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FLOOD RISK ASSESSMENT

ON

LAND TO THE SOUTH OF DONCASTER ROAD, DARFIELD, BARNSLEY

FOR

SAUL HOMES & KEEPMOAT HOMES

E20/7309/FR01

JUNE 2024

M.Huddleston MEng.

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

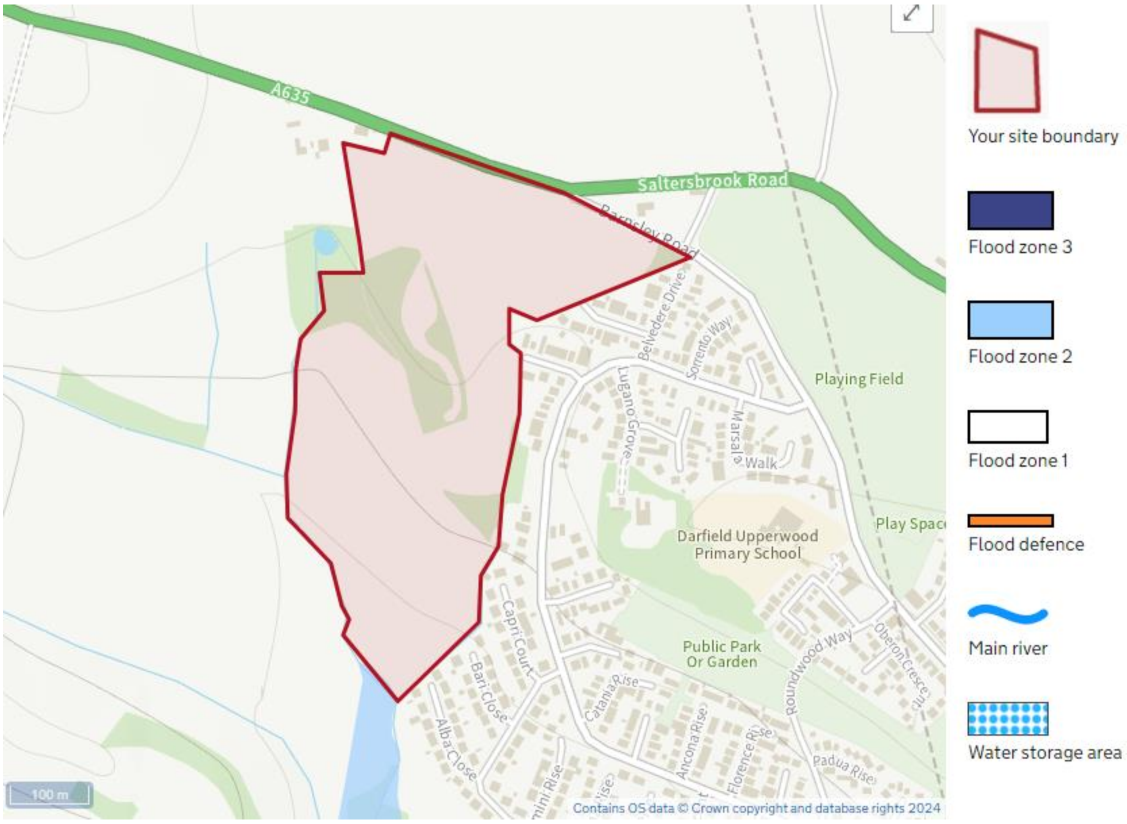
4.1 On reviewing the Environment Agency websites flood risk maps, the vast majority of the site currently falls within flood zone 1: which is designated as low probability of flooding from sea or rivers less than 0.1% (ie 1 in 1000 year) probability of flooding. A small sliver of the development site is located within Flood Zone 2 adjacent to the watercourse on the southern boundary.

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%).

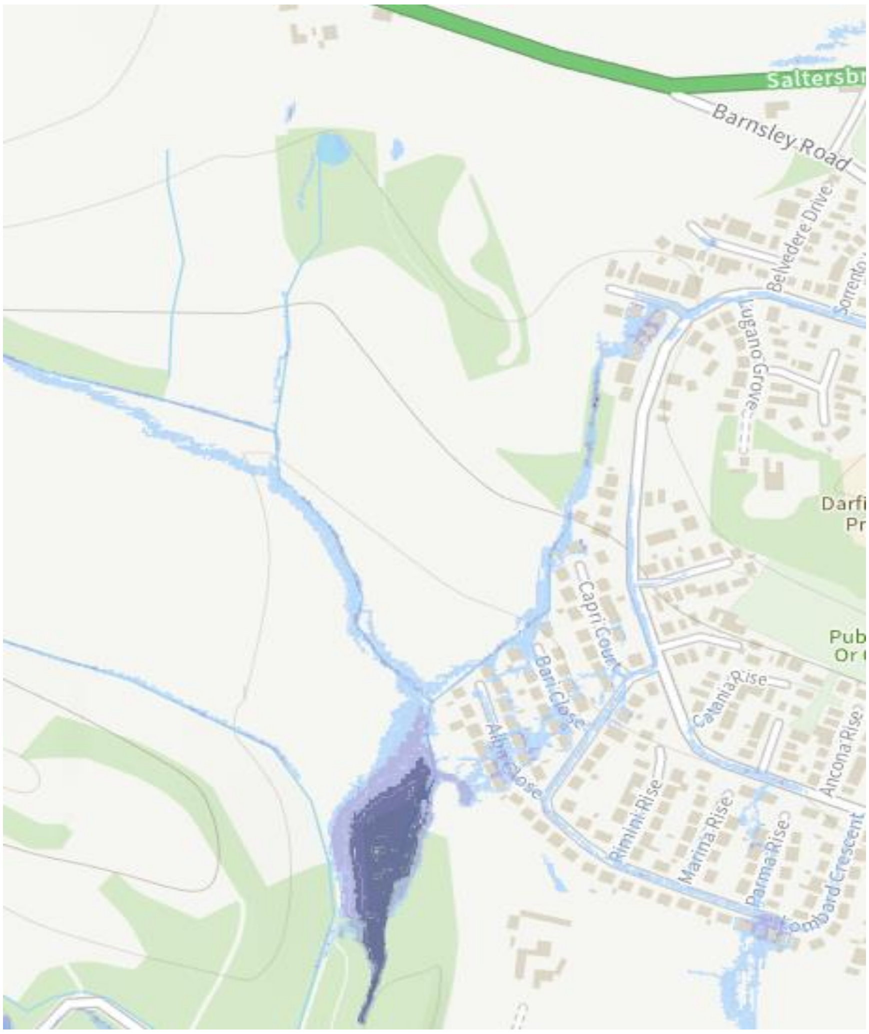
Flood Zone 2: Medium Probability. Land assessed as having between a 1 in 100 and 1 in 1000 chance of river flooding (1% 0.1%) and between a 1 in 200 and 1 in 1000 chance of sea flooding (0.5% 0.1%) in any year.

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.



Note 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.

4.2 The surface water flooding maps show some ingress into the site from the watercourses along the southern and eastern site boundaries. These indicate that the largest ingress will be from low risk events. The surface water ingress affects the southern and eastern boundaries to Area 2. Floor levels adjacent the boundaries will need to be raised slightly to facilitate a flood route through the site.



4.3 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.

4.4 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.

4.5 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.

4.6 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.

4.7 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 The proposed development area only marginally 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.

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. There is a small sliver of site within flood zone 2 levels in the area are proposed to be raised and the watercourse diverted to enable the construction of the detention basin. 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

Haigh Huddleston & Associates
Civil Structural Engineering Consultants
t 01924 574074
e info@haighhuddleston.co.uk

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.

N

APPENDIX B

PROPOSED PLANNING LAYOUT

01 / SITE LAYOUT

PLANNING LAYOUT LAYERS KEY:

- 1800mm BRICK WALL
- 1800mm TIMBER FENCE
- 450mm KNEE HIGH RAIL
- APPLICATION BOUNDARY
- APPLICATION BOUNDARY (LAND OWNERSHIP NOT INCLUDED)
- TREES
- CARS (VISITOR PARKING)
- BLOCK PAVING (SHARED SURFACES)
- BLOCK PAVING (BRINDLE)
- CYCLE STORE / BIN STORAGE
- EV CHARGING POINT
- BIN COLLECTION POINT

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

SCHEDULE OF ACCOMMODATION:

KEEPMOAT HOMES

HOUSETYPE REPRESENTATION	HOUSETYPE INFO	AMOUNT

SAUL HOMES

HOUSETYPE REPRESENTATION	HOUSETYPE INFO	AMOUNT

Designer Risk Assessment

Criteria	Location	Who's At Risk	Consequence	Mitigation
Trenches and excavation	Whole Site	Construction Staff	1. Risk of collapsing excavation 2. Falling debris into excavation 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. Risk of health problems to General Public 3. Risk of health problems to Construction Staff	Contractor to determine safe methods of working through construction methods/sequences. Site staff to be provided with appropriate PPE relative to their nature of work. Work may also 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 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 & polution.	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.

NORTH

1:1000 SCALE

10m 100m

Do not scale off this drawing - Only figured dimensions to be taken from this drawing. Drawings based on Ordnance Survey and/or existing record drawings - Design and Drawing content subject to Site Survey, Structural Survey, Site Investigations, Planning and Statutory Requirements and Approvals.

Rev	Date	Description	Drawn	Check

jrp Architecture Planning Urban Design Landscape

CLIENT: KEEPMOAT HOMES & SAUL HOMES

PROJECT: DONCASTER ROAD, DARFIELD

DRAWING: SITE LAYOUT

DRAWING NUMBER: 23 5638 01

SCALE @ A1: 1:1000

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

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

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NORTH

1:1000 SCALE

10m 100m

Do not scale off this drawing - Only figured dimensions to be taken from this drawing. Drawings based on Ordnance Survey and/or existing record drawings - Design and Drawing content subject to Site Survey, Structural Survey, Site Investigations, Planning and Statutory Requirements and Approvals.

Rev	Date	Description	Drawn	Check

Architecture
Planning
Urban Design
Landscape

CLIENT: KEEPMOAT HOMES & SAUL HOMES

PROJECT: DONCASTER ROAD, DARFIELD

DRAWING: SITE LAYOUT PHASE 1 & 2

DRAWING NUMBER: 23 5638 10

SCALE @ A0: 1:1000

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

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APPENDIX C

TOPOGRAPHICAL SURVEY


DONCASTER ROAD A635
SALTERSBROOK ROAD A635
BARNSLEY ROAD

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
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accounts@haighhuddleston.co.uk

Your Ref:
Our Ref: Z005354

For telephone enquiries ring:
George Mullaney on 0345 120 8482

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.

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.

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.

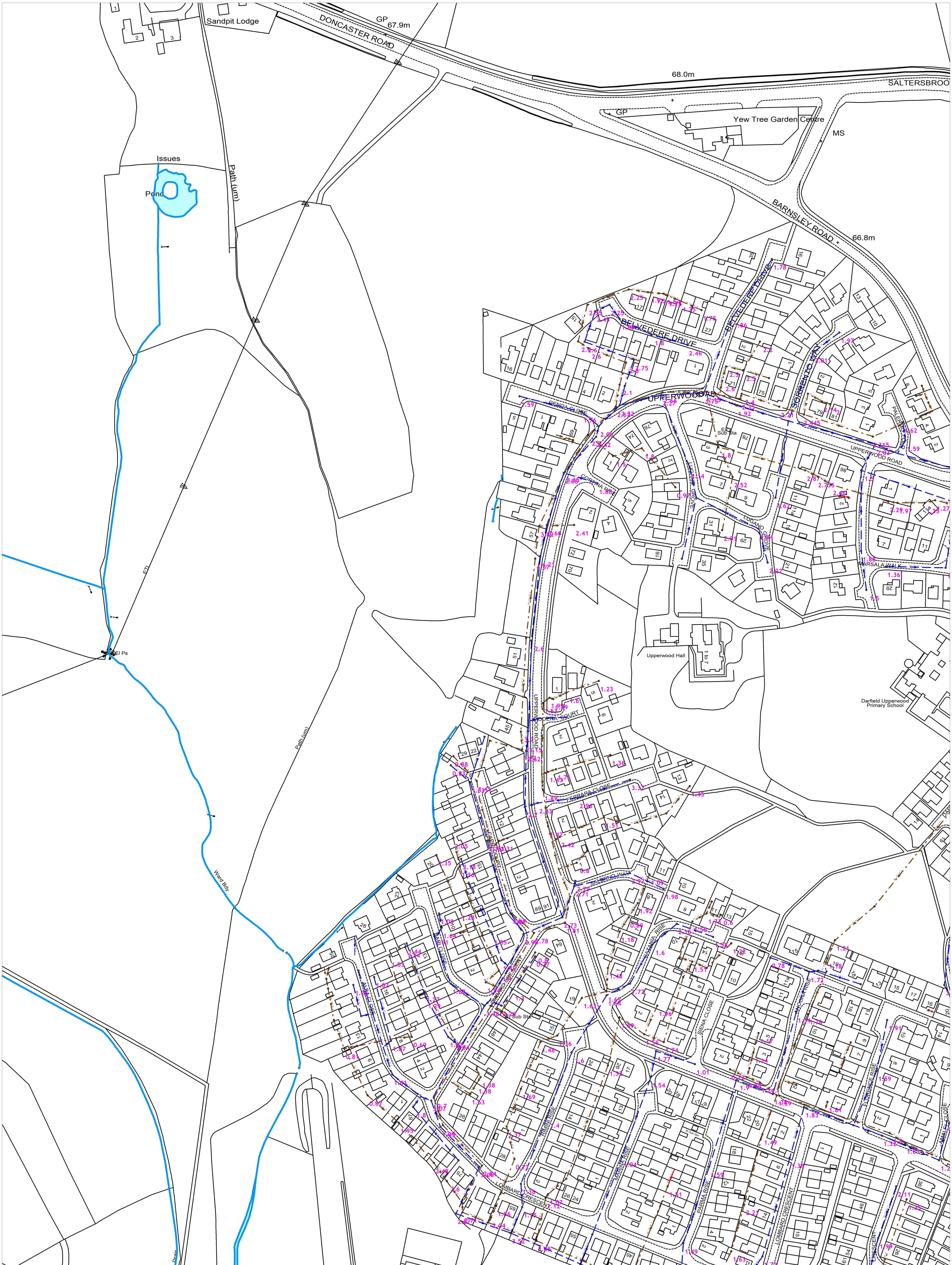
All the above comments are based upon the information and records available at the present time and is subject to formal planning approval agreement. The information contained in this letter together with that shown on any extract from the Statutory Sewer

Yorkshire Water

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

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

Notes

Partial Key
Foul Sewer = F
Combined Sewer = C
Surface Water Sewer = SW
Trade Sewer = TD
Partially Separate = PS

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

---

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

Unit 4, Midgley Business Park,
Midgley, Wakefield
West Yorkshire, WF4 4JJ
t 01924 574074
w www.haighhuddleston.co.uk

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.

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.
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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.
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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		

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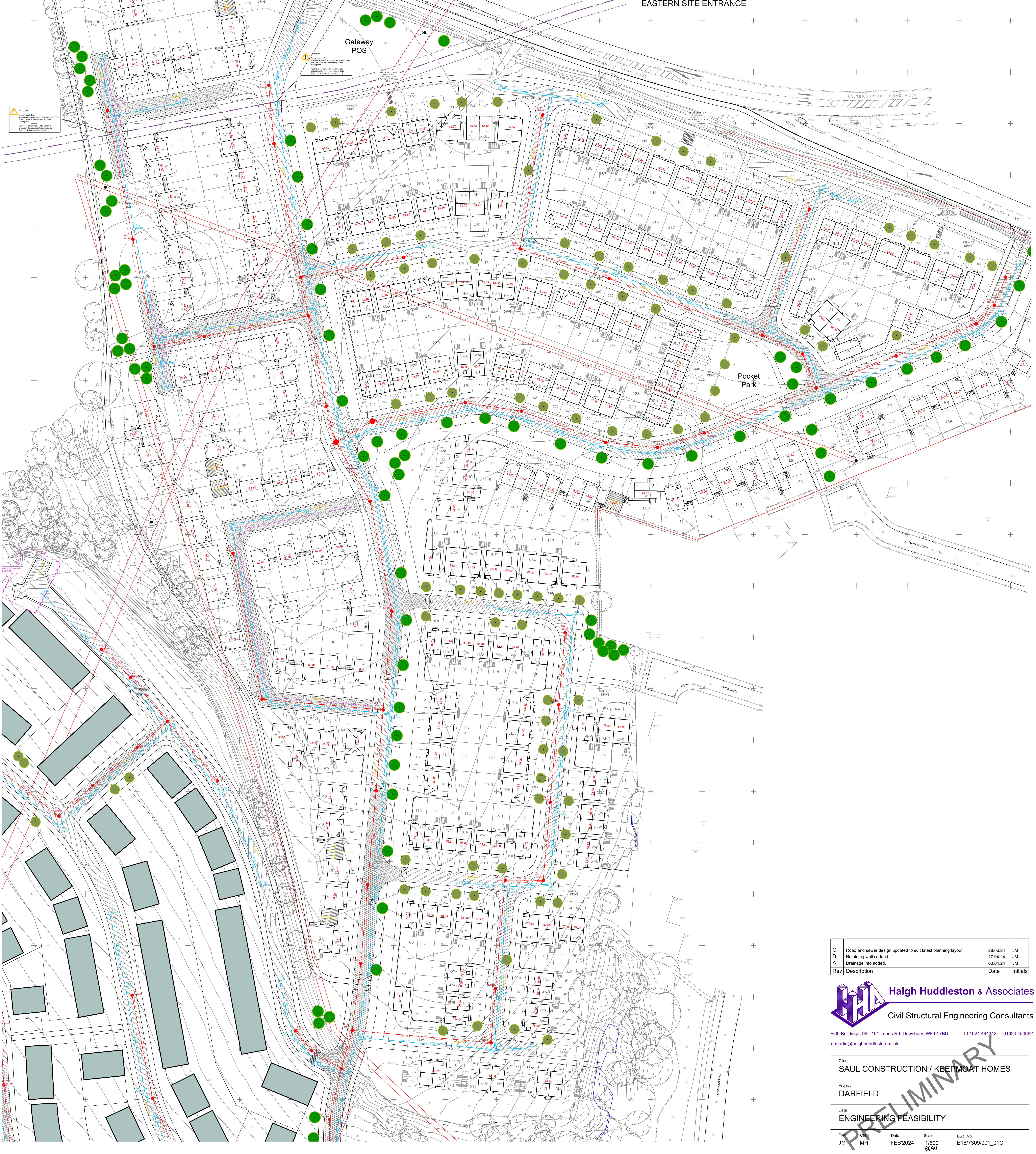
EASTERN SITE ENTRANCE



Rev	Description	Date	Initials
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

Haigh Huddleston & Associates
Civil Structural Engineering Consultants
Firth Buildings, 99 - 101 Leeds Rd, Dewsbury, WF12 7BU t 01924 464342 f 01924 450662
e martin@haighhuddleston.co.uk

Client
SAUL CONSTRUCTION / KEEPMOAT HOMES

Project
DARFIELD

Detail
ENGINEERING FEASIBILITY

Dwn	Chkd	Date	Scale	Dwg No.
JM	MH	FEB'2024	1/500 @A0	E18/7309/001_01C

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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.

Rev	Description	Date	Initials
-	-	-	-

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Client
SAUL CONSTRUCTION / KEEPMOAT HOMES

Project
DARFIELD

Detail
ENGINEERING FEASIBILITY - FULL SITE

Dwn	Chkd	Date	Scale	Dwg No.
JM	MH	FEB'2024	1/1000 @A0	E18/7309/001_03

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

Circular_Default Sewer Type Link Type

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

Available Diameters (mm)

150	225

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
1	0.094	5.00	66.180	1200	440202.830	405258.642	1.530
2	0.082	5.00	65.415	1200	440194.012	405236.657	3.915
3	0.139	5.00	65.234	1200	440195.807	405215.082	4.025
36	0.196	5.00	64.205	1200	440252.209	405172.225	1.500
4	0.090	5.00	64.704	1500	440206.154	405163.064	3.924
37	0.040	5.00	64.452	1200	440125.800	405244.862	1.425
42	0.075	5.00	64.852	1200	440157.412	405228.119	1.425
38	0.025	5.00	64.484	1200	440130.207	405222.708	3.559
39	0.106	5.00	64.000	1200	440138.929	405178.860	3.278
43	0.023	5.00	63.427	1200	440151.286	405116.734	1.425
40	0.012	5.00	63.672	1500	440147.466	405135.940	3.224
41	0.058	5.00	63.980	1500	440167.735	405139.972	3.626
5	0.066	5.00	64.552	1500	440209.110	405148.202	4.540
6	0.057	5.00	64.017	1500	440217.335	405106.852	4.146
44	0.150	5.00	65.679	1200	440482.921	405164.775	1.925
45	0.022	5.00	64.722	1200	440474.705	405145.462	1.517
46	0.035	5.00	64.210	1200	440466.094	405138.577	1.556
47	0.100	5.00	63.472	1200	440439.417	405127.874	1.714
55	0.138	5.00	65.679	1200	440320.691	405227.214	1.425
34	0.093	5.00	65.825	1200	440281.251	405233.883	1.425
56	0.060	5.00	65.674	1200	440300.971	405230.548	1.695
57	0.055	5.00	64.208	1500	440291.184	405172.676	1.771
58	0.237	5.00	63.879	1500	440327.666	405160.878	1.773
63	0.088	5.00	65.463	1200	440419.244	405189.223	1.425
64	0.109	5.00	65.858	1200	440405.921	405194.185	1.998
59	0.023	5.00	63.918	1500	440385.496	405139.341	2.326
61	0.045	5.00	63.484	1500	440401.182	405130.385	2.073
48	0.107	5.00	63.040	1500	440407.351	405115.009	1.765
49	0.034	5.00	61.961	1500	440359.799	405095.930	1.825
50	0.170	5.00	60.986	1500	440340.458	405091.254	1.995
51	0.165	5.00	60.582	1800	440319.110	405094.469	2.011
52	0.021	5.00	61.561	1800	440291.218	405104.833	3.075
53	0.171	5.00	62.248	1800	440271.276	405108.801	3.820

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
54	0.000		63.609	1800	440230.351	405100.660	5.300
7	0.027	5.00	63.718	1800	440221.546	405095.588	5.588
8	0.062	5.00	63.177	1800	440232.666	405076.284	5.111
9	0.068	5.00	61.929	1800	440242.043	405026.737	4.007
65	0.097	5.00	62.660	1200	440204.706	405069.310	1.425
66	0.193	5.00	62.250	1200	440176.572	405063.714	1.568
67	0.012	5.00	60.388	1200	440189.553	404998.455	1.504
68	0.109	5.00	60.380	1500	440193.130	404994.186	1.627
10	0.057	5.00	61.013	1800	440238.831	404990.256	3.227
11	0.105	5.00	60.190	1800	440235.943	404957.456	2.569
12	0.043	5.00	58.180	1800	440232.702	404920.646	2.166
13	0.111	5.00	56.152	1800	440230.031	404890.309	2.168
69	0.094	5.00	60.670	1200	440279.184	405031.043	1.425
71	0.139	5.00	59.700	1200	440309.911	405028.338	1.558
73	0.078	5.00	58.958	1200	440306.613	404990.875	1.568
74	0.121	5.00	58.298	1500	440303.255	404952.739	1.749
75	0.046	5.00	57.578	1500	440300.713	404923.863	1.609
80	0.071	5.00	58.171	1200	440267.362	404924.314	1.425
77	0.101	5.00	57.883	1500	440284.545	404922.801	2.238
33	0.073	5.00	56.232	1500	440280.873	404881.101	1.783
81	0.053	5.00	55.136	1200	440292.424	404860.113	1.425
78	0.061	5.00	55.424	1500	440278.968	404859.469	2.028
14	0.026	5.00	54.388	1800	440226.085	404864.126	2.169
82	0.076	5.00	53.744	1200	440195.564	404885.934	1.425
83	0.079	5.00	53.522	1200	440200.857	404864.134	1.483
84	0.000		53.383	1200	440210.868	404853.846	1.598
15	0.020	5.00	53.365	1800	440221.622	404849.230	2.326
16	0.067	5.00	52.043	1800	440217.688	404830.229	2.145
17	0.033	5.00	50.774	1800	440217.870	404811.578	2.119
85	0.129	5.00	49.626	1200	440129.422	404912.497	1.526
86	0.137	5.00	48.884	1200	440135.643	404883.519	1.525
87	0.051	5.00	47.831	1200	440143.184	404842.386	1.592
88	0.106	5.00	47.240	1200	440152.339	404820.353	1.597
89	0.059	5.00	46.918	1500	440163.368	404802.469	1.600
90	0.017	5.00	47.483	1500	440177.271	404791.386	2.359
91	0.074	5.00	48.277	1500	440196.692	404785.220	3.289
18	0.035	5.00	49.187	1800	440223.116	404788.362	4.676
92	0.098	5.00	45.827	1200	440275.564	404752.388	1.425
19	0.025	5.00	46.337	1800	440232.493	404746.438	2.750
20	0.057	5.00	45.134	1800	440232.315	404729.183	1.978
21	0.025	5.00	43.886	1800	440227.256	404710.806	2.001
93	0.032	5.00	43.067	1200	440203.718	404708.630	1.350
22	0.018	5.00	42.636	1800	440216.797	404694.614	2.036
23	0.085	5.00	41.577	1800	440204.936	404683.546	1.991
24	0.024	5.00	40.452	1800	440189.936	404675.115	2.013
25	0.070	5.00	39.255	1800	440171.504	404670.732	2.079
94	0.062	5.00	53.767	1200	440188.743	404923.038	1.425
95	0.051	5.00	53.581	1200	440182.757	404940.047	1.464
96	0.059	5.00	53.372	1200	440172.837	404959.876	1.532
117	0.126	5.00	53.683	1200	440103.234	405036.537	1.483
118	0.023	5.00	53.016	1200	440137.903	405001.896	1.516
97	0.000	5.00	53.032	1200	440152.517	404984.422	1.759

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
98	0.031	5.00	52.343	1200	440139.936	404974.100	1.721
99	0.076	5.00	50.553	1200	440122.839	404959.256	1.673
100	0.116	5.00	49.807	1500	440109.754	404946.484	1.611
119	0.139	5.00	48.369	1200	440049.046	404999.252	1.425
101	0.000		49.332	1500	440081.871	404970.721	2.828
102	0.051	5.00	48.653	1500	440070.951	404957.840	2.360
103	0.000		47.869	1500	440063.904	404947.613	1.731
104	0.022	5.00	46.878	1500	440060.036	404932.899	1.635
105	0.101	5.00	45.879	1500	440062.886	404917.718	1.666
106	0.000		44.986	1500	440072.378	404901.543	1.711
107	0.046	5.00	44.723	1500	440081.421	404883.860	1.696
108	0.021	5.00	44.480	1500	440084.829	404866.303	1.677
109	0.110	5.00	43.731	1500	440086.338	404842.929	1.709
110	0.026	5.00	42.128	1500	440089.275	404818.827	1.699
111	0.145	5.00	40.660	1500	440096.294	404797.733	1.713
112	0.000		39.226	1500	440108.179	404777.745	1.979
120	0.127	5.00	42.762	1200	440174.913	404729.714	1.462
121	0.090	5.00	41.308	1200	440149.286	404743.381	1.460
113	0.094	5.00	39.954	1500	440126.349	404757.984	3.043
122	0.130	5.00	43.494	1200	440061.632	404866.813	1.425
123	0.000		42.183	1200	440042.057	404864.957	1.425
124	0.000		39.000	1200	440048.503	404796.943	1.495
127	0.087	5.00	39.728	1200	440075.534	404789.230	1.425
125	0.000		39.000	1200	440067.429	404777.899	1.795
126	0.000		38.000	1200	440087.474	404751.725	1.015
114	0.000		38.000	1500	440098.905	404725.884	1.578
115	0.000		38.300	1500	440115.550	404691.368	1.974
116	0.124	5.00	38.600	1500	440129.797	404680.192	2.319
26	0.000		38.666	1950	440147.652	404672.741	2.883
27	0.068	5.00	38.366	1950	440143.390	404649.229	2.643
128	0.080	5.00	43.327	1200	440248.263	404697.802	1.425
129	0.077	5.00	42.926	1200	440259.817	404689.413	1.500
130	0.070	5.00	41.400	1200	440245.406	404669.566	1.609
134	0.024	5.00	39.503	1200	440202.210	404652.177	1.425
131	0.085	5.00	38.644	1200	440213.113	404640.035	1.564
132	0.123	5.00	38.500	1500	440189.946	404618.878	1.704
133	0.054	5.00	38.550	1500	440163.036	404594.717	1.995
28	0.000		37.970	1950	440134.003	404627.035	2.307
29	0.000		37.500	1950	440114.116	404609.170	2.148
30	0.000	5.00	36.800	1800	440147.998	404565.910	1.558
31	0.000		36.800	1800	440153.563	404563.666	1.623
32			36.000	1200	440171.236	404556.542	0.910

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	30.0	225	Circular_Default Sewer Type	66.180	64.650	1.305	65.415	63.860	1.330
1.001	21.650	100.0	225	Circular_Default Sewer Type	65.415	61.500	3.690	65.234	61.284	3.725
1.002	53.037	150.0	300	Circular_Default Sewer Type	65.234	61.209	3.725	64.704	60.855	3.549
2.000	46.957	150.0	300	Circular_Default Sewer Type	64.205	62.705	1.200	64.704	62.392	2.012
1.003	15.153	24.5	375	Circular_Default Sewer Type	64.704	60.780	3.549	64.552	60.162	4.015
3.000	22.588	150.0	225	Circular_Default Sewer Type	64.452	63.027	1.200	64.484	62.876	1.383
4.000	27.738	54.8	225	Circular_Default Sewer Type	64.852	63.427	1.200	64.484	62.921	1.338
3.001	44.707	220.0	300	Circular_Default Sewer Type	64.484	60.925	3.259	64.000	60.722	2.978
3.002	43.761	220.0	300	Circular_Default Sewer Type	64.000	60.722	2.978	63.672	60.523	2.849
5.000	19.582	150.0	225	Circular_Default Sewer Type	63.427	62.002	1.200	63.672	61.871	1.576
3.003	20.666	220.0	375	Circular_Default Sewer Type	63.672	60.448	2.849	63.980	60.354	3.251
3.004	42.186	220.0	375	Circular_Default Sewer Type	63.980	60.354	3.251	64.552	60.162	4.015
1.004	42.160	300.0	525	Circular_Default Sewer Type	64.552	60.012	4.015	64.017	59.871	3.621
1.005	12.025	300.0	525	Circular_Default Sewer Type	64.017	59.871	3.621	63.718	59.831	3.362
6.000	20.988	38.2	225	Circular_Default Sewer Type	65.679	63.754	1.700	64.722	63.205	1.292
6.001	11.025	20.0	225	Circular_Default Sewer Type	64.722	63.205	1.292	64.210	62.654	1.331
6.002	28.744	35.0	225	Circular_Default Sewer Type	64.210	62.654	1.331	63.472	61.833	1.414
6.003	34.550	103.8	300	Circular_Default Sewer Type	63.472	61.758	1.414	63.040	61.425	1.315
7.000	20.000	100.0	225	Circular_Default Sewer Type	65.679	64.254	1.200	65.674	64.054	1.395
8.000	20.000	57.8	225	Circular_Default Sewer Type	65.825	64.400	1.200	65.674	64.054	1.395
7.001	58.694	40.0	300	Circular_Default Sewer Type	65.674	63.979	1.395	64.208	62.512	1.396
7.002	38.342	150.0	375	Circular_Default Sewer Type	64.208	62.437	1.396	63.879	62.181	1.323
7.003	61.710	120.0	450	Circular_Default Sewer Type	63.879	62.106	1.323	63.918	61.592	1.876
9.000	14.217	80.0	225	Circular_Default Sewer Type	65.463	64.038	1.200	65.858	63.860	1.773
9.001	58.524	28.6	225	Circular_Default Sewer Type	65.858	63.860	1.773	63.918	61.817	1.876

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	1	1200	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
2.000	36	1200	Manhole	Adoptable	4	1500	Manhole	Adoptable
1.003	4	1500	Manhole	Adoptable	5	1500	Manhole	Adoptable
3.000	37	1200	Manhole	Adoptable	38	1200	Manhole	Adoptable
4.000	42	1200	Manhole	Adoptable	38	1200	Manhole	Adoptable
3.001	38	1200	Manhole	Adoptable	39	1200	Manhole	Adoptable
3.002	39	1200	Manhole	Adoptable	40	1500	Manhole	Adoptable
5.000	43	1200	Manhole	Adoptable	40	1500	Manhole	Adoptable
3.003	40	1500	Manhole	Adoptable	41	1500	Manhole	Adoptable
3.004	41	1500	Manhole	Adoptable	5	1500	Manhole	Adoptable
1.004	5	1500	Manhole	Adoptable	6	1500	Manhole	Adoptable
1.005	6	1500	Manhole	Adoptable	7	1800	Manhole	Adoptable
6.000	44	1200	Manhole	Adoptable	45	1200	Manhole	Adoptable
6.001	45	1200	Manhole	Adoptable	46	1200	Manhole	Adoptable
6.002	46	1200	Manhole	Adoptable	47	1200	Manhole	Adoptable
6.003	47	1200	Manhole	Adoptable	48	1500	Manhole	Adoptable
7.000	55	1200	Manhole	Adoptable	56	1200	Manhole	Adoptable
8.000	34	1200	Manhole	Adoptable	56	1200	Manhole	Adoptable
7.001	56	1200	Manhole	Adoptable	57	1500	Manhole	Adoptable
7.002	57	1500	Manhole	Adoptable	58	1500	Manhole	Adoptable
7.003	58	1500	Manhole	Adoptable	59	1500	Manhole	Adoptable
9.000	63	1200	Manhole	Adoptable	64	1200	Manhole	Adoptable
9.001	64	1200	Manhole	Adoptable	59	1500	Manhole	Adoptable

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
7.004	18.063	100.0	450	Circular_Default Sewer Type	63.918	61.592	1.876	63.484	61.411	1.623
7.005	16.567	121.8	450	Circular_Default Sewer Type	63.484	61.411	1.623	63.040	61.275	1.315
6.004	51.237	45.0	450	Circular_Default Sewer Type	63.040	61.275	1.315	61.961	60.136	1.375
6.005	19.898	20.0	450	Circular_Default Sewer Type	61.961	60.136	1.375	60.986	59.141	1.395
6.006	21.589	80.0	600	Circular_Default Sewer Type	60.986	58.991	1.395	60.582	58.721	1.261
6.007	29.755	350.0	750	Circular_Default Sewer Type	60.582	58.571	1.261	61.561	58.486	2.325
6.008	20.333	350.0	750	Circular_Default Sewer Type	61.561	58.486	2.325	62.248	58.428	3.070
6.009	41.727	350.0	750	Circular_Default Sewer Type	62.248	58.428	3.070	63.609	58.309	4.550
6.010	10.161	350.0	750	Circular_Default Sewer Type	63.609	58.309	4.550	63.718	58.280	4.688
1.006	22.278	350.0	900	Circular_Default Sewer Type	63.718	58.130	4.688	63.177	58.066	4.211
1.007	50.427	350.0	900	Circular_Default Sewer Type	63.177	58.066	4.211	61.929	57.922	3.107
1.008	36.622	350.0	900	Circular_Default Sewer Type	61.929	57.922	3.107	61.013	57.817	2.296
10.000	28.685	60.0	225	Circular_Default Sewer Type	62.660	61.235	1.200	62.250	60.757	1.268
10.001	66.538	37.0	300	Circular_Default Sewer Type	62.250	60.682	1.268	60.388	58.884	1.204
10.002	5.569	100.0	300	Circular_Default Sewer Type	60.388	58.884	1.204	60.380	58.828	1.252
10.003	45.870	103.8	375	Circular_Default Sewer Type	60.380	58.753	1.252	61.013	58.311	2.327
1.009	32.927	200.0	900	Circular_Default Sewer Type	61.013	57.786	2.327	60.190	57.621	1.669
1.010	36.952	23.0	750	Circular_Default Sewer Type	60.190	57.621	1.819	58.180	56.014	1.416
1.011	30.454	15.0	750	Circular_Default Sewer Type	58.180	56.014	1.416	56.152	53.984	1.418
1.012	26.479	15.0	750	Circular_Default Sewer Type	56.152	53.984	1.418	54.388	52.219	1.419
11.000	30.846	30.0	225	Circular_Default Sewer Type	60.670	59.245	1.200	59.700	58.217	1.258
11.001	37.608	50.0	300	Circular_Default Sewer Type	59.700	58.142	1.258	58.958	57.390	1.268
11.002	38.284	50.0	300	Circular_Default Sewer Type	58.958	57.390	1.268	58.298	56.624	1.374
11.003	28.988	50.0	375	Circular_Default Sewer Type	58.298	56.549	1.374	57.578	55.969	1.234
11.004	16.203	50.0	375	Circular_Default Sewer Type	57.578	55.969	1.234	57.883	55.645	1.863

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
7.004	59	1500	Manhole	Adoptable	61	1500	Manhole	Adoptable
7.005	61	1500	Manhole	Adoptable	48	1500	Manhole	Adoptable
6.004	48	1500	Manhole	Adoptable	49	1500	Manhole	Adoptable
6.005	49	1500	Manhole	Adoptable	50	1500	Manhole	Adoptable
6.006	50	1500	Manhole	Adoptable	51	1800	Manhole	Adoptable
6.007	51	1800	Manhole	Adoptable	52	1800	Manhole	Adoptable
6.008	52	1800	Manhole	Adoptable	53	1800	Manhole	Adoptable
6.009	53	1800	Manhole	Adoptable	54	1800	Manhole	Adoptable
6.010	54	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
10.000	65	1200	Manhole	Adoptable	66	1200	Manhole	Adoptable
10.001	66	1200	Manhole	Adoptable	67	1200	Manhole	Adoptable
10.002	67	1200	Manhole	Adoptable	68	1500	Manhole	Adoptable
10.003	68	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
11.000	69	1200	Manhole	Adoptable	71	1200	Manhole	Adoptable
11.001	71	1200	Manhole	Adoptable	73	1200	Manhole	Adoptable
11.002	73	1200	Manhole	Adoptable	74	1500	Manhole	Adoptable
11.003	74	1500	Manhole	Adoptable	75	1500	Manhole	Adoptable
11.004	75	1500	Manhole	Adoptable	77	1500	Manhole	Adoptable

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
12.000	17.249	18.1	225	Circular_Default Sewer Type	58.171	56.746	1.200	57.883	55.795	1.863
11.005	41.861	35.0	375	Circular_Default Sewer Type	57.883	55.645	1.863	56.232	54.449	1.408
11.006	21.716	22.2	375	Circular_Default Sewer Type	56.232	54.449	1.408	55.424	53.471	1.578
13.000	13.471	150.0	225	Circular_Default Sewer Type	55.136	53.711	1.200	55.424	53.621	1.578
11.007	53.088	73.0	450	Circular_Default Sewer Type	55.424	53.396	1.578	54.388	52.669	1.269
1.013	15.550	13.2	750	Circular_Default Sewer Type	54.388	52.219	1.419	53.365	51.039	1.576
14.000	22.433	80.0	225	Circular_Default Sewer Type	53.744	52.319	1.200	53.522	52.039	1.258
14.001	14.355	80.0	225	Circular_Default Sewer Type	53.522	52.039	1.258	53.383	51.860	1.298
14.002	11.703	80.0	300	Circular_Default Sewer Type	53.383	51.785	1.298	53.365	51.639	1.426
1.014	19.404	17.0	750	Circular_Default Sewer Type	53.365	51.039	1.576	52.043	49.898	1.395
1.015	18.652	15.0	750	Circular_Default Sewer Type	52.043	49.898	1.395	50.774	48.655	1.369
1.016	23.801	15.0	750	Circular_Default Sewer Type	50.774	48.655	1.369	49.187	47.068	1.369
15.000	29.638	40.0	225	Circular_Default Sewer Type	49.626	48.100	1.301	48.884	47.359	1.300
15.001	41.819	40.0	225	Circular_Default Sewer Type	48.884	47.359	1.300	47.831	46.314	1.292
15.002	23.859	40.0	300	Circular_Default Sewer Type	47.831	46.239	1.292	47.240	45.643	1.297
15.003	21.011	84.0	300	Circular_Default Sewer Type	47.240	45.643	1.297	46.918	45.393	1.225
15.004	17.780	150.0	375	Circular_Default Sewer Type	46.918	45.318	1.225	47.483	45.199	1.909
15.005	20.376	150.0	450	Circular_Default Sewer Type	47.483	45.124	1.909	48.277	44.988	2.839
15.006	26.610	150.0	450	Circular_Default Sewer Type	48.277	44.988	2.839	49.187	44.811	3.926
1.017	42.960	50.6	750	Circular_Default Sewer Type	49.187	44.511	3.926	46.337	43.662	1.925
16.000	43.480	150.0	225	Circular_Default Sewer Type	45.827	44.402	1.200	46.337	44.112	2.000
1.018	17.256	40.0	750	Circular_Default Sewer Type	46.337	43.587	2.000	45.134	43.156	1.228
1.019	19.061	15.0	750	Circular_Default Sewer Type	45.134	43.156	1.228	43.886	41.885	1.251
1.020	19.276	15.0	750	Circular_Default Sewer Type	43.886	41.885	1.251	42.636	40.600	1.286
17.000	19.171	37.1	150	Circular_Default Sewer Type	43.067	41.717	1.200	42.636	41.200	1.286

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
12.000	80	1200	Manhole	Adoptable	77	1500	Manhole	Adoptable
11.005	77	1500	Manhole	Adoptable	33	1500	Manhole	Adoptable
11.006	33	1500	Manhole	Adoptable	78	1500	Manhole	Adoptable
13.000	81	1200	Manhole	Adoptable	78	1500	Manhole	Adoptable
11.007	78	1500	Manhole	Adoptable	14	1800	Manhole	Adoptable
1.013	14	1800	Manhole	Adoptable	15	1800	Manhole	Adoptable
14.000	82	1200	Manhole	Adoptable	83	1200	Manhole	Adoptable
14.001	83	1200	Manhole	Adoptable	84	1200	Manhole	Adoptable
14.002	84	1200	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
15.000	85	1200	Manhole	Adoptable	86	1200	Manhole	Adoptable
15.001	86	1200	Manhole	Adoptable	87	1200	Manhole	Adoptable
15.002	87	1200	Manhole	Adoptable	88	1200	Manhole	Adoptable
15.003	88	1200	Manhole	Adoptable	89	1500	Manhole	Adoptable
15.004	89	1500	Manhole	Adoptable	90	1500	Manhole	Adoptable
15.005	90	1500	Manhole	Adoptable	91	1500	Manhole	Adoptable
15.006	91	1500	Manhole	Adoptable	18	1800	Manhole	Adoptable
1.017	18	1800	Manhole	Adoptable	19	1800	Manhole	Adoptable
16.000	92	1200	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
17.000	93	1200	Manhole	Adoptable	22	1800	Manhole	Adoptable

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.021	16.223	16.0	750	Circular_Default Sewer Type	42.636	40.600	1.286	41.577	39.586	1.241
1.022	17.207	15.0	750	Circular_Default Sewer Type	41.577	39.586	1.241	40.452	38.439	1.263
1.023	18.946	15.0	750	Circular_Default Sewer Type	40.452	38.439	1.263	39.255	37.176	1.329
1.024	23.936	21.9	750	Circular_Default Sewer Type	39.255	37.176	1.329	38.666	36.083	1.833
18.000	18.032	80.0	225	Circular_Default Sewer Type	53.767	52.342	1.200	53.581	52.117	1.239
18.001	22.172	80.0	225	Circular_Default Sewer Type	53.581	52.117	1.239	53.372	51.840	1.307
18.002	31.865	64.8	225	Circular_Default Sewer Type	53.372	51.840	1.307	53.032	51.348	1.459
19.000	49.010	70.0	225	Circular_Default Sewer Type	53.683	52.200	1.258	53.016	51.500	1.291
19.001	22.780	150.0	225	Circular_Default Sewer Type	53.016	51.500	1.291	53.032	51.348	1.459
18.003	16.273	25.0	300	Circular_Default Sewer Type	53.032	51.273	1.459	52.343	50.622	1.421
18.004	22.642	13.0	300	Circular_Default Sewer Type	52.343	50.622	1.421	50.553	48.880	1.373
18.005	18.285	30.0	300	Circular_Default Sewer Type	50.553	48.880	1.373	49.807	48.271	1.236
18.006	36.944	80.0	375	Circular_Default Sewer Type	49.807	48.196	1.236	49.332	47.734	1.223
20.000	43.491	150.0	225	Circular_Default Sewer Type	48.369	46.944	1.200	49.332	46.654	2.453
18.007	16.887	80.0	375	Circular_Default Sewer Type	49.332	46.504	2.453	48.653	46.293	1.985
18.008	12.420	80.0	375	Circular_Default Sewer Type	48.653	46.293	1.985	47.869	46.138	1.356
18.009	15.214	17.0	375	Circular_Default Sewer Type	47.869	46.138	1.356	46.878	45.243	1.260
18.010	15.446	15.0	375	Circular_Default Sewer Type	46.878	45.243	1.260	45.879	44.213	1.291
18.011	18.754	20.0	375	Circular_Default Sewer Type	45.879	44.213	1.291	44.986	43.275	1.336
18.012	19.861	80.0	375	Circular_Default Sewer Type	44.986	43.275	1.336	44.723	43.027	1.321
18.013	17.885	80.0	375	Circular_Default Sewer Type	44.723	43.027	1.321	44.480	42.803	1.302
18.014	23.423	30.0	375	Circular_Default Sewer Type	44.480	42.803	1.302	43.731	42.022	1.334
18.015	24.280	16.0	375	Circular_Default Sewer Type	43.731	42.022	1.334	42.128	40.504	1.249
18.016	22.231	15.0	450	Circular_Default Sewer Type	42.128	40.429	1.249	40.660	38.947	1.263
18.017	23.255	15.0	450	Circular_Default Sewer Type	40.660	38.947	1.263	39.226	37.397	1.379

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
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	1800	Manhole	Adoptable
1.024	25	1800	Manhole	Adoptable	26	1950	Manhole	Adoptable
18.000	94	1200	Manhole	Adoptable	95	1200	Manhole	Adoptable
18.001	95	1200	Manhole	Adoptable	96	1200	Manhole	Adoptable
18.002	96	1200	Manhole	Adoptable	97	1200	Manhole	Adoptable
19.000	117	1200	Manhole	Adoptable	118	1200	Manhole	Adoptable
19.001	118	1200	Manhole	Adoptable	97	1200	Manhole	Adoptable
18.003	97	1200	Manhole	Adoptable	98	1200	Manhole	Adoptable
18.004	98	1200	Manhole	Adoptable	99	1200	Manhole	Adoptable
18.005	99	1200	Manhole	Adoptable	100	1500	Manhole	Adoptable
18.006	100	1500	Manhole	Adoptable	101	1500	Manhole	Adoptable
20.000	119	1200	Manhole	Adoptable	101	1500	Manhole	Adoptable
18.007	101	1500	Manhole	Adoptable	102	1500	Manhole	Adoptable
18.008	102	1500	Manhole	Adoptable	103	1500	Manhole	Adoptable
18.009	103	1500	Manhole	Adoptable	104	1500	Manhole	Adoptable
18.010	104	1500	Manhole	Adoptable	105	1500	Manhole	Adoptable
18.011	105	1500	Manhole	Adoptable	106	1500	Manhole	Adoptable
18.012	106	1500	Manhole	Adoptable	107	1500	Manhole	Adoptable
18.013	107	1500	Manhole	Adoptable	108	1500	Manhole	Adoptable
18.014	108	1500	Manhole	Adoptable	109	1500	Manhole	Adoptable
18.015	109	1500	Manhole	Adoptable	110	1500	Manhole	Adoptable
18.016	110	1500	Manhole	Adoptable	111	1500	Manhole	Adoptable
18.017	111	1500	Manhole	Adoptable	112	1500	Manhole	Adoptable

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
18.018	26.845	80.0	600	Circular_Default Sewer Type	39.226	37.247	1.379	39.954	36.911	2.443
21.000	29.044	20.0	225	Circular_Default Sewer Type	42.762	41.300	1.237	41.308	39.848	1.235
21.001	27.191	20.0	225	Circular_Default Sewer Type	41.308	39.848	1.235	39.954	38.488	1.241
18.019	42.232	86.4	600	Circular_Default Sewer Type	39.954	36.911	2.443	38.000	36.422	0.978
22.000	19.663	15.0	225	Circular_Default Sewer Type	43.494	42.069	1.200	42.183	40.758	1.200
22.001	68.319	21.0	225	Circular_Default Sewer Type	42.183	40.758	1.200	39.000	37.505	1.270
22.002	26.849	89.5	225	Circular_Default Sewer Type	39.000	37.505	1.270	39.000	37.205	1.570
23.000	13.931	12.7	225	Circular_Default Sewer Type	39.728	38.303	1.200	39.000	37.205	1.570
22.003	32.968	150.0	225	Circular_Default Sewer Type	39.000	37.205	1.570	38.000	36.985	0.790
22.004	28.256	150.0	225	Circular_Default Sewer Type	38.000	36.985	0.790	38.000	36.797	0.978
18.020	38.320	400.0	600	Circular_Default Sewer Type	38.000	36.422	0.978	38.300	36.326	1.374
18.021	18.107	400.0	600	Circular_Default Sewer Type	38.300	36.326	1.374	38.600	36.281	1.719
18.022	19.347	400.0	600	Circular_Default Sewer Type	38.600	36.281	1.719	38.666	36.233	1.833
1.025	23.895	400.0	1050	Circular_Default Sewer Type	38.666	35.783	1.833	38.366	35.723	1.593
1.026	24.097	400.0	1050	Circular_Default Sewer Type	38.366	35.723	1.593	37.970	35.663	1.257
24.000	14.278	30.0	225	Circular_Default Sewer Type	43.327	41.902	1.200	42.926	41.426	1.275
24.001	24.527	15.0	225	Circular_Default Sewer Type	42.926	41.426	1.275	41.400	39.791	1.384
24.002	43.760	16.6	225	Circular_Default Sewer Type	41.400	39.791	1.384	38.644	37.155	1.264
25.000	16.319	17.7	225	Circular_Default Sewer Type	39.503	38.078	1.200	38.644	37.155	1.264
24.003	31.374	150.0	300	Circular_Default Sewer Type	38.644	37.080	1.264	38.500	36.871	1.329
24.004	36.165	150.0	375	Circular_Default Sewer Type	38.500	36.796	1.329	38.550	36.555	1.620
24.005	43.444	200.0	375	Circular_Default Sewer Type	38.550	36.555	1.620	37.970	36.338	1.257
1.027	26.733	500.0	1050	Circular_Default Sewer Type	37.970	35.663	1.257	37.500	35.610	0.840
26.000	6.000	500.0	900	Circular_Default Sewer Type	36.800	35.242	0.658	36.800	35.230	0.670
26.001	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
18.018	112	1500	Manhole	Adoptable	113	1500	Manhole	Adoptable
21.000	120	1200	Manhole	Adoptable	121	1200	Manhole	Adoptable
21.001	121	1200	Manhole	Adoptable	113	1500	Manhole	Adoptable
18.019	113	1500	Manhole	Adoptable	114	1500	Manhole	Adoptable
22.000	122	1200	Manhole	Adoptable	123	1200	Manhole	Adoptable
22.001	123	1200	Manhole	Adoptable	124	1200	Manhole	Adoptable
22.002	124	1200	Manhole	Adoptable	125	1200	Manhole	Adoptable
23.000	127	1200	Manhole	Adoptable	125	1200	Manhole	Adoptable
22.003	125	1200	Manhole	Adoptable	126	1200	Manhole	Adoptable
22.004	126	1200	Manhole	Adoptable	114	1500	Manhole	Adoptable
18.020	114	1500	Manhole	Adoptable	115	1500	Manhole	Adoptable
18.021	115	1500	Manhole	Adoptable	116	1500	Manhole	Adoptable
18.022	116	1500	Manhole	Adoptable	26	1950	Manhole	Adoptable
1.025	26	1950	Manhole	Adoptable	27	1950	Manhole	Adoptable
1.026	27	1950	Manhole	Adoptable	28	1950	Manhole	Adoptable
24.000	128	1200	Manhole	Adoptable	129	1200	Manhole	Adoptable
24.001	129	1200	Manhole	Adoptable	130	1200	Manhole	Adoptable
24.002	130	1200	Manhole	Adoptable	131	1200	Manhole	Adoptable
25.000	134	1200	Manhole	Adoptable	131	1200	Manhole	Adoptable
24.003	131	1200	Manhole	Adoptable	132	1500	Manhole	Adoptable
24.004	132	1500	Manhole	Adoptable	133	1500	Manhole	Adoptable
24.005	133	1500	Manhole	Adoptable	28	1950	Manhole	Adoptable
1.027	28	1950	Manhole	Adoptable	29	1950	Manhole	Adoptable
26.000	30	1800	Manhole	Adoptable	31	1800	Manhole	Adoptable
26.001	31	1800	Manhole	Adoptable	32	1200	Manhole	Adoptable

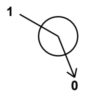
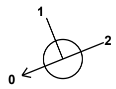
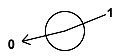
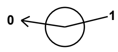
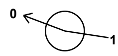
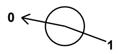
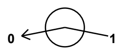
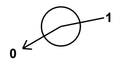
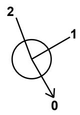
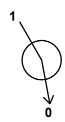
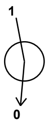
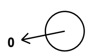
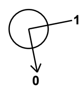
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
1	440202.830	405258.642	66.180	1.530	1200	0	1.000	64.650	225
2	440194.012	405236.657	65.415	3.915	1200	1	1.000	63.860	225
						0	1.001	61.500	225
3	440195.807	405215.082	65.234	4.025	1200	1	1.001	61.284	225
						0	1.002	61.209	300
36	440252.209	405172.225	64.205	1.500	1200	0	2.000	62.705	300
4	440206.154	405163.064	64.704	3.924	1500	1	2.000	62.392	300
						2	1.002	60.855	300
						0	1.003	60.780	375
37	440125.800	405244.862	64.452	1.425	1200	0	3.000	63.027	225
42	440157.412	405228.119	64.852	1.425	1200	0	4.000	63.427	225
38	440130.207	405222.708	64.484	3.559	1200	1	4.000	62.921	225
						2	3.000	62.876	225
						0	3.001	60.925	300
39	440138.929	405178.860	64.000	3.278	1200	1	3.001	60.722	300
						0	3.002	60.722	300
43	440151.286	405116.734	63.427	1.425	1200	0	5.000	62.002	225
40	440147.466	405135.940	63.672	3.224	1500	1	5.000	61.871	225
						2	3.002	60.523	300
						0	3.003	60.448	375
41	440167.735	405139.972	63.980	3.626	1500	1	3.003	60.354	375
						0	3.004	60.354	375
5	440209.110	405148.202	64.552	4.540	1500	1	3.004	60.162	375
						2	1.003	60.162	375
						0	1.004	60.012	525

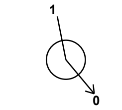
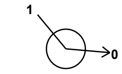
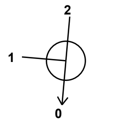
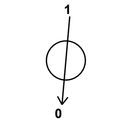
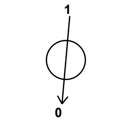
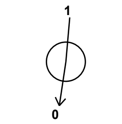
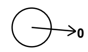
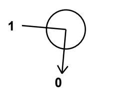
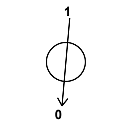
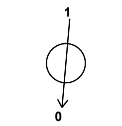
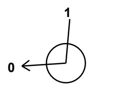
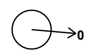
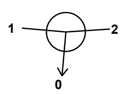
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
6	440217.335	405106.852	64.017	4.146	1500	1	1.004	59.871	525
						0	1.005	59.871	525
44	440482.921	405164.775	65.679	1.925	1200	0	6.000	63.754	225
45	440474.705	405145.462	64.722	1.517	1200	1	6.000	63.205	225
						0	6.001	63.205	225
46	440466.094	405138.577	64.210	1.556	1200	1	6.001	62.654	225
						0	6.002	62.654	225
47	440439.417	405127.874	63.472	1.714	1200	1	6.002	61.833	225
						0	6.003	61.758	300
55	440320.691	405227.214	65.679	1.425	1200	0	7.000	64.254	225
34	440281.251	405233.883	65.825	1.425	1200	0	8.000	64.400	225
56	440300.971	405230.548	65.674	1.695	1200	1	8.000	64.054	225
						2	7.000	64.054	225
						0	7.001	63.979	300
57	440291.184	405172.676	64.208	1.771	1500	1	7.001	62.512	300
						0	7.002	62.437	375
58	440327.666	405160.878	63.879	1.773	1500	1	7.002	62.181	375
						0	7.003	62.106	450
63	440419.244	405189.223	65.463	1.425	1200	0	9.000	64.038	225
64	440405.921	405194.185	65.858	1.998	1200	1	9.000	63.860	225
						0	9.001	63.860	225
59	440385.496	405139.341	63.918	2.326	1500	1	9.001	61.817	225
						2	7.003	61.592	450
						0	7.004	61.592	450

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections		Link	IL (m)	Dia (mm)
61	440401.182	405130.385	63.484	2.073	1500		1	7.004	61.411	450
							0	7.005	61.411	450
48	440407.351	405115.009	63.040	1.765	1500		1	7.005	61.275	450
							2	6.003	61.425	300
							0	6.004	61.275	450
49	440359.799	405095.930	61.961	1.825	1500		1	6.004	60.136	450
							0	6.005	60.136	450
50	440340.458	405091.254	60.986	1.995	1500		1	6.005	59.141	450
							0	6.006	58.991	600
51	440319.110	405094.469	60.582	2.011	1800		1	6.006	58.721	600
							0	6.007	58.571	750
52	440291.218	405104.833	61.561	3.075	1800		1	6.007	58.486	750
							0	6.008	58.486	750
53	440271.276	405108.801	62.248	3.820	1800		1	6.008	58.428	750
							0	6.009	58.428	750
54	440230.351	405100.660	63.609	5.300	1800		1	6.009	58.309	750
							0	6.010	58.309	750
7	440221.546	405095.588	63.718	5.588	1800		1	6.010	58.280	750
							2	1.005	59.831	525
							0	1.006	58.130	900
8	440232.666	405076.284	63.177	5.111	1800		1	1.006	58.066	900
							0	1.007	58.066	900
9	440242.043	405026.737	61.929	4.007	1800		1	1.007	57.922	900
							0	1.008	57.922	900
65	440204.706	405069.310	62.660	1.425	1200					
							0	10.000	61.235	225
66	440176.572	405063.714	62.250	1.568	1200		1	10.000	60.757	225
							0	10.001	60.682	300

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections		Link	IL (m)	Dia (mm)
67	440189.553	404998.455	60.388	1.504	1200		1	10.001	58.884	300
							0	10.002	58.884	300
68	440193.130	404994.186	60.380	1.627	1500		1	10.002	58.828	300
							0	10.003	58.753	375
10	440238.831	404990.256	61.013	3.227	1800		1	10.003	58.311	375
							2	1.008	57.817	900
							0	1.009	57.786	900
11	440235.943	404957.456	60.190	2.569	1800		1	1.009	57.621	900
							0	1.010	57.621	750
12	440232.702	404920.646	58.180	2.166	1800		1	1.010	56.014	750
							0	1.011	56.014	750
13	440230.031	404890.309	56.152	2.168	1800		1	1.011	53.984	750
							0	1.012	53.984	750
69	440279.184	405031.043	60.670	1.425	1200		0	11.000	59.245	225
71	440309.911	405028.338	59.700	1.558	1200		1	11.000	58.217	225
							0	11.001	58.142	300
73	440306.613	404990.875	58.958	1.568	1200		1	11.001	57.390	300
							0	11.002	57.390	300
74	440303.255	404952.739	58.298	1.749	1500		1	11.002	56.624	300
							0	11.003	56.549	375
75	440300.713	404923.863	57.578	1.609	1500		1	11.003	55.969	375
							0	11.004	55.969	375
80	440267.362	404924.314	58.171	1.425	1200		0	12.000	56.746	225
77	440284.545	404922.801	57.883	2.238	1500		1	12.000	55.795	225
							2	11.004	55.645	375
							0	11.005	55.645	375

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
33	440280.873	404881.101	56.232	1.783	1500	1	11.005	54.449	375
						0	11.006	54.449	375
81	440292.424	404860.113	55.136	1.425	1200	0	13.000	53.711	225
78	440278.968	404859.469	55.424	2.028	1500	1	13.000	53.621	225
						2	11.006	53.471	375
						0	11.007	53.396	450
14	440226.085	404864.126	54.388	2.169	1800	1	11.007	52.669	450
						2	1.012	52.219	750
						0	1.013	52.219	750
82	440195.564	404885.934	53.744	1.425	1200	0	14.000	52.319	225
83	440200.857	404864.134	53.522	1.483	1200	1	14.000	52.039	225
						0	14.001	52.039	225
84	440210.868	404853.846	53.383	1.598	1200	1	14.001	51.860	225
						0	14.002	51.785	300
15	440221.622	404849.230	53.365	2.326	1800	1	14.002	51.639	300
						2	1.013	51.039	750
						0	1.014	51.039	750
16	440217.688	404830.229	52.043	2.145	1800	1	1.014	49.898	750
						0	1.015	49.898	750
17	440217.870	404811.578	50.774	2.119	1800	1	1.015	48.655	750
						0	1.016	48.655	750
85	440129.422	404912.497	49.626	1.526	1200	0	15.000	48.100	225
86	440135.643	404883.519	48.884	1.525	1200	1	15.000	47.359	225
						0	15.001	47.359	225
87	440143.184	404842.386	47.831	1.592	1200	1	15.001	46.314	225
						0	15.002	46.239	300

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
88	440152.339	404820.353	47.240	1.597	1200	1	15.002	45.643	300
						0	15.003	45.643	300
89	440163.368	404802.469	46.918	1.600	1500	1	15.003	45.393	300
						0	15.004	45.318	375
90	440177.271	404791.386	47.483	2.359	1500	1	15.004	45.199	375
						0	15.005	45.124	450
91	440196.692	404785.220	48.277	3.289	1500	1	15.005	44.988	450
						0	15.006	44.988	450
18	440223.116	404788.362	49.187	4.676	1800	1	15.006	44.811	450
						2	1.016	47.068	750
						0	1.017	44.511	750
92	440275.564	404752.388	45.827	1.425	1200	0	16.000	44.402	225
19	440232.493	404746.438	46.337	2.750	1800	1	16.000	44.112	225
						2	1.017	43.662	750
						0	1.018	43.587	750
20	440232.315	404729.183	45.134	1.978	1800	1	1.018	43.156	750
						0	1.019	43.156	750
21	440227.256	404710.806	43.886	2.001	1800	1	1.019	41.885	750
						0	1.020	41.885	750
93	440203.718	404708.630	43.067	1.350	1200	0	17.000	41.717	150
22	440216.797	404694.614	42.636	2.036	1800	1	17.000	41.200	150
						2	1.020	40.600	750
						0	1.021	40.600	750
23	440204.936	404683.546	41.577	1.991	1800	1	1.021	39.586	750
						0	1.022	39.586	750
24	440189.936	404675.115	40.452	2.013	1800	1	1.022	38.439	750
						0	1.023	38.439	750

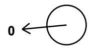
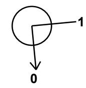
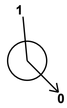
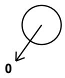
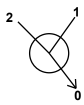
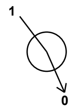
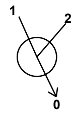
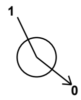
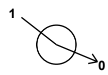
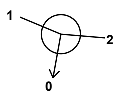
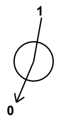
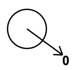
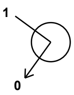
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
25	440171.504	404670.732	39.255	2.079	1800	1	1.023	37.176	750
						0	1.024	37.176	750
94	440188.743	404923.038	53.767	1.425	1200	0	18.000	52.342	225
95	440182.757	404940.047	53.581	1.464	1200	1	18.000	52.117	225
						0	18.001	52.117	225
96	440172.837	404959.876	53.372	1.532	1200	1	18.001	51.840	225
						0	18.002	51.840	225
117	440103.234	405036.537	53.683	1.483	1200	0	19.000	52.200	225
118	440137.903	405001.896	53.016	1.516	1200	1	19.000	51.500	225
						0	19.001	51.500	225
97	440152.517	404984.422	53.032	1.759	1200	1	19.001	51.348	225
						2	18.002	51.348	225
						0	18.003	51.273	300
98	440139.936	404974.100	52.343	1.721	1200	1	18.003	50.622	300
						0	18.004	50.622	300
99	440122.839	404959.256	50.553	1.673	1200	1	18.004	48.880	300
						0	18.005	48.880	300
100	440109.754	404946.484	49.807	1.611	1500	1	18.005	48.271	300
						0	18.006	48.196	375
119	440049.046	404999.252	48.369	1.425	1200	0	20.000	46.944	225
101	440081.871	404970.721	49.332	2.828	1500	1	20.000	46.654	225
						2	18.006	47.734	375
						0	18.007	46.504	375
102	440070.951	404957.840	48.653	2.360	1500	1	18.007	46.293	375
						0	18.008	46.293	375

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
103	440063.904	404947.613	47.869	1.731	1500	1	18.008	46.138	375
						0	18.009	46.138	375
104	440060.036	404932.899	46.878	1.635	1500	1	18.009	45.243	375
						0	18.010	45.243	375
105	440062.886	404917.718	45.879	1.666	1500	1	18.010	44.213	375
						0	18.011	44.213	375
106	440072.378	404901.543	44.986	1.711	1500	1	18.011	43.275	375
						0	18.012	43.275	375
107	440081.421	404883.860	44.723	1.696	1500	1	18.012	43.027	375
						0	18.013	43.027	375
108	440084.829	404866.303	44.480	1.677	1500	1	18.013	42.803	375
						0	18.014	42.803	375
109	440086.338	404842.929	43.731	1.709	1500	1	18.014	42.022	375
						0	18.015	42.022	375
110	440089.275	404818.827	42.128	1.699	1500	1	18.015	40.504	375
						0	18.016	40.429	450
111	440096.294	404797.733	40.660	1.713	1500	1	18.016	38.947	450
						0	18.017	38.947	450
112	440108.179	404777.745	39.226	1.979	1500	1	18.017	37.397	450
						0	18.018	37.247	600
120	440174.913	404729.714	42.762	1.462	1200	0	21.000	41.300	225
121	440149.286	404743.381	41.308	1.460	1200	1	21.000	39.848	225
						0	21.001	39.848	225
113	440126.349	404757.984	39.954	3.043	1500	1	21.001	38.488	225
						2	18.018	36.911	600
						0	18.019	36.911	600

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
122	440061.632	404866.813	43.494	1.425	1200	 0	22.000	42.069	225
123	440042.057	404864.957	42.183	1.425	1200	 1	22.000	40.758	225
						0	22.001	40.758	225
124	440048.503	404796.943	39.000	1.495	1200	 1	22.001	37.505	225
						0	22.002	37.505	225
127	440075.534	404789.230	39.728	1.425	1200	 0	23.000	38.303	225
125	440067.429	404777.899	39.000	1.795	1200	 1	23.000	37.205	225
						2	22.002	37.205	225
						0	22.003	37.205	225
126	440087.474	404751.725	38.000	1.015	1200	 1	22.003	36.985	225
						0	22.004	36.985	225
114	440098.905	404725.884	38.000	1.578	1500	 1	22.004	36.797	225
						2	18.019	36.422	600
						0	18.020	36.422	600
115	440115.550	404691.368	38.300	1.974	1500	 1	18.020	36.326	600
						0	18.021	36.326	600
116	440129.797	404680.192	38.600	2.319	1500	 1	18.021	36.281	600
						0	18.022	36.281	600
26	440147.652	404672.741	38.666	2.883	1950	 1	18.022	36.233	600
						2	1.024	36.083	750
						0	1.025	35.783	1050
27	440143.390	404649.229	38.366	2.643	1950	 1	1.025	35.723	1050
						0	1.026	35.723	1050
128	440248.263	404697.802	43.327	1.425	1200	 0	24.000	41.902	225
129	440259.817	404689.413	42.926	1.500	1200	 1	24.000	41.426	225
						0	24.001	41.426	225

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
130	440245.406	404669.566	41.400	1.609	1200	1	24.001	39.791	225
						0	24.002	39.791	225
134	440202.210	404652.177	39.503	1.425	1200	0	25.000	38.078	225
131	440213.113	404640.035	38.644	1.564	1200	1	25.000	37.155	225
						2	24.002	37.155	225
						0	24.003	37.080	300
132	440189.946	404618.878	38.500	1.704	1500	1	24.003	36.871	300
						0	24.004	36.796	375
133	440163.036	404594.717	38.550	1.995	1500	1	24.004	36.555	375
						0	24.005	36.555	375
28	440134.003	404627.035	37.970	2.307	1950	1	24.005	36.338	375
						2	1.026	35.663	1050
						0	1.027	35.663	1050
29	440114.116	404609.170	37.500	2.148	1950	1	1.027	35.610	1050
30	440147.998	404565.910	36.800	1.558	1800	0	26.000	35.242	900
31	440153.563	404563.666	36.800	1.623	1800	1	26.000	35.230	900
						0	26.001	35.177	300
32	440171.236	404556.542	36.000	0.910	1200	1	26.001	35.090	300

Node 31 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

Node 30 Flow through Pond Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Main Channel Length (m)	55.000
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
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

Results for 2 year Critical Storm Duration. Lowest mass balance: 99.63%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1	10	64.714	0.064	16.3	0.1517	0.0000	OK
15 minute winter	2	10	61.630	0.130	30.2	0.2009	0.0000	OK
15 minute winter	3	11	61.378	0.169	53.7	0.3087	0.0000	OK
15 minute winter	36	10	62.832	0.127	33.9	0.4771	0.0000	OK
15 minute winter	4	10	60.916	0.136	100.5	0.3026	0.0000	OK
15 minute winter	37	10	63.089	0.062	6.9	0.1047	0.0000	OK
15 minute winter	42	10	63.493	0.066	13.0	0.1449	0.0000	OK
15 minute winter	38	11	61.039	0.114	23.7	0.1452	0.0000	OK
15 minute winter	39	11	60.884	0.162	41.3	0.2882	0.0000	OK
15 minute winter	43	10	62.049	0.047	4.0	0.0678	0.0000	OK
15 minute winter	40	11	60.612	0.164	46.0	0.3012	0.0000	OK
15 minute winter	41	11	60.526	0.172	55.0	0.3580	0.0000	OK
15 minute winter	5	11	60.324	0.312	165.3	0.6422	0.0000	OK
15 minute winter	6	12	60.193	0.322	171.3	0.6566	0.0000	OK
15 minute winter	44	10	63.844	0.090	25.9	0.2426	0.0000	OK
15 minute winter	45	10	63.284	0.079	29.4	0.1122	0.0000	OK
15 minute winter	46	10	62.756	0.102	35.3	0.1618	0.0000	OK
15 minute winter	47	11	61.910	0.152	52.1	0.3488	0.0000	OK
15 minute winter	55	10	64.366	0.112	23.9	0.3432	0.0000	OK
15 minute winter	34	10	64.477	0.077	16.1	0.1864	0.0000	OK
15 minute winter	56	11	64.089	0.110	49.6	0.2021	0.0000	OK
15 minute winter	57	11	62.598	0.161	58.0	0.3839	0.0000	OK
15 minute winter	58	11	62.284	0.178	97.1	0.7920	0.0000	OK
15 minute winter	63	10	64.120	0.082	15.2	0.1932	0.0000	OK
15 minute winter	64	10	63.952	0.092	33.8	0.2034	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	16.0	1.758	0.168	0.2162	
15 minute winter	2	1.001	3	29.7	1.313	0.571	0.4911	
15 minute winter	3	1.002	4	53.1	1.326	0.586	2.1231	
15 minute winter	36	2.000	4	32.9	1.178	0.363	1.3104	
15 minute winter	4	1.003	5	100.9	2.731	0.249	0.6169	
15 minute winter	37	3.000	38	6.7	0.774	0.158	0.1955	
15 minute winter	42	4.000	38	12.7	1.328	0.180	0.2651	
15 minute winter	38	3.001	39	23.5	0.755	0.315	1.4181	
15 minute winter	39	3.002	40	40.1	1.069	0.538	1.6487	
15 minute winter	43	5.000	40	3.8	0.662	0.090	0.1139	
15 minute winter	40	3.003	41	45.6	0.959	0.340	0.9839	
15 minute winter	41	3.004	5	54.7	1.152	0.407	2.0021	
15 minute winter	5	1.004	6	162.0	1.195	0.581	5.7136	
15 minute winter	6	1.005	7	171.3	1.345	0.615	1.5312	
15 minute winter	44	6.000	45	25.6	1.883	0.304	0.2862	
15 minute winter	45	6.001	46	29.2	1.956	0.250	0.1652	
15 minute winter	46	6.002	47	34.8	2.049	0.394	0.4895	
15 minute winter	47	6.003	48	51.9	1.501	0.476	1.1952	
15 minute winter	55	7.000	56	23.4	1.238	0.450	0.3783	
15 minute winter	34	8.000	56	15.8	1.372	0.231	0.2305	
15 minute winter	56	7.001	57	49.1	2.135	0.278	1.3494	
15 minute winter	57	7.002	58	58.5	1.342	0.359	1.6719	
15 minute winter	58	7.003	59	97.8	1.389	0.332	4.3494	
15 minute winter	63	9.000	64	15.0	1.068	0.258	0.2001	
15 minute winter	64	9.001	59	32.9	2.208	0.337	0.8732	

Results for 2 year Critical Storm Duration. Lowest mass balance: 99.63%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	59	11	61.824	0.232	134.4	0.4565	0.0000	OK
15 minute winter	61	11	61.658	0.247	141.4	0.5441	0.0000	OK
15 minute winter	48	11	61.496	0.221	210.3	0.6579	0.0000	OK
15 minute winter	49	11	60.322	0.186	215.1	0.3989	0.0000	OK
15 minute winter	50	11	59.249	0.258	240.9	0.8954	0.0000	OK
15 minute winter	51	12	58.951	0.380	267.1	1.5892	0.0000	OK
15 minute winter	52	12	58.878	0.392	265.5	1.0501	0.0000	OK
15 minute winter	53	12	58.811	0.383	290.5	1.3162	0.0000	OK
15 minute winter	54	12	58.691	0.382	290.6	0.9726	0.0000	OK
15 minute winter	7	12	58.612	0.482	462.1	1.2728	0.0000	OK
15 minute winter	8	12	58.520	0.454	468.4	1.2643	0.0000	OK
15 minute winter	9	13	58.371	0.449	471.6	1.2954	0.0000	OK
15 minute winter	65	10	61.313	0.078	16.8	0.1942	0.0000	OK
15 minute winter	66	10	60.787	0.105	49.8	0.3774	0.0000	OK
15 minute winter	67	11	59.050	0.166	51.1	0.2141	0.0000	OK
15 minute winter	68	11	58.911	0.158	68.5	0.4915	0.0000	OK
15 minute winter	10	13	58.185	0.399	536.1	1.1561	0.0000	OK
15 minute winter	11	13	57.875	0.254	548.0	0.8556	0.0000	OK
15 minute winter	12	13	56.240	0.226	553.1	0.6654	0.0000	OK
15 minute winter	13	13	54.210	0.226	564.2	0.8065	0.0000	OK
15 minute winter	69	10	59.309	0.064	16.3	0.1562	0.0000	OK
15 minute winter	71	10	58.244	0.102	40.0	0.2982	0.0000	OK
15 minute winter	73	11	57.513	0.123	53.1	0.2612	0.0000	OK
15 minute winter	74	11	56.682	0.133	72.3	0.4176	0.0000	OK
15 minute winter	75	11	56.118	0.149	80.1	0.3477	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	59	7.004	61	134.1	1.563	0.415	1.5508	
15 minute winter	61	7.005	48	140.9	1.712	0.481	1.3793	
15 minute winter	48	6.004	49	209.6	3.010	0.434	3.5693	
15 minute winter	49	6.005	50	213.3	3.735	0.294	1.1383	
15 minute winter	50	6.006	51	240.3	2.248	0.312	2.3098	
15 minute winter	51	6.007	52	262.7	1.164	0.399	6.7860	
15 minute winter	52	6.008	53	267.4	1.167	0.406	4.6597	
15 minute winter	53	6.009	54	290.6	1.288	0.442	9.4144	
15 minute winter	54	6.010	7	287.2	1.417	0.436	2.1004	
15 minute winter	7	1.006	8	460.0	1.382	0.433	7.4163	
15 minute winter	8	1.007	9	464.9	1.468	0.438	16.0202	
15 minute winter	9	1.008	10	475.3	1.612	0.448	10.8006	
15 minute winter	65	10.000	66	16.4	1.378	0.244	0.3417	
15 minute winter	66	10.001	67	49.0	1.610	0.267	2.0510	
15 minute winter	67	10.002	68	50.8	1.405	0.458	0.2014	
15 minute winter	68	10.003	10	68.8	1.608	0.351	1.9639	
15 minute winter	10	1.009	11	537.6	2.589	0.382	6.8861	
15 minute winter	11	1.010	12	548.8	4.515	0.212	4.4947	
15 minute winter	12	1.011	13	553.2	4.955	0.173	3.4007	
15 minute winter	13	1.012	14	563.9	4.557	0.176	3.3084	
15 minute winter	69	11.000	71	16.0	1.765	0.168	0.2795	
15 minute winter	71	11.001	73	39.6	1.644	0.251	0.9061	
15 minute winter	73	11.002	74	52.4	1.982	0.333	1.0118	
15 minute winter	74	11.003	75	72.6	1.926	0.256	1.0931	
15 minute winter	75	11.004	77	80.6	1.960	0.284	0.6661	

Results for 2 year Critical Storm Duration. Lowest mass balance: 99.63%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	80	10	56.795	0.049	12.3	0.1048	0.0000	OK
15 minute winter	77	11	55.796	0.151	108.7	0.4039	0.0000	OK
15 minute winter	33	11	54.597	0.148	121.2	0.3827	0.0000	OK
15 minute winter	81	10	53.785	0.074	9.2	0.1382	0.0000	OK
15 minute winter	78	11	53.593	0.197	140.4	0.4667	0.0000	OK
15 minute winter	14	13	52.483	0.264	681.8	0.7350	0.0000	OK
15 minute winter	82	10	52.391	0.072	13.1	0.1577	0.0000	OK
15 minute winter	83	10	52.153	0.114	26.6	0.2504	0.0000	OK
15 minute winter	84	11	51.886	0.101	26.1	0.1138	0.0000	OK
15 minute winter	15	13	51.325	0.286	704.3	0.7770	0.0000	OK
15 minute winter	16	13	50.176	0.278	712.5	0.8803	0.0000	OK
15 minute winter	17	13	48.932	0.277	717.4	0.7911	0.0000	OK
15 minute winter	85	10	48.179	0.079	22.3	0.2231	0.0000	OK
15 minute winter	86	10	47.481	0.122	45.7	0.3566	0.0000	OK
15 minute winter	87	11	46.351	0.112	53.1	0.1983	0.0000	OK
15 minute winter	88	11	45.822	0.179	71.0	0.4402	0.0000	OK
15 minute winter	89	11	45.521	0.203	80.7	0.5082	0.0000	OK
15 minute winter	90	11	45.317	0.193	83.9	0.3681	0.0000	OK
15 minute winter	91	11	45.188	0.200	96.1	0.4435	0.0000	OK
15 minute winter	18	13	44.909	0.398	803.7	1.0724	0.0000	OK
15 minute winter	92	11	44.500	0.098	16.9	0.2468	0.0000	OK
15 minute winter	19	13	44.012	0.425	821.7	1.1584	0.0000	OK
15 minute winter	20	13	43.461	0.305	829.9	0.9508	0.0000	OK
15 minute winter	21	13	42.187	0.302	833.3	0.8439	0.0000	OK
15 minute winter	93	10	41.762	0.045	5.5	0.0719	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	80	12.000	77	12.2	1.942	0.099	0.1081	
15 minute winter	77	11.005	33	109.3	2.668	0.322	1.7158	
15 minute winter	33	11.006	78	121.7	3.195	0.286	0.8275	
15 minute winter	81	13.000	78	9.0	0.826	0.212	0.1466	
15 minute winter	78	11.007	14	140.4	2.182	0.371	3.4160	
15 minute winter	14	1.013	15	683.3	4.675	0.200	2.2736	
15 minute winter	82	14.000	83	12.9	0.838	0.222	0.3484	
15 minute winter	83	14.001	84	26.1	1.366	0.448	0.2748	
15 minute winter	84	14.002	15	26.1	1.335	0.210	0.2293	
15 minute winter	15	1.014	16	705.9	4.671	0.235	2.9331	
15 minute winter	16	1.015	17	714.1	4.828	0.223	2.7589	
15 minute winter	17	1.016	18	719.3	5.420	0.225	3.1621	
15 minute winter	85	15.000	86	22.1	1.288	0.267	0.5090	
15 minute winter	86	15.001	87	44.5	2.087	0.540	0.8928	
15 minute winter	87	15.002	88	53.1	1.574	0.301	0.8088	
15 minute winter	88	15.003	89	71.1	1.713	0.586	0.8721	
15 minute winter	89	15.004	90	81.1	1.418	0.497	1.0171	
15 minute winter	90	15.005	91	84.1	1.266	0.319	1.3533	
15 minute winter	91	15.006	18	95.5	1.482	0.362	1.7156	
15 minute winter	18	1.017	19	807.1	3.681	0.464	9.4210	
15 minute winter	92	16.000	19	16.3	0.994	0.386	0.7143	
15 minute winter	19	1.018	20	824.3	3.882	0.421	3.6669	
15 minute winter	20	1.019	21	830.8	4.982	0.260	3.1793	
15 minute winter	21	1.020	22	834.2	4.814	0.261	3.3415	
15 minute winter	93	17.000	22	5.4	1.248	0.184	0.0830	

Results for 2 year Critical Storm Duration. Lowest mass balance: 99.63%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m^3)	Flood (m^3)	Status
15 minute winter	22	13	40.922	0.322	839.6	0.8776	0.0000	OK
15 minute winter	23	13	39.901	0.315	849.1	1.0712	0.0000	OK
15 minute winter	24	13	38.746	0.307	852.5	0.8550	0.0000	OK
15 minute winter	25	13	37.506	0.330	859.5	1.0611	0.0000	OK
15 minute winter	94	10	52.407	0.065	10.7	0.1300	0.0000	OK
15 minute winter	95	10	52.208	0.091	19.4	0.1659	0.0000	OK
15 minute winter	96	11	51.949	0.109	29.3	0.2074	0.0000	OK
15 minute winter	117	10	52.290	0.090	21.8	0.2556	0.0000	OK
15 minute winter	118	11	51.630	0.130	25.4	0.1866	0.0000	OK
15 minute winter	97	11	51.383	0.110	53.9	0.1246	0.0000	OK
15 minute winter	98	11	50.710	0.088	59.0	0.1313	0.0000	OK
15 minute winter	99	11	49.013	0.133	71.4	0.2715	0.0000	OK
15 minute winter	100	11	48.370	0.174	90.5	0.5583	0.0000	OK
15 minute winter	119	11	47.065	0.121	24.0	0.3742	0.0000	OK
15 minute winter	101	11	46.720	0.216	113.7	0.3813	0.0000	OK
15 minute winter	102	11	46.518	0.225	122.0	0.4939	0.0000	OK
15 minute winter	103	11	46.278	0.140	121.9	0.2474	0.0000	OK
15 minute winter	104	11	45.377	0.134	125.3	0.2736	0.0000	OK
15 minute winter	105	11	44.359	0.146	141.4	0.4345	0.0000	OK
15 minute winter	106	11	43.520	0.245	141.2	0.4336	0.0000	OK
15 minute winter	107	11	43.276	0.249	147.5	0.5746	0.0000	OK
15 minute winter	108	12	42.986	0.183	149.4	0.3697	0.0000	OK
15 minute winter	109	12	42.182	0.160	166.1	0.4897	0.0000	OK
15 minute winter	110	12	40.573	0.144	170.1	0.2984	0.0000	OK
15 minute winter	111	12	39.105	0.158	191.6	0.5463	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m^3)	Discharge Vol (m^3)
15 minute winter	22	1.021	23	840.7	4.718	0.271	2.8911	
15 minute winter	23	1.022	24	850.1	4.926	0.266	2.9700	
15 minute winter	24	1.023	25	852.6	4.797	0.266	3.3725	
15 minute winter	25	1.024	26	857.8	3.873	0.324	6.4327	
15 minute winter	94	18.000	95	10.6	0.868	0.182	0.2205	
15 minute winter	95	18.001	96	19.1	1.127	0.328	0.3755	
15 minute winter	96	18.002	97	29.0	1.559	0.448	0.5922	
15 minute winter	117	19.000	118	21.4	1.132	0.343	0.9413	
15 minute winter	118	19.001	97	24.9	1.085	0.588	0.5231	
15 minute winter	97	18.003	98	54.0	2.660	0.242	0.3310	
15 minute winter	98	18.004	99	59.0	2.506	0.191	0.5365	
15 minute winter	99	18.005	100	71.6	2.513	0.352	0.5210	
15 minute winter	100	18.006	101	90.5	1.883	0.404	1.7759	
15 minute winter	119	20.000	101	23.2	1.084	0.549	0.9316	
15 minute winter	101	18.007	102	113.7	1.691	0.508	1.1356	
15 minute winter	102	18.008	103	121.9	2.294	0.544	0.6604	
15 minute winter	103	18.009	104	121.7	3.338	0.250	0.5548	
15 minute winter	104	18.010	105	125.0	3.346	0.241	0.5795	
15 minute winter	105	18.011	106	141.2	2.430	0.314	1.0876	
15 minute winter	106	18.012	107	140.0	1.825	0.625	1.5293	
15 minute winter	107	18.013	108	146.6	2.240	0.655	1.1699	
15 minute winter	108	18.014	109	150.4	3.057	0.410	1.1523	
15 minute winter	109	18.015	110	166.6	3.927	0.332	1.0305	
15 minute winter	110	18.016	111	170.6	3.661	0.204	1.0362	
15 minute winter	111	18.017	112	191.5	4.107	0.229	1.0848	

Results for 2 year Critical Storm Duration. Lowest mass balance: 99.63%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	112	12	37.467	0.220	191.5	0.3894	0.0000	OK
15 minute winter	120	10	41.366	0.066	22.0	0.1881	0.0000	OK
15 minute winter	121	10	39.938	0.090	37.4	0.2130	0.0000	OK
15 minute winter	113	11	37.146	0.235	239.6	0.5613	0.0000	OK
15 minute winter	122	10	42.132	0.063	22.5	0.1866	0.0000	OK
15 minute winter	123	10	40.825	0.067	22.3	0.0754	0.0000	OK
15 minute winter	124	11	37.603	0.098	22.0	0.1107	0.0000	OK
15 minute winter	127	10	38.351	0.048	15.0	0.1136	0.0000	OK
15 minute winter	125	11	37.373	0.168	36.2	0.1900	0.0000	OK
15 minute winter	126	12	37.151	0.166	36.1	0.1879	0.0000	OK
15 minute winter	114	12	36.884	0.462	274.7	0.8159	0.0000	OK
15 minute winter	115	13	36.791	0.465	274.7	0.8222	0.0000	OK
15 minute winter	116	13	36.727	0.446	288.2	1.2665	0.0000	OK
15 minute winter	26	13	36.641	0.858	1131.2	2.5612	0.0000	OK
15 minute winter	27	13	36.538	0.815	1132.6	2.8544	0.0000	OK
15 minute winter	128	10	41.960	0.058	13.8	0.1316	0.0000	OK
15 minute winter	129	10	41.494	0.068	27.0	0.1461	0.0000	OK
15 minute winter	130	10	39.875	0.084	38.9	0.1682	0.0000	OK
15 minute winter	134	10	38.106	0.028	4.1	0.0409	0.0000	OK
15 minute winter	131	11	37.260	0.180	57.2	0.4000	0.0000	OK
15 minute winter	132	11	36.988	0.192	76.5	0.6152	0.0000	OK
15 minute winter	133	11	36.773	0.218	85.9	0.5031	0.0000	OK
15 minute winter	28	13	36.417	0.754	1199.6	2.2503	0.0000	OK
480 minute winter	29	392	35.490	0.138	167.0	0.4126	0.0000	OK
480 minute winter	30	392	35.490	0.248	113.4	0.6316	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	112	18.018	113	192.4	2.000	0.250	2.6303	
15 minute winter	120	21.000	121	21.8	1.791	0.187	0.3550	
15 minute winter	121	21.001	113	36.8	2.551	0.315	0.3920	
15 minute winter	113	18.019	114	240.2	1.475	0.324	6.9986	
15 minute winter	122	22.000	123	22.3	2.361	0.166	0.1862	
15 minute winter	123	22.001	124	22.0	1.707	0.193	0.8985	
15 minute winter	124	22.002	125	21.9	0.897	0.398	0.6493	
15 minute winter	127	23.000	125	14.9	1.256	0.102	0.2635	
15 minute winter	125	22.003	126	36.1	1.154	0.851	1.0362	
15 minute winter	126	22.004	114	35.5	1.169	0.839	0.8583	
15 minute winter	114	18.020	115	274.7	1.184	0.802	8.8932	
15 minute winter	115	18.021	116	271.5	1.218	0.793	4.1591	
15 minute winter	116	18.022	26	281.3	1.424	0.821	4.1480	
15 minute winter	26	1.025	27	1125.9	1.527	0.758	17.6091	
15 minute winter	27	1.026	28	1125.0	1.628	0.757	16.6522	
15 minute winter	128	24.000	129	13.7	1.506	0.144	0.1299	
15 minute winter	129	24.001	130	26.8	2.278	0.198	0.2888	
15 minute winter	130	24.002	131	38.5	2.600	0.300	0.6898	
15 minute winter	134	25.000	131	4.1	1.058	0.033	0.1711	
15 minute winter	131	24.003	132	56.5	1.326	0.624	1.3367	
15 minute winter	132	24.004	133	77.1	1.259	0.473	2.2247	
15 minute winter	133	24.005	28	83.8	1.324	0.594	2.7750	
15 minute winter	28	1.027	29	1193.6	2.004	0.899	15.9497	
480 minute winter	29	Flow through pond	30	113.4	0.048	0.000	1313.2087	
480 minute winter	30	26.000	31	35.6	0.529	0.040	0.8768	

Results for 2 year Critical Storm Duration. Lowest mass balance: 99.63%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
480 minute winter	31	392	35.488	0.311	35.6	0.7926	0.0000	SURCHARGED
15 minute summer	32	1	35.090	0.000	25.8	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
480 minute winter	31	Hydro-Brake®	32	35.6				1121.7

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.63%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1	10	64.741	0.091	30.8	0.2153	0.0000	OK
15 minute winter	2	11	61.806	0.306	57.3	0.4750	0.0000	SURCHARGED
15 minute winter	3	11	61.518	0.309	99.9	0.5625	0.0000	SURCHARGED
15 minute winter	36	10	62.895	0.190	64.2	0.7113	0.0000	OK
15 minute winter	4	11	60.982	0.202	185.4	0.4489	0.0000	OK
15 minute winter	37	10	63.115	0.088	13.1	0.1485	0.0000	OK
15 minute winter	42	10	63.521	0.094	24.6	0.2061	0.0000	OK
15 minute winter	38	11	61.089	0.164	45.1	0.2089	0.0000	OK
15 minute winter	39	11	60.987	0.265	78.7	0.4708	0.0000	OK
15 minute winter	43	10	62.067	0.065	7.5	0.0947	0.0000	OK
15 minute winter	40	12	60.704	0.256	86.7	0.4710	0.0000	OK
15 minute winter	41	12	60.641	0.287	103.7	0.5995	0.0000	OK
15 minute winter	5	11	60.544	0.532	302.7	1.0951	0.0000	SURCHARGED
15 minute winter	6	11	60.353	0.482	318.6	0.9848	0.0000	OK
15 minute winter	44	10	63.887	0.133	49.1	0.3567	0.0000	OK
15 minute winter	45	10	63.322	0.117	55.9	0.1665	0.0000	OK
15 minute winter	46	10	62.808	0.154	67.0	0.2428	0.0000	OK
15 minute winter	47	11	61.997	0.239	99.3	0.5502	0.0000	OK
15 minute winter	55	10	64.428	0.174	45.2	0.5335	0.0000	OK
15 minute winter	34	10	64.511	0.111	30.5	0.2696	0.0000	OK
15 minute winter	56	10	64.139	0.160	93.9	0.2935	0.0000	OK
15 minute winter	57	11	62.676	0.239	111.3	0.5718	0.0000	OK
15 minute winter	58	10	62.366	0.260	184.1	1.1562	0.0000	OK
15 minute winter	63	10	64.159	0.121	28.8	0.2864	0.0000	OK
15 minute winter	64	10	63.995	0.135	64.2	0.3007	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	30.4	2.082	0.319	0.3460	
15 minute winter	2	1.001	3	54.6	1.419	1.050	0.8610	
15 minute winter	3	1.002	4	95.3	1.474	1.052	3.4687	
15 minute winter	36	2.000	4	62.4	1.371	0.689	2.1357	
15 minute winter	4	1.003	5	185.3	2.742	0.457	1.2931	
15 minute winter	37	3.000	38	12.7	0.921	0.301	0.3138	
15 minute winter	42	4.000	38	24.1	1.575	0.343	0.4251	
15 minute winter	38	3.001	39	44.5	0.858	0.596	2.3544	
15 minute winter	39	3.002	40	75.8	1.260	1.015	2.6218	
15 minute winter	43	5.000	40	7.3	0.791	0.173	0.1816	
15 minute winter	40	3.003	41	85.8	1.069	0.638	1.7633	
15 minute winter	41	3.004	5	102.4	1.191	0.762	4.2346	
15 minute winter	5	1.004	6	301.0	1.408	1.080	8.9321	
15 minute winter	6	1.005	7	315.9	1.664	1.133	2.2589	
15 minute winter	44	6.000	45	48.7	2.153	0.577	0.4746	
15 minute winter	45	6.001	46	55.5	2.225	0.475	0.2743	
15 minute winter	46	6.002	47	66.5	2.278	0.754	0.8551	
15 minute winter	47	6.003	48	98.4	1.703	0.902	1.9943	
15 minute winter	55	7.000	56	44.2	1.415	0.850	0.6260	
15 minute winter	34	8.000	56	30.0	1.613	0.438	0.3725	
15 minute winter	56	7.001	57	93.3	2.464	0.529	2.2470	
15 minute winter	57	7.002	58	111.0	1.559	0.681	2.7287	
15 minute winter	58	7.003	59	186.4	1.532	0.632	7.3998	
15 minute winter	63	9.000	64	28.5	1.233	0.489	0.3319	
15 minute winter	64	9.001	59	63.4	2.525	0.650	1.5863	

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.63%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	59	11	61.979	0.387	255.5	0.7605	0.0000	OK
15 minute winter	61	11	61.812	0.401	267.1	0.8820	0.0000	OK
15 minute winter	48	11	61.618	0.343	397.1	1.0207	0.0000	OK
15 minute winter	49	11	60.415	0.279	406.3	0.5963	0.0000	OK
15 minute winter	50	11	59.412	0.421	457.2	1.4602	0.0000	OK
15 minute winter	51	12	59.202	0.631	503.5	2.6427	0.0000	OK
15 minute winter	52	12	59.129	0.643	497.9	1.7249	0.0000	OK
15 minute winter	53	12	59.061	0.633	539.8	2.1790	0.0000	OK
15 minute winter	54	12	58.952	0.643	537.3	1.6368	0.0000	OK
15 minute winter	7	12	58.874	0.744	855.8	1.9645	0.0000	OK
15 minute winter	8	12	58.759	0.693	869.3	1.9320	0.0000	OK
15 minute winter	9	13	58.575	0.653	879.7	1.8846	0.0000	OK
15 minute winter	65	10	61.348	0.113	31.8	0.2805	0.0000	OK
15 minute winter	66	10	60.832	0.150	94.4	0.5390	0.0000	OK
15 minute winter	67	11	59.142	0.258	97.0	0.3334	0.0000	OK
15 minute winter	68	11	58.989	0.236	129.8	0.7319	0.0000	OK
15 minute winter	10	12	58.359	0.573	1000.2	1.6614	0.0000	OK
15 minute winter	11	12	57.991	0.370	1024.1	1.2444	0.0000	OK
15 minute winter	12	13	56.341	0.327	1032.0	0.9614	0.0000	OK
15 minute winter	13	13	54.313	0.329	1056.1	1.1727	0.0000	OK
15 minute winter	69	10	59.335	0.090	30.8	0.2210	0.0000	OK
15 minute winter	71	10	58.290	0.148	75.8	0.4313	0.0000	OK
15 minute winter	73	10	57.572	0.182	100.7	0.3872	0.0000	OK
15 minute winter	74	10	56.744	0.195	137.7	0.6140	0.0000	OK
15 minute winter	75	11	56.193	0.224	151.8	0.5246	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	59	7.004	61	253.2	1.734	0.783	2.6563	
15 minute winter	61	7.005	48	265.8	1.940	0.908	2.3073	
15 minute winter	48	6.004	49	395.8	3.406	0.820	5.9575	
15 minute winter	49	6.005	50	404.8	4.084	0.558	2.0164	
15 minute winter	50	6.006	51	452.6	2.212	0.588	4.8796	
15 minute winter	51	6.007	52	491.4	1.294	0.747	11.8666	
15 minute winter	52	6.008	53	496.0	1.268	0.754	8.1206	
15 minute winter	53	6.009	54	537.3	1.363	0.816	16.6620	
15 minute winter	54	6.010	7	534.2	1.463	0.812	3.9419	
15 minute winter	7	1.006	8	853.4	1.573	0.804	12.0814	
15 minute winter	8	1.007	9	862.3	1.698	0.812	25.5991	
15 minute winter	9	1.008	10	881.6	1.948	0.830	16.5443	
15 minute winter	65	10.000	66	31.2	1.623	0.464	0.5511	
15 minute winter	66	10.001	67	93.2	1.853	0.508	3.2980	
15 minute winter	67	10.002	68	96.2	1.625	0.866	0.3276	
15 minute winter	68	10.003	10	130.9	1.871	0.667	3.2105	
15 minute winter	10	1.009	11	999.2	2.992	0.710	11.0603	
15 minute winter	11	1.010	12	1023.9	5.123	0.396	7.3923	
15 minute winter	12	1.011	13	1035.3	5.603	0.323	5.6280	
15 minute winter	13	1.012	14	1058.9	5.029	0.331	5.6730	
15 minute winter	69	11.000	71	30.3	2.095	0.318	0.4467	
15 minute winter	71	11.001	73	75.1	1.892	0.477	1.4921	
15 minute winter	73	11.002	74	99.3	2.306	0.631	1.6493	
15 minute winter	74	11.003	75	137.6	2.179	0.485	1.8299	
15 minute winter	75	11.004	77	152.9	2.225	0.539	1.1134	

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.63%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	80	10	56.814	0.068	23.3	0.1451	0.0000	OK
15 minute winter	77	11	55.869	0.224	206.1	0.5982	0.0000	OK
15 minute winter	33	11	54.666	0.217	229.9	0.5610	0.0000	OK
15 minute winter	81	10	53.817	0.106	17.4	0.1986	0.0000	OK
15 minute winter	78	11	53.693	0.297	266.5	0.7048	0.0000	OK
15 minute winter	14	12	52.626	0.407	1307.1	1.1341	0.0000	OK
15 minute winter	82	10	52.420	0.101	24.9	0.2231	0.0000	OK
15 minute winter	83	10	52.218	0.179	50.5	0.3934	0.0000	OK
15 minute winter	84	11	51.931	0.146	49.3	0.1652	0.0000	OK
15 minute winter	15	12	51.481	0.442	1353.2	1.2001	0.0000	OK
15 minute winter	16	12	50.326	0.428	1367.5	1.3562	0.0000	OK
15 minute winter	17	12	49.078	0.423	1372.7	1.2082	0.0000	OK
15 minute winter	85	10	48.213	0.113	42.3	0.3185	0.0000	OK
15 minute winter	86	11	47.564	0.205	86.8	0.5999	0.0000	OK
15 minute winter	87	11	46.416	0.177	100.5	0.3129	0.0000	OK
15 minute winter	88	11	46.058	0.415	134.6	1.0202	0.0000	SURCHARGED
15 minute winter	89	11	45.640	0.322	151.0	0.8054	0.0000	OK
15 minute winter	90	11	45.414	0.290	155.5	0.5543	0.0000	OK
15 minute winter	91	12	45.297	0.309	177.4	0.6861	0.0000	OK
15 minute winter	18	12	45.193	0.682	1548.0	1.8360	0.0000	OK
15 minute winter	92	11	44.549	0.147	32.1	0.3686	0.0000	OK
15 minute winter	19	13	44.303	0.716	1571.0	1.9521	0.0000	OK
15 minute winter	20	13	43.633	0.477	1592.1	1.4881	0.0000	OK
15 minute winter	21	13	42.360	0.475	1599.9	1.3266	0.0000	OK
15 minute winter	93	10	41.781	0.064	10.5	0.1026	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	80	12.000	77	23.3	2.259	0.190	0.1823	
15 minute winter	77	11.005	33	207.4	3.080	0.612	2.8197	
15 minute winter	33	11.006	78	231.1	3.464	0.542	1.4565	
15 minute winter	81	13.000	78	17.1	0.975	0.403	0.2360	
15 minute winter	78	11.007	14	267.6	2.525	0.707	5.6251	
15 minute winter	14	1.013	15	1303.7	5.101	0.382	3.9961	
15 minute winter	82	14.000	83	24.6	0.947	0.423	0.5751	
15 minute winter	83	14.001	84	49.3	1.555	0.847	0.4562	
15 minute winter	84	14.002	15	49.5	1.562	0.398	0.3707	
15 minute winter	15	1.014	16	1350.4	5.123	0.449	5.1348	
15 minute winter	16	1.015	17	1364.3	5.305	0.426	4.8071	
15 minute winter	17	1.016	18	1367.2	6.179	0.427	5.2856	
15 minute winter	85	15.000	86	41.9	1.450	0.508	0.8517	
15 minute winter	86	15.001	87	84.4	2.315	1.024	1.6253	
15 minute winter	87	15.002	88	100.3	1.677	0.569	1.3545	
15 minute winter	88	15.003	89	132.8	1.887	1.095	1.4466	
15 minute winter	89	15.004	90	150.3	1.603	0.922	1.6675	
15 minute winter	90	15.005	91	154.6	1.401	0.587	2.2726	
15 minute winter	91	15.006	18	171.7	1.675	0.652	3.4529	
15 minute winter	18	1.017	19	1545.4	3.840	0.888	17.5799	
15 minute winter	92	16.000	19	31.1	1.156	0.734	1.2693	
15 minute winter	19	1.018	20	1581.4	4.237	0.808	6.2843	
15 minute winter	20	1.019	21	1595.2	5.417	0.498	5.6134	
15 minute winter	21	1.020	22	1602.4	5.203	0.501	5.9352	
15 minute winter	93	17.000	22	10.3	1.483	0.353	0.1337	

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.63%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	22	13	41.115	0.515	1612.4	1.4009	0.0000	OK
15 minute winter	23	13	40.082	0.496	1630.5	1.6862	0.0000	OK
15 minute winter	24	13	38.986	0.547	1636.8	1.5219	0.0000	OK
15 minute winter	25	13	38.158	0.982	1650.1	3.1606	0.0000	SURCHARGED
15 minute winter	94	10	52.437	0.095	20.3	0.1895	0.0000	OK
15 minute winter	95	10	52.254	0.137	36.8	0.2499	0.0000	OK
15 minute winter	96	11	52.009	0.169	55.4	0.3211	0.0000	OK
15 minute winter	117	10	52.331	0.131	41.3	0.3719	0.0000	OK
15 minute winter	118	11	51.742	0.242	48.1	0.3476	0.0000	SURCHARGED
15 minute winter	97	11	51.434	0.161	101.2	0.1826	0.0000	OK
15 minute winter	98	11	50.745	0.123	110.9	0.1834	0.0000	OK
15 minute winter	99	11	49.080	0.200	134.3	0.4086	0.0000	OK
15 minute winter	100	11	48.460	0.264	170.1	0.8481	0.0000	OK
15 minute winter	119	11	47.213	0.269	45.5	0.8297	0.0000	SURCHARGED
15 minute winter	101	11	46.926	0.422	209.2	0.7452	0.0000	SURCHARGED
15 minute winter	102	11	46.649	0.356	224.3	0.7833	0.0000	OK
15 minute winter	103	11	46.344	0.206	223.9	0.3634	0.0000	OK
15 minute winter	104	11	45.431	0.188	230.3	0.3831	0.0000	OK
15 minute winter	105	12	44.508	0.295	261.3	0.8788	0.0000	OK
15 minute winter	106	12	44.075	0.800	256.4	1.4129	0.0000	SURCHARGED
15 minute winter	107	12	43.600	0.573	269.4	1.3232	0.0000	SURCHARGED
15 minute winter	108	12	43.084	0.281	275.5	0.5662	0.0000	OK
15 minute winter	109	12	42.260	0.238	303.9	0.7269	0.0000	OK
15 minute winter	110	12	40.636	0.207	311.4	0.4295	0.0000	OK
15 minute winter	111	11	39.174	0.227	349.0	0.7858	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	22	1.021	23	1614.5	5.116	0.521	5.1196	
15 minute winter	23	1.022	24	1632.3	5.297	0.510	5.6186	
15 minute winter	24	1.023	25	1637.0	4.849	0.511	7.4280	
15 minute winter	25	1.024	26	1650.5	3.816	0.623	10.5347	
15 minute winter	94	18.000	95	20.1	0.976	0.345	0.3705	
15 minute winter	95	18.001	96	36.2	1.267	0.622	0.6307	
15 minute winter	96	18.002	97	54.9	1.781	0.849	0.9825	
15 minute winter	117	19.000	118	40.6	1.285	0.653	1.5514	
15 minute winter	118	19.001	97	46.3	1.198	1.094	0.8404	
15 minute winter	97	18.003	98	101.3	3.081	0.454	0.5355	
15 minute winter	98	18.004	99	110.9	2.867	0.358	0.8734	
15 minute winter	99	18.005	100	134.4	2.784	0.660	0.8855	
15 minute winter	100	18.006	101	170.4	2.161	0.761	2.9106	
15 minute winter	119	20.000	101	43.5	1.173	1.027	1.7297	
15 minute winter	101	18.007	102	208.6	1.891	0.932	1.8450	
15 minute winter	102	18.008	103	223.9	2.541	1.000	1.0562	
15 minute winter	103	18.009	104	223.5	3.831	0.459	0.8914	
15 minute winter	104	18.010	105	230.1	3.531	0.443	1.1378	
15 minute winter	105	18.011	106	256.4	2.495	0.571	1.9062	
15 minute winter	106	18.012	107	257.6	2.336	1.151	2.1906	
15 minute winter	107	18.013	108	270.1	2.536	1.206	1.7773	
15 minute winter	108	18.014	109	275.7	3.402	0.752	1.8996	
15 minute winter	109	18.015	110	304.7	4.468	0.606	1.6546	
15 minute winter	110	18.016	111	311.9	4.328	0.372	1.6582	
15 minute winter	111	18.017	112	347.0	4.692	0.414	2.7172	

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.63%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	112	13	38.152	0.905	347.0	1.5990	0.0000	SURCHARGED
15 minute winter	120	10	41.392	0.092	41.6	0.2637	0.0000	OK
15 minute winter	121	10	39.981	0.133	70.8	0.3148	0.0000	OK
15 minute winter	113	13	38.056	1.145	413.7	2.7311	0.0000	SURCHARGED
15 minute winter	122	10	42.159	0.090	42.6	0.2652	0.0000	OK
15 minute winter	123	10	40.852	0.094	42.3	0.1061	0.0000	OK
15 minute winter	124	13	38.311	0.806	41.8	0.9112	0.0000	SURCHARGED
15 minute winter	127	10	38.370	0.067	28.5	0.1571	0.0000	OK
15 minute winter	125	13	38.235	1.030	59.7	1.1647	0.0000	SURCHARGED
15 minute winter	126	13	38.000	1.015	48.6	1.1480	0.4798	FLOOD
15 minute winter	114	13	37.868	1.446	435.6	2.5556	0.0000	FLOOD RISK
15 minute winter	115	13	37.661	1.335	432.7	2.3588	0.0000	SURCHARGED
15 minute winter	116	13	37.531	1.250	460.4	3.5452	0.0000	SURCHARGED
15 minute winter	26	13	37.380	1.597	2108.8	4.7701	0.0000	SURCHARGED
15 minute winter	27	13	37.115	1.392	2122.3	4.8718	0.0000	SURCHARGED
15 minute winter	128	10	41.985	0.083	26.2	0.1876	0.0000	OK
15 minute winter	129	10	41.521	0.095	51.2	0.2061	0.0000	OK
15 minute winter	130	10	39.912	0.121	73.8	0.2421	0.0000	OK
15 minute winter	134	10	38.116	0.038	7.9	0.0561	0.0000	OK
15 minute winter	131	11	37.454	0.374	108.8	0.8301	0.0000	SURCHARGED
15 minute winter	132	12	37.182	0.386	143.9	1.2397	0.0000	SURCHARGED
15 minute winter	133	13	37.034	0.479	158.8	1.1047	0.0000	SURCHARGED
15 minute winter	28	13	36.845	1.182	2244.4	3.5281	0.0000	SURCHARGED
480 minute winter	29	472	35.690	0.338	301.6	1.0093	0.0000	OK
480 minute winter	30	472	35.690	0.448	169.4	1.1402	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	112	18.018	113	332.1	1.973	0.431	7.5616	
15 minute winter	120	21.000	121	41.3	2.081	0.354	0.5766	
15 minute winter	121	21.001	113	69.8	2.971	0.597	0.6387	
15 minute winter	113	18.019	114	404.2	1.609	0.545	11.8958	
15 minute winter	122	22.000	123	42.3	2.786	0.314	0.2989	
15 minute winter	123	22.001	124	41.8	1.994	0.366	1.8844	
15 minute winter	124	22.002	125	34.9	0.938	0.635	1.0678	
15 minute winter	127	23.000	125	28.4	1.504	0.193	0.3456	
15 minute winter	125	22.003	126	48.6	1.223	1.149	1.3112	
15 minute winter	126	22.004	114	50.2	1.278	1.186	1.1238	
15 minute winter	114	18.020	115	432.7	1.536	1.264	10.7939	
15 minute winter	115	18.021	116	433.7	1.540	1.266	5.1003	
15 minute winter	116	18.022	26	460.5	1.635	1.345	5.4496	
15 minute winter	26	1.025	27	2109.5	2.446	1.419	20.6127	
15 minute winter	27	1.026	28	2123.0	2.461	1.428	20.7870	
15 minute winter	128	24.000	129	26.0	1.774	0.273	0.2096	
15 minute winter	129	24.001	130	50.9	2.695	0.377	0.4632	
15 minute winter	130	24.002	131	73.1	2.661	0.570	1.3460	
15 minute winter	134	25.000	131	7.8	0.991	0.063	0.3609	
15 minute winter	131	24.003	132	106.0	1.519	1.171	2.2093	
15 minute winter	132	24.004	133	142.1	1.393	0.871	3.9889	
15 minute winter	133	24.005	28	151.1	1.464	1.071	4.7917	
15 minute winter	28	1.027	29	2245.6	2.645	1.691	21.5367	
480 minute winter	29	Flow through pond	30	169.4	0.059	0.000	2711.6980	
480 minute winter	30	26.000	31	36.2	0.535	0.041	1.9224	

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.63%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
480 minute winter	31	472	35.690	0.513	36.2	1.3048	0.0000	SURCHARGED
15 minute summer	32	1	35.090	0.000	35.2	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
480 minute winter	31	Hydro-Brake®	32	36.1				1235.8

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.63%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1	10	64.781	0.131	55.9	0.3102	0.0000	OK
15 minute winter	2	12	64.038	2.538	103.9	3.9333	0.0000	SURCHARGED
15 minute winter	3	11	63.204	1.995	167.4	3.6349	0.0000	SURCHARGED
15 minute winter	36	11	63.147	0.442	116.4	1.6564	0.0000	SURCHARGED
15 minute winter	4	11	61.902	1.122	322.2	2.4969	0.0000	SURCHARGED
15 minute winter	37	10	63.152	0.125	23.8	0.2118	0.0000	OK
15 minute winter	42	10	63.563	0.136	44.6	0.2975	0.0000	OK
15 minute winter	38	11	62.768	1.843	82.0	2.3418	0.0000	SURCHARGED
15 minute winter	39	12	62.540	1.818	134.2	3.2327	0.0000	SURCHARGED
15 minute winter	43	10	62.093	0.091	13.7	0.1318	0.0000	OK
15 minute winter	40	12	61.861	1.413	147.6	2.6024	0.0000	SURCHARGED
15 minute winter	41	12	61.700	1.346	174.9	2.8091	0.0000	SURCHARGED
15 minute winter	5	11	61.298	1.286	524.1	2.6464	0.0000	SURCHARGED
15 minute winter	6	11	60.654	0.783	552.8	1.5979	0.0000	SURCHARGED
15 minute winter	44	12	64.984	1.230	89.1	3.3071	0.0000	SURCHARGED
15 minute winter	45	12	64.551	1.346	82.5	1.9125	0.0000	FLOOD RISK
15 minute winter	46	12	64.210	1.556	94.6	2.4600	0.7943	FLOOD
15 minute winter	47	12	63.403	1.645	142.8	3.7811	0.0000	FLOOD RISK
15 minute winter	55	12	65.279	1.025	82.0	3.1438	0.0000	SURCHARGED
15 minute winter	34	12	65.090	0.690	55.3	1.6812	0.0000	SURCHARGED
15 minute winter	56	12	64.953	0.974	164.5	1.7920	0.0000	SURCHARGED
15 minute winter	57	12	64.143	1.706	177.8	4.0747	0.0000	FLOOD RISK
15 minute winter	58	12	63.879	1.773	294.7	7.8739	0.9823	FLOOD
15 minute winter	63	12	65.217	1.179	52.3	2.7897	0.0000	FLOOD RISK
15 minute winter	64	12	65.125	1.265	108.3	2.8117	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	55.2	2.398	0.580	0.6199	
15 minute winter	2	1.001	3	92.0	2.313	1.769	0.8610	
15 minute winter	3	1.002	4	162.4	2.306	1.793	3.7348	
15 minute winter	36	2.000	4	111.0	1.586	1.226	3.1585	
15 minute winter	4	1.003	5	317.4	2.878	0.783	1.6713	
15 minute winter	37	3.000	38	23.3	1.068	0.549	0.4935	
15 minute winter	42	4.000	38	43.8	1.813	0.623	0.6705	
15 minute winter	38	3.001	39	74.9	1.063	1.003	3.1482	
15 minute winter	39	3.002	40	127.7	1.813	1.711	3.0816	
15 minute winter	43	5.000	40	13.4	0.928	0.317	0.2832	
15 minute winter	40	3.003	41	147.9	1.341	1.100	2.2794	
15 minute winter	41	3.004	5	178.2	1.616	1.326	4.6530	
15 minute winter	5	1.004	6	525.4	2.433	1.885	9.1079	
15 minute winter	6	1.005	7	553.1	2.561	1.984	2.5468	
15 minute winter	44	6.000	45	70.2	2.243	0.832	0.8347	
15 minute winter	45	6.001	46	75.8	2.275	0.649	0.4385	
15 minute winter	46	6.002	47	85.8	2.278	0.973	1.1432	
15 minute winter	47	6.003	48	128.0	1.818	1.174	2.4330	
15 minute winter	55	7.000	56	74.1	1.863	1.425	0.7954	
15 minute winter	34	8.000	56	54.8	1.789	0.799	0.7954	
15 minute winter	56	7.001	57	147.0	2.544	0.834	4.1332	
15 minute winter	57	7.002	58	162.2	1.545	0.994	4.2290	
15 minute winter	58	7.003	59	243.1	1.586	0.824	9.7775	
15 minute winter	63	9.000	64	47.3	1.281	0.813	0.5654	
15 minute winter	64	9.001	59	87.5	2.513	0.897	2.3276	

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.63%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	59	12	63.495	1.903	341.6	3.7390	0.0000	SURCHARGED
15 minute winter	61	12	63.197	1.786	351.9	3.9300	0.0000	FLOOD RISK
15 minute winter	48	12	62.880	1.605	523.2	4.7823	0.0000	FLOOD RISK
15 minute winter	49	12	61.278	1.142	534.1	2.4432	0.0000	SURCHARGED
15 minute winter	50	12	60.442	1.451	609.8	5.0370	0.0000	SURCHARGED
15 minute winter	51	12	60.151	1.580	688.6	6.6136	0.0000	SURCHARGED
15 minute winter	52	12	59.996	1.510	701.6	4.0490	0.0000	SURCHARGED
15 minute winter	53	12	59.866	1.438	783.1	4.9466	0.0000	SURCHARGED
15 minute winter	54	12	59.620	1.311	786.1	3.3357	0.0000	SURCHARGED
15 minute winter	7	12	59.497	1.367	1353.6	3.6114	0.0000	SURCHARGED
15 minute winter	8	12	59.283	1.217	1384.5	3.3908	0.0000	SURCHARGED
15 minute winter	9	12	58.928	1.006	1418.0	2.9026	0.0000	SURCHARGED
15 minute winter	65	10	61.406	0.171	57.6	0.4250	0.0000	OK
15 minute winter	66	11	60.947	0.265	171.7	0.9518	0.0000	OK
15 minute winter	67	11	59.613	0.729	171.0	0.9416	0.0000	SURCHARGED
15 minute winter	68	11	59.334	0.581	229.5	1.8046	0.0000	SURCHARGED
15 minute winter	10	12	58.611	0.825	1670.5	2.3912	0.0000	OK
15 minute winter	11	12	58.156	0.535	1723.4	1.7986	0.0000	OK
15 minute winter	12	12	56.476	0.462	1746.8	1.3602	0.0000	OK
15 minute winter	13	12	54.481	0.497	1803.6	1.7729	0.0000	OK
15 minute winter	69	10	59.369	0.124	55.9	0.3029	0.0000	OK
15 minute winter	71	12	58.585	0.443	138.5	1.2910	0.0000	SURCHARGED
15 minute winter	73	12	58.093	0.703	176.0	1.4947	0.0000	SURCHARGED
15 minute winter	74	12	57.201	0.652	233.7	2.0558	0.0000	SURCHARGED
15 minute winter	75	12	56.768	0.799	253.5	1.8687	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	59	7.004	61	333.5	2.105	1.032	2.8620	
15 minute winter	61	7.005	48	356.9	2.253	1.219	2.6249	
15 minute winter	48	6.004	49	523.8	3.443	1.085	8.1182	
15 minute winter	49	6.005	50	543.4	4.143	0.749	3.1527	
15 minute winter	50	6.006	51	612.8	2.187	0.796	6.0811	
15 minute winter	51	6.007	52	691.9	1.572	1.051	13.0958	
15 minute winter	52	6.008	53	703.7	1.599	1.069	8.9490	
15 minute winter	53	6.009	54	786.1	1.786	1.194	18.3649	
15 minute winter	54	6.010	7	788.0	1.791	1.197	4.4721	
15 minute winter	7	1.006	8	1355.7	2.139	1.277	14.1192	
15 minute winter	8	1.007	9	1386.4	2.188	1.306	31.9593	
15 minute winter	9	1.008	10	1420.1	2.244	1.338	22.4492	
15 minute winter	65	10.000	66	57.0	1.795	0.848	0.9529	
15 minute winter	66	10.001	67	163.9	2.362	0.894	4.5332	
15 minute winter	67	10.002	68	168.5	2.394	1.517	0.3922	
15 minute winter	68	10.003	10	228.6	2.074	1.164	4.9373	
15 minute winter	10	1.009	11	1674.7	3.270	1.190	16.4898	
15 minute winter	11	1.010	12	1726.8	5.555	0.668	11.4706	
15 minute winter	12	1.011	13	1752.1	5.984	0.547	9.0500	
15 minute winter	13	1.012	14	1795.1	5.228	0.561	9.9249	
15 minute winter	69	11.000	71	56.0	2.224	0.587	0.9422	
15 minute winter	71	11.001	73	129.7	2.034	0.823	2.6483	
15 minute winter	73	11.002	74	161.8	2.491	1.027	2.6959	
15 minute winter	74	11.003	75	226.2	2.264	0.798	3.1973	
15 minute winter	75	11.004	77	238.4	2.463	0.841	1.7871	

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.63%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	80	11	56.836	0.090	42.2	0.1923	0.0000	OK
15 minute winter	77	12	56.416	0.771	327.2	2.0595	0.0000	SURCHARGED
15 minute winter	33	12	55.093	0.644	357.8	1.6662	0.0000	SURCHARGED
15 minute winter	81	11	54.178	0.467	31.5	0.8752	0.0000	SURCHARGED
15 minute winter	78	11	54.122	0.726	416.4	1.7191	0.0000	SURCHARGED
15 minute winter	14	12	53.117	0.898	2219.8	2.5007	0.0000	SURCHARGED
15 minute winter	82	11	52.790	0.471	45.2	1.0344	0.0000	SURCHARGED
15 minute winter	83	11	52.602	0.563	86.8	1.2359	0.0000	SURCHARGED
15 minute winter	84	12	52.061	0.276	87.0	0.3126	0.0000	OK
15 minute winter	15	12	51.988	0.949	2290.6	2.5785	0.0000	SURCHARGED
15 minute winter	16	12	50.596	0.698	2319.0	2.2117	0.0000	OK
15 minute winter	17	11	49.300	0.645	2329.4	1.8432	0.0000	OK
15 minute winter	85	11	49.484	1.384	76.7	3.9046	0.0000	FLOOD RISK
15 minute winter	86	11	48.884	1.525	143.7	4.4652	6.8938	FLOOD
15 minute winter	87	11	47.572	1.333	128.4	2.3628	0.0000	FLOOD RISK
15 minute winter	88	11	47.240	1.597	174.8	3.9254	7.6519	FLOOD
15 minute winter	89	11	46.918	1.600	409.0	4.0080	93.8262	FLOOD
15 minute winter	90	13	47.398	2.274	267.4	4.3449	0.0000	FLOOD RISK
15 minute winter	91	13	47.597	2.609	256.2	5.7848	0.0000	SURCHARGED
15 minute winter	18	13	47.780	3.269	2334.4	8.8078	0.0000	SURCHARGED
15 minute winter	92	12	45.827	1.425	63.0	3.5711	9.1350	FLOOD
15 minute winter	19	13	45.980	2.393	2182.6	6.5269	0.0000	SURCHARGED
15 minute winter	20	13	44.922	1.766	2178.3	5.5109	0.0000	FLOOD RISK
15 minute winter	21	13	43.788	1.903	2146.7	5.3176	0.0000	FLOOD RISK
15 minute winter	93	13	42.740	1.023	28.3	1.6412	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	80	12.000	77	42.0	2.300	0.342	0.4715	
15 minute winter	77	11.005	33	321.7	3.204	0.948	4.6171	
15 minute winter	33	11.006	78	358.0	3.489	0.840	2.3952	
15 minute winter	81	13.000	78	30.9	1.071	0.729	0.5358	
15 minute winter	78	11.007	14	414.9	2.789	1.096	8.4073	
15 minute winter	14	1.013	15	2207.1	5.286	0.646	6.8439	
15 minute winter	82	14.000	83	42.6	1.072	0.733	0.8922	
15 minute winter	83	14.001	84	87.0	2.187	1.495	0.5651	
15 minute winter	84	14.002	15	87.0	1.764	0.699	0.8091	
15 minute winter	15	1.014	16	2287.9	5.346	0.761	8.4119	
15 minute winter	16	1.015	17	2314.1	5.638	0.723	7.6976	
15 minute winter	17	1.016	18	2318.2	6.572	0.724	9.8494	
15 minute winter	85	15.000	86	67.1	1.687	0.813	1.1787	
15 minute winter	86	15.001	87	98.1	2.468	1.190	1.6632	
15 minute winter	87	15.002	88	115.5	1.719	0.655	1.6801	
15 minute winter	88	15.003	89	158.2	2.247	1.304	1.4796	
15 minute winter	89	15.004	90	-270.3	-2.451	-1.657	1.9611	
15 minute winter	90	15.005	91	-261.6	-1.651	-0.992	3.2284	
15 minute winter	91	15.006	18	278.5	1.776	1.057	4.2162	
15 minute winter	18	1.017	19	2153.9	4.894	1.238	18.9076	
15 minute winter	92	16.000	19	46.2	1.171	1.092	1.7292	
15 minute winter	19	1.018	20	2146.4	4.877	1.096	7.5947	
15 minute winter	20	1.019	21	2132.7	5.432	0.666	8.3891	
15 minute winter	21	1.020	22	2129.2	5.226	0.665	8.4838	
15 minute winter	93	17.000	22	18.7	1.704	0.639	0.3375	

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.63%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	22	13	42.636	2.036	2147.4	5.5419	0.0000	FLOOD RISK
15 minute winter	23	13	41.551	1.965	2176.3	6.6798	0.0000	FLOOD RISK
15 minute winter	24	13	40.407	1.968	2185.5	5.4772	0.0000	FLOOD RISK
15 minute winter	25	12	39.205	2.029	2210.3	6.5291	0.0000	FLOOD RISK
15 minute winter	94	12	52.975	0.633	36.8	1.2675	0.0000	SURCHARGED
15 minute winter	95	12	52.892	0.775	59.1	1.4158	0.0000	SURCHARGED
15 minute winter	96	12	52.558	0.718	88.6	1.3658	0.0000	SURCHARGED
15 minute winter	117	11	53.059	0.859	74.9	2.4307	0.0000	SURCHARGED
15 minute winter	118	11	52.167	0.667	78.5	0.9560	0.0000	SURCHARGED
15 minute winter	97	11	51.496	0.223	163.8	0.2518	0.0000	OK
15 minute winter	98	12	50.832	0.210	180.4	0.3136	0.0000	OK
15 minute winter	99	12	49.948	1.068	220.2	2.1795	0.0000	SURCHARGED
15 minute winter	100	12	49.020	0.824	275.1	2.6411	0.0000	SURCHARGED
15 minute winter	119	11	48.369	1.425	82.6	4.3919	5.0628	FLOOD
15 minute winter	101	12	48.210	1.706	314.2	3.0143	0.0000	SURCHARGED
15 minute winter	102	12	47.655	1.362	331.0	2.9945	0.0000	SURCHARGED
15 minute winter	103	12	47.125	0.987	322.3	1.7432	0.0000	SURCHARGED
15 minute winter	104	12	46.524	1.281	326.9	2.6080	0.0000	SURCHARGED
15 minute winter	105	12	45.879	1.666	373.4	4.9647	0.7977	FLOOD
15 minute winter	106	11	44.986	1.711	360.1	3.0233	5.6038	FLOOD
15 minute winter	107	11	44.223	1.196	353.5	2.7618	0.0000	SURCHARGED
15 minute winter	108	12	43.404	0.601	362.5	1.2122	0.0000	SURCHARGED
15 minute winter	109	11	42.335	0.313	419.6	0.9547	0.0000	OK
15 minute winter	110	11	40.682	0.253	431.0	0.5240	0.0000	OK
15 minute winter	111	12	39.589	0.642	509.9	2.2207	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	22	1.021	23	2147.4	5.037	0.693	7.1401	
15 minute winter	23	1.022	24	2177.3	5.306	0.680	7.5732	
15 minute winter	24	1.023	25	2186.5	4.969	0.683	8.3385	
15 minute winter	25	1.024	26	2211.7	5.026	0.835	10.5347	
15 minute winter	94	18.000	95	31.3	1.032	0.538	0.7172	
15 minute winter	95	18.001	96	57.1	1.437	0.982	0.8818	
15 minute winter	96	18.002	97	86.5	2.176	1.337	1.2545	
15 minute winter	117	19.000	118	65.6	1.649	1.054	1.9492	
15 minute winter	118	19.001	97	77.4	1.946	1.828	0.8966	
15 minute winter	97	18.003	98	164.2	3.284	0.736	0.8830	
15 minute winter	98	18.004	99	178.7	3.081	0.577	1.3946	
15 minute winter	99	18.005	100	212.3	3.015	1.043	1.2876	
15 minute winter	100	18.006	101	271.0	2.458	1.211	4.0748	
15 minute winter	119	20.000	101	60.5	1.520	1.428	1.7297	
15 minute winter	101	18.007	102	302.6	2.743	1.352	1.8626	
15 minute winter	102	18.008	103	322.3	2.929	1.440	1.3699	
15 minute winter	103	18.009	104	316.7	3.760	0.650	1.6781	
15 minute winter	104	18.010	105	326.5	3.399	0.629	1.7036	
15 minute winter	105	18.011	106	360.1	3.265	0.802	2.0685	
15 minute winter	106	18.012	107	336.1	3.048	1.501	2.1906	
15 minute winter	107	18.013	108	350.8	3.181	1.567	1.9727	
15 minute winter	108	18.014	109	359.8	3.557	0.982	2.4417	
15 minute winter	109	18.015	110	416.5	4.663	0.829	2.1631	
15 minute winter	110	18.016	111	428.8	4.287	0.512	2.7800	
15 minute winter	111	18.017	112	504.9	4.681	0.602	3.6846	

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.63%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	112	11	38.764	1.517	504.9	2.6811	0.0000	SURCHARGED
15 minute winter	120	10	41.430	0.130	75.5	0.3737	0.0000	OK
15 minute winter	121	11	40.357	0.509	128.5	1.2027	0.0000	SURCHARGED
15 minute winter	113	11	38.542	1.631	667.6	3.8897	0.0000	SURCHARGED
15 minute winter	122	10	42.197	0.128	77.2	0.3780	0.0000	OK
15 minute winter	123	11	40.904	0.146	77.1	0.1652	0.0000	OK
15 minute winter	124	11	39.000	1.495	74.5	1.6908	5.0970	FLOOD
15 minute winter	127	11	39.042	0.739	51.7	1.7386	0.0000	SURCHARGED
15 minute winter	125	11	38.885	1.680	78.7	1.8998	0.0000	FLOOD RISK
30 minute winter	126	16	38.000	1.015	75.8	1.1480	37.3940	FLOOD
15 minute winter	114	10	38.000	1.578	670.9	2.7883	115.5214	FLOOD
15 minute winter	115	12	37.932	1.606	414.8	2.8379	0.0000	SURCHARGED
15 minute winter	116	12	37.890	1.609	464.9	4.5633	0.0000	SURCHARGED
15 minute winter	26	12	37.823	2.040	2510.7	6.0923	0.0000	SURCHARGED
15 minute winter	27	12	37.447	1.724	2542.0	6.0359	0.0000	SURCHARGED
15 minute winter	128	10	42.021	0.119	47.5	0.2675	0.0000	OK
15 minute winter	129	12	41.677	0.251	93.2	0.5427	0.0000	SURCHARGED
15 minute winter	130	12	41.005	1.214	130.4	2.4284	0.0000	SURCHARGED
15 minute winter	134	11	38.662	0.584	15.9	0.8578	0.0000	SURCHARGED
15 minute winter	131	11	38.644	1.564	170.4	3.4690	4.7981	FLOOD
15 minute winter	132	11	38.137	1.341	211.0	4.3047	0.0000	SURCHARGED
15 minute winter	133	11	37.706	1.151	225.6	2.6574	0.0000	SURCHARGED
15 minute winter	28	12	37.060	1.397	2760.0	4.1719	0.0000	SURCHARGED
960 minute winter	29	945	36.085	0.733	315.7	2.1890	0.0000	OK
960 minute winter	30	945	36.085	0.843	176.3	2.1456	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	112	18.018	113	506.8	1.931	0.658	7.5616	
15 minute winter	120	21.000	121	75.0	2.243	0.642	0.9235	
15 minute winter	121	21.001	113	117.9	3.227	1.009	1.0814	
15 minute winter	113	18.019	114	667.8	2.371	0.901	11.8958	
15 minute winter	122	22.000	123	77.1	3.159	0.571	0.4903	
15 minute winter	123	22.001	124	74.5	2.086	0.653	2.2902	
15 minute winter	124	22.002	125	44.2	1.112	0.805	1.0678	
15 minute winter	127	23.000	125	46.9	1.659	0.319	0.5541	
15 minute winter	125	22.003	126	78.3	1.969	1.849	1.3112	
30 minute winter	126	22.004	114	53.3	1.340	1.258	1.1238	
15 minute winter	114	18.020	115	414.8	1.473	1.211	10.7939	
15 minute winter	115	18.021	116	425.7	1.511	1.243	5.1003	
15 minute winter	116	18.022	26	454.8	1.615	1.328	5.4496	
15 minute winter	26	1.025	27	2511.2	2.911	1.690	20.6127	
15 minute winter	27	1.026	28	2541.8	2.947	1.710	20.7870	
15 minute winter	128	24.000	129	47.4	1.996	0.497	0.4026	
15 minute winter	129	24.001	130	88.8	2.892	0.658	0.9755	
15 minute winter	130	24.002	131	112.8	2.836	0.879	1.7404	
15 minute winter	134	25.000	131	28.0	1.029	0.225	0.6490	
15 minute winter	131	24.003	132	140.3	1.993	1.550	2.2093	
15 minute winter	132	24.004	133	195.4	1.772	1.198	3.9889	
15 minute winter	133	24.005	28	224.7	2.038	1.593	4.7917	
15 minute winter	28	1.027	29	2760.2	3.204	2.078	22.3064	
960 minute winter	29	Flow through pond	30	176.3	0.054	0.000	5600.2168	
960 minute winter	30	26.000	31	36.2	0.515	0.041	3.7182	

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.63%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
960 minute winter	31	945	36.085	0.908	36.2	2.3108	0.0000	SURCHARGED
15 minute summer	32	1	35.090	0.000	36.1	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
960 minute winter	31	Hydro-Brake®	32	36.1				2074.4