	0.003	3.6348	
30 minute winter	17	Hydro-Brake®	18	0.9				
30 minute winter	18	Orifice	19	0.0				0.0

Results for 1 year 60 minute summer. 300 minute analysis at 1 minute timestep. Mass balance: 99.51%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute summer	1	59	122.012	0.112	14.0	0.7295	0.0000	OK
60 minute summer	2	55	122.012	0.215	22.6	1.3664	0.0000	OK
60 minute summer	3	53	122.010	0.288	19.8	1.7404	0.0000	OK
60 minute summer	4	33	125.559	0.059	6.0	0.1666	0.0000	OK
60 minute summer	5	54	122.011	0.267	12.4	1.6168	0.0000	OK
60 minute summer	6	1	122.711	0.000	0.0	0.0000	0.0000	OK
60 minute summer	7	54	122.010	0.328	16.0	1.8767	0.0000	OK
60 minute summer	8	56	122.011	0.387	11.6	2.5340	0.0000	SURCHARGED
60 minute summer	9	64	118.073	0.173	5.1	0.9898	0.0000	OK
60 minute summer	10	65	118.073	0.219	7.4	1.5989	0.0000	OK
60 minute summer	11	65	118.073	0.289	8.5	1.7947	0.0000	OK
60 minute summer	12	33	116.554	0.038	8.1	0.0814	0.0000	OK
60 minute summer	13	33	116.423	0.048	8.3	0.1197	0.0000	OK
60 minute summer	14	65	112.726	0.364	17.3	2.1000	0.0000	OK
60 minute summer	15	65	112.726	0.423	17.3	2.5305	0.0000	OK
60 minute summer	16	65	112.726	0.492	13.0	2.9914	0.0000	OK
60 minute summer	17	65	112.726	0.519	4.2	2.9746	0.0000	SURCHARGED
60 minute summer	18	65	112.714	0.531	0.5	0.9379	0.0000	SURCHARGED
60 minute summer	19	1	113.139	1.000	0.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
60 minute summer	1	1.000	2	13.9	0.460	0.007	3.8780	
60 minute summer	2	1.001	3	17.2	0.391	0.008	5.1438	
60 minute summer	3	1.002	7	10.8	0.312	0.005	3.6357	
60 minute summer	4	2.000	5	6.0	0.746	0.141	0.1432	
60 minute summer	5	2.001	7	7.9	0.359	0.004	5.4150	
60 minute summer	6	3.000	7	0.0	0.000	0.000	0.0000	
60 minute summer	7	1.003	8	6.1	0.211	0.003	6.6691	
60 minute summer	8	Hydro-Brake®	9	5.1				
60 minute summer	9	1.005	10	5.4	0.363	0.003	2.1995	
60 minute summer	10	1.006	11	5.4	0.207	0.003	4.8495	
60 minute summer	11	Hydro-Brake®	12	4.9				
60 minute summer	12	1.008	14	8.1	1.613	0.032	0.0902	
60 minute summer	13	4.000	14	8.3	1.134	0.056	0.3126	
60 minute summer	14	1.009	15	13.4	0.422	0.006	7.5687	
60 minute summer	15	1.010	16	9.3	0.317	0.004	10.8884	
60 minute summer	16	1.011	17	4.2	0.350	0.002	5.0290	
60 minute summer	17	Hydro-Brake®	18	0.5				
60 minute summer	18	Orifice	19	0.0				0.0

Results for 1 year 60 minute winter. 300 minute analysis at 1 minute timestep. Mass balance: 99.59%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute winter	1	60	122.045	0.145	11.3	0.9448	0.0000	OK
60 minute winter	2	57	122.043	0.246	18.2	1.5622	0.0000	OK
60 minute winter	3	59	122.043	0.321	15.5	1.9372	0.0000	OK
60 minute winter	4	33	125.552	0.052	4.8	0.1484	0.0000	OK
60 minute winter	5	58	122.043	0.299	10.0	1.8136	0.0000	OK
60 minute winter	6	1	122.711	0.000	0.0	0.0000	0.0000	OK
60 minute winter	7	59	122.043	0.361	14.9	2.0658	0.0000	OK
60 minute winter	8	59	122.043	0.420	10.4	2.7450	0.0000	SURCHARGED
60 minute winter	9	65	118.091	0.191	5.1	1.0941	0.0000	OK
60 minute winter	10	65	118.091	0.237	7.3	1.7314	0.0000	OK
60 minute winter	11	64	118.091	0.307	7.8	1.9044	0.0000	SURCHARGED
60 minute winter	12	34	116.552	0.036	7.5	0.0784	0.0000	OK
60 minute winter	13	33	116.418	0.044	6.7	0.1078	0.0000	OK
60 minute winter	14	65	112.755	0.393	14.9	2.2692	0.0000	OK
60 minute winter	15	65	112.755	0.452	14.8	2.7048	0.0000	OK
60 minute winter	16	65	112.755	0.521	10.9	3.1730	0.0000	OK
60 minute winter	17	65	112.755	0.549	4.3	3.1459	0.0000	SURCHARGED
60 minute winter	18	65	112.744	0.560	0.5	0.9904	0.0000	SURCHARGED
60 minute winter	19	1	113.139	1.000	0.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
60 minute winter	1	1.000	2	11.3	0.415	0.005	5.0089	
60 minute winter	2	1.001	3	13.5	0.403	0.006	6.0919	
60 minute winter	3	1.002	7	9.2	0.335	0.004	4.1952	
60 minute winter	4	2.000	5	4.8	0.702	0.113	0.1219	
60 minute winter	5	2.001	7	7.7	0.379	0.004	6.2663	
60 minute winter	6	3.000	7	0.0	0.000	0.000	0.0000	
60 minute winter	7	1.003	8	6.8	0.226	0.003	7.5276	
60 minute winter	8	Hydro-Brake®	9	5.1				
60 minute winter	9	1.005	10	5.3	0.365	0.003	2.4976	
60 minute winter	10	1.006	11	5.1	0.210	0.002	5.3397	
60 minute winter	11	Hydro-Brake®	12	5.0				
60 minute winter	12	1.008	14	7.5	1.577	0.030	0.0855	
60 minute winter	13	4.000	14	6.7	1.066	0.045	0.2690	
60 minute winter	14	1.009	15	11.7	0.441	0.006	8.3481	
60 minute winter	15	1.010	16	8.3	0.338	0.004	11.8384	
60 minute winter	16	1.011	17	4.3	0.357	0.002	5.4241	
60 minute winter	17	Hydro-Brake®	18	0.5				
60 minute winter	18	Orifice	19	0.0				0.0

Results for 1 year 120 minute summer. 360 minute analysis at 2 minute timestep. Mass balance: 99.65%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute summer	1	92	122.026	0.126	9.7	0.8200	0.0000	OK
120 minute summer	2	92	122.026	0.229	15.8	1.4547	0.0000	OK
120 minute summer	3	94	122.025	0.303	12.6	1.8295	0.0000	OK
120 minute summer	4	64	125.549	0.049	4.2	0.1386	0.0000	OK
120 minute summer	5	90	122.025	0.281	8.7	1.7067	0.0000	OK
120 minute summer	6	2	122.711	0.000	0.0	0.0000	0.0000	OK
120 minute summer	7	90	122.025	0.343	12.4	1.9647	0.0000	OK
120 minute summer	8	90	122.025	0.402	9.7	2.6314	0.0000	SURCHARGED
120 minute summer	9	126	118.120	0.220	5.1	1.2601	0.0000	OK
120 minute summer	10	126	118.120	0.266	6.5	1.9444	0.0000	OK
120 minute summer	11	126	118.120	0.336	6.9	2.0855	0.0000	SURCHARGED
120 minute summer	12	64	116.552	0.035	7.2	0.0766	0.0000	OK
120 minute summer	13	64	116.415	0.041	5.8	0.1006	0.0000	OK
120 minute summer	14	126	112.947	0.585	13.5	3.3765	0.0000	OK
120 minute summer	15	126	112.947	0.644	12.6	3.8542	0.0000	OK
120 minute summer	16	126	112.947	0.713	8.3	4.3398	0.0000	OK
120 minute summer	17	126	112.947	0.741	2.8	4.2434	0.0000	SURCHARGED
120 minute summer	18	126	112.935	0.752	0.4	1.3296	0.0000	SURCHARGED
120 minute summer	19	2	113.139	1.000	0.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
120 minute summer	1	1.000	2	9.7	0.387	0.005	4.3768	
120 minute summer	2	1.001	3	10.7	0.353	0.005	5.5880	
120 minute summer	3	1.002	7	7.7	0.267	0.004	3.8909	
120 minute summer	4	2.000	5	4.2	0.676	0.099	0.1108	
120 minute summer	5	2.001	7	5.4	0.248	0.003	5.8051	
120 minute summer	6	3.000	7	0.0	0.000	0.000	0.0000	
120 minute summer	7	1.003	8	5.6	0.192	0.003	7.0654	
120 minute summer	8	Hydro-Brake®	9	5.1				
120 minute summer	9	1.005	10	5.1	0.348	0.002	2.9975	
120 minute summer	10	1.006	11	5.1	0.190	0.002	6.1640	
120 minute summer	11	Hydro-Brake®	12	5.0				
120 minute summer	12	1.008	14	7.1	1.554	0.029	0.0826	
120 minute summer	13	4.000	14	5.8	1.022	0.039	0.2431	
120 minute summer	14	1.009	15	9.9	0.374	0.005	13.6775	
120 minute summer	15	1.010	16	5.7	0.271	0.003	18.1364	
120 minute summer	16	1.011	17	2.8	0.262	0.001	7.9676	
120 minute summer	17	Hydro-Brake®	18	0.4				
120 minute summer	18	Orifice	19	0.0				0.0

Results for 1 year 120 minute winter. 360 minute analysis at 2 minute timestep. Mass balance: 99.70%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute winter	1	96	122.061	0.161	7.5	1.0504	0.0000	OK
120 minute winter	2	96	122.060	0.263	12.2	1.6676	0.0000	OK
120 minute winter	3	98	122.060	0.338	9.6	2.0384	0.0000	OK
120 minute winter	4	64	125.543	0.043	3.2	0.1209	0.0000	OK
120 minute winter	5	98	122.060	0.316	6.7	1.9191	0.0000	OK
120 minute winter	6	2	122.711	0.000	0.0	0.0000	0.0000	OK
120 minute winter	7	98	122.060	0.378	9.5	2.1653	0.0000	OK
120 minute winter	8	98	122.060	0.437	8.0	2.8601	0.0000	SURCHARGED
120 minute winter	9	126	118.146	0.246	5.1	1.4104	0.0000	OK
120 minute winter	10	126	118.146	0.292	6.2	2.1364	0.0000	OK
120 minute winter	11	126	118.146	0.362	6.6	2.2487	0.0000	SURCHARGED
120 minute winter	12	64	116.550	0.034	6.7	0.0743	0.0000	OK
120 minute winter	13	64	116.410	0.036	4.5	0.0891	0.0000	OK
120 minute winter	14	126	112.986	0.624	11.7	3.6035	0.0000	OK
120 minute winter	15	126	112.986	0.683	10.6	4.0894	0.0000	OK
120 minute winter	16	126	112.986	0.752	7.4	4.5787	0.0000	OK
120 minute winter	17	126	112.986	0.780	2.5	4.4682	0.0000	SURCHARGED
120 minute winter	18	126	112.975	0.792	0.4	1.3994	0.0000	SURCHARGED
120 minute winter	19	2	113.139	1.000	0.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
120 minute winter	1	1.000	2	7.5	0.360	0.004	5.6064	
120 minute winter	2	1.001	3	8.5	0.355	0.004	6.6188	
120 minute winter	3	1.002	7	6.5	0.286	0.003	4.4911	
120 minute winter	4	2.000	5	3.2	0.625	0.076	0.0913	
120 minute winter	5	2.001	7	4.8	0.265	0.002	6.7350	
120 minute winter	6	3.000	7	0.0	0.000	0.000	0.0000	
120 minute winter	7	1.003	8	4.6	0.201	0.002	7.9944	
120 minute winter	8	Hydro-Brake®	9	5.1				
120 minute winter	9	1.005	10	5.1	0.357	0.002	3.4687	
120 minute winter	10	1.006	11	5.1	0.197	0.002	6.9301	
120 minute winter	11	Hydro-Brake®	12	5.1				
120 minute winter	12	1.008	14	6.7	1.526	0.027	0.0790	
120 minute winter	13	4.000	14	4.5	0.947	0.030	0.2037	
120 minute winter	14	1.009	15	8.5	0.388	0.004	14.7824	
120 minute winter	15	1.010	16	5.5	0.302	0.003	19.4129	
120 minute winter	16	1.011	17	2.5	0.268	0.001	8.4748	
120 minute winter	17	Hydro-Brake®	18	0.4				
120 minute winter	18	Orifice	19	0.0				0.0

Results for 1 year 180 minute summer. 420 minute analysis at 4 minute timestep. Mass balance: 99.70%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
180 minute summer	1	124	122.029	0.129	7.6	0.8413	0.0000	OK
180 minute summer	2	128	122.028	0.231	12.3	1.4668	0.0000	OK
180 minute summer	3	128	122.027	0.305	8.8	1.8413	0.0000	OK
180 minute summer	4	96	125.543	0.043	3.2	0.1209	0.0000	OK
180 minute summer	5	128	122.027	0.283	6.7	1.7144	0.0000	OK
180 minute summer	6	4	122.711	0.000	0.0	0.0000	0.0000	OK
180 minute summer	7	128	122.027	0.345	8.9	1.9744	0.0000	OK
180 minute summer	8	128	122.027	0.404	7.9	2.6408	0.0000	SURCHARGED
180 minute summer	9	188	118.145	0.245	5.1	1.4020	0.0000	OK
180 minute summer	10	188	118.145	0.291	6.3	2.1257	0.0000	OK
180 minute summer	11	188	118.145	0.361	6.5	2.2396	0.0000	SURCHARGED
180 minute summer	12	96	116.550	0.034	6.7	0.0743	0.0000	OK
180 minute summer	13	96	116.410	0.036	4.5	0.0891	0.0000	OK
180 minute summer	14	188	113.148	0.786	11.7	4.5331	0.0000	OK
180 minute summer	15	188	113.148	0.845	10.7	5.0535	0.0000	OK
180 minute summer	16	188	113.148	0.914	7.1	5.5596	0.0000	OK
180 minute summer	17	188	113.148	0.942	2.3	5.3911	0.0000	SURCHARGED
180 minute summer	18	188	113.136	0.953	0.3	1.6834	0.0000	SURCHARGED
180 minute summer	19	4	113.139	1.000	0.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
180 minute summer	1	1.000	2	7.6	0.347	0.004	4.4555	
180 minute summer	2	1.001	3	7.8	0.344	0.004	5.6488	
180 minute summer	3	1.002	7	5.8	0.259	0.003	3.9236	
180 minute summer	4	2.000	5	3.2	0.625	0.076	0.0913	
180 minute summer	5	2.001	7	4.5	0.228	0.002	5.8441	
180 minute summer	6	3.000	7	0.0	0.000	0.000	0.0000	
180 minute summer	7	1.003	8	4.7	0.177	0.002	7.1066	
180 minute summer	8	Hydro-Brake®	9	5.1				
180 minute summer	9	1.005	10	5.1	0.338	0.002	3.4416	
180 minute summer	10	1.006	11	5.1	0.171	0.002	6.8865	
180 minute summer	11	Hydro-Brake®	12	5.1				
180 minute summer	12	1.008	14	6.7	1.525	0.027	0.0789	
180 minute summer	13	4.000	14	4.5	0.947	0.030	0.2037	
180 minute summer	14	1.009	15	8.6	0.357	0.004	19.1877	
180 minute summer	15	1.010	16	5.1	0.249	0.002	24.4100	
180 minute summer	16	1.011	17	2.3	0.239	0.001	10.4269	
180 minute summer	17	Hydro-Brake®	18	0.3				
180 minute summer	18	Orifice	19	0.0				0.0

Results for 1 year 180 minute winter. 420 minute analysis at 4 minute timestep. Mass balance: 99.24%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
180 minute winter	1	136	122.059	0.158	5.8	1.0337	0.0000	OK
180 minute winter	2	136	122.060	0.263	9.3	1.6677	0.0000	OK
180 minute winter	3	136	122.060	0.338	7.4	2.0375	0.0000	OK
180 minute winter	4	96	125.538	0.038	2.5	0.1069	0.0000	OK
180 minute winter	5	136	122.059	0.315	5.2	1.9129	0.0000	OK
180 minute winter	6	4	122.711	0.000	0.0	0.0000	0.0000	OK
180 minute winter	7	136	122.059	0.377	7.6	2.1613	0.0000	OK
180 minute winter	8	140	122.059	0.436	7.1	2.8539	0.0000	SURCHARGED
180 minute winter	9	224	118.178	0.278	5.1	1.5918	0.0000	OK
180 minute winter	10	224	118.178	0.324	6.0	2.3679	0.0000	OK
180 minute winter	11	224	118.178	0.394	6.2	2.4454	0.0000	SURCHARGED
180 minute winter	12	96	116.550	0.034	6.4	0.0725	0.0000	OK
180 minute winter	13	96	116.406	0.032	3.5	0.0791	0.0000	OK
180 minute winter	14	308	113.246	0.884	10.3	5.0998	0.0000	OK
180 minute winter	15	308	113.246	0.943	9.3	5.6411	0.0000	OK
180 minute winter	16	308	113.246	1.012	6.1	6.1572	0.0000	OK
180 minute winter	17	308	113.246	1.040	5.1	5.9533	0.0000	SURCHARGED
180 minute winter	18	220	113.141	0.958	5.1	1.6934	0.0000	SURCHARGED
180 minute winter	19	4	113.139	1.000	5.1	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
180 minute winter	1	1.000	2	5.7	0.328	0.003	5.5628	
180 minute winter	2	1.001	3	6.6	0.352	0.003	6.6216	
180 minute winter	3	1.002	7	5.0	0.258	0.002	4.4835	
180 minute winter	4	2.000	5	2.5	0.583	0.059	0.0766	
180 minute winter	5	2.001	7	3.7	0.230	0.002	6.7118	
180 minute winter	6	3.000	7	0.0	0.000	0.000	0.0000	
180 minute winter	7	1.003	8	4.7	0.180	0.002	7.9715	
180 minute winter	8	Hydro-Brake®	9	5.1				
180 minute winter	9	1.005	10	5.1	0.345	0.002	4.0600	
180 minute winter	10	1.006	11	5.1	0.182	0.002	7.8818	
180 minute winter	11	Hydro-Brake®	12	5.1				
180 minute winter	12	1.008	14	6.4	1.503	0.026	0.0761	
180 minute winter	13	4.000	14	3.5	0.879	0.024	0.1708	
180 minute winter	14	1.009	15	7.7	0.363	0.004	21.6624	
180 minute winter	15	1.010	16	5.1	0.258	0.002	27.1064	
180 minute winter	16	1.011	17	5.1	0.234	0.002	11.4416	
180 minute winter	17	Hydro-Brake®	18	5.1				
180 minute winter	18	Orifice	19	5.1				58.2

Results for 1 year 240 minute summer. 480 minute analysis at 4 minute timestep. Mass balance: 99.10%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
240 minute summer	1	164	122.026	0.126	6.6	0.8223	0.0000	OK
240 minute summer	2	164	122.027	0.230	10.6	1.4623	0.0000	OK
240 minute summer	3	164	122.028	0.306	8.2	1.8444	0.0000	OK
240 minute summer	4	124	125.540	0.040	2.8	0.1125	0.0000	OK
240 minute summer	5	160	122.028	0.284	5.8	1.7206	0.0000	OK
240 minute summer	6	4	122.711	0.000	0.0	0.0000	0.0000	OK
240 minute summer	7	160	122.028	0.346	8.6	1.9791	0.0000	OK
240 minute summer	8	160	122.028	0.405	7.6	2.6473	0.0000	SURCHARGED
240 minute summer	9	248	118.162	0.262	5.1	1.5017	0.0000	OK
240 minute summer	10	248	118.162	0.308	6.0	2.2530	0.0000	OK
240 minute summer	11	248	118.162	0.378	6.3	2.3477	0.0000	SURCHARGED
240 minute summer	12	124	116.550	0.034	6.4	0.0725	0.0000	OK
240 minute summer	13	124	116.408	0.034	3.9	0.0830	0.0000	OK
240 minute summer	14	252	113.246	0.884	10.6	5.1033	0.0000	OK
240 minute summer	15	252	113.246	0.943	9.7	5.6447	0.0000	OK
240 minute summer	16	252	113.246	1.012	6.4	6.1608	0.0000	OK
240 minute summer	17	252	113.246	1.040	5.1	5.9567	0.0000	SURCHARGED
240 minute summer	18	252	113.141	0.958	5.1	1.6934	0.0000	SURCHARGED
240 minute summer	19	4	113.139	1.000	5.1	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
240 minute summer	1	1.000	2	6.5	0.334	0.003	4.4050	
240 minute summer	2	1.001	3	6.9	0.344	0.003	5.6468	
240 minute summer	3	1.002	7	5.3	0.255	0.003	3.9349	
240 minute summer	4	2.000	5	2.8	0.599	0.065	0.0823	
240 minute summer	5	2.001	7	3.5	0.199	0.002	5.8681	
240 minute summer	6	3.000	7	0.0	0.000	0.000	0.0000	
240 minute summer	7	1.003	8	4.6	0.190	0.002	7.1305	
240 minute summer	8	Hydro-Brake®	9	5.1				
240 minute summer	9	1.005	10	5.1	0.338	0.002	3.7631	
240 minute summer	10	1.006	11	5.1	0.178	0.002	7.4065	
240 minute summer	11	Hydro-Brake®	12	5.1				
240 minute summer	12	1.008	14	6.4	1.504	0.026	0.0761	
240 minute summer	13	4.000	14	3.9	0.905	0.026	0.1831	
240 minute summer	14	1.009	15	7.8	0.333	0.004	21.6769	
240 minute summer	15	1.010	16	5.2	0.233	0.002	27.1217	
240 minute summer	16	1.011	17	5.1	0.223	0.002	11.4472	
240 minute summer	17	Hydro-Brake®	18	5.1				
240 minute summer	18	Orifice	19	5.1				60.7

Results for 1 year 240 minute winter. 480 minute analysis at 4 minute timestep. Mass balance: 99.27%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
240 minute winter	1	176	122.056	0.156	4.9	1.0171	0.0000	OK
240 minute winter	2	176	122.055	0.258	7.9	1.6412	0.0000	OK
240 minute winter	3	176	122.055	0.333	6.2	2.0111	0.0000	OK
240 minute winter	4	128	125.535	0.035	2.1	0.0980	0.0000	OK
240 minute winter	5	176	122.055	0.311	4.4	1.8876	0.0000	OK
240 minute winter	6	4	122.711	0.000	0.0	0.0000	0.0000	OK
240 minute winter	7	176	122.055	0.373	7.1	2.1369	0.0000	OK
240 minute winter	8	176	122.055	0.432	6.7	2.8267	0.0000	SURCHARGED
240 minute winter	9	272	118.192	0.292	5.1	1.6744	0.0000	OK
240 minute winter	10	272	118.192	0.338	5.8	2.4735	0.0000	OK
240 minute winter	11	272	118.192	0.408	6.0	2.5349	0.0000	SURCHARGED
240 minute winter	12	132	116.549	0.033	6.1	0.0713	0.0000	OK
240 minute winter	13	128	116.403	0.029	2.9	0.0722	0.0000	OK
240 minute winter	14	244	113.248	0.886	9.3	5.1144	0.0000	OK
240 minute winter	15	244	113.248	0.945	8.4	5.6562	0.0000	OK
240 minute winter	16	244	113.248	1.014	5.4	6.1725	0.0000	OK
240 minute winter	17	244	113.248	1.042	5.2	5.9678	0.0000	SURCHARGED
240 minute winter	18	212	113.142	0.959	5.2	1.6940	0.0000	SURCHARGED
240 minute winter	19	4	113.139	1.000	5.2	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
240 minute winter	1	1.000	2	4.8	0.311	0.002	5.4377	
240 minute winter	2	1.001	3	5.5	0.344	0.003	6.4908	
240 minute winter	3	1.002	7	4.6	0.255	0.002	4.4084	
240 minute winter	4	2.000	5	2.1	0.554	0.050	0.0676	
240 minute winter	5	2.001	7	3.1	0.191	0.001	6.5985	
240 minute winter	6	3.000	7	0.0	0.000	0.000	0.0000	
240 minute winter	7	1.003	8	4.6	0.180	0.002	7.8591	
240 minute winter	8	Hydro-Brake®	9	5.1				
240 minute winter	9	1.005	10	5.1	0.335	0.002	4.3355	
240 minute winter	10	1.006	11	5.1	0.185	0.002	8.3238	
240 minute winter	11	Hydro-Brake®	12	5.1				
240 minute winter	12	1.008	14	6.1	1.487	0.025	0.0742	
240 minute winter	13	4.000	14	2.9	0.831	0.020	0.1497	
240 minute winter	14	1.009	15	7.0	0.363	0.003	21.7231	
240 minute winter	15	1.010	16	5.3	0.257	0.002	27.1707	
240 minute winter	16	1.011	17	5.2	0.236	0.002	11.4651	
240 minute winter	17	Hydro-Brake®	18	5.2				
240 minute winter	18	Orifice	19	5.2				74.5

Results for 1 year 360 minute summer. 600 minute analysis at 8 minute timestep. Mass balance: 99.14%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
360 minute summer	1	232	122.019	0.119	5.3	0.7735	0.0000	OK
360 minute summer	2	232	122.018	0.221	8.5	1.4041	0.0000	OK
360 minute summer	3	232	122.018	0.296	6.8	1.7853	0.0000	OK
360 minute summer	4	184	125.536	0.036	2.3	0.1018	0.0000	OK
360 minute summer	5	232	122.018	0.274	4.7	1.6602	0.0000	OK
360 minute summer	6	8	122.711	0.000	0.0	0.0000	0.0000	OK
360 minute summer	7	232	122.018	0.336	7.2	1.9225	0.0000	OK
360 minute summer	8	232	122.018	0.395	6.8	2.5820	0.0000	SURCHARGED
360 minute summer	9	360	118.185	0.285	5.1	1.6332	0.0000	OK
360 minute summer	10	360	118.185	0.331	5.8	2.4209	0.0000	OK
360 minute summer	11	360	118.185	0.401	6.0	2.4903	0.0000	SURCHARGED
360 minute summer	12	184	116.549	0.033	6.1	0.0711	0.0000	OK
360 minute summer	13	184	116.404	0.030	3.1	0.0741	0.0000	OK
360 minute summer	14	312	113.258	0.896	9.5	5.1700	0.0000	OK
360 minute summer	15	312	113.258	0.955	8.5	5.7139	0.0000	OK
360 minute summer	16	312	113.258	1.024	5.8	6.2312	0.0000	OK
360 minute summer	17	312	113.258	1.052	5.8	6.0229	0.0000	SURCHARGED
360 minute summer	18	312	113.142	0.959	5.8	1.6945	0.0000	SURCHARGED
360 minute summer	19	8	113.139	1.000	5.8	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
360 minute summer	1	1.000	2	5.2	0.313	0.002	4.1183	
360 minute summer	2	1.001	3	5.8	0.335	0.003	5.3656	
360 minute summer	3	1.002	7	4.7	0.256	0.002	3.7692	
360 minute summer	4	2.000	5	2.3	0.566	0.053	0.0713	
360 minute summer	5	2.001	7	3.0	0.172	0.001	5.6112	
360 minute summer	6	3.000	7	0.0	0.000	0.000	0.0000	
360 minute summer	7	1.003	8	4.5	0.150	0.002	6.8707	
360 minute summer	8	Hydro-Brake®	9	5.1				
360 minute summer	9	1.005	10	5.0	0.335	0.002	4.1979	
360 minute summer	10	1.006	11	5.0	0.158	0.002	8.1034	
360 minute summer	11	Hydro-Brake®	12	5.1				
360 minute summer	12	1.008	14	6.1	1.485	0.024	0.0739	
360 minute summer	13	4.000	14	3.1	0.844	0.021	0.1555	
360 minute summer	14	1.009	15	7.0	0.315	0.003	21.9528	
360 minute summer	15	1.010	16	5.7	0.213	0.003	27.4141	
360 minute summer	16	1.011	17	5.8	0.198	0.003	11.5546	
360 minute summer	17	Hydro-Brake®	18	5.8				
360 minute summer	18	Orifice	19	5.8				80.2

Results for 1 year 360 minute winter. 600 minute analysis at 8 minute timestep. Mass balance: 99.27%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
360 minute winter	1	248	122.036	0.136	3.8	0.8842	0.0000	OK
360 minute winter	2	248	122.036	0.238	6.2	1.5147	0.0000	OK
360 minute winter	3	248	122.035	0.313	5.2	1.8911	0.0000	OK
360 minute winter	4	184	125.530	0.030	1.6	0.0858	0.0000	OK
360 minute winter	5	248	122.035	0.291	3.4	1.7666	0.0000	OK
360 minute winter	6	8	122.711	0.000	0.0	0.0000	0.0000	OK
360 minute winter	7	248	122.035	0.353	6.1	2.0229	0.0000	OK
360 minute winter	8	248	122.035	0.412	6.1	2.6963	0.0000	SURCHARGED
360 minute winter	9	360	118.223	0.323	5.1	1.8520	0.0000	OK
360 minute winter	10	360	118.223	0.369	5.6	2.7001	0.0000	OK
360 minute winter	11	360	118.223	0.439	5.8	2.7275	0.0000	SURCHARGED
360 minute winter	12	184	116.548	0.032	5.9	0.0699	0.0000	OK
360 minute winter	13	184	116.400	0.026	2.3	0.0646	0.0000	OK
360 minute winter	14	280	113.269	0.906	8.4	5.2312	0.0000	OK
360 minute winter	15	280	113.269	0.965	7.4	5.7773	0.0000	OK
360 minute winter	16	280	113.269	1.034	6.5	6.2957	0.0000	OK
360 minute winter	17	280	113.269	1.062	6.3	6.0836	0.0000	SURCHARGED
360 minute winter	18	280	113.143	0.960	6.3	1.6956	0.0000	SURCHARGED
360 minute winter	19	8	113.139	1.000	6.3	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
360 minute winter	1	1.000	2	3.8	0.295	0.002	4.7095	
360 minute winter	2	1.001	3	4.6	0.323	0.002	5.8836	
360 minute winter	3	1.002	7	4.0	0.254	0.002	4.0657	
360 minute winter	4	2.000	5	1.6	0.512	0.038	0.0558	
360 minute winter	5	2.001	7	2.6	0.172	0.001	6.0676	
360 minute winter	6	3.000	7	0.0	0.000	0.000	0.0000	
360 minute winter	7	1.003	8	4.4	0.166	0.002	7.3302	
360 minute winter	8	Hydro-Brake®	9	5.1				
360 minute winter	9	1.005	10	5.0	0.339	0.002	4.9435	
360 minute winter	10	1.006	11	5.1	0.170	0.002	9.2871	
360 minute winter	11	Hydro-Brake®	12	5.1				
360 minute winter	12	1.008	14	5.9	1.469	0.024	0.0721	
360 minute winter	13	4.000	14	2.3	0.775	0.015	0.1266	
360 minute winter	14	1.009	15	6.3	0.336	0.003	22.1997	
360 minute winter	15	1.010	16	6.2	0.242	0.003	27.6752	
360 minute winter	16	1.011	17	6.3	0.195	0.003	11.6495	
360 minute winter	17	Hydro-Brake®	18	6.3				
360 minute winter	18	Orifice	19	6.3				100.9

Results for 1 year 480 minute summer. 720 minute analysis at 8 minute timestep. Mass balance: 99.26%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
480 minute summer	1	296	122.005	0.105	4.3	0.6822	0.0000	OK
480 minute summer	2	296	122.004	0.207	7.0	1.3154	0.0000	OK
480 minute summer	3	296	122.004	0.282	5.6	1.7024	0.0000	OK
480 minute summer	4	248	125.532	0.032	1.8	0.0908	0.0000	OK
480 minute summer	5	296	122.004	0.260	3.8	1.5772	0.0000	OK
480 minute summer	6	8	122.711	0.000	0.0	0.0000	0.0000	OK
480 minute summer	7	296	122.004	0.322	6.4	1.8441	0.0000	OK
480 minute summer	8	296	122.004	0.381	6.3	2.4922	0.0000	SURCHARGED
480 minute summer	9	432	118.185	0.285	5.1	1.6297	0.0000	OK
480 minute summer	10	432	118.185	0.331	5.7	2.4164	0.0000	OK
480 minute summer	11	432	118.185	0.401	5.8	2.4865	0.0000	SURCHARGED
480 minute summer	12	248	116.549	0.033	6.0	0.0703	0.0000	OK
480 minute summer	13	248	116.401	0.027	2.5	0.0673	0.0000	OK
480 minute summer	14	344	113.264	0.902	8.8	5.2034	0.0000	OK
480 minute summer	15	344	113.264	0.961	7.7	5.7485	0.0000	OK
480 minute summer	16	344	113.264	1.030	6.2	6.2664	0.0000	OK
480 minute summer	17	344	113.264	1.058	6.1	6.0561	0.0000	SURCHARGED
480 minute summer	18	344	113.142	0.959	6.1	1.6951	0.0000	SURCHARGED
480 minute summer	19	8	113.139	1.000	6.1	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
480 minute summer	1	1.000	2	4.3	0.299	0.002	3.6482	
480 minute summer	2	1.001	3	5.0	0.320	0.002	4.9625	
480 minute summer	3	1.002	7	4.1	0.254	0.002	3.5410	
480 minute summer	4	2.000	5	1.8	0.530	0.043	0.0606	
480 minute summer	5	2.001	7	2.7	0.171	0.001	5.2591	
480 minute summer	6	3.000	7	0.0	0.000	0.000	0.0000	
480 minute summer	7	1.003	8	4.5	0.158	0.002	6.5158	
480 minute summer	8	Hydro-Brake®	9	5.1				
480 minute summer	9	1.005	10	5.0	0.338	0.002	4.1861	
480 minute summer	10	1.006	11	5.0	0.172	0.002	8.0845	
480 minute summer	11	Hydro-Brake®	12	5.1				
480 minute summer	12	1.008	14	6.0	1.475	0.024	0.0727	
480 minute summer	13	4.000	14	2.5	0.796	0.017	0.1347	
480 minute summer	14	1.009	15	6.5	0.291	0.003	22.0879	
480 minute summer	15	1.010	16	5.9	0.212	0.003	27.5585	
480 minute summer	16	1.011	17	6.1	0.200	0.003	11.6078	
480 minute summer	17	Hydro-Brake®	18	6.1				
480 minute summer	18	Orifice	19	6.1				99.3

Results for 1 year 480 minute winter. 720 minute analysis at 8 minute timestep. Mass balance: 99.44%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
480 minute winter	1	320	122.011	0.110	3.2	0.7204	0.0000	OK
480 minute winter	2	320	122.010	0.213	5.2	1.3551	0.0000	OK
480 minute winter	3	320	122.010	0.288	4.6	1.7402	0.0000	OK
480 minute winter	4	248	125.528	0.028	1.4	0.0804	0.0000	OK
480 minute winter	5	320	122.010	0.266	2.9	1.6150	0.0000	OK
480 minute winter	6	8	122.711	0.000	0.0	0.0000	0.0000	OK
480 minute winter	7	320	122.010	0.328	5.6	1.8798	0.0000	OK
480 minute winter	8	320	122.010	0.387	5.8	2.5329	0.0000	SURCHARGED
480 minute winter	9	464	118.233	0.333	5.1	1.9091	0.0000	OK
480 minute winter	10	464	118.233	0.379	5.5	2.7731	0.0000	OK
480 minute winter	11	464	118.233	0.449	5.7	2.7894	0.0000	SURCHARGED
480 minute winter	12	256	116.548	0.032	5.8	0.0691	0.0000	OK
480 minute winter	13	248	116.398	0.024	1.9	0.0591	0.0000	OK
480 minute winter	14	328	113.287	0.925	7.8	5.3367	0.0000	OK
480 minute winter	15	328	113.287	0.984	7.4	5.8867	0.0000	OK
480 minute winter	16	328	113.287	1.053	7.4	6.4069	0.0000	OK
480 minute winter	17	328	113.287	1.081	7.2	6.1883	0.0000	SURCHARGED
480 minute winter	18	328	113.144	0.961	7.2	1.6975	0.0000	SURCHARGED
480 minute winter	19	8	113.139	1.000	7.2	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
480 minute winter	1	1.000	2	3.2	0.281	0.002	3.8495	
480 minute winter	2	1.001	3	4.1	0.320	0.002	5.1418	
480 minute winter	3	1.002	7	3.7	0.260	0.002	3.6443	
480 minute winter	4	2.000	5	1.4	0.492	0.033	0.0508	
480 minute winter	5	2.001	7	2.2	0.163	0.001	5.4185	
480 minute winter	6	3.000	7	0.0	0.000	0.000	0.0000	
480 minute winter	7	1.003	8	4.4	0.157	0.002	6.6770	
480 minute winter	8	Hydro-Brake®	9	5.1				
480 minute winter	9	1.005	10	5.0	0.338	0.002	5.1438	
480 minute winter	10	1.006	11	5.0	0.156	0.002	9.6022	
480 minute winter	11	Hydro-Brake®	12	5.1				
480 minute winter	12	1.008	14	5.8	1.460	0.023	0.0710	
480 minute winter	13	4.000	14	1.9	0.731	0.013	0.1115	
480 minute winter	14	1.009	15	6.7	0.316	0.003	22.6211	
480 minute winter	15	1.010	16	6.9	0.198	0.003	28.1148	
480 minute winter	16	1.011	17	7.2	0.170	0.003	11.8081	
480 minute winter	17	Hydro-Brake®	18	7.2				
480 minute winter	18	Orifice	19	7.2				119.3

Results for 1 year 600 minute summer. 840 minute analysis at 15 minute timestep. Mass balance: 99.37%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
600 minute summer	1	375	121.986	0.086	3.6	0.5625	0.0000	OK
600 minute summer	2	375	121.986	0.189	5.8	1.2019	0.0000	OK
600 minute summer	3	375	121.986	0.264	5.1	1.5945	0.0000	OK
600 minute summer	4	315	125.529	0.029	1.5	0.0832	0.0000	OK
600 minute summer	5	375	121.986	0.242	3.1	1.4686	0.0000	OK
600 minute summer	6	15	122.711	0.000	0.0	0.0000	0.0000	OK
600 minute summer	7	375	121.986	0.304	5.9	1.7415	0.0000	OK
600 minute summer	8	375	121.986	0.363	5.9	2.3747	0.0000	SURCHARGED
600 minute summer	9	495	118.186	0.286	5.1	1.6390	0.0000	OK
600 minute summer	10	495	118.186	0.332	5.6	2.4283	0.0000	OK
600 minute summer	11	495	118.186	0.402	5.7	2.4966	0.0000	SURCHARGED
600 minute summer	12	315	116.548	0.032	5.8	0.0693	0.0000	OK
600 minute summer	13	315	116.399	0.025	2.1	0.0620	0.0000	OK
600 minute summer	14	390	113.277	0.915	8.1	5.2778	0.0000	OK
600 minute summer	15	390	113.277	0.974	7.1	5.8256	0.0000	OK
600 minute summer	16	390	113.277	1.043	6.9	6.3449	0.0000	OK
600 minute summer	17	390	113.277	1.071	6.8	6.1299	0.0000	SURCHARGED
600 minute summer	18	390	113.143	0.960	6.7	1.6965	0.0000	SURCHARGED
600 minute summer	19	15	113.139	1.000	6.7	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
600 minute summer	1	1.000	2	3.6	0.291	0.002	3.0791	
600 minute summer	2	1.001	3	4.5	0.314	0.002	4.4545	
600 minute summer	3	1.002	7	4.0	0.253	0.002	3.2476	
600 minute summer	4	2.000	5	1.5	0.502	0.035	0.0533	
600 minute summer	5	2.001	7	2.2	0.163	0.001	4.8086	
600 minute summer	6	3.000	7	0.0	0.000	0.000	0.0000	
600 minute summer	7	1.003	8	4.4	0.155	0.002	6.0571	
600 minute summer	8	Hydro-Brake®	9	5.1				
600 minute summer	9	1.005	10	5.0	0.338	0.002	4.2171	
600 minute summer	10	1.006	11	5.0	0.145	0.002	8.1343	
600 minute summer	11	Hydro-Brake®	12	5.1				
600 minute summer	12	1.008	14	5.8	1.462	0.023	0.0712	
600 minute summer	13	4.000	14	2.1	0.754	0.014	0.1194	
600 minute summer	14	1.009	15	6.4	0.282	0.003	22.3876	
600 minute summer	15	1.010	16	6.5	0.176	0.003	27.8712	
600 minute summer	16	1.011	17	6.8	0.197	0.003	11.7196	
600 minute summer	17	Hydro-Brake®	18	6.7				
600 minute summer	18	Orifice	19	6.7				112.0

Results for 1 year 600 minute winter. 840 minute analysis at 15 minute timestep. Mass balance: 99.41%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
600 minute winter	1	390	121.983	0.083	2.7	0.5431	0.0000	OK
600 minute winter	2	390	121.983	0.186	4.4	1.1826	0.0000	OK
600 minute winter	3	390	121.983	0.261	4.3	1.5765	0.0000	OK
600 minute winter	4	315	125.526	0.026	1.2	0.0747	0.0000	OK
600 minute winter	5	390	121.983	0.239	2.5	1.4506	0.0000	OK
600 minute winter	6	15	122.711	0.000	0.0	0.0000	0.0000	OK
600 minute winter	7	390	121.983	0.301	5.2	1.7246	0.0000	OK
600 minute winter	8	390	121.983	0.360	5.6	2.3556	0.0000	SURCHARGED
600 minute winter	9	525	118.229	0.329	5.1	1.8864	0.0000	OK
600 minute winter	10	525	118.229	0.375	5.5	2.7440	0.0000	OK
600 minute winter	11	525	118.229	0.445	5.6	2.7648	0.0000	SURCHARGED
600 minute winter	12	315	116.548	0.032	5.7	0.0684	0.0000	OK
600 minute winter	13	315	116.396	0.022	1.6	0.0546	0.0000	OK
600 minute winter	14	375	113.296	0.934	7.5	5.3881	0.0000	OK
600 minute winter	15	375	113.296	0.993	7.5	5.9400	0.0000	OK
600 minute winter	16	375	113.296	1.062	7.7	6.4612	0.0000	OK
600 minute winter	17	375	113.296	1.090	7.6	6.2393	0.0000	SURCHARGED
600 minute winter	18	375	113.144	0.961	7.6	1.6984	0.0000	SURCHARGED
600 minute winter	19	15	113.139	1.000	7.6	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
600 minute winter	1	1.000	2	2.7	0.274	0.001	2.9843	
600 minute winter	2	1.001	3	3.8	0.321	0.002	4.3706	
600 minute winter	3	1.002	7	3.6	0.255	0.002	3.2000	
600 minute winter	4	2.000	5	1.2	0.469	0.028	0.0456	
600 minute winter	5	2.001	7	2.0	0.153	0.001	4.7346	
600 minute winter	6	3.000	7	0.0	0.000	0.000	0.0000	
600 minute winter	7	1.003	8	4.4	0.125	0.002	5.9828	
600 minute winter	8	Hydro-Brake®	9	5.1				
600 minute winter	9	1.005	10	5.0	0.337	0.002	5.0640	
600 minute winter	10	1.006	11	5.0	0.147	0.002	9.4766	
600 minute winter	11	Hydro-Brake®	12	5.1				
600 minute winter	12	1.008	14	5.7	1.451	0.023	0.0700	
600 minute winter	13	4.000	14	1.6	0.693	0.011	0.0991	
600 minute winter	14	1.009	15	6.8	0.298	0.003	22.8201	
600 minute winter	15	1.010	16	7.2	0.220	0.003	28.3213	
600 minute winter	16	1.011	17	7.6	0.107	0.004	11.8804	
600 minute winter	17	Hydro-Brake®	18	7.6				
600 minute winter	18	Orifice	19	7.6				135.3

Results for 1 year 720 minute summer. 960 minute analysis at 15 minute timestep. Mass balance: 99.24%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
720 minute summer	1	435	121.968	0.068	3.2	0.4447	0.0000	OK
720 minute summer	2	435	121.968	0.171	5.2	1.0869	0.0000	OK
720 minute summer	3	435	121.968	0.246	4.8	1.4851	0.0000	OK
720 minute summer	4	375	125.528	0.028	1.4	0.0804	0.0000	OK
720 minute summer	5	435	121.968	0.224	2.9	1.3589	0.0000	OK
720 minute summer	6	15	122.711	0.000	0.0	0.0000	0.0000	OK
720 minute summer	7	435	121.968	0.286	5.6	1.6379	0.0000	OK
720 minute summer	8	435	121.968	0.345	5.8	2.2565	0.0000	SURCHARGED
720 minute summer	9	540	118.181	0.281	5.1	1.6098	0.0000	OK
720 minute summer	10	540	118.181	0.327	5.5	2.3910	0.0000	OK
720 minute summer	11	540	118.181	0.397	5.6	2.4650	0.0000	SURCHARGED
720 minute summer	12	375	116.548	0.032	5.7	0.0686	0.0000	OK
720 minute summer	13	375	116.398	0.024	1.9	0.0591	0.0000	OK
720 minute summer	14	435	113.288	0.926	7.8	5.3411	0.0000	OK
720 minute summer	15	435	113.288	0.985	7.3	5.8913	0.0000	OK
720 minute summer	16	435	113.288	1.054	7.4	6.4116	0.0000	OK
720 minute summer	17	435	113.288	1.082	7.3	6.1927	0.0000	SURCHARGED
720 minute summer	18	435	113.144	0.961	7.3	1.6976	0.0000	SURCHARGED
720 minute summer	19	15	113.139	1.000	7.3	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
720 minute summer	1	1.000	2	3.2	0.283	0.002	2.5456	
720 minute summer	2	1.001	3	4.3	0.312	0.002	3.9602	
720 minute summer	3	1.002	7	3.8	0.258	0.002	2.9585	
720 minute summer	4	2.000	5	1.4	0.492	0.033	0.0508	
720 minute summer	5	2.001	7	2.2	0.151	0.001	4.3637	
720 minute summer	6	3.000	7	0.0	0.000	0.000	0.0000	
720 minute summer	7	1.003	8	4.4	0.144	0.002	5.6017	
720 minute summer	8	Hydro-Brake®	9	5.1				
720 minute summer	9	1.005	10	5.0	0.329	0.002	4.1200	
720 minute summer	10	1.006	11	5.0	0.143	0.002	7.9780	
720 minute summer	11	Hydro-Brake®	12	5.1				
720 minute summer	12	1.008	14	5.7	1.454	0.023	0.0703	
720 minute summer	13	4.000	14	1.9	0.731	0.013	0.1115	
720 minute summer	14	1.009	15	6.6	0.275	0.003	22.6383	
720 minute summer	15	1.010	16	6.9	0.171	0.003	28.1330	
720 minute summer	16	1.011	17	7.3	0.197	0.003	11.8148	
720 minute summer	17	Hydro-Brake®	18	7.3				
720 minute summer	18	Orifice	19	7.3				123.5

Results for 1 year 720 minute winter. 960 minute analysis at 15 minute timestep. Mass balance: 99.48%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
720 minute winter	1	450	121.952	0.052	2.4	0.3391	0.0000	OK
720 minute winter	2	450	121.952	0.155	3.9	0.9838	0.0000	OK
720 minute winter	3	450	121.952	0.230	3.9	1.3875	0.0000	OK
720 minute winter	4	360	125.524	0.024	1.0	0.0685	0.0000	OK
720 minute winter	5	450	121.952	0.208	2.1	1.2606	0.0000	OK
720 minute winter	6	15	122.711	0.000	0.0	0.0000	0.0000	OK
720 minute winter	7	450	121.952	0.270	4.8	1.5452	0.0000	OK
720 minute winter	8	450	121.952	0.329	5.4	2.1506	0.0000	SURCHARGED
720 minute winter	9	570	118.216	0.316	5.1	1.8069	0.0000	OK
720 minute winter	10	570	118.216	0.362	5.4	2.6426	0.0000	OK
720 minute winter	11	570	118.216	0.432	5.5	2.6786	0.0000	SURCHARGED
720 minute winter	12	390	116.548	0.032	5.6	0.0680	0.0000	OK
720 minute winter	13	360	116.395	0.021	1.4	0.0514	0.0000	OK
720 minute winter	14	435	113.299	0.937	7.2	5.4055	0.0000	OK
720 minute winter	15	435	113.299	0.996	7.5	5.9581	0.0000	OK
720 minute winter	16	435	113.299	1.065	7.8	6.4795	0.0000	OK
720 minute winter	17	435	113.299	1.093	7.7	6.2566	0.0000	SURCHARGED
720 minute winter	18	435	113.144	0.961	7.7	1.6986	0.0000	SURCHARGED
720 minute winter	19	15	113.139	1.000	7.7	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
720 minute winter	1	1.000	2	2.4	0.266	0.001	2.0890	
720 minute winter	2	1.001	3	3.5	0.308	0.002	3.5284	
720 minute winter	3	1.002	7	3.3	0.254	0.002	2.7058	
720 minute winter	4	2.000	5	1.0	0.445	0.024	0.0401	
720 minute winter	5	2.001	7	1.7	0.152	0.001	3.9742	
720 minute winter	6	3.000	7	0.0	0.000	0.000	0.0000	
720 minute winter	7	1.003	8	4.3	0.131	0.002	5.2033	
720 minute winter	8	Hydro-Brake®	9	5.1				
720 minute winter	9	1.005	10	4.9	0.331	0.002	4.7878	
720 minute winter	10	1.006	11	5.0	0.135	0.002	9.0416	
720 minute winter	11	Hydro-Brake®	12	5.1				
720 minute winter	12	1.008	14	5.6	1.446	0.022	0.0694	
720 minute winter	13	4.000	14	1.4	0.665	0.009	0.0903	
720 minute winter	14	1.009	15	6.8	0.296	0.003	22.8876	
720 minute winter	15	1.010	16	7.3	0.187	0.003	28.3904	
720 minute winter	16	1.011	17	7.7	0.112	0.004	11.9044	
720 minute winter	17	Hydro-Brake®	18	7.7				
720 minute winter	18	Orifice	19	7.7				147.3

Results for 1 year 960 minute summer. 1200 minute analysis at 15 minute timestep. Mass balance: 98.10%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
960 minute summer	1	555	121.943	0.043	2.7	0.2811	0.0000	OK
960 minute summer	2	555	121.943	0.146	4.4	0.9267	0.0000	OK
960 minute summer	3	555	121.943	0.221	4.3	1.3332	0.0000	OK
960 minute summer	4	495	125.526	0.026	1.2	0.0747	0.0000	OK
960 minute summer	5	555	121.943	0.199	2.5	1.2062	0.0000	OK
960 minute summer	6	15	122.711	0.000	0.0	0.0000	0.0000	OK
960 minute summer	7	555	121.943	0.261	5.1	1.4938	0.0000	OK
960 minute summer	8	555	121.943	0.320	5.5	2.0919	0.0000	SURCHARGED
960 minute summer	9	675	118.173	0.273	5.1	1.5652	0.0000	OK
960 minute summer	10	675	118.173	0.319	5.3	2.3341	0.0000	OK
960 minute summer	11	675	118.173	0.389	5.5	2.4166	0.0000	SURCHARGED
960 minute summer	12	495	116.548	0.031	5.6	0.0680	0.0000	OK
960 minute summer	13	495	116.396	0.022	1.6	0.0546	0.0000	OK
960 minute summer	14	540	113.298	0.936	7.4	5.4001	0.0000	OK
960 minute summer	15	540	113.298	0.995	7.6	5.9525	0.0000	OK
960 minute summer	16	540	113.298	1.064	7.8	6.4739	0.0000	OK
960 minute summer	17	540	113.298	1.092	7.7	6.2512	0.0000	SURCHARGED
960 minute summer	18	540	113.144	0.961	7.7	1.6985	0.0000	SURCHARGED
960 minute summer	19	15	113.139	1.000	7.7	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
960 minute summer	1	1.000	2	2.7	0.274	0.001	1.8597	
960 minute summer	2	1.001	3	3.8	0.321	0.002	3.2970	
960 minute summer	3	1.002	7	3.5	0.258	0.002	2.5679	
960 minute summer	4	2.000	5	1.2	0.469	0.028	0.0456	
960 minute summer	5	2.001	7	1.9	0.151	0.001	3.7640	
960 minute summer	6	3.000	7	0.0	0.000	0.000	0.0000	
960 minute summer	7	1.003	8	4.3	0.122	0.002	4.9841	
960 minute summer	8	Hydro-Brake®	9	5.1				
960 minute summer	9	1.005	10	4.9	0.330	0.002	3.9718	
960 minute summer	10	1.006	11	5.0	0.134	0.002	7.7411	
960 minute summer	11	Hydro-Brake®	12	5.1				
960 minute summer	12	1.008	14	5.6	1.445	0.022	0.0693	
960 minute summer	13	4.000	14	1.6	0.693	0.011	0.0991	
960 minute summer	14	1.009	15	6.9	0.258	0.003	22.8667	
960 minute summer	15	1.010	16	7.2	0.160	0.003	28.3691	
960 minute summer	16	1.011	17	7.7	0.179	0.004	11.8970	
960 minute summer	17	Hydro-Brake®	18	7.7				
960 minute summer	18	Orifice	19	7.7				149.9

Results for 1 year 960 minute winter. 1200 minute analysis at 15 minute timestep. Mass balance: 98.93%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
960 minute winter	1	495	121.929	0.029	2.0	0.1862	0.0000	OK
960 minute winter	2	585	121.904	0.107	3.3	0.6801	0.0000	OK
960 minute winter	3	585	121.904	0.182	3.5	1.0987	0.0000	OK
960 minute winter	4	495	125.523	0.023	0.9	0.0650	0.0000	OK
960 minute winter	5	585	121.904	0.160	1.8	0.9705	0.0000	OK
960 minute winter	6	15	122.711	0.000	0.0	0.0000	0.0000	OK
960 minute winter	7	585	121.904	0.222	4.5	1.2712	0.0000	OK
960 minute winter	8	585	121.904	0.281	5.1	1.8377	0.0000	OK
960 minute winter	9	690	118.187	0.287	5.0	1.6450	0.0000	OK
960 minute winter	10	690	118.187	0.333	5.3	2.4359	0.0000	OK
960 minute winter	11	690	118.187	0.403	5.4	2.5031	0.0000	SURCHARGED
960 minute winter	12	525	116.547	0.031	5.5	0.0674	0.0000	OK
960 minute winter	13	480	116.393	0.019	1.2	0.0480	0.0000	OK
960 minute winter	14	555	113.295	0.933	6.8	5.3845	0.0000	OK
960 minute winter	15	555	113.295	0.992	7.2	5.9363	0.0000	OK
960 minute winter	16	555	113.295	1.061	7.6	6.4574	0.0000	OK
960 minute winter	17	555	113.295	1.089	7.6	6.2358	0.0000	SURCHARGED
960 minute winter	18	555	113.144	0.961	7.6	1.6983	0.0000	SURCHARGED
960 minute winter	19	15	113.139	1.000	7.6	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
960 minute winter	1	1.000	2	2.0	0.256	0.001	1.1229	
960 minute winter	2	1.001	3	3.1	0.302	0.001	2.3450	
960 minute winter	3	1.002	7	3.0	0.252	0.001	1.9948	
960 minute winter	4	2.000	5	0.9	0.431	0.021	0.0373	
960 minute winter	5	2.001	7	1.5	0.154	0.001	2.8882	
960 minute winter	6	3.000	7	0.0	0.000	0.000	0.0000	
960 minute winter	7	1.003	8	4.2	0.130	0.002	4.0677	
960 minute winter	8	Hydro-Brake®	9	5.0				
960 minute winter	9	1.005	10	4.8	0.335	0.002	4.2371	
960 minute winter	10	1.006	11	4.9	0.134	0.002	8.1665	
960 minute winter	11	Hydro-Brake®	12	5.1				
960 minute winter	12	1.008	14	5.5	1.438	0.022	0.0685	
960 minute winter	13	4.000	14	1.2	0.635	0.008	0.0811	
960 minute winter	14	1.009	15	6.7	0.266	0.003	22.8063	
960 minute winter	15	1.010	16	7.1	0.213	0.003	28.3072	
960 minute winter	16	1.011	17	7.6	0.135	0.004	11.8756	
960 minute winter	17	Hydro-Brake®	18	7.6				
960 minute winter	18	Orifice	19	7.6				173.7

Results for 1 year 1440 minute summer. 1680 minute analysis at 30 minute timestep. Mass balance: 96.39%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute summer	1	750	121.929	0.029	2.1	0.1901	0.0000	OK
1440 minute summer	2	810	121.883	0.086	3.4	0.5445	0.0000	OK
1440 minute summer	3	810	121.883	0.161	3.7	0.9697	0.0000	OK
1440 minute summer	4	750	125.523	0.023	0.9	0.0650	0.0000	OK
1440 minute summer	5	810	121.883	0.139	1.9	0.8409	0.0000	OK
1440 minute summer	6	30	122.711	0.000	0.0	0.0000	0.0000	OK
1440 minute summer	7	810	121.883	0.201	4.7	1.1489	0.0000	OK
1440 minute summer	8	810	121.883	0.260	5.1	1.6979	0.0000	OK
1440 minute summer	9	900	118.131	0.231	4.9	1.3247	0.0000	OK
1440 minute summer	10	900	118.131	0.277	5.2	2.0271	0.0000	OK
1440 minute summer	11	900	118.131	0.347	5.3	2.1559	0.0000	SURCHARGED
1440 minute summer	12	810	116.547	0.031	5.4	0.0669	0.0000	OK
1440 minute summer	13	750	116.393	0.019	1.2	0.0480	0.0000	OK
1440 minute summer	14	780	113.293	0.931	6.7	5.3722	0.0000	OK
1440 minute summer	15	780	113.293	0.990	7.2	5.9235	0.0000	OK
1440 minute summer	16	780	113.293	1.059	7.5	6.4444	0.0000	OK
1440 minute summer	17	780	113.293	1.087	7.5	6.2235	0.0000	SURCHARGED
1440 minute summer	18	780	113.144	0.961	7.5	1.6981	0.0000	SURCHARGED
1440 minute summer	19	30	113.139	1.000	7.5	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
1440 minute summer	1	1.000	2	2.1	0.263	0.001	0.8346	
1440 minute summer	2	1.001	3	3.3	0.309	0.002	1.8711	
1440 minute summer	3	1.002	7	3.2	0.260	0.002	1.6975	
1440 minute summer	4	2.000	5	0.9	0.431	0.021	0.0373	
1440 minute summer	5	2.001	7	1.6	0.151	0.001	2.4365	
1440 minute summer	6	3.000	7	0.0	0.000	0.000	0.0000	
1440 minute summer	7	1.003	8	4.1	0.123	0.002	3.5841	
1440 minute summer	8	Hydro-Brake®	9	4.9				
1440 minute summer	9	1.005	10	4.8	0.334	0.002	3.1986	
1440 minute summer	10	1.006	11	4.9	0.131	0.002	6.4922	
1440 minute summer	11	Hydro-Brake®	12	5.0				
1440 minute summer	12	1.008	14	5.4	1.432	0.022	0.0678	
1440 minute summer	13	4.000	14	1.2	0.635	0.008	0.0811	
1440 minute summer	14	1.009	15	6.6	0.232	0.003	22.7587	
1440 minute summer	15	1.010	16	7.0	0.182	0.003	28.2584	
1440 minute summer	16	1.011	17	7.5	0.116	0.004	11.8587	
1440 minute summer	17	Hydro-Brake®	18	7.5				
1440 minute summer	18	Orifice	19	7.5				189.8

Results for 1 year 1440 minute winter. 1680 minute analysis at 30 minute timestep. Mass balance: 97.67%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute winter	1	750	121.926	0.026	1.6	0.1693	0.0000	OK
1440 minute winter	2	750	121.829	0.032	2.6	0.2029	0.0000	OK
1440 minute winter	3	810	121.820	0.098	2.9	0.5911	0.0000	OK
1440 minute winter	4	750	125.520	0.020	0.7	0.0577	0.0000	OK
1440 minute winter	5	810	121.820	0.076	1.4	0.4602	0.0000	OK
1440 minute winter	6	30	122.711	0.000	0.0	0.0000	0.0000	OK
1440 minute winter	7	810	121.820	0.138	4.0	0.7893	0.0000	OK
1440 minute winter	8	810	121.820	0.197	4.7	1.2871	0.0000	OK
1440 minute winter	9	930	118.088	0.188	4.6	1.0782	0.0000	OK
1440 minute winter	10	930	118.088	0.234	4.9	1.7123	0.0000	OK
1440 minute winter	11	930	118.088	0.304	5.1	1.8885	0.0000	SURCHARGED
1440 minute winter	12	780	116.547	0.031	5.3	0.0662	0.0000	OK
1440 minute winter	13	720	116.391	0.017	0.9	0.0417	0.0000	OK
1440 minute winter	14	810	113.282	0.920	6.3	5.3081	0.0000	OK
1440 minute winter	15	810	113.282	0.979	6.7	5.8571	0.0000	OK
1440 minute winter	16	810	113.282	1.048	7.0	6.3769	0.0000	OK
1440 minute winter	17	810	113.282	1.076	7.0	6.1600	0.0000	SURCHARGED
1440 minute winter	18	810	113.143	0.960	7.0	1.6970	0.0000	SURCHARGED
1440 minute winter	19	30	113.139	1.000	7.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
1440 minute winter	1	1.000	2	1.6	0.242	0.001	0.2740	
1440 minute winter	2	1.001	3	2.6	0.300	0.001	0.7538	
1440 minute winter	3	1.002	7	2.7	0.255	0.001	0.9127	
1440 minute winter	4	2.000	5	0.7	0.401	0.017	0.0312	
1440 minute winter	5	2.001	7	1.3	0.152	0.001	1.2549	
1440 minute winter	6	3.000	7	0.0	0.000	0.000	0.0000	
1440 minute winter	7	1.003	8	3.8	0.140	0.002	2.2698	
1440 minute winter	8	Hydro-Brake®	9	4.6				
1440 minute winter	9	1.005	10	4.5	0.334	0.002	2.4525	
1440 minute winter	10	1.006	11	4.7	0.131	0.002	5.2691	
1440 minute winter	11	Hydro-Brake®	12	5.0				
1440 minute winter	12	1.008	14	5.3	1.422	0.021	0.0667	
1440 minute winter	13	4.000	14	0.9	0.581	0.006	0.0665	
1440 minute winter	14	1.009	15	6.3	0.234	0.003	22.5089	
1440 minute winter	15	1.010	16	6.6	0.204	0.003	27.9977	
1440 minute winter	16	1.011	17	7.0	0.056	0.003	11.7652	
1440 minute winter	17	Hydro-Brake®	18	7.0				
1440 minute winter	18	Orifice	19	7.0				216.5

Results for 2 year 15 minute summer. 1455 minute analysis at 1 minute timestep. Mass balance: 99.27%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	1	17	122.005	0.104	24.7	0.6814	0.0000	OK
15 minute summer	2	18	121.996	0.199	39.2	1.2639	0.0000	OK
15 minute summer	3	15	121.992	0.270	42.4	1.6277	0.0000	OK
15 minute summer	4	10	125.579	0.079	10.6	0.2238	0.0000	OK
15 minute summer	5	19	121.997	0.253	21.7	1.5363	0.0000	OK
15 minute summer	6	1	122.711	0.000	0.0	0.0000	0.0000	OK
15 minute summer	7	19	121.998	0.316	47.3	1.8091	0.0000	OK
15 minute summer	8	15	121.993	0.370	23.7	2.4227	0.0000	SURCHARGED
15 minute summer	9	19	118.015	0.115	6.3	0.6577	0.0000	OK
15 minute summer	10	18	118.010	0.156	15.3	1.1425	0.0000	OK
15 minute summer	11	20	118.011	0.227	15.5	1.4092	0.0000	OK
15 minute summer	12	10	116.559	0.043	10.4	0.0918	0.0000	OK
15 minute summer	13	10	116.438	0.064	14.7	0.1576	0.0000	OK
15 minute summer	14	18	112.552	0.190	26.2	1.0947	0.0000	OK
15 minute summer	15	20	112.557	0.254	33.8	1.5193	0.0000	OK
15 minute summer	16	19	112.552	0.318	34.9	1.9343	0.0000	OK
15 minute summer	17	20	112.551	0.345	12.9	1.9730	0.0000	SURCHARGED
15 minute summer	18	20	112.538	0.355	1.5	0.6281	0.0000	SURCHARGED
15 minute summer	19	1	113.139	1.000	0.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	1	1.000	2	24.0	0.551	0.011	3.3094	
15 minute summer	2	1.001	3	37.6	0.636	0.018	4.6367	
15 minute summer	3	1.002	7	31.4	0.483	0.015	3.3833	
15 minute summer	4	2.000	5	10.3	0.866	0.244	0.2138	
15 minute summer	5	2.001	7	21.7	0.507	0.010	5.0971	
15 minute summer	6	3.000	7	0.0	0.000	0.000	0.0000	
15 minute summer	7	1.003	8	11.4	0.252	0.005	6.2401	
15 minute summer	8	Hydro-Brake®	9	5.1				
15 minute summer	9	1.005	10	9.2	0.296	0.004	1.2605	
15 minute summer	10	1.006	11	8.1	0.198	0.004	3.2468	
15 minute summer	11	Hydro-Brake®	12	4.7				
15 minute summer	12	1.008	14	10.3	1.733	0.041	0.1072	
15 minute summer	13	4.000	14	14.3	1.331	0.097	0.4618	
15 minute summer	14	1.009	15	27.2	0.612	0.013	3.3756	
15 minute summer	15	1.010	16	28.4	0.508	0.013	5.6556	
15 minute summer	16	1.011	17	12.9	0.455	0.006	2.8178	
15 minute summer	17	Hydro-Brake®	18	1.5				
15 minute summer	18	Orifice	19	0.0				0.0

Results for 2 year 15 minute winter. 1455 minute analysis at 1 minute timestep. Mass balance: 99.37%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1	16	122.024	0.124	26.0	0.8087	0.0000	OK
15 minute winter	2	20	122.021	0.224	41.1	1.4205	0.0000	OK
15 minute winter	3	17	122.021	0.299	43.8	1.8062	0.0000	OK
15 minute winter	4	10	125.581	0.081	11.1	0.2289	0.0000	OK
15 minute winter	5	18	122.025	0.281	22.7	1.7053	0.0000	OK
15 minute winter	6	1	122.711	0.000	0.0	0.0000	0.0000	OK
15 minute winter	7	19	122.015	0.333	34.1	1.9089	0.0000	OK
15 minute winter	8	19	122.022	0.399	26.9	2.6106	0.0000	SURCHARGED
15 minute winter	9	18	118.026	0.126	6.0	0.7227	0.0000	OK
15 minute winter	10	19	118.027	0.173	13.8	1.2627	0.0000	OK
15 minute winter	11	17	118.024	0.240	13.4	1.4881	0.0000	OK
15 minute winter	12	10	116.559	0.043	10.8	0.0935	0.0000	OK
15 minute winter	13	10	116.439	0.065	15.4	0.1611	0.0000	OK
15 minute winter	14	20	112.574	0.212	27.3	1.2253	0.0000	OK
15 minute winter	15	19	112.576	0.273	34.4	1.6353	0.0000	OK
15 minute winter	16	20	112.576	0.342	32.0	2.0827	0.0000	OK
15 minute winter	17	20	112.577	0.371	16.9	2.1253	0.0000	SURCHARGED
15 minute winter	18	20	112.561	0.378	1.9	0.6687	0.0000	SURCHARGED
15 minute winter	19	1	113.139	1.000	0.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	1	1.000	2	25.1	0.564	0.012	4.1788	
15 minute winter	2	1.001	3	38.7	0.616	0.018	5.3784	
15 minute winter	3	1.002	7	24.4	0.472	0.012	3.7687	
15 minute winter	4	2.000	5	10.8	0.875	0.254	0.2203	
15 minute winter	5	2.001	7	16.4	0.530	0.008	5.6584	
15 minute winter	6	3.000	7	0.0	0.000	0.000	0.0000	
15 minute winter	7	1.003	8	16.7	0.265	0.008	6.8990	
15 minute winter	8	Hydro-Brake®	9	5.1				
15 minute winter	9	1.005	10	8.4	0.305	0.004	1.4662	
15 minute winter	10	1.006	11	8.5	0.203	0.004	3.5899	
15 minute winter	11	Hydro-Brake®	12	4.8				
15 minute winter	12	1.008	14	10.7	1.751	0.043	0.1101	
15 minute winter	13	4.000	14	14.9	1.347	0.101	0.4762	
15 minute winter	14	1.009	15	27.1	0.597	0.013	3.8369	
15 minute winter	15	1.010	16	25.5	0.533	0.012	6.2990	
15 minute winter	16	1.011	17	16.9	0.462	0.008	3.1273	
15 minute winter	17	Hydro-Brake®	18	1.9				
15 minute winter	18	Orifice	19	0.0				0.0

Results for 2 year 30 minute summer. 1470 minute analysis at 1 minute timestep. Mass balance: 99.50%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
30 minute summer	1	34	122.050	0.150	22.9	0.9765	0.0000	OK
30 minute summer	2	34	122.044	0.247	37.0	1.5675	0.0000	OK
30 minute summer	3	32	122.045	0.323	33.6	1.9467	0.0000	OK
30 minute summer	4	18	125.576	0.076	9.8	0.2164	0.0000	OK
30 minute summer	5	32	122.045	0.301	20.3	1.8254	0.0000	OK
30 minute summer	6	1	122.711	0.000	0.0	0.0000	0.0000	OK
30 minute summer	7	32	122.046	0.364	25.6	2.0833	0.0000	OK
30 minute summer	8	32	122.045	0.422	21.9	2.7623	0.0000	SURCHARGED
30 minute summer	9	35	118.063	0.163	5.1	0.9350	0.0000	OK
30 minute summer	10	35	118.060	0.206	10.1	1.5070	0.0000	OK
30 minute summer	11	34	118.062	0.278	13.7	1.7250	0.0000	OK
30 minute summer	12	18	116.558	0.042	10.3	0.0913	0.0000	OK
30 minute summer	13	18	116.436	0.062	13.6	0.1531	0.0000	OK
30 minute summer	14	34	112.649	0.287	25.3	1.6569	0.0000	OK
30 minute summer	15	35	112.649	0.346	28.7	2.0696	0.0000	OK
30 minute summer	16	35	112.651	0.417	24.6	2.5393	0.0000	OK
30 minute summer	17	35	112.652	0.446	9.6	2.5511	0.0000	SURCHARGED
30 minute summer	18	35	112.637	0.454	1.1	0.8028	0.0000	SURCHARGED
30 minute summer	19	1	113.139	1.000	0.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
30 minute summer	1	1.000	2	22.7	0.543	0.011	5.1049	
30 minute summer	2	1.001	3	29.1	0.478	0.014	6.0856	
30 minute summer	3	1.002	7	19.6	0.393	0.009	4.2353	
30 minute summer	4	2.000	5	9.8	0.853	0.231	0.2048	
30 minute summer	5	2.001	7	10.7	0.429	0.005	6.3366	
30 minute summer	6	3.000	7	0.0	0.000	0.000	0.0000	
30 minute summer	7	1.003	8	12.4	0.246	0.006	7.6024	
30 minute summer	8	Hydro-Brake®	9	5.1				
30 minute summer	9	1.005	10	8.2	0.367	0.004	2.0207	
30 minute summer	10	1.006	11	9.2	0.206	0.004	4.5206	
30 minute summer	11	Hydro-Brake®	12	4.9				
30 minute summer	12	1.008	14	10.2	1.728	0.041	0.1064	
30 minute summer	13	4.000	14	13.6	1.309	0.092	0.4440	
30 minute summer	14	1.009	15	22.3	0.525	0.011	5.5866	
30 minute summer	15	1.010	16	18.5	0.396	0.009	8.5112	
30 minute summer	16	1.011	17	9.6	0.392	0.005	4.0644	
30 minute summer	17	Hydro-Brake®	18	1.1				
30 minute summer	18	Orifice	19	0.0				0.0

Results for 2 year 30 minute winter. 1470 minute analysis at 1 minute timestep. Mass balance: 99.57%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
30 minute winter	1	32	122.081	0.181	20.7	1.1832	0.0000	OK
30 minute winter	2	33	122.076	0.279	33.5	1.7707	0.0000	OK
30 minute winter	3	31	122.078	0.356	27.2	2.1509	0.0000	OK
30 minute winter	4	18	125.572	0.072	8.9	0.2054	0.0000	OK
30 minute winter	5	31	122.076	0.332	18.4	2.0159	0.0000	OK
30 minute winter	6	1	122.711	0.000	0.0	0.0000	0.0000	OK
30 minute winter	7	34	122.077	0.395	25.5	2.2592	0.0000	OK
30 minute winter	8	34	122.078	0.455	19.3	2.9728	0.0000	SURCHARGED
30 minute winter	9	32	118.079	0.179	6.2	1.0259	0.0000	OK
30 minute winter	10	34	118.078	0.224	10.7	1.6380	0.0000	OK
30 minute winter	11	33	118.079	0.295	13.2	1.8287	0.0000	OK
30 minute winter	12	18	116.558	0.041	9.8	0.0895	0.0000	OK
30 minute winter	13	18	116.433	0.059	12.3	0.1456	0.0000	OK
30 minute winter	14	35	112.677	0.315	23.4	1.8196	0.0000	OK
30 minute winter	15	35	112.680	0.377	24.7	2.2569	0.0000	OK
30 minute winter	16	35	112.681	0.447	22.4	2.7217	0.0000	OK
30 minute winter	17	35	112.681	0.475	8.0	2.7215	0.0000	SURCHARGED
30 minute winter	18	35	112.667	0.484	0.9	0.8558	0.0000	SURCHARGED
30 minute winter	19	1	113.139	1.000	0.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
30 minute winter	1	1.000	2	20.6	0.509	0.010	6.2543	
30 minute winter	2	1.001	3	23.4	0.496	0.011	7.1064	
30 minute winter	3	1.002	7	21.1	0.415	0.010	4.7874	
30 minute winter	4	2.000	5	8.9	0.831	0.210	0.1908	
30 minute winter	5	2.001	7	11.9	0.458	0.006	7.1699	
30 minute winter	6	3.000	7	0.0	0.000	0.000	0.0000	
30 minute winter	7	1.003	8	12.7	0.257	0.006	8.4468	
30 minute winter	8	Hydro-Brake®	9	5.1				
30 minute winter	9	1.005	10	9.6	0.365	0.005	2.2778	
30 minute winter	10	1.006	11	8.8	0.202	0.004	4.9730	
30 minute winter	11	Hydro-Brake®	12	5.0				
30 minute winter	12	1.008	14	9.8	1.707	0.039	0.1033	
30 minute winter	13	4.000	14	12.3	1.272	0.083	0.4136	
30 minute winter	14	1.009	15	19.2	0.521	0.009	6.3437	
30 minute winter	15	1.010	16	17.2	0.420	0.008	9.4611	
30 minute winter	16	1.011	17	8.0	0.405	0.004	4.4494	
30 minute winter	17	Hydro-Brake®	18	0.9				
30 minute winter	18	Orifice	19	0.0				0.0

Results for 2 year 60 minute summer. 1500 minute analysis at 1 minute timestep. Mass balance: 99.65%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute summer	1	57	122.086	0.186	17.9	1.2133	0.0000	OK
60 minute summer	2	60	122.085	0.288	28.8	1.8272	0.0000	OK
60 minute summer	3	62	122.082	0.360	21.4	2.1732	0.0000	OK
60 minute summer	4	33	125.566	0.066	7.6	0.1887	0.0000	OK
60 minute summer	5	59	122.084	0.340	15.8	2.0599	0.0000	OK
60 minute summer	6	1	122.711	0.000	0.0	0.0000	0.0000	OK
60 minute summer	7	59	122.083	0.401	17.7	2.2960	0.0000	OK
60 minute summer	8	59	122.083	0.460	13.4	3.0106	0.0000	SURCHARGED
60 minute summer	9	65	118.114	0.214	5.1	1.2245	0.0000	OK
60 minute summer	10	65	118.114	0.260	8.4	1.8982	0.0000	OK
60 minute summer	11	64	118.114	0.330	9.3	2.0463	0.0000	SURCHARGED
60 minute summer	12	33	116.556	0.040	9.1	0.0863	0.0000	OK
60 minute summer	13	33	116.429	0.055	10.6	0.1352	0.0000	OK
60 minute summer	14	65	112.794	0.432	20.9	2.4930	0.0000	OK
60 minute summer	15	65	112.794	0.491	20.9	2.9394	0.0000	OK
60 minute summer	16	65	112.794	0.560	15.5	3.4101	0.0000	OK
60 minute summer	17	65	112.794	0.588	5.0	3.3688	0.0000	SURCHARGED
60 minute summer	18	65	112.782	0.599	0.6	1.0587	0.0000	SURCHARGED
60 minute summer	19	1	113.139	1.000	0.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
60 minute summer	1	1.000	2	17.7	0.455	0.008	6.4969	
60 minute summer	2	1.001	3	17.9	0.382	0.008	7.3519	
60 minute summer	3	1.002	7	11.5	0.331	0.005	4.8828	
60 minute summer	4	2.000	5	7.6	0.796	0.179	0.1700	
60 minute summer	5	2.001	7	10.7	0.388	0.005	7.3624	
60 minute summer	6	3.000	7	0.0	0.000	0.000	0.0000	
60 minute summer	7	1.003	8	6.7	0.222	0.003	8.6130	
60 minute summer	8	Hydro-Brake®	9	5.1				
60 minute summer	9	1.005	10	5.4	0.366	0.003	2.8872	
60 minute summer	10	1.006	11	5.4	0.205	0.003	5.9793	
60 minute summer	11	Hydro-Brake®	12	5.0				
60 minute summer	12	1.008	14	9.1	1.673	0.037	0.0981	
60 minute summer	13	4.000	14	10.6	1.218	0.072	0.3723	
60 minute summer	14	1.009	15	15.9	0.424	0.008	9.4080	
60 minute summer	15	1.010	16	10.8	0.338	0.005	13.1106	
60 minute summer	16	1.011	17	5.0	0.359	0.002	5.9417	
60 minute summer	17	Hydro-Brake®	18	0.6				
60 minute summer	18	Orifice	19	0.0				0.0

Results for 2 year 60 minute winter. 1500 minute analysis at 1 minute timestep. Mass balance: 99.70%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute winter	1	61	122.127	0.226	14.5	1.4771	0.0000	OK
60 minute winter	2	61	122.123	0.326	23.1	2.0731	0.0000	OK
60 minute winter	3	60	122.123	0.401	17.2	2.4206	0.0000	OK
60 minute winter	4	33	125.560	0.060	6.2	0.1695	0.0000	OK
60 minute winter	5	60	122.124	0.380	12.9	2.3018	0.0000	OK
60 minute winter	6	1	122.711	0.000	0.0	0.0000	0.0000	OK
60 minute winter	7	59	122.123	0.441	15.0	2.5276	0.0000	OK
60 minute winter	8	59	122.124	0.501	12.5	3.2762	0.0000	SURCHARGED
60 minute winter	9	65	118.136	0.236	5.1	1.3495	0.0000	OK
60 minute winter	10	65	118.135	0.281	8.0	2.0562	0.0000	OK
60 minute winter	11	64	118.135	0.351	8.5	2.1809	0.0000	SURCHARGED
60 minute winter	12	33	116.554	0.038	8.4	0.0828	0.0000	OK
60 minute winter	13	33	116.423	0.049	8.6	0.1220	0.0000	OK
60 minute winter	14	65	112.831	0.469	17.9	2.7088	0.0000	OK
60 minute winter	15	65	112.831	0.528	17.8	3.1618	0.0000	OK
60 minute winter	16	65	112.832	0.598	13.0	3.6375	0.0000	OK
60 minute winter	17	65	112.832	0.626	4.8	3.5829	0.0000	SURCHARGED
60 minute winter	18	65	112.820	0.637	0.6	1.1250	0.0000	SURCHARGED
60 minute winter	19	1	113.139	1.000	0.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
60 minute winter	1	1.000	2	14.1	0.424	0.007	8.1512	
60 minute winter	2	1.001	3	14.5	0.395	0.007	8.6472	
60 minute winter	3	1.002	7	10.0	0.356	0.005	5.6198	
60 minute winter	4	2.000	5	6.2	0.753	0.146	0.1467	
60 minute winter	5	2.001	7	9.6	0.405	0.005	8.4809	
60 minute winter	6	3.000	7	0.0	0.000	0.000	0.0000	
60 minute winter	7	1.003	8	6.0	0.235	0.003	9.7240	
60 minute winter	8	Hydro-Brake®	9	5.1				
60 minute winter	9	1.005	10	5.2	0.371	0.002	3.2725	
60 minute winter	10	1.006	11	5.5	0.206	0.003	6.6072	
60 minute winter	11	Hydro-Brake®	12	5.0				
60 minute winter	12	1.008	14	8.4	1.630	0.034	0.0924	
60 minute winter	13	4.000	14	8.6	1.147	0.058	0.3211	
60 minute winter	14	1.009	15	13.8	0.440	0.007	10.4350	
60 minute winter	15	1.010	16	9.4	0.361	0.004	14.3339	
60 minute winter	16	1.011	17	4.8	0.376	0.002	6.4407	
60 minute winter	17	Hydro-Brake®	18	0.6				
60 minute winter	18	Orifice	19	0.0				0.0

Results for 2 year 120 minute summer. 1560 minute analysis at 2 minute timestep. Mass balance: 99.75%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute summer	1	102	122.103	0.203	12.3	1.3244	0.0000	OK
120 minute summer	2	96	122.102	0.305	19.5	1.9397	0.0000	OK
120 minute summer	3	100	122.102	0.380	14.4	2.2910	0.0000	OK
120 minute summer	4	64	125.555	0.055	5.2	0.1548	0.0000	OK
120 minute summer	5	94	122.102	0.358	10.8	2.1705	0.0000	OK
120 minute summer	6	2	122.711	0.000	0.0	0.0000	0.0000	OK
120 minute summer	7	94	122.102	0.420	13.0	2.4034	0.0000	OK
120 minute summer	8	100	122.102	0.479	9.9	3.1308	0.0000	SURCHARGED
120 minute summer	9	126	118.170	0.270	5.1	1.5439	0.0000	OK
120 minute summer	10	126	118.170	0.316	6.9	2.3068	0.0000	OK
120 minute summer	11	126	118.170	0.386	7.6	2.3933	0.0000	SURCHARGED
120 minute summer	12	64	116.553	0.037	7.9	0.0802	0.0000	OK
120 minute summer	13	64	116.420	0.046	7.3	0.1126	0.0000	OK
120 minute summer	14	126	113.032	0.670	16.0	3.8646	0.0000	OK
120 minute summer	15	126	113.032	0.729	14.8	4.3602	0.0000	OK
120 minute summer	16	126	113.032	0.798	9.9	4.8543	0.0000	OK
120 minute summer	17	126	113.032	0.826	3.3	4.7275	0.0000	SURCHARGED
120 minute summer	18	126	113.020	0.837	0.4	1.4787	0.0000	SURCHARGED
120 minute summer	19	2	113.139	1.000	0.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
120 minute summer	1	1.000	2	11.9	0.383	0.006	7.2471	
120 minute summer	2	1.001	3	12.0	0.340	0.006	7.9631	
120 minute summer	3	1.002	7	7.5	0.282	0.004	5.2294	
120 minute summer	4	2.000	5	5.2	0.718	0.123	0.1293	
120 minute summer	5	2.001	7	6.3	0.346	0.003	7.8748	
120 minute summer	6	3.000	7	0.0	0.000	0.000	0.0000	
120 minute summer	7	1.003	8	5.5	0.193	0.003	9.1188	
120 minute summer	8	Hydro-Brake®	9	5.1				
120 minute summer	9	1.005	10	5.1	0.355	0.002	3.9010	
120 minute summer	10	1.006	11	5.1	0.197	0.002	7.6275	
120 minute summer	11	Hydro-Brake®	12	5.1				
120 minute summer	12	1.008	14	7.9	1.599	0.032	0.0884	
120 minute summer	13	4.000	14	7.3	1.095	0.049	0.2859	
120 minute summer	14	1.009	15	11.4	0.389	0.005	16.0449	
120 minute summer	15	1.010	16	6.7	0.294	0.003	20.8644	
120 minute summer	16	1.011	17	3.3	0.323	0.002	9.0490	
120 minute summer	17	Hydro-Brake®	18	0.4				
120 minute summer	18	Orifice	19	0.0				0.0

Results for 2 year 120 minute winter. 1560 minute analysis at 2 minute timestep. Mass balance: 99.78%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute winter	1	112	122.149	0.249	9.5	1.6240	0.0000	OK
120 minute winter	2	112	122.148	0.351	14.2	2.2286	0.0000	OK
120 minute winter	3	114	122.148	0.426	10.3	2.5688	0.0000	OK
120 minute winter	4	64	125.548	0.048	4.0	0.1352	0.0000	OK
120 minute winter	5	114	122.148	0.404	8.3	2.4486	0.0000	OK
120 minute winter	6	2	122.711	0.000	0.0	0.0000	0.0000	OK
120 minute winter	7	114	122.148	0.466	9.9	2.6669	0.0000	OK
120 minute winter	8	114	122.148	0.525	8.6	3.4326	0.0000	SURCHARGED
120 minute winter	9	126	118.198	0.298	5.1	1.7051	0.0000	OK
120 minute winter	10	126	118.198	0.344	6.5	2.5126	0.0000	OK
120 minute winter	11	126	118.198	0.414	7.0	2.5681	0.0000	SURCHARGED
120 minute winter	12	66	116.552	0.036	7.3	0.0771	0.0000	OK
120 minute winter	13	64	116.414	0.040	5.6	0.0990	0.0000	OK
120 minute winter	14	126	113.080	0.717	13.4	4.1405	0.0000	OK
120 minute winter	15	126	113.080	0.776	12.8	4.6464	0.0000	OK
120 minute winter	16	126	113.080	0.845	8.4	5.1457	0.0000	OK
120 minute winter	17	126	113.080	0.874	2.8	5.0017	0.0000	SURCHARGED
120 minute winter	18	126	113.068	0.885	0.5	1.5635	0.0000	SURCHARGED
120 minute winter	19	2	113.139	1.000	0.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
120 minute winter	1	1.000	2	8.7	0.362	0.004	9.1376	
120 minute winter	2	1.001	3	8.7	0.340	0.004	9.4642	
120 minute winter	3	1.002	7	6.2	0.304	0.003	6.0683	
120 minute winter	4	2.000	5	4.0	0.667	0.094	0.1070	
120 minute winter	5	2.001	7	5.7	0.338	0.003	9.1726	
120 minute winter	6	3.000	7	0.0	0.000	0.000	0.0000	
120 minute winter	7	1.003	8	5.1	0.209	0.002	10.3935	
120 minute winter	8	Hydro-Brake®	9	5.1				
120 minute winter	9	1.005	10	5.1	0.365	0.002	4.4394	
120 minute winter	10	1.006	11	5.1	0.203	0.002	8.4880	
120 minute winter	11	Hydro-Brake®	12	5.1				
120 minute winter	12	1.008	14	7.2	1.561	0.029	0.0834	
120 minute winter	13	4.000	14	5.6	1.012	0.038	0.2372	
120 minute winter	14	1.009	15	10.2	0.395	0.005	17.3617	
120 minute winter	15	1.010	16	6.0	0.316	0.003	22.3642	
120 minute winter	16	1.011	17	2.8	0.292	0.001	9.6373	
120 minute winter	17	Hydro-Brake®	18	0.5				
120 minute winter	18	Orifice	19	0.0				0.0

Results for 2 year 180 minute summer. 1620 minute analysis at 4 minute timestep. Mass balance: 99.19%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
180 minute summer	1	136	122.106	0.206	9.4	1.3421	0.0000	OK
180 minute summer	2	136	122.105	0.308	15.0	1.9563	0.0000	OK
180 minute summer	3	132	122.104	0.382	11.2	2.3072	0.0000	OK
180 minute summer	4	96	125.548	0.048	4.0	0.1353	0.0000	OK
180 minute summer	5	128	122.105	0.361	8.3	2.1865	0.0000	OK
180 minute summer	6	4	122.711	0.000	0.0	0.0000	0.0000	OK
180 minute summer	7	128	122.104	0.422	11.0	2.4187	0.0000	OK
180 minute summer	8	128	122.105	0.481	9.0	3.1490	0.0000	SURCHARGED
180 minute summer	9	248	118.202	0.302	5.1	1.7300	0.0000	OK
180 minute summer	10	248	118.202	0.348	6.5	2.5444	0.0000	OK
180 minute summer	11	248	118.202	0.418	7.0	2.5952	0.0000	SURCHARGED
180 minute summer	12	96	116.552	0.036	7.2	0.0769	0.0000	OK
180 minute summer	13	96	116.414	0.040	5.6	0.0990	0.0000	OK
180 minute summer	14	324	113.246	0.884	13.4	5.1018	0.0000	OK
180 minute summer	15	324	113.246	0.943	12.4	5.6432	0.0000	OK
180 minute summer	16	324	113.246	1.012	8.1	6.1593	0.0000	OK
180 minute summer	17	324	113.246	1.040	5.1	5.9553	0.0000	SURCHARGED
180 minute summer	18	324	113.141	0.958	5.1	1.6933	0.0000	SURCHARGED
180 minute summer	19	4	113.139	1.000	5.1	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
180 minute summer	1	1.000	2	9.1	0.350	0.004	7.3568	
180 minute summer	2	1.001	3	9.4	0.333	0.004	8.0491	
180 minute summer	3	1.002	7	6.2	0.263	0.003	5.2766	
180 minute summer	4	2.000	5	4.0	0.667	0.094	0.1070	
180 minute summer	5	2.001	7	5.1	0.246	0.002	7.9485	
180 minute summer	6	3.000	7	0.0	0.000	0.000	0.0000	
180 minute summer	7	1.003	8	5.0	0.189	0.002	9.1938	
180 minute summer	8	Hydro-Brake®	9	5.1				
180 minute summer	9	1.005	10	5.1	0.342	0.002	4.5246	
180 minute summer	10	1.006	11	5.1	0.181	0.002	8.6233	
180 minute summer	11	Hydro-Brake®	12	5.1				
180 minute summer	12	1.008	14	7.2	1.559	0.029	0.0831	
180 minute summer	13	4.000	14	5.6	1.012	0.038	0.2373	
180 minute summer	14	1.009	15	9.7	0.372	0.005	21.6708	
180 minute summer	15	1.010	16	5.6	0.267	0.003	27.1153	
180 minute summer	16	1.011	17	5.1	0.254	0.002	11.4448	
180 minute summer	17	Hydro-Brake®	18	5.1				
180 minute summer	18	Orifice	19	5.1				76.4

Results for 2 year 180 minute winter. 1620 minute analysis at 4 minute timestep. Mass balance: 99.23%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
180 minute winter	1	144	122.152	0.252	7.3	1.6456	0.0000	OK
180 minute winter	2	144	122.152	0.355	10.4	2.2541	0.0000	OK
180 minute winter	3	144	122.152	0.430	7.8	2.5939	0.0000	OK
180 minute winter	4	96	125.542	0.042	3.1	0.1190	0.0000	OK
180 minute winter	5	140	122.152	0.408	6.4	2.4725	0.0000	OK
180 minute winter	6	4	122.711	0.000	0.0	0.0000	0.0000	OK
180 minute winter	7	144	122.152	0.470	8.1	2.6892	0.0000	OK
180 minute winter	8	140	122.152	0.529	7.4	3.4570	0.0000	SURCHARGED
180 minute winter	9	284	118.241	0.341	5.1	1.9535	0.0000	OK
180 minute winter	10	284	118.241	0.387	6.3	2.8297	0.0000	OK
180 minute winter	11	284	118.241	0.457	6.6	2.8375	0.0000	SURCHARGED
180 minute winter	12	96	116.551	0.035	6.8	0.0746	0.0000	OK
180 minute winter	13	96	116.409	0.035	4.3	0.0872	0.0000	OK
180 minute winter	14	372	113.246	0.884	11.6	5.1023	0.0000	OK
180 minute winter	15	372	113.246	0.943	10.5	5.6436	0.0000	OK
180 minute winter	16	372	113.246	1.012	6.8	6.1598	0.0000	OK
180 minute winter	17	372	113.246	1.040	5.1	5.9557	0.0000	SURCHARGED
180 minute winter	18	372	113.141	0.958	5.1	1.6933	0.0000	SURCHARGED
180 minute winter	19	4	113.139	1.000	5.1	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
180 minute winter	1	1.000	2	6.4	0.329	0.003	9.2945	
180 minute winter	2	1.001	3	6.6	0.330	0.003	9.6112	
180 minute winter	3	1.002	7	4.9	0.280	0.002	6.1424	
180 minute winter	4	2.000	5	3.1	0.620	0.073	0.0893	
180 minute winter	5	2.001	7	4.4	0.243	0.002	9.2842	
180 minute winter	6	3.000	7	0.0	0.000	0.000	0.0000	
180 minute winter	7	1.003	8	4.7	0.181	0.002	10.4992	
180 minute winter	8	Hydro-Brake®	9	5.1				
180 minute winter	9	1.005	10	5.1	0.351	0.002	5.2991	
180 minute winter	10	1.006	11	5.1	0.192	0.002	9.8479	
180 minute winter	11	Hydro-Brake®	12	5.1				
180 minute winter	12	1.008	14	6.8	1.530	0.027	0.0795	
180 minute winter	13	4.000	14	4.3	0.934	0.029	0.1974	
180 minute winter	14	1.009	15	8.5	0.384	0.004	21.6726	
180 minute winter	15	1.010	16	5.1	0.289	0.002	27.1172	
180 minute winter	16	1.011	17	5.1	0.299	0.002	11.4455	
180 minute winter	17	Hydro-Brake®	18	5.1				
180 minute winter	18	Orifice	19	5.1				92.1

Results for 2 year 240 minute summer. 1680 minute analysis at 4 minute timestep. Mass balance: 99.22%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
240 minute summer	1	172	122.105	0.205	8.2	1.3381	0.0000	OK
240 minute summer	2	172	122.104	0.307	12.1	1.9499	0.0000	OK
240 minute summer	3	168	122.104	0.382	8.6	2.3058	0.0000	OK
240 minute summer	4	124	125.544	0.044	3.5	0.1259	0.0000	OK
240 minute summer	5	168	122.104	0.360	7.3	2.1845	0.0000	OK
240 minute summer	6	4	122.711	0.000	0.0	0.0000	0.0000	OK
240 minute summer	7	168	122.104	0.422	9.1	2.4171	0.0000	OK
240 minute summer	8	168	122.104	0.481	8.0	3.1468	0.0000	SURCHARGED
240 minute summer	9	300	118.216	0.316	5.1	1.8069	0.0000	OK
240 minute summer	10	300	118.216	0.362	6.3	2.6426	0.0000	OK
240 minute summer	11	300	118.216	0.432	6.7	2.6787	0.0000	SURCHARGED
240 minute summer	12	124	116.551	0.035	6.9	0.0753	0.0000	OK
240 minute summer	13	124	116.411	0.037	4.9	0.0922	0.0000	OK
240 minute summer	14	244	113.257	0.895	12.2	5.1662	0.0000	OK
240 minute summer	15	244	113.257	0.954	11.2	5.7099	0.0000	OK
240 minute summer	16	244	113.257	1.023	7.3	6.2272	0.0000	OK
240 minute summer	17	244	113.257	1.051	5.8	6.0191	0.0000	SURCHARGED
240 minute summer	18	244	113.142	0.959	5.7	1.6945	0.0000	SURCHARGED
240 minute summer	19	4	113.139	1.000	5.7	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
240 minute summer	1	1.000	2	7.4	0.335	0.003	7.3239	
240 minute summer	2	1.001	3	7.3	0.337	0.003	8.0276	
240 minute summer	3	1.002	7	5.4	0.255	0.003	5.2738	
240 minute summer	4	2.000	5	3.5	0.640	0.082	0.0967	
240 minute summer	5	2.001	7	5.5	0.228	0.003	7.9401	
240 minute summer	6	3.000	7	0.0	0.000	0.000	0.0000	
240 minute summer	7	1.003	8	4.7	0.180	0.002	9.1853	
240 minute summer	8	Hydro-Brake®	9	5.1				
240 minute summer	9	1.005	10	5.1	0.336	0.002	4.7879	
240 minute summer	10	1.006	11	5.1	0.172	0.002	9.0418	
240 minute summer	11	Hydro-Brake®	12	5.1				
240 minute summer	12	1.008	14	6.9	1.538	0.028	0.0805	
240 minute summer	13	4.000	14	4.8	0.967	0.033	0.2142	
240 minute summer	14	1.009	15	8.9	0.357	0.004	21.9371	
240 minute summer	15	1.010	16	5.7	0.249	0.003	27.3975	
240 minute summer	16	1.011	17	5.8	0.239	0.003	11.5485	
240 minute summer	17	Hydro-Brake®	18	5.7				
240 minute summer	18	Orifice	19	5.7				92.3

Results for 2 year 240 minute winter. 1680 minute analysis at 4 minute timestep. Mass balance: 99.41%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
240 minute winter	1	180	122.147	0.247	6.1	1.6111	0.0000	OK
240 minute winter	2	180	122.147	0.350	8.8	2.2218	0.0000	OK
240 minute winter	3	184	122.147	0.425	6.8	2.5639	0.0000	OK
240 minute winter	4	128	125.538	0.038	2.6	0.1090	0.0000	OK
240 minute winter	5	184	122.147	0.403	5.4	2.4434	0.0000	OK
240 minute winter	6	4	122.711	0.000	0.0	0.0000	0.0000	OK
240 minute winter	7	184	122.147	0.465	7.3	2.6616	0.0000	OK
240 minute winter	8	184	122.147	0.524	7.0	3.4260	0.0000	SURCHARGED
240 minute winter	9	336	118.247	0.347	5.1	1.9887	0.0000	OK
240 minute winter	10	336	118.247	0.393	6.0	2.8747	0.0000	OK
240 minute winter	11	336	118.247	0.463	6.3	2.8757	0.0000	SURCHARGED
240 minute winter	12	128	116.550	0.034	6.5	0.0732	0.0000	OK
240 minute winter	13	128	116.407	0.032	3.6	0.0802	0.0000	OK
240 minute winter	14	236	113.262	0.900	10.5	5.1947	0.0000	OK
240 minute winter	15	236	113.262	0.959	9.5	5.7395	0.0000	OK
240 minute winter	16	236	113.262	1.028	6.2	6.2573	0.0000	OK
240 minute winter	17	236	113.262	1.056	6.0	6.0474	0.0000	SURCHARGED
240 minute winter	18	236	113.142	0.959	6.0	1.6950	0.0000	SURCHARGED
240 minute winter	19	4	113.139	1.000	6.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
240 minute winter	1	1.000	2	5.4	0.315	0.003	9.0738	
240 minute winter	2	1.001	3	5.8	0.336	0.003	9.4396	
240 minute winter	3	1.002	7	4.6	0.266	0.002	6.0522	
240 minute winter	4	2.000	5	2.6	0.589	0.061	0.0787	
240 minute winter	5	2.001	7	3.7	0.232	0.002	9.1471	
240 minute winter	6	3.000	7	0.0	0.000	0.000	0.0000	
240 minute winter	7	1.003	8	4.7	0.181	0.002	10.3666	
240 minute winter	8	Hydro-Brake®	9	5.1				
240 minute winter	9	1.005	10	5.1	0.346	0.002	5.4235	
240 minute winter	10	1.006	11	5.1	0.183	0.002	10.0432	
240 minute winter	11	Hydro-Brake®	12	5.1				
240 minute winter	12	1.008	14	6.5	1.512	0.026	0.0772	
240 minute winter	13	4.000	14	3.6	0.886	0.024	0.1742	
240 minute winter	14	1.009	15	7.8	0.372	0.004	22.0528	
240 minute winter	15	1.010	16	5.9	0.265	0.003	27.5209	
240 minute winter	16	1.011	17	6.0	0.234	0.003	11.5944	
240 minute winter	17	Hydro-Brake®	18	6.0				
240 minute winter	18	Orifice	19	6.0				112.6

Results for 2 year 360 minute summer. 1800 minute analysis at 8 minute timestep. Mass balance: 99.38%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
360 minute summer	1	240	122.097	0.197	6.4	1.2859	0.0000	OK
360 minute summer	2	240	122.097	0.300	9.0	1.9078	0.0000	OK
360 minute summer	3	240	122.098	0.376	7.0	2.2672	0.0000	OK
360 minute summer	4	184	125.539	0.039	2.7	0.1106	0.0000	OK
360 minute summer	5	240	122.098	0.354	5.7	2.1458	0.0000	OK
360 minute summer	6	8	122.711	0.000	0.0	0.0000	0.0000	OK
360 minute summer	7	240	122.098	0.416	7.7	2.3806	0.0000	OK
360 minute summer	8	240	122.098	0.475	7.1	3.1054	0.0000	SURCHARGED
360 minute summer	9	384	118.250	0.350	5.1	2.0041	0.0000	OK
360 minute summer	10	384	118.250	0.396	6.1	2.8943	0.0000	OK
360 minute summer	11	384	118.250	0.466	6.3	2.8924	0.0000	SURCHARGED
360 minute summer	12	184	116.550	0.034	6.5	0.0733	0.0000	OK
360 minute summer	13	184	116.407	0.033	3.8	0.0819	0.0000	OK
360 minute summer	14	272	113.269	0.907	10.7	5.2351	0.0000	OK
360 minute summer	15	272	113.269	0.966	9.6	5.7814	0.0000	OK
360 minute summer	16	272	113.269	1.035	6.5	6.2999	0.0000	OK
360 minute summer	17	272	113.269	1.063	6.4	6.0875	0.0000	SURCHARGED
360 minute summer	18	272	113.143	0.960	6.4	1.6957	0.0000	SURCHARGED
360 minute summer	19	8	113.139	1.000	6.4	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
360 minute summer	1	1.000	2	5.5	0.313	0.003	7.0348	
360 minute summer	2	1.001	3	5.7	0.335	0.003	7.8212	
360 minute summer	3	1.002	7	4.6	0.256	0.002	5.1592	
360 minute summer	4	2.000	5	2.7	0.594	0.063	0.0804	
360 minute summer	5	2.001	7	3.8	0.200	0.002	7.7631	
360 minute summer	6	3.000	7	0.0	0.000	0.000	0.0000	
360 minute summer	7	1.003	8	4.6	0.157	0.002	9.0117	
360 minute summer	8	Hydro-Brake®	9	5.1				
360 minute summer	9	1.005	10	5.1	0.336	0.002	5.4782	
360 minute summer	10	1.006	11	5.1	0.161	0.002	10.1287	
360 minute summer	11	Hydro-Brake®	12	5.1				
360 minute summer	12	1.008	14	6.5	1.513	0.026	0.0773	
360 minute summer	13	4.000	14	3.8	0.898	0.025	0.1794	
360 minute summer	14	1.009	15	7.8	0.326	0.004	22.2157	
360 minute summer	15	1.010	16	6.2	0.218	0.003	27.6919	
360 minute summer	16	1.011	17	6.4	0.171	0.003	11.6555	
360 minute summer	17	Hydro-Brake®	18	6.4				
360 minute summer	18	Orifice	19	6.4				114.5

Results for 2 year 360 minute winter. 1800 minute analysis at 8 minute timestep. Mass balance: 99.47%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
360 minute winter	1	264	122.131	0.231	4.7	1.5053	0.0000	OK
360 minute winter	2	264	122.131	0.334	7.0	2.1191	0.0000	OK
360 minute winter	3	264	122.131	0.409	5.7	2.4659	0.0000	OK
360 minute winter	4	184	125.534	0.034	2.0	0.0955	0.0000	OK
360 minute winter	5	264	122.131	0.386	4.2	2.3439	0.0000	OK
360 minute winter	6	8	122.711	0.000	0.0	0.0000	0.0000	OK
360 minute winter	7	264	122.131	0.448	6.5	2.5680	0.0000	OK
360 minute winter	8	264	122.131	0.507	6.4	3.3188	0.0000	SURCHARGED
360 minute winter	9	424	118.294	0.394	5.1	2.2567	0.0000	OK
360 minute winter	10	424	118.294	0.440	5.9	3.2167	0.0000	OK
360 minute winter	11	424	118.294	0.510	6.0	3.1662	0.0000	SURCHARGED
360 minute winter	12	184	116.549	0.033	6.2	0.0715	0.0000	OK
360 minute winter	13	184	116.403	0.029	2.8	0.0709	0.0000	OK
360 minute winter	14	256	113.296	0.934	9.3	5.3916	0.0000	OK
360 minute winter	15	256	113.296	0.993	8.2	5.9437	0.0000	OK
360 minute winter	16	256	113.296	1.062	7.9	6.4649	0.0000	OK
360 minute winter	17	256	113.296	1.090	7.6	6.2428	0.0000	SURCHARGED
360 minute winter	18	256	113.144	0.961	7.6	1.6984	0.0000	SURCHARGED
360 minute winter	19	8	113.139	1.000	7.6	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
360 minute winter	1	1.000	2	4.3	0.299	0.002	8.3943	
360 minute winter	2	1.001	3	5.0	0.327	0.002	8.9032	
360 minute winter	3	1.002	7	4.2	0.253	0.002	5.7535	
360 minute winter	4	2.000	5	2.0	0.545	0.047	0.0651	
360 minute winter	5	2.001	7	3.0	0.163	0.001	8.6803	
360 minute winter	6	3.000	7	0.0	0.000	0.000	0.0000	
360 minute winter	7	1.003	8	4.6	0.168	0.002	9.9116	
360 minute winter	8	Hydro-Brake®	9	5.1				
360 minute winter	9	1.005	10	5.1	0.333	0.002	6.3886	
360 minute winter	10	1.006	11	5.1	0.172	0.002	11.5506	
360 minute winter	11	Hydro-Brake®	12	5.1				
360 minute winter	12	1.008	14	6.2	1.491	0.025	0.0746	
360 minute winter	13	4.000	14	2.8	0.821	0.019	0.1457	
360 minute winter	14	1.009	15	7.2	0.340	0.003	22.8339	
360 minute winter	15	1.010	16	7.3	0.232	0.003	28.3354	
360 minute winter	16	1.011	17	7.6	0.243	0.004	11.8853	
360 minute winter	17	Hydro-Brake®	18	7.6				
360 minute winter	18	Orifice	19	7.6				137.6

Results for 2 year 480 minute summer. 1920 minute analysis at 8 minute timestep. Mass balance: 99.51%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
480 minute summer	1	304	122.082	0.182	5.2	1.1865	0.0000	OK
480 minute summer	2	312	122.082	0.285	8.3	1.8086	0.0000	OK
480 minute summer	3	304	122.082	0.360	6.5	2.1702	0.0000	OK
480 minute summer	4	248	125.535	0.035	2.2	0.1003	0.0000	OK
480 minute summer	5	304	122.082	0.337	4.6	2.0468	0.0000	OK
480 minute summer	6	8	122.711	0.000	0.0	0.0000	0.0000	OK
480 minute summer	7	304	122.082	0.400	7.2	2.2876	0.0000	OK
480 minute summer	8	304	122.082	0.458	6.8	2.9984	0.0000	SURCHARGED
480 minute summer	9	488	118.263	0.363	5.1	2.0808	0.0000	OK
480 minute summer	10	488	118.263	0.409	5.8	2.9923	0.0000	OK
480 minute summer	11	488	118.263	0.479	6.1	2.9756	0.0000	SURCHARGED
480 minute summer	12	248	116.549	0.033	6.3	0.0719	0.0000	OK
480 minute summer	13	248	116.404	0.030	3.1	0.0745	0.0000	OK
480 minute summer	14	312	113.290	0.928	9.7	5.3553	0.0000	OK
480 minute summer	15	312	113.290	0.987	8.6	5.9060	0.0000	OK
480 minute summer	16	312	113.290	1.056	7.6	6.4266	0.0000	OK
480 minute summer	17	312	113.290	1.084	7.4	6.2068	0.0000	SURCHARGED
480 minute summer	18	312	113.144	0.961	7.4	1.6978	0.0000	SURCHARGED
480 minute summer	19	8	113.139	1.000	7.4	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
480 minute summer	1	1.000	2	5.1	0.303	0.002	6.4264	
480 minute summer	2	1.001	3	5.5	0.323	0.003	7.3130	
480 minute summer	3	1.002	7	4.3	0.256	0.002	4.8708	
480 minute summer	4	2.000	5	2.2	0.562	0.052	0.0699	
480 minute summer	5	2.001	7	3.4	0.172	0.002	7.3128	
480 minute summer	6	3.000	7	0.0	0.000	0.000	0.0000	
480 minute summer	7	1.003	8	4.5	0.150	0.002	8.5674	
480 minute summer	8	Hydro-Brake®	9	5.1				
480 minute summer	9	1.005	10	5.0	0.338	0.002	5.7523	
480 minute summer	10	1.006	11	5.0	0.158	0.002	10.5581	
480 minute summer	11	Hydro-Brake®	12	5.1				
480 minute summer	12	1.008	14	6.3	1.496	0.025	0.0752	
480 minute summer	13	4.000	14	3.1	0.847	0.021	0.1569	
480 minute summer	14	1.009	15	7.1	0.314	0.003	22.6932	
480 minute summer	15	1.010	16	7.1	0.213	0.003	28.1913	
480 minute summer	16	1.011	17	7.4	0.198	0.004	11.8354	
480 minute summer	17	Hydro-Brake®	18	7.4				
480 minute summer	18	Orifice	19	7.4				136.3

Results for 2 year 480 minute winter. 1920 minute analysis at 8 minute timestep. Mass balance: 99.53%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
480 minute winter	1	336	122.103	0.203	3.8	1.3262	0.0000	OK
480 minute winter	2	336	122.103	0.306	5.8	1.9457	0.0000	OK
480 minute winter	3	336	122.103	0.381	5.0	2.3011	0.0000	OK
480 minute winter	4	248	125.530	0.030	1.6	0.0858	0.0000	OK
480 minute winter	5	336	122.103	0.359	3.4	2.1785	0.0000	OK
480 minute winter	6	8	122.711	0.000	0.0	0.0000	0.0000	OK
480 minute winter	7	336	122.103	0.421	6.0	2.4118	0.0000	OK
480 minute winter	8	336	122.103	0.480	6.1	3.1405	0.0000	SURCHARGED
480 minute winter	9	496	118.317	0.417	5.1	2.3868	0.0000	OK
480 minute winter	10	496	118.317	0.463	5.7	3.3828	0.0000	OK
480 minute winter	11	496	118.317	0.533	5.9	3.3072	0.0000	SURCHARGED
480 minute winter	12	248	116.549	0.033	6.0	0.0706	0.0000	OK
480 minute winter	13	248	116.400	0.026	2.3	0.0648	0.0000	OK
480 minute winter	14	312	113.319	0.957	8.5	5.5246	0.0000	OK
480 minute winter	15	312	113.319	1.016	8.4	6.0815	0.0000	OK
480 minute winter	16	312	113.319	1.085	8.5	6.6051	0.0000	OK
480 minute winter	17	312	113.319	1.113	8.1	6.3747	0.0000	SURCHARGED
480 minute winter	18	312	113.145	0.962	8.1	1.6997	0.0000	SURCHARGED
480 minute winter	19	8	113.139	1.000	8.1	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
480 minute winter	1	1.000	2	3.6	0.284	0.002	7.2766	
480 minute winter	2	1.001	3	4.3	0.329	0.002	8.0088	
480 minute winter	3	1.002	7	3.8	0.256	0.002	5.2586	
480 minute winter	4	2.000	5	1.6	0.512	0.038	0.0558	
480 minute winter	5	2.001	7	2.5	0.161	0.001	7.9135	
480 minute winter	6	3.000	7	0.0	0.000	0.000	0.0000	
480 minute winter	7	1.003	8	4.5	0.140	0.002	9.1596	
480 minute winter	8	Hydro-Brake®	9	5.1				
480 minute winter	9	1.005	10	5.1	0.336	0.002	6.8669	
480 minute winter	10	1.006	11	5.1	0.156	0.002	12.2914	
480 minute winter	11	Hydro-Brake®	12	5.1				
480 minute winter	12	1.008	14	6.0	1.478	0.024	0.0731	
480 minute winter	13	4.000	14	2.3	0.777	0.016	0.1270	
480 minute winter	14	1.009	15	7.5	0.328	0.004	23.3377	
480 minute winter	15	1.010	16	7.7	0.219	0.004	28.8503	
480 minute winter	16	1.011	17	8.1	0.173	0.004	12.0646	
480 minute winter	17	Hydro-Brake®	18	8.1				
480 minute winter	18	Orifice	19	8.1				159.0

Results for 2 year 600 minute summer. 2040 minute analysis at 15 minute timestep. Mass balance: 99.49%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
600 minute summer	1	375	122.065	0.165	4.3	1.0790	0.0000	OK
600 minute summer	2	375	122.065	0.268	6.9	1.7041	0.0000	OK
600 minute summer	3	375	122.065	0.343	5.7	2.0722	0.0000	OK
600 minute summer	4	315	125.532	0.032	1.8	0.0908	0.0000	OK
600 minute summer	5	375	122.065	0.321	3.8	1.9487	0.0000	OK
600 minute summer	6	15	122.711	0.000	0.0	0.0000	0.0000	OK
600 minute summer	7	375	122.065	0.383	6.5	2.1948	0.0000	OK
600 minute summer	8	375	122.065	0.442	6.4	2.8926	0.0000	SURCHARGED
600 minute summer	9	570	118.270	0.370	5.1	2.1191	0.0000	OK
600 minute summer	10	570	118.270	0.416	5.8	3.0412	0.0000	OK
600 minute summer	11	570	118.270	0.486	6.0	3.0171	0.0000	SURCHARGED
600 minute summer	12	315	116.549	0.033	6.1	0.0710	0.0000	OK
600 minute summer	13	315	116.402	0.028	2.6	0.0686	0.0000	OK
600 minute summer	14	360	113.307	0.945	9.0	5.4529	0.0000	OK
600 minute summer	15	360	113.307	1.004	8.4	6.0072	0.0000	OK
600 minute summer	16	360	113.307	1.073	8.2	6.5295	0.0000	OK
600 minute summer	17	360	113.307	1.101	8.0	6.3036	0.0000	SURCHARGED
600 minute summer	18	360	113.145	0.962	7.9	1.6992	0.0000	SURCHARGED
600 minute summer	19	15	113.139	1.000	7.9	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
600 minute summer	1	1.000	2	4.2	0.283	0.002	5.8007	
600 minute summer	2	1.001	3	4.9	0.321	0.002	6.7995	
600 minute summer	3	1.002	7	3.9	0.251	0.002	4.5846	
600 minute summer	4	2.000	5	1.8	0.530	0.043	0.0606	
600 minute summer	5	2.001	7	2.9	0.161	0.001	6.8715	
600 minute summer	6	3.000	7	0.0	0.000	0.000	0.0000	
600 minute summer	7	1.003	8	4.5	0.165	0.002	8.1303	
600 minute summer	8	Hydro-Brake®	9	5.1				
600 minute summer	9	1.005	10	5.0	0.336	0.002	5.8893	
600 minute summer	10	1.006	11	5.0	0.139	0.002	10.7735	
600 minute summer	11	Hydro-Brake®	12	5.1				
600 minute summer	12	1.008	14	6.1	1.483	0.024	0.0737	
600 minute summer	13	4.000	14	2.6	0.805	0.018	0.1385	
600 minute summer	14	1.009	15	7.4	0.304	0.004	23.0705	
600 minute summer	15	1.010	16	7.5	0.195	0.004	28.5777	
600 minute summer	16	1.011	17	8.0	0.197	0.004	11.9694	
600 minute summer	17	Hydro-Brake®	18	7.9				
600 minute summer	18	Orifice	19	7.9				150.3

Results for 2 year 600 minute winter. 2040 minute analysis at 15 minute timestep. Mass balance: 99.59%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
600 minute winter	1	405	122.073	0.173	3.3	1.1298	0.0000	OK
600 minute winter	2	405	122.073	0.276	5.0	1.7547	0.0000	OK
600 minute winter	3	405	122.073	0.351	4.3	2.1199	0.0000	OK
600 minute winter	4	315	125.528	0.028	1.4	0.0804	0.0000	OK
600 minute winter	5	405	122.073	0.329	2.9	1.9964	0.0000	OK
600 minute winter	6	15	122.711	0.000	0.0	0.0000	0.0000	OK
600 minute winter	7	405	122.073	0.391	5.3	2.2399	0.0000	OK
600 minute winter	8	405	122.073	0.450	5.8	2.9441	0.0000	SURCHARGED
600 minute winter	9	600	118.333	0.433	5.1	2.4807	0.0000	OK
600 minute winter	10	600	118.333	0.479	5.6	3.5028	0.0000	OK
600 minute winter	11	600	118.333	0.549	5.8	3.4091	0.0000	SURCHARGED
600 minute winter	12	330	116.548	0.032	5.9	0.0696	0.0000	OK
600 minute winter	13	315	116.399	0.025	2.0	0.0606	0.0000	OK
600 minute winter	14	375	113.332	0.970	8.0	5.5980	0.0000	OK
600 minute winter	15	375	113.332	1.029	8.4	6.1577	0.0000	OK
600 minute winter	16	375	113.332	1.098	8.6	6.6826	0.0000	OK
600 minute winter	17	375	113.332	1.126	8.8	6.4476	0.0000	SURCHARGED
600 minute winter	18	375	113.145	0.962	8.3	1.7001	0.0000	SURCHARGED
600 minute winter	19	15	113.139	1.000	8.3	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
600 minute winter	1	1.000	2	3.1	0.275	0.001	6.1005	
600 minute winter	2	1.001	3	3.7	0.321	0.002	7.0494	
600 minute winter	3	1.002	7	3.3	0.255	0.002	4.7237	
600 minute winter	4	2.000	5	1.4	0.492	0.033	0.0508	
600 minute winter	5	2.001	7	2.3	0.190	0.001	7.0858	
600 minute winter	6	3.000	7	0.0	0.000	0.000	0.0000	
600 minute winter	7	1.003	8	4.5	0.142	0.002	8.3422	
600 minute winter	8	Hydro-Brake®	9	5.1				
600 minute winter	9	1.005	10	5.0	0.335	0.002	7.2151	
600 minute winter	10	1.006	11	5.0	0.158	0.002	12.8291	
600 minute winter	11	Hydro-Brake®	12	5.1				
600 minute winter	12	1.008	14	5.9	1.467	0.023	0.0718	
600 minute winter	13	4.000	14	2.0	0.743	0.014	0.1155	
600 minute winter	14	1.009	15	7.5	0.312	0.004	23.6089	
600 minute winter	15	1.010	16	8.0	0.235	0.004	29.1195	
600 minute winter	16	1.011	17	8.8	0.109	0.004	12.1542	
600 minute winter	17	Hydro-Brake®	18	8.3				
600 minute winter	18	Orifice	19	8.3				181.2

Results for 2 year 720 minute summer. 2160 minute analysis at 15 minute timestep. Mass balance: 99.55%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
720 minute summer	1	450	122.047	0.147	3.9	0.9588	0.0000	OK
720 minute summer	2	450	122.047	0.250	6.2	1.5897	0.0000	OK
720 minute summer	3	450	122.047	0.325	5.1	1.9635	0.0000	OK
720 minute summer	4	375	125.531	0.031	1.7	0.0884	0.0000	OK
720 minute summer	5	450	122.047	0.303	3.5	1.8394	0.0000	OK
720 minute summer	6	15	122.711	0.000	0.0	0.0000	0.0000	OK
720 minute summer	7	450	122.047	0.365	6.0	2.0917	0.0000	OK
720 minute summer	8	450	122.047	0.424	6.1	2.7748	0.0000	SURCHARGED
720 minute summer	9	615	118.268	0.368	5.1	2.1071	0.0000	OK
720 minute summer	10	615	118.268	0.414	5.7	3.0258	0.0000	OK
720 minute summer	11	615	118.268	0.484	5.9	3.0041	0.0000	SURCHARGED
720 minute summer	12	375	116.549	0.033	6.0	0.0704	0.0000	OK
720 minute summer	13	375	116.400	0.026	2.3	0.0648	0.0000	OK
720 minute summer	14	420	113.322	0.960	8.6	5.5400	0.0000	OK
720 minute summer	15	420	113.322	1.019	8.6	6.0975	0.0000	OK
720 minute summer	16	420	113.322	1.088	8.5	6.6214	0.0000	OK
720 minute summer	17	420	113.322	1.116	8.2	6.3900	0.0000	SURCHARGED
720 minute summer	18	420	113.145	0.962	8.2	1.6998	0.0000	SURCHARGED
720 minute summer	19	15	113.139	1.000	8.2	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
720 minute summer	1	1.000	2	3.8	0.283	0.002	5.1309	
720 minute summer	2	1.001	3	4.3	0.307	0.002	6.2464	
720 minute summer	3	1.002	7	3.8	0.254	0.002	4.2717	
720 minute summer	4	2.000	5	1.7	0.521	0.040	0.0582	
720 minute summer	5	2.001	7	2.6	0.152	0.001	6.3867	
720 minute summer	6	3.000	7	0.0	0.000	0.000	0.0000	
720 minute summer	7	1.003	8	4.4	0.154	0.002	7.6477	
720 minute summer	8	Hydro-Brake®	9	5.1				
720 minute summer	9	1.005	10	5.0	0.330	0.002	5.8463	
720 minute summer	10	1.006	11	5.0	0.143	0.002	10.7060	
720 minute summer	11	Hydro-Brake®	12	5.1				
720 minute summer	12	1.008	14	6.0	1.476	0.024	0.0728	
720 minute summer	13	4.000	14	2.3	0.777	0.016	0.1270	
720 minute summer	14	1.009	15	7.5	0.287	0.004	23.3945	
720 minute summer	15	1.010	16	7.8	0.180	0.004	28.9068	
720 minute summer	16	1.011	17	8.2	0.197	0.004	12.0834	
720 minute summer	17	Hydro-Brake®	18	8.2				
720 minute summer	18	Orifice	19	8.2				162.5

Results for 2 year 720 minute winter. 2160 minute analysis at 15 minute timestep. Mass balance: 99.54%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
720 minute winter	1	480	122.044	0.144	2.9	0.9363	0.0000	OK
720 minute winter	2	480	122.044	0.247	4.7	1.5660	0.0000	OK
720 minute winter	3	480	122.044	0.322	4.2	1.9408	0.0000	OK
720 minute winter	4	375	125.527	0.027	1.3	0.0776	0.0000	OK
720 minute winter	5	480	122.044	0.300	2.6	1.8168	0.0000	OK
720 minute winter	6	15	122.711	0.000	0.0	0.0000	0.0000	OK
720 minute winter	7	480	122.044	0.362	5.2	2.0702	0.0000	OK
720 minute winter	8	480	122.044	0.421	5.7	2.7503	0.0000	SURCHARGED
720 minute winter	9	675	118.330	0.430	5.1	2.4643	0.0000	OK
720 minute winter	10	675	118.330	0.476	5.5	3.4817	0.0000	OK
720 minute winter	11	675	118.330	0.546	5.7	3.3913	0.0000	SURCHARGED
720 minute winter	12	405	116.548	0.032	5.8	0.0691	0.0000	OK
720 minute winter	13	360	116.397	0.023	1.7	0.0562	0.0000	OK
720 minute winter	14	435	113.331	0.969	7.7	5.5920	0.0000	OK
720 minute winter	15	435	113.331	1.028	8.2	6.1514	0.0000	OK
720 minute winter	16	435	113.331	1.097	8.5	6.6762	0.0000	OK
720 minute winter	17	435	113.331	1.125	8.8	6.4416	0.0000	SURCHARGED
720 minute winter	18	435	113.145	0.962	8.3	1.7001	0.0000	SURCHARGED
720 minute winter	19	15	113.139	1.000	8.3	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
720 minute winter	1	1.000	2	2.9	0.266	0.001	5.0003	
720 minute winter	2	1.001	3	3.6	0.313	0.002	6.1317	
720 minute winter	3	1.002	7	3.3	0.254	0.002	4.2071	
720 minute winter	4	2.000	5	1.3	0.481	0.031	0.0482	
720 minute winter	5	2.001	7	2.1	0.152	0.001	6.2874	
720 minute winter	6	3.000	7	0.0	0.000	0.000	0.0000	
720 minute winter	7	1.003	8	4.4	0.127	0.002	7.5485	
720 minute winter	8	Hydro-Brake®	9	5.1				
720 minute winter	9	1.005	10	5.0	0.331	0.002	7.1537	
720 minute winter	10	1.006	11	5.0	0.157	0.002	12.7346	
720 minute winter	11	Hydro-Brake®	12	5.1				
720 minute winter	12	1.008	14	5.8	1.460	0.023	0.0710	
720 minute winter	13	4.000	14	1.7	0.706	0.011	0.1033	
720 minute winter	14	1.009	15	7.4	0.295	0.004	23.5865	
720 minute winter	15	1.010	16	7.8	0.205	0.004	29.0973	
720 minute winter	16	1.011	17	8.8	0.107	0.004	12.1469	
720 minute winter	17	Hydro-Brake®	18	8.3				
720 minute winter	18	Orifice	19	8.3				194.2

Results for 2 year 960 minute summer. 2400 minute analysis at 15 minute timestep. Mass balance: 99.18%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
960 minute summer	1	570	122.016	0.116	3.3	0.7558	0.0000	OK
960 minute summer	2	570	122.016	0.219	5.3	1.3905	0.0000	OK
960 minute summer	3	570	122.016	0.294	4.5	1.7741	0.0000	OK
960 minute summer	4	495	125.528	0.028	1.4	0.0804	0.0000	OK
960 minute summer	5	570	122.016	0.272	2.9	1.6491	0.0000	OK
960 minute summer	6	15	122.711	0.000	0.0	0.0000	0.0000	OK
960 minute summer	7	570	122.016	0.334	5.6	1.9120	0.0000	OK
960 minute summer	8	570	122.016	0.393	5.8	2.5696	0.0000	SURCHARGED
960 minute summer	9	735	118.260	0.360	5.1	2.0612	0.0000	OK
960 minute summer	10	735	118.260	0.406	5.6	2.9673	0.0000	OK
960 minute summer	11	735	118.260	0.476	5.7	2.9543	0.0000	SURCHARGED
960 minute summer	12	495	116.548	0.032	5.8	0.0692	0.0000	OK
960 minute summer	13	495	116.398	0.024	1.9	0.0591	0.0000	OK
960 minute summer	14	540	113.334	0.972	7.9	5.6082	0.0000	OK
960 minute summer	15	540	113.334	1.031	8.4	6.1687	0.0000	OK
960 minute summer	16	540	113.334	1.100	9.2	6.6972	0.0000	OK
960 minute summer	17	540	113.334	1.128	12.9	6.4574	0.0000	SURCHARGED
960 minute summer	18	540	113.145	0.962	8.3	1.7002	0.0000	SURCHARGED
960 minute summer	19	15	113.139	1.000	8.3	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
960 minute summer	1	1.000	2	3.3	0.279	0.002	4.0370	
960 minute summer	2	1.001	3	3.9	0.311	0.002	5.3067	
960 minute summer	3	1.002	7	3.6	0.257	0.002	3.7381	
960 minute summer	4	2.000	5	1.4	0.492	0.033	0.0508	
960 minute summer	5	2.001	7	2.3	0.156	0.001	5.5636	
960 minute summer	6	3.000	7	0.0	0.000	0.000	0.0000	
960 minute summer	7	1.003	8	4.4	0.144	0.002	6.8223	
960 minute summer	8	Hydro-Brake®	9	5.1				
960 minute summer	9	1.005	10	5.0	0.335	0.002	5.6823	
960 minute summer	10	1.006	11	5.0	0.143	0.002	10.4480	
960 minute summer	11	Hydro-Brake®	12	5.1				
960 minute summer	12	1.008	14	5.8	1.461	0.023	0.0711	
960 minute summer	13	4.000	14	1.9	0.731	0.013	0.1115	
960 minute summer	14	1.009	15	7.5	0.275	0.004	23.6453	
960 minute summer	15	1.010	16	8.7	0.171	0.004	29.1725	
960 minute summer	16	1.011	17	12.9	0.197	0.006	12.1679	
960 minute summer	17	Hydro-Brake®	18	8.3				
960 minute summer	18	Orifice	19	8.3				189.5

Results for 2 year 960 minute winter. 2400 minute analysis at 15 minute timestep. Mass balance: 99.60%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
960 minute winter	1	615	121.992	0.092	2.4	0.5987	0.0000	OK
960 minute winter	2	615	121.992	0.195	3.9	1.2371	0.0000	OK
960 minute winter	3	615	121.992	0.270	3.7	1.6282	0.0000	OK
960 minute winter	4	465	125.524	0.024	1.0	0.0685	0.0000	OK
960 minute winter	5	615	121.992	0.248	2.1	1.5027	0.0000	OK
960 minute winter	6	15	122.711	0.000	0.0	0.0000	0.0000	OK
960 minute winter	7	615	121.992	0.310	4.9	1.7736	0.0000	OK
960 minute winter	8	615	121.992	0.369	5.4	2.4116	0.0000	SURCHARGED
960 minute winter	9	765	118.304	0.404	5.1	2.3131	0.0000	OK
960 minute winter	10	765	118.304	0.450	5.5	3.2888	0.0000	OK
960 minute winter	11	765	118.304	0.520	5.6	3.2274	0.0000	SURCHARGED
960 minute winter	12	525	116.548	0.032	5.7	0.0685	0.0000	OK
960 minute winter	13	465	116.395	0.021	1.4	0.0514	0.0000	OK
960 minute winter	14	540	113.320	0.958	7.2	5.5291	0.0000	OK
960 minute winter	15	540	113.320	1.017	7.8	6.0863	0.0000	OK
960 minute winter	16	540	113.320	1.086	8.2	6.6099	0.0000	OK
960 minute winter	17	540	113.320	1.114	8.1	6.3793	0.0000	SURCHARGED
960 minute winter	18	540	113.145	0.962	8.1	1.6997	0.0000	SURCHARGED
960 minute winter	19	15	113.139	1.000	8.1	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
960 minute winter	1	1.000	2	2.4	0.257	0.001	3.2539	
960 minute winter	2	1.001	3	3.3	0.313	0.002	4.6129	
960 minute winter	3	1.002	7	3.2	0.254	0.001	3.3391	
960 minute winter	4	2.000	5	1.0	0.445	0.024	0.0401	
960 minute winter	5	2.001	7	1.8	0.152	0.001	4.9494	
960 minute winter	6	3.000	7	0.0	0.000	0.000	0.0000	
960 minute winter	7	1.003	8	4.4	0.134	0.002	6.1993	
960 minute winter	8	Hydro-Brake®	9	5.1				
960 minute winter	9	1.005	10	5.0	0.330	0.002	6.5952	
960 minute winter	10	1.006	11	5.0	0.136	0.002	11.8708	
960 minute winter	11	Hydro-Brake®	12	5.1				
960 minute winter	12	1.008	14	5.7	1.452	0.023	0.0701	
960 minute winter	13	4.000	14	1.4	0.665	0.009	0.0903	
960 minute winter	14	1.009	15	7.1	0.282	0.003	23.3545	
960 minute winter	15	1.010	16	7.6	0.173	0.004	28.8670	
960 minute winter	16	1.011	17	8.1	0.202	0.004	12.0701	
960 minute winter	17	Hydro-Brake®	18	8.1				
960 minute winter	18	Orifice	19	8.1				221.9

Results for 2 year 1440 minute summer. 2880 minute analysis at 30 minute timestep. Mass balance: 97.36%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute summer	1	840	121.951	0.051	2.5	0.3327	0.0000	OK
1440 minute summer	2	840	121.951	0.154	4.0	0.9778	0.0000	OK
1440 minute summer	3	840	121.951	0.229	3.8	1.3816	0.0000	OK
1440 minute summer	4	750	125.524	0.024	1.0	0.0685	0.0000	OK
1440 minute summer	5	840	121.951	0.207	2.1	1.2548	0.0000	OK
1440 minute summer	6	30	122.711	0.000	0.0	0.0000	0.0000	OK
1440 minute summer	7	840	121.951	0.269	4.8	1.5396	0.0000	OK
1440 minute summer	8	840	121.951	0.328	5.4	2.1443	0.0000	SURCHARGED
1440 minute summer	9	960	118.223	0.323	5.1	1.8504	0.0000	OK
1440 minute summer	10	960	118.223	0.369	5.4	2.6981	0.0000	OK
1440 minute summer	11	960	118.223	0.439	5.5	2.7257	0.0000	SURCHARGED
1440 minute summer	12	750	116.548	0.031	5.6	0.0679	0.0000	OK
1440 minute summer	13	750	116.396	0.021	1.5	0.0530	0.0000	OK
1440 minute summer	14	780	113.316	0.954	7.3	5.5046	0.0000	OK
1440 minute summer	15	780	113.316	1.013	7.8	6.0608	0.0000	OK
1440 minute summer	16	780	113.316	1.082	8.2	6.5840	0.0000	OK
1440 minute summer	17	780	113.316	1.110	8.1	6.3549	0.0000	SURCHARGED
1440 minute summer	18	780	113.145	0.962	8.1	1.6995	0.0000	SURCHARGED
1440 minute summer	19	30	113.139	1.000	8.1	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
1440 minute summer	1	1.000	2	2.5	0.257	0.001	2.0641	
1440 minute summer	2	1.001	3	3.3	0.309	0.002	3.5036	
1440 minute summer	3	1.002	7	3.2	0.254	0.001	2.6908	
1440 minute summer	4	2.000	5	1.0	0.445	0.024	0.0401	
1440 minute summer	5	2.001	7	1.7	0.153	0.001	3.9514	
1440 minute summer	6	3.000	7	0.0	0.000	0.000	0.0000	
1440 minute summer	7	1.003	8	4.3	0.122	0.002	5.1794	
1440 minute summer	8	Hydro-Brake®	9	5.1				
1440 minute summer	9	1.005	10	4.9	0.328	0.002	4.9380	
1440 minute summer	10	1.006	11	5.0	0.130	0.002	9.2785	
1440 minute summer	11	Hydro-Brake®	12	5.1				
1440 minute summer	12	1.008	14	5.6	1.444	0.022	0.0692	
1440 minute summer	13	4.000	14	1.5	0.679	0.010	0.0947	
1440 minute summer	14	1.009	15	7.1	0.241	0.003	23.2638	
1440 minute summer	15	1.010	16	7.6	0.160	0.004	28.7764	
1440 minute summer	16	1.011	17	8.1	0.041	0.004	12.0399	
1440 minute summer	17	Hydro-Brake®	18	8.1				
1440 minute summer	18	Orifice	19	8.1				238.1

Results for 2 year 1440 minute winter. 2880 minute analysis at 30 minute timestep. Mass balance: 98.75%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute winter	1	720	121.927	0.027	1.8	0.1781	0.0000	OK
1440 minute winter	2	840	121.889	0.092	2.9	0.5843	0.0000	OK
1440 minute winter	3	840	121.889	0.167	3.2	1.0076	0.0000	OK
1440 minute winter	4	720	125.522	0.022	0.8	0.0615	0.0000	OK
1440 minute winter	5	840	121.889	0.145	1.6	0.8789	0.0000	OK
1440 minute winter	6	30	122.711	0.000	0.0	0.0000	0.0000	OK
1440 minute winter	7	840	121.889	0.207	4.3	1.1848	0.0000	OK
1440 minute winter	8	840	121.889	0.266	5.0	1.7389	0.0000	OK
1440 minute winter	9	990	118.220	0.319	4.9	1.8292	0.0000	OK
1440 minute winter	10	990	118.219	0.365	5.2	2.6710	0.0000	OK
1440 minute winter	11	990	118.219	0.435	5.4	2.7027	0.0000	SURCHARGED
1440 minute winter	12	840	116.547	0.031	5.5	0.0673	0.0000	OK
1440 minute winter	13	720	116.393	0.019	1.1	0.0460	0.0000	OK
1440 minute winter	14	780	113.296	0.934	6.7	5.3881	0.0000	OK
1440 minute winter	15	780	113.296	0.993	7.1	5.9400	0.0000	OK
1440 minute winter	16	780	113.296	1.062	7.6	6.4612	0.0000	OK
1440 minute winter	17	780	113.296	1.090	7.6	6.2393	0.0000	SURCHARGED
1440 minute winter	18	780	113.144	0.961	7.6	1.6984	0.0000	SURCHARGED
1440 minute winter	19	30	113.139	1.000	7.6	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
1440 minute winter	1	1.000	2	1.8	0.252	0.001	0.9214	
1440 minute winter	2	1.001	3	2.9	0.303	0.001	2.0097	
1440 minute winter	3	1.002	7	2.9	0.255	0.001	1.7836	
1440 minute winter	4	2.000	5	0.8	0.416	0.019	0.0343	
1440 minute winter	5	2.001	7	1.5	0.152	0.001	2.5670	
1440 minute winter	6	3.000	7	0.0	0.000	0.000	0.0000	
1440 minute winter	7	1.003	8	4.1	0.140	0.002	3.7230	
1440 minute winter	8	Hydro-Brake®	9	4.9				
1440 minute winter	9	1.005	10	4.8	0.334	0.002	4.8645	
1440 minute winter	10	1.006	11	4.9	0.131	0.002	9.1628	
1440 minute winter	11	Hydro-Brake®	12	5.1				
1440 minute winter	12	1.008	14	5.5	1.437	0.022	0.0684	
1440 minute winter	13	4.000	14	1.1	0.617	0.007	0.0764	
1440 minute winter	14	1.009	15	6.6	0.251	0.003	22.8201	
1440 minute winter	15	1.010	16	7.1	0.140	0.003	28.3212	
1440 minute winter	16	1.011	17	7.6	0.090	0.004	11.8804	
1440 minute winter	17	Hydro-Brake®	18	7.6				
1440 minute winter	18	Orifice	19	7.6				263.4

Results for 30 year 15 minute summer. 255 minute analysis at 1 minute timestep. Mass balance: 99.67%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	1	19	122.174	0.274	46.5	1.7895	0.0000	OK
15 minute summer	2	20	122.166	0.369	74.6	2.3415	0.0000	OK
15 minute summer	3	20	122.167	0.445	64.8	2.6873	0.0000	OK
15 minute summer	4	10	125.613	0.113	19.8	0.3212	0.0000	OK
15 minute summer	5	19	122.160	0.416	40.8	2.5211	0.0000	OK
15 minute summer	6	1	122.711	0.000	0.0	0.0000	0.0000	OK
15 minute summer	7	19	122.164	0.482	42.3	2.7623	0.0000	OK
15 minute summer	8	20	122.158	0.535	33.2	3.5018	0.0000	SURCHARGED
15 minute summer	9	19	118.114	0.214	12.6	1.2248	0.0000	OK
15 minute summer	10	20	118.105	0.251	22.6	1.8342	0.0000	OK
15 minute summer	11	20	118.110	0.326	20.4	2.0257	0.0000	SURCHARGED
15 minute summer	12	10	116.569	0.053	16.3	0.1150	0.0000	OK
15 minute summer	13	10	116.463	0.089	27.6	0.2192	0.0000	OK
15 minute summer	14	20	112.714	0.352	46.2	2.0325	0.0000	OK
15 minute summer	15	20	112.703	0.399	52.6	2.3905	0.0000	OK
15 minute summer	16	20	112.706	0.472	40.4	2.8732	0.0000	OK
15 minute summer	17	20	112.707	0.501	20.2	2.8677	0.0000	SURCHARGED
15 minute summer	18	20	112.691	0.508	2.4	0.8981	0.0000	SURCHARGED
15 minute summer	19	1	113.139	1.000	0.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	1	1.000	2	45.7	0.644	0.022	9.6862	
15 minute summer	2	1.001	3	56.2	0.645	0.027	10.1042	
15 minute summer	3	1.002	7	32.7	0.482	0.016	6.3293	
15 minute summer	4	2.000	5	19.4	1.016	0.459	0.3420	
15 minute summer	5	2.001	7	26.9	0.569	0.013	9.5853	
15 minute summer	6	3.000	7	0.0	0.000	0.000	0.0000	
15 minute summer	7	1.003	8	24.9	0.274	0.012	10.7695	
15 minute summer	8	Hydro-Brake®	9	5.1				
15 minute summer	9	1.005	10	13.3	0.300	0.006	2.8075	
15 minute summer	10	1.006	11	-6.9	0.204	-0.003	5.8161	
15 minute summer	11	Hydro-Brake®	12	5.0				
15 minute summer	12	1.008	14	16.2	1.967	0.065	0.1476	
15 minute summer	13	4.000	14	27.1	1.589	0.183	0.7318	
15 minute summer	14	1.009	15	40.1	0.661	0.019	7.1048	
15 minute summer	15	1.010	16	29.2	0.532	0.014	10.2059	
15 minute summer	16	1.011	17	20.2	0.488	0.010	4.7786	
15 minute summer	17	Hydro-Brake®	18	2.4				
15 minute summer	18	Orifice	19	0.0				0.0

Results for 30 year 15 minute winter. 255 minute analysis at 1 minute timestep. Mass balance: 99.72%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1	18	122.209	0.309	48.8	2.0158	0.0000	OK
15 minute winter	2	19	122.210	0.413	77.9	2.6239	0.0000	OK
15 minute winter	3	20	122.204	0.482	63.5	2.9110	0.0000	OK
15 minute winter	4	10	125.617	0.117	20.9	0.3310	0.0000	OK
15 minute winter	5	20	122.204	0.460	42.8	2.7913	0.0000	OK
15 minute winter	6	1	122.711	0.000	0.0	0.0000	0.0000	OK
15 minute winter	7	17	122.205	0.523	70.6	2.9946	0.0000	OK
15 minute winter	8	18	122.206	0.583	43.7	3.8101	0.0000	SURCHARGED
15 minute winter	9	20	118.135	0.235	12.0	1.3449	0.0000	OK
15 minute winter	10	20	118.131	0.277	25.9	2.0242	0.0000	OK
15 minute winter	11	19	118.134	0.350	19.2	2.1745	0.0000	SURCHARGED
15 minute winter	12	10	116.570	0.054	16.8	0.1168	0.0000	OK
15 minute winter	13	10	116.465	0.091	29.0	0.2246	0.0000	OK
15 minute winter	14	20	112.747	0.385	48.2	2.2219	0.0000	OK
15 minute winter	15	19	112.740	0.437	55.6	2.6139	0.0000	OK
15 minute winter	16	20	112.746	0.512	46.1	3.1186	0.0000	OK
15 minute winter	17	20	112.748	0.542	26.3	3.1016	0.0000	SURCHARGED
15 minute winter	18	20	112.729	0.546	2.5	0.9647	0.0000	SURCHARGED
15 minute winter	19	1	113.139	1.000	0.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	1	1.000	2	47.5	0.644	0.023	11.4657	
15 minute winter	2	1.001	3	54.6	0.655	0.026	11.4920	
15 minute winter	3	1.002	7	36.6	0.504	0.017	7.1072	
15 minute winter	4	2.000	5	20.4	1.028	0.481	0.3548	
15 minute winter	5	2.001	7	44.8	0.588	0.021	10.7539	
15 minute winter	6	3.000	7	0.0	0.000	0.000	0.0000	
15 minute winter	7	1.003	8	-28.3	0.225	-0.013	11.9417	
15 minute winter	8	Hydro-Brake®	9	5.1				
15 minute winter	9	1.005	10	-6.9	0.284	-0.003	3.2249	
15 minute winter	10	1.006	11	11.0	0.188	0.005	6.5206	
15 minute winter	11	Hydro-Brake®	12	5.0				
15 minute winter	12	1.008	14	16.7	1.985	0.067	0.1510	
15 minute winter	13	4.000	14	28.3	1.607	0.191	0.7559	
15 minute winter	14	1.009	15	42.8	0.647	0.020	8.0333	
15 minute winter	15	1.010	16	35.6	0.561	0.017	11.4481	
15 minute winter	16	1.011	17	26.3	0.500	0.012	5.3141	
15 minute winter	17	Hydro-Brake®	18	2.5				
15 minute winter	18	Orifice	19	0.0				0.0

Results for 30 year 30 minute summer. 270 minute analysis at 1 minute timestep. Mass balance: 99.79%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
30 minute summer	1	35	122.273	0.373	43.6	2.4337	0.0000	OK
30 minute summer	2	35	122.268	0.471	64.2	2.9909	0.0000	OK
30 minute summer	3	34	122.268	0.546	44.4	3.2963	0.0000	OK
30 minute summer	4	18	125.610	0.110	18.6	0.3116	0.0000	OK
30 minute summer	5	34	122.268	0.524	38.6	3.1803	0.0000	OK
30 minute summer	6	1	122.711	0.000	0.0	0.0000	0.0000	OK
30 minute summer	7	34	122.268	0.586	42.1	3.3535	0.0000	OK
30 minute summer	8	34	122.267	0.644	34.3	4.2098	0.0000	SURCHARGED
30 minute summer	9	35	118.188	0.288	9.0	1.6504	0.0000	OK
30 minute summer	10	35	118.185	0.331	19.5	2.4177	0.0000	OK
30 minute summer	11	34	118.188	0.404	17.1	2.5086	0.0000	SURCHARGED
30 minute summer	12	18	116.568	0.052	15.7	0.1132	0.0000	OK
30 minute summer	13	18	116.460	0.086	25.9	0.2135	0.0000	OK
30 minute summer	14	35	112.856	0.494	44.4	2.8488	0.0000	OK
30 minute summer	15	35	112.856	0.553	42.5	3.3062	0.0000	OK
30 minute summer	16	35	112.854	0.620	33.8	3.7705	0.0000	OK
30 minute summer	17	35	112.853	0.647	12.9	3.7064	0.0000	SURCHARGED
30 minute summer	18	35	112.841	0.658	1.4	1.1625	0.0000	SURCHARGED
30 minute summer	19	1	113.139	1.000	0.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
30 minute summer	1	1.000	2	37.1	0.534	0.018	14.6230	
30 minute summer	2	1.001	3	35.9	0.489	0.017	13.5333	
30 minute summer	3	1.002	7	22.9	0.442	0.011	8.3261	
30 minute summer	4	2.000	5	18.6	1.006	0.439	0.3300	
30 minute summer	5	2.001	7	31.1	0.502	0.015	12.6887	
30 minute summer	6	3.000	7	0.0	0.000	0.000	0.0000	
30 minute summer	7	1.003	8	13.4	0.269	0.006	13.7561	
30 minute summer	8	Hydro-Brake®	9	5.1				
30 minute summer	9	1.005	10	9.0	0.363	0.004	4.2212	
30 minute summer	10	1.006	11	10.1	0.195	0.005	8.1252	
30 minute summer	11	Hydro-Brake®	12	5.1				
30 minute summer	12	1.008	14	15.7	1.951	0.063	0.1445	
30 minute summer	13	4.000	14	25.9	1.570	0.175	0.7069	
30 minute summer	14	1.009	15	30.4	0.493	0.014	11.1086	
30 minute summer	15	1.010	16	22.3	0.451	0.011	15.0914	
30 minute summer	16	1.011	17	12.9	0.435	0.006	6.7302	
30 minute summer	17	Hydro-Brake®	18	1.4				
30 minute summer	18	Orifice	19	0.0				0.0

Results for 30 year 30 minute winter. 270 minute analysis at 1 minute timestep. Mass balance: 99.82%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
30 minute winter	1	31	122.326	0.426	39.4	2.7800	0.0000	OK
30 minute winter	2	33	122.323	0.526	57.1	3.3428	0.0000	OK
30 minute winter	3	32	122.321	0.599	41.3	3.6164	0.0000	OK
30 minute winter	4	18	125.603	0.103	16.8	0.2933	0.0000	OK
30 minute winter	5	32	122.322	0.578	34.9	3.5040	0.0000	OK
30 minute winter	6	1	122.711	0.000	0.0	0.0000	0.0000	OK
30 minute winter	7	32	122.322	0.640	50.8	3.6671	0.0000	OK
30 minute winter	8	34	122.324	0.701	22.4	4.5813	0.0000	SURCHARGED
30 minute winter	9	32	118.216	0.316	10.5	1.8100	0.0000	OK
30 minute winter	10	35	118.215	0.361	16.7	2.6412	0.0000	OK
30 minute winter	11	34	118.217	0.433	19.7	2.6903	0.0000	SURCHARGED
30 minute winter	12	18	116.567	0.051	14.7	0.1095	0.0000	OK
30 minute winter	13	18	116.456	0.082	23.4	0.2024	0.0000	OK
30 minute winter	14	35	112.906	0.544	40.7	3.1373	0.0000	OK
30 minute winter	15	35	112.904	0.601	43.4	3.5986	0.0000	OK
30 minute winter	16	35	112.902	0.668	29.7	4.0678	0.0000	OK
30 minute winter	17	35	112.902	0.696	13.6	3.9861	0.0000	SURCHARGED
30 minute winter	18	35	112.890	0.707	1.3	1.2499	0.0000	SURCHARGED
30 minute winter	19	1	113.139	1.000	0.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
30 minute winter	1	1.000	2	33.9	0.536	0.016	17.1621	
30 minute winter	2	1.001	3	34.0	0.519	0.016	15.4886	
30 minute winter	3	1.002	7	29.3	0.460	0.014	9.3521	
30 minute winter	4	2.000	5	16.8	0.981	0.397	0.3056	
30 minute winter	5	2.001	7	30.1	0.528	0.014	14.2958	
30 minute winter	6	3.000	7	0.0	0.000	0.000	0.0000	
30 minute winter	7	1.003	8	-14.7	0.273	-0.007	15.3264	
30 minute winter	8	Hydro-Brake®	9	5.1				
30 minute winter	9	1.005	10	9.8	0.355	0.005	4.7840	
30 minute winter	10	1.006	11	10.8	0.195	0.005	9.0389	
30 minute winter	11	Hydro-Brake®	12	5.1				
30 minute winter	12	1.008	14	14.7	1.917	0.059	0.1380	
30 minute winter	13	4.000	14	23.4	1.527	0.158	0.6570	
30 minute winter	14	1.009	15	32.9	0.526	0.016	12.4940	
30 minute winter	15	1.010	16	19.8	0.472	0.009	16.7017	
30 minute winter	16	1.011	17	13.6	0.451	0.006	7.3782	
30 minute winter	17	Hydro-Brake®	18	1.3				
30 minute winter	18	Orifice	19	0.0				0.0

Results for 30 year 60 minute summer. 300 minute analysis at 1 minute timestep. Mass balance: 99.86%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute summer	1	65	122.369	0.469	34.1	3.0617	0.0000	OK
60 minute summer	2	63	122.368	0.571	45.5	3.6279	0.0000	OK
60 minute summer	3	64	122.368	0.646	28.1	3.8982	0.0000	OK
60 minute summer	4	33	125.595	0.095	14.6	0.2703	0.0000	OK
60 minute summer	5	64	122.368	0.624	30.3	3.7867	0.0000	OK
60 minute summer	6	1	122.711	0.000	0.0	0.0000	0.0000	OK
60 minute summer	7	64	122.368	0.686	34.1	3.9303	0.0000	OK
60 minute summer	8	64	122.369	0.746	19.4	4.8776	0.0000	SURCHARGED
60 minute summer	9	64	118.267	0.367	5.2	2.1024	0.0000	OK
60 minute summer	10	65	118.267	0.413	11.5	3.0205	0.0000	OK
60 minute summer	11	64	118.267	0.483	12.6	3.0002	0.0000	SURCHARGED
60 minute summer	12	33	116.565	0.049	13.5	0.1048	0.0000	OK
60 minute summer	13	33	116.450	0.076	20.3	0.1880	0.0000	OK
60 minute summer	14	65	113.063	0.701	36.0	4.0447	0.0000	OK
60 minute summer	15	65	113.063	0.760	35.1	4.5477	0.0000	OK
60 minute summer	16	65	113.063	0.829	25.2	5.0464	0.0000	OK
60 minute summer	17	65	113.063	0.857	8.1	4.9084	0.0000	SURCHARGED
60 minute summer	18	65	113.050	0.867	1.0	1.5319	0.0000	SURCHARGED
60 minute summer	19	1	113.139	1.000	0.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
60 minute summer	1	1.000	2	24.3	0.384	0.012	19.3245	
60 minute summer	2	1.001	3	21.5	0.424	0.010	17.1998	
60 minute summer	3	1.002	7	13.6	0.392	0.006	10.2329	
60 minute summer	4	2.000	5	14.6	0.947	0.345	0.2751	
60 minute summer	5	2.001	7	19.2	0.455	0.009	15.6710	
60 minute summer	6	3.000	7	0.0	0.000	0.000	0.0000	
60 minute summer	7	1.003	8	7.9	0.250	0.004	16.6055	
60 minute summer	8	Hydro-Brake®	9	5.1				
60 minute summer	9	1.005	10	5.4	0.375	0.003	5.8302	
60 minute summer	10	1.006	11	5.4	0.204	0.003	10.6830	
60 minute summer	11	Hydro-Brake®	12	5.1				
60 minute summer	12	1.008	14	13.5	1.871	0.054	0.1296	
60 minute summer	13	4.000	14	20.3	1.467	0.137	0.5930	
60 minute summer	14	1.009	15	25.5	0.441	0.012	16.9086	
60 minute summer	15	1.010	16	16.2	0.390	0.008	21.8546	
60 minute summer	16	1.011	17	8.1	0.404	0.004	9.4392	
60 minute summer	17	Hydro-Brake®	18	1.0				
60 minute summer	18	Orifice	19	0.0				0.0

Results for 30 year 60 minute winter. 300 minute analysis at 1 minute timestep. Mass balance: 99.88%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute winter	1	63	122.443	0.543	27.6	3.5437	0.0000	OK
60 minute winter	2	61	122.443	0.646	38.0	4.1053	0.0000	OK
60 minute winter	3	62	122.443	0.721	22.9	4.3500	0.0000	OK
60 minute winter	4	33	125.584	0.084	11.8	0.2397	0.0000	OK
60 minute winter	5	62	122.443	0.699	24.5	4.2381	0.0000	OK
60 minute winter	6	1	122.711	0.000	0.0	0.0000	0.0000	OK
60 minute winter	7	62	122.443	0.761	31.6	4.3565	0.0000	OK
60 minute winter	8	62	122.443	0.820	18.9	5.3623	0.0000	SURCHARGED
60 minute winter	9	61	118.302	0.402	5.1	2.3024	0.0000	OK
60 minute winter	10	62	118.302	0.448	11.4	3.2748	0.0000	OK
60 minute winter	11	63	118.303	0.519	11.9	3.2205	0.0000	SURCHARGED
60 minute winter	12	33	116.562	0.046	11.9	0.0985	0.0000	OK
60 minute winter	13	33	116.442	0.068	16.4	0.1685	0.0000	OK
60 minute winter	14	65	113.130	0.768	30.1	4.4329	0.0000	OK
60 minute winter	15	65	113.130	0.827	29.6	4.9500	0.0000	OK
60 minute winter	16	65	113.130	0.896	21.5	5.4550	0.0000	OK
60 minute winter	17	65	113.130	0.924	7.4	5.2927	0.0000	SURCHARGED
60 minute winter	18	65	113.118	0.935	0.9	1.6514	0.0000	SURCHARGED
60 minute winter	19	1	113.139	1.000	0.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
60 minute winter	1	1.000	2	20.9	0.404	0.010	22.9895	
60 minute winter	2	1.001	3	18.7	0.452	0.009	19.8647	
60 minute winter	3	1.002	7	14.1	0.418	0.007	11.6327	
60 minute winter	4	2.000	5	11.8	0.896	0.279	0.2349	
60 minute winter	5	2.001	7	16.6	0.464	0.008	17.8566	
60 minute winter	6	3.000	7	0.0	0.000	0.000	0.0000	
60 minute winter	7	1.003	8	9.0	0.261	0.004	18.6376	
60 minute winter	8	Hydro-Brake®	9	5.1				
60 minute winter	9	1.005	10	5.7	0.370	0.003	6.5524	
60 minute winter	10	1.006	11	6.4	0.198	0.003	11.8201	
60 minute winter	11	Hydro-Brake®	12	5.1				
60 minute winter	12	1.008	14	11.9	1.807	0.048	0.1186	
60 minute winter	13	4.000	14	16.4	1.382	0.111	0.5086	
60 minute winter	14	1.009	15	22.3	0.452	0.011	18.7291	
60 minute winter	15	1.010	16	14.2	0.422	0.007	23.9030	
60 minute winter	16	1.011	17	7.4	0.410	0.003	10.2340	
60 minute winter	17	Hydro-Brake®	18	0.9				
60 minute winter	18	Orifice	19	0.0				0.0

Results for 30 year 120 minute summer. 360 minute analysis at 2 minute timestep. Mass balance: 99.83%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute summer	1	124	122.454	0.553	23.2	3.6096	0.0000	OK
120 minute summer	2	122	122.455	0.658	27.3	4.1771	0.0000	OK
120 minute summer	3	122	122.456	0.733	18.4	4.4273	0.0000	OK
120 minute summer	4	64	125.577	0.077	9.9	0.2177	0.0000	OK
120 minute summer	5	122	122.456	0.712	20.6	4.3177	0.0000	OK
120 minute summer	6	2	122.711	0.000	0.0	0.0000	0.0000	OK
120 minute summer	7	122	122.456	0.774	17.7	4.4308	0.0000	OK
120 minute summer	8	122	122.456	0.833	13.2	5.4472	0.0000	SURCHARGED
120 minute summer	9	124	118.349	0.449	5.1	2.5728	0.0000	OK
120 minute summer	10	124	118.349	0.495	8.8	3.6202	0.0000	OK
120 minute summer	11	124	118.349	0.565	9.9	3.5088	0.0000	SURCHARGED
120 minute summer	12	64	116.560	0.044	10.9	0.0940	0.0000	OK
120 minute summer	13	64	116.437	0.063	13.8	0.1544	0.0000	OK
120 minute summer	14	122	113.279	0.917	26.2	5.2934	0.0000	OK
120 minute summer	15	122	113.279	0.976	25.5	5.8418	0.0000	OK
120 minute summer	16	122	113.279	1.045	17.0	6.3613	0.0000	OK
120 minute summer	17	122	113.279	1.073	7.0	6.1454	0.0000	SURCHARGED
120 minute summer	18	122	113.143	0.960	6.9	1.6967	0.0000	SURCHARGED
120 minute summer	19	2	113.139	1.000	6.9	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
120 minute summer	1	1.000	2	14.1	0.322	0.007	23.5243	
120 minute summer	2	1.001	3	14.3	0.365	0.007	20.3081	
120 minute summer	3	1.002	7	7.1	0.339	0.003	11.8707	
120 minute summer	4	2.000	5	9.9	0.855	0.234	0.2065	
120 minute summer	5	2.001	7	14.0	0.396	0.007	18.2349	
120 minute summer	6	3.000	7	0.0	0.000	0.000	0.0000	
120 minute summer	7	1.003	8	5.2	0.227	0.002	18.9834	
120 minute summer	8	Hydro-Brake®	9	5.1				
120 minute summer	9	1.005	10	5.1	0.368	0.002	7.5583	
120 minute summer	10	1.006	11	5.1	0.206	0.002	13.3586	
120 minute summer	11	Hydro-Brake®	12	5.1				
120 minute summer	12	1.008	14	10.9	1.758	0.044	0.1111	
120 minute summer	13	4.000	14	13.8	1.316	0.093	0.4496	
120 minute summer	14	1.009	15	19.0	0.412	0.009	22.4504	
120 minute summer	15	1.010	16	10.8	0.346	0.005	27.9368	
120 minute summer	16	1.011	17	7.0	0.354	0.003	11.7431	
120 minute summer	17	Hydro-Brake®	18	6.9				
120 minute summer	18	Orifice	19	6.9				85.9

Results for 30 year 120 minute winter. 360 minute analysis at 2 minute timestep. Mass balance: 99.87%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute winter	1	120	122.557	0.657	17.9	4.2868	0.0000	OK
120 minute winter	2	120	122.557	0.760	23.4	4.8299	0.0000	OK
120 minute winter	3	120	122.557	0.835	14.3	5.0419	0.0000	OK
120 minute winter	4	64	125.567	0.067	7.7	0.1901	0.0000	OK
120 minute winter	5	122	122.557	0.813	15.9	4.9333	0.0000	OK
120 minute winter	6	2	122.711	0.000	0.0	0.0000	0.0000	OK
120 minute winter	7	122	122.557	0.875	15.1	5.0120	0.0000	OK
120 minute winter	8	122	122.557	0.934	11.0	6.1109	0.0000	SURCHARGED
120 minute winter	9	120	118.388	0.488	5.1	2.7948	0.0000	OK
120 minute winter	10	120	118.388	0.534	7.8	3.9036	0.0000	OK
120 minute winter	11	120	118.388	0.604	8.9	3.7495	0.0000	SURCHARGED
120 minute winter	12	64	116.557	0.041	9.6	0.0884	0.0000	OK
120 minute winter	13	64	116.429	0.055	10.7	0.1360	0.0000	OK
120 minute winter	14	118	113.312	0.950	21.5	5.4842	0.0000	OK
120 minute winter	15	118	113.312	1.009	20.6	6.0397	0.0000	OK
120 minute winter	16	118	113.312	1.078	14.0	6.5626	0.0000	OK
120 minute winter	17	118	113.312	1.106	8.1	6.3347	0.0000	SURCHARGED
120 minute winter	18	118	113.145	0.962	8.0	1.6994	0.0000	SURCHARGED
120 minute winter	19	2	113.139	1.000	8.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
120 minute winter	1	1.000	2	12.5	0.327	0.006	28.5813	
120 minute winter	2	1.001	3	11.4	0.398	0.005	23.8569	
120 minute winter	3	1.002	7	7.8	0.364	0.004	13.6901	
120 minute winter	4	2.000	5	7.7	0.800	0.182	0.1718	
120 minute winter	5	2.001	7	11.1	0.389	0.005	21.0899	
120 minute winter	6	3.000	7	0.0	0.000	0.000	0.0000	
120 minute winter	7	1.003	8	6.2	0.232	0.003	21.5801	
120 minute winter	8	Hydro-Brake®	9	5.1				
120 minute winter	9	1.005	10	5.1	0.370	0.002	8.3953	
120 minute winter	10	1.006	11	5.1	0.204	0.002	14.6426	
120 minute winter	11	Hydro-Brake®	12	5.1				
120 minute winter	12	1.008	14	9.6	1.696	0.038	0.1015	
120 minute winter	13	4.000	14	10.7	1.222	0.072	0.3754	
120 minute winter	14	1.009	15	15.6	0.426	0.007	23.1885	
120 minute winter	15	1.010	16	9.3	0.362	0.004	28.6983	
120 minute winter	16	1.011	17	8.1	0.335	0.004	12.0125	
120 minute winter	17	Hydro-Brake®	18	8.0				
120 minute winter	18	Orifice	19	8.0				93.1

Results for 30 year 180 minute summer. 420 minute analysis at 4 minute timestep. Mass balance: 99.88%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
180 minute summer	1	180	122.488	0.588	17.7	3.8357	0.0000	OK
180 minute summer	2	180	122.487	0.690	23.0	4.3854	0.0000	OK
180 minute summer	3	180	122.487	0.765	14.1	4.6165	0.0000	OK
180 minute summer	4	96	125.567	0.066	7.6	0.1888	0.0000	OK
180 minute summer	5	184	122.487	0.743	15.7	4.5062	0.0000	OK
180 minute summer	6	4	122.711	0.000	0.0	0.0000	0.0000	OK
180 minute summer	7	184	122.487	0.805	14.1	4.6089	0.0000	OK
180 minute summer	8	184	122.487	0.864	11.2	5.6504	0.0000	SURCHARGED
180 minute summer	9	184	118.391	0.491	5.1	2.8108	0.0000	OK
180 minute summer	10	184	118.391	0.537	7.8	3.9241	0.0000	OK
180 minute summer	11	184	118.391	0.607	8.8	3.7670	0.0000	SURCHARGED
180 minute summer	12	96	116.557	0.041	9.5	0.0879	0.0000	OK
180 minute summer	13	96	116.429	0.055	10.5	0.1347	0.0000	OK
180 minute summer	14	152	113.320	0.958	21.1	5.5282	0.0000	OK
180 minute summer	15	152	113.320	1.017	20.0	6.0853	0.0000	OK
180 minute summer	16	152	113.320	1.086	13.4	6.6089	0.0000	OK
180 minute summer	17	152	113.320	1.114	8.2	6.3783	0.0000	SURCHARGED
180 minute summer	18	152	113.145	0.962	8.1	1.6997	0.0000	SURCHARGED
180 minute summer	19	4	113.139	1.000	8.1	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
180 minute summer	1	1.000	2	12.0	0.297	0.006	25.1855	
180 minute summer	2	1.001	3	10.7	0.334	0.005	21.4363	
180 minute summer	3	1.002	7	4.6	0.308	0.002	12.4411	
180 minute summer	4	2.000	5	7.6	0.797	0.179	0.1702	
180 minute summer	5	2.001	7	10.3	0.276	0.005	19.1274	
180 minute summer	6	3.000	7	0.0	0.000	0.000	0.0000	
180 minute summer	7	1.003	8	4.7	0.203	0.002	19.8028	
180 minute summer	8	Hydro-Brake®	9	5.1				
180 minute summer	9	1.005	10	5.1	0.366	0.002	8.4561	
180 minute summer	10	1.006	11	5.0	0.187	0.002	14.7356	
180 minute summer	11	Hydro-Brake®	12	5.1				
180 minute summer	12	1.008	14	9.5	1.691	0.038	0.1008	
180 minute summer	13	4.000	14	10.5	1.216	0.071	0.3704	
180 minute summer	14	1.009	15	15.0	0.399	0.007	23.3510	
180 minute summer	15	1.010	16	8.7	0.295	0.004	28.8636	
180 minute summer	16	1.011	17	8.2	0.292	0.004	12.0690	
180 minute summer	17	Hydro-Brake®	18	8.1				
180 minute summer	18	Orifice	19	8.1				110.0

Results for 30 year 180 minute winter. 420 minute analysis at 4 minute timestep. Mass balance: 99.92%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
180 minute winter	1	180	122.604	0.704	13.6	4.5922	0.0000	OK
180 minute winter	2	180	122.604	0.807	17.1	5.1241	0.0000	OK
180 minute winter	3	176	122.603	0.881	11.6	5.3195	0.0000	OK
180 minute winter	4	96	125.558	0.058	5.8	0.1638	0.0000	OK
180 minute winter	5	176	122.603	0.859	12.1	5.2106	0.0000	OK
180 minute winter	6	4	122.711	0.000	0.0	0.0000	0.0000	OK
180 minute winter	7	176	122.603	0.921	11.9	5.2747	0.0000	OK
180 minute winter	8	176	122.603	0.980	9.8	6.4101	0.0000	SURCHARGED
180 minute winter	9	180	118.442	0.542	5.1	3.1034	0.0000	OK
180 minute winter	10	180	118.442	0.588	7.2	4.2975	0.0000	OK
180 minute winter	11	180	118.442	0.658	7.9	4.0840	0.0000	SURCHARGED
180 minute winter	12	96	116.555	0.039	8.5	0.0833	0.0000	OK
180 minute winter	13	96	116.422	0.048	8.1	0.1185	0.0000	OK
180 minute winter	14	148	113.402	1.039	17.5	5.9989	0.0000	OK
180 minute winter	15	144	113.400	1.097	16.3	6.5623	0.0000	OK
180 minute winter	16	144	113.400	1.166	13.9	7.0951	0.0000	OK
180 minute winter	17	144	113.398	1.192	23.1	6.8242	0.0000	SURCHARGED
180 minute winter	18	144	113.146	0.963	9.0	1.7021	0.0000	SURCHARGED
180 minute winter	19	4	113.139	1.000	9.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
180 minute winter	1	1.000	2	8.6	0.301	0.004	30.8158	
180 minute winter	2	1.001	3	8.9	0.363	0.004	25.3903	
180 minute winter	3	1.002	7	5.2	0.323	0.002	14.4652	
180 minute winter	4	2.000	5	5.8	0.740	0.137	0.1399	
180 minute winter	5	2.001	7	8.5	0.289	0.004	22.3088	
180 minute winter	6	3.000	7	0.0	0.000	0.000	0.0000	
180 minute winter	7	1.003	8	4.6	0.216	0.002	22.6644	
180 minute winter	8	Hydro-Brake®	9	5.1				
180 minute winter	9	1.005	10	5.0	0.367	0.002	9.5708	
180 minute winter	10	1.006	11	5.0	0.208	0.002	16.4314	
180 minute winter	11	Hydro-Brake®	12	5.1				
180 minute winter	12	1.008	14	8.5	1.636	0.034	0.0932	
180 minute winter	13	4.000	14	8.1	1.128	0.055	0.3079	
180 minute winter	14	1.009	15	12.5	0.407	0.006	24.9292	
180 minute winter	15	1.010	16	13.9	0.318	0.007	30.3346	
180 minute winter	16	1.011	17	23.1	0.325	0.011	12.5114	
180 minute winter	17	Hydro-Brake®	18	9.0				
180 minute winter	18	Orifice	19	9.0				118.8

Results for 30 year 240 minute summer. 480 minute analysis at 4 minute timestep. Mass balance: 99.90%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
240 minute summer	1	240	122.489	0.589	15.2	3.8422	0.0000	OK
240 minute summer	2	240	122.489	0.692	18.9	4.3954	0.0000	OK
240 minute summer	3	240	122.489	0.767	12.0	4.6286	0.0000	OK
240 minute summer	4	124	125.561	0.061	6.5	0.1731	0.0000	OK
240 minute summer	5	240	122.489	0.745	13.4	4.5168	0.0000	OK
240 minute summer	6	4	122.711	0.000	0.0	0.0000	0.0000	OK
240 minute summer	7	240	122.489	0.807	12.5	4.6195	0.0000	OK
240 minute summer	8	236	122.489	0.866	10.2	5.6620	0.0000	SURCHARGED
240 minute summer	9	240	118.411	0.511	5.1	2.9276	0.0000	OK
240 minute summer	10	240	118.411	0.557	7.4	4.0732	0.0000	OK
240 minute summer	11	240	118.411	0.627	8.2	3.8936	0.0000	SURCHARGED
240 minute summer	12	124	116.556	0.039	8.9	0.0851	0.0000	OK
240 minute summer	13	124	116.424	0.050	9.0	0.1243	0.0000	OK
240 minute summer	14	172	113.396	1.034	18.8	5.9668	0.0000	OK
240 minute summer	15	172	113.397	1.094	17.6	6.5438	0.0000	OK
240 minute summer	16	172	113.400	1.166	15.1	7.0971	0.0000	OK
240 minute summer	17	176	113.396	1.190	22.8	6.8125	0.0000	SURCHARGED
240 minute summer	18	172	113.146	0.963	9.0	1.7021	0.0000	SURCHARGED
240 minute summer	19	4	113.139	1.000	9.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
240 minute summer	1	1.000	2	9.5	0.295	0.005	25.2484	
240 minute summer	2	1.001	3	9.0	0.320	0.004	21.4985	
240 minute summer	3	1.002	7	4.5	0.290	0.002	12.4767	
240 minute summer	4	2.000	5	6.4	0.761	0.152	0.1509	
240 minute summer	5	2.001	7	8.7	0.267	0.004	19.1786	
240 minute summer	6	3.000	7	0.0	0.000	0.000	0.0000	
240 minute summer	7	1.003	8	4.6	0.185	0.002	19.8501	
240 minute summer	8	Hydro-Brake®	9	5.1				
240 minute summer	9	1.005	10	5.1	0.359	0.002	8.9000	
240 minute summer	10	1.006	11	5.0	0.198	0.002	15.4127	
240 minute summer	11	Hydro-Brake®	12	5.1				
240 minute summer	12	1.008	14	8.9	1.658	0.036	0.0961	
240 minute summer	13	4.000	14	8.9	1.159	0.060	0.3299	
240 minute summer	14	1.009	15	13.3	0.379	0.006	24.8541	
240 minute summer	15	1.010	16	15.1	0.300	0.007	30.3066	
240 minute summer	16	1.011	17	22.8	0.283	0.011	12.5044	
240 minute summer	17	Hydro-Brake®	18	9.0				
240 minute summer	18	Orifice	19	9.0				134.9

Results for 30 year 240 minute winter. 480 minute analysis at 4 minute timestep. Mass balance: 99.95%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
240 minute winter	1	236	122.621	0.721	11.3	4.7014	0.0000	OK
240 minute winter	2	236	122.621	0.824	13.9	5.2327	0.0000	OK
240 minute winter	3	232	122.621	0.899	9.5	5.4255	0.0000	OK
240 minute winter	4	124	125.552	0.052	4.8	0.1485	0.0000	OK
240 minute winter	5	232	122.621	0.877	10.0	5.3192	0.0000	OK
240 minute winter	6	4	122.711	0.000	0.0	0.0000	0.0000	OK
240 minute winter	7	232	122.621	0.939	10.1	5.3766	0.0000	OK
240 minute winter	8	232	122.621	0.998	8.7	6.5271	0.0000	SURCHARGED
240 minute winter	9	240	118.479	0.579	5.1	3.3168	0.0000	OK
240 minute winter	10	240	118.479	0.625	6.8	4.5699	0.0000	OK
240 minute winter	11	240	118.479	0.695	7.4	4.3153	0.0000	SURCHARGED
240 minute winter	12	124	116.553	0.037	7.9	0.0803	0.0000	OK
240 minute winter	13	124	116.418	0.044	6.7	0.1078	0.0000	OK
240 minute winter	14	180	113.535	1.173	15.3	6.7699	0.0000	OK
240 minute winter	15	180	113.535	1.232	19.4	7.3714	0.0000	SURCHARGED
240 minute winter	16	180	113.535	1.301	14.7	7.9149	0.0000	SURCHARGED
240 minute winter	17	180	113.536	1.330	27.4	7.6132	0.0000	SURCHARGED
240 minute winter	18	180	113.148	0.965	9.8	1.7043	0.0000	SURCHARGED
240 minute winter	19	4	113.139	1.000	9.8	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
240 minute winter	1	1.000	2	7.0	0.289	0.003	31.6181	
240 minute winter	2	1.001	3	7.5	0.342	0.004	25.9550	
240 minute winter	3	1.002	7	4.5	0.299	0.002	14.7531	
240 minute winter	4	2.000	5	4.8	0.702	0.113	0.1220	
240 minute winter	5	2.001	7	6.7	0.303	0.003	22.7675	
240 minute winter	6	3.000	7	0.0	0.000	0.000	0.0000	
240 minute winter	7	1.003	8	4.5	0.189	0.002	23.0665	
240 minute winter	8	Hydro-Brake®	9	5.1				
240 minute winter	9	1.005	10	5.0	0.364	0.002	10.3879	
240 minute winter	10	1.006	11	5.0	0.189	0.002	17.6666	
240 minute winter	11	Hydro-Brake®	12	5.1				
240 minute winter	12	1.008	14	7.9	1.600	0.032	0.0885	
240 minute winter	13	4.000	14	6.7	1.066	0.045	0.2689	
240 minute winter	14	1.009	15	17.5	0.399	0.008	26.4576	
240 minute winter	15	1.010	16	14.4	0.302	0.007	31.1005	
240 minute winter	16	1.011	17	27.4	0.273	0.013	12.5673	
240 minute winter	17	Hydro-Brake®	18	9.8				
240 minute winter	18	Orifice	19	9.8				142.4

Results for 30 year 360 minute summer. 600 minute analysis at 8 minute timestep. Mass balance: 99.91%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
360 minute summer	1	296	122.477	0.577	11.7	3.7619	0.0000	OK
360 minute summer	2	296	122.477	0.680	14.1	4.3173	0.0000	OK
360 minute summer	3	296	122.477	0.755	8.9	4.5542	0.0000	OK
360 minute summer	4	184	125.553	0.053	5.0	0.1510	0.0000	OK
360 minute summer	5	296	122.476	0.732	10.3	4.4420	0.0000	OK
360 minute summer	6	8	122.711	0.000	0.0	0.0000	0.0000	OK
360 minute summer	7	296	122.476	0.794	10.0	4.5489	0.0000	OK
360 minute summer	8	296	122.476	0.853	8.8	5.5813	0.0000	SURCHARGED
360 minute summer	9	360	118.444	0.544	5.1	3.1126	0.0000	OK
360 minute summer	10	360	118.444	0.590	6.9	4.3093	0.0000	OK
360 minute summer	11	360	118.444	0.660	7.5	4.0940	0.0000	SURCHARGED
360 minute summer	12	184	116.553	0.037	8.0	0.0808	0.0000	OK
360 minute summer	13	184	116.419	0.044	7.0	0.1098	0.0000	OK
360 minute summer	14	232	113.643	1.281	15.7	7.3948	0.0000	SURCHARGED
360 minute summer	15	232	113.644	1.341	15.5	8.0269	0.0000	SURCHARGED
360 minute summer	16	232	113.644	1.410	15.0	8.5812	0.0000	SURCHARGED
360 minute summer	17	232	113.644	1.438	21.8	8.2356	0.0000	SURCHARGED
360 minute summer	18	232	113.148	0.965	10.0	1.7050	0.0000	SURCHARGED
360 minute summer	19	8	113.139	1.000	10.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
360 minute summer	1	1.000	2	7.1	0.284	0.003	24.6442	
360 minute summer	2	1.001	3	6.6	0.308	0.003	21.0670	
360 minute summer	3	1.002	7	4.3	0.264	0.002	12.2526	
360 minute summer	4	2.000	5	4.9	0.707	0.117	0.1248	
360 minute summer	5	2.001	7	6.6	0.246	0.003	18.8266	
360 minute summer	6	3.000	7	0.0	0.000	0.000	0.0000	
360 minute summer	7	1.003	8	4.6	0.173	0.002	19.5278	
360 minute summer	8	Hydro-Brake®	9	5.1				
360 minute summer	9	1.005	10	5.1	0.341	0.002	9.6060	
360 minute summer	10	1.006	11	5.0	0.189	0.002	16.4851	
360 minute summer	11	Hydro-Brake®	12	5.1				
360 minute summer	12	1.008	14	8.0	1.606	0.032	0.0892	
360 minute summer	13	4.000	14	6.9	1.077	0.047	0.2757	
360 minute summer	14	1.009	15	12.5	0.371	0.006	26.5317	
360 minute summer	15	1.010	16	15.0	0.245	0.007	31.1005	
360 minute summer	16	1.011	17	21.8	0.264	0.010	12.5673	
360 minute summer	17	Hydro-Brake®	18	10.0				
360 minute summer	18	Orifice	19	10.0				177.2

Results for 30 year 360 minute winter. 600 minute analysis at 8 minute timestep. Mass balance: 99.95%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
360 minute winter	1	344	122.608	0.708	8.5	4.6189	0.0000	OK
360 minute winter	2	344	122.608	0.811	10.8	5.1524	0.0000	OK
360 minute winter	3	344	122.608	0.886	7.5	5.3484	0.0000	OK
360 minute winter	4	184	125.545	0.045	3.6	0.1281	0.0000	OK
360 minute winter	5	336	122.608	0.864	7.5	5.2405	0.0000	OK
360 minute winter	6	8	122.711	0.000	0.0	0.0000	0.0000	OK
360 minute winter	7	344	122.608	0.926	8.4	5.3026	0.0000	OK
360 minute winter	8	336	122.608	0.985	7.7	6.4423	0.0000	SURCHARGED
360 minute winter	9	352	118.523	0.623	5.1	3.5645	0.0000	OK
360 minute winter	10	352	118.523	0.669	6.4	4.8861	0.0000	OK
360 minute winter	11	352	118.523	0.739	6.8	4.5839	0.0000	SURCHARGED
360 minute winter	12	176	116.552	0.036	7.2	0.0768	0.0000	OK
360 minute winter	13	184	116.412	0.038	5.1	0.0945	0.0000	OK
360 minute winter	14	248	113.809	1.446	12.9	8.3477	0.0000	SURCHARGED
360 minute winter	15	248	113.807	1.504	18.1	9.0011	0.0000	SURCHARGED
360 minute winter	16	248	113.808	1.574	13.7	9.5794	0.0000	SURCHARGED
360 minute winter	17	248	113.808	1.602	21.5	9.1708	0.0000	SURCHARGED
360 minute winter	18	280	113.148	0.965	10.0	1.7051	0.0000	SURCHARGED
360 minute winter	19	8	113.139	1.000	10.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
360 minute winter	1	1.000	2	5.5	0.281	0.003	31.0195	
360 minute winter	2	1.001	3	5.8	0.314	0.003	25.5437	
360 minute winter	3	1.002	7	3.8	0.264	0.002	14.5445	
360 minute winter	4	2.000	5	3.6	0.647	0.085	0.0991	
360 minute winter	5	2.001	7	4.9	0.224	0.002	22.4361	
360 minute winter	6	3.000	7	0.0	0.000	0.000	0.0000	
360 minute winter	7	1.003	8	4.5	0.169	0.002	22.7756	
360 minute winter	8	Hydro-Brake®	9	5.1				
360 minute winter	9	1.005	10	5.0	0.345	0.002	11.3364	
360 minute winter	10	1.006	11	4.9	0.167	0.002	19.0904	
360 minute winter	11	Hydro-Brake®	12	5.1				
360 minute winter	12	1.008	14	7.2	1.557	0.029	0.0829	
360 minute winter	13	4.000	14	5.1	0.983	0.034	0.2218	
360 minute winter	14	1.009	15	15.9	0.365	0.008	26.5317	
360 minute winter	15	1.010	16	11.6	0.281	0.006	31.1005	
360 minute winter	16	1.011	17	21.5	0.166	0.010	12.5673	
360 minute winter	17	Hydro-Brake®	18	10.0				
360 minute winter	18	Orifice	19	10.0				184.2

Results for 30 year 480 minute summer. 720 minute analysis at 8 minute timestep. Mass balance: 99.91%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
480 minute summer	1	360	122.466	0.566	9.3	3.6897	0.0000	OK
480 minute summer	2	360	122.466	0.669	12.4	4.2469	0.0000	OK
480 minute summer	3	360	122.466	0.743	7.8	4.4877	0.0000	OK
480 minute summer	4	248	125.548	0.048	4.0	0.1353	0.0000	OK
480 minute summer	5	360	122.465	0.721	8.3	4.3756	0.0000	OK
480 minute summer	6	8	122.711	0.000	0.0	0.0000	0.0000	OK
480 minute summer	7	360	122.466	0.783	8.7	4.4861	0.0000	OK
480 minute summer	8	360	122.465	0.842	8.0	5.5096	0.0000	SURCHARGED
480 minute summer	9	720	118.492	0.592	5.1	3.3921	0.0000	OK
480 minute summer	10	720	118.492	0.638	6.6	4.6661	0.0000	OK
480 minute summer	11	720	118.492	0.708	7.0	4.3970	0.0000	SURCHARGED
480 minute summer	12	248	116.552	0.036	7.4	0.0778	0.0000	OK
480 minute summer	13	248	116.414	0.040	5.5	0.0981	0.0000	OK
480 minute summer	14	296	113.876	1.514	13.5	8.7381	0.0000	SURCHARGED
480 minute summer	15	296	113.877	1.574	15.2	9.4193	0.0000	SURCHARGED
480 minute summer	16	296	113.876	1.642	17.0	9.9939	0.0000	SURCHARGED
480 minute summer	17	296	113.876	1.670	24.3	9.5649	0.0000	SURCHARGED
480 minute summer	18	344	113.148	0.965	10.0	1.7050	0.0000	SURCHARGED
480 minute summer	19	8	113.139	1.000	10.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
480 minute summer	1	1.000	2	6.6	0.293	0.003	24.0995	
480 minute summer	2	1.001	3	6.0	0.308	0.003	20.6785	
480 minute summer	3	1.002	7	4.0	0.254	0.002	12.0515	
480 minute summer	4	2.000	5	4.0	0.667	0.094	0.1070	
480 minute summer	5	2.001	7	5.6	0.233	0.003	18.5114	
480 minute summer	6	3.000	7	0.0	0.000	0.000	0.0000	
480 minute summer	7	1.003	8	4.6	0.148	0.002	19.2389	
480 minute summer	8	Hydro-Brake®	9	5.1				
480 minute summer	9	1.005	10	5.1	0.334	0.002	10.6768	
480 minute summer	10	1.006	11	4.9	0.182	0.002	18.1015	
480 minute summer	11	Hydro-Brake®	12	5.1				
480 minute summer	12	1.008	14	7.4	1.570	0.030	0.0845	
480 minute summer	13	4.000	14	5.5	1.007	0.037	0.2343	
480 minute summer	14	1.009	15	13.5	0.347	0.006	26.5317	
480 minute summer	15	1.010	16	16.8	0.243	0.008	31.1005	
480 minute summer	16	1.011	17	24.3	0.262	0.012	12.5673	
480 minute summer	17	Hydro-Brake®	18	10.0				
480 minute summer	18	Orifice	19	10.0				213.5

Results for 30 year 480 minute winter. 720 minute analysis at 8 minute timestep. Mass balance: 99.94%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
480 minute winter	1	392	122.584	0.684	6.9	4.4607	0.0000	OK
480 minute winter	2	392	122.584	0.787	8.5	4.9992	0.0000	OK
480 minute winter	3	392	122.584	0.862	6.3	5.2038	0.0000	OK
480 minute winter	4	248	125.541	0.041	3.0	0.1171	0.0000	OK
480 minute winter	5	392	122.584	0.840	6.2	5.0957	0.0000	OK
480 minute winter	6	8	122.711	0.000	0.0	0.0000	0.0000	OK
480 minute winter	7	392	122.584	0.902	7.3	5.1658	0.0000	OK
480 minute winter	8	392	122.584	0.961	7.0	6.2861	0.0000	SURCHARGED
480 minute winter	9	472	118.549	0.649	5.1	3.7146	0.0000	OK
480 minute winter	10	472	118.549	0.695	6.2	5.0777	0.0000	OK
480 minute winter	11	472	118.549	0.765	6.5	4.7466	0.0000	SURCHARGED
480 minute winter	12	232	116.551	0.035	6.8	0.0747	0.0000	OK
480 minute winter	13	248	116.409	0.035	4.1	0.0852	0.0000	OK
480 minute winter	14	320	113.945	1.583	11.3	9.1377	0.0000	SURCHARGED
480 minute winter	15	320	113.947	1.644	12.3	9.8347	0.0000	SURCHARGED
480 minute winter	16	320	113.946	1.712	16.5	10.4177	0.0000	SURCHARGED
480 minute winter	17	320	113.946	1.740	23.0	9.9625	0.0000	SURCHARGED
480 minute winter	18	272	113.148	0.965	10.0	1.7050	0.0000	SURCHARGED
480 minute winter	19	8	113.139	1.000	10.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
480 minute winter	1	1.000	2	4.5	0.284	0.002	29.8649	
480 minute winter	2	1.001	3	5.0	0.309	0.002	24.7524	
480 minute winter	3	1.002	7	3.8	0.259	0.002	14.1472	
480 minute winter	4	2.000	5	3.0	0.614	0.071	0.0872	
480 minute winter	5	2.001	7	4.5	0.170	0.002	21.8103	
480 minute winter	6	3.000	7	0.0	0.000	0.000	0.0000	
480 minute winter	7	1.003	8	4.5	0.176	0.002	22.2220	
480 minute winter	8	Hydro-Brake®	9	5.1				
480 minute winter	9	1.005	10	5.0	0.342	0.002	11.9086	
480 minute winter	10	1.006	11	4.8	0.181	0.002	19.9442	
480 minute winter	11	Hydro-Brake®	12	5.1				
480 minute winter	12	1.008	14	6.8	1.531	0.027	0.0796	
480 minute winter	13	4.000	14	4.1	0.921	0.028	0.1909	
480 minute winter	14	1.009	15	12.1	0.370	0.006	26.5317	
480 minute winter	15	1.010	16	16.3	0.232	0.008	31.1005	
480 minute winter	16	1.011	17	23.0	0.186	0.011	12.5673	
480 minute winter	17	Hydro-Brake®	18	10.0				
480 minute winter	18	Orifice	19	10.0				223.9

Results for 30 year 600 minute summer. 840 minute analysis at 15 minute timestep. Mass balance: 99.92%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
600 minute summer	1	435	122.448	0.548	7.7	3.5743	0.0000	OK
600 minute summer	2	435	122.448	0.651	9.3	4.1351	0.0000	OK
600 minute summer	3	435	122.448	0.726	6.3	4.3818	0.0000	OK
600 minute summer	4	315	125.543	0.043	3.3	0.1227	0.0000	OK
600 minute summer	5	435	122.448	0.704	6.8	4.2692	0.0000	OK
600 minute summer	6	15	122.711	0.000	0.0	0.0000	0.0000	OK
600 minute summer	7	435	122.448	0.766	7.4	4.3856	0.0000	OK
600 minute summer	8	435	122.448	0.825	7.3	5.3949	0.0000	SURCHARGED
600 minute summer	9	840	118.573	0.673	5.1	3.8520	0.0000	OK
600 minute summer	10	840	118.573	0.719	6.3	5.2531	0.0000	OK
600 minute summer	11	840	118.573	0.789	6.7	4.8955	0.0000	SURCHARGED
600 minute summer	12	315	116.551	0.035	7.0	0.0757	0.0000	OK
600 minute summer	13	315	116.411	0.036	4.6	0.0900	0.0000	OK
600 minute summer	14	375	113.937	1.575	12.1	9.0876	0.0000	SURCHARGED
600 minute summer	15	375	113.937	1.634	14.3	9.7792	0.0000	SURCHARGED
600 minute summer	16	375	113.936	1.702	14.1	10.3601	0.0000	SURCHARGED
600 minute summer	17	375	113.938	1.732	19.3	9.9167	0.0000	SURCHARGED
600 minute summer	18	330	113.148	0.965	10.0	1.7050	0.0000	SURCHARGED
600 minute summer	19	15	113.139	1.000	10.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
600 minute summer	1	1.000	2	4.8	0.290	0.002	23.2318	
600 minute summer	2	1.001	3	5.1	0.312	0.002	20.0572	
600 minute summer	3	1.002	7	3.9	0.253	0.002	11.7286	
600 minute summer	4	2.000	5	3.3	0.631	0.078	0.0933	
600 minute summer	5	2.001	7	4.8	0.156	0.002	18.0053	
600 minute summer	6	3.000	7	0.0	0.000	0.000	0.0000	
600 minute summer	7	1.003	8	4.6	0.155	0.002	18.7723	
600 minute summer	8	Hydro-Brake®	9	5.1				
600 minute summer	9	1.005	10	5.0	0.332	0.002	12.4299	
600 minute summer	10	1.006	11	4.8	0.143	0.002	20.7189	
600 minute summer	11	Hydro-Brake®	12	5.1				
600 minute summer	12	1.008	14	7.0	1.544	0.028	0.0812	
600 minute summer	13	4.000	14	4.6	0.953	0.031	0.2069	
600 minute summer	14	1.009	15	12.6	0.340	0.006	26.5317	
600 minute summer	15	1.010	16	13.9	0.243	0.007	31.1005	
600 minute summer	16	1.011	17	19.3	0.146	0.009	12.5673	
600 minute summer	17	Hydro-Brake®	18	10.0				
600 minute summer	18	Orifice	19	10.0				243.1

Results for 30 year 600 minute winter. 840 minute analysis at 15 minute timestep. Mass balance: 99.95%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
600 minute winter	1	465	122.561	0.661	5.9	4.3107	0.0000	OK
600 minute winter	2	465	122.561	0.764	7.6	4.8527	0.0000	OK
600 minute winter	3	465	122.561	0.839	5.7	5.0641	0.0000	OK
600 minute winter	4	315	125.538	0.038	2.5	0.1069	0.0000	OK
600 minute winter	5	465	122.561	0.817	5.2	4.9551	0.0000	OK
600 minute winter	6	15	122.711	0.000	0.0	0.0000	0.0000	OK
600 minute winter	7	465	122.561	0.879	6.9	5.0331	0.0000	OK
600 minute winter	8	465	122.561	0.938	6.8	6.1345	0.0000	SURCHARGED
600 minute winter	9	840	118.564	0.664	5.1	3.7996	0.0000	OK
600 minute winter	10	840	118.564	0.710	6.0	5.1863	0.0000	OK
600 minute winter	11	840	118.564	0.780	6.3	4.8388	0.0000	SURCHARGED
600 minute winter	12	300	116.550	0.034	6.6	0.0736	0.0000	OK
600 minute winter	13	315	116.406	0.032	3.5	0.0791	0.0000	OK
600 minute winter	14	390	113.953	1.591	10.5	9.1823	0.0000	SURCHARGED
600 minute winter	15	390	113.953	1.650	13.7	9.8725	0.0000	SURCHARGED
600 minute winter	16	390	113.953	1.719	13.5	10.4595	0.0000	SURCHARGED
600 minute winter	17	390	113.954	1.748	16.8	10.0068	0.0000	SURCHARGED
600 minute winter	18	330	113.148	0.965	10.0	1.7050	0.0000	SURCHARGED
600 minute winter	19	15	113.139	1.000	10.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
600 minute winter	1	1.000	2	4.0	0.274	0.002	28.7567	
600 minute winter	2	1.001	3	4.6	0.304	0.002	23.9797	
600 minute winter	3	1.002	7	3.7	0.251	0.002	13.7536	
600 minute winter	4	2.000	5	2.5	0.583	0.059	0.0766	
600 minute winter	5	2.001	7	3.7	0.179	0.002	21.1888	
600 minute winter	6	3.000	7	0.0	0.000	0.000	0.0000	
600 minute winter	7	1.003	8	4.5	0.172	0.002	21.6683	
600 minute winter	8	Hydro-Brake®	9	5.1				
600 minute winter	9	1.005	10	5.0	0.338	0.002	12.2319	
600 minute winter	10	1.006	11	4.8	0.160	0.002	20.4245	
600 minute winter	11	Hydro-Brake®	12	5.1				
600 minute winter	12	1.008	14	6.6	1.517	0.026	0.0779	
600 minute winter	13	4.000	14	3.5	0.879	0.024	0.1708	
600 minute winter	14	1.009	15	12.1	0.331	0.006	26.5317	
600 minute winter	15	1.010	16	12.0	0.206	0.006	31.1005	
600 minute winter	16	1.011	17	16.8	0.216	0.008	12.5673	
600 minute winter	17	Hydro-Brake®	18	10.0				
600 minute winter	18	Orifice	19	10.0				263.1

Results for 30 year 720 minute summer. 960 minute analysis at 15 minute timestep. Mass balance: 99.88%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
720 minute summer	1	495	122.430	0.530	6.9	3.4547	0.0000	OK
720 minute summer	2	495	122.430	0.633	8.7	4.0183	0.0000	OK
720 minute summer	3	495	122.430	0.708	5.8	4.2706	0.0000	OK
720 minute summer	4	375	125.541	0.041	2.9	0.1151	0.0000	OK
720 minute summer	5	495	122.430	0.685	6.1	4.1574	0.0000	OK
720 minute summer	6	15	122.711	0.000	0.0	0.0000	0.0000	OK
720 minute summer	7	495	122.430	0.747	7.1	4.2801	0.0000	OK
720 minute summer	8	495	122.430	0.806	7.0	5.2743	0.0000	SURCHARGED
720 minute summer	9	960	118.670	0.770	5.1	4.4107	0.0000	OK
720 minute summer	10	960	118.670	0.816	6.1	5.9663	0.0000	OK
720 minute summer	11	960	118.670	0.886	6.5	5.5012	0.0000	SURCHARGED
720 minute summer	12	375	116.551	0.035	6.8	0.0747	0.0000	OK
720 minute summer	13	375	116.409	0.035	4.1	0.0852	0.0000	OK
720 minute summer	14	435	113.933	1.571	11.3	9.0676	0.0000	SURCHARGED
720 minute summer	15	435	113.933	1.630	10.9	9.7552	0.0000	SURCHARGED
720 minute summer	16	435	113.935	1.701	12.4	10.3493	0.0000	SURCHARGED
720 minute summer	17	435	113.929	1.723	27.3	9.8652	0.0000	SURCHARGED
720 minute summer	18	495	113.148	0.965	10.0	1.7050	0.0000	SURCHARGED
720 minute summer	19	15	113.139	1.000	10.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
720 minute summer	1	1.000	2	4.4	0.276	0.002	22.3294	
720 minute summer	2	1.001	3	4.5	0.308	0.002	19.4044	
720 minute summer	3	1.002	7	3.6	0.253	0.002	11.3867	
720 minute summer	4	2.000	5	2.9	0.608	0.068	0.0851	
720 minute summer	5	2.001	7	4.3	0.155	0.002	17.4687	
720 minute summer	6	3.000	7	0.0	0.000	0.000	0.0000	
720 minute summer	7	1.003	8	4.6	0.155	0.002	18.2755	
720 minute summer	8	Hydro-Brake®	9	5.1				
720 minute summer	9	1.005	10	5.0	0.333	0.002	14.5062	
720 minute summer	10	1.006	11	4.8	0.144	0.002	23.7667	
720 minute summer	11	Hydro-Brake®	12	5.1				
720 minute summer	12	1.008	14	6.8	1.531	0.027	0.0796	
720 minute summer	13	4.000	14	4.1	0.921	0.028	0.1909	
720 minute summer	14	1.009	15	10.6	0.332	0.005	26.5317	
720 minute summer	15	1.010	16	12.2	0.236	0.006	31.1005	
720 minute summer	16	1.011	17	27.3	0.152	0.013	12.5673	
720 minute summer	17	Hydro-Brake®	18	10.0				
720 minute summer	18	Orifice	19	10.0				274.3

Results for 30 year 720 minute winter. 960 minute analysis at 15 minute timestep. Mass balance: 99.96%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
720 minute winter	1	555	122.529	0.628	5.2	4.0988	0.0000	OK
720 minute winter	2	555	122.529	0.731	6.9	4.6463	0.0000	OK
720 minute winter	3	555	122.529	0.806	5.2	4.8680	0.0000	OK
720 minute winter	4	375	125.535	0.035	2.2	0.1003	0.0000	OK
720 minute winter	5	555	122.529	0.785	4.6	4.7581	0.0000	OK
720 minute winter	6	15	122.711	0.000	0.0	0.0000	0.0000	OK
720 minute winter	7	555	122.529	0.847	6.4	4.8471	0.0000	OK
720 minute winter	8	555	122.529	0.906	6.5	5.9220	0.0000	SURCHARGED
720 minute winter	9	960	118.721	0.821	5.1	4.7027	0.0000	OK
720 minute winter	10	960	118.721	0.867	5.9	6.3390	0.0000	OK
720 minute winter	11	960	118.721	0.937	6.1	5.8177	0.0000	SURCHARGED
720 minute winter	12	360	116.550	0.034	6.4	0.0725	0.0000	OK
720 minute winter	13	375	116.404	0.030	3.1	0.0745	0.0000	OK
720 minute winter	14	450	113.848	1.486	9.8	8.5732	0.0000	SURCHARGED
720 minute winter	15	450	113.847	1.544	12.0	9.2385	0.0000	SURCHARGED
720 minute winter	16	450	113.847	1.613	13.1	9.8193	0.0000	SURCHARGED
720 minute winter	17	450	113.848	1.642	17.2	9.4016	0.0000	SURCHARGED
720 minute winter	18	495	113.148	0.965	10.0	1.7050	0.0000	SURCHARGED
720 minute winter	19	15	113.139	1.000	10.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
720 minute winter	1	1.000	2	3.7	0.271	0.002	27.1797	
720 minute winter	2	1.001	3	4.2	0.308	0.002	22.8722	
720 minute winter	3	1.002	7	3.5	0.253	0.002	13.1877	
720 minute winter	4	2.000	5	2.2	0.562	0.052	0.0699	
720 minute winter	5	2.001	7	3.4	0.185	0.002	20.2972	
720 minute winter	6	3.000	7	0.0	0.000	0.000	0.0000	
720 minute winter	7	1.003	8	4.6	0.144	0.002	20.8677	
720 minute winter	8	Hydro-Brake®	9	5.1				
720 minute winter	9	1.005	10	4.9	0.332	0.002	15.5485	
720 minute winter	10	1.006	11	4.5	0.151	0.002	25.2669	
720 minute winter	11	Hydro-Brake®	12	5.1				
720 minute winter	12	1.008	14	6.4	1.504	0.026	0.0761	
720 minute winter	13	4.000	14	3.1	0.847	0.021	0.1569	
720 minute winter	14	1.009	15	11.1	0.296	0.005	26.5317	
720 minute winter	15	1.010	16	11.8	0.213	0.006	31.1005	
720 minute winter	16	1.011	17	17.2	0.116	0.008	12.5673	
720 minute winter	17	Hydro-Brake®	18	10.0				
720 minute winter	18	Orifice	19	10.0				288.7

Results for 30 year 960 minute summer. 1200 minute analysis at 15 minute timestep. Mass balance: 99.97%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
960 minute summer	1	630	122.388	0.488	5.7	3.1806	0.0000	OK
960 minute summer	2	630	122.388	0.591	7.2	3.7524	0.0000	OK
960 minute summer	3	630	122.388	0.666	5.2	4.0189	0.0000	OK
960 minute summer	4	495	125.537	0.037	2.4	0.1047	0.0000	OK
960 minute summer	5	630	122.388	0.644	5.0	3.9051	0.0000	OK
960 minute summer	6	15	122.711	0.000	0.0	0.0000	0.0000	OK
960 minute summer	7	630	122.388	0.706	6.4	4.0418	0.0000	OK
960 minute summer	8	630	122.388	0.765	6.6	5.0023	0.0000	SURCHARGED
960 minute summer	9	1125	118.835	0.935	5.1	5.3511	0.0000	OK
960 minute summer	10	1125	118.835	0.981	6.0	7.1667	0.0000	OK
960 minute summer	11	1125	118.835	1.051	6.3	6.5206	0.0000	SURCHARGED
960 minute summer	12	480	116.550	0.034	6.5	0.0731	0.0000	OK
960 minute summer	13	495	116.406	0.032	3.4	0.0780	0.0000	OK
960 minute summer	14	555	113.781	1.419	10.3	8.1864	0.0000	SURCHARGED
960 minute summer	15	555	113.781	1.478	14.7	8.8461	0.0000	SURCHARGED
960 minute summer	16	555	113.781	1.546	14.2	9.4117	0.0000	SURCHARGED
960 minute summer	17	555	113.782	1.576	18.2	9.0232	0.0000	SURCHARGED
960 minute summer	18	585	113.148	0.965	10.0	1.7051	0.0000	SURCHARGED
960 minute summer	19	15	113.139	1.000	10.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
960 minute summer	1	1.000	2	3.8	0.274	0.002	20.2692	
960 minute summer	2	1.001	3	4.3	0.309	0.002	17.9122	
960 minute summer	3	1.002	7	3.6	0.253	0.002	10.6058	
960 minute summer	4	2.000	5	2.4	0.576	0.057	0.0744	
960 minute summer	5	2.001	7	3.6	0.156	0.002	16.2476	
960 minute summer	6	3.000	7	0.0	0.000	0.000	0.0000	
960 minute summer	7	1.003	8	4.6	0.159	0.002	17.1389	
960 minute summer	8	Hydro-Brake®	9	5.1				
960 minute summer	9	1.005	10	4.9	0.332	0.002	17.6896	
960 minute summer	10	1.006	11	4.7	0.140	0.002	28.2603	
960 minute summer	11	Hydro-Brake®	12	5.1				
960 minute summer	12	1.008	14	6.5	1.511	0.026	0.0771	
960 minute summer	13	4.000	14	3.4	0.871	0.023	0.1674	
960 minute summer	14	1.009	15	13.3	0.304	0.006	26.5317	
960 minute summer	15	1.010	16	14.0	0.200	0.007	31.1005	
960 minute summer	16	1.011	17	18.2	0.217	0.009	12.5673	
960 minute summer	17	Hydro-Brake®	18	10.0				
960 minute summer	18	Orifice	19	10.0				326.0

Results for 30 year 960 minute winter. 1200 minute analysis at 15 minute timestep. Mass balance: 99.94%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
960 minute winter	1	690	122.458	0.558	4.2	3.6394	0.0000	OK
960 minute winter	2	690	122.458	0.661	5.6	4.1989	0.0000	OK
960 minute winter	3	690	122.458	0.736	4.5	4.4428	0.0000	OK
960 minute winter	4	480	125.532	0.032	1.8	0.0908	0.0000	OK
960 minute winter	5	690	122.458	0.714	3.7	4.3307	0.0000	OK
960 minute winter	6	15	122.711	0.000	0.0	0.0000	0.0000	OK
960 minute winter	7	690	122.458	0.776	5.7	4.4436	0.0000	OK
960 minute winter	8	690	122.458	0.835	6.1	5.4612	0.0000	SURCHARGED
960 minute winter	9	1200	118.990	1.090	5.1	6.2395	0.0000	OK
960 minute winter	10	1200	118.990	1.136	5.8	8.3007	0.0000	OK
960 minute winter	11	1200	118.990	1.206	6.0	7.4837	0.0000	SURCHARGED
960 minute winter	12	450	116.549	0.033	6.1	0.0710	0.0000	OK
960 minute winter	13	480	116.401	0.027	2.5	0.0673	0.0000	OK
960 minute winter	14	555	113.615	1.253	8.9	7.2295	0.0000	SURCHARGED
960 minute winter	15	555	113.616	1.313	14.1	7.8561	0.0000	SURCHARGED
960 minute winter	16	555	113.615	1.381	15.1	8.4057	0.0000	SURCHARGED
960 minute winter	17	555	113.615	1.409	27.9	8.0699	0.0000	SURCHARGED
960 minute winter	18	555	113.148	0.965	9.9	1.7049	0.0000	SURCHARGED
960 minute winter	19	15	113.139	1.000	9.9	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
960 minute winter	1	1.000	2	3.1	0.271	0.001	23.7244	
960 minute winter	2	1.001	3	3.8	0.308	0.002	20.4142	
960 minute winter	3	1.002	7	3.4	0.253	0.002	11.9150	
960 minute winter	4	2.000	5	1.8	0.530	0.043	0.0606	
960 minute winter	5	2.001	7	2.8	0.155	0.001	18.2981	
960 minute winter	6	3.000	7	0.0	0.000	0.000	0.0000	
960 minute winter	7	1.003	8	4.6	0.123	0.002	19.0417	
960 minute winter	8	Hydro-Brake®	9	5.1				
960 minute winter	9	1.005	10	5.0	0.332	0.002	19.9960	
960 minute winter	10	1.006	11	4.7	0.152	0.002	31.0115	
960 minute winter	11	Hydro-Brake®	12	5.1				
960 minute winter	12	1.008	14	6.1	1.483	0.024	0.0737	
960 minute winter	13	4.000	14	2.5	0.796	0.017	0.1347	
960 minute winter	14	1.009	15	13.0	0.312	0.006	26.5317	
960 minute winter	15	1.010	16	14.8	0.221	0.007	31.1005	
960 minute winter	16	1.011	17	27.9	0.107	0.013	12.5673	
960 minute winter	17	Hydro-Brake®	18	9.9				
960 minute winter	18	Orifice	19	9.9				349.1

Results for 30 year 1440 minute summer. 1680 minute analysis at 30 minute timestep. Mass balance: 99.96%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute summer	1	900	122.312	0.412	4.2	2.6877	0.0000	OK
1440 minute summer	2	900	122.312	0.515	5.8	3.2716	0.0000	OK
1440 minute summer	3	900	122.312	0.590	4.5	3.5615	0.0000	OK
1440 minute summer	4	750	125.532	0.032	1.8	0.0908	0.0000	OK
1440 minute summer	5	900	122.312	0.568	3.7	3.4452	0.0000	OK
1440 minute summer	6	30	122.711	0.000	0.0	0.0000	0.0000	OK
1440 minute summer	7	900	122.312	0.630	5.8	3.6077	0.0000	OK
1440 minute summer	8	900	122.312	0.689	6.1	4.5064	0.0000	SURCHARGED
1440 minute summer	9	1380	118.925	1.025	5.1	5.8670	0.0000	OK
1440 minute summer	10	1380	118.925	1.071	5.7	7.8252	0.0000	OK
1440 minute summer	11	1380	118.925	1.141	6.0	7.0798	0.0000	SURCHARGED
1440 minute summer	12	720	116.549	0.033	6.1	0.0710	0.0000	OK
1440 minute summer	13	750	116.401	0.027	2.5	0.0673	0.0000	OK
1440 minute summer	14	780	113.525	1.162	8.9	6.7087	0.0000	OK
1440 minute summer	15	780	113.524	1.221	10.7	7.3069	0.0000	SURCHARGED
1440 minute summer	16	780	113.525	1.290	11.1	7.8537	0.0000	SURCHARGED
1440 minute summer	17	780	113.521	1.315	25.2	7.5272	0.0000	SURCHARGED
1440 minute summer	18	780	113.148	0.964	9.7	1.7042	0.0000	SURCHARGED
1440 minute summer	19	30	113.139	1.000	9.7	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
1440 minute summer	1	1.000	2	3.2	0.254	0.002	16.6025	
1440 minute summer	2	1.001	3	3.7	0.299	0.002	15.2021	
1440 minute summer	3	1.002	7	3.3	0.249	0.002	9.1674	
1440 minute summer	4	2.000	5	1.8	0.530	0.043	0.0606	
1440 minute summer	5	2.001	7	2.8	0.155	0.001	13.9977	
1440 minute summer	6	3.000	7	0.0	0.000	0.000	0.0000	
1440 minute summer	7	1.003	8	4.5	0.121	0.002	15.0234	
1440 minute summer	8	Hydro-Brake®	9	5.1				
1440 minute summer	9	1.005	10	4.9	0.327	0.002	19.1461	
1440 minute summer	10	1.006	11	4.7	0.144	0.002	30.1468	
1440 minute summer	11	Hydro-Brake®	12	5.1				
1440 minute summer	12	1.008	14	6.1	1.483	0.024	0.0737	
1440 minute summer	13	4.000	14	2.5	0.796	0.017	0.1347	
1440 minute summer	14	1.009	15	9.7	0.268	0.005	26.4147	
1440 minute summer	15	1.010	16	10.6	0.192	0.005	31.1005	
1440 minute summer	16	1.011	17	25.2	0.039	0.012	12.5673	
1440 minute summer	17	Hydro-Brake®	18	9.7				
1440 minute summer	18	Orifice	19	9.7				431.6

Results for 30 year 1440 minute winter. 1680 minute analysis at 30 minute timestep. Mass balance: 99.99%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute winter	1	990	122.321	0.421	3.1	2.7432	0.0000	OK
1440 minute winter	2	990	122.321	0.524	4.4	3.3260	0.0000	OK
1440 minute winter	3	990	122.321	0.599	3.8	3.6132	0.0000	OK
1440 minute winter	4	720	125.527	0.027	1.3	0.0776	0.0000	OK
1440 minute winter	5	990	122.321	0.577	2.7	3.4972	0.0000	OK
1440 minute winter	6	30	122.711	0.000	0.0	0.0000	0.0000	OK
1440 minute winter	7	990	122.321	0.639	5.1	3.6567	0.0000	OK
1440 minute winter	8	990	122.321	0.698	5.7	4.5624	0.0000	SURCHARGED
1440 minute winter	9	1440	119.226	1.326	5.2	7.5911	0.0000	SURCHARGED
1440 minute winter	10	1440	119.227	1.373	5.6	10.0349	0.0000	SURCHARGED
1440 minute winter	11	1440	119.224	1.440	8.0	8.9364	0.0000	SURCHARGED
1440 minute winter	12	690	116.548	0.032	5.9	0.0698	0.0000	OK
1440 minute winter	13	750	116.398	0.024	1.9	0.0591	0.0000	OK
1440 minute winter	14	810	113.419	1.057	8.0	6.0971	0.0000	OK
1440 minute winter	15	810	113.418	1.115	12.2	6.6727	0.0000	OK
1440 minute winter	16	810	113.423	1.189	13.9	7.2354	0.0000	OK
1440 minute winter	17	780	113.418	1.212	22.4	6.9379	0.0000	SURCHARGED
1440 minute winter	18	810	113.147	0.964	9.2	1.7026	0.0000	SURCHARGED
1440 minute winter	19	30	113.139	1.000	9.2	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
1440 minute winter	1	1.000	2	2.6	0.254	0.001	17.0117	
1440 minute winter	2	1.001	3	3.3	0.309	0.002	15.5083	
1440 minute winter	3	1.002	7	3.1	0.243	0.001	9.3307	
1440 minute winter	4	2.000	5	1.3	0.481	0.031	0.0482	
1440 minute winter	5	2.001	7	2.2	0.157	0.001	14.2523	
1440 minute winter	6	3.000	7	0.0	0.000	0.000	0.0000	
1440 minute winter	7	1.003	8	4.5	0.120	0.002	15.2641	
1440 minute winter	8	Hydro-Brake®	9	5.1				
1440 minute winter	9	1.005	10	4.9	0.325	0.002	20.6751	
1440 minute winter	10	1.006	11	7.9	0.136	0.004	31.3338	
1440 minute winter	11	Hydro-Brake®	12	5.1				
1440 minute winter	12	1.008	14	5.9	1.469	0.024	0.0720	
1440 minute winter	13	4.000	14	1.9	0.731	0.013	0.1115	
1440 minute winter	14	1.009	15	11.3	0.295	0.005	25.2298	
1440 minute winter	15	1.010	16	13.3	0.179	0.006	30.5945	
1440 minute winter	16	1.011	17	22.4	0.136	0.011	12.5553	
1440 minute winter	17	Hydro-Brake®	18	9.2				
1440 minute winter	18	Orifice	19	9.2				472.0

Results for 100 year +40% CC 15 minute summer. 255 minute analysis at 1 minute timestep. Mass balance: 99.85%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	1	18	122.444	0.544	83.5	3.5455	0.0000	OK
15 minute summer	2	20	122.442	0.645	126.3	4.0955	0.0000	OK
15 minute summer	3	19	122.429	0.707	80.1	4.2701	0.0000	OK
15 minute summer	4	10	125.669	0.169	35.7	0.4799	0.0000	OK
15 minute summer	5	19	122.436	0.692	73.3	4.1950	0.0000	OK
15 minute summer	6	1	122.711	0.000	0.0	0.0000	0.0000	OK
15 minute summer	7	19	122.431	0.749	97.0	4.2873	0.0000	OK
15 minute summer	8	17	122.431	0.808	52.0	5.2825	0.0000	SURCHARGED
15 minute summer	9	20	118.263	0.363	14.8	2.0785	0.0000	OK
15 minute summer	10	18	118.258	0.404	35.8	2.9528	0.0000	OK
15 minute summer	11	19	118.259	0.475	30.3	2.9493	0.0000	SURCHARGED
15 minute summer	12	10	116.584	0.067	25.8	0.1456	0.0000	OK
15 minute summer	13	10	116.497	0.123	49.6	0.3027	0.0000	OK
15 minute summer	14	19	112.945	0.583	79.9	3.3642	0.0000	OK
15 minute summer	15	20	112.949	0.646	73.7	3.8667	0.0000	OK
15 minute summer	16	20	112.947	0.713	71.0	4.3417	0.0000	OK
15 minute summer	17	20	112.947	0.741	27.9	4.2432	0.0000	SURCHARGED
15 minute summer	18	20	112.930	0.747	2.5	1.3193	0.0000	SURCHARGED
15 minute summer	19	1	113.139	1.000	0.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	1	1.000	2	76.8	0.682	0.036	22.6020	
15 minute summer	2	1.001	3	66.8	0.645	0.032	19.5598	
15 minute summer	3	1.002	7	-64.6	0.496	-0.031	11.3970	
15 minute summer	4	2.000	5	34.9	1.152	0.825	0.5429	
15 minute summer	5	2.001	7	63.3	0.623	0.030	17.5791	
15 minute summer	6	3.000	7	0.0	0.000	0.000	0.0000	
15 minute summer	7	1.003	8	-27.6	0.248	-0.013	18.2935	
15 minute summer	8	Hydro-Brake®	9	5.1				
15 minute summer	9	1.005	10	-9.7	0.286	-0.005	5.6755	
15 minute summer	10	1.006	11	-14.7	0.192	-0.007	10.3926	
15 minute summer	11	Hydro-Brake®	12	5.1				
15 minute summer	12	1.008	14	25.6	2.238	0.103	0.2056	
15 minute summer	13	4.000	14	48.9	1.858	0.331	1.1293	
15 minute summer	14	1.009	15	51.3	0.647	0.024	13.6022	
15 minute summer	15	1.010	16	49.9	0.568	0.024	18.1774	
15 minute summer	16	1.011	17	27.9	0.537	0.013	7.9688	
15 minute summer	17	Hydro-Brake®	18	2.5				
15 minute summer	18	Orifice	19	0.0				0.0

Results for 100 year +40% CC 15 minute winter. 255 minute analysis at 1 minute timestep. Mass balance: 99.88%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1	19	122.497	0.597	87.7	3.8919	0.0000	OK
15 minute winter	2	19	122.515	0.718	123.2	4.5580	0.0000	OK
15 minute winter	3	20	122.506	0.784	76.6	4.7293	0.0000	OK
15 minute winter	4	10	125.676	0.176	37.4	0.4993	0.0000	OK
15 minute winter	5	20	122.503	0.759	76.8	4.6058	0.0000	OK
15 minute winter	6	1	122.711	0.000	0.0	0.0000	0.0000	OK
15 minute winter	7	20	122.502	0.820	91.3	4.6962	0.0000	OK
15 minute winter	8	18	122.500	0.877	49.8	5.7357	0.0000	SURCHARGED
15 minute winter	9	20	118.299	0.399	21.0	2.2862	0.0000	OK
15 minute winter	10	18	118.297	0.443	33.5	3.2345	0.0000	OK
15 minute winter	11	20	118.296	0.512	31.7	3.1754	0.0000	SURCHARGED
15 minute winter	12	10	116.585	0.069	26.8	0.1486	0.0000	OK
15 minute winter	13	10	116.500	0.126	52.1	0.3109	0.0000	OK
15 minute winter	14	19	113.012	0.650	83.5	3.7485	0.0000	OK
15 minute winter	15	20	113.015	0.712	87.9	4.2609	0.0000	OK
15 minute winter	16	20	113.010	0.776	61.9	4.7240	0.0000	OK
15 minute winter	17	20	113.010	0.803	33.7	4.6006	0.0000	SURCHARGED
15 minute winter	18	20	112.995	0.812	3.0	1.4339	0.0000	SURCHARGED
15 minute winter	19	1	113.139	1.000	0.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	1	1.000	2	72.4	0.684	0.034	26.0600	
15 minute winter	2	1.001	3	63.2	0.691	0.030	22.1550	
15 minute winter	3	1.002	7	51.4	0.514	0.024	12.7483	
15 minute winter	4	2.000	5	36.5	1.158	0.861	0.5639	
15 minute winter	5	2.001	7	49.2	0.646	0.023	19.5760	
15 minute winter	6	3.000	7	0.0	0.000	0.000	0.0000	
15 minute winter	7	1.003	8	-31.1	0.201	-0.015	20.1303	
15 minute winter	8	Hydro-Brake®	9	5.1				
15 minute winter	9	1.005	10	-15.9	0.259	-0.008	6.4437	
15 minute winter	10	1.006	11	-9.2	0.193	-0.004	11.5817	
15 minute winter	11	Hydro-Brake®	12	5.1				
15 minute winter	12	1.008	14	26.6	2.260	0.107	0.2115	
15 minute winter	13	4.000	14	51.2	1.879	0.346	1.1685	
15 minute winter	14	1.009	15	68.6	0.678	0.033	15.4987	
15 minute winter	15	1.010	16	42.7	0.595	0.020	20.2595	
15 minute winter	16	1.011	17	33.7	0.547	0.016	8.7748	
15 minute winter	17	Hydro-Brake®	18	3.0				
15 minute winter	18	Orifice	19	0.0				0.0

Results for 100 year +40% CC 30 minute summer. 270 minute analysis at 1 minute timestep. Mass balance: 99.86%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
30 minute summer	1	37	122.651	0.751	79.2	4.8999	0.0000	OK
30 minute summer	2	34	122.648	0.851	101.4	5.4074	0.0000	OK
30 minute summer	3	33	122.647	0.925	66.1	5.5831	0.0000	OK
30 minute summer	4	18	125.664	0.164	33.9	0.4653	0.0000	OK
30 minute summer	5	36	122.649	0.905	70.2	5.4903	0.0000	OK
30 minute summer	6	1	122.711	0.000	0.0	0.0000	0.0000	OK
30 minute summer	7	36	122.648	0.966	84.8	5.5293	0.0000	OK
30 minute summer	8	36	122.648	1.025	44.9	6.7033	0.0000	SURCHARGED
30 minute summer	9	41	118.379	0.479	17.3	2.7418	0.0000	OK
30 minute summer	10	35	118.379	0.525	30.9	3.8386	0.0000	OK
30 minute summer	11	34	118.383	0.599	28.8	3.7172	0.0000	SURCHARGED
30 minute summer	12	18	116.582	0.066	24.7	0.1429	0.0000	OK
30 minute summer	13	18	116.494	0.120	47.0	0.2954	0.0000	OK
30 minute summer	14	270	113.246	0.884	77.0	5.1014	0.0000	OK
30 minute summer	15	270	113.246	0.943	79.5	5.6428	0.0000	OK
30 minute summer	16	270	113.246	1.012	51.7	6.1589	0.0000	OK
30 minute summer	17	270	113.246	1.040	17.8	5.9549	0.0000	SURCHARGED
30 minute summer	18	70	113.141	0.958	5.1	1.6935	0.0000	SURCHARGED
30 minute summer	19	1	113.139	1.000	5.1	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
30 minute summer	1	1.000	2	52.2	0.496	0.025	32.9065	
30 minute summer	2	1.001	3	47.9	0.553	0.023	26.7920	
30 minute summer	3	1.002	7	24.2	0.478	0.011	15.1677	
30 minute summer	4	2.000	5	33.9	1.145	0.800	0.5275	
30 minute summer	5	2.001	7	49.4	0.576	0.023	23.4569	
30 minute summer	6	3.000	7	0.0	0.000	0.000	0.0000	
30 minute summer	7	1.003	8	-35.4	0.284	-0.017	23.6484	
30 minute summer	8	Hydro-Brake®	9	5.1				
30 minute summer	9	1.005	10	-12.4	0.336	-0.006	8.1837	
30 minute summer	10	1.006	11	12.0	0.190	0.006	14.4044	
30 minute summer	11	Hydro-Brake®	12	5.1				
30 minute summer	12	1.008	14	24.8	2.218	0.099	0.2006	
30 minute summer	13	4.000	14	47.1	1.843	0.319	1.0962	
30 minute summer	14	1.009	15	57.2	0.527	0.027	21.6691	
30 minute summer	15	1.010	16	32.6	0.503	0.015	27.1135	
30 minute summer	16	1.011	17	17.8	0.472	0.008	11.4442	
30 minute summer	17	Hydro-Brake®	18	5.1				
30 minute summer	18	Orifice	19	5.1				68.5

Results for 100 year +40% CC 30 minute winter. 270 minute analysis at 1 minute timestep. Mass balance: 99.91%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
30 minute winter	1	35	122.771	0.871	71.7	5.6804	0.0000	OK
30 minute winter	2	33	122.767	0.970	96.3	6.1624	0.0000	OK
30 minute winter	3	34	122.766	1.044	53.6	6.3034	0.0000	OK
30 minute winter	4	18	125.651	0.151	30.6	0.4299	0.0000	OK
30 minute winter	5	34	122.771	1.027	63.6	6.2289	0.0000	OK
30 minute winter	6	53	122.726	0.015	1.8	1.5875	0.0000	OK
30 minute winter	7	34	122.769	1.087	80.1	6.2243	0.0000	OK
30 minute winter	8	34	122.770	1.147	47.4	7.5006	0.0000	SURCHARGED
30 minute winter	9	36	118.436	0.536	12.4	3.0698	0.0000	OK
30 minute winter	10	35	118.435	0.581	37.1	4.2489	0.0000	OK
30 minute winter	11	34	118.434	0.650	28.0	4.0345	0.0000	SURCHARGED
30 minute winter	12	18	116.580	0.064	22.9	0.1371	0.0000	OK
30 minute winter	13	18	116.487	0.113	42.6	0.2793	0.0000	OK
30 minute winter	14	35	113.275	0.913	70.2	5.2697	0.0000	OK
30 minute winter	15	35	113.275	0.972	78.2	5.8170	0.0000	OK
30 minute winter	16	34	113.276	1.042	50.4	6.3400	0.0000	OK
30 minute winter	17	34	113.276	1.070	17.1	6.1259	0.0000	SURCHARGED
30 minute winter	18	34	113.143	0.960	6.7	1.6964	0.0000	SURCHARGED
30 minute winter	19	1	113.139	1.000	6.7	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
30 minute winter	1	1.000	2	54.1	0.524	0.026	38.1547	
30 minute winter	2	1.001	3	40.2	0.583	0.019	30.2299	
30 minute winter	3	1.002	7	-31.4	0.484	-0.015	16.8455	
30 minute winter	4	2.000	5	30.6	1.125	0.723	0.4850	
30 minute winter	5	2.001	7	49.7	0.591	0.024	26.1495	
30 minute winter	6	3.000	7	-1.8	-0.253	-0.045	0.0877	
30 minute winter	7	1.003	8	-15.5	0.276	-0.007	25.8445	
30 minute winter	8	Hydro-Brake®	9	5.1				
30 minute winter	9	1.005	10	8.1	0.321	0.004	9.4278	
30 minute winter	10	1.006	11	-15.8	0.192	-0.007	16.1843	
30 minute winter	11	Hydro-Brake®	12	5.1				
30 minute winter	12	1.008	14	22.9	2.170	0.092	0.1894	
30 minute winter	13	4.000	14	42.6	1.796	0.288	1.0176	
30 minute winter	14	1.009	15	58.0	0.549	0.028	22.3548	
30 minute winter	15	1.010	16	33.8	0.526	0.016	27.8418	
30 minute winter	16	1.011	17	17.1	0.498	0.008	11.7130	
30 minute winter	17	Hydro-Brake®	18	6.7				
30 minute winter	18	Orifice	19	6.7				75.4

Results for 100 year +40% CC 60 minute summer. 300 minute analysis at 1 minute timestep. Mass balance: 99.94%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute summer	1	57	122.860	0.960	62.6	6.2639	0.0000	OK
60 minute summer	2	56	122.858	1.061	73.8	6.7407	0.0000	OK
60 minute summer	3	55	122.859	1.137	48.9	6.8599	0.0000	OK
60 minute summer	4	33	125.638	0.138	26.7	0.3912	0.0000	OK
60 minute summer	5	55	122.860	1.116	55.5	6.7686	0.0000	OK
60 minute summer	6	66	122.844	0.133	18.0	14.2324	0.0000	OK
60 minute summer	7	55	122.859	1.177	49.9	6.7415	0.0000	OK
60 minute summer	8	55	122.860	1.237	35.5	8.0871	0.0000	SURCHARGED
60 minute summer	9	73	118.534	0.634	12.2	3.6298	0.0000	OK
60 minute summer	10	82	118.534	0.680	25.1	4.9686	0.0000	OK
60 minute summer	11	68	118.534	0.750	22.7	4.6550	0.0000	SURCHARGED
60 minute summer	12	33	116.576	0.060	20.7	0.1301	0.0000	OK
60 minute summer	13	33	116.479	0.105	37.2	0.2592	0.0000	OK
60 minute summer	14	63	113.468	1.106	62.0	6.3842	0.0000	OK
60 minute summer	15	63	113.468	1.164	62.8	6.9683	0.0000	OK
60 minute summer	16	63	113.470	1.236	42.1	7.5226	0.0000	SURCHARGED
60 minute summer	17	62	113.467	1.261	23.2	7.2226	0.0000	SURCHARGED
60 minute summer	18	62	113.147	0.964	9.5	1.7035	0.0000	SURCHARGED
60 minute summer	19	1	113.139	1.000	9.5	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
60 minute summer	1	1.000	2	34.9	0.396	0.017	41.7184	
60 minute summer	2	1.001	3	29.7	0.488	0.014	32.3761	
60 minute summer	3	1.002	7	18.9	0.441	0.009	17.7320	
60 minute summer	4	2.000	5	26.7	1.094	0.631	0.4355	
60 minute summer	5	2.001	7	35.8	0.515	0.017	27.5593	
60 minute summer	6	3.000	7	-18.0	-0.787	-0.446	0.2639	
60 minute summer	7	1.003	8	-12.6	0.284	-0.006	26.6185	
60 minute summer	8	Hydro-Brake®	9	5.1				
60 minute summer	9	1.005	10	-8.0	0.365	-0.004	11.5844	
60 minute summer	10	1.006	11	-6.6	0.195	-0.003	19.4592	
60 minute summer	11	Hydro-Brake®	12	5.1				
60 minute summer	12	1.008	14	20.7	2.111	0.083	0.1761	
60 minute summer	13	4.000	14	37.2	1.732	0.252	0.9211	
60 minute summer	14	1.009	15	45.2	0.475	0.021	25.9483	
60 minute summer	15	1.010	16	25.8	0.453	0.012	30.9715	
60 minute summer	16	1.011	17	23.2	0.448	0.011	12.5673	
60 minute summer	17	Hydro-Brake®	18	9.5				
60 minute summer	18	Orifice	19	9.5				95.1

Results for 100 year +40% CC 60 minute winter. 300 minute analysis at 1 minute timestep. Mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute winter	1	47	122.988	1.088	50.6	7.0987	0.0000	OK
60 minute winter	2	47	122.986	1.189	60.8	7.5529	0.0000	OK
60 minute winter	3	47	122.983	1.261	42.7	7.6134	0.0000	SURCHARGED
60 minute winter	4	33	125.620	0.120	21.6	0.3413	0.0000	OK
60 minute winter	5	47	122.981	1.237	44.9	7.5028	0.0000	SURCHARGED
60 minute winter	6	63	122.978	0.267	47.8	28.5005	0.0000	SURCHARGED
60 minute winter	7	47	122.982	1.300	47.3	7.4443	0.0000	SURCHARGED
60 minute winter	8	47	122.982	1.359	30.9	8.8875	0.0000	SURCHARGED
60 minute winter	9	300	118.708	0.808	11.5	4.6286	0.0000	OK
60 minute winter	10	300	118.708	0.854	20.7	6.2444	0.0000	OK
60 minute winter	11	300	118.708	0.924	18.3	5.7374	0.0000	SURCHARGED
60 minute winter	12	33	116.572	0.056	17.7	0.1201	0.0000	OK
60 minute winter	13	33	116.468	0.094	30.1	0.2312	0.0000	OK
60 minute winter	14	61	113.856	1.494	51.1	8.6215	0.0000	SURCHARGED
60 minute winter	15	61	113.856	1.552	51.7	9.2901	0.0000	SURCHARGED
60 minute winter	16	62	113.857	1.623	37.0	9.8792	0.0000	SURCHARGED
60 minute winter	17	62	113.853	1.647	17.6	9.4327	0.0000	SURCHARGED
60 minute winter	18	74	113.148	0.965	10.0	1.7051	0.0000	SURCHARGED
60 minute winter	19	1	113.139	1.000	10.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
60 minute winter	1	1.000	2	31.1	0.412	0.015	45.3982	
60 minute winter	2	1.001	3	32.8	0.520	0.016	33.7734	
60 minute winter	3	1.002	7	34.3	0.462	0.016	17.9496	
60 minute winter	4	2.000	5	21.6	1.042	0.510	0.3697	
60 minute winter	5	2.001	7	33.5	0.523	0.016	28.0483	
60 minute winter	6	3.000	7	-47.8	-1.508	-1.185	0.3521	
60 minute winter	7	1.003	8	-12.9	0.262	-0.006	26.6782	
60 minute winter	8	Hydro-Brake®	9	5.1				
60 minute winter	9	1.005	10	-6.9	0.353	-0.003	15.2870	
60 minute winter	10	1.006	11	6.0	0.192	0.003	24.8951	
60 minute winter	11	Hydro-Brake®	12	5.1				
60 minute winter	12	1.008	14	17.7	2.018	0.071	0.1573	
60 minute winter	13	4.000	14	30.1	1.636	0.204	0.7889	
60 minute winter	14	1.009	15	37.5	0.495	0.018	26.5317	
60 minute winter	15	1.010	16	23.6	0.467	0.011	31.1005	
60 minute winter	16	1.011	17	17.6	0.462	0.008	12.5673	
60 minute winter	17	Hydro-Brake®	18	10.0				
60 minute winter	18	Orifice	19	10.0				99.6

Results for 100 year +40% CC 120 minute summer. 360 minute analysis at 2 minute timestep. Mass balance: 99.94%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute summer	1	124	123.091	1.191	42.8	7.7706	0.0000	OK
120 minute summer	2	124	123.092	1.295	50.0	8.2227	0.0000	SURCHARGED
120 minute summer	3	124	123.094	1.372	31.3	8.2810	0.0000	SURCHARGED
120 minute summer	4	64	125.609	0.109	18.3	0.3085	0.0000	OK
120 minute summer	5	124	123.093	1.349	38.0	8.1842	0.0000	SURCHARGED
120 minute summer	6	124	123.090	0.379	46.5	40.4349	0.0000	SURCHARGED
120 minute summer	7	122	123.088	1.406	46.1	8.0513	0.0000	SURCHARGED
120 minute summer	8	122	123.088	1.465	24.3	9.5832	0.0000	SURCHARGED
120 minute summer	9	360	118.857	0.957	6.2	5.4777	0.0000	OK
120 minute summer	10	360	118.857	1.003	14.8	7.3283	0.0000	OK
120 minute summer	11	360	118.857	1.073	15.5	6.6578	0.0000	SURCHARGED
120 minute summer	12	64	116.568	0.052	15.7	0.1129	0.0000	OK
120 minute summer	13	64	116.460	0.086	25.4	0.2113	0.0000	OK
120 minute summer	14	124	114.038	1.676	43.8	9.6725	0.0000	SURCHARGED
120 minute summer	15	118	114.036	1.733	41.6	10.3729	0.0000	SURCHARGED
120 minute summer	16	120	114.036	1.802	29.1	18.5320	0.0000	SURCHARGED
120 minute summer	17	122	114.036	1.830	19.9	10.4765	0.0000	SURCHARGED
120 minute summer	18	170	113.148	0.965	10.0	1.7051	0.0000	SURCHARGED
120 minute summer	19	2	113.139	1.000	10.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
120 minute summer	1	1.000	2	23.4	0.341	0.011	46.4783	
120 minute summer	2	1.001	3	28.9	0.430	0.014	33.7956	
120 minute summer	3	1.002	7	32.0	0.403	0.015	17.9496	
120 minute summer	4	2.000	5	18.3	1.002	0.432	0.3259	
120 minute summer	5	2.001	7	24.3	0.464	0.012	28.0483	
120 minute summer	6	3.000	7	-46.5	-1.409	-1.152	0.3521	
120 minute summer	7	1.003	8	9.8	0.244	0.005	26.6782	
120 minute summer	8	Hydro-Brake®	9	5.1				
120 minute summer	9	1.005	10	4.9	0.372	0.002	18.0723	
120 minute summer	10	1.006	11	5.3	0.200	0.003	28.7744	
120 minute summer	11	Hydro-Brake®	12	5.1				
120 minute summer	12	1.008	14	15.6	1.949	0.063	0.1440	
120 minute summer	13	4.000	14	25.4	1.562	0.172	0.6972	
120 minute summer	14	1.009	15	29.6	0.439	0.014	26.5317	
120 minute summer	15	1.010	16	18.8	0.407	0.009	31.1005	
120 minute summer	16	1.011	17	19.9	0.405	0.009	12.5673	
120 minute summer	17	Hydro-Brake®	18	10.0				
120 minute summer	18	Orifice	19	10.0				131.6

Results for 100 year +40% CC 120 minute winter. 360 minute analysis at 2 minute timestep. Mass balance: 99.99%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute winter	1	122	123.322	1.422	33.0	9.2733	0.0000	SURCHARGED
120 minute winter	2	122	123.324	1.527	38.4	9.7003	0.0000	SURCHARGED
120 minute winter	3	122	123.324	1.602	40.1	9.6675	0.0000	SURCHARGED
120 minute winter	4	64	125.593	0.093	14.1	0.2650	0.0000	OK
120 minute winter	5	120	123.324	1.580	29.3	9.5834	0.0000	SURCHARGED
120 minute winter	6	122	123.323	0.612	68.6	65.3376	0.0000	SURCHARGED
120 minute winter	7	120	123.323	1.641	67.0	9.3942	0.0000	SURCHARGED
120 minute winter	8	120	123.323	1.700	18.7	11.1186	0.0000	SURCHARGED
120 minute winter	9	360	119.019	1.119	5.5	6.4094	0.0000	OK
120 minute winter	10	360	119.019	1.165	10.0	8.5176	0.0000	OK
120 minute winter	11	360	119.019	1.235	11.9	7.6678	0.0000	SURCHARGED
120 minute winter	12	62	116.564	0.048	13.2	0.1036	0.0000	OK
120 minute winter	13	64	116.449	0.075	19.6	0.1847	0.0000	OK
120 minute winter	14	120	114.100	1.738	34.9	10.0309	0.0000	SURCHARGED
120 minute winter	15	120	114.101	1.798	38.9	10.7582	0.0000	SURCHARGED
120 minute winter	16	120	114.100	1.866	49.2	32.4530	0.0000	SURCHARGED
120 minute winter	17	116	114.101	1.895	22.5	10.8496	0.0000	SURCHARGED
120 minute winter	18	222	113.148	0.965	10.0	1.7050	0.0000	SURCHARGED
120 minute winter	19	2	113.139	1.000	10.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
120 minute winter	1	1.000	2	22.9	0.362	0.011	46.5060	
120 minute winter	2	1.001	3	35.6	0.451	0.017	33.7956	
120 minute winter	3	1.002	7	37.8	0.396	0.018	17.9496	
120 minute winter	4	2.000	5	14.1	0.938	0.333	0.2681	
120 minute winter	5	2.001	7	20.5	0.420	0.010	28.0483	
120 minute winter	6	3.000	7	-68.6	-1.872	-1.699	0.3521	
120 minute winter	7	1.003	8	12.3	0.251	0.006	26.6782	
120 minute winter	8	Hydro-Brake®	9	5.5				
120 minute winter	9	1.005	10	5.2	0.364	0.002	20.2965	
120 minute winter	10	1.006	11	5.4	0.194	0.003	31.2086	
120 minute winter	11	Hydro-Brake®	12	5.1				
120 minute winter	12	1.008	14	13.2	1.859	0.053	0.1275	
120 minute winter	13	4.000	14	19.6	1.453	0.133	0.5785	
120 minute winter	14	1.009	15	32.4	0.456	0.015	26.5317	
120 minute winter	15	1.010	16	43.1	0.390	0.020	31.1005	
120 minute winter	16	1.011	17	22.5	0.395	0.011	12.5673	
120 minute winter	17	Hydro-Brake®	18	10.0				
120 minute winter	18	Orifice	19	10.0				150.3

Results for 100 year +40% CC 180 minute summer. 420 minute analysis at 4 minute timestep. Mass balance: 99.99%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
180 minute summer	1	180	123.234	1.334	32.6	8.6973	0.0000	SURCHARGED
180 minute summer	2	184	123.234	1.437	36.5	9.1263	0.0000	SURCHARGED
180 minute summer	3	184	123.237	1.515	27.0	9.1430	0.0000	SURCHARGED
180 minute summer	4	96	125.593	0.093	13.9	0.2629	0.0000	OK
180 minute summer	5	184	123.237	1.493	28.9	9.0540	0.0000	SURCHARGED
180 minute summer	6	184	123.235	0.524	46.0	55.9465	0.0000	SURCHARGED
180 minute summer	7	184	123.236	1.554	45.4	8.8974	0.0000	SURCHARGED
180 minute summer	8	184	123.234	1.611	18.5	10.5342	0.0000	SURCHARGED
180 minute summer	9	408	119.025	1.125	5.4	6.4395	0.0000	OK
180 minute summer	10	408	119.025	1.171	10.2	8.5559	0.0000	OK
180 minute summer	11	408	119.025	1.241	11.8	7.7004	0.0000	SURCHARGED
180 minute summer	12	92	116.564	0.048	13.1	0.1032	0.0000	OK
180 minute summer	13	96	116.448	0.074	19.4	0.1837	0.0000	OK
180 minute summer	14	160	114.098	1.736	34.5	10.0164	0.0000	SURCHARGED
180 minute summer	15	168	114.098	1.795	35.6	10.7429	0.0000	SURCHARGED
180 minute summer	16	164	114.098	1.864	43.9	31.9634	0.0000	SURCHARGED
180 minute summer	17	160	114.099	1.893	19.2	10.8403	0.0000	SURCHARGED
180 minute summer	18	284	113.148	0.965	10.0	1.7051	0.0000	SURCHARGED
180 minute summer	19	4	113.139	1.000	10.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
180 minute summer	1	1.000	2	16.3	0.317	0.008	46.5060	
180 minute summer	2	1.001	3	24.2	0.398	0.011	33.7956	
180 minute summer	3	1.002	7	27.5	0.374	0.013	17.9496	
180 minute summer	4	2.000	5	13.9	0.935	0.328	0.2653	
180 minute summer	5	2.001	7	18.2	0.431	0.009	28.0483	
180 minute summer	6	3.000	7	-46.0	-1.337	-1.140	0.3521	
180 minute summer	7	1.003	8	12.3	0.236	0.006	26.6782	
180 minute summer	8	Hydro-Brake®	9	5.4				
180 minute summer	9	1.005	10	5.2	0.371	0.002	20.3408	
180 minute summer	10	1.006	11	4.8	0.191	0.002	31.2327	
180 minute summer	11	Hydro-Brake®	12	5.1				
180 minute summer	12	1.008	14	13.1	1.853	0.052	0.1266	
180 minute summer	13	4.000	14	19.4	1.449	0.131	0.5742	
180 minute summer	14	1.009	15	29.3	0.403	0.014	26.5317	
180 minute summer	15	1.010	16	37.9	0.377	0.018	31.1005	
180 minute summer	16	1.011	17	19.2	0.379	0.009	12.5673	
180 minute summer	17	Hydro-Brake®	18	10.0				
180 minute summer	18	Orifice	19	10.0				168.4

Results for 100 year +40% CC 180 minute winter. 420 minute analysis at 4 minute timestep. Mass balance: 99.99%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
180 minute winter	1	180	123.503	1.603	25.1	10.4522	0.0000	SURCHARGED
180 minute winter	2	180	123.503	1.706	32.8	10.8361	0.0000	SURCHARGED
180 minute winter	3	180	123.501	1.779	36.4	10.7367	0.0000	SURCHARGED
180 minute winter	4	96	125.580	0.080	10.7	0.2271	0.0000	OK
180 minute winter	5	180	123.499	1.755	22.2	10.6458	0.0000	SURCHARGED
180 minute winter	6	180	123.501	0.790	60.0	84.3347	0.0000	SURCHARGED
180 minute winter	7	180	123.501	1.819	60.3	10.4137	0.0000	SURCHARGED
180 minute winter	8	180	123.501	1.878	14.2	12.2793	0.0000	SURCHARGED
180 minute winter	9	328	119.342	1.442	6.9	8.2587	0.0000	SURCHARGED
180 minute winter	10	340	119.343	1.489	10.4	10.8841	0.0000	SURCHARGED
180 minute winter	11	336	119.341	1.557	9.8	9.6612	0.0000	SURCHARGED
180 minute winter	12	92	116.560	0.044	11.2	0.0952	0.0000	OK
180 minute winter	13	96	116.439	0.065	14.9	0.1605	0.0000	OK
180 minute winter	14	180	114.172	1.810	27.6	10.4431	0.0000	SURCHARGED
180 minute winter	15	172	114.170	1.867	34.0	11.1715	0.0000	SURCHARGED
180 minute winter	16	176	114.170	1.936	41.5	47.6237	0.0000	SURCHARGED
180 minute winter	17	176	114.171	1.965	17.3	11.2526	0.0000	SURCHARGED
180 minute winter	18	368	113.148	0.965	10.0	1.7051	0.0000	SURCHARGED
180 minute winter	19	4	113.139	1.000	10.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
180 minute winter	1	1.000	2	20.0	0.332	0.009	46.5060	
180 minute winter	2	1.001	3	32.4	0.411	0.015	33.7956	
180 minute winter	3	1.002	7	36.1	0.334	0.017	17.9496	
180 minute winter	4	2.000	5	10.7	0.873	0.253	0.2186	
180 minute winter	5	2.001	7	17.9	0.319	0.009	28.0483	
180 minute winter	6	3.000	7	-60.0	-1.720	-1.486	0.3521	
180 minute winter	7	1.003	8	11.1	0.210	0.005	26.6782	
180 minute winter	8	Hydro-Brake®	9	5.8				
180 minute winter	9	1.005	10	10.2	0.370	0.005	20.6751	
180 minute winter	10	1.006	11	8.6	0.209	0.004	31.3338	
180 minute winter	11	Hydro-Brake®	12	5.2				
180 minute winter	12	1.008	14	11.1	1.771	0.045	0.1131	
180 minute winter	13	4.000	14	14.9	1.346	0.101	0.4749	
180 minute winter	14	1.009	15	27.7	0.443	0.013	26.5317	
180 minute winter	15	1.010	16	35.5	0.319	0.017	31.1005	
180 minute winter	16	1.011	17	17.3	0.320	0.008	12.5673	
180 minute winter	17	Hydro-Brake®	18	10.0				
180 minute winter	18	Orifice	19	10.0				185.4

Results for 100 year +40% CC 240 minute summer. 480 minute analysis at 4 minute timestep. Mass balance: 99.96%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
240 minute summer	1	240	123.308	1.408	27.8	9.1841	0.0000	SURCHARGED
240 minute summer	2	240	123.309	1.512	30.7	9.6048	0.0000	SURCHARGED
240 minute summer	3	240	123.310	1.588	28.3	9.5831	0.0000	SURCHARGED
240 minute summer	4	124	125.585	0.085	11.9	0.2401	0.0000	OK
240 minute summer	5	244	123.307	1.563	24.6	9.4781	0.0000	SURCHARGED
240 minute summer	6	244	123.306	0.595	46.1	63.5254	0.0000	SURCHARGED
240 minute summer	7	244	123.306	1.624	46.4	9.2995	0.0000	SURCHARGED
240 minute summer	8	244	123.306	1.683	15.8	11.0090	0.0000	SURCHARGED
240 minute summer	9	388	119.224	1.324	6.3	7.5809	0.0000	SURCHARGED
240 minute summer	10	368	119.225	1.371	8.5	10.0186	0.0000	SURCHARGED
240 minute summer	11	364	119.222	1.438	10.4	8.9280	0.0000	SURCHARGED
240 minute summer	12	124	116.561	0.045	11.8	0.0980	0.0000	OK
240 minute summer	13	124	116.442	0.068	16.5	0.1686	0.0000	OK
240 minute summer	14	188	114.150	1.788	30.0	10.3207	0.0000	SURCHARGED
240 minute summer	15	220	114.148	1.845	29.1	11.0381	0.0000	SURCHARGED
240 minute summer	16	204	114.148	1.914	39.4	42.7798	0.0000	SURCHARGED
240 minute summer	17	196	114.150	1.944	21.2	11.1299	0.0000	SURCHARGED
240 minute summer	18	396	113.148	0.965	10.0	1.7051	0.0000	SURCHARGED
240 minute summer	19	4	113.139	1.000	10.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
240 minute summer	1	1.000	2	15.8	0.294	0.007	46.5060	
240 minute summer	2	1.001	3	25.1	0.371	0.012	33.7956	
240 minute summer	3	1.002	7	28.0	0.354	0.013	17.9496	
240 minute summer	4	2.000	5	11.8	0.896	0.279	0.2352	
240 minute summer	5	2.001	7	15.6	0.411	0.007	28.0483	
240 minute summer	6	3.000	7	-46.1	-1.492	-1.142	0.3521	
240 minute summer	7	1.003	8	8.6	0.233	0.004	26.6782	
240 minute summer	8	Hydro-Brake®	9	5.5				
240 minute summer	9	1.005	10	8.0	0.368	0.004	20.6751	
240 minute summer	10	1.006	11	8.4	0.206	0.004	31.3338	
240 minute summer	11	Hydro-Brake®	12	5.1				
240 minute summer	12	1.008	14	11.8	1.801	0.047	0.1178	
240 minute summer	13	4.000	14	16.4	1.381	0.111	0.5084	
240 minute summer	14	1.009	15	22.8	0.414	0.011	26.5317	
240 minute summer	15	1.010	16	33.4	0.349	0.016	31.1005	
240 minute summer	16	1.011	17	21.2	0.300	0.010	12.5673	
240 minute summer	17	Hydro-Brake®	18	10.0				
240 minute summer	18	Orifice	19	10.0				200.5

Results for 100 year +40% CC 240 minute winter. 480 minute analysis at 4 minute timestep. Mass balance: 99.99%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
240 minute winter	1	236	123.713	1.813	20.7	11.8233	0.0000	SURCHARGED
240 minute winter	2	236	123.713	1.915	26.9	12.1671	0.0000	SURCHARGED
240 minute winter	3	236	123.713	1.991	28.6	12.0176	0.0000	SURCHARGED
240 minute winter	4	124	125.572	0.072	8.8	0.2041	0.0000	OK
240 minute winter	5	236	123.712	1.968	18.3	11.9379	0.0000	SURCHARGED
240 minute winter	6	236	123.711	1.000	45.4	90.0197	0.0000	SURCHARGED
240 minute winter	7	236	123.710	2.028	46.3	11.6143	0.0000	SURCHARGED
240 minute winter	8	236	123.712	2.089	13.9	13.6595	0.0000	SURCHARGED
240 minute winter	9	304	119.593	1.693	7.6	9.6954	0.0000	SURCHARGED
240 minute winter	10	328	119.594	1.740	13.7	12.7164	0.0000	SURCHARGED
240 minute winter	11	340	119.593	1.809	12.6	11.2272	0.0000	SURCHARGED
240 minute winter	12	120	116.558	0.042	10.0	0.0903	0.0000	OK
240 minute winter	13	124	116.433	0.059	12.3	0.1456	0.0000	OK
240 minute winter	14	240	114.227	1.865	23.5	10.7645	0.0000	SURCHARGED
240 minute winter	15	240	114.226	1.922	30.5	11.5042	0.0000	SURCHARGED
240 minute winter	16	236	114.224	1.990	39.2	59.3468	0.0000	SURCHARGED
240 minute winter	17	236	114.226	2.020	21.6	11.5640	0.0000	FLOOD RISK
240 minute winter	18	124	113.148	0.965	10.0	1.7050	0.0000	SURCHARGED
240 minute winter	19	4	113.139	1.000	10.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
240 minute winter	1	1.000	2	16.0	0.313	0.008	46.5060	
240 minute winter	2	1.001	3	25.2	0.393	0.012	33.7956	
240 minute winter	3	1.002	7	27.7	0.340	0.013	17.9496	
240 minute winter	4	2.000	5	8.8	0.829	0.208	0.1892	
240 minute winter	5	2.001	7	15.6	0.304	0.007	28.0483	
240 minute winter	6	3.000	7	-45.4	-1.495	-1.124	0.3521	
240 minute winter	7	1.003	8	13.9	0.212	0.007	26.6782	
240 minute winter	8	Hydro-Brake®	9	6.1				
240 minute winter	9	1.005	10	13.7	0.365	0.007	20.6751	
240 minute winter	10	1.006	11	12.6	0.193	0.006	31.3338	
240 minute winter	11	Hydro-Brake®	12	5.6				
240 minute winter	12	1.008	14	10.0	1.716	0.040	0.1047	
240 minute winter	13	4.000	14	12.3	1.273	0.083	0.4137	
240 minute winter	14	1.009	15	24.8	0.399	0.012	26.5317	
240 minute winter	15	1.010	16	33.8	0.349	0.016	31.1005	
240 minute winter	16	1.011	17	21.6	0.337	0.010	12.5673	
240 minute winter	17	Hydro-Brake®	18	10.0				
240 minute winter	18	Orifice	19	10.0				201.3

Results for 100 year +40% CC 360 minute summer. 600 minute analysis at 8 minute timestep. Mass balance: 99.96%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
360 minute summer	1	352	123.343	1.443	21.3	9.4117	0.0000	SURCHARGED
360 minute summer	2	360	123.340	1.543	24.1	9.8009	0.0000	SURCHARGED
360 minute summer	3	352	123.341	1.619	18.8	9.7731	0.0000	SURCHARGED
360 minute summer	4	184	125.573	0.073	9.1	0.2072	0.0000	OK
360 minute summer	5	360	123.341	1.597	18.8	9.6876	0.0000	SURCHARGED
360 minute summer	6	360	123.339	0.628	30.3	67.0794	0.0000	SURCHARGED
360 minute summer	7	360	123.340	1.658	30.7	9.4920	0.0000	SURCHARGED
360 minute summer	8	360	123.341	1.718	15.9	11.2373	0.0000	SURCHARGED
360 minute summer	9	376	119.528	1.628	8.2	9.3192	0.0000	SURCHARGED
360 minute summer	10	368	119.527	1.673	10.1	12.2309	0.0000	SURCHARGED
360 minute summer	11	376	119.526	1.742	10.3	10.8125	0.0000	SURCHARGED
360 minute summer	12	184	116.558	0.042	10.1	0.0908	0.0000	OK
360 minute summer	13	184	116.434	0.060	12.6	0.1470	0.0000	OK
360 minute summer	14	312	114.211	1.849	24.0	10.6705	0.0000	SURCHARGED
360 minute summer	15	288	114.211	1.908	32.6	11.4176	0.0000	SURCHARGED
360 minute summer	16	288	114.210	1.976	33.1	56.1351	0.0000	SURCHARGED
360 minute summer	17	296	114.209	2.003	18.6	11.4706	0.0000	FLOOD RISK
360 minute summer	18	600	113.148	0.965	10.0	1.7050	0.0000	SURCHARGED
360 minute summer	19	8	113.139	1.000	10.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
360 minute summer	1	1.000	2	10.9	0.271	0.005	46.5060	
360 minute summer	2	1.001	3	16.4	0.339	0.008	33.7956	
360 minute summer	3	1.002	7	18.3	0.328	0.009	17.9496	
360 minute summer	4	2.000	5	9.0	0.834	0.213	0.1930	
360 minute summer	5	2.001	7	11.9	0.220	0.006	28.0483	
360 minute summer	6	3.000	7	-30.3	-0.961	-0.751	0.3521	
360 minute summer	7	1.003	8	14.8	0.224	0.007	26.6782	
360 minute summer	8	Hydro-Brake®	9	5.5				
360 minute summer	9	1.005	10	9.8	0.363	0.005	20.6751	
360 minute summer	10	1.006	11	9.7	0.170	0.005	31.3338	
360 minute summer	11	Hydro-Brake®	12	5.5				
360 minute summer	12	1.008	14	10.1	1.722	0.041	0.1056	
360 minute summer	13	4.000	14	12.5	1.279	0.085	0.4190	
360 minute summer	14	1.009	15	26.6	0.390	0.013	26.5317	
360 minute summer	15	1.010	16	27.5	0.318	0.013	31.1005	
360 minute summer	16	1.011	17	18.6	0.270	0.009	12.5673	
360 minute summer	17	Hydro-Brake®	18	10.0				
360 minute summer	18	Orifice	19	10.0				240.7

Results for 100 year +40% CC 360 minute winter. 600 minute analysis at 8 minute timestep. Mass balance: 99.99%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
360 minute winter	1	344	123.931	2.031	15.5	13.2467	0.0000	SURCHARGED
360 minute winter	2	352	123.930	2.133	19.7	13.5460	0.0000	SURCHARGED
360 minute winter	3	352	123.933	2.211	19.9	13.3445	0.0000	FLOOD RISK
360 minute winter	4	184	125.562	0.062	6.6	0.1751	0.0000	OK
360 minute winter	5	352	123.930	2.186	13.7	13.2589	0.0000	SURCHARGED
360 minute winter	6	344	123.930	1.219	33.9	90.4064	0.0000	SURCHARGED
360 minute winter	7	344	123.927	2.245	34.3	12.8555	0.0000	SURCHARGED
360 minute winter	8	344	123.929	2.306	9.4	15.0796	0.0000	FLOOD RISK
360 minute winter	9	376	120.017	2.117	7.1	12.1205	0.0000	SURCHARGED
360 minute winter	10	368	120.017	2.163	9.3	15.8076	0.0000	SURCHARGED
360 minute winter	11	368	120.015	2.231	10.0	13.8489	0.0000	SURCHARGED
360 minute winter	12	176	116.555	0.039	8.5	0.0835	0.0000	OK
360 minute winter	13	184	116.425	0.051	9.2	0.1261	0.0000	OK
360 minute winter	14	352	114.305	1.943	18.7	11.2103	0.0000	SURCHARGED
360 minute winter	15	352	114.306	2.003	23.6	11.9852	0.0000	SURCHARGED
360 minute winter	16	352	114.305	2.071	25.8	76.7603	0.0000	SURCHARGED
360 minute winter	17	352	114.304	2.098	31.1	12.0148	0.0000	FLOOD RISK
360 minute winter	18	168	113.148	0.965	10.0	1.7050	0.0000	SURCHARGED
360 minute winter	19	8	113.139	1.000	10.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
360 minute winter	1	1.000	2	10.9	0.284	0.005	46.5060	
360 minute winter	2	1.001	3	17.1	0.351	0.008	33.7956	
360 minute winter	3	1.002	7	19.3	0.281	0.009	17.9496	
360 minute winter	4	2.000	5	6.6	0.766	0.156	0.1534	
360 minute winter	5	2.001	7	12.2	0.272	0.006	28.0483	
360 minute winter	6	3.000	7	-33.9	-0.917	-0.840	0.3521	
360 minute winter	7	1.003	8	9.4	0.163	0.004	26.6782	
360 minute winter	8	Hydro-Brake®	9	6.4				
360 minute winter	9	1.005	10	8.8	0.358	0.004	20.6751	
360 minute winter	10	1.006	11	10.0	0.201	0.005	31.3338	
360 minute winter	11	Hydro-Brake®	12	6.2				
360 minute winter	12	1.008	14	8.5	1.639	0.034	0.0936	
360 minute winter	13	4.000	14	9.2	1.169	0.062	0.3369	
360 minute winter	14	1.009	15	19.2	0.360	0.009	26.5317	
360 minute winter	15	1.010	16	21.8	0.246	0.010	31.1005	
360 minute winter	16	1.011	17	31.1	0.277	0.015	12.5673	
360 minute winter	17	Hydro-Brake®	18	10.0				
360 minute winter	18	Orifice	19	10.0				230.7

Results for 100 year +40% CC 480 minute summer. 720 minute analysis at 8 minute timestep. Mass balance: 99.96%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
480 minute summer	1	424	123.336	1.436	16.8	9.3660	0.0000	SURCHARGED
480 minute summer	2	424	123.335	1.538	20.2	9.7704	0.0000	SURCHARGED
480 minute summer	3	416	123.334	1.612	21.5	9.7297	0.0000	SURCHARGED
480 minute summer	4	248	125.565	0.065	7.2	0.1834	0.0000	OK
480 minute summer	5	416	123.333	1.589	14.9	9.6392	0.0000	SURCHARGED
480 minute summer	6	432	123.332	0.621	33.2	66.2805	0.0000	SURCHARGED
480 minute summer	7	424	123.335	1.653	33.6	9.4639	0.0000	SURCHARGED
480 minute summer	8	416	123.333	1.710	10.2	11.1822	0.0000	SURCHARGED
480 minute summer	9	488	119.649	1.749	6.8	10.0153	0.0000	SURCHARGED
480 minute summer	10	488	119.649	1.795	10.4	13.1188	0.0000	SURCHARGED
480 minute summer	11	488	119.648	1.864	9.6	11.5689	0.0000	SURCHARGED
480 minute summer	12	240	116.556	0.040	9.0	0.0859	0.0000	OK
480 minute summer	13	248	116.427	0.053	10.0	0.1316	0.0000	OK
480 minute summer	14	368	114.252	1.890	20.0	10.9071	0.0000	SURCHARGED
480 minute summer	15	392	114.250	1.946	26.0	11.6478	0.0000	SURCHARGED
480 minute summer	16	376	114.248	2.014	30.3	64.5170	0.0000	SURCHARGED
480 minute summer	17	400	114.250	2.044	22.3	11.7054	0.0000	FLOOD RISK
480 minute summer	18	224	113.148	0.965	10.0	1.7050	0.0000	SURCHARGED
480 minute summer	19	8	113.139	1.000	10.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
480 minute summer	1	1.000	2	12.3	0.263	0.006	46.5060	
480 minute summer	2	1.001	3	19.0	0.322	0.009	33.7956	
480 minute summer	3	1.002	7	20.8	0.302	0.010	17.9496	
480 minute summer	4	2.000	5	7.2	0.785	0.170	0.1636	
480 minute summer	5	2.001	7	10.8	0.225	0.005	28.0483	
480 minute summer	6	3.000	7	-33.2	-1.172	-0.822	0.3521	
480 minute summer	7	1.003	8	9.1	0.212	0.004	26.6782	
480 minute summer	8	Hydro-Brake®	9	5.5				
480 minute summer	9	1.005	10	9.8	0.353	0.005	20.6751	
480 minute summer	10	1.006	11	9.6	0.186	0.005	31.3338	
480 minute summer	11	Hydro-Brake®	12	5.7				
480 minute summer	12	1.008	14	9.0	1.667	0.036	0.0973	
480 minute summer	13	4.000	14	10.0	1.199	0.068	0.3578	
480 minute summer	14	1.009	15	21.3	0.359	0.010	26.5317	
480 minute summer	15	1.010	16	25.8	0.293	0.012	31.1005	
480 minute summer	16	1.011	17	22.3	0.282	0.011	12.5673	
480 minute summer	17	Hydro-Brake®	18	10.0				
480 minute summer	18	Orifice	19	10.0				278.8

Results for 100 year +40% CC 480 minute winter. 720 minute analysis at 8 minute timestep. Mass balance: 99.99%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
480 minute winter	1	456	123.934	2.034	12.5	13.2653	0.0000	SURCHARGED
480 minute winter	2	456	123.934	2.137	18.2	13.5762	0.0000	SURCHARGED
480 minute winter	3	464	123.936	2.214	18.9	13.3650	0.0000	FLOOD RISK
480 minute winter	4	248	125.555	0.055	5.3	0.1563	0.0000	OK
480 minute winter	5	456	123.937	2.193	11.0	13.3033	0.0000	SURCHARGED
480 minute winter	6	456	123.940	1.229	29.3	90.4236	0.0000	SURCHARGED
480 minute winter	7	456	123.935	2.253	30.0	12.9009	0.0000	SURCHARGED
480 minute winter	8	456	123.937	2.314	18.5	15.1308	0.0000	FLOOD RISK
480 minute winter	9	480	120.295	2.395	6.6	13.7127	0.0000	SURCHARGED
480 minute winter	10	480	120.297	2.442	13.8	17.8519	0.0000	SURCHARGED
480 minute winter	11	480	120.292	2.508	11.0	15.5693	0.0000	FLOOD RISK
480 minute winter	12	232	116.553	0.037	7.8	0.0797	0.0000	OK
480 minute winter	13	248	116.420	0.046	7.4	0.1133	0.0000	OK
480 minute winter	14	464	114.353	1.991	15.9	11.4886	0.0000	SURCHARGED
480 minute winter	15	464	114.352	2.049	19.0	12.2611	0.0000	SURCHARGED
480 minute winter	16	472	114.350	2.116	24.0	86.5280	0.0000	SURCHARGED
480 minute winter	17	464	114.350	2.144	20.5	12.2743	0.0000	FLOOD RISK
480 minute winter	18	216	113.148	0.965	10.0	1.7050	0.0000	SURCHARGED
480 minute winter	19	8	113.139	1.000	10.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
480 minute winter	1	1.000	2	10.6	0.268	0.005	46.5060	
480 minute winter	2	1.001	3	16.5	0.335	0.008	33.7956	
480 minute winter	3	1.002	7	18.8	0.284	0.009	17.9496	
480 minute winter	4	2.000	5	5.3	0.722	0.125	0.1311	
480 minute winter	5	2.001	7	10.3	0.252	0.005	28.0483	
480 minute winter	6	3.000	7	-29.3	-1.111	-0.727	0.3521	
480 minute winter	7	1.003	8	18.3	0.171	0.009	26.6782	
480 minute winter	8	Hydro-Brake®	9	6.4				
480 minute winter	9	1.005	10	13.8	0.355	0.007	20.6751	
480 minute winter	10	1.006	11	10.8	0.174	0.005	31.3338	
480 minute winter	11	Hydro-Brake®	12	6.5				
480 minute winter	12	1.008	14	7.8	1.593	0.031	0.0875	
480 minute winter	13	4.000	14	7.4	1.099	0.050	0.2887	
480 minute winter	14	1.009	15	15.9	0.391	0.008	26.5317	
480 minute winter	15	1.010	16	20.7	0.275	0.010	31.1005	
480 minute winter	16	1.011	17	20.5	0.171	0.010	12.5673	
480 minute winter	17	Hydro-Brake®	18	10.0				
480 minute winter	18	Orifice	19	10.0				271.5

Results for 100 year +40% CC 600 minute summer. 840 minute analysis at 15 minute timestep. Mass balance: 99.98%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
600 minute summer	1	510	123.311	1.411	13.8	9.2036	0.0000	SURCHARGED
600 minute summer	2	495	123.311	1.514	15.7	9.6198	0.0000	SURCHARGED
600 minute summer	3	495	123.313	1.591	14.2	9.6021	0.0000	SURCHARGED
600 minute summer	4	315	125.558	0.058	5.9	0.1653	0.0000	OK
600 minute summer	5	495	123.313	1.569	12.2	9.5140	0.0000	SURCHARGED
600 minute summer	6	495	123.309	0.598	20.3	63.8779	0.0000	SURCHARGED
600 minute summer	7	495	123.305	1.623	21.7	9.2920	0.0000	SURCHARGED
600 minute summer	8	495	123.308	1.685	10.3	11.0221	0.0000	SURCHARGED
600 minute summer	9	600	119.763	1.863	6.5	10.6679	0.0000	SURCHARGED
600 minute summer	10	600	119.763	1.909	8.3	13.9543	0.0000	SURCHARGED
600 minute summer	11	615	119.762	1.978	9.4	12.2781	0.0000	SURCHARGED
600 minute summer	12	300	116.554	0.038	8.2	0.0821	0.0000	OK
600 minute summer	13	315	116.422	0.048	8.2	0.1192	0.0000	OK
600 minute summer	14	450	114.266	1.904	17.3	10.9869	0.0000	SURCHARGED
600 minute summer	15	450	114.264	1.961	24.2	11.7318	0.0000	SURCHARGED
600 minute summer	16	465	114.262	2.028	22.9	67.5409	0.0000	SURCHARGED
600 minute summer	17	450	114.261	2.055	18.3	11.7682	0.0000	FLOOD RISK
600 minute summer	18	285	113.148	0.965	9.9	1.7046	0.0000	SURCHARGED
600 minute summer	19	15	113.139	1.000	9.9	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
600 minute summer	1	1.000	2	8.5	0.255	0.004	46.5060	
600 minute summer	2	1.001	3	12.0	0.309	0.006	33.7956	
600 minute summer	3	1.002	7	12.3	0.280	0.006	17.9496	
600 minute summer	4	2.000	5	5.9	0.743	0.139	0.1416	
600 minute summer	5	2.001	7	8.6	0.169	0.004	28.0483	
600 minute summer	6	3.000	7	-20.3	-0.863	-0.503	0.3521	
600 minute summer	7	1.003	8	9.5	0.147	0.005	26.6782	
600 minute summer	8	Hydro-Brake®	9	5.5				
600 minute summer	9	1.005	10	8.3	0.343	0.004	20.6751	
600 minute summer	10	1.006	11	9.4	0.196	0.004	31.3338	
600 minute summer	11	Hydro-Brake®	12	5.9				
600 minute summer	12	1.008	14	8.2	1.621	0.033	0.0912	
600 minute summer	13	4.000	14	8.2	1.132	0.055	0.3107	
600 minute summer	14	1.009	15	20.3	0.320	0.010	26.5317	
600 minute summer	15	1.010	16	19.2	0.232	0.009	31.1005	
600 minute summer	16	1.011	17	18.3	0.030	0.009	12.5673	
600 minute summer	17	Hydro-Brake®	18	9.9				
600 minute summer	18	Orifice	19	9.9				322.7

Results for 100 year +40% CC 600 minute winter. 840 minute analysis at 15 minute timestep. Mass balance: 99.99%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
600 minute winter	1	540	123.845	1.945	10.6	12.6830	0.0000	SURCHARGED
600 minute winter	2	540	123.846	2.049	14.4	13.0134	0.0000	SURCHARGED
600 minute winter	3	525	123.846	2.124	14.1	12.8212	0.0000	FLOOD RISK
600 minute winter	4	315	125.551	0.051	4.5	0.1437	0.0000	OK
600 minute winter	5	540	123.846	2.102	9.4	12.7483	0.0000	SURCHARGED
600 minute winter	6	540	123.846	1.135	20.9	90.2574	0.0000	SURCHARGED
600 minute winter	7	510	123.844	2.162	21.5	12.3792	0.0000	SURCHARGED
600 minute winter	8	540	123.846	2.223	10.8	14.5372	0.0000	SURCHARGED
600 minute winter	9	585	120.402	2.502	6.7	14.3275	0.0000	SURCHARGED
600 minute winter	10	585	120.399	2.545	13.2	18.6042	0.0000	SURCHARGED
600 minute winter	11	585	120.402	2.618	9.8	16.2515	0.0000	FLOOD RISK
600 minute winter	12	285	116.552	0.036	7.3	0.0773	0.0000	OK
600 minute winter	13	315	116.416	0.042	6.3	0.1047	0.0000	OK
600 minute winter	14	600	114.370	2.008	14.2	11.5882	0.0000	SURCHARGED
600 minute winter	15	585	114.369	2.066	16.5	12.3632	0.0000	SURCHARGED
600 minute winter	16	585	114.369	2.135	19.8	90.5443	0.0000	SURCHARGED
600 minute winter	17	600	114.370	2.164	18.8	12.3906	0.0000	FLOOD RISK
600 minute winter	18	270	113.148	0.965	9.9	1.7047	0.0000	SURCHARGED
600 minute winter	19	15	113.139	1.000	9.9	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
600 minute winter	1	1.000	2	8.2	0.255	0.004	46.5060	
600 minute winter	2	1.001	3	12.1	0.320	0.006	33.7956	
600 minute winter	3	1.002	7	13.4	0.260	0.006	17.9496	
600 minute winter	4	2.000	5	4.5	0.690	0.106	0.1165	
600 minute winter	5	2.001	7	9.4	0.177	0.004	28.0483	
600 minute winter	6	3.000	7	-20.9	-0.551	-0.519	0.3521	
600 minute winter	7	1.003	8	10.8	0.167	0.005	26.6782	
600 minute winter	8	Hydro-Brake®	9	6.3				
600 minute winter	9	1.005	10	12.0	0.352	0.006	20.6751	
600 minute winter	10	1.006	11	9.8	0.152	0.005	31.3338	
600 minute winter	11	Hydro-Brake®	12	6.7				
600 minute winter	12	1.008	14	7.3	1.564	0.029	0.0837	
600 minute winter	13	4.000	14	6.3	1.048	0.043	0.2579	
600 minute winter	14	1.009	15	13.9	0.309	0.007	26.5317	
600 minute winter	15	1.010	16	17.0	0.274	0.008	31.1005	
600 minute winter	16	1.011	17	18.8	0.184	0.009	12.5673	
600 minute winter	17	Hydro-Brake®	18	9.9				
600 minute winter	18	Orifice	19	9.9				316.2

Results for 100 year +40% CC 720 minute summer. 960 minute analysis at 15 minute timestep. Mass balance: 99.98%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
720 minute summer	1	555	123.293	1.393	12.3	9.0824	0.0000	SURCHARGED
720 minute summer	2	555	123.292	1.495	14.2	9.4974	0.0000	SURCHARGED
720 minute summer	3	555	123.295	1.573	11.5	9.4942	0.0000	SURCHARGED
720 minute summer	4	375	125.555	0.055	5.3	0.1563	0.0000	OK
720 minute summer	5	555	123.292	1.548	11.0	9.3901	0.0000	SURCHARGED
720 minute summer	6	570	123.290	0.579	16.0	61.8428	0.0000	SURCHARGED
720 minute summer	7	540	123.290	1.608	26.8	9.2098	0.0000	SURCHARGED
720 minute summer	8	570	123.290	1.667	11.7	10.9008	0.0000	SURCHARGED
720 minute summer	9	720	119.797	1.897	6.9	10.8605	0.0000	SURCHARGED
720 minute summer	10	720	119.797	1.943	11.4	14.2023	0.0000	SURCHARGED
720 minute summer	11	720	119.797	2.013	11.6	12.4940	0.0000	SURCHARGED
720 minute summer	12	360	116.553	0.037	7.9	0.0805	0.0000	OK
720 minute summer	13	375	116.420	0.046	7.3	0.1126	0.0000	OK
720 minute summer	14	525	114.261	1.899	16.0	10.9613	0.0000	SURCHARGED
720 minute summer	15	540	114.261	1.958	20.5	11.7188	0.0000	SURCHARGED
720 minute summer	16	540	114.260	2.026	22.2	67.1083	0.0000	SURCHARGED
720 minute summer	17	540	114.261	2.055	21.7	11.7693	0.0000	FLOOD RISK
720 minute summer	18	330	113.148	0.965	10.0	1.7051	0.0000	SURCHARGED
720 minute summer	19	15	113.139	1.000	10.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
720 minute summer	1	1.000	2	6.7	0.260	0.003	46.5060	
720 minute summer	2	1.001	3	9.9	0.300	0.005	33.7956	
720 minute summer	3	1.002	7	18.2	0.268	0.009	17.9496	
720 minute summer	4	2.000	5	5.3	0.722	0.125	0.1311	
720 minute summer	5	2.001	7	8.2	0.167	0.004	28.0483	
720 minute summer	6	3.000	7	-16.0	-0.505	-0.398	0.3521	
720 minute summer	7	1.003	8	11.7	0.151	0.006	26.6782	
720 minute summer	8	Hydro-Brake®	9	5.5				
720 minute summer	9	1.005	10	11.3	0.338	0.005	20.6751	
720 minute summer	10	1.006	11	11.6	0.196	0.005	31.3338	
720 minute summer	11	Hydro-Brake®	12	5.9				
720 minute summer	12	1.008	14	7.9	1.602	0.032	0.0887	
720 minute summer	13	4.000	14	7.3	1.095	0.049	0.2860	
720 minute summer	14	1.009	15	17.6	0.301	0.008	26.5317	
720 minute summer	15	1.010	16	18.9	0.229	0.009	31.1005	
720 minute summer	16	1.011	17	21.7	0.062	0.010	12.5673	
720 minute summer	17	Hydro-Brake®	18	10.0				
720 minute summer	18	Orifice	19	10.0				372.3

Results for 100 year +40% CC 720 minute winter. 960 minute analysis at 15 minute timestep. Mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
720 minute winter	1	570	123.767	1.867	9.3	12.1786	0.0000	SURCHARGED
720 minute winter	2	570	123.766	1.968	13.4	12.5037	0.0000	SURCHARGED
720 minute winter	3	570	123.764	2.042	13.7	12.3237	0.0000	FLOOD RISK
720 minute winter	4	375	125.548	0.048	4.0	0.1353	0.0000	OK
720 minute winter	5	570	123.765	2.021	8.3	12.2544	0.0000	SURCHARGED
720 minute winter	6	570	123.762	1.051	19.6	90.1104	0.0000	SURCHARGED
720 minute winter	7	585	123.762	2.080	21.8	11.9099	0.0000	SURCHARGED
720 minute winter	8	585	123.759	2.136	9.5	13.9674	0.0000	SURCHARGED
720 minute winter	9	705	120.406	2.506	7.0	14.3474	0.0000	SURCHARGED
720 minute winter	10	705	120.404	2.550	11.1	18.6387	0.0000	SURCHARGED
720 minute winter	11	705	120.404	2.620	11.0	16.2609	0.0000	FLOOD RISK
720 minute winter	12	675	116.551	0.035	7.1	0.0762	0.0000	OK
720 minute winter	13	375	116.414	0.040	5.5	0.0981	0.0000	OK
720 minute winter	14	705	114.370	2.008	12.8	11.5876	0.0000	SURCHARGED
720 minute winter	15	690	114.370	2.067	17.0	12.3699	0.0000	SURCHARGED
720 minute winter	16	705	114.370	2.136	18.0	90.7812	0.0000	SURCHARGED
720 minute winter	17	690	114.370	2.164	31.3	12.3909	0.0000	FLOOD RISK
720 minute winter	18	315	113.148	0.965	9.9	1.7049	0.0000	SURCHARGED
720 minute winter	19	15	113.139	1.000	9.9	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
720 minute winter	1	1.000	2	7.9	0.252	0.004	46.5060	
720 minute winter	2	1.001	3	12.0	0.313	0.006	33.7956	
720 minute winter	3	1.002	7	12.9	0.257	0.006	17.9496	
720 minute winter	4	2.000	5	4.0	0.667	0.094	0.1070	
720 minute winter	5	2.001	7	9.1	0.166	0.004	28.0483	
720 minute winter	6	3.000	7	-19.6	-0.609	-0.485	0.3521	
720 minute winter	7	1.003	8	9.5	0.175	0.004	26.6782	
720 minute winter	8	Hydro-Brake®	9	6.1				
720 minute winter	9	1.005	10	10.6	0.342	0.005	20.6751	
720 minute winter	10	1.006	11	11.0	0.148	0.005	31.3338	
720 minute winter	11	Hydro-Brake®	12	6.7				
720 minute winter	12	1.008	14	7.1	1.549	0.028	0.0819	
720 minute winter	13	4.000	14	5.5	1.007	0.037	0.2343	
720 minute winter	14	1.009	15	14.4	0.375	0.007	26.5317	
720 minute winter	15	1.010	16	15.8	0.248	0.007	31.1005	
720 minute winter	16	1.011	17	31.3	0.209	0.015	12.5673	
720 minute winter	17	Hydro-Brake®	18	9.9				
720 minute winter	18	Orifice	19	9.9				365.7

Results for 100 year +40% CC 960 minute summer. 1200 minute analysis at 15 minute timestep. Mass balance: 99.97%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
960 minute summer	1	720	123.245	1.345	10.2	8.7748	0.0000	SURCHARGED
960 minute summer	2	690	123.244	1.447	11.7	9.1932	0.0000	SURCHARGED
960 minute summer	3	690	123.244	1.522	12.2	9.1838	0.0000	SURCHARGED
960 minute summer	4	495	125.549	0.049	4.3	0.1404	0.0000	OK
960 minute summer	5	690	123.243	1.499	9.0	9.0916	0.0000	SURCHARGED
960 minute summer	6	690	123.243	0.532	16.6	56.7480	0.0000	SURCHARGED
960 minute summer	7	675	123.243	1.561	17.9	8.9407	0.0000	SURCHARGED
960 minute summer	8	690	123.243	1.620	11.5	10.5963	0.0000	SURCHARGED
960 minute summer	9	885	119.757	1.857	6.1	10.6347	0.0000	SURCHARGED
960 minute summer	10	900	119.758	1.904	8.7	13.9141	0.0000	SURCHARGED
960 minute summer	11	885	119.756	1.972	7.6	12.2399	0.0000	SURCHARGED
960 minute summer	12	480	116.552	0.036	7.3	0.0774	0.0000	OK
960 minute summer	13	495	116.415	0.041	6.0	0.1023	0.0000	OK
960 minute summer	14	630	114.229	1.867	14.0	10.7765	0.0000	SURCHARGED
960 minute summer	15	645	114.226	1.923	16.6	11.5098	0.0000	SURCHARGED
960 minute summer	16	645	114.226	1.992	21.3	59.6956	0.0000	SURCHARGED
960 minute summer	17	645	114.227	2.021	18.6	11.5704	0.0000	FLOOD RISK
960 minute summer	18	1125	113.148	0.965	10.0	1.7050	0.0000	SURCHARGED
960 minute summer	19	15	113.139	1.000	10.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
960 minute summer	1	1.000	2	6.9	0.260	0.003	46.5060	
960 minute summer	2	1.001	3	10.7	0.304	0.005	33.7956	
960 minute summer	3	1.002	7	11.5	0.255	0.005	17.9496	
960 minute summer	4	2.000	5	4.3	0.681	0.102	0.1127	
960 minute summer	5	2.001	7	6.3	0.158	0.003	28.0483	
960 minute summer	6	3.000	7	-16.6	-0.679	-0.412	0.3521	
960 minute summer	7	1.003	8	10.7	0.154	0.005	26.6782	
960 minute summer	8	Hydro-Brake®	9	5.4				
960 minute summer	9	1.005	10	8.4	0.334	0.004	20.6751	
960 minute summer	10	1.006	11	7.4	0.179	0.004	31.3338	
960 minute summer	11	Hydro-Brake®	12	5.8				
960 minute summer	12	1.008	14	7.3	1.564	0.029	0.0838	
960 minute summer	13	4.000	14	6.0	1.033	0.041	0.2492	
960 minute summer	14	1.009	15	14.4	0.305	0.007	26.5317	
960 minute summer	15	1.010	16	18.6	0.272	0.009	31.1005	
960 minute summer	16	1.011	17	18.6	0.107	0.009	12.5673	
960 minute summer	17	Hydro-Brake®	18	10.0				
960 minute summer	18	Orifice	19	10.0				485.8

Results for 100 year +40% CC 960 minute winter. 1200 minute analysis at 15 minute timestep. Mass balance: 99.98%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
960 minute winter	1	735	123.548	1.648	7.5	10.7466	0.0000	SURCHARGED
960 minute winter	2	735	123.547	1.750	10.5	11.1148	0.0000	SURCHARGED
960 minute winter	3	750	123.545	1.823	9.9	11.0022	0.0000	SURCHARGED
960 minute winter	4	495	125.543	0.043	3.2	0.1209	0.0000	OK
960 minute winter	5	735	123.545	1.801	6.7	10.9229	0.0000	SURCHARGED
960 minute winter	6	735	123.543	0.832	12.1	88.8533	0.0000	SURCHARGED
960 minute winter	7	735	123.545	1.863	28.5	10.6649	0.0000	SURCHARGED
960 minute winter	8	720	123.542	1.918	11.0	12.5468	0.0000	SURCHARGED
960 minute winter	9	915	120.310	2.410	7.2	13.7997	0.0000	SURCHARGED
960 minute winter	10	885	120.311	2.457	15.5	17.9571	0.0000	SURCHARGED
960 minute winter	11	900	120.309	2.525	12.4	15.6746	0.0000	FLOOD RISK
960 minute winter	12	705	116.551	0.035	7.0	0.0757	0.0000	OK
960 minute winter	13	495	116.410	0.036	4.5	0.0891	0.0000	OK
960 minute winter	14	930	114.334	1.972	11.3	11.3823	0.0000	SURCHARGED
960 minute winter	15	915	114.334	2.031	16.5	12.1546	0.0000	SURCHARGED
960 minute winter	16	915	114.334	2.100	15.3	83.0076	0.0000	SURCHARGED
960 minute winter	17	930	114.334	2.128	20.2	12.1851	0.0000	FLOOD RISK
960 minute winter	18	405	113.148	0.965	10.0	1.7050	0.0000	SURCHARGED
960 minute winter	19	15	113.139	1.000	10.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
960 minute winter	1	1.000	2	6.8	0.260	0.003	46.5060	
960 minute winter	2	1.001	3	8.5	0.300	0.004	33.7956	
960 minute winter	3	1.002	7	18.2	0.253	0.009	17.9496	
960 minute winter	4	2.000	5	3.2	0.625	0.076	0.0913	
960 minute winter	5	2.001	7	10.3	0.184	0.005	28.0483	
960 minute winter	6	3.000	7	-12.1	-0.641	-0.301	0.3521	
960 minute winter	7	1.003	8	11.0	0.167	0.005	26.6782	
960 minute winter	8	Hydro-Brake®	9	5.8				
960 minute winter	9	1.005	10	14.9	0.339	0.007	20.6751	
960 minute winter	10	1.006	11	11.1	0.162	0.005	31.3338	
960 minute winter	11	Hydro-Brake®	12	6.6				
960 minute winter	12	1.008	14	7.0	1.544	0.028	0.0812	
960 minute winter	13	4.000	14	4.5	0.947	0.030	0.2038	
960 minute winter	14	1.009	15	15.3	0.322	0.007	26.5317	
960 minute winter	15	1.010	16	13.9	0.187	0.007	31.1005	
960 minute winter	16	1.011	17	20.2	0.207	0.010	12.5673	
960 minute winter	17	Hydro-Brake®	18	10.0				
960 minute winter	18	Orifice	19	10.0				471.3

Results for 100 year +40% CC 1440 minute summer. 1680 minute analysis at 30 minute timestep. Mass balance: 99.97%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute summer	1	960	123.141	1.241	7.4	8.0915	0.0000	SURCHARGED
1440 minute summer	2	990	123.140	1.343	8.8	8.5327	0.0000	SURCHARGED
1440 minute summer	3	960	123.143	1.420	9.3	8.5741	0.0000	SURCHARGED
1440 minute summer	4	750	125.543	0.043	3.2	0.1209	0.0000	OK
1440 minute summer	5	960	123.142	1.398	6.6	8.4770	0.0000	SURCHARGED
1440 minute summer	6	960	123.140	0.428	6.0	45.7445	0.0000	SURCHARGED
1440 minute summer	7	990	123.138	1.456	10.4	8.3369	0.0000	SURCHARGED
1440 minute summer	8	960	123.137	1.514	9.2	9.9020	0.0000	SURCHARGED
1440 minute summer	9	1170	119.658	1.758	6.9	10.0639	0.0000	SURCHARGED
1440 minute summer	10	1140	119.659	1.805	6.9	13.1898	0.0000	SURCHARGED
1440 minute summer	11	1140	119.655	1.871	7.3	11.6146	0.0000	SURCHARGED
1440 minute summer	12	720	116.550	0.034	6.7	0.0740	0.0000	OK
1440 minute summer	13	750	116.410	0.036	4.4	0.0881	0.0000	OK
1440 minute summer	14	900	114.140	1.778	11.5	10.2591	0.0000	SURCHARGED
1440 minute summer	15	900	114.140	1.837	14.6	10.9911	0.0000	SURCHARGED
1440 minute summer	16	900	114.140	1.906	15.3	40.9993	0.0000	SURCHARGED
1440 minute summer	17	900	114.140	1.934	21.0	11.0722	0.0000	SURCHARGED
1440 minute summer	18	690	113.148	0.965	10.0	1.7051	0.0000	SURCHARGED
1440 minute summer	19	30	113.139	1.000	10.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
1440 minute summer	1	1.000	2	6.1	0.266	0.003	46.5060	
1440 minute summer	2	1.001	3	8.6	0.300	0.004	33.7956	
1440 minute summer	3	1.002	7	8.8	0.250	0.004	17.9496	
1440 minute summer	4	2.000	5	3.2	0.625	0.076	0.0913	
1440 minute summer	5	2.001	7	4.6	0.154	0.002	28.0483	
1440 minute summer	6	3.000	7	-6.0	-0.302	-0.148	0.3521	
1440 minute summer	7	1.003	8	8.7	0.123	0.004	26.6782	
1440 minute summer	8	Hydro-Brake®	9	5.2				
1440 minute summer	9	1.005	10	6.6	0.332	0.003	20.6751	
1440 minute summer	10	1.006	11	7.1	0.142	0.003	31.3338	
1440 minute summer	11	Hydro-Brake®	12	5.7				
1440 minute summer	12	1.008	14	6.7	1.522	0.027	0.0785	
1440 minute summer	13	4.000	14	4.4	0.941	0.030	0.2006	
1440 minute summer	14	1.009	15	12.5	0.334	0.006	26.5317	
1440 minute summer	15	1.010	16	13.3	0.135	0.006	31.1005	
1440 minute summer	16	1.011	17	21.0	0.025	0.010	12.5673	
1440 minute summer	17	Hydro-Brake®	18	10.0				
1440 minute summer	18	Orifice	19	10.0				623.8

Results for 100 year +40% CC 1440 minute winter. 1680 minute analysis at 30 minute timestep. Mass balance: 99.97%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute winter	1	1050	123.394	1.494	5.6	9.7433	0.0000	SURCHARGED
1440 minute winter	2	1050	123.394	1.597	7.8	10.1435	0.0000	SURCHARGED
1440 minute winter	3	1050	123.396	1.674	9.6	10.1046	0.0000	SURCHARGED
1440 minute winter	4	750	125.537	0.037	2.4	0.1047	0.0000	OK
1440 minute winter	5	1050	123.395	1.651	5.0	10.0135	0.0000	SURCHARGED
1440 minute winter	6	1050	123.390	0.679	8.5	72.5416	0.0000	SURCHARGED
1440 minute winter	7	1020	123.384	1.701	12.2	9.7425	0.0000	SURCHARGED
1440 minute winter	8	1080	123.389	1.766	12.2	11.5486	0.0000	SURCHARGED
1440 minute winter	9	1110	120.164	2.264	7.2	12.9662	0.0000	SURCHARGED
1440 minute winter	10	1110	120.165	2.311	9.6	16.8927	0.0000	SURCHARGED
1440 minute winter	11	1140	120.163	2.379	11.5	14.7686	0.0000	SURCHARGED
1440 minute winter	12	990	116.551	0.035	6.8	0.0748	0.0000	OK
1440 minute winter	13	750	116.405	0.031	3.3	0.0768	0.0000	OK
1440 minute winter	14	1020	114.151	1.789	9.5	10.3244	0.0000	SURCHARGED
1440 minute winter	15	1050	114.152	1.849	14.4	11.0656	0.0000	SURCHARGED
1440 minute winter	16	1050	114.151	1.917	12.4	43.3913	0.0000	SURCHARGED
1440 minute winter	17	1050	114.151	1.944	18.5	11.1340	0.0000	SURCHARGED
1440 minute winter	18	660	113.148	0.965	10.0	1.7050	0.0000	SURCHARGED
1440 minute winter	19	30	113.139	1.000	10.0	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
1440 minute winter	1	1.000	2	5.7	0.263	0.003	46.5060	
1440 minute winter	2	1.001	3	9.0	0.299	0.004	33.7956	
1440 minute winter	3	1.002	7	9.7	0.255	0.005	17.9496	
1440 minute winter	4	2.000	5	2.4	0.576	0.057	0.0744	
1440 minute winter	5	2.001	7	5.9	0.152	0.003	28.0483	
1440 minute winter	6	3.000	7	-8.5	-0.508	-0.211	0.3521	
1440 minute winter	7	1.003	8	11.5	0.126	0.005	26.6782	
1440 minute winter	8	Hydro-Brake®	9	5.6				
1440 minute winter	9	1.005	10	9.6	0.333	0.005	20.6751	
1440 minute winter	10	1.006	11	11.0	0.151	0.005	31.3338	
1440 minute winter	11	Hydro-Brake®	12	6.4				
1440 minute winter	12	1.008	14	6.8	1.533	0.027	0.0798	
1440 minute winter	13	4.000	14	3.3	0.863	0.022	0.1639	
1440 minute winter	14	1.009	15	14.0	0.250	0.007	26.5317	
1440 minute winter	15	1.010	16	11.4	0.226	0.005	31.1005	
1440 minute winter	16	1.011	17	18.5	0.056	0.009	12.5673	
1440 minute winter	17	Hydro-Brake®	18	10.0				
1440 minute winter	18	Orifice	19	10.0				695.6

APPENDIX D
GREENFIELD RUNOFF CALCULATIONS

MAY 2022

Greenfield runoff rate estimation for sites

www.uksuds.com | Greenfield runoff tool

Calculated by:	Chris Lynch
Site name:	IVY MILL PHASE 1 AND 2
Site location:	WHITEHAVEN

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

Site Details

Latitude:	54.51801° N
Longitude:	3.6007° W
Reference:	1701238601
Date:	Dec 10 2021 18:58

Runoff estimation approach IH124

Site characteristics

Total site area (ha): 2.186

Methodology

Q_{BAR} estimation method:	Calculate from SPR and SAAR
SPR estimation method:	Calculate from SOIL type

Soil characteristics	Default	Edited
SOIL type:	4	4
HOST class:	N/A	N/A
SPR/SPRHOST:	0.47	0.47

Hydrological characteristics	Default	Edited
SAAR (mm):	1061	1061
Hydrological region:	10	10
Growth curve factor 1 year:	0.87	0.87
Growth curve factor 30 years:	1.7	1.7
Growth curve factor 100 years:	2.08	2.08
Growth curve factor 200 years:	2.37	2.37

Notes

(1) Is Q_{BAR} < 2.0 l/s/ha?

When Q_{BAR} is < 2.0 l/s/ha then limiting discharge rates are set at 2.0 l/s/ha.

(2) Are flow rates < 5.0 l/s?

Where flow rates are less than 5.0 l/s consent for discharge is usually set at 5.0 l/s if blockage from vegetation and other materials is possible. Lower consent flow rates may be set where the blockage risk is addressed by using appropriate drainage elements.

(3) Is SPR/SPRHOST ≤ 0.3?

Where groundwater levels are low enough the use of soakaways to avoid discharge offsite would normally be preferred for disposal of surface water runoff.

Greenfield runoff rates	Default	Edited
Q_{BAR} (l/s):	17.17	17.17
1 in 1 year (l/s):	14.94	14.94
1 in 30 years (l/s):	29.19	29.19
1 in 100 year (l/s):	35.71	35.71
1 in 200 years (l/s):	40.69	40.69