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FLOOD RISK ASSESSMENT

ON

LAND TO THE SOUTH OF DONCASTER ROAD, DARFIELD, BARNSLEY

FOR

SAUL HOMES &
KEEPMOAT HOMES

E20/7309/FR01C
Rev C – February 2026

JUNE 2024

M.Huddleston MEng.

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1.0 INTRODUCTION

1.1 This report is commissioned to investigate and report on the Flood Risk for this site in accordance Planning Practise Guidance- Flood Risk and Coastal Change April 2022 and the proposals for drainage of this site when redeveloped as residential land. The report is based on information supplied by the client and from relevant authorities in both written and verbal format. Some of this information is in verbal form only. No liability can be accepted for information supplied by third parties which is subsequently found to be inaccurate or incorrect.

2.0 THE SITE

2.1 The site is located to the south of Doncaster Road, Darfield. It is situated around Ordnance Survey grid reference 440215,404985. A site location plan is included in Appendix A.

2.2 The site is irregularly shaped, with boundaries formed by watercourses to the west and south-west, Doncaster Road to the north and residential properties to the east. There is vehicular access from Doncaster Road along the northern boundary of the site and pedestrian access on the Southern boundary. The overall site area is approximately 17.55ha.

2.3 The site primarily consists of two grassed fields separated by an overgrown former quarry area and small overgrown embankment which is partially tree-lined. The north-western corner of the site is an area of short grass. An occasionally tarmacked access track between the two grassed fields is present at the southern tip of the northern field. Several overhead electric lines cross the site from north to south and west to east with supporting poles located within the fields on site. An oil pipeline crosses the north western corner of the site.

2.4 Tree growth is noted in the former quarry area and along the embankment separating the northern and southern fields. Further tree growth is noted at the north eastern corner of the northern field at the boundary of the site and Barnsley Road. There is a hedgerow to the northern boundary.

2.5 Overgrown watercourses extend along the western boundary of the southern area of the site. These are occasionally bridged to connect the footpath links between the fields.

2.6 The site slopes from north to south at a grade of approximately 1 in 20. A high point of approximately 67.2m AOD is located approximately half way along the northern boundary of the site and a low point of approximately 35.1m in the southeast corner.

3.0 PROPOSED DEVELOPMENT AND DRAINAGE CONSTRAINTS

3.1 The proposed planning application is for the detailed development of the northern portion (Area 1) and the outline for the southern portion (Area 2). The northern portion consists of 260 plots in total split between Saul Homes (93 plots) and Keepmoat Homes (167 plots). In addition to the plots there are the access roads and associated car parking areas. A sketch scheme for Area 2 is provided to enable an overall drainage design to be established. The proposed site layout is attached in the appendices.

SITE GEOLOGY

3.2 The site investigation report confirms the ground consists of three distinct areas. In the north of the site medium dense sands overlay a weak sandstone strata. Within the central area of the development there is a former sandpit which has been backfilled with landfill, primarily consisting of unconsolidated construction waste of between 6-9m in depth. The southern portion of the site a firm clay overlies a moderately weak mudstone strata.

3.3 Four soakaways have been undertaken in the northern area of the site within the sandstone strata. Within three of the tests the groundwater level increased during the test, only SAW 02 managed to provide a reasonable infiltration rate of 10^{-5} m/s. Therefore, considering the landfill area and the clay superficial deposits occupying the central and southern areas of the development site we would therefore conclude that soakaways would not be a suitable method of surface water drainage for the development.

EXISTING DRAINAGE

3.4 There are two existing open watercourses adjacent to the site. A watercourse serving the open agricultural land to the west of the site form the southern site boundary. A second watercourse runs adjacent to the eastern site boundary, this is culverted in sections through existing properties. Both watercourses join at the south eastern corner of the development and form a tributary to the River Dove to the south of the site.

3.5 There are no existing public foul or surface water sewers crossing the development land. The nearest public sewers are located in the development to the east of the site. These consist of both foul and surface water. A copy of the Yorkshire Water records for the site are in the appendices at the rear of the report.

3.6 Yorkshire Water has confirmed that there is no capacity within adjacent adopted surface water systems to service the site. They have recommended that surface water is discharged to the adjacent watercourse on the southern boundary of the site. This will require a right of discharge in perpetuity to the existing watercourse which will need to be agreed with the current landowner. Due to the site being an open field a greenfield discharge will need to be agreed with the LLFA.

3.7 Due to the slope of the land it's likely that a gravity connection for the surface water should be feasible. However further survey and re-engineering work in the vicinity of the diverted watercourse outfall is recommended to ensure that it is running freely and without obstruction to avoid any flooding to land south of the site.

4.0 FLOOD RISK

4.1 On reviewing the Environment Agency websites flood risk maps (Fig 1), the vast majority of the site currently falls within flood zone 1: which is designated as low probability of flooding from sea or rivers less than 0.1% (ie 1 in 1000 year) probability of flooding. Following the update of the EA flood maps in June 2025, the development proposals have been revised to bring the development, including the proposed detention basin, outside of Flood Zone 2 and Flood Zone 3. Only a short length of the final surface water sewer outfall to the existing watercourse encroaches on Flood Zone 2.

The hierarchy of flood zones are described as:

Flood Zone 1: Low Probability. Land assessed as having a less than 1 in 1000 chance of river and sea flooding in any year (<0.1%).

Flood Zone 2: Medium Probability. Land assessed as having between a 1 in 100 and 1 in 1000 chance of river flooding (1% 0.1%) and between a 1 in 200 and 1 in 1000 chance of sea flooding (0.5% 0.1%) in any year.

Flood Zone 3: High Probability. Land assessed as having a 1 in 100 or greater chance of river flooding (>1%) and 1 in 200 or greater chance of sea flooding (>0.5%) in any year.

The main development area of the site is therefore considered not to be at risk from fluvial flooding from rivers or sea for the 1 in 100 or 1 in 1000 year flood event. The proposed use of the site would be classified as More Vulnerable in Table 2: Flood Risk Vulnerability Classification in the Planning Practise Guidance- Flood Risk and Coastal Change April 2022. In accordance with that table the proposed development would be considered to be appropriate for the site.

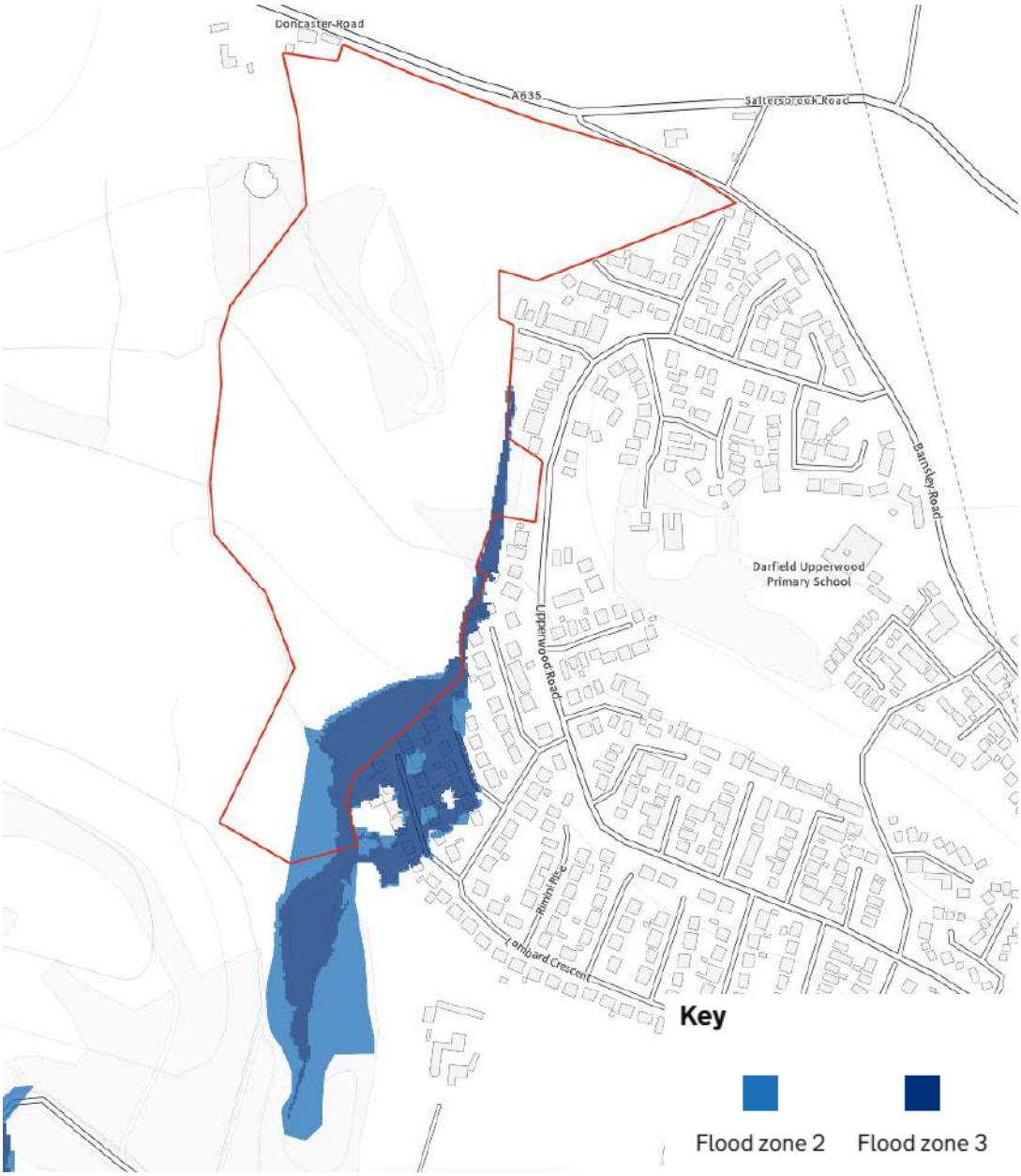

Fig 1 – Flood Risk Map for Planning

4.2 However, the depth of flooding from rivers and sea map indicates a less than 0.1% chance of this area being flooded up to 0.9m (Fig 2). The extent of flooding on the depth plan also does not match the outlines shown for Flood Zone 2.

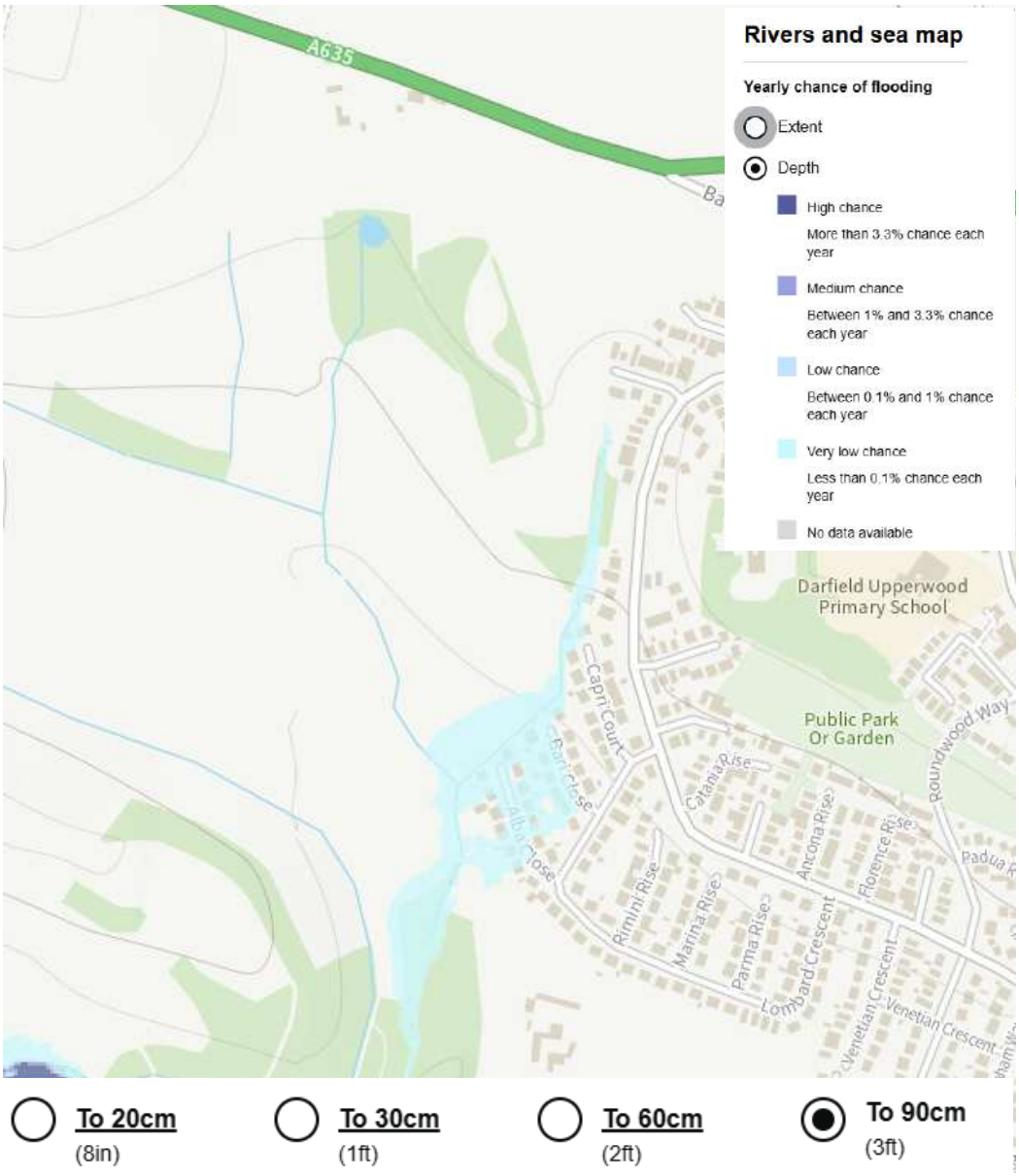

Fig 2 – Depth of Flooding from Rivers and Sea Map

4.3 The surface water flooding maps show some ingress into the site from the watercourses along the southern and eastern site boundaries. However, the watercourse on the eastern boundary is at a level approximately 1-1.5m below the adjacent on-site levels for Area 2 (Fig 3). In addition to this, the on-site levels are falling steeply from north to south, not towards the watercourse. This makes the indicated area of flooding unlikely as exceedance flow would fall southwards with the watercourse, not to the west. Anecdotally, water levels within this eastern watercourse have not burst their banks, which means it isn't likely the southern tip of Area 2 has been flooded. The existing EA flood maps are therefore not considered to be an accurate representation of the on-site circumstances.

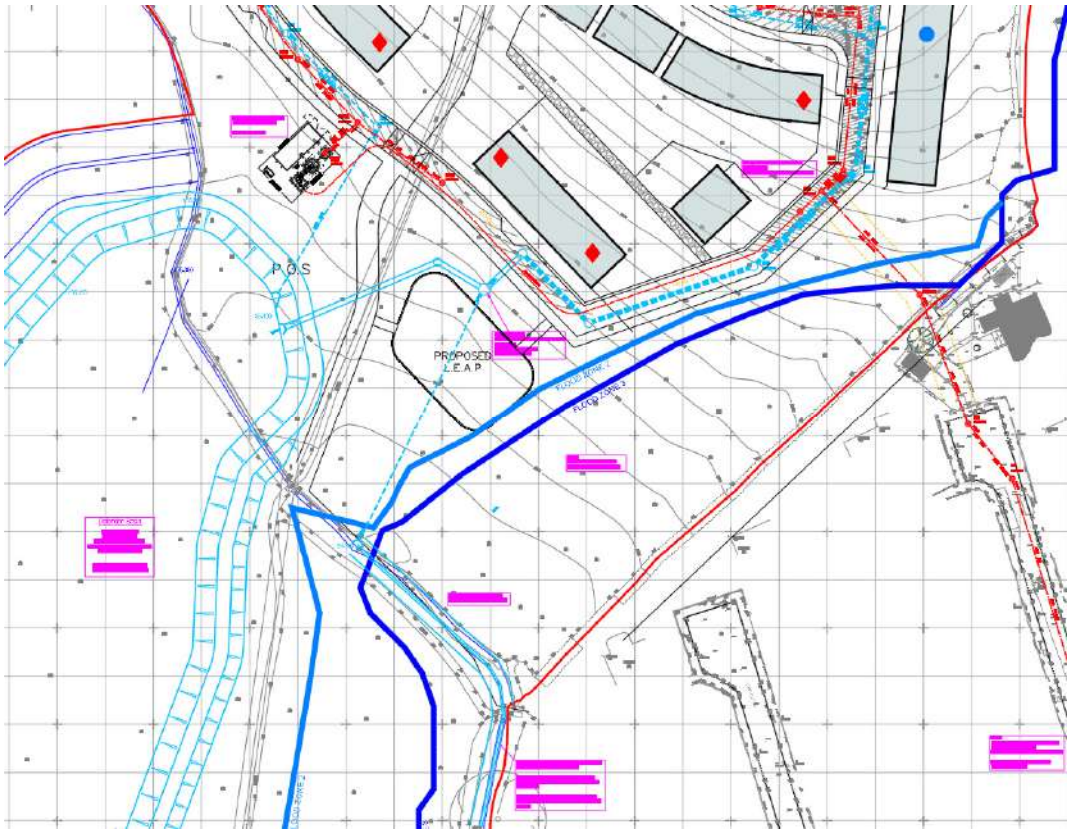

Fig 3 – Flood Zone Extents Adjacent Proposed Detention Basin

4.4 The proposed development and detention basin have been redesigned to lie entirely outside the newly defined Flood Zone 2, only a short length of the proposed final surface water sewer outfall is located within Flood Zone 2. Although there will be marginal raising of ground levels to enable sufficient ground cover to the outfall sewer, the proposed improvement and deepening works on the watercourse to accommodate the proposed outfall will provide compensatory storage for the small area of Flood Zone 2 that may be lost to the outfall construction.

4.5 The site does not appear to fall within an area subject to flooding from reservoirs according to the EA maps. We consider the risk of such a source of flooding would be low. The site does not fall within a flood warning zone.

4.6 Due to the size of the development being in excess of 1Ha, it would be necessary to prepare a site-specific Flood Risk Assessment for the site.

4.7 There are a number of potential flooding mechanisms that the Planning Practise Guidance- Flood Risk and Coastal Change April 2022 now requires to be evaluated for each proposed development site. Each method of flooding requires an assessment to be made on its probability relative to the site development. The normal requirement of the document is for no flooding of properties for storms up to a 1% probability or a once in a 100 years storm. The risk assessment also includes for flooding both on site and off site, and the effects of the development on the downstream catchment or the flow regime of the watercourse. NPPG also requires that the effects of severe storms above the normal 1% probability are reviewed together with the effects of climatic change relating to the design life of the development.

4.8 It also requires that the effects of climate change are taken into account together with the impacts of extreme events and flood defence failures. Prior to this the Sequential Test, and where necessary, the Exception test as outlined in Planning Practise Guidance- Flood Risk and Coastal Change April 2022, must also be applied to each development site. These aspects are not covered in this report but the proposed site being in Flood Zone 1, would mean these requirements are already met and do not apply.

4.9 The Planning Practise Guidance- Flood Risk and Coastal Change April 2022 requires that each flooding mechanism is addressed, and levels of risk evaluated. We consider there are three main risks of flooding to the site. The alternative mechanisms are not applicable to this site.

- Inundation from floodwaters leaving watercourses or rivers entering the site. This can include the effects on culverted watercourses and where the risk of blockage can occur and from breach scenarios.
- Rainwater falling on the site and not being able to leave the site at sufficient rate to prevent flooding on the site.
- Overland flows from adjacent land sites due to surcharging of sewerage systems or other watercourses.
- The impact of the developed site on the existing drainage systems and off-site surface water systems must also be assessed as part of this flood risk assessment.

5.0 DISCUSSION OF FLOOD RISKS

5.1 Flood Risk from Watercourses, River & Tidal

5.1.1 Only a short length of the proposed surface water outfall serving the development falls within the Flood Risk maps for Zone 2 as published by the Environment Agency. The site is therefore considered not to be at risk from fluvial flooding for the once in 100 year flood event.

5.1.2 A detention basin to attenuate the surface water discharge from the site is proposed to be located to the south of the site. This will require the existing watercourse to be re-routed to the south of the detention basin. This would reduce the risk of flooding to the development area.

5.1.3 It is proposed to raise the southern corner of Area 2 by up to 3m to ensure a gravity outfall can be achieved to the watercourse, in conjunction with providing the attenuation within the new basin.

5.1.4 Given the above measures we would therefore consider the risk of flooding of the site from River and Sea is acceptable for this type of development on this site.

5.2 **Risk of Flooding from overland flows from adjacent land.**

5.2.1 The site lies on land sloping from north to south. Doncaster/Barnsley Road forms the northern site boundary this will provide a cut off drain to any surface water flows from the agricultural land to the north. In addition, the surface water flood maps indicate that this land lies within a separate catchment with flows being generated to the north.

5.2.2 To the east of the site there is residential development along with a watercourse abutting the site boundary. The watercourse lies within a relatively deep gully near the central portion of the site, this would be approximately 3m below the existing site levels. The remainder of the watercourse appears to be a combination of open and culverted sections as its passes through the rear gardens of the existing properties. Overland flood water associated with this system is shown on the Environment Agency Plans. This primarily affects Area 2 on site. Any future detailed planning application for this area should afford sufficient standoff from the boundary to enable slab levels can be elevated above existing ground levels. This would ensure that any new development could accommodate any overland flood route along the eastern boundary.

5.2.3 The land to the south is lower than the development site. The land to the west is agricultural land and falls at a similar rate to the development site. Therefore, flows will predominately be in a southern direction. In addition, there is a shallow watercourse abutting the site boundary providing a cut off drain to prevent surface water flows entering the development site.

5.2.4 We would, however, still recommend that an overland flood route is provided through the site to cater for extreme events and in addition to any blockage failure of new drainage systems on site.

5.3 **Risk of Flooding from Rainwater Falling on Site**

5.3.1 The risk of flooding from water falling on site and not being able to leave the site is relatively high. The impermeable area of the site will increase significantly due to the development, and this would increase the run off from the site. This would increase the flood risk to downstream properties unless attenuation measures and restriction of flows took place.

	Impermeable Area (ha)
Current Site	**0 ha**
Proposed Development	**Area 1 4.50 ha** **Area 2 3.76 ha** **Total 8.25 ha**

5.3.2 The normal hierarchy for surface water discharge in accordance with current planning and SUDS policies is as follows:

1. The use of infiltration systems such as Soakaways.
2. Discharge to nearby rivers or watercourses with the use of attenuation.
3. Discharge to existing public sewer network with the use of attenuation. Note Yorkshire Water have confirmed there is no available capacity for surface water within the existing sewers.

5.3.3 Infiltration testing was undertaken in four trial pits as part of the recent site investigation report, only one test proved successful. In addition, a large proportion of the site consists of made ground and/or clays over mudstone. Considering the above the use soakaways will not be a viable method of dealing with surface water discharge from the site.

5.3.4 Therefore the development should drain to the watercourse located to the southern boundary of the site. To avoid a requirement of a surface water pumping station the current design suggests raising the lower portion of Area 2 and diverting the existing watercourse around the proposed detention basin. Note any existing land drainage connections to the watercourse will need to be maintained. Following a site walkover, it is evident that the existing watercourse is currently poorly maintained especially as it travels further to the south of the site. Existing levels are preventing some overland flows from reaching the watercourse thus resulting in

shallow flooding across the land adjacent to the watercourse, in the location of the proposed basin. Some local re-engineering of the existing watercourse is likely to be required in the area of the proposed basin and where the diverted watercourse will re-connect.

5.3.5 The new connection from the development is to connect to the watercourse at the south of the site. Storm water attenuation systems should be utilised to ensure the flows from the site are reduced to agricultural run-off rates or as otherwise agreed with the Barnsley Land Drainage Authority.

5.3.6 Further to a review of the topographical survey it can be established that entire site (18.0 ha) falls to the adjacent watercourses. This would contribute to surface water runoff towards the southeast. A copy of the site survey is contained within the appendices.

5.3.7 A site greenfield area of 18.0 ha would equate to the following existing runoff rates.

Storm Event	**Discharge Rate (l/s)**
1 in 1 year	31.0
Q_{BAR}	36.1
1 In 30 year	63.4
1 in 100 year	75.0

5.3.8 There are no significant existing buildings or paved areas on site. In conjunction with infiltration systems not being suitable a greenfield discharge rate of 36.1l/s has been proposed for the development into the existing watercourse. Therefore, this has been considered as the design option for the treatment of the discharge of surface water and storage volumes calculated based upon this discharge rate. The above figure has been confirmed by Barnsley LLFA, a copy of the email is contained at the rear of the report.

5.3.9 With attenuation of flows there would have to be a storm-water storage facility. The use of above storage systems such as swales, detention basins or ponds, would provide the most sustainable urban drainage system and possibly the most economic but this would entail significant land up take and potentially large, commuted sums for future maintenance. With

the recent implementation of the Codes for Adoption by Yorkshire Water there is greater scope for a regulatory body to adopt and maintain the above ground storage facilities than previously.

5.3.10 Based on the current planning layout including both Area 1 & 2 there is 8.25ha of impermeable area from the plots and highway that will need to be catered for within the proposed attenuation system. Based on this criteria, the estimated volumes of storage required within the attenuation basin for the 2, 30 and 100 year storms are as follows. Note a 40% climate change uplift has been included within the 1 in the 100 year figures.

Return Period Storm	**Volume of attenuation (m^3)**
1 in 2 year event	1313 m^3
1 in 30 year event	2711 m^3
I in 100 year event + 40% CC	5600 m^3

5.3.11 At present the basin is designed as an online feature, and therefore some sediment retention could be designed into the scheme to improve the water quality. Please note Yorkshire Water will require an easement and access for future maintenance.

5.3.12 The size of the storm water storage facilities would need to be determined accurately in the final detailed designs. These should be all in accordance with the current PPG. The volumes of storage can include flooding to roads and designated areas such as carpark areas or public open space for the 100 year storm with 40% allowance for climate change, but must ensure that no buildings are flooded.

5.3.13 The requirement for surface water attenuation and the expected shallow nature of the culverted watercourse will necessitate a length of offsite surface water sewer to enable a reconnection with the watercourse level at a suitable level. Easements will be required to the offsite pipework in addition to permission to connect with the current landowner. The position and levels of the attenuation has been considered to ensure that any failure or blockage of the outfall will result in above ground flooding to the fields to the east of the site and not affect any of the new or existing properties.

5.4 **Impact on Existing Drainage Systems.**

5.4.1 If the site is developed with attenuation systems and an agreed discharge rate of 36l/s reduced to agricultural rates of discharge, there should be no increase in the flood risk to properties off site or in the drainage networks downstream of the site. In real terms there would be slight reduction in flood risk to adjacent land due to the attenuation provided on site for the 1 in 100 year storms with the discharge rate cut to below the current estimated 1 in 1 year storm agricultural discharge rate.

5.4.2 In addition to the above, the diversion and clearing out works to the existing watercourses will provide an improvement the existing system a very dilapidated overgrown condition as well as providing compensatory flood storage for the small area of Flood Zone 2 impacted by the construction of the proposed surface water outfall to the existing watercourse.

5.4.3 The maintenance of the onsite proposed SUDS basin would be carried out by Yorkshire Water as part of the Section 104 Agreement, put forward for adoption. The maintenance of any on or off site above ground storage systems will need to be resolved satisfactorily in perpetuity either with Yorkshire Water, a management company or Barnsley MBC. This may mean commuted sums being paid for such an agreement.

5.4.4 The developer will be responsible to maintain the drainage systems on site until final adoption by Yorkshire Water or similar body ensuring that they are working effectively in the intervening period between construction and adoption.

6.0 FUTURE MAINTENANCE

6.1 It is proposed for the adoptable drainage, and outfall to the attenuation basin to be adopted and maintained by Yorkshire Water or a similar approved regulatory body under a Section 104 Agreement. The maintenance of the attenuation basin should be in line with the SUDS manual. (CIRIA C753, 2015) as detailed in table 22.1 below.

TABLE 22.1 Operation and maintenance requirements for detention basins

Maintenance schedule	Required action	Typical frequency
Regular maintenance	Remove litter and debris	Monthly
	Cut grass – for spillways and access routes	Monthly (during growing season), or as required
	Cut grass – meadow grass in and around basin	Half yearly (spring – before nesting season, and autumn)
	Manage other vegetation and remove nuisance plants	Monthly (at start, then as required)
	Inspect inlets, outlets and overflows for blockages, and clear if required.	Monthly
	Inspect banksides, structures, pipework etc for evidence of physical damage	Monthly
	Inspect inlets and facility surface for silt accumulation. Establish appropriate silt removal frequencies.	Monthly (for first year), then annually or as required
	Check any penstocks and other mechanical devices	Annually
	Tidy all dead growth before start of growing season	Annually
	Remove sediment from inlets, outlet and forebay	Annually (or as required)
	Manage wetland plants in outlet pool – where provided	Annually (as set out in Chapter 23)
Occasional maintenance	Reseed areas of poor vegetation growth	As required
	Prune and trim any trees and remove cuttings	Every 2 years, or as required
	Remove sediment from inlets, outlets, forebay and main basin when required	Every 5 years, or as required (likely to be minimal requirements where effective upstream source control is provided)
Remedial actions	Repair erosion or other damage by reseeding or re-turfing	As required
	Realignment of rip-rap	As required
	Repair/rehabilitation of inlets, outlets and overflows	As required
	Relevel uneven surfaces and reinstate design levels	As required

6.2 The developer will be responsible to maintain the drainage systems, on site until final adoption by the Water Authority ensuring that they are working effectively in the intervening period between construction and final adoption.

6.3 Maintenance will usually be carried out manually, although a suction tanker can be used for sediment/ debris removal for large systems. Maintenance should be provided at regular intervals to ensure that the constructed system's are working adequately. If maintenance is not undertaken for long periods, deposits can become hard-packed and require considerable effort to remove.

7.0 CONCLUSIONS

7.1 The majority of the site to be developed currently falls within Flood Zone 1 as defined by the EA Flood maps, only a short section of the proposed surface water sewer to the existing watercourse is shown to be within Flood Zone 2. The area of the site to be developed is not at risk of flooding from river, the flood risk is considered to be acceptable for residential development.

7.2 The development of the site utilising infiltration techniques is not considered suitable. A surface water attenuation system should be designed to reduce the run-off from the site to an agricultural discharge rate of 36l/s, to ensure there is no increase in flood risk to the downstream catchment. A detention basin has been designed to accommodate the 1 in 100year event with a 40% climate change uplift, in addition a 10% urban creep has been included within the drainage design. Consent for the final outfall to the watercourse will require approval and further survey investigation on site.

7.3 The risk of overland flows entering the site is considered to be low due to the topography of the area around the site and the drainage systems to the previously developed areas to the north. Properties along the eastern and southern boundaries will require to be raised to ensure any overland surface water can be accommodated without causing risk to the new properties. The risk can be further minimised by providing a flood water route through the site to ensure flood water flows are directed away from the existing and proposed housing. We would recommend that the floor levels of the proposed houses should be a minimum of 300mm above the existing ground/road levels.

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APPENDICES

A LOCATION PLAN

B PROPOSED PLANNING LAYOUT

C TOPOGRAPHICAL SURVEY

D YORKSHIRE WATER RECORDS & CORRESPONDENCE

E BARNSELY LAND DRAINAGE CORRESPONDENCE

F GREENFIELD DISCHARGE RATE CALCULATION

G PROPOSED ENGINEERING FEASIBILITY PLAN

H PRELIMINARY DRAINAGE CALCULATIONS

APPENDIX A

LOCATION PLAN

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Unit 4
Midgley Business Park
Bar Lane
Midgley
WF4 4JJ

Client : SAUL HOMES

Job Title: DONCASTER RD, DARFIELD

Job Number : E20/7309

LOCATION PLAN

OS Grid Reference : SE 402051
Easting : 440277
Northing : 405163

Topographical Survey carried out using GPS.

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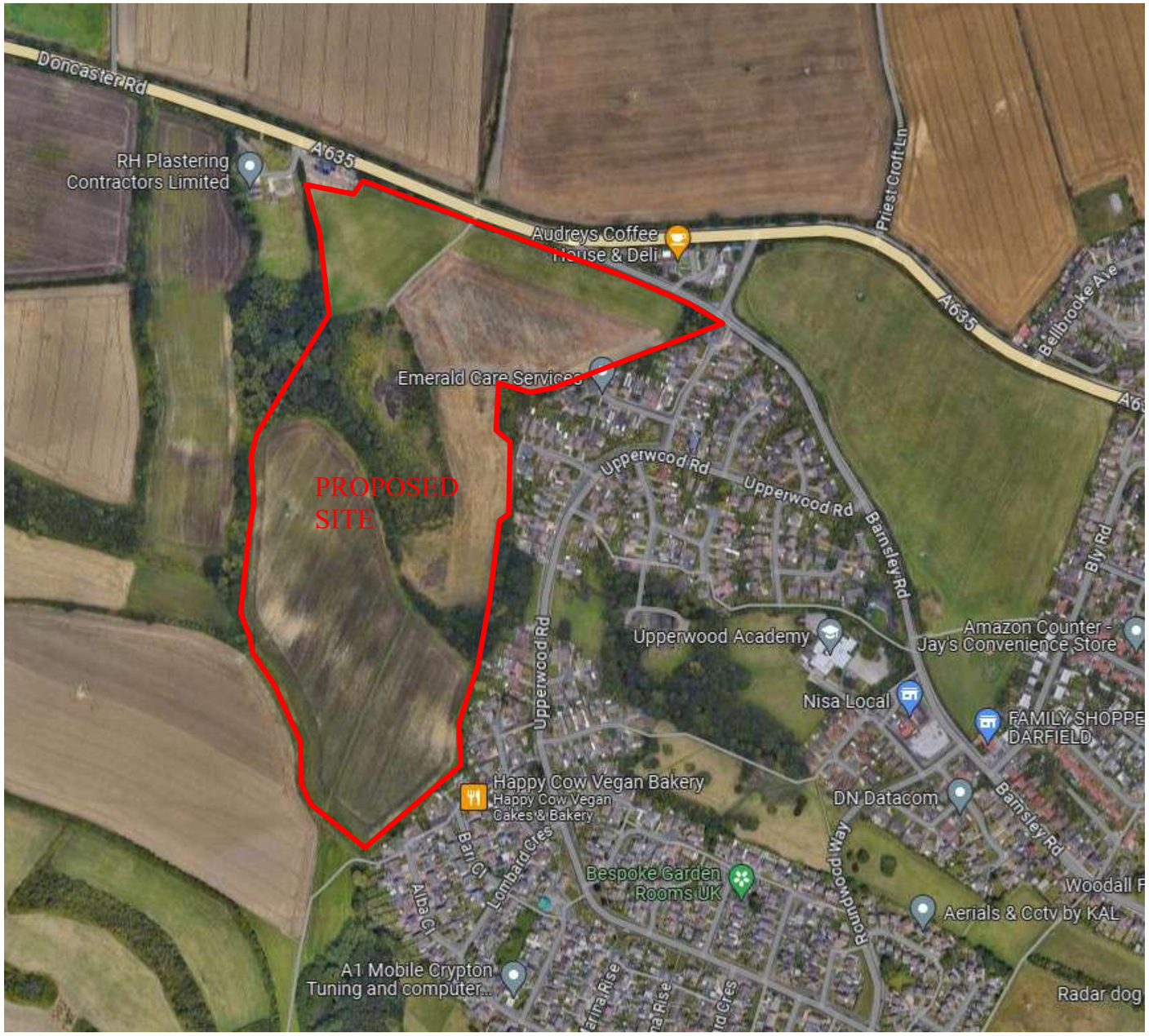

APPENDIX B

PROPOSED PLANNING LAYOUT

PLANNING LAYOUT LAYERS KEY:

- 1800mm BRICK WALL
- 1800mm TIMBER FENCE
- 450mm KNEE HIGH RAIL
- PHASE 1 APPLICATION BOUNDARY
- PHASE 2 APPLICATION BOUNDARY
- LOCKABLE GATE
- TREES
- CARS (VISITOR PARKING)
- BLOCK PAVING (SHARED SURFACES)
- BLOCK PAVING (BRINDLE)
- CYCLE STORE / BIN STORAGE
- EV CHARGING POINT
- BIN COLLECTION POINT
- INDICATIVE DRAINAGE ROUTE

ADDITIONAL NOTES:

PV PANELS TO BE PROVIDED ON EACH PLOT. POSITION SUBJECT TO LOCATION / ORIENTATION OF PLOT.

SCHEDULE OF ACCOMMODATION:

KEEPMOAT HOMES

HOUSETYPE REPRESENTATION	HOUSETYPE INFO	AMOUNT
QU	QUARTERMAINE 2.5 STOREY 4 BED SEMI & DOUBLE GARAGE	13 No.
WA	WATERSMEET (WCO) 2 STOREY 3 BED SEMI	6 No.
RUT	RUTLAND (WCO) 2 STOREY 3 BED SEMI	8 No.
FAR	FARNBURY (WCO) 2 STOREY 3 BED SEMI / TERRACE	38 No.
MEL	MELBOURNE (WCO) 2 STOREY 3 BED SEMI	12 No.
MU	MEADOWHURST (WCO) 2 STOREY 3 BED SEMI	10 No.
FE	FENTON 2 STOREY 3 BED SEMI	6 No.
HOL	HOLGATE (WCO) 2 STOREY 3 BED SEMI	10 No.
WES	WESTBOURNE 2.5 STOREY 4 BED SEMI	17 No.
HOP	HOPTON 2 STOREY 3 BED DETACHED	13 No.
SU	SOUTHWOOD (WCO) 2.5 STOREY 4 BED SEMI / TERRACE	10 No.
SOUTH	SOUTHS 2.5 STOREY 5 BED SEMI	15 No.
SHA	SHAWBURNE 2.5 STOREY 5 BED SEMI	10 No.
FRE / FRE	FRESHAM 2 STOREY 3 BED DET. / SEMI	6 No.
CLA	CLARENDON (WCO) 2 STOREY 3 BED SEMI	8 No.
SHR	SHRUBERY 2 STOREY 3 BED DETACHED	12 No.
CLA	CLAYTON 2 STOREY 3 BED DETACHED	6 No.
	TOTAL No.	181 No.

SAUL HOMES

HOUSETYPE REPRESENTATION	HOUSETYPE INFO	AMOUNT
LAURE	LAUREL 2 STOREY 2 BED SEMI / TERRACE / DETACHED	2 No.
COLLINGWOOD	COLLINGWOOD 2 STOREY 3 BED SEMI	10 No.
HOLLOCK	HOLLOCK 2 STOREY 3 BED SEMI / TERRACE	2 No.
HOLLY	HOLLY 2 STOREY 3 BED DETACHED / TERRACE	9 No.
BYWOOD	BYWOOD 2 STOREY 3 BED DETACHED	3 No.
ASPEN	ASPEN 2 STOREY 3 BED SEMI	2 No.
BRIDGE	BRIDGE 2 STOREY 3 BED SEMI / DETACHED	5 No.
WILLOW	WILLOW 2 STOREY 3 BED DETACHED	5 No.
LIME (WCO)	LIME (WCO) 2 STOREY 3 BED SEMI / DETACHED	3 No.
YEWS	YEWS 2 STOREY 3 BED DETACHED	2 No.
CHESTNUT	CHESTNUT 2 STOREY 3 BED DETACHED	7 No.
BYFIELD	BYFIELD 2 STOREY 3 BED DETACHED	10 No.
MULBERRY	MULBERRY 2 STOREY 3 BED DETACHED	5 No.
	TOTAL No.	65 No.
	COMBINED TOTAL No.	256 No.

Designer Risk Assessment

Criteria	Location	Who's At Risk	Consequence	Mitigation
Trenches and excavation	Whole Site	Construction Staff	1. Risk of collapsing excavation 2. Risk of falling into trenches 3. Risk associated with working in confined spaces	Contractor to determine safe methods of working in confined spaces, where necessary.
Working Adjacent to Live Traffic	Site boundaries adjacent to Doncaster Rd & Barnsley Rd	1. General Public 2. Construction Staff	1. Risk of Obstruction/Striking Passing vehicles 2. Risk of being struck by Plant machinery	Contractors safe method of working. Implementation of signing and traffic control measures. Contractor to provide appropriate protection barriers. Workers to wear high visibility clothing.
General Public / Children trespassing on site	Whole Site	1. General Public	Risk of public injury on site from trips, falls, falling from height, uncovered manholes / trenches	Ensure the site is properly secure and inform the surrounding public of site location and boundaries Give advance warning of the start of construction.
Effects of noise, dust or vibration of construction works.	Whole Site	1. General Public 2. Adjacent Properties 3. Construction Staff	1. Annoyance to General Public 2. Annoyance to Adjacent Residential Public 3. Risk of health problems to Construction Staff	Contractor to determine safe methods of working through construction methods/sequences. Site Manager to monitor environmental impacts. Noisy activities to be programmed to be undertaken at specific times, in sensitive areas to minimise disruption to adjacent properties.
Contaminated Ground	Whole Site	Construction Staff	Health risks to Construction Staff	It is always possible that contaminated land may be uncovered during the construction phase. The contractor should determine safe methods of working if contaminated land is encountered.
Existing Hedgerows	Whole Site	Construction Staff	Risk of puncture wounds, scratching from Hawthorn / Blackthorn hedging	Construction staff to be provided with appropriate Personal Protective Equipment (PPE) relative to their nature of work.
Retained Trees	Whole Site	1. General Public 2. Construction Staff	Risk of serious injury from falling branches.	Tree survey required to establish condition of trees and recommended works. All recommended works to be carried out with high priority works on unsafe trees carried out as soon as is reasonably practicable.
Farm Machinery	Farm and farm land adjacent to Whole Site boundaries	1. General Public 2. Construction Staff	Risk of serious injury from blades, flails, attachments and flying debris.	Contractor to produce a plan of work that eliminates the danger by avoidance of work at or near the area of danger.
Low-level Electric Overhead Power Lines	Running North to South towards Eastern site boundary	1. General Public 2. Construction Staff	1. Risk of death or serious injury from electrocution.	Contractor to produce a plan of work that where possible eliminates the danger by avoidance of work and site traffic at or near the overhead power lines. If the danger cannot be eliminated, the risk must be managed by controlling access to, and work beneath overhead power lines.
Oil Pipeline	Running East to West through the northern corner of the site	1. General Public 2. Construction Staff	1. Risk of death or serious injury & pollution.	Contractor to produce a plan of work that where possible eliminates the danger by avoidance of work and site traffic at or near the oil pipeline. If the danger cannot be eliminated, the risk must be managed by controlling access to, and work over and adjacent to pipeline.

SALES AREA EXTRACT

Rev	Date	Description	Drawn	Check
M	05.06.25	KEEPMOAT PARCELS UPDATED IN LINE WITH INSTRUCTION RECEIVED 03.06.25.	JP	VS
L	23.05.25	LAYOUT UPDATED FOLLOWING HIGHWAYS & DRAINAGE CONSULTANTS COMMENTS.	JP	VS
K	08.05.25	SUB STATION RELOCATED.	JP	VS
J	07.05.25	SITE LAYOUT UPDATED IN RESPONSE TO PLANNING COMMENTS.	JP	VS
i	24.03.25	SITE BOUNDARY UPDATED.	JP	VS
H	20.03.25	SITE BOUNDARY UPDATED.	JP	VS
G	28.02.25	FOOTPATH ADJACENT TO PLOT 9 ALIGNED TO SITE BOUNDARY. CYCLE WAY LINK TO PH 2 BROUGHT CLOSER TO HIGHWAY.	JP	VS
F	25.02.25	RED LINE BOUNDARY UPDATED IN LINE WITH TITLE PLANS.	JP	VS
E	24.02.25	SAUL HOMES PARCEL UPDATED IN RESPONSE TO URBAN DESIGN COMMENTS.	JP	VS
D	14.01.25	LAYOUT UPDATED IN LINE WITH CLIENT'S MARK UP RECEIVED 09.01.25.	JP	VS
C	03.01.25	LAYOUT UPDATED IN RESPONSE TO URBAN DESIGN COMMENTS.	JP	VS
B	19.11.24	M4(3) PROVISION UPDATED IN LINE WITH CLIENT REQUEST.	JP	VS
A	18.11.24	KEEPMOAT PARCELS UPDATED IN LINE WITH CLIENTS REQUEST.	JP	VS

jrp Architecture Planning Urban Design Landscape

CLIENT:
KEEPMOAT & SAUL HOMES

DRAWING NUMBER:
23 5638 01-M

PROJECT:
DONCASTER ROAD, DARFIELD

SCALE @ A1:
1:1000

DRAWING:
SITE LAYOUT

DRAWN:	DATE:
JP	JUN '24
CHECKED:	**DATE:**
VS	JUN '24

JRP Associates
14 Mariner Court,
Calder Park, Wakefield, WF4 3FL

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E info@jrpassoc.co.uk
W jrpassoc.co.uk

01 / SITE LAYOUT

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PLANNING LAYOUT LAYERS KEY:

- 1800mm BRICK WALL
- 1800mm TIMBER FENCE
- 450mm KNEE HIGH RAIL
- LOCKABLE GATE
- CARS (VISITOR PARKING)
- BLOCK PAVING (SHARED SURFACES)
- BLOCK PAVING (BRINDLE)
- CYCLE STORE / BIN STORAGE
- EV CHARGING POINT
- BIN COLLECTION POINT
- INDICATIVE DRAINAGE ROUTE

ADDITIONAL NOTES:

PV PANELS TO BE PROVIDED ON EACH PLOT. POSITION SUBJECT TO LOCATION / ORIENTATION OF PLOT.

10 / SITE LAYOUT PHASE 1 & 2

NORTH

1:200 SCALE

5m 25m

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Rev	Date	Description	Drawn	Check
H	18.06.25	PHASE 1 UPDATED IN LINE WITH LATEST PLANNING LAYOUT (REV-M). INDICATIVE DRAINAGE ROUTE SHOWN.	JP	VS
G	07.05.25	PHASE 1 UPDATED IN LINE WITH LATEST PLANNING LAYOUT (REV-J).	JP	VS
F	24.03.25	SITE BOUNDARY UPDATED.	JP	VS
E	20.03.25	SITE BOUNDARY UPDATED.	JP	VS
D	28.02.25	PHASE 1 UPDATED IN LINE WITH LATEST PLANNING LAYOUT (REV-G).	JP	VS
C	25.02.25	RED LINE BOUNDARY UPDATED IN LINE WITH TITLE PLANS.	JP	VS
B	24.02.25	PHASE 2 UPDATED IN LINE WITH REVISED MASTERPLAN.	JP	LB/VS
A	18.12.24	PHASE 1 UPDATED IN LINE WITH LATEST PLANNING LAYOUT (REV-B).	JP	VS

jrp Architecture Planning Urban Design Landscape

CLIENT:
KEEPMOAT & SAUL HOMES

DRAWING NUMBER:
23 5638 10-H

PROJECT:
DONCASTER ROAD, DARFIELD

SCALE @ A0:
1:1000

DRAWING:
SITE LAYOUT PHASE 1 & 2

DRAWN:	DATE:
JP	JUN '24
CHECKED:	**DATE:**
VS	JUN '24

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APPENDIX C

TOPOGRAPHICAL SURVEY

DONCASTER ROAD A 635
SALTERSBROOK ROAD A 635
BARNSLEY ROAD
A 635 DONCASTER ROAD
GENOA CLOSE
UPPERWOOD ROAD
ALBA CLOSE

APPENDIX D

YORKSHIRE WATER RECORDS

& CORRESPONDENCE

YorkshireWater

Yorkshire Water Services
Developer Services
Pre-Development Team
PO BOX 52
Bradford
BD3 7AY

Tel: 0345 120 8482
Fax:

Email:
technical.sewerage@yorkshirewater.co.uk

For telephone enquiries ring:
George Mullaney on 0345 120 8482

Haigh Huddleston & Associates
99-103 Leeds Road
Dewsbury
West Yorkshire
WF12 7BU
accounts@haighhuddleston.co.uk

Your Ref:
Our Ref: Z005354

27th October 2023

Dear Ms Huddleston,

Doncaster Road, Darfield, Barnsley, S73 9RL. - Pre-planning Enquiry V295328

Thank you for your recent enquiry and remittance. Our official VAT receipt has been sent to you under separate cover. Please find enclosed a complimentary extract from the Statutory Sewer Map which indicates the recorded position of the public sewers. Please note that as of October 2011 and the private to public sewer transfer, there are many uncharted Yorkshire Water assets currently not shown on our records.

The following comments reflect our view, with regard to the public sewer network only, based on a 'desk top' study of the site and are valid for a maximum period of twelve months:

Foul Water

Development of the site should take place with separate systems for foul and surface water drainage. The separate systems should extend to the points of discharge to be agreed.

It is noted from correspondence on the previous Pre-planning enquiry under reference U012534 that the 375mm foul sewer in Lombard Crescent is some distance from the site and an alternate point of discharge is preferred.

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CUSTOMER SERVICE EXCELLENCE CSE

YorkshireWater

The closest practicable point of discharge for foul will be the 225mm foul public sewer running along Upperwood Road, but at present it does not have adequate capacity available to accommodate the anticipated foul water discharge from the proposed site. Subject to the submission of a Formal Planning Application and robust build plan and start date, Yorkshire Water will carry out a feasibility study to determine suitable foul connection points, any available capacity in the public sewer network, together with timescales for any potential upgrading works required.

The cost for any feasibility/modelling/upgrade works will be at Yorkshire Waters cost up-front and recouped via the sites eventual infrastructure charges.

What are infrastructure charges?

We levy infrastructure charges for all newly connected properties that have not been connected to our water or sewer network before. The charges are calculated to recover the cost of reinforcing our existing water and sewer networks needed to serve new developments. The charges are set to recover the costs over the whole of the Yorkshire Water area to increase capacity.

For more information

https://www.yorkshirewater.com/developers/developer-services-charges

Please review section 4 (page 68) of our New Connection Charging Arrangements 2023/2024 for an explanation of our infrastructure charges

Surface Water

The developer's attention is drawn to Requirement H3 of the Building Regulations 2010. This establishes a preferred hierarchy for surface water disposal. Consideration should firstly be given to discharge to soakaway, infiltration system and watercourse in that priority order.

Sustainable Drainage Systems (SuDS), for example the use of soakaways and/or permeable hardstanding etc, may be a suitable solution for surface water disposal appropriate in this situation. You are advised to seek comments on the suitability of SuDS in this instance from the appropriate authorities.

As the proposed site is currently undeveloped no surface water is known to have previously discharged to the public sewer network.

As such, the local public sewer network does not have capacity to accept any surface water from the proposed site. If SuDS are not viable, the developer is advised to contact the Environment Agency/local Land Drainage Authority/Internal Drainage Board* with a view to establishing a suitable watercourse for discharge.

YorkshireWater

It is understood that a watercourse is located to the west and south of the site. This appears to be the obvious place for surface water disposal (if SuDS are not viable). Please note Yorkshire Water cannot provide plans of culverted watercourses or highway drains. To obtain plans please contact the Lead Local Flood Authority for more details.

Please note further restrictions on surface water disposal from the site may be imposed by other parties. You are strongly advised to seek advice/comments from the Environment Agency/Land Drainage Authority/Internal Drainage Board, with regard to surface water disposal from the site.

Other Observations

Any new connection to an existing public sewer will require the prior approval of Yorkshire Water. You may apply online or obtain an application form from our website (www.yorkshirewater.com/developers/sewerage/sewerage-connections/) or by telephoning 0345 120 84 82.

Under the provisions of section 111 of the Water Industry Act 1991 it is unlawful to pass into any public sewer (or into any drain or private sewer communicating with the public sewer network) any items likely to cause damage to the public sewer network or interfere with the free flow of its contents or affect the treatment and disposal of its contents. Amongst other things this includes fat, oil, nappies, bandages, syringes, medicines, sanitary towels and incontinence pants. Contravention of the provisions of section 111 is a criminal offence.

An off-site foul and surface water sewer may be required which may be provided by the developer and considered for Code for Adoption under Section 104 of the Water Industry Act 1991. Please telephone 0345 120 84 82 for advice on sewer adoptions. Alternatively, the developer may in certain circumstances be able to requisition off-site sewers under Section 98 of the Water Industry Act 1991 for which an application must be made in writing. For further information, please telephone 0345 120 84 82.

Prospectively adoptable sewers and pumping stations must be designed and constructed in accordance with the Code for Adoption, pursuant to an agreement under Section 104 of the Water Industry Act 1991. We are happy to offer pre-development technical advice on any prospective sites that you would like to put forward for adoption, prior to submission of your adoption application.

An application to enter into a Section 104 agreement must be made in writing prior to any works commencing on site. Please contact our Sewer Adoption, Diversion and Requisition (telephone 0345 120 84 82) or email technical.sewerage@yorkshirewater.co.uk or visit - https://www.yorkshirewater.com/developers/sewerage/sewer-adoptions/ for further information.

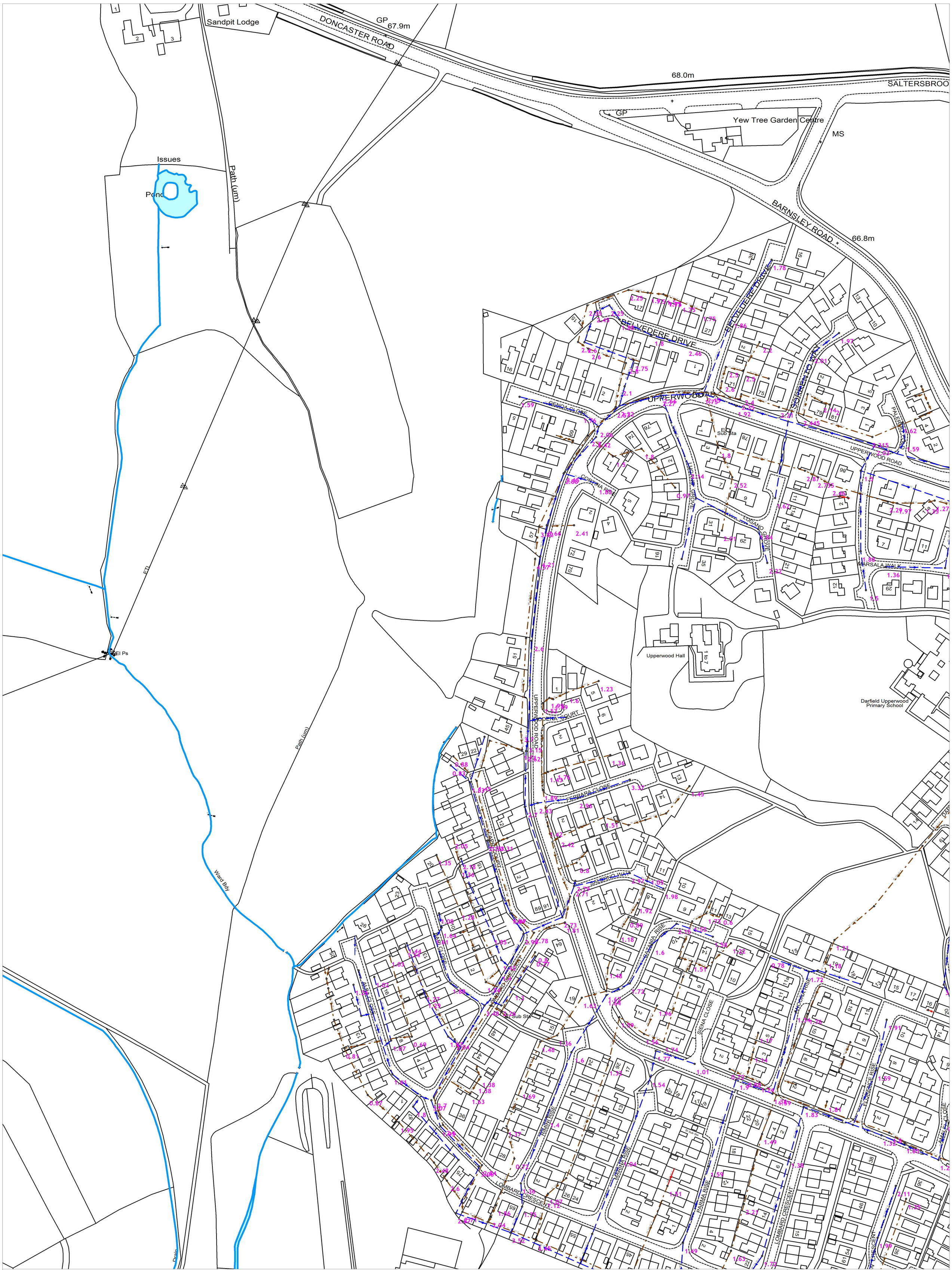
All the above comments are based upon the information and records available at the present time and is subject to formal planning approval agreement. The information contained in this letter together with that shown on any extract from the Statutory Sewer

YorkshireWater

Map that may be enclosed is believed to be correct and is supplied in good faith. Please note that capacity in the public sewer network is not reserved for specific future development. It is used up on a 'first come, first served' basis. You should visit the site and establish the line and level of any public sewers affecting your proposals before the commencement of any design work.

Yours sincerely

George Mullaney
Development Services Technician



440162 : 404614

Map Name : SE3904SE

Title

Notes

YorkshireWater

Yorkshire Water,
PO Box 500,
Halifax Road,
Bradford BD6 2LZ
Contact Name :
YorMap Advisor C ROBERTS
Contact Tel : 87 2582

Partial Key

Foul Sewer = F

Combined Sewer = C

Surface Water Sewer = SW

Trade Sewer = TD

Partially Separate = PS

This plan is furnished as a general guide only and no warranty as to its correctness is given or implied. This plan must not be relied upon in the event of excavations or other works made in the vicinity of public sewers. No house or property connections are shown.

Date Req : 12/08/2018, 13:19:41

Date Gen : 12/08/2018, 13:28:00

Source : Sewer Network Enquiry

UPN: Undefined

Originator: C ROBERTS, YorMap, 87 2582

APPENDIX E

BARNSLEY LAND DRIANGE

CORRESPONDENCE

From:	Atkins , Wayne (SENIOR ENGINEER)
To:	Martin Huddleston; Grayson , Ian (SENIOR ENGINEER - ASSETS)
Cc:	Paul Justice MCIAT; Joe Blankley; Lewis Galtress
Subject:	RE: Development at Darfield - Saul Construction/Keepmoat
Date:	26 January 2024 07:56:21
Attachments:	image001.png image002.png

Morning Martin,

I confirm the discharge rate of 36l/s for the overall site is acceptable to BMBC as Lead Local Flood Authority.

Consent for the watercourse diversion and installation of the headwall will be required under the Land Drainage Act, both Temporary and Permanent works consent will be required for each element. This will need to be applied for when the design is finalised.. Once the development is at that stage then an email should be sent to highwaydrainage@barnsley.gov.uk to request a Works in Watercourses consent pack which gives details of how to apply and relevant forms to be completed.

If you need anything else let me know.

Regards

Wayne Atkins F.I.H.E.
Senior Engineer, Highway Design
Strategic Transport
Growth and Sustainability
Barnsley Metropolitan Borough Council

E-mail: wayneatkins@barnsley.gov.uk
Mail : PO Box 601, Barnsley S70 9FA

From: Martin Huddleston <martin@haighhuddleston.co.uk>
Sent: Thursday, January 25, 2024 5:29 PM
To: Grayson , Ian (SENIOR ENGINEER - ASSETS) <iangrayson@barnsley.gov.uk>; Atkins , Wayne (SENIOR ENGINEER) <WayneAtkins@barnsley.gov.uk>
Cc: Paul Justice MCIAT <PJustice@saulhomes.co.uk>; Joe Blankley <Joseph.Blankley@keepmoat.com>; Lewis Galtress <Lewis.Galtress@keepmoat.com>
Subject: Development at Darfield - Saul Construction/Keepmoat

---

CAUTION: This email originated from outside of the organisation. Do not click links or open attachments unless you recognise the sender and know the content is safe.

Afternoon Ian, Wayne

Thanks for your time involved in attending site to review the proposed drainage arrangement and outfall for the above site

I've attached the current basin proposals would be acceptable in principle

The design details are based upon the 1 in 100yr return storm and 40% c/c.

The discharge rate has been calculated based upon a greenfield runoff rate of 2l/s/ha. Based upon a developable area of 18ha this provides a peak discharge rate of 36l/s for the overall site. This could be reduced if the phase 1 area is taken in isolation.

In relation to the diversion of the watercourse and construction of the outfall headwall are there any formal approvals required from Barnsley prior to any works commencing on site.

Should you have any queries please do not hesitate to contact me direct

Regards

Martin

Martin Huddleston
Haigh Huddleston & Associates
mobile 07745 877798
martin@haighhuddleston.co.uk

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APPENDIX F

GREENFIELD DISCHARGE RATE

IH 124 Mean Annual Flood

Input

Return Period (years)	2	Soil	0.300
Area (ha)	18.020	Urban	0.000
SAAR (mm)	689	Region Number	Region 3

Results	**l/s**
QBAR Rural	36.1
QBAR Urban	36.1
Q2 years	34.0
Q1 year	31.0
Q2 years	34.0
Q5 years	45.1
Q10 years	52.3
Q20 years	59.2
Q25 years	61.5
Q30 years	63.4
Q50 years	68.3
Q100 years	75.0
Q200 years	85.1
Q250 years	88.4
Q1000 years	109.6

Warning: It is unusual to use the IH124 method with an area < 50ha. The Interim Code of Practice recommends that the IH124 method is applied with 50ha and the resulting discharge is linearly interpolated for the required area. The ICP SUDS tab will do this automatically.

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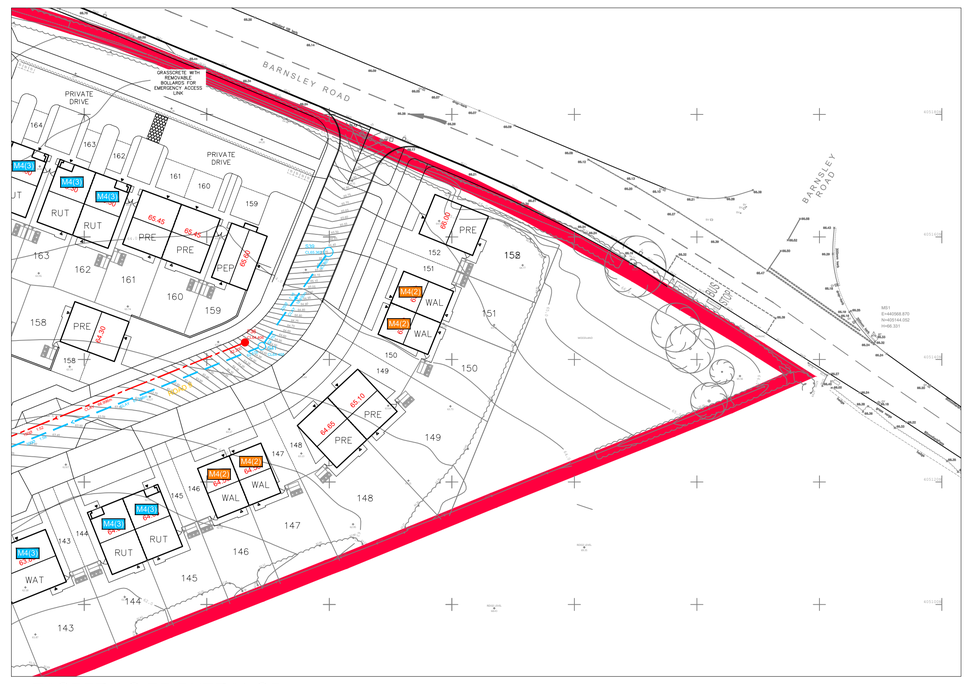
APPENDIX G

ENGINEERING FEASIBILITY PLAN

RISK ASSESSMENT: SIGNIFICANT RISKS THAT CANNOT BE DESIGNED OUT		
RISK	LEVEL OF RISK (H/M)	SUGGESTED ACTION
DEEP EXCAVATIONS ASSOCIATED WITH NEW DRAINAGE WORKS	HIGH	ENSURE ALL EXCAVATIONS HAVE ADEQUATE TRENCH SUPPORTS
HANDLING LARGE DIAMETER MANHOLE RINGS AND CIRCULAR PIPES	HIGH	USE CORRECT LIFTING EQUIPMENT AND ENSURE OPERATIVES WEAR APPROPRIATE PROTECTIVE CLOTHING/HARD HATS/CORRECT PPE
CONTACT WITH SEWAGE	MED	OPERATIVES TO USE CORRECT BREATHING EQUIPMENT/CORRECT PPE
NOISE	MED	OPERATIVES TO USE CORRECT EAR PROTECTION/CORRECT PPE
DRAINAGE EXCAVATIONS ADJACENT EXISTING BOUNDARY STRUCTURES	HIGH	ENSURE CORRECT SUPPORTS ARE PROVIDED TO TRENCHES AND BUILDINGS WHERE REQUIRED
DRAINAGE EXCAVATION IN PUBLIC HIGHWAY	HIGH	ENSURE CORRECT USE OF TRENCH SUPPORTS IN EXCAVATION AND SCREEN BARRIERS TO PROTECT MEMBERS OF THE PUBLIC
MAINTAIN ACCESS TO ADJACENT PROPERTIES AND OCCUPIERS	HIGH	ENSURE WORKS ARE PROTECTED WITH BARRIERS AND SIGNS TO GUIDE THE PUBLIC AWAY FROM THE WORKS
DRAINAGE EXCAVATIONS NEAR TO EXISTING SERVICES	HIGH	ENSURE WORKS ARE PROTECTED WITH BARRIERS AND SIGNS TO GUIDE MEMBERS OF THE PUBLIC AWAY FROM THE AREA
WORKING IN CONFINED SPACES. WORKING IN DRAINS AND MANHOLES	HIGH	CONFINED SPACES WORKING TRAINED PERSONNEL ONLY TO CARRY OUT WORKS UNDER A PERMIT TO WORK SCHEME IMPLEMENTED BY CONTRACTOR. GAS TESTING TO TAKE PLACE BEFORE ALL ENTRIES TO CONFINED SPACES
WORKING IN HIGHWAYS / RISKS FROM VEHICLE AND PLANT	HIGH	ALL WORKS TO BE SIGNED AND FENCED FROM NORMAL VEHICULAR TRAFFIC. ALL WORKERS TO WEAR HIGH VISIBILITY CLOTHING. ALL PLANT TO HAVE VISUAL AND AUDIBLE WARNING SYSTEMS.
ROAD AND DRAINAGE CONSTRUCTION	HIGH	ALL EXCAVATIONS TO BE ADEQUATELY FENCED OFF AND SUPPORTED DURING CONSTRUCTION. ALL OPERATIVES TO BE TRAINED IN CORRECT METHODS OF LIFTING AND WORK IN ACCORDANCE WITH LOLER REGS
IT IS ASSUMED THAT WORKS ASSOCIATED WITH THIS DESIGN WILL BE UNDERTAKEN BY A PERSON OR PERSONS WHO ARE COMPETANT AND HAVE THE REQUIRED LEVEL OF EXPERIENCE AND EXPERTISE		

1. ALL ADOPTABLE SEWER WORKS AND MATERIAL TO BE IN ACCORDANCE WITH "CODES FOR ADOPTION" ,THE RELEVANT BRITISH/EUROPEAN AND YORKSHIRE WATER'S STANDARDS/REQUIREMENTS/ADDENDUM TO THE MECHANICAL AND ELECTRICAL SPECIFICATION AND KITEMARKED.
2. MANHOLE COVERS SHALL/MUST HAVE A CLEAR OPENING OF 600mm AND SHALL BE CLASS D400 TO BS EN 124 WITH 150mm DEEP FRAMES IN HIGHWAYS.
3. FILLED GROUND MUST BE FILLED AND CONSOLIDATED UNDER THE SUPERVISION AND TO THE SATISFACTION OF YORKSHIRE WATER BEFORE ANY SEWER WORKS ARE CARRIED OUT.
4. YORKSHIRE WATER IS **NOT** OBLIGED TO ACCEPT FILTER DRAIN/LAND DRAINAGE RUNOFF INTO THE PUBLIC SEWER NETWORK OR ADOPTABLE DRAINAGE SYSTEM (DIRECTLY OR INDIRECTLY). AN ALTERNATIVE METHOD OF DISPOSAL OF THE LAND DRAINAGE RUNOFF WILL THEREFORE BE REQUIRED AND YOU WILL HAVE TO LIAISE WITH THE LOCAL AUTHORITY, LAND DRAINAGE SECTION WITH REGARD TO THE DISPOSAL OF THE FILTER DRAIN/LAND DRAINAGE RUNOFF.
5. COVER SLABS MUST CARRY THE BSI KITEMARK OR WILL BE REJECTED BY YORKSHIRE WATER INSPECTOR. WHERE THE CLEAR OPENING OF THE KITEMARKED PRODUCT IS DIFFERENT TO THAT OF THE COVER AND FRAME, A LOADING BEARING SLAB SHOULD BE FITTED ABOVE THE COVER SLAB TO BRING THE SIZE DOWN TO 600x600mm FOR THE YORKSHIRE WATER SPECIFIED COVER SIZE. PLEASE REFER TO CONCRETE PIPE SYSTEMS ASSOCIATION (CPSA), "TECHNICAL BULLETIN' ISSUED AUTUMN 2004 FOR KITEMARKED COVER SLAB OPENING SIZES.
6. SULPHATE RESISTANT CEMENT (C20-DC2) AND PRECAST CONCRETE PRODUCTS MUST BE USED OR A LABORATORY REPORT PROVIDED PROVING THAT SUCH PRECAUTIONS ARE NOT NECESSARY.
7. THE ADOPTABLE SEWERS SHOULD BE A MINIMUM OF 1m AND MANHOLES 0.5m FROM KERB FACES AND MARGINS.
8. SEWERS MUST HAVE 5m CLEARANCE FROM TREES AND HEDGES (PLEASE ALSO REFER TO FIGURE 2.3 ON PAGE 33 IN "CODES FOR ADOPTION" FOR RESTRICTION ON TREE PLANTING ADJACENT TO SEWERS).
9. SEWERS TO BE LAID IN CLASS "S" BEDDING (150mm GRANULAR BED AND SURROUND). WHERE DEPTH OF COVER TO TOP OF THE SEWER IS LESS THAN 1.2m IN HIGHWAYS AND VERGES (OR LESS THAN 900mm IN NONE VEHICULAR ACCESS AREAS) THEN A CONCRETE SLAB OVER SEWER SHALL BE PROVIDED ABOVE GRANULAR BED AND SURROUND.
10. BEDDING AND BACKFILL MATERIAL TO CONFORM TO THE REQUIREMENT OF WATER INDUSTRY SPECIFICATION 4-08-02 (TABLE A2).
11. THE CHAMBER SIZE OF MANHOLES WIT HMORE THAN ONE CONNECTION IN THEM MAY NEED OT BE INCREASED AN INCREMENT TO ACCOMMODATE THE CONNECTIONS AND BENDS.
12. YORKSHIRE WATER POLICY IS NOT TO ACCEPT TYPE "C" BRICK MANHOLES AND 1050mm DIAM. MANHOLE RINGS. INSTEAD IT IS PREFERRED THAT YOU USE A TYPE "B" MANHOLE WITH 1200mm DIAM. OR 1500mm DIAM. RINGS, WITH THE OPENING SIGHTED OVER THE CHANNEL WHERE DEPTH OF COVER TO PIPE SOFFIT IS 1-1.5m.
13. ADOPTABLE PLASTIC SEWER PIPES TO BE BSI KITEMARKED (CERTIFIED TO WIS 4-35-01 AND BS/EN13476). ADOPTABLE PLASTIC SEWER PIPES TO BE LAID IN MAXIMUM 3 METRE LENGTHS UNLESS THERE IS A SPECIFIC OPERATIONAL NEED TO LAY LONGER LENGTHS. PLASTIC CHANNEL SECTIONS IN MANHOLES ARE NOT ACCEPTABLE AND YORKSHIRE WATER WOULD PREFER CLAYWARE CHANNELS IN MANHOLES. WE HAVE FOUND THAT PLASTIC CHANNELS ARE DIFFICULT TO SET IN CONCRETE BECAUSE THEY FLOAT AND A SATISFACTORY FINISHED CANNOT BE OBTAINED ON THE BENCHING.
14. THE MINIMUM CRUSHING STRENGTH FOR CLAY PIPES SHOULD BE AS FOLLOWS: 100mm DIA. 40KN/m, 150mm DIA. 40KN/m, 225mm DIA. 45KN/m AND 300mm DIA. 72KN/m.THE MINIMUM CRUSHING STRENGTH FOR CONCRETE PIPES SHOULD BE - CLASS 120 TO EN 1916/BS5911-1 2002. PLASTIC PIPES SHOULD CONFORM TO WIS 4-35-01 AND BS EN13476.
15. WHERE A B125 COVER AND FRAME HAS BEEN APPROVED, THIS MUST NOT BE COATED IN PLASTIC AND MUST HAVE LIFTING EYES SUIABLY SIZED TO ACCOMMODATE STANDARD LIFTING KEYS. SCREW DOWN COVERS ARE NOT ACCEPTABLE.
16. ALL HIGHWAY WORKS AND MATERIAL TO CONFORM WITH BARNSLEY MBC SPECIFICATION.
17. GULLY COVER AND FRAMES SHALL BE D400 DUCTILE IRON AND COMPLY WITH EUROPEAN STANDARD BS EN 124. THOSE SIGHTED IN ACCESSWAYS AND MEWS COURTS MUST BE SUITABLE FOR USE IN PEDESTRIAN AREAS.



EASTERN SITE ENTRANCE

Rev	Description	Date	Initials
J	Red line boundary updated to suit latest planning application.	23.02.26	JM
H	Pond and sewer outfall amended to suit updated EA flood maps.	29.01.26	JM
G	Red line boundary updated.	04.11.25	JM
F	Road 16 and 17 updated to suit latest planning layout.	22.10.25	JM
E	Road and sewer design updated to suit latest planning layout.	09.07.25	JM
D	Road and sewer design updated to suit latest planning layout.	08.04.25	JM
C	Road and sewer design updated to suit latest planning layout.	28.06.24	JM
B	Retaining walls added.	17.04.24	JM
A	Drainage info added.	03.04.24	JM

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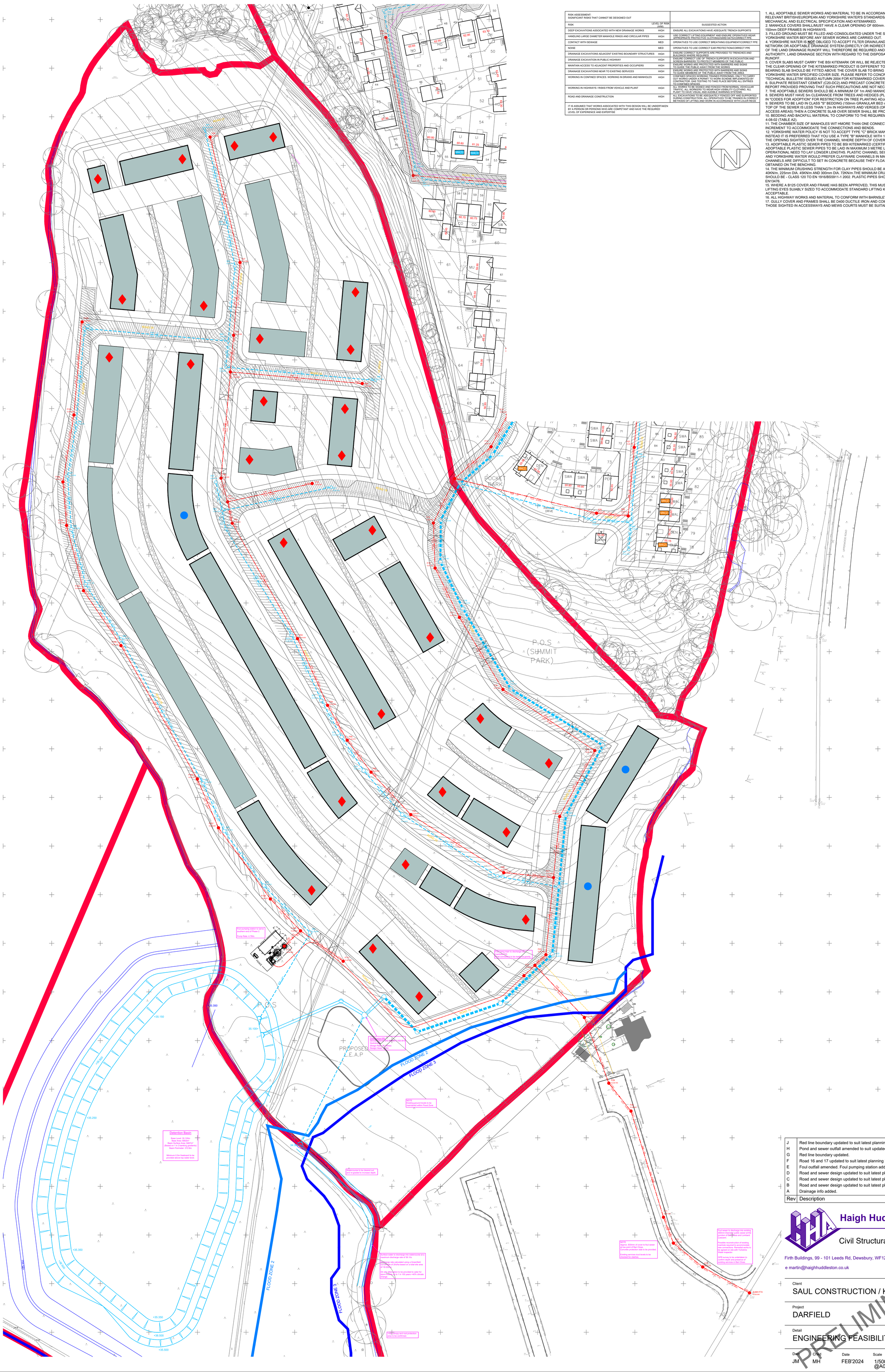
Client
SAUL CONSTRUCTION / KEEPMOAT HOMES

Project
DARFIELD

Detail
ENGINEERING FEASIBILITY

Drn	Chkd	Date	Scale	Dwg No.
JM	MH	FEB'2024	1/500 @A0	E18/7309/001_01J

PRELIMINARY



RISK ASSESSMENT: SIGNIFICANT RISKS THAT CANNOT BE DESIGNED OUT		
RISK	LEVEL OF RISK (H/M)	SUGGESTED ACTION
DEEP EXCAVATIONS ASSOCIATED WITH NEW DRAINAGE WORKS	HIGH	ENSURE ALL EXCAVATIONS HAVE ADEQUATE TRENCH SUPPORTS
HANDLING LARGE DIAMETER MANHOLE RINGS AND CIRCULAR PIPES	HIGH	USE CORRECT LIFTING EQUIPMENT AND ENSURE OPERATIVES WEAR APPROPRIATE PROTECTIVE CLOTHING/HARD HATS/CORRECT PPE.
CONTACT WITH SEWAGE	MED	OPERATIVES TO USE CORRECT BREATHING EQUIPMENT/CORRECT PPE
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DRAINAGE EXCAVATION IN PUBLIC HIGHWAY	HIGH	ENSURE CORRECT USE OF TRENCH SUPPORTS IN EXCAVATION AND SCREEN BARRIERS TO PROTECT MEMBERS OF THE PUBLIC
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WORKING IN CONFINED SPACES. WORKING IN DRAINS AND MANHOLES	HIGH	CONFINED SPACES WORKING TRAINED PERSONNEL ONLY TO CARRY OUT WORK UNDER A PERMIT TO WORK SCHEME IMPLEMENTED BY CONTRACTOR. GAS TESTING TO TAKE PLACE BEFORE ALL ENTRIES TO CONFINED SPACES
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ROAD AND DRAINAGE CONSTRUCTION	HIGH	ALL EXCAVATIONS TO BE ADEQUATELY FENCED OFF AND SUPPORTED DURING CONSTRUCTION. ALL OPERATIVES TO BE TRAINED IN CORRECT METHODS OF LIFTING AND WORK IN ACCORDANCE WITH LOLER REGS.
IT IS ASSUMED THAT WORKS ASSOCIATED WITH THIS DESIGN WILL BE UNDERTAKEN BY A PERSON OR PERSONS WHO ARE COMPETANT AND HAVE THE REQUIRED LEVEL OF EXPERIENCE AND EXPERTISE		

1. ALL ADOPTABLE SEWER WORKS AND MATERIAL TO BE IN ACCORDANCE WITH "CODES FOR ADOPTION" ,THE RELEVANT BRITISH/EUROPEAN AND YORKSHIRE WATER'S STANDARDS/REQUIREMENTS/ADDENDUM TO THE MECHANICAL AND ELECTRICAL SPECIFICATION AND KITEMARKED.
2. MANHOLE COVERS SHALL/MUST HAVE A CLEAR OPENING OF 600mm AND SHALL BE CLASS D400 TO BS EN 124 WITH 150mm DEEP FRAMES IN HIGHWAYS.
3. FILLED GROUND MUST BE FILLED AND CONSOLIDATED UNDER THE SUPERVISION AND TO THE SATISFACTION OF YORKSHIRE WATER BEFORE ANY SEWER WORKS ARE CARRIED OUT.
4. YORKSHIRE WATER IS **NOT** OBLIGED TO ACCEPT FILTER DRAIN/LAND DRAINAGE RUNOFF INTO THE PUBLIC SEWER NETWORK OR ADOPTABLE DRAINAGE SYSTEM (DIRECTLY OR INDIRECTLY). AN ALTERNATIVE METHOD OF DISPOSAL OF THE LAND DRAINAGE RUNOFF WILL THEREFORE BE REQUIRED AND YOU WILL HAVE TO LIAISE WITH THE LOCAL AUTHORITY, LAND DRAINAGE SECTION WITH REGARD TO THE DISPOSAL OF THE FILTER DRAIN/LAND DRAINAGE RUNOFF.
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16. ALL HIGHWAY WORKS AND MATERIAL TO CONFORM WITH BARNSLEY MBC SPECIFICATION.
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Rev	Description	Date	Initials
J	Red line boundary updated to suit latest planning application.	23.02.26	JM
H	Pond and sewer outfall amended to suit updated EA flood maps.	29.01.26	JM
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Dwn	Chkd	Date	Scale	Dwg No.
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PRELIMINARY

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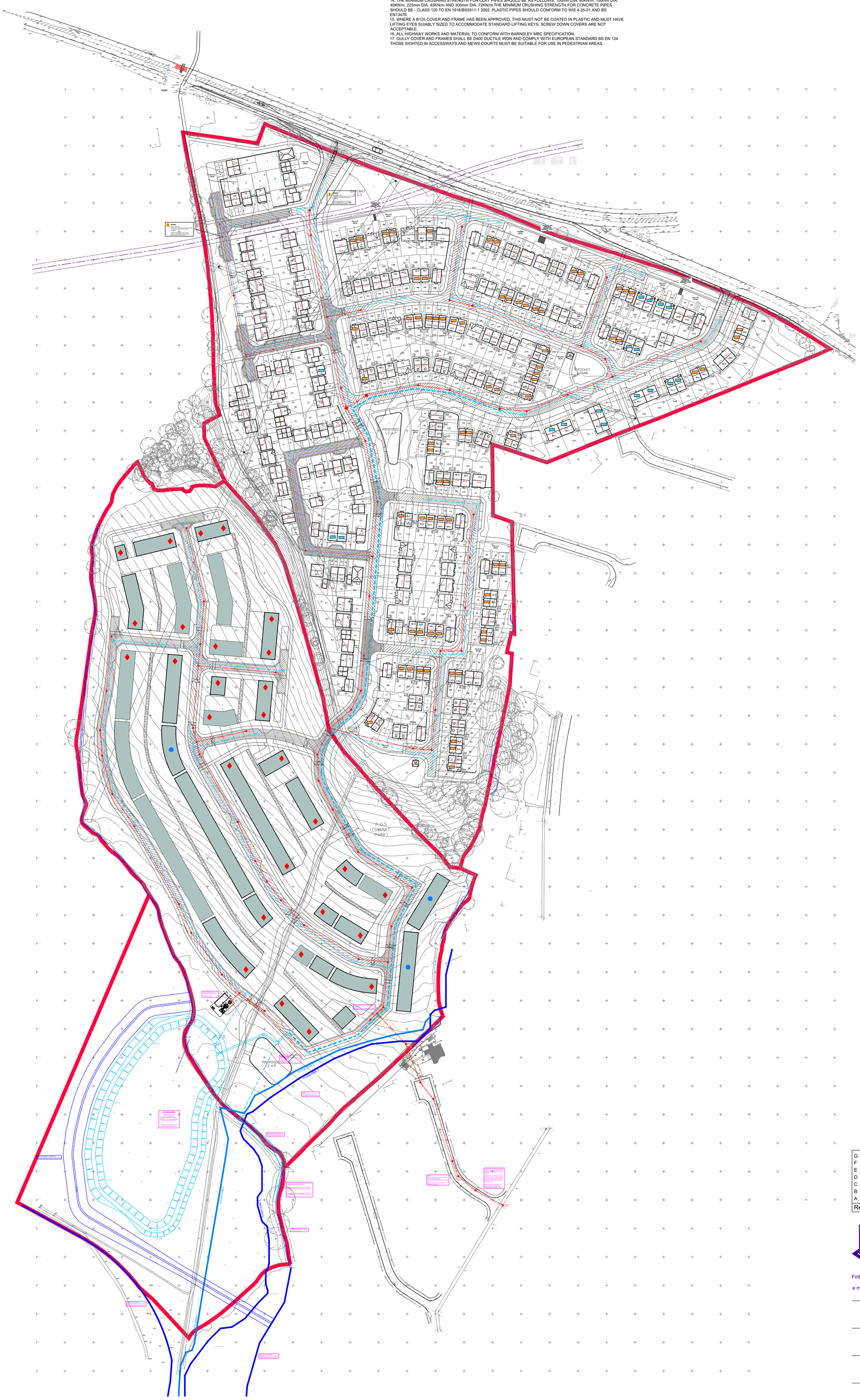

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DARFIELD

Detail
ENGINEERING FEASIBILITY - FULL SITE

Dwn	Chkd	Date	Scale	Dwg No.
JM	MH	FEB'2024	1/1000 @A0	E18/7309/001_03G

PRELIMINARY

APPENDIX H

PRELIMINARY DRAINAGE CALCULATIONS

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	2	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	19.000	Minimum Backdrop Height (m)	0.200
Ratio-R	0.400	Preferred Cover Depth (m)	1.200
CV	0.750	Include Intermediate Ground	✓
Time of Entry (mins)	5.00	Enforce best practice design rules	x

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
1	0.139	5.00	66.085	1500	440202.830	405258.642	1.785
127	0.012	5.00	65.336	1500	440182.788	405235.724	1.425
2	0.024	5.00	65.510	1200	440194.012	405236.657	4.010
3	0.137	5.00	65.324	1200	440195.807	405215.082	4.115
31	0.203	5.00	64.265	1500	440258.240	405173.425	1.615
4	0.090	5.00	64.840	1500	440206.154	405163.064	4.060
32	0.044	5.00	64.578	1500	440125.800	405244.862	1.425
37	0.075	5.00	64.961	1500	440153.345	405227.311	1.425
33	0.027	5.00	64.645	1200	440130.207	405222.708	3.720
34	0.108	5.00	64.000	1200	440138.929	405178.860	3.278
38	0.026	5.00	63.523	1200	440151.286	405116.734	1.425
35	0.012	5.00	63.768	1500	440147.466	405135.940	3.320
36	0.058	5.00	64.076	1500	440167.735	405139.972	3.722
5	0.068	5.00	64.650	1500	440209.110	405148.202	4.638
6	0.064	5.00	64.017	1500	440217.335	405106.852	4.146
39	0.093	5.00	65.362	1500	440479.861	405157.536	1.562
41	0.139	5.00	64.458	1200	440468.975	405142.147	1.780
49	0.134	5.00	65.516	1200	440325.575	405226.388	1.425
55	0.095	5.00	65.916	1200	440282.895	405233.605	1.425
50	0.068	5.00	65.710	1200	440300.971	405230.548	1.944
51	0.054	5.00	64.246	1500	440291.308	405173.406	1.843
52	0.240	5.00	63.886	1800	440308.336	405168.216	1.706
56	0.088	5.00	65.334	1200	440425.051	405189.269	1.425
57	0.110	5.00	65.887	1200	440404.509	405194.711	2.244
53	0.023	5.00	63.959	1500	440384.129	405139.989	2.318
54	0.064	5.00	63.484	1500	440401.182	405130.385	2.006
42	0.170	5.00	63.096	1800	440406.517	405117.088	1.737
43	0.061	5.00	62.679	1500	440376.373	405104.984	1.801
44	0.104	5.00	61.017	1800	440341.671	405091.071	1.913
45	0.160	5.00	60.638	1800	440326.576	405093.441	1.990
46	0.032	5.00	61.602	1800	440291.788	405106.367	3.060
47	0.112	5.00	62.478	1800	440265.497	405109.581	4.012
48	0.000	5.00	63.490	1800	440235.470	405103.609	5.111
7	0.026	5.00	63.718	1800	440221.546	405095.588	5.536
8	0.066	5.00	63.177	1800	440232.666	405076.284	5.059
9	0.053	5.00	61.999	1800	440242.043	405026.737	4.025
58	0.099	5.00	62.810	1200	440204.706	405069.310	1.425
59	0.193	5.00	62.400	1200	440176.572	405063.714	1.568
60	0.012	5.00	60.223	1200	440189.553	404998.455	1.537
61	0.115	5.00	60.155	1500	440193.130	404994.186	1.581
10	0.055	5.00	61.013	1800	440238.831	404990.256	3.222

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Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
11	0.108	5.00	60.269	1800	440236.219	404960.592	2.627
12	0.040	5.00	57.832	1800	440232.243	404915.438	2.079
13	0.114	5.00	56.499	1800	440230.056	404895.114	2.024
14	0.000	5.00	55.453	1800	440221.525	404880.985	2.010
62	0.154	5.00	61.089	1500	440274.673	405031.441	1.425
63	0.110	5.00	59.628	1200	440308.731	405028.442	1.838
64	0.075	5.00	58.527	1200	440305.673	404993.717	1.608
65	0.076	5.00	57.820	1500	440301.947	404951.400	1.684
66	0.100	5.00	57.536	1500	440299.461	404923.164	1.754
70	0.070	5.00	57.925	1200	440266.309	404924.407	1.525
67	0.101	5.00	57.535	1500	440284.545	404922.801	1.940
68	0.071	5.00	55.875	1500	440280.686	404878.981	1.909
71	0.054	5.00	54.951	1200	440292.604	404862.367	1.425
69	0.083	5.00	55.236	1800	440279.157	404861.607	2.070
26	0.000		55.350	1500	440235.601	404865.506	2.621
15	0.022	5.00	54.227	1800	440208.000	404869.110	2.088
16	0.040	5.00	53.048	1800	440200.127	404854.157	2.036
17	0.029	5.00	51.857	1800	440199.951	404836.859	1.998
18	0.101	5.00	50.419	1800	440209.235	404817.676	1.981
19	0.079	5.00	47.811	1800	440228.935	404784.606	2.123
20	0.075	5.00	46.210	1800	440266.797	404761.465	2.297
21	0.043	5.00	44.663	1800	440251.633	404732.710	2.050
27	0.144	5.00	50.714	1200	440155.001	404867.584	1.714
79	0.098	5.00	48.333	1200	440107.505	404869.719	1.425
28	0.053	5.00	48.148	1200	440110.073	404857.858	1.777
72	0.136	5.00	47.880	1200	440111.576	404850.472	1.603
73	0.110	5.00	45.888	1500	440138.674	404806.839	1.661
74	0.000		44.737	1500	440150.924	404779.988	1.720
75	0.082	5.00	44.466	1500	440159.315	404764.838	1.696
76	0.052	5.00	44.275	1500	440168.366	404751.051	1.741
77	0.123	5.00	43.973	1500	440184.251	404732.965	1.783
78	0.060	5.00	43.353	1500	440223.405	404707.543	1.747
22	0.071	5.00	42.666	1800	440248.732	404703.276	2.025
23	0.089	5.00	40.810	1800	440245.996	404675.520	2.178
24	0.056	5.00	39.327	1800	440224.636	404655.291	2.329
80	0.083	5.00	38.993	1200	440184.434	404650.481	1.425
25	0.000		38.515	1950	440201.041	404632.946	2.653
29	0.000		37.300	1950	440143.943	404578.872	1.942
81	0.100	5.00	52.928	1200	440102.807	405015.180	1.425
82	0.088	5.00	51.409	1200	440111.766	404977.638	1.450
83	0.077	5.00	50.606	1200	440115.380	404958.470	1.460
96	0.166	5.00	51.908	1200	440173.169	404911.597	1.425
97	0.000		48.952	1200	440111.729	404917.007	1.628
84	0.056	5.00	49.354	1200	440112.674	404927.735	2.165
85	0.150	5.00	46.447	1500	440053.533	404932.943	1.708
86	0.069	5.00	44.475	1500	440050.032	404893.187	1.731
87	0.000		43.408	1500	440046.532	404872.022	1.737
88	0.079	5.00	42.306	1500	440048.108	404850.255	1.726
89	0.085	5.00	41.106	1500	440053.981	404827.675	1.693
90	0.000		40.195	1500	440068.537	404804.935	1.682
91	0.076	5.00	38.495	1500	440102.303	404745.857	1.758
92	0.067	5.00	38.317	1500	440110.995	404726.185	1.909

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Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
93	0.000		38.671	1500	440127.211	404703.725	2.402
94	0.047	5.00	38.994	1500	440146.380	404684.406	2.861
95	0.000		37.300	1500	440111.956	404611.364	1.942
30	0.000	5.00	36.800	1800	440147.998	404565.910	1.558
125	0.000		36.800	1800	440153.563	404563.666	1.623
126			36.000	1200	440171.236	404556.542	0.910

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	23.687	0.600	64.300	63.770	0.530	44.7	225	5.20	50.0
2.000	127	2	11.263	0.600	63.911	63.770	0.141	80.0	225	5.13	50.0
1.001	2	3	21.650	0.600	61.500	61.284	0.216	100.0	225	5.48	50.0
1.002	3	4	53.037	0.600	61.209	60.855	0.354	150.0	300	6.17	50.0
3.000	31	4	53.107	0.600	62.650	62.296	0.354	150.0	300	5.69	50.0
1.003	4	5	15.153	0.600	60.780	60.162	0.618	24.5	375	6.24	50.0
4.000	32	33	22.588	0.600	63.153	63.002	0.151	150.0	225	5.35	50.0
5.000	37	33	23.591	0.600	63.536	63.002	0.534	44.2	225	5.20	50.0
4.001	33	34	44.707	0.600	60.925	60.722	0.203	220.0	300	6.06	50.0
4.002	34	35	43.761	0.600	60.722	60.523	0.199	220.0	300	6.75	50.0
6.000	38	35	19.582	0.600	62.098	61.967	0.131	150.0	225	5.31	50.0
4.003	35	36	20.666	0.600	60.448	60.354	0.094	220.0	375	7.03	50.0
4.004	36	5	42.186	0.600	60.354	60.162	0.192	220.0	375	7.61	50.0
1.004	5	6	42.160	0.600	60.012	59.871	0.141	300.0	525	8.16	50.0
1.005	6	7	12.025	0.600	59.871	59.831	0.040	300.0	525	8.31	50.0
7.000	39	41	18.850	0.600	63.800	62.753	1.047	18.0	225	5.10	50.0
7.001	41	42	67.298	0.600	62.678	61.509	1.169	57.6	300	5.64	50.0
8.000	49	50	24.953	0.600	64.091	63.841	0.250	100.0	225	5.32	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	1.962	78.0	18.8	1.560	1.515	0.139	0.0	75	1.623
2.000	1.463	58.2	1.6	1.200	1.515	0.012	0.0	26	0.647
1.001	1.307	52.0	23.7	3.785	3.815	0.175	0.0	107	1.279
1.002	1.281	90.6	42.3	3.815	3.685	0.312	0.0	144	1.259
3.000	1.281	90.6	27.5	1.315	2.244	0.203	0.0	113	1.129
1.003	3.672	405.5	82.0	3.685	4.113	0.605	0.0	114	2.903
4.000	1.065	42.3	6.0	1.200	1.418	0.044	0.0	57	0.755
5.000	1.973	78.4	10.2	1.200	1.418	0.075	0.0	54	1.365
4.001	1.056	74.6	19.8	3.420	2.978	0.146	0.0	105	0.896
4.002	1.056	74.6	34.4	2.978	2.945	0.254	0.0	143	1.036
6.000	1.065	42.3	3.5	1.200	1.576	0.026	0.0	44	0.647
4.003	1.217	134.4	39.6	2.945	3.347	0.292	0.0	139	1.063
4.004	1.217	134.4	47.4	3.347	4.113	0.350	0.0	153	1.115
1.004	1.288	278.8	138.6	4.113	3.621	1.023	0.0	262	1.286
1.005	1.288	278.8	147.3	3.621	3.362	1.087	0.0	271	1.305
7.000	3.098	123.2	12.6	1.337	1.480	0.093	0.0	48	2.002
7.001	2.076	146.7	31.4	1.480	1.287	0.232	0.0	94	1.665
8.000	1.307	52.0	18.2	1.200	1.644	0.134	0.0	92	1.195

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Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
9.000	55	50	18.333	0.600	64.491	63.841	0.650	28.2	225	5.12	50.0
8.001	50	51	57.953	0.600	63.766	62.478	1.288	45.0	300	5.73	50.0
8.002	51	52	17.801	0.600	62.403	62.255	0.148	120.0	375	5.91	50.0
8.003	52	53	80.879	0.600	62.180	61.641	0.539	150.0	450	6.72	50.0
10.000	56	57	21.251	0.600	63.909	63.643	0.266	80.0	225	5.24	50.0
10.001	57	53	58.394	0.600	63.643	61.866	1.777	32.9	225	5.67	50.0
8.004	53	54	19.571	0.600	61.641	61.478	0.163	120.0	450	6.90	50.0
8.005	54	42	14.327	0.600	61.478	61.359	0.119	120.0	450	7.03	50.0
7.002	42	43	32.483	0.600	61.359	60.953	0.406	80.0	450	7.26	50.0
7.003	43	44	37.387	0.600	60.878	59.179	1.699	22.0	525	7.39	50.0
7.004	44	45	15.280	0.600	59.104	58.798	0.306	50.0	600	7.47	50.0
7.005	45	46	37.112	0.600	58.648	58.542	0.106	350.0	750	7.88	50.0
7.006	46	47	26.487	0.600	58.542	58.466	0.076	350.0	750	8.18	50.0
7.007	47	48	30.615	0.600	58.466	58.379	0.087	350.0	750	8.52	50.0
7.008	48	7	16.069	0.600	58.379	58.332	0.047	341.9	750	8.70	50.0
1.006	7	8	22.278	0.600	58.182	58.118	0.064	350.0	900	8.92	50.0
1.007	8	9	50.427	0.600	58.118	57.974	0.144	350.0	900	9.43	49.2
1.008	9	10	36.622	0.600	57.974	57.791	0.183	200.0	900	9.70	48.5
11.000	58	59	28.685	0.600	61.385	60.907	0.478	60.0	225	5.28	50.0
11.001	59	60	66.538	0.600	60.832	58.686	2.146	31.0	300	5.67	50.0
11.002	60	61	5.569	0.600	58.686	58.649	0.037	150.0	300	5.75	50.0
11.003	61	10	45.870	0.600	58.574	58.316	0.258	177.8	375	6.31	50.0
1.009	10	11	29.779	0.600	57.791	57.642	0.149	200.0	900	9.93	47.9
1.010	11	12	45.329	0.600	57.642	55.753	1.889	24.0	750	10.06	47.6

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)
9.000	2.473	98.3	12.9	1.200	1.644	0.095	0.0	55	1.727
8.001	2.350	166.1	40.3	1.644	1.468	0.297	0.0	100	1.945
8.002	1.653	182.5	47.6	1.468	1.256	0.351	0.0	130	1.397
8.003	1.657	263.6	80.1	1.256	1.868	0.591	0.0	169	1.459
10.000	1.463	58.2	11.9	1.200	2.019	0.088	0.0	69	1.157
10.001	2.290	91.0	26.8	2.019	1.868	0.198	0.0	83	1.994
8.004	1.855	294.9	110.0	1.868	1.556	0.812	0.0	190	1.726
8.005	1.855	294.9	118.7	1.556	1.287	0.876	0.0	198	1.758
7.002	2.274	361.7	173.2	1.287	1.276	1.278	0.0	219	2.251
7.003	4.790	1036.8	181.5	1.276	1.313	1.339	0.0	147	3.642
7.004	3.449	975.1	195.6	1.313	1.240	1.443	0.0	181	2.723
7.005	1.490	658.2	217.2	1.240	2.310	1.603	0.0	296	1.343
7.006	1.490	658.2	221.6	2.310	3.262	1.635	0.0	298	1.349
7.007	1.490	658.2	236.8	3.262	4.361	1.747	0.0	310	1.374
7.008	1.507	666.0	236.8	4.361	4.636	1.747	0.0	308	1.385
1.006	1.669	1061.6	387.6	4.636	4.159	2.860	0.0	375	1.544
1.007	1.669	1061.6	390.5	4.159	3.125	2.926	0.0	377	1.547
1.008	2.212	1407.0	391.4	3.125	2.322	2.979	0.0	323	1.909
11.000	1.691	67.2	13.4	1.200	1.268	0.099	0.0	68	1.329
11.001	2.834	200.3	39.6	1.268	1.237	0.292	0.0	90	2.221
11.002	1.281	90.6	41.2	1.237	1.206	0.304	0.0	142	1.253
11.003	1.355	149.7	56.8	1.206	2.322	0.419	0.0	160	1.266
1.009	2.212	1407.0	448.2	2.322	1.727	3.453	0.0	348	1.977
1.010	5.725	2529.4	459.0	1.877	1.329	3.561	0.0	214	4.405

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Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.011	12	13	20.441	0.600	55.753	54.475	1.278	16.0	750	10.11	47.4
1.012	13	14	16.505	0.600	54.475	53.443	1.032	16.0	750	10.15	47.3
1.013	14	15	17.998	0.600	53.443	52.139	1.304	13.8	750	10.19	47.2
12.000	62	63	34.190	0.600	59.664	57.865	1.799	19.0	225	5.19	50.0
12.001	63	64	34.859	0.600	57.790	56.919	0.871	40.0	300	5.42	50.0
12.002	64	65	42.481	0.600	56.919	56.211	0.708	60.0	300	5.77	50.0
12.003	65	66	28.345	0.600	56.136	55.782	0.354	80.0	375	6.00	50.0
12.004	66	67	14.920	0.600	55.782	55.595	0.187	80.0	375	6.13	50.0
13.000	70	67	18.307	0.600	56.400	55.745	0.655	27.9	225	5.12	50.0
12.005	67	68	43.990	0.600	55.595	53.966	1.629	27.0	375	6.34	50.0
12.006	68	69	17.441	0.600	53.966	53.241	0.725	24.1	375	6.41	50.0
14.000	71	69	13.468	0.600	53.526	53.391	0.135	100.0	225	5.17	50.0
12.007	69	26	43.730	0.600	53.166	52.729	0.437	100.0	450	6.77	50.0
12.008	26	15	27.835	0.600	52.729	52.439	0.290	96.0	450	7.00	50.0
1.014	15	16	16.899	0.600	52.139	51.012	1.127	15.0	750	10.23	47.1
1.015	16	17	17.299	0.600	51.012	49.859	1.153	15.0	750	10.27	47.0
1.016	17	18	21.312	0.600	49.859	48.438	1.421	15.0	750	10.31	46.9
1.017	18	19	38.493	0.600	48.438	45.688	2.750	14.0	750	10.40	46.7
1.018	19	20	44.374	0.600	45.688	43.913	1.775	25.0	750	10.53	46.4
1.019	20	21	32.508	0.600	43.913	42.613	1.300	25.0	750	10.63	46.2
1.020	21	22	29.577	0.600	42.613	40.641	1.972	15.0	750	10.70	46.0
15.000	27	28	45.969	0.600	49.000	46.446	2.554	18.0	225	5.25	50.0
16.000	79	28	12.136	0.600	46.908	46.446	0.462	26.3	225	5.08	50.0
15.001	28	72	7.537	0.600	46.371	46.277	0.094	80.0	300	5.32	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.011	7.015	3099.2	462.9	1.329	1.274	3.601	0.0	194	5.118
1.012	7.015	3099.2	476.6	1.274	1.260	3.715	0.0	197	5.159
1.013	7.554	3337.2	475.6	1.260	1.338	3.715	0.0	189	5.444
12.000	3.015	119.9	20.9	1.200	1.538	0.154	0.0	63	2.270
12.001	2.493	176.2	35.8	1.538	1.308	0.264	0.0	91	1.967
12.002	2.033	143.7	45.9	1.308	1.309	0.339	0.0	116	1.815
12.003	2.027	223.9	56.2	1.309	1.379	0.415	0.0	128	1.699
12.004	2.027	223.9	69.8	1.379	1.565	0.515	0.0	143	1.797
13.000	2.484	98.8	9.5	1.300	1.565	0.070	0.0	47	1.587
12.005	3.498	386.4	93.0	1.565	1.534	0.686	0.0	125	2.900
12.006	3.707	409.4	102.6	1.534	1.620	0.757	0.0	127	3.101
14.000	1.307	52.0	7.3	1.200	1.620	0.054	0.0	57	0.928
12.007	2.033	323.3	121.2	1.620	2.171	0.894	0.0	190	1.892
12.008	2.075	330.0	121.2	2.171	1.338	0.894	0.0	189	1.923
1.014	7.246	3201.0	591.7	1.338	1.286	4.631	0.0	216	5.605
1.015	7.246	3201.0	595.6	1.286	1.248	4.671	0.0	217	5.615
1.016	7.246	3201.0	597.7	1.248	1.231	4.700	0.0	218	5.625
1.017	7.500	3313.6	607.9	1.231	1.373	4.801	0.0	216	5.792
1.018	5.609	2478.2	613.7	1.373	1.547	4.880	0.0	252	4.691
1.019	5.609	2478.2	620.1	1.547	1.300	4.955	0.0	254	4.704
1.020	7.246	3201.0	623.3	1.300	1.275	4.998	0.0	222	5.683
15.000	3.098	123.2	19.5	1.489	1.477	0.144	0.0	60	2.279
16.000	2.563	101.9	13.3	1.200	1.477	0.098	0.0	55	1.790
15.001	1.759	124.3	40.0	1.477	1.303	0.295	0.0	117	1.574

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Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
15.002	72	73	51.363	0.600	46.277	44.302	1.975	26.0	300	5.60	50.0
15.003	73	74	29.513	0.600	44.227	43.092	1.135	26.0	375	5.73	50.0
15.004	74	75	17.319	0.600	43.017	42.770	0.247	70.0	450	5.85	50.0
15.005	75	76	16.492	0.600	42.770	42.534	0.236	70.0	450	5.96	50.0
15.006	76	77	24.071	0.600	42.534	42.190	0.344	70.0	450	6.13	50.0
15.007	77	78	46.683	0.600	42.190	41.606	0.584	80.0	450	6.47	50.0
15.008	78	22	25.684	0.600	41.606	40.941	0.665	38.6	450	6.60	50.0
1.021	22	23	27.891	0.600	40.641	38.782	1.859	15.0	750	10.76	45.9
1.022	23	24	29.419	0.600	38.632	36.998	1.634	18.0	900	10.83	45.7
1.023	24	25	32.497	0.600	36.998	36.012	0.986	33.0	900	10.93	45.5
17.000	80	25	24.151	0.600	37.568	36.687	0.881	27.4	225	5.16	50.0
1.024	25	29	78.640	0.600	35.862	35.600	0.262	300.0	1050	11.59	44.0
18.000	81	82	38.596	0.600	51.503	49.959	1.544	25.0	225	5.24	50.0
18.001	82	83	19.506	0.600	49.959	49.146	0.813	24.0	225	5.37	50.0
18.002	83	84	30.854	0.600	49.146	47.264	1.882	16.4	225	5.52	50.0
19.000	96	97	61.678	0.600	50.483	47.399	3.084	20.0	225	5.35	50.0
19.001	97	84	10.770	0.600	47.324	47.189	0.135	80.0	300	5.45	50.0
18.003	84	85	59.370	0.600	47.189	44.814	2.375	25.0	300	5.84	50.0
18.004	85	86	39.910	0.600	44.739	42.744	1.995	20.0	375	6.00	50.0
18.005	86	87	21.452	0.600	42.744	41.671	1.073	20.0	375	6.09	50.0
18.006	87	88	21.824	0.600	41.671	40.580	1.091	20.0	375	6.18	50.0
18.007	88	89	23.331	0.600	40.580	39.413	1.167	20.0	375	6.27	50.0
18.008	89	90	27.000	0.600	39.413	38.513	0.900	30.0	375	6.41	50.0
18.009	90	91	68.047	0.600	38.513	36.812	1.701	40.0	375	6.80	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
15.002	3.095	218.8	58.4	1.303	1.286	0.431	0.0	105	2.631
15.003	3.565	393.8	73.3	1.286	1.270	0.541	0.0	109	2.751
15.004	2.432	386.8	73.3	1.270	1.246	0.541	0.0	132	1.892
15.005	2.432	386.8	84.4	1.246	1.291	0.623	0.0	142	1.962
15.006	2.432	386.8	91.5	1.291	1.333	0.675	0.0	148	2.006
15.007	2.274	361.7	108.1	1.333	1.297	0.798	0.0	168	1.998
15.008	3.279	521.5	116.3	1.297	1.275	0.858	0.0	144	2.663
1.021	7.246	3201.0	736.7	1.275	1.278	5.927	0.0	243	5.945
1.022	7.402	4709.2	745.3	1.278	1.429	6.016	0.0	240	5.494
1.023	5.467	3478.0	748.5	1.429	1.603	6.072	0.0	281	4.406
17.000	2.508	99.7	11.2	1.200	1.603	0.083	0.0	51	1.671
1.024	1.984	1718.0	734.7	1.603	0.650	6.155	0.0	479	1.910
18.000	2.627	104.5	13.6	1.200	1.225	0.100	0.0	54	1.818
18.001	2.682	106.6	25.5	1.225	1.235	0.188	0.0	74	2.206
18.002	3.247	129.1	35.9	1.235	1.865	0.265	0.0	81	2.798
19.000	2.939	116.8	22.5	1.200	1.328	0.166	0.0	66	2.279
19.001	1.759	124.3	22.5	1.328	1.865	0.166	0.0	86	1.344
18.003	3.157	223.1	66.0	1.865	1.333	0.487	0.0	112	2.763
18.004	4.067	449.2	86.3	1.333	1.356	0.637	0.0	111	3.172
18.005	4.067	449.2	95.7	1.356	1.362	0.706	0.0	117	3.258
18.006	4.067	449.2	95.7	1.362	1.351	0.706	0.0	117	3.258
18.007	4.067	449.2	106.4	1.351	1.318	0.785	0.0	123	3.352
18.008	3.318	366.5	117.9	1.318	1.307	0.870	0.0	146	2.972
18.009	2.872	317.2	117.9	1.307	1.308	0.870	0.0	158	2.666

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Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
18.010	91	92	21.507	0.600	36.737	36.558	0.179	120.0	450	7.00	50.0
18.011	92	93	27.702	0.600	36.408	36.269	0.139	200.0	600	7.27	50.0
18.012	93	94	27.215	0.600	36.269	36.133	0.136	200.0	600	7.53	50.0
18.013	94	95	80.747	0.600	36.133	35.729	0.404	200.0	600	8.31	50.0
27.000	30	125	6.000	0.600	35.242	35.230	0.012	500.0	900	5.07	50.0
27.001	125	126	19.055	0.600	35.177	35.090	0.087	220.0	300	5.37	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
18.010	1.855	294.9	128.2	1.308	1.309	0.946	0.0	207	1.791
18.011	1.718	485.8	137.3	1.309	1.802	1.013	0.0	217	1.486
18.012	1.718	485.8	137.3	1.802	2.261	1.013	0.0	217	1.486
18.013	1.718	485.8	143.7	2.261	0.971	1.060	0.0	222	1.504
27.000	1.394	886.9	0.0	0.658	0.670	0.000	0.0	0	0.000
27.001	1.056	74.6	0.0	1.323	0.610	0.000	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	23.687	44.7	225	Circular_Default Sewer Type	66.085	64.300	1.560	65.510	63.770	1.515
2.000	11.263	80.0	225	Circular_Default Sewer Type	65.336	63.911	1.200	65.510	63.770	1.515
1.001	21.650	100.0	225	Circular_Default Sewer Type	65.510	61.500	3.785	65.324	61.284	3.815
1.002	53.037	150.0	300	Circular_Default Sewer Type	65.324	61.209	3.815	64.840	60.855	3.685
3.000	53.107	150.0	300	Circular_Default Sewer Type	64.265	62.650	1.315	64.840	62.296	2.244
1.003	15.153	24.5	375	Circular_Default Sewer Type	64.840	60.780	3.685	64.650	60.162	4.113
4.000	22.588	150.0	225	Circular_Default Sewer Type	64.578	63.153	1.200	64.645	63.002	1.418
5.000	23.591	44.2	225	Circular_Default Sewer Type	64.961	63.536	1.200	64.645	63.002	1.418
4.001	44.707	220.0	300	Circular_Default Sewer Type	64.645	60.925	3.420	64.000	60.722	2.978
4.002	43.761	220.0	300	Circular_Default Sewer Type	64.000	60.722	2.978	63.768	60.523	2.945
6.000	19.582	150.0	225	Circular_Default Sewer Type	63.523	62.098	1.200	63.768	61.967	1.576
4.003	20.666	220.0	375	Circular_Default Sewer Type	63.768	60.448	2.945	64.076	60.354	3.347
4.004	42.186	220.0	375	Circular_Default Sewer Type	64.076	60.354	3.347	64.650	60.162	4.113
1.004	42.160	300.0	525	Circular_Default Sewer Type	64.650	60.012	4.113	64.017	59.871	3.621

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	1	1500	Manhole	Adoptable	2	1200	Manhole	Adoptable
2.000	127	1500	Manhole	Adoptable	2	1200	Manhole	Adoptable
1.001	2	1200	Manhole	Adoptable	3	1200	Manhole	Adoptable
1.002	3	1200	Manhole	Adoptable	4	1500	Manhole	Adoptable
3.000	31	1500	Manhole	Adoptable	4	1500	Manhole	Adoptable
1.003	4	1500	Manhole	Adoptable	5	1500	Manhole	Adoptable
4.000	32	1500	Manhole	Adoptable	33	1200	Manhole	Adoptable
5.000	37	1500	Manhole	Adoptable	33	1200	Manhole	Adoptable
4.001	33	1200	Manhole	Adoptable	34	1200	Manhole	Adoptable
4.002	34	1200	Manhole	Adoptable	35	1500	Manhole	Adoptable
6.000	38	1200	Manhole	Adoptable	35	1500	Manhole	Adoptable
4.003	35	1500	Manhole	Adoptable	36	1500	Manhole	Adoptable
4.004	36	1500	Manhole	Adoptable	5	1500	Manhole	Adoptable
1.004	5	1500	Manhole	Adoptable	6	1500	Manhole	Adoptable

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Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.005	12.025	300.0	525	Circular_Default Sewer Type	64.017	59.871	3.621	63.718	59.831	3.362
7.000	18.850	18.0	225	Circular_Default Sewer Type	65.362	63.800	1.337	64.458	62.753	1.480
7.001	67.298	57.6	300	Circular_Default Sewer Type	64.458	62.678	1.480	63.096	61.509	1.287
8.000	24.953	100.0	225	Circular_Default Sewer Type	65.516	64.091	1.200	65.710	63.841	1.644
9.000	18.333	28.2	225	Circular_Default Sewer Type	65.916	64.491	1.200	65.710	63.841	1.644
8.001	57.953	45.0	300	Circular_Default Sewer Type	65.710	63.766	1.644	64.246	62.478	1.468
8.002	17.801	120.0	375	Circular_Default Sewer Type	64.246	62.403	1.468	63.886	62.255	1.256
8.003	80.879	150.0	450	Circular_Default Sewer Type	63.886	62.180	1.256	63.959	61.641	1.868
10.000	21.251	80.0	225	Circular_Default Sewer Type	65.334	63.909	1.200	65.887	63.643	2.019
10.001	58.394	32.9	225	Circular_Default Sewer Type	65.887	63.643	2.019	63.959	61.866	1.868
8.004	19.571	120.0	450	Circular_Default Sewer Type	63.959	61.641	1.868	63.484	61.478	1.556
8.005	14.327	120.0	450	Circular_Default Sewer Type	63.484	61.478	1.556	63.096	61.359	1.287
7.002	32.483	80.0	450	Circular_Default Sewer Type	63.096	61.359	1.287	62.679	60.953	1.276
7.003	37.387	22.0	525	Circular_Default Sewer Type	62.679	60.878	1.276	61.017	59.179	1.313
7.004	15.280	50.0	600	Circular_Default Sewer Type	61.017	59.104	1.313	60.638	58.798	1.240
7.005	37.112	350.0	750	Circular_Default Sewer Type	60.638	58.648	1.240	61.602	58.542	2.310
7.006	26.487	350.0	750	Circular_Default Sewer Type	61.602	58.542	2.310	62.478	58.466	3.262
7.007	30.615	350.0	750	Circular_Default Sewer Type	62.478	58.466	3.262	63.490	58.379	4.361
7.008	16.069	341.9	750	Circular_Default Sewer Type	63.490	58.379	4.361	63.718	58.332	4.636
1.006	22.278	350.0	900	Circular_Default Sewer Type	63.718	58.182	4.636	63.177	58.118	4.159
1.007	50.427	350.0	900	Circular_Default Sewer Type	63.177	58.118	4.159	61.999	57.974	3.125
1.008	36.622	200.0	900	Circular_Default Sewer Type	61.999	57.974	3.125	61.013	57.791	2.322
11.000	28.685	60.0	225	Circular_Default Sewer Type	62.810	61.385	1.200	62.400	60.907	1.268
11.001	66.538	31.0	300	Circular_Default Sewer Type	62.400	60.832	1.268	60.223	58.686	1.237
11.002	5.569	150.0	300	Circular_Default Sewer Type	60.223	58.686	1.237	60.155	58.649	1.206

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.005	6	1500	Manhole	Adoptable	7	1800	Manhole	Adoptable
7.000	39	1500	Manhole	Adoptable	41	1200	Manhole	Adoptable
7.001	41	1200	Manhole	Adoptable	42	1800	Manhole	Adoptable
8.000	49	1200	Manhole	Adoptable	50	1200	Manhole	Adoptable
9.000	55	1200	Manhole	Adoptable	50	1200	Manhole	Adoptable
8.001	50	1200	Manhole	Adoptable	51	1500	Manhole	Adoptable
8.002	51	1500	Manhole	Adoptable	52	1800	Manhole	Adoptable
8.003	52	1800	Manhole	Adoptable	53	1500	Manhole	Adoptable
10.000	56	1200	Manhole	Adoptable	57	1200	Manhole	Adoptable
10.001	57	1200	Manhole	Adoptable	53	1500	Manhole	Adoptable
8.004	53	1500	Manhole	Adoptable	54	1500	Manhole	Adoptable
8.005	54	1500	Manhole	Adoptable	42	1800	Manhole	Adoptable
7.002	42	1800	Manhole	Adoptable	43	1500	Manhole	Adoptable
7.003	43	1500	Manhole	Adoptable	44	1800	Manhole	Adoptable
7.004	44	1800	Manhole	Adoptable	45	1800	Manhole	Adoptable
7.005	45	1800	Manhole	Adoptable	46	1800	Manhole	Adoptable
7.006	46	1800	Manhole	Adoptable	47	1800	Manhole	Adoptable
7.007	47	1800	Manhole	Adoptable	48	1800	Manhole	Adoptable
7.008	48	1800	Manhole	Adoptable	7	1800	Manhole	Adoptable
1.006	7	1800	Manhole	Adoptable	8	1800	Manhole	Adoptable
1.007	8	1800	Manhole	Adoptable	9	1800	Manhole	Adoptable
1.008	9	1800	Manhole	Adoptable	10	1800	Manhole	Adoptable
11.000	58	1200	Manhole	Adoptable	59	1200	Manhole	Adoptable
11.001	59	1200	Manhole	Adoptable	60	1200	Manhole	Adoptable
11.002	60	1200	Manhole	Adoptable	61	1500	Manhole	Adoptable

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Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
11.003	45.870	177.8	375	Circular_Default Sewer Type	60.155	58.574	1.206	61.013	58.316	2.322
1.009	29.779	200.0	900	Circular_Default Sewer Type	61.013	57.791	2.322	60.269	57.642	1.727
1.010	45.329	24.0	750	Circular_Default Sewer Type	60.269	57.642	1.877	57.832	55.753	1.329
1.011	20.441	16.0	750	Circular_Default Sewer Type	57.832	55.753	1.329	56.499	54.475	1.274
1.012	16.505	16.0	750	Circular_Default Sewer Type	56.499	54.475	1.274	55.453	53.443	1.260
1.013	17.998	13.8	750	Circular_Default Sewer Type	55.453	53.443	1.260	54.227	52.139	1.338
12.000	34.190	19.0	225	Circular_Default Sewer Type	61.089	59.664	1.200	59.628	57.865	1.538
12.001	34.859	40.0	300	Circular_Default Sewer Type	59.628	57.790	1.538	58.527	56.919	1.308
12.002	42.481	60.0	300	Circular_Default Sewer Type	58.527	56.919	1.308	57.820	56.211	1.309
12.003	28.345	80.0	375	Circular_Default Sewer Type	57.820	56.136	1.309	57.536	55.782	1.379
12.004	14.920	80.0	375	Circular_Default Sewer Type	57.536	55.782	1.379	57.535	55.595	1.565
13.000	18.307	27.9	225	Circular_Default Sewer Type	57.925	56.400	1.300	57.535	55.745	1.565
12.005	43.990	27.0	375	Circular_Default Sewer Type	57.535	55.595	1.565	55.875	53.966	1.534
12.006	17.441	24.1	375	Circular_Default Sewer Type	55.875	53.966	1.534	55.236	53.241	1.620
14.000	13.468	100.0	225	Circular_Default Sewer Type	54.951	53.526	1.200	55.236	53.391	1.620
12.007	43.730	100.0	450	Circular_Default Sewer Type	55.236	53.166	1.620	55.350	52.729	2.171
12.008	27.835	96.0	450	Circular_Default Sewer Type	55.350	52.729	2.171	54.227	52.439	1.338
1.014	16.899	15.0	750	Circular_Default Sewer Type	54.227	52.139	1.338	53.048	51.012	1.286
1.015	17.299	15.0	750	Circular_Default Sewer Type	53.048	51.012	1.286	51.857	49.859	1.248
1.016	21.312	15.0	750	Circular_Default Sewer Type	51.857	49.859	1.248	50.419	48.438	1.231
1.017	38.493	14.0	750	Circular_Default Sewer Type	50.419	48.438	1.231	47.811	45.688	1.373
1.018	44.374	25.0	750	Circular_Default Sewer Type	47.811	45.688	1.373	46.210	43.913	1.547
1.019	32.508	25.0	750	Circular_Default Sewer Type	46.210	43.913	1.547	44.663	42.613	1.300
1.020	29.577	15.0	750	Circular_Default Sewer Type	44.663	42.613	1.300	42.666	40.641	1.275
15.000	45.969	18.0	225	Circular_Default Sewer Type	50.714	49.000	1.489	48.148	46.446	1.477

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
11.003	61	1500	Manhole	Adoptable	10	1800	Manhole	Adoptable
1.009	10	1800	Manhole	Adoptable	11	1800	Manhole	Adoptable
1.010	11	1800	Manhole	Adoptable	12	1800	Manhole	Adoptable
1.011	12	1800	Manhole	Adoptable	13	1800	Manhole	Adoptable
1.012	13	1800	Manhole	Adoptable	14	1800	Manhole	Adoptable
1.013	14	1800	Manhole	Adoptable	15	1800	Manhole	Adoptable
12.000	62	1500	Manhole	Adoptable	63	1200	Manhole	Adoptable
12.001	63	1200	Manhole	Adoptable	64	1200	Manhole	Adoptable
12.002	64	1200	Manhole	Adoptable	65	1500	Manhole	Adoptable
12.003	65	1500	Manhole	Adoptable	66	1500	Manhole	Adoptable
12.004	66	1500	Manhole	Adoptable	67	1500	Manhole	Adoptable
13.000	70	1200	Manhole	Adoptable	67	1500	Manhole	Adoptable
12.005	67	1500	Manhole	Adoptable	68	1500	Manhole	Adoptable
12.006	68	1500	Manhole	Adoptable	69	1800	Manhole	Adoptable
14.000	71	1200	Manhole	Adoptable	69	1800	Manhole	Adoptable
12.007	69	1800	Manhole	Adoptable	26	1500	Manhole	Adoptable
12.008	26	1500	Manhole	Adoptable	15	1800	Manhole	Adoptable
1.014	15	1800	Manhole	Adoptable	16	1800	Manhole	Adoptable
1.015	16	1800	Manhole	Adoptable	17	1800	Manhole	Adoptable
1.016	17	1800	Manhole	Adoptable	18	1800	Manhole	Adoptable
1.017	18	1800	Manhole	Adoptable	19	1800	Manhole	Adoptable
1.018	19	1800	Manhole	Adoptable	20	1800	Manhole	Adoptable
1.019	20	1800	Manhole	Adoptable	21	1800	Manhole	Adoptable
1.020	21	1800	Manhole	Adoptable	22	1800	Manhole	Adoptable
15.000	27	1200	Manhole	Adoptable	28	1200	Manhole	Adoptable

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Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
16.000	12.136	26.3	225	Circular_Default Sewer Type	48.333	46.908	1.200	48.148	46.446	1.477
15.001	7.537	80.0	300	Circular_Default Sewer Type	48.148	46.371	1.477	47.880	46.277	1.303
15.002	51.363	26.0	300	Circular_Default Sewer Type	47.880	46.277	1.303	45.888	44.302	1.286
15.003	29.513	26.0	375	Circular_Default Sewer Type	45.888	44.227	1.286	44.737	43.092	1.270
15.004	17.319	70.0	450	Circular_Default Sewer Type	44.737	43.017	1.270	44.466	42.770	1.246
15.005	16.492	70.0	450	Circular_Default Sewer Type	44.466	42.770	1.246	44.275	42.534	1.291
15.006	24.071	70.0	450	Circular_Default Sewer Type	44.275	42.534	1.291	43.973	42.190	1.333
15.007	46.683	80.0	450	Circular_Default Sewer Type	43.973	42.190	1.333	43.353	41.606	1.297
15.008	25.684	38.6	450	Circular_Default Sewer Type	43.353	41.606	1.297	42.666	40.941	1.275
1.021	27.891	15.0	750	Circular_Default Sewer Type	42.666	40.641	1.275	40.810	38.782	1.278
1.022	29.419	18.0	900	Circular_Default Sewer Type	40.810	38.632	1.278	39.327	36.998	1.429
1.023	32.497	33.0	900	Circular_Default Sewer Type	39.327	36.998	1.429	38.515	36.012	1.603
17.000	24.151	27.4	225	Circular_Default Sewer Type	38.993	37.568	1.200	38.515	36.687	1.603
1.024	78.640	300.0	1050	Circular_Default Sewer Type	38.515	35.862	1.603	37.300	35.600	0.650
18.000	38.596	25.0	225	Circular_Default Sewer Type	52.928	51.503	1.200	51.409	49.959	1.225
18.001	19.506	24.0	225	Circular_Default Sewer Type	51.409	49.959	1.225	50.606	49.146	1.235
18.002	30.854	16.4	225	Circular_Default Sewer Type	50.606	49.146	1.235	49.354	47.264	1.865
19.000	61.678	20.0	225	Circular_Default Sewer Type	51.908	50.483	1.200	48.952	47.399	1.328
19.001	10.770	80.0	300	Circular_Default Sewer Type	48.952	47.324	1.328	49.354	47.189	1.865
18.003	59.370	25.0	300	Circular_Default Sewer Type	49.354	47.189	1.865	46.447	44.814	1.333
18.004	39.910	20.0	375	Circular_Default Sewer Type	46.447	44.739	1.333	44.475	42.744	1.356
18.005	21.452	20.0	375	Circular_Default Sewer Type	44.475	42.744	1.356	43.408	41.671	1.362
18.006	21.824	20.0	375	Circular_Default Sewer Type	43.408	41.671	1.362	42.306	40.580	1.351
18.007	23.331	20.0	375	Circular_Default Sewer Type	42.306	40.580	1.351	41.106	39.413	1.318
18.008	27.000	30.0	375	Circular_Default Sewer Type	41.106	39.413	1.318	40.195	38.513	1.307

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
16.000	79	1200	Manhole	Adoptable	28	1200	Manhole	Adoptable
15.001	28	1200	Manhole	Adoptable	72	1200	Manhole	Adoptable
15.002	72	1200	Manhole	Adoptable	73	1500	Manhole	Adoptable
15.003	73	1500	Manhole	Adoptable	74	1500	Manhole	Adoptable
15.004	74	1500	Manhole	Adoptable	75	1500	Manhole	Adoptable
15.005	75	1500	Manhole	Adoptable	76	1500	Manhole	Adoptable
15.006	76	1500	Manhole	Adoptable	77	1500	Manhole	Adoptable
15.007	77	1500	Manhole	Adoptable	78	1500	Manhole	Adoptable
15.008	78	1500	Manhole	Adoptable	22	1800	Manhole	Adoptable
1.021	22	1800	Manhole	Adoptable	23	1800	Manhole	Adoptable
1.022	23	1800	Manhole	Adoptable	24	1800	Manhole	Adoptable
1.023	24	1800	Manhole	Adoptable	25	1950	Manhole	Adoptable
17.000	80	1200	Manhole	Adoptable	25	1950	Manhole	Adoptable
1.024	25	1950	Manhole	Adoptable	29	1950	Manhole	Adoptable
18.000	81	1200	Manhole	Adoptable	82	1200	Manhole	Adoptable
18.001	82	1200	Manhole	Adoptable	83	1200	Manhole	Adoptable
18.002	83	1200	Manhole	Adoptable	84	1200	Manhole	Adoptable
19.000	96	1200	Manhole	Adoptable	97	1200	Manhole	Adoptable
19.001	97	1200	Manhole	Adoptable	84	1200	Manhole	Adoptable
18.003	84	1200	Manhole	Adoptable	85	1500	Manhole	Adoptable
18.004	85	1500	Manhole	Adoptable	86	1500	Manhole	Adoptable
18.005	86	1500	Manhole	Adoptable	87	1500	Manhole	Adoptable
18.006	87	1500	Manhole	Adoptable	88	1500	Manhole	Adoptable
18.007	88	1500	Manhole	Adoptable	89	1500	Manhole	Adoptable
18.008	89	1500	Manhole	Adoptable	90	1500	Manhole	Adoptable

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Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
18.009	68.047	40.0	375	Circular_Default Sewer Type	40.195	38.513	1.307	38.495	36.812	1.308
18.010	21.507	120.0	450	Circular_Default Sewer Type	38.495	36.737	1.308	38.317	36.558	1.309
18.011	27.702	200.0	600	Circular_Default Sewer Type	38.317	36.408	1.309	38.671	36.269	1.802
18.012	27.215	200.0	600	Circular_Default Sewer Type	38.671	36.269	1.802	38.994	36.133	2.261
18.013	80.747	200.0	600	Circular_Default Sewer Type	38.994	36.133	2.261	37.300	35.729	0.971
27.000	6.000	500.0	900	Circular_Default Sewer Type	36.800	35.242	0.658	36.800	35.230	0.670
27.001	19.055	220.0	300	Circular_Default Sewer Type	36.800	35.177	1.323	36.000	35.090	0.610

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
18.009	90	1500	Manhole	Adoptable	91	1500	Manhole	Adoptable
18.010	91	1500	Manhole	Adoptable	92	1500	Manhole	Adoptable
18.011	92	1500	Manhole	Adoptable	93	1500	Manhole	Adoptable
18.012	93	1500	Manhole	Adoptable	94	1500	Manhole	Adoptable
18.013	94	1500	Manhole	Adoptable	95	1500	Manhole	Adoptable
27.000	30	1800	Manhole	Adoptable	125	1800	Manhole	Adoptable
27.001	125	1800	Manhole	Adoptable	126	1200	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections		Link	IL (m)	Dia (mm)
1	440202.830	405258.642	66.085	1.785	1500		0	1.000	64.300	225
127	440182.788	405235.724	65.336	1.425	1500		0	2.000	63.911	225
2	440194.012	405236.657	65.510	4.010	1200		1	2.000	63.770	225
							2	1.000	63.770	225
							0	1.001	61.500	225
3	440195.807	405215.082	65.324	4.115	1200		1	1.001	61.284	225
							0	1.002	61.209	300
31	440258.240	405173.425	64.265	1.615	1500		0	3.000	62.650	300
4	440206.154	405163.064	64.840	4.060	1500		1	3.000	62.296	300
							2	1.002	60.855	300
							0	1.003	60.780	375
32	440125.800	405244.862	64.578	1.425	1500		0	4.000	63.153	225

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
37	440153.345	405227.311	64.961	1.425	1500				
						0	5.000	63.536	225
33	440130.207	405222.708	64.645	3.720	1200	1	5.000	63.002	225
						2	4.000	63.002	225
						0	4.001	60.925	300
34	440138.929	405178.860	64.000	3.278	1200	1	4.001	60.722	300
						0	4.002	60.722	300
38	440151.286	405116.734	63.523	1.425	1200				
						0	6.000	62.098	225
35	440147.466	405135.940	63.768	3.320	1500	1	6.000	61.967	225
						2	4.002	60.523	300
						0	4.003	60.448	375
36	440167.735	405139.972	64.076	3.722	1500	1	4.003	60.354	375
						0	4.004	60.354	375
5	440209.110	405148.202	64.650	4.638	1500	1	4.004	60.162	375
						2	1.003	60.162	375
						0	1.004	60.012	525
6	440217.335	405106.852	64.017	4.146	1500	1	1.004	59.871	525
						0	1.005	59.871	525
39	440479.861	405157.536	65.362	1.562	1500				
						0	7.000	63.800	225
41	440468.975	405142.147	64.458	1.780	1200	1	7.000	62.753	225
						0	7.001	62.678	300
49	440325.575	405226.388	65.516	1.425	1200				
						0	8.000	64.091	225
55	440282.895	405233.605	65.916	1.425	1200				
						0	9.000	64.491	225
50	440300.971	405230.548	65.710	1.944	1200	1	9.000	63.841	225
						2	8.000	63.841	225
						0	8.001	63.766	300

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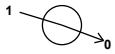
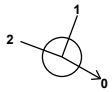
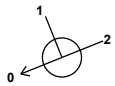
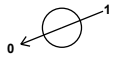
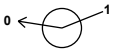
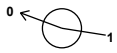
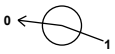
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections		Link	IL (m)	Dia (mm)
51	440291.308	405173.406	64.246	1.843	1500		1	8.001	62.478	300
							0	8.002	62.403	375
52	440308.336	405168.216	63.886	1.706	1800		1	8.002	62.255	375
							0	8.003	62.180	450
56	440425.051	405189.269	65.334	1.425	1200					
							0	10.000	63.909	225
57	440404.509	405194.711	65.887	2.244	1200		1	10.000	63.643	225
							0	10.001	63.643	225
53	440384.129	405139.989	63.959	2.318	1500		1	10.001	61.866	225
							2	8.003	61.641	450
							0	8.004	61.641	450
54	440401.182	405130.385	63.484	2.006	1500		1	8.004	61.478	450
							0	8.005	61.478	450
42	440406.517	405117.088	63.096	1.737	1800		1	8.005	61.359	450
							2	7.001	61.509	300
							0	7.002	61.359	450
43	440376.373	405104.984	62.679	1.801	1500		1	7.002	60.953	450
							0	7.003	60.878	525
44	440341.671	405091.071	61.017	1.913	1800		1	7.003	59.179	525
							0	7.004	59.104	600
45	440326.576	405093.441	60.638	1.990	1800		1	7.004	58.798	600
							0	7.005	58.648	750
46	440291.788	405106.367	61.602	3.060	1800		1	7.005	58.542	750
							0	7.006	58.542	750
47	440265.497	405109.581	62.478	4.012	1800		1	7.006	58.466	750
							0	7.007	58.466	750
48	440235.470	405103.609	63.490	5.111	1800		1	7.007	58.379	750
							0	7.008	58.379	750

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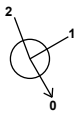
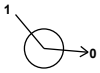
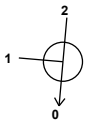
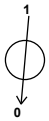
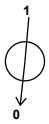
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections		Link	IL (m)	Dia (mm)
7	440221.546	405095.588	63.718	5.536	1800		1	7.008	58.332	750
							2	1.005	59.831	525
							0	1.006	58.182	900
8	440232.666	405076.284	63.177	5.059	1800		1	1.006	58.118	900
							0	1.007	58.118	900
9	440242.043	405026.737	61.999	4.025	1800		1	1.007	57.974	900
							0	1.008	57.974	900
58	440204.706	405069.310	62.810	1.425	1200					
							0	11.000	61.385	225
59	440176.572	405063.714	62.400	1.568	1200		1	11.000	60.907	225
							0	11.001	60.832	300
60	440189.553	404998.455	60.223	1.537	1200		1	11.001	58.686	300
							0	11.002	58.686	300
61	440193.130	404994.186	60.155	1.581	1500		1	11.002	58.649	300
							0	11.003	58.574	375
10	440238.831	404990.256	61.013	3.222	1800		1	11.003	58.316	375
							2	1.008	57.791	900
							0	1.009	57.791	900
11	440236.219	404960.592	60.269	2.627	1800		1	1.009	57.642	900
							0	1.010	57.642	750
12	440232.243	404915.438	57.832	2.079	1800		1	1.010	55.753	750
							0	1.011	55.753	750
13	440230.056	404895.114	56.499	2.024	1800		1	1.011	54.475	750
							0	1.012	54.475	750
14	440221.525	404880.985	55.453	2.010	1800		1	1.012	53.443	750
							0	1.013	53.443	750
62	440274.673	405031.441	61.089	1.425	1500					
							0	12.000	59.664	225

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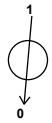
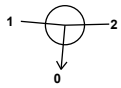
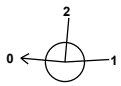
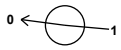
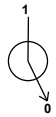
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections		Link	IL (m)	Dia (mm)
63	440308.731	405028.442	59.628	1.838	1200		1	12.000	57.865	225
							0	12.001	57.790	300
64	440305.673	404993.717	58.527	1.608	1200		1	12.001	56.919	300
							0	12.002	56.919	300
65	440301.947	404951.400	57.820	1.684	1500		1	12.002	56.211	300
							0	12.003	56.136	375
66	440299.461	404923.164	57.536	1.754	1500		1	12.003	55.782	375
							0	12.004	55.782	375
70	440266.309	404924.407	57.925	1.525	1200					
							0	13.000	56.400	225
67	440284.545	404922.801	57.535	1.940	1500		1	13.000	55.745	225
							2	12.004	55.595	375
							0	12.005	55.595	375
68	440280.686	404878.981	55.875	1.909	1500		1	12.005	53.966	375
							0	12.006	53.966	375
71	440292.604	404862.367	54.951	1.425	1200					
							0	14.000	53.526	225
69	440279.157	404861.607	55.236	2.070	1800		1	14.000	53.391	225
							2	12.006	53.241	375
							0	12.007	53.166	450
26	440235.601	404865.506	55.350	2.621	1500		1	12.007	52.729	450
							0	12.008	52.729	450
15	440208.000	404869.110	54.227	2.088	1800		1	12.008	52.439	450
							2	1.013	52.139	750
							0	1.014	52.139	750
16	440200.127	404854.157	53.048	2.036	1800		1	1.014	51.012	750
							0	1.015	51.012	750
17	440199.951	404836.859	51.857	1.998	1800		1	1.015	49.859	750
							0	1.016	49.859	750

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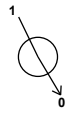
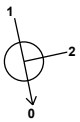
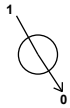
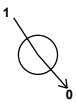
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections		Link	IL (m)	Dia (mm)
18	440209.235	404817.676	50.419	1.981	1800		1	1.016	48.438	750
							0	1.017	48.438	750
19	440228.935	404784.606	47.811	2.123	1800		1	1.017	45.688	750
							0	1.018	45.688	750
20	440266.797	404761.465	46.210	2.297	1800		1	1.018	43.913	750
							0	1.019	43.913	750
21	440251.633	404732.710	44.663	2.050	1800		1	1.019	42.613	750
							0	1.020	42.613	750
27	440155.001	404867.584	50.714	1.714	1200		0	15.000	49.000	225
79	440107.505	404869.719	48.333	1.425	1200		0	16.000	46.908	225
28	440110.073	404857.858	48.148	1.777	1200		1	16.000	46.446	225
							2	15.000	46.446	225
							0	15.001	46.371	300
72	440111.576	404850.472	47.880	1.603	1200		1	15.001	46.277	300
							0	15.002	46.277	300
73	440138.674	404806.839	45.888	1.661	1500		1	15.002	44.302	300
							0	15.003	44.227	375
74	440150.924	404779.988	44.737	1.720	1500		1	15.003	43.092	375
							0	15.004	43.017	450
75	440159.315	404764.838	44.466	1.696	1500		1	15.004	42.770	450
							0	15.005	42.770	450
76	440168.366	404751.051	44.275	1.741	1500		1	15.005	42.534	450
							0	15.006	42.534	450
77	440184.251	404732.965	43.973	1.783	1500		1	15.006	42.190	450
							0	15.007	42.190	450

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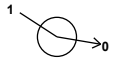
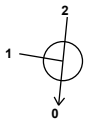
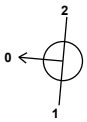
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections		Link	IL (m)	Dia (mm)
78	440223.405	404707.543	43.353	1.747	1500		1	15.007	41.606	450
							0	15.008	41.606	450
22	440248.732	404703.276	42.666	2.025	1800		1	15.008	40.941	450
							2	1.020	40.641	750
							0	1.021	40.641	750
23	440245.996	404675.520	40.810	2.178	1800		1	1.021	38.782	750
							0	1.022	38.632	900
24	440224.636	404655.291	39.327	2.329	1800		1	1.022	36.998	900
							0	1.023	36.998	900
80	440184.434	404650.481	38.993	1.425	1200		0	17.000	37.568	225
25	440201.041	404632.946	38.515	2.653	1950		1	17.000	36.687	225
							2	1.023	36.012	900
							0	1.024	35.862	1050
29	440143.943	404578.872	37.300	1.942	1950		1	1.024	35.600	1050
81	440102.807	405015.180	52.928	1.425	1200		0	18.000	51.503	225
82	440111.766	404977.638	51.409	1.450	1200		1	18.000	49.959	225
							0	18.001	49.959	225
83	440115.380	404958.470	50.606	1.460	1200		1	18.001	49.146	225
							0	18.002	49.146	225
96	440173.169	404911.597	51.908	1.425	1200		0	19.000	50.483	225
97	440111.729	404917.007	48.952	1.628	1200		1	19.000	47.399	225
							0	19.001	47.324	300
84	440112.674	404927.735	49.354	2.165	1200		1	19.001	47.189	300
							2	18.002	47.264	225
							0	18.003	47.189	300

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections		Link	IL (m)	Dia (mm)
85	440053.533	404932.943	46.447	1.708	1500		1	18.003	44.814	300
							0	18.004	44.739	375
86	440050.032	404893.187	44.475	1.731	1500		1	18.004	42.744	375
							0	18.005	42.744	375
87	440046.532	404872.022	43.408	1.737	1500		1	18.005	41.671	375
							0	18.006	41.671	375
88	440048.108	404850.255	42.306	1.726	1500		1	18.006	40.580	375
							0	18.007	40.580	375
89	440053.981	404827.675	41.106	1.693	1500		1	18.007	39.413	375
							0	18.008	39.413	375
90	440068.537	404804.935	40.195	1.682	1500		1	18.008	38.513	375
							0	18.009	38.513	375
91	440102.303	404745.857	38.495	1.758	1500		1	18.009	36.812	375
							0	18.010	36.737	450
92	440110.995	404726.185	38.317	1.909	1500		1	18.010	36.558	450
							0	18.011	36.408	600
93	440127.211	404703.725	38.671	2.402	1500		1	18.011	36.269	600
							0	18.012	36.269	600
94	440146.380	404684.406	38.994	2.861	1500		1	18.012	36.133	600
							0	18.013	36.133	600
95	440111.956	404611.364	37.300	1.942	1500		1	18.013	35.729	600
30	440147.998	404565.910	36.800	1.558	1800		0	27.000	35.242	900
125	440153.563	404563.666	36.800	1.623	1800		1	27.000	35.230	900
							0	27.001	35.177	300

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
126	440171.236	404556.542	36.000	0.910	1200	1	27.001	35.090	300

Simulation Settings

Rainfall Methodology	FSR	Skip Steady State	✓
Rainfall Events	Singular	Drain Down Time (mins)	240
FSR Region	England and Wales	Additional Storage (m³/ha)	20.0
M5-60 (mm)	19.000	Starting Level (m)	
Ratio-R	0.400	Check Discharge Rate(s)	✓
Summer CV	0.750	Check Discharge Volume	✓
Winter CV	0.840	100 year 360 minute (m³)	
Analysis Speed	Detailed		

Storm Durations

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

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0
30	0	0	0
100	40	0	0

Pre-development Discharge Rate

Site Makeup	Greenfield	Growth Factor 30 year	1.95
Greenfield Method	IH124	Growth Factor 100 year	2.48
Positively Drained Area (ha)		Betterment (%)	0
SAAR (mm)		QBar	
Soil Index	1	Q 1 year (l/s)	
SPR	0.10	Q 30 year (l/s)	
Region	1	Q 100 year (l/s)	
Growth Factor 1 year	0.85		

Pre-development Discharge Volume

Site Makeup	Greenfield	Return Period (years)	100
Greenfield Method	FSR/FEH	Climate Change (%)	0
Positively Drained Area (ha)		Storm Duration (mins)	360
Soil Index	1	Betterment (%)	0
SPR	0.10	PR	
CWI		Runoff Volume (m³)	

Node 125 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	35.177	Product Number	CTL-SHE-0256-3610-1000-3610
Design Depth (m)	1.000	Min Outlet Diameter (m)	0.300
Design Flow (l/s)	36.1	Min Node Diameter (mm)	1800

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Node 30 Flow through Pond Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Main Channel Length (m)	58.000
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	35.242	Main Channel Slope (1:X)	500.0
Safety Factor	2.0	Time to half empty (mins)	0	Main Channel n	0.030

Inlets

95	29

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	6687.0	0.0	1.500	8273.0	0.0

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Results for 2 year Critical Storm Duration. Lowest mass balance: 99.89%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1	10	64.388	0.088	24.0	0.2939	0.0000	OK
15 minute winter	127	10	63.941	0.030	2.1	0.0572	0.0000	OK
15 minute winter	2	10	61.628	0.128	29.7	0.1604	0.0000	OK
15 minute winter	3	11	61.377	0.168	52.9	0.3026	0.0000	OK
15 minute winter	31	11	62.779	0.129	35.1	0.5541	0.0000	OK
15 minute winter	4	11	60.916	0.136	101.0	0.2995	0.0000	OK
15 minute winter	32	10	63.218	0.065	7.6	0.1551	0.0000	OK
15 minute winter	37	10	63.599	0.063	13.0	0.1777	0.0000	OK
15 minute winter	33	11	61.042	0.117	24.8	0.1491	0.0000	OK
15 minute winter	34	11	60.888	0.166	42.7	0.2965	0.0000	OK
15 minute winter	38	10	62.148	0.050	4.5	0.0743	0.0000	OK
15 minute winter	35	11	60.616	0.168	47.9	0.3081	0.0000	OK
15 minute winter	36	11	60.529	0.175	56.9	0.3637	0.0000	OK
15 minute winter	5	11	60.327	0.315	168.0	0.6496	0.0000	OK
15 minute winter	6	12	60.197	0.326	174.6	0.6765	0.0000	OK
15 minute winter	39	10	63.856	0.056	16.1	0.1667	0.0000	OK
15 minute winter	41	10	62.784	0.106	39.9	0.2862	0.0000	OK
15 minute winter	49	10	64.200	0.109	23.2	0.3269	0.0000	OK
15 minute winter	55	10	64.555	0.064	16.4	0.1580	0.0000	OK
15 minute winter	50	11	63.881	0.115	50.6	0.2101	0.0000	OK
15 minute winter	51	11	62.561	0.158	58.8	0.3725	0.0000	OK
15 minute winter	52	11	62.371	0.191	98.7	1.0212	0.0000	OK
15 minute winter	56	10	63.988	0.079	15.2	0.1873	0.0000	OK
15 minute winter	57	11	63.738	0.095	34.0	0.2011	0.0000	OK
15 minute winter	53	11	61.890	0.249	136.7	0.4888	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	1	1.000	2	23.6	1.682	0.302	0.3320	
15 minute winter	127	2.000	2	2.0	0.682	0.035	0.0338	
15 minute winter	2	1.001	3	29.4	1.312	0.566	0.4852	
15 minute winter	3	1.002	4	52.5	1.322	0.580	2.1060	
15 minute winter	31	3.000	4	34.0	1.190	0.375	1.5156	
15 minute winter	4	1.003	5	101.3	2.723	0.250	0.6262	
15 minute winter	32	4.000	33	7.4	0.796	0.174	0.2093	
15 minute winter	37	5.000	33	12.7	1.433	0.162	0.2095	
15 minute winter	33	4.001	34	24.5	0.767	0.329	1.4590	
15 minute winter	34	4.002	35	41.5	1.077	0.557	1.6918	
15 minute winter	38	6.000	35	4.3	0.685	0.102	0.1244	
15 minute winter	35	4.003	36	47.5	0.970	0.354	1.0125	
15 minute winter	36	4.004	5	56.6	1.162	0.421	2.0540	
15 minute winter	5	1.004	6	164.2	1.196	0.589	5.7881	
15 minute winter	6	1.005	7	175.1	1.354	0.628	1.5541	
15 minute winter	39	7.000	41	15.9	2.100	0.129	0.1428	
15 minute winter	41	7.001	42	39.0	1.744	0.266	1.5907	
15 minute winter	49	8.000	50	22.6	1.238	0.435	0.4568	
15 minute winter	55	9.000	50	16.2	1.792	0.165	0.1658	
15 minute winter	50	8.001	51	50.0	2.055	0.301	1.4112	
15 minute winter	51	8.002	52	59.3	1.422	0.325	0.7428	
15 minute winter	52	8.003	53	99.8	1.300	0.379	6.2146	
15 minute winter	56	10.000	57	15.0	1.057	0.258	0.3021	
15 minute winter	57	10.001	53	33.2	2.103	0.364	0.9209	
15 minute winter	53	8.004	54	135.1	1.446	0.458	1.8364	

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Results for 2 year Critical Storm Duration. Lowest mass balance: 99.89%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	54	11	61.745	0.267	145.5	0.6414	0.0000	OK
15 minute winter	42	11	61.626	0.267	211.0	1.2023	0.0000	OK
15 minute winter	43	11	61.049	0.171	216.9	0.4178	0.0000	OK
15 minute winter	44	11	59.333	0.229	231.8	0.8325	0.0000	OK
15 minute winter	45	12	59.010	0.362	256.7	1.5052	0.0000	OK
15 minute winter	46	12	58.919	0.377	260.8	1.0389	0.0000	OK
15 minute winter	47	12	58.842	0.376	275.7	1.1663	0.0000	OK
15 minute winter	48	12	58.741	0.362	273.2	0.9208	0.0000	OK
15 minute winter	7	12	58.649	0.467	448.8	1.2333	0.0000	OK
15 minute winter	8	12	58.552	0.434	454.5	1.2168	0.0000	OK
15 minute winter	9	13	58.372	0.398	460.9	1.1172	0.0000	OK
15 minute winter	58	10	61.464	0.079	17.1	0.1984	0.0000	OK
15 minute winter	59	10	60.933	0.101	50.1	0.3617	0.0000	OK
15 minute winter	60	11	58.869	0.183	51.4	0.2361	0.0000	OK
15 minute winter	61	11	58.760	0.186	69.8	0.6007	0.0000	OK
15 minute winter	10	13	58.187	0.396	528.9	1.1436	0.0000	OK
15 minute winter	11	13	57.892	0.250	541.9	0.8407	0.0000	OK
15 minute winter	12	13	55.989	0.236	546.4	0.6917	0.0000	OK
15 minute winter	13	13	54.727	0.252	557.5	0.9235	0.0000	OK
15 minute winter	14	13	53.671	0.228	557.3	0.5809	0.0000	OK
15 minute winter	62	10	59.737	0.073	26.6	0.2874	0.0000	OK
15 minute winter	63	10	57.892	0.102	45.2	0.2381	0.0000	OK
15 minute winter	64	11	57.055	0.136	57.8	0.2797	0.0000	OK
15 minute winter	65	11	56.285	0.149	69.5	0.3981	0.0000	OK
15 minute winter	66	11	55.962	0.180	86.2	0.5220	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	54	8.005	42	144.3	1.491	0.489	1.4029	
15 minute winter	42	7.002	43	207.0	2.270	0.572	2.9821	
15 minute winter	43	7.003	44	216.5	3.724	0.209	2.1744	
15 minute winter	44	7.004	45	231.7	2.505	0.238	1.4326	
15 minute winter	45	7.005	46	256.5	1.196	0.390	8.0243	
15 minute winter	46	7.006	47	260.6	1.178	0.396	5.8602	
15 minute winter	47	7.007	48	273.2	1.268	0.415	6.5968	
15 minute winter	48	7.008	7	272.5	1.411	0.409	3.1122	
15 minute winter	7	1.006	8	445.6	1.404	0.420	7.0701	
15 minute winter	8	1.007	9	455.6	1.596	0.429	14.3992	
15 minute winter	9	1.008	10	465.9	1.734	0.331	9.8708	
15 minute winter	58	11.000	59	16.7	1.385	0.249	0.3462	
15 minute winter	59	11.001	60	49.3	1.532	0.246	2.1818	
15 minute winter	60	11.002	61	51.1	1.229	0.564	0.2314	
15 minute winter	61	11.003	10	69.8	1.320	0.466	2.4259	
15 minute winter	10	1.009	11	531.2	2.598	0.378	6.1351	
15 minute winter	11	1.010	12	542.4	4.397	0.214	5.5928	
15 minute winter	12	1.011	13	546.2	4.404	0.176	2.5357	
15 minute winter	13	1.012	14	557.3	4.597	0.180	2.0021	
15 minute winter	14	1.013	15	556.8	4.343	0.167	2.3381	
15 minute winter	62	12.000	63	26.2	2.388	0.218	0.3748	
15 minute winter	63	12.001	64	44.8	1.732	0.254	0.9032	
15 minute winter	64	12.002	65	57.1	1.897	0.397	1.2780	
15 minute winter	65	12.003	66	69.9	1.506	0.312	1.3166	
15 minute winter	66	12.004	67	86.7	1.925	0.387	0.6724	

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Results for 2 year Critical Storm Duration. Lowest mass balance: 99.89%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	70	10	56.455	0.055	12.1	0.1117	0.0000	OK
15 minute winter	67	11	55.737	0.142	114.6	0.3974	0.0000	OK
15 minute winter	68	11	54.123	0.157	126.6	0.3937	0.0000	OK
15 minute winter	71	10	53.593	0.067	9.3	0.1262	0.0000	OK
15 minute winter	69	11	53.392	0.226	149.4	0.7563	0.0000	OK
15 minute winter	26	11	52.959	0.230	150.0	0.4060	0.0000	OK
15 minute winter	15	13	52.415	0.276	688.2	0.7594	0.0000	OK
15 minute winter	16	13	51.288	0.276	693.2	0.8121	0.0000	OK
15 minute winter	17	13	50.133	0.274	697.1	0.7767	0.0000	OK
15 minute winter	18	13	48.680	0.242	707.7	0.8640	0.0000	OK
15 minute winter	19	13	45.979	0.291	716.2	0.9581	0.0000	OK
15 minute winter	20	13	44.227	0.314	724.5	1.0030	0.0000	OK
15 minute winter	21	13	42.872	0.259	728.3	0.7685	0.0000	OK
15 minute winter	27	10	49.068	0.068	24.9	0.1911	0.0000	OK
15 minute winter	79	10	46.971	0.063	16.9	0.1576	0.0000	OK
15 minute winter	28	10	46.523	0.152	50.6	0.2617	0.0000	OK
15 minute winter	72	10	46.399	0.122	73.4	0.3443	0.0000	OK
15 minute winter	73	11	44.355	0.128	91.0	0.3965	0.0000	OK
15 minute winter	74	11	43.179	0.162	91.0	0.2866	0.0000	OK
15 minute winter	75	11	42.947	0.177	104.7	0.4845	0.0000	OK
15 minute winter	76	11	42.713	0.179	113.8	0.4236	0.0000	OK
15 minute winter	77	11	42.390	0.200	134.3	0.6294	0.0000	OK
15 minute winter	78	11	41.780	0.174	144.4	0.4271	0.0000	OK
15 minute winter	22	13	40.943	0.302	854.9	0.9800	0.0000	OK
15 minute winter	23	13	38.912	0.280	864.1	0.9406	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	70	13.000	67	11.9	1.654	0.121	0.1322	
15 minute winter	67	12.005	68	115.0	2.819	0.298	1.7960	
15 minute winter	68	12.006	69	126.9	2.996	0.310	0.7421	
15 minute winter	71	14.000	69	9.1	0.962	0.176	0.1281	
15 minute winter	69	12.007	26	150.0	1.863	0.464	3.5211	
15 minute winter	26	12.008	15	148.3	1.951	0.449	2.1258	
15 minute winter	15	1.014	16	689.2	4.691	0.215	2.4831	
15 minute winter	16	1.015	17	694.2	4.744	0.217	2.5315	
15 minute winter	17	1.016	18	697.7	5.200	0.218	2.8611	
15 minute winter	18	1.017	19	708.4	5.048	0.214	5.4092	
15 minute winter	19	1.018	20	717.1	4.316	0.289	7.3752	
15 minute winter	20	1.019	21	724.0	4.687	0.292	5.0279	
15 minute winter	21	1.020	22	726.9	4.880	0.227	4.4473	
15 minute winter	27	15.000	28	24.6	2.308	0.200	0.5053	
15 minute winter	79	16.000	28	16.8	1.688	0.165	0.1271	
15 minute winter	28	15.001	72	49.9	1.599	0.401	0.2354	
15 minute winter	72	15.002	73	72.3	2.763	0.330	1.3444	
15 minute winter	73	15.003	74	91.0	2.844	0.231	0.9446	
15 minute winter	74	15.004	75	91.4	1.672	0.236	0.9471	
15 minute winter	75	15.005	76	105.3	1.805	0.272	0.9625	
15 minute winter	76	15.006	77	114.3	1.803	0.296	1.5264	
15 minute winter	77	15.007	78	134.6	2.162	0.372	2.9085	
15 minute winter	78	15.008	22	143.5	2.695	0.275	1.3677	
15 minute winter	22	1.021	23	855.3	5.716	0.267	4.1775	
15 minute winter	23	1.022	24	864.1	4.513	0.184	5.6396	

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Results for 2 year Critical Storm Duration. Lowest mass balance: 99.89%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	24	13	37.334	0.336	869.6	1.0163	0.0000	OK
15 minute winter	80	10	37.627	0.059	14.3	0.1346	0.0000	OK
15 minute winter	25	13	36.418	0.556	878.7	1.6590	0.0000	OK
15 minute winter	29	14	36.009	0.651	879.5	1.9443	0.0000	OK
15 minute winter	81	10	51.564	0.061	17.3	0.1555	0.0000	OK
15 minute winter	82	10	50.046	0.087	32.3	0.2036	0.0000	OK
15 minute winter	83	10	49.241	0.095	45.2	0.2066	0.0000	OK
15 minute winter	96	10	50.559	0.076	28.7	0.2628	0.0000	OK
15 minute winter	97	10	47.431	0.107	27.9	0.1206	0.0000	OK
15 minute winter	84	11	47.318	0.129	82.0	0.2120	0.0000	OK
15 minute winter	85	11	44.864	0.125	106.5	0.4418	0.0000	OK
15 minute winter	86	11	42.884	0.140	118.2	0.3585	0.0000	OK
15 minute winter	87	11	41.810	0.139	118.7	0.2458	0.0000	OK
15 minute winter	88	11	40.723	0.143	131.8	0.3845	0.0000	OK
15 minute winter	89	11	39.587	0.174	145.8	0.4822	0.0000	OK
15 minute winter	90	11	38.696	0.183	146.1	0.3234	0.0000	OK
15 minute winter	91	11	36.994	0.257	158.8	0.6759	0.0000	OK
15 minute winter	92	12	36.672	0.264	165.5	0.6511	0.0000	OK
15 minute winter	93	12	36.532	0.263	166.5	0.4642	0.0000	OK
15 minute winter	94	12	36.383	0.250	174.0	0.5244	0.0000	OK
15 minute winter	95	13	35.656	0.298	170.3	0.5273	0.0000	OK
480 minute winter	30	376	35.462	0.220	116.1	0.5592	0.0000	OK
480 minute winter	125	376	35.459	0.282	35.2	0.7183	0.0000	OK
15 minute summer	126	1	35.090	0.000	24.0	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	24	1.023	25	869.7	3.651	0.250	8.0060	
15 minute winter	80	17.000	25	14.1	1.753	0.141	0.1942	
15 minute winter	25	1.024	29	879.5	2.010	0.512	34.4096	
15 minute winter	29	Flow through Pond	30	1110.4	0.199	0.003	541.3920	
15 minute winter	81	18.000	82	17.1	1.504	0.164	0.4412	
15 minute winter	82	18.001	83	31.9	2.132	0.299	0.2918	
15 minute winter	83	18.002	84	44.5	2.897	0.345	0.4748	
15 minute winter	96	19.000	97	27.9	2.405	0.239	0.7169	
15 minute winter	97	19.001	84	27.8	1.092	0.223	0.2752	
15 minute winter	84	18.003	85	82.2	2.904	0.368	1.6796	
15 minute winter	85	18.004	86	107.0	3.075	0.238	1.3900	
15 minute winter	86	18.005	87	118.7	3.185	0.264	0.8000	
15 minute winter	87	18.006	88	119.0	3.137	0.265	0.8276	
15 minute winter	88	18.007	89	132.0	2.979	0.294	1.0348	
15 minute winter	89	18.008	90	146.1	2.825	0.399	1.3961	
15 minute winter	90	18.009	91	146.4	2.754	0.462	3.6176	
15 minute winter	91	18.010	92	155.8	1.799	0.528	1.8658	
15 minute winter	92	18.011	93	166.5	1.401	0.343	3.2937	
15 minute winter	93	18.012	94	167.7	1.464	0.345	3.1268	
15 minute winter	94	18.013	95	170.3	1.585	0.351	8.6770	
15 minute winter	95	Flow through Pond	30	1110.4	0.199	0.003	541.3920	
480 minute winter	30	27.000	125	35.2	0.539	0.040	0.7398	
480 minute winter	125	Hydro-Brake®	126	35.2				1056.5

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Results for 2 year 480 minute summer. 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 summer	1	248	64.334	0.034	3.7	0.1122	0.0000	OK
480 minute summer	127	248	63.923	0.012	0.3	0.0229	0.0000	OK
480 minute summer	2	248	61.546	0.046	4.6	0.0576	0.0000	OK
480 minute summer	3	248	61.271	0.062	8.3	0.1107	0.0000	OK
480 minute summer	31	248	62.700	0.050	5.4	0.2132	0.0000	OK
480 minute summer	4	248	60.833	0.053	16.1	0.1161	0.0000	OK
480 minute summer	32	248	63.179	0.026	1.2	0.0625	0.0000	OK
480 minute summer	37	248	63.561	0.025	2.0	0.0706	0.0000	OK
480 minute summer	33	248	60.971	0.046	3.9	0.0590	0.0000	OK
480 minute summer	34	248	60.784	0.062	6.8	0.1101	0.0000	OK
480 minute summer	38	248	62.118	0.020	0.7	0.0304	0.0000	OK
480 minute summer	35	248	60.510	0.062	7.8	0.1139	0.0000	OK
480 minute summer	36	248	60.421	0.067	9.4	0.1403	0.0000	OK
480 minute summer	5	248	60.123	0.111	27.3	0.2290	0.0000	OK
480 minute summer	6	248	59.992	0.121	29.0	0.2504	0.0000	OK
480 minute summer	39	248	63.822	0.022	2.5	0.0665	0.0000	OK
480 minute summer	41	248	62.720	0.042	6.2	0.1133	0.0000	OK
480 minute summer	49	248	64.132	0.041	3.6	0.1222	0.0000	OK
480 minute summer	55	248	64.516	0.025	2.5	0.0618	0.0000	OK
480 minute summer	50	248	63.811	0.045	7.9	0.0817	0.0000	OK
480 minute summer	51	248	62.462	0.059	9.3	0.1387	0.0000	OK
480 minute summer	52	248	62.253	0.073	15.7	0.3934	0.0000	OK
480 minute summer	56	248	63.940	0.031	2.4	0.0735	0.0000	OK
480 minute summer	57	248	63.680	0.037	5.3	0.0781	0.0000	OK
480 minute summer	53	248	61.726	0.085	21.6	0.1667	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	3.7	1.006	0.047	0.0871	
480 minute summer	127	2.000	2	0.3	0.384	0.005	0.0088	
480 minute summer	2	1.001	3	4.6	0.803	0.089	0.1240	
480 minute summer	3	1.002	4	8.3	0.807	0.092	0.5457	
480 minute summer	31	3.000	4	5.4	0.711	0.060	0.4032	
480 minute summer	4	1.003	5	16.1	1.771	0.040	0.1378	
480 minute summer	32	4.000	33	1.2	0.471	0.028	0.0576	
480 minute summer	37	5.000	33	2.0	0.841	0.025	0.0561	
480 minute summer	33	4.001	34	3.9	0.456	0.052	0.3849	
480 minute summer	34	4.002	35	6.8	0.663	0.091	0.4486	
480 minute summer	38	6.000	35	0.7	0.401	0.017	0.0342	
480 minute summer	35	4.003	36	7.8	0.617	0.058	0.2615	
480 minute summer	36	4.004	5	9.4	0.709	0.070	0.5594	
480 minute summer	5	1.004	6	27.3	0.774	0.098	1.4888	
480 minute summer	6	1.005	7	29.0	0.824	0.104	0.4234	
480 minute summer	39	7.000	41	2.5	1.230	0.020	0.0383	
480 minute summer	41	7.001	42	6.2	1.040	0.042	0.4012	
480 minute summer	49	8.000	50	3.6	0.751	0.069	0.1197	
480 minute summer	55	9.000	50	2.5	1.051	0.025	0.0436	
480 minute summer	50	8.001	51	7.9	1.218	0.048	0.3759	
480 minute summer	51	8.002	52	9.3	0.864	0.051	0.1918	
480 minute summer	52	8.003	53	15.7	0.841	0.060	1.5146	
480 minute summer	56	10.000	57	2.4	0.638	0.041	0.0802	
480 minute summer	57	10.001	53	5.3	1.254	0.058	0.2469	
480 minute summer	53	8.004	54	21.6	1.001	0.073	0.4225	

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Results for 2 year 480 minute summer. 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 summer	54	248	61.568	0.090	23.3	0.2165	0.0000	OK
480 minute summer	42	248	61.454	0.095	34.0	0.4291	0.0000	OK
480 minute summer	43	248	60.945	0.067	35.6	0.1642	0.0000	OK
480 minute summer	44	248	59.189	0.085	38.4	0.3093	0.0000	OK
480 minute summer	45	248	58.780	0.132	42.7	0.5469	0.0000	OK
480 minute summer	46	248	58.677	0.135	43.6	0.3730	0.0000	OK
480 minute summer	47	248	58.605	0.139	46.6	0.4321	0.0000	OK
480 minute summer	48	248	58.519	0.140	46.6	0.3561	0.0000	OK
480 minute summer	7	248	58.354	0.172	76.3	0.4538	0.0000	OK
480 minute summer	8	248	58.284	0.166	78.1	0.4657	0.0000	OK
480 minute summer	9	248	58.123	0.149	79.5	0.4181	0.0000	OK
480 minute summer	58	248	61.415	0.030	2.6	0.0768	0.0000	OK
480 minute summer	59	248	60.872	0.040	7.8	0.1446	0.0000	OK
480 minute summer	60	248	58.751	0.065	8.1	0.0840	0.0000	OK
480 minute summer	61	248	58.644	0.070	11.2	0.2248	0.0000	OK
480 minute summer	10	248	57.952	0.161	92.1	0.4661	0.0000	OK
480 minute summer	11	248	57.743	0.101	95.0	0.3409	0.0000	OK
480 minute summer	12	248	55.845	0.092	96.1	0.2708	0.0000	OK
480 minute summer	13	248	54.572	0.097	99.2	0.3565	0.0000	OK
480 minute summer	14	248	53.532	0.089	99.2	0.2274	0.0000	OK
480 minute summer	62	248	59.693	0.029	4.1	0.1128	0.0000	OK
480 minute summer	63	248	57.831	0.041	7.0	0.0946	0.0000	OK
480 minute summer	64	248	56.970	0.051	9.0	0.1058	0.0000	OK
480 minute summer	65	248	56.192	0.056	11.0	0.1494	0.0000	OK
480 minute summer	66	248	55.848	0.066	13.7	0.1921	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	54	8.005	42	23.3	0.993	0.079	0.3363	
480 minute summer	42	7.002	43	34.0	1.428	0.094	0.7733	
480 minute summer	43	7.003	44	35.6	2.256	0.034	0.5899	
480 minute summer	44	7.004	45	38.4	1.650	0.039	0.3556	
480 minute summer	45	7.005	46	42.7	0.807	0.065	1.9630	
480 minute summer	46	7.006	47	43.6	0.791	0.066	1.4592	
480 minute summer	47	7.007	48	46.6	0.826	0.071	1.7267	
480 minute summer	48	7.008	7	46.6	0.877	0.070	0.8549	
480 minute summer	7	1.006	8	76.3	0.928	0.072	1.8320	
480 minute summer	8	1.007	9	78.1	1.052	0.074	3.7480	
480 minute summer	9	1.008	10	79.4	1.093	0.056	2.6646	
480 minute summer	58	11.000	59	2.6	0.819	0.039	0.0911	
480 minute summer	59	11.001	60	7.8	0.941	0.039	0.5615	
480 minute summer	60	11.002	61	8.1	0.761	0.089	0.0593	
480 minute summer	61	11.003	10	11.2	0.805	0.075	0.6386	
480 minute summer	10	1.009	11	92.1	1.613	0.065	1.7262	
480 minute summer	11	1.010	12	95.0	2.866	0.038	1.5042	
480 minute summer	12	1.011	13	96.1	2.989	0.031	0.6570	
480 minute summer	13	1.012	14	99.2	3.161	0.032	0.5178	
480 minute summer	14	1.013	15	99.1	2.971	0.030	0.6024	
480 minute summer	62	12.000	63	4.1	1.405	0.034	0.0998	
480 minute summer	63	12.001	64	7.0	1.030	0.040	0.2381	
480 minute summer	64	12.002	65	9.0	1.139	0.063	0.3356	
480 minute summer	65	12.003	66	11.0	0.947	0.049	0.3298	
480 minute summer	66	12.004	67	13.7	1.190	0.061	0.1721	

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Results for 2 year 480 minute summer. 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 summer	70	248	56.422	0.022	1.9	0.0449	0.0000	OK
480 minute summer	67	248	55.650	0.055	18.3	0.1550	0.0000	OK
480 minute summer	68	248	54.024	0.058	20.2	0.1465	0.0000	OK
480 minute summer	71	248	53.552	0.026	1.4	0.0487	0.0000	OK
480 minute summer	69	248	53.249	0.083	23.8	0.2783	0.0000	OK
480 minute summer	26	248	52.813	0.084	23.8	0.1477	0.0000	OK
480 minute summer	15	248	52.244	0.105	123.5	0.2900	0.0000	OK
480 minute summer	16	248	51.118	0.106	124.6	0.3102	0.0000	OK
480 minute summer	17	248	49.965	0.106	125.4	0.3006	0.0000	OK
480 minute summer	18	248	48.537	0.099	128.1	0.3516	0.0000	OK
480 minute summer	19	248	45.805	0.117	130.2	0.3843	0.0000	OK
480 minute summer	20	248	44.036	0.123	132.1	0.3949	0.0000	OK
480 minute summer	21	248	42.717	0.104	133.3	0.3090	0.0000	OK
480 minute summer	27	248	49.028	0.028	3.9	0.0776	0.0000	OK
480 minute summer	79	248	46.933	0.025	2.6	0.0633	0.0000	OK
480 minute summer	28	248	46.426	0.055	7.9	0.0944	0.0000	OK
480 minute summer	72	248	46.324	0.047	11.5	0.1329	0.0000	OK
480 minute summer	73	248	44.277	0.050	14.4	0.1533	0.0000	OK
480 minute summer	74	248	43.077	0.060	14.4	0.1062	0.0000	OK
480 minute summer	75	248	42.835	0.065	16.6	0.1780	0.0000	OK
480 minute summer	76	248	42.600	0.066	18.0	0.1557	0.0000	OK
480 minute summer	77	248	42.266	0.076	21.3	0.2391	0.0000	OK
480 minute summer	78	248	41.671	0.065	22.9	0.1606	0.0000	OK
480 minute summer	22	248	40.759	0.118	158.1	0.3816	0.0000	OK
480 minute summer	23	248	38.744	0.112	160.4	0.3778	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	70	13.000	67	1.9	0.971	0.019	0.0358	
480 minute summer	67	12.005	68	18.3	1.750	0.047	0.4602	
480 minute summer	68	12.006	69	20.2	1.910	0.049	0.1845	
480 minute summer	71	14.000	69	1.4	0.565	0.027	0.0334	
480 minute summer	69	12.007	26	23.8	1.180	0.074	0.8820	
480 minute summer	26	12.008	15	23.8	1.206	0.072	0.5495	
480 minute summer	15	1.014	16	123.5	3.289	0.039	0.6348	
480 minute summer	16	1.015	17	124.6	3.301	0.039	0.6531	
480 minute summer	17	1.016	18	125.4	3.489	0.039	0.7662	
480 minute summer	18	1.017	19	128.1	3.304	0.039	1.4933	
480 minute summer	19	1.018	20	130.1	2.867	0.053	2.0146	
480 minute summer	20	1.019	21	132.1	3.148	0.053	1.3684	
480 minute summer	21	1.020	22	133.3	3.297	0.042	1.1965	
480 minute summer	27	15.000	28	3.9	1.412	0.032	0.1270	
480 minute summer	79	16.000	28	2.6	1.085	0.026	0.0291	
480 minute summer	28	15.001	72	7.9	1.003	0.064	0.0594	
480 minute summer	72	15.002	73	11.5	1.650	0.053	0.3580	
480 minute summer	73	15.003	74	14.4	1.702	0.037	0.2497	
480 minute summer	74	15.004	75	14.4	1.082	0.037	0.2306	
480 minute summer	75	15.005	76	16.6	1.168	0.043	0.2344	
480 minute summer	76	15.006	77	18.0	1.129	0.047	0.3847	
480 minute summer	77	15.007	78	21.3	1.341	0.059	0.7432	
480 minute summer	78	15.008	22	22.9	1.648	0.044	0.3569	
480 minute summer	22	1.021	23	158.0	3.752	0.049	1.1758	
480 minute summer	23	1.022	24	160.4	3.037	0.034	1.5576	

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Results for 2 year 480 minute summer. 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 summer	24	248	37.135	0.137	161.9	0.4134	0.0000	OK
480 minute summer	80	248	37.591	0.023	2.2	0.0536	0.0000	OK
480 minute summer	25	248	36.082	0.220	164.0	0.6573	0.0000	OK
480 minute summer	29	248	35.572	0.214	163.7	0.6396	0.0000	OK
480 minute summer	81	248	51.528	0.025	2.7	0.0633	0.0000	OK
480 minute summer	82	248	49.992	0.033	5.1	0.0784	0.0000	OK
480 minute summer	83	248	49.182	0.036	7.2	0.0797	0.0000	OK
480 minute summer	96	248	50.513	0.030	4.4	0.1037	0.0000	OK
480 minute summer	97	248	47.363	0.039	4.4	0.0436	0.0000	OK
480 minute summer	84	248	47.239	0.050	13.1	0.0816	0.0000	OK
480 minute summer	85	248	44.789	0.050	17.1	0.1748	0.0000	OK
480 minute summer	86	248	42.797	0.053	18.9	0.1367	0.0000	OK
480 minute summer	87	248	41.724	0.053	18.9	0.0935	0.0000	OK
480 minute summer	88	248	40.635	0.055	21.0	0.1467	0.0000	OK
480 minute summer	89	248	39.477	0.064	23.3	0.1782	0.0000	OK
480 minute summer	90	248	38.582	0.069	23.3	0.1219	0.0000	OK
480 minute summer	91	248	36.829	0.092	25.3	0.2425	0.0000	OK
480 minute summer	92	248	36.506	0.098	27.1	0.2420	0.0000	OK
480 minute summer	93	248	36.367	0.098	27.1	0.1735	0.0000	OK
480 minute summer	94	248	36.231	0.098	28.4	0.2054	0.0000	OK
480 minute summer	95	248	35.452	0.094	28.4	0.1664	0.0000	OK
480 minute summer	30	352	35.444	0.202	142.0	0.5151	0.0000	OK
480 minute summer	125	352	35.441	0.264	34.9	0.6725	0.0000	OK
480 minute summer	126	8	35.090	0.000	34.9	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)
480 minute summer	24	1.023	25	161.8	2.795	0.047	1.8820	
480 minute summer	80	17.000	25	2.2	1.023	0.022	0.0519	
480 minute summer	25	1.024	29	163.7	1.284	0.095	10.0230	
480 minute summer	29	Flow through Pond	30	142.0	0.040	0.000	978.2810	
480 minute summer	81	18.000	82	2.7	0.898	0.026	0.1167	
480 minute summer	82	18.001	83	5.1	1.306	0.048	0.0763	
480 minute summer	83	18.002	84	7.2	1.747	0.056	0.1272	
480 minute summer	96	19.000	97	4.4	1.414	0.038	0.1919	
480 minute summer	97	19.001	84	4.4	0.688	0.035	0.0692	
480 minute summer	84	18.003	85	13.1	1.739	0.059	0.4474	
480 minute summer	85	18.004	86	17.1	1.887	0.038	0.3617	
480 minute summer	86	18.005	87	18.9	1.990	0.042	0.2038	
480 minute summer	87	18.006	88	18.9	1.953	0.042	0.2113	
480 minute summer	88	18.007	89	21.0	1.876	0.047	0.2618	
480 minute summer	89	18.008	90	23.3	1.767	0.064	0.3565	
480 minute summer	90	18.009	91	23.3	1.696	0.073	0.9352	
480 minute summer	91	18.010	92	25.3	1.125	0.086	0.4838	
480 minute summer	92	18.011	93	27.1	0.905	0.056	0.8292	
480 minute summer	93	18.012	94	27.1	0.905	0.056	0.8146	
480 minute summer	94	18.013	95	28.4	0.961	0.058	2.3853	
480 minute summer	95	Flow through Pond	30	142.0	0.040	0.000	978.2810	
480 minute summer	30	27.000	125	34.9	0.532	0.039	0.6587	
480 minute summer	125	Hydro-Brake®	126	34.9				982.1

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Results for 2 year 480 minute winter. 720 minute analysis at 8 minute timestep. Mass balance: 99.93%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
480 minute winter	1	248	64.329	0.029	2.8	0.0980	0.0000	OK
480 minute winter	127	200	63.921	0.010	0.2	0.0191	0.0000	OK
480 minute winter	2	248	61.540	0.040	3.5	0.0502	0.0000	OK
480 minute winter	3	248	61.262	0.053	6.2	0.0958	0.0000	OK
480 minute winter	31	248	62.693	0.043	4.0	0.1840	0.0000	OK
480 minute winter	4	248	60.825	0.045	12.0	0.1003	0.0000	OK
480 minute winter	32	248	63.176	0.023	0.9	0.0545	0.0000	OK
480 minute winter	37	240	63.558	0.022	1.5	0.0614	0.0000	OK
480 minute winter	33	248	60.965	0.040	2.9	0.0511	0.0000	OK
480 minute winter	34	248	60.775	0.053	5.1	0.0955	0.0000	OK
480 minute winter	38	232	62.115	0.017	0.5	0.0259	0.0000	OK
480 minute winter	35	248	60.501	0.053	5.8	0.0979	0.0000	OK
480 minute winter	36	248	60.412	0.058	7.0	0.1212	0.0000	OK
480 minute winter	5	248	60.108	0.096	20.4	0.1972	0.0000	OK
480 minute winter	6	248	59.975	0.104	21.7	0.2154	0.0000	OK
480 minute winter	39	248	63.820	0.020	1.9	0.0584	0.0000	OK
480 minute winter	41	248	62.715	0.037	4.7	0.0992	0.0000	OK
480 minute winter	49	248	64.126	0.035	2.7	0.1060	0.0000	OK
480 minute winter	55	248	64.513	0.022	1.9	0.0541	0.0000	OK
480 minute winter	50	248	63.805	0.039	6.0	0.0716	0.0000	OK
480 minute winter	51	248	62.455	0.052	7.1	0.1212	0.0000	OK
480 minute winter	52	248	62.244	0.064	11.9	0.3440	0.0000	OK
480 minute winter	56	248	63.936	0.027	1.8	0.0641	0.0000	OK
480 minute winter	57	248	63.675	0.032	4.0	0.0681	0.0000	OK
480 minute winter	53	248	61.715	0.074	16.4	0.1446	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	2.8	0.927	0.036	0.0716	
480 minute winter	127	2.000	2	0.2	0.342	0.003	0.0066	
480 minute winter	2	1.001	3	3.5	0.742	0.067	0.1021	
480 minute winter	3	1.002	4	6.2	0.741	0.068	0.4440	
480 minute winter	31	3.000	4	4.0	0.651	0.044	0.3262	
480 minute winter	4	1.003	5	12.0	1.627	0.030	0.1118	
480 minute winter	32	4.000	33	0.9	0.432	0.021	0.0471	
480 minute winter	37	5.000	33	1.5	0.772	0.019	0.0458	
480 minute winter	33	4.001	34	2.9	0.419	0.039	0.3132	
480 minute winter	34	4.002	35	5.1	0.610	0.068	0.3659	
480 minute winter	38	6.000	35	0.5	0.361	0.012	0.0271	
480 minute winter	35	4.003	36	5.8	0.569	0.043	0.2108	
480 minute winter	36	4.004	5	7.0	0.652	0.052	0.4534	
480 minute winter	5	1.004	6	20.4	0.716	0.073	1.2006	
480 minute winter	6	1.005	7	21.7	0.763	0.078	0.3422	
480 minute winter	39	7.000	41	1.9	1.136	0.015	0.0315	
480 minute winter	41	7.001	42	4.7	0.957	0.032	0.3306	
480 minute winter	49	8.000	50	2.7	0.691	0.052	0.0975	
480 minute winter	55	9.000	50	1.9	0.968	0.019	0.0360	
480 minute winter	50	8.001	51	6.0	1.123	0.036	0.3098	
480 minute winter	51	8.002	52	7.1	0.799	0.039	0.1582	
480 minute winter	52	8.003	53	11.9	0.779	0.045	1.2396	
480 minute winter	56	10.000	57	1.8	0.585	0.031	0.0657	
480 minute winter	57	10.001	53	4.0	1.154	0.044	0.2024	
480 minute winter	53	8.004	54	16.4	0.934	0.056	0.3436	

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Results for 2 year 480 minute winter. 720 minute analysis at 8 minute timestep. Mass balance: 99.93%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
480 minute winter	54	248	61.556	0.078	17.7	0.1874	0.0000	OK
480 minute winter	42	248	61.442	0.083	25.8	0.3728	0.0000	OK
480 minute winter	43	248	60.937	0.059	27.0	0.1438	0.0000	OK
480 minute winter	44	248	59.178	0.074	29.1	0.2685	0.0000	OK
480 minute winter	45	248	58.762	0.114	32.3	0.4741	0.0000	OK
480 minute winter	46	248	58.659	0.117	32.9	0.3219	0.0000	OK
480 minute winter	47	248	58.586	0.120	35.1	0.3732	0.0000	OK
480 minute winter	48	248	58.500	0.121	35.1	0.3076	0.0000	OK
480 minute winter	7	248	58.330	0.148	57.3	0.3909	0.0000	OK
480 minute winter	8	248	58.262	0.144	58.6	0.4036	0.0000	OK
480 minute winter	9	248	58.102	0.128	59.7	0.3603	0.0000	OK
480 minute winter	58	248	61.412	0.027	2.0	0.0677	0.0000	OK
480 minute winter	59	248	60.867	0.035	5.8	0.1256	0.0000	OK
480 minute winter	60	248	58.742	0.056	6.0	0.0718	0.0000	OK
480 minute winter	61	248	58.634	0.060	8.3	0.1937	0.0000	OK
480 minute winter	10	248	57.931	0.140	69.1	0.4049	0.0000	OK
480 minute winter	11	248	57.730	0.088	71.3	0.2965	0.0000	OK
480 minute winter	12	248	55.833	0.080	72.1	0.2349	0.0000	OK
480 minute winter	13	248	54.559	0.084	74.3	0.3085	0.0000	OK
480 minute winter	14	248	53.520	0.077	74.3	0.1968	0.0000	OK
480 minute winter	62	248	59.689	0.025	3.1	0.0988	0.0000	OK
480 minute winter	63	248	57.826	0.036	5.3	0.0828	0.0000	OK
480 minute winter	64	248	56.964	0.045	6.8	0.0922	0.0000	OK
480 minute winter	65	248	56.185	0.049	8.3	0.1306	0.0000	OK
480 minute winter	66	248	55.839	0.057	10.3	0.1663	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	54	8.005	42	17.7	0.926	0.060	0.2740	
480 minute winter	42	7.002	43	25.8	1.321	0.071	0.6345	
480 minute winter	43	7.003	44	27.0	2.080	0.026	0.4853	
480 minute winter	44	7.004	45	29.1	1.527	0.030	0.2912	
480 minute winter	45	7.005	46	32.3	0.754	0.049	1.5904	
480 minute winter	46	7.006	47	32.9	0.739	0.050	1.1795	
480 minute winter	47	7.007	48	35.1	0.769	0.053	1.3970	
480 minute winter	48	7.008	7	35.1	0.819	0.053	0.6899	
480 minute winter	7	1.006	8	57.3	0.861	0.054	1.4833	
480 minute winter	8	1.007	9	58.6	0.975	0.055	3.0348	
480 minute winter	9	1.008	10	59.7	1.012	0.042	2.1605	
480 minute winter	58	11.000	59	2.0	0.756	0.030	0.0759	
480 minute winter	59	11.001	60	5.8	0.868	0.029	0.4519	
480 minute winter	60	11.002	61	6.0	0.700	0.066	0.0477	
480 minute winter	61	11.003	10	8.3	0.738	0.055	0.5159	
480 minute winter	10	1.009	11	69.1	1.484	0.049	1.4075	
480 minute winter	11	1.010	12	71.3	2.647	0.028	1.2225	
480 minute winter	12	1.011	13	72.0	2.776	0.023	0.5312	
480 minute winter	13	1.012	14	74.3	2.937	0.024	0.4183	
480 minute winter	14	1.013	15	74.3	2.763	0.022	0.4863	
480 minute winter	62	12.000	63	3.1	1.292	0.026	0.0820	
480 minute winter	63	12.001	64	5.3	0.950	0.030	0.1954	
480 minute winter	64	12.002	65	6.8	1.051	0.047	0.2750	
480 minute winter	65	12.003	66	8.3	0.875	0.037	0.2690	
480 minute winter	66	12.004	67	10.3	1.099	0.046	0.1400	

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Results for 2 year 480 minute winter. 720 minute analysis at 8 minute timestep. Mass balance: 99.93%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
480 minute winter	70	240	56.419	0.019	1.4	0.0388	0.0000	OK
480 minute winter	67	248	55.643	0.048	13.7	0.1349	0.0000	OK
480 minute winter	68	248	54.016	0.050	15.1	0.1266	0.0000	OK
480 minute winter	71	248	53.549	0.023	1.1	0.0434	0.0000	OK
480 minute winter	69	248	53.238	0.072	17.9	0.2415	0.0000	OK
480 minute winter	26	248	52.801	0.072	17.9	0.1279	0.0000	OK
480 minute winter	15	248	52.230	0.091	92.6	0.2503	0.0000	OK
480 minute winter	16	248	51.103	0.091	93.4	0.2678	0.0000	OK
480 minute winter	17	248	49.951	0.092	94.0	0.2595	0.0000	OK
480 minute winter	18	248	48.524	0.086	96.0	0.3065	0.0000	OK
480 minute winter	19	248	45.789	0.101	97.6	0.3330	0.0000	OK
480 minute winter	20	248	44.020	0.107	99.1	0.3412	0.0000	OK
480 minute winter	21	248	42.703	0.090	100.0	0.2680	0.0000	OK
480 minute winter	27	248	49.024	0.024	2.9	0.0675	0.0000	OK
480 minute winter	79	248	46.930	0.022	2.0	0.0557	0.0000	OK
480 minute winter	28	248	46.418	0.047	6.0	0.0820	0.0000	OK
480 minute winter	72	248	46.318	0.041	8.7	0.1160	0.0000	OK
480 minute winter	73	248	44.270	0.043	10.9	0.1340	0.0000	OK
480 minute winter	74	248	43.069	0.052	10.9	0.0926	0.0000	OK
480 minute winter	75	248	42.827	0.057	12.5	0.1546	0.0000	OK
480 minute winter	76	248	42.591	0.057	13.5	0.1350	0.0000	OK
480 minute winter	77	248	42.256	0.066	15.9	0.2070	0.0000	OK
480 minute winter	78	248	41.663	0.057	17.1	0.1390	0.0000	OK
480 minute winter	22	248	40.742	0.101	118.5	0.3293	0.0000	OK
480 minute winter	23	248	38.729	0.097	120.3	0.3276	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	70	13.000	67	1.4	0.887	0.014	0.0289	
480 minute winter	67	12.005	68	13.7	1.614	0.035	0.3738	
480 minute winter	68	12.006	69	15.1	1.758	0.037	0.1499	
480 minute winter	71	14.000	69	1.1	0.526	0.021	0.0281	
480 minute winter	69	12.007	26	17.9	1.091	0.055	0.7174	
480 minute winter	26	12.008	15	17.9	1.113	0.054	0.4477	
480 minute winter	15	1.014	16	92.6	3.059	0.029	0.5118	
480 minute winter	16	1.015	17	93.4	3.069	0.029	0.5267	
480 minute winter	17	1.016	18	94.0	3.222	0.029	0.6220	
480 minute winter	18	1.017	19	96.0	3.042	0.029	1.2165	
480 minute winter	19	1.018	20	97.6	2.652	0.039	1.6329	
480 minute winter	20	1.019	21	99.1	2.916	0.040	1.1088	
480 minute winter	21	1.020	22	100.0	3.058	0.031	0.9682	
480 minute winter	27	15.000	28	2.9	1.292	0.024	0.1032	
480 minute winter	79	16.000	28	2.0	1.004	0.020	0.0242	
480 minute winter	28	15.001	72	6.0	0.932	0.048	0.0486	
480 minute winter	72	15.002	73	8.7	1.519	0.040	0.2942	
480 minute winter	73	15.003	74	10.9	1.566	0.028	0.2054	
480 minute winter	74	15.004	75	10.9	1.004	0.028	0.1881	
480 minute winter	75	15.005	76	12.5	1.083	0.032	0.1905	
480 minute winter	76	15.006	77	13.5	1.043	0.035	0.3122	
480 minute winter	77	15.007	78	15.9	1.234	0.044	0.6026	
480 minute winter	78	15.008	22	17.1	1.514	0.033	0.2901	
480 minute winter	22	1.021	23	118.5	3.465	0.037	0.9547	
480 minute winter	23	1.022	24	120.2	2.815	0.026	1.2581	

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Results for 2 year 480 minute winter. 720 minute analysis at 8 minute timestep. Mass balance: 99.93%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
480 minute winter	24	248	37.116	0.118	121.3	0.3569	0.0000	OK
480 minute winter	80	248	37.589	0.021	1.7	0.0474	0.0000	OK
480 minute winter	25	248	36.052	0.190	123.0	0.5684	0.0000	OK
480 minute winter	29	256	35.538	0.180	122.9	0.5389	0.0000	OK
480 minute winter	81	248	51.525	0.022	2.0	0.0548	0.0000	OK
480 minute winter	82	248	49.988	0.029	3.8	0.0681	0.0000	OK
480 minute winter	83	248	49.177	0.031	5.3	0.0686	0.0000	OK
480 minute winter	96	248	50.509	0.026	3.3	0.0904	0.0000	OK
480 minute winter	97	248	47.358	0.034	3.3	0.0379	0.0000	OK
480 minute winter	84	248	47.232	0.043	9.7	0.0705	0.0000	OK
480 minute winter	85	248	44.782	0.043	12.7	0.1518	0.0000	OK
480 minute winter	86	248	42.790	0.046	14.1	0.1184	0.0000	OK
480 minute winter	87	248	41.717	0.046	14.1	0.0810	0.0000	OK
480 minute winter	88	248	40.628	0.048	15.7	0.1277	0.0000	OK
480 minute winter	89	248	39.469	0.056	17.4	0.1540	0.0000	OK
480 minute winter	90	248	38.573	0.060	17.4	0.1055	0.0000	OK
480 minute winter	91	248	36.816	0.079	18.9	0.2090	0.0000	OK
480 minute winter	92	248	36.493	0.084	20.2	0.2086	0.0000	OK
480 minute winter	93	248	36.354	0.085	20.2	0.1496	0.0000	OK
480 minute winter	94	248	36.218	0.085	21.1	0.1775	0.0000	OK
480 minute winter	95	376	35.462	0.104	21.1	0.1841	0.0000	OK
480 minute winter	30	376	35.462	0.220	116.1	0.5592	0.0000	OK
480 minute winter	125	376	35.459	0.282	35.2	0.7184	0.0000	OK
480 minute winter	126	8	35.090	0.000	35.2	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	24	1.023	25	121.3	2.580	0.035	1.5285	
480 minute winter	80	17.000	25	1.7	0.949	0.017	0.0433	
480 minute winter	25	1.024	29	122.9	1.184	0.072	8.1644	
480 minute winter	29	Flow through Pond	30	116.1	0.043	0.000	1097.2179	
480 minute winter	81	18.000	82	2.0	0.820	0.019	0.0949	
480 minute winter	82	18.001	83	3.8	1.202	0.036	0.0617	
480 minute winter	83	18.002	84	5.3	1.597	0.041	0.1024	
480 minute winter	96	19.000	97	3.3	1.296	0.028	0.1571	
480 minute winter	97	19.001	84	3.3	0.636	0.027	0.0561	
480 minute winter	84	18.003	85	9.7	1.592	0.043	0.3618	
480 minute winter	85	18.004	86	12.7	1.725	0.028	0.2938	
480 minute winter	86	18.005	87	14.1	1.831	0.031	0.1652	
480 minute winter	87	18.006	88	14.1	1.791	0.031	0.1718	
480 minute winter	88	18.007	89	15.7	1.726	0.035	0.2127	
480 minute winter	89	18.008	90	17.4	1.629	0.047	0.2889	
480 minute winter	90	18.009	91	17.4	1.558	0.055	0.7598	
480 minute winter	91	18.010	92	18.9	1.037	0.064	0.3922	
480 minute winter	92	18.011	93	20.2	0.837	0.042	0.6685	
480 minute winter	93	18.012	94	20.2	0.836	0.042	0.6577	
480 minute winter	94	18.013	95	21.1	0.881	0.043	1.9329	
480 minute winter	95	Flow through Pond	30	116.1	0.043	0.000	1097.2179	
480 minute winter	30	27.000	125	35.2	0.539	0.040	0.7399	
480 minute winter	125	Hydro-Brake®	126	35.2				1056.5

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Results for 30 year Critical Storm Duration. Lowest mass balance: 99.73%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1	10	64.430	0.130	45.5	0.4334	0.0000	OK
15 minute winter	127	10	63.951	0.040	3.9	0.0782	0.0000	OK
15 minute winter	2	11	61.797	0.297	56.5	0.3711	0.0000	SURCHARGED
15 minute winter	3	11	61.507	0.298	98.8	0.5354	0.0000	OK
15 minute winter	31	11	62.843	0.193	66.5	0.8252	0.0000	OK
15 minute winter	4	11	60.985	0.205	187.4	0.4525	0.0000	OK
15 minute winter	32	10	63.246	0.093	14.4	0.2206	0.0000	OK
15 minute winter	37	10	63.625	0.089	24.6	0.2521	0.0000	OK
15 minute winter	33	11	61.094	0.169	47.0	0.2152	0.0000	OK
15 minute winter	34	11	60.997	0.275	81.3	0.4918	0.0000	OK
15 minute winter	38	10	62.168	0.070	8.5	0.1041	0.0000	OK
15 minute winter	35	12	60.719	0.271	89.8	0.4986	0.0000	OK
15 minute winter	36	12	60.664	0.310	106.5	0.6436	0.0000	OK
15 minute winter	5	11	60.557	0.545	305.6	1.1232	0.0000	SURCHARGED
15 minute winter	6	11	60.361	0.490	323.7	1.0170	0.0000	OK
15 minute winter	39	10	63.880	0.080	30.5	0.2353	0.0000	OK
15 minute winter	41	10	62.828	0.150	75.7	0.4037	0.0000	OK
15 minute winter	49	10	64.258	0.167	43.9	0.5029	0.0000	OK
15 minute winter	55	10	64.582	0.091	31.1	0.2234	0.0000	OK
15 minute winter	50	10	63.933	0.167	96.0	0.3057	0.0000	OK
15 minute winter	51	11	62.639	0.236	111.1	0.5542	0.0000	OK
15 minute winter	52	10	62.455	0.275	187.9	1.4723	0.0000	OK
15 minute winter	56	10	64.025	0.116	28.8	0.2751	0.0000	OK
15 minute winter	57	10	63.782	0.139	64.4	0.2940	0.0000	OK
15 minute winter	53	12	62.224	0.583	257.8	1.1463	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	1	1.000	2	44.8	1.962	0.574	0.5408	
15 minute winter	127	2.000	2	3.8	0.816	0.066	0.0529	
15 minute winter	2	1.001	3	55.1	1.417	1.059	0.8603	
15 minute winter	3	1.002	4	95.1	1.470	1.050	3.4653	
15 minute winter	31	3.000	4	64.5	1.384	0.713	2.4762	
15 minute winter	4	1.003	5	187.6	2.730	0.463	1.3017	
15 minute winter	32	4.000	33	14.0	0.944	0.331	0.3365	
15 minute winter	37	5.000	33	24.2	1.700	0.308	0.3356	
15 minute winter	33	4.001	34	46.3	0.871	0.621	2.4225	
15 minute winter	34	4.002	35	77.9	1.266	1.044	2.6787	
15 minute winter	38	6.000	35	8.3	0.818	0.196	0.1988	
15 minute winter	35	4.003	36	88.6	1.077	0.659	1.8874	
15 minute winter	36	4.004	5	104.9	1.200	0.780	4.3794	
15 minute winter	5	1.004	6	304.0	1.412	1.091	8.9761	
15 minute winter	6	1.005	7	322.3	1.676	1.156	2.2825	
15 minute winter	39	7.000	41	30.2	2.493	0.245	0.2283	
15 minute winter	41	7.001	42	74.6	1.820	0.508	3.5324	
15 minute winter	49	8.000	50	42.8	1.420	0.823	0.7543	
15 minute winter	55	9.000	50	30.9	2.069	0.315	0.2769	
15 minute winter	50	8.001	51	94.2	2.403	0.567	2.2722	
15 minute winter	51	8.002	52	112.5	1.653	0.617	1.2110	
15 minute winter	52	8.003	53	187.9	1.460	0.713	10.5006	
15 minute winter	56	10.000	57	28.4	1.223	0.489	0.4940	
15 minute winter	57	10.001	53	64.9	2.364	0.713	1.8905	
15 minute winter	53	8.004	54	237.4	1.509	0.805	3.1009	

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Results for 30 year Critical Storm Duration. Lowest mass balance: 99.73%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	54	12	62.060	0.582	253.8	1.3996	0.0000	SURCHARGED
15 minute winter	42	12	61.903	0.544	372.9	2.4512	0.0000	SURCHARGED
15 minute winter	43	12	61.106	0.228	380.8	0.5566	0.0000	OK
15 minute winter	44	12	59.452	0.348	408.6	1.2654	0.0000	OK
15 minute winter	45	12	59.206	0.558	450.5	2.3187	0.0000	OK
15 minute winter	46	12	59.125	0.583	458.8	1.6060	0.0000	OK
15 minute winter	47	12	59.052	0.586	484.3	1.8195	0.0000	OK
15 minute winter	48	12	58.962	0.583	480.5	1.4830	0.0000	OK
15 minute winter	7	12	58.881	0.699	804.5	1.8436	0.0000	OK
15 minute winter	8	12	58.763	0.645	819.7	1.8111	0.0000	OK
15 minute winter	9	12	58.557	0.583	832.2	1.6362	0.0000	OK
15 minute winter	58	10	61.499	0.114	32.4	0.2869	0.0000	OK
15 minute winter	59	10	60.975	0.143	94.9	0.5142	0.0000	OK
15 minute winter	60	11	58.998	0.312	97.8	0.4021	0.0000	SURCHARGED
15 minute winter	61	11	58.866	0.292	132.1	0.9401	0.0000	OK
15 minute winter	10	12	58.351	0.560	968.6	1.6158	0.0000	OK
15 minute winter	11	12	57.997	0.355	992.0	1.1967	0.0000	OK
15 minute winter	12	12	56.096	0.343	997.8	1.0032	0.0000	OK
15 minute winter	13	12	54.844	0.369	1021.5	1.3554	0.0000	OK
15 minute winter	14	13	53.777	0.334	1021.4	0.8491	0.0000	OK
15 minute winter	62	10	59.769	0.105	50.5	0.4120	0.0000	OK
15 minute winter	63	10	57.937	0.147	85.8	0.3423	0.0000	OK
15 minute winter	64	11	57.124	0.205	109.7	0.4236	0.0000	OK
15 minute winter	65	11	56.363	0.227	131.8	0.6060	0.0000	OK
15 minute winter	66	11	56.055	0.273	163.6	0.7928	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	54	8.005	42	254.9	1.609	0.864	2.2700	
15 minute winter	42	7.002	43	365.2	2.488	1.010	5.0308	
15 minute winter	43	7.003	44	382.0	3.835	0.368	3.8011	
15 minute winter	44	7.004	45	408.1	2.480	0.419	2.8569	
15 minute winter	45	7.005	46	448.9	1.321	0.682	13.3406	
15 minute winter	46	7.006	47	455.2	1.274	0.692	9.7569	
15 minute winter	47	7.007	48	480.5	1.325	0.730	11.2733	
15 minute winter	48	7.008	7	478.8	1.525	0.719	5.7226	
15 minute winter	7	1.006	8	802.8	1.581	0.756	11.3040	
15 minute winter	8	1.007	9	818.6	1.790	0.771	23.2204	
15 minute winter	9	1.008	10	835.3	2.002	0.594	15.5424	
15 minute winter	58	11.000	59	31.8	1.630	0.473	0.5591	
15 minute winter	59	11.001	60	93.9	1.733	0.469	3.4458	
15 minute winter	60	11.002	61	96.6	1.422	1.067	0.3653	
15 minute winter	61	11.003	10	132.7	1.511	0.886	4.0420	
15 minute winter	10	1.009	11	964.4	3.002	0.685	9.6365	
15 minute winter	11	1.010	12	987.6	4.943	0.390	9.0946	
15 minute winter	12	1.011	13	996.8	4.859	0.322	4.2066	
15 minute winter	13	1.012	14	1021.4	5.055	0.330	3.3360	
15 minute winter	14	1.013	15	1023.6	4.740	0.307	3.9792	
15 minute winter	62	12.000	63	49.8	2.823	0.415	0.6030	
15 minute winter	63	12.001	64	85.1	1.985	0.483	1.4901	
15 minute winter	64	12.002	65	108.4	2.189	0.754	2.1030	
15 minute winter	65	12.003	66	132.8	1.703	0.593	2.2053	
15 minute winter	66	12.004	67	164.6	2.211	0.735	1.1067	

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Results for 30 year Critical Storm Duration. Lowest mass balance: 99.73%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	70	10	56.477	0.077	22.9	0.1572	0.0000	OK
15 minute winter	67	11	55.802	0.207	217.7	0.5822	0.0000	OK
15 minute winter	68	11	54.200	0.234	240.4	0.5870	0.0000	OK
15 minute winter	71	10	53.623	0.097	17.7	0.1834	0.0000	OK
15 minute winter	69	11	53.529	0.363	283.9	1.2153	0.0000	OK
15 minute winter	26	11	53.092	0.363	285.0	0.6409	0.0000	OK
15 minute winter	15	12	52.559	0.420	1297.3	1.1573	0.0000	OK
15 minute winter	16	12	51.433	0.421	1304.4	1.2359	0.0000	OK
15 minute winter	17	12	50.271	0.412	1308.3	1.1671	0.0000	OK
15 minute winter	18	12	48.792	0.354	1329.7	1.2603	0.0000	OK
15 minute winter	19	12	46.122	0.434	1344.2	1.4288	0.0000	OK
15 minute winter	20	13	44.388	0.475	1365.3	1.5190	0.0000	OK
15 minute winter	21	13	43.000	0.387	1382.6	1.1477	0.0000	OK
15 minute winter	27	10	49.096	0.096	47.2	0.2689	0.0000	OK
15 minute winter	79	10	46.994	0.086	32.1	0.2165	0.0000	OK
15 minute winter	28	10	46.604	0.233	96.1	0.4019	0.0000	OK
15 minute winter	72	10	46.457	0.180	139.7	0.5102	0.0000	OK
15 minute winter	73	10	44.414	0.187	173.2	0.5783	0.0000	OK
15 minute winter	74	10	43.261	0.244	172.0	0.4317	0.0000	OK
15 minute winter	75	11	43.039	0.269	198.1	0.7355	0.0000	OK
15 minute winter	76	11	42.807	0.273	215.9	0.6456	0.0000	OK
15 minute winter	77	11	42.491	0.301	255.1	0.9457	0.0000	OK
15 minute winter	78	11	41.866	0.260	274.5	0.6386	0.0000	OK
15 minute winter	22	13	41.106	0.465	1625.4	1.5106	0.0000	OK
15 minute winter	23	13	39.049	0.417	1653.2	1.4005	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	70	13.000	67	22.7	1.965	0.229	0.2112	
15 minute winter	67	12.005	68	218.5	3.243	0.565	2.9627	
15 minute winter	68	12.006	69	241.3	3.038	0.589	1.4223	
15 minute winter	71	14.000	69	17.4	1.106	0.335	0.2738	
15 minute winter	69	12.007	26	285.0	2.081	0.882	5.9904	
15 minute winter	26	12.008	15	281.9	2.225	0.854	3.5368	
15 minute winter	15	1.014	16	1294.2	5.117	0.404	4.2911	
15 minute winter	16	1.015	17	1300.9	5.207	0.406	4.3388	
15 minute winter	17	1.016	18	1303.9	5.812	0.407	4.8121	
15 minute winter	18	1.017	19	1325.3	5.687	0.400	9.0158	
15 minute winter	19	1.018	20	1351.2	4.845	0.545	12.3714	
15 minute winter	20	1.019	21	1374.5	5.249	0.555	8.5040	
15 minute winter	21	1.020	22	1387.1	5.386	0.433	7.6346	
15 minute winter	27	15.000	28	46.8	2.304	0.380	1.0526	
15 minute winter	79	16.000	28	31.9	1.665	0.313	0.2655	
15 minute winter	28	15.001	72	95.1	1.839	0.765	0.3877	
15 minute winter	72	15.002	73	137.2	3.219	0.627	2.1974	
15 minute winter	73	15.003	74	172.0	3.325	0.437	1.5297	
15 minute winter	74	15.004	75	172.8	1.851	0.447	1.6171	
15 minute winter	75	15.005	76	199.9	2.005	0.517	1.6447	
15 minute winter	76	15.006	77	217.2	2.038	0.561	2.5644	
15 minute winter	77	15.007	78	256.0	2.466	0.708	4.8419	
15 minute winter	78	15.008	22	273.9	3.125	0.525	2.2513	
15 minute winter	22	1.021	23	1636.5	6.511	0.511	7.0038	
15 minute winter	23	1.022	24	1657.4	4.894	0.352	9.9666	

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Results for 30 year Critical Storm Duration. Lowest mass balance: 99.73%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	24	13	37.531	0.533	1667.9	1.6116	0.0000	OK
15 minute winter	80	10	37.651	0.083	27.2	0.1903	0.0000	OK
15 minute winter	25	13	36.758	0.896	1694.2	2.6742	0.0000	OK
15 minute winter	29	13	36.365	1.007	1701.8	3.0073	0.0000	OK
15 minute winter	81	10	51.589	0.086	32.8	0.2172	0.0000	OK
15 minute winter	82	10	50.087	0.128	61.3	0.3002	0.0000	OK
15 minute winter	83	10	49.287	0.141	85.7	0.3082	0.0000	OK
15 minute winter	96	10	50.592	0.109	54.4	0.3767	0.0000	OK
15 minute winter	97	10	47.487	0.163	53.2	0.1848	0.0000	OK
15 minute winter	84	11	47.381	0.192	155.7	0.3159	0.0000	OK
15 minute winter	85	11	44.919	0.180	202.1	0.6348	0.0000	OK
15 minute winter	86	11	42.951	0.207	224.3	0.5308	0.0000	OK
15 minute winter	87	11	41.877	0.206	225.5	0.3638	0.0000	OK
15 minute winter	88	11	40.794	0.214	250.4	0.5728	0.0000	OK
15 minute winter	89	11	39.686	0.273	277.0	0.7556	0.0000	OK
15 minute winter	90	11	38.787	0.274	277.7	0.4842	0.0000	OK
15 minute winter	91	12	37.204	0.467	301.9	1.2294	0.0000	SURCHARGED
15 minute winter	92	12	36.811	0.403	314.2	0.9949	0.0000	OK
15 minute winter	93	12	36.664	0.395	312.4	0.6975	0.0000	OK
15 minute winter	94	12	36.504	0.371	323.0	0.7777	0.0000	OK
15 minute winter	95	13	35.815	0.457	321.9	0.8070	0.0000	OK
480 minute winter	30	464	35.628	0.386	147.7	0.9827	0.0000	OK
480 minute winter	125	464	35.628	0.451	36.2	1.1468	0.0000	SURCHARGED
15 minute summer	126	1	35.090	0.000	34.7	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	24	1.023	25	1677.6	3.729	0.482	15.4728	
15 minute winter	80	17.000	25	26.9	2.086	0.269	0.3110	
15 minute winter	25	1.024	29	1701.8	2.325	0.991	57.3275	
15 minute winter	29	Flow through Pond	30	2190.6	0.251	0.006	1036.1061	
15 minute winter	81	18.000	82	32.5	1.749	0.311	0.7178	
15 minute winter	82	18.001	83	60.5	2.445	0.568	0.4827	
15 minute winter	83	18.002	84	84.6	3.363	0.655	0.7769	
15 minute winter	96	19.000	97	53.2	2.848	0.456	1.1528	
15 minute winter	97	19.001	84	52.9	1.224	0.425	0.4649	
15 minute winter	84	18.003	85	155.8	3.371	0.698	2.7435	
15 minute winter	85	18.004	86	203.0	3.540	0.452	2.2884	
15 minute winter	86	18.005	87	225.5	3.627	0.502	1.3334	
15 minute winter	87	18.006	88	226.0	3.567	0.503	1.3828	
15 minute winter	88	18.007	89	250.8	3.319	0.558	1.7571	
15 minute winter	89	18.008	90	277.7	3.227	0.758	2.3240	
15 minute winter	90	18.009	91	278.5	2.835	0.878	6.6805	
15 minute winter	91	18.010	92	293.5	2.021	0.995	3.2320	
15 minute winter	92	18.011	93	312.4	1.585	0.643	5.5100	
15 minute winter	93	18.012	94	311.0	1.667	0.640	5.1648	
15 minute winter	94	18.013	95	321.9	1.843	0.663	14.1858	
15 minute winter	95	Flow through Pond	30	2190.6	0.251	0.006	1036.1061	
480 minute winter	30	27.000	125	36.2	0.545	0.041	1.5895	
480 minute winter	125	Hydro-Brake®	126	36.1				1220.3

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Results for 30 year 480 minute summer. 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 summer	1	248	64.345	0.045	6.7	0.1507	0.0000	OK
480 minute summer	127	248	63.927	0.016	0.6	0.0317	0.0000	OK
480 minute summer	2	248	61.563	0.063	8.5	0.0790	0.0000	OK
480 minute summer	3	248	61.293	0.084	15.1	0.1502	0.0000	OK
480 minute summer	31	248	62.717	0.067	9.8	0.2869	0.0000	OK
480 minute summer	4	248	60.851	0.071	29.3	0.1576	0.0000	OK
480 minute summer	32	248	63.187	0.034	2.1	0.0820	0.0000	OK
480 minute summer	37	248	63.569	0.033	3.6	0.0936	0.0000	OK
480 minute summer	33	248	60.986	0.061	7.0	0.0784	0.0000	OK
480 minute summer	34	248	60.805	0.083	12.2	0.1484	0.0000	OK
480 minute summer	38	248	62.125	0.027	1.3	0.0408	0.0000	OK
480 minute summer	35	248	60.532	0.084	14.1	0.1550	0.0000	OK
480 minute summer	36	248	60.445	0.091	16.9	0.1887	0.0000	OK
480 minute summer	5	248	60.165	0.153	49.5	0.3144	0.0000	OK
480 minute summer	6	248	60.037	0.166	52.6	0.3438	0.0000	OK
480 minute summer	39	248	63.830	0.030	4.5	0.0883	0.0000	OK
480 minute summer	41	248	62.734	0.056	11.2	0.1515	0.0000	OK
480 minute summer	49	248	64.146	0.055	6.5	0.1647	0.0000	OK
480 minute summer	55	248	64.525	0.034	4.6	0.0830	0.0000	OK
480 minute summer	50	248	63.826	0.060	14.4	0.1099	0.0000	OK
480 minute summer	51	248	62.483	0.080	17.0	0.1886	0.0000	OK
480 minute summer	52	248	62.279	0.099	28.6	0.5279	0.0000	OK
480 minute summer	56	248	63.950	0.041	4.3	0.0975	0.0000	OK
480 minute summer	57	248	63.693	0.050	9.6	0.1048	0.0000	OK
480 minute summer	53	248	61.758	0.117	39.3	0.2294	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	6.7	1.195	0.086	0.1329	
480 minute summer	127	2.000	2	0.6	0.473	0.010	0.0143	
480 minute summer	2	1.001	3	8.5	0.954	0.164	0.1929	
480 minute summer	3	1.002	4	15.1	0.956	0.167	0.8381	
480 minute summer	31	3.000	4	9.8	0.846	0.108	0.6153	
480 minute summer	4	1.003	5	29.3	2.091	0.072	0.2123	
480 minute summer	32	4.000	33	2.1	0.556	0.050	0.0853	
480 minute summer	37	5.000	33	3.6	1.002	0.046	0.0848	
480 minute summer	33	4.001	34	7.0	0.538	0.094	0.5853	
480 minute summer	34	4.002	35	12.2	0.783	0.163	0.6823	
480 minute summer	38	6.000	35	1.3	0.482	0.031	0.0529	
480 minute summer	35	4.003	36	14.1	0.723	0.105	0.4030	
480 minute summer	36	4.004	5	16.9	0.838	0.126	0.8507	
480 minute summer	5	1.004	6	49.5	0.897	0.178	2.3267	
480 minute summer	6	1.005	7	52.6	0.963	0.189	0.6569	
480 minute summer	39	7.000	41	4.5	1.466	0.037	0.0579	
480 minute summer	41	7.001	42	11.2	1.237	0.076	0.6093	
480 minute summer	49	8.000	50	6.5	0.889	0.125	0.1825	
480 minute summer	55	9.000	50	4.6	1.258	0.047	0.0670	
480 minute summer	50	8.001	51	14.4	1.452	0.087	0.5749	
480 minute summer	51	8.002	52	17.0	1.022	0.093	0.2961	
480 minute summer	52	8.003	53	28.6	0.985	0.109	2.3527	
480 minute summer	56	10.000	57	4.3	0.754	0.074	0.1216	
480 minute summer	57	10.001	53	9.6	1.492	0.105	0.3758	
480 minute summer	53	8.004	54	39.3	1.149	0.133	0.6698	

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Results for 30 year 480 minute summer. 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 summer	54	248	61.603	0.125	42.4	0.3007	0.0000	OK
480 minute summer	42	248	61.490	0.131	61.8	0.5877	0.0000	OK
480 minute summer	43	248	60.969	0.091	64.8	0.2213	0.0000	OK
480 minute summer	44	248	59.221	0.117	69.8	0.4234	0.0000	OK
480 minute summer	45	248	58.828	0.180	77.5	0.7488	0.0000	OK
480 minute summer	46	248	58.729	0.187	79.0	0.5140	0.0000	OK
480 minute summer	47	248	58.657	0.191	84.4	0.5927	0.0000	OK
480 minute summer	48	248	58.570	0.191	84.4	0.4853	0.0000	OK
480 minute summer	7	248	58.418	0.236	138.3	0.6236	0.0000	OK
480 minute summer	8	248	58.343	0.225	141.5	0.6310	0.0000	OK
480 minute summer	9	248	58.178	0.204	144.1	0.5741	0.0000	OK
480 minute summer	58	248	61.426	0.041	4.8	0.1037	0.0000	OK
480 minute summer	59	248	60.886	0.054	14.1	0.1926	0.0000	OK
480 minute summer	60	248	58.776	0.090	14.7	0.1154	0.0000	OK
480 minute summer	61	248	58.668	0.094	20.3	0.3040	0.0000	OK
480 minute summer	10	248	58.008	0.217	167.1	0.6260	0.0000	OK
480 minute summer	11	248	57.778	0.136	172.3	0.4589	0.0000	OK
480 minute summer	12	248	55.878	0.125	174.2	0.3675	0.0000	OK
480 minute summer	13	248	54.608	0.133	179.7	0.4871	0.0000	OK
480 minute summer	14	248	53.564	0.121	179.7	0.3089	0.0000	OK
480 minute summer	62	248	59.702	0.038	7.4	0.1505	0.0000	OK
480 minute summer	63	248	57.844	0.054	12.7	0.1262	0.0000	OK
480 minute summer	64	248	56.988	0.069	16.3	0.1425	0.0000	OK
480 minute summer	65	248	56.211	0.075	20.0	0.2012	0.0000	OK
480 minute summer	66	248	55.872	0.090	24.8	0.2607	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	54	8.005	42	42.4	1.146	0.144	0.5301	
480 minute summer	42	7.002	43	61.8	1.681	0.171	1.1945	
480 minute summer	43	7.003	44	64.8	2.680	0.062	0.9041	
480 minute summer	44	7.004	45	69.8	1.935	0.072	0.5511	
480 minute summer	45	7.005	46	77.5	0.931	0.118	3.0914	
480 minute summer	46	7.006	47	79.0	0.911	0.120	2.2983	
480 minute summer	47	7.007	48	84.4	0.958	0.128	2.6969	
480 minute summer	48	7.008	7	84.4	1.026	0.127	1.3236	
480 minute summer	7	1.006	8	138.3	1.080	0.130	2.8531	
480 minute summer	8	1.007	9	141.5	1.223	0.133	5.8392	
480 minute summer	9	1.008	10	144.1	1.279	0.102	4.1272	
480 minute summer	58	11.000	59	4.8	0.979	0.071	0.1407	
480 minute summer	59	11.001	60	14.1	1.097	0.070	0.8702	
480 minute summer	60	11.002	61	14.7	0.892	0.162	0.0918	
480 minute summer	61	11.003	10	20.3	0.953	0.136	0.9773	
480 minute summer	10	1.009	11	167.1	1.908	0.119	2.6446	
480 minute summer	11	1.010	12	172.3	3.355	0.068	2.3305	
480 minute summer	12	1.011	13	174.2	3.459	0.056	1.0296	
480 minute summer	13	1.012	14	179.7	3.651	0.058	0.8125	
480 minute summer	14	1.013	15	179.6	3.425	0.054	0.9468	
480 minute summer	62	12.000	63	7.4	1.672	0.062	0.1513	
480 minute summer	63	12.001	64	12.7	1.223	0.072	0.3637	
480 minute summer	64	12.002	65	16.3	1.352	0.113	0.5121	
480 minute summer	65	12.003	66	20.0	1.116	0.089	0.5091	
480 minute summer	66	12.004	67	24.8	1.401	0.111	0.2648	

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Results for 30 year 480 minute summer. 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 summer	70	248	56.429	0.029	3.4	0.0594	0.0000	OK
480 minute summer	67	248	55.669	0.074	33.1	0.2075	0.0000	OK
480 minute summer	68	248	54.045	0.079	36.5	0.1985	0.0000	OK
480 minute summer	71	248	53.561	0.035	2.6	0.0659	0.0000	OK
480 minute summer	69	248	53.279	0.113	43.1	0.3765	0.0000	OK
480 minute summer	26	248	52.843	0.114	43.1	0.2010	0.0000	OK
480 minute summer	15	248	52.283	0.144	223.8	0.3975	0.0000	OK
480 minute summer	16	248	51.157	0.145	225.7	0.4253	0.0000	OK
480 minute summer	17	248	50.004	0.145	227.1	0.4105	0.0000	OK
480 minute summer	18	248	48.571	0.133	232.0	0.4748	0.0000	OK
480 minute summer	19	248	45.846	0.158	235.8	0.5202	0.0000	OK
480 minute summer	20	248	44.081	0.168	239.4	0.5377	0.0000	OK
480 minute summer	21	248	42.754	0.141	241.5	0.4189	0.0000	OK
480 minute summer	27	248	49.037	0.037	7.0	0.1030	0.0000	OK
480 minute summer	79	248	46.942	0.034	4.7	0.0845	0.0000	OK
480 minute summer	28	248	46.446	0.075	14.3	0.1288	0.0000	OK
480 minute summer	72	248	46.340	0.063	20.9	0.1786	0.0000	OK
480 minute summer	73	248	44.294	0.067	26.2	0.2064	0.0000	OK
480 minute summer	74	248	43.099	0.082	26.2	0.1441	0.0000	OK
480 minute summer	75	248	42.859	0.089	30.2	0.2421	0.0000	OK
480 minute summer	76	248	42.623	0.089	32.7	0.2115	0.0000	OK
480 minute summer	77	248	42.292	0.102	38.6	0.3217	0.0000	OK
480 minute summer	78	248	41.694	0.088	41.5	0.2171	0.0000	OK
480 minute summer	22	248	40.802	0.161	286.4	0.5222	0.0000	OK
480 minute summer	23	248	38.784	0.152	290.6	0.5126	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	70	13.000	67	3.4	1.155	0.034	0.0539	
480 minute summer	67	12.005	68	33.1	2.058	0.086	0.7077	
480 minute summer	68	12.006	69	36.5	2.249	0.089	0.2831	
480 minute summer	71	14.000	69	2.6	0.679	0.050	0.0516	
480 minute summer	69	12.007	26	43.1	1.383	0.133	1.3632	
480 minute summer	26	12.008	15	43.1	1.421	0.131	0.8444	
480 minute summer	15	1.014	16	223.8	3.777	0.070	1.0017	
480 minute summer	16	1.015	17	225.7	3.799	0.071	1.0280	
480 minute summer	17	1.016	18	227.1	4.052	0.071	1.1948	
480 minute summer	18	1.017	19	232.0	3.870	0.070	2.3125	
480 minute summer	19	1.018	20	235.8	3.346	0.095	3.1294	
480 minute summer	20	1.019	21	239.4	3.662	0.097	2.1291	
480 minute summer	21	1.020	22	241.5	3.822	0.075	1.8710	
480 minute summer	27	15.000	28	7.0	1.681	0.057	0.1914	
480 minute summer	79	16.000	28	4.7	1.290	0.046	0.0442	
480 minute summer	28	15.001	72	14.3	1.174	0.115	0.0920	
480 minute summer	72	15.002	73	20.9	1.962	0.096	0.5473	
480 minute summer	73	15.003	74	26.2	2.022	0.067	0.3826	
480 minute summer	74	15.004	75	26.2	1.262	0.068	0.3596	
480 minute summer	75	15.005	76	30.2	1.364	0.078	0.3651	
480 minute summer	76	15.006	77	32.7	1.328	0.085	0.5932	
480 minute summer	77	15.007	78	38.6	1.579	0.107	1.1425	
480 minute summer	78	15.008	22	41.5	1.949	0.080	0.5470	
480 minute summer	22	1.021	23	286.3	4.393	0.089	1.8184	
480 minute summer	23	1.022	24	290.6	3.514	0.062	2.4401	

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Results for 30 year 480 minute summer. 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 summer	24	248	37.185	0.187	293.3	0.5654	0.0000	OK
480 minute summer	80	248	37.599	0.031	4.0	0.0714	0.0000	OK
480 minute summer	25	248	36.162	0.300	297.3	0.8971	0.0000	OK
480 minute summer	29	248	35.688	0.330	297.1	0.9860	0.0000	OK
480 minute summer	81	248	51.536	0.033	4.8	0.0830	0.0000	OK
480 minute summer	82	248	50.004	0.045	9.1	0.1045	0.0000	OK
480 minute summer	83	248	49.195	0.049	12.8	0.1062	0.0000	OK
480 minute summer	96	248	50.523	0.040	8.0	0.1388	0.0000	OK
480 minute summer	97	248	47.377	0.053	8.0	0.0596	0.0000	OK
480 minute summer	84	248	47.255	0.066	23.5	0.1092	0.0000	OK
480 minute summer	85	248	44.805	0.066	30.8	0.2331	0.0000	OK
480 minute summer	86	248	42.816	0.072	34.1	0.1838	0.0000	OK
480 minute summer	87	248	41.742	0.071	34.1	0.1259	0.0000	OK
480 minute summer	88	248	40.653	0.073	37.9	0.1964	0.0000	OK
480 minute summer	89	248	39.500	0.087	42.0	0.2408	0.0000	OK
480 minute summer	90	248	38.606	0.093	42.0	0.1641	0.0000	OK
480 minute summer	91	248	36.863	0.126	45.7	0.3314	0.0000	OK
480 minute summer	92	248	36.541	0.133	48.9	0.3285	0.0000	OK
480 minute summer	93	248	36.402	0.133	48.9	0.2354	0.0000	OK
480 minute summer	94	248	36.265	0.132	51.2	0.2760	0.0000	OK
480 minute summer	95	440	35.587	0.229	51.2	0.4046	0.0000	OK
480 minute summer	30	448	35.585	0.343	192.8	0.8740	0.0000	OK
480 minute summer	125	448	35.585	0.408	36.1	1.0377	0.0000	SURCHARGED
480 minute summer	126	8	35.090	0.000	36.1	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	24	1.023	25	293.3	3.277	0.084	2.9114	
480 minute summer	80	17.000	25	4.0	1.223	0.040	0.0790	
480 minute summer	25	1.024	29	297.1	1.514	0.173	15.4359	
480 minute summer	29	Flow through Pond	30	192.8	0.045	0.000	1953.6267	
480 minute summer	81	18.000	82	4.8	1.060	0.046	0.1760	
480 minute summer	82	18.001	83	9.1	1.538	0.085	0.1155	
480 minute summer	83	18.002	84	12.8	2.064	0.099	0.1914	
480 minute summer	96	19.000	97	8.0	1.686	0.068	0.2926	
480 minute summer	97	19.001	84	8.0	0.811	0.064	0.1066	
480 minute summer	84	18.003	85	23.5	2.061	0.105	0.6769	
480 minute summer	85	18.004	86	30.8	2.224	0.069	0.5527	
480 minute summer	86	18.005	87	34.1	2.336	0.076	0.3131	
480 minute summer	87	18.006	88	34.1	2.301	0.076	0.3234	
480 minute summer	88	18.007	89	37.9	2.208	0.084	0.4012	
480 minute summer	89	18.008	90	42.0	2.076	0.115	0.5466	
480 minute summer	90	18.009	91	42.0	2.008	0.132	1.4236	
480 minute summer	91	18.010	92	45.7	1.320	0.155	0.7448	
480 minute summer	92	18.011	93	48.9	1.054	0.101	1.2852	
480 minute summer	93	18.012	94	48.9	1.062	0.101	1.2533	
480 minute summer	94	18.013	95	51.2	1.139	0.105	3.6288	
480 minute summer	95	Flow through Pond	30	192.8	0.045	0.000	1953.6267	
480 minute summer	30	27.000	125	36.1	0.537	0.041	1.3627	
480 minute summer	125	Hydro-Brake®	126	36.1				1185.5

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Results for 30 year 480 minute winter. 720 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
480 minute winter	1	248	64.339	0.039	5.0	0.1303	0.0000	OK
480 minute winter	127	224	63.925	0.014	0.4	0.0262	0.0000	OK
480 minute winter	2	248	61.554	0.054	6.3	0.0676	0.0000	OK
480 minute winter	3	248	61.281	0.072	11.2	0.1289	0.0000	OK
480 minute winter	31	248	62.708	0.058	7.3	0.2474	0.0000	OK
480 minute winter	4	248	60.841	0.061	21.7	0.1351	0.0000	OK
480 minute winter	32	248	63.183	0.030	1.6	0.0718	0.0000	OK
480 minute winter	37	248	63.565	0.029	2.7	0.0814	0.0000	OK
480 minute winter	33	248	60.979	0.054	5.3	0.0685	0.0000	OK
480 minute winter	34	248	60.794	0.072	9.2	0.1284	0.0000	OK
480 minute winter	38	240	62.121	0.023	0.9	0.0342	0.0000	OK
480 minute winter	35	248	60.520	0.072	10.5	0.1328	0.0000	OK
480 minute winter	36	248	60.432	0.078	12.6	0.1624	0.0000	OK
480 minute winter	5	248	60.142	0.130	36.7	0.2676	0.0000	OK
480 minute winter	6	248	60.012	0.141	39.0	0.2927	0.0000	OK
480 minute winter	39	240	63.826	0.026	3.3	0.0760	0.0000	OK
480 minute winter	41	248	62.727	0.049	8.3	0.1307	0.0000	OK
480 minute winter	49	248	64.138	0.047	4.8	0.1410	0.0000	OK
480 minute winter	55	248	64.520	0.029	3.4	0.0716	0.0000	OK
480 minute winter	50	248	63.818	0.052	10.6	0.0945	0.0000	OK
480 minute winter	51	248	62.471	0.068	12.5	0.1611	0.0000	OK
480 minute winter	52	248	62.265	0.085	21.1	0.4544	0.0000	OK
480 minute winter	56	248	63.945	0.036	3.2	0.0844	0.0000	OK
480 minute winter	57	248	63.686	0.043	7.2	0.0908	0.0000	OK
480 minute winter	53	248	61.740	0.099	29.1	0.1950	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	5.0	1.097	0.064	0.1079	
480 minute winter	127	2.000	2	0.4	0.418	0.007	0.0108	
480 minute winter	2	1.001	3	6.3	0.878	0.121	0.1554	
480 minute winter	3	1.002	4	11.2	0.879	0.124	0.6762	
480 minute winter	31	3.000	4	7.3	0.777	0.081	0.4992	
480 minute winter	4	1.003	5	21.7	1.926	0.054	0.1707	
480 minute winter	32	4.000	33	1.6	0.513	0.038	0.0704	
480 minute winter	37	5.000	33	2.7	0.920	0.034	0.0692	
480 minute winter	33	4.001	34	5.3	0.498	0.071	0.4786	
480 minute winter	34	4.002	35	9.2	0.723	0.123	0.5570	
480 minute winter	38	6.000	35	0.9	0.432	0.021	0.0408	
480 minute winter	35	4.003	36	10.5	0.669	0.078	0.3244	
480 minute winter	36	4.004	5	12.6	0.772	0.094	0.6890	
480 minute winter	5	1.004	6	36.7	0.833	0.132	1.8573	
480 minute winter	6	1.005	7	39.0	0.891	0.140	0.5266	
480 minute winter	39	7.000	41	3.3	1.336	0.027	0.0466	
480 minute winter	41	7.001	42	8.3	1.134	0.057	0.4928	
480 minute winter	49	8.000	50	4.8	0.816	0.092	0.1468	
480 minute winter	55	9.000	50	3.4	1.151	0.035	0.0542	
480 minute winter	50	8.001	51	10.6	1.327	0.064	0.4630	
480 minute winter	51	8.002	52	12.5	0.938	0.068	0.2373	
480 minute winter	52	8.003	53	21.1	0.909	0.080	1.8811	
480 minute winter	56	10.000	57	3.2	0.690	0.055	0.0989	
480 minute winter	57	10.001	53	7.2	1.372	0.079	0.3066	
480 minute winter	53	8.004	54	29.1	1.074	0.099	0.5304	

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Results for 30 year 480 minute winter. 720 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
480 minute winter	54	248	61.584	0.106	31.4	0.2546	0.0000	OK
480 minute winter	42	248	61.470	0.111	45.8	0.5013	0.0000	OK
480 minute winter	43	248	60.956	0.078	48.0	0.1903	0.0000	OK
480 minute winter	44	248	59.203	0.099	51.7	0.3612	0.0000	OK
480 minute winter	45	248	58.802	0.154	57.5	0.6380	0.0000	OK
480 minute winter	46	248	58.701	0.159	58.7	0.4369	0.0000	OK
480 minute winter	47	248	58.629	0.163	62.7	0.5050	0.0000	OK
480 minute winter	48	248	58.542	0.163	62.7	0.4149	0.0000	OK
480 minute winter	7	248	58.383	0.201	102.6	0.5308	0.0000	OK
480 minute winter	8	248	58.311	0.193	105.0	0.5407	0.0000	OK
480 minute winter	9	248	58.148	0.174	106.9	0.4889	0.0000	OK
480 minute winter	58	248	61.421	0.036	3.6	0.0900	0.0000	OK
480 minute winter	59	248	60.878	0.046	10.5	0.1668	0.0000	OK
480 minute winter	60	248	58.762	0.076	10.9	0.0983	0.0000	OK
480 minute winter	61	248	58.655	0.081	15.0	0.2603	0.0000	OK
480 minute winter	10	248	57.978	0.187	123.9	0.5390	0.0000	OK
480 minute winter	11	248	57.759	0.117	127.8	0.3947	0.0000	OK
480 minute winter	12	248	55.860	0.107	129.2	0.3147	0.0000	OK
480 minute winter	13	248	54.588	0.113	133.3	0.4155	0.0000	OK
480 minute winter	14	248	53.547	0.104	133.3	0.2642	0.0000	OK
480 minute winter	62	248	59.697	0.033	5.5	0.1300	0.0000	OK
480 minute winter	63	248	57.837	0.047	9.5	0.1095	0.0000	OK
480 minute winter	64	248	56.979	0.060	12.2	0.1231	0.0000	OK
480 minute winter	65	248	56.201	0.065	14.9	0.1733	0.0000	OK
480 minute winter	66	248	55.859	0.077	18.5	0.2237	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	54	8.005	42	31.4	1.068	0.106	0.4215	
480 minute winter	42	7.002	43	45.8	1.551	0.127	0.9600	
480 minute winter	43	7.003	44	48.0	2.462	0.046	0.7291	
480 minute winter	44	7.004	45	51.7	1.789	0.053	0.4418	
480 minute winter	45	7.005	46	57.5	0.868	0.087	2.4582	
480 minute winter	46	7.006	47	58.7	0.851	0.089	1.8277	
480 minute winter	47	7.007	48	62.7	0.892	0.095	2.1531	
480 minute winter	48	7.008	7	62.7	0.950	0.094	1.0604	
480 minute winter	7	1.006	8	102.6	1.003	0.097	2.2806	
480 minute winter	8	1.007	9	105.0	1.135	0.099	4.6667	
480 minute winter	9	1.008	10	106.9	1.184	0.076	3.3098	
480 minute winter	58	11.000	59	3.6	0.901	0.054	0.1146	
480 minute winter	59	11.001	60	10.5	1.016	0.052	0.6986	
480 minute winter	60	11.002	61	10.9	0.824	0.120	0.0737	
480 minute winter	61	11.003	10	15.0	0.875	0.100	0.7861	
480 minute winter	10	1.009	11	123.9	1.756	0.088	2.1330	
480 minute winter	11	1.010	12	127.8	3.105	0.051	1.8672	
480 minute winter	12	1.011	13	129.2	3.221	0.042	0.8198	
480 minute winter	13	1.012	14	133.3	3.404	0.043	0.6464	
480 minute winter	14	1.013	15	133.3	3.194	0.040	0.7532	
480 minute winter	62	12.000	63	5.5	1.534	0.046	0.1226	
480 minute winter	63	12.001	64	9.5	1.126	0.054	0.2955	
480 minute winter	64	12.002	65	12.2	1.245	0.085	0.4162	
480 minute winter	65	12.003	66	14.9	1.032	0.067	0.4101	
480 minute winter	66	12.004	67	18.5	1.295	0.083	0.2136	

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Results for 30 year 480 minute winter. 720 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
480 minute winter	70	240	56.425	0.025	2.5	0.0513	0.0000	OK
480 minute winter	67	248	55.659	0.064	24.6	0.1793	0.0000	OK
480 minute winter	68	248	54.034	0.068	27.2	0.1705	0.0000	OK
480 minute winter	71	240	53.556	0.030	1.9	0.0565	0.0000	OK
480 minute winter	69	248	53.263	0.097	32.1	0.3235	0.0000	OK
480 minute winter	26	248	52.826	0.097	32.1	0.1722	0.0000	OK
480 minute winter	15	248	52.262	0.123	166.2	0.3389	0.0000	OK
480 minute winter	16	248	51.135	0.123	167.6	0.3625	0.0000	OK
480 minute winter	17	248	49.983	0.124	168.6	0.3507	0.0000	OK
480 minute winter	18	248	48.552	0.114	172.2	0.4075	0.0000	OK
480 minute winter	19	248	45.824	0.136	175.0	0.4464	0.0000	OK
480 minute winter	20	248	44.057	0.144	177.7	0.4599	0.0000	OK
480 minute winter	21	248	42.734	0.121	179.2	0.3590	0.0000	OK
480 minute winter	27	248	49.032	0.032	5.2	0.0891	0.0000	OK
480 minute winter	79	248	46.937	0.029	3.5	0.0731	0.0000	OK
480 minute winter	28	248	46.435	0.064	10.6	0.1099	0.0000	OK
480 minute winter	72	248	46.331	0.054	15.5	0.1540	0.0000	OK
480 minute winter	73	248	44.285	0.058	19.5	0.1780	0.0000	OK
480 minute winter	74	248	43.087	0.070	19.5	0.1237	0.0000	OK
480 minute winter	75	248	42.846	0.076	22.5	0.2079	0.0000	OK
480 minute winter	76	248	42.611	0.077	24.4	0.1818	0.0000	OK
480 minute winter	77	248	42.278	0.088	28.8	0.2775	0.0000	OK
480 minute winter	78	248	41.682	0.076	31.0	0.1871	0.0000	OK
480 minute winter	22	248	40.778	0.137	212.8	0.4458	0.0000	OK
480 minute winter	23	248	38.763	0.131	216.0	0.4391	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	70	13.000	67	2.5	1.054	0.025	0.0434	
480 minute winter	67	12.005	68	24.6	1.897	0.064	0.5710	
480 minute winter	68	12.006	69	27.2	2.074	0.066	0.2289	
480 minute winter	71	14.000	69	1.9	0.619	0.037	0.0413	
480 minute winter	69	12.007	26	32.1	1.280	0.099	1.0964	
480 minute winter	26	12.008	15	32.1	1.312	0.097	0.6813	
480 minute winter	15	1.014	16	166.2	3.530	0.052	0.7957	
480 minute winter	16	1.015	17	167.6	3.545	0.052	0.8178	
480 minute winter	17	1.016	18	168.6	3.766	0.053	0.9545	
480 minute winter	18	1.017	19	172.2	3.579	0.052	1.8546	
480 minute winter	19	1.018	20	175.0	3.097	0.071	2.5072	
480 minute winter	20	1.019	21	177.7	3.401	0.072	1.7033	
480 minute winter	21	1.020	22	179.2	3.553	0.056	1.4940	
480 minute winter	27	15.000	28	5.2	1.540	0.042	0.1552	
480 minute winter	79	16.000	28	3.5	1.184	0.034	0.0359	
480 minute winter	28	15.001	72	10.6	1.085	0.085	0.0738	
480 minute winter	72	15.002	73	15.5	1.798	0.071	0.4428	
480 minute winter	73	15.003	74	19.5	1.860	0.050	0.3095	
480 minute winter	74	15.004	75	19.5	1.171	0.050	0.2885	
480 minute winter	75	15.005	76	22.5	1.264	0.058	0.2936	
480 minute winter	76	15.006	77	24.4	1.228	0.063	0.4790	
480 minute winter	77	15.007	78	28.8	1.457	0.080	0.9238	
480 minute winter	78	15.008	22	31.0	1.796	0.059	0.4435	
480 minute winter	22	1.021	23	212.8	4.063	0.066	1.4622	
480 minute winter	23	1.022	24	215.9	3.272	0.046	1.9470	

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Results for 30 year 480 minute winter. 720 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
480 minute winter	24	248	37.158	0.160	217.9	0.4831	0.0000	OK
480 minute winter	80	248	37.595	0.027	3.0	0.0621	0.0000	OK
480 minute winter	25	248	36.119	0.257	220.9	0.7676	0.0000	OK
480 minute winter	29	264	35.644	0.286	220.9	0.8538	0.0000	OK
480 minute winter	81	248	51.532	0.029	3.6	0.0724	0.0000	OK
480 minute winter	82	248	49.998	0.039	6.8	0.0904	0.0000	OK
480 minute winter	83	248	49.188	0.042	9.6	0.0919	0.0000	OK
480 minute winter	96	248	50.518	0.035	6.0	0.1205	0.0000	OK
480 minute winter	97	248	47.369	0.045	6.0	0.0512	0.0000	OK
480 minute winter	84	248	47.246	0.057	17.6	0.0944	0.0000	OK
480 minute winter	85	248	44.796	0.057	23.0	0.2016	0.0000	OK
480 minute winter	86	248	42.806	0.062	25.5	0.1587	0.0000	OK
480 minute winter	87	248	41.733	0.062	25.5	0.1087	0.0000	OK
480 minute winter	88	248	40.643	0.063	28.3	0.1696	0.0000	OK
480 minute winter	89	248	39.488	0.075	31.4	0.2071	0.0000	OK
480 minute winter	90	248	38.593	0.080	31.4	0.1414	0.0000	OK
480 minute winter	91	248	36.845	0.108	34.1	0.2835	0.0000	OK
480 minute winter	92	248	36.522	0.114	36.5	0.2819	0.0000	OK
480 minute winter	93	248	36.383	0.114	36.5	0.2021	0.0000	OK
480 minute winter	94	248	36.247	0.114	38.2	0.2381	0.0000	OK
480 minute winter	95	464	35.631	0.273	38.2	0.4816	0.0000	OK
480 minute winter	30	464	35.628	0.386	147.7	0.9828	0.0000	OK
480 minute winter	125	464	35.628	0.451	36.2	1.1469	0.0000	SURCHARGED
480 minute winter	126	8	35.090	0.000	36.1	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	24	1.023	25	217.9	3.027	0.063	2.3403	
480 minute winter	80	17.000	25	3.0	1.122	0.030	0.0646	
480 minute winter	25	1.024	29	220.9	1.396	0.129	12.4466	
480 minute winter	29	Flow through Pond	30	147.7	0.053	0.000	2253.0696	
480 minute winter	81	18.000	82	3.6	0.977	0.034	0.1432	
480 minute winter	82	18.001	83	6.8	1.416	0.064	0.0938	
480 minute winter	83	18.002	84	9.6	1.899	0.074	0.1560	
480 minute winter	96	19.000	97	6.0	1.552	0.051	0.2385	
480 minute winter	97	19.001	84	6.0	0.752	0.048	0.0862	
480 minute winter	84	18.003	85	17.6	1.895	0.079	0.5514	
480 minute winter	85	18.004	86	23.0	2.052	0.051	0.4476	
480 minute winter	86	18.005	87	25.5	2.160	0.057	0.2533	
480 minute winter	87	18.006	88	25.5	2.127	0.057	0.2617	
480 minute winter	88	18.007	89	28.3	2.040	0.063	0.3242	
480 minute winter	89	18.008	90	31.4	1.919	0.086	0.4419	
480 minute winter	90	18.009	91	31.4	1.849	0.099	1.1555	
480 minute winter	91	18.010	92	34.1	1.220	0.116	0.6011	
480 minute winter	92	18.011	93	36.5	0.979	0.075	1.0334	
480 minute winter	93	18.012	94	36.5	0.982	0.075	1.0115	
480 minute winter	94	18.013	95	38.2	1.047	0.079	2.9461	
480 minute winter	95	Flow through Pond	30	147.7	0.053	0.000	2253.0696	
480 minute winter	30	27.000	125	36.2	0.545	0.041	1.5897	
480 minute winter	125	Hydro-Brake®	126	36.1				1220.3

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Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.53%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1	11	64.608	0.308	82.6	1.0256	0.0000	SURCHARGED
15 minute winter	127	12	64.003	0.092	7.1	0.1774	0.0000	OK
15 minute winter	2	12	64.013	2.513	97.9	3.1438	0.0000	SURCHARGED
15 minute winter	3	11	63.166	1.957	163.6	3.5174	0.0000	SURCHARGED
15 minute winter	31	11	63.132	0.482	120.6	2.0623	0.0000	SURCHARGED
15 minute winter	4	11	61.921	1.141	320.9	2.5227	0.0000	SURCHARGED
15 minute winter	32	10	63.286	0.133	26.1	0.3165	0.0000	OK
15 minute winter	37	10	63.664	0.128	44.6	0.3616	0.0000	OK
15 minute winter	33	11	62.890	1.965	85.4	2.5070	0.0000	SURCHARGED
15 minute winter	34	12	62.646	1.924	138.3	3.4432	0.0000	SURCHARGED
15 minute winter	38	10	62.195	0.097	15.4	0.1450	0.0000	OK
15 minute winter	35	12	61.924	1.476	153.1	2.7149	0.0000	SURCHARGED
15 minute winter	36	12	61.752	1.398	180.3	2.9063	0.0000	SURCHARGED
15 minute winter	5	11	61.323	1.311	529.2	2.6999	0.0000	SURCHARGED
15 minute winter	6	11	60.666	0.795	561.8	1.6502	0.0000	SURCHARGED
15 minute winter	39	11	63.931	0.131	55.3	0.3874	0.0000	OK
15 minute winter	41	12	63.583	0.905	135.7	2.4384	0.0000	SURCHARGED
15 minute winter	49	12	65.443	1.352	79.6	4.0718	0.0000	FLOOD RISK
15 minute winter	55	12	65.194	0.703	56.5	1.7323	0.0000	SURCHARGED
15 minute winter	50	12	65.032	1.266	154.1	2.3182	0.0000	SURCHARGED
15 minute winter	51	11	64.055	1.652	173.7	3.8876	0.0000	FLOOD RISK
15 minute winter	52	11	63.886	1.706	285.0	9.1407	4.2555	FLOOD
15 minute winter	56	12	65.334	1.425	52.3	3.3716	0.2489	FLOOD
15 minute winter	57	12	65.206	1.563	96.1	3.3001	0.0000	SURCHARGED
15 minute winter	53	12	63.374	1.733	343.7	3.4061	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	1	1.000	2	77.6	2.105	0.994	0.9421	
15 minute winter	127	2.000	2	9.2	0.964	0.158	0.3094	
15 minute winter	2	1.001	3	91.6	2.304	1.763	0.8610	
15 minute winter	3	1.002	4	158.8	2.256	1.754	3.7348	
15 minute winter	31	3.000	4	113.3	1.616	1.251	3.5837	
15 minute winter	4	1.003	5	316.1	2.866	0.780	1.6713	
15 minute winter	32	4.000	33	25.5	1.091	0.601	0.5291	
15 minute winter	37	5.000	33	43.9	1.962	0.560	0.5281	
15 minute winter	33	4.001	34	77.9	1.107	1.044	3.1482	
15 minute winter	34	4.002	35	131.5	1.868	1.763	3.0816	
15 minute winter	38	6.000	35	15.1	0.956	0.356	0.3091	
15 minute winter	35	4.003	36	153.1	1.389	1.139	2.2794	
15 minute winter	36	4.004	5	183.3	1.662	1.364	4.6530	
15 minute winter	5	1.004	6	531.5	2.460	1.907	9.1079	
15 minute winter	6	1.005	7	562.3	2.603	2.017	2.5514	
15 minute winter	39	7.000	41	53.1	2.507	0.431	0.6008	
15 minute winter	41	7.001	42	119.2	1.810	0.812	4.7391	
15 minute winter	49	8.000	50	63.9	1.608	1.229	0.9924	
15 minute winter	55	9.000	50	52.2	2.101	0.531	0.7291	
15 minute winter	50	8.001	51	143.6	2.435	0.864	4.0810	
15 minute winter	51	8.002	52	159.4	1.605	0.873	1.9634	
15 minute winter	52	8.003	53	249.9	1.578	0.948	12.8147	
15 minute winter	56	10.000	57	39.8	1.272	0.684	0.8452	
15 minute winter	57	10.001	53	86.8	2.361	0.953	2.3224	
15 minute winter	53	8.004	54	348.1	2.197	1.180	3.1009	

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Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.53%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	54	12	63.039	1.561	372.3	3.7543	0.0000	SURCHARGED
15 minute winter	42	11	62.710	1.351	578.9	6.0808	0.0000	SURCHARGED
15 minute winter	43	12	61.271	0.393	603.3	0.9615	0.0000	OK
15 minute winter	44	12	60.467	1.363	649.9	4.9498	0.0000	SURCHARGED
15 minute winter	45	12	60.196	1.548	722.3	6.4305	0.0000	SURCHARGED
15 minute winter	46	12	60.003	1.461	736.5	4.0230	0.0000	SURCHARGED
15 minute winter	47	12	59.838	1.372	788.3	4.2564	0.0000	SURCHARGED
15 minute winter	48	12	59.632	1.253	788.0	3.1893	0.0000	SURCHARGED
15 minute winter	7	12	59.485	1.303	1362.3	3.4387	0.0000	SURCHARGED
15 minute winter	8	12	59.267	1.149	1393.3	3.2230	0.0000	SURCHARGED
15 minute winter	9	12	58.911	0.937	1418.1	2.6304	0.0000	SURCHARGED
15 minute winter	58	10	61.558	0.173	58.8	0.4365	0.0000	OK
15 minute winter	59	11	61.077	0.245	172.3	0.8811	0.0000	OK
15 minute winter	60	11	59.651	0.965	173.1	1.2424	0.0000	SURCHARGED
15 minute winter	61	11	59.366	0.792	234.3	2.5529	0.0000	SURCHARGED
15 minute winter	10	12	58.608	0.817	1671.2	2.3587	0.0000	OK
15 minute winter	11	12	58.160	0.518	1721.7	1.7439	0.0000	OK
15 minute winter	12	12	56.268	0.515	1739.8	1.5073	0.0000	OK
15 minute winter	13	12	55.037	0.562	1791.7	2.0619	0.0000	OK
15 minute winter	14	12	53.957	0.514	1791.3	1.3086	0.0000	OK
15 minute winter	62	11	59.825	0.161	91.5	0.6339	0.0000	OK
15 minute winter	63	12	58.865	1.075	154.3	2.5028	0.0000	SURCHARGED
15 minute winter	64	12	58.314	1.395	173.4	2.8786	0.0000	FLOOD RISK
15 minute winter	65	12	57.251	1.115	205.0	2.9758	0.0000	SURCHARGED
15 minute winter	66	12	56.892	1.110	249.8	3.2281	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	54	8.005	42	375.4	2.369	1.273	2.2700	
15 minute winter	42	7.002	43	572.5	3.614	1.583	5.0947	
15 minute winter	43	7.003	44	601.1	3.888	0.580	7.2821	
15 minute winter	44	7.004	45	648.0	2.427	0.665	4.3040	
15 minute winter	45	7.005	46	721.6	1.640	1.096	16.3338	
15 minute winter	46	7.006	47	736.3	1.673	1.119	11.6575	
15 minute winter	47	7.007	48	788.0	1.791	1.197	13.4743	
15 minute winter	48	7.008	7	790.3	1.796	1.187	7.0723	
15 minute winter	7	1.006	8	1362.7	2.150	1.284	14.1192	
15 minute winter	8	1.007	9	1393.5	2.199	1.313	31.9593	
15 minute winter	9	1.008	10	1418.1	2.253	1.008	22.6813	
15 minute winter	58	11.000	59	57.6	1.831	0.857	0.9138	
15 minute winter	59	11.001	60	166.0	2.414	0.829	4.3938	
15 minute winter	60	11.002	61	170.0	2.415	1.878	0.3922	
15 minute winter	61	11.003	10	232.1	2.105	1.550	4.9451	
15 minute winter	10	1.009	11	1671.6	3.333	1.188	14.6298	
15 minute winter	11	1.010	12	1721.2	5.336	0.680	14.6515	
15 minute winter	12	1.011	13	1738.8	5.166	0.561	6.9073	
15 minute winter	13	1.012	14	1791.3	5.315	0.578	5.5750	
15 minute winter	14	1.013	15	1790.1	4.866	0.536	6.6888	
15 minute winter	62	12.000	63	88.9	3.066	0.741	1.2008	
15 minute winter	63	12.001	64	131.5	2.110	0.746	2.4547	
15 minute winter	64	12.002	65	160.9	2.362	1.120	2.9915	
15 minute winter	65	12.003	66	195.5	1.800	0.873	3.1264	
15 minute winter	66	12.004	67	241.3	2.432	1.078	1.6456	

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Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.53%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	70	12	56.622	0.222	41.6	0.4542	0.0000	OK
15 minute winter	67	12	56.548	0.953	325.7	2.6755	0.0000	SURCHARGED
15 minute winter	68	12	55.212	1.246	353.1	3.1282	0.0000	SURCHARGED
15 minute winter	71	12	54.454	0.928	32.1	1.7534	0.0000	SURCHARGED
15 minute winter	69	12	54.408	1.242	416.7	4.1582	0.0000	SURCHARGED
15 minute winter	26	12	53.497	0.768	416.4	1.3563	0.0000	SURCHARGED
15 minute winter	15	12	52.823	0.684	2216.9	1.8857	0.0000	OK
15 minute winter	16	12	51.690	0.678	2230.7	1.9925	0.0000	OK
15 minute winter	17	12	50.492	0.633	2238.8	1.7936	0.0000	OK
15 minute winter	18	13	49.076	0.638	2281.2	2.2750	0.0000	OK
15 minute winter	19	13	47.333	1.645	2282.3	5.4105	0.0000	SURCHARGED
15 minute winter	20	13	45.271	1.358	2278.4	4.3431	0.0000	SURCHARGED
15 minute winter	21	14	43.528	0.915	2267.6	2.7120	0.0000	SURCHARGED
15 minute winter	27	10	49.136	0.136	85.6	0.3836	0.0000	OK
15 minute winter	79	12	47.336	0.428	58.2	1.0729	0.0000	SURCHARGED
15 minute winter	28	11	47.176	0.805	165.5	1.3909	0.0000	SURCHARGED
15 minute winter	72	11	46.914	0.637	233.1	1.8002	0.0000	SURCHARGED
15 minute winter	73	12	44.506	0.279	282.6	0.8624	0.0000	OK
15 minute winter	74	12	43.752	0.735	279.4	1.2993	0.0000	SURCHARGED
15 minute winter	75	12	43.542	0.772	318.2	2.1117	0.0000	SURCHARGED
15 minute winter	76	13	43.280	0.746	343.9	1.7649	0.0000	SURCHARGED
15 minute winter	77	13	42.984	0.794	406.5	2.4996	0.0000	SURCHARGED
15 minute winter	78	13	42.328	0.722	435.0	1.7710	0.0000	SURCHARGED
15 minute winter	22	13	41.899	1.258	2644.4	4.0842	0.0000	SURCHARGED
15 minute winter	23	14	39.739	1.107	2662.3	3.7220	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	70	13.000	67	41.4	2.116	0.419	0.7267	
15 minute winter	67	12.005	68	317.5	3.276	0.822	4.8520	
15 minute winter	68	12.006	69	350.1	3.175	0.855	1.9237	
15 minute winter	71	14.000	69	28.1	1.117	0.540	0.5356	
15 minute winter	69	12.007	26	416.4	2.628	1.288	6.9287	
15 minute winter	26	12.008	15	416.6	2.630	1.262	4.3536	
15 minute winter	15	1.014	16	2212.1	5.316	0.691	7.1006	
15 minute winter	16	1.015	17	2225.3	5.505	0.695	7.0506	
15 minute winter	17	1.016	18	2234.3	6.197	0.698	8.4146	
15 minute winter	18	1.017	19	2255.4	5.868	0.681	16.1565	
15 minute winter	19	1.018	20	2252.9	5.119	0.909	19.5299	
15 minute winter	20	1.019	21	2253.0	5.436	0.909	14.3074	
15 minute winter	21	1.020	22	2265.6	5.873	0.708	13.0175	
15 minute winter	27	15.000	28	85.0	2.351	0.690	1.4929	
15 minute winter	79	16.000	28	52.8	1.708	0.519	0.4827	
15 minute winter	28	15.001	72	152.5	2.166	1.226	0.5308	
15 minute winter	72	15.002	73	221.5	3.418	1.012	3.6169	
15 minute winter	73	15.003	74	279.4	3.326	0.710	2.9249	
15 minute winter	74	15.004	75	279.1	1.880	0.721	2.7441	
15 minute winter	75	15.005	76	319.8	2.033	0.827	2.6130	
15 minute winter	76	15.006	77	345.9	2.183	0.894	3.8139	
15 minute winter	77	15.007	78	406.2	2.582	1.123	7.3966	
15 minute winter	78	15.008	22	433.0	3.338	0.830	4.0695	
15 minute winter	22	1.021	23	2638.4	6.817	0.824	12.2754	
15 minute winter	23	1.022	24	2665.1	4.864	0.566	18.6450	

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Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.53%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	24	14	38.787	1.789	2678.4	5.4131	0.0000	SURCHARGED
15 minute winter	80	13	37.847	0.279	49.3	0.6396	0.0000	SURCHARGED
15 minute winter	25	13	37.771	1.909	2704.5	5.6989	0.0000	SURCHARGED
15 minute winter	29	14	36.912	1.554	2706.8	4.6397	0.0000	OK
15 minute winter	81	11	51.626	0.123	59.4	0.3119	0.0000	OK
15 minute winter	82	12	50.850	0.891	111.2	2.0888	0.0000	SURCHARGED
15 minute winter	83	12	50.131	0.985	140.6	2.1536	0.0000	SURCHARGED
15 minute winter	96	10	50.639	0.156	98.6	0.5398	0.0000	OK
15 minute winter	97	12	48.135	0.811	97.6	0.9177	0.0000	SURCHARGED
15 minute winter	84	12	48.038	0.849	238.5	1.3987	0.0000	SURCHARGED
15 minute winter	85	12	45.004	0.265	314.7	0.9349	0.0000	OK
15 minute winter	86	12	43.758	1.014	350.2	2.6001	0.0000	SURCHARGED
15 minute winter	87	12	42.949	1.278	338.7	2.2591	0.0000	SURCHARGED
15 minute winter	88	12	42.143	1.563	377.6	4.1930	0.0000	FLOOD RISK
15 minute winter	89	11	41.106	1.693	397.6	4.6913	5.6344	FLOOD
15 minute winter	90	11	39.960	1.447	359.7	2.5577	0.0000	FLOOD RISK
15 minute winter	91	11	37.473	0.736	399.6	1.9382	0.0000	SURCHARGED
15 minute winter	92	11	36.956	0.548	437.1	1.3532	0.0000	OK
15 minute winter	93	12	36.792	0.523	435.0	0.9234	0.0000	OK
15 minute winter	94	12	36.618	0.485	456.9	1.0164	0.0000	OK
720 minute winter	95	705	35.965	0.607	50.0	1.0724	0.0000	OK
720 minute winter	30	720	35.965	0.723	189.0	1.8395	0.0000	OK
960 minute winter	125	930	35.975	0.798	106.2	2.0312	0.0000	SURCHARGED
15 minute summer	126	1	35.090	0.000	36.0	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	24	1.023	25	2682.0	4.232	0.771	20.5957	
15 minute winter	80	17.000	25	49.2	2.363	0.494	0.9605	
15 minute winter	25	1.024	29	2706.8	3.138	1.576	67.8377	
15 minute winter	29	Flow through Pond	30	3199.5	0.303	0.008	1904.2123	
15 minute winter	81	18.000	82	58.9	1.876	0.564	1.1962	
15 minute winter	82	18.001	83	97.5	2.554	0.915	0.7758	
15 minute winter	83	18.002	84	124.6	3.479	0.965	1.2271	
15 minute winter	96	19.000	97	97.6	3.059	0.835	2.1322	
15 minute winter	97	19.001	84	83.4	1.287	0.671	0.7584	
15 minute winter	84	18.003	85	234.6	3.654	1.051	4.1801	
15 minute winter	85	18.004	86	311.6	3.770	0.694	3.8644	
15 minute winter	86	18.005	87	338.7	3.843	0.754	2.3661	
15 minute winter	87	18.006	88	333.4	3.577	0.742	2.4071	
15 minute winter	88	18.007	89	358.2	3.306	0.797	2.5733	
15 minute winter	89	18.008	90	359.7	3.262	0.982	2.9780	
15 minute winter	90	18.009	91	359.9	3.264	1.135	7.5054	
15 minute winter	91	18.010	92	399.6	2.522	1.355	3.3562	
15 minute winter	92	18.011	93	435.0	1.652	0.895	7.3370	
15 minute winter	93	18.012	94	430.6	1.753	0.886	6.8650	
15 minute winter	94	18.013	95	453.7	1.950	0.934	18.8190	
720 minute winter	95	Flow through Pond	30	189.0	0.046	0.000	4680.6865	
720 minute winter	30	27.000	125	36.3	0.517	0.041	3.3000	
960 minute winter	125	Hydro-Brake®	126	36.1				1991.0

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Results for 100 year +40% CC 720 minute summer. 960 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
720 minute summer	1	375	64.352	0.052	8.7	0.1721	0.0000	OK
720 minute summer	127	375	63.930	0.019	0.8	0.0363	0.0000	OK
720 minute summer	2	375	61.572	0.072	11.0	0.0906	0.0000	OK
720 minute summer	3	375	61.305	0.096	19.6	0.1724	0.0000	OK
720 minute summer	31	375	62.726	0.076	12.7	0.3274	0.0000	OK
720 minute summer	4	375	60.862	0.082	37.9	0.1805	0.0000	OK
720 minute summer	32	375	63.193	0.040	2.8	0.0946	0.0000	OK
720 minute summer	37	375	63.574	0.038	4.7	0.1068	0.0000	OK
720 minute summer	33	375	60.995	0.070	9.2	0.0898	0.0000	OK
720 minute summer	34	375	60.818	0.096	16.0	0.1712	0.0000	OK
720 minute summer	38	375	62.128	0.030	1.6	0.0451	0.0000	OK
720 minute summer	35	375	60.545	0.097	18.4	0.1788	0.0000	OK
720 minute summer	36	375	60.458	0.104	22.0	0.2163	0.0000	OK
720 minute summer	5	375	60.188	0.176	64.2	0.3633	0.0000	OK
720 minute summer	6	375	60.062	0.191	68.2	0.3960	0.0000	OK
720 minute summer	39	375	63.834	0.034	5.8	0.0999	0.0000	OK
720 minute summer	41	375	62.742	0.064	14.5	0.1722	0.0000	OK
720 minute summer	49	375	64.153	0.062	8.4	0.1881	0.0000	OK
720 minute summer	55	375	64.529	0.038	6.0	0.0947	0.0000	OK
720 minute summer	50	375	63.834	0.068	18.7	0.1254	0.0000	OK
720 minute summer	51	375	62.495	0.092	22.1	0.2165	0.0000	OK
720 minute summer	52	375	62.292	0.112	37.2	0.6022	0.0000	OK
720 minute summer	56	375	63.955	0.046	5.5	0.1100	0.0000	OK
720 minute summer	57	375	63.700	0.057	12.4	0.1193	0.0000	OK
720 minute summer	53	375	61.776	0.135	51.0	0.2654	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	8.7	1.286	0.112	0.1602	
720 minute summer	127	2.000	2	0.8	0.517	0.014	0.0174	
720 minute summer	2	1.001	3	11.0	1.023	0.212	0.2329	
720 minute summer	3	1.002	4	19.6	1.027	0.216	1.0125	
720 minute summer	31	3.000	4	12.7	0.910	0.140	0.7414	
720 minute summer	4	1.003	5	37.9	2.243	0.093	0.2560	
720 minute summer	32	4.000	33	2.8	0.604	0.066	0.1047	
720 minute summer	37	5.000	33	4.7	1.082	0.060	0.1025	
720 minute summer	33	4.001	34	9.2	0.580	0.123	0.7127	
720 minute summer	34	4.002	35	16.0	0.843	0.214	0.8305	
720 minute summer	38	6.000	35	1.6	0.513	0.038	0.0611	
720 minute summer	35	4.003	36	18.4	0.775	0.137	0.4909	
720 minute summer	36	4.004	5	22.0	0.902	0.164	1.0289	
720 minute summer	5	1.004	6	64.2	0.956	0.230	2.8334	
720 minute summer	6	1.005	7	68.2	1.032	0.245	0.7949	
720 minute summer	39	7.000	41	5.8	1.579	0.047	0.0693	
720 minute summer	41	7.001	42	14.5	1.334	0.099	0.7315	
720 minute summer	49	8.000	50	8.4	0.955	0.162	0.2196	
720 minute summer	55	9.000	50	6.0	1.358	0.061	0.0810	
720 minute summer	50	8.001	51	18.7	1.564	0.113	0.6928	
720 minute summer	51	8.002	52	22.1	1.098	0.121	0.3584	
720 minute summer	52	8.003	53	37.2	1.052	0.141	2.8640	
720 minute summer	56	10.000	57	5.5	0.806	0.095	0.1455	
720 minute summer	57	10.001	53	12.4	1.604	0.136	0.4515	
720 minute summer	53	8.004	54	51.0	1.214	0.173	0.8227	

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Results for 100 year +40% CC 720 minute summer. 960 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
720 minute summer	54	375	61.623	0.145	55.0	0.3490	0.0000	OK
720 minute summer	42	375	61.510	0.151	80.2	0.6777	0.0000	OK
720 minute summer	43	375	60.981	0.103	84.0	0.2524	0.0000	OK
720 minute summer	44	375	59.238	0.134	90.5	0.4873	0.0000	OK
720 minute summer	45	375	58.856	0.208	100.5	0.8635	0.0000	OK
720 minute summer	46	375	58.758	0.216	102.5	0.5948	0.0000	OK
720 minute summer	47	375	58.686	0.220	109.5	0.6840	0.0000	OK
720 minute summer	48	375	58.598	0.219	109.5	0.5583	0.0000	OK
720 minute summer	7	375	58.455	0.273	179.3	0.7195	0.0000	OK
720 minute summer	8	375	58.376	0.258	183.4	0.7242	0.0000	OK
720 minute summer	9	375	58.210	0.236	186.7	0.6617	0.0000	OK
720 minute summer	58	375	61.432	0.047	6.2	0.1179	0.0000	OK
720 minute summer	59	375	60.893	0.061	18.3	0.2187	0.0000	OK
720 minute summer	60	375	58.789	0.103	19.1	0.1332	0.0000	OK
720 minute summer	61	375	58.682	0.108	26.3	0.3479	0.0000	OK
720 minute summer	10	375	58.038	0.247	216.4	0.7134	0.0000	OK
720 minute summer	11	375	57.797	0.155	223.2	0.5233	0.0000	OK
720 minute summer	12	375	55.897	0.144	225.7	0.4215	0.0000	OK
720 minute summer	13	375	54.628	0.153	232.9	0.5602	0.0000	OK
720 minute summer	14	375	53.582	0.139	232.9	0.3547	0.0000	OK
720 minute summer	62	375	59.708	0.044	9.7	0.1720	0.0000	OK
720 minute summer	63	375	57.852	0.062	16.6	0.1438	0.0000	OK
720 minute summer	64	375	56.998	0.079	21.3	0.1636	0.0000	OK
720 minute summer	65	375	56.223	0.087	26.1	0.2310	0.0000	OK
720 minute summer	66	375	55.885	0.103	32.4	0.3003	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	54	8.005	42	55.0	1.215	0.186	0.6488	
720 minute summer	42	7.002	43	80.2	1.800	0.222	1.4479	
720 minute summer	43	7.003	44	84.0	2.884	0.081	1.0890	
720 minute summer	44	7.004	45	90.5	2.071	0.093	0.6680	
720 minute summer	45	7.005	46	100.5	0.985	0.153	3.7876	
720 minute summer	46	7.006	47	102.5	0.964	0.156	2.8151	
720 minute summer	47	7.007	48	109.5	1.019	0.166	3.2895	
720 minute summer	48	7.008	7	109.5	1.095	0.164	1.6081	
720 minute summer	7	1.006	8	179.3	1.150	0.169	3.4741	
720 minute summer	8	1.007	9	183.4	1.301	0.173	7.1101	
720 minute summer	9	1.008	10	186.7	1.367	0.133	5.0038	
720 minute summer	58	11.000	59	6.2	1.054	0.092	0.1687	
720 minute summer	59	11.001	60	18.3	1.173	0.091	1.0556	
720 minute summer	60	11.002	61	19.1	0.956	0.211	0.1114	
720 minute summer	61	11.003	10	26.3	1.024	0.176	1.1780	
720 minute summer	10	1.009	11	216.4	2.049	0.154	3.1877	
720 minute summer	11	1.010	12	223.2	3.583	0.088	2.8267	
720 minute summer	12	1.011	13	225.7	3.673	0.073	1.2572	
720 minute summer	13	1.012	14	232.9	3.874	0.075	0.9932	
720 minute summer	14	1.013	15	232.9	3.623	0.070	1.1593	
720 minute summer	62	12.000	63	9.7	1.809	0.081	0.1833	
720 minute summer	63	12.001	64	16.6	1.319	0.094	0.4407	
720 minute summer	64	12.002	65	21.3	1.458	0.148	0.6209	
720 minute summer	65	12.003	66	26.1	1.193	0.117	0.6211	
720 minute summer	66	12.004	67	32.4	1.506	0.145	0.3219	

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Results for 100 year +40% CC 720 minute summer. 960 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
720 minute summer	70	375	56.433	0.033	4.4	0.0673	0.0000	OK
720 minute summer	67	375	55.679	0.084	43.1	0.2369	0.0000	OK
720 minute summer	68	375	54.057	0.091	47.6	0.2286	0.0000	OK
720 minute summer	71	375	53.566	0.040	3.4	0.0754	0.0000	OK
720 minute summer	69	375	53.295	0.129	56.2	0.4328	0.0000	OK
720 minute summer	26	375	52.860	0.131	56.2	0.2316	0.0000	OK
720 minute summer	15	375	52.306	0.167	290.5	0.4587	0.0000	OK
720 minute summer	16	375	51.179	0.167	293.0	0.4908	0.0000	OK
720 minute summer	17	375	50.026	0.167	294.8	0.4731	0.0000	OK
720 minute summer	18	375	48.590	0.152	301.1	0.5428	0.0000	OK
720 minute summer	19	375	45.869	0.181	306.1	0.5969	0.0000	OK
720 minute summer	20	375	44.107	0.194	310.8	0.6188	0.0000	OK
720 minute summer	21	375	42.775	0.162	313.5	0.4805	0.0000	OK
720 minute summer	27	375	49.041	0.041	9.0	0.1166	0.0000	OK
720 minute summer	79	375	46.946	0.038	6.1	0.0964	0.0000	OK
720 minute summer	28	375	46.456	0.085	18.4	0.1475	0.0000	OK
720 minute summer	72	375	46.349	0.072	26.9	0.2031	0.0000	OK
720 minute summer	73	375	44.303	0.076	33.8	0.2347	0.0000	OK
720 minute summer	74	375	43.110	0.093	33.8	0.1647	0.0000	OK
720 minute summer	75	375	42.871	0.101	38.9	0.2768	0.0000	OK
720 minute summer	76	375	42.636	0.102	42.2	0.2420	0.0000	OK
720 minute summer	77	375	42.307	0.117	49.9	0.3670	0.0000	OK
720 minute summer	78	375	41.707	0.101	53.7	0.2483	0.0000	OK
720 minute summer	22	375	40.827	0.186	371.7	0.6027	0.0000	OK
720 minute summer	23	375	38.807	0.175	377.3	0.5884	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	70	13.000	67	4.4	1.246	0.045	0.0647	
720 minute summer	67	12.005	68	43.1	2.204	0.112	0.8603	
720 minute summer	68	12.006	69	47.6	2.414	0.116	0.3439	
720 minute summer	71	14.000	69	3.4	0.732	0.065	0.0626	
720 minute summer	69	12.007	26	56.2	1.480	0.174	1.6603	
720 minute summer	26	12.008	15	56.2	1.526	0.170	1.0252	
720 minute summer	15	1.014	16	290.5	3.995	0.091	1.2291	
720 minute summer	16	1.015	17	293.0	4.023	0.092	1.2601	
720 minute summer	17	1.016	18	294.8	4.315	0.092	1.4566	
720 minute summer	18	1.017	19	301.1	4.136	0.091	2.8080	
720 minute summer	19	1.018	20	306.1	3.564	0.124	3.8118	
720 minute summer	20	1.019	21	310.8	3.902	0.125	2.5952	
720 minute summer	21	1.020	22	313.5	4.061	0.098	2.2858	
720 minute summer	27	15.000	28	9.0	1.809	0.073	0.2288	
720 minute summer	79	16.000	28	6.1	1.389	0.060	0.0533	
720 minute summer	28	15.001	72	18.4	1.253	0.148	0.1109	
720 minute summer	72	15.002	73	26.9	2.107	0.123	0.6557	
720 minute summer	73	15.003	74	33.8	2.175	0.086	0.4589	
720 minute summer	74	15.004	75	33.8	1.345	0.087	0.4355	
720 minute summer	75	15.005	76	38.9	1.450	0.101	0.4424	
720 minute summer	76	15.006	77	42.2	1.419	0.109	0.7169	
720 minute summer	77	15.007	78	49.9	1.691	0.138	1.3804	
720 minute summer	78	15.008	22	53.7	2.093	0.103	0.6594	
720 minute summer	22	1.021	23	371.7	4.695	0.116	2.2094	
720 minute summer	23	1.022	24	377.3	3.733	0.080	2.9821	

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Results for 100 year +40% CC 720 minute summer. 960 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
720 minute summer	24	375	37.213	0.215	380.8	0.6518	0.0000	OK
720 minute summer	80	375	37.603	0.035	5.2	0.0812	0.0000	OK
720 minute summer	25	375	36.208	0.346	386.0	1.0330	0.0000	OK
720 minute summer	29	735	35.878	0.520	386.0	1.5530	0.0000	OK
720 minute summer	81	375	51.540	0.037	6.3	0.0948	0.0000	OK
720 minute summer	82	375	50.010	0.051	11.8	0.1193	0.0000	OK
720 minute summer	83	375	49.201	0.055	16.6	0.1213	0.0000	OK
720 minute summer	96	375	50.529	0.046	10.4	0.1579	0.0000	OK
720 minute summer	97	375	47.385	0.061	10.4	0.0685	0.0000	OK
720 minute summer	84	375	47.265	0.076	30.5	0.1247	0.0000	OK
720 minute summer	85	375	44.814	0.075	39.9	0.2649	0.0000	OK
720 minute summer	86	375	42.826	0.082	44.2	0.2100	0.0000	OK
720 minute summer	87	375	41.752	0.081	44.2	0.1438	0.0000	OK
720 minute summer	88	375	40.664	0.084	49.2	0.2246	0.0000	OK
720 minute summer	89	375	39.513	0.100	54.5	0.2762	0.0000	OK
720 minute summer	90	375	38.619	0.106	54.5	0.1877	0.0000	OK
720 minute summer	91	375	36.882	0.145	59.3	0.3820	0.0000	OK
720 minute summer	92	375	36.561	0.153	63.5	0.3777	0.0000	OK
720 minute summer	93	375	36.422	0.153	63.5	0.2704	0.0000	OK
720 minute summer	94	375	36.283	0.150	66.4	0.3154	0.0000	OK
720 minute summer	95	735	35.878	0.520	66.4	0.9188	0.0000	OK
720 minute summer	30	735	35.878	0.636	245.3	1.6185	0.0000	OK
720 minute summer	125	750	35.921	0.744	111.4	1.8925	0.0000	SURCHARGED
720 minute summer	126	15	35.090	0.000	36.1	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)
720 minute summer	24	1.023	25	380.8	3.497	0.109	3.5403	
720 minute summer	80	17.000	25	5.2	1.322	0.052	0.0950	
720 minute summer	25	1.024	29	386.0	1.624	0.225	18.6991	
720 minute summer	29	Flow through Pond	30	245.3	0.052	0.001	4043.1875	
720 minute summer	81	18.000	82	6.3	1.150	0.060	0.2128	
720 minute summer	82	18.001	83	11.8	1.651	0.111	0.1395	
720 minute summer	83	18.002	84	16.6	2.220	0.129	0.2307	
720 minute summer	96	19.000	97	10.4	1.822	0.089	0.3521	
720 minute summer	97	19.001	84	10.4	0.868	0.084	0.1295	
720 minute summer	84	18.003	85	30.5	2.218	0.137	0.8165	
720 minute summer	85	18.004	86	39.9	2.388	0.089	0.6669	
720 minute summer	86	18.005	87	44.2	2.504	0.098	0.3788	
720 minute summer	87	18.006	88	44.2	2.465	0.098	0.3915	
720 minute summer	88	18.007	89	49.2	2.363	0.110	0.4867	
720 minute summer	89	18.008	90	54.5	2.223	0.149	0.6620	
720 minute summer	90	18.009	91	54.5	2.160	0.172	1.7171	
720 minute summer	91	18.010	92	59.3	1.414	0.201	0.9027	
720 minute summer	92	18.011	93	63.5	1.123	0.131	1.5665	
720 minute summer	93	18.012	94	63.5	1.136	0.131	1.5213	
720 minute summer	94	18.013	95	66.4	1.225	0.137	4.3776	
720 minute summer	95	Flow through Pond	30	245.3	0.052	0.001	4043.1875	
720 minute summer	30	27.000	125	111.4	0.536	0.126	2.9972	
720 minute summer	125	Hydro-Brake®	126	36.1				1604.7

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Results for 100 year +40% CC 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	375	64.345	0.045	6.6	0.1496	0.0000	OK
720 minute winter	127	375	63.927	0.016	0.6	0.0317	0.0000	OK
720 minute winter	2	375	61.562	0.062	8.3	0.0780	0.0000	OK
720 minute winter	3	375	61.292	0.083	14.8	0.1487	0.0000	OK
720 minute winter	31	375	62.716	0.066	9.6	0.2839	0.0000	OK
720 minute winter	4	375	60.850	0.070	28.6	0.1557	0.0000	OK
720 minute winter	32	375	63.187	0.034	2.1	0.0820	0.0000	OK
720 minute winter	37	375	63.569	0.033	3.5	0.0923	0.0000	OK
720 minute winter	33	375	60.986	0.061	6.9	0.0779	0.0000	OK
720 minute winter	34	375	60.804	0.082	12.0	0.1471	0.0000	OK
720 minute winter	38	360	62.124	0.026	1.2	0.0393	0.0000	OK
720 minute winter	35	375	60.531	0.083	13.8	0.1532	0.0000	OK
720 minute winter	36	375	60.444	0.090	16.5	0.1864	0.0000	OK
720 minute winter	5	375	60.163	0.151	48.3	0.3102	0.0000	OK
720 minute winter	6	375	60.034	0.163	51.3	0.3392	0.0000	OK
720 minute winter	39	375	63.830	0.030	4.4	0.0873	0.0000	OK
720 minute winter	41	375	62.734	0.056	11.0	0.1501	0.0000	OK
720 minute winter	49	375	64.145	0.054	6.3	0.1621	0.0000	OK
720 minute winter	55	375	64.524	0.033	4.5	0.0821	0.0000	OK
720 minute winter	50	375	63.825	0.059	14.0	0.1084	0.0000	OK
720 minute winter	51	375	62.482	0.079	16.5	0.1857	0.0000	OK
720 minute winter	52	375	62.277	0.097	27.8	0.5205	0.0000	OK
720 minute winter	56	375	63.950	0.041	4.2	0.0964	0.0000	OK
720 minute winter	57	375	63.692	0.049	9.4	0.1037	0.0000	OK
720 minute winter	53	375	61.756	0.115	38.3	0.2262	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	6.6	1.190	0.085	0.1314	
720 minute winter	127	2.000	2	0.6	0.473	0.010	0.0143	
720 minute winter	2	1.001	3	8.3	0.948	0.160	0.1897	
720 minute winter	3	1.002	4	14.8	0.950	0.163	0.8261	
720 minute winter	31	3.000	4	9.6	0.841	0.106	0.6063	
720 minute winter	4	1.003	5	28.6	2.077	0.071	0.2086	
720 minute winter	32	4.000	33	2.1	0.556	0.050	0.0853	
720 minute winter	37	5.000	33	3.5	0.994	0.045	0.0831	
720 minute winter	33	4.001	34	6.9	0.536	0.092	0.5787	
720 minute winter	34	4.002	35	12.0	0.779	0.161	0.6742	
720 minute winter	38	6.000	35	1.2	0.470	0.028	0.0500	
720 minute winter	35	4.003	36	13.8	0.720	0.103	0.3962	
720 minute winter	36	4.004	5	16.5	0.833	0.123	0.8362	
720 minute winter	5	1.004	6	48.3	0.892	0.173	2.2832	
720 minute winter	6	1.005	7	51.3	0.957	0.184	0.6450	
720 minute winter	39	7.000	41	4.4	1.456	0.036	0.0570	
720 minute winter	41	7.001	42	11.0	1.231	0.075	0.6016	
720 minute winter	49	8.000	50	6.3	0.881	0.121	0.1784	
720 minute winter	55	9.000	50	4.5	1.250	0.046	0.0660	
720 minute winter	50	8.001	51	14.0	1.440	0.084	0.5635	
720 minute winter	51	8.002	52	16.5	1.014	0.090	0.2898	
720 minute winter	52	8.003	53	27.8	0.977	0.105	2.3064	
720 minute winter	56	10.000	57	4.2	0.747	0.072	0.1197	
720 minute winter	57	10.001	53	9.4	1.483	0.103	0.3702	
720 minute winter	53	8.004	54	38.3	1.143	0.130	0.6564	

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Results for 100 year +40% CC 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	54	375	61.601	0.123	41.3	0.2963	0.0000	OK
720 minute winter	42	375	61.488	0.129	60.3	0.5800	0.0000	OK
720 minute winter	43	375	60.967	0.089	63.2	0.2185	0.0000	OK
720 minute winter	44	375	59.219	0.115	68.1	0.4178	0.0000	OK
720 minute winter	45	375	58.826	0.178	75.7	0.7394	0.0000	OK
720 minute winter	46	375	58.726	0.184	77.2	0.5076	0.0000	OK
720 minute winter	47	375	58.655	0.189	82.5	0.5854	0.0000	OK
720 minute winter	48	375	58.567	0.188	82.5	0.4797	0.0000	OK
720 minute winter	7	375	58.415	0.233	135.0	0.6154	0.0000	OK
720 minute winter	8	375	58.340	0.222	138.1	0.6231	0.0000	OK
720 minute winter	9	375	58.176	0.202	140.6	0.5664	0.0000	OK
720 minute winter	58	375	61.426	0.041	4.7	0.1027	0.0000	OK
720 minute winter	59	375	60.885	0.053	13.8	0.1906	0.0000	OK
720 minute winter	60	375	58.775	0.089	14.4	0.1141	0.0000	OK
720 minute winter	61	375	58.667	0.093	19.8	0.3001	0.0000	OK
720 minute winter	10	375	58.005	0.214	163.0	0.6182	0.0000	OK
720 minute winter	11	375	57.777	0.135	168.1	0.4532	0.0000	OK
720 minute winter	12	375	55.877	0.124	170.0	0.3629	0.0000	OK
720 minute winter	13	375	54.606	0.131	175.4	0.4809	0.0000	OK
720 minute winter	14	375	53.563	0.120	175.4	0.3050	0.0000	OK
720 minute winter	62	375	59.702	0.038	7.3	0.1494	0.0000	OK
720 minute winter	63	375	57.844	0.054	12.5	0.1252	0.0000	OK
720 minute winter	64	375	56.987	0.068	16.0	0.1412	0.0000	OK
720 minute winter	65	375	56.211	0.075	19.6	0.1991	0.0000	OK
720 minute winter	66	375	55.871	0.089	24.3	0.2579	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	54	8.005	42	41.3	1.139	0.140	0.5198	
720 minute winter	42	7.002	43	60.3	1.670	0.167	1.1730	
720 minute winter	43	7.003	44	63.2	2.661	0.061	0.8881	
720 minute winter	44	7.004	45	68.1	1.923	0.070	0.5412	
720 minute winter	45	7.005	46	75.7	0.926	0.115	3.0366	
720 minute winter	46	7.006	47	77.2	0.906	0.117	2.2579	
720 minute winter	47	7.007	48	82.5	0.953	0.125	2.6513	
720 minute winter	48	7.008	7	82.5	1.019	0.124	1.3022	
720 minute winter	7	1.006	8	135.0	1.074	0.127	2.8016	
720 minute winter	8	1.007	9	138.1	1.216	0.130	5.7317	
720 minute winter	9	1.008	10	140.6	1.271	0.100	4.0522	
720 minute winter	58	11.000	59	4.7	0.973	0.070	0.1386	
720 minute winter	59	11.001	60	13.8	1.089	0.069	0.8569	
720 minute winter	60	11.002	61	14.4	0.887	0.159	0.0904	
720 minute winter	61	11.003	10	19.8	0.946	0.132	0.9599	
720 minute winter	10	1.009	11	163.0	1.894	0.116	2.5985	
720 minute winter	11	1.010	12	168.1	3.333	0.066	2.2883	
720 minute winter	12	1.011	13	170.0	3.439	0.055	1.0107	
720 minute winter	13	1.012	14	175.4	3.630	0.057	0.7975	
720 minute winter	14	1.013	15	175.4	3.407	0.053	0.9295	
720 minute winter	62	12.000	63	7.3	1.665	0.061	0.1499	
720 minute winter	63	12.001	64	12.5	1.218	0.071	0.3592	
720 minute winter	64	12.002	65	16.0	1.345	0.111	0.5053	
720 minute winter	65	12.003	66	19.6	1.110	0.088	0.5015	
720 minute winter	66	12.004	67	24.3	1.394	0.109	0.2608	

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Results for 100 year +40% CC 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	70	375	56.429	0.029	3.3	0.0585	0.0000	OK
720 minute winter	67	375	55.668	0.073	32.4	0.2053	0.0000	OK
720 minute winter	68	375	54.044	0.078	35.8	0.1965	0.0000	OK
720 minute winter	71	360	53.560	0.034	2.5	0.0646	0.0000	OK
720 minute winter	69	375	53.277	0.111	42.2	0.3725	0.0000	OK
720 minute winter	26	375	52.842	0.113	42.2	0.1988	0.0000	OK
720 minute winter	15	375	52.281	0.142	218.6	0.3924	0.0000	OK
720 minute winter	16	375	51.155	0.143	220.5	0.4199	0.0000	OK
720 minute winter	17	375	50.002	0.143	221.9	0.4055	0.0000	OK
720 minute winter	18	375	48.570	0.132	226.7	0.4692	0.0000	OK
720 minute winter	19	375	45.844	0.156	230.4	0.5140	0.0000	OK
720 minute winter	20	375	44.079	0.166	233.9	0.5311	0.0000	OK
720 minute winter	21	375	42.753	0.140	235.9	0.4139	0.0000	OK
720 minute winter	27	375	49.036	0.036	6.8	0.1016	0.0000	OK
720 minute winter	79	375	46.941	0.033	4.6	0.0836	0.0000	OK
720 minute winter	28	375	46.444	0.073	13.9	0.1268	0.0000	OK
720 minute winter	72	375	46.339	0.062	20.3	0.1760	0.0000	OK
720 minute winter	73	375	44.293	0.066	25.5	0.2036	0.0000	OK
720 minute winter	74	375	43.097	0.080	25.5	0.1421	0.0000	OK
720 minute winter	75	375	42.857	0.087	29.4	0.2387	0.0000	OK
720 minute winter	76	375	42.622	0.088	31.9	0.2087	0.0000	OK
720 minute winter	77	375	42.291	0.101	37.7	0.3179	0.0000	OK
720 minute winter	78	375	41.693	0.087	40.5	0.2144	0.0000	OK
720 minute winter	22	375	40.800	0.159	279.8	0.5157	0.0000	OK
720 minute winter	23	375	38.783	0.151	284.0	0.5063	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	70	13.000	67	3.3	1.144	0.033	0.0528	
720 minute winter	67	12.005	68	32.4	2.045	0.084	0.6973	
720 minute winter	68	12.006	69	35.8	2.237	0.087	0.2791	
720 minute winter	71	14.000	69	2.5	0.671	0.048	0.0502	
720 minute winter	69	12.007	26	42.2	1.375	0.131	1.3420	
720 minute winter	26	12.008	15	42.2	1.413	0.128	0.8315	
720 minute winter	15	1.014	16	218.6	3.756	0.068	0.9836	
720 minute winter	16	1.015	17	220.5	3.778	0.069	1.0097	
720 minute winter	17	1.016	18	221.9	4.029	0.069	1.1740	
720 minute winter	18	1.017	19	226.7	3.846	0.068	2.2728	
720 minute winter	19	1.018	20	230.4	3.326	0.093	3.0750	
720 minute winter	20	1.019	21	233.9	3.641	0.094	2.0920	
720 minute winter	21	1.020	22	235.9	3.802	0.074	1.8385	
720 minute winter	27	15.000	28	6.8	1.667	0.055	0.1875	
720 minute winter	79	16.000	28	4.6	1.282	0.045	0.0436	
720 minute winter	28	15.001	72	13.9	1.166	0.112	0.0900	
720 minute winter	72	15.002	73	20.3	1.945	0.093	0.5360	
720 minute winter	73	15.003	74	25.5	2.006	0.065	0.3752	
720 minute winter	74	15.004	75	25.5	1.253	0.066	0.3524	
720 minute winter	75	15.005	76	29.4	1.354	0.076	0.3581	
720 minute winter	76	15.006	77	31.9	1.319	0.082	0.5828	
720 minute winter	77	15.007	78	37.7	1.569	0.104	1.1228	
720 minute winter	78	15.008	22	40.5	1.935	0.078	0.5375	
720 minute winter	22	1.021	23	279.8	4.367	0.087	1.7878	
720 minute winter	23	1.022	24	284.0	3.495	0.060	2.3972	

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Results for 100 year +40% CC 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	24	375	37.183	0.185	286.6	0.5584	0.0000	OK
720 minute winter	80	375	37.599	0.031	3.9	0.0705	0.0000	OK
720 minute winter	25	375	36.159	0.297	290.5	0.8863	0.0000	OK
720 minute winter	29	720	35.965	0.607	290.5	1.8127	0.0000	OK
720 minute winter	81	375	51.535	0.032	4.7	0.0822	0.0000	OK
720 minute winter	82	375	50.003	0.044	8.9	0.1034	0.0000	OK
720 minute winter	83	375	49.194	0.048	12.5	0.1049	0.0000	OK
720 minute winter	96	375	50.523	0.040	7.8	0.1371	0.0000	OK
720 minute winter	97	375	47.376	0.052	7.8	0.0588	0.0000	OK
720 minute winter	84	375	47.254	0.065	22.9	0.1077	0.0000	OK
720 minute winter	85	375	44.804	0.065	30.0	0.2300	0.0000	OK
720 minute winter	86	375	42.815	0.071	33.3	0.1816	0.0000	OK
720 minute winter	87	375	41.741	0.070	33.3	0.1244	0.0000	OK
720 minute winter	88	375	40.652	0.072	37.0	0.1940	0.0000	OK
720 minute winter	89	375	39.499	0.086	41.0	0.2377	0.0000	OK
720 minute winter	90	375	38.605	0.092	41.0	0.1621	0.0000	OK
720 minute winter	91	375	36.861	0.124	44.6	0.3270	0.0000	OK
720 minute winter	92	375	36.539	0.131	47.8	0.3245	0.0000	OK
720 minute winter	93	375	36.401	0.132	47.8	0.2325	0.0000	OK
720 minute winter	94	375	36.263	0.130	50.0	0.2726	0.0000	OK
720 minute winter	95	705	35.965	0.607	50.0	1.0728	0.0000	OK
720 minute winter	30	720	35.965	0.723	189.0	1.8398	0.0000	OK
720 minute winter	125	720	35.965	0.788	52.5	2.0049	0.0000	SURCHARGED
720 minute winter	126	15	35.090	0.000	36.1	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)
720 minute winter	24	1.023	25	286.6	3.258	0.082	2.8622	
720 minute winter	80	17.000	25	3.9	1.214	0.039	0.0776	
720 minute winter	25	1.024	29	290.5	1.505	0.169	15.1850	
720 minute winter	29	Flow through Pond	30	189.0	0.046	0.000	4681.3013	
720 minute winter	81	18.000	82	4.7	1.054	0.045	0.1733	
720 minute winter	82	18.001	83	8.9	1.529	0.083	0.1136	
720 minute winter	83	18.002	84	12.5	2.050	0.097	0.1882	
720 minute winter	96	19.000	97	7.8	1.674	0.067	0.2874	
720 minute winter	97	19.001	84	7.8	0.806	0.063	0.1046	
720 minute winter	84	18.003	85	22.9	2.046	0.103	0.6646	
720 minute winter	85	18.004	86	30.0	2.207	0.067	0.5428	
720 minute winter	86	18.005	87	33.3	2.321	0.074	0.3078	
720 minute winter	87	18.006	88	33.3	2.287	0.074	0.3178	
720 minute winter	88	18.007	89	37.0	2.194	0.082	0.3942	
720 minute winter	89	18.008	90	41.0	2.062	0.112	0.5370	
720 minute winter	90	18.009	91	41.0	1.995	0.129	1.3992	
720 minute winter	91	18.010	92	44.6	1.312	0.151	0.7317	
720 minute winter	92	18.011	93	47.8	1.048	0.098	1.2632	
720 minute winter	93	18.012	94	47.8	1.056	0.098	1.2319	
720 minute winter	94	18.013	95	50.0	1.132	0.103	4.5745	
720 minute winter	95	Flow through Pond	30	189.0	0.046	0.000	4681.3013	
720 minute winter	30	27.000	125	52.5	0.517	0.059	3.3003	
720 minute winter	125	Hydro-Brake®	126	36.1				1595.1

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