PUNCH
consulting engineers

Great Connell SHD – Newbridge

Engineering Planning Report
192229-PUNCH-XX-XX-RP-C-0001

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1 Introduction

PUNCH Consulting Engineers were commissioned by Aston Ltd to provide Civil & Structural Consulting Engineering services for the proposed Strategic Housing Development located at Great Connell, Newbridge, County Kildare. The site location is shown in Figure 1-1 below.

The existing site is approximately 27.635 hectares and is part brownfield/ part greenfield site with 3 no. existing buildings on the eastern side, and the majority of the existing land used for agriculture. The proposed development is located to the east of Newbridge town centre on the eastern side of the River Liffey. The site is within the Newbridge Local Area Plan.

There is one existing access route onto the site from Great Connell Road to the east.

The proposed site is bounded by the existing Wellesley Manor residential developments to the north-east, Great Connell Road to the east and existing farmland to the south. The River Liffey and existing farmland are located to the west. Ardstone Homes Limited were granted planning for 343 residential units on the site located on the western side of the River Liffey under planning approval grant ABP-302141-18.

Murphy International Limited headquarters/offices are located adjacent the site on the eastern side of Great Connell Road. The site is approximately 2km from Newbridge Town (St Conleth's Bridge), 2.9km from Newbridge Train Station and approximately 4.9km from the Newbridge/M7 junction. Distances are taken from the proposed site entrance on Great Connell Road.

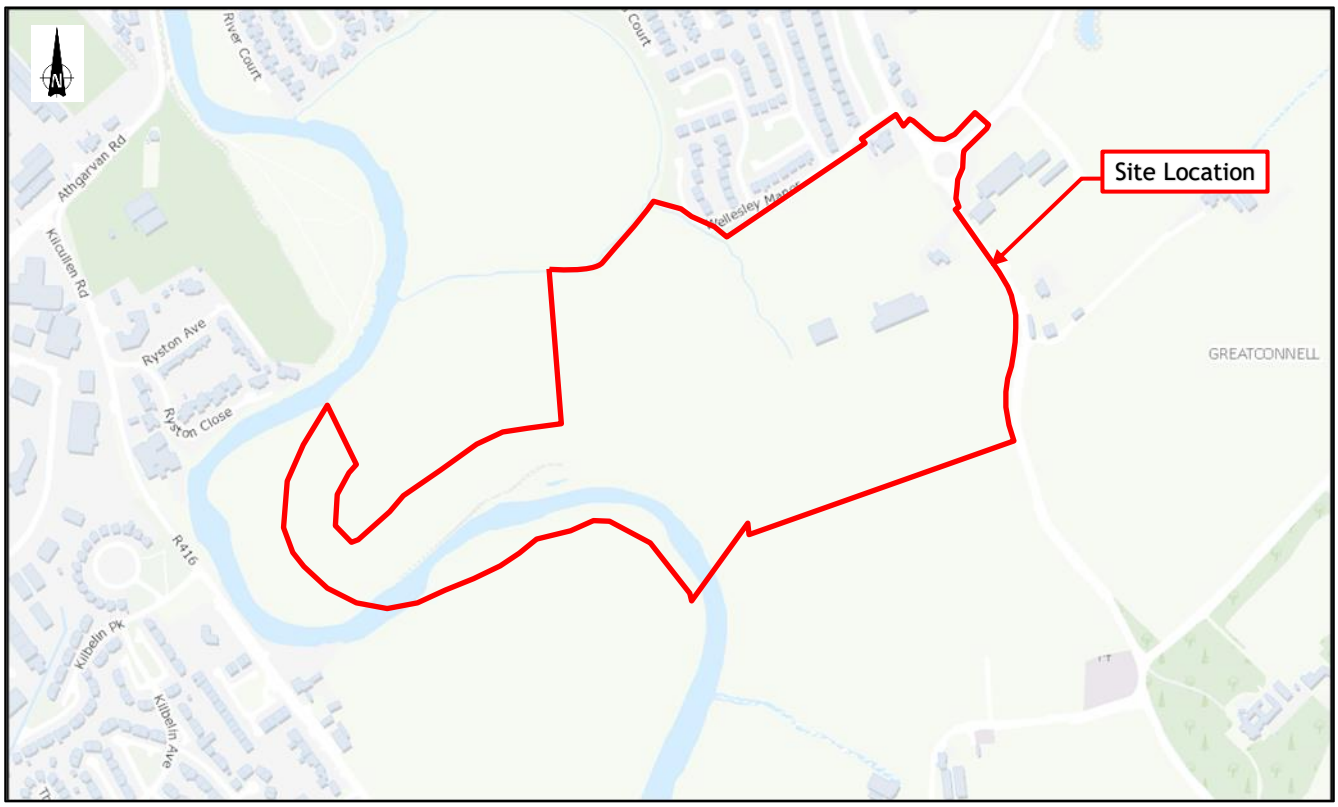


Figure 1-1: Site Location Plan
(Ref: https://viewer.myplan.ie/)

1.1 Proposed Development

Aston Limited intend to apply to An Bord Pleanála for permission for a strategic housing development at this site at Great Connell, Newbridge, County Kildare. This subject site comprises the lands surrounding and including the dwellings of 'Greatconnell' and 'Valencia Lodge', Great Connell, Newbridge, Co. Kildare, Eircodes: W12 TW29 and W12 V382.

The development will consist of the demolition of existing site structures (2,622.3 sqm) and the construction of 569 no. residential units, a neighbourhood centre with 11 no. units (commercial floor area 2,141 sqm) and a childcare facility (886 sqm), a circa 350 metre section of distributor road, and all ancillary and associated works on a site of 27.64 ha. The proposed development comprises:

1. Demolition of existing site structures (total 2,622.3 sqm) comprising; 'Great Connell' a two-storey dwelling of 331.9 sqm with detached single storey garage and outhouses of 48 sqm; 'Valencia Lodge' a single storey dwelling of 135.6 sqm with a single storey garage of 17.8 sqm; two no. single storey sheds of 1,440 sqm and 595 sqm, and a three-sided shed of 54 sqm.
2. Construction of 569 no. new residential dwellings (325 no. houses and 244 no. apartments) comprising:
   - 64 no. two-bed houses; 173 no. three-bed houses; and 88 no. four-bed houses (ranging in height from 2 to 3 storeys).
   - Apartment Block A (Part 3 and 4 Storeys): 5 no. one-bed apartments; 14 no. two-bed apartments; and 3 no. three-bed apartments. These proposed units have private balconies or terraces, and access to a community roof terrace of 112.4 sqm.
   - Apartment Block B (Part 3 and 4 Storeys): 5 no. one-bed apartments; 14 no. two-bed apartments; and 3 no. three-bed apartments. These proposed units have private balconies or terraces, and access to a community roof terrace of 112.4 sqm.
   - Apartment Block C (Part 3 and 4 Storeys): 4 no. one-bed apartments; 19 no. two-bed apartments and 4 no. three-bed apartments. These proposed units have private balconies or terraces, and access to a community roof terrace of 87 sqm.
   - 13 no. apartments above the proposed Neighbourhood Centre comprising; 4 no. own-door two-bed apartments; 3 no. shared-access one-bed apartments; and 6 no. shared-access two-bed apartments. These proposed units have private balconies or terraces.
   - 160 no. own-door apartments in 2- and 3- storey buildings comprising; 16 no. one-bed apartments; 78 no. two-bed apartments, 66 no. three-bed duplex apartments. These units will have private amenity areas in the form of terraces, balconies and/or rear gardens.
3. Provision of Neighbourhood Centre (ranging in height between 2 and 4 storeys) with 11 no. commercial units comprising: a convenience shop of 909 sqm (unit 1); 3 no. doctor/dentist/physio units of 120 sqm, 120 sqm and 90 sqm (units 6, 7, and 8, respectively); a café of 125 sqm (unit 4); a restaurant of 213 sqm (unit 9); and 5 no. shop/convenience services units of 112 sqm, 49 sqm, 171 sqm, 100sqm and 100 sqm (units 2, 3, 5,10 and 11, respectively). The proposed Neighbourhood Centre includes an external roof terrace of 176 sqm.
4. Provision of a childcare facility (886 sqm) within the Neighbourhood Centre with capacity for in the order of 154 no. children.
5. Provision of 1,008 no. car parking spaces comprising 650 no. spaces for the proposed houses; 312 no. spaces for the proposed apartments; and 46 no. spaces to serve the Neighbourhood Centre.
6. Provision of 732 bicycle parking spaces comprising 536 no. secure residential spaces, 134 no. residential visitor spaces, and 62 no. spaces to serve the Neighbourhood Centre.
7. A series of 18 no. public open spaces and pocket parks are proposed throughout the residential development (2.613 ha net area).
8. Provision of a 8.31 ha amenity area adjoining the River Liffey.

9. Vehicular access to the proposed development from Great Connell road via a circa 350 metre section of the Newbridge South Orbital Relief Road (NSORR), including footpaths and cycle paths. It is proposed to upgrade the existing Great Connell Roundabout to a signalised junction and provide footpaths and cycle paths within the subject site along the Great Connell Road.
10. Proposed development facilitates future potential pedestrian, cycle and vehicular links to adjoining residential development and undeveloped lands.
11. All enabling and site development works, landscaping, boundary treatments, lighting, services and connections, including connection to permitted wastewater pumping station, waste management, ESB substations, compensatory flood storage and all other ancillary works above and below ground on a site of 27.64 ha.
12. A 7-year permission is sought.

The proposed layout for the development is detailed in the series of drawings by OFA Architects accompanying this report.

2 Stormwater Drainage Design

2.1 Existing Stormwater Drainage

Within the proposed site for development there is no existing surface water piped drainage network. From a review of Kildare County Council's service record drawings, the following existing sewers are noted:

1. 1000mm concrete surface water sewer that flows adjacent to the northeast boundary of the site, from the Great Connell Road in a southwest direction along Wellesley Manor and discharges to a small stream that then flows into the Liffey.
2. An existing drainage system serving the Wellesley Manor residential estate to the north of the site, which connects to the 1000mm concrete surface water drain.

Refer to Figure 2-1 and Figure 2-2 below.

Figure 2-1: Existing Surface Water Network Surrounding the Proposed Site.
(Extract from Irish Water records)

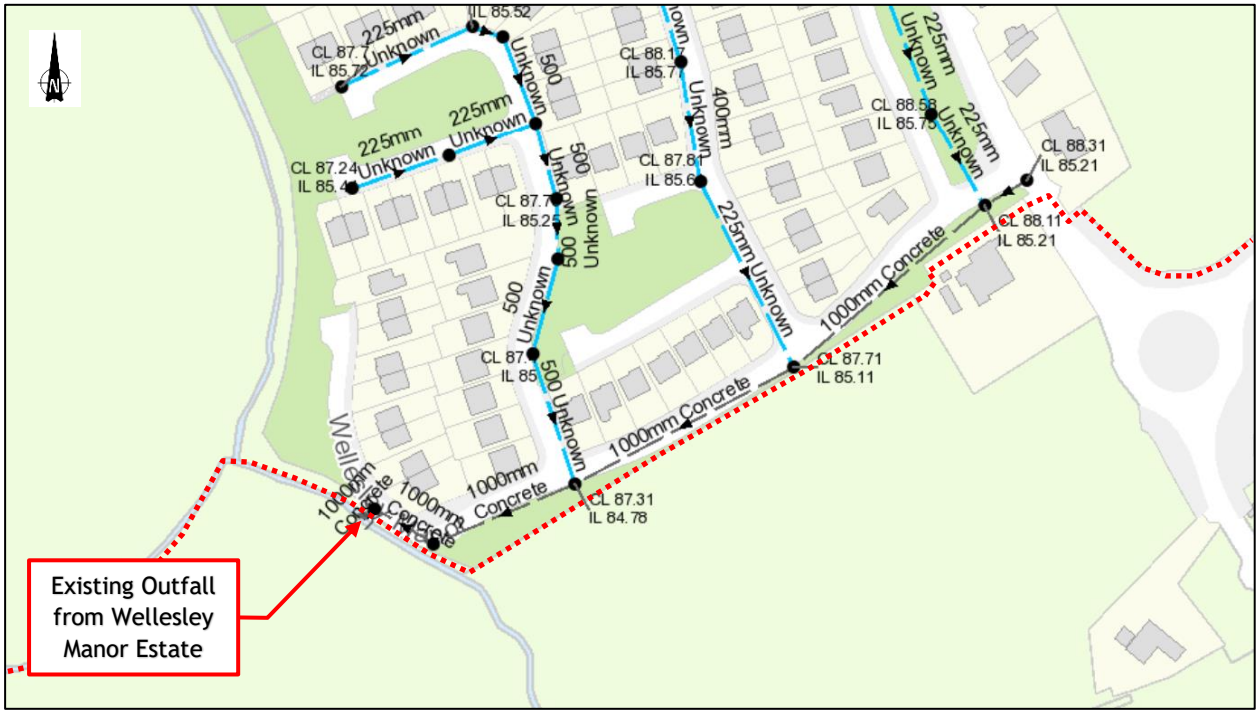


Figure 2-2: Existing Surface Water Network Serving Wellesley Manor Estate. (Extract from Irish Water records)

The proposed development occupies agricultural land situated adjacent to the River Liffey. The site area is approximately 27.635 ha, with a zoned land extent of 17.346 ha. The site topography is varied, with a fall in a northwest direction of approximately 2.74m (+85.49m to +88.23).

There is an existing ditch on the site that crosses from south to north. The ditch joins the River Liffey further downstream of the site. The ditch has invert levels in the region of 84.7 mAOD.

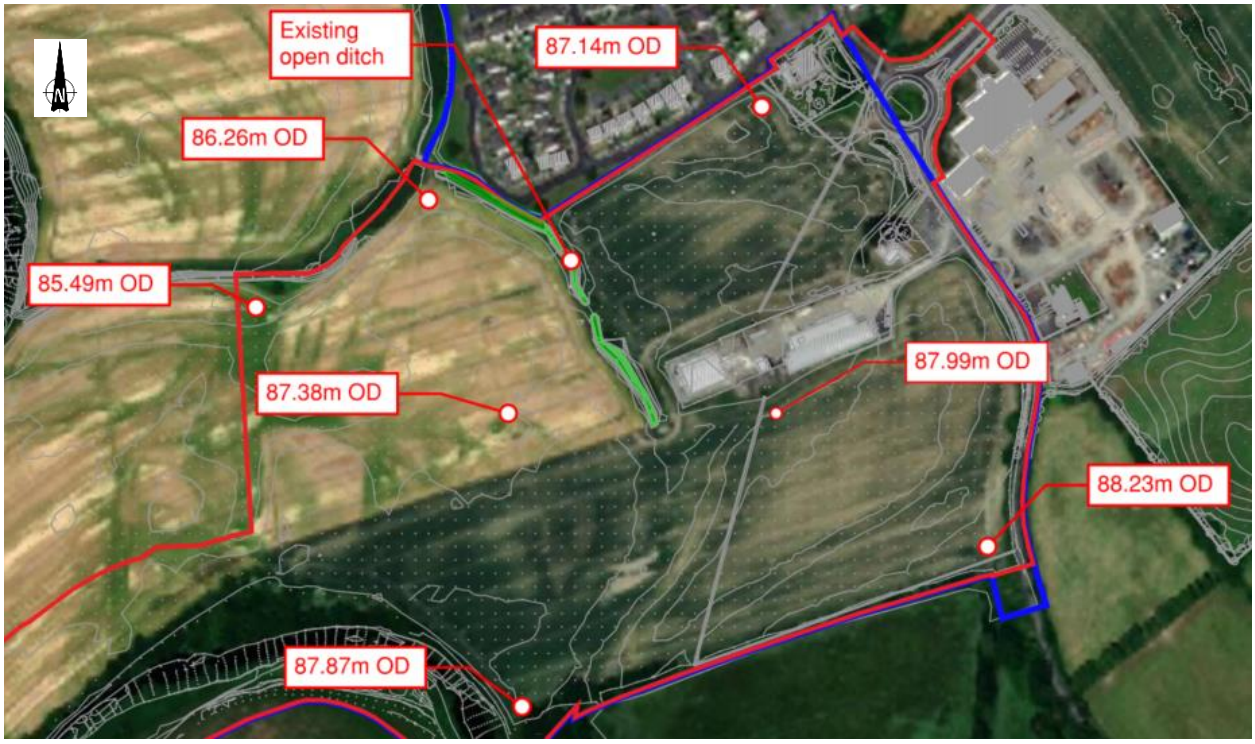


Figure 2-3: Existing Site Levels

2.2 Proposed Stormwater Drainage

A new surface water drainage network will be provided for the proposed development. The proposed surface water drainage system has been designed, analysed, and simulated using Causeway Flow software with reference to the following documents:

a) Kildare Development Plan 2017-2023
b) CIRIA SuDS Manual 2015 C753 – The SuDS Manual
c) CIRIA Publications C644 – Building Greener
d) Greater Dublin Strategic Drainage Study (GDSDS)
e) Greater Dublin Regional Code of Practice for Drainage Works
f) Recommendations for Site Development Works for Housing Areas - Department of the Environment and Local Government

The proposed surface water drainage network will serve the developed section of the site. Due to the topography across the site, it is not possible to drain the entire site via one outfall. As such it is proposed to discharge via four outlets to the existing ditch which passes through the mid-northern portion of the site and two outlets to the River Liffey to the west. Please refer to drawings 192229-PUNCH-XX-XX-DR-C-0101, 192229-PUNCH-XX-XX-DR-C-0102, 192229-PUNCH-XX-XX-DR-C-0103 and 192229-PUNCH-XX-XX-DR-C-0104 for plans of the proposed drainage network and discharge points from the development site.

All surface water drainage within the site will fall via gravity to the various surface water outfalls. Flows from the development will be limited to the greenfield runoff rate. Interception, treatment and attenuation measures will be provided to reduce, treat and restrict outflow from the site.

As detailed in the following sections, the sum of the discharge rates from the six outfalls have been restricted to ensure Qbar from the full site is not exceeded for the 1 in 100-year rainfall event with 20% climate change. Therefore, total discharge will be limited to the greenfield runoff rate of 76.31 l/s.

The proposed section of NSORR road that will traverse the site is to be drained by a network that is separate to the residential development drainage. Dedicated surface water drainage lines will be provided for the road that will discharge to 2 no. dedicated attenuation systems. Due to level and vertical clearance constraints imposed by the existing 900mm dia. Newbridge Eastern Interceptor Sewer traversing the site, 2 no. outfalls are required for the road drainage.

The site conditions have been reviewed through desktop study and site investigations and the design parameters outlined in Table 2-1 have been identified.

The SuDS measures provided will ensure that all surface water from the proposed development will pass through at least one SuDS element, which includes bio-swales, soakpits, permeable paving and attenuation tanks. This will ensure the surface water discharge from the development is restricted to Qbar for the 1 in 100 year storm with 20% climate change allowance.

Table 2-1: Stormwater Drainage Design Parameters

Description	Value
Drainage Area	16.8 ha
SOIL type	Soil Type 3 *(As confirmed through site investigation carried out by IGSL Limited)*
SPR Value	0.4 *(Due to SOIL Type)*
Standard Average Annual Rainfall (SAAR)	899mm *(Source = Met Eireann Data)*
Flow reduction parameter	Qbar *(Mean annual peak greenfield flow)*
Maximum Allowable Controlled Outflow	76.31 l/s
Flow restriction method	Hydro-brake included at each outfall
Infiltration Rate (soakaway design & car park permeable paving design)	Varies – Minimum infiltration rate 0.132 m/hr based on Site Investigation infiltration tests carried out within the development site boundary. Refer to extracts from Site Investigation report in Appendix I.
Attenuation Volume	5707m^3
Return Period used for Pipework Design	5 year
Return Periods used in Simulations	30 year and 100 year
Climate Change	20%

There is an existing ditch south of the distributor road to be infilled to accommodate the proposed development. The ditch currently drains a portion of the site. The catchment of the ditch included in the proposed drainage network will cater for this area following removal of a portion of the ditch.

2.2.1 Mean Annual Peak Greenfield Flow (Qbar) Calculation

As there is no drainage network within the existing site, all surface water runoff on the existing site, currently infiltrates to the natural ground or runs overland to the open ditch to the north of the site or River Liffey.

Site investigations carried out by IGSL Limited found the following:

1. SOIL Type: a mixture of generally permeable soils at the site were identified, including gravels and sands with some silt and clay encountered also. This soil type conforms with Soil Type 3 as per the GDSDS.
2. Infiltration rate: Infiltration testing to inform soakaway design was carried out during the site investigations. The results of the infiltration tests determined the soil to be permeable with a minimum infiltration rate of 0.132 m/hr determined by the Site Investigation infiltration tests carried out within the development site boundary.
3. Groundwater levels: Groundwater monitoring was carried out from April 2021 to January 2022, with seven groundwater level readings taken during this period. The results of the groundwater monitoring are included in Appendix J. The base of all proposed infiltration SuDS systems are 1m above the top groundwater level measured near the proposed SuDS system.

The Standard Average Annual Rainfall (SAAR) for the development site has been sourced from the Met Éireann 1981-2010 Annual Average Rainfall Grid.

Using the parameters listed in Table 2-1 above, the Qbar discharge rate has been calculated in accordance with IH124 (GDSDS drainage design criterion 2). A copy of the calculation report for this assessment can be found in Appendix B. Based on a Soil Type 3, a drained area of 16.8 Ha and the rainfall parameters noted above, Qbar has been calculated for the site as 76.31 l/s. This is split into two catchments as shown on Table 2-2.

Table 2-2: Qbar rates and restricted outflow rates assigned to each catchment

Catchment	Area Served (ha)	Qbar (l/s)	Restricted Outflow Rate (l/s)
1. NSORR road that will traverse the site	0.8	3.46	4
2. Residential development	16.0	72.85	72.3
TOTAL	**16.8**	**76.31**	**76.3**

2.2.2 Causeway Flow Modelling – General

The proposed surface water drainage system has been designed using Causeway Flow software in accordance with the Department of Environment and Local Government's guidance document "Recommendations for Site Development Works for Housing Areas", with guidance taken from the "Greater Dublin Strategic Drainage Study" (GDSDS) and the Newbridge Development Plan.

The model has analysed a range of storms at the 1% AEP (1 in 100-year return period storm), taking account of the predicted daily maximum water level in the River Liffey as modelled by JBA Flooding Consultants, with 20% additional rainfall to allow for climate change.

The network has been modelled with the 9 no. proposed attenuation tanks and their respective volumes and the associated hydro-brake control outlets included. Conservatively, in the Causeway Flow model all hard surfaces have been assumed to be 100% impermeable and discharge to the piped network in the drainage model, i.e., intercepting SuDS such as permeable paving, green roofs and bio-swales have not been included in the model. Due to the permeable nature of the site, and the level of SuDS provided at the development, the runoff entering the drainage network will be less than indicated in the Causeway Flow model, particularly for low-level rainfall events.

Depths of water in the network model (including pipework, manholes, the attenuation tanks) have been assessed for surcharging and flood risk. The model is established such that a flood risk is identified in the

simulation results if the water rises to within 300mm of the cover level. If the water level rises to a level below this, it is identified as a surcharge within the model results. It is important to note that this warning is given related to proposed ground level at the node and not related to Finished Floor level. The maximum water level in the attenuation tanks is more than 500mm below the Finished Floor level of the adjacent property. This aligns with Criterion 3 of the GDSDS.

Causeway includes a design setting called "additional storage". This is included in the software to account for storage volume in the network provided by secondary drainage including gullies, access junctions, inspection chambers, service connections etc. This provides additional storage in the network above the storage provided within the attenuation tank and primary drainage network. 20m^3/ha is the standard allowance provided for in Causeway Flow and was utilised for this design.

Please refer to detailed Causeway calculations (inputs and outputs) enclosed in Appendix D for details.

2.2.3 Climate Change

An allowance of 20% was allowed for climate change in the drainage design as per the KCC Development plan (2017-2023).

2.2.4 Discharge to the River Liffey

The proposed site is located beside the River Liffey and the proposed surface water drainage system will discharge to the river. As such the proposed network has been designed to account for the effects of coincidental flooding. The Greater Dublin Strategic Drainage Study (GDSDS) recommends a pragmatic approach to joint probability analysis for combination flood events.

The proposed network has been designed in accordance with GDSDS Volume 5 guidance for combination flood events. The network has also been designed for a 1 in 100-year return period storm with an allowance for 20% climate change as per industry standard. The 4 design criteria chosen are as follows:

1. 100-year rainfall event
2. 30-year rainfall event with 0.25-year river
3. 5-year rainfall event with 1-year river
4. 1 year rainfall with 5-year river.

An estimate for the water levels for the 10-year river were calculated by JBA Consulting, and the ESB also provided JBA Consulting the 2-year River release flows from the Golden Falls Dam upstream of the proposed development, which was used to calculate the water levels in the 2-year River event.

A Site-Specific Flood Risk Assessment (SSFRA) was completed for the site by JBA Consulting (Document Number: COQ-JBAI-00-00-RP-HM-0012 is included under separate cover as part of this planning application). The flood model prepared as part of this assessment was used to estimate the river levels. Refer to Table 2-3 below for the JBA estimated water levels.

Table 2-3: Surcharge Modelling River Liffey Water Levels

Flow (m^3/s)	Outfall 1	Outfall 3	Outfalls 2, 4, 5, & 6
	Water Level (Mod)		
58.75 (2 Year)	85.30	87.15	85.90
91.91 (10 Year)	85.62	87.53	85.91

The SSFRA prepared by JBA calculated maximum predicted flood levels for the site. The development Finished Floor levels have been set to ensure the finished floor levels are above the predicted flood levels in the relevant areas. Refer to JBA's SSFRA for further information on the maximum predicted flood levels.

These river flood levels were modelled in Causeway Flow as a surcharge at the outfall of the surface water drainage network. This impacted the surface water network by simulating when the proposed outfall would be submerged. For the design the worst-case scenario was assumed, and the river was assumed to be at its peak level throughout the duration of the rainfall event.

As an additional factor of safety, more conservative water levels surcharge models than those required by the GDSDS have been developed as listed below:

1. 100-year rainfall event
2. 30-year rainfall event with 2-year river
3. 5-year rainfall event with 10-year river
4. 1 year rainfall with 10-year river.

Results of the surcharge models for the above events can be found in Appendix D.

The proposed surface water discharge points will incorporate a non-return valves to prevent water from the river surcharging up through the surface water drainage network.

Regarding protection of the water quality of the River Liffey, the surface water will be routed through SuDS prior to connection to carrier drainage system. This will filter and treat the surface water, reducing silts and oils entering the drainage network. This is described in further detail in Section 2.3 below. As an additional treatment measure, the surface water will be routed through petrol interceptors prior to discharge to the River Liffey.

All works carried out adjacent to or into the River Liffey and/or site watercourses will be in compliance with the requirement of Waterways Ireland and Inland Fisheries Ireland document "Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters"

2.2.5 Hydro-Brakes

It is proposed that Hydro-brakes® flow controls are to be used before each outfall to restrict the flows to Qbar. The below table provides the restricted max flow rates at each outfall

Table 2-4: Hydro-Brake Diameter and Design Flows

Outfall	Hydro-Brake Orifice Dia (m)	Design Flow (l/s)	Hydro-Brake® Product Number
Outfall 1	0.143	9.9	CTL-SHE-0143-9900-1143-9900
Outfall 2 (NSORR)	0.065	2.0	CTL-SHE-0065-2000-1143-2000
Outfall 3	0.093	4.0	CTL-SHE-0093-4000-1143-4000
Outfall 4	0.250	37.4	CTL-SHE-0250-3740-1800-3740
Outfall 5	0.193	21.0	CTL-SHE-0193-2100-1661-2100
Outfall 6 (NSORR)	0.065	2.0	CTL-SHE-0065-2000-1143-2000

2.2.6 Trapped Road Gullies

All gullies will contain a silt trap to prevent silt entering the connecting SuDS or carry drain system. Please refer to drawing 192229-PUNCH-XX-XX-DR-C-0501 for trapped gully typical detail.

2.3 SuDS Proposals

The proposed development has been assessed in relation to Sustainable Urban Drainage Systems (SuDS). A variety of SuDS measures have been proposed to comply with Council recommendations. All SuDS measures are to be implemented with reference to the UK SuDS Manual and Kildare City Council drainage requirements. With regards to the use of attenuation ponds within the proposed development, the volumes of water needed to be attenuated in the proposed tanks locations, would have resulted in the water being up to 2m in depth at times. In the interest of safety and to ensure the useability of this open space, it was considered necessary to provide underground attenuation tanks in these locations.

Relatively small volumes of rainwater collected on the respective SuDS systems will enter the public sewer network during typical low intensity storms. This is because the proposed SuDS measures will retain rainwater until it is either used via evapotranspiration in the green areas or infiltrated to the ground.

The SuDS processes decrease the impact of the development on the receiving environment by providing amenity and biodiversity in many cases. Regular maintenance of the SuDS proposals is required to ensure they are operating to their optimal level throughout their design life.

2.3.1 Permeable Surfacing

It is proposed to provide 6046m^2 of permeable paving across the site. Permeable paving will be provided in parking bays and driveways throughout the site, including the parking for the neighbourhood centre. Permeable paving will be located as shown on drawings *192229-PUNCH-XX-XX-DR-C-0151 to 0154*.

The treatment processes that occur within permeable pavements include:

I. Filtration of silt and the attached pollutants – the majority of silt is trapped within the top 30mm of the jointing material between the blocks.
II. Biodegradation of organic pollutants, such as petrol and diesel within the pavement construction.
III. Adsorption of pollutants (pollutants attach or bind to surfaces within the construction) which depends on factors such as texture, aggregate structure, and moisture content.
IV. Settlement and retention of solids.

The use of permeable pavers for this purpose is supported by the treatment processes outlined above. CIRIA C753 (The SuDS Manual) notes that regarding interception design of pervious pavements, studies have shown that runoff typically does not occur from pervious pavements for rainfall events up to 5 mm. Please refer to drawing *192229-PUNCH-XX-XX-DR-C-0551* for permeable paving detail.

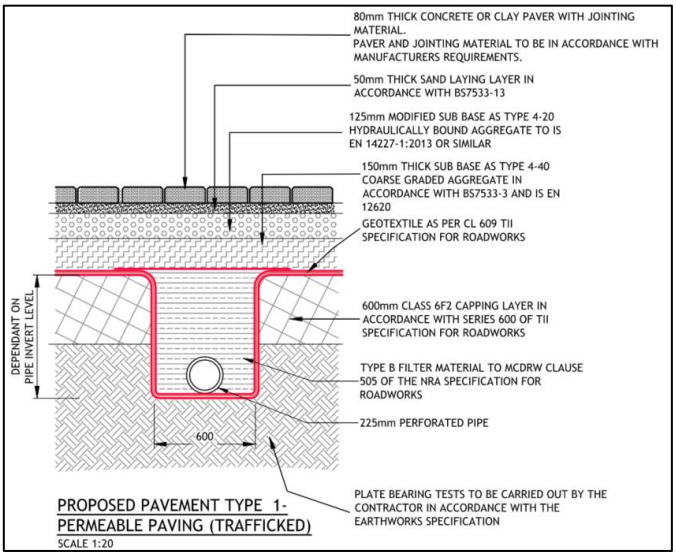


Figure 2-4: Proposed permeable paving (trafficked) detail as per PUNCH Detail drawing*192229-PUNCH-XX-XX-DR-C-0551*

2.3.2 Swales/Bioswales

Swales are to be provided along the edges of roadways within green areas and on the northern side of the section of NSORR. The swales will provide treatment via evapotranspiration within the topsoil layers with water compatible vegetation. Infiltration into the ground below is feasible due to the permeable sand and gravel layers below. Low level earth dams will be provided along the swales to enable build-up of water for treatment. Please refer to drawing *192229-PUNCH-XX-XX-DR-C-0503* for typical swale detail.

The swales will incorporate a high-flow overflow with a screened outlet to the drainage network to accommodate removal of water in high flow circumstance. Swales will be located as shown on drawings *192229-PUNCH-XX-XX-DR-C-0151 to 0154*.

CIRIA C753 (The SuDS Manual) Table 24.6 notes that regarding interception design of swales, pavements drained by swales can be considered to provide interception, i.e. it can be assumed that there will be zero runoff from the first 5 mm rainfall for 80% of events during the summer and 50% in winter.

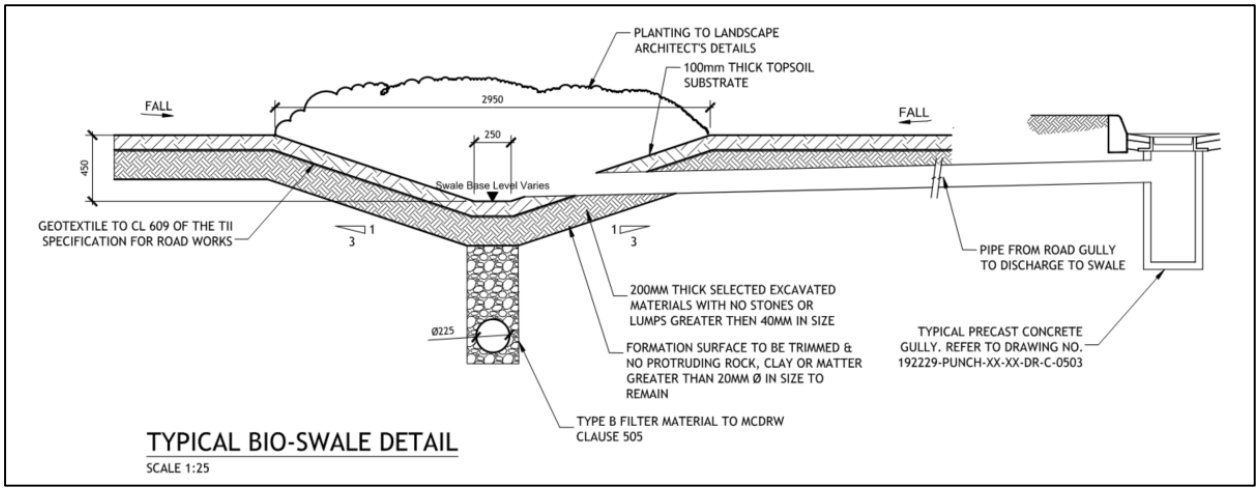


Figure 2-5: Proposed bio-swale detail as per PUNCH Detail drawing *192229-PUNCH-XX-XX-DR-C-0503*

2.3.3 Soakaways/Soakpits

Soakaways are excavations filled with a void-forming material e.g stone or a geo-cellular material that allows the temporary storage of water before it soaks into the ground. On this project it is proposed to form the soakaways using geo-cellular units wrapped in a geotextile.

Locations of proposed soakaways are shown on drawings *192229-PUNCH-XX-XX-DR-C-0151 to 0154*. Soakaways are proposed in the rear gardens of nearly all the housing units. Locations where houses without soakaways are proposed are shown on drawing *192229-PUNCH-XX-XX-DR-C-0151*.

Rainwater is to discharge to soakaways from the rear of houses and rear gardens hardstanding areas. Please refer to drawing *192229-PUNCH-XX-XX-DR-C-0501* for soakaway standard detail.

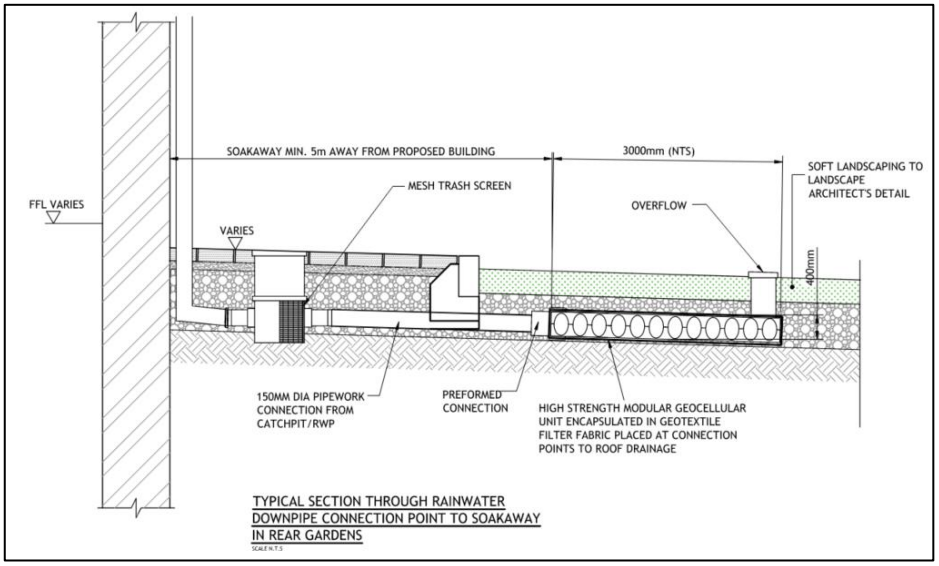


Figure 2-6: Proposed soakaway in rear gardens detail as per PUNCH Detail drawing *192229-PUNCH-XX-XX-DR-C-0501*

2.3.4 Rainwater Harvesting

Rainwater harvesting (RWH) is the collection of rainwater runoff for use. Runoff can be collected from roofs and other impermeable areas, stored, treated (where required) and then used as a supply of water for domestic, commercial, industrial and/or institutional properties. RWH systems have a number of key benefits:

- They can meet some of the building's water demand, delivering sustainability and climate resilience benefits.
- They can help reduce the volume of runoff from a site.
- They can help reduce the volume of attenuation storage required on the site.

The proposed development will incorporate rainwater harvesting. Rainwater harvesting/water butts will be provided to the houses and apartments. As noted above, where soakaways are present, rainwater will discharge to them from the rear sections of house roofs. Locations of proposed rainwater harvesting units are shown on drawings *192229-PUNCH-XX-XX-DR-C-0151 to 0154*.

2.3.5 Green Roofs

Green roofs are areas of living vegetation, installed on the top of buildings, for a range of reasons including visual benefit, ecological value, enhanced building performance and the reduction of surface water runoff. Green roofs are widely recognised as an effective SuDS solution and an important tool in mitigating the adverse effects of development on rainfall run-off and for managing urban flood risk. Please refer to Architects drawing for details of green roofs and associated roof drainage and access systems.

Research in the UK (Kellagher and Lauchlan, 2005, CIRIA, 2007) indicates that green roofs are effective in providing both attenuation and volume reduction in runoff for small rainfall events but suggests that these advantages are reduced (but not completely lost) for larger rainfall events.

It is proposed to provide green roofs on sections of the proposed apartment blocks and a portion of the neighbourhood centre in the form of sedum green roofs. Refer to drawing *192229-PUNCH-XX-XX-DR-C0154* for proposed locations. Green roofs will also be provided on bicycle stands across the site. Details for perimeters, drainage outlets, fire breaks, fall arrest system incorporation and penetrations will be installed as per the relevant standard detail specific to the manufacturer's system. Ultimately the

drainage layers within the extensive roof system will drain to roof perimeter outlets with subsequent discharge via downpipes to the site's drainage network.

Please refer to Figure 2-7 for a typical green roof detail.

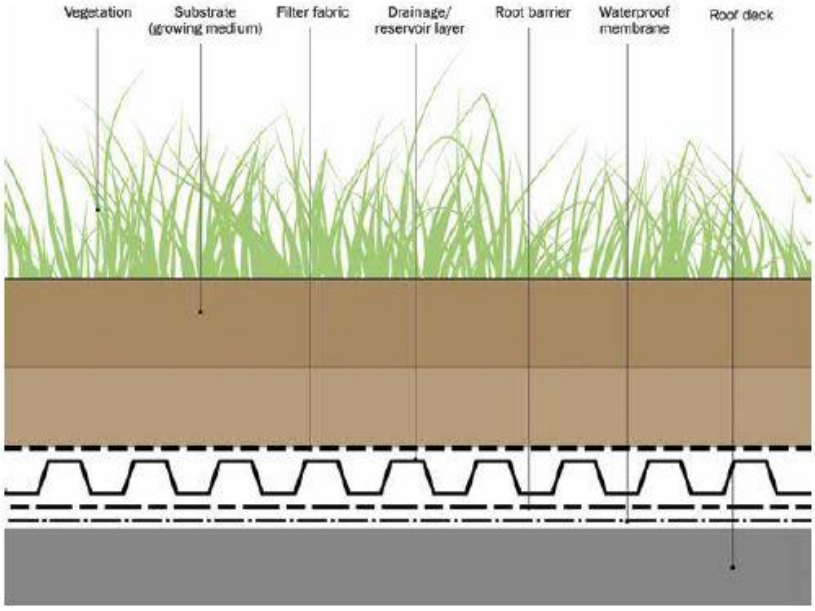


Figure 2-7: Typical Green Roof Detail (Source: SuDS manual - Figure 12.1)

2.3.6 Attenuation Tanks

The proposed attenuation tanks are sized to reduce the runoff from the site to the greenfield runoff rate of 76.31 l/s. The attenuation system has been designed for a 1:100-year storm return period storm with 20% additional rainfall to allow for climate change.

9 no. attenuation tanks are proposed to serve the proposed development with a total of 5707m^3 attenuation volume required. Two of the attenuation tanks with an attenuation volume of 320m^3 will be provided separate to the main development drainage network to cater for surface water flows from the NSORR road passing through the site. Please refer to drawing *192229-PUNCH-XX-XX-DR-C-0112* for catchment areas associated with each tank. Hydrobrakes placed downstream of the attenuation tanks will work to ensure effective use of the attenuation tanks.

The surface water runoff from the buildings and the hardstanding areas will collect and discharge to the attenuation tanks via the proposed SuDS measures discussed above.

Attenuation tank locations can be seen on the PUNCH drainage drawings *192229-PUNCH-XX-XX-DR-C-0101-0104* accompanying this report. Please refer to drawing *192229-PUNCH-XX-XX-DR-C-0505* for typical attenuation tank detail and schedule of proposed tanks.

2.3.7 Petrol Interceptor

In addition to the treatment provided by SuDS, it is proposed that all surface water run-off from all trafficked areas will outfall via Class 1 Bypass Separator located downstream of the proposed attenuation tanks. These devices will remove hydrocarbons and fine sediment particles from the site runoff and lower the risk of downstream contamination following an oil spillage on site. Petrol Interceptors will be provided prior to the attenuation tanks for the NSORR drainage.

Bypass separators fully treat all flows generated by rainfall rates of up to 6.5mm/hr. This covers over 99% of all rainfall events. Flows above this rate are allowed to bypass the separator. These separators are used when it is considered an acceptable risk not to provide full treatment for high flows, for example where the risk of a large spillage and heavy rainfall occurring at the same time is small.

Class 1 devices are designed to achieve a concentration of less than 5mg/l of oil under standard test conditions.

Treatment will also be provided by routing the drainage through swales/bioswales and permeable paving. This will provide an additional level of treatment prior to a petrol interceptor.

Please refer to drawings *192229-PUNCH-XX-XX-DR-C-0101-0104* for the locations of the proposed petrol interceptors and drawing *192229-PUNCH-XX-XX-DR-C-0509* for typical petrol interceptor detail.

2.3.8 Interception Storage Calculation

The interception storage volume is calculated based on:

- Entirety of the paved / roof area
- 5mm rainfall depth
- 80% runoff factor

Interception storage is to be provided within the green roof, permeable paving, swales and soakaways. The volumes to be provided for each are outlined in Table 2-5 below.

Table 2-5: Interception Storage Provision Calculation

Type	Plan Area of SuDS Element	Rate Calculation	Rate	Treatment Volume Provided	Detail
Extensive Green Roof	1766m^2	150mm deep sedum moss	5l/sq.m	8.8m^3	Treatment within green roof landscape component
Permeable Pavement	6104m^2	Deemed to provide treatment for own area only 325mm deep drainage layer at 30% voids	Area x 0.005 x 0.8	24.4m^3	Treatment within pervious layers and pervious pavement
Engineered Swales	5098m^2	Treatment provided by swale for impervious area 5 times the swale area	Area x 0.005 x 0.8 x 5	20.4m^3	Treatment within topsoil layer, no infiltration
Soakaways	1009m^2	Treatment provided for rear section of roof and for rear garden hard standing areas	291 No. Houses with Soakaways x 36 sq.m x 0.8 x 0.005	41.9m^3	Treatment within soakaway and subsoil sands and gravels.

2.4 Surface Water Drainage Proposals

With reference to the above Section 2, please refer to the following PUNCH Drawings:

192229-PUNCH-XX-XX-DR-C-0101	PROPOSED DRAINAGE LAYOUT - SHEET 1
192229-PUNCH-XX-XX-DR-C-0102	PROPOSED DRAINAGE LAYOUT - SHEET 2
192229-PUNCH-XX-XX-DR-C-0103	PROPOSED DRAINAGE LAYOUT - SHEET 3
192229-PUNCH-XX-XX-DR-C-0104	PROPOSED DRAINAGE LAYOUT - SHEET 4
192229-PUNCH-XX-XX-DR-C-0111	TYPICAL SuDS SCHEMATIC DETAIL PLAN
192229-PUNCH-XX-XX-DR-C-0112	PROPOSED OUTFALL CATCHMENTS LAYOUT
192229-PUNCH-XX-XX-DR-C-0150	PROPOSED SuDS MEASURES LAYOUT - SHEET 1
192229-PUNCH-XX-XX-DR-C-0151	PROPOSED SuDS MEASURES LAYOUT - SHEET 2
192229-PUNCH-XX-XX-DR-C-0152	PROPOSED SuDS MEASURES LAYOUT - SHEET 3
192229-PUNCH-XX-XX-DR-C-0153	PROPOSED SuDS MEASURES LAYOUT - SHEET 4
192229-PUNCH-XX-XX-DR-C-0154	PROPOSED SuDS MEASURES LAYOUT - SHEET 5
192229-PUNCH-XX-XX-DR-C-0160	PROPOSED OVERALL SURFACE WATER LAYOUT
192229-PUNCH-XX-XX-DR-C-0200	PROPOSED SURFACE WATER NETWORK LONG SECTIONS - SHEET 1
192229-PUNCH-XX-XX-DR-C-0201	PROPOSED SURFACE WATER NETWORK LONG SECTIONS - SHEET 2
192229-PUNCH-XX-XX-DR-C-0202	PROPOSED SURFACE WATER NETWORK LONG SECTIONS - SHEET 3
192229-PUNCH-XX-XX-DR-C-0203	PROPOSED SURFACE WATER NETWORK LONG SECTIONS - SHEET 4
192229-PUNCH-XX-XX-DR-C-0204	PROPOSED SURFACE WATER NETWORK LONG SECTIONS - SHEET 5
192229-PUNCH-XX-XX-DR-C-0205	PROPOSED SURFACE WATER NETWORK LONG SECTIONS - SHEET 6
192229-PUNCH-XX-XX-DR-C-0206	PROPOSED SURFACE WATER NETWORK LONG SECTIONS - SHEET 7
192229-PUNCH-XX-XX-DR-C-0207	PROPOSED SURFACE WATER NETWORK LONG SECTIONS - SHEET 8
192229-PUNCH-XX-XX-DR-C-0208	PROPOSED SURFACE WATER NETWORK LONG SECTIONS - SHEET 9
192229-PUNCH-XX-XX-DR-C-0209	PROPOSED SURFACE WATER NETWORK LONG SECTIONS - SHEET 10
192229-PUNCH-XX-XX-DR-C-0210	PROPOSED SURFACE WATER NETWORK LONG SECTIONS - SHEET 11
192229-PUNCH-XX-XX-DR-C-0501	TYPICAL DRAINAGE DETAILS - SHEET 1
192229-PUNCH-XX-XX-DR-C-0502	TYPICAL DRAINAGE DETAILS - SHEET 2
192229-PUNCH-XX-XX-DR-C-0503	TYPICAL DRAINAGE DETAILS - SHEET 3
192229-PUNCH-XX-XX-DR-C-0505	TYPICAL ATTENUATION TANK DETAILS
192229-PUNCH-XX-XX-DR-C-0509	TYPICAL PETROL INTERCEPTOR DETAILS
192229-PUNCH-XX-XX-DR-C-0551	TYPICAL PAVEMENT BUILD-UP DETAILS

3 Foul Water Drainage Design

3.1 Existing Foul Water Drainage

From reviewing the Kildare County Councils/Irish Water record drawings it can be seen that there is a:

- Kilcullen/Athgarvan 450mm concrete foul sewer traverses north across the site. Foul drainage from Wellesley Manor housing development is collected in a network of 150mmm to 300mm foul sewers and discharges into this 450mm foul sewer at the northern boundary of the proposed development site
- The newly constructed 600mm pumped rising main/900mm gravity Newbridge Eastern Interceptor Sewer traverses the subject site west-east.

Refer to Appendix A for Record Drawings indicating the 450mm Kilcullen Sewer and also including Irish Water As-Built record drawings detailing the 600mm rising main/900mm gravity Newbridge Eastern Interceptor Sewer.

The recently constructed Newbridge Eastern Interceptor Sewer (wayleave) and 450mm Kilcullen-Athgarvan Sewer are indicated in

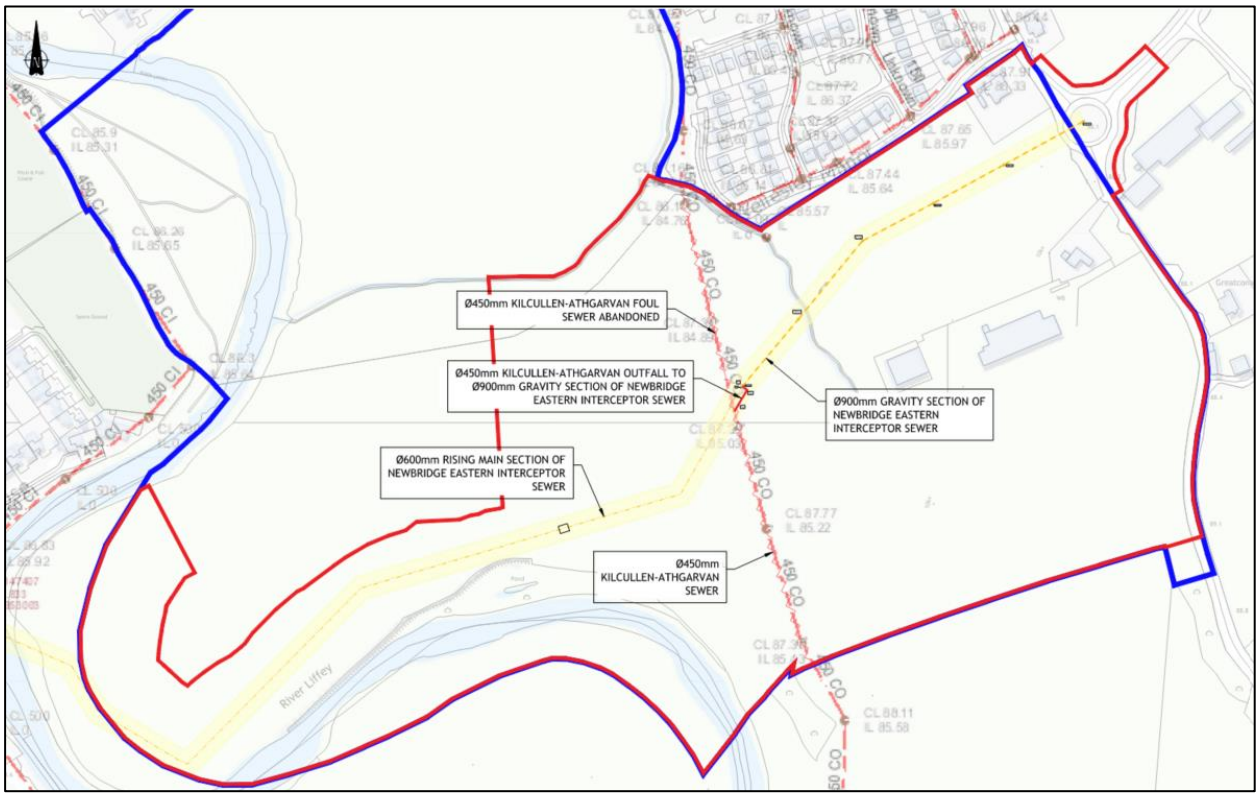


Figure 3-1 below.

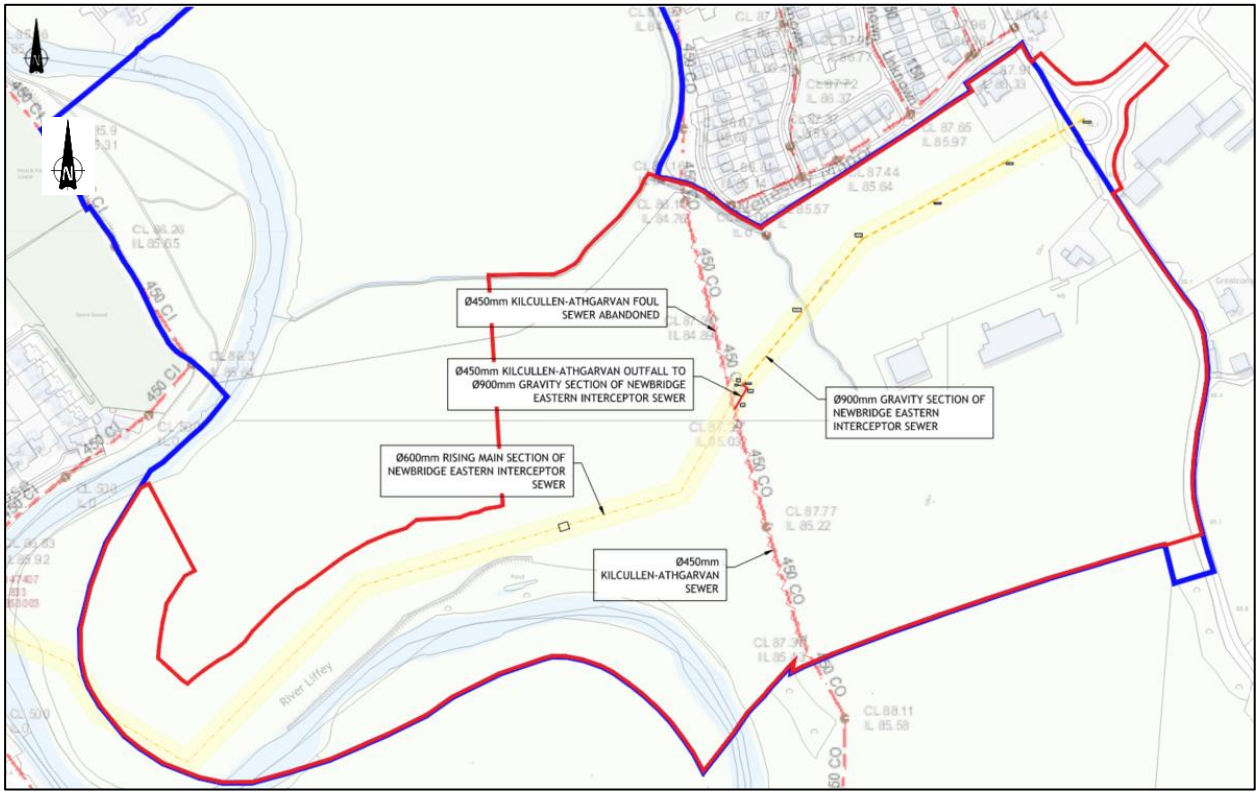


Figure 3-1: Existing foul drainage surrounding the site
(Extract from Irish Water Records / Newbridge Eastern Interceptor sewer As-Built records)

The proposed development occupies agricultural land situated adjacent to the River Liffey. The site topography is varied, with a fall northwards of approximately 1.9m (+86.18m to +88.05). The site includes existing treelines and hedgerows which will be retained where possible.

3.2 Kilcullen-Athgarvan Sewer Diversion

The existing 450mm Kilcullen Athgarvan foul sewer traverses the site in a north westerly direction and discharges into the newly constructed 900mm Newbridge Eastern Interceptor Sewer which runs along the route of the proposed section of the Newbridge Southern Orbital Ring Road (NSORR) proposed under this SHD application.

The proposed development impacts on the existing 450mm sewer route and it is thus necessary to divert the sewer to run along the southern edge of the development and then along the proposed Newbridge Southern Orbital Ring Road (NSORR) before discharging into the 900mm Newbridge Eastern Interceptor Sewer, as shown in Figure 3-2 below.

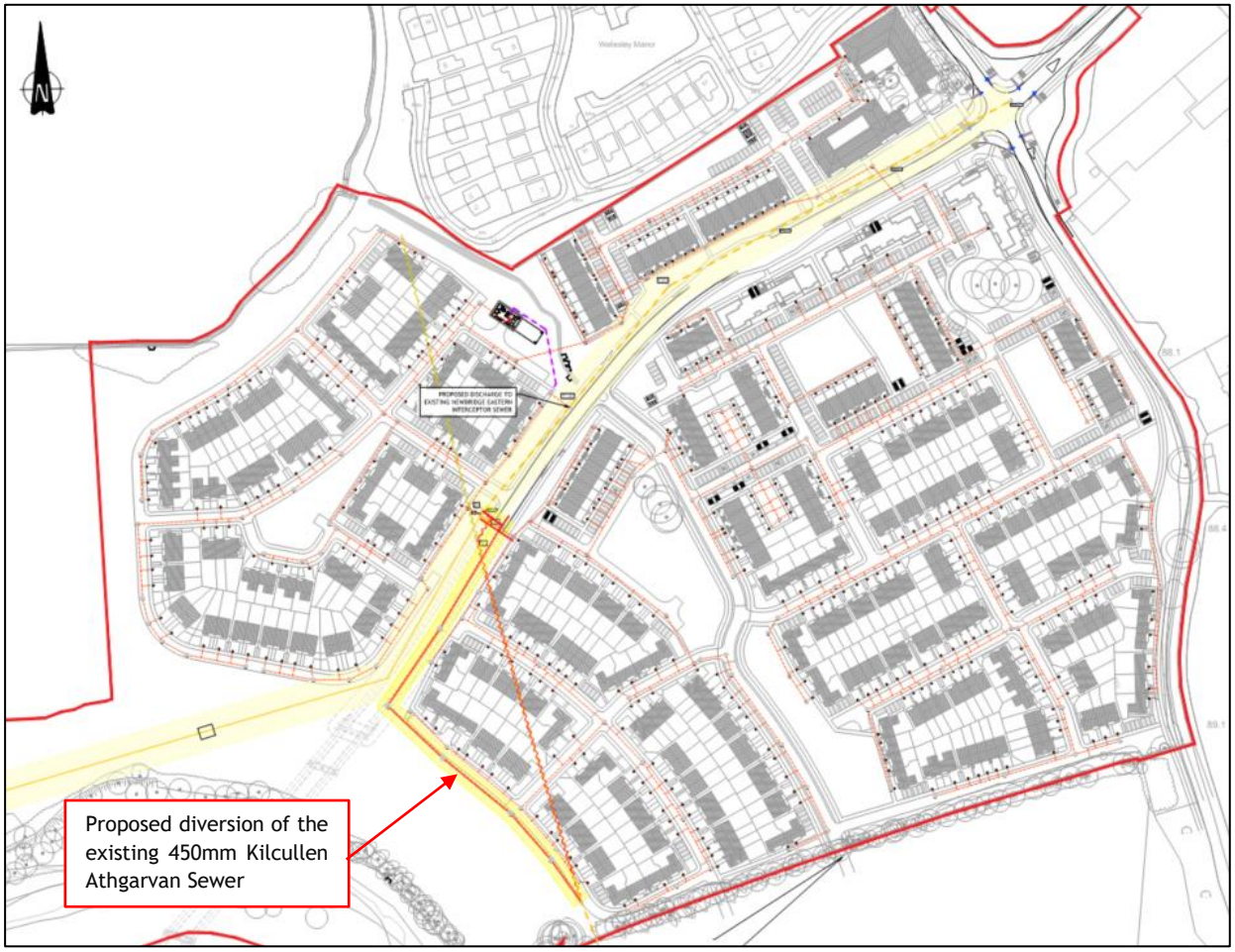


Figure 3-2: Proposed diversion of the existing 450mm Kilcullen Athgarvan foul sewer. Refer to PUNCH drawing 192229-PUNCH-XX-XX-DR-C-0130

PUNCH Diversion proposals for the 450mm sewer were presented to Irish Water and following detailed discussion and design development a Confirmation of Feasibility for the Diversion Applications (DIV21230) has been issued by Irish Water and is included in Appendix H. The final approved design is for a 600mm thermoplastic twin wall pipe laid at a 1 in 600 gradient meeting the requirements set out in Irish Water Code of Practice for Wastewater Infrastructure (Document IW -CDS-5030-03)

Please refer to the following PUNCH Drawings detailing the proposed diversion:

1. 192229-PUNCH-XX-XX-DR-C-0130
2. 192229-PUNCH-XX-XX-DR-C-0131
3. 192229-PUNCH-XX-XX-DR-C-0184
4. 192229-PUNCH-XX-XX-DR-C-0508

3.3 Proposed Foul Water Drainage

On this scheme it has not been feasible to connect the development into the 900mm gravity Newbridge Eastern Interceptor Sewer by gravity. Instead, all site drainage is collected by gravity and brought to a foul pump station servicing the entire development which is located north of the NSORR close to Wellesley Manor site boundary.

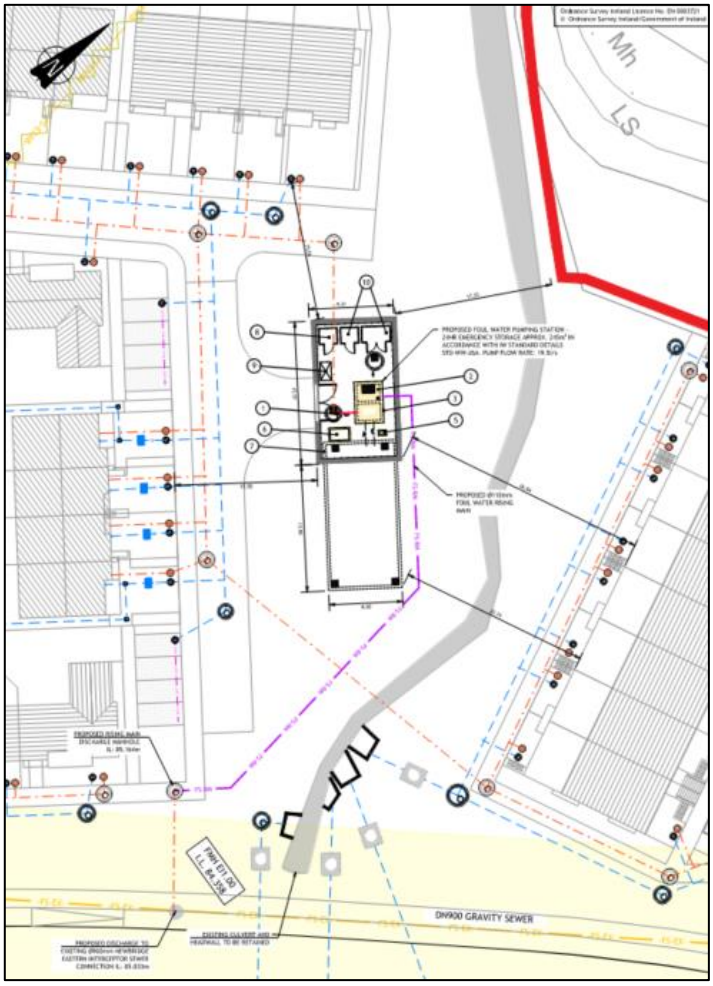


Figure 3-3: Proposed Foul Pump Station Location. Refer to PUNCH drawing 192229-PUNCH-XX-XX-DR-C-0110

Irish Water's Wastewater Code of Practice (Document IW-CDS-5030-03) sets out the minimum gradient requirements for works in residential developments. In addition, the further considerations of a large site area and the relatively flat site topography forces the depths of the foul drainage network to be significantly below the level of the 900mm Newbridge Eastern Interceptor Sewer at any potential direct gravity outfall.

Where possible, floor levels of houses and adjoining lands have been raised up significantly while tying into the level of the existing boundaries and road infrastructure to attempt a gravity connection. An assessment of the road levels and foul drainage plans, and long sections will thus confirm that a gravity connection is not feasible.

The foul network design proposals take full account of the Irish Water wayleave for the 600mm diam. rising main/900mm diam. Newbridge Eastern Interceptor Sewer and the proposed pipe and manholes are set back from the wayleave in accordance with Irish Water Wastewater Code of Practice (Document IW-CDS-5030-03) requirements.

For full details of the proposed foul drainage network please refer to PUNCH drawings *192229-PUNCH-XX-XX-DR-C-0101-0104* for full details of the proposed foul drainage network.

The proposed foul water sewers have been designed using Causeway Flow software in accordance with Irish Water's *Code of Practice for Wastewater Infrastructure* and the DOE's *Recommendations for Site Development Works for Housing Areas*. The foul loading has been calculated in accordance with the *Code of Practice for Wastewater Infrastructure (*particularly Section 3.6, Appendix C and Appendix D) published by Irish Water.

All foul water drainage shall be designed in accordance with Irish Water's Wastewater Code of Practice and Standard Details. The Commercial Peaking Factor was found from Table 2.7 in the Irish Water Code of Practice.

A 10% allowance for infiltration has been included in all calculations in accordance with the Irish Water code of Practice. This factor has been applied to the flow rates used to calculate the peak flows detailed in Table 3-1 below. Table 3-1 describes the foul water drainage design parameters used.

Table 3-1: Foul Water Drainage Design Parameters

Description	Value
Commercial Flow Rate	330 l/day/100m2 of retail/commercial space
Residential Flow Rate	165 l/person/day
Creche Flow Rate	99 l/person/day
Infiltration	10%
Peaking Factor	3DWF (Commercial) 6DWF (Residential)
Minimum Self Cleansing Velocity	0.75m/s
Minimum Pipe Diameter	150mm

Table 3-2: Foul Sewerage Flows

Source	Quantity	Flow	Flow unit	Daily	DWF	DWF	6 DWF
				(litres/ day)	m^3/day	litres/ sec	litres/ sec
Residential	1536 residents	165	l/person/day	253,490	253,490	2.934	17.603
Commercial	2,141 m2	330	l/day/100m^2	7,065	7,065	0.082	0.491
Creche	200 people	99	l/person/day	19,800	19.800	0.229	1.375
Total				**280,355**	**280,355**	**3.245**	**19.469**

3.4 Foul Pump Station Design

The proposed foul pump station and foul rising main have been designed in accordance with the Irish Water code of Practice for Wastewater Infrastructure and Irish Water Wastewater Standard Details. For full details of the proposed pump station design and the proposed rising main route refer to PUNCH Drawings *192229-PUNCH-XX-XX-DR-C-0101, 192229-PUNCH-XX-XX-DR-C-0507,* and *192229-PUNCH-XX-XX-DR-C-0509.*

3.4.1 Pump station Layout

The proposed foul pump station is a reinforced concrete structure. The 24-hour emergency storage tank will be constructed as a pre-cast concrete structure. A precast form of construction is proposed in order that the construction has the least impact on the surrounding area.

The proposed pump station design includes the following elements:

- Wet well
- Dry valve chamber
- 3 no. submersible pumps
- Flow meter chamber and inlet chamber with penstock
- Emergency Storage Tank providing 24-hour emergency storage (245m^3 storage volume)
- Control panels housed within kiosk structures.
- Dosing and Odour Control units

3.4.2 Pump Station Philosophy

The 3 pumps within the station will operate as a duty, assist and standby pump respectively with water levels in the wet well dictating start and stop times for each pump. The operation of the pumps will be controlled via ultrasonic level transmitters in the wet wells. Submersible pumps have variable speed drives for efficient operation. The pump operation arrangement is as follows:

Table 3-3 - Pump Operation Arrangement

	Role	Flow Rate
Pump 1	Duty	19.5 l/s
Pump 2	Assist	Variable to achieve self-cleansing velocity
Pump 3	Standby	Standby

All pumps shall be capable of automatic ramp up with increasing flow. Ramp up and ramp down times for each pump are to be in accordance with the manufacturer's recommendations. Provision shall be made for a portable generator in the event of a power failure.

3.4.3 Pump Selection

The pumping station design and pump selection have been made in accordance with the Irish Water code of practice. A preliminary pump curve has been selected based on the information available at present.

In line with the Irish Water Wastewater Code of Practice the chosen pumps will be able to provide a peak flow of 6 dry weather flow, calculated to be 19.5l/s.

3.4.4 Design Specification

The foul pump station will have the seven primary alarm signals:

1. High-high level
2. Low-low level
3. Emergency stop
4. Flowmeter fault
5. Temperature (motor)
6. Pump trip/fail
7. Level sensor fault

Notification will be sent to both Irish Water and Kildare County Council in the case of any alarm signal and forward flow will be limited in the case of an alarm through the use of interlocks.

3.4.5 Emergency Storage tank

The foul pumping station will include an emergency storage tank. Section 5.11 of the Irish Water Wastewater Code of Practice outlines the storage volumes required per number of residential units, as per the following table:

Houses	Storage Hours	Max Storage Volume (m^3)
0 – 250	24	112
250 - 333	24 for 250 and 18 thereafter	139
334 - 1667	24 for 250, 18 up to 333 and 12 thereafter	437
1668 - 3333	24 for 250, 18 up to 333, 12 up to 1667 and 10 thereafter	746

Figure 3-4: Table from Section 5.11 of the Irish Water Wastewater Code of Practice outlining storage volume requirements

As such it is proposed to provide the following storage volume:

Table 3-4 - Pump Operation Arrangement

	Unit numbers	No.	Type	Storage hours (hr)	Storage Volume (m^3)
Residential Units	0-250	250	houses	24	111
Residential Units	251-569	319	houses	18	107
Creche		200	people	24	20
Commercial		2141	m^2	24	7
Total					**245**

The total storage volume to be provided with the foul pumping station is 245m^3. The pump station will deliver a peak flow of 6 times the DWF calculated above which equals 19.5l/s.

3.4.6 Foul Rising Main and Discharge

The proposed foul pump station will pump the foul discharge to the 900mm gravity Newbridge Eastern Interceptor Sewer. The route is as shown on PUNCH drawings *192229-PUNCH-XX-XX-DR-C-0101*. This route will be the discharge route in the short to medium term condition. The proposed rising main will be 110mm OD.

The pumped main will discharge to a decompression manhole with a gravity connection to the existing 900mm gravity Newbridge Eastern Interceptor Sewer.

Detailed design of the proposed pumping station will be carried out and submitted for approval to Irish Water, following grant of the application. All proposed wastewater drainage infrastructure, installed to serve the proposed development is to be offered to Irish Water to be taken in charge.

3.5 Correspondence with Irish Water

A Pre-Connection Enquiry Form has been issued to Irish Water in relation to the proposed development and Irish Water has issued a Confirmation of Feasibility for the proposals. This Confirmation of Feasibility can be seen in Appendix F.

All new watermain infrastructure installed to serve the proposed development will be taken in charge by Irish Water.

PUNCH foul drainage network proposals have been issued to Irish Water for Design Vetting. Following discussions and further design development a Statement of Design Acceptance (CDS20007443) for the proposals has been received, which is included in Appendix G.

3.6 Foul Water Drainage Proposal Drawings

With reference to the above Section 3, please refer to the following PUNCH Drawings:

192229-PUNCH-XX-XX-DR-C-0101	PROPOSED DRAINAGE LAYOUT - SHEET 1
192229-PUNCH-XX-XX-DR-C-0102	PROPOSED DRAINAGE LAYOUT - SHEET 2
192229-PUNCH-XX-XX-DR-C-0103	PROPOSED DRAINAGE LAYOUT - SHEET 3
192229-PUNCH-XX-XX-DR-C-0104	PROPOSED DRAINAGE LAYOUT - SHEET 4
192229-PUNCH-XX-XX-DR-C-0110	PROPOSED FOUL WATER PUMPING STATION - DETAIL PLAN
192229-PUNCH-XX-XX-DR-C-0113	PROPOSED OVERALL FOUL WATER LAYOUT
192229-PUNCH-XX-XX-DR-C-0130	PROPOSED DIVERSION OF KILCULLEN-ARTHGARVAN FOUL WATER SEWER - PLAN
192229-PUNCH-XX-XX-DR-C-0131	EXISTING KILCULLEN-ARTHGARVAN FOUL WATER SEWER - LONG SECTIONS
192229-PUNCH-XX-XX-DR-C-0175	PROPOSED FOUL WATER NETWORK LONG SECTIONS - SHEET 1
192229-PUNCH-XX-XX-DR-C-0176	PROPOSED FOUL WATER NETWORK LONG SECTIONS - SHEET 2
192229-PUNCH-XX-XX-DR-C-0177	PROPOSED FOUL WATER NETWORK LONG SECTIONS - SHEET 3
192229-PUNCH-XX-XX-DR-C-0178	PROPOSED FOUL WATER NETWORK LONG SECTIONS - SHEET 4
192229-PUNCH-XX-XX-DR-C-0179	PROPOSED FOUL WATER NETWORK LONG SECTIONS - SHEET 5
192229-PUNCH-XX-XX-DR-C-0180	PROPOSED FOUL WATER NETWORK LONG SECTIONS - SHEET 6
192229-PUNCH-XX-XX-DR-C-0181	PROPOSED FOUL WATER NETWORK LONG SECTIONS - SHEET 7
192229-PUNCH-XX-XX-DR-C-0182	PROPOSED FOUL WATER NETWORK LONG SECTIONS - SHEET 8

192229-PUNCH-XX-XX-DR-C-0183	PROPOSED FOUL WATER NETWORK LONG SECTIONS - SHEET 9
192229-PUNCH-XX-XX-DR-C-0184	PROPOSED FOUL WATER NETWORK LONG SECTIONS - SHEET 10
192229-PUNCH-XX-XX-DR-C-0501	TYPICAL DRAINAGE DETAILS - SHEET 1
192229-PUNCH-XX-XX-DR-C-0506	FOUL PUMPING STATION DETAILS
192229-PUNCH-XX-XX-DR-C-0507	FOUL PUMPING STATION EMERGENCY STORAGE TANK DETAILS
192229-PUNCH-XX-XX-DR-C-0508	PROPOSED KILCULLEN FOUL WATER SEWER DIVERSION DETAILS

4 Watermain Design

4.1 Existing Watermain

Record drawings provided by Irish Water indicate the presence of an existing 300mm Dia. watermain running along the Great Connell Road to the east of the site. The housing estate to the north contains a 100mm uPVC watermain network and a 150mm PVC network running in the Newbridge town to the west.

Please refer to Appendix A for Record Drawings illustrating the existing watermain arrangement. An extract is shown in Figure 4-1 below.

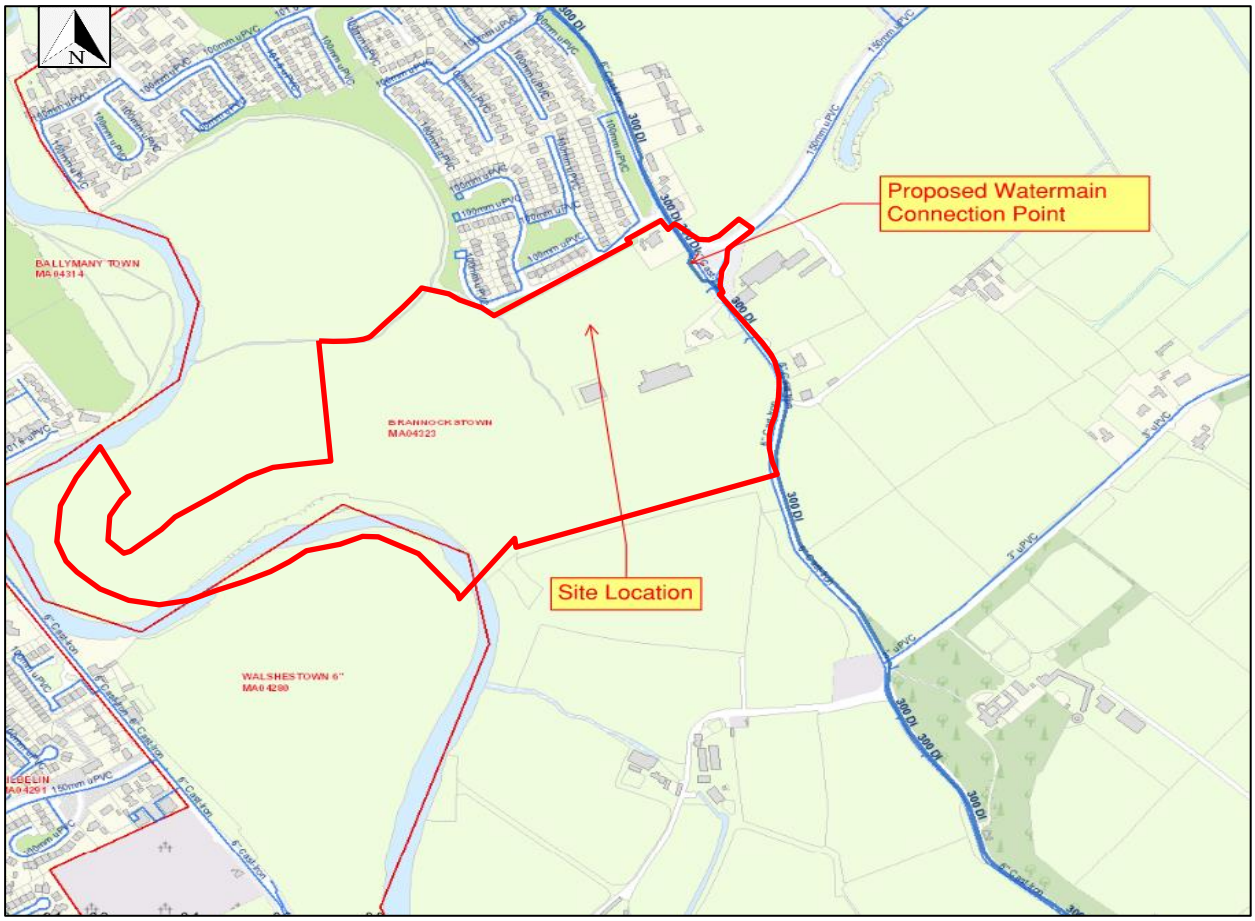


Figure 4-1: Existing Watermains Surrounding the Site (Extract From Irish Water Records)

The proposed development occupies agricultural land situated adjacent to the River Liffey. The site topography is varied, with a fall northwards of approximately 1.9m (+86.18m to +88.05). The site includes existing treelines and hedgerows which will be retained where possible.

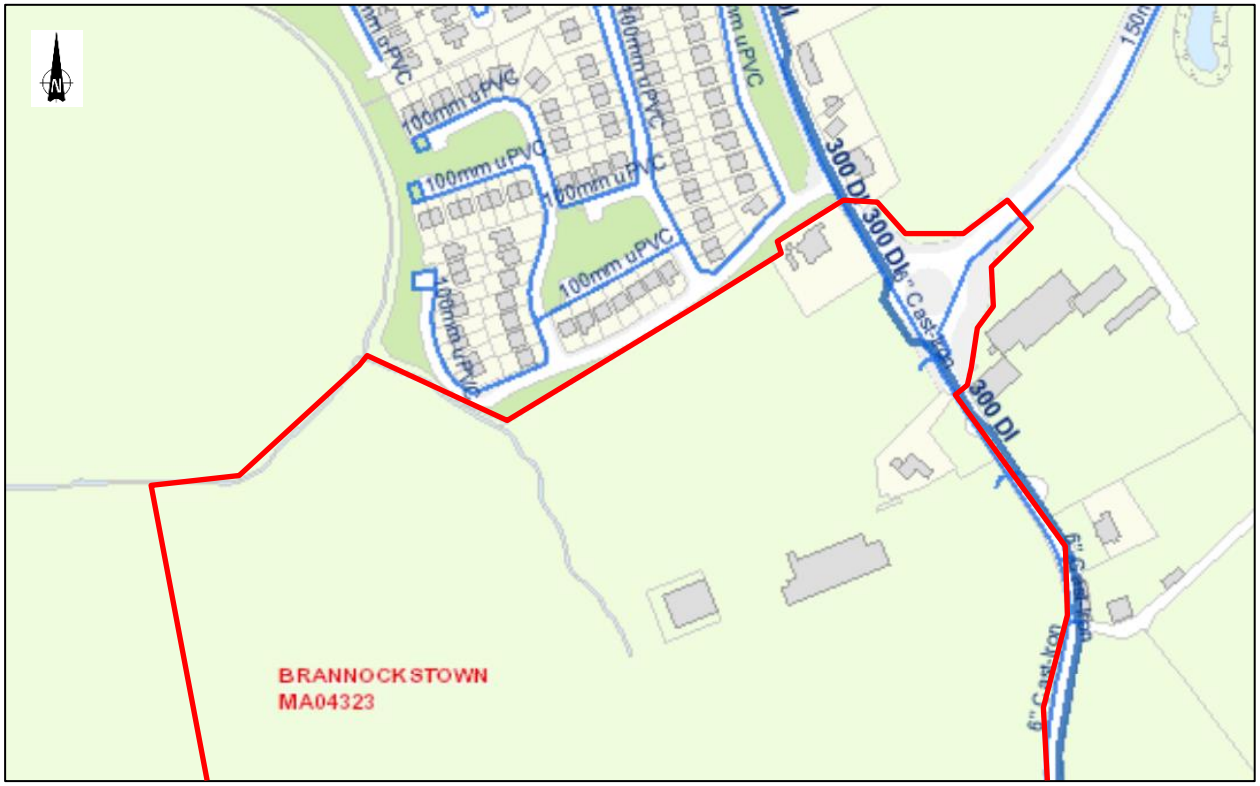


Figure 4-2: Existing Watermains in the Northeast of the Site (Extract From Irish Water Records)

4.2 Proposed Watermain

All watermain proposals have been designed in accordance with Irish Water's Water Code of Practice and Standard Details.

It is proposed to construct a new 200mm diameter watermain to service the proposed development. The watermain will connect to the existing watermain located in the roundabout to the north-east of the site. Please refer to PUNCH Consulting Engineers drawings accompanying this report which detail the watermain proposals for the site. Table 4-1 describes the watermain design parameters used.

Table 4-1: Watermain Design Parameters

Description	Value
Residential Flow Rate	150 l/person/day
Commercial Flow Rate	300 l/day/per 100m^2 of retail space
Creche Flow Rate	90 l/person/day
Average Demand	1.25 DWF
Peak Demand	5 DWF

Table 4-2: Watermain Design Calculation

Category	Quantity	Flow	Flow unit	Daily Flow (l/day)	DWF (l/s)	Average Demand (1.25DWF) (l/s)	Peak Demand (5*Average DWF) (l/s)
Residential	1536 residents	150	l/person/day	230,400	2.667	3.334	16.670
Commercial	2,141 m2	300	l/day/100m^2	6,423	0.074	0.093	0.465
Creche	200 people	90	l/person/day	18,000	0.208	0.260	1.302
Total				**254,868**	**2.950**	**3.687**	**18.437**

The watermain layout has been designed in accordance with "Irish Water Code of Practice for Water Infrastructure". All watermains are to be constructed in accordance with Irish Water Code of Practice and the Local Authority's requirements.

To reduce the water demand on Local Authority water supplies and to reduce the foul discharge from the development, water conservation measures will be incorporated in the sanitary facilities throughout the development, e.g. dual flush toilets.

4.3 Correspondence with Irish Water

A Pre-Connection Enquiry Form has been issued to Irish Water in relation to the proposed development and Irish Water has issued a Confirmation of Feasibility for the proposals. This Confirmation of Feasibility can be seen in Appendix F.

All new watermain infrastructure installed to serve the proposed development will be taken in charge by Irish Water.

The watermain proposals have been issued to Irish Water for design vetting. Irish Water have issued a Statement of Design Acceptance for the proposals, which is included in Appendix G.

4.4 Watermain Proposal Drawings

With reference to the above Section 4, please refer to the following PUNCH Drawings:

192229-PUNCH-XX-XX-DR-C-0114	PROPOSED OVERALL WATERMAIN LAYOUT
192229-PUNCH-XX-XX-DR-C-0301	PROPOSED WATERMAIN LAYOUT - SHEET 1
192229-PUNCH-XX-XX-DR-C-0302	PROPOSED WATERMAIN LAYOUT - SHEET 2
192229-PUNCH-XX-XX-DR-C-0303	PROPOSED WATERMAIN LAYOUT - SHEET 3
192229-PUNCH-XX-XX-DR-C-0304	PROPOSED WATERMAIN LAYOUT - SHEET 4

5 Flood Compensation

A Flood Risk Assessment Report has been prepared by JBA Consulting and accompanies this planning application. Document Number: COQ-JBAI-00-00-RP-HM-0012.

Section 6.2 of JBA's Flood Risk Assessment Report describes the Compensation Storage required because of the loss of volume in the floodplain due to the SHD development.

Utilising 'Civils 3D' ground modelling software PUNCH carried out a number of detailed assessments comparing the 1% AEP floodplain surface with the pre development and post development ground surfaces to calculate 1) the volume of flood compensation storage required due to displacement by the SHD development and 2) the volume flood compensation storage provided. The outputs of the assessments are described below:

Table 5-1 compares the pre and post development floodplain surfaces, on a level for level basis at 200mm intervals below the floodplain surface, without providing any flood compensation. The shortfall calculated amounted to approx. 884m3 and is thus the required Flood Compensation Storage Volume

Table 5-1: Post Development – Without Any Flood Compensation

Post Development Without Any Flood Compensation

FLOOD STORAGE

Height Range (Below flood plain)		Preworks (Refer to drawing 192229-PUNCH-XX-XX-DR-C-0811)	Post-Works (Refer to drawing 192229-PUNCH-XX-XX-DR-C-0812)	Shortfall	Additional
(m)	(m)	(m3)	(m3)	(m3)	(m3)
0.00	0.20	29127.881	28484.902	-642.979	
0.20	0.40	23317.669	23208.552	-109.117	
0.40	0.60	18712.786	18660.316	-52.470	
0.60	0.80	14693.045	14647.683	-45.362	
0.80	1.00	10923.473	10894.683	-28.790	
1.00	1.20	8702.552	8697.846	-4.706	
1.20	1.40	7339.686	7339.677	-0.009	
1.40	1.60	6338.635	6338.635	0.000	
1.60	1.80	5545.515	5545.515	0.000	
1.80	2.00	4841.687	4841.687	0.000	
2.00	2.20	4101.458	4101.458	0.000	
2.20	2.40	2765.708	2765.708	0.000	
2.40	2.60	1452.496	1452.496	0.000	
2.60	2.80	778.381	778.381	0.000	
2.80	3.00	321.364	321.364	0.000	
3.00	3.20	118.410	118.410	0.000	
3.20	3.40	43.792	43.792	0.000	
3.40	3.60	16.866	16.866	0.000	
3.60	3.80	2.391	2.391	0.000	
4.00	4.20	0.133	0.133	0.000	
		139143.928	138260.495	-883.433	0.000

Flood Compensation Areas were then introduced (Figure 5-1) by slightly lowering landscaped/amenity areas in pre-development Flood Zone C. Table 5-2 again compares the pre and post development floodplain surfaces; this time taking account of the flood compensation storage provided. Due to the site topography, it has not been feasible to provide a level for level provision at 5 of the height ranges but with the additional flood compensation areas there is now a surplus of approx. 1278m3 flood storage volume provided overall compared to the pre-development scenario.

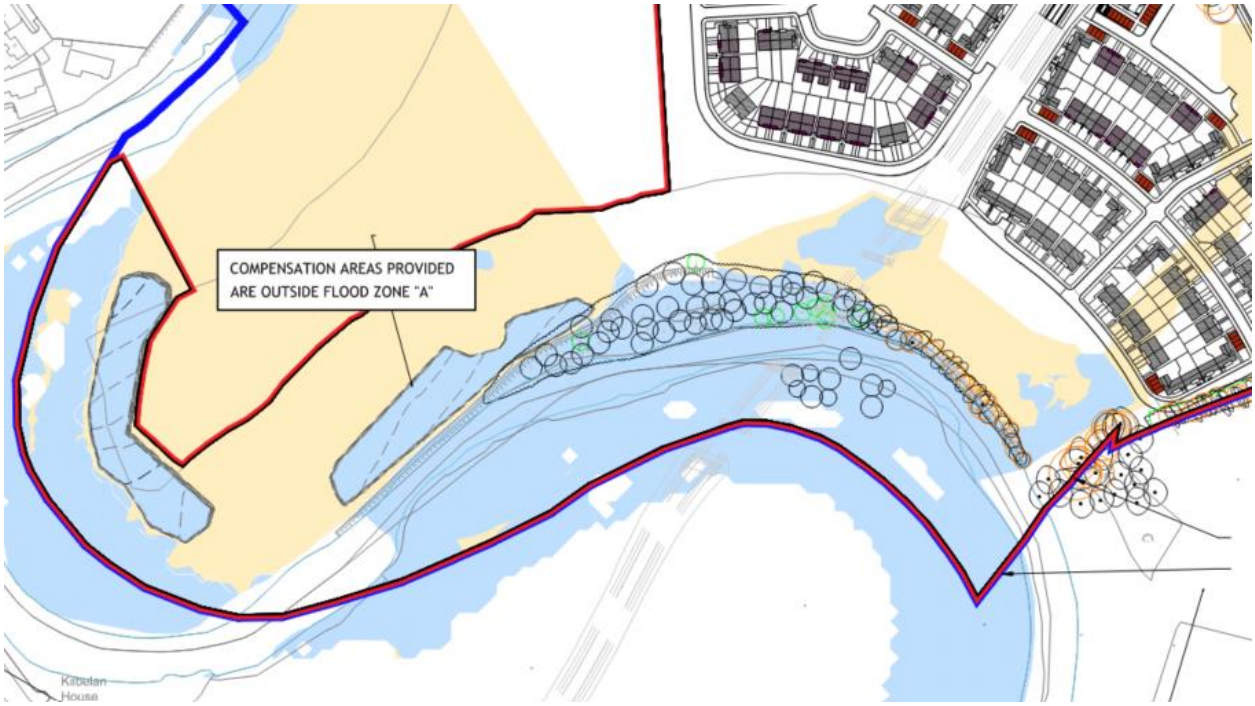


Figure 5-1: Flood Compensation Areas (Extract From 192229-PUNCH-XX-XX-DR-C-0813)

)

Table 5-2: Post Development – With Flood Compensation

Post-Development With Flood Compensation

FLOOD STORAGE

Height Range (Below flood plain)		Preworks (Refer to drawing 192229-PUNCH-XX-XX-DR-C-0811)	Post-Works (Refer to drawing 192229-PUNCH-XX-XX-DR-C-0813)	Shortfall	Additional
(m)	(m)	(m3)	(m3)	(m3)	(m3)
0.00	0.20	29127.881	29925.037		797.156
0.20	0.40	23317.669	23922.799		605.130
0.40	0.60	18712.786	18667.366	-45.420	
0.60	0.80	14693.045	14647.683	-45.362	
0.80	1.00	10923.473	10894.683	-28.790	
1.00	1.20	8702.552	8697.846	-4.706	
1.20	1.40	7339.686	7339.677	-0.009	
1.40	1.60	6338.635	6338.635	0.000	
1.60	1.80	5545.515	5545.515	0.000	
1.80	2.00	4841.687	4841.687	0.000	
2.00	2.20	4101.458	4101.458	0.000	
2.20	2.40	2765.708	2765.708	0.000	
2.40	2.60	1452.496	1452.496	0.000	
2.60	2.80	778.381	778.381	0.000	
2.80	3.00	321.364	321.364	0.000	
3.00	3.20	118.410	118.410	0.000	
3.20	3.40	43.792	43.792	0.000	
3.40	3.60	16.866	16.866	0.000	
3.60	3.80	2.391	2.391	0.000	
3.80	4.00	0.133	0.133	0.000	
		139143.928	140421.927	-124.287	1402.286

Now with the required flood compensation areas assessed and provided for in Flood Zone C areas, ground levels were also lowered between the development footprint and the River Liffey to reinstate an overland flow route within the floodplain, which re-enters the channel approx. 180m downstream. Table 5-3 compares the pre and post development floodplain surfaces; with the additional flowpaths included this time.

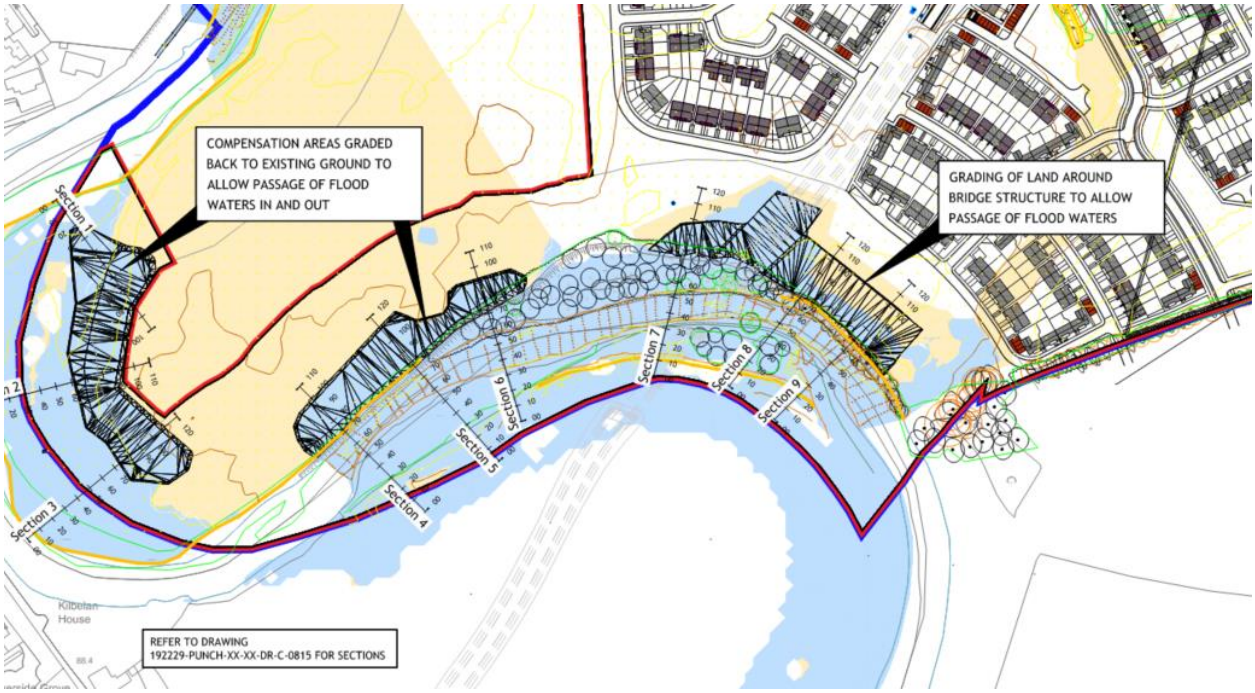


Figure 5-2: Flood Compensation Areas (Extract From 192229-PUNCH-XX-XX-DR-C-0814)

Table 5-3: Post Development (Final) – Incl Flowpaths

Post-Development (Final) includes flow paths in and out of flood compensation area and around the bridge structure

		FLOOD STORAGE			
Height Range (Below flood plain)		Preworks (Refer to drawing 192229-PUNCH-XX-XX-DR-C-0811)	Post-Works (Refer to drawing 192229-PUNCH-XX-XX-DR-C-0814)	Shortfall	Additional
(m)	(m)	(m3)	(m3)	(m3)	(m3)
0.00	0.20	29127.881	30657.397		1529.516
0.20	0.40	23317.669	24284.356		966.69
0.40	0.60	18712.786	18670.793	-41.99	
0.60	0.80	14693.045	14647.667	-45.38	
0.80	1.00	10923.473	10894.616	-28.86	
1.00	1.20	8702.552	8697.744	-4.81	
1.20	1.40	7339.686	7339.560	-0.13	
1.40	1.60	6338.635	6338.524	-0.11	
1.60	1.80	5545.515	5545.428	-0.09	
1.80	2.00	4841.687	4841.642	-0.05	
2.00	2.20	4101.458	4101.476		0.02
2.20	2.40	2765.708	2765.720		0.01
2.40	2.60	1452.496	1452.496	0.00	
2.60	2.80	778.381	778.381	0.00	
2.80	3.00	321.364	321.364	0.00	
3.00	3.20	118.410	118.410	0.00	
3.20	3.40	43.792	43.792	0.00	
3.40	3.60	16.866	16.866	0.00	
3.60	3.80	2.391	2.391	0.00	
3.80	4.00	0.133	0.133	0.00	
		139143.928	141518.756	-121.40	2496.23

Refer to PUNCH drawing 19229-PUNCH-XX-XX-DR-C-0815 for sections indicating the excavations for the flood compensation storage areas and the including flowpaths and regrading of the lands back towards the River Liffey.

Relevant Section 5 Drawings

192229-PUNCH-XX-XX-DR-C-0811	FLOOD MODEL– Q100 PRE-DEVELOPMENT
192229-PUNCH-XX-XX-DR-C-0812	FLOOD MODEL– Q100 POST DEVELOPMENT – NO COMPENSATION
192229-PUNCH-XX-XX-DR-C-0813	FLOOD MODEL – Q100 POST DEVELOPMENT – (WITH COMPENSATION
192229-PUNCH-XX-XX-DR-C-0814	FLOOD MODEL–Q100 POST DEVELOPMENT – (FINAL)
192229-PUNCH-XX-XX-DR-C-0815	CROSS-SECTIONS – Q100 POST DEVELOPMENT – (FINAL)

6 Traffic & Transport

Traffic & Transportation Assessment Report has been prepared by Punch consulting engineers and accompanies this planning application. Document Number: 192229-PUNCH-XX-XX-RP-C-0004.

7 Tri Partite Meeting Comments

This section of the report addresses the Engineering items raised in the ABP Notice of Pre-Application Consultation Opinion issued following the ABP Tri Partite meeting.

7.1 An Bord Pleanála Notice of Pre-Application Consultation Opinion

7.1.1 Opinion Item 3, Sub-Section 4

"Furthermore, Pursuant to article 285(5)(b) of the Planning and Development (Strategic Housing Development) Regulations 2017, the prospective applicant is hereby notified that, in addition to the requirements as specified in articles 297 and 298 of the Planning and Development (Strategic Housing Development) Regulations 2017, the following specific information should be submitted with any application for permission:

Sub Section Item 4 - Response to issues raised in Appendix B of Planning Authority Report, which includes the internal reports of the Drainage Dept. relating to the SUDS hierarchy, and the Park Department relating, inter alia, design approach and landscaping etc"

PUNCH Response to Opinion Item 3 Sub-Section Item 4:

Refer to our comments below in response to *KCC SHD Stage 2 Opinion (SHD202105)*.

7.2 Kildare County Council SHD Stage 2 Report (Ref:SHD202105 – Stage 2 Opinion)

7.2.1 Engineering Items raised in Section 4.1 Internal Reports

"Water Services Department: Recommendations made including that a detailed hydraulic modelling and condition assessment should be undertaken. Firefighting requirements should be identified and met. The need for a site WWPS should be reviewed and with IW as this development could be served by gravity connection in some way particularly as it is immediately adjacent to a brand new sewerage system i.e. 900mm diameter gravity NEIS. The proposed 10% infiltration allowance in the wastewater network design (EPR section 3.2) is not included in the submitted network simulation at EPR Appendix D. The minimum permitted sewer pipe diameter is 150mm, however in the submitted network simulation a multitude of oversized 225mm pipes have been used and consideration shall be given to reducing these to 150mm and the network simulation pipe sections so not correspond to the submitted drainage layout drawings. The achievable proportional velocities are all below the minimum self-cleansing velocities of 0.75mps, predicted pipe flow rates are minimal compared to the values given in ERP Table 3-2, some pipes sections have zero flow rates and the number of dwellings is nowhere near the proposed 606 units plus creche and neighbourhood centre.

The proposed SuDS strategy is not considered acceptable and a number of recommendations including a substantial redesign of the proposal to maximise both sustainability and amenity. A justification for any deviation from the nature based solutions and natural water retention measures should be submitted. At least 6 months of groundwater monitoring should be undertaken including a winter season.

A revised Site Specific Flood Risk Assessment is required to take account of additional information as well as third party expert scrutiny. The current proposal contravenes the Planning System Flood Risk Management Guidelines as it appears to suggest a relocation of the flood waters to adjoining property outside the site. It should also be revised following a revised SuDS strategy as recommended.

The Applicant should have regard to the planning history relating to Irish Water and Water services matters for adjoining properties including the adjacent Ardstone-Glenveagh SHD to the West.

Fire Service: Recommendations made regarding turning facilities, fire safety certificates, location of fire hydrants and water supply requirements."

PUNCH Response to Engineering Items raised in Section 4.1:

Refer to our comments below in response to *KCC SHD Stage 2 Opinion (SHD202105)*.

7.2.2 Engineering Items raised in Section 5 - Opinion and Reasons: Sub-Section 3 and 7

*3. "The proposed **SuDS strategy** is not considered acceptable and a number of recommendations including a substantial redesign of the proposal to maximise both sustainability and amenity. A justification for any deviation from the nature based solutions and natural water retention measures should be submitted. At least 6 months of groundwater monitoring should be undertaken including a winter season.*

7. Consideration should be given to providing green roofs throughout the scheme on all flat roof structures including apartments blocks, the neighbourhood centre and bin and bike stores."

PUNCH Response to items raised in Section 5 – Item 3 and 7:

Refer to our comments below in response to *KCC SHD Stage 2 Opinion (SHD202105)*.

7.2.3 KCC SHD Stage 2 Report Appendix B (Pages 45-46) - Kildare County Council Fire Service Report

1. *"The Applicant shall obtain Fire Safety Certificates in accordance with the requirements of the Building Control Act.*
2. *Where access roadways are provided with the site of a building, turning facilities for fire appliances, in accordance with the requirements of Table 5.1 should be provided in any dead-end access route that is more than 20m long.*
3. *A minimum of 1,100 litres/min of water is to be available in the mains at 2 bar pressure for firefighting.*
4. *All mains are to be equipped with fire hydrants to the relevant British Standard and no building is to be further than 46 metres from any hydrant measured along a hose route.*
5. *All hydrants are to be in boxes to B.S. 750 and the top of any hydrant is to be no more than 200mm below cover level.*
6. *All hydrants are to be marked in accordance with BS 3251 (All covers shall be painted yellow with road marking paint and with a unique identification number on the underside).*
7. *No hydrant is to be placed in a roadway. If placed in a grassed area it should have a 200mm concrete surround, level with the ground. Hydrants should preferably be in the centre of footpaths, away from gateways."*

PUNCH Response to KCC Fire Service Report Comments:

1. Noted.
2. Noted. Fire tender vehicles autotracks have been prepared and submitted with the application, confirming KCC requirements for turning movements can be achieved. Refer to PUNCH drawings *192229-PUNCH-XX-XX-DR-C-0600 to 0603*.
3. Noted. Water supply for firefighting will be provided to meet KCC and the Fire Safety Certificate Conditions.

4. Noted. Fire hydrants coverage on site is in accordance with KCC requirements and no building is further than 46m from a hydrant.
5. Noted. Fire hydrants to be constructed to B.S. 750 and KCC requirements.
6. Noted. Fire hydrants to be constructed to KCC requirements.
7. Noted. All hydrants are located off roadways and Fire hydrants to be constructed to KCC requirements.

7.2.4 Kildare County Council Water Services - Appendix B (Pages 69 - 70) Irish Water Issues (Foul & Water Supply)

1. *KCC WSD Comment 1.1:*

"Irish Water issues pertaining to foul water drainage and water supply that are known to KCC WSD are included in this report to provide context to the board. However IW as the national water services authority are responsible for these matters and as a prescribed body under planning legislation are a party to the SHD process and usually make a submission to the board at Stage 2 before the tripartite meeting is held."

PUNCH Response to KCC WSD Comment 1.1:

Noted. The applicant has obtained a Confirmation of Feasibility *(CoF – CDS20007443)* letter and Statement of Design Acceptance (CDS20007443) from Irish Water in response to the PUNCH design submission. The PUNCH design submission to support this application, takes due account of the items raised by Kildare County Council and Irish Water at Stage 2.

2. *KCC WSD Comment 1.2:*

"IW will be making a submission on the full planning application if and when that is received."

PUNCH Response to KCC WSD Comment 1.2:

Noted.

3. *KCC WSD Comment 1.3:*

"The newly constructed 600mm pumped rising main-900mm gravity Newbridge Eastern Interceptor Sewer which traverses the subject site west – east shall be provided with a suitable wayleave to IW specific requirements. The proposed diversion of the existing 450mm Kilcullen-Athgarvan sewer which traverses the subject site south-north shall also be provided with a wayleave and diversion agreement. KCC recived diversion application for this (DIV21230 Great Connell, Newbridge, Co Kildare) from John Dixon of IW Diversions, Connections and Developer Services week commencing 13/09/21.The treatment of the northern section of 450mm Kilcullen-Athgarvan sewer before it picks up Wellesley Manor and Baroda Court must be addressed by IW."

PUNCH Response to KCC WSD Comment 1.3:

Noted. The proposed development takes account of the wayleaves to the Irish Water 600mm rising main and 900mm gravity Newbridge Eastern Interceptor Sewer. A Diversion Confirmation of Feasiblity letter (DIV21230) of the 450mm Kilcullen-Athgarvan sewer has been obtained from Irish Water. A wayleave has been provided for this diversion to meet Irish Water requirements.

4. KCC WSD Comment 1.4:

*"The Irish Water (IW) Confirmation of Feasibility (CoF – CDS20007443) dated 28/01/21 for 620 units (submitted Engineering Planning Report (EPR) Appendix F) states that connections to IW networks are feasible **at the present time** following **a desk top analysis** of the **capacity currently available** in IW networks.*
Given the level of ongoing development and extant permissions in Newbridge which may make connections before the proposed development, WSD is recommending to IW that detailed hydraulic modelling and condition assessment of both networks but particularly modelling of the local water networks to access the impact of the development on the level of demand in Newbridge and the effect to existing customers be carried out. Flow and pressure analysis should also be carried out and reported on before planning application stage or at the very least, the connection application stage to identify unknown network capacity and condition constraints which would need to be removed to facilitate connection of the proposed development.

Before connection agreements are finalised, agreement shall be reached on the removal of any network constraints and where they are not funded and implemented by IW, they should be funded by the prospective applicant, in part or in full and implemented by IW."

PUNCH Response to KCC WSD Comment 1.4:

Noted. These Kildare Co Co comments are for Irish Water to address in considering this SHD application. It should be noted however that the 600mm rising main/900mm gravity Newbridge Eastern Interceptor Sewer was a major Irish Water Capital Infrastructure Project constructed to faciltitate previously restricted zoned development in the Newbridge Area, of which this SHD application form part, and we expect took due consideration of before issuing their Confirmation of Feasibility (CoF – CDS20007443) and Statement of Design Acceptance (CDS20007443)

5. KCC WSD Comment 1.5:

"Connections to the IW water and wastewater networks and their locations will be the subject of connection agreements between IW and the prospective applicant prior to commencement of the development should permsission be granted and it will be a matter for IW to sanction the appropriate connection location at that stage.

Furthermore, WSD would aslo recommend to IW that no development is commenced should permission be granted until such a time as a contract for any network upgrades has been signed and that no units or only a limited number of units are occupied in the proposed development prior to completion and commisssiong of any required network upgrades."

PUNCH Response to KCC WSD Comment 1.5:

Noted. It should be noted however that the 600mm rising main/900mm gravity Newbridge Eastern Interceptor Sewer was a major Irish Water Capital Infrastructure Project constructed to faciltitate previously restricted zoned development in the Newbridge Area, of which this SHD application form part, and we expect took due consideration of before issuing their Confirmation of Feasibility (CoF – CDS20007443) and Statement of Design Acceptance (CDS20007443) without a requirement for additional upgrades.

6. *KCC WSD Comment 1.6:*

"Pre-connection applications do not consider fire fighting water supply requirements for the proposed development. Therefore, the prospective applicant should consult the KCC Fire Service to ascertain their requirements and IW to identify available pressures and flows in the public mains, respectively prior to submitting the full planning applications."

PUNCH Response to KCC WSD Comment 1.6:

KCC Fire Service have noted their requirement of a minimum of 1,100 litres/min of water at 2 bar pressure for firefighting. Water supply for firefighting will be provided to meet KCC Fire Service Department requirements and any future Fire Safety Certificate Conditions.

7. *KCC WSD Comment 1.7:*

"The need for a site WWPS should be reviwed with IW as this development could be served by gravity connection in some way particularly as it is immediately adjacent to a brand new sewerage system i.e. 900mm diameter gravity NEIS."

PUNCH Response to KCC WSD Comment 1.7:

A gravity connection for the entire development was asssessed in detail in the process of preparing the foul drainage submission with the aim of avoiding the use of an onsite WWPS. However, to achieve Irish Water's minimum design requirements including minimum gradients, self-cleansing velocities and minimum vertical clearance between services, a WWPS is therefore required for western section of the development. Irish Water have provided a Statement of Design Acceptence (CDS20007443) on the basis of this design.

8. *KCC WSD Comment 1.8:*

"The Statement of Design Acceptance (SoDA) from IW approving the proposed wastewater and water supply designs and layouts must be submitted with any planning application. The proposed foul drainage including the proposed site WWPS and water supply systems shall be designed and constructed in accordance with the IW Standards Details and Codes of Practice.

The water services design shall also have regard to the wastewater drainage and water supply policies and objectives contained in the applicable CDP and the Newbridge LAP at the time of making a planning application. The sewers shall be provided in roadways to the maximum extent possible including the proposed 450mm Kilcullen- Athgarvan diversion sewer.

The proposed 10% infiltration allowance in the wastewater network design (EPR section 3.2) is not included in the submitted network simulation at ERP Appendix D. The minimum permitted sewer pipe diameter is 150mm, however in the submitted network simulation a multitude of oversized 225mm pipes have been used and consideration shall be given to reducing these to 150mm and the network simulation pipe sections so not correspond to the submitted drainage layout drawings.

The achievable proportional velocities are all below the minimum self-cleansing velocities of 0.75mps, predicted pipe flow rates are minimal compared to the values given in ERP Table 3-2, some pipes sections have zero flow rates and the number of dwellings is nowhere near the proposed 606 units plus creche and neighbourhood centre.

Adequate vertical separation shall be provided between services especially foul water and surface waterpipes where they intersect."

PUNCH Response to KCC WSD Comment 1.8:

a) We confirm all proposed foul and water proposals are in compliance with Irish Water Standard Details and Codes of Practice. Irish Water have provided a Statement of Design Acceptence (CDS20007443) on the basis of this design.
b) An additional flow of 10% infiltration flow has been included in the Causeway flow model wastewater network calculations provided in this submission (Appendix E).
c) Pipe diameters have been provided in compliance with Irish Water's Wastewater Code of Practice. Pipe diameters of up to 300mm in some locations are required to cater for the peak flow rates/number of units served.
d) Updated drainage calculations have been prepared and are included in Appendix E. The pipe network has been designed in accordance with the Irish Water WWCoP. Irish Water have provided a Statement of Design Acceptence (CDS20007443) on the basis of this design.
e) Vertical separation of 300mm between services is maintained throughout the site in compliance with the requirements of the IW Code of Practice.

9. KCC WSD Comment 1.9:

"With regard to the above issues the prospective applicant is advised to continue their ongoing dialogue with IW and consult KCC WSD to reach agreement on the above issues before submitting the full planning applications to the Board."

PUNCH Response to KCC WSD Comment 1.9:

Noted. Irish Water have provided a Statement of Design Acceptence (CDS20007443) on the basis of this design.

7.2.5 Kildare County Council Water Services - Appendix B (Pages 70 – 74) Surface Water & Flood Risk

Surface Water:

1. *KCC WSD Comment 2.1:*

"The site watercourses and any site open drainage channels shall be retained in open channel including the "drain to the north of the subject site" (submitted SSFRA section 5.1 post development fluvial flood modelling scenario) and any exisiting site pipework should be "de-culverted" in order to comply with GDSDS Sustainability Stormwater Drainage Design Principle and to promote biodiversity and provide amenity value for future residents and vistors alike (see submitted Engineering Planning Report section 2.2 regarding filling in the existing ditch south of NSORR)."

PUNCH Response to KCC WSD Comment 2.1:

All existing site watercourses and drainage channels have been retained with the exception of a short section of the open drain to the south of the Newbridge Southern Orbital Relief Road (NSORR). The development proposals have been evaluted by the Environmental Consultant and the SHD submission includes an EIAR. SuDS measures include swales, permeable paving, soakways and stormtech attenuation systems which adhere to the principles of GDSDS sustainability stormwater drainage design. The Landscape Architects proposals outline in detail additional proposals which addresses biodiversity across the site.

2. *KCC WSD Comment 2.2:*

"Section 50 consent shall be obatained where required for any changes to, crossing-bridging of the river Liffey (agreement with other parties including Ardstone-Glenveagh and KCC Roads Department regarding bridge construction shall also be address although it appears the proposed development red-line boundry and description does not emcompass the construction of the bridge) and existing site watercourses as a result of the proposed development. The OPW consents shall be included in the engineering report submitted with any planning application."

PUNCH Response to KCC WSD Comment 2.2:

Section 50 requirements have been addressed in JBA's Site Specific Flood Risk Assessment, and the proposed development takes account of their requirements. Please note there is no bridge crossing of the River Liffey included in this SHD application.

3. *KCC WSD Comment 2.3:*

"The proposed drainage and SuDS strategy for the mixed use development and Newbridge Southern Orbital Relief Road (NSORR) is fairly typical, limited and predicated on a mixture of traditional pipe and gulley systems and limited SuDS including driveway and parking bay permeable paving, swales, and proprietary underground attenuation storage geocellular structures. (Tree pits, rain gardens and filter drains are mentioned at submitted Engineering Planning Report (EPR) section 2.3 but not included on the submitted drainage layout drawings).*

**It is noted that the mixed use development drainage and NSORR drainage have been separated. The drainage strategy including for the mixed use development and NSORR submitted with any planning application shall comply with the surface water management policies and objectives contained in the relevant Newbridge LAP and CDP and clearly demonstrate that the proportion of impermeable surfaces have been reduced as much as possible e.g. pervious surfacing can be introduced in in all roadways, pavements and footpaths in private areas and management company controlled areas which will not be taken in charge including at apartment blocks and the neighbourhood centre area. All remaining*

Impermeable surface areas shall be discharged to at least 1 SuDS feature before connecting to the proposed drainage pipe network and outfall, ultimately to the river Liffey. The connection of the proposed rainwater harvesting and butts to filter drains-soakaways in rear gardens (EPR 23.6) shall be clarified e.g. are these overflows?

NB the environmental Implications of discharging surface water to the site watercourses, river Liffey and to ground where feasible shall be adequately assessed."

PUNCH Response to KCC WSD Comment 2.3:

The proposed drainage and SuDS strategy has been further developed to take account of KCC WSD comments. The Soil Infiltration Test results (Site Investigation – Appendix I) have been utilised to maximise the level of infiltration on the site. The extent of impermeable surfacing has been reduced across the site with housing driveways and carparking spaces and roadways in private managed areas at Apartments and the Neighbourhood Centre discharging to ground where infiltration rates allow. Where possible, all efforts have been made to allow stormwater on impermeable surface areas to pass through at least 1 SuDS feature such as green roofs, soakaways, swales etc before connecting to the drainage pipe network.

The utilisation of these SuDS measures provide interception storage and treatment volumes of surface water run-off that enhance the environmental charaterisitics of the surface water run-off; by filtration of silts and other pollutants; biodegradation of organic pollutants such as petrol and diesel and settlement/retention of solids. These measures will ensure that any environmental implications of discharging run-off to the site watercourses, River Liffey and ground is mitigated. Refer also to Section 2.3 of this report and SuDS Drawings *192229-PUNCH-XX-XX-DR-C-0151 to 0154*.

4. *KCC WSD Comment 2.4:*

"The proposed SuDS strategy is not acceptable and shall be revised and demonstrably maximise the potential to remove-reduce and treat runoff by increasing the proportion of roads ***including NSORR****, pavements, footpaths and roofs discharging to SuDS features in the following structured and hierarchical manner."*

PUNCH Response to KCC WSD Comment 2.5:

Noted: Refer to PUNCH response to specific items raised by KCC WSD below

5. *KCC WSD Comment 2.5:*

"Nature based solutions (NBS) and Natural Water Retention Measures (NWRM) SuDS which reduce and treat runoff shall be prioritised in the first Instance eg green-blue roofs in management company controlled buildings, constructed wetlands, bioretention areas, bioswales, retention ponds, tree trenches-pits (with tree root barriers close to dralnage, roads, footpaths, pavements, buildings and structures), house planters and rain gardens which also promote biodiversity in flora and fauna and provide amenity value.

WSD recommend that the proposed swales be converted to bloswales and NSORR and the internal roadways should discharge direct to the bioswales through gaps in the roadside kerbs and the 9 no large underground attenuation storage structures be replaced with NBS-NWRM SuDS.

The planting schemes for NBS and NWRM SuDS shall be devised by landscape architects, conform to recommended industry guidance including CIRIA SuDS Manual (see item 2.20.2 below).

WSD consider that NBS-NWRM SuDS provided in open space areas eg ponds, bioswales or bioretention areas should count towards the 15% open space requirement."

PUNCH Response to KCC WSD Comment 2.5:

The proposed drainage and SuDS strategy has been further developed to take account of KCC WSD comments. Green sedum roofs are provided on all Apartment Buildings (as well as bicycle sheds). The extent of impermeable surfacing has been reduced across the site with housing driveways and carparking spaces and roadways in private managed areas at Apartments and the Neighbourhood Centre discharging to ground where infiltration rates allow. Where possible, all efforts have been made to allow stormwater on impermeable surface areas to pass through at least 1 SuDS feature such as green roofs, soakaways, swales etc before connecting to the drainage pipe network.

All road surface water run-off, including the NSORR, will discharge to bioswales. The bioswales will incorporate a wildflower mix designed in agreement with the landscape architect, to promote bodiversity and is included within the overall scheme of SuDS measures. The utilisation of these SuDS measures provide interception storage and treatment volumes of surface water run-off that enhance the environmental charaterisitics of the surface water run-off; by filtration of silts and other pollutants; biodegradation of organic pollutants such as petrol and diesel and settlement/retention of solids. Refer also to Section 2.3 of this report and SuDS Drawings *192229-PUNCH-XX-XX-DR-C-0151 to 0154.*

6. *KCC WSD Comment 2.6:*

"Where NBS and NWRM SuDS are not included in the proposed drainage-SuDS strategy to be submitted with any planning application, a clear and plausible rationale for this approach must be included in the engineering report submitted with any planning application.

Absence of NBS-NWRM SuDS without an acceptable justification will lead to a pre-commencement condition where permission is granted seeking clarification on this absence with potential construction delays and in extreme cases, a recommendation for refusal of the planning application."

PUNCH Response to KCC WSD Comment 2.6:

The proposed drainage and SuDS strategy has been further developed to take account of KCC WSD comments. Nature based solutions and natural water retention measures have been maximised within the development such as green sedum roofs, soakaways, swales and permeable paving and Stormtech attenuation storage systems. Please refer to the section 2.3 of this report and SuDS Drawings *192229-PUNCH-XX-XX-DR-C-0151 to 0154.*

It has not been feasible to utilise detention basins/ponds for attenuation storage. Detention basins/ponds used for surface water storage require a very large footprint area and would by necessity be located within the green/open space areas of the housing. Locating the detention basins/ponds in the green/open spaces would significantly reduce the available amenity area for residents. In addition the flat nature of the site would result in deep detention basins/ponds being required. Their location, in green/open space areas, would pose a potential health and safety risk to vulnerable users such as children. The proposed use of Stormtech attenuation systems will provide enhanced environmental characteristics of the surface water run-off compared to conventional geocelluar storage structures by the filtration of silts and other pollutants; biodegradation of organic pollutants such as petrol and diesel and settlement/retention of solids.

7. *KCC WSD Comment 2.7:*

"Only where the run-off from the site impermeable surface areas cannot be discharged to these nature-based SuDS, shall other SuDS types be considered, starting with infiltration system SuDS which discharge runoff to ground.

Infiltration system SuDS can be either shallow or deep depending on their invert level and depth of runoff discharge."

PUNCH Response to KCC WSD Comment 2.7:

The proposed drainage and SuDS strategy has been further developed to take account of KCC WSD comments. The Soil Infiltration Test results (Site Investigation – Appendix I) have been utilised to maximise the level of infiltration on the site. Nature based solutions and natural water retention measures have been maximised within the development such as green sedum roofs, soakaways, swales and permeable paving and Stormtech attenuation storage systems. Please refer to the section 2.3 of this report and SuDS Drawings *192229-PUNCH-XX-XX-DR-C-0151 to 0154.*

8. *KCC WSD Comment 2.8:*

*"**Subject to expert geotechnical advice**, shallow infiltration SuDS including the proposed driveway and parking bay permeable paving and in management company controlled areas and other private areas and small tree pits-trenches which can be provided along internal roadways Including NSORR can be unlined and along with infiltration SuDS in areas of fill may not be subject to soil infiltration tests and groundwater monitoring due to their location in the unconsolidated soil upper layers and above typical groundwater levels (subject to check of nearest groundwater level results to ensure they are above maximum recorded groundwater levels) and if the fill material is sufficiently permeable, the fill layer suitably deep and-or the underlying existing ground formation is treated appropriately,*

**It is vital to ensure that these upper soil layers are not over-compacted during or after the construction stage in locations where shallow infiltration system SuDS are proposed so as to maintain sufficient upper soil layer infiltration values.*

Expert geotechnical advice shall also be sought on soil replacement-remediation measures where over-compaction of the upper soil layers occurs.

Drainage provision in gardens including the house rear garden soak pits and open space areas shall be carefully addressed where over-compaction of the upper soil layers may occur during and after construction phase (see Item 2.11 below)."

PUNCH Response to KCC WSD Comment 2.8:

The proposed drainage and SuDS strategy has been further developed to take account of KCC WSD comments. The Soil Infiltration Test results (Site Investigation – Appendix I) have been utilised to maximise the level of infiltration on the site. The ground water levels have also been assessed over a 6 month period (Site Investigations Appendix J) and unlined SuDS infiltration systems are used where ground water levels are more than 1m below the base of the infiltation system, as recommended by CIRIA 753 – The SuDS Manual.

A detailed Construction Management Plan to be submitted to KCC for planning compliance will be prepared by the contractor to address the requirements in relation to appropriate care to the over-compaction of upper soil layers during and after construction phase.

Refer to the section 2.3 of this report and SuDS Drawings *192229-PUNCH-XX-XX-DR-C-0151 to 0154.*

9. *KCC WSD Comment 2.9:*

"Deeper infiltration system SuDS such as soakaways, infiltration trenches and unlined underground attenuation storage structures are subject to adequate soil permeability and favourable site groundwater regimes.

Soil permeability shall be assessed by conducting BRE Digest 365 soil infiltration tests carried out at the locations and depths of the proposed infiltration SuDS.

A site investigation report has been submitted and Infiltration to ground has been ruled out (submitted Engineering Planning Report (EPR) Table 21) presumably on the basis of relatively high groundwater levels recorded in boreholes and trial pits notwithstanding the predominance of sand and particularly gravel sub-soil layers and very good recorded soil Infiltration rates. This shall be clarified in the engineering report submitted with any planning application."

PUNCH Response to KCC WSD Comment 2.9:

The proposed drainage and SuDS strategy has been further developed to take account of KCC WSD comments. The Soil Infiltration Tests in accordance with BRE Digest 365 were carried out across the site and the results are included in Appendix I and summarised on SuDS drawings 192229-PUNCH-XX-XX-DR-C-0151 to 0154. The extent of deeper infiltration systems SuDS such as soakaways, infiltration trenches has been maximised across the site taking account of the recorded results and depths to groundwater.

The recommendation CIRIA C753 – The SuDS Manual is that ground water levels should not be within 1m of the base of the unlined attenuation tanks. Site investigations (Appendix I and Appendix J) have confirmed that ground water levels are within 1m of the base of all attenuation tanks and as such lined/tanked attenuation tanks are proposed.

10. *KCC WSD Comment 2.10:*

"Single day borehole or trial pit records are not considered to be an accurate depiction of site groundwater conditions which are subject to meteorological and climatic variations as noted in the submitted SI report.

To that end, standpipes were installed in seven boreholes to enable monitoring of groundwater levels. Groundwater monitoring should be carried out at the locations of the proposed deep infiltration system SuDS and ***lasts at least 6 months and include at least one winter season****.*

However, groundwater levels have only been measured on one date i.e. 06.04.2021 and it appears that only three standpipes were located adjacent to one of the nine proposed underground attenuation storage structures."

PUNCH Response to KCC WSD Comment 2.10:

Additional ground water monitoring over a 6 month period, from April 2021 to January 2022, has been carried out to take account of KCC WSD comments. Ground water levels vary from 0.93mBGL to 2.92mBGL across the site. The results are included in the Site Investigation Report (Appendix I and Appendix J) and the results are summarised on SuDS drawings 192229-PUNCH-XX-XX-DR-C-0151 to 0154. The extent of deeper infiltration systems SuDS such as soakaways, infiltration trenches has been maximised across the site taking account of the recorded results and depths to groundwater.

11. *KCC WSD Comment 2.11:*

"With the abundance of groundwater strikes recorded during the site Investigation exercise, WSD would caution again the provision of the proposed soakpits in every house rear garden pending expert geotechnical-hydrogeological advice and further monitoring of groundwater levels as item 2.13 below."

PUNCH Response to KCC WSD Comment 2.11:

Ground water monitoring took place over a 6 month period, from April 2021 to January 2022 and established that water levels vary from 0.93mBGL to 2.92mBGL across the site. The results are included in the Site Investigation Report (Appendix I and Appendix J) and the results summarised on SuDS drawings 192229-PUNCH-XX-XX-DR-C-0151 to 0154.

Soakpits have been proposed in gardens where a minimum height of 1m separation from the measured maximum ground water table is feasible. In all cases a high-level overflow to the main drainage network is proposed in the event the soakpit is not operating effectively. Refer to *192229-PUNCH-XX-XX-DR-C-0501* for details.

12. KCC WSD Comment 2.12:

"Notwithstanding the abundance of groundwater strikes during the site Investigation which was conducted in February and March 2021 (during the Covid lockdown), more detailed examination of the borehole and trial pit logs revealed the potential to mobilise infiltration to ground above highest recorded groundwater levels at some locations of the subject site ***subject to expert geotechnical-hydrogeological advice****. For example, recorded groundwater levels in the northern and eastern site portions were somewhat lower than the rest of the site and discharge of runoff to ground* ***may*** *be feasible at proposed underground attenuation storage structures (where they are retained) #1 and #2 for Newbridge Southern Orbital Relief Road and #5 and #7 for the residential development.*

These issues should be clarified in the engineering report submitted with any planning application."

PUNCH Response to KCC WSD Comment 2.12:

The proposed drainage and SuDS strategy has been further developed to take account of KCC WSD comments. Ground water monitoring took place over a 6 month period, from April 2021 to January 2022 and established that water levels vary from 0.93mBGL to 2.92mBGL across the site. The results are included in the Site Investigation Report (Appendix I and Appendix J) and the results summarised on SuDS drawings 192229-PUNCH-XX-XX-DR-C-0151 to 0154.

SuDS measures have been designed taking into account the ground water monitoring data. The extent of deeper infiltration systems SuDS such as soakaways, has been maximised across the site taking account of the recorded results and depths to groundwater and the recommendation of CIRIA C753 – The SuDS Manual that ground water levels should not be within 1m of the base of unlined infiltration systems. Refer to the section 2.3 of this report and SuDS Drawings *192229-PUNCH-XX-XX-DR-C-0151 to 0154.*

13. KCC WSD Comment 2.13:

"It is recommended that the prospective applicant shall immediately commence a regular on-site groundwater monitoring programme to accurately determine the prevailing groundwater regime and finalise the SuDS strategy before submitting a planning application.

Otherwise, a pre-commencement condition where permission is granted may be included to this effect and requesting submission of the groundwater monitoring (and soil infiltration test) results and finalisation of a SuDS strategy agreed with the Planning Authority before any development commences."

PUNCH Response to KCC WSD Comment 2.13:

The proposed drainage and SuDS strategy has been further developed to take account of KCC WSD comments. Ground water monitoring took place over a 6 month period, from April 2021 to January 2022 and established that water levels vary from 0.93mBGL to 2.92mBGL across the site. The results are

included in the Site Investigation Report (Appendix I and Appendix J) and the results summarised on SuDS drawings 192229-PUNCH-XX-XX-DR-C-0151 to 0154.

14. KCC WSD Comment 2.14:

"Discharge from infiltration system SuDS should be located a safe distance from buildings, structures, and roads to prevent damage to sub-structures or their foundation layers shall be lined-tanked."

PUNCH Response to KCC WSD Comment 2.14:

The proposed drainage and SuDS strategy has been further developed to take account of KCC WSD comments. Where feasible, infiltration system SuDS measures are located more than 5m from structures. Where systems are less than 5m to foundations they are lined.

15. KCC WSD Comment 2.15:

"A drainage layout drawing with the various Infiltration test and groundwater monitoring locations and results is a useful tool in optimising the SuDS strategy and should be included in any planning application submission."

PUNCH Response to KCC WSD Comment 2.15:

The proposed drainage and SuDS strategy has been further developed to take account of KCC WSD comments. This information has been included on the SuDS strategy drawings *192229-PUNCH-XX-XX-DR-C-0151 to 0154* accompanying this report.

16. KCC WSD Comment 2.16:

*"Where infiltration system SuDS are not feasible and **as item 2.6 above**, only then shall filtration system SuDS such as lined permeable paving, bioswales which are connected to the proposed drainage pipe network and filter drains-strips be considered in the drainage and SuDS strategies. They are typically narrow and linear so are suitable where space is restricted e.g. along roads including the NSORR.*

The proposed use of under-draining filter drains below lined permeable paving (EPR section 2.3.2) is not standard practice and shall be reviewed."

PUNCH Response to KCC WSD Comment 2.16:

The proposed drainage and SuDS strategy has been further developed to take account of KCC WSD comments. This information has been included on the SuDS strategy drawings *192229-PUNCH-XX-XX-DR-C-0151 to 0154* accompanying this report.

It is proposed to use an unlined permeable paving system that will infiltrate to ground. Filter drain pipes will also be included as an overflow to the main drainage collector system in line with the UK SuDS manual CIRIA C753. This will provide a fail-safe in the event the infiltration is ineffective in operation.

17. KCC WSD Comment 2.17:

*"Finally, detention system SuDS i.e. detention basins and lined underground attenuation storage structures such as the proposed large structures should only be considered as a last resort where the other SuDS types are not deemed feasible and **as item 2.6 above**."*

PUNCH Response to KCC WSD Comment 2.17:

The proposed drainage and SuDS strategy has been further developed to take account of KCC WSD comments. This information has been included on the SuDS strategy drawings *192229-PUNCH-XX-XX-DR-C-0151 to 0154* accompanying this report.

The recommendation of the UK SuDS Manual CIRIA C753 is that ground water levels should not be within 1m of the base of the unlined attenuation tanks. Site investigations have confirmed that ground water levels are within 1m of the base of all attenuation tanks and as such lined/tanked Stormtech attenuation tanks are proposed. The proposed use of Stormtech attenuation systems will provide enhanced environmental characteristics of the surface water run-off compared to conventional geocelluar storage structures by the filtration of silts and other pollutants; biodegradation of organic pollutants such as petrol and diesel and settlement/retention of solids.

It has not been feasible to utilise detention basins/ponds for attenuation storage. Detention basins/ponds used for surface water storage require a very large footprint area and would by necessity be located within the green/open space areas of the housing. Locating the detention basins/ponds in the green/open spaces would significantly reduce the available amenity area for residents. In addition the flat nature of the site would result in deep detention basins/ponds being required. Their location, in green/open space areas, would pose a potential health and safety risk to vulnerable users such as children. The proposed use of Stormtech attenuation systems will provide enhanced environmental characteristics of the surface water run-off compared to conventional geocelluar storage structures by the filtration of silts and other pollutants; biodegradation of organic pollutants such as petrol and diesel and settlement/retention of solids.

18. *KCC WSD Comment 2.18:*

"A review of the site layout shall be undertaken to ensure maximum provision of SuDS."

PUNCH Response to KCC WSD Comment 2.18:

The proposed drainage and SuDS strategy has been further developed to take account of KCC WSD comments. The provision of SuDS has been maximised. This information has been included on the SuDS strategy drawings *192229-PUNCH-XX-XX-DR-C-0151 to 0154* accompanying this report.

19. *KCC WSD Comment 2.19:*

"Any surface level storage of surface water runoff in SuDS and also access to the site watercourses, open drainage channels including de-culverted pipe work and river Liffey should be subject to a risk assessment especially the risk of young children drowning in even shallow depths of water.

The safety issues raised at EPR section 2.3.4 regarding surface storage can be adequately mitigated in the opinion of WSD with reference to available design guidance especially CIRIA SuDS Manual."

PUNCH Response to KCC WSD Comment 2.19:

The proposed drainage and SuDS strategy has been further developed to take account of KCC WSD comments. This information has been included on the SuDS strategy drawings *192229-PUNCH-XX-XX-DR-C-0151 to 0154* accompanying this report.

The SuDS strategy has been maximised to include swales, soak pits, permeable paving and Stormtech attenuation systems.

It has not been feasible to utilise detention basins/ponds for attenuation storage. Detention basins/ponds used for surface water storage require a very large footprint area and would by necessity be located within the green/open space areas of the housing. Locating the detention basins/ponds in the green/open spaces would significantly reduce the available amenity area for residents. In addition the flat nature of the site would result in deep detention basins/ponds being required. Their location, in green/open space areas, would pose a potential health and safety risk to vulnerable users such as children. The proposed use of Stormtech attenuation systems will provide enhanced environmental characteristics of the surface water run-off compared to conventional geocelluar storage structures by the filtration of silts and other pollutants; biodegradation of organic pollutants such as petrol and diesel and settlement/retention of solids.

Detention ponds were not provided in green open areas, due to the large footprint of the pond would render the open space areas unusable to residents. In addition the depths required would result in very deep ponds which was deemed to be a health and safety issue.

20. KCC WSD Comment 2.20:

"Prior to finalising the alternative drainage and SuDS strategies the applicant shall consult Development Control (also see item 2.30 below), Roads and Parks departments as follows:

2.20.1 regarding future maintenance of drainage and SuDS Including for NSORR and particularly NBS-NWRM SuDS, flow control devices and outfall non-return values where they will be put forward for taking in charge, and

2.20.2 the planting schemes for any NBS-NWRM SuDS shall be agreed with Parks department and

2.20.3 the numbers, size, locations and type of underground attenuation storage structure where they are used and

2.20.4 consider whether separation of the management company-controlled drainage and drainage to be taken in charge (Roads and Development Control departments) is required."

PUNCH Response to KCC WSD Comment 2.20:

The proposed drainage and SuDS strategy has been further developed to take account of KCC WSD comments. This information has been included on the SuDS strategy drawings *192229-PUNCH-XX-XX-DR-C-0151 to 0154* accompanying this report. The drainage design has been undertaken in compliance with the GDSDS and the UK CIRIA C753 SuDS manual 2015 best practice guidelines.

The updated proposals have been discussed/circulated to KCC Roads and Parks Departments and address comments received. The NSORR Roads and Development surface water drainage are on separate drainage systems.

21. KCC WSD Comment 2.21:

"Regarding details of the proposed receiving surface water drainage networks i.e. the existing site watercourses and the river Liffey as follows:

2.21.1 Consent for the applicant to discharge runoff to ***both*** *receiving watercourses and Liffey, and*

2.21.2 Capacity assessment of receiving watercourses to adequately cater for existing flows therein (including existing 1000mm outfall pipe from adjoining Wellesley Manor development as per submitted Engineering Planning Report (EPR) Appendix A) and the restricted discharges from the proposed development, and

2.21.3 Condition assessment of watercourses which identifies any faults therein and which must be remedied to accept runoff from the development, and

2.21.4 Agreed remedial measures to the watercourses including timeframe for delivery thereof and

2.21.5 Maintenance arrangements of the site watercourses to safeguard flow conveyance capacity of the watercourses, which shall be primarily the responsibility of the prospective applicant where no other party is deemed responsible and

2.21.6 Where discharge to the existing watercourses is problematic, consideration of alternatives shall be made."

PUNCH Response to KCC WSD Comment 2.21:

The proposed drainage and SuDS strategy has been further developed to take account of KCC WSD comments.

Inland Fisheries and Waterways Ireland have been notified of the proposals and have made no adverse comments. Any surface water outfalls to the existing watercourses and the River Liffey will be constructed in accordance with Inland Fisheries Ireland "Guidelines on the Protection of Fisheries During Construction Works In and Adjacent to Waters 2016" and take account of any planning conditions attached to this SHD permission

The proposed development has been desgined in accordance with GDSDS which ensures the development does not exceed the pre-development greenfield run-off rate. Thus there is no net increase in surface water flows into the River Liffey or adjoining watercourses.

In addition, JBA Consultants have carried out a Site Specific Flood Risk Assessment, incorporating modelling of the River Liffey, and the associated linked watercourses, and have concluded that the proposed development does not pose an increased risk of flooding.

Refer to the environmental consultant's Construction Management Plan for protection measures proposed to protect the adjoining water courses during construction.

22. KCC WSD Comment 2.22:

"The proposed SuDS shall be designed in accordance with GDSDS and CIRIA SuDS Manual and construction detail drawings of all proposed SuDS features shall be submitted with any planning application.

Permeable paving at roof downpipe outlets should be provided with a diffuser to prevent point loading of run-off and washing out of finer stone base granular material."

PUNCH Response to KCC WSD Comment 2.22:

The proposed drainage and SuDS strategy has been further developed to take account of KCC WSD comments. This information has been included on the SuDS strategy drawings *192229-PUNCH-XX-XX-DR-C-0151 to 0154* accompanying this report. The drainage design has been undertaken in compliance with the GDSDS and the UK CIRIA C753 SuDS manual 2015 best practice guidelines.

The drawings include a detail of a permeable paving roof downpipe outlet with a diffuser to prevent point loading of run-off and washing out of finer stone base granualr material.

23. KCC WSD Comment 2.23:

"SuDS like traditional drainage systems are prone to failure and lack of proper maintenance therefore they should be designed with an appropriate factor of safety, overflows and planned flood routing to green areas, surface water outfalls and away from buildings and strategic roads.

It is noted at submitted EPR Appendix E page 31 that a low design safety of factor for the proposed underground attenuation storage structures has been used."

PUNCH Response to KCC WSD Comment 2.23:

The proposed drainage and SuDS strategy and calculations have been further developed to take account of KCC WSD comments. This information has been included on the SuDS strategy drawings *192229-PUNCH-XX-XX-DR-C-0151 to 0154* accompanying this report. The drainage design has been undertaken in compliance with the GDSDS and the UK CIRIA C753 SuDS manual 2015 best practice guidelines.

Safety factors for the proposed attenuation storage have been increased to a more conservative figure. (Appendix D)

24. KCC WSD Comment 2.24:

"The submitted drainage design details are preliminary in nature and the design submitted with any planning application shall demonstrably comply with GDSDS Volume 2 Chapter 6 Stormwater Drainage design criteria 1-4.

It shall be made clear in the engineering report submitted with any planning application exactly how adequate interception, treatment (criterion 1) and long-term storage (criterion 4) shall be provided."

PUNCH Response to KCC WSD Comment 2.24:

The proposed drainage and SuDS strategy and calculations have been further developed to take account of KCC WSD comments. This information has been included on the SuDS strategy drawings *192229-PUNCH-XX-XX-DR-C-0151 to 0154* and also refer to calculations on interception, treatment and long term storage contained within section 2 of this report.

25. KCC WSD Comment 2.25:

"The relevant site areas for each building element i.e. roads, roofs, footpaths and pavements used in the drainage design and the runoff coefficients applied thereto shall be unambiguous and consistent in the engineering documentation submitted with any planning application.

For example, in the submitted EPR the total site area is given as 25ha (Section Introduction), 17.9ha at Table 2-1 and 17.905ha at Appendix B."

PUNCH Response to KCC WSD Comment 2.25:

The proposed drainage and SuDS strategy and calculations have been further developed to take account of KCC WSD comments. This information has been included on the SuDS strategy drawings *192229-PUNCH-XX-XX-DR-C-0151 to 0154* and the Engineering Planning Report has been updated with consistent site areas and justification for figures used is set out.

26. KCC WSD Comment 2.26:

"Qbar runoff discharge rate shall be calculated in accordance with IH124 (GDSDS drainage design criterion 2). The total controlled outflow of 113.8 l/s appears unduly large even for a large site such as the subject site and the SOIL Type value shall consider the outcome of the site Investigation exercise. The position of the flow control manhole at proposed attenuation tank #3 shall be reviewed.

The two Qbar calculations at EPR Appendix B shall be explained (NSORR and mixed use development?) and the discrepancies and omissions in flow control manholes in EPR Appendix E and the submitted drainage layout drawings shall be rectified in any planning application."

PUNCH Response to KCC WSD Comment 2.26:

The proposed drainage and SuDS strategy and calculations have been further developed to take account of KCC WSD comments. This information has been included on the SuDS strategy drawings *192229-PUNCH-XX-XX-DR-C-0151 to 0154* and the Engineering Planning Report. Further to receipt of final site investigation results a revised Qbar has been calculated using the IH124 method. Updated Qbar calculations are included in Appendix B of this Engineering Planning Report.

27. *KCC WSD Comment 2.27:*

*"Attenuation storage volume design calculations for 100 year storm event plus **20% climate change factor** (10% In submitted EPR section 2.2.2 and Appendix E) using the appropriate soil infiltration rate where runoff discharge is to ground or the Qbar restricted discharge rate where runoff is discharged to a pipe network or watercourse.*

As per Items 2.22 and 2.23 above, overflows should be provided from attenuation storage SuDS with flow control manholes where deemed necessary.

The proposed provision of 'additional storage' in secondary drainage elements shall be reviewed (EPR section 2.2.2)."

PUNCH Response to KCC WSD Comment 2.27:

The proposed drainage and SuDS strategy and calculations have been further developed to take account of KCC WSD comments. This information has been included on the SuDS strategy drawings *192229-PUNCH-XX-XX-DR-C-0151 to 0154* and Section 2 of this Engineering Planning Report.

Calculations have been updated to show attenuation storage volume design calculations for the 100-year event with 20% additional allowance for climate change, with discharge flows limited to Qbar.

SuDS system include overflow where appropriate such as in soakways and permeable paving systems.

A more conservative additional storage of 20 l/ha has been used in the updated calculations. Note this is a conservative approach as additional storage volumes in places such as gullies, inspections chambers etc. are not taken account of in the model's analysis.

28. *KCC WSD Comment 2.28:*

*"The drainage pipe network simulations (EPR Appendix E) submitted with any planning application shall use a **20% climate change factor**."*

PUNCH Response to KCC WSD Comment 2.28:

The proposed drainage and SuDS strategy and calculations have been further developed to take account of KCC WSD comments. This information has been included on the SuDS strategy drawings 192229-PUNCH-XX-XX-DR-C-0151 to 0154.

The calculations included an updated "20% climate change factor" in the stormwater drainage network simulations.

29. KCC WSD Comment 2.29:

"GDSDS sustainability design principle precludes unduly large pipes and the pipe sizes for pipe sections 9.004, 11.001, 11.003-5, 12.000, 13.001, 17.000-1, 17.013, 18.000-1, 22.001-3, 23.000-5, 28.004, 34.007 (EPR Appendix E) shall be considered for reduction in size.

Pipe section 1.007 should be considered for a diameter Increase to ensure adequate hydraulic flow capacity is available.

The predicted super-capacity flows at pipe sections 1.014-16, 24.007-12, 36.007 and zero flows and proportional velocities at pipe sections 5.000, 5.001, 8.000 etc. shall be clarified.

The drainage pipe network sections 23.000-3 do not correspond to the submitted drainage layout drawing.

Proportional flow velocities less than the minimum permitted self-cleansing velocity of 0.75 mps at pipe sections 5.002, 6.000 and 7.000 etc. shall be reviewed.

Pipe section 11.001 should be reduced below 90m length."

PUNCH Response to KCC WSD Comment 2.29:

The proposed drainage and SuDS strategy and calculations have been further developed to take account of KCC WSD comments. This information has been included on the SuDS strategy drawings *192229-PUNCH-XX-XX-DR-C-0151 to 0154* and Section 2 of this Engineering Planning Report.

The pipe sizes have been reviewed and updated throughout. Pipes have been designed to accommodate the required flows, minimum gradients, minimum velocities for self-cleansing, and vertical separation from other pipes.

30. KCC WSD Comment 2.30:

"Unduly shallow and deep sections of pipe should be avoided with unavoidable shallow sections being appropriately protected to prevent damage.

Deep pipe sections and manholes especially adjacent to houses may preclude individual house connections to the collecting sewer pipe but where necessary deep manholes shall be wide enough and have required safety features to facilitate safe access by operatives.

Adequate vertical separation shall be provided between services especially surface water and foul water pipes where they intersect.

The longitudinal section drawings submitted with any planning application shall be clearly legible and include SuDS Including any underground attenuation storage facilities.

The prospective applicant shall consult the Development Control department on these issues prior to finalising the drainage design to be submitted with any planning application."

PUNCH Response to KCC WSD Comment 2.30:

The proposed drainage and SuDS strategy and calculations have been further developed to take account of KCC WSD comments. This information has been included on the SuDS strategy drawings *192229-PUNCH-XX-XX-DR-C-0151 to 0154* and Section 2 of this Engineering Planning Report. The drawings and report include the following:

- Pipes with reduced cover will be protected with a concrete surround
- Deep pipes and manholes have been reduced as far as possible. Where required, they will be constructed to ensure safe access for maintenance can be achieved.
- 300mm vertical separation has been achieved between foul and stormwater drainage lines where they cross.
- Longitudinal sections include attenuation storage facilities

31. KCC WSD Comment 2.31:

"It appears from the submitted documentation that there are no basements in proposed development including in apartment blocks A, B and C."

PUNCH Response to KCC WSD Comment 2.31:

The proposed drainage and SuDS strategy and calculations have been further developed to take account of KCC WSD comments. This information has been included on the SuDS strategy drawings *192229-PUNCH-XX-XX-DR-C-0151 to 0154* and Section 2 of this Engineering Planning Report. Note there are no basements in the proposed development.

Flood Risk:

Note: Refer to JBA Consulting Engineers for all Site Specific Flood Risk Assessment/Modelling responses. PUNCH response below addresses any specific surface water drainage queries raised in relation to flood risk.

1. KCC WSD Comment 2.32.4.2 and 2.32.4.3

*"2.32.4.2 Compliance with GDSDS Stormwater Drainage Design Criterion 3 Site Flooding Level of Service for the **proposed** drainage systems based on the **revised drainage and SuDS strategies and designs** that emerge from the review to be carried out as outlined at section 2 above shall be demonstrated by submission of **separate** 30 and 100 year event plus **20% climate change factor** pipe network simulations covering event durations up to 10,080 minutes and FFLs shall have a minimum freeboard of 500mm above the top water level in the drainage systems including pipe network and attenuation storage for the 100 year event plus 20% event.*

2.32.4.3 Where planned overspills occur from the drainage system for storm events greater than the climate change adjusted 30 year event, the flow routing shall be directed towards safe areas e.g. surface water outfalls and open spaces and away from other adjacent properties and roads and the flow routing shall not be obstructed."

PUNCH Response to KCC WSD Comment 2.32.4:

The proposed drainage and SuDS strategy and calculations have been further developed to take account of KCC WSD comments. This information has been included on the SuDS strategy drawings *192229-PUNCH-XX-XX-DR-C-0151 to 0154* and Section 2 of this Engineering Planning Report.

Causeway Flow calculations have been prepared for the stormwater drainage network for 30 year and 100-year rainfall events with a 20% climate change allowance for event durations up to 10,080 minutes.

In accordance with GDSDS Criterion 3 Level of service (flooding) for the site, the finish floor levels are at least 500mm above the maximum river level and adjacent on-site attenuation storage for the 100 year plus 20% event.

Modelling has determined overspills are not occurring from the drainage system for storm events greater than the 20% climate change adjusted 30 year or 100 year events.

2. *KCC WSD Comment 2.35:*

"The prospective applicant should have regard to pre-planning meeting details, previous planning decisions and Irish Water and KCC WSD reports and conditions on the subject and adjacent sites, including the adjacent Ardstone-Glenveagh SHD."

PUNCH Response to KCC WSD Comment 2.35:

The proposed drainage and SuDS strategy and calculations have been further developed to take account of KCC WSD comments. This information has been included on the SuDS strategy drawings 192229-PUNCH-XX-XX-DR-C-0151 to 0154 and Section 2 of this Engineering Planning Report.

The final design has regard to pre-planning meeting details, previous planning decision and Irish Water and KCC WSD reports and conditions on the subject and adjacent sites including the adjacent Ardstone-Glenveagh SHD.

7.3 Irish Water – Ref CDS20007443

7.3.1 In respect to Wastewater

IW – Waste Water Item 1:

"A connection to service this development proposal must be made to the new 900mm sewer traversing the proposed site. The newly constructed 600mm pumped rising main-900mm gravity Newbridge Eastern Interceptor Sewer which traverses the subject site west-east shall be provided with a suitable wayleave to IW specific requirements."

PUNCH Response to IW – Waste Water Item 1:

As outlined in Section 3 of this Engineering Planning Report, it is proposed to connect the development to the 900mm gravity Newbridge Easter Interceptor Sewer at the locations indicated on the drawings accompanying this SHD application. The Irish Water wayleave for this 600mm diam. rising main/900mm diam. gravity sewer is indicated on the submitted drawings and the scheme is set back from the wayleave in accordance with Irish Water Wastewater Code of Practice (Document IW-CDS-5030-03) requirements. We are in receipt of the Irish Water Statement of Design Acceptance (CDS20007443) for the proposed scheme. Post receipt of grant of Planning Permission via the SHD process it is intended to submit a Connection Application to Irish Water.

IW – Waste Water Item 2:

"The applicant has engaged with Irish Water in relation to a proposed diversion (DIV21230) of the existing 450mm Kilcullen-Athgarvan sewer which traverses the subject site south-north which shall also be provided with a wayleave. This assessment is currently ongoing and further information has been requested including calculations to ensure that the diversion route will maintain self-cleansing conditions. The applicant is required to continue to engage with Irish Water Diversions to confirm feasibility of assessment of any potential diversion(s) prior to progressing to SHD application."

PUNCH Response to IW – Waste Water Item 2:

The requested additional information has been submitted to Irish Water in support of the Diversion application. The information demonstrates compliance with Irish Water Wastewater Code of Practice (Document IW-CDS-5030-03) and includes details of the wayleave and calculations demonstrating self-cleansing conditions are met. We are in receipt of the Irish Water Diversion Confirmation of Feasiblity letter (DIV21230) for the proposed diversion.

IW – Waste Water Item 3:

"The need for the proposed site wastewater pump station (WWPS) will be agreed with IW as part of any connection agreement as it may be feasible to serve the development by gravity connection given the sites adjacency to a new IW public new sewerage system i.e. 900mm diameter gravity sewer"

PUNCH Response to IW – Waste Water Item 3:

The proposed site wastewater pumping station is required for the western section of the proposed development in order to comply with the requirements of the Irish Water Wastewater Code of Practice (Document IW-CDS-5030-03 dated July 2020) and in particular, minimum gradients, self-cleansing velocities and minimum vertical clearance between services.

A gravity connection for the entire development was asssessed in detail in the process of preparing the foul drainage design with the aim of avoiding the use of an onsite WWPS. However, to achieve Irish Water's minimum design requirements including minimum gradients, self-cleansing velocities and minimum vertical clearance between services, a WWPS is therefore required for western section of the development. Irish Water have provided a Statement of Design Acceptence (CDS20007443) on the basis of this design.

7.3.2 In respect to Water

IW - Water Item 1:

"Connection is feasible to the existing 300mm DI main. A new connection main has to be a 200mm ID pipe. A bulk meter is to be installed on the connection main, meter to be connected to telemetry online"

PUNCH Response to IW –Water Item 1:

As outlined in Section 4 of the report and as indicated on the drawings accompanying this SHD application it is proposed to serve this SHD development via a 200mm ID connection off the existing 300mm watermain on Great Connell Road together with a bulk meter at the take-off point to Irish Water standard details.

7.3.3 IW Planning Observations:

"Connection(s) to the public network are subject to a Connection Agreement with Irish Water.

All development is to be carried out in compliance with Irish Waters Standards Codes and Practices and that design layouts for the development proposal, within the redline boundary have been submitted to Irish Water and that a Statement of Design Acceptance has been issued to the applicant by Irish Water ahead of any SHD Application.

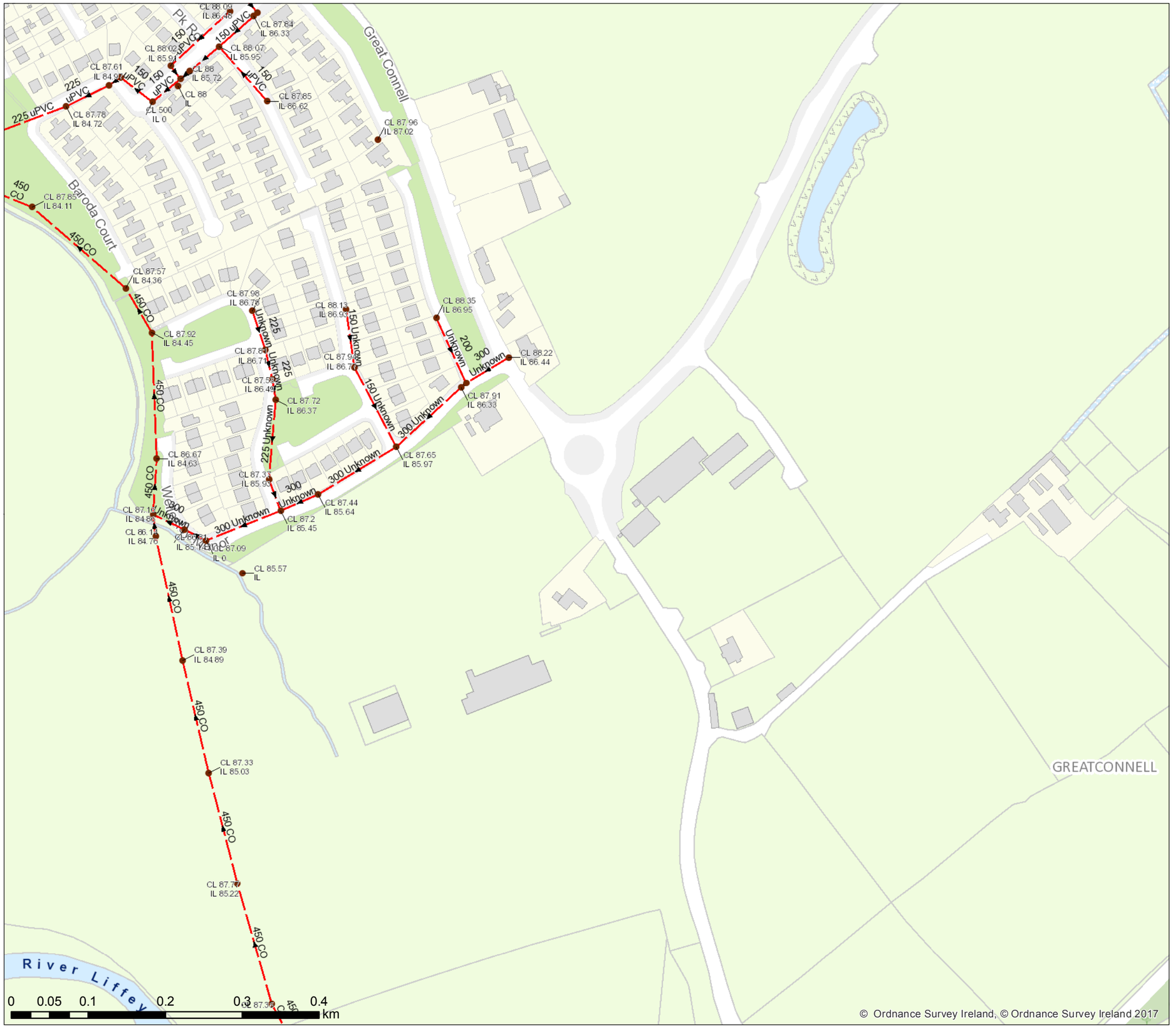
Irish Water does not permit build over of its assets and the separation distances as per Irish Waters Standards Codes and Practices which must be achieved. The applicant has engaged with Irish Waters Diversions in order to ensure appropriate and access to existing infrastructure(s) to agree to assess feasibility of any potential build over/diversion(s) which may be required, separation distances, appropriate wayleaves and or access ahead of any SHD application."

PUNCH Response to IW Planning Observations:

Noted. Drawings submitted to Irish Water and accompanying this SHD application include wayleaves and separation distances in compliance with Irish Water Stand Details and Codes of Practice.

Appendix A Existing Record Drawings

Irish Water Web Map



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Service connection pipes are not generally shown but their presence should be anticipated.

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Water Distribution Network
- Water Treatment Plant
- Water Pump Station
- Storage Cell/Tower
- Dosing Point
- Meter Station
- Abstraction Point
- Telemetry Kiosk

Reservoir
- Potable
- Raw Water

Water Distribution Mains
- Irish Water
- Private

Trunk Water Mains
- Irish Water
- Private

Water Lateral Lines
- Irish Water
- Non IW
- Water Casings
- Water Abandoned Lines
- Boundary Meter
- Bulk/Check Meter
- Group Scheme
- Source Meter
- Waste Meter
- Unknown Meter ; Other Meter
- Non-Return
- PRV
- PSV
- Sluice Line Valve Open/Closed
- Butterfly Line Valve Open/Closed
- Sluice Boundary Valve Open/Closed
- Butterfly Boundary Valve Open/Closed
- Scour Valves
- Single Air Control Valve
- Double Air Control Valve
- Water Stop Valves
- Water Service Connections
- Water Distribution Chambers
- Water Network Junctions
- Pressure Monitoring Point
- Fire Hydrant
- Fire Hydrant/Washout

Water Fittings
- Cap
- Reducer
- Tap
- Other Fittings

Sewer Foul Combined Network
- Waste Water Treatment Plant
- Waste Water Pump station

Sewer Mains Irish Water
- Gravity - Combined
- Gravity - Foul
- Gravity - Unknown
- Pumping - Combined
- Pumping - Foul
- Pumping - Unknown
- Syphon - Combined
- Syphon - Foul
- Overflow

Sewer Mains Private
- Gravity - Combined
- Gravity - Foul
- Gravity - Unknown
- Pumping - Combined
- Pumping - Foul
- Pumping - Unknown
- Syphon - Combined
- Syphon - Foul
- Overflow
- Sewer Lateral Lines
- Sewer Casings

Sewer Manholes
- Standard
- Backdrop
- Cascade
- Catchpit
- Bifurcation
- Hatchbox
- Lamphole
- Hydrobrake
- Other; Unknown

Discharge Type
- Outfall
- Overflow
- Soakaway
- Standard Outlet
- Other; Unknown

Cleanout Type
- Rodding Eye
- Flushing Structure
- Other; Unknown

Sewer Inlets
- Catchpit
- Gully
- Standard
- Other; Unknown

Sewer Fittings
- Vent/Col
- Other; Unknown

Storm Water Network

Surface Water Mains
- Surface Gravity Mains
- Surface Gravity Mains Private
- Surface Water Pressurised Mains
- Surface Water Pressurised Mains Private

Inlet Type
- Gully
- Standard
- Other; Unknown

Storm Manholes
- Standard
- Backdrop
- Cascade
- Catchpit
- Bifurcation
- Hatchbox
- Lamphole
- Hydrobrake
- Other; Unknown
- Storm Culverts
- Storm Clean Outs
- Stormwater Chambers

Discharge Type
- Outfall
- Overflow
- Soakaway
- Other; Unknown

Gas Networks Ireland
- Transmission High Pressure Gasline
- Distribution Medium Pressure Gasline
- Distribution Low Pressure Gasline

ESB Networks

ESB HV Lines
- HV Underground
- HV Overhead
- HV Abandoned

ESB MVLV Lines
- MV Overhead Three Phase
- MV Overhead Single Phase
- LV Overhead Three Phase
- LV Overhead Single Phase
- MVLV Underground
- Abandoned

Non Service Categories
- Proposed
- Under Construction
- Out of Service
- Decommissioned

Water Non Service Assets
- Water Point Feature
- Water Pipe
- Water Structure

Waste Non Service Assets
- Waste Point Feature
- Sewer
- Waste Structure

Irish Water Web Map

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- Irish Water
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Water Lateral Lines
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- Water Distribution Chambers
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- Pumping - Combined
- Pumping - Foul
- Pumping - Unknown
- Syphon - Combined
- Syphon - Foul
- Overflow
- Sewer Lateral Lines
- Sewer Casings

Sewer Manholes
- Standard
- Backdrop
- Cascade
- Catchpit
- Bifurcation
- Hatchbox
- Lamphole
- Hydrobrake
- Other; Unknown

Discharge Type
- Outfall
- Overflow
- Soakaway
- Standard Outlet
- Other; Unknown

Cleanout Type
- Rodding Eye
- Flushing Structure
- Other; Unknown

Sewer Inlets
- Catchpit
- Gully
- Standard
- Other; Unknown

Sewer Fittings
- Vent/Col
- Other; Unknown

Storm Water Network

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- Surface Gravity Mains
- Surface Gravity Mains Private
- Surface Water Pressurised Mains
- Surface Water Pressurised Mains Private

Inlet Type
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- Abandoned

Non Service Categories
- Proposed
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- Decommissioned

Water Non Service Assets
- Water Point Feature
- Water Pipe
- Water Structure

Waste Non Service Assets
- Waste Point Feature
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Irish Water Web Map

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- Overflow
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- Sewer Casings

Sewer Manholes
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- Backdrop
- Cascade
- Catchpit
- Bifurcation
- Hatchbox
- Lamphole
- Hydrobrake
- Other; Unknown

Discharge Type
- Outfall
- Overflow
- Soakaway
- Standard Outlet
- Other; Unknown

Cleanout Type
- Rodding Eye
- Flushing Structure
- Other; Unknown

Sewer Inlets
- Catchpit
- Gully
- Standard
- Other; Unknown

Sewer Fittings
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- Other; Unknown

Storm Water Network

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- Surface Gravity Mains Private
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- Surface Water Pressurised Mains Private

Inlet Type
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- Other; Unknown

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Non Service Categories
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Water Non Service Assets
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- Water Structure

Waste Non Service Assets
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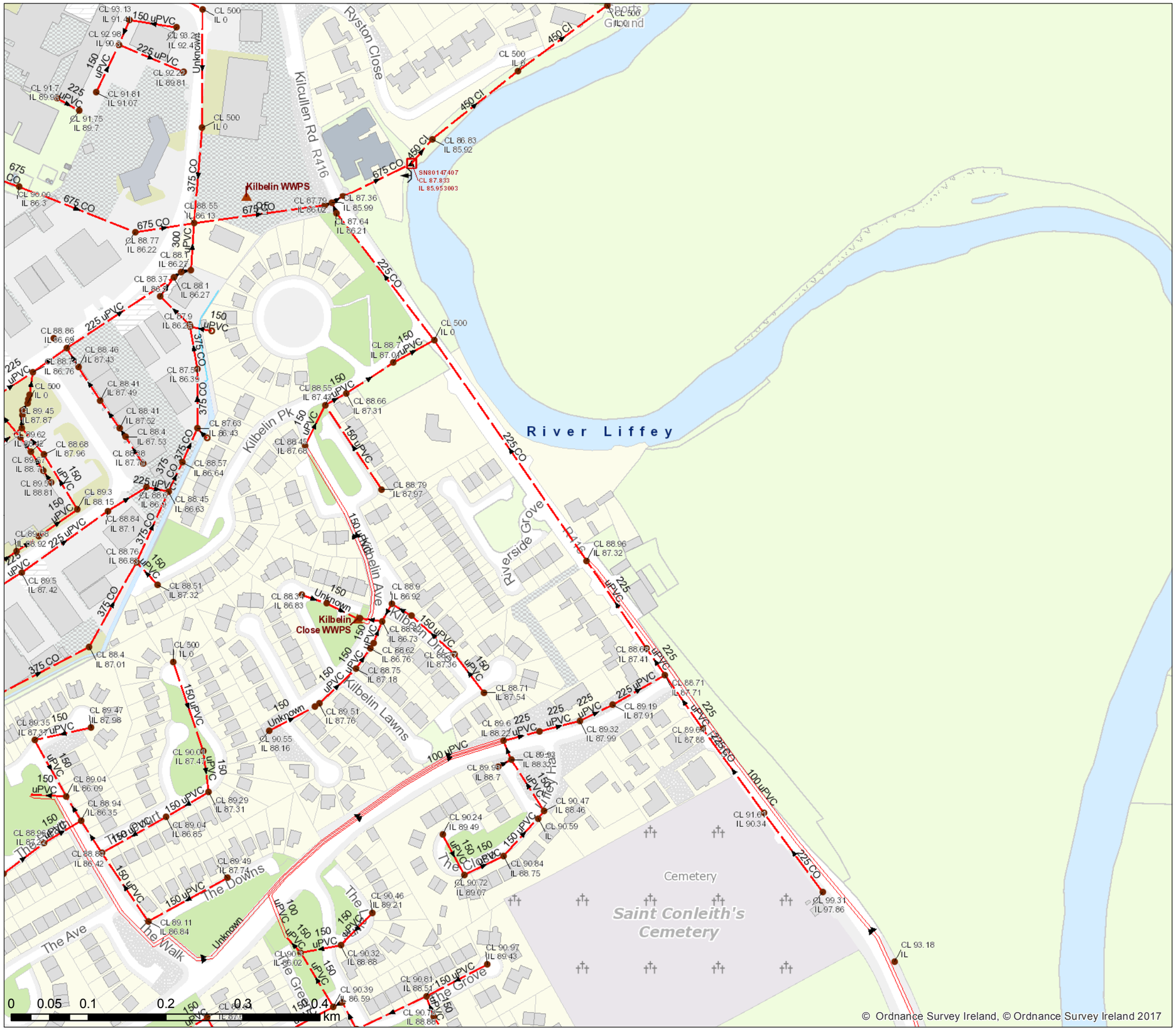
- Sewer
- Waste Structure

Irish Water Web Map



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- Water Pump Station
- Storage Cell/Tower
- Dosing Point
- Meter Station
- Abstraction Point
- Telemetry Kiosk

Reservoir
- Potable
- Raw Water

Water Distribution Mains
- Irish Water
- Private

Trunk Water Mains
- Irish Water
- Private

Water Lateral Lines
- Irish Water
- Non IW
- Water Casings
- Water Abandoned Lines
- Boundary Meter
- Bulk/Check Meter
- Group Scheme
- Source Meter
- Waste Meter
- Unknown Meter ; Other Meter
- Non-Return
- PRV
- PSV
- Sluice Line Valve Open/Closed
- Butterfly Line Valve Open/Closed
- Sluice Boundary Valve Open/Closed
- Butterfly Boundary Valve Open/Closed
- Scour Valves
- Single Air Control Valve
- Double Air Control Valve
- Water Stop Valves
- Water Service Connections
- Water Distribution Chambers
- Water Network Junctions
- Pressure Monitoring Point
- Fire Hydrant
- Fire Hydrant/Washout

Water Fittings
- Cap
- Reducer
- Tap
- Other Fittings

Sewer Foul Combined Network
- Waste Water Treatment Plant
- Waste Water Pump station

Sewer Mains Irish Water
- Gravity - Combined
- Gravity - Foul
- Gravity - Unknown
- Pumping - Combined
- Pumping - Foul
- Pumping - Unknown
- Syphon - Combined
- Syphon - Foul
- Overflow

Sewer Mains Private
- Gravity - Combined
- Gravity - Foul
- Gravity - Unknown
- Pumping - Combined
- Pumping - Foul
- Pumping - Unknown
- Syphon - Combined
- Syphon - Foul
- Overflow
- Sewer Lateral Lines
- Sewer Casings

Sewer Manholes
- Standard
- Backdrop
- Cascade
- Catchpit
- Bifurcation
- Hatchbox
- Lamphole
- Hydrobrake
- Other; Unknown

Discharge Type
- Outfall
- Overflow
- Soakaway
- Standard Outlet
- Other; Unknown

Cleanout Type
- Rodding Eye
- Flushing Structure
- Other; Unknown

Sewer Inlets
- Catchpit
- Gully
- Standard
- Other; Unknown

Sewer Fittings
- Vent/Col
- Other; Unknown

Storm Water Network

Surface Water Mains
- Surface Gravity Mains
- Surface Gravity Mains Private
- Surface Water Pressurised Mains
- Surface Water Pressurised Mains Private

Inlet Type
- Gully
- Standard
- Other; Unknown

Storm Manholes
- Standard
- Backdrop
- Cascade
- Catchpit
- Bifurcation
- Hatchbox
- Lamphole
- Hydrobrake
- Other; Unknown

Storm Culverts
- Storm Clean Outs
- Stormwater Chambers

Discharge Type
- Outfall
- Overflow
- Soakaway
- Other; Unknown

Gas Networks Ireland
- Transmission High Pressure Gasline
- Distribution Medium Pressure Gasline
- Distribution Low Pressure Gasline

ESB Networks

ESB HV Lines
- HV Underground
- HV Overhead
- HV Abandoned

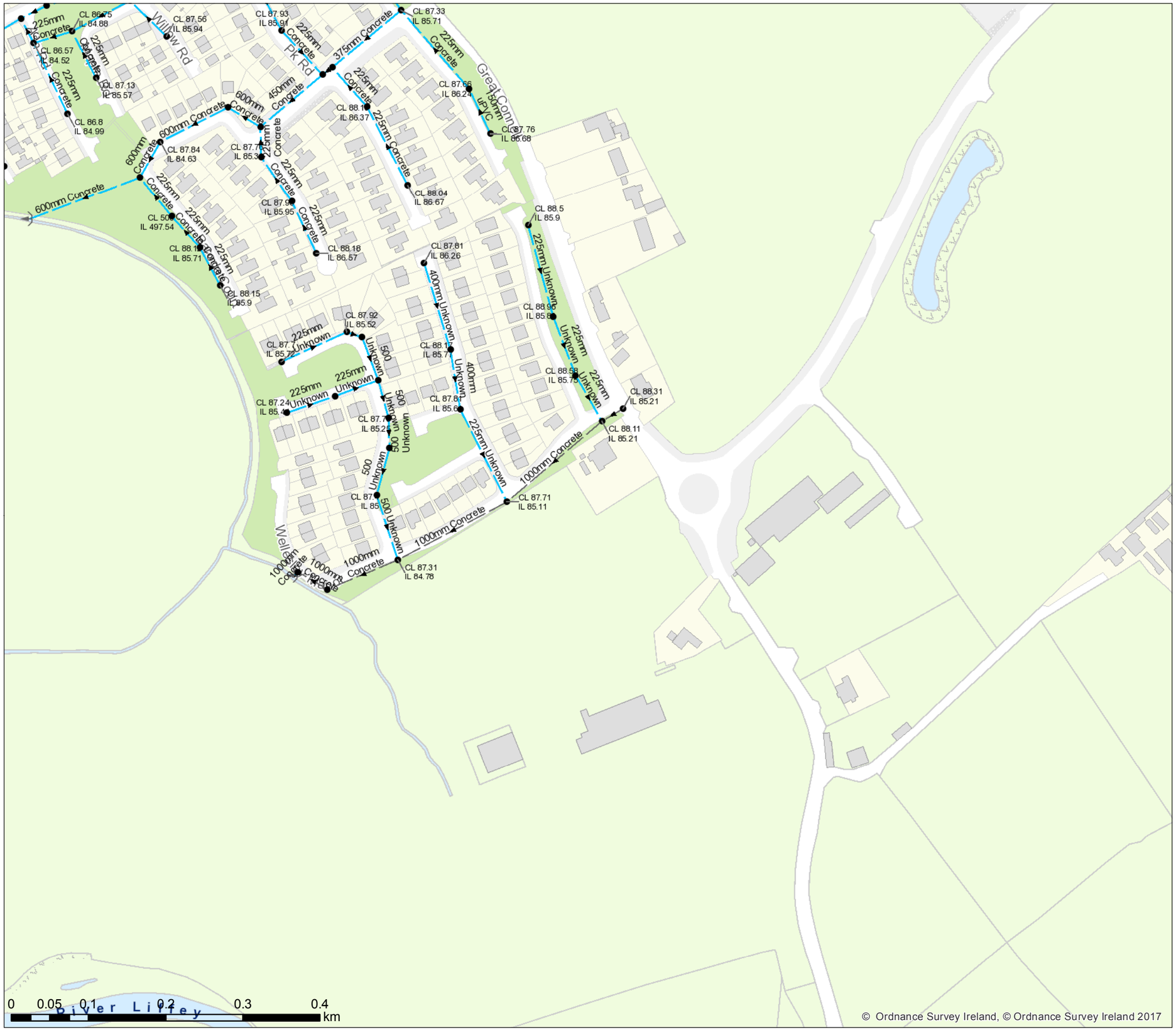
ESB MVLV Lines
- MV Overhead Three Phase
- MV Overhead Single Phase
- LV Overhead Three Phase
- LV Overhead Single Phase
- MVLV Underground
- Abandoned

Non Service Categories
- Proposed
- Under Construction
- Out of Service
- Decommissioned

Water Non Service Assets
- Water Point Feature
- Water Pipe
- Water Structure

Waste Non Service Assets
- Waste Point Feature
- Sewer
- Waste Structure

Irish Water Web Map



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Water Distribution Network
- Water Treatment Plant
- Water Pump Station
- Storage Cell/Tower
- Dosing Point
- Meter Station
- Abstraction Point
- Telemetry Kiosk

Reservoir
- Potable
- Raw Water

Water Distribution Mains
- Irish Water
- Private

Trunk Water Mains
- Irish Water
- Private

Water Lateral Lines
- Irish Water
- Non IW
- Water Casings
- Water Abandoned Lines
- Boundary Meter
- Bulk/Check Meter
- Group Scheme
- Source Meter
- Waste Meter
- Unknown Meter ; Other Meter
- Non-Return
- PRV
- PSV
- Sluice Line Valve Open/Closed
- Butterfly Line Valve Open/Closed
- Sluice Boundary Valve Open/Closed
- Butterfly Boundary Valve Open/Closed
- Scour Valves
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- Double Air Control Valve
- Water Stop Valves
- Water Service Connections
- Water Distribution Chambers
- Water Network Junctions
- Pressure Monitoring Point
- Fire Hydrant
- Fire Hydrant/Washout

Water Fittings
- Cap
- Reducer
- Tap
- Other Fittings

Sewer Foul Combined Network
- Waste Water Treatment Plant
- Waste Water Pump station

Sewer Mains Irish Water
- Gravity - Combined
- Gravity - Foul
- Gravity - Unknown
- Pumping - Combined
- Pumping - Foul
- Pumping - Unknown
- Syphon - Combined
- Syphon - Foul
- Overflow

Sewer Mains Private
- Gravity - Combined
- Gravity - Foul
- Gravity - Unknown
- Pumping - Combined
- Pumping - Foul
- Pumping - Unknown
- Syphon - Combined
- Syphon - Foul
- Overflow
- Sewer Lateral Lines
- Sewer Casings

Sewer Manholes
- Standard
- Backdrop
- Cascade
- Catchpit
- Bifurcation
- Hatchbox
- Lamphole
- Hydrobrake
- Other; Unknown

Discharge Type
- Outfall
- Overflow
- Soakaway
- Standard Outlet
- Other; Unknown

Cleanout Type
- Rodding Eye
- Flushing Structure
- Other; Unknown

Sewer Inlets
- Catchpit
- Gully
- Standard
- Other; Unknown

Sewer Fittings
- Vent/Col
- Other; Unknown

Storm Water Network

Surface Water Mains
- Surface Gravity Mains
- Surface Gravity Mains Private
- Surface Water Pressurised Mains
- Surface Water Pressurised Mains Private

Inlet Type
- Gully
- Standard
- Other; Unknown

Storm Manholes
- Standard
- Backdrop
- Cascade
- Catchpit
- Bifurcation
- Hatchbox
- Lamphole
- Hydrobrake
- Other; Unknown
- Storm Culverts
- Storm Clean Outs
- Stormwater Chambers

Discharge Type
- Outfall
- Overflow
- Soakaway
- Other; Unknown

Gas Networks Ireland
- Transmission High Pressure Gasline
- Distribution Medium Pressure Gasline
- Distribution Low Pressure Gasline

ESB Networks

ESB HV Lines
- HV Underground
- HV Overhead
- HV Abandoned

ESB MVLV Lines
- MV Overhead Three Phase
- MV Overhead Single Phase
- LV Overhead Three Phase
- LV Overhead Single Phase
- MVLV Underground
- Abandoned

Non Service Categories
- Proposed
- Under Construction
- Out of Service
- Decommissioned

Water Non Service Assets
- Water Point Feature
- Water Pipe
- Water Structure

Waste Non Service Assets
- Waste Point Feature
- Sewer
- Waste Structure

Irish Water Web Map

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Water Distribution Network
- Water Treatment Plant
- Water Pump Station
- Storage Cell/Tower
- Dosing Point
- Meter Station
- Abstraction Point
- Telemetry Kiosk

Reservoir
- Potable
- Raw Water

Water Distribution Mains
- Irish Water
- Private

Trunk Water Mains
- Irish Water
- Private

Water Lateral Lines
- Irish Water
- Non IW
- Water Casings
- Water Abandoned Lines
- Boundary Meter
- Bulk/Check Meter
- Group Scheme
- Source Meter
- Waste Meter
- Unknown Meter ; Other Meter
- Non-Return
- PRV
- PSV
- Sluice Line Valve Open/Closed
- Butterfly Line Valve Open/Closed
- Sluice Boundary Valve Open/Closed
- Butterfly Boundary Valve Open/Closed
- Scour Valves
- Single Air Control Valve
- Double Air Control Valve
- Water Stop Valves
- Water Service Connections
- Water Distribution Chambers
- Water Network Junctions
- Pressure Monitoring Point
- Fire Hydrant
- Fire Hydrant/Washout

Water Fittings
- Cap
- Reducer
- Tap
- Other Fittings

Sewer Foul Combined Network
- Waste Water Treatment Plant
- Waste Water Pump station

Sewer Mains Irish Water
- Gravity - Combined
- Gravity - Foul
- Gravity - Unknown
- Pumping - Combined
- Pumping - Foul
- Pumping - Unknown
- Syphon - Combined
- Syphon - Foul
- Overflow

Sewer Mains Private
- Gravity - Combined
- Gravity - Foul
- Gravity - Unknown
- Pumping - Combined
- Pumping - Foul
- Pumping - Unknown
- Syphon - Combined
- Syphon - Foul
- Overflow
- Sewer Lateral Lines
- Sewer Casings

Sewer Manholes
- Standard
- Backdrop
- Cascade
- Catchpit
- Bifurcation
- Hatchbox
- Lamphole
- Hydrobrake
- Other; Unknown

Discharge Type
- Outfall
- Overflow
- Soakaway
- Standard Outlet
- Other; Unknown

Cleanout Type
- Rodding Eye
- Flushing Structure
- Other; Unknown

Sewer Inlets
- Catchpit
- Gully
- Standard
- Other; Unknown

Sewer Fittings
- Vent/Col
- Other; Unknown

Storm Water Network

Surface Water Mains
- Surface Gravity Mains
- Surface Gravity Mains Private
- Surface Water Pressurised Mains
- Surface Water Pressurised Mains Private

Inlet Type
- Gully
- Standard
- Other; Unknown

Storm Manholes
- Standard
- Backdrop
- Cascade
- Catchpit
- Bifurcation
- Hatchbox
- Lamphole
- Hydrobrake
- Other; Unknown
- Storm Culverts
- Storm Clean Outs
- Stormwater Chambers

Discharge Type
- Outfall
- Overflow
- Soakaway
- Other; Unknown

Gas Networks Ireland
- Transmission High Pressure Gasline
- Distribution Medium Pressure Gasline
- Distribution Low Pressure Gasline

ESB Networks

ESB HV Lines
- HV Underground
- HV Overhead
- HV Abandoned

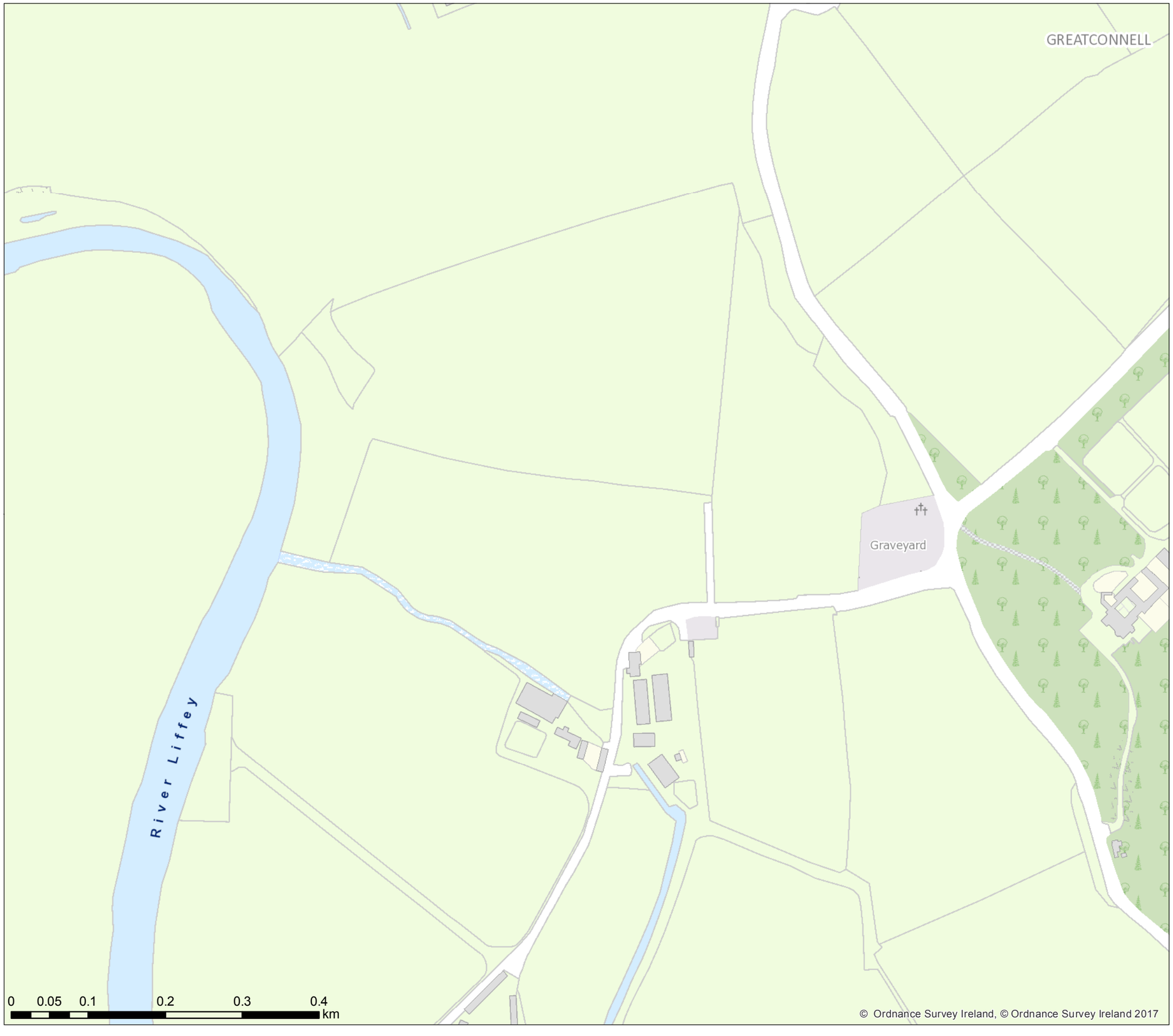
ESB MVLV Lines
- MV Overhead Three Phase
- MV Overhead Single Phase
- LV Overhead Three Phase
- LV Overhead Single Phase
- MVLV Underground
- Abandoned

Non Service Categories
- Proposed
- Under Construction
- Out of Service
- Decommissioned

Water Non Service Assets
- Water Point Feature
- Water Pipe
- Water Structure

Waste Non Service Assets
- Waste Point Feature
- Sewer
- Waste Structure

Irish Water Web Map



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Water Distribution Network
- Water Treatment Plant
- Water Pump Station
- Storage Cell/Tower
- Dosing Point
- Meter Station
- Abstraction Point
- Telemetry Kiosk

Reservoir
- Potable
- Raw Water

Water Distribution Mains
- Irish Water
- Private

Trunk Water Mains
- Irish Water
- Private

Water Lateral Lines
- Irish Water
- Non IW
- Water Casings
- Water Abandoned Lines
- Boundary Meter
- Bulk/Check Meter
- Group Scheme
- Source Meter
- Waste Meter
- Unknown Meter ; Other Meter
- Non-Return
- PRV
- PSV
- Sluice Line Valve Open/Closed
- Butterfly Line Valve Open/Closed
- Sluice Boundary Valve Open/Closed
- Butterfly Boundary Valve Open/Closed
- Scour Valves
- Single Air Control Valve
- Double Air Control Valve
- Water Stop Valves
- Water Service Connections
- Water Distribution Chambers
- Water Network Junctions
- Pressure Monitoring Point
- Fire Hydrant
- Fire Hydrant/Washout

Water Fittings
- Cap
- Reducer
- Tap
- Other Fittings

Sewer Foul Combined Network
- Waste Water Treatment Plant
- Waste Water Pump station

Sewer Mains Irish Water
- Gravity - Combined
- Gravity - Foul
- Gravity - Unknown
- Pumping - Combined
- Pumping - Foul
- Pumping - Unknown
- Syphon - Combined
- Syphon - Foul
- Overflow

Sewer Mains Private
- Gravity - Combined
- Gravity - Foul
- Gravity - Unknown
- Pumping - Combined
- Pumping - Foul
- Pumping - Unknown
- Syphon - Combined
- Syphon - Foul
- Overflow
- Sewer Lateral Lines
- Sewer Casings

Sewer Manholes
- Standard
- Backdrop
- Cascade
- Catchpit
- Bifurcation
- Hatchbox
- Lamphole
- Hydrobrake
- Other; Unknown

Discharge Type
- Outfall
- Overflow
- Soakaway
- Standard Outlet
- Other; Unknown

Cleanout Type
- Rodding Eye
- Flushing Structure
- Other; Unknown

Sewer Inlets
- Catchpit
- Gully
- Standard
- Other; Unknown

Sewer Fittings
- Vent/Col
- Other; Unknown

Storm Water Network

Surface Water Mains
- Surface Gravity Mains
- Surface Gravity Mains Private
- Surface Water Pressurised Mains
- Surface Water Pressurised Mains Private

Inlet Type
- Gully
- Standard
- Other; Unknown

Storm Manholes
- Standard
- Backdrop
- Cascade
- Catchpit
- Bifurcation
- Hatchbox
- Lamphole
- Hydrobrake
- Other; Unknown
- Storm Culverts
- Storm Clean Outs
- Stormwater Chambers

Discharge Type
- Outfall
- Overflow
- Soakaway
- Other; Unknown

Gas Networks Ireland
- Transmission High Pressure Gasline
- Distribution Medium Pressure Gasline
- Distribution Low Pressure Gasline

ESB Networks

ESB HV Lines
- HV Underground
- HV Overhead
- HV Abandoned

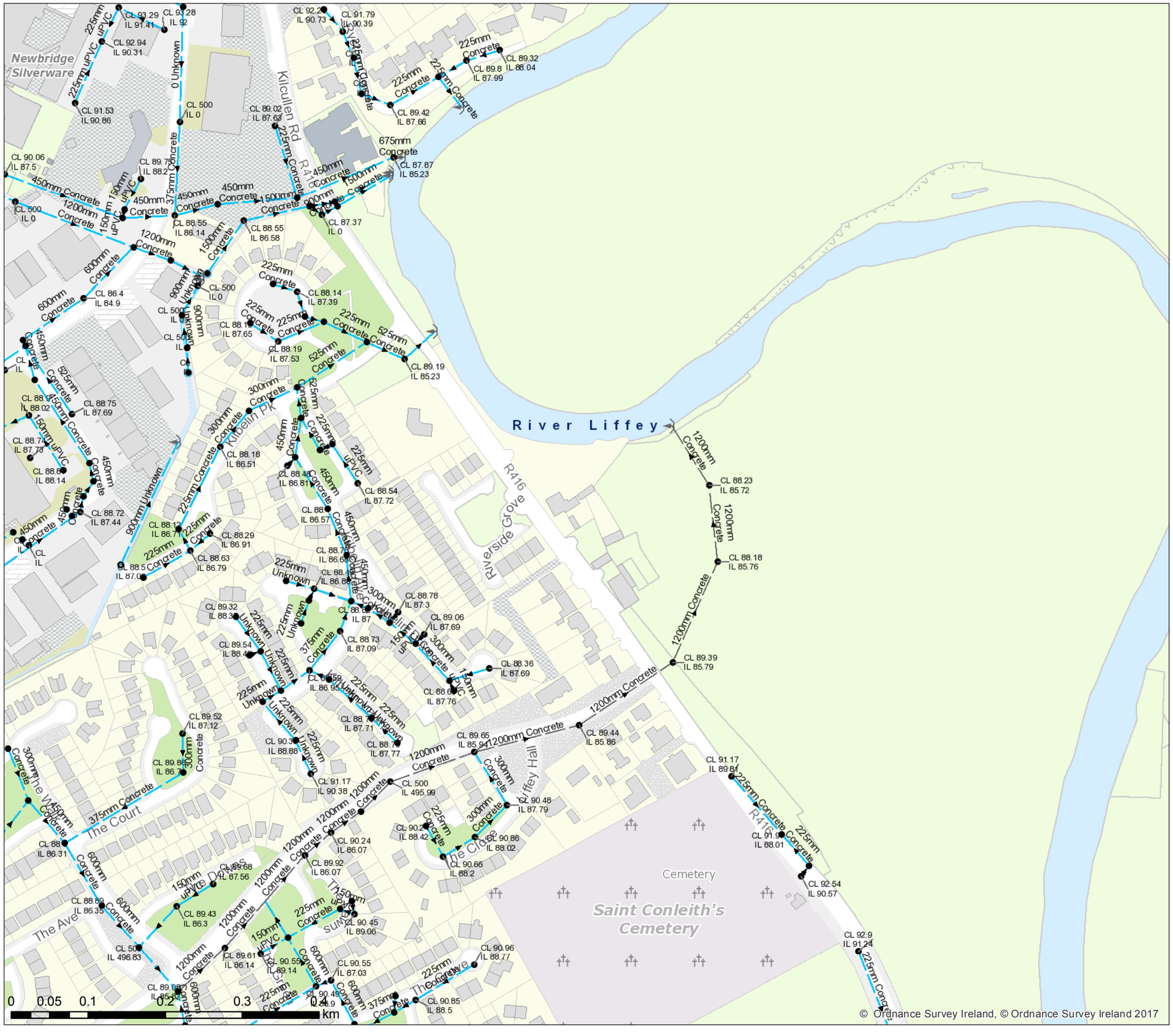
ESB MVLV Lines
- MV Overhead Three Phase
- MV Overhead Single Phase
- LV Overhead Three Phase
- LV Overhead Single Phase
- MVLV Underground
- Abandoned

Non Service Categories
- Proposed
- Under Construction
- Out of Service
- Decommissioned

Water Non Service Assets
- Water Point Feature
- Water Pipe
- Water Structure

Waste Non Service Assets
- Waste Point Feature
- Sewer
- Waste Structure

Irish Water Web Map



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- Meter Station
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- Telemetry Kiosk

Reservoir
- Potable
- Raw Water

Water Distribution Mains
- Irish Water
- Private

Trunk Water Mains
- Irish Water
- Private

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- Water Casings
- Water Abandoned Lines
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- Water Distribution Chambers
- Water Network Junctions
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Water Fittings
- Cap
- Reducer
- Tap
- Other Fittings

Sewer Foul Combined Network
- Waste Water Treatment Plant
- Waste Water Pump station

Sewer Mains Irish Water
- Gravity - Combined
- Gravity - Foul
- Gravity - Unknown
- Pumping - Combined
- Pumping - Foul
- Pumping - Unknown
- Syphon - Combined
- Syphon - Foul
- Overflow

Sewer Mains Private
- Gravity - Combined
- Gravity - Foul
- Gravity - Unknown
- Pumping - Combined
- Pumping - Foul
- Pumping - Unknown
- Syphon - Combined
- Syphon - Foul
- Overflow
- Sewer Lateral Lines
- Sewer Casings

Sewer Manholes
- Standard
- Backdrop
- Cascade
- Catchpit
- Bifurcation
- Hatchbox
- Lamphole
- Hydrobrake
- Other; Unknown

Discharge Type
- Outfall
- Overflow
- Soakaway
- Standard Outlet
- Other; Unknown

Cleanout Type
- Rodding Eye
- Flushing Structure
- Other; Unknown

Sewer Inlets
- Catchpit
- Gully
- Standard
- Other; Unknown

Sewer Fittings
- Vent/Col
- Other; Unknown

Storm Water Network

Surface Water Mains
- Surface Gravity Mains
- Surface Gravity Mains Private
- Surface Water Pressurised Mains
- Surface Water Pressurised Mains Private

Inlet Type
- Gully
- Standard
- Other; Unknown

Storm Manholes
- Standard
- Backdrop
- Cascade
- Catchpit
- Bifurcation
- Hatchbox
- Lamphole
- Hydrobrake
- Other; Unknown
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- Storm Clean Outs
- Stormwater Chambers

Discharge Type
- Outfall
- Overflow
- Soakaway
- Other; Unknown

Gas Networks Ireland
- Transmission High Pressure Gasline
- Distribution Medium Pressure Gasline
- Distribution Low Pressure Gasline

ESB Networks

ESB HV Lines
- HV Underground
- HV Overhead
- HV Abandoned

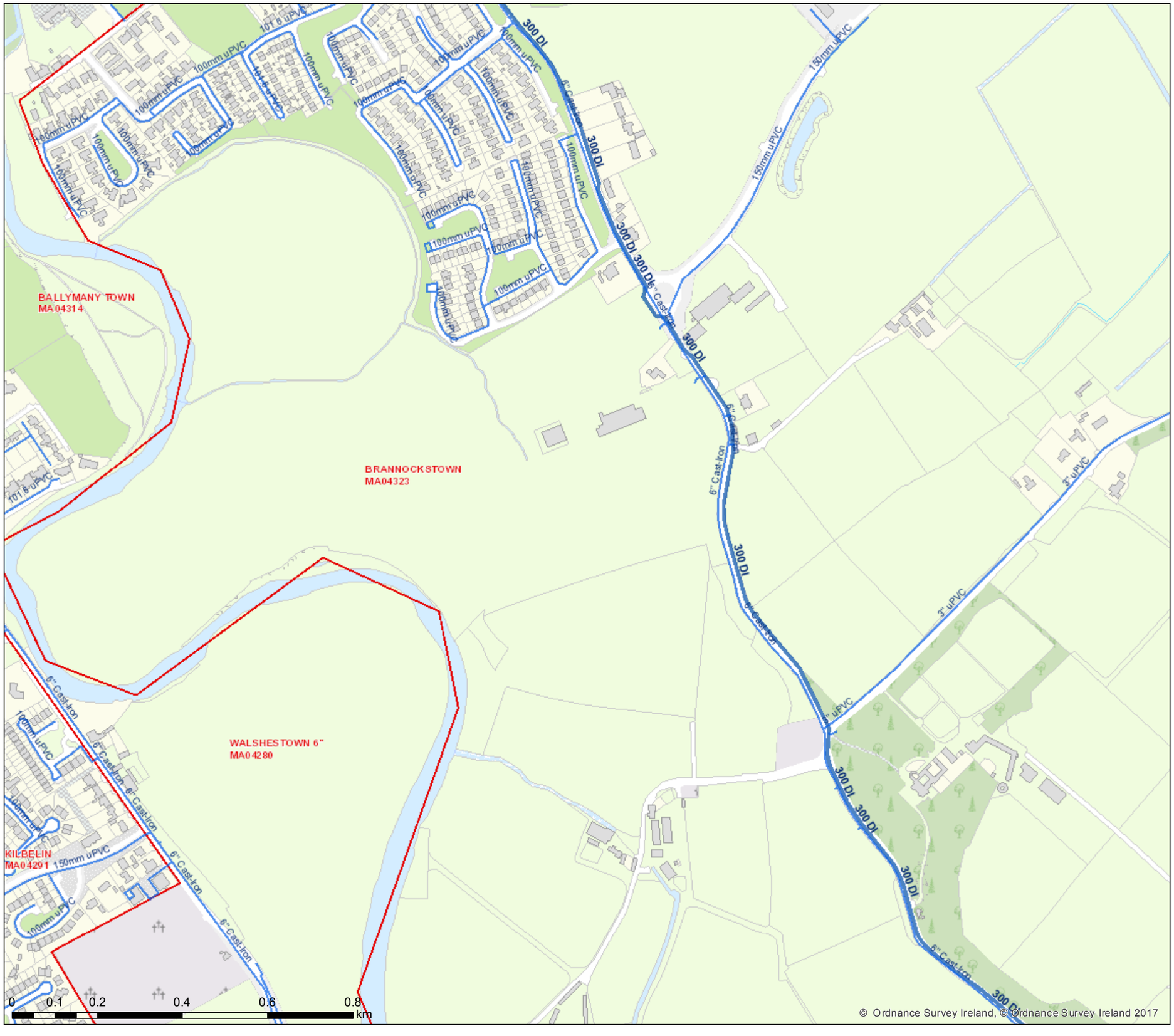
ESB MVLV Lines
- MV Overhead Three Phase
- MV Overhead Single Phase
- LV Overhead Three Phase
- LV Overhead Single Phase
- MVLV Underground
- Abandoned

Non Service Categories
- Proposed
- Under Construction
- Out of Service
- Decommissioned

Water Non Service Assets
- Water Point Feature
- Water Pipe
- Water Structure

Waste Non Service Assets
- Waste Point Feature
- Sewer
- Waste Structure

Irish Water Web Map



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Service connection pipes are not generally shown but their presence should be anticipated.

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NOTE: DIAL BEFORE YOU DIG Phone: 1850 427 747 or e-mail dig@gasnetworks.ie - The actual position of the gas/electricity distribution and transmission network must be verified on site before any mechanical excavating takes place. If any mechanical excavation is proposed, hard copy maps must be requested from GNI re gas. All work in the vicinity of gas distribution and transmission network must be completed in accordance with the current edition of the Health & Safety Authority publication,
'Code of Practice For Avoiding Danger From Underground Services' which is available from the Health and Safety Authority (1890 28 93 89) or can be downloaded free of charge at www.hsa.ie."

Water Distribution Network
- Water Treatment Plant
- Water Pump Station
- Storage Cell/Tower
- Dosing Point
- Meter Station
- Abstraction Point
- Telemetry Kiosk

Reservoir
- Potable
- Raw Water

Water Distribution Mains
- Irish Water
- Private

Trunk Water Mains
- Irish Water
- Private

Water Lateral Lines
- Irish Water
- Non IW
- Water Casings
- Water Abandoned Lines
- Boundary Meter
- Bulk/Check Meter
- Group Scheme
- Source Meter
- Waste Meter
- Unknown Meter ; Other Meter
- Non-Return
- PRV
- PSV
- Sluice Line Valve Open/Closed
- Butterfly Line Valve Open/Closed
- Sluice Boundary Valve Open/Closed
- Butterfly Boundary Valve Open/Closed
- Scour Valves
- Single Air Control Valve
- Double Air Control Valve
- Water Stop Valves
- Water Service Connections
- Water Distribution Chambers
- Water Network Junctions
- Pressure Monitoring Point
- Fire Hydrant
- Fire Hydrant/Washout

Water Fittings
- Cap
- Reducer
- Tap
- Other Fittings

Sewer Foul Combined Network
- Waste Water Treatment Plant
- Waste Water Pump station

Sewer Mains Irish Water
- Gravity - Combined
- Gravity - Foul
- Gravity - Unknown
- Pumping - Combined
- Pumping - Foul
- Pumping - Unknown
- Syphon - Combined
- Syphon - Foul
- Overflow

Sewer Mains Private
- Gravity - Combined
- Gravity - Foul
- Gravity - Unknown
- Pumping - Combined
- Pumping - Foul
- Pumping - Unknown
- Syphon - Combined
- Syphon - Foul
- Overflow
- Sewer Lateral Lines
- Sewer Casings

Sewer Manholes
- Standard
- Backdrop
- Cascade
- Catchpit
- Bifurcation
- Hatchbox
- Lamphole
- Hydrobrake
- Other; Unknown

Discharge Type
- Outfall
- Overflow
- Soakaway
- Standard Outlet
- Other; Unknown

Cleanout Type
- Rodding Eye
- Flushing Structure
- Other; Unknown

Sewer Inlets
- Catchpit
- Gully
- Standard
- Other; Unknown

Sewer Fittings
- Vent/Col
- Other; Unknown

Storm Water Network

Surface Water Mains
- Surface Gravity Mains
- Surface Gravity Mains Private
- Surface Water Pressurised Mains
- Surface Water Pressurised Mains Private

Inlet Type
- Gully
- Standard
- Other; Unknown

Storm Manholes
- Standard
- Backdrop
- Cascade
- Catchpit
- Bifurcation
- Hatchbox
- Lamphole
- Hydrobrake
- Other; Unknown
- Storm Culverts
- Storm Clean Outs
- Stormwater Chambers

Discharge Type
- Outfall
- Overflow
- Soakaway
- Other; Unknown

Gas Networks Ireland
- Transmission High Pressure Gasline
- Distribution Medium Pressure Gasline
- Distribution Low Pressure Gasline

ESB Networks

ESB HV Lines
- HV Underground
- HV Overhead
- HV Abandoned

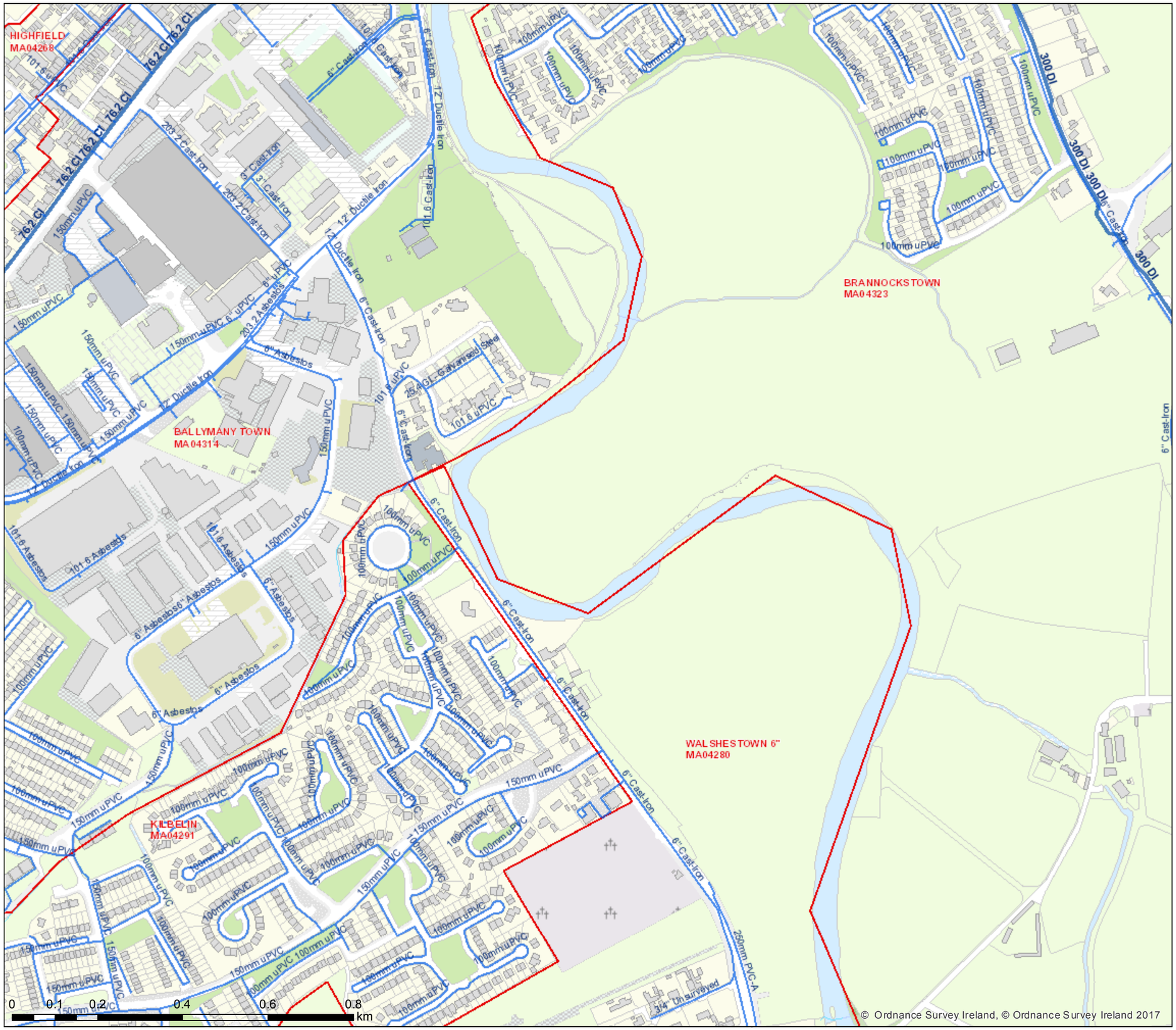
ESB MVLV Lines
- MV Overhead Three Phase
- MV Overhead Single Phase
- LV Overhead Three Phase
- LV Overhead Single Phase
- MVLV Underground
- Abandoned

Non Service Categories
- Proposed
- Under Construction
- Out of Service
- Decommissioned

Water Non Service Assets
- Water Point Feature
- Water Pipe
- Water Structure

Waste Non Service Assets
- Waste Point Feature
- Sewer
- Waste Structure

Irish Water Web Map


HIGHFIELD
MA04268
BALLYMANY TOWN
MA04314
BRANNOCKSTOWN
MA04323
KILBELIN
MA04291
WALSHESTOWN 6"
MA04280
762 CI
762 CI 762 CI
762 CI 762 CI
762 CI 762 CI
203.2 C.I.
203.2 C.I.
203.2 C.I.
203.2 Asbestos
150mm uPVC
150mm uPVC
150mm uPVC

Appendix B Qbar Calculation Report

Mean Annual Flood Flow Rate Equation for Greenfield Catchments IH124

(Based on Institute of Hydrology report No. 124)

Project title: **Aston SHD, Newbridge**

Project no.: **192229**

Designed: **S. O'Coileir** Date: **07/03/2022**

(Complete figures in **blue** only)

$Q\ Bar = 0.00108 \times Area^{0.89} \times SAAR^{1.17} \times Soil^{2.17}$

Where			Units
Q Bar	=	Mean Annual Peak Flow	m^3/s
Area	=	Catchment area	km^2
SARR	=	Standard Annual Average Rainfall	mm
Soil	=	Soil Index	-

Table 1

Soil	WRAP	Runoff	Soil value	Soil Characteristics
1	Very high	Very low	0.15	Sandy, well drained
2	High	Low	0.3	Intermediate soils (sandy)
3	Moderate	Moderate	0.4	Intermediate soils (silty)
4	Low	High	0.45	Clayey, poorly drained
5	Very low	Very high	0.5	Steel, rocky areas

Area description: Full Site - Impervious Areas

Soil characteristics: Soil type (See Table 1) **3** (Intermediate soils - Silty)
=> Soil index = 0.40 **See SI report**

Area = 0.5 km^2 (**167373** m^2)

Where developments are smaller than 50 ha, the analysis for determining the peak greenfield discharge rate should use 50 ha in the formula and linearly interpolate the flow rate value based on the ratio of the development to 50 ha.(Ref: Interim Code of Practice for Sustainable Drainage Systems)

SAAR = 899 mm

Refer to Annual Average Rainfall Diagram & Data on next tab

Q Bar = 0.228 m^3/s

= 227.97 l/s

or

= 4.56 l/s/ha

Linear Interpolation of Q Bar based on ratio of development to 50 ha

Peak greenfield discharge rate, Q_{Bar} = 76.31 l/s

Growth Curve

Region: Greater Dublin

Growth curves are adopted from "Comment on Estimation of Greenfield Runoff Rates" - A.M.Crawley & C.Cunnane - National Hydrology Seminar 2003 where possible.

Return Period Q_{t1}:	1	year
Growth Factor for Q_{t1}:	0.85	
Allowable Discharge for 1 year return period:	**64.86**	**l/s**
Return Period Q_{t2}:	5	year
Growth Factor for Q_{t2}:	1.4	
Allowable Discharge for 5 year return period:	**106.84**	**l/s**
Return Period Q_{t3}:	25	year
Growth Factor for Q_{t3}:	2.05	
Allowable Discharge for 25 year return period:	**156.44**	**l/s**
Return Period Q_{t4}:	100	year
Growth Factor for Q_{t4}:	2.61	
Allowable Discharge for 100 year return period:	**199.17**	**l/s**

Discharge rate equal to 1 year greenfield site peak runoff rate or 2l/s/ha, whichever is the greater. Site critical duration storm to be used to assess attenuation storage volume.(Ref: Greater Dublin Strategic Drainage Study)

Discharge rate equal to 1 in 100 year critical duration storm to be used to assess attenuation storage volume.(Ref: Greater Dublin Strategic Drainage Study)

Mean Annual Flood Flow Rate Equation for Greenfield Catchments IH124

(Based on Institute of Hydrology report No. 124)

Project title: **Aston SHD, Newbridge**

Project no.: **192229**

Designed: **S. O'Coileir** Date: **07/03/2022**

(Complete figures in **blue** only)

$Q\ Bar = 0.00108 \times Area^{0.89} \times SAAR^{1.17} \times Soil^{2.17}$

Where			Units
Q Bar	=	Mean Annual Peak Flow	m^3/s
Area	=	Catchment area	km^2
SARR	=	Standard Annual Average Rainfall	mm
Soil	=	Soil Index	-

Table 1

Soil	WRAP	Runoff	Soil value	Soil Characteristics
1	Very high	Very low	0.15	Sandy, well drained
2	High	Low	0.3	Intermediate soils (sandy)
3	Moderate	Moderate	0.4	Intermediate soils (silty)
4	Low	High	0.45	Clayey, poorly drained
5	Very low	Very high	0.5	Steel, rocky areas

Area description: Impervious Areas

Soil characteristics: Soil type (See Table 1) **3** (Intermediate soils - Silty)
=> Soil index = 0.40 **See SI report**

Area = 0.5 km^2 (**159780** m^2)

Where developments are smaller than 50 ha, the analysis for determining the peak greenfield discharge rate should use 50 ha in the formula and linearly interpolate the flow rate value based on the ratio of the development to 50 ha.(Ref: Interim Code of Practice for Sustainable Drainage Systems)

SAAR = 899 mm

Refer to Annual Average Rainfall Diagram & Data on next tab

Q Bar = 0.228 m^3/s

= 227.97 l/s

or

= 4.56 l/s/ha

Linear Interpolation of Q Bar based on ratio of development to 50 ha

Peak greenfield discharge rate, Q_{Bar} = 72.85 l/s

Growth Curve

Region: Greater Dublin

Growth curves are adopted from "Comment on Estimation of Greenfield Runoff Rates" - A.M.Crawley & C.Cunnane - National Hydrology Seminar 2003 where possible.

Return Period Q_{t1}: 1 year
Growth Factor for Q_{t1}: 0.85
Allowable Discharge for 1 year return period: 61.92 l/s

Discharge rate equal to 1 year greenfield site peak runoff rate or 2l/s/ha, whichever is the greater. Site critical duration storm to be used to assess attenuation storage volume.(Ref: Greater Dublin Strategic Drainage Study)

Return Period Q_{t2}: 5 year
Growth Factor for Q_{t2}: 1.4
Allowable Discharge for 5 year return period: 101.99 l/s

Return Period Q_{t3}: 25 year
Growth Factor for Q_{t3}: 2.05
Allowable Discharge for 25 year return period: 149.34 l/s

Return Period Q_{t4}: 100 year
Growth Factor for Q_{t4}: 2.61
Allowable Discharge for 100 year return period: 190.14 l/s

Discharge rate equal to 1 in 100 year critical duration storm to be used to assess attenuation storage volume.(Ref: Greater Dublin Strategic Drainage Study)

Mean Annual Flood Flow Rate Equation for Greenfield Catchments IH124

(Based on Institute of Hydrology report No. 124)

Project title: **Aston SHD, Newbridge**

Project no.: **192229**

Designed: **S. O'Coileir** Date: **07/03/2022**

(Complete figures in **blue** only)

$Q\ Bar = 0.00108 \times Area^{0.89} \times SAAR^{1.17} \times Soil^{2.17}$

Where			Units
Q Bar	=	Mean Annual Peak Flow	m^3/s
Area	=	Catchment area	km^2
SARR	=	Standard Annual Average Rainfall	mm
Soil	=	Soil Index	-

Table 1

Soil	WRAP	Runoff	Soil value	Soil Characteristics
1	Very high	Very low	0.15	Sandy, well drained
2	High	Low	0.3	Intermediate soils (sandy)
3	Moderate	Moderate	0.4	Intermediate soils (silty)
4	Low	High	0.45	Clayey, poorly drained
5	Very low	Very high	0.5	Steel, rocky areas

Area description: NSORR Only - Impervious Areas

Soil characteristics: Soil type (See Table 1) **3** (Intermediate soils - Silty)

=> Soil index = 0.40 **See SI report**

Area = 0.5 km^2 (**7593** m^2)

Where developments are smaller than 50 ha, the analysis for determining the peak greenfield discharge rate should use 50 ha in the formula and linearly interpolate the flow rate value based on the ratio of the development to 50 ha.(Ref: Interim Code of Practice for Sustainable Drainage Systems)

SAAR = 899 mm

Refer to Annual Average Rainfall Diagram & Data on next tab

Q Bar = 0.228 m^3/s

= 227.97 l/s

or

= 4.56 l/s/ha

Linear Interpolation of Q Bar based on ratio of development to 50 ha

Peak greenfield discharge rate, Q_{Bar} = 3.46 l/s

Growth Curve

Region: Greater Dublin

Growth curves are adopted from "Comment on Estimation of Greenfield Runoff Rates" - A.M.Crawley & C.Cunnane - National Hydrology Seminar 2003 where possible.

Return Period Q_{t1}:	1	year
Growth Factor for Q_{t1}:	0.85	
Allowable Discharge for 1 year return period:	**2.94**	**l/s**

Discharge rate equal to 1 year greenfield site peak runoff rate or 2l/s/ha, whichever is the greater. Site critical duration storm to be used to assess attenuation storage volume.(Ref: Greater Dublin Strategic Drainage Study)

Return Period Q_{t2}:	5	year
Growth Factor for Q_{t2}:	1.4	
Allowable Discharge for 5 year return period:	**4.85**	**l/s**

Return Period Q_{t3}:	25	year
Growth Factor for Q_{t3}:	2.05	
Allowable Discharge for 25 year return period:	**7.10**	**l/s**

Return Period Q_{t4}:	100	year
Growth Factor for Q_{t4}:	2.61	
Allowable Discharge for 100 year return period:	**9.04**	**l/s**

Discharge rate equal to 1 in 100 year critical duration storm to be used to assess attenuation storage volume.(Ref: Greater Dublin Strategic Drainage Study)

Appendix C Met Eireann Rainfall Data

Met Eireann
Return Period Rainfall Depths for sliding Durations
Irish Grid: Easting: 281600, Northing: 214761,

	Interval		Years												
DURATION	6months,	1year,	2,	3,	4,	5,	10,	20,	30,	50,	75,	100,	150,	200,	250,	500,
5 mins	2.6,	3.6,	4.1,	4.9,	5.4,	5.8,	7.1,	8.5,	9.5,	10.8,	11.9,	12.8,	14.2,	15.2,	16.1,	N/A ,
10 mins	3.7,	5.0,	5.8,	6.8,	7.6,	8.1,	9.9,	11.9,	13.2,	15.0,	16.6,	17.9,	19.8,	21.2,	22.4,	N/A ,
15 mins	4.3,	5.9,	6.8,	8.0,	8.9,	9.5,	11.7,	14.0,	15.5,	17.7,	19.6,	21.0,	23.3,	25.0,	26.4,	N/A ,
30 mins	5.7,	7.7,	8.8,	10.4,	11.4,	12.2,	14.8,	17.6,	19.5,	22.0,	24.3,	26.0,	28.6,	30.7,	32.3,	N/A ,
1 hours	7.5,	10.1,	11.4,	13.3,	14.6,	15.6,	18.7,	22.2,	24.4,	27.4,	30.1,	32.1,	35.2,	37.6,	39.6,	N/A ,
2 hours	10.0,	13.2,	14.8,	17.2,	18.7,	19.9,	23.7,	27.9,	30.5,	34.2,	37.3,	39.7,	43.4,	46.2,	48.5,	N/A ,
3 hours	11.7,	15.4,	17.2,	19.9,	21.7,	23.0,	27.3,	31.9,	34.8,	38.8,	42.3,	45.0,	49.0,	52.1,	54.6,	N/A ,
4 hours	13.2,	17.2,	19.2,	22.1,	24.0,	25.5,	30.1,	35.0,	38.2,	42.5,	46.3,	49.1,	53.4,	56.7,	59.3,	N/A ,
6 hours	15.5,	20.0,	22.3,	25.6,	27.8,	29.4,	34.6,	40.1,	43.6,	48.4,	52.5,	55.6,	60.3,	63.9,	66.8,	N/A ,
9 hours	18.3,	23.4,	26.0,	29.7,	32.1,	34.0,	39.7,	45.8,	49.7,	55.0,	59.5,	63.0,	68.1,	72.0,	75.2,	N/A ,
12 hours	20.5,	26.1,	29.0,	33.0,	35.6,	37.6,	43.8,	50.4,	54.6,	60.2,	65.1,	68.8,	74.3,	78.4,	81.8,	N/A ,
18 hours	24.2,	30.5,	33.7,	38.3,	41.2,	43.4,	50.3,	57.6,	62.3,	68.5,	73.8,	77.9,	83.9,	88.4,	92.1,	N/A ,
24 hours	27.1,	34.1,	37.6,	42.5,	45.7,	48.1,	55.5,	63.4,	68.3,	75.0,	80.7,	85.0,	91.4,	96.3,	100.2,	113.3,
2 days	32.1,	39.7,	43.4,	48.7,	52.0,	54.5,	62.3,	70.5,	75.6,	82.4,	88.2,	92.5,	98.9,	103.7,	107.6,	120.7,
3 days	36.5,	44.7,	48.6,	54.2,	57.8,	60.5,	68.7,	77.2,	82.5,	89.6,	95.6,	100.0,	106.7,	111.6,	115.6,	128.9,
4 days	40.5,	49.2,	53.4,	59.4,	63.1,	65.9,	74.5,	83.5,	89.0,	96.3,	102.6,	107.2,	114.0,	119.1,	123.2,	136.9,
6 days	47.8,	57.5,	62.2,	68.7,	72.8,	75.9,	85.2,	94.9,	100.9,	108.7,	115.4,	120.3,	127.6,	133.0,	137.4,	151.8,
8 days	54.4,	65.0,	70.1,	77.2,	81.6,	84.9,	95.0,	105.3,	111.7,	120.1,	127.1,	132.3,	140.0,	145.7,	150.3,	165.5,
10 days	60.7,	72.1,	77.5,	85.1,	89.8,	93.4,	104.1,	115.1,	121.8,	130.6,	138.1,	143.6,	151.6,	157.6,	162.4,	178.3,
12 days	66.6,	78.8,	84.6,	92.6,	97.7,	101.4,	112.7,	124.3,	131.3,	140.6,	148.4,	154.2,	162.6,	168.9,	173.9,	190.4,
16 days	77.9,	91.5,	98.0,	106.9,	112.4,	116.5,	129.0,	141.6,	149.3,	159.4,	167.9,	174.1,	183.2,	190.0,	195.4,	213.1,
20 days	88.6,	103.6,	110.6,	120.3,	126.3,	130.8,	144.3,	157.9,	166.2,	177.0,	186.1,	192.7,	202.5,	209.7,	215.5,	234.4,
25 days	101.5,	118.0,	125.7,	136.3,	142.9,	147.8,	162.4,	177.2,	186.1,	197.9,	207.6,	214.8,	225.3,	233.0,	239.2,	259.4,

NOTES:
N/A Data not available
These values are derived from a Depth Duration Frequency (DDF) Model
For details refer to:
'Fitzgerald D. L. (2007), Estimates of Point Rainfall Frequencies, Technical Note No. 61, Met Eireann, Dublin',
Available for download at www.met.ie/climate/dataproducts/Estimation-of-Point-Rainfall-Frequencies_TN61.pdf

M5/60 = 15.6, Ratio R = 0.286

Appendix D Surface Water Calculations – Causeway Flow Modelling

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	5	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00
FSR Region	Scotland and Ireland	Connection Type	Level Inverts
M5-60 (mm)	15.600	Minimum Backdrop Height (m)	0.000
Ratio-R	0.286	Preferred Cover Depth (m)	1.200
CV	0.750	Include Intermediate Ground	✓
Time of Entry (mins)	5.00	Enforce best practice design rules	x

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
1-0	0.012	5.00	88.550	1350	681728.297	714559.265	1.550
1-1	0.025	5.00	88.200	1350	681727.082	714579.948	1.264
1-2	0.032	5.00	88.200	1350	681729.935	714618.237	1.383
1-3	0.025	5.00	88.150	1350	681724.880	714650.182	1.433
1-4	0.012	5.00	88.050	1350	681726.157	714667.886	1.388
1-5	0.042	5.00	88.201	1350	681706.946	714704.913	1.668
2-0	0.012	5.00	88.588	1200	681654.345	714711.728	1.425
1-6	0.170	5.00	88.523	1350	681668.442	714684.340	2.077
1-7	0.171	5.00	88.681	1350	681613.809	714655.342	2.358
1-8	0.133	5.00	88.553	1350	681573.837	714634.246	2.320
1-9	0.182	5.00	88.321	1350	681516.849	714604.369	2.216
1-10	0.055	5.00	88.495	1350	681489.411	714611.148	2.437
1-11			88.016	1800	681465.859	714652.863	2.095
3-0	0.013	5.00	88.471	1200	681495.121	714623.928	1.680
1-12	0.101	5.00	88.157	1350	681476.088	714659.384	2.256
4-0		5.00	88.200	1200	681714.921	714722.862	1.115
4-1	0.028	5.00	88.200	1200	681700.576	714747.663	1.259
4-2			88.200	1200	681696.983	714746.664	1.278
4-3	0.029	5.00	88.321	1200	681679.139	714777.631	1.579
5-0		5.00	88.100	1200	681687.188	714707.538	0.975
5-1	0.043	5.00	88.000	1200	681674.194	714731.842	1.038
4-4	0.076	5.00	88.227	1200	681656.262	714765.409	1.616
4-5	0.040	5.00	88.128	1200	681631.788	714752.351	1.657
4-6			88.062	1200	681629.584	714756.232	1.614
4-7	0.066	5.00	87.821	1200	681618.718	714752.021	1.432
6-0	0.020	5.00	87.900	1200	681651.744	714821.450	1.029
6-1	0.040	5.00	88.070	1200	681635.217	714852.261	1.405
6-2	0.021	5.00	88.000	1200	681600.572	714833.783	1.567
6-3	0.098	5.00	87.930	1200	681613.963	714808.759	1.665
4-8	0.132	5.00	87.727	1350	681593.233	714797.616	1.601
7-0		5.00	88.100	1200	681598.010	714732.199	1.525
4-9	0.150	5.00	87.721	1350	681569.162	714784.678	1.680
8-0		5.00	87.700	1200	681578.569	714821.954	1.410
9-0		5.00	87.700	1200	681499.419	714779.633	1.301
8-1	0.095	5.00	87.400	1200	681538.921	714800.785	1.280
4-10	0.051	5.00	87.822	1350	681552.322	714775.627	1.819
10-0		5.00	87.635	1200	681456.887	714742.982	0.874
10-1	0.039	5.00	87.816	1200	681464.184	714728.460	1.151
11-0		5.00	87.700	1200	681470.270	714761.709	1.175
11-1	0.036	5.00	87.700	1200	681481.748	714767.493	1.251
10-2	0.075	5.00	87.700	1200	681494.310	714744.490	1.406
12-0		5.00	87.588	1200	681518.601	714738.418	1.425
10-3	0.104	5.00	87.724	1200	681511.067	714753.407	1.625
4-11	0.111	5.00	87.850	1500	681527.859	714762.478	1.898
4-12			87.850	1500	681530.789	714757.146	1.906
13-0		5.00	87.600	1200	681570.228	714744.973	1.425
4-13	0.042	5.00	87.400	1500	681544.032	714731.413	1.496
4-14	0.039	5.00	87.500	1500	681526.924	714722.557	1.623
14-0	0.027	5.00	88.142	1200	681632.181	714739.287	1.989
14-1	0.143	5.00	87.334	1200	681586.068	714714.847	1.318
15-0	0.007	5.00	88.094	1200	681560.301	714658.807	1.825
14-2	0.222	5.00	87.521	1350	681542.637	714691.750	1.634
4-15	0.076	5.00	87.418	1500	681536.496	714703.253	1.565
16-0		5.00	88.000	1200	681524.006	714656.720	1.425
17-0		5.00	87.625	1200	681491.700	714717.223	1.425
4-16	0.262	5.00	87.823	1500	681507.377	714687.844	2.006
1-13	0.083	5.00	88.078	1500	681471.112	714668.653	2.301
18-0		5.00	87.800	1200	681422.878	714707.549	1.375
19-0	0.025	5.00	88.150	1200	681367.542	714630.246	1.425

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Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
19-1	0.020	5.00	87.600	1200	681380.523	714649.147	1.010
18-1	0.075	5.00	87.750	1200	681392.936	714654.934	1.682
20-0	0.024	5.00	87.550	1200	681458.635	714610.046	1.306
18-2	0.178	5.00	87.900	1350	681419.839	714638.804	1.961
18-3	0.102	5.00	87.724	1350	681442.714	714678.477	1.927
18-4	0.029	5.00	87.871	1350	681452.487	714687.900	2.101
1-14	0.065	5.00	87.871	1500	681458.950	714691.294	2.119
1-15	0.032	5.00	87.781	1500	681452.167	714703.160	2.042
1-16	0.056	5.00	87.570	2100	681431.016	714720.912	1.858
PI 4			87.100	1500	681413.439	714734.297	1.516
Outfall 4			86.490	1500	681407.762	714738.679	0.917
21-0	0.005	5.00	88.540	1350	681732.623	714543.018	1.282
21-1	0.054	5.00	88.225	1350	681683.674	714528.552	1.125
21-2	0.032	5.00	88.405	1350	681649.964	714518.491	1.414
21-3	0.107	5.00	88.691	1350	681596.221	714502.522	1.873
21-4	0.056	5.00	88.367	1350	681550.069	714488.810	1.698
21-5	0.062	5.00	88.456	1350	681538.872	714510.770	1.858
22-0	0.025	5.00	88.245	1350	681680.587	714541.754	1.150
22-1	0.024	5.00	88.298	1350	681676.628	714555.083	1.243
23-0	0.035	5.00	88.357	1350	681708.590	714630.655	1.196
22-2	0.279	5.00	88.564	1350	681652.175	714600.736	1.657
24-0	0.008	5.00	88.655	1350	681619.602	714645.364	1.555
22-3	0.105	5.00	88.563	1350	681644.994	714598.737	1.678
22-4	0.133	5.00	89.151	1350	681604.492	714576.263	2.398
25-0		5.00	88.704	1200	681578.956	714511.950	1.425
25-1	0.062	5.00	88.700	1200	681570.824	714540.652	1.597
22-5	0.125	5.00	88.931	1350	681561.371	714552.096	2.319
26-0		5.00	88.550	1200	681520.981	714587.351	1.425
26-1	0.017	5.00	88.550	1200	681529.224	714571.926	1.528
22-6	0.059	5.00	88.890	1350	681548.127	714544.673	2.316
22-7			88.500	1350	681533.514	714533.960	1.971
21-6	0.069	5.00	88.369	1500	681527.948	714530.232	1.857
21-7	0.148	5.00	88.161	1500	681498.591	714572.945	1.761
21-8	0.029	5.00	88.218	1500	681494.806	714586.463	1.843
21-9	0.013	5.00	88.083	1500	681479.812	714583.385	1.735
21-10	0.087	5.00	87.929	1500	681440.788	714563.200	1.657
27-0		5.00	88.114	1500	681350.118	714601.420	1.792
27-1	0.144	5.00	87.900	1500	681391.219	714575.945	1.625
28-0	0.039	5.00	88.108	1350	681472.874	714484.377	1.630
28-1	0.162	5.00	87.846	1350	681446.895	714523.359	1.513
21-11	0.213	5.00	88.117	1500	681424.130	714546.888	1.885
29-0	0.002	5.00	88.510	1200	681529.152	714477.102	1.125
29-1	0.026	5.00	88.500	1200	681493.847	714463.154	1.339
29-2	0.017	5.00	88.289	1200	681481.690	714464.705	1.201
29-3	0.059	5.00	88.782	1200	681435.452	714440.649	2.002
29-4	0.025	5.00	88.880	1200	681420.740	714447.405	2.196
29-5	0.060	5.00	88.851	1200	681401.736	714473.443	2.364
21-12	0.180	5.00	88.730	1500	681378.428	714500.325	2.561
30-0	0.010	5.00	88.750	1200	681336.824	714583.857	1.425
30-1	0.021	5.00	88.700	1200	681318.656	714552.623	1.638
30-2	0.049	5.00	88.800	1200	681338.498	714532.780	1.904
21-13	0.094	5.00	88.850	1500	681354.275	714520.630	2.712
21-14			88.070	1500	681331.006	714494.008	1.966
PI 3			88.070	1500	681328.921	714490.869	2.073
Outfall 3			87.300	1500	681310.005	714462.485	1.362
31-0		5.00	88.586	1200	681241.100	714577.004	1.811
31-1	0.061	5.00	88.460	1200	681266.075	714572.105	1.835
31-2	0.026	5.00	88.375	1200	681288.357	714572.144	2.029
31-4	0.021	5.00	88.412	1200	681300.880	714577.792	2.238
31-5	0.021	5.00	88.350	1200	681310.328	714592.053	2.390
31-6	0.055	5.00	88.000	1200	681328.209	714617.952	2.355
32-0		5.00	87.750	1200	681351.362	714665.315	1.625
32-1	0.023	5.00	87.750	1200	681337.837	714644.743	1.770
31-7	0.004	5.00	87.894	1200	681322.684	714621.696	2.289
34-0	0.027	5.00	87.225	1200	681241.403	714640.836	1.425
34-1	0.037	5.00	87.366	1200	681263.636	714636.398	1.700
34-2	0.019	5.00	87.322	1200	681271.591	714641.215	1.711
31-8	0.143	5.00	87.387	1200	681277.979	714651.973	2.003
33-0		5.00	87.400	1200	681304.110	714699.473	1.725
31-9	0.052	5.00	87.385	1350	681274.152	714654.584	2.289

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Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
31-10			87.260	1800	681266.162	714658.164	2.189
35-0	0.025	5.00	87.091	1200	681280.289	714692.365	1.432
31-11	0.063	5.00	86.850	1350	681255.367	714674.032	1.834
31-12	0.079	5.00	86.901	1350	681230.026	714659.891	1.968
36-0		5.00	88.558	1200	681231.376	714579.073	1.658
36-1	0.066	5.00	88.383	1200	681201.801	714584.854	1.661
36-2	0.022	5.00	88.162	1200	681188.714	714591.490	1.587
36-3	0.018	5.00	87.954	1200	681182.045	714600.247	1.489
36-4	0.010	5.00	87.676	1200	681178.035	714614.258	1.357
31-13	0.198	5.00	87.231	1350	681174.797	714656.902	2.456
31-14	0.052	5.00	87.000	1350	681172.134	714690.391	2.283
31-15	0.020	5.00	86.950	1350	681178.112	714704.102	2.259
37-0		5.00	88.000	1200	681393.391	714716.054	1.425
37-1	0.051	5.00	87.736	1200	681364.767	714673.338	1.464
38-0	0.034	5.00	87.352	1200	681384.526	714741.184	1.675
39-0		5.00	87.171	1200	681352.807	714770.696	1.056
38-1	0.111	5.00	87.147	1200	681348.326	714765.422	1.727
37-2	0.272	5.00	87.247	1200	681304.036	714714.518	2.103
40-0		5.00	87.200	1200	681328.813	714803.744	1.425
40-1	0.026	5.00	87.075	1200	681305.668	714816.641	1.456
37-3	0.272	5.00	87.021	1350	681257.516	714759.392	2.077
37-4	0.088	5.00	86.930	1350	681218.378	714728.860	2.108
31-16	0.100	5.00	86.850	1500	681195.150	714715.697	2.195
31-17			86.440	2100	681189.329	714725.568	1.809
PI 1			86.440	1500	681186.333	714730.649	1.920
Outfall 1			85.570	1500	681181.220	714748.846	1.069
41-0	0.051	5.00	88.250	1200	681603.924	714908.556	1.550
41-1	0.035	5.00	88.250	1200	681618.947	714884.229	1.667
41-2	0.060	5.00	87.800	1200	681580.497	714859.153	1.405
41-3	0.044	5.00	87.500	1200	681539.046	714832.914	1.306
42-0	0.087	5.00	87.868	1200	681554.612	714897.046	1.294
42-1	0.122	5.00	87.996	1200	681561.361	714886.575	1.473
43-0	0.018	5.00	88.018	1200	681529.669	714880.070	1.425
42-2	0.096	5.00	88.148	1200	681536.014	714870.226	1.749
44-0	0.019	5.00	88.248	1200	681512.910	714874.563	1.825
41-4	0.089	5.00	88.226	1350	681521.339	714860.680	2.167
45-0	0.057	5.00	87.573	1200	681450.416	714820.912	1.161
41-5	0.087	5.00	87.879	1350	681482.391	714838.085	1.959
41-6			87.897	1350	681480.058	714842.579	1.998
41-7			87.523	1350	681434.036	714818.133	1.785
41-8	0.027	5.00	87.523	1350	681436.400	714813.481	1.806
46-0		5.00	87.430	1200	681419.932	714815.536	1.425
41-9	0.037	5.00	87.480	1350	681424.329	714807.040	1.806
47-0		5.00	87.950	1200	681526.464	714826.290	1.425
47-1	0.058	5.00	87.550	1200	681482.339	714802.714	1.442
41-10	0.123	5.00	87.430	1350	681438.489	714779.369	2.030
41-11	0.023	5.00	87.390	1350	681441.127	714775.003	2.005
41-12	0.030	5.00	87.450	1800	681437.310	714761.518	2.103
48-0		5.00	87.450	1200	681389.971	714797.634	1.150
41-13	0.158	5.00	87.350	1800	681415.501	714749.863	2.075
PI 5			87.350	1500	681410.913	714747.274	2.185
Outfall 5			86.400	1500	681406.210	714744.800	1.252
50-0		5.00	91.041	1200	681272.880	714510.934	2.141
50-1	0.075	5.00	90.205	1200	681305.334	714543.097	2.205
50-2	0.043	5.00	89.346	1200	681326.122	714573.010	2.146
50-3	0.036	5.00	88.831	1350	681341.206	714595.670	2.631
50-4	0.109	5.00	88.427	1350	681376.057	714649.341	2.425
50-5	0.141	5.00	88.100	1350	681423.923	714716.689	2.279
PI 2			87.100	1350	681408.828	714728.225	1.480
Outfall 2			86.501	1350	681405.225	714730.997	0.891
49-0		5.00	87.806	1350	681617.771	714850.092	1.612
49-1	0.130	5.00	87.191	1350	681553.609	714815.717	1.222
49-2	0.017	5.00	87.245	1350	681537.854	714803.050	1.339
49-3	0.108	5.00	87.547	1350	681490.130	714778.489	1.748
49-4	0.057	5.00	87.734	1350	681460.413	714760.641	2.004
49-5	0.051	5.00	87.899	1350	681437.601	714733.019	2.219
PI 6			87.889	1350	681413.647	714739.599	2.363
Outfall 6			86.490	1350	681408.322	714741.891	0.986

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Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.017	PI 4	Outfall 4	7.171	0.600	85.584	85.573	0.011	652.0	600	15.93	35.2
1.016	1-16	PI 4	22.093	0.600	85.712	85.684	0.028	789.0	600	15.80	35.3
1.015	1-15	1-16	27.613	0.600	85.739	85.712	0.027	1030.0	600	15.37	35.8
1.014	1-14	1-15	13.668	0.600	85.752	85.739	0.013	1030.0	600	14.76	36.6
1.013	1-13	1-14	25.701	0.600	85.777	85.752	0.025	1030.0	600	14.46	37.0
18.004	18-4	1-14	7.300	0.600	85.770	85.756	0.014	504.0	375	7.72	50.0
18.003	18-3	18-4	13.576	0.600	85.797	85.770	0.027	504.0	375	7.57	50.0
18.002	18-2	18-3	45.795	0.600	85.939	85.797	0.142	322.5	375	7.29	50.0
18.001	18-1	18-2	31.368	0.600	86.068	85.939	0.129	243.2	300	6.53	50.0
20.000	20-0	18-2	48.292	0.600	86.244	85.959	0.285	169.4	225	5.80	50.0
18.000	18-0	18-1	60.538	0.600	86.425	86.068	0.357	169.6	225	6.01	50.0
19.001	19-1	18-1	13.696	0.600	86.590	86.509	0.081	169.1	225	5.61	50.0
19.000	19-0	19-1	22.929	0.600	86.725	86.590	0.135	169.8	225	5.38	50.0
1.012	1-12	1-13	10.520	0.600	85.901	85.884	0.017	634.0	450	13.89	37.8
4.016	4-16	1-13	41.030	0.600	85.817	85.777	0.040	1030.0	600	12.77	39.4
16.000	16-0	4-16	35.288	0.600	86.575	86.367	0.208	169.7	225	5.59	50.0
17.000	17-0	4-16	33.300	0.600	86.200	86.003	0.197	169.0	225	5.55	50.0
4.015	4-15	4-16	32.945	0.600	85.853	85.817	0.036	908.0	600	11.86	40.9
14.002	14-2	4-15	13.040	0.600	85.887	85.861	0.026	504.0	375	7.38	50.0
4.014	4-14	4-15	21.547	0.600	85.877	85.853	0.024	908.0	600	11.17	42.1
4.013	4-13	4-14	19.264	0.600	85.904	85.877	0.027	723.0	500	10.72	43.0
13.000	13-0	4-13	29.498	0.600	86.175	86.001	0.174	169.5	225	5.49	50.0
4.012	4-12	4-13	28.941	0.600	85.944	85.904	0.040	723.0	500	10.32	43.8
4.011	4-11	4-12	6.084	0.600	85.952	85.944	0.008	723.0	500	9.72	45.0
4.010	4-10	4-11	27.773	0.600	86.003	85.952	0.051	545.0	400	9.59	45.3
10.003	10-3	4-11	19.085	0.600	86.099	86.027	0.072	264.0	225	6.55	50.0
10.002	10-2	10-3	18.982	0.600	86.294	86.182	0.112	169.5	225	6.15	50.0
12.000	12-0	10-3	16.776	0.600	86.163	86.099	0.064	264.0	225	5.35	50.0
11.001	11-1	10-2	26.210	0.600	86.449	86.294	0.155	169.1	225	5.65	50.0
10.001	10-1	10-2	34.125	0.600	86.665	86.464	0.201	169.8	225	5.84	50.0
10.000	10-0	10-1	16.252	0.600	86.761	86.665	0.096	169.3	225	5.27	50.0
11.000	11-0	11-1	12.853	0.600	86.525	86.449	0.076	169.1	225	5.21	50.0
4.009	4-9	4-10	19.118	0.600	86.041	86.003	0.038	504.0	375	9.01	46.6

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)
1.017	0.946	267.5	356.9	0.916	0.317	3.746	0.0	600
1.016	0.859	242.8	358.4	1.258	0.816	3.746	0.0	600
1.015	0.750	212.1	358.2	1.442	1.258	3.690	0.0	600
1.014	0.750	212.1	362.8	1.519	1.442	3.658	0.0	600
1.013	0.750	212.1	314.8	1.701	1.519	3.140	0.0	600
18.004	0.800	88.4	61.3	1.726	1.740	0.453	0.0	230
18.003	0.800	88.4	57.5	1.552	1.726	0.424	0.0	221
18.002	1.003	110.8	43.6	1.586	1.552	0.322	0.0	163
18.001	1.004	70.9	16.3	1.382	1.661	0.120	0.0	98
20.000	1.001	39.8	3.3	1.081	1.716	0.024	0.0	44
18.000	1.001	39.8	0.0	1.150	1.457	0.000	0.0	0
19.001	1.002	39.9	6.1	0.785	1.016	0.045	0.0	59
19.000	1.000	39.8	3.4	1.200	0.785	0.025	0.0	44
1.012	0.800	127.2	100.8	1.806	1.744	0.985	0.0	304
4.016	0.750	212.1	221.3	1.406	1.701	2.072	0.0	525
16.000	1.001	39.8	0.0	1.200	1.231	0.000	0.0	0
17.000	1.003	39.9	0.0	1.200	1.595	0.000	0.0	0
4.015	0.800	226.1	200.7	0.965	1.406	1.810	0.0	442
14.002	0.800	88.4	54.1	1.259	1.182	0.399	0.0	212
4.014	0.800	226.1	152.4	1.023	0.965	1.335	0.0	362
4.013	0.800	157.1	150.9	0.996	1.123	1.296	0.0	396
13.000	1.001	39.8	0.0	1.200	1.174	0.000	0.0	0
4.012	0.800	157.1	148.7	1.406	0.996	1.254	0.0	390
4.011	0.800	157.1	153.0	1.398	1.406	1.254	0.0	402
4.010	0.801	100.7	109.2	1.419	1.498	0.889	0.0	400
10.003	0.800	31.8	34.4	1.400	1.598	0.254	0.0	225
10.002	1.001	39.8	20.3	1.181	1.317	0.150	0.0	114
12.000	0.800	31.8	0.0	1.200	1.400	0.000	0.0	0
11.001	1.002	39.9	4.9	1.026	1.181	0.036	0.0	53
10.001	1.000	39.8	5.3	0.926	1.011	0.039	0.0	55
10.000	1.002	39.8	0.0	0.649	0.926	0.000	0.0	0
11.000	1.002	39.9	0.0	0.950	1.026	0.000	0.0	0
4.009	0.800	88.4	93.9	1.305	1.444	0.743	0.0	339

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Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
8.001	8-1	4-10	28.505	0.600	86.120	86.003	0.117	243.6	300	6.41	50.0
8.000	8-0	8-1	44.945	0.600	86.290	86.120	0.170	264.0	225	5.94	50.0
9.000	9-0	8-1	44.809	0.600	86.399	86.229	0.170	264.0	225	5.93	50.0
4.008	4-8	4-9	27.328	0.600	86.126	86.041	0.085	321.5	375	8.61	47.6
7.000	7-0	4-9	59.885	0.600	86.575	86.222	0.353	169.6	225	6.00	50.0
6.003	6-3	4-8	23.535	0.600	86.265	86.126	0.139	169.3	225	7.10	50.0
4.007	4-7	4-8	52.234	0.600	86.389	86.126	0.263	198.6	255	8.16	48.8
4.006	4-6	4-7	11.653	0.600	86.448	86.389	0.059	197.5	255	7.29	50.0
4.005	4-5	4-6	4.463	0.600	86.471	86.448	0.023	194.1	255	7.10	50.0
4.004	4-4	4-5	27.740	0.600	86.611	86.471	0.140	198.1	255	7.03	50.0
5.001	5-1	4-4	38.057	0.600	86.962	86.737	0.225	169.1	225	6.09	50.0
4.003	4-3	4-4	25.937	0.600	86.742	86.611	0.131	198.0	255	6.56	50.0
4.002	4-2	4-3	35.740	0.600	86.922	86.742	0.180	198.6	255	6.13	50.0
4.001	4-1	4-2	3.729	0.600	86.941	86.922	0.019	196.3	255	5.54	50.0
4.000	4-0	4-1	28.651	0.600	87.085	86.941	0.144	199.0	255	5.48	50.0
5.000	5-0	5-1	27.560	0.600	87.125	86.962	0.163	169.1	225	5.46	50.0
6.002	6-2	6-3	28.382	0.600	86.433	86.265	0.168	168.9	225	6.71	50.0
6.001	6-1	6-2	39.265	0.600	86.665	86.433	0.232	169.2	225	6.24	50.0
6.000	6-0	6-1	34.964	0.600	86.871	86.665	0.206	169.7	225	5.58	50.0
14.001	14-1	14-2	49.191	0.600	86.016	85.887	0.129	380.0	300	7.11	50.0
15.000	15-0	14-2	37.380	0.600	86.269	86.048	0.221	169.1	225	5.62	50.0
14.000	14-0	14-1	52.189	0.600	86.153	86.016	0.137	380.0	300	6.09	50.0
1.011	1-11	1-12	12.131	0.600	85.921	85.901	0.020	600.0	400	13.67	38.1
3.000	3-0	1-12	40.242	0.600	86.791	86.554	0.237	169.8	225	5.67	50.0
1.010	1-10	1-11	47.904	0.600	86.058	85.921	0.137	349.7	400	13.40	38.5
1.009	1-9	1-10	28.263	0.600	86.105	86.058	0.047	600.0	400	12.61	39.7
1.008	1-8	1-9	64.345	0.600	86.233	86.105	0.128	504.0	375	11.99	40.7
1.007	1-7	1-8	45.197	0.600	86.323	86.233	0.090	504.0	375	10.65	43.1
1.006	1-6	1-7	61.852	0.600	86.446	86.323	0.123	504.0	375	9.71	45.0
1.005	1-5	1-6	43.656	0.600	86.533	86.446	0.087	504.0	375	8.42	48.1
2.000	2-0	1-6	30.803	0.600	87.163	86.981	0.182	169.2	225	5.51	50.0
1.004	1-4	1-5	41.714	0.600	86.662	86.533	0.129	323.4	375	7.51	50.0
1.003	1-3	1-4	17.750	0.600	86.717	86.662	0.055	322.7	375	6.82	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)
8.001	1.003	70.9	12.9	0.980	1.519	0.095	0.0	86
8.000	0.800	31.8	0.0	1.185	1.055	0.000	0.0	0
9.000	0.800	31.8	0.0	1.076	0.946	0.000	0.0	0
4.008	1.005	111.0	76.5	1.226	1.305	0.593	0.0	230
7.000	1.001	39.8	0.0	1.300	1.274	0.000	0.0	0
6.003	1.002	39.8	24.3	1.440	1.376	0.179	0.0	127
4.007	1.002	51.2	37.3	1.177	1.346	0.282	0.0	162
4.006	1.004	51.3	29.3	1.359	1.177	0.216	0.0	138
4.005	1.013	51.8	29.3	1.402	1.359	0.216	0.0	137
4.004	1.003	51.2	23.9	1.361	1.402	0.176	0.0	122
5.001	1.002	39.8	5.8	0.813	1.265	0.043	0.0	58
4.003	1.003	51.2	7.7	1.324	1.361	0.057	0.0	66
4.002	1.002	51.2	3.8	1.023	1.324	0.028	0.0	46
4.001	1.008	51.5	3.8	1.004	1.023	0.028	0.0	46
4.000	1.001	51.1	0.0	0.860	1.004	0.000	0.0	0
5.000	1.002	39.9	0.0	0.750	0.813	0.000	0.0	0
6.002	1.003	39.9	11.0	1.342	1.440	0.081	0.0	80
6.001	1.002	39.8	8.1	1.180	1.342	0.060	0.0	69
6.000	1.000	39.8	2.7	0.804	1.180	0.020	0.0	40
14.001	0.800	56.6	23.0	1.018	1.334	0.170	0.0	133
15.000	1.002	39.8	0.9	1.600	1.248	0.007	0.0	24
14.000	0.800	56.6	3.7	1.689	1.018	0.027	0.0	51
1.011	0.763	95.9	89.9	1.695	1.856	0.871	0.0	309
3.000	1.000	39.8	1.8	1.455	1.378	0.013	0.0	32
1.010	1.003	126.1	90.8	2.037	1.695	0.871	0.0	252
1.009	0.763	95.9	87.7	1.816	2.037	0.816	0.0	303
1.008	0.800	88.4	69.9	1.945	1.841	0.634	0.0	252
1.007	0.800	88.4	58.5	1.983	1.945	0.501	0.0	223
1.006	0.800	88.4	40.3	1.702	1.983	0.330	0.0	178
1.005	0.800	88.4	19.3	1.293	1.702	0.148	0.0	118
2.000	1.002	39.8	1.6	1.200	1.317	0.012	0.0	31
1.004	1.002	110.7	14.4	1.013	1.293	0.106	0.0	90
1.003	1.003	110.8	12.7	1.058	1.013	0.094	0.0	85

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Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.002	1-2	1-3	32.342	0.600	86.817	86.717	0.100	323.4	375	6.52	50.0
1.001	1-1	1-2	38.395	0.600	86.936	86.817	0.119	322.6	375	5.98	50.0
1.000	1-0	1-1	20.719	0.600	87.000	86.936	0.064	323.7	375	5.34	50.0
21.015	PI 3	Outfall 3	34.110	0.600	85.997	85.938	0.059	578.1	600	15.16	36.1
21.014	21-14	PI 3	3.768	0.600	86.104	86.097	0.007	538.3	600	14.60	36.8
21.013	21-13	21-14	35.358	0.600	86.138	86.104	0.034	1030.0	600	14.53	36.9
21.012	21-12	21-13	31.554	0.600	86.169	86.138	0.031	1030.0	600	13.75	38.0
30.002	30-2	21-13	19.913	0.600	86.896	86.778	0.118	168.8	225	6.34	50.0
30.001	30-1	30-2	28.062	0.600	87.062	86.896	0.166	169.0	225	6.01	50.0
30.000	30-0	30-1	36.134	0.600	87.325	87.062	0.263	137.4	225	5.54	50.0
21.011	21-11	21-12	65.244	0.600	86.232	86.169	0.063	1030.0	600	13.05	39.0
29.005	29-5	21-12	35.580	0.600	86.487	86.277	0.210	169.4	225	8.09	48.9
29.004	29-4	29-5	32.236	0.600	86.684	86.487	0.197	163.6	225	7.50	50.0
29.003	29-3	29-4	16.189	0.600	86.780	86.684	0.096	168.6	225	6.97	50.0
29.002	29-2	29-3	52.121	0.600	87.088	86.780	0.308	169.2	225	6.70	50.0
29.001	29-1	29-2	12.256	0.600	87.161	87.088	0.073	167.9	225	5.83	50.0
29.000	29-0	29-1	37.960	0.600	87.385	87.161	0.224	169.5	225	5.63	50.0
21.010	21-10	21-11	23.315	0.600	86.272	86.232	0.040	582.9	500	11.60	41.3
27.001	27-1	21-11	43.903	0.600	86.275	86.232	0.043	1030.0	600	7.05	50.0
28.001	28-1	21-11	32.739	0.600	86.333	86.232	0.101	324.2	375	6.32	50.0
28.000	28-0	28-1	46.846	0.600	86.478	86.333	0.145	323.1	375	5.78	50.0
27.000	27-0	27-1	48.356	0.600	86.322	86.275	0.047	1030.0	600	6.07	50.0
21.009	21-9	21-10	43.935	0.600	86.348	86.272	0.076	578.1	500	11.16	42.1
21.008	21-8	21-9	15.307	0.600	86.375	86.348	0.027	566.9	500	10.35	43.7
21.007	21-7	21-8	14.038	0.600	86.400	86.375	0.025	561.5	500	10.06	44.3
21.006	21-6	21-7	51.829	0.600	86.512	86.400	0.112	462.8	500	9.81	44.8
21.005	21-5	21-6	22.318	0.600	86.598	86.534	0.064	348.7	400	8.95	46.8
22.007	22-7	21-6	6.699	0.600	86.529	86.512	0.017	394.1	400	8.52	47.8
22.006	22-6	22-7	18.119	0.600	86.574	86.529	0.045	402.7	400	8.40	48.1
22.005	22-5	22-6	15.182	0.600	86.612	86.574	0.038	399.5	400	8.08	49.0
26.001	26-1	22-6	33.167	0.600	87.022	86.826	0.196	169.2	225	5.84	50.0
26.000	26-0	26-1	17.489	0.600	87.125	87.022	0.103	169.8	225	5.29	50.0
22.004	22-4	22-5	49.431	0.600	86.753	86.612	0.141	350.6	400	7.81	49.7

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)
1.002	1.002	110.6	9.4	1.008	1.058	0.069	0.0	73
1.001	1.003	110.8	5.0	0.889	1.008	0.037	0.0	54
1.000	1.001	110.6	1.6	1.175	0.889	0.012	0.0	32
21.015	1.005	284.3	257.7	1.473	0.762	2.635	0.0	451
21.014	1.042	294.7	262.9	1.366	1.373	2.635	0.0	444
21.013	0.750	212.1	263.4	2.112	1.366	2.635	0.0	600
21.012	0.750	212.1	253.2	1.961	2.112	2.461	0.0	600
30.002	1.003	39.9	10.8	1.679	1.847	0.080	0.0	80
30.001	1.003	39.9	4.2	1.413	1.679	0.031	0.0	49
30.000	1.113	44.3	1.4	1.200	1.413	0.010	0.0	27
21.011	0.750	212.1	221.0	1.285	1.961	2.092	0.0	524
29.005	1.001	39.8	25.1	2.139	2.228	0.189	0.0	130
29.004	1.019	40.5	17.5	1.971	2.139	0.129	0.0	103
29.003	1.004	39.9	14.1	1.777	1.971	0.104	0.0	92
29.002	1.002	39.8	6.1	0.976	1.777	0.045	0.0	59
29.001	1.006	40.0	3.8	1.114	0.976	0.028	0.0	47
29.000	1.001	39.8	0.3	0.900	1.114	0.002	0.0	14
21.010	0.892	175.2	171.9	1.157	1.385	1.534	0.0	405
27.001	0.750	212.1	19.5	1.025	1.285	0.144	0.0	122
28.001	1.001	110.5	27.2	1.138	1.510	0.201	0.0	126
28.000	1.002	110.7	5.3	1.255	1.138	0.039	0.0	55
27.000	0.750	212.1	0.0	1.192	1.025	0.000	0.0	0
21.009	0.896	175.9	165.2	1.235	1.157	1.447	0.0	387
21.008	0.905	177.7	169.9	1.343	1.235	1.434	0.0	394
21.007	0.909	178.6	168.6	1.261	1.343	1.405	0.0	389
21.006	1.003	196.9	152.7	1.357	1.261	1.257	0.0	333
21.005	1.005	126.3	40.1	1.458	1.435	0.316	0.0	154
22.007	0.944	118.7	113.1	1.571	1.457	0.872	0.0	314
22.006	0.934	117.4	113.8	1.916	1.571	0.872	0.0	319
22.005	0.938	117.9	105.7	1.919	1.916	0.796	0.0	297
26.001	1.002	39.8	2.3	1.303	1.839	0.017	0.0	36
26.000	1.000	39.8	0.0	1.200	1.303	0.000	0.0	0
22.004	1.002	125.9	82.1	1.998	1.919	0.609	0.0	236

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Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
25.001	25-1	22-5	14.843	0.600	87.103	87.015	0.088	168.7	225	5.74	50.0
25.000	25-0	25-1	29.832	0.600	87.279	87.103	0.176	169.5	225	5.50	50.0
22.003	22-3	22-4	46.319	0.600	86.885	86.753	0.132	350.9	400	6.98	50.0
22.002	22-2	22-3	7.454	0.600	86.907	86.885	0.022	338.8	400	6.21	50.0
24.000	24-0	22-3	53.093	0.600	87.100	86.949	0.151	351.6	400	5.88	50.0
22.001	22-1	22-2	51.789	0.600	87.055	86.907	0.148	349.9	400	6.09	50.0
23.000	23-0	22-2	63.858	0.600	87.161	86.964	0.197	324.2	375	6.06	50.0
22.000	22-0	22-1	13.905	0.600	87.095	87.055	0.040	347.6	400	5.23	50.0
21.004	21-4	21-5	24.650	0.600	86.669	86.598	0.071	347.2	400	8.58	47.7
21.003	21-3	21-4	48.146	0.600	86.818	86.669	0.149	323.1	375	8.17	48.7
21.002	21-2	21-3	56.065	0.600	86.991	86.818	0.173	324.1	375	7.37	50.0
21.001	21-1	21-2	35.179	0.600	87.100	86.991	0.109	322.7	375	6.43	50.0
21.000	21-0	21-1	51.042	0.600	87.258	87.100	0.158	323.0	375	5.85	50.0
31.017	PI 1	Outfall 1	18.902	0.600	84.520	84.501	0.019	1020.0	600	11.45	41.6
31.016	31-17	PI 1	5.899	0.600	84.631	84.620	0.011	536.2	600	11.03	42.4
31.015	31-16	31-17	11.460	0.600	84.655	84.631	0.024	477.5	600	10.94	42.6
31.014	31-15	31-16	20.609	0.600	84.691	84.655	0.036	572.5	450	10.76	42.9
37.004	37-4	31-16	26.698	0.600	84.822	84.744	0.078	342.3	375	9.70	45.0
37.003	37-3	37-4	49.639	0.600	84.944	84.822	0.122	406.9	375	9.25	46.1
37.002	37-2	37-3	64.636	0.600	85.144	84.944	0.200	323.2	300	8.32	48.3
40.001	40-1	37-3	74.807	0.600	85.619	85.178	0.441	169.6	225	6.69	50.0
40.000	40-0	40-1	26.496	0.600	85.775	85.619	0.156	169.8	225	5.44	50.0
38.001	38-1	37-2	67.475	0.600	85.420	85.144	0.276	244.5	300	6.85	50.0
37.001	37-1	37-2	73.376	0.600	86.272	85.840	0.432	169.9	225	7.08	50.0
37.000	37-0	37-1	51.420	0.600	86.575	86.272	0.303	169.7	225	5.86	50.0
38.000	38-0	38-1	43.565	0.600	85.677	85.420	0.257	169.5	225	5.73	50.0
39.000	39-0	38-1	6.921	0.600	86.115	86.074	0.041	168.8	225	5.11	50.0
31.013	31-14	31-15	14.958	0.600	84.717	84.691	0.026	575.3	450	10.36	43.7
31.012	31-13	31-14	33.595	0.600	84.775	84.717	0.058	579.2	450	10.06	44.3
31.011	31-12	31-13	55.310	0.600	84.933	84.775	0.158	350.1	400	9.39	45.7
36.004	36-4	31-13	42.767	0.600	86.319	85.891	0.428	100.0	225	6.56	50.0
36.003	36-3	36-4	14.574	0.600	86.465	86.319	0.146	100.0	225	6.01	50.0
36.002	36-2	36-3	11.007	0.600	86.575	86.465	0.110	100.0	225	5.83	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)
25.001	1.004	39.9	8.4	1.372	1.691	0.062	0.0	70
25.000	1.001	39.8	0.0	1.200	1.372	0.000	0.0	0
22.003	1.002	125.9	64.5	1.278	1.998	0.476	0.0	203
22.002	1.019	128.1	49.2	1.257	1.278	0.363	0.0	171
24.000	1.001	125.7	1.1	1.155	1.214	0.008	0.0	26
22.001	1.003	126.0	6.6	0.843	1.257	0.049	0.0	62
23.000	1.001	110.5	4.7	0.821	1.225	0.035	0.0	52
22.000	1.006	126.5	3.4	0.750	0.843	0.025	0.0	45
21.004	1.007	126.5	32.8	1.298	1.458	0.254	0.0	139
21.003	1.002	110.7	26.2	1.498	1.323	0.198	0.0	123
21.002	1.001	110.5	12.3	1.039	1.498	0.091	0.0	84
21.001	1.003	110.8	8.0	0.750	1.039	0.059	0.0	68
21.000	1.002	110.7	0.7	0.907	0.750	0.005	0.0	21
31.017	0.754	213.2	225.1	1.320	0.469	1.996	0.0	537
31.016	1.044	295.3	229.3	1.209	1.220	1.996	0.0	399
31.015	1.107	313.1	230.2	1.595	1.209	1.996	0.0	383
31.014	0.842	134.0	121.1	1.809	1.745	1.042	0.0	337
37.004	0.973	107.5	104.3	1.733	1.731	0.854	0.0	299
37.003	0.892	98.5	95.7	1.702	1.733	0.766	0.0	300
37.002	0.869	61.4	61.3	1.803	1.777	0.468	0.0	247
40.001	1.001	39.8	3.5	1.231	1.618	0.026	0.0	45
40.000	1.000	39.8	0.0	1.200	1.231	0.000	0.0	0
38.001	1.001	70.7	19.7	1.427	1.803	0.145	0.0	108
37.001	1.000	39.8	6.9	1.239	1.182	0.051	0.0	63
37.000	1.001	39.8	0.0	1.200	1.239	0.000	0.0	0
38.000	1.001	39.8	4.6	1.450	1.502	0.034	0.0	51
39.000	1.003	39.9	0.0	0.831	0.848	0.000	0.0	0
31.013	0.840	133.6	121.0	1.833	1.809	1.022	0.0	337
31.012	0.837	133.2	116.4	2.006	1.833	0.970	0.0	327
31.011	1.003	126.0	81.3	1.568	2.056	0.656	0.0	234
36.004	1.307	52.0	15.7	1.132	1.115	0.116	0.0	85
36.003	1.307	52.0	14.4	1.264	1.132	0.106	0.0	80
36.002	1.307	52.0	11.9	1.362	1.264	0.088	0.0	73

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Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
36.001	36-1	36-2	14.673	0.600	86.722	86.575	0.147	100.0	225	5.69	50.0
36.000	36-0	36-1	30.135	0.600	86.900	86.722	0.178	169.3	225	5.50	50.0
31.010	31-11	31-12	29.020	0.600	85.016	84.933	0.083	349.6	400	8.47	47.9
31.009	31-10	31-11	19.192	0.600	85.071	85.016	0.055	348.9	400	7.99	49.2
35.000	35-0	31-11	30.939	0.600	85.659	85.476	0.183	169.1	225	5.51	50.0
31.008	31-9	31-10	8.755	0.600	85.096	85.071	0.025	350.2	400	7.67	50.0
31.007	31-8	31-9	4.633	0.600	85.384	85.369	0.015	308.9	300	7.53	50.0
34.000	33-0	31-9	53.968	0.600	85.675	85.357	0.318	169.7	225	5.90	50.0
31.006	31-7	31-8	53.993	0.600	85.605	85.384	0.221	244.3	300	7.44	50.0
33.002	34-2	31-8	12.512	0.600	85.611	85.537	0.074	169.1	225	5.74	50.0
33.001	34-1	34-2	9.300	0.600	85.666	85.611	0.055	169.1	225	5.53	50.0
33.000	34-0	34-1	22.672	0.600	85.800	85.666	0.134	169.2	225	5.38	50.0
31.005	31-6	31-7	6.674	0.600	85.645	85.605	0.040	166.9	225	6.54	50.0
32.001	32-1	31-7	27.582	0.600	85.980	85.817	0.163	169.2	225	5.87	50.0
32.000	32-0	32-1	24.620	0.600	86.125	85.980	0.145	169.8	225	5.41	50.0
31.004	31-5	31-6	31.472	0.600	85.960	85.645	0.315	100.0	225	6.43	50.0
31.003	31-4	31-5	17.107	0.600	86.174	85.960	0.214	80.0	225	6.03	50.0
31.002	31-2	31-4	13.738	0.600	86.346	86.174	0.172	80.0	225	5.83	50.0
31.001	31-1	31-2	22.282	0.600	86.625	86.346	0.279	80.0	225	5.68	50.0
31.000	31-0	31-1	25.451	0.600	86.775	86.625	0.150	169.7	225	5.42	50.0
41.014	PI 5	Outfall 5	5.314	0.600	85.165	85.148	0.017	312.6	500	11.01	42.4
41.013	41-13	PI 5	5.268	0.600	85.275	85.265	0.010	526.8	500	10.94	42.6
41.012	41-12	41-13	24.728	0.600	85.347	85.275	0.072	343.4	400	10.84	42.7
48.000	48-0	41-13	54.165	0.600	86.300	85.758	0.542	100.0	225	5.69	50.0
41.011	41-11	41-12	14.015	0.600	85.385	85.347	0.038	368.8	400	10.44	43.5
41.010	41-10	41-11	5.101	0.600	85.400	85.385	0.015	340.1	400	10.20	44.0
41.009	41-9	41-10	31.084	0.600	85.674	85.578	0.096	323.8	375	10.11	44.2
47.001	47-1	41-10	49.677	0.600	86.108	85.815	0.293	169.5	225	6.53	50.0
47.000	47-0	47-1	50.028	0.600	86.525	86.108	0.417	120.0	225	5.70	50.0
41.008	41-8	41-9	13.682	0.600	85.717	85.674	0.043	318.2	375	9.60	45.3
46.000	46-0	41-9	9.566	0.600	86.005	85.948	0.057	167.8	225	5.16	50.0
41.007	41-7	41-8	5.218	0.600	85.738	85.717	0.021	248.5	375	9.37	45.8
41.006	41-6	41-7	52.111	0.600	85.899	85.738	0.161	323.7	375	9.29	46.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)
36.001	1.307	52.0	8.9	1.436	1.362	0.066	0.0	63
36.000	1.002	39.8	0.0	1.433	1.436	0.000	0.0	0
31.010	1.003	126.1	75.0	1.434	1.568	0.577	0.0	222
31.009	1.004	126.2	65.2	1.789	1.434	0.489	0.0	204
35.000	1.002	39.9	3.4	1.207	1.149	0.025	0.0	44
31.008	1.003	126.0	66.3	1.889	1.789	0.489	0.0	206
31.007	0.889	62.8	59.2	1.703	1.716	0.437	0.0	233
34.000	1.001	39.8	0.0	1.500	1.803	0.000	0.0	0
31.006	1.001	70.8	28.6	1.989	1.703	0.211	0.0	133
33.002	1.002	39.9	11.2	1.486	1.625	0.083	0.0	81
33.001	1.002	39.9	8.7	1.475	1.486	0.064	0.0	71
33.000	1.002	39.8	3.7	1.200	1.475	0.027	0.0	46
31.005	1.009	40.1	24.9	2.130	2.064	0.184	0.0	129
32.001	1.002	39.8	3.1	1.545	1.852	0.023	0.0	43
32.000	1.000	39.8	0.0	1.400	1.545	0.000	0.0	0
31.004	1.307	52.0	17.5	2.165	2.130	0.129	0.0	90
31.003	1.463	58.2	14.6	2.013	2.165	0.108	0.0	77
31.002	1.463	58.2	11.8	1.804	2.013	0.087	0.0	68
31.001	1.463	58.2	8.3	1.610	1.804	0.061	0.0	57
31.000	1.001	39.8	0.0	1.586	1.610	0.000	0.0	0
41.014	1.223	240.1	140.4	1.685	0.752	1.221	0.0	275
41.013	0.939	184.4	140.8	1.575	1.585	1.221	0.0	329
41.012	1.013	127.2	123.1	1.703	1.675	1.063	0.0	319
48.000	1.307	52.0	0.0	0.925	1.367	0.000	0.0	0
41.011	0.977	122.7	121.9	1.605	1.703	1.033	0.0	328
41.010	1.018	127.9	120.5	1.630	1.605	1.010	0.0	311
41.009	1.001	110.6	99.3	1.431	1.477	0.829	0.0	279
47.001	1.001	39.8	7.9	1.217	1.390	0.058	0.0	67
47.000	1.192	47.4	0.0	1.200	1.217	0.000	0.0	0
41.008	1.010	111.6	97.2	1.431	1.431	0.792	0.0	272
46.000	1.006	40.0	0.0	1.200	1.307	0.000	0.0	0
41.007	1.145	126.4	95.0	1.410	1.431	0.765	0.0	244
41.006	1.001	110.6	95.3	1.623	1.410	0.765	0.0	270

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Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
41.005	41-5	41-6	5.064	0.600	85.920	85.899	0.021	241.1	375	8.43	48.1
41.004	41-4	41-5	45.028	0.600	86.059	85.920	0.139	323.9	375	8.35	48.3
45.000	45-0	41-5	36.295	0.600	86.412	86.198	0.214	169.6	225	5.60	50.0
41.003	41-3	41-4	32.932	0.600	86.194	86.059	0.135	243.9	300	7.60	50.0
42.002	42-2	41-4	17.507	0.600	86.399	86.327	0.072	243.1	300	6.00	50.0
44.000	44-0	41-4	16.241	0.600	86.423	86.327	0.096	169.2	225	5.27	50.0
42.001	42-1	42-2	30.162	0.600	86.523	86.399	0.124	243.2	300	5.71	50.0
43.000	43-0	42-2	11.712	0.600	86.593	86.524	0.069	169.7	225	5.20	50.0
42.000	42-0	42-1	12.458	0.600	86.574	86.523	0.051	244.3	300	5.21	50.0
41.002	41-2	41-3	49.058	0.600	86.395	86.194	0.201	244.1	300	7.06	50.0
41.001	41-1	41-2	45.904	0.600	86.583	86.395	0.188	244.2	300	6.24	50.0
41.000	41-0	41-1	28.592	0.600	86.700	86.583	0.117	244.4	300	5.48	50.0
49.006	PI 2	Outfall 2	4.546	0.600	85.620	85.610	0.010	454.6	450	9.22	46.1
49.005	50-5	PI 2	18.999	0.600	85.821	85.763	0.058	327.6	400	9.14	46.3
49.004	50-4	50-5	82.625	0.600	86.002	85.821	0.181	456.5	400	8.84	47.0
49.003	50-3	50-4	63.994	0.600	86.200	86.002	0.198	323.2	400	7.27	50.0
49.002	50-2	50-3	27.221	0.600	87.200	86.860	0.340	80.0	225	6.25	50.0
49.001	50-1	50-2	36.427	0.600	88.000	87.545	0.455	80.0	225	5.94	50.0
49.000	50-0	50-1	45.692	0.600	88.900	88.329	0.571	80.0	225	5.52	50.0
50.006	PI 6	Outfall 6	5.797	0.600	85.526	85.504	0.022	263.5	450	9.69	45.1
50.005	49-5	PI 6	24.841	0.600	85.680	85.626	0.054	460.0	450	9.62	45.2
50.004	49-4	49-5	35.824	0.600	85.730	85.680	0.050	720.0	450	9.18	46.2
50.003	49-3	49-4	34.665	0.600	85.799	85.730	0.069	500.0	375	8.38	48.2
50.002	49-2	49-3	53.673	0.600	85.906	85.799	0.107	500.0	375	7.66	50.0
50.001	49-1	49-2	20.216	0.600	85.969	85.906	0.063	320.9	375	6.55	50.0
50.000	49-0	49-1	72.790	0.600	86.194	85.969	0.225	323.5	375	6.21	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)
41.005	1.162	128.4	99.7	1.584	1.623	0.765	0.0	249
41.004	1.001	110.6	81.2	1.792	1.584	0.621	0.0	240
45.000	1.001	39.8	7.7	0.936	1.456	0.057	0.0	67
41.003	1.002	70.8	25.7	1.006	1.867	0.190	0.0	125
42.002	1.004	70.9	43.8	1.449	1.599	0.323	0.0	171
44.000	1.002	39.8	2.6	1.600	1.674	0.019	0.0	38
42.001	1.003	70.9	28.3	1.173	1.449	0.209	0.0	132
43.000	1.000	39.8	2.4	1.200	1.399	0.018	0.0	37
42.000	1.001	70.8	11.8	0.994	1.173	0.087	0.0	82
41.002	1.002	70.8	19.8	1.105	1.006	0.146	0.0	108
41.001	1.001	70.8	11.7	1.367	1.105	0.086	0.0	82
41.000	1.001	70.8	6.9	1.250	1.367	0.051	0.0	63
49.006	0.947	150.6	50.5	1.030	0.441	0.404	0.0	179
49.005	1.037	130.3	50.7	1.879	0.937	0.404	0.0	173
49.004	0.877	110.2	33.5	2.025	1.879	0.263	0.0	151
49.003	1.044	131.2	20.9	2.231	2.025	0.154	0.0	107
49.002	1.463	58.2	16.0	1.921	1.746	0.118	0.0	80
49.001	1.463	58.2	10.2	1.980	1.576	0.075	0.0	64
49.000	1.463	58.2	0.0	1.916	1.651	0.000	0.0	0
50.006	1.247	198.4	44.3	1.913	0.536	0.363	0.0	144
50.005	0.941	149.7	44.5	1.769	1.813	0.363	0.0	167
50.004	0.750	119.3	39.1	1.554	1.769	0.312	0.0	177
50.003	0.803	88.7	33.3	1.373	1.629	0.255	0.0	159
50.002	0.803	88.7	19.9	0.964	1.373	0.147	0.0	120
50.001	1.006	111.1	17.6	0.847	0.964	0.130	0.0	101
50.000	1.002	110.6	0.0	1.237	0.847	0.000	0.0	0

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Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.017	7.171	652.0	600	Circular	87.100	85.584	0.916	86.490	85.573	0.317
1.016	22.093	789.0	600	Circular	87.570	85.712	1.258	87.100	85.684	0.816
1.015	27.613	1030.0	600	Circular	87.781	85.739	1.442	87.570	85.712	1.258
1.014	13.668	1030.0	600	Circular	87.871	85.752	1.519	87.781	85.739	1.442
1.013	25.701	1030.0	600	Circular	88.078	85.777	1.701	87.871	85.752	1.519
18.004	7.300	504.0	375	Circular	87.871	85.770	1.726	87.871	85.756	1.740
18.003	13.576	504.0	375	Circular	87.724	85.797	1.552	87.871	85.770	1.726
18.002	45.795	322.5	375	Circular	87.900	85.939	1.586	87.724	85.797	1.552
18.001	31.368	243.2	300	Circular	87.750	86.068	1.382	87.900	85.939	1.661
20.000	48.292	169.4	225	Circular	87.550	86.244	1.081	87.900	85.959	1.716
18.000	60.538	169.6	225	Circular	87.800	86.425	1.150	87.750	86.068	1.457
19.001	13.696	169.1	225	Circular	87.600	86.590	0.785	87.750	86.509	1.016
19.000	22.929	169.8	225	Circular	88.150	86.725	1.200	87.600	86.590	0.785
1.012	10.520	634.0	450	Circular	88.157	85.901	1.806	88.078	85.884	1.744
4.016	41.030	1030.0	600	Circular	87.823	85.817	1.406	88.078	85.777	1.701
16.000	35.288	169.7	225	Circular	88.000	86.575	1.200	87.823	86.367	1.231
17.000	33.300	169.0	225	Circular	87.625	86.200	1.200	87.823	86.003	1.595
4.015	32.945	908.0	600	Circular	87.418	85.853	0.965	87.823	85.817	1.406
14.002	13.040	504.0	375	Circular	87.521	85.887	1.259	87.418	85.861	1.182
4.014	21.547	908.0	600	Circular	87.500	85.877	1.023	87.418	85.853	0.965
4.013	19.264	723.0	500	Circular	87.400	85.904	0.996	87.500	85.877	1.123
13.000	29.498	169.5	225	Circular	87.600	86.175	1.200	87.400	86.001	1.174
4.012	28.941	723.0	500	Circular	87.850	85.944	1.406	87.400	85.904	0.996
4.011	6.084	723.0	500	Circular	87.850	85.952	1.398	87.850	85.944	1.406
4.010	27.773	545.0	400	Circular	87.822	86.003	1.419	87.850	85.952	1.498
10.003	19.085	264.0	225	Circular	87.724	86.099	1.400	87.850	86.027	1.598
10.002	18.982	169.5	225	Circular	87.700	86.294	1.181	87.724	86.182	1.317
12.000	16.776	264.0	225	Circular	87.588	86.163	1.200	87.724	86.099	1.400
11.001	26.210	169.1	225	Circular	87.700	86.449	1.026	87.700	86.294	1.181
10.001	34.125	169.8	225	Circular	87.816	86.665	0.926	87.700	86.464	1.011
10.000	16.252	169.3	225	Circular	87.635	86.761	0.649	87.816	86.665	0.926
11.000	12.853	169.1	225	Circular	87.700	86.525	0.950	87.700	86.449	1.026
4.009	19.118	504.0	375	Circular	87.721	86.041	1.305	87.822	86.003	1.444
8.001	28.505	243.6	300	Circular	87.400	86.120	0.980	87.822	86.003	1.519

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.017	PI 4	1500	Manhole	Adoptable	Outfall 4	1500	Manhole	Adoptable
1.016	1-16	2100	Manhole	Adoptable	PI 4	1500	Manhole	Adoptable
1.015	1-15	1500	Manhole	Adoptable	1-16	2100	Manhole	Adoptable
1.014	1-14	1500	Manhole	Adoptable	1-15	1500	Manhole	Adoptable
1.013	1-13	1500	Manhole	Adoptable	1-14	1500	Manhole	Adoptable
18.004	18-4	1350	Manhole	Adoptable	1-14	1500	Manhole	Adoptable
18.003	18-3	1350	Manhole	Adoptable	18-4	1350	Manhole	Adoptable
18.002	18-2	1350	Manhole	Adoptable	18-3	1350	Manhole	Adoptable
18.001	18-1	1200	Manhole	Adoptable	18-2	1350	Manhole	Adoptable
20.000	20-0	1200	Manhole	Adoptable	18-2	1350	Manhole	Adoptable
18.000	18-0	1200	Manhole	Adoptable	18-1	1200	Manhole	Adoptable
19.001	19-1	1200	Manhole	Adoptable	18-1	1200	Manhole	Adoptable
19.000	19-0	1200	Manhole	Adoptable	19-1	1200	Manhole	Adoptable
1.012	1-12	1350	Manhole	Adoptable	1-13	1500	Manhole	Adoptable
4.016	4-16	1500	Manhole	Adoptable	1-13	1500	Manhole	Adoptable
16.000	16-0	1200	Manhole	Adoptable	4-16	1500	Manhole	Adoptable
17.000	17-0	1200	Manhole	Adoptable	4-16	1500	Manhole	Adoptable
4.015	4-15	1500	Manhole	Adoptable	4-16	1500	Manhole	Adoptable
14.002	14-2	1350	Manhole	Adoptable	4-15	1500	Manhole	Adoptable
4.014	4-14	1500	Manhole	Adoptable	4-15	1500	Manhole	Adoptable
4.013	4-13	1500	Manhole	Adoptable	4-14	1500	Manhole	Adoptable
13.000	13-0	1200	Manhole	Adoptable	4-13	1500	Manhole	Adoptable
4.012	4-12	1500	Manhole	Adoptable	4-13	1500	Manhole	Adoptable
4.011	4-11	1500	Manhole	Adoptable	4-12	1500	Manhole	Adoptable
4.010	4-10	1350	Manhole	Adoptable	4-11	1500	Manhole	Adoptable
10.003	10-3	1200	Manhole	Adoptable	4-11	1500	Manhole	Adoptable
10.002	10-2	1200	Manhole	Adoptable	10-3	1200	Manhole	Adoptable
12.000	12-0	1200	Manhole	Adoptable	10-3	1200	Manhole	Adoptable
11.001	11-1	1200	Manhole	Adoptable	10-2	1200	Manhole	Adoptable
10.001	10-1	1200	Manhole	Adoptable	10-2	1200	Manhole	Adoptable
10.000	10-0	1200	Manhole	Adoptable	10-1	1200	Manhole	Adoptable
11.000	11-0	1200	Manhole	Adoptable	11-1	1200	Manhole	Adoptable
4.009	4-9	1350	Manhole	Adoptable	4-10	1350	Manhole	Adoptable
8.001	8-1	1200	Manhole	Adoptable	4-10	1350	Manhole	Adoptable

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Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
8.000	44.945	264.0	225	Circular	87.700	86.290	1.185	87.400	86.120	1.055
9.000	44.809	264.0	225	Circular	87.700	86.399	1.076	87.400	86.229	0.946
4.008	27.328	321.5	375	Circular	87.727	86.126	1.226	87.721	86.041	1.305
7.000	59.885	169.6	225	Circular	88.100	86.575	1.300	87.721	86.222	1.274
6.003	23.535	169.3	225	Circular	87.930	86.265	1.440	87.727	86.126	1.376
4.007	52.234	198.6	255	Circular	87.821	86.389	1.177	87.727	86.126	1.346
4.006	11.653	197.5	255	Circular	88.062	86.448	1.359	87.821	86.389	1.177
4.005	4.463	194.1	255	Circular	88.128	86.471	1.402	88.062	86.448	1.359
4.004	27.740	198.1	255	Circular	88.227	86.611	1.361	88.128	86.471	1.402
5.001	38.057	169.1	225	Circular	88.000	86.962	0.813	88.227	86.737	1.265
4.003	25.937	198.0	255	Circular	88.321	86.742	1.324	88.227	86.611	1.361
4.002	35.740	198.6	255	Circular	88.200	86.922	1.023	88.321	86.742	1.324
4.001	3.729	196.3	255	Circular	88.200	86.941	1.004	88.200	86.922	1.023
4.000	28.651	199.0	255	Circular	88.200	87.085	0.860	88.200	86.941	1.004
5.000	27.560	169.1	225	Circular	88.100	87.125	0.750	88.000	86.962	0.813
6.002	28.382	168.9	225	Circular	88.000	86.433	1.342	87.930	86.265	1.440
6.001	39.265	169.2	225	Circular	88.070	86.665	1.180	88.000	86.433	1.342
6.000	34.964	169.7	225	Circular	87.900	86.871	0.804	88.070	86.665	1.180
14.001	49.191	380.0	300	Circular	87.334	86.016	1.018	87.521	85.887	1.334
15.000	37.380	169.1	225	Circular	88.094	86.269	1.600	87.521	86.048	1.248
14.000	52.189	380.0	300	Circular	88.142	86.153	1.689	87.334	86.016	1.018
1.011	12.131	600.0	400	Circular	88.016	85.921	1.695	88.157	85.901	1.856
3.000	40.242	169.8	225	Circular	88.471	86.791	1.455	88.157	86.554	1.378
1.010	47.904	349.7	400	Circular	88.495	86.058	2.037	88.016	85.921	1.695
1.009	28.263	600.0	400	Circular	88.321	86.105	1.816	88.495	86.058	2.037
1.008	64.345	504.0	375	Circular	88.553	86.233	1.945	88.321	86.105	1.841
1.007	45.197	504.0	375	Circular	88.681	86.323	1.983	88.553	86.233	1.945
1.006	61.852	504.0	375	Circular	88.523	86.446	1.702	88.681	86.323	1.983
1.005	43.656	504.0	375	Circular	88.201	86.533	1.293	88.523	86.446	1.702
2.000	30.803	169.2	225	Circular	88.588	87.163	1.200	88.523	86.981	1.317
1.004	41.714	323.4	375	Circular	88.050	86.662	1.013	88.201	86.533	1.293
1.003	17.750	322.7	375	Circular	88.150	86.717	1.058	88.050	86.662	1.013
1.002	32.342	323.4	375	Circular	88.200	86.817	1.008	88.150	86.717	1.058
1.001	38.395	322.6	375	Circular	88.200	86.936	0.889	88.200	86.817	1.008

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
8.000	8-0	1200	Manhole	Adoptable	8-1	1200	Manhole	Adoptable
9.000	9-0	1200	Manhole	Adoptable	8-1	1200	Manhole	Adoptable
4.008	4-8	1350	Manhole	Adoptable	4-9	1350	Manhole	Adoptable
7.000	7-0	1200	Manhole	Adoptable	4-9	1350	Manhole	Adoptable
6.003	6-3	1200	Manhole	Adoptable	4-8	1350	Manhole	Adoptable
4.007	4-7	1200	Manhole	Adoptable	4-8	1350	Manhole	Adoptable
4.006	4-6	1200	Manhole	Adoptable	4-7	1200	Manhole	Adoptable
4.005	4-5	1200	Manhole	Adoptable	4-6	1200	Manhole	Adoptable
4.004	4-4	1200	Manhole	Adoptable	4-5	1200	Manhole	Adoptable
5.001	5-1	1200	Manhole	Adoptable	4-4	1200	Manhole	Adoptable
4.003	4-3	1200	Manhole	Adoptable	4-4	1200	Manhole	Adoptable
4.002	4-2	1200	Manhole	Adoptable	4-3	1200	Manhole	Adoptable
4.001	4-1	1200	Manhole	Adoptable	4-2	1200	Manhole	Adoptable
4.000	4-0	1200	Manhole	Adoptable	4-1	1200	Manhole	Adoptable
5.000	5-0	1200	Manhole	Adoptable	5-1	1200	Manhole	Adoptable
6.002	6-2	1200	Manhole	Adoptable	6-3	1200	Manhole	Adoptable
6.001	6-1	1200	Manhole	Adoptable	6-2	1200	Manhole	Adoptable
6.000	6-0	1200	Manhole	Adoptable	6-1	1200	Manhole	Adoptable
14.001	14-1	1200	Manhole	Adoptable	14-2	1350	Manhole	Adoptable
15.000	15-0	1200	Manhole	Adoptable	14-2	1350	Manhole	Adoptable
14.000	14-0	1200	Manhole	Adoptable	14-1	1200	Manhole	Adoptable
1.011	1-11	1800	Manhole	Adoptable	1-12	1350	Manhole	Adoptable
3.000	3-0	1200	Manhole	Adoptable	1-12	1350	Manhole	Adoptable
1.010	1-10	1350	Manhole	Adoptable	1-11	1800	Manhole	Adoptable
1.009	1-9	1350	Manhole	Adoptable	1-10	1350	Manhole	Adoptable
1.008	1-8	1350	Manhole	Adoptable	1-9	1350	Manhole	Adoptable
1.007	1-7	1350	Manhole	Adoptable	1-8	1350	Manhole	Adoptable
1.006	1-6	1350	Manhole	Adoptable	1-7	1350	Manhole	Adoptable
1.005	1-5	1350	Manhole	Adoptable	1-6	1350	Manhole	Adoptable
2.000	2-0	1200	Manhole	Adoptable	1-6	1350	Manhole	Adoptable
1.004	1-4	1350	Manhole	Adoptable	1-5	1350	Manhole	Adoptable
1.003	1-3	1350	Manhole	Adoptable	1-4	1350	Manhole	Adoptable
1.002	1-2	1350	Manhole	Adoptable	1-3	1350	Manhole	Adoptable
1.001	1-1	1350	Manhole	Adoptable	1-2	1350	Manhole	Adoptable

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Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	20.719	323.7	375	Circular	88.550	87.000	1.175	88.200	86.936	0.889
21.015	34.110	578.1	600	Circular	88.070	85.997	1.473	87.300	85.938	0.762
21.014	3.768	538.3	600	Circular	88.070	86.104	1.366	88.070	86.097	1.373
21.013	35.358	1030.0	600	Circular	88.850	86.138	2.112	88.070	86.104	1.366
21.012	31.554	1030.0	600	Circular	88.730	86.169	1.961	88.850	86.138	2.112
30.002	19.913	168.8	225	Circular	88.800	86.896	1.679	88.850	86.778	1.847
30.001	28.062	169.0	225	Circular	88.700	87.062	1.413	88.800	86.896	1.679
30.000	36.134	137.4	225	Circular	88.750	87.325	1.200	88.700	87.062	1.413
21.011	65.244	1030.0	600	Circular	88.117	86.232	1.285	88.730	86.169	1.961
29.005	35.580	169.4	225	Circular	88.851	86.487	2.139	88.730	86.277	2.228
29.004	32.236	163.6	225	Circular	88.880	86.684	1.971	88.851	86.487	2.139
29.003	16.189	168.6	225	Circular	88.782	86.780	1.777	88.880	86.684	1.971
29.002	52.121	169.2	225	Circular	88.289	87.088	0.976	88.782	86.780	1.777
29.001	12.256	167.9	225	Circular	88.500	87.161	1.114	88.289	87.088	0.976
29.000	37.960	169.5	225	Circular	88.510	87.385	0.900	88.500	87.161	1.114
21.010	23.315	582.9	500	Circular	87.929	86.272	1.157	88.117	86.232	1.385
27.001	43.903	1030.0	600	Circular	87.900	86.275	1.025	88.117	86.232	1.285
28.001	32.739	324.2	375	Circular	87.846	86.333	1.138	88.117	86.232	1.510
28.000	46.846	323.1	375	Circular	88.108	86.478	1.255	87.846	86.333	1.138
27.000	48.356	1030.0	600	Circular	88.114	86.322	1.192	87.900	86.275	1.025
21.009	43.935	578.1	500	Circular	88.083	86.348	1.235	87.929	86.272	1.157
21.008	15.307	566.9	500	Circular	88.218	86.375	1.343	88.083	86.348	1.235
21.007	14.038	561.5	500	Circular	88.161	86.400	1.261	88.218	86.375	1.343
21.006	51.829	462.8	500	Circular	88.369	86.512	1.357	88.161	86.400	1.261
21.005	22.318	348.7	400	Circular	88.456	86.598	1.458	88.369	86.534	1.435
22.007	6.699	394.1	400	Circular	88.500	86.529	1.571	88.369	86.512	1.457
22.006	18.119	402.7	400	Circular	88.890	86.574	1.916	88.500	86.529	1.571
22.005	15.182	399.5	400	Circular	88.931	86.612	1.919	88.890	86.574	1.916
26.001	33.167	169.2	225	Circular	88.550	87.022	1.303	88.890	86.826	1.839
26.000	17.489	169.8	225	Circular	88.550	87.125	1.200	88.550	87.022	1.303
22.004	49.431	350.6	400	Circular	89.151	86.753	1.998	88.931	86.612	1.919
25.001	14.843	168.7	225	Circular	88.700	87.103	1.372	88.931	87.015	1.691
25.000	29.832	169.5	225	Circular	88.704	87.279	1.200	88.700	87.103	1.372
22.003	46.319	350.9	400	Circular	88.563	86.885	1.278	89.151	86.753	1.998

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	1-0	1350	Manhole	Adoptable	1-1	1350	Manhole	Adoptable
21.015	PI 3	1500	Manhole	Adoptable	Outfall 3	1500	Manhole	Adoptable
21.014	21-14	1500	Manhole	Adoptable	PI 3	1500	Manhole	Adoptable
21.013	21-13	1500	Manhole	Adoptable	21-14	1500	Manhole	Adoptable
21.012	21-12	1500	Manhole	Adoptable	21-13	1500	Manhole	Adoptable
30.002	30-2	1200	Manhole	Adoptable	21-13	1500	Manhole	Adoptable
30.001	30-1	1200	Manhole	Adoptable	30-2	1200	Manhole	Adoptable
30.000	30-0	1200	Manhole	Adoptable	30-1	1200	Manhole	Adoptable
21.011	21-11	1500	Manhole	Adoptable	21-12	1500	Manhole	Adoptable
29.005	29-5	1200	Manhole	Adoptable	21-12	1500	Manhole	Adoptable
29.004	29-4	1200	Manhole	Adoptable	29-5	1200	Manhole	Adoptable
29.003	29-3	1200	Manhole	Adoptable	29-4	1200	Manhole	Adoptable
29.002	29-2	1200	Manhole	Adoptable	29-3	1200	Manhole	Adoptable
29.001	29-1	1200	Manhole	Adoptable	29-2	1200	Manhole	Adoptable
29.000	29-0	1200	Manhole	Adoptable	29-1	1200	Manhole	Adoptable
21.010	21-10	1500	Manhole	Adoptable	21-11	1500	Manhole	Adoptable
27.001	27-1	1500	Manhole	Adoptable	21-11	1500	Manhole	Adoptable
28.001	28-1	1350	Manhole	Adoptable	21-11	1500	Manhole	Adoptable
28.000	28-0	1350	Manhole	Adoptable	28-1	1350	Manhole	Adoptable
27.000	27-0	1500	Manhole	Adoptable	27-1	1500	Manhole	Adoptable
21.009	21-9	1500	Manhole	Adoptable	21-10	1500	Manhole	Adoptable
21.008	21-8	1500	Manhole	Adoptable	21-9	1500	Manhole	Adoptable
21.007	21-7	1500	Manhole	Adoptable	21-8	1500	Manhole	Adoptable
21.006	21-6	1500	Manhole	Adoptable	21-7	1500	Manhole	Adoptable
21.005	21-5	1350	Manhole	Adoptable	21-6	1500	Manhole	Adoptable
22.007	22-7	1350	Manhole	Adoptable	21-6	1500	Manhole	Adoptable
22.006	22-6	1350	Manhole	Adoptable	22-7	1350	Manhole	Adoptable
22.005	22-5	1350	Manhole	Adoptable	22-6	1350	Manhole	Adoptable
26.001	26-1	1200	Manhole	Adoptable	22-6	1350	Manhole	Adoptable
26.000	26-0	1200	Manhole	Adoptable	26-1	1200	Manhole	Adoptable
22.004	22-4	1350	Manhole	Adoptable	22-5	1350	Manhole	Adoptable
25.001	25-1	1200	Manhole	Adoptable	22-5	1350	Manhole	Adoptable
25.000	25-0	1200	Manhole	Adoptable	25-1	1200	Manhole	Adoptable
22.003	22-3	1350	Manhole	Adoptable	22-4	1350	Manhole	Adoptable

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Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
22.002	7.454	338.8	400	Circular	88.564	86.907	1.257	88.563	86.885	1.278
24.000	53.093	351.6	400	Circular	88.655	87.100	1.155	88.563	86.949	1.214
22.001	51.789	349.9	400	Circular	88.298	87.055	0.843	88.564	86.907	1.257
23.000	63.858	324.2	375	Circular	88.357	87.161	0.821	88.564	86.964	1.225
22.000	13.905	347.6	400	Circular	88.245	87.095	0.750	88.298	87.055	0.843
21.004	24.650	347.2	400	Circular	88.367	86.669	1.298	88.456	86.598	1.458
21.003	48.146	323.1	375	Circular	88.691	86.818	1.498	88.367	86.669	1.323
21.002	56.065	324.1	375	Circular	88.405	86.991	1.039	88.691	86.818	1.498
21.001	35.179	322.7	375	Circular	88.225	87.100	0.750	88.405	86.991	1.039
21.000	51.042	323.0	375	Circular	88.540	87.258	0.907	88.225	87.100	0.750
31.017	18.902	1020.0	600	Circular	86.440	84.520	1.320	85.570	84.501	0.469
31.016	5.899	536.2	600	Circular	86.440	84.631	1.209	86.440	84.620	1.220
31.015	11.460	477.5	600	Circular	86.850	84.655	1.595	86.440	84.631	1.209
31.014	20.609	572.5	450	Circular	86.950	84.691	1.809	86.850	84.655	1.745
37.004	26.698	342.3	375	Circular	86.930	84.822	1.733	86.850	84.744	1.731
37.003	49.639	406.9	375	Circular	87.021	84.944	1.702	86.930	84.822	1.733
37.002	64.636	323.2	300	Circular	87.247	85.144	1.803	87.021	84.944	1.777
40.001	74.807	169.6	225	Circular	87.075	85.619	1.231	87.021	85.178	1.618
40.000	26.496	169.8	225	Circular	87.200	85.775	1.200	87.075	85.619	1.231
38.001	67.475	244.5	300	Circular	87.147	85.420	1.427	87.247	85.144	1.803
37.001	73.376	169.9	225	Circular	87.736	86.272	1.239	87.247	85.840	1.182
37.000	51.420	169.7	225	Circular	88.000	86.575	1.200	87.736	86.272	1.239
38.000	43.565	169.5	225	Circular	87.352	85.677	1.450	87.147	85.420	1.502
39.000	6.921	168.8	225	Circular	87.171	86.115	0.831	87.147	86.074	0.848
31.013	14.958	575.3	450	Circular	87.000	84.717	1.833	86.950	84.691	1.809
31.012	33.595	579.2	450	Circular	87.231	84.775	2.006	87.000	84.717	1.833
31.011	55.310	350.1	400	Circular	86.901	84.933	1.568	87.231	84.775	2.056
36.004	42.767	100.0	225	Circular	87.676	86.319	1.132	87.231	85.891	1.115
36.003	14.574	100.0	225	Circular	87.954	86.465	1.264	87.676	86.319	1.132
36.002	11.007	100.0	225	Circular	88.162	86.575	1.362	87.954	86.465	1.264
36.001	14.673	100.0	225	Circular	88.383	86.722	1.436	88.162	86.575	1.362
36.000	30.135	169.3	225	Circular	88.558	86.900	1.433	88.383	86.722	1.436
31.010	29.020	349.6	400	Circular	86.850	85.016	1.434	86.901	84.933	1.568
31.009	19.192	348.9	400	Circular	87.260	85.071	1.789	86.850	85.016	1.434

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
22.002	22-2	1350	Manhole	Adoptable	22-3	1350	Manhole	Adoptable
24.000	24-0	1350	Manhole	Adoptable	22-3	1350	Manhole	Adoptable
22.001	22-1	1350	Manhole	Adoptable	22-2	1350	Manhole	Adoptable
23.000	23-0	1350	Manhole	Adoptable	22-2	1350	Manhole	Adoptable
22.000	22-0	1350	Manhole	Adoptable	22-1	1350	Manhole	Adoptable
21.004	21-4	1350	Manhole	Adoptable	21-5	1350	Manhole	Adoptable
21.003	21-3	1350	Manhole	Adoptable	21-4	1350	Manhole	Adoptable
21.002	21-2	1350	Manhole	Adoptable	21-3	1350	Manhole	Adoptable
21.001	21-1	1350	Manhole	Adoptable	21-2	1350	Manhole	Adoptable
21.000	21-0	1350	Manhole	Adoptable	21-1	1350	Manhole	Adoptable
31.017	PI 1	1500	Manhole	Adoptable	Outfall 1	1500	Manhole	Adoptable
31.016	31-17	2100	Manhole	Adoptable	PI 1	1500	Manhole	Adoptable
31.015	31-16	1500	Manhole	Adoptable	31-17	2100	Manhole	Adoptable
31.014	31-15	1350	Manhole	Adoptable	31-16	1500	Manhole	Adoptable
37.004	37-4	1350	Manhole	Adoptable	31-16	1500	Manhole	Adoptable
37.003	37-3	1350	Manhole	Adoptable	37-4	1350	Manhole	Adoptable
37.002	37-2	1200	Manhole	Adoptable	37-3	1350	Manhole	Adoptable
40.001	40-1	1200	Manhole	Adoptable	37-3	1350	Manhole	Adoptable
40.000	40-0	1200	Manhole	Adoptable	40-1	1200	Manhole	Adoptable
38.001	38-1	1200	Manhole	Adoptable	37-2	1200	Manhole	Adoptable
37.001	37-1	1200	Manhole	Adoptable	37-2	1200	Manhole	Adoptable
37.000	37-0	1200	Manhole	Adoptable	37-1	1200	Manhole	Adoptable
38.000	38-0	1200	Manhole	Adoptable	38-1	1200	Manhole	Adoptable
39.000	39-0	1200	Manhole	Adoptable	38-1	1200	Manhole	Adoptable
31.013	31-14	1350	Manhole	Adoptable	31-15	1350	Manhole	Adoptable
31.012	31-13	1350	Manhole	Adoptable	31-14	1350	Manhole	Adoptable
31.011	31-12	1350	Manhole	Adoptable	31-13	1350	Manhole	Adoptable
36.004	36-4	1200	Manhole	Adoptable	31-13	1350	Manhole	Adoptable
36.003	36-3	1200	Manhole	Adoptable	36-4	1200	Manhole	Adoptable
36.002	36-2	1200	Manhole	Adoptable	36-3	1200	Manhole	Adoptable
36.001	36-1	1200	Manhole	Adoptable	36-2	1200	Manhole	Adoptable
36.000	36-0	1200	Manhole	Adoptable	36-1	1200	Manhole	Adoptable
31.010	31-11	1350	Manhole	Adoptable	31-12	1350	Manhole	Adoptable
31.009	31-10	1800	Manhole	Adoptable	31-11	1350	Manhole	Adoptable

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Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
35.000	30.939	169.1	225	Circular	87.091	85.659	1.207	86.850	85.476	1.149
31.008	8.755	350.2	400	Circular	87.385	85.096	1.889	87.260	85.071	1.789
31.007	4.633	308.9	300	Circular	87.387	85.384	1.703	87.385	85.369	1.716
34.000	53.968	169.7	225	Circular	87.400	85.675	1.500	87.385	85.357	1.803
31.006	53.993	244.3	300	Circular	87.894	85.605	1.989	87.387	85.384	1.703
33.002	12.512	169.1	225	Circular	87.322	85.611	1.486	87.387	85.537	1.625
33.001	9.300	169.1	225	Circular	87.366	85.666	1.475	87.322	85.611	1.486
33.000	22.672	169.2	225	Circular	87.225	85.800	1.200	87.366	85.666	1.475
31.005	6.674	166.9	225	Circular	88.000	85.645	2.130	87.894	85.605	2.064
32.001	27.582	169.2	225	Circular	87.750	85.980	1.545	87.894	85.817	1.852
32.000	24.620	169.8	225	Circular	87.750	86.125	1.400	87.750	85.980	1.545
31.004	31.472	100.0	225	Circular	88.350	85.960	2.165	88.000	85.645	2.130
31.003	17.107	80.0	225	Circular	88.412	86.174	2.013	88.350	85.960	2.165
31.002	13.738	80.0	225	Circular	88.375	86.346	1.804	88.412	86.174	2.013
31.001	22.282	80.0	225	Circular	88.460	86.625	1.610	88.375	86.346	1.804
31.000	25.451	169.7	225	Circular	88.586	86.775	1.586	88.460	86.625	1.610
41.014	5.314	312.6	500	Circular	87.350	85.165	1.685	86.400	85.148	0.752
41.013	5.268	526.8	500	Circular	87.350	85.275	1.575	87.350	85.265	1.585
41.012	24.728	343.4	400	Circular	87.450	85.347	1.703	87.350	85.275	1.675
48.000	54.165	100.0	225	Circular	87.450	86.300	0.925	87.350	85.758	1.367
41.011	14.015	368.8	400	Circular	87.390	85.385	1.605	87.450	85.347	1.703
41.010	5.101	340.1	400	Circular	87.430	85.400	1.630	87.390	85.385	1.605
41.009	31.084	323.8	375	Circular	87.480	85.674	1.431	87.430	85.578	1.477
47.001	49.677	169.5	225	Circular	87.550	86.108	1.217	87.430	85.815	1.390
47.000	50.028	120.0	225	Circular	87.950	86.525	1.200	87.550	86.108	1.217
41.008	13.682	318.2	375	Circular	87.523	85.717	1.431	87.480	85.674	1.431
46.000	9.566	167.8	225	Circular	87.430	86.005	1.200	87.480	85.948	1.307
41.007	5.218	248.5	375	Circular	87.523	85.738	1.410	87.523	85.717	1.431
41.006	52.111	323.7	375	Circular	87.897	85.899	1.623	87.523	85.738	1.410
41.005	5.064	241.1	375	Circular	87.879	85.920	1.584	87.897	85.899	1.623
41.004	45.028	323.9	375	Circular	88.226	86.059	1.792	87.879	85.920	1.584
45.000	36.295	169.6	225	Circular	87.573	86.412	0.936	87.879	86.198	1.456
41.003	32.932	243.9	300	Circular	87.500	86.194	1.006	88.226	86.059	1.867
42.002	17.507	243.1	300	Circular	88.148	86.399	1.449	88.226	86.327	1.599

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
35.000	35-0	1200	Manhole	Adoptable	31-11	1350	Manhole	Adoptable
31.008	31-9	1350	Manhole	Adoptable	31-10	1800	Manhole	Adoptable
31.007	31-8	1200	Manhole	Adoptable	31-9	1350	Manhole	Adoptable
34.000	33-0	1200	Manhole	Adoptable	31-9	1350	Manhole	Adoptable
31.006	31-7	1200	Manhole	Adoptable	31-8	1200	Manhole	Adoptable
33.002	34-2	1200	Manhole	Adoptable	31-8	1200	Manhole	Adoptable
33.001	34-1	1200	Manhole	Adoptable	34-2	1200	Manhole	Adoptable
33.000	34-0	1200	Manhole	Adoptable	34-1	1200	Manhole	Adoptable
31.005	31-6	1200	Manhole	Adoptable	31-7	1200	Manhole	Adoptable
32.001	32-1	1200	Manhole	Adoptable	31-7	1200	Manhole	Adoptable
32.000	32-0	1200	Manhole	Adoptable	32-1	1200	Manhole	Adoptable
31.004	31-5	1200	Manhole	Adoptable	31-6	1200	Manhole	Adoptable
31.003	31-4	1200	Manhole	Adoptable	31-5	1200	Manhole	Adoptable
31.002	31-2	1200	Manhole	Adoptable	31-4	1200	Manhole	Adoptable
31.001	31-1	1200	Manhole	Adoptable	31-2	1200	Manhole	Adoptable
31.000	31-0	1200	Manhole	Adoptable	31-1	1200	Manhole	Adoptable
41.014	PI 5	1500	Manhole	Adoptable	Outfall 5	1500	Manhole	Adoptable
41.013	41-13	1800	Manhole	Adoptable	PI 5	1500	Manhole	Adoptable
41.012	41-12	1800	Manhole	Adoptable	41-13	1800	Manhole	Adoptable
48.000	48-0	1200	Manhole	Adoptable	41-13	1800	Manhole	Adoptable
41.011	41-11	1350	Manhole	Adoptable	41-12	1800	Manhole	Adoptable
41.010	41-10	1350	Manhole	Adoptable	41-11	1350	Manhole	Adoptable
41.009	41-9	1350	Manhole	Adoptable	41-10	1350	Manhole	Adoptable
47.001	47-1	1200	Manhole	Adoptable	41-10	1350	Manhole	Adoptable
47.000	47-0	1200	Manhole	Adoptable	47-1	1200	Manhole	Adoptable
41.008	41-8	1350	Manhole	Adoptable	41-9	1350	Manhole	Adoptable
46.000	46-0	1200	Manhole	Adoptable	41-9	1350	Manhole	Adoptable
41.007	41-7	1350	Manhole	Adoptable	41-8	1350	Manhole	Adoptable
41.006	41-6	1350	Manhole	Adoptable	41-7	1350	Manhole	Adoptable
41.005	41-5	1350	Manhole	Adoptable	41-6	1350	Manhole	Adoptable
41.004	41-4	1350	Manhole	Adoptable	41-5	1350	Manhole	Adoptable
45.000	45-0	1200	Manhole	Adoptable	41-5	1350	Manhole	Adoptable
41.003	41-3	1200	Manhole	Adoptable	41-4	1350	Manhole	Adoptable
42.002	42-2	1200	Manhole	Adoptable	41-4	1350	Manhole	Adoptable

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Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
44.000	16.241	169.2	225	Circular	88.248	86.423	1.600	88.226	86.327	1.674
42.001	30.162	243.2	300	Circular	87.996	86.523	1.173	88.148	86.399	1.449
43.000	11.712	169.7	225	Circular	88.018	86.593	1.200	88.148	86.524	1.399
42.000	12.458	244.3	300	Circular	87.868	86.574	0.994	87.996	86.523	1.173
41.002	49.058	244.1	300	Circular	87.800	86.395	1.105	87.500	86.194	1.006
41.001	45.904	244.2	300	Circular	88.250	86.583	1.367	87.800	86.395	1.105
41.000	28.592	244.4	300	Circular	88.250	86.700	1.250	88.250	86.583	1.367
49.006	4.546	454.6	450	Circular	87.100	85.620	1.030	86.501	85.610	0.441
49.005	18.999	327.6	400	Circular	88.100	85.821	1.879	87.100	85.763	0.937
49.004	82.625	456.5	400	Circular	88.427	86.002	2.025	88.100	85.821	1.879
49.003	63.994	323.2	400	Circular	88.831	86.200	2.231	88.427	86.002	2.025
49.002	27.221	80.0	225	Circular	89.346	87.200	1.921	88.831	86.860	1.746
49.001	36.427	80.0	225	Circular	90.205	88.000	1.980	89.346	87.545	1.576
49.000	45.692	80.0	225	Circular	91.041	88.900	1.916	90.205	88.329	1.651
50.006	5.797	263.5	450	Circular	87.889	85.526	1.913	86.490	85.504	0.536
50.005	24.841	460.0	450	Circular	87.899	85.680	1.769	87.889	85.626	1.813
50.004	35.824	720.0	450	Circular	87.734	85.730	1.554	87.899	85.680	1.769
50.003	34.665	500.0	375	Circular	87.547	85.799	1.373	87.734	85.730	1.629
50.002	53.673	500.0	375	Circular	87.245	85.906	0.964	87.547	85.799	1.373
50.001	20.216	320.9	375	Circular	87.191	85.969	0.847	87.245	85.906	0.964
50.000	72.790	323.5	375	Circular	87.806	86.194	1.237	87.191	85.969	0.847

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
44.000	44-0	1200	Manhole	Adoptable	41-4	1350	Manhole	Adoptable
42.001	42-1	1200	Manhole	Adoptable	42-2	1200	Manhole	Adoptable
43.000	43-0	1200	Manhole	Adoptable	42-2	1200	Manhole	Adoptable
42.000	42-0	1200	Manhole	Adoptable	42-1	1200	Manhole	Adoptable
41.002	41-2	1200	Manhole	Adoptable	41-3	1200	Manhole	Adoptable
41.001	41-1	1200	Manhole	Adoptable	41-2	1200	Manhole	Adoptable
41.000	41-0	1200	Manhole	Adoptable	41-1	1200	Manhole	Adoptable
49.006	PI 2	1350	Manhole	Adoptable	Outfall 2	1350	Manhole	Adoptable
49.005	50-5	1350	Manhole	Adoptable	PI 2	1350	Manhole	Adoptable
49.004	50-4	1350	Manhole	Adoptable	50-5	1350	Manhole	Adoptable
49.003	50-3	1350	Manhole	Adoptable	50-4	1350	Manhole	Adoptable
49.002	50-2	1200	Manhole	Adoptable	50-3	1350	Manhole	Adoptable
49.001	50-1	1200	Manhole	Adoptable	50-2	1200	Manhole	Adoptable
49.000	50-0	1200	Manhole	Adoptable	50-1	1200	Manhole	Adoptable
50.006	PI 6	1350	Manhole	Adoptable	Outfall 6	1350	Manhole	Adoptable
50.005	49-5	1350	Manhole	Adoptable	PI 6	1350	Manhole	Adoptable
50.004	49-4	1350	Manhole	Adoptable	49-5	1350	Manhole	Adoptable
50.003	49-3	1350	Manhole	Adoptable	49-4	1350	Manhole	Adoptable
50.002	49-2	1350	Manhole	Adoptable	49-3	1350	Manhole	Adoptable
50.001	49-1	1350	Manhole	Adoptable	49-2	1350	Manhole	Adoptable
50.000	49-0	1350	Manhole	Adoptable	49-1	1350	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
1-0	681728.297	714559.265	88.550	1.550	1350	0	1.000	87.000	375
1-1	681727.082	714579.948	88.200	1.264	1350	1	1.000	86.936	375
						0	1.001	86.936	375
1-2	681729.935	714618.237	88.200	1.383	1350	1	1.001	86.817	375
						0	1.002	86.817	375
1-3	681724.880	714650.182	88.150	1.433	1350	1	1.002	86.717	375
						0	1.003	86.717	375
1-4	681726.157	714667.886	88.050	1.388	1350	1	1.003	86.662	375
						0	1.004	86.662	375

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
1-5	681706.946	714704.913	88.201	1.668	1350	1	1.004	86.533	375
						0	1.005	86.533	375
2-0	681654.345	714711.728	88.588	1.425	1200	0	2.000	87.163	225
1-6	681668.442	714684.340	88.523	2.077	1350	1	2.000	86.981	225
						2	1.005	86.446	375
						0	1.006	86.446	375
1-7	681613.809	714655.342	88.681	2.358	1350	1	1.006	86.323	375
						0	1.007	86.323	375
1-8	681573.837	714634.246	88.553	2.320	1350	1	1.007	86.233	375
						0	1.008	86.233	375
1-9	681516.849	714604.369	88.321	2.216	1350	1	1.008	86.105	375
						0	1.009	86.105	400
1-10	681489.411	714611.148	88.495	2.437	1350	1	1.009	86.058	400
						0	1.010	86.058	400
1-11	681465.859	714652.863	88.016	2.095	1800	1	1.010	85.921	400
						0	1.011	85.921	400
3-0	681495.121	714623.928	88.471	1.680	1200	0	3.000	86.791	225
1-12	681476.088	714659.384	88.157	2.256	1350	1	3.000	86.554	225
						2	1.011	85.901	400
						0	1.012	85.901	450
4-0	681714.921	714722.862	88.200	1.115	1200	0	4.000	87.085	255
4-1	681700.576	714747.663	88.200	1.259	1200	1	4.000	86.941	255
						0	4.001	86.941	255
4-2	681696.983	714746.664	88.200	1.278	1200	1	4.001	86.922	255
						0	4.002	86.922	255
4-3	681679.139	714777.631	88.321	1.579	1200	1	4.002	86.742	255
						0	4.003	86.742	255
5-0	681687.188	714707.538	88.100	0.975	1200	0	5.000	87.125	225
5-1	681674.194	714731.842	88.000	1.038	1200	1	5.000	86.962	225
						0	5.001	86.962	225
4-4	681656.262	714765.409	88.227	1.616	1200	1	5.001	86.737	225
						2	4.003	86.611	255
						0	4.004	86.611	255

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
4-5	681631.788	714752.351	88.128	1.657	1200	1	4.004	86.471	255
						0	4.005	86.471	255
4-6	681629.584	714756.232	88.062	1.614	1200	1	4.005	86.448	255
						0	4.006	86.448	255
4-7	681618.718	714752.021	87.821	1.432	1200	1	4.006	86.389	255
						0	4.007	86.389	255
6-0	681651.744	714821.450	87.900	1.029	1200	0	6.000	86.871	225
6-1	681635.217	714852.261	88.070	1.405	1200	1	6.000	86.665	225
						0	6.001	86.665	225
6-2	681600.572	714833.783	88.000	1.567	1200	1	6.001	86.433	225
						0	6.002	86.433	225
6-3	681613.963	714808.759	87.930	1.665	1200	1	6.002	86.265	225
						0	6.003	86.265	225
4-8	681593.233	714797.616	87.727	1.601	1350	1	6.003	86.126	225
						2	4.007	86.126	255
						0	4.008	86.126	375
7-0	681598.010	714732.199	88.100	1.525	1200	0	7.000	86.575	225
4-9	681569.162	714784.678	87.721	1.680	1350	1	7.000	86.222	225
						2	4.008	86.041	375
						0	4.009	86.041	375
8-0	681578.569	714821.954	87.700	1.410	1200	0	8.000	86.290	225
9-0	681499.419	714779.633	87.700	1.301	1200	0	9.000	86.399	225
8-1	681538.921	714800.785	87.400	1.280	1200	1	9.000	86.229	225
						2	8.000	86.120	225
						0	8.001	86.120	300
4-10	681552.322	714775.627	87.822	1.819	1350	1	8.001	86.003	300
						2	4.009	86.003	375
						0	4.010	86.003	400
10-0	681456.887	714742.982	87.635	0.874	1200	0	10.000	86.761	225
10-1	681464.184	714728.460	87.816	1.151	1200	1	10.000	86.665	225
						0	10.001	86.665	225
11-0	681470.270	714761.709	87.700	1.175	1200	0	11.000	86.525	225

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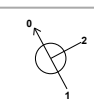
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
11-1	681481.748	714767.493	87.700	1.251	1200	1	11.000	86.449	225
						0	11.001	86.449	225
10-2	681494.310	714744.490	87.700	1.406	1200	1	11.001	86.294	225
						2	10.001	86.464	225
						0	10.002	86.294	225
12-0	681518.601	714738.418	87.588	1.425	1200				
						0	12.000	86.163	225
10-3	681511.067	714753.407	87.724	1.625	1200	1	12.000	86.099	225
						2	10.002	86.182	225
						0	10.003	86.099	225
4-11	681527.859	714762.478	87.850	1.898	1500	1	10.003	86.027	225
						2	4.010	85.952	400
						0	4.011	85.952	500
4-12	681530.789	714757.146	87.850	1.906	1500	1	4.011	85.944	500
						0	4.012	85.944	500
13-0	681570.228	714744.973	87.600	1.425	1200				
						0	13.000	86.175	225
4-13	681544.032	714731.413	87.400	1.496	1500	1	13.000	86.001	225
						2	4.012	85.904	500
						0	4.013	85.904	500
4-14	681526.924	714722.557	87.500	1.623	1500	1	4.013	85.877	500
						0	4.014	85.877	600
14-0	681632.181	714739.287	88.142	1.989	1200				
						0	14.000	86.153	300
14-1	681586.068	714714.847	87.334	1.318	1200	1	14.000	86.016	300
						0	14.001	86.016	300
15-0	681560.301	714658.807	88.094	1.825	1200				
						0	15.000	86.269	225
14-2	681542.637	714691.750	87.521	1.634	1350	1	15.000	86.048	225
									
						2	14.001	85.887	300
						0	14.002	85.887	375
4-15	681536.496	714703.253	87.418	1.565	1500	1	14.002	85.861	375
						2	4.014	85.853	600
						0	4.015	85.853	600
16-0	681524.006	714656.720	88.000	1.425	1200				
						0	16.000	86.575	225
17-0	681491.700	714717.223	87.625	1.425	1200				
						0	17.000	86.200	225
4-16	681507.377	714687.844	87.823	2.006	1500	1	17.000	86.003	225
						2	16.000	86.367	225
						3	4.015	85.817	600
						0	4.016	85.817	600

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
1-13	681471.112	714668.653	88.078	2.301	1500	1	4.016	85.777	600
						2	1.012	85.884	450
						0	1.013	85.777	600
18-0	681422.878	714707.549	87.800	1.375	1200	0	18.000	86.425	225
19-0	681367.542	714630.246	88.150	1.425	1200	0	19.000	86.725	225
19-1	681380.523	714649.147	87.600	1.010	1200	1	19.000	86.590	225
						0	19.001	86.590	225
18-1	681392.936	714654.934	87.750	1.682	1200	1	19.001	86.509	225
						2	18.000	86.068	225
						0	18.001	86.068	300
20-0	681458.635	714610.046	87.550	1.306	1200	0	20.000	86.244	225
18-2	681419.839	714638.804	87.900	1.961	1350	1	20.000	85.959	225
						2	18.001	85.939	300
						0	18.002	85.939	375
18-3	681442.714	714678.477	87.724	1.927	1350	1	18.002	85.797	375
						0	18.003	85.797	375
18-4	681452.487	714687.900	87.871	2.101	1350	1	18.003	85.770	375
						0	18.004	85.770	375
1-14	681458.950	714691.294	87.871	2.119	1500	1	18.004	85.756	375
						2	1.013	85.752	600
						0	1.014	85.752	600
1-15	681452.167	714703.160	87.781	2.042	1500	1	1.014	85.739	600
						0	1.015	85.739	600
1-16	681431.016	714720.912	87.570	1.858	2100	1	1.015	85.712	600
						0	1.016	85.712	600
PI 4	681413.439	714734.297	87.100	1.516	1500	1	1.016	85.684	600
						0	1.017	85.584	600
Outfall 4	681407.762	714738.679	86.490	0.917	1500	1	1.017	85.573	600
21-0	681732.623	714543.018	88.540	1.282	1350	0	21.000	87.258	375
21-1	681683.674	714528.552	88.225	1.125	1350	1	21.000	87.100	375
						0	21.001	87.100	375
21-2	681649.964	714518.491	88.405	1.414	1350	1	21.001	86.991	375
						0	21.002	86.991	375

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
21-3	681596.221	714502.522	88.691	1.873	1350	1	21.002	86.818	375
						0	21.003	86.818	375
21-4	681550.069	714488.810	88.367	1.698	1350	1	21.003	86.669	375
						0	21.004	86.669	400
21-5	681538.872	714510.770	88.456	1.858	1350	1	21.004	86.598	400
						0	21.005	86.598	400
22-0	681680.587	714541.754	88.245	1.150	1350				
						0	22.000	87.095	400
22-1	681676.628	714555.083	88.298	1.243	1350	1	22.000	87.055	400
						0	22.001	87.055	400
23-0	681708.590	714630.655	88.357	1.196	1350				
						0	23.000	87.161	375
22-2	681652.175	714600.736	88.564	1.657	1350	1	23.000	86.964	375
						2	22.001	86.907	400
						0	22.002	86.907	400
24-0	681619.602	714645.364	88.655	1.555	1350				
						0	24.000	87.100	400
22-3	681644.994	714598.737	88.563	1.678	1350	1	24.000	86.949	400
						2	22.002	86.885	400
						0	22.003	86.885	400
22-4	681604.492	714576.263	89.151	2.398	1350	1	22.003	86.753	400
						0	22.004	86.753	400
25-0	681578.956	714511.950	88.704	1.425	1200				
						0	25.000	87.279	225
25-1	681570.824	714540.652	88.700	1.597	1200	1	25.000	87.103	225
						0	25.001	87.103	225
22-5	681561.371	714552.096	88.931	2.319	1350	1	25.001	87.015	225
						2	22.004	86.612	400
						0	22.005	86.612	400
26-0	681520.981	714587.351	88.550	1.425	1200				
						0	26.000	87.125	225
26-1	681529.224	714571.926	88.550	1.528	1200	1	26.000	87.022	225
						0	26.001	87.022	225
22-6	681548.127	714544.673	88.890	2.316	1350	1	26.001	86.826	225
						2	22.005	86.574	400
						0	22.006	86.574	400
22-7	681533.514	714533.960	88.500	1.971	1350	1	22.006	86.529	400
						0	22.007	86.529	400

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
21-6	681527.948	714530.232	88.369	1.857	1500		1	22.007	86.512	400
							2	21.005	86.534	400
							0	21.006	86.512	500
21-7	681498.591	714572.945	88.161	1.761	1500		1	21.006	86.400	500
							0	21.007	86.400	500
21-8	681494.806	714586.463	88.218	1.843	1500		1	21.007	86.375	500
							0	21.008	86.375	500
21-9	681479.812	714583.385	88.083	1.735	1500		1	21.008	86.348	500
							0	21.009	86.348	500
21-10	681440.788	714563.200	87.929	1.657	1500		1	21.009	86.272	500
							0	21.010	86.272	500
27-0	681350.118	714601.420	88.114	1.792	1500		0	27.000	86.322	600
27-1	681391.219	714575.945	87.900	1.625	1500		1	27.000	86.275	600
							0	27.001	86.275	600
28-0	681472.874	714484.377	88.108	1.630	1350		0	28.000	86.478	375
28-1	681446.895	714523.359	87.846	1.513	1350		1	28.000	86.333	375
							0	28.001	86.333	375
21-11	681424.130	714546.888	88.117	1.885	1500		1	28.001	86.232	375
							2	27.001	86.232	600
							3	21.010	86.232	500
							0	21.011	86.232	600
29-0	681529.152	714477.102	88.510	1.125	1200		0	29.000	87.385	225
29-1	681493.847	714463.154	88.500	1.339	1200		1	29.000	87.161	225
							0	29.001	87.161	225
29-2	681481.690	714464.705	88.289	1.201	1200		1	29.001	87.088	225
							0	29.002	87.088	225
29-3	681435.452	714440.649	88.782	2.002	1200		1	29.002	86.780	225
							0	29.003	86.780	225
29-4	681420.740	714447.405	88.880	2.196	1200		1	29.003	86.684	225
							0	29.004	86.684	225
29-5	681401.736	714473.443	88.851	2.364	1200		1	29.004	86.487	225
							0	29.005	86.487	225
21-12	681378.428	714500.325	88.730	2.561	1500		1	29.005	86.277	225
							2	21.011	86.169	600
							0	21.012	86.169	600

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
30-0	681336.824	714583.857	88.750	1.425	1200		0 30.000	87.325	225
30-1	681318.656	714552.623	88.700	1.638	1200		1 30.000 0 30.001	87.062 87.062	225 225
30-2	681338.498	714532.780	88.800	1.904	1200		1 30.001 0 30.002	86.896 86.896	225 225
21-13	681354.275	714520.630	88.850	2.712	1500		1 30.002 2 21.012 0 21.013	86.778 86.138 86.138	225 600 600
21-14	681331.006	714494.008	88.070	1.966	1500		1 21.013 0 21.014	86.104 86.104	600 600
PI 3	681328.921	714490.869	88.070	2.073	1500		1 21.014 0 21.015	86.097 85.997	600 600
Outfall 3	681310.005	714462.485	87.300	1.362	1500		1 21.015	85.938	600
31-0	681241.100	714577.004	88.586	1.811	1200		0 31.000	86.775	225
31-1	681266.075	714572.105	88.460	1.835	1200		1 31.000 0 31.001	86.625 86.625	225 225
31-2	681288.357	714572.144	88.375	2.029	1200		1 31.001 0 31.002	86.346 86.346	225 225
31-4	681300.880	714577.792	88.412	2.238	1200		1 31.002 0 31.003	86.174 86.174	225 225
31-5	681310.328	714592.053	88.350	2.390	1200		1 31.003 0 31.004	85.960 85.960	225 225
31-6	681328.209	714617.952	88.000	2.355	1200		1 31.004 0 31.005	85.645 85.645	225 225
32-0	681351.362	714665.315	87.750	1.625	1200		0 32.000	86.125	225
32-1	681337.837	714644.743	87.750	1.770	1200		1 32.000 0 32.001	85.980 85.980	225 225
31-7	681322.684	714621.696	87.894	2.289	1200		1 32.001 2 31.005 0 31.006	85.817 85.605 85.605	225 225 300
34-0	681241.403	714640.836	87.225	1.425	1200		0 33.000	85.800	225

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
34-1	681263.636	714636.398	87.366	1.700	1200	1	33.000	85.666	225
						0	33.001	85.666	225
34-2	681271.591	714641.215	87.322	1.711	1200	1	33.001	85.611	225
						0	33.002	85.611	225
31-8	681277.979	714651.973	87.387	2.003	1200	1	33.002	85.537	225
						2	31.006	85.384	300
						0	31.007	85.384	300
33-0	681304.110	714699.473	87.400	1.725	1200				
						0	34.000	85.675	225
31-9	681274.152	714654.584	87.385	2.289	1350	1	34.000	85.357	225
						2	31.007	85.369	300
						0	31.008	85.096	400
31-10	681266.162	714658.164	87.260	2.189	1800	1	31.008	85.071	400
						0	31.009	85.071	400
35-0	681280.289	714692.365	87.091	1.432	1200				
						0	35.000	85.659	225
31-11	681255.367	714674.032	86.850	1.834	1350	1	35.000	85.476	225
						2	31.009	85.016	400
						0	31.010	85.016	400
31-12	681230.026	714659.891	86.901	1.968	1350	1	31.010	84.933	400
						0	31.011	84.933	400
36-0	681231.376	714579.073	88.558	1.658	1200				
						0	36.000	86.900	225
36-1	681201.801	714584.854	88.383	1.661	1200	1	36.000	86.722	225
						0	36.001	86.722	225
36-2	681188.714	714591.490	88.162	1.587	1200	1	36.001	86.575	225
						0	36.002	86.575	225
36-3	681182.045	714600.247	87.954	1.489	1200	1	36.002	86.465	225
						0	36.003	86.465	225
36-4	681178.035	714614.258	87.676	1.357	1200	1	36.003	86.319	225
						0	36.004	86.319	225
31-13	681174.797	714656.902	87.231	2.456	1350	1	36.004	85.891	225
						2	31.011	84.775	400
						0	31.012	84.775	450
31-14	681172.134	714690.391	87.000	2.283	1350	1	31.012	84.717	450
						0	31.013	84.717	450
31-15	681178.112	714704.102	86.950	2.259	1350	1	31.013	84.691	450
						0	31.014	84.691	450

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
37-0	681393.391	714716.054	88.000	1.425	1200		0	37.000	86.575	225
37-1	681364.767	714673.338	87.736	1.464	1200		1	37.000	86.272	225
							0	37.001	86.272	225
38-0	681384.526	714741.184	87.352	1.675	1200		0	38.000	85.677	225
39-0	681352.807	714770.696	87.171	1.056	1200		0	39.000	86.115	225
38-1	681348.326	714765.422	87.147	1.727	1200		1	39.000	86.074	225
							2	38.000	85.420	225
							0	38.001	85.420	300
37-2	681304.036	714714.518	87.247	2.103	1200		1	38.001	85.144	300
							2	37.001	85.840	225
							0	37.002	85.144	300
40-0	681328.813	714803.744	87.200	1.425	1200		0	40.000	85.775	225
40-1	681305.668	714816.641	87.075	1.456	1200		1	40.000	85.619	225
							0	40.001	85.619	225
37-3	681257.516	714759.392	87.021	2.077	1350		1	40.001	85.178	225
							2	37.002	84.944	300
							0	37.003	84.944	375
37-4	681218.378	714728.860	86.930	2.108	1350		1	37.003	84.822	375
							0	37.004	84.822	375
31-16	681195.150	714715.697	86.850	2.195	1500		1	37.004	84.744	375
							2	31.014	84.655	450
							0	31.015	84.655	600
31-17	681189.329	714725.568	86.440	1.809	2100		1	31.015	84.631	600
							0	31.016	84.631	600
PI 1	681186.333	714730.649	86.440	1.920	1500		1	31.016	84.620	600
							0	31.017	84.520	600
Outfall 1	681181.220	714748.846	85.570	1.069	1500		1	31.017	84.501	600
41-0	681603.924	714908.556	88.250	1.550	1200		0	41.000	86.700	300
41-1	681618.947	714884.229	88.250	1.667	1200		1	41.000	86.583	300
							0	41.001	86.583	300
41-2	681580.497	714859.153	87.800	1.405	1200		1	41.001	86.395	300
							0	41.002	86.395	300

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
41-3	681539.046	714832.914	87.500	1.306	1200	1	41.002	86.194	300
						0	41.003	86.194	300
42-0	681554.612	714897.046	87.868	1.294	1200	0	42.000	86.574	300
42-1	681561.361	714886.575	87.996	1.473	1200	1	42.000	86.523	300
						0	42.001	86.523	300
43-0	681529.669	714880.070	88.018	1.425	1200	0	43.000	86.593	225
42-2	681536.014	714870.226	88.148	1.749	1200	1	43.000	86.524	225
						2	42.001	86.399	300
						0	42.002	86.399	300
44-0	681512.910	714874.563	88.248	1.825	1200	0	44.000	86.423	225
41-4	681521.339	714860.680	88.226	2.167	1350	1	44.000	86.327	225
						2	42.002	86.327	300
						3	41.003	86.059	300
						0	41.004	86.059	375
45-0	681450.416	714820.912	87.573	1.161	1200	0	45.000	86.412	225
41-5	681482.391	714838.085	87.879	1.959	1350	1	45.000	86.198	225
						2	41.004	85.920	375
						0	41.005	85.920	375
41-6	681480.058	714842.579	87.897	1.998	1350	1	41.005	85.899	375
						0	41.006	85.899	375
41-7	681434.036	714818.133	87.523	1.785	1350	1	41.006	85.738	375
						0	41.007	85.738	375
41-8	681436.400	714813.481	87.523	1.806	1350	1	41.007	85.717	375
						0	41.008	85.717	375
46-0	681419.932	714815.536	87.430	1.425	1200	0	46.000	86.005	225
41-9	681424.329	714807.040	87.480	1.806	1350	1	46.000	85.948	225
						2	41.008	85.674	375
						0	41.009	85.674	375
47-0	681526.464	714826.290	87.950	1.425	1200	0	47.000	86.525	225
47-1	681482.339	714802.714	87.550	1.442	1200	1	47.000	86.108	225
						0	47.001	86.108	225
41-10	681438.489	714779.369	87.430	2.030	1350	1	47.001	85.815	225
						2	41.009	85.578	375
						0	41.010	85.400	400

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
41-11	681441.127	714775.003	87.390	2.005	1350	1	41.010	85.385	400
						0	41.011	85.385	400
41-12	681437.310	714761.518	87.450	2.103	1800	1	41.011	85.347	400
						0	41.012	85.347	400
48-0	681389.971	714797.634	87.450	1.150	1200	0	48.000	86.300	225
41-13	681415.501	714749.863	87.350	2.075	1800	1	48.000	85.758	225
						2	41.012	85.275	400
						0	41.013	85.275	500
PI 5	681410.913	714747.274	87.350	2.185	1500	1	41.013	85.265	500
						0	41.014	85.165	500
Outfall 5	681406.210	714744.800	86.400	1.252	1500	1	41.014	85.148	500
50-0	681272.880	714510.934	91.041	2.141	1200	0	49.000	88.900	225
50-1	681305.334	714543.097	90.205	2.205	1200	1	49.000	88.329	225
						0	49.001	88.000	225
50-2	681326.122	714573.010	89.346	2.146	1200	1	49.001	87.545	225
						0	49.002	87.200	225
50-3	681341.206	714595.670	88.831	2.631	1350	1	49.002	86.860	225
						0	49.003	86.200	400
50-4	681376.057	714649.341	88.427	2.425	1350	1	49.003	86.002	400
						0	49.004	86.002	400
50-5	681423.923	714716.689	88.100	2.279	1350	1	49.004	85.821	400
						0	49.005	85.821	400
PI 2	681408.828	714728.225	87.100	1.480	1350	1	49.005	85.763	400
						0	49.006	85.620	450
Outfall 2	681405.225	714730.997	86.501	0.891	1350	1	49.006	85.610	450
49-0	681617.771	714850.092	87.806	1.612	1350	0	50.000	86.194	375
49-1	681553.609	714815.717	87.191	1.222	1350	1	50.000	85.969	375
						0	50.001	85.969	375
49-2	681537.854	714803.050	87.245	1.339	1350	1	50.001	85.906	375
						0	50.002	85.906	375

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
49-3	681490.130	714778.489	87.547	1.748	1350	1	50.002	85.799	375
						0	50.003	85.799	375
49-4	681460.413	714760.641	87.734	2.004	1350	1	50.003	85.730	375
						0	50.004	85.730	450
49-5	681437.601	714733.019	87.899	2.219	1350	1	50.004	85.680	450
						0	50.005	85.680	450
PI 6	681413.647	714739.599	87.889	2.363	1350	1	50.005	85.626	450
						0	50.006	85.526	450
Outfall 6	681408.322	714741.891	86.490	0.986	1350	1	50.006	85.504	450

Simulation Settings

Rainfall Methodology	FSR	Summer CV	0.750	Drain Down Time (mins)	240
FSR Region	Scotland and Ireland	Winter CV	0.840	Additional Storage (m³/ha)	20.0
M5-60 (mm)	15.600	Analysis Speed	Normal	Check Discharge Rate(s)	x
Ratio-R	0.286	Skip Steady State	x	Check Discharge Volume	x

Storm Durations

15	60	180	360	600	960	2160	4320	7200	10080
30	120	240	480	720	1440	2880	5760	8640	

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
100	20	0	0

Node 21-14 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	86.104	Product Number	CTL-SHE-0093-4000-1143-4000
Design Depth (m)	1.143	Min Outlet Diameter (m)	0.150
Design Flow (l/s)	4.0	Min Node Diameter (mm)	1200

Node 31-17 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	84.631	Product Number	CTL-SHE-0143-9900-1143-9900
Design Depth (m)	1.143	Min Outlet Diameter (m)	0.225
Design Flow (l/s)	9.9	Min Node Diameter (mm)	1200

Node 50-5 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	85.821	Product Number	CTL-SHE-0065-2000-1143-2000
Design Depth (m)	1.143	Min Outlet Diameter (m)	0.100
Design Flow (l/s)	2.0	Min Node Diameter (mm)	1200

Node 1-11 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	85.921	Product Number	CTL-SHE-0173-1500-1143-1500
Design Depth (m)	1.143	Min Outlet Diameter (m)	0.225
Design Flow (l/s)	15.0	Min Node Diameter (mm)	1500

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Node 41-13 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	85.275	Product Number	CTL-SHE-0193-2100-1661-2100
Design Depth (m)	1.661	Min Outlet Diameter (m)	0.225
Design Flow (l/s)	21.0	Min Node Diameter (mm)	1800

Node 1-16 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	85.712	Product Number	CTL-SHE-0250-3740-1800-3740
Design Depth (m)	1.800	Min Outlet Diameter (m)	0.300
Design Flow (l/s)	37.4	Min Node Diameter (mm)	1800

Node 49-5 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	85.680	Product Number	CTL-SHE-0065-2000-1143-2000
Design Depth (m)	1.143	Min Outlet Diameter (m)	0.100
Design Flow (l/s)	2.0	Min Node Diameter (mm)	1200

Node 21-14 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	10.0	Invert Level (m)	86.104
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.91	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	2120.0	0.0	1.143	2120.0	0.0	1.144	0.0	0.0

Node 31-17 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	10.0	Invert Level (m)	84.631
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.91	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	540.0	0.0	1.143	540.0	0.0	1.144	0.0	0.0

Node 41-7 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	10.0	Invert Level (m)	85.738
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.89	Time to half empty (mins)	224

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	350.0	0.0	1.143	350.0	0.0	1.144	0.0	0.0

Node 31-10 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	10.0	Invert Level (m)	85.071
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.90	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	500.0	0.0	1.143	500.0	0.0	1.144	0.0	0.0

Node 4-12 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	10.0	Invert Level (m)	85.944
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.89	Time to half empty (mins)	244

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	680.0	0.0	1.143	680.0	0.0	1.144	0.0	0.0

Node 1-11 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	10.0	Invert Level (m)	85.921
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.91	Time to half empty (mins)	

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Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	655.0	0.0	1.143	655.0	0.0	1.144	0.0	0.0

Node 49-3 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	10.0	Invert Level (m)	85.799
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.87	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	150.0	0.0	1.143	150.0	0.0	1.144	0.0	0.0

Node 50-5 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	10.0	Invert Level (m)	85.821
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.87	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	183.0	0.0	1.143	183.0	0.0	1.144	0.0	0.0

Node 22-7 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	10.0	Invert Level (m)	86.529
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.88	Time to half empty (mins)	2880

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	360.0	0.0	1.143	360.0	0.0	1.144	0.0	0.0

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Results for 100 year +20% CC Critical Storm Duration. Lowest mass balance: 98.90%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1-0	13	87.722	0.722	22.6	1.1447	0.0000	SURCHARGED
15 minute winter	1-1	13	87.707	0.771	78.9	1.4092	0.0000	SURCHARGED
15 minute winter	1-2	13	87.629	0.812	59.9	1.5376	0.0000	SURCHARGED
15 minute winter	1-3	13	87.620	0.903	147.9	1.6069	0.0000	SURCHARGED
15 minute winter	1-4	13	87.609	0.947	73.6	1.5189	0.0000	SURCHARGED
15 minute winter	1-5	13	87.622	1.089	106.1	2.1073	0.0000	SURCHARGED
15 minute winter	2-0	13	87.679	0.516	7.7	0.6702	0.0000	SURCHARGED
15 minute winter	1-6	13	87.582	1.136	123.6	3.4864	0.0000	SURCHARGED
15 minute winter	1-7	13	87.464	1.141	115.1	3.2885	0.0000	SURCHARGED
15 minute winter	1-8	12	87.338	1.105	135.6	2.8487	0.0000	SURCHARGED
15 minute winter	1-9	11	87.101	0.996	172.6	3.0614	0.0000	SURCHARGED
600 minute winter	1-10	570	86.955	0.897	35.0	1.6891	0.0000	SURCHARGED
600 minute winter	1-11	570	86.955	1.034	46.4	618.7478	0.0000	SURCHARGED
240 minute winter	3-0	192	87.048	0.257	1.1	0.3307	0.0000	SURCHARGED
240 minute winter	1-12	192	87.048	1.147	16.7	2.6694	0.0000	SURCHARGED
15 minute winter	4-0	13	87.732	0.647	13.3	0.7315	0.0000	SURCHARGED
15 minute winter	4-1	14	87.716	0.775	23.6	1.2217	0.0000	SURCHARGED
15 minute winter	4-2	14	87.715	0.793	28.8	0.8969	0.0000	SURCHARGED
15 minute winter	4-3	13	87.713	0.971	54.7	1.4552	0.0000	SURCHARGED
15 minute winter	5-0	13	87.773	0.648	6.1	0.7324	0.0000	SURCHARGED
15 minute winter	5-1	13	87.718	0.756	33.7	1.4811	0.0000	FLOOD RISK
15 minute winter	4-4	13	87.709	1.098	44.3	2.2751	0.0000	SURCHARGED
15 minute winter	4-5	13	87.628	1.157	45.4	1.8671	0.0000	SURCHARGED
15 minute winter	4-6	13	87.595	1.147	48.9	1.2968	0.0000	SURCHARGED
15 minute winter	4-7	13	87.534	1.145	59.0	2.3507	0.0000	FLOOD RISK
15 minute winter	6-0	12	87.685	0.814	7.5	1.2369	0.0000	FLOOD RISK
15 minute winter	6-1	12	87.683	1.018	32.7	1.7300	0.0000	SURCHARGED
15 minute winter	6-2	12	87.622	1.189	44.3	1.6634	0.0000	SURCHARGED
15 minute winter	6-3	12	87.535	1.270	54.0	2.9322	0.0000	SURCHARGED
15 minute winter	4-8	11	87.243	1.117	141.9	3.4419	0.0000	SURCHARGED
15 minute summer	7-0	10	87.257	0.682	19.9	0.7711	0.0000	SURCHARGED
15 minute winter	4-9	10	87.141	1.100	188.1	3.5400	0.0000	SURCHARGED
240 minute winter	8-0	192	87.055	0.765	1.6	0.8654	0.0000	SURCHARGED
240 minute winter	9-0	196	87.055	0.656	1.9	0.7419	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	1-0	1.000	1-1	20.5	0.323	0.186	2.2852	
15 minute winter	1-1	1.001	1-2	-66.4	-0.743	-0.600	4.2349	
15 minute winter	1-2	1.002	1-3	50.1	0.647	0.452	3.5672	
15 minute winter	1-3	1.003	1-4	-114.6	-1.135	-1.034	1.9578	
15 minute winter	1-4	1.004	1-5	73.7	0.692	0.666	4.6009	
15 minute winter	1-5	1.005	1-6	-90.3	-0.819	-1.022	4.8151	
15 minute winter	2-0	2.000	1-6	12.2	0.620	0.307	1.2251	
15 minute winter	1-6	1.006	1-7	90.5	0.820	1.024	6.8221	
15 minute winter	1-7	1.007	1-8	115.7	1.049	1.309	4.9851	
15 minute winter	1-8	1.008	1-9	143.6	1.302	1.625	7.0971	
15 minute winter	1-9	1.009	1-10	177.0	1.414	1.846	3.5382	
600 minute winter	1-10	1.010	1-11	34.1	0.918	0.270	5.9971	
600 minute winter	1-11	Hydro-Brake®	1-12	14.8				
240 minute winter	3-0	3.000	1-12	1.1	0.440	0.028	1.6005	
240 minute winter	1-12	1.012	1-13	14.5	0.317	0.114	1.6668	
15 minute winter	4-0	4.000	4-1	-13.3	-0.260	-0.260	1.4629	
15 minute winter	4-1	4.001	4-2	14.4	0.747	0.279	0.1904	
15 minute winter	4-2	4.002	4-3	-28.8	-0.564	-0.563	1.8249	
15 minute winter	4-3	4.003	4-4	-36.1	-0.707	-0.704	1.3243	
15 minute winter	5-0	5.000	5-1	-6.1	0.245	-0.154	1.0961	
15 minute winter	5-1	5.001	4-4	-17.6	0.809	-0.442	1.5136	
15 minute winter	4-4	4.004	4-5	41.8	0.822	0.816	1.4164	
15 minute winter	4-5	4.005	4-6	48.9	0.958	0.945	0.2279	
15 minute winter	4-6	4.006	4-7	51.4	1.008	1.003	0.5950	
15 minute winter	4-7	4.007	4-8	63.1	1.235	1.233	2.6670	
15 minute winter	6-0	6.000	6-1	9.9	0.456	0.248	1.3906	
15 minute winter	6-1	6.001	6-2	20.3	0.764	0.509	1.5616	
15 minute winter	6-2	6.002	6-3	28.2	0.708	0.706	1.1288	
15 minute winter	6-3	6.003	4-8	54.9	1.381	1.379	0.9360	
15 minute winter	4-8	4.008	4-9	147.4	1.337	1.329	3.0142	
15 minute summer	7-0	7.000	4-9	-19.9	-0.640	-0.501	2.3817	
15 minute winter	4-9	4.009	4-10	190.5	1.727	2.156	2.1087	
240 minute winter	8-0	8.000	8-1	-1.6	-0.042	-0.049	1.7875	
240 minute winter	9-0	9.000	8-1	-1.9	-0.070	-0.059	1.7821	

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Results for 100 year +20% CC Critical Storm Duration. Lowest mass balance: 98.90%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
240 minute winter	8-1	196	87.055	0.935	8.0	2.4448	0.0000	SURCHARGED
240 minute winter	4-10	196	87.055	1.052	63.8	2.0952	0.0000	SURCHARGED
15 minute winter	10-0	12	87.274	0.513	10.3	0.5805	0.0000	SURCHARGED
15 minute winter	10-1	12	87.298	0.633	33.0	1.1443	0.0000	SURCHARGED
15 minute winter	11-0	11	87.289	0.764	8.7	0.8646	0.0000	SURCHARGED
15 minute winter	11-1	11	87.289	0.840	27.8	1.4339	0.0000	SURCHARGED
15 minute winter	10-2	11	87.255	0.961	48.3	2.1127	0.0000	SURCHARGED
15 minute winter	12-0	11	87.075	0.912	10.2	1.0318	0.0000	SURCHARGED
15 minute winter	10-3	11	87.065	0.966	82.3	2.3302	0.0000	SURCHARGED
240 minute winter	4-11	196	87.054	1.102	89.0	3.2352	0.0000	SURCHARGED
240 minute winter	4-12	196	87.053	1.109	155.1	673.2071	0.0000	SURCHARGED
240 minute winter	13-0	196	87.052	0.877	0.7	0.9920	0.0000	SURCHARGED
240 minute winter	4-13	196	87.052	1.148	69.5	2.6738	0.0000	SURCHARGED
240 minute winter	4-14	192	87.051	1.174	66.5	2.6396	0.0000	SURCHARGED
15 minute winter	14-0	11	87.078	0.925	13.6	1.2962	0.0000	SURCHARGED
15 minute winter	14-1	12	87.109	1.093	67.3	3.6081	0.0000	FLOOD RISK
240 minute winter	15-0	192	87.051	0.782	1.2	0.9447	0.0000	SURCHARGED
240 minute winter	14-2	192	87.051	1.164	32.1	4.8296	0.0000	SURCHARGED
240 minute winter	4-15	192	87.051	1.198	64.0	3.2796	0.0000	SURCHARGED
240 minute winter	16-0	192	87.050	0.475	1.4	0.5372	0.0000	SURCHARGED
240 minute winter	17-0	196	87.050	0.850	0.8	0.9610	0.0000	SURCHARGED
240 minute winter	4-16	192	87.050	1.233	45.1	5.3987	0.0000	SURCHARGED
240 minute winter	1-13	192	87.048	1.271	45.4	3.1647	0.0000	SURCHARGED
15 minute winter	18-0	13	87.203	0.778	18.1	0.8797	0.0000	SURCHARGED
15 minute winter	19-0	13	87.296	0.571	24.0	0.8458	0.0000	SURCHARGED
15 minute winter	19-1	13	87.287	0.697	18.2	1.0647	0.0000	SURCHARGED
15 minute winter	18-1	13	87.263	1.195	54.3	2.4182	0.0000	SURCHARGED
15 minute winter	20-0	13	87.231	0.987	10.4	1.4789	0.0000	SURCHARGED
15 minute winter	18-2	12	87.223	1.284	84.8	4.1701	0.0000	SURCHARGED
15 minute winter	18-3	13	87.128	1.331	103.3	3.3130	0.0000	SURCHARGED
15 minute winter	18-4	13	87.063	1.293	112.2	2.2079	0.0000	SURCHARGED
240 minute winter	1-14	192	87.048	1.296	39.0	3.0859	0.0000	SURCHARGED
240 minute winter	1-15	192	87.047	1.308	37.1	2.7230	0.0000	SURCHARGED
240 minute winter	1-16	192	87.047	1.335	38.3	5.4266	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)
240 minute winter	8-1	8.001	4-10	6.8	0.186	0.096	2.0073	
240 minute winter	4-10	4.010	4-11	63.3	0.566	0.628	3.4769	
15 minute winter	10-0	10.000	10-1	-10.3	-0.278	-0.258	0.6464	
15 minute winter	10-1	10.001	10-2	-19.2	0.716	-0.484	1.3572	
15 minute winter	11-0	11.000	11-1	-8.7	-0.438	-0.218	0.5112	
15 minute winter	11-1	11.001	10-2	-17.2	-0.435	-0.430	1.0424	
15 minute winter	10-2	10.002	10-3	50.2	1.262	1.261	0.7549	
15 minute winter	12-0	12.000	10-3	-10.2	-0.317	-0.320	0.6672	
15 minute winter	10-3	10.003	4-11	84.7	2.131	2.665	0.7590	
240 minute winter	4-11	4.011	4-12	88.3	1.424	0.562	1.1901	
240 minute winter	4-12	4.012	4-13	-68.6	-0.351	-0.437	5.6611	
240 minute winter	13-0	13.000	4-13	-0.7	-0.030	-0.018	1.1732	
240 minute winter	4-13	4.013	4-14	-66.0	-0.337	-0.420	3.7682	
240 minute winter	4-14	4.014	4-15	-63.2	-0.225	-0.280	6.0693	
15 minute winter	14-0	14.000	14-1	16.8	0.239	0.297	3.6751	
15 minute winter	14-1	14.001	14-2	47.8	0.679	0.845	3.4640	
240 minute winter	15-0	15.000	14-2	-0.6	0.246	-0.016	1.4866	
240 minute winter	14-2	14.002	4-15	30.9	0.420	0.350	1.4383	
240 minute winter	4-15	4.015	4-16	44.9	0.297	0.199	9.2799	
240 minute winter	16-0	16.000	4-16	-1.4	-0.042	-0.035	1.4034	
240 minute winter	17-0	17.000	4-16	-0.8	-0.036	-0.020	1.3244	
240 minute winter	4-16	4.016	1-13	45.4	0.314	0.214	11.5572	
240 minute winter	1-13	1.013	1-14	36.4	0.277	0.172	7.2394	
15 minute winter	18-0	18.000	18-1	-18.1	-0.586	-0.454	2.4077	
15 minute winter	19-0	19.000	19-1	-15.2	0.629	-0.382	0.9119	
15 minute winter	19-1	19.001	18-1	23.9	0.884	0.599	0.5447	
15 minute winter	18-1	18.001	18-2	37.7	0.605	0.532	2.2089	
15 minute winter	20-0	20.000	18-2	9.3	-0.251	0.234	1.9206	
15 minute winter	18-2	18.002	18-3	82.7	0.750	0.746	5.0511	
15 minute winter	18-3	18.003	18-4	106.0	0.961	1.200	1.4974	
15 minute winter	18-4	18.004	1-14	114.9	1.042	1.300	0.8052	
240 minute winter	1-14	1.014	1-15	37.1	0.352	0.175	3.8500	
240 minute winter	1-15	1.015	1-16	37.2	0.204	0.175	7.7780	
240 minute winter	1-16	1.016	PI 4	37.3	0.426	0.154	1.9351	

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Results for 100 year +20% CC Critical Storm Duration. Lowest mass balance: 98.90%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
30 minute winter	PI 4	10	85.907	0.323	37.4	0.5700	0.0000	OK
15 minute summer	Outfall 4	1	85.900	0.327	42.4	0.0000	0.0000	OK
15 minute winter	21-0	11	87.291	0.033	1.9	0.0491	0.0000	OK
30 minute winter	21-1	22	87.257	0.157	17.9	0.3763	0.0000	OK
30 minute winter	21-2	22	87.235	0.244	27.4	0.4598	0.0000	OK
30 minute winter	21-3	21	87.244	0.426	59.3	1.0965	0.0000	SURCHARGED
30 minute winter	21-4	21	87.223	0.554	73.1	1.1584	0.0000	SURCHARGED
10080 minute winter	21-5	7440	87.220	0.622	1.7	1.3052	0.0000	SURCHARGED
15 minute winter	22-0	13	87.800	0.705	27.0	1.3163	0.0000	SURCHARGED
15 minute winter	22-1	13	87.761	0.706	48.6	1.2827	0.0000	SURCHARGED
15 minute winter	23-0	12	87.843	0.682	32.6	1.3761	0.0000	SURCHARGED
15 minute winter	22-2	12	87.790	0.883	123.4	4.2379	0.0000	SURCHARGED
15 minute winter	24-0	13	87.723	0.623	37.4	0.9549	0.0000	SURCHARGED
15 minute winter	22-3	12	87.749	0.864	143.1	2.3180	0.0000	SURCHARGED
15 minute winter	22-4	12	87.580	0.827	169.1	2.1014	0.0000	SURCHARGED
30 minute winter	25-0	23	87.356	0.077	3.5	0.0871	0.0000	OK
30 minute winter	25-1	23	87.346	0.243	18.9	0.4627	0.0000	SURCHARGED
30 minute winter	22-5	23	87.337	0.725	165.6	1.8188	0.0000	SURCHARGED
30 minute winter	26-0	23	87.271	0.146	5.0	0.1652	0.0000	OK
30 minute winter	26-1	23	87.264	0.242	9.5	0.3279	0.0000	SURCHARGED
30 minute winter	22-6	23	87.266	0.692	186.9	1.3429	0.0000	SURCHARGED
10080 minute winter	22-7	7440	87.220	0.691	4.7	219.8322	0.0000	SURCHARGED
10080 minute winter	21-6	7440	87.220	0.708	5.2	1.7767	0.0000	SURCHARGED
15 minute winter	21-7	13	87.300	0.900	229.7	3.1048	0.0000	SURCHARGED
15 minute winter	21-8	12	87.353	0.978	184.3	2.0371	0.0000	SURCHARGED
15 minute winter	21-9	12	87.402	1.054	177.7	2.0205	0.0000	SURCHARGED
15 minute winter	21-10	12	87.482	1.210	178.1	3.4086	0.0000	SURCHARGED
15 minute winter	27-0	12	87.486	1.164	61.5	2.0564	0.0000	SURCHARGED
15 minute winter	27-1	12	87.506	1.231	164.8	4.3567	0.0000	SURCHARGED
15 minute winter	28-0	12	87.624	1.146	41.7	2.1889	0.0000	SURCHARGED
15 minute winter	28-1	12	87.580	1.247	68.3	4.4572	0.0000	FLOOD RISK
15 minute winter	21-11	12	87.519	1.287	202.1	5.1831	0.0000	SURCHARGED
15 minute winter	29-0	13	87.768	0.383	15.7	0.4472	0.0000	SURCHARGED
15 minute winter	29-1	14	87.773	0.612	23.8	0.9302	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)
30 minute winter	PI 4	1.017	Outfall 4	37.5	0.243	0.140	1.1163	538.0
15 minute winter	21-0	21.000	21-1	1.7	0.122	0.016	0.8075	
30 minute winter	21-1	21.001	21-2	17.6	0.645	0.159	2.1066	
30 minute winter	21-2	21.002	21-3	26.7	0.591	0.242	5.2202	
30 minute winter	21-3	21.003	21-4	56.0	0.827	0.506	5.3104	
30 minute winter	21-4	21.004	21-5	57.0	0.789	0.451	3.0859	
10080 minute winter	21-5	21.005	21-6	1.7	0.309	0.013	2.7940	
15 minute winter	22-0	22.000	22-1	20.9	0.419	0.165	1.7408	
15 minute winter	22-1	22.001	22-2	-40.1	-0.393	-0.318	6.4835	
15 minute winter	23-0	23.000	22-2	22.8	0.257	0.206	7.0434	
15 minute winter	22-2	22.002	22-3	112.3	0.897	0.877	0.9332	
15 minute winter	24-0	24.000	22-3	-34.6	-0.422	-0.275	6.6467	
15 minute winter	22-3	22.003	22-4	130.1	1.039	1.034	5.7987	
15 minute winter	22-4	22.004	22-5	163.9	1.310	1.302	6.1883	
30 minute winter	25-0	25.000	25-1	-3.5	-0.149	-0.088	0.7723	
30 minute winter	25-1	25.001	22-5	18.6	0.952	0.466	0.5903	
30 minute winter	22-5	22.005	22-6	163.8	1.309	1.390	1.9006	
30 minute winter	26-0	26.000	26-1	-5.0	-0.269	-0.126	0.5862	
30 minute winter	26-1	26.001	22-6	5.2	0.595	0.130	1.3191	
30 minute winter	22-6	22.006	22-7	181.8	2.138	1.549	2.2683	
10080 minute winter	22-7	22.007	21-6	3.4	0.360	0.028	0.8386	
10080 minute winter	21-6	21.006	21-7	5.2	0.369	0.026	10.1382	
15 minute winter	21-7	21.007	21-8	-186.3	-0.952	-1.043	2.7460	
15 minute winter	21-8	21.008	21-9	-178.1	-0.911	-1.002	2.9942	
15 minute winter	21-9	21.009	21-10	-174.9	0.916	-0.994	8.5941	
15 minute winter	21-10	21.010	21-11	174.5	0.945	0.996	4.5606	
15 minute winter	27-0	27.000	27-1	-61.5	-0.463	-0.290	13.6208	
15 minute winter	27-1	27.001	21-11	-113.9	-0.523	-0.537	12.3665	
15 minute winter	28-0	28.000	28-1	-27.9	-0.340	-0.252	5.1670	
15 minute winter	28-1	28.001	21-11	65.3	0.595	0.590	3.6110	
15 minute winter	21-11	21.011	21-12	213.0	0.915	1.004	18.3778	
15 minute winter	29-0	29.000	29-1	-15.1	-0.511	-0.380	1.5097	
15 minute winter	29-1	29.001	29-2	18.2	0.679	0.455	0.4874	

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Results for 100 year +20% CC Critical Storm Duration. Lowest mass balance: 98.90%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	29-2	14	87.777	0.689	21.7	0.9737	0.0000	SURCHARGED
15 minute winter	29-3	14	87.736	0.956	34.8	1.6446	0.0000	SURCHARGED
15 minute winter	29-4	14	87.703	1.019	30.1	1.3855	0.0000	SURCHARGED
15 minute winter	29-5	13	87.615	1.128	45.0	1.8492	0.0000	SURCHARGED
15 minute winter	21-12	12	87.531	1.362	249.1	4.3222	0.0000	SURCHARGED
15 minute winter	30-0	13	87.653	0.328	23.9	0.4165	0.0000	SURCHARGED
15 minute winter	30-1	13	87.614	0.552	48.2	0.7660	0.0000	SURCHARGED
15 minute winter	30-2	13	87.585	0.689	31.8	1.1340	0.0000	SURCHARGED
15 minute winter	21-13	12	87.558	1.420	266.5	3.4927	0.0000	SURCHARGED
10080 minute winter	21-14	7440	87.220	1.116	12.6	2154.4030	0.0000	SURCHARGED
5760 minute winter	PI 3	2820	86.740	0.743	4.0	1.3130	0.0000	SURCHARGED
15 minute summer	Outfall 3	1	86.740	0.802	0.0	0.0000	0.0000	OK
15 minute summer	31-0	1	86.775	0.000	0.0	0.0000	0.0000	OK
15 minute winter	31-1	10	86.725	0.100	22.9	0.1787	0.0000	OK
15 minute winter	31-2	12	86.589	0.243	32.3	0.3373	0.0000	SURCHARGED
15 minute winter	31-4	12	86.537	0.363	37.3	0.4788	0.0000	SURCHARGED
15 minute winter	31-5	12	86.440	0.480	43.4	0.6269	0.0000	SURCHARGED
15 minute winter	31-6	12	86.206	0.561	58.8	0.8967	0.0000	SURCHARGED
15 minute summer	32-0	1	86.125	0.000	0.0	0.0000	0.0000	OK
15 minute winter	32-1	12	86.073	0.093	8.6	0.1296	0.0000	OK
15 minute winter	31-7	12	86.066	0.461	66.9	0.5377	0.0000	SURCHARGED
1440 minute winter	34-0	1140	86.001	0.201	0.6	0.3039	0.0000	OK
1440 minute winter	34-1	1140	86.001	0.335	1.5	0.5250	0.0000	SURCHARGED
1440 minute winter	34-2	1140	86.001	0.390	1.9	0.5280	0.0000	SURCHARGED
1440 minute winter	31-8	1140	86.001	0.617	10.2	1.5796	0.0000	SURCHARGED
1440 minute winter	33-0	1140	86.001	0.326	0.2	0.3692	0.0000	SURCHARGED
1440 minute winter	31-9	1140	86.001	0.905	11.4	1.7072	0.0000	SURCHARGED
1440 minute winter	31-10	1140	86.001	0.930	17.0	420.9549	0.0000	SURCHARGED
1440 minute winter	35-0	1140	86.001	0.342	0.6	0.5064	0.0000	SURCHARGED
1440 minute winter	31-11	1140	86.001	0.985	10.1	2.0866	0.0000	SURCHARGED
1440 minute winter	31-12	1140	86.001	1.068	9.2	2.3861	0.0000	SURCHARGED
15 minute summer	36-0	1	86.900	0.000	0.0	0.0000	0.0000	OK
15 minute winter	36-1	10	86.840	0.118	24.8	0.2277	0.0000	OK
15 minute winter	36-2	10	86.723	0.148	32.6	0.2084	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	29-2	29.002	29-3	24.3	0.622	0.610	2.0729	
15 minute winter	29-3	29.003	29-4	29.4	0.911	0.738	0.6439	
15 minute winter	29-4	29.004	29-5	33.4	0.863	0.823	1.2821	
15 minute winter	29-5	29.005	21-12	42.4	1.067	1.066	1.4151	
15 minute winter	21-12	21.012	21-13	262.4	1.096	1.237	8.8880	
15 minute winter	30-0	30.000	30-1	-21.0	-0.539	-0.474	1.4371	
15 minute winter	30-1	30.001	30-2	-37.2	-0.987	-0.934	1.1161	
15 minute winter	30-2	30.002	21-13	35.6	1.126	0.893	0.7920	
15 minute winter	21-13	21.013	21-14	282.0	2.414	1.330	5.0771	
10080 minute winter	21-14	Hydro-Brake®	PI 3	4.0				
5760 minute winter	PI 3	21.015	Outfall 3	4.0	0.014	0.014	9.6080	720.3
15 minute summer	31-0	31.000	31-1	0.0	0.000	0.000	0.2073	
15 minute winter	31-1	31.001	31-2	22.5	1.116	0.386	0.6120	
15 minute winter	31-2	31.002	31-4	29.4	1.206	0.506	0.5464	
15 minute winter	31-4	31.003	31-5	36.0	1.249	0.619	0.6804	
15 minute winter	31-5	31.004	31-6	41.0	1.032	0.790	1.2517	
15 minute winter	31-6	31.005	31-7	58.7	1.475	1.462	0.2654	
15 minute summer	32-0	32.000	32-1	0.0	0.000	0.000	0.1289	
15 minute winter	32-1	32.001	31-7	8.3	0.643	0.208	0.7624	
15 minute winter	31-7	31.006	31-8	67.8	0.962	0.957	3.8022	
1440 minute winter	34-0	33.000	34-1	0.6	0.264	0.015	0.8758	
1440 minute winter	34-1	33.001	34-2	1.5	0.434	0.038	0.3699	
1440 minute winter	34-2	33.002	31-8	1.9	0.513	0.048	0.4976	
1440 minute winter	31-8	31.007	31-9	10.2	0.664	0.162	0.3263	
1440 minute winter	33-0	34.000	31-9	-0.2	-0.006	-0.004	2.1464	
1440 minute winter	31-9	31.008	31-10	11.1	0.686	0.088	1.0960	
1440 minute winter	31-10	31.009	31-11	-10.0	0.450	-0.079	2.4026	
1440 minute winter	35-0	35.000	31-11	0.6	0.368	0.015	1.2305	
1440 minute winter	31-11	31.010	31-12	-9.2	0.424	-0.073	3.6330	
1440 minute winter	31-12	31.011	31-13	8.5	0.330	0.067	6.9243	
15 minute summer	36-0	36.000	36-1	0.0	0.000	0.000	0.3070	
15 minute winter	36-1	36.001	36-2	24.3	0.994	0.467	0.3581	
15 minute winter	36-2	36.002	36-3	32.1	1.109	0.617	0.3186	

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Results for 100 year +20% CC Critical Storm Duration. Lowest mass balance: 98.90%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	36-3	11	86.626	0.161	38.9	0.2211	0.0000	OK
15 minute winter	36-4	11	86.480	0.161	42.3	0.2052	0.0000	OK
1440 minute winter	31-13	1140	86.001	1.226	11.3	3.7318	0.0000	SURCHARGED
1440 minute winter	31-14	1140	86.001	1.284	11.5	2.4226	0.0000	SURCHARGED
1440 minute winter	31-15	1140	86.001	1.310	11.5	2.1061	0.0000	SURCHARGED
15 minute winter	37-0	13	86.942	0.367	19.4	0.4147	0.0000	SURCHARGED
15 minute winter	37-1	13	86.874	0.602	41.1	1.1006	0.0000	SURCHARGED
15 minute winter	38-0	12	86.896	1.219	36.2	1.8734	0.0000	SURCHARGED
15 minute winter	39-0	12	86.870	0.755	8.6	0.8536	0.0000	SURCHARGED
15 minute winter	38-1	12	86.881	1.461	54.6	3.5294	0.0000	FLOOD RISK
15 minute winter	37-2	12	86.802	1.658	131.0	6.1645	0.0000	SURCHARGED
15 minute winter	40-0	12	86.167	0.392	12.4	0.4428	0.0000	SURCHARGED
15 minute winter	40-1	11	86.200	0.581	25.2	0.8641	0.0000	SURCHARGED
15 minute winter	37-3	12	86.123	1.179	196.9	4.7770	0.0000	SURCHARGED
1440 minute winter	37-4	1140	86.001	1.179	19.3	2.6712	0.0000	SURCHARGED
1440 minute winter	31-16	1140	86.001	1.346	28.1	3.6037	0.0000	SURCHARGED
1440 minute winter	31-17	1140	86.001	1.370	28.0	566.6603	0.0000	SURCHARGED
30 minute winter	PI 1	24	84.916	0.396	10.5	0.6989	0.0000	OK
15 minute summer	Outfall 1	1	84.910	0.409	9.0	0.0000	0.0000	OK
15 minute winter	41-0	12	87.502	0.802	19.1	1.4349	0.0000	SURCHARGED
15 minute winter	41-1	12	87.460	0.877	47.7	1.3602	0.0000	SURCHARGED
15 minute winter	41-2	12	87.467	1.072	41.8	2.1274	0.0000	SURCHARGED
15 minute winter	41-3	12	87.387	1.193	55.8	2.1526	0.0000	FLOOD RISK
15 minute winter	42-0	12	87.574	1.000	32.7	2.4753	0.0000	FLOOD RISK
15 minute winter	42-1	12	87.564	1.041	69.9	2.9010	0.0000	SURCHARGED
15 minute winter	43-0	12	87.459	0.866	6.8	1.1981	0.0000	SURCHARGED
15 minute winter	42-2	12	87.455	1.056	95.3	2.3539	0.0000	SURCHARGED
15 minute winter	44-0	12	87.304	0.881	18.4	1.1800	0.0000	SURCHARGED
15 minute winter	41-4	12	87.297	1.238	171.4	2.7897	0.0000	SURCHARGED
15 minute winter	45-0	12	86.940	0.528	21.4	1.1165	0.0000	SURCHARGED
15 minute winter	41-5	12	86.898	0.978	212.8	2.2688	0.0000	SURCHARGED
360 minute winter	41-6	272	86.809	0.910	44.7	1.3015	0.0000	SURCHARGED
360 minute winter	41-7	272	86.806	1.068	48.1	334.3096	0.0000	SURCHARGED
360 minute winter	41-8	272	86.806	1.089	19.5	1.8837	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	36-3	36.003	36-4	38.8	1.296	0.747	0.4425	
15 minute winter	36-4	36.004	31-13	42.3	1.436	0.814	1.2604	
1440 minute winter	31-13	31.012	31-14	10.8	0.349	0.081	5.3229	
1440 minute winter	31-14	31.013	31-15	11.2	0.345	0.084	2.3700	
1440 minute winter	31-15	31.014	31-16	11.4	0.268	0.085	3.2654	
15 minute winter	37-0	37.000	37-1	-19.4	-0.641	-0.487	2.0450	
15 minute winter	37-1	37.001	37-2	32.3	0.844	0.813	2.9182	
15 minute winter	38-0	38.000	38-1	-24.2	-0.665	-0.607	1.7326	
15 minute winter	39-0	39.000	38-1	-8.6	0.366	-0.215	0.2753	
15 minute winter	38-1	38.001	37-2	42.6	0.606	0.602	4.7515	
15 minute winter	37-2	37.002	37-3	113.5	1.612	1.848	4.5516	
15 minute winter	40-0	40.000	40-1	-12.4	-0.469	-0.311	1.0538	
15 minute winter	40-1	40.001	37-3	18.7	0.549	0.470	2.9752	
15 minute winter	37-3	37.003	37-4	200.9	1.822	2.040	5.4750	
1440 minute winter	37-4	37.004	31-16	19.2	0.483	0.179	2.9447	
1440 minute winter	31-16	31.015	31-17	28.0	0.757	0.089	3.2280	
1440 minute winter	31-17	31.016	PI 1	9.9	0.327	0.033	0.7769	
30 minute winter	PI 1	31.017	Outfall 1	14.0	0.070	0.066	3.7963	145.7
15 minute winter	41-0	41.000	41-1	17.4	0.671	0.246	2.0134	
15 minute winter	41-1	41.001	41-2	30.1	0.700	0.425	3.2325	
15 minute winter	41-2	41.002	41-3	40.3	0.793	0.569	3.4546	
15 minute winter	41-3	41.003	41-4	52.9	0.751	0.747	2.3190	
15 minute winter	42-0	42.000	42-1	24.2	0.494	0.341	0.8773	
15 minute winter	42-1	42.001	42-2	58.7	0.839	0.828	2.1240	
15 minute winter	43-0	43.000	42-2	7.9	0.532	0.198	0.4658	
15 minute winter	42-2	42.002	41-4	89.1	1.265	1.256	1.2328	
15 minute winter	44-0	44.000	41-4	-11.7	0.604	-0.293	0.6459	
15 minute winter	41-4	41.004	41-5	170.9	1.550	1.546	4.9665	
15 minute winter	45-0	45.000	41-5	17.3	0.720	0.436	1.4435	
15 minute winter	41-5	41.005	41-6	212.0	1.923	1.652	0.5585	
360 minute winter	41-6	41.006	41-7	44.5	0.992	0.402	5.7477	
360 minute winter	41-7	41.007	41-8	19.5	0.394	0.154	0.5755	
360 minute winter	41-8	41.008	41-9	19.6	0.403	0.176	1.5091	

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Results for 100 year +20% CC Critical Storm Duration. Lowest mass balance: 98.90%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
360 minute winter	46-0	272	86.805	0.800	0.2	0.9047	0.0000	SURCHARGED
360 minute winter	41-9	272	86.805	1.131	19.7	2.0821	0.0000	SURCHARGED
360 minute winter	47-0	272	86.803	0.278	0.8	0.3149	0.0000	SURCHARGED
360 minute winter	47-1	272	86.803	0.695	3.7	1.3456	0.0000	SURCHARGED
360 minute winter	41-10	272	86.803	1.403	20.1	3.7087	0.0000	SURCHARGED
360 minute winter	41-11	272	86.803	1.418	20.2	2.3546	0.0000	SURCHARGED
360 minute winter	41-12	272	86.801	1.454	20.3	4.1161	0.0000	SURCHARGED
360 minute winter	48-0	272	86.800	0.500	1.2	0.5652	0.0000	SURCHARGED
360 minute winter	41-13	272	86.800	1.525	23.2	6.2026	0.0000	SURCHARGED
15 minute winter	PI 5	9	85.901	0.736	20.8	1.3011	0.0000	SURCHARGED
15 minute summer	Outfall 5	1	85.900	0.752	20.6	0.0000	0.0000	OK
15 minute summer	50-0	1	88.900	0.000	0.0	0.0000	0.0000	OK
15 minute winter	50-1	10	88.113	0.113	28.2	0.2041	0.0000	OK
15 minute winter	50-2	10	87.353	0.153	43.6	0.2338	0.0000	OK
1440 minute winter	50-3	1110	87.345	1.144	3.6	1.9514	0.0000	SURCHARGED
1440 minute winter	50-4	1110	87.345	1.343	5.8	3.1284	0.0000	SURCHARGED
1440 minute winter	50-5	1110	87.345	1.524	8.9	186.1237	0.0000	SURCHARGED
15 minute winter	PI 2	16	85.902	0.282	1.8	0.4031	0.0000	OK
15 minute summer	Outfall 2	1	85.900	0.290	2.2	0.0000	0.0000	OK
960 minute winter	49-0	900	86.937	0.743	0.9	1.0626	0.0000	SURCHARGED
960 minute winter	49-1	900	86.937	0.968	4.1	3.4435	0.0000	FLOOD RISK
960 minute winter	49-2	900	86.937	1.031	3.8	1.7365	0.0000	SURCHARGED
960 minute winter	49-3	900	86.937	1.138	8.2	151.4838	0.0000	SURCHARGED
960 minute winter	49-4	900	86.937	1.207	1.9	2.4131	0.0000	SURCHARGED
960 minute winter	49-5	900	86.937	1.257	2.0	2.3761	0.0000	SURCHARGED
15 minute winter	PI 6	13	85.902	0.376	1.8	0.5377	0.0000	OK
15 minute summer	Outfall 6	1	85.900	0.396	1.9	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
360 minute winter	46-0	46.000	41-9	-0.2	-0.027	-0.005	0.3805	
360 minute winter	41-9	41.009	41-10	19.8	0.399	0.179	3.4285	
360 minute winter	47-0	47.000	47-1	-0.8	-0.030	-0.018	1.9897	
360 minute winter	47-1	47.001	41-10	3.0	0.385	0.076	1.9757	
360 minute winter	41-10	41.010	41-11	20.2	0.353	0.158	0.6386	
360 minute winter	41-11	41.011	41-12	20.3	0.329	0.166	1.7545	
360 minute winter	41-12	41.012	41-13	20.5	0.216	0.161	3.0957	
360 minute winter	48-0	48.000	41-13	-1.2	-0.048	-0.023	2.1542	
360 minute winter	41-13	Hydro-Brake®	PI 5	21.0				
15 minute winter	PI 5	41.014	Outfall 5	20.8	0.106	0.087	1.0395	123.4
15 minute summer	50-0	49.000	50-1	0.0	0.000	0.000	0.0000	
15 minute winter	50-1	49.001	50-2	27.5	1.424	0.472	0.7049	
15 minute winter	50-2	49.002	50-3	43.1	1.561	0.740	0.7508	
1440 minute winter	50-3	49.003	50-4	3.3	0.281	0.025	8.0114	
1440 minute winter	50-4	49.004	50-5	5.7	0.408	0.051	10.3438	
1440 minute winter	50-5	Hydro-Brake®	PI 2	2.2				
15 minute winter	PI 2	49.006	Outfall 2	3.4	0.032	0.023	0.4827	25.9
960 minute winter	49-0	50.000	49-1	-0.9	-0.013	-0.008	8.0285	
960 minute winter	49-1	50.001	49-2	3.3	0.284	0.030	2.2298	
960 minute winter	49-2	50.002	49-3	3.7	0.369	0.042	5.9200	
960 minute winter	49-3	50.003	49-4	1.9	0.107	0.021	3.8234	
960 minute winter	49-4	50.004	49-5	1.9	0.075	0.016	5.6761	
960 minute winter	49-5	Hydro-Brake®	PI 6	1.9				
15 minute winter	PI 6	50.006	Outfall 6	3.1	0.022	0.016	0.8382	24.9

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Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	5	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00
FSR Region	Scotland and Ireland	Connection Type	Level Inverts
M5-60 (mm)	15.600	Minimum Backdrop Height (m)	0.000
Ratio-R	0.286	Preferred Cover Depth (m)	1.200
CV	0.750	Include Intermediate Ground	✓
Time of Entry (mins)	5.00	Enforce best practice design rules	x

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
1-0	0.012	5.00	88.550	1350	681728.297	714559.265	1.550
1-1	0.025	5.00	88.200	1350	681727.082	714579.948	1.264
1-2	0.032	5.00	88.200	1350	681729.935	714618.237	1.383
1-3	0.025	5.00	88.150	1350	681724.880	714650.182	1.433
1-4	0.012	5.00	88.050	1350	681726.157	714667.886	1.388
1-5	0.042	5.00	88.201	1350	681706.946	714704.913	1.668
2-0	0.012	5.00	88.588	1200	681654.345	714711.728	1.425
1-6	0.170	5.00	88.523	1350	681668.442	714684.340	2.077
1-7	0.171	5.00	88.681	1350	681613.809	714655.342	2.358
1-8	0.133	5.00	88.553	1350	681573.837	714634.246	2.320
1-9	0.182	5.00	88.321	1350	681516.849	714604.369	2.216
1-10	0.055	5.00	88.495	1350	681489.411	714611.148	2.437
1-11			88.016	1800	681465.859	714652.863	2.095
3-0	0.013	5.00	88.471	1200	681495.121	714623.928	1.680
1-12	0.101	5.00	88.157	1350	681476.088	714659.384	2.256
4-0		5.00	88.200	1200	681714.921	714722.862	1.115
4-1	0.028	5.00	88.200	1200	681700.576	714747.663	1.259
4-2			88.200	1200	681696.983	714746.664	1.278
4-3	0.029	5.00	88.321	1200	681679.139	714777.631	1.579
5-0		5.00	88.100	1200	681687.188	714707.538	0.975
5-1	0.043	5.00	88.000	1200	681674.194	714731.842	1.038
4-4	0.076	5.00	88.227	1200	681656.262	714765.409	1.616
4-5	0.040	5.00	88.128	1200	681631.788	714752.351	1.657
4-6			88.062	1200	681629.584	714756.232	1.614
4-7	0.066	5.00	87.821	1200	681618.718	714752.021	1.432
6-0	0.020	5.00	87.900	1200	681651.744	714821.450	1.029
6-1	0.040	5.00	88.070	1200	681635.217	714852.261	1.405
6-2	0.021	5.00	88.000	1200	681600.572	714833.783	1.567
6-3	0.098	5.00	87.930	1200	681613.963	714808.759	1.665
4-8	0.132	5.00	87.727	1350	681593.233	714797.616	1.601
7-0		5.00	88.100	1200	681598.010	714732.199	1.525
4-9	0.150	5.00	87.721	1350	681569.162	714784.678	1.680
8-0		5.00	87.700	1200	681578.569	714821.954	1.410
9-0		5.00	87.700	1200	681499.419	714779.633	1.301
8-1	0.095	5.00	87.400	1200	681538.921	714800.785	1.280
4-10	0.051	5.00	87.822	1350	681552.322	714775.627	1.819
10-0		5.00	87.635	1200	681456.887	714742.982	0.874
10-1	0.039	5.00	87.816	1200	681464.184	714728.460	1.151
11-0		5.00	87.700	1200	681470.270	714761.709	1.175
11-1	0.036	5.00	87.700	1200	681481.748	714767.493	1.251
10-2	0.075	5.00	87.700	1200	681494.310	714744.490	1.406
12-0		5.00	87.588	1200	681518.601	714738.418	1.425
10-3	0.104	5.00	87.724	1200	681511.067	714753.407	1.625
4-11	0.111	5.00	87.850	1500	681527.859	714762.478	1.898
4-12			87.850	1500	681530.789	714757.146	1.906
13-0		5.00	87.600	1200	681570.228	714744.973	1.425
4-13	0.042	5.00	87.400	1500	681544.032	714731.413	1.496
4-14	0.039	5.00	87.500	1500	681526.924	714722.557	1.623
14-0	0.027	5.00	88.142	1200	681632.181	714739.287	1.989
14-1	0.143	5.00	87.334	1200	681586.068	714714.847	1.318
15-0	0.007	5.00	88.094	1200	681560.301	714658.807	1.825
14-2	0.222	5.00	87.521	1350	681542.637	714691.750	1.634
4-15	0.076	5.00	87.418	1500	681536.496	714703.253	1.565
16-0		5.00	88.000	1200	681524.006	714656.720	1.425
17-0		5.00	87.625	1200	681491.700	714717.223	1.425
4-16	0.262	5.00	87.823	1500	681507.377	714687.844	2.006
1-13	0.083	5.00	88.078	1500	681471.112	714668.653	2.301
18-0		5.00	87.800	1200	681422.878	714707.549	1.375
19-0	0.025	5.00	88.150	1200	681367.542	714630.246	1.425

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Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
19-1	0.020	5.00	87.600	1200	681380.523	714649.147	1.010
18-1	0.075	5.00	87.750	1200	681392.936	714654.934	1.682
20-0	0.024	5.00	87.550	1200	681458.635	714610.046	1.306
18-2	0.178	5.00	87.900	1350	681419.839	714638.804	1.961
18-3	0.102	5.00	87.724	1350	681442.714	714678.477	1.927
18-4	0.029	5.00	87.871	1350	681452.487	714687.900	2.101
1-14	0.065	5.00	87.871	1500	681458.950	714691.294	2.119
1-15	0.032	5.00	87.781	1500	681452.167	714703.160	2.042
1-16	0.056	5.00	87.570	2100	681431.016	714720.912	1.858
PI 4			87.100	1500	681413.439	714734.297	1.516
Outfall 4			86.490	1500	681407.762	714738.679	0.917
21-0	0.005	5.00	88.540	1350	681732.623	714543.018	1.282
21-1	0.054	5.00	88.225	1350	681683.674	714528.552	1.125
21-2	0.032	5.00	88.405	1350	681649.964	714518.491	1.414
21-3	0.107	5.00	88.691	1350	681596.221	714502.522	1.873
21-4	0.056	5.00	88.367	1350	681550.069	714488.810	1.698
21-5	0.062	5.00	88.456	1350	681538.872	714510.770	1.858
22-0	0.025	5.00	88.245	1350	681680.587	714541.754	1.150
22-1	0.024	5.00	88.298	1350	681676.628	714555.083	1.243
23-0	0.035	5.00	88.357	1350	681708.590	714630.655	1.196
22-2	0.279	5.00	88.564	1350	681652.175	714600.736	1.657
24-0	0.008	5.00	88.655	1350	681619.602	714645.364	1.555
22-3	0.105	5.00	88.563	1350	681644.994	714598.737	1.678
22-4	0.133	5.00	89.151	1350	681604.492	714576.263	2.398
25-0		5.00	88.704	1200	681578.956	714511.950	1.425
25-1	0.062	5.00	88.700	1200	681570.824	714540.652	1.597
22-5	0.125	5.00	88.931	1350	681561.371	714552.096	2.319
26-0		5.00	88.550	1200	681520.981	714587.351	1.425
26-1	0.017	5.00	88.550	1200	681529.224	714571.926	1.528
22-6	0.059	5.00	88.890	1350	681548.127	714544.673	2.316
22-7			88.500	1350	681533.514	714533.960	1.971
21-6	0.069	5.00	88.369	1500	681527.948	714530.232	1.857
21-7	0.148	5.00	88.161	1500	681498.591	714572.945	1.761
21-8	0.029	5.00	88.218	1500	681494.806	714586.463	1.843
21-9	0.013	5.00	88.083	1500	681479.812	714583.385	1.735
21-10	0.087	5.00	87.929	1500	681440.788	714563.200	1.657
27-0		5.00	88.114	1500	681350.118	714601.420	1.792
27-1	0.144	5.00	87.900	1500	681391.219	714575.945	1.625
28-0	0.039	5.00	88.108	1350	681472.874	714484.377	1.630
28-1	0.162	5.00	87.846	1350	681446.895	714523.359	1.513
21-11	0.213	5.00	88.117	1500	681424.130	714546.888	1.885
29-0	0.002	5.00	88.510	1200	681529.152	714477.102	1.125
29-1	0.026	5.00	88.500	1200	681493.847	714463.154	1.339
29-2	0.017	5.00	88.289	1200	681481.690	714464.705	1.201
29-3	0.059	5.00	88.782	1200	681435.452	714440.649	2.002
29-4	0.025	5.00	88.880	1200	681420.740	714447.405	2.196
29-5	0.060	5.00	88.851	1200	681401.736	714473.443	2.364
21-12	0.180	5.00	88.730	1500	681378.428	714500.325	2.561
30-0	0.010	5.00	88.750	1200	681336.824	714583.857	1.425
30-1	0.021	5.00	88.700	1200	681318.656	714552.623	1.638
30-2	0.049	5.00	88.800	1200	681338.498	714532.780	1.904
21-13	0.094	5.00	88.850	1500	681354.275	714520.630	2.712
21-14			88.070	1500	681331.006	714494.008	1.966
PI 3			88.070	1500	681328.921	714490.869	2.073
Outfall 3			87.300	1500	681310.005	714462.485	1.362
31-0		5.00	88.586	1200	681241.100	714577.004	1.811
31-1	0.061	5.00	88.460	1200	681266.075	714572.105	1.835
31-2	0.026	5.00	88.375	1200	681288.357	714572.144	2.029
31-4	0.021	5.00	88.412	1200	681300.880	714577.792	2.238
31-5	0.021	5.00	88.350	1200	681310.328	714592.053	2.390
31-6	0.055	5.00	88.000	1200	681328.209	714617.952	2.355
32-0		5.00	87.750	1200	681351.362	714665.315	1.625
32-1	0.023	5.00	87.750	1200	681337.837	714644.743	1.770
31-7	0.004	5.00	87.894	1200	681322.684	714621.696	2.289
34-0	0.027	5.00	87.225	1200	681241.403	714640.836	1.425
34-1	0.037	5.00	87.366	1200	681263.636	714636.398	1.700
34-2	0.019	5.00	87.322	1200	681271.591	714641.215	1.711
31-8	0.143	5.00	87.387	1200	681277.979	714651.973	2.003
33-0		5.00	87.400	1200	681304.110	714699.473	1.725
31-9	0.052	5.00	87.385	1350	681274.152	714654.584	2.289

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Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
31-10			87.260	1800	681266.162	714658.164	2.189
35-0	0.025	5.00	87.091	1200	681280.289	714692.365	1.432
31-11	0.063	5.00	86.850	1350	681255.367	714674.032	1.834
31-12	0.079	5.00	86.901	1350	681230.026	714659.891	1.968
36-0		5.00	88.558	1200	681231.376	714579.073	1.658
36-1	0.066	5.00	88.383	1200	681201.801	714584.854	1.661
36-2	0.022	5.00	88.162	1200	681188.714	714591.490	1.587
36-3	0.018	5.00	87.954	1200	681182.045	714600.247	1.489
36-4	0.010	5.00	87.676	1200	681178.035	714614.258	1.357
31-13	0.198	5.00	87.231	1350	681174.797	714656.902	2.456
31-14	0.052	5.00	87.000	1350	681172.134	714690.391	2.283
31-15	0.020	5.00	86.950	1350	681178.112	714704.102	2.259
37-0		5.00	88.000	1200	681393.391	714716.054	1.425
37-1	0.051	5.00	87.736	1200	681364.767	714673.338	1.464
38-0	0.034	5.00	87.352	1200	681384.526	714741.184	1.675
39-0		5.00	87.171	1200	681352.807	714770.696	1.056
38-1	0.111	5.00	87.147	1200	681348.326	714765.422	1.727
37-2	0.272	5.00	87.247	1200	681304.036	714714.518	2.103
40-0		5.00	87.200	1200	681328.813	714803.744	1.425
40-1	0.026	5.00	87.075	1200	681305.668	714816.641	1.456
37-3	0.272	5.00	87.021	1350	681257.516	714759.392	2.077
37-4	0.088	5.00	86.930	1350	681218.378	714728.860	2.108
31-16	0.100	5.00	86.850	1500	681195.150	714715.697	2.195
31-17			86.440	2100	681189.329	714725.568	1.809
PI 1			86.440	1500	681186.333	714730.649	1.920
Outfall 1			85.570	1500	681181.220	714748.846	1.069
41-0	0.051	5.00	88.250	1200	681603.924	714908.556	1.550
41-1	0.035	5.00	88.250	1200	681618.947	714884.229	1.667
41-2	0.060	5.00	87.800	1200	681580.497	714859.153	1.405
41-3	0.044	5.00	87.500	1200	681539.046	714832.914	1.306
42-0	0.087	5.00	87.868	1200	681554.612	714897.046	1.294
42-1	0.122	5.00	87.996	1200	681561.361	714886.575	1.473
43-0	0.018	5.00	88.018	1200	681529.669	714880.070	1.425
42-2	0.096	5.00	88.148	1200	681536.014	714870.226	1.749
44-0	0.019	5.00	88.248	1200	681512.910	714874.563	1.825
41-4	0.089	5.00	88.226	1350	681521.339	714860.680	2.167
45-0	0.057	5.00	87.573	1200	681450.416	714820.912	1.161
41-5	0.087	5.00	87.879	1350	681482.391	714838.085	1.959
41-6			87.897	1350	681480.058	714842.579	1.998
41-7			87.523	1350	681434.036	714818.133	1.785
41-8	0.027	5.00	87.523	1350	681436.400	714813.481	1.806
46-0		5.00	87.430	1200	681419.932	714815.536	1.425
41-9	0.037	5.00	87.480	1350	681424.329	714807.040	1.806
47-0		5.00	87.950	1200	681526.464	714826.290	1.425
47-1	0.058	5.00	87.550	1200	681482.339	714802.714	1.442
41-10	0.123	5.00	87.430	1350	681438.489	714779.369	2.030
41-11	0.023	5.00	87.390	1350	681441.127	714775.003	2.005
41-12	0.030	5.00	87.450	1800	681437.310	714761.518	2.103
48-0		5.00	87.450	1200	681389.971	714797.634	1.150
41-13	0.158	5.00	87.350	1800	681415.501	714749.863	2.075
PI 5			87.350	1500	681410.913	714747.274	2.185
Outfall 5			86.400	1500	681406.210	714744.800	1.252
50-0		5.00	91.041	1200	681272.880	714510.934	2.141
50-1	0.075	5.00	90.205	1200	681305.334	714543.097	2.205
50-2	0.043	5.00	89.346	1200	681326.122	714573.010	2.146
50-3	0.036	5.00	88.831	1350	681341.206	714595.670	2.631
50-4	0.109	5.00	88.427	1350	681376.057	714649.341	2.425
50-5	0.141	5.00	88.100	1350	681423.923	714716.689	2.279
PI 2			87.100	1350	681408.828	714728.225	1.480
Outfall 2			86.501	1350	681405.225	714730.997	0.891
49-0		5.00	87.806	1350	681617.771	714850.092	1.612
49-1	0.130	5.00	87.191	1350	681553.609	714815.717	1.222
49-2	0.017	5.00	87.245	1350	681537.854	714803.050	1.339
49-3	0.108	5.00	87.547	1350	681490.130	714778.489	1.748
49-4	0.057	5.00	87.734	1350	681460.413	714760.641	2.004
49-5	0.051	5.00	87.899	1350	681437.601	714733.019	2.219
PI 6			87.889	1350	681413.647	714739.599	2.363
Outfall 6			86.490	1350	681408.322	714741.891	0.986

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Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.017	PI 4	Outfall 4	7.171	0.600	85.584	85.573	0.011	652.0	600	15.93	35.2
1.016	1-16	PI 4	22.093	0.600	85.712	85.684	0.028	789.0	600	15.80	35.3
1.015	1-15	1-16	27.613	0.600	85.739	85.712	0.027	1030.0	600	15.37	35.8
1.014	1-14	1-15	13.668	0.600	85.752	85.739	0.013	1030.0	600	14.76	36.6
1.013	1-13	1-14	25.701	0.600	85.777	85.752	0.025	1030.0	600	14.46	37.0
18.004	18-4	1-14	7.300	0.600	85.770	85.756	0.014	504.0	375	7.72	50.0
18.003	18-3	18-4	13.576	0.600	85.797	85.770	0.027	504.0	375	7.57	50.0
18.002	18-2	18-3	45.795	0.600	85.939	85.797	0.142	322.5	375	7.29	50.0
18.001	18-1	18-2	31.368	0.600	86.068	85.939	0.129	243.2	300	6.53	50.0
20.000	20-0	18-2	48.292	0.600	86.244	85.959	0.285	169.4	225	5.80	50.0
18.000	18-0	18-1	60.538	0.600	86.425	86.068	0.357	169.6	225	6.01	50.0
19.001	19-1	18-1	13.696	0.600	86.590	86.509	0.081	169.1	225	5.61	50.0
19.000	19-0	19-1	22.929	0.600	86.725	86.590	0.135	169.8	225	5.38	50.0
1.012	1-12	1-13	10.520	0.600	85.901	85.884	0.017	634.0	450	13.89	37.8
4.016	4-16	1-13	41.030	0.600	85.817	85.777	0.040	1030.0	600	12.77	39.4
16.000	16-0	4-16	35.288	0.600	86.575	86.367	0.208	169.7	225	5.59	50.0
17.000	17-0	4-16	33.300	0.600	86.200	86.003	0.197	169.0	225	5.55	50.0
4.015	4-15	4-16	32.945	0.600	85.853	85.817	0.036	908.0	600	11.86	40.9
14.002	14-2	4-15	13.040	0.600	85.887	85.861	0.026	504.0	375	7.38	50.0
4.014	4-14	4-15	21.547	0.600	85.877	85.853	0.024	908.0	600	11.17	42.1
4.013	4-13	4-14	19.264	0.600	85.904	85.877	0.027	723.0	500	10.72	43.0
13.000	13-0	4-13	29.498	0.600	86.175	86.001	0.174	169.5	225	5.49	50.0
4.012	4-12	4-13	28.941	0.600	85.944	85.904	0.040	723.0	500	10.32	43.8
4.011	4-11	4-12	6.084	0.600	85.952	85.944	0.008	723.0	500	9.72	45.0
4.010	4-10	4-11	27.773	0.600	86.003	85.952	0.051	545.0	400	9.59	45.3
10.003	10-3	4-11	19.085	0.600	86.099	86.027	0.072	264.0	225	6.55	50.0
10.002	10-2	10-3	18.982	0.600	86.294	86.182	0.112	169.5	225	6.15	50.0
12.000	12-0	10-3	16.776	0.600	86.163	86.099	0.064	264.0	225	5.35	50.0
11.001	11-1	10-2	26.210	0.600	86.449	86.294	0.155	169.1	225	5.65	50.0
10.001	10-1	10-2	34.125	0.600	86.665	86.464	0.201	169.8	225	5.84	50.0
10.000	10-0	10-1	16.252	0.600	86.761	86.665	0.096	169.3	225	5.27	50.0
11.000	11-0	11-1	12.853	0.600	86.525	86.449	0.076	169.1	225	5.21	50.0
4.009	4-9	4-10	19.118	0.600	86.041	86.003	0.038	504.0	375	9.01	46.6

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)
1.017	0.946	267.5	356.9	0.916	0.317	3.746	0.0	600
1.016	0.859	242.8	358.4	1.258	0.816	3.746	0.0	600
1.015	0.750	212.1	358.2	1.442	1.258	3.690	0.0	600
1.014	0.750	212.1	362.8	1.519	1.442	3.658	0.0	600
1.013	0.750	212.1	314.8	1.701	1.519	3.140	0.0	600
18.004	0.800	88.4	61.3	1.726	1.740	0.453	0.0	230
18.003	0.800	88.4	57.5	1.552	1.726	0.424	0.0	221
18.002	1.003	110.8	43.6	1.586	1.552	0.322	0.0	163
18.001	1.004	70.9	16.3	1.382	1.661	0.120	0.0	98
20.000	1.001	39.8	3.3	1.081	1.716	0.024	0.0	44
18.000	1.001	39.8	0.0	1.150	1.457	0.000	0.0	0
19.001	1.002	39.9	6.1	0.785	1.016	0.045	0.0	59
19.000	1.000	39.8	3.4	1.200	0.785	0.025	0.0	44
1.012	0.800	127.2	100.8	1.806	1.744	0.985	0.0	304
4.016	0.750	212.1	221.3	1.406	1.701	2.072	0.0	525
16.000	1.001	39.8	0.0	1.200	1.231	0.000	0.0	0
17.000	1.003	39.9	0.0	1.200	1.595	0.000	0.0	0
4.015	0.800	226.1	200.7	0.965	1.406	1.810	0.0	442
14.002	0.800	88.4	54.1	1.259	1.182	0.399	0.0	212
4.014	0.800	226.1	152.4	1.023	0.965	1.335	0.0	362
4.013	0.800	157.1	150.9	0.996	1.123	1.296	0.0	396
13.000	1.001	39.8	0.0	1.200	1.174	0.000	0.0	0
4.012	0.800	157.1	148.7	1.406	0.996	1.254	0.0	390
4.011	0.800	157.1	153.0	1.398	1.406	1.254	0.0	402
4.010	0.801	100.7	109.2	1.419	1.498	0.889	0.0	400
10.003	0.800	31.8	34.4	1.400	1.598	0.254	0.0	225
10.002	1.001	39.8	20.3	1.181	1.317	0.150	0.0	114
12.000	0.800	31.8	0.0	1.200	1.400	0.000	0.0	0
11.001	1.002	39.9	4.9	1.026	1.181	0.036	0.0	53
10.001	1.000	39.8	5.3	0.926	1.011	0.039	0.0	55
10.000	1.002	39.8	0.0	0.649	0.926	0.000	0.0	0
11.000	1.002	39.9	0.0	0.950	1.026	0.000	0.0	0
4.009	0.800	88.4	93.9	1.305	1.444	0.743	0.0	339

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Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
8.001	8-1	4-10	28.505	0.600	86.120	86.003	0.117	243.6	300	6.41	50.0
8.000	8-0	8-1	44.945	0.600	86.290	86.120	0.170	264.0	225	5.94	50.0
9.000	9-0	8-1	44.809	0.600	86.399	86.229	0.170	264.0	225	5.93	50.0
4.008	4-8	4-9	27.328	0.600	86.126	86.041	0.085	321.5	375	8.61	47.6
7.000	7-0	4-9	59.885	0.600	86.575	86.222	0.353	169.6	225	6.00	50.0
6.003	6-3	4-8	23.535	0.600	86.265	86.126	0.139	169.3	225	7.10	50.0
4.007	4-7	4-8	52.234	0.600	86.389	86.126	0.263	198.6	255	8.16	48.8
4.006	4-6	4-7	11.653	0.600	86.448	86.389	0.059	197.5	255	7.29	50.0
4.005	4-5	4-6	4.463	0.600	86.471	86.448	0.023	194.1	255	7.10	50.0
4.004	4-4	4-5	27.740	0.600	86.611	86.471	0.140	198.1	255	7.03	50.0
5.001	5-1	4-4	38.057	0.600	86.962	86.737	0.225	169.1	225	6.09	50.0
4.003	4-3	4-4	25.937	0.600	86.742	86.611	0.131	198.0	255	6.56	50.0
4.002	4-2	4-3	35.740	0.600	86.922	86.742	0.180	198.6	255	6.13	50.0
4.001	4-1	4-2	3.729	0.600	86.941	86.922	0.019	196.3	255	5.54	50.0
4.000	4-0	4-1	28.651	0.600	87.085	86.941	0.144	199.0	255	5.48	50.0
5.000	5-0	5-1	27.560	0.600	87.125	86.962	0.163	169.1	225	5.46	50.0
6.002	6-2	6-3	28.382	0.600	86.433	86.265	0.168	168.9	225	6.71	50.0
6.001	6-1	6-2	39.265	0.600	86.665	86.433	0.232	169.2	225	6.24	50.0
6.000	6-0	6-1	34.964	0.600	86.871	86.665	0.206	169.7	225	5.58	50.0
14.001	14-1	14-2	49.191	0.600	86.016	85.887	0.129	380.0	300	7.11	50.0
15.000	15-0	14-2	37.380	0.600	86.269	86.048	0.221	169.1	225	5.62	50.0
14.000	14-0	14-1	52.189	0.600	86.153	86.016	0.137	380.0	300	6.09	50.0
1.011	1-11	1-12	12.131	0.600	85.921	85.901	0.020	600.0	400	13.67	38.1
3.000	3-0	1-12	40.242	0.600	86.791	86.554	0.237	169.8	225	5.67	50.0
1.010	1-10	1-11	47.904	0.600	86.058	85.921	0.137	349.7	400	13.40	38.5
1.009	1-9	1-10	28.263	0.600	86.105	86.058	0.047	600.0	400	12.61	39.7
1.008	1-8	1-9	64.345	0.600	86.233	86.105	0.128	504.0	375	11.99	40.7
1.007	1-7	1-8	45.197	0.600	86.323	86.233	0.090	504.0	375	10.65	43.1
1.006	1-6	1-7	61.852	0.600	86.446	86.323	0.123	504.0	375	9.71	45.0
1.005	1-5	1-6	43.656	0.600	86.533	86.446	0.087	504.0	375	8.42	48.1
2.000	2-0	1-6	30.803	0.600	87.163	86.981	0.182	169.2	225	5.51	50.0
1.004	1-4	1-5	41.714	0.600	86.662	86.533	0.129	323.4	375	7.51	50.0
1.003	1-3	1-4	17.750	0.600	86.717	86.662	0.055	322.7	375	6.82	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)
8.001	1.003	70.9	12.9	0.980	1.519	0.095	0.0	86
8.000	0.800	31.8	0.0	1.185	1.055	0.000	0.0	0
9.000	0.800	31.8	0.0	1.076	0.946	0.000	0.0	0
4.008	1.005	111.0	76.5	1.226	1.305	0.593	0.0	230
7.000	1.001	39.8	0.0	1.300	1.274	0.000	0.0	0
6.003	1.002	39.8	24.3	1.440	1.376	0.179	0.0	127
4.007	1.002	51.2	37.3	1.177	1.346	0.282	0.0	162
4.006	1.004	51.3	29.3	1.359	1.177	0.216	0.0	138
4.005	1.013	51.8	29.3	1.402	1.359	0.216	0.0	137
4.004	1.003	51.2	23.9	1.361	1.402	0.176	0.0	122
5.001	1.002	39.8	5.8	0.813	1.265	0.043	0.0	58
4.003	1.003	51.2	7.7	1.324	1.361	0.057	0.0	66
4.002	1.002	51.2	3.8	1.023	1.324	0.028	0.0	46
4.001	1.008	51.5	3.8	1.004	1.023	0.028	0.0	46
4.000	1.001	51.1	0.0	0.860	1.004	0.000	0.0	0
5.000	1.002	39.9	0.0	0.750	0.813	0.000	0.0	0
6.002	1.003	39.9	11.0	1.342	1.440	0.081	0.0	80
6.001	1.002	39.8	8.1	1.180	1.342	0.060	0.0	69
6.000	1.000	39.8	2.7	0.804	1.180	0.020	0.0	40
14.001	0.800	56.6	23.0	1.018	1.334	0.170	0.0	133
15.000	1.002	39.8	0.9	1.600	1.248	0.007	0.0	24
14.000	0.800	56.6	3.7	1.689	1.018	0.027	0.0	51
1.011	0.763	95.9	89.9	1.695	1.856	0.871	0.0	309
3.000	1.000	39.8	1.8	1.455	1.378	0.013	0.0	32
1.010	1.003	126.1	90.8	2.037	1.695	0.871	0.0	252
1.009	0.763	95.9	87.7	1.816	2.037	0.816	0.0	303
1.008	0.800	88.4	69.9	1.945	1.841	0.634	0.0	252
1.007	0.800	88.4	58.5	1.983	1.945	0.501	0.0	223
1.006	0.800	88.4	40.3	1.702	1.983	0.330	0.0	178
1.005	0.800	88.4	19.3	1.293	1.702	0.148	0.0	118
2.000	1.002	39.8	1.6	1.200	1.317	0.012	0.0	31
1.004	1.002	110.7	14.4	1.013	1.293	0.106	0.0	90
1.003	1.003	110.8	12.7	1.058	1.013	0.094	0.0	85

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Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.002	1-2	1-3	32.342	0.600	86.817	86.717	0.100	323.4	375	6.52	50.0
1.001	1-1	1-2	38.395	0.600	86.936	86.817	0.119	322.6	375	5.98	50.0
1.000	1-0	1-1	20.719	0.600	87.000	86.936	0.064	323.7	375	5.34	50.0
21.015	PI 3	Outfall 3	34.110	0.600	85.997	85.938	0.059	578.1	600	15.16	36.1
21.014	21-14	PI 3	3.768	0.600	86.104	86.097	0.007	538.3	600	14.60	36.8
21.013	21-13	21-14	35.358	0.600	86.138	86.104	0.034	1030.0	600	14.53	36.9
21.012	21-12	21-13	31.554	0.600	86.169	86.138	0.031	1030.0	600	13.75	38.0
30.002	30-2	21-13	19.913	0.600	86.896	86.778	0.118	168.8	225	6.34	50.0
30.001	30-1	30-2	28.062	0.600	87.062	86.896	0.166	169.0	225	6.01	50.0
30.000	30-0	30-1	36.134	0.600	87.325	87.062	0.263	137.4	225	5.54	50.0
21.011	21-11	21-12	65.244	0.600	86.232	86.169	0.063	1030.0	600	13.05	39.0
29.005	29-5	21-12	35.580	0.600	86.487	86.277	0.210	169.4	225	8.09	48.9
29.004	29-4	29-5	32.236	0.600	86.684	86.487	0.197	163.6	225	7.50	50.0
29.003	29-3	29-4	16.189	0.600	86.780	86.684	0.096	168.6	225	6.97	50.0
29.002	29-2	29-3	52.121	0.600	87.088	86.780	0.308	169.2	225	6.70	50.0
29.001	29-1	29-2	12.256	0.600	87.161	87.088	0.073	167.9	225	5.83	50.0
29.000	29-0	29-1	37.960	0.600	87.385	87.161	0.224	169.5	225	5.63	50.0
21.010	21-10	21-11	23.315	0.600	86.272	86.232	0.040	582.9	500	11.60	41.3
27.001	27-1	21-11	43.903	0.600	86.275	86.232	0.043	1030.0	600	7.05	50.0
28.001	28-1	21-11	32.739	0.600	86.333	86.232	0.101	324.2	375	6.32	50.0
28.000	28-0	28-1	46.846	0.600	86.478	86.333	0.145	323.1	375	5.78	50.0
27.000	27-0	27-1	48.356	0.600	86.322	86.275	0.047	1030.0	600	6.07	50.0
21.009	21-9	21-10	43.935	0.600	86.348	86.272	0.076	578.1	500	11.16	42.1
21.008	21-8	21-9	15.307	0.600	86.375	86.348	0.027	566.9	500	10.35	43.7
21.007	21-7	21-8	14.038	0.600	86.400	86.375	0.025	561.5	500	10.06	44.3
21.006	21-6	21-7	51.829	0.600	86.512	86.400	0.112	462.8	500	9.81	44.8
21.005	21-5	21-6	22.318	0.600	86.598	86.534	0.064	348.7	400	8.95	46.8
22.007	22-7	21-6	6.699	0.600	86.529	86.512	0.017	394.1	400	8.52	47.8
22.006	22-6	22-7	18.119	0.600	86.574	86.529	0.045	402.7	400	8.40	48.1
22.005	22-5	22-6	15.182	0.600	86.612	86.574	0.038	399.5	400	8.08	49.0
26.001	26-1	22-6	33.167	0.600	87.022	86.826	0.196	169.2	225	5.84	50.0
26.000	26-0	26-1	17.489	0.600	87.125	87.022	0.103	169.8	225	5.29	50.0
22.004	22-4	22-5	49.431	0.600	86.753	86.612	0.141	350.6	400	7.81	49.7

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)
1.002	1.002	110.6	9.4	1.008	1.058	0.069	0.0	73
1.001	1.003	110.8	5.0	0.889	1.008	0.037	0.0	54
1.000	1.001	110.6	1.6	1.175	0.889	0.012	0.0	32
21.015	1.005	284.3	257.7	1.473	0.762	2.635	0.0	451
21.014	1.042	294.7	262.9	1.366	1.373	2.635	0.0	444
21.013	0.750	212.1	263.4	2.112	1.366	2.635	0.0	600
21.012	0.750	212.1	253.2	1.961	2.112	2.461	0.0	600
30.002	1.003	39.9	10.8	1.679	1.847	0.080	0.0	80
30.001	1.003	39.9	4.2	1.413	1.679	0.031	0.0	49
30.000	1.113	44.3	1.4	1.200	1.413	0.010	0.0	27
21.011	0.750	212.1	221.0	1.285	1.961	2.092	0.0	524
29.005	1.001	39.8	25.1	2.139	2.228	0.189	0.0	130
29.004	1.019	40.5	17.5	1.971	2.139	0.129	0.0	103
29.003	1.004	39.9	14.1	1.777	1.971	0.104	0.0	92
29.002	1.002	39.8	6.1	0.976	1.777	0.045	0.0	59
29.001	1.006	40.0	3.8	1.114	0.976	0.028	0.0	47
29.000	1.001	39.8	0.3	0.900	1.114	0.002	0.0	14
21.010	0.892	175.2	171.9	1.157	1.385	1.534	0.0	405
27.001	0.750	212.1	19.5	1.025	1.285	0.144	0.0	122
28.001	1.001	110.5	27.2	1.138	1.510	0.201	0.0	126
28.000	1.002	110.7	5.3	1.255	1.138	0.039	0.0	55
27.000	0.750	212.1	0.0	1.192	1.025	0.000	0.0	0
21.009	0.896	175.9	165.2	1.235	1.157	1.447	0.0	387
21.008	0.905	177.7	169.9	1.343	1.235	1.434	0.0	394
21.007	0.909	178.6	168.6	1.261	1.343	1.405	0.0	389
21.006	1.003	196.9	152.7	1.357	1.261	1.257	0.0	333
21.005	1.005	126.3	40.1	1.458	1.435	0.316	0.0	154
22.007	0.944	118.7	113.1	1.571	1.457	0.872	0.0	314
22.006	0.934	117.4	113.8	1.916	1.571	0.872	0.0	319
22.005	0.938	117.9	105.7	1.919	1.916	0.796	0.0	297
26.001	1.002	39.8	2.3	1.303	1.839	0.017	0.0	36
26.000	1.000	39.8	0.0	1.200	1.303	0.000	0.0	0
22.004	1.002	125.9	82.1	1.998	1.919	0.609	0.0	236

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Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
25.001	25-1	22-5	14.843	0.600	87.103	87.015	0.088	168.7	225	5.74	50.0
25.000	25-0	25-1	29.832	0.600	87.279	87.103	0.176	169.5	225	5.50	50.0
22.003	22-3	22-4	46.319	0.600	86.885	86.753	0.132	350.9	400	6.98	50.0
22.002	22-2	22-3	7.454	0.600	86.907	86.885	0.022	338.8	400	6.21	50.0
24.000	24-0	22-3	53.093	0.600	87.100	86.949	0.151	351.6	400	5.88	50.0
22.001	22-1	22-2	51.789	0.600	87.055	86.907	0.148	349.9	400	6.09	50.0
23.000	23-0	22-2	63.858	0.600	87.161	86.964	0.197	324.2	375	6.06	50.0
22.000	22-0	22-1	13.905	0.600	87.095	87.055	0.040	347.6	400	5.23	50.0
21.004	21-4	21-5	24.650	0.600	86.669	86.598	0.071	347.2	400	8.58	47.7
21.003	21-3	21-4	48.146	0.600	86.818	86.669	0.149	323.1	375	8.17	48.7
21.002	21-2	21-3	56.065	0.600	86.991	86.818	0.173	324.1	375	7.37	50.0
21.001	21-1	21-2	35.179	0.600	87.100	86.991	0.109	322.7	375	6.43	50.0
21.000	21-0	21-1	51.042	0.600	87.258	87.100	0.158	323.0	375	5.85	50.0
31.017	PI 1	Outfall 1	18.902	0.600	84.520	84.501	0.019	1020.0	600	11.45	41.6
31.016	31-17	PI 1	5.899	0.600	84.631	84.620	0.011	536.2	600	11.03	42.4
31.015	31-16	31-17	11.460	0.600	84.655	84.631	0.024	477.5	600	10.94	42.6
31.014	31-15	31-16	20.609	0.600	84.691	84.655	0.036	572.5	450	10.76	42.9
37.004	37-4	31-16	26.698	0.600	84.822	84.744	0.078	342.3	375	9.70	45.0
37.003	37-3	37-4	49.639	0.600	84.944	84.822	0.122	406.9	375	9.25	46.1
37.002	37-2	37-3	64.636	0.600	85.144	84.944	0.200	323.2	300	8.32	48.3
40.001	40-1	37-3	74.807	0.600	85.619	85.178	0.441	169.6	225	6.69	50.0
40.000	40-0	40-1	26.496	0.600	85.775	85.619	0.156	169.8	225	5.44	50.0
38.001	38-1	37-2	67.475	0.600	85.420	85.144	0.276	244.5	300	6.85	50.0
37.001	37-1	37-2	73.376	0.600	86.272	85.840	0.432	169.9	225	7.08	50.0
37.000	37-0	37-1	51.420	0.600	86.575	86.272	0.303	169.7	225	5.86	50.0
38.000	38-0	38-1	43.565	0.600	85.677	85.420	0.257	169.5	225	5.73	50.0
39.000	39-0	38-1	6.921	0.600	86.115	86.074	0.041	168.8	225	5.11	50.0
31.013	31-14	31-15	14.958	0.600	84.717	84.691	0.026	575.3	450	10.36	43.7
31.012	31-13	31-14	33.595	0.600	84.775	84.717	0.058	579.2	450	10.06	44.3
31.011	31-12	31-13	55.310	0.600	84.933	84.775	0.158	350.1	400	9.39	45.7
36.004	36-4	31-13	42.767	0.600	86.319	85.891	0.428	100.0	225	6.56	50.0
36.003	36-3	36-4	14.574	0.600	86.465	86.319	0.146	100.0	225	6.01	50.0
36.002	36-2	36-3	11.007	0.600	86.575	86.465	0.110	100.0	225	5.83	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)
25.001	1.004	39.9	8.4	1.372	1.691	0.062	0.0	70
25.000	1.001	39.8	0.0	1.200	1.372	0.000	0.0	0
22.003	1.002	125.9	64.5	1.278	1.998	0.476	0.0	203
22.002	1.019	128.1	49.2	1.257	1.278	0.363	0.0	171
24.000	1.001	125.7	1.1	1.155	1.214	0.008	0.0	26
22.001	1.003	126.0	6.6	0.843	1.257	0.049	0.0	62
23.000	1.001	110.5	4.7	0.821	1.225	0.035	0.0	52
22.000	1.006	126.5	3.4	0.750	0.843	0.025	0.0	45
21.004	1.007	126.5	32.8	1.298	1.458	0.254	0.0	139
21.003	1.002	110.7	26.2	1.498	1.323	0.198	0.0	123
21.002	1.001	110.5	12.3	1.039	1.498	0.091	0.0	84
21.001	1.003	110.8	8.0	0.750	1.039	0.059	0.0	68
21.000	1.002	110.7	0.7	0.907	0.750	0.005	0.0	21
31.017	0.754	213.2	225.1	1.320	0.469	1.996	0.0	537
31.016	1.044	295.3	229.3	1.209	1.220	1.996	0.0	399
31.015	1.107	313.1	230.2	1.595	1.209	1.996	0.0	383
31.014	0.842	134.0	121.1	1.809	1.745	1.042	0.0	337
37.004	0.973	107.5	104.3	1.733	1.731	0.854	0.0	299
37.003	0.892	98.5	95.7	1.702	1.733	0.766	0.0	300
37.002	0.869	61.4	61.3	1.803	1.777	0.468	0.0	247
40.001	1.001	39.8	3.5	1.231	1.618	0.026	0.0	45
40.000	1.000	39.8	0.0	1.200	1.231	0.000	0.0	0
38.001	1.001	70.7	19.7	1.427	1.803	0.145	0.0	108
37.001	1.000	39.8	6.9	1.239	1.182	0.051	0.0	63
37.000	1.001	39.8	0.0	1.200	1.239	0.000	0.0	0
38.000	1.001	39.8	4.6	1.450	1.502	0.034	0.0	51
39.000	1.003	39.9	0.0	0.831	0.848	0.000	0.0	0
31.013	0.840	133.6	121.0	1.833	1.809	1.022	0.0	337
31.012	0.837	133.2	116.4	2.006	1.833	0.970	0.0	327
31.011	1.003	126.0	81.3	1.568	2.056	0.656	0.0	234
36.004	1.307	52.0	15.7	1.132	1.115	0.116	0.0	85
36.003	1.307	52.0	14.4	1.264	1.132	0.106	0.0	80
36.002	1.307	52.0	11.9	1.362	1.264	0.088	0.0	73

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Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
36.001	36-1	36-2	14.673	0.600	86.722	86.575	0.147	100.0	225	5.69	50.0
36.000	36-0	36-1	30.135	0.600	86.900	86.722	0.178	169.3	225	5.50	50.0
31.010	31-11	31-12	29.020	0.600	85.016	84.933	0.083	349.6	400	8.47	47.9
31.009	31-10	31-11	19.192	0.600	85.071	85.016	0.055	348.9	400	7.99	49.2
35.000	35-0	31-11	30.939	0.600	85.659	85.476	0.183	169.1	225	5.51	50.0
31.008	31-9	31-10	8.755	0.600	85.096	85.071	0.025	350.2	400	7.67	50.0
31.007	31-8	31-9	4.633	0.600	85.384	85.369	0.015	308.9	300	7.53	50.0
34.000	33-0	31-9	53.968	0.600	85.675	85.357	0.318	169.7	225	5.90	50.0
31.006	31-7	31-8	53.993	0.600	85.605	85.384	0.221	244.3	300	7.44	50.0
33.002	34-2	31-8	12.512	0.600	85.611	85.537	0.074	169.1	225	5.74	50.0
33.001	34-1	34-2	9.300	0.600	85.666	85.611	0.055	169.1	225	5.53	50.0
33.000	34-0	34-1	22.672	0.600	85.800	85.666	0.134	169.2	225	5.38	50.0
31.005	31-6	31-7	6.674	0.600	85.645	85.605	0.040	166.9	225	6.54	50.0
32.001	32-1	31-7	27.582	0.600	85.980	85.817	0.163	169.2	225	5.87	50.0
32.000	32-0	32-1	24.620	0.600	86.125	85.980	0.145	169.8	225	5.41	50.0
31.004	31-5	31-6	31.472	0.600	85.960	85.645	0.315	100.0	225	6.43	50.0
31.003	31-4	31-5	17.107	0.600	86.174	85.960	0.214	80.0	225	6.03	50.0
31.002	31-2	31-4	13.738	0.600	86.346	86.174	0.172	80.0	225	5.83	50.0
31.001	31-1	31-2	22.282	0.600	86.625	86.346	0.279	80.0	225	5.68	50.0
31.000	31-0	31-1	25.451	0.600	86.775	86.625	0.150	169.7	225	5.42	50.0
41.014	PI 5	Outfall 5	5.314	0.600	85.165	85.148	0.017	312.6	500	11.01	42.4
41.013	41-13	PI 5	5.268	0.600	85.275	85.265	0.010	526.8	500	10.94	42.6
41.012	41-12	41-13	24.728	0.600	85.347	85.275	0.072	343.4	400	10.84	42.7
48.000	48-0	41-13	54.165	0.600	86.300	85.758	0.542	100.0	225	5.69	50.0
41.011	41-11	41-12	14.015	0.600	85.385	85.347	0.038	368.8	400	10.44	43.5
41.010	41-10	41-11	5.101	0.600	85.400	85.385	0.015	340.1	400	10.20	44.0
41.009	41-9	41-10	31.084	0.600	85.674	85.578	0.096	323.8	375	10.11	44.2
47.001	47-1	41-10	49.677	0.600	86.108	85.815	0.293	169.5	225	6.53	50.0
47.000	47-0	47-1	50.028	0.600	86.525	86.108	0.417	120.0	225	5.70	50.0
41.008	41-8	41-9	13.682	0.600	85.717	85.674	0.043	318.2	375	9.60	45.3
46.000	46-0	41-9	9.566	0.600	86.005	85.948	0.057	167.8	225	5.16	50.0
41.007	41-7	41-8	5.218	0.600	85.738	85.717	0.021	248.5	375	9.37	45.8
41.006	41-6	41-7	52.111	0.600	85.899	85.738	0.161	323.7	375	9.29	46.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)
36.001	1.307	52.0	8.9	1.436	1.362	0.066	0.0	63
36.000	1.002	39.8	0.0	1.433	1.436	0.000	0.0	0
31.010	1.003	126.1	75.0	1.434	1.568	0.577	0.0	222
31.009	1.004	126.2	65.2	1.789	1.434	0.489	0.0	204
35.000	1.002	39.9	3.4	1.207	1.149	0.025	0.0	44
31.008	1.003	126.0	66.3	1.889	1.789	0.489	0.0	206
31.007	0.889	62.8	59.2	1.703	1.716	0.437	0.0	233
34.000	1.001	39.8	0.0	1.500	1.803	0.000	0.0	0
31.006	1.001	70.8	28.6	1.989	1.703	0.211	0.0	133
33.002	1.002	39.9	11.2	1.486	1.625	0.083	0.0	81
33.001	1.002	39.9	8.7	1.475	1.486	0.064	0.0	71
33.000	1.002	39.8	3.7	1.200	1.475	0.027	0.0	46
31.005	1.009	40.1	24.9	2.130	2.064	0.184	0.0	129
32.001	1.002	39.8	3.1	1.545	1.852	0.023	0.0	43
32.000	1.000	39.8	0.0	1.400	1.545	0.000	0.0	0
31.004	1.307	52.0	17.5	2.165	2.130	0.129	0.0	90
31.003	1.463	58.2	14.6	2.013	2.165	0.108	0.0	77
31.002	1.463	58.2	11.8	1.804	2.013	0.087	0.0	68
31.001	1.463	58.2	8.3	1.610	1.804	0.061	0.0	57
31.000	1.001	39.8	0.0	1.586	1.610	0.000	0.0	0
41.014	1.223	240.1	140.4	1.685	0.752	1.221	0.0	275
41.013	0.939	184.4	140.8	1.575	1.585	1.221	0.0	329
41.012	1.013	127.2	123.1	1.703	1.675	1.063	0.0	319
48.000	1.307	52.0	0.0	0.925	1.367	0.000	0.0	0
41.011	0.977	122.7	121.9	1.605	1.703	1.033	0.0	328
41.010	1.018	127.9	120.5	1.630	1.605	1.010	0.0	311
41.009	1.001	110.6	99.3	1.431	1.477	0.829	0.0	279
47.001	1.001	39.8	7.9	1.217	1.390	0.058	0.0	67
47.000	1.192	47.4	0.0	1.200	1.217	0.000	0.0	0
41.008	1.010	111.6	97.2	1.431	1.431	0.792	0.0	272
46.000	1.006	40.0	0.0	1.200	1.307	0.000	0.0	0
41.007	1.145	126.4	95.0	1.410	1.431	0.765	0.0	244
41.006	1.001	110.6	95.3	1.623	1.410	0.765	0.0	270

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Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
41.005	41-5	41-6	5.064	0.600	85.920	85.899	0.021	241.1	375	8.43	48.1
41.004	41-4	41-5	45.028	0.600	86.059	85.920	0.139	323.9	375	8.35	48.3
45.000	45-0	41-5	36.295	0.600	86.412	86.198	0.214	169.6	225	5.60	50.0
41.003	41-3	41-4	32.932	0.600	86.194	86.059	0.135	243.9	300	7.60	50.0
42.002	42-2	41-4	17.507	0.600	86.399	86.327	0.072	243.1	300	6.00	50.0
44.000	44-0	41-4	16.241	0.600	86.423	86.327	0.096	169.2	225	5.27	50.0
42.001	42-1	42-2	30.162	0.600	86.523	86.399	0.124	243.2	300	5.71	50.0
43.000	43-0	42-2	11.712	0.600	86.593	86.524	0.069	169.7	225	5.20	50.0
42.000	42-0	42-1	12.458	0.600	86.574	86.523	0.051	244.3	300	5.21	50.0
41.002	41-2	41-3	49.058	0.600	86.395	86.194	0.201	244.1	300	7.06	50.0
41.001	41-1	41-2	45.904	0.600	86.583	86.395	0.188	244.2	300	6.24	50.0
41.000	41-0	41-1	28.592	0.600	86.700	86.583	0.117	244.4	300	5.48	50.0
49.006	PI 2	Outfall 2	4.546	0.600	85.620	85.610	0.010	454.6	450	9.22	46.1
49.005	50-5	PI 2	18.999	0.600	85.821	85.763	0.058	327.6	400	9.14	46.3
49.004	50-4	50-5	82.625	0.600	86.002	85.821	0.181	456.5	400	8.84	47.0
49.003	50-3	50-4	63.994	0.600	86.200	86.002	0.198	323.2	400	7.27	50.0
49.002	50-2	50-3	27.221	0.600	87.200	86.860	0.340	80.0	225	6.25	50.0
49.001	50-1	50-2	36.427	0.600	88.000	87.545	0.455	80.0	225	5.94	50.0
49.000	50-0	50-1	45.692	0.600	88.900	88.329	0.571	80.0	225	5.52	50.0
50.006	PI 6	Outfall 6	5.797	0.600	85.526	85.504	0.022	263.5	450	9.69	45.1
50.005	49-5	PI 6	24.841	0.600	85.680	85.626	0.054	460.0	450	9.62	45.2
50.004	49-4	49-5	35.824	0.600	85.730	85.680	0.050	720.0	450	9.18	46.2
50.003	49-3	49-4	34.665	0.600	85.799	85.730	0.069	500.0	375	8.38	48.2
50.002	49-2	49-3	53.673	0.600	85.906	85.799	0.107	500.0	375	7.66	50.0
50.001	49-1	49-2	20.216	0.600	85.969	85.906	0.063	320.9	375	6.55	50.0
50.000	49-0	49-1	72.790	0.600	86.194	85.969	0.225	323.5	375	6.21	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)
41.005	1.162	128.4	99.7	1.584	1.623	0.765	0.0	249
41.004	1.001	110.6	81.2	1.792	1.584	0.621	0.0	240
45.000	1.001	39.8	7.7	0.936	1.456	0.057	0.0	67
41.003	1.002	70.8	25.7	1.006	1.867	0.190	0.0	125
42.002	1.004	70.9	43.8	1.449	1.599	0.323	0.0	171
44.000	1.002	39.8	2.6	1.600	1.674	0.019	0.0	38
42.001	1.003	70.9	28.3	1.173	1.449	0.209	0.0	132
43.000	1.000	39.8	2.4	1.200	1.399	0.018	0.0	37
42.000	1.001	70.8	11.8	0.994	1.173	0.087	0.0	82
41.002	1.002	70.8	19.8	1.105	1.006	0.146	0.0	108
41.001	1.001	70.8	11.7	1.367	1.105	0.086	0.0	82
41.000	1.001	70.8	6.9	1.250	1.367	0.051	0.0	63
49.006	0.947	150.6	50.5	1.030	0.441	0.404	0.0	179
49.005	1.037	130.3	50.7	1.879	0.937	0.404	0.0	173
49.004	0.877	110.2	33.5	2.025	1.879	0.263	0.0	151
49.003	1.044	131.2	20.9	2.231	2.025	0.154	0.0	107
49.002	1.463	58.2	16.0	1.921	1.746	0.118	0.0	80
49.001	1.463	58.2	10.2	1.980	1.576	0.075	0.0	64
49.000	1.463	58.2	0.0	1.916	1.651	0.000	0.0	0
50.006	1.247	198.4	44.3	1.913	0.536	0.363	0.0	144
50.005	0.941	149.7	44.5	1.769	1.813	0.363	0.0	167
50.004	0.750	119.3	39.1	1.554	1.769	0.312	0.0	177
50.003	0.803	88.7	33.3	1.373	1.629	0.255	0.0	159
50.002	0.803	88.7	19.9	0.964	1.373	0.147	0.0	120
50.001	1.006	111.1	17.6	0.847	0.964	0.130	0.0	101
50.000	1.002	110.6	0.0	1.237	0.847	0.000	0.0	0

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Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.017	7.171	652.0	600	Circular	87.100	85.584	0.916	86.490	85.573	0.317
1.016	22.093	789.0	600	Circular	87.570	85.712	1.258	87.100	85.684	0.816
1.015	27.613	1030.0	600	Circular	87.781	85.739	1.442	87.570	85.712	1.258
1.014	13.668	1030.0	600	Circular	87.871	85.752	1.519	87.781	85.739	1.442
1.013	25.701	1030.0	600	Circular	88.078	85.777	1.701	87.871	85.752	1.519
18.004	7.300	504.0	375	Circular	87.871	85.770	1.726	87.871	85.756	1.740
18.003	13.576	504.0	375	Circular	87.724	85.797	1.552	87.871	85.770	1.726
18.002	45.795	322.5	375	Circular	87.900	85.939	1.586	87.724	85.797	1.552
18.001	31.368	243.2	300	Circular	87.750	86.068	1.382	87.900	85.939	1.661
20.000	48.292	169.4	225	Circular	87.550	86.244	1.081	87.900	85.959	1.716
18.000	60.538	169.6	225	Circular	87.800	86.425	1.150	87.750	86.068	1.457
19.001	13.696	169.1	225	Circular	87.600	86.590	0.785	87.750	86.509	1.016
19.000	22.929	169.8	225	Circular	88.150	86.725	1.200	87.600	86.590	0.785
1.012	10.520	634.0	450	Circular	88.157	85.901	1.806	88.078	85.884	1.744
4.016	41.030	1030.0	600	Circular	87.823	85.817	1.406	88.078	85.777	1.701
16.000	35.288	169.7	225	Circular	88.000	86.575	1.200	87.823	86.367	1.231
17.000	33.300	169.0	225	Circular	87.625	86.200	1.200	87.823	86.003	1.595
4.015	32.945	908.0	600	Circular	87.418	85.853	0.965	87.823	85.817	1.406
14.002	13.040	504.0	375	Circular	87.521	85.887	1.259	87.418	85.861	1.182
4.014	21.547	908.0	600	Circular	87.500	85.877	1.023	87.418	85.853	0.965
4.013	19.264	723.0	500	Circular	87.400	85.904	0.996	87.500	85.877	1.123
13.000	29.498	169.5	225	Circular	87.600	86.175	1.200	87.400	86.001	1.174
4.012	28.941	723.0	500	Circular	87.850	85.944	1.406	87.400	85.904	0.996
4.011	6.084	723.0	500	Circular	87.850	85.952	1.398	87.850	85.944	1.406
4.010	27.773	545.0	400	Circular	87.822	86.003	1.419	87.850	85.952	1.498
10.003	19.085	264.0	225	Circular	87.724	86.099	1.400	87.850	86.027	1.598
10.002	18.982	169.5	225	Circular	87.700	86.294	1.181	87.724	86.182	1.317
12.000	16.776	264.0	225	Circular	87.588	86.163	1.200	87.724	86.099	1.400
11.001	26.210	169.1	225	Circular	87.700	86.449	1.026	87.700	86.294	1.181
10.001	34.125	169.8	225	Circular	87.816	86.665	0.926	87.700	86.464	1.011
10.000	16.252	169.3	225	Circular	87.635	86.761	0.649	87.816	86.665	0.926
11.000	12.853	169.1	225	Circular	87.700	86.525	0.950	87.700	86.449	1.026
4.009	19.118	504.0	375	Circular	87.721	86.041	1.305	87.822	86.003	1.444
8.001	28.505	243.6	300	Circular	87.400	86.120	0.980	87.822	86.003	1.519

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.017	PI 4	1500	Manhole	Adoptable	Outfall 4	1500	Manhole	Adoptable
1.016	1-16	2100	Manhole	Adoptable	PI 4	1500	Manhole	Adoptable
1.015	1-15	1500	Manhole	Adoptable	1-16	2100	Manhole	Adoptable
1.014	1-14	1500	Manhole	Adoptable	1-15	1500	Manhole	Adoptable
1.013	1-13	1500	Manhole	Adoptable	1-14	1500	Manhole	Adoptable
18.004	18-4	1350	Manhole	Adoptable	1-14	1500	Manhole	Adoptable
18.003	18-3	1350	Manhole	Adoptable	18-4	1350	Manhole	Adoptable
18.002	18-2	1350	Manhole	Adoptable	18-3	1350	Manhole	Adoptable
18.001	18-1	1200	Manhole	Adoptable	18-2	1350	Manhole	Adoptable
20.000	20-0	1200	Manhole	Adoptable	18-2	1350	Manhole	Adoptable
18.000	18-0	1200	Manhole	Adoptable	18-1	1200	Manhole	Adoptable
19.001	19-1	1200	Manhole	Adoptable	18-1	1200	Manhole	Adoptable
19.000	19-0	1200	Manhole	Adoptable	19-1	1200	Manhole	Adoptable
1.012	1-12	1350	Manhole	Adoptable	1-13	1500	Manhole	Adoptable
4.016	4-16	1500	Manhole	Adoptable	1-13	1500	Manhole	Adoptable
16.000	16-0	1200	Manhole	Adoptable	4-16	1500	Manhole	Adoptable
17.000	17-0	1200	Manhole	Adoptable	4-16	1500	Manhole	Adoptable
4.015	4-15	1500	Manhole	Adoptable	4-16	1500	Manhole	Adoptable
14.002	14-2	1350	Manhole	Adoptable	4-15	1500	Manhole	Adoptable
4.014	4-14	1500	Manhole	Adoptable	4-15	1500	Manhole	Adoptable
4.013	4-13	1500	Manhole	Adoptable	4-14	1500	Manhole	Adoptable
13.000	13-0	1200	Manhole	Adoptable	4-13	1500	Manhole	Adoptable
4.012	4-12	1500	Manhole	Adoptable	4-13	1500	Manhole	Adoptable
4.011	4-11	1500	Manhole	Adoptable	4-12	1500	Manhole	Adoptable
4.010	4-10	1350	Manhole	Adoptable	4-11	1500	Manhole	Adoptable
10.003	10-3	1200	Manhole	Adoptable	4-11	1500	Manhole	Adoptable
10.002	10-2	1200	Manhole	Adoptable	10-3	1200	Manhole	Adoptable
12.000	12-0	1200	Manhole	Adoptable	10-3	1200	Manhole	Adoptable
11.001	11-1	1200	Manhole	Adoptable	10-2	1200	Manhole	Adoptable
10.001	10-1	1200	Manhole	Adoptable	10-2	1200	Manhole	Adoptable
10.000	10-0	1200	Manhole	Adoptable	10-1	1200	Manhole	Adoptable
11.000	11-0	1200	Manhole	Adoptable	11-1	1200	Manhole	Adoptable
4.009	4-9	1350	Manhole	Adoptable	4-10	1350	Manhole	Adoptable
8.001	8-1	1200	Manhole	Adoptable	4-10	1350	Manhole	Adoptable

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Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
8.000	44.945	264.0	225	Circular	87.700	86.290	1.185	87.400	86.120	1.055
9.000	44.809	264.0	225	Circular	87.700	86.399	1.076	87.400	86.229	0.946
4.008	27.328	321.5	375	Circular	87.727	86.126	1.226	87.721	86.041	1.305
7.000	59.885	169.6	225	Circular	88.100	86.575	1.300	87.721	86.222	1.274
6.003	23.535	169.3	225	Circular	87.930	86.265	1.440	87.727	86.126	1.376
4.007	52.234	198.6	255	Circular	87.821	86.389	1.177	87.727	86.126	1.346
4.006	11.653	197.5	255	Circular	88.062	86.448	1.359	87.821	86.389	1.177
4.005	4.463	194.1	255	Circular	88.128	86.471	1.402	88.062	86.448	1.359
4.004	27.740	198.1	255	Circular	88.227	86.611	1.361	88.128	86.471	1.402
5.001	38.057	169.1	225	Circular	88.000	86.962	0.813	88.227	86.737	1.265
4.003	25.937	198.0	255	Circular	88.321	86.742	1.324	88.227	86.611	1.361
4.002	35.740	198.6	255	Circular	88.200	86.922	1.023	88.321	86.742	1.324
4.001	3.729	196.3	255	Circular	88.200	86.941	1.004	88.200	86.922	1.023
4.000	28.651	199.0	255	Circular	88.200	87.085	0.860	88.200	86.941	1.004
5.000	27.560	169.1	225	Circular	88.100	87.125	0.750	88.000	86.962	0.813
6.002	28.382	168.9	225	Circular	88.000	86.433	1.342	87.930	86.265	1.440
6.001	39.265	169.2	225	Circular	88.070	86.665	1.180	88.000	86.433	1.342
6.000	34.964	169.7	225	Circular	87.900	86.871	0.804	88.070	86.665	1.180
14.001	49.191	380.0	300	Circular	87.334	86.016	1.018	87.521	85.887	1.334
15.000	37.380	169.1	225	Circular	88.094	86.269	1.600	87.521	86.048	1.248
14.000	52.189	380.0	300	Circular	88.142	86.153	1.689	87.334	86.016	1.018
1.011	12.131	600.0	400	Circular	88.016	85.921	1.695	88.157	85.901	1.856
3.000	40.242	169.8	225	Circular	88.471	86.791	1.455	88.157	86.554	1.378
1.010	47.904	349.7	400	Circular	88.495	86.058	2.037	88.016	85.921	1.695
1.009	28.263	600.0	400	Circular	88.321	86.105	1.816	88.495	86.058	2.037
1.008	64.345	504.0	375	Circular	88.553	86.233	1.945	88.321	86.105	1.841
1.007	45.197	504.0	375	Circular	88.681	86.323	1.983	88.553	86.233	1.945
1.006	61.852	504.0	375	Circular	88.523	86.446	1.702	88.681	86.323	1.983
1.005	43.656	504.0	375	Circular	88.201	86.533	1.293	88.523	86.446	1.702
2.000	30.803	169.2	225	Circular	88.588	87.163	1.200	88.523	86.981	1.317
1.004	41.714	323.4	375	Circular	88.050	86.662	1.013	88.201	86.533	1.293
1.003	17.750	322.7	375	Circular	88.150	86.717	1.058	88.050	86.662	1.013
1.002	32.342	323.4	375	Circular	88.200	86.817	1.008	88.150	86.717	1.058
1.001	38.395	322.6	375	Circular	88.200	86.936	0.889	88.200	86.817	1.008

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
8.000	8-0	1200	Manhole	Adoptable	8-1	1200	Manhole	Adoptable
9.000	9-0	1200	Manhole	Adoptable	8-1	1200	Manhole	Adoptable
4.008	4-8	1350	Manhole	Adoptable	4-9	1350	Manhole	Adoptable
7.000	7-0	1200	Manhole	Adoptable	4-9	1350	Manhole	Adoptable
6.003	6-3	1200	Manhole	Adoptable	4-8	1350	Manhole	Adoptable
4.007	4-7	1200	Manhole	Adoptable	4-8	1350	Manhole	Adoptable
4.006	4-6	1200	Manhole	Adoptable	4-7	1200	Manhole	Adoptable
4.005	4-5	1200	Manhole	Adoptable	4-6	1200	Manhole	Adoptable
4.004	4-4	1200	Manhole	Adoptable	4-5	1200	Manhole	Adoptable
5.001	5-1	1200	Manhole	Adoptable	4-4	1200	Manhole	Adoptable
4.003	4-3	1200	Manhole	Adoptable	4-4	1200	Manhole	Adoptable
4.002	4-2	1200	Manhole	Adoptable	4-3	1200	Manhole	Adoptable
4.001	4-1	1200	Manhole	Adoptable	4-2	1200	Manhole	Adoptable
4.000	4-0	1200	Manhole	Adoptable	4-1	1200	Manhole	Adoptable
5.000	5-0	1200	Manhole	Adoptable	5-1	1200	Manhole	Adoptable
6.002	6-2	1200	Manhole	Adoptable	6-3	1200	Manhole	Adoptable
6.001	6-1	1200	Manhole	Adoptable	6-2	1200	Manhole	Adoptable
6.000	6-0	1200	Manhole	Adoptable	6-1	1200	Manhole	Adoptable
14.001	14-1	1200	Manhole	Adoptable	14-2	1350	Manhole	Adoptable
15.000	15-0	1200	Manhole	Adoptable	14-2	1350	Manhole	Adoptable
14.000	14-0	1200	Manhole	Adoptable	14-1	1200	Manhole	Adoptable
1.011	1-11	1800	Manhole	Adoptable	1-12	1350	Manhole	Adoptable
3.000	3-0	1200	Manhole	Adoptable	1-12	1350	Manhole	Adoptable
1.010	1-10	1350	Manhole	Adoptable	1-11	1800	Manhole	Adoptable
1.009	1-9	1350	Manhole	Adoptable	1-10	1350	Manhole	Adoptable
1.008	1-8	1350	Manhole	Adoptable	1-9	1350	Manhole	Adoptable
1.007	1-7	1350	Manhole	Adoptable	1-8	1350	Manhole	Adoptable
1.006	1-6	1350	Manhole	Adoptable	1-7	1350	Manhole	Adoptable
1.005	1-5	1350	Manhole	Adoptable	1-6	1350	Manhole	Adoptable
2.000	2-0	1200	Manhole	Adoptable	1-6	1350	Manhole	Adoptable
1.004	1-4	1350	Manhole	Adoptable	1-5	1350	Manhole	Adoptable
1.003	1-3	1350	Manhole	Adoptable	1-4	1350	Manhole	Adoptable
1.002	1-2	1350	Manhole	Adoptable	1-3	1350	Manhole	Adoptable
1.001	1-1	1350	Manhole	Adoptable	1-2	1350	Manhole	Adoptable

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Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	20.719	323.7	375	Circular	88.550	87.000	1.175	88.200	86.936	0.889
21.015	34.110	578.1	600	Circular	88.070	85.997	1.473	87.300	85.938	0.762
21.014	3.768	538.3	600	Circular	88.070	86.104	1.366	88.070	86.097	1.373
21.013	35.358	1030.0	600	Circular	88.850	86.138	2.112	88.070	86.104	1.366
21.012	31.554	1030.0	600	Circular	88.730	86.169	1.961	88.850	86.138	2.112
30.002	19.913	168.8	225	Circular	88.800	86.896	1.679	88.850	86.778	1.847
30.001	28.062	169.0	225	Circular	88.700	87.062	1.413	88.800	86.896	1.679
30.000	36.134	137.4	225	Circular	88.750	87.325	1.200	88.700	87.062	1.413
21.011	65.244	1030.0	600	Circular	88.117	86.232	1.285	88.730	86.169	1.961
29.005	35.580	169.4	225	Circular	88.851	86.487	2.139	88.730	86.277	2.228
29.004	32.236	163.6	225	Circular	88.880	86.684	1.971	88.851	86.487	2.139
29.003	16.189	168.6	225	Circular	88.782	86.780	1.777	88.880	86.684	1.971
29.002	52.121	169.2	225	Circular	88.289	87.088	0.976	88.782	86.780	1.777
29.001	12.256	167.9	225	Circular	88.500	87.161	1.114	88.289	87.088	0.976
29.000	37.960	169.5	225	Circular	88.510	87.385	0.900	88.500	87.161	1.114
21.010	23.315	582.9	500	Circular	87.929	86.272	1.157	88.117	86.232	1.385
27.001	43.903	1030.0	600	Circular	87.900	86.275	1.025	88.117	86.232	1.285
28.001	32.739	324.2	375	Circular	87.846	86.333	1.138	88.117	86.232	1.510
28.000	46.846	323.1	375	Circular	88.108	86.478	1.255	87.846	86.333	1.138
27.000	48.356	1030.0	600	Circular	88.114	86.322	1.192	87.900	86.275	1.025
21.009	43.935	578.1	500	Circular	88.083	86.348	1.235	87.929	86.272	1.157
21.008	15.307	566.9	500	Circular	88.218	86.375	1.343	88.083	86.348	1.235
21.007	14.038	561.5	500	Circular	88.161	86.400	1.261	88.218	86.375	1.343
21.006	51.829	462.8	500	Circular	88.369	86.512	1.357	88.161	86.400	1.261
21.005	22.318	348.7	400	Circular	88.456	86.598	1.458	88.369	86.534	1.435
22.007	6.699	394.1	400	Circular	88.500	86.529	1.571	88.369	86.512	1.457
22.006	18.119	402.7	400	Circular	88.890	86.574	1.916	88.500	86.529	1.571
22.005	15.182	399.5	400	Circular	88.931	86.612	1.919	88.890	86.574	1.916
26.001	33.167	169.2	225	Circular	88.550	87.022	1.303	88.890	86.826	1.839
26.000	17.489	169.8	225	Circular	88.550	87.125	1.200	88.550	87.022	1.303
22.004	49.431	350.6	400	Circular	89.151	86.753	1.998	88.931	86.612	1.919
25.001	14.843	168.7	225	Circular	88.700	87.103	1.372	88.931	87.015	1.691
25.000	29.832	169.5	225	Circular	88.704	87.279	1.200	88.700	87.103	1.372
22.003	46.319	350.9	400	Circular	88.563	86.885	1.278	89.151	86.753	1.998

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	1-0	1350	Manhole	Adoptable	1-1	1350	Manhole	Adoptable
21.015	PI 3	1500	Manhole	Adoptable	Outfall 3	1500	Manhole	Adoptable
21.014	21-14	1500	Manhole	Adoptable	PI 3	1500	Manhole	Adoptable
21.013	21-13	1500	Manhole	Adoptable	21-14	1500	Manhole	Adoptable
21.012	21-12	1500	Manhole	Adoptable	21-13	1500	Manhole	Adoptable
30.002	30-2	1200	Manhole	Adoptable	21-13	1500	Manhole	Adoptable
30.001	30-1	1200	Manhole	Adoptable	30-2	1200	Manhole	Adoptable
30.000	30-0	1200	Manhole	Adoptable	30-1	1200	Manhole	Adoptable
21.011	21-11	1500	Manhole	Adoptable	21-12	1500	Manhole	Adoptable
29.005	29-5	1200	Manhole	Adoptable	21-12	1500	Manhole	Adoptable
29.004	29-4	1200	Manhole	Adoptable	29-5	1200	Manhole	Adoptable
29.003	29-3	1200	Manhole	Adoptable	29-4	1200	Manhole	Adoptable
29.002	29-2	1200	Manhole	Adoptable	29-3	1200	Manhole	Adoptable
29.001	29-1	1200	Manhole	Adoptable	29-2	1200	Manhole	Adoptable
29.000	29-0	1200	Manhole	Adoptable	29-1	1200	Manhole	Adoptable
21.010	21-10	1500	Manhole	Adoptable	21-11	1500	Manhole	Adoptable
27.001	27-1	1500	Manhole	Adoptable	21-11	1500	Manhole	Adoptable
28.001	28-1	1350	Manhole	Adoptable	21-11	1500	Manhole	Adoptable
28.000	28-0	1350	Manhole	Adoptable	28-1	1350	Manhole	Adoptable
27.000	27-0	1500	Manhole	Adoptable	27-1	1500	Manhole	Adoptable
21.009	21-9	1500	Manhole	Adoptable	21-10	1500	Manhole	Adoptable
21.008	21-8	1500	Manhole	Adoptable	21-9	1500	Manhole	Adoptable
21.007	21-7	1500	Manhole	Adoptable	21-8	1500	Manhole	Adoptable
21.006	21-6	1500	Manhole	Adoptable	21-7	1500	Manhole	Adoptable
21.005	21-5	1350	Manhole	Adoptable	21-6	1500	Manhole	Adoptable
22.007	22-7	1350	Manhole	Adoptable	21-6	1500	Manhole	Adoptable
22.006	22-6	1350	Manhole	Adoptable	22-7	1350	Manhole	Adoptable
22.005	22-5	1350	Manhole	Adoptable	22-6	1350	Manhole	Adoptable
26.001	26-1	1200	Manhole	Adoptable	22-6	1350	Manhole	Adoptable
26.000	26-0	1200	Manhole	Adoptable	26-1	1200	Manhole	Adoptable
22.004	22-4	1350	Manhole	Adoptable	22-5	1350	Manhole	Adoptable
25.001	25-1	1200	Manhole	Adoptable	22-5	1350	Manhole	Adoptable
25.000	25-0	1200	Manhole	Adoptable	25-1	1200	Manhole	Adoptable
22.003	22-3	1350	Manhole	Adoptable	22-4	1350	Manhole	Adoptable

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Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
22.002	7.454	338.8	400	Circular	88.564	86.907	1.257	88.563	86.885	1.278
24.000	53.093	351.6	400	Circular	88.655	87.100	1.155	88.563	86.949	1.214
22.001	51.789	349.9	400	Circular	88.298	87.055	0.843	88.564	86.907	1.257
23.000	63.858	324.2	375	Circular	88.357	87.161	0.821	88.564	86.964	1.225
22.000	13.905	347.6	400	Circular	88.245	87.095	0.750	88.298	87.055	0.843
21.004	24.650	347.2	400	Circular	88.367	86.669	1.298	88.456	86.598	1.458
21.003	48.146	323.1	375	Circular	88.691	86.818	1.498	88.367	86.669	1.323
21.002	56.065	324.1	375	Circular	88.405	86.991	1.039	88.691	86.818	1.498
21.001	35.179	322.7	375	Circular	88.225	87.100	0.750	88.405	86.991	1.039
21.000	51.042	323.0	375	Circular	88.540	87.258	0.907	88.225	87.100	0.750
31.017	18.902	1020.0	600	Circular	86.440	84.520	1.320	85.570	84.501	0.469
31.016	5.899	536.2	600	Circular	86.440	84.631	1.209	86.440	84.620	1.220
31.015	11.460	477.5	600	Circular	86.850	84.655	1.595	86.440	84.631	1.209
31.014	20.609	572.5	450	Circular	86.950	84.691	1.809	86.850	84.655	1.745
37.004	26.698	342.3	375	Circular	86.930	84.822	1.733	86.850	84.744	1.731
37.003	49.639	406.9	375	Circular	87.021	84.944	1.702	86.930	84.822	1.733
37.002	64.636	323.2	300	Circular	87.247	85.144	1.803	87.021	84.944	1.777
40.001	74.807	169.6	225	Circular	87.075	85.619	1.231	87.021	85.178	1.618
40.000	26.496	169.8	225	Circular	87.200	85.775	1.200	87.075	85.619	1.231
38.001	67.475	244.5	300	Circular	87.147	85.420	1.427	87.247	85.144	1.803
37.001	73.376	169.9	225	Circular	87.736	86.272	1.239	87.247	85.840	1.182
37.000	51.420	169.7	225	Circular	88.000	86.575	1.200	87.736	86.272	1.239
38.000	43.565	169.5	225	Circular	87.352	85.677	1.450	87.147	85.420	1.502
39.000	6.921	168.8	225	Circular	87.171	86.115	0.831	87.147	86.074	0.848
31.013	14.958	575.3	450	Circular	87.000	84.717	1.833	86.950	84.691	1.809
31.012	33.595	579.2	450	Circular	87.231	84.775	2.006	87.000	84.717	1.833
31.011	55.310	350.1	400	Circular	86.901	84.933	1.568	87.231	84.775	2.056
36.004	42.767	100.0	225	Circular	87.676	86.319	1.132	87.231	85.891	1.115
36.003	14.574	100.0	225	Circular	87.954	86.465	1.264	87.676	86.319	1.132
36.002	11.007	100.0	225	Circular	88.162	86.575	1.362	87.954	86.465	1.264
36.001	14.673	100.0	225	Circular	88.383	86.722	1.436	88.162	86.575	1.362
36.000	30.135	169.3	225	Circular	88.558	86.900	1.433	88.383	86.722	1.436
31.010	29.020	349.6	400	Circular	86.850	85.016	1.434	86.901	84.933	1.568
31.009	19.192	348.9	400	Circular	87.260	85.071	1.789	86.850	85.016	1.434

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
22.002	22-2	1350	Manhole	Adoptable	22-3	1350	Manhole	Adoptable
24.000	24-0	1350	Manhole	Adoptable	22-3	1350	Manhole	Adoptable
22.001	22-1	1350	Manhole	Adoptable	22-2	1350	Manhole	Adoptable
23.000	23-0	1350	Manhole	Adoptable	22-2	1350	Manhole	Adoptable
22.000	22-0	1350	Manhole	Adoptable	22-1	1350	Manhole	Adoptable
21.004	21-4	1350	Manhole	Adoptable	21-5	1350	Manhole	Adoptable
21.003	21-3	1350	Manhole	Adoptable	21-4	1350	Manhole	Adoptable
21.002	21-2	1350	Manhole	Adoptable	21-3	1350	Manhole	Adoptable
21.001	21-1	1350	Manhole	Adoptable	21-2	1350	Manhole	Adoptable
21.000	21-0	1350	Manhole	Adoptable	21-1	1350	Manhole	Adoptable
31.017	PI 1	1500	Manhole	Adoptable	Outfall 1	1500	Manhole	Adoptable
31.016	31-17	2100	Manhole	Adoptable	PI 1	1500	Manhole	Adoptable
31.015	31-16	1500	Manhole	Adoptable	31-17	2100	Manhole	Adoptable
31.014	31-15	1350	Manhole	Adoptable	31-16	1500	Manhole	Adoptable
37.004	37-4	1350	Manhole	Adoptable	31-16	1500	Manhole	Adoptable
37.003	37-3	1350	Manhole	Adoptable	37-4	1350	Manhole	Adoptable
37.002	37-2	1200	Manhole	Adoptable	37-3	1350	Manhole	Adoptable
40.001	40-1	1200	Manhole	Adoptable	37-3	1350	Manhole	Adoptable
40.000	40-0	1200	Manhole	Adoptable	40-1	1200	Manhole	Adoptable
38.001	38-1	1200	Manhole	Adoptable	37-2	1200	Manhole	Adoptable
37.001	37-1	1200	Manhole	Adoptable	37-2	1200	Manhole	Adoptable
37.000	37-0	1200	Manhole	Adoptable	37-1	1200	Manhole	Adoptable
38.000	38-0	1200	Manhole	Adoptable	38-1	1200	Manhole	Adoptable
39.000	39-0	1200	Manhole	Adoptable	38-1	1200	Manhole	Adoptable
31.013	31-14	1350	Manhole	Adoptable	31-15	1350	Manhole	Adoptable
31.012	31-13	1350	Manhole	Adoptable	31-14	1350	Manhole	Adoptable
31.011	31-12	1350	Manhole	Adoptable	31-13	1350	Manhole	Adoptable
36.004	36-4	1200	Manhole	Adoptable	31-13	1350	Manhole	Adoptable
36.003	36-3	1200	Manhole	Adoptable	36-4	1200	Manhole	Adoptable
36.002	36-2	1200	Manhole	Adoptable	36-3	1200	Manhole	Adoptable
36.001	36-1	1200	Manhole	Adoptable	36-2	1200	Manhole	Adoptable
36.000	36-0	1200	Manhole	Adoptable	36-1	1200	Manhole	Adoptable
31.010	31-11	1350	Manhole	Adoptable	31-12	1350	Manhole	Adoptable
31.009	31-10	1800	Manhole	Adoptable	31-11	1350	Manhole	Adoptable

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Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
35.000	30.939	169.1	225	Circular	87.091	85.659	1.207	86.850	85.476	1.149
31.008	8.755	350.2	400	Circular	87.385	85.096	1.889	87.260	85.071	1.789
31.007	4.633	308.9	300	Circular	87.387	85.384	1.703	87.385	85.369	1.716
34.000	53.968	169.7	225	Circular	87.400	85.675	1.500	87.385	85.357	1.803
31.006	53.993	244.3	300	Circular	87.894	85.605	1.989	87.387	85.384	1.703
33.002	12.512	169.1	225	Circular	87.322	85.611	1.486	87.387	85.537	1.625
33.001	9.300	169.1	225	Circular	87.366	85.666	1.475	87.322	85.611	1.486
33.000	22.672	169.2	225	Circular	87.225	85.800	1.200	87.366	85.666	1.475
31.005	6.674	166.9	225	Circular	88.000	85.645	2.130	87.894	85.605	2.064
32.001	27.582	169.2	225	Circular	87.750	85.980	1.545	87.894	85.817	1.852
32.000	24.620	169.8	225	Circular	87.750	86.125	1.400	87.750	85.980	1.545
31.004	31.472	100.0	225	Circular	88.350	85.960	2.165	88.000	85.645	2.130
31.003	17.107	80.0	225	Circular	88.412	86.174	2.013	88.350	85.960	2.165
31.002	13.738	80.0	225	Circular	88.375	86.346	1.804	88.412	86.174	2.013
31.001	22.282	80.0	225	Circular	88.460	86.625	1.610	88.375	86.346	1.804
31.000	25.451	169.7	225	Circular	88.586	86.775	1.586	88.460	86.625	1.610
41.014	5.314	312.6	500	Circular	87.350	85.165	1.685	86.400	85.148	0.752
41.013	5.268	526.8	500	Circular	87.350	85.275	1.575	87.350	85.265	1.585
41.012	24.728	343.4	400	Circular	87.450	85.347	1.703	87.350	85.275	1.675
48.000	54.165	100.0	225	Circular	87.450	86.300	0.925	87.350	85.758	1.367
41.011	14.015	368.8	400	Circular	87.390	85.385	1.605	87.450	85.347	1.703
41.010	5.101	340.1	400	Circular	87.430	85.400	1.630	87.390	85.385	1.605
41.009	31.084	323.8	375	Circular	87.480	85.674	1.431	87.430	85.578	1.477
47.001	49.677	169.5	225	Circular	87.550	86.108	1.217	87.430	85.815	1.390
47.000	50.028	120.0	225	Circular	87.950	86.525	1.200	87.550	86.108	1.217
41.008	13.682	318.2	375	Circular	87.523	85.717	1.431	87.480	85.674	1.431
46.000	9.566	167.8	225	Circular	87.430	86.005	1.200	87.480	85.948	1.307
41.007	5.218	248.5	375	Circular	87.523	85.738	1.410	87.523	85.717	1.431
41.006	52.111	323.7	375	Circular	87.897	85.899	1.623	87.523	85.738	1.410
41.005	5.064	241.1	375	Circular	87.879	85.920	1.584	87.897	85.899	1.623
41.004	45.028	323.9	375	Circular	88.226	86.059	1.792	87.879	85.920	1.584
45.000	36.295	169.6	225	Circular	87.573	86.412	0.936	87.879	86.198	1.456
41.003	32.932	243.9	300	Circular	87.500	86.194	1.006	88.226	86.059	1.867
42.002	17.507	243.1	300	Circular	88.148	86.399	1.449	88.226	86.327	1.599

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
35.000	35-0	1200	Manhole	Adoptable	31-11	1350	Manhole	Adoptable
31.008	31-9	1350	Manhole	Adoptable	31-10	1800	Manhole	Adoptable
31.007	31-8	1200	Manhole	Adoptable	31-9	1350	Manhole	Adoptable
34.000	33-0	1200	Manhole	Adoptable	31-9	1350	Manhole	Adoptable
31.006	31-7	1200	Manhole	Adoptable	31-8	1200	Manhole	Adoptable
33.002	34-2	1200	Manhole	Adoptable	31-8	1200	Manhole	Adoptable
33.001	34-1	1200	Manhole	Adoptable	34-2	1200	Manhole	Adoptable
33.000	34-0	1200	Manhole	Adoptable	34-1	1200	Manhole	Adoptable
31.005	31-6	1200	Manhole	Adoptable	31-7	1200	Manhole	Adoptable
32.001	32-1	1200	Manhole	Adoptable	31-7	1200	Manhole	Adoptable
32.000	32-0	1200	Manhole	Adoptable	32-1	1200	Manhole	Adoptable
31.004	31-5	1200	Manhole	Adoptable	31-6	1200	Manhole	Adoptable
31.003	31-4	1200	Manhole	Adoptable	31-5	1200	Manhole	Adoptable
31.002	31-2	1200	Manhole	Adoptable	31-4	1200	Manhole	Adoptable
31.001	31-1	1200	Manhole	Adoptable	31-2	1200	Manhole	Adoptable
31.000	31-0	1200	Manhole	Adoptable	31-1	1200	Manhole	Adoptable
41.014	PI 5	1500	Manhole	Adoptable	Outfall 5	1500	Manhole	Adoptable
41.013	41-13	1800	Manhole	Adoptable	PI 5	1500	Manhole	Adoptable
41.012	41-12	1800	Manhole	Adoptable	41-13	1800	Manhole	Adoptable
48.000	48-0	1200	Manhole	Adoptable	41-13	1800	Manhole	Adoptable
41.011	41-11	1350	Manhole	Adoptable	41-12	1800	Manhole	Adoptable
41.010	41-10	1350	Manhole	Adoptable	41-11	1350	Manhole	Adoptable
41.009	41-9	1350	Manhole	Adoptable	41-10	1350	Manhole	Adoptable
47.001	47-1	1200	Manhole	Adoptable	41-10	1350	Manhole	Adoptable
47.000	47-0	1200	Manhole	Adoptable	47-1	1200	Manhole	Adoptable
41.008	41-8	1350	Manhole	Adoptable	41-9	1350	Manhole	Adoptable
46.000	46-0	1200	Manhole	Adoptable	41-9	1350	Manhole	Adoptable
41.007	41-7	1350	Manhole	Adoptable	41-8	1350	Manhole	Adoptable
41.006	41-6	1350	Manhole	Adoptable	41-7	1350	Manhole	Adoptable
41.005	41-5	1350	Manhole	Adoptable	41-6	1350	Manhole	Adoptable
41.004	41-4	1350	Manhole	Adoptable	41-5	1350	Manhole	Adoptable
45.000	45-0	1200	Manhole	Adoptable	41-5	1350	Manhole	Adoptable
41.003	41-3	1200	Manhole	Adoptable	41-4	1350	Manhole	Adoptable
42.002	42-2	1200	Manhole	Adoptable	41-4	1350	Manhole	Adoptable

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Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
44.000	16.241	169.2	225	Circular	88.248	86.423	1.600	88.226	86.327	1.674
42.001	30.162	243.2	300	Circular	87.996	86.523	1.173	88.148	86.399	1.449
43.000	11.712	169.7	225	Circular	88.018	86.593	1.200	88.148	86.524	1.399
42.000	12.458	244.3	300	Circular	87.868	86.574	0.994	87.996	86.523	1.173
41.002	49.058	244.1	300	Circular	87.800	86.395	1.105	87.500	86.194	1.006
41.001	45.904	244.2	300	Circular	88.250	86.583	1.367	87.800	86.395	1.105
41.000	28.592	244.4	300	Circular	88.250	86.700	1.250	88.250	86.583	1.367
49.006	4.546	454.6	450	Circular	87.100	85.620	1.030	86.501	85.610	0.441
49.005	18.999	327.6	400	Circular	88.100	85.821	1.879	87.100	85.763	0.937
49.004	82.625	456.5	400	Circular	88.427	86.002	2.025	88.100	85.821	1.879
49.003	63.994	323.2	400	Circular	88.831	86.200	2.231	88.427	86.002	2.025
49.002	27.221	80.0	225	Circular	89.346	87.200	1.921	88.831	86.860	1.746
49.001	36.427	80.0	225	Circular	90.205	88.000	1.980	89.346	87.545	1.576
49.000	45.692	80.0	225	Circular	91.041	88.900	1.916	90.205	88.329	1.651
50.006	5.797	263.5	450	Circular	87.889	85.526	1.913	86.490	85.504	0.536
50.005	24.841	460.0	450	Circular	87.899	85.680	1.769	87.889	85.626	1.813
50.004	35.824	720.0	450	Circular	87.734	85.730	1.554	87.899	85.680	1.769
50.003	34.665	500.0	375	Circular	87.547	85.799	1.373	87.734	85.730	1.629
50.002	53.673	500.0	375	Circular	87.245	85.906	0.964	87.547	85.799	1.373
50.001	20.216	320.9	375	Circular	87.191	85.969	0.847	87.245	85.906	0.964
50.000	72.790	323.5	375	Circular	87.806	86.194	1.237	87.191	85.969	0.847

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
44.000	44-0	1200	Manhole	Adoptable	41-4	1350	Manhole	Adoptable
42.001	42-1	1200	Manhole	Adoptable	42-2	1200	Manhole	Adoptable
43.000	43-0	1200	Manhole	Adoptable	42-2	1200	Manhole	Adoptable
42.000	42-0	1200	Manhole	Adoptable	42-1	1200	Manhole	Adoptable
41.002	41-2	1200	Manhole	Adoptable	41-3	1200	Manhole	Adoptable
41.001	41-1	1200	Manhole	Adoptable	41-2	1200	Manhole	Adoptable
41.000	41-0	1200	Manhole	Adoptable	41-1	1200	Manhole	Adoptable
49.006	PI 2	1350	Manhole	Adoptable	Outfall 2	1350	Manhole	Adoptable
49.005	50-5	1350	Manhole	Adoptable	PI 2	1350	Manhole	Adoptable
49.004	50-4	1350	Manhole	Adoptable	50-5	1350	Manhole	Adoptable
49.003	50-3	1350	Manhole	Adoptable	50-4	1350	Manhole	Adoptable
49.002	50-2	1200	Manhole	Adoptable	50-3	1350	Manhole	Adoptable
49.001	50-1	1200	Manhole	Adoptable	50-2	1200	Manhole	Adoptable
49.000	50-0	1200	Manhole	Adoptable	50-1	1200	Manhole	Adoptable
50.006	PI 6	1350	Manhole	Adoptable	Outfall 6	1350	Manhole	Adoptable
50.005	49-5	1350	Manhole	Adoptable	PI 6	1350	Manhole	Adoptable
50.004	49-4	1350	Manhole	Adoptable	49-5	1350	Manhole	Adoptable
50.003	49-3	1350	Manhole	Adoptable	49-4	1350	Manhole	Adoptable
50.002	49-2	1350	Manhole	Adoptable	49-3	1350	Manhole	Adoptable
50.001	49-1	1350	Manhole	Adoptable	49-2	1350	Manhole	Adoptable
50.000	49-0	1350	Manhole	Adoptable	49-1	1350	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
1-0	681728.297	714559.265	88.550	1.550	1350	0	1.000	87.000	375
1-1	681727.082	714579.948	88.200	1.264	1350	1	1.000	86.936	375
						0	1.001	86.936	375
1-2	681729.935	714618.237	88.200	1.383	1350	1	1.001	86.817	375
						0	1.002	86.817	375
1-3	681724.880	714650.182	88.150	1.433	1350	1	1.002	86.717	375
						0	1.003	86.717	375
1-4	681726.157	714667.886	88.050	1.388	1350	1	1.003	86.662	375
						0	1.004	86.662	375

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
1-5	681706.946	714704.913	88.201	1.668	1350	1	1.004	86.533	375
						0	1.005	86.533	375
2-0	681654.345	714711.728	88.588	1.425	1200	0	2.000	87.163	225
1-6	681668.442	714684.340	88.523	2.077	1350	1	2.000	86.981	225
						2	1.005	86.446	375
						0	1.006	86.446	375
1-7	681613.809	714655.342	88.681	2.358	1350	1	1.006	86.323	375
						0	1.007	86.323	375
1-8	681573.837	714634.246	88.553	2.320	1350	1	1.007	86.233	375
						0	1.008	86.233	375
1-9	681516.849	714604.369	88.321	2.216	1350	1	1.008	86.105	375
						0	1.009	86.105	400
1-10	681489.411	714611.148	88.495	2.437	1350	1	1.009	86.058	400
						0	1.010	86.058	400
1-11	681465.859	714652.863	88.016	2.095	1800	1	1.010	85.921	400
						0	1.011	85.921	400
3-0	681495.121	714623.928	88.471	1.680	1200	0	3.000	86.791	225
1-12	681476.088	714659.384	88.157	2.256	1350	1	3.000	86.554	225
						2	1.011	85.901	400
						0	1.012	85.901	450
4-0	681714.921	714722.862	88.200	1.115	1200	0	4.000	87.085	255
4-1	681700.576	714747.663	88.200	1.259	1200	1	4.000	86.941	255
						0	4.001	86.941	255
4-2	681696.983	714746.664	88.200	1.278	1200	1	4.001	86.922	255
						0	4.002	86.922	255
4-3	681679.139	714777.631	88.321	1.579	1200	1	4.002	86.742	255
						0	4.003	86.742	255
5-0	681687.188	714707.538	88.100	0.975	1200	0	5.000	87.125	225
5-1	681674.194	714731.842	88.000	1.038	1200	1	5.000	86.962	225
						0	5.001	86.962	225
4-4	681656.262	714765.409	88.227	1.616	1200	1	5.001	86.737	225
						2	4.003	86.611	255
						0	4.004	86.611	255

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
4-5	681631.788	714752.351	88.128	1.657	1200	1	4.004	86.471	255
						0	4.005	86.471	255
4-6	681629.584	714756.232	88.062	1.614	1200	1	4.005	86.448	255
						0	4.006	86.448	255
4-7	681618.718	714752.021	87.821	1.432	1200	1	4.006	86.389	255
						0	4.007	86.389	255
6-0	681651.744	714821.450	87.900	1.029	1200	0	6.000	86.871	225
6-1	681635.217	714852.261	88.070	1.405	1200	1	6.000	86.665	225
						0	6.001	86.665	225
6-2	681600.572	714833.783	88.000	1.567	1200	1	6.001	86.433	225
						0	6.002	86.433	225
6-3	681613.963	714808.759	87.930	1.665	1200	1	6.002	86.265	225
						0	6.003	86.265	225
4-8	681593.233	714797.616	87.727	1.601	1350	1	6.003	86.126	225
						2	4.007	86.126	255
						0	4.008	86.126	375
7-0	681598.010	714732.199	88.100	1.525	1200	0	7.000	86.575	225
4-9	681569.162	714784.678	87.721	1.680	1350	1	7.000	86.222	225
						2	4.008	86.041	375
						0	4.009	86.041	375
8-0	681578.569	714821.954	87.700	1.410	1200	0	8.000	86.290	225
9-0	681499.419	714779.633	87.700	1.301	1200	0	9.000	86.399	225
8-1	681538.921	714800.785	87.400	1.280	1200	1	9.000	86.229	225
						2	8.000	86.120	225
						0	8.001	86.120	300
4-10	681552.322	714775.627	87.822	1.819	1350	1	8.001	86.003	300
						2	4.009	86.003	375
						0	4.010	86.003	400
10-0	681456.887	714742.982	87.635	0.874	1200	0	10.000	86.761	225
10-1	681464.184	714728.460	87.816	1.151	1200	1	10.000	86.665	225
						0	10.001	86.665	225
11-0	681470.270	714761.709	87.700	1.175	1200	0	11.000	86.525	225

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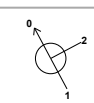
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
11-1	681481.748	714767.493	87.700	1.251	1200	1	11.000	86.449	225
						0	11.001	86.449	225
10-2	681494.310	714744.490	87.700	1.406	1200	1	11.001	86.294	225
						2	10.001	86.464	225
						0	10.002	86.294	225
12-0	681518.601	714738.418	87.588	1.425	1200				
						0	12.000	86.163	225
10-3	681511.067	714753.407	87.724	1.625	1200	1	12.000	86.099	225
						2	10.002	86.182	225
						0	10.003	86.099	225
4-11	681527.859	714762.478	87.850	1.898	1500	1	10.003	86.027	225
						2	4.010	85.952	400
						0	4.011	85.952	500
4-12	681530.789	714757.146	87.850	1.906	1500	1	4.011	85.944	500
						0	4.012	85.944	500
13-0	681570.228	714744.973	87.600	1.425	1200				
						0	13.000	86.175	225
4-13	681544.032	714731.413	87.400	1.496	1500	1	13.000	86.001	225
						2	4.012	85.904	500
						0	4.013	85.904	500
4-14	681526.924	714722.557	87.500	1.623	1500	1	4.013	85.877	500
						0	4.014	85.877	600
14-0	681632.181	714739.287	88.142	1.989	1200				
						0	14.000	86.153	300
14-1	681586.068	714714.847	87.334	1.318	1200	1	14.000	86.016	300
						0	14.001	86.016	300
15-0	681560.301	714658.807	88.094	1.825	1200				
						0	15.000	86.269	225
14-2	681542.637	714691.750	87.521	1.634	1350	1	15.000	86.048	225
									
						2	14.001	85.887	300
						0	14.002	85.887	375
4-15	681536.496	714703.253	87.418	1.565	1500	1	14.002	85.861	375
						2	4.014	85.853	600
						0	4.015	85.853	600
16-0	681524.006	714656.720	88.000	1.425	1200				
						0	16.000	86.575	225
17-0	681491.700	714717.223	87.625	1.425	1200				
						0	17.000	86.200	225
4-16	681507.377	714687.844	87.823	2.006	1500	1	17.000	86.003	225
						2	16.000	86.367	225
						3	4.015	85.817	600
						0	4.016	85.817	600

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
1-13	681471.112	714668.653	88.078	2.301	1500	1	4.016	85.777	600
						2	1.012	85.884	450
						0	1.013	85.777	600
18-0	681422.878	714707.549	87.800	1.375	1200	0	18.000	86.425	225
19-0	681367.542	714630.246	88.150	1.425	1200	0	19.000	86.725	225
19-1	681380.523	714649.147	87.600	1.010	1200	1	19.000	86.590	225
						0	19.001	86.590	225
18-1	681392.936	714654.934	87.750	1.682	1200	1	19.001	86.509	225
						2	18.000	86.068	225
						0	18.001	86.068	300
20-0	681458.635	714610.046	87.550	1.306	1200	0	20.000	86.244	225
18-2	681419.839	714638.804	87.900	1.961	1350	1	20.000	85.959	225
						2	18.001	85.939	300
						0	18.002	85.939	375
18-3	681442.714	714678.477	87.724	1.927	1350	1	18.002	85.797	375
						0	18.003	85.797	375
18-4	681452.487	714687.900	87.871	2.101	1350	1	18.003	85.770	375
						0	18.004	85.770	375
1-14	681458.950	714691.294	87.871	2.119	1500	1	18.004	85.756	375
						2	1.013	85.752	600
						0	1.014	85.752	600
1-15	681452.167	714703.160	87.781	2.042	1500	1	1.014	85.739	600
						0	1.015	85.739	600
1-16	681431.016	714720.912	87.570	1.858	2100	1	1.015	85.712	600
						0	1.016	85.712	600
PI 4	681413.439	714734.297	87.100	1.516	1500	1	1.016	85.684	600
						0	1.017	85.584	600
Outfall 4	681407.762	714738.679	86.490	0.917	1500	1	1.017	85.573	600
21-0	681732.623	714543.018	88.540	1.282	1350	0	21.000	87.258	375
21-1	681683.674	714528.552	88.225	1.125	1350	1	21.000	87.100	375
						0	21.001	87.100	375
21-2	681649.964	714518.491	88.405	1.414	1350	1	21.001	86.991	375
						0	21.002	86.991	375

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
21-3	681596.221	714502.522	88.691	1.873	1350	1	21.002	86.818	375
						0	21.003	86.818	375
21-4	681550.069	714488.810	88.367	1.698	1350	1	21.003	86.669	375
						0	21.004	86.669	400
21-5	681538.872	714510.770	88.456	1.858	1350	1	21.004	86.598	400
						0	21.005	86.598	400
22-0	681680.587	714541.754	88.245	1.150	1350				
						0	22.000	87.095	400
22-1	681676.628	714555.083	88.298	1.243	1350	1	22.000	87.055	400
						0	22.001	87.055	400
23-0	681708.590	714630.655	88.357	1.196	1350				
						0	23.000	87.161	375
22-2	681652.175	714600.736	88.564	1.657	1350	1	23.000	86.964	375
						2	22.001	86.907	400
						0	22.002	86.907	400
24-0	681619.602	714645.364	88.655	1.555	1350				
						0	24.000	87.100	400
22-3	681644.994	714598.737	88.563	1.678	1350	1	24.000	86.949	400
						2	22.002	86.885	400
						0	22.003	86.885	400
22-4	681604.492	714576.263	89.151	2.398	1350	1	22.003	86.753	400
						0	22.004	86.753	400
25-0	681578.956	714511.950	88.704	1.425	1200				
						0	25.000	87.279	225
25-1	681570.824	714540.652	88.700	1.597	1200	1	25.000	87.103	225
						0	25.001	87.103	225
22-5	681561.371	714552.096	88.931	2.319	1350	1	25.001	87.015	225
						2	22.004	86.612	400
						0	22.005	86.612	400
26-0	681520.981	714587.351	88.550	1.425	1200				
						0	26.000	87.125	225
26-1	681529.224	714571.926	88.550	1.528	1200	1	26.000	87.022	225
						0	26.001	87.022	225
22-6	681548.127	714544.673	88.890	2.316	1350	1	26.001	86.826	225
						2	22.005	86.574	400
						0	22.006	86.574	400
22-7	681533.514	714533.960	88.500	1.971	1350	1	22.006	86.529	400
						0	22.007	86.529	400

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
21-6	681527.948	714530.232	88.369	1.857	1500		1	22.007	86.512	400
							2	21.005	86.534	400
							0	21.006	86.512	500
21-7	681498.591	714572.945	88.161	1.761	1500		1	21.006	86.400	500
							0	21.007	86.400	500
21-8	681494.806	714586.463	88.218	1.843	1500		1	21.007	86.375	500
							0	21.008	86.375	500
21-9	681479.812	714583.385	88.083	1.735	1500		1	21.008	86.348	500
							0	21.009	86.348	500
21-10	681440.788	714563.200	87.929	1.657	1500		1	21.009	86.272	500
							0	21.010	86.272	500
27-0	681350.118	714601.420	88.114	1.792	1500		0	27.000	86.322	600
27-1	681391.219	714575.945	87.900	1.625	1500		1	27.000	86.275	600
							0	27.001	86.275	600
28-0	681472.874	714484.377	88.108	1.630	1350		0	28.000	86.478	375
28-1	681446.895	714523.359	87.846	1.513	1350		1	28.000	86.333	375
							0	28.001	86.333	375
21-11	681424.130	714546.888	88.117	1.885	1500		1	28.001	86.232	375
							2	27.001	86.232	600
							3	21.010	86.232	500
							0	21.011	86.232	600
29-0	681529.152	714477.102	88.510	1.125	1200		0	29.000	87.385	225
29-1	681493.847	714463.154	88.500	1.339	1200		1	29.000	87.161	225
							0	29.001	87.161	225
29-2	681481.690	714464.705	88.289	1.201	1200		1	29.001	87.088	225
							0	29.002	87.088	225
29-3	681435.452	714440.649	88.782	2.002	1200		1	29.002	86.780	225
							0	29.003	86.780	225
29-4	681420.740	714447.405	88.880	2.196	1200		1	29.003	86.684	225
							0	29.004	86.684	225
29-5	681401.736	714473.443	88.851	2.364	1200		1	29.004	86.487	225
							0	29.005	86.487	225
21-12	681378.428	714500.325	88.730	2.561	1500		1	29.005	86.277	225
							2	21.011	86.169	600
							0	21.012	86.169	600

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
30-0	681336.824	714583.857	88.750	1.425	1200		0 30.000	87.325	225
30-1	681318.656	714552.623	88.700	1.638	1200		1 30.000 0 30.001	87.062 87.062	225 225
30-2	681338.498	714532.780	88.800	1.904	1200		1 30.001 0 30.002	86.896 86.896	225 225
21-13	681354.275	714520.630	88.850	2.712	1500		1 30.002 2 21.012 0 21.013	86.778 86.138 86.138	225 600 600
21-14	681331.006	714494.008	88.070	1.966	1500		1 21.013 0 21.014	86.104 86.104	600 600
PI 3	681328.921	714490.869	88.070	2.073	1500		1 21.014 0 21.015	86.097 85.997	600 600
Outfall 3	681310.005	714462.485	87.300	1.362	1500		1 21.015	85.938	600
31-0	681241.100	714577.004	88.586	1.811	1200		0 31.000	86.775	225
31-1	681266.075	714572.105	88.460	1.835	1200		1 31.000 0 31.001	86.625 86.625	225 225
31-2	681288.357	714572.144	88.375	2.029	1200		1 31.001 0 31.002	86.346 86.346	225 225
31-4	681300.880	714577.792	88.412	2.238	1200		1 31.002 0 31.003	86.174 86.174	225 225
31-5	681310.328	714592.053	88.350	2.390	1200		1 31.003 0 31.004	85.960 85.960	225 225
31-6	681328.209	714617.952	88.000	2.355	1200		1 31.004 0 31.005	85.645 85.645	225 225
32-0	681351.362	714665.315	87.750	1.625	1200		0 32.000	86.125	225
32-1	681337.837	714644.743	87.750	1.770	1200		1 32.000 0 32.001	85.980 85.980	225 225
31-7	681322.684	714621.696	87.894	2.289	1200		1 32.001 2 31.005 0 31.006	85.817 85.605 85.605	225 225 300
34-0	681241.403	714640.836	87.225	1.425	1200		0 33.000	85.800	225

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
34-1	681263.636	714636.398	87.366	1.700	1200	1	33.000	85.666	225
						0	33.001	85.666	225
34-2	681271.591	714641.215	87.322	1.711	1200	1	33.001	85.611	225
						0	33.002	85.611	225
31-8	681277.979	714651.973	87.387	2.003	1200	1	33.002	85.537	225
						2	31.006	85.384	300
						0	31.007	85.384	300
33-0	681304.110	714699.473	87.400	1.725	1200				
						0	34.000	85.675	225
31-9	681274.152	714654.584	87.385	2.289	1350	1	34.000	85.357	225
						2	31.007	85.369	300
						0	31.008	85.096	400
31-10	681266.162	714658.164	87.260	2.189	1800	1	31.008	85.071	400
						0	31.009	85.071	400
35-0	681280.289	714692.365	87.091	1.432	1200				
						0	35.000	85.659	225
31-11	681255.367	714674.032	86.850	1.834	1350	1	35.000	85.476	225
						2	31.009	85.016	400
						0	31.010	85.016	400
31-12	681230.026	714659.891	86.901	1.968	1350	1	31.010	84.933	400
						0	31.011	84.933	400
36-0	681231.376	714579.073	88.558	1.658	1200				
						0	36.000	86.900	225
36-1	681201.801	714584.854	88.383	1.661	1200	1	36.000	86.722	225
						0	36.001	86.722	225
36-2	681188.714	714591.490	88.162	1.587	1200	1	36.001	86.575	225
						0	36.002	86.575	225
36-3	681182.045	714600.247	87.954	1.489	1200	1	36.002	86.465	225
						0	36.003	86.465	225
36-4	681178.035	714614.258	87.676	1.357	1200	1	36.003	86.319	225
						0	36.004	86.319	225
31-13	681174.797	714656.902	87.231	2.456	1350	1	36.004	85.891	225
						2	31.011	84.775	400
						0	31.012	84.775	450
31-14	681172.134	714690.391	87.000	2.283	1350	1	31.012	84.717	450
						0	31.013	84.717	450
31-15	681178.112	714704.102	86.950	2.259	1350	1	31.013	84.691	450
						0	31.014	84.691	450

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
37-0	681393.391	714716.054	88.000	1.425	1200		0	37.000	86.575	225
37-1	681364.767	714673.338	87.736	1.464	1200		1	37.000	86.272	225
							0	37.001	86.272	225
38-0	681384.526	714741.184	87.352	1.675	1200		0	38.000	85.677	225
39-0	681352.807	714770.696	87.171	1.056	1200		0	39.000	86.115	225
38-1	681348.326	714765.422	87.147	1.727	1200		1	39.000	86.074	225
							2	38.000	85.420	225
							0	38.001	85.420	300
37-2	681304.036	714714.518	87.247	2.103	1200		1	38.001	85.144	300
							2	37.001	85.840	225
							0	37.002	85.144	300
40-0	681328.813	714803.744	87.200	1.425	1200		0	40.000	85.775	225
40-1	681305.668	714816.641	87.075	1.456	1200		1	40.000	85.619	225
							0	40.001	85.619	225
37-3	681257.516	714759.392	87.021	2.077	1350		1	40.001	85.178	225
							2	37.002	84.944	300
							0	37.003	84.944	375
37-4	681218.378	714728.860	86.930	2.108	1350		1	37.003	84.822	375
							0	37.004	84.822	375
31-16	681195.150	714715.697	86.850	2.195	1500		1	37.004	84.744	375
							2	31.014	84.655	450
							0	31.015	84.655	600
31-17	681189.329	714725.568	86.440	1.809	2100		1	31.015	84.631	600
							0	31.016	84.631	600
PI 1	681186.333	714730.649	86.440	1.920	1500		1	31.016	84.620	600
							0	31.017	84.520	600
Outfall 1	681181.220	714748.846	85.570	1.069	1500		1	31.017	84.501	600
41-0	681603.924	714908.556	88.250	1.550	1200		0	41.000	86.700	300
41-1	681618.947	714884.229	88.250	1.667	1200		1	41.000	86.583	300
							0	41.001	86.583	300
41-2	681580.497	714859.153	87.800	1.405	1200		1	41.001	86.395	300
							0	41.002	86.395	300

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
41-3	681539.046	714832.914	87.500	1.306	1200	1	41.002	86.194	300
						0	41.003	86.194	300
42-0	681554.612	714897.046	87.868	1.294	1200	0	42.000	86.574	300
42-1	681561.361	714886.575	87.996	1.473	1200	1	42.000	86.523	300
						0	42.001	86.523	300
43-0	681529.669	714880.070	88.018	1.425	1200	0	43.000	86.593	225
42-2	681536.014	714870.226	88.148	1.749	1200	1	43.000	86.524	225
						2	42.001	86.399	300
						0	42.002	86.399	300
44-0	681512.910	714874.563	88.248	1.825	1200	0	44.000	86.423	225
41-4	681521.339	714860.680	88.226	2.167	1350	1	44.000	86.327	225
						2	42.002	86.327	300
						3	41.003	86.059	300
						0	41.004	86.059	375
45-0	681450.416	714820.912	87.573	1.161	1200	0	45.000	86.412	225
41-5	681482.391	714838.085	87.879	1.959	1350	1	45.000	86.198	225
						2	41.004	85.920	375
						0	41.005	85.920	375
41-6	681480.058	714842.579	87.897	1.998	1350	1	41.005	85.899	375
						0	41.006	85.899	375
41-7	681434.036	714818.133	87.523	1.785	1350	1	41.006	85.738	375
						0	41.007	85.738	375
41-8	681436.400	714813.481	87.523	1.806	1350	1	41.007	85.717	375
						0	41.008	85.717	375
46-0	681419.932	714815.536	87.430	1.425	1200	0	46.000	86.005	225
41-9	681424.329	714807.040	87.480	1.806	1350	1	46.000	85.948	225
						2	41.008	85.674	375
						0	41.009	85.674	375
47-0	681526.464	714826.290	87.950	1.425	1200	0	47.000	86.525	225
47-1	681482.339	714802.714	87.550	1.442	1200	1	47.000	86.108	225
						0	47.001	86.108	225
41-10	681438.489	714779.369	87.430	2.030	1350	1	47.001	85.815	225
						2	41.009	85.578	375
						0	41.010	85.400	400

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
41-11	681441.127	714775.003	87.390	2.005	1350	1	41.010	85.385	400
						0	41.011	85.385	400
41-12	681437.310	714761.518	87.450	2.103	1800	1	41.011	85.347	400
						0	41.012	85.347	400
48-0	681389.971	714797.634	87.450	1.150	1200	0	48.000	86.300	225
41-13	681415.501	714749.863	87.350	2.075	1800	1	48.000	85.758	225
						2	41.012	85.275	400
						0	41.013	85.275	500
PI 5	681410.913	714747.274	87.350	2.185	1500	1	41.013	85.265	500
						0	41.014	85.165	500
Outfall 5	681406.210	714744.800	86.400	1.252	1500	1	41.014	85.148	500
50-0	681272.880	714510.934	91.041	2.141	1200	0	49.000	88.900	225
50-1	681305.334	714543.097	90.205	2.205	1200	1	49.000	88.329	225
						0	49.001	88.000	225
50-2	681326.122	714573.010	89.346	2.146	1200	1	49.001	87.545	225
						0	49.002	87.200	225
50-3	681341.206	714595.670	88.831	2.631	1350	1	49.002	86.860	225
						0	49.003	86.200	400
50-4	681376.057	714649.341	88.427	2.425	1350	1	49.003	86.002	400
						0	49.004	86.002	400
50-5	681423.923	714716.689	88.100	2.279	1350	1	49.004	85.821	400
						0	49.005	85.821	400
PI 2	681408.828	714728.225	87.100	1.480	1350	1	49.005	85.763	400
						0	49.006	85.620	450
Outfall 2	681405.225	714730.997	86.501	0.891	1350	1	49.006	85.610	450
49-0	681617.771	714850.092	87.806	1.612	1350	0	50.000	86.194	375
49-1	681553.609	714815.717	87.191	1.222	1350	1	50.000	85.969	375
						0	50.001	85.969	375
49-2	681537.854	714803.050	87.245	1.339	1350	1	50.001	85.906	375
						0	50.002	85.906	375

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
49-3	681490.130	714778.489	87.547	1.748	1350	1	50.002	85.799	375
						0	50.003	85.799	375
49-4	681460.413	714760.641	87.734	2.004	1350	1	50.003	85.730	375
						0	50.004	85.730	450
49-5	681437.601	714733.019	87.899	2.219	1350	1	50.004	85.680	450
						0	50.005	85.680	450
PI 6	681413.647	714739.599	87.889	2.363	1350	1	50.005	85.626	450
						0	50.006	85.526	450
Outfall 6	681408.322	714741.891	86.490	0.986	1350	1	50.006	85.504	450

Simulation Settings

Rainfall Methodology	FSR	Summer CV	0.750	Drain Down Time (mins)	240
FSR Region	Scotland and Ireland	Winter CV	0.840	Additional Storage (m³/ha)	20.0
M5-60 (mm)	15.600	Analysis Speed	Normal	Check Discharge Rate(s)	x
Ratio-R	0.286	Skip Steady State	x	Check Discharge Volume	x

Storm Durations

15	60	180	360	600	960	2160	4320	7200	10080
30	120	240	480	720	1440	2880	5760	8640	

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	20	0	0

Node 21-14 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	86.104	Product Number	CTL-SHE-0093-4000-1143-4000
Design Depth (m)	1.143	Min Outlet Diameter (m)	0.150
Design Flow (l/s)	4.0	Min Node Diameter (mm)	1200

Node 31-17 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	84.631	Product Number	CTL-SHE-0143-9900-1143-9900
Design Depth (m)	1.143	Min Outlet Diameter (m)	0.225
Design Flow (l/s)	9.9	Min Node Diameter (mm)	1200

Node 50-5 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	85.821	Product Number	CTL-SHE-0065-2000-1143-2000
Design Depth (m)	1.143	Min Outlet Diameter (m)	0.100
Design Flow (l/s)	2.0	Min Node Diameter (mm)	1200

Node 1-11 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	85.921	Product Number	CTL-SHE-0173-1500-1143-1500
Design Depth (m)	1.143	Min Outlet Diameter (m)	0.225
Design Flow (l/s)	15.0	Min Node Diameter (mm)	1500

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Node 41-13 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	85.275	Product Number	CTL-SHE-0193-2100-1661-2100
Design Depth (m)	1.661	Min Outlet Diameter (m)	0.225
Design Flow (l/s)	21.0	Min Node Diameter (mm)	1800

Node 1-16 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	85.712	Product Number	CTL-SHE-0250-3740-1800-3740
Design Depth (m)	1.800	Min Outlet Diameter (m)	0.300
Design Flow (l/s)	37.4	Min Node Diameter (mm)	1800

Node 49-5 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	85.680	Product Number	CTL-SHE-0065-2000-1143-2000
Design Depth (m)	1.143	Min Outlet Diameter (m)	0.100
Design Flow (l/s)	2.0	Min Node Diameter (mm)	1200

Node 21-14 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	10.0	Invert Level (m)	86.104
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.91	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	2120.0	0.0	1.143	2120.0	0.0	1.144	0.0	0.0

Node 31-17 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	10.0	Invert Level (m)	84.631
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.91	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	540.0	0.0	1.143	540.0	0.0	1.144	0.0	0.0

Node 41-7 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	10.0	Invert Level (m)	85.738
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.89	Time to half empty (mins)	0

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	350.0	0.0	1.143	350.0	0.0	1.144	0.0	0.0

Node 31-10 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	10.0	Invert Level (m)	85.071
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.90	Time to half empty (mins)	0

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	500.0	0.0	1.143	500.0	0.0	1.144	0.0	0.0

Node 4-12 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	10.0	Invert Level (m)	85.944
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.89	Time to half empty (mins)	0

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	680.0	0.0	1.143	680.0	0.0	1.144	0.0	0.0

Node 1-11 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	10.0	Invert Level (m)	85.921
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.91	Time to half empty (mins)	0

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Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	655.0	0.0	1.143	655.0	0.0	1.144	0.0	0.0

Node 49-3 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	10.0	Invert Level (m)	85.799
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.87	Time to half empty (mins)	0

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	150.0	0.0	1.143	150.0	0.0	1.144	0.0	0.0

Node 50-5 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	10.0	Invert Level (m)	85.821
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.87	Time to half empty (mins)	0

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	183.0	0.0	1.143	183.0	0.0	1.144	0.0	0.0

Node 22-7 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	10.0	Invert Level (m)	86.529
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.88	Time to half empty (mins)	0

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	360.0	0.0	1.143	360.0	0.0	1.144	0.0	0.0

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Results for 1 year +20% CC Critical Storm Duration. Lowest mass balance: 87.74%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1-0	11	87.031	0.031	1.6	0.0486	0.0000	OK
15 minute winter	1-1	11	86.987	0.051	4.8	0.0939	0.0000	OK
15 minute winter	1-2	11	86.885	0.068	8.5	0.1291	0.0000	OK
15 minute winter	1-3	12	86.799	0.082	11.3	0.1466	0.0000	OK
15 minute winter	1-4	12	86.745	0.083	12.4	0.1329	0.0000	OK
15 minute winter	1-5	12	86.639	0.106	16.6	0.2044	0.0000	OK
15 minute winter	2-0	11	87.193	0.030	1.6	0.0390	0.0000	OK
15 minute winter	1-6	14	86.630	0.184	36.7	0.5652	0.0000	OK
15 minute winter	1-7	13	86.617	0.294	54.3	0.8471	0.0000	OK
15 minute winter	1-8	13	86.591	0.358	62.6	0.9228	0.0000	OK
15 minute winter	1-9	12	86.556	0.451	82.0	1.3865	0.0000	SURCHARGED
15 minute winter	1-10	12	86.528	0.470	95.8	0.8855	0.0000	SURCHARGED
720 minute winter	1-11	510	86.242	0.321	14.1	192.4048	0.0000	OK
15 minute winter	3-0	11	86.822	0.031	1.7	0.0394	0.0000	OK
240 minute winter	1-12	168	86.230	0.329	6.9	0.7653	0.0000	OK
15 minute summer	4-0	1	87.085	0.000	0.0	0.0000	0.0000	OK
15 minute winter	4-1	11	86.989	0.048	3.7	0.0756	0.0000	OK
15 minute winter	4-2	11	86.967	0.045	3.5	0.0507	0.0000	OK
15 minute winter	4-3	11	86.805	0.063	7.1	0.0945	0.0000	OK
15 minute summer	5-0	1	87.125	0.000	0.0	0.0000	0.0000	OK
15 minute winter	5-1	11	87.018	0.056	5.6	0.1094	0.0000	OK
15 minute winter	4-4	11	86.726	0.115	21.6	0.2385	0.0000	OK
15 minute winter	4-5	13	86.702	0.231	26.6	0.3720	0.0000	OK
15 minute winter	4-6	13	86.692	0.244	25.5	0.2759	0.0000	OK
15 minute winter	4-7	13	86.672	0.283	31.8	0.5808	0.0000	SURCHARGED
15 minute winter	6-0	11	86.909	0.038	2.6	0.0581	0.0000	OK
15 minute winter	6-1	11	86.731	0.066	7.7	0.1118	0.0000	OK
15 minute winter	6-2	12	86.657	0.224	17.9	0.3137	0.0000	OK
15 minute winter	6-3	12	86.634	0.369	22.3	0.8521	0.0000	SURCHARGED
15 minute winter	4-8	12	86.610	0.484	68.5	1.4914	0.0000	SURCHARGED
15 minute winter	7-0	13	86.577	0.002	0.5	0.0028	0.0000	OK
15 minute winter	4-9	12	86.583	0.542	81.6	1.7440	0.0000	SURCHARGED
15 minute winter	8-0	11	86.629	0.339	12.9	0.3830	0.0000	SURCHARGED
15 minute winter	9-0	12	86.630	0.231	11.6	0.2614	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	1-0	1.000	1-1	1.5	0.241	0.014	0.1376	
15 minute winter	1-1	1.001	1-2	4.6	0.408	0.041	0.4355	
15 minute winter	1-2	1.002	1-3	8.2	0.522	0.074	0.5094	
15 minute winter	1-3	1.003	1-4	11.0	0.620	0.100	0.3186	
15 minute winter	1-4	1.004	1-5	12.2	0.564	0.110	0.9060	
15 minute winter	1-5	1.005	1-6	15.9	0.454	0.180	1.7232	
15 minute winter	2-0	2.000	1-6	1.5	0.484	0.038	0.0959	
15 minute winter	1-6	1.006	1-7	34.4	0.628	0.390	4.4587	
15 minute winter	1-7	1.007	1-8	50.3	0.720	0.570	4.5458	
15 minute winter	1-8	1.008	1-9	72.5	0.755	0.820	7.0377	
15 minute winter	1-9	1.009	1-10	92.9	0.874	0.969	3.5382	
15 minute winter	1-10	1.010	1-11	107.1	2.029	0.849	3.0364	
720 minute winter	1-11	Hydro-Brake®	1-12	7.6				
15 minute winter	3-0	3.000	1-12	1.6	0.490	0.040	0.1291	
240 minute winter	1-12	1.012	1-13	6.9	0.274	0.055	1.3407	
15 minute summer	4-0	4.000	4-1	0.0	0.000	0.000	0.0920	
15 minute winter	4-1	4.001	4-2	3.5	0.569	0.068	0.0235	
15 minute winter	4-2	4.002	4-3	3.5	0.446	0.068	0.2824	
15 minute winter	4-3	4.003	4-4	7.0	0.443	0.137	0.4166	
15 minute summer	5-0	5.000	5-1	0.0	0.000	0.000	0.1017	
15 minute winter	5-1	5.001	4-4	5.3	0.697	0.133	0.2883	
15 minute winter	4-4	4.004	4-5	21.7	0.786	0.423	0.9446	
15 minute winter	4-5	4.005	4-6	25.5	0.833	0.493	0.2204	
15 minute winter	4-6	4.006	4-7	25.2	0.838	0.491	0.5903	
15 minute winter	4-7	4.007	4-8	36.1	0.710	0.706	2.6670	
15 minute winter	6-0	6.000	6-1	2.5	0.366	0.064	0.2464	
15 minute winter	6-1	6.001	6-2	7.5	0.701	0.189	0.9586	
15 minute winter	6-2	6.002	6-3	15.9	0.538	0.400	1.1280	
15 minute winter	6-3	6.003	4-8	25.4	0.639	0.638	0.9360	
15 minute winter	4-8	4.008	4-9	73.8	0.701	0.665	3.0142	
15 minute winter	7-0	7.000	4-9	-0.5	-0.021	-0.012	1.1931	
15 minute winter	4-9	4.009	4-10	89.1	0.827	1.008	2.1087	
15 minute winter	8-0	8.000	8-1	-12.9	-0.407	-0.407	1.7875	
15 minute winter	9-0	9.000	8-1	11.9	-0.375	0.374	1.7821	

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Results for 1 year +20% CC Critical Storm Duration. Lowest mass balance: 87.74%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	8-1	12	86.561	0.441	34.3	1.1522	0.0000	SURCHARGED
15 minute summer	4-10	12	86.537	0.534	114.2	1.0643	0.0000	SURCHARGED
15 minute summer	10-0	1	86.761	0.000	0.0	0.0000	0.0000	OK
15 minute winter	10-1	11	86.718	0.053	5.1	0.0962	0.0000	OK
15 minute winter	11-0	12	86.574	0.049	3.1	0.0557	0.0000	OK
15 minute winter	11-1	12	86.577	0.128	8.5	0.2177	0.0000	OK
15 minute winter	10-2	12	86.571	0.277	21.1	0.6099	0.0000	SURCHARGED
15 minute winter	12-0	12	86.545	0.382	7.0	0.4323	0.0000	SURCHARGED
15 minute winter	10-3	11	86.545	0.446	36.0	1.0756	0.0000	SURCHARGED
15 minute winter	4-11	11	86.510	0.558	172.7	1.6401	0.0000	SURCHARGED
240 minute winter	4-12	168	86.234	0.290	41.8	175.9819	0.0000	OK
240 minute winter	13-0	168	86.233	0.058	0.2	0.0656	0.0000	OK
240 minute winter	4-13	168	86.233	0.329	21.3	0.7660	0.0000	OK
240 minute winter	4-14	168	86.232	0.355	21.8	0.7985	0.0000	OK
240 minute winter	14-0	168	86.232	0.079	0.9	0.1109	0.0000	OK
240 minute winter	14-1	168	86.232	0.216	5.4	0.7130	0.0000	OK
15 minute winter	15-0	11	86.292	0.023	0.9	0.0278	0.0000	OK
240 minute winter	14-2	168	86.232	0.345	11.4	1.4307	0.0000	OK
240 minute winter	4-15	168	86.232	0.379	25.6	1.0369	0.0000	OK
15 minute summer	16-0	1	86.575	0.000	0.0	0.0000	0.0000	OK
240 minute winter	17-0	168	86.231	0.031	0.1	0.0348	0.0000	OK
240 minute winter	4-16	168	86.231	0.414	27.8	1.8123	0.0000	OK
240 minute winter	1-13	168	86.230	0.453	29.4	1.1272	0.0000	OK
15 minute summer	18-0	1	86.425	0.000	0.0	0.0000	0.0000	OK
15 minute winter	19-0	10	86.768	0.043	3.3	0.0637	0.0000	OK
15 minute winter	19-1	11	86.650	0.060	5.8	0.0909	0.0000	OK
240 minute winter	18-1	168	86.230	0.162	3.8	0.3269	0.0000	OK
15 minute winter	20-0	11	86.286	0.042	3.1	0.0624	0.0000	OK
240 minute winter	18-2	168	86.230	0.291	9.6	0.9435	0.0000	OK
240 minute winter	18-3	168	86.229	0.432	11.4	1.0768	0.0000	SURCHARGED
240 minute winter	18-4	168	86.229	0.459	11.7	0.7840	0.0000	SURCHARGED
240 minute winter	1-14	168	86.229	0.477	34.3	1.1361	0.0000	OK
240 minute winter	1-15	168	86.228	0.489	34.7	1.0184	0.0000	OK
240 minute winter	1-16	168	86.227	0.515	35.4	2.0955	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	8-1	8.001	4-10	31.5	0.447	0.444	2.0073	
15 minute summer	4-10	4.010	4-11	118.2	1.082	1.174	3.4769	
15 minute summer	10-0	10.000	10-1	0.0	0.000	0.000	0.0565	
15 minute winter	10-1	10.001	10-2	4.9	0.667	0.124	0.4318	
15 minute winter	11-0	11.000	11-1	-3.1	-0.216	-0.078	0.1903	
15 minute winter	11-1	11.001	10-2	12.0	0.366	0.301	0.8254	
15 minute winter	10-2	10.002	10-3	25.7	0.790	0.646	0.7549	
15 minute winter	12-0	12.000	10-3	-7.0	-0.298	-0.220	0.6672	
15 minute winter	10-3	10.003	4-11	38.1	0.958	1.198	0.7590	
15 minute winter	4-11	4.011	4-12	179.4	2.568	1.142	0.6050	
240 minute winter	4-12	4.012	4-13	21.0	0.229	0.134	3.6775	
240 minute winter	13-0	13.000	4-13	-0.2	-0.009	-0.005	0.7058	
240 minute winter	4-13	4.013	4-14	21.6	0.199	0.138	2.7469	
240 minute winter	4-14	4.014	4-15	22.1	0.159	0.098	3.8903	
240 minute winter	14-0	14.000	14-1	0.9	0.122	0.015	1.8035	
240 minute winter	14-1	14.001	14-2	4.3	0.223	0.076	3.0677	
15 minute winter	15-0	15.000	14-2	0.9	0.363	0.022	0.4888	
240 minute winter	14-2	14.002	4-15	10.4	0.339	0.118	1.4092	
240 minute winter	4-15	4.015	4-16	26.0	0.240	0.115	6.5022	
15 minute summer	16-0	16.000	4-16	0.0	0.000	0.000	0.0000	
240 minute winter	17-0	17.000	4-16	-0.1	-0.008	-0.003	0.7162	
240 minute winter	4-16	4.016	1-13	28.3	0.266	0.133	8.9349	
240 minute winter	1-13	1.013	1-14	29.8	0.230	0.141	6.0209	
15 minute summer	18-0	18.000	18-1	0.0	0.000	0.000	0.5198	
15 minute winter	19-0	19.000	19-1	3.2	0.479	0.081	0.1559	
15 minute winter	19-1	19.001	18-1	5.7	0.703	0.144	0.1117	
240 minute winter	18-1	18.001	18-2	3.5	0.229	0.050	1.7012	
15 minute winter	20-0	20.000	18-2	3.0	0.223	0.076	1.0698	
240 minute winter	18-2	18.002	18-3	8.3	0.311	0.075	4.6240	
240 minute winter	18-3	18.003	18-4	10.8	0.273	0.122	1.4974	
240 minute winter	18-4	18.004	1-14	11.6	0.205	0.131	0.8052	
240 minute winter	1-14	1.014	1-15	34.3	0.303	0.162	3.3244	
240 minute winter	1-15	1.015	1-16	34.7	0.207	0.164	6.9543	
240 minute winter	1-16	1.016	PI 4	35.4	0.383	0.146	2.0410	

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Results for 1 year +20% CC Critical Storm Duration. Lowest mass balance: 87.74%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	PI 4	11	85.916	0.332	33.8	0.5860	0.0000	OK
15 minute summer	Outfall 4	1	85.910	0.337	31.2	0.0000	0.0000	OK
15 minute winter	21-0	11	87.277	0.019	0.7	0.0288	0.0000	OK
15 minute winter	21-1	11	87.163	0.063	7.6	0.1515	0.0000	OK
15 minute winter	21-2	12	87.068	0.077	11.0	0.1443	0.0000	OK
15 minute winter	21-3	11	86.931	0.113	23.4	0.2907	0.0000	OK
10080 minute winter	21-4	10080	86.841	0.172	0.8	0.3602	0.0000	OK
10080 minute winter	21-5	10080	86.841	0.243	1.0	0.5106	0.0000	OK
15 minute winter	22-0	10	87.138	0.043	3.3	0.0812	0.0000	OK
15 minute winter	22-1	11	87.114	0.059	6.3	0.1065	0.0000	OK
15 minute winter	23-0	11	87.211	0.050	4.6	0.1004	0.0000	OK
15 minute winter	22-2	12	87.107	0.200	46.0	0.9616	0.0000	OK
15 minute winter	24-0	12	87.124	0.024	1.0	0.0366	0.0000	OK
15 minute winter	22-3	11	87.087	0.202	53.8	0.5432	0.0000	OK
15 minute summer	22-4	11	87.056	0.303	63.6	0.7704	0.0000	OK
15 minute summer	25-0	1	87.279	0.000	0.0	0.0000	0.0000	OK
15 minute winter	25-1	11	87.173	0.070	8.1	0.1332	0.0000	OK
15 minute winter	22-5	10	87.009	0.397	98.2	0.9966	0.0000	OK
15 minute summer	26-0	1	87.125	0.000	0.0	0.0000	0.0000	OK
15 minute winter	26-1	11	87.057	0.035	2.2	0.0474	0.0000	OK
15 minute winter	22-6	10	86.984	0.410	114.9	0.7958	0.0000	SURCHARGED
10080 minute winter	22-7	10200	86.841	0.312	2.6	99.3609	0.0000	OK
10080 minute winter	21-6	10200	86.841	0.329	3.8	0.8264	0.0000	OK
10080 minute winter	21-7	10020	86.841	0.441	4.2	1.5216	0.0000	OK
10080 minute winter	21-8	10020	86.841	0.466	4.2	0.9709	0.0000	OK
10080 minute winter	21-9	10020	86.841	0.493	4.2	0.9457	0.0000	OK
10080 minute winter	21-10	10020	86.841	0.569	4.4	1.6037	0.0000	SURCHARGED
10080 minute winter	27-0	10020	86.841	0.519	0.1	0.9177	0.0000	OK
10080 minute winter	27-1	10020	86.841	0.566	0.4	2.0042	0.0000	OK
10080 minute winter	28-0	10080	86.841	0.363	0.1	0.6939	0.0000	OK
10080 minute winter	28-1	10080	86.841	0.508	0.6	1.8160	0.0000	SURCHARGED
10080 minute winter	21-11	10260	86.841	0.609	5.7	2.4535	0.0000	SURCHARGED
15 minute winter	29-0	11	87.397	0.012	0.3	0.0138	0.0000	OK
15 minute winter	29-1	11	87.206	0.045	3.6	0.0683	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	PI 4	1.017	Outfall 4	35.7	0.222	0.133	1.1569	125.5
15 minute winter	21-0	21.000	21-1	0.6	0.088	0.005	0.3664	
15 minute winter	21-1	21.001	21-2	7.1	0.507	0.064	0.4965	
15 minute winter	21-2	21.002	21-3	10.4	0.479	0.094	1.2294	
15 minute winter	21-3	21.003	21-4	22.4	0.712	0.202	1.5336	
10080 minute winter	21-4	21.004	21-5	0.8	0.263	0.006	1.6182	
10080 minute winter	21-5	21.005	21-6	1.0	0.304	0.008	2.0416	
15 minute winter	22-0	22.000	22-1	3.2	0.361	0.025	0.1292	
15 minute winter	22-1	22.001	22-2	6.0	0.183	0.048	1.9099	
15 minute winter	23-0	23.000	22-2	4.3	0.283	0.039	1.5007	
15 minute winter	22-2	22.002	22-3	41.2	0.755	0.322	0.4703	
15 minute winter	24-0	24.000	22-3	0.9	0.240	0.007	1.1001	
15 minute winter	22-3	22.003	22-4	56.9	0.813	0.452	3.7638	
15 minute summer	22-4	22.004	22-5	74.4	0.841	0.591	5.5467	
15 minute summer	25-0	25.000	25-1	0.0	0.000	0.000	0.1521	
15 minute winter	25-1	25.001	22-5	7.8	0.768	0.196	0.1511	
15 minute winter	22-5	22.005	22-6	106.9	1.081	0.907	1.8995	
15 minute summer	26-0	26.000	26-1	0.0	0.000	0.000	0.0331	
15 minute winter	26-1	26.001	22-6	2.1	0.500	0.053	0.5575	
15 minute winter	22-6	22.006	22-7	124.6	2.284	1.061	1.1505	
10080 minute winter	22-7	22.007	21-6	2.6	0.336	0.022	0.7208	
10080 minute winter	21-6	21.006	21-7	3.8	0.359	0.019	8.2786	
10080 minute winter	21-7	21.007	21-8	4.1	0.357	0.023	2.6167	
10080 minute winter	21-8	21.008	21-9	4.2	0.364	0.024	2.9473	
10080 minute winter	21-9	21.009	21-10	4.2	0.327	0.024	8.5831	
10080 minute winter	21-10	21.010	21-11	4.3	0.277	0.025	4.5606	
10080 minute winter	27-0	27.000	27-1	-0.1	-0.003	0.000	12.9297	
10080 minute winter	27-1	27.001	21-11	0.3	0.056	0.001	12.2325	
10080 minute winter	28-0	28.000	28-1	0.1	0.103	0.001	5.1429	
10080 minute winter	28-1	28.001	21-11	0.5	0.102	0.005	3.6110	
10080 minute winter	21-11	21.011	21-12	5.5	0.233	0.026	18.3778	
15 minute winter	29-0	29.000	29-1	0.2	0.077	0.005	0.1217	
15 minute winter	29-1	29.001	29-2	3.5	0.527	0.087	0.0817	

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Results for 1 year +20% CC Critical Storm Duration. Lowest mass balance: 87.74%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	29-2	11	87.144	0.056	5.6	0.0793	0.0000	OK
15 minute winter	29-3	11	86.872	0.092	12.8	0.1580	0.0000	OK
10080 minute winter	29-4	10320	86.841	0.157	0.4	0.2139	0.0000	OK
10080 minute winter	29-5	10320	86.841	0.354	0.6	0.5807	0.0000	SURCHARGED
10080 minute winter	21-12	10260	86.841	0.672	6.6	2.1330	0.0000	SURCHARGED
15 minute winter	30-0	11	87.351	0.026	1.3	0.0327	0.0000	OK
15 minute winter	30-1	11	87.109	0.047	3.9	0.0647	0.0000	OK
15 minute winter	30-2	11	86.975	0.079	10.0	0.1293	0.0000	OK
10080 minute winter	21-13	10020	86.841	0.703	7.0	1.7299	0.0000	SURCHARGED
10080 minute winter	21-14	10140	86.841	0.737	6.9	1423.5240	0.0000	SURCHARGED
10080 minute winter	PI 3	10320	86.841	0.844	0.1	1.4917	0.0000	SURCHARGED
15 minute summer	Outfall 3	1	87.530	1.592	0.0	0.0000	0.0000	OK
15 minute summer	31-0	1	86.775	0.000	0.0	0.0000	0.0000	OK
15 minute winter	31-1	10	86.680	0.055	8.0	0.0994	0.0000	OK
15 minute winter	31-2	10	86.415	0.069	11.2	0.0953	0.0000	OK
15 minute winter	31-4	11	86.250	0.076	13.7	0.1009	0.0000	OK
15 minute winter	31-5	11	86.046	0.086	16.4	0.1126	0.0000	OK
15 minute winter	31-6	11	85.782	0.137	23.2	0.2184	0.0000	OK
15 minute summer	32-0	1	86.125	0.000	0.0	0.0000	0.0000	OK
15 minute winter	32-1	11	86.021	0.041	3.0	0.0570	0.0000	OK
15 minute winter	31-7	11	85.729	0.124	26.3	0.1442	0.0000	OK
15 minute winter	34-0	10	85.844	0.044	3.5	0.0668	0.0000	OK
15 minute winter	34-1	10	85.739	0.073	8.2	0.1150	0.0000	OK
15 minute winter	34-2	11	85.694	0.083	10.5	0.1125	0.0000	OK
15 minute winter	31-8	10	85.636	0.252	53.7	0.6444	0.0000	OK
15 minute summer	33-0	1	85.675	0.000	0.0	0.0000	0.0000	OK
15 minute winter	31-9	10	85.611	0.515	69.3	0.9709	0.0000	SURCHARGED
4320 minute winter	31-10	2880	85.574	0.503	4.3	227.6436	0.0000	SURCHARGED
15 minute winter	35-0	11	85.702	0.043	3.3	0.0639	0.0000	OK
4320 minute winter	31-11	2880	85.574	0.558	4.1	1.1821	0.0000	SURCHARGED
4320 minute winter	31-12	2880	85.575	0.642	3.4	1.4337	0.0000	SURCHARGED
15 minute summer	36-0	1	86.900	0.000	0.0	0.0000	0.0000	OK
15 minute winter	36-1	10	86.785	0.063	8.6	0.1208	0.0000	OK
15 minute winter	36-2	10	86.650	0.075	11.3	0.1056	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	29-2	29.002	29-3	5.5	0.485	0.138	0.5976	
15 minute winter	29-3	29.003	29-4	12.7	0.803	0.318	0.2559	
10080 minute winter	29-4	29.004	29-5	0.4	0.281	0.010	1.1191	
10080 minute winter	29-5	29.005	21-12	0.6	0.270	0.015	1.4151	
10080 minute winter	21-12	21.012	21-13	6.5	0.211	0.031	8.8880	
15 minute winter	30-0	30.000	30-1	1.2	0.303	0.028	0.1524	
15 minute winter	30-1	30.001	30-2	3.8	0.423	0.096	0.2562	
15 minute winter	30-2	30.002	21-13	9.8	0.820	0.247	0.2389	
10080 minute winter	21-13	21.013	21-14	6.9	0.360	0.033	9.9595	
10080 minute winter	21-14	Hydro-Brake®	PI 3	0.1				
10080 minute winter	PI 3	21.015	Outfall 3	0.0	0.000	0.000	9.6080	0.0
15 minute summer	31-0	31.000	31-1	0.0	0.000	0.000	0.0930	
15 minute winter	31-1	31.001	31-2	7.8	0.878	0.134	0.1984	
15 minute winter	31-2	31.002	31-4	11.0	1.000	0.190	0.1516	
15 minute winter	31-4	31.003	31-5	13.8	1.066	0.237	0.2211	
15 minute winter	31-5	31.004	31-6	16.4	0.837	0.315	0.6168	
15 minute winter	31-6	31.005	31-7	23.0	0.972	0.573	0.1587	
15 minute summer	32-0	32.000	32-1	0.0	0.000	0.000	0.0588	
15 minute winter	32-1	32.001	31-7	2.8	0.581	0.071	0.1342	
15 minute winter	31-7	31.006	31-8	25.8	0.627	0.364	2.3872	
15 minute winter	34-0	33.000	34-1	3.4	0.414	0.086	0.1896	
15 minute winter	34-1	33.001	34-2	8.0	0.655	0.201	0.1141	
15 minute winter	34-2	33.002	31-8	10.3	0.811	0.259	0.1871	
15 minute winter	31-8	31.007	31-9	62.9	1.152	1.001	0.2872	
15 minute summer	33-0	34.000	31-9	0.0	0.000	0.000	1.0732	
15 minute winter	31-9	31.008	31-10	96.3	1.994	0.764	0.5594	
4320 minute winter	31-10	31.009	31-11	4.1	0.343	0.032	2.4026	
15 minute winter	35-0	35.000	31-11	3.2	0.602	0.079	0.1627	
4320 minute winter	31-11	31.010	31-12	3.3	0.337	0.026	3.6330	
4320 minute winter	31-12	31.011	31-13	3.4	0.208	0.027	6.9243	
15 minute summer	36-0	36.000	36-1	0.0	0.000	0.000	0.1313	
15 minute winter	36-1	36.001	36-2	8.4	0.816	0.161	0.1510	
15 minute winter	36-2	36.002	36-3	11.2	0.908	0.215	0.1352	

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Results for 1 year +20% CC Critical Storm Duration. Lowest mass balance: 87.74%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	36-3	11	86.547	0.082	13.5	0.1124	0.0000	OK
15 minute winter	36-4	11	86.402	0.083	14.7	0.1059	0.0000	OK
4320 minute winter	31-13	2880	85.576	0.801	4.1	2.4381	0.0000	SURCHARGED
4320 minute winter	31-14	2880	85.575	0.858	4.3	1.6200	0.0000	SURCHARGED
4320 minute winter	31-15	2940	85.575	0.884	4.6	1.4208	0.0000	SURCHARGED
15 minute summer	37-0	1	86.575	0.000	0.0	0.0000	0.0000	OK
15 minute winter	37-1	11	86.330	0.058	6.7	0.1056	0.0000	OK
15 minute winter	38-0	11	85.726	0.049	4.4	0.0759	0.0000	OK
15 minute summer	39-0	1	86.115	0.000	0.0	0.0000	0.0000	OK
4320 minute winter	38-1	2940	85.574	0.154	0.7	0.3732	0.0000	OK
4320 minute winter	37-2	2880	85.575	0.431	2.3	1.6010	0.0000	SURCHARGED
15 minute summer	40-0	1	85.775	0.000	0.0	0.0000	0.0000	OK
15 minute winter	40-1	11	85.660	0.041	3.4	0.0610	0.0000	OK
4320 minute winter	37-3	2880	85.575	0.631	3.5	2.5544	0.0000	SURCHARGED
4320 minute winter	37-4	2880	85.575	0.753	3.7	1.7057	0.0000	SURCHARGED
4320 minute winter	31-16	2880	85.575	0.920	7.1	2.4647	0.0000	SURCHARGED
4320 minute winter	31-17	2880	85.574	0.943	7.1	466.8336	0.0000	SURCHARGED
4320 minute winter	PI 1	2700	85.543	1.023	0.2	1.8079	0.0000	SURCHARGED
15 minute summer	Outfall 1	1	85.620	1.119	0.0	0.0000	0.0000	OK
15 minute winter	41-0	10	86.761	0.061	6.7	0.1089	0.0000	OK
15 minute winter	41-1	11	86.661	0.078	11.1	0.1213	0.0000	OK
15 minute winter	41-2	11	86.496	0.101	18.2	0.2011	0.0000	OK
15 minute winter	41-3	11	86.453	0.259	24.9	0.4681	0.0000	OK
15 minute winter	42-0	10	86.662	0.088	11.4	0.2185	0.0000	OK
15 minute winter	42-1	10	86.650	0.127	27.0	0.3534	0.0000	OK
15 minute winter	43-0	10	86.631	0.038	2.4	0.0520	0.0000	OK
15 minute winter	42-2	11	86.573	0.174	41.1	0.3876	0.0000	OK
15 minute winter	44-0	10	86.461	0.038	2.5	0.0510	0.0000	OK
15 minute winter	41-4	11	86.414	0.355	83.9	0.7994	0.0000	OK
15 minute winter	45-0	10	86.476	0.064	7.4	0.1357	0.0000	OK
15 minute summer	41-5	11	86.355	0.435	99.3	1.0098	0.0000	SURCHARGED
15 minute summer	41-6	11	86.340	0.441	103.8	0.6310	0.0000	SURCHARGED
360 minute winter	41-7	232	86.110	0.372	22.4	116.5393	0.0000	OK
360 minute winter	41-8	232	86.110	0.393	12.4	0.6799	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	36-3	36.003	36-4	13.5	1.040	0.260	0.1916	
15 minute winter	36-4	36.004	31-13	14.5	1.116	0.280	0.5574	
4320 minute winter	31-13	31.012	31-14	4.2	0.221	0.032	5.3229	
4320 minute winter	31-14	31.013	31-15	4.5	0.215	0.034	2.3700	
4320 minute winter	31-15	31.014	31-16	4.8	0.167	0.036	3.2654	
15 minute summer	37-0	37.000	37-1	0.0	0.000	0.000	0.1976	
15 minute winter	37-1	37.001	37-2	5.7	0.719	0.144	0.5866	
15 minute winter	38-0	38.000	38-1	4.3	0.373	0.107	0.5182	
15 minute summer	39-0	39.000	38-1	0.0	0.000	0.000	0.0000	
4320 minute winter	38-1	38.001	37-2	0.7	0.197	0.010	3.6091	
4320 minute winter	37-2	37.002	37-3	2.1	0.304	0.034	4.5516	
15 minute summer	40-0	40.000	40-1	0.0	0.000	0.000	0.0622	
15 minute winter	40-1	40.001	37-3	2.9	0.555	0.073	0.9169	
4320 minute winter	37-3	37.003	37-4	3.3	0.323	0.034	5.4750	
4320 minute winter	37-4	37.004	31-16	3.7	0.330	0.034	2.9447	
4320 minute winter	31-16	31.015	31-17	7.1	0.440	0.023	3.2280	
4320 minute winter	31-17	31.016	PI 1	0.2	0.226	0.001	1.6616	
4320 minute winter	PI 1	31.017	Outfall 1	0.0	0.000	0.000	5.3243	0.0
15 minute winter	41-0	41.000	41-1	6.5	0.538	0.092	0.3531	
15 minute winter	41-1	41.001	41-2	10.8	0.609	0.152	0.8145	
15 minute winter	41-2	41.002	41-3	17.8	0.717	0.251	2.1004	
15 minute winter	41-3	41.003	41-4	34.3	0.607	0.485	2.2253	
15 minute winter	42-0	42.000	42-1	11.1	0.488	0.156	0.2839	
15 minute winter	42-1	42.001	42-2	26.5	0.755	0.374	1.0633	
15 minute winter	43-0	43.000	42-2	2.4	0.517	0.060	0.0612	
15 minute winter	42-2	42.002	41-4	40.9	1.031	0.577	0.6949	
15 minute winter	44-0	44.000	41-4	2.5	0.524	0.062	0.1490	
15 minute winter	41-4	41.004	41-5	87.9	0.878	0.795	4.9140	
15 minute winter	45-0	45.000	41-5	7.2	0.655	0.180	0.6547	
15 minute summer	41-5	41.005	41-6	103.8	1.002	0.809	0.5585	
15 minute summer	41-6	41.006	41-7	114.9	2.032	1.039	2.9955	
360 minute winter	41-7	41.007	41-8	12.2	0.378	0.096	0.5752	
360 minute winter	41-8	41.008	41-9	12.4	0.373	0.111	1.5091	

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Results for 1 year +20% CC Critical Storm Duration. Lowest mass balance: 87.74%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
360 minute winter	46-0	232	86.109	0.104	0.1	0.1179	0.0000	OK
360 minute winter	41-9	232	86.109	0.435	12.7	0.8013	0.0000	SURCHARGED
15 minute summer	47-0	1	86.525	0.000	0.0	0.0000	0.0000	OK
15 minute winter	47-1	11	86.172	0.064	7.6	0.1238	0.0000	OK
360 minute winter	41-10	232	86.108	0.708	14.7	1.8707	0.0000	SURCHARGED
360 minute winter	41-11	232	86.107	0.722	14.9	1.1997	0.0000	SURCHARGED
360 minute winter	41-12	232	86.106	0.759	15.3	2.1490	0.0000	SURCHARGED
15 minute summer	48-0	1	86.300	0.000	0.0	0.0000	0.0000	OK
360 minute winter	41-13	232	86.105	0.830	17.5	3.3761	0.0000	SURCHARGED
7200 minute summer	PI 5	3240	85.911	0.746	5.9	1.3181	0.0000	SURCHARGED
15 minute summer	Outfall 5	1	85.910	0.762	0.0	0.0000	0.0000	OK
15 minute summer	50-0	1	88.900	0.000	0.0	0.0000	0.0000	OK
15 minute winter	50-1	10	88.062	0.062	9.8	0.1129	0.0000	OK
15 minute winter	50-2	11	87.280	0.080	15.0	0.1223	0.0000	OK
15 minute winter	50-3	11	86.302	0.102	19.3	0.1734	0.0000	OK
960 minute winter	50-4	690	86.195	0.193	3.5	0.4496	0.0000	OK
960 minute winter	50-5	690	86.195	0.374	4.9	60.5330	0.0000	OK
60 minute winter	PI 2	35	85.911	0.291	1.7	0.4157	0.0000	OK
15 minute summer	Outfall 2	1	85.910	0.300	0.5	0.0000	0.0000	OK
15 minute summer	49-0	1	86.194	0.000	0.0	0.0000	0.0000	OK
960 minute winter	49-1	675	86.131	0.162	1.7	0.5779	0.0000	OK
960 minute winter	49-2	675	86.131	0.225	1.7	0.3798	0.0000	OK
960 minute winter	49-3	675	86.131	0.332	2.9	44.2611	0.0000	OK
960 minute winter	49-4	675	86.131	0.401	1.6	0.8027	0.0000	OK
960 minute winter	49-5	675	86.131	0.451	1.8	0.8535	0.0000	SURCHARGED
60 minute summer	PI 6	39	85.910	0.384	1.2	0.5500	0.0000	OK
15 minute summer	Outfall 6	1	85.910	0.406	0.0	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
360 minute winter	46-0	46.000	41-9	-0.1	-0.017	-0.003	0.2317	
360 minute winter	41-9	41.009	41-10	12.8	0.378	0.115	3.4285	
15 minute summer	47-0	47.000	47-1	0.0	0.000	0.000	0.2236	
15 minute winter	47-1	47.001	41-10	6.9	0.753	0.173	0.6561	
360 minute winter	41-10	41.010	41-11	14.7	0.278	0.115	0.6386	
360 minute winter	41-11	41.011	41-12	15.0	0.274	0.122	1.7545	
360 minute winter	41-12	41.012	41-13	15.4	0.158	0.121	3.0957	
15 minute summer	48-0	48.000	41-13	0.0	0.000	0.000	0.7142	
360 minute winter	41-13	Hydro-Brake®	PI 5	17.5				
7200 minute summer	PI 5	41.014	Outfall 5	5.9	0.030	0.024	1.0395	515.7
15 minute summer	50-0	49.000	50-1	0.0	0.000	0.000	0.0000	
15 minute winter	50-1	49.001	50-2	9.4	1.076	0.162	0.3209	
15 minute winter	50-2	49.002	50-3	14.9	1.213	0.257	0.3357	
15 minute winter	50-3	49.003	50-4	19.2	0.568	0.146	2.1779	
960 minute winter	50-4	49.004	50-5	3.1	0.376	0.028	7.5005	
960 minute winter	50-5	Hydro-Brake®	PI 2	1.8				
60 minute winter	PI 2	49.006	Outfall 2	1.7	0.015	0.011	0.5011	20.7
15 minute summer	49-0	50.000	49-1	0.0	0.000	0.000	0.8220	
960 minute winter	49-1	50.001	49-2	1.5	0.293	0.013	1.1609	
960 minute winter	49-2	50.002	49-3	1.5	0.284	0.017	4.6286	
960 minute winter	49-3	50.003	49-4	1.5	0.099	0.017	3.7025	
960 minute winter	49-4	50.004	49-5	1.7	0.067	0.014	5.5100	
960 minute winter	49-5	Hydro-Brake®	PI 6	1.8				
60 minute summer	PI 6	50.006	Outfall 6	1.2	0.008	0.006	0.8543	9.8

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Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	5	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00
FSR Region	Scotland and Ireland	Connection Type	Level Inverts
M5-60 (mm)	15.600	Minimum Backdrop Height (m)	0.000
Ratio-R	0.286	Preferred Cover Depth (m)	1.200
CV	0.750	Include Intermediate Ground	✓
Time of Entry (mins)	5.00	Enforce best practice design rules	x

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
1-0	0.012	5.00	88.550	1350	681728.297	714559.265	1.550
1-1	0.025	5.00	88.200	1350	681727.082	714579.948	1.264
1-2	0.032	5.00	88.200	1350	681729.935	714618.237	1.383
1-3	0.025	5.00	88.150	1350	681724.880	714650.182	1.433
1-4	0.012	5.00	88.050	1350	681726.157	714667.886	1.388
1-5	0.042	5.00	88.201	1350	681706.946	714704.913	1.668
2-0	0.012	5.00	88.588	1200	681654.345	714711.728	1.425
1-6	0.170	5.00	88.523	1350	681668.442	714684.340	2.077
1-7	0.171	5.00	88.681	1350	681613.809	714655.342	2.358
1-8	0.133	5.00	88.553	1350	681573.837	714634.246	2.320
1-9	0.182	5.00	88.321	1350	681516.849	714604.369	2.216
1-10	0.055	5.00	88.495	1350	681489.411	714611.148	2.437
1-11			88.016	1800	681465.859	714652.863	2.095
3-0	0.013	5.00	88.471	1200	681495.121	714623.928	1.680
1-12	0.101	5.00	88.157	1350	681476.088	714659.384	2.256
4-0		5.00	88.200	1200	681714.921	714722.862	1.115
4-1	0.028	5.00	88.200	1200	681700.576	714747.663	1.259
4-2			88.200	1200	681696.983	714746.664	1.278
4-3	0.029	5.00	88.321	1200	681679.139	714777.631	1.579
5-0		5.00	88.100	1200	681687.188	714707.538	0.975
5-1	0.043	5.00	88.000	1200	681674.194	714731.842	1.038
4-4	0.076	5.00	88.227	1200	681656.262	714765.409	1.616
4-5	0.040	5.00	88.128	1200	681631.788	714752.351	1.657
4-6			88.062	1200	681629.584	714756.232	1.614
4-7	0.066	5.00	87.821	1200	681618.718	714752.021	1.432
6-0	0.020	5.00	87.900	1200	681651.744	714821.450	1.029
6-1	0.040	5.00	88.070	1200	681635.217	714852.261	1.405
6-2	0.021	5.00	88.000	1200	681600.572	714833.783	1.567
6-3	0.098	5.00	87.930	1200	681613.963	714808.759	1.665
4-8	0.132	5.00	87.727	1350	681593.233	714797.616	1.601
7-0		5.00	88.100	1200	681598.010	714732.199	1.525
4-9	0.150	5.00	87.721	1350	681569.162	714784.678	1.680
8-0		5.00	87.700	1200	681578.569	714821.954	1.410
9-0		5.00	87.700	1200	681499.419	714779.633	1.301
8-1	0.095	5.00	87.400	1200	681538.921	714800.785	1.280
4-10	0.051	5.00	87.822	1350	681552.322	714775.627	1.819
10-0		5.00	87.635	1200	681456.887	714742.982	0.874
10-1	0.039	5.00	87.816	1200	681464.184	714728.460	1.151
11-0		5.00	87.700	1200	681470.270	714761.709	1.175
11-1	0.036	5.00	87.700	1200	681481.748	714767.493	1.251
10-2	0.075	5.00	87.700	1200	681494.310	714744.490	1.406
12-0		5.00	87.588	1200	681518.601	714738.418	1.425
10-3	0.104	5.00	87.724	1200	681511.067	714753.407	1.625
4-11	0.111	5.00	87.850	1500	681527.859	714762.478	1.898
4-12			87.850	1500	681530.789	714757.146	1.906
13-0		5.00	87.600	1200	681570.228	714744.973	1.425
4-13	0.042	5.00	87.400	1500	681544.032	714731.413	1.496
4-14	0.039	5.00	87.500	1500	681526.924	714722.557	1.623
14-0	0.027	5.00	88.142	1200	681632.181	714739.287	1.989
14-1	0.143	5.00	87.334	1200	681586.068	714714.847	1.318
15-0	0.007	5.00	88.094	1200	681560.301	714658.807	1.825
14-2	0.222	5.00	87.521	1350	681542.637	714691.750	1.634
4-15	0.076	5.00	87.418	1500	681536.496	714703.253	1.565
16-0		5.00	88.000	1200	681524.006	714656.720	1.425
17-0		5.00	87.625	1200	681491.700	714717.223	1.425
4-16	0.262	5.00	87.823	1500	681507.377	714687.844	2.006
1-13	0.083	5.00	88.078	1500	681471.112	714668.653	2.301
18-0		5.00	87.800	1200	681422.878	714707.549	1.375
19-0	0.025	5.00	88.150	1200	681367.542	714630.246	1.425

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Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
19-1	0.020	5.00	87.600	1200	681380.523	714649.147	1.010
18-1	0.075	5.00	87.750	1200	681392.936	714654.934	1.682
20-0	0.024	5.00	87.550	1200	681458.635	714610.046	1.306
18-2	0.178	5.00	87.900	1350	681419.839	714638.804	1.961
18-3	0.102	5.00	87.724	1350	681442.714	714678.477	1.927
18-4	0.029	5.00	87.871	1350	681452.487	714687.900	2.101
1-14	0.065	5.00	87.871	1500	681458.950	714691.294	2.119
1-15	0.032	5.00	87.781	1500	681452.167	714703.160	2.042
1-16	0.056	5.00	87.570	2100	681431.016	714720.912	1.858
PI 4			87.100	1500	681413.439	714734.297	1.516
Outfall 4			86.490	1500	681407.762	714738.679	0.917
21-0	0.005	5.00	88.540	1350	681732.623	714543.018	1.282
21-1	0.054	5.00	88.225	1350	681683.674	714528.552	1.125
21-2	0.032	5.00	88.405	1350	681649.964	714518.491	1.414
21-3	0.107	5.00	88.691	1350	681596.221	714502.522	1.873
21-4	0.056	5.00	88.367	1350	681550.069	714488.810	1.698
21-5	0.062	5.00	88.456	1350	681538.872	714510.770	1.858
22-0	0.025	5.00	88.245	1350	681680.587	714541.754	1.150
22-1	0.024	5.00	88.298	1350	681676.628	714555.083	1.243
23-0	0.035	5.00	88.357	1350	681708.590	714630.655	1.196
22-2	0.279	5.00	88.564	1350	681652.175	714600.736	1.657
24-0	0.008	5.00	88.655	1350	681619.602	714645.364	1.555
22-3	0.105	5.00	88.563	1350	681644.994	714598.737	1.678
22-4	0.133	5.00	89.151	1350	681604.492	714576.263	2.398
25-0		5.00	88.704	1200	681578.956	714511.950	1.425
25-1	0.062	5.00	88.700	1200	681570.824	714540.652	1.597
22-5	0.125	5.00	88.931	1350	681561.371	714552.096	2.319
26-0		5.00	88.550	1200	681520.981	714587.351	1.425
26-1	0.017	5.00	88.550	1200	681529.224	714571.926	1.528
22-6	0.059	5.00	88.890	1350	681548.127	714544.673	2.316
22-7			88.500	1350	681533.514	714533.960	1.971
21-6	0.069	5.00	88.369	1500	681527.948	714530.232	1.857
21-7	0.148	5.00	88.161	1500	681498.591	714572.945	1.761
21-8	0.029	5.00	88.218	1500	681494.806	714586.463	1.843
21-9	0.013	5.00	88.083	1500	681479.812	714583.385	1.735
21-10	0.087	5.00	87.929	1500	681440.788	714563.200	1.657
27-0		5.00	88.114	1500	681350.118	714601.420	1.792
27-1	0.144	5.00	87.900	1500	681391.219	714575.945	1.625
28-0	0.039	5.00	88.108	1350	681472.874	714484.377	1.630
28-1	0.162	5.00	87.846	1350	681446.895	714523.359	1.513
21-11	0.213	5.00	88.117	1500	681424.130	714546.888	1.885
29-0	0.002	5.00	88.510	1200	681529.152	714477.102	1.125
29-1	0.026	5.00	88.500	1200	681493.847	714463.154	1.339
29-2	0.017	5.00	88.289	1200	681481.690	714464.705	1.201
29-3	0.059	5.00	88.782	1200	681435.452	714440.649	2.002
29-4	0.025	5.00	88.880	1200	681420.740	714447.405	2.196
29-5	0.060	5.00	88.851	1200	681401.736	714473.443	2.364
21-12	0.180	5.00	88.730	1500	681378.428	714500.325	2.561
30-0	0.010	5.00	88.750	1200	681336.824	714583.857	1.425
30-1	0.021	5.00	88.700	1200	681318.656	714552.623	1.638
30-2	0.049	5.00	88.800	1200	681338.498	714532.780	1.904
21-13	0.094	5.00	88.850	1500	681354.275	714520.630	2.712
21-14			88.070	1500	681331.006	714494.008	1.966
PI 3			88.070	1500	681328.921	714490.869	2.073
Outfall 3			87.300	1500	681310.005	714462.485	1.362
31-0		5.00	88.586	1200	681241.100	714577.004	1.811
31-1	0.061	5.00	88.460	1200	681266.075	714572.105	1.835
31-2	0.026	5.00	88.375	1200	681288.357	714572.144	2.029
31-4	0.021	5.00	88.412	1200	681300.880	714577.792	2.238
31-5	0.021	5.00	88.350	1200	681310.328	714592.053	2.390
31-6	0.055	5.00	88.000	1200	681328.209	714617.952	2.355
32-0		5.00	87.750	1200	681351.362	714665.315	1.625
32-1	0.023	5.00	87.750	1200	681337.837	714644.743	1.770
31-7	0.004	5.00	87.894	1200	681322.684	714621.696	2.289
34-0	0.027	5.00	87.225	1200	681241.403	714640.836	1.425
34-1	0.037	5.00	87.366	1200	681263.636	714636.398	1.700
34-2	0.019	5.00	87.322	1200	681271.591	714641.215	1.711
31-8	0.143	5.00	87.387	1200	681277.979	714651.973	2.003
33-0		5.00	87.400	1200	681304.110	714699.473	1.725
31-9	0.052	5.00	87.385	1350	681274.152	714654.584	2.289

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Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
31-10			87.260	1800	681266.162	714658.164	2.189
35-0	0.025	5.00	87.091	1200	681280.289	714692.365	1.432
31-11	0.063	5.00	86.850	1350	681255.367	714674.032	1.834
31-12	0.079	5.00	86.901	1350	681230.026	714659.891	1.968
36-0		5.00	88.558	1200	681231.376	714579.073	1.658
36-1	0.066	5.00	88.383	1200	681201.801	714584.854	1.661
36-2	0.022	5.00	88.162	1200	681188.714	714591.490	1.587
36-3	0.018	5.00	87.954	1200	681182.045	714600.247	1.489
36-4	0.010	5.00	87.676	1200	681178.035	714614.258	1.357
31-13	0.198	5.00	87.231	1350	681174.797	714656.902	2.456
31-14	0.052	5.00	87.000	1350	681172.134	714690.391	2.283
31-15	0.020	5.00	86.950	1350	681178.112	714704.102	2.259
37-0		5.00	88.000	1200	681393.391	714716.054	1.425
37-1	0.051	5.00	87.736	1200	681364.767	714673.338	1.464
38-0	0.034	5.00	87.352	1200	681384.526	714741.184	1.675
39-0		5.00	87.171	1200	681352.807	714770.696	1.056
38-1	0.111	5.00	87.147	1200	681348.326	714765.422	1.727
37-2	0.272	5.00	87.247	1200	681304.036	714714.518	2.103
40-0		5.00	87.200	1200	681328.813	714803.744	1.425
40-1	0.026	5.00	87.075	1200	681305.668	714816.641	1.456
37-3	0.272	5.00	87.021	1350	681257.516	714759.392	2.077
37-4	0.088	5.00	86.930	1350	681218.378	714728.860	2.108
31-16	0.100	5.00	86.850	1500	681195.150	714715.697	2.195
31-17			86.440	2100	681189.329	714725.568	1.809
PI 1			86.440	1500	681186.333	714730.649	1.920
Outfall 1			85.570	1500	681181.220	714748.846	1.069
41-0	0.051	5.00	88.250	1200	681603.924	714908.556	1.550
41-1	0.035	5.00	88.250	1200	681618.947	714884.229	1.667
41-2	0.060	5.00	87.800	1200	681580.497	714859.153	1.405
41-3	0.044	5.00	87.500	1200	681539.046	714832.914	1.306
42-0	0.087	5.00	87.868	1200	681554.612	714897.046	1.294
42-1	0.122	5.00	87.996	1200	681561.361	714886.575	1.473
43-0	0.018	5.00	88.018	1200	681529.669	714880.070	1.425
42-2	0.096	5.00	88.148	1200	681536.014	714870.226	1.749
44-0	0.019	5.00	88.248	1200	681512.910	714874.563	1.825
41-4	0.089	5.00	88.226	1350	681521.339	714860.680	2.167
45-0	0.057	5.00	87.573	1200	681450.416	714820.912	1.161
41-5	0.087	5.00	87.879	1350	681482.391	714838.085	1.959
41-6			87.897	1350	681480.058	714842.579	1.998
41-7			87.523	1350	681434.036	714818.133	1.785
41-8	0.027	5.00	87.523	1350	681436.400	714813.481	1.806
46-0		5.00	87.430	1200	681419.932	714815.536	1.425
41-9	0.037	5.00	87.480	1350	681424.329	714807.040	1.806
47-0		5.00	87.950	1200	681526.464	714826.290	1.425
47-1	0.058	5.00	87.550	1200	681482.339	714802.714	1.442
41-10	0.123	5.00	87.430	1350	681438.489	714779.369	2.030
41-11	0.023	5.00	87.390	1350	681441.127	714775.003	2.005
41-12	0.030	5.00	87.450	1800	681437.310	714761.518	2.103
48-0		5.00	87.450	1200	681389.971	714797.634	1.150
41-13	0.158	5.00	87.350	1800	681415.501	714749.863	2.075
PI 5			87.350	1500	681410.913	714747.274	2.185
Outfall 5			86.400	1500	681406.210	714744.800	1.252
50-0		5.00	91.041	1200	681272.880	714510.934	2.141
50-1	0.075	5.00	90.205	1200	681305.334	714543.097	2.205
50-2	0.043	5.00	89.346	1200	681326.122	714573.010	2.146
50-3	0.036	5.00	88.831	1350	681341.206	714595.670	2.631
50-4	0.109	5.00	88.427	1350	681376.057	714649.341	2.425
50-5	0.141	5.00	88.100	1350	681423.923	714716.689	2.279
PI 2			87.100	1350	681408.828	714728.225	1.480
Outfall 2			86.501	1350	681405.225	714730.997	0.891
49-0		5.00	87.806	1350	681617.771	714850.092	1.612
49-1	0.130	5.00	87.191	1350	681553.609	714815.717	1.222
49-2	0.017	5.00	87.245	1350	681537.854	714803.050	1.339
49-3	0.108	5.00	87.547	1350	681490.130	714778.489	1.748
49-4	0.057	5.00	87.734	1350	681460.413	714760.641	2.004
49-5	0.051	5.00	87.899	1350	681437.601	714733.019	2.219
PI 6			87.889	1350	681413.647	714739.599	2.363
Outfall 6			86.490	1350	681408.322	714741.891	0.986

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Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.017	PI 4	Outfall 4	7.171	0.600	85.584	85.573	0.011	652.0	600	15.93	35.2
1.016	1-16	PI 4	22.093	0.600	85.712	85.684	0.028	789.0	600	15.80	35.3
1.015	1-15	1-16	27.613	0.600	85.739	85.712	0.027	1030.0	600	15.37	35.8
1.014	1-14	1-15	13.668	0.600	85.752	85.739	0.013	1030.0	600	14.76	36.6
1.013	1-13	1-14	25.701	0.600	85.777	85.752	0.025	1030.0	600	14.46	37.0
18.004	18-4	1-14	7.300	0.600	85.770	85.756	0.014	504.0	375	7.72	50.0
18.003	18-3	18-4	13.576	0.600	85.797	85.770	0.027	504.0	375	7.57	50.0
18.002	18-2	18-3	45.795	0.600	85.939	85.797	0.142	322.5	375	7.29	50.0
18.001	18-1	18-2	31.368	0.600	86.068	85.939	0.129	243.2	300	6.53	50.0
20.000	20-0	18-2	48.292	0.600	86.244	85.959	0.285	169.4	225	5.80	50.0
18.000	18-0	18-1	60.538	0.600	86.425	86.068	0.357	169.6	225	6.01	50.0
19.001	19-1	18-1	13.696	0.600	86.590	86.509	0.081	169.1	225	5.61	50.0
19.000	19-0	19-1	22.929	0.600	86.725	86.590	0.135	169.8	225	5.38	50.0
1.012	1-12	1-13	10.520	0.600	85.901	85.884	0.017	634.0	450	13.89	37.8
4.016	4-16	1-13	41.030	0.600	85.817	85.777	0.040	1030.0	600	12.77	39.4
16.000	16-0	4-16	35.288	0.600	86.575	86.367	0.208	169.7	225	5.59	50.0
17.000	17-0	4-16	33.300	0.600	86.200	86.003	0.197	169.0	225	5.55	50.0
4.015	4-15	4-16	32.945	0.600	85.853	85.817	0.036	908.0	600	11.86	40.9
14.002	14-2	4-15	13.040	0.600	85.887	85.861	0.026	504.0	375	7.38	50.0
4.014	4-14	4-15	21.547	0.600	85.877	85.853	0.024	908.0	600	11.17	42.1
4.013	4-13	4-14	19.264	0.600	85.904	85.877	0.027	723.0	500	10.72	43.0
13.000	13-0	4-13	29.498	0.600	86.175	86.001	0.174	169.5	225	5.49	50.0
4.012	4-12	4-13	28.941	0.600	85.944	85.904	0.040	723.0	500	10.32	43.8
4.011	4-11	4-12	6.084	0.600	85.952	85.944	0.008	723.0	500	9.72	45.0
4.010	4-10	4-11	27.773	0.600	86.003	85.952	0.051	545.0	400	9.59	45.3
10.003	10-3	4-11	19.085	0.600	86.099	86.027	0.072	264.0	225	6.55	50.0
10.002	10-2	10-3	18.982	0.600	86.294	86.182	0.112	169.5	225	6.15	50.0
12.000	12-0	10-3	16.776	0.600	86.163	86.099	0.064	264.0	225	5.35	50.0
11.001	11-1	10-2	26.210	0.600	86.449	86.294	0.155	169.1	225	5.65	50.0
10.001	10-1	10-2	34.125	0.600	86.665	86.464	0.201	169.8	225	5.84	50.0
10.000	10-0	10-1	16.252	0.600	86.761	86.665	0.096	169.3	225	5.27	50.0
11.000	11-0	11-1	12.853	0.600	86.525	86.449	0.076	169.1	225	5.21	50.0
4.009	4-9	4-10	19.118	0.600	86.041	86.003	0.038	504.0	375	9.01	46.6

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)
1.017	0.946	267.5	356.9	0.916	0.317	3.746	0.0	600
1.016	0.859	242.8	358.4	1.258	0.816	3.746	0.0	600
1.015	0.750	212.1	358.2	1.442	1.258	3.690	0.0	600
1.014	0.750	212.1	362.8	1.519	1.442	3.658	0.0	600
1.013	0.750	212.1	314.8	1.701	1.519	3.140	0.0	600
18.004	0.800	88.4	61.3	1.726	1.740	0.453	0.0	230
18.003	0.800	88.4	57.5	1.552	1.726	0.424	0.0	221
18.002	1.003	110.8	43.6	1.586	1.552	0.322	0.0	163
18.001	1.004	70.9	16.3	1.382	1.661	0.120	0.0	98
20.000	1.001	39.8	3.3	1.081	1.716	0.024	0.0	44
18.000	1.001	39.8	0.0	1.150	1.457	0.000	0.0	0
19.001	1.002	39.9	6.1	0.785	1.016	0.045	0.0	59
19.000	1.000	39.8	3.4	1.200	0.785	0.025	0.0	44
1.012	0.800	127.2	100.8	1.806	1.744	0.985	0.0	304
4.016	0.750	212.1	221.3	1.406	1.701	2.072	0.0	525
16.000	1.001	39.8	0.0	1.200	1.231	0.000	0.0	0
17.000	1.003	39.9	0.0	1.200	1.595	0.000	0.0	0
4.015	0.800	226.1	200.7	0.965	1.406	1.810	0.0	442
14.002	0.800	88.4	54.1	1.259	1.182	0.399	0.0	212
4.014	0.800	226.1	152.4	1.023	0.965	1.335	0.0	362
4.013	0.800	157.1	150.9	0.996	1.123	1.296	0.0	396
13.000	1.001	39.8	0.0	1.200	1.174	0.000	0.0	0
4.012	0.800	157.1	148.7	1.406	0.996	1.254	0.0	390
4.011	0.800	157.1	153.0	1.398	1.406	1.254	0.0	402
4.010	0.801	100.7	109.2	1.419	1.498	0.889	0.0	400
10.003	0.800	31.8	34.4	1.400	1.598	0.254	0.0	225
10.002	1.001	39.8	20.3	1.181	1.317	0.150	0.0	114
12.000	0.800	31.8	0.0	1.200	1.400	0.000	0.0	0
11.001	1.002	39.9	4.9	1.026	1.181	0.036	0.0	53
10.001	1.000	39.8	5.3	0.926	1.011	0.039	0.0	55
10.000	1.002	39.8	0.0	0.649	0.926	0.000	0.0	0
11.000	1.002	39.9	0.0	0.950	1.026	0.000	0.0	0
4.009	0.800	88.4	93.9	1.305	1.444	0.743	0.0	339

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Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
8.001	8-1	4-10	28.505	0.600	86.120	86.003	0.117	243.6	300	6.41	50.0
8.000	8-0	8-1	44.945	0.600	86.290	86.120	0.170	264.0	225	5.94	50.0
9.000	9-0	8-1	44.809	0.600	86.399	86.229	0.170	264.0	225	5.93	50.0
4.008	4-8	4-9	27.328	0.600	86.126	86.041	0.085	321.5	375	8.61	47.6
7.000	7-0	4-9	59.885	0.600	86.575	86.222	0.353	169.6	225	6.00	50.0
6.003	6-3	4-8	23.535	0.600	86.265	86.126	0.139	169.3	225	7.10	50.0
4.007	4-7	4-8	52.234	0.600	86.389	86.126	0.263	198.6	255	8.16	48.8
4.006	4-6	4-7	11.653	0.600	86.448	86.389	0.059	197.5	255	7.29	50.0
4.005	4-5	4-6	4.463	0.600	86.471	86.448	0.023	194.1	255	7.10	50.0
4.004	4-4	4-5	27.740	0.600	86.611	86.471	0.140	198.1	255	7.03	50.0
5.001	5-1	4-4	38.057	0.600	86.962	86.737	0.225	169.1	225	6.09	50.0
4.003	4-3	4-4	25.937	0.600	86.742	86.611	0.131	198.0	255	6.56	50.0
4.002	4-2	4-3	35.740	0.600	86.922	86.742	0.180	198.6	255	6.13	50.0
4.001	4-1	4-2	3.729	0.600	86.941	86.922	0.019	196.3	255	5.54	50.0
4.000	4-0	4-1	28.651	0.600	87.085	86.941	0.144	199.0	255	5.48	50.0
5.000	5-0	5-1	27.560	0.600	87.125	86.962	0.163	169.1	225	5.46	50.0
6.002	6-2	6-3	28.382	0.600	86.433	86.265	0.168	168.9	225	6.71	50.0
6.001	6-1	6-2	39.265	0.600	86.665	86.433	0.232	169.2	225	6.24	50.0
6.000	6-0	6-1	34.964	0.600	86.871	86.665	0.206	169.7	225	5.58	50.0
14.001	14-1	14-2	49.191	0.600	86.016	85.887	0.129	380.0	300	7.11	50.0
15.000	15-0	14-2	37.380	0.600	86.269	86.048	0.221	169.1	225	5.62	50.0
14.000	14-0	14-1	52.189	0.600	86.153	86.016	0.137	380.0	300	6.09	50.0
1.011	1-11	1-12	12.131	0.600	85.921	85.901	0.020	600.0	400	13.67	38.1
3.000	3-0	1-12	40.242	0.600	86.791	86.554	0.237	169.8	225	5.67	50.0
1.010	1-10	1-11	47.904	0.600	86.058	85.921	0.137	349.7	400	13.40	38.5
1.009	1-9	1-10	28.263	0.600	86.105	86.058	0.047	600.0	400	12.61	39.7
1.008	1-8	1-9	64.345	0.600	86.233	86.105	0.128	504.0	375	11.99	40.7
1.007	1-7	1-8	45.197	0.600	86.323	86.233	0.090	504.0	375	10.65	43.1
1.006	1-6	1-7	61.852	0.600	86.446	86.323	0.123	504.0	375	9.71	45.0
1.005	1-5	1-6	43.656	0.600	86.533	86.446	0.087	504.0	375	8.42	48.1
2.000	2-0	1-6	30.803	0.600	87.163	86.981	0.182	169.2	225	5.51	50.0
1.004	1-4	1-5	41.714	0.600	86.662	86.533	0.129	323.4	375	7.51	50.0
1.003	1-3	1-4	17.750	0.600	86.717	86.662	0.055	322.7	375	6.82	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)
8.001	1.003	70.9	12.9	0.980	1.519	0.095	0.0	86
8.000	0.800	31.8	0.0	1.185	1.055	0.000	0.0	0
9.000	0.800	31.8	0.0	1.076	0.946	0.000	0.0	0
4.008	1.005	111.0	76.5	1.226	1.305	0.593	0.0	230
7.000	1.001	39.8	0.0	1.300	1.274	0.000	0.0	0
6.003	1.002	39.8	24.3	1.440	1.376	0.179	0.0	127
4.007	1.002	51.2	37.3	1.177	1.346	0.282	0.0	162
4.006	1.004	51.3	29.3	1.359	1.177	0.216	0.0	138
4.005	1.013	51.8	29.3	1.402	1.359	0.216	0.0	137
4.004	1.003	51.2	23.9	1.361	1.402	0.176	0.0	122
5.001	1.002	39.8	5.8	0.813	1.265	0.043	0.0	58
4.003	1.003	51.2	7.7	1.324	1.361	0.057	0.0	66
4.002	1.002	51.2	3.8	1.023	1.324	0.028	0.0	46
4.001	1.008	51.5	3.8	1.004	1.023	0.028	0.0	46
4.000	1.001	51.1	0.0	0.860	1.004	0.000	0.0	0
5.000	1.002	39.9	0.0	0.750	0.813	0.000	0.0	0
6.002	1.003	39.9	11.0	1.342	1.440	0.081	0.0	80
6.001	1.002	39.8	8.1	1.180	1.342	0.060	0.0	69
6.000	1.000	39.8	2.7	0.804	1.180	0.020	0.0	40
14.001	0.800	56.6	23.0	1.018	1.334	0.170	0.0	133
15.000	1.002	39.8	0.9	1.600	1.248	0.007	0.0	24
14.000	0.800	56.6	3.7	1.689	1.018	0.027	0.0	51
1.011	0.763	95.9	89.9	1.695	1.856	0.871	0.0	309
3.000	1.000	39.8	1.8	1.455	1.378	0.013	0.0	32
1.010	1.003	126.1	90.8	2.037	1.695	0.871	0.0	252
1.009	0.763	95.9	87.7	1.816	2.037	0.816	0.0	303
1.008	0.800	88.4	69.9	1.945	1.841	0.634	0.0	252
1.007	0.800	88.4	58.5	1.983	1.945	0.501	0.0	223
1.006	0.800	88.4	40.3	1.702	1.983	0.330	0.0	178
1.005	0.800	88.4	19.3	1.293	1.702	0.148	0.0	118
2.000	1.002	39.8	1.6	1.200	1.317	0.012	0.0	31
1.004	1.002	110.7	14.4	1.013	1.293	0.106	0.0	90
1.003	1.003	110.8	12.7	1.058	1.013	0.094	0.0	85

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Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.002	1-2	1-3	32.342	0.600	86.817	86.717	0.100	323.4	375	6.52	50.0
1.001	1-1	1-2	38.395	0.600	86.936	86.817	0.119	322.6	375	5.98	50.0
1.000	1-0	1-1	20.719	0.600	87.000	86.936	0.064	323.7	375	5.34	50.0
21.015	PI 3	Outfall 3	34.110	0.600	85.997	85.938	0.059	578.1	600	15.16	36.1
21.014	21-14	PI 3	3.768	0.600	86.104	86.097	0.007	538.3	600	14.60	36.8
21.013	21-13	21-14	35.358	0.600	86.138	86.104	0.034	1030.0	600	14.53	36.9
21.012	21-12	21-13	31.554	0.600	86.169	86.138	0.031	1030.0	600	13.75	38.0
30.002	30-2	21-13	19.913	0.600	86.896	86.778	0.118	168.8	225	6.34	50.0
30.001	30-1	30-2	28.062	0.600	87.062	86.896	0.166	169.0	225	6.01	50.0
30.000	30-0	30-1	36.134	0.600	87.325	87.062	0.263	137.4	225	5.54	50.0
21.011	21-11	21-12	65.244	0.600	86.232	86.169	0.063	1030.0	600	13.05	39.0
29.005	29-5	21-12	35.580	0.600	86.487	86.277	0.210	169.4	225	8.09	48.9
29.004	29-4	29-5	32.236	0.600	86.684	86.487	0.197	163.6	225	7.50	50.0
29.003	29-3	29-4	16.189	0.600	86.780	86.684	0.096	168.6	225	6.97	50.0
29.002	29-2	29-3	52.121	0.600	87.088	86.780	0.308	169.2	225	6.70	50.0
29.001	29-1	29-2	12.256	0.600	87.161	87.088	0.073	167.9	225	5.83	50.0
29.000	29-0	29-1	37.960	0.600	87.385	87.161	0.224	169.5	225	5.63	50.0
21.010	21-10	21-11	23.315	0.600	86.272	86.232	0.040	582.9	500	11.60	41.3
27.001	27-1	21-11	43.903	0.600	86.275	86.232	0.043	1030.0	600	7.05	50.0
28.001	28-1	21-11	32.739	0.600	86.333	86.232	0.101	324.2	375	6.32	50.0
28.000	28-0	28-1	46.846	0.600	86.478	86.333	0.145	323.1	375	5.78	50.0
27.000	27-0	27-1	48.356	0.600	86.322	86.275	0.047	1030.0	600	6.07	50.0
21.009	21-9	21-10	43.935	0.600	86.348	86.272	0.076	578.1	500	11.16	42.1
21.008	21-8	21-9	15.307	0.600	86.375	86.348	0.027	566.9	500	10.35	43.7
21.007	21-7	21-8	14.038	0.600	86.400	86.375	0.025	561.5	500	10.06	44.3
21.006	21-6	21-7	51.829	0.600	86.512	86.400	0.112	462.8	500	9.81	44.8
21.005	21-5	21-6	22.318	0.600	86.598	86.534	0.064	348.7	400	8.95	46.8
22.007	22-7	21-6	6.699	0.600	86.529	86.512	0.017	394.1	400	8.52	47.8
22.006	22-6	22-7	18.119	0.600	86.574	86.529	0.045	402.7	400	8.40	48.1
22.005	22-5	22-6	15.182	0.600	86.612	86.574	0.038	399.5	400	8.08	49.0
26.001	26-1	22-6	33.167	0.600	87.022	86.826	0.196	169.2	225	5.84	50.0
26.000	26-0	26-1	17.489	0.600	87.125	87.022	0.103	169.8	225	5.29	50.0
22.004	22-4	22-5	49.431	0.600	86.753	86.612	0.141	350.6	400	7.81	49.7

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)
1.002	1.002	110.6	9.4	1.008	1.058	0.069	0.0	73
1.001	1.003	110.8	5.0	0.889	1.008	0.037	0.0	54
1.000	1.001	110.6	1.6	1.175	0.889	0.012	0.0	32
21.015	1.005	284.3	257.7	1.473	0.762	2.635	0.0	451
21.014	1.042	294.7	262.9	1.366	1.373	2.635	0.0	444
21.013	0.750	212.1	263.4	2.112	1.366	2.635	0.0	600
21.012	0.750	212.1	253.2	1.961	2.112	2.461	0.0	600
30.002	1.003	39.9	10.8	1.679	1.847	0.080	0.0	80
30.001	1.003	39.9	4.2	1.413	1.679	0.031	0.0	49
30.000	1.113	44.3	1.4	1.200	1.413	0.010	0.0	27
21.011	0.750	212.1	221.0	1.285	1.961	2.092	0.0	524
29.005	1.001	39.8	25.1	2.139	2.228	0.189	0.0	130
29.004	1.019	40.5	17.5	1.971	2.139	0.129	0.0	103
29.003	1.004	39.9	14.1	1.777	1.971	0.104	0.0	92
29.002	1.002	39.8	6.1	0.976	1.777	0.045	0.0	59
29.001	1.006	40.0	3.8	1.114	0.976	0.028	0.0	47
29.000	1.001	39.8	0.3	0.900	1.114	0.002	0.0	14
21.010	0.892	175.2	171.9	1.157	1.385	1.534	0.0	405
27.001	0.750	212.1	19.5	1.025	1.285	0.144	0.0	122
28.001	1.001	110.5	27.2	1.138	1.510	0.201	0.0	126
28.000	1.002	110.7	5.3	1.255	1.138	0.039	0.0	55
27.000	0.750	212.1	0.0	1.192	1.025	0.000	0.0	0
21.009	0.896	175.9	165.2	1.235	1.157	1.447	0.0	387
21.008	0.905	177.7	169.9	1.343	1.235	1.434	0.0	394
21.007	0.909	178.6	168.6	1.261	1.343	1.405	0.0	389
21.006	1.003	196.9	152.7	1.357	1.261	1.257	0.0	333
21.005	1.005	126.3	40.1	1.458	1.435	0.316	0.0	154
22.007	0.944	118.7	113.1	1.571	1.457	0.872	0.0	314
22.006	0.934	117.4	113.8	1.916	1.571	0.872	0.0	319
22.005	0.938	117.9	105.7	1.919	1.916	0.796	0.0	297
26.001	1.002	39.8	2.3	1.303	1.839	0.017	0.0	36
26.000	1.000	39.8	0.0	1.200	1.303	0.000	0.0	0
22.004	1.002	125.9	82.1	1.998	1.919	0.609	0.0	236

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Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
25.001	25-1	22-5	14.843	0.600	87.103	87.015	0.088	168.7	225	5.74	50.0
25.000	25-0	25-1	29.832	0.600	87.279	87.103	0.176	169.5	225	5.50	50.0
22.003	22-3	22-4	46.319	0.600	86.885	86.753	0.132	350.9	400	6.98	50.0
22.002	22-2	22-3	7.454	0.600	86.907	86.885	0.022	338.8	400	6.21	50.0
24.000	24-0	22-3	53.093	0.600	87.100	86.949	0.151	351.6	400	5.88	50.0
22.001	22-1	22-2	51.789	0.600	87.055	86.907	0.148	349.9	400	6.09	50.0
23.000	23-0	22-2	63.858	0.600	87.161	86.964	0.197	324.2	375	6.06	50.0
22.000	22-0	22-1	13.905	0.600	87.095	87.055	0.040	347.6	400	5.23	50.0
21.004	21-4	21-5	24.650	0.600	86.669	86.598	0.071	347.2	400	8.58	47.7
21.003	21-3	21-4	48.146	0.600	86.818	86.669	0.149	323.1	375	8.17	48.7
21.002	21-2	21-3	56.065	0.600	86.991	86.818	0.173	324.1	375	7.37	50.0
21.001	21-1	21-2	35.179	0.600	87.100	86.991	0.109	322.7	375	6.43	50.0
21.000	21-0	21-1	51.042	0.600	87.258	87.100	0.158	323.0	375	5.85	50.0
31.017	PI 1	Outfall 1	18.902	0.600	84.520	84.501	0.019	1020.0	600	11.45	41.6
31.016	31-17	PI 1	5.899	0.600	84.631	84.620	0.011	536.2	600	11.03	42.4
31.015	31-16	31-17	11.460	0.600	84.655	84.631	0.024	477.5	600	10.94	42.6
31.014	31-15	31-16	20.609	0.600	84.691	84.655	0.036	572.5	450	10.76	42.9
37.004	37-4	31-16	26.698	0.600	84.822	84.744	0.078	342.3	375	9.70	45.0
37.003	37-3	37-4	49.639	0.600	84.944	84.822	0.122	406.9	375	9.25	46.1
37.002	37-2	37-3	64.636	0.600	85.144	84.944	0.200	323.2	300	8.32	48.3
40.001	40-1	37-3	74.807	0.600	85.619	85.178	0.441	169.6	225	6.69	50.0
40.000	40-0	40-1	26.496	0.600	85.775	85.619	0.156	169.8	225	5.44	50.0
38.001	38-1	37-2	67.475	0.600	85.420	85.144	0.276	244.5	300	6.85	50.0
37.001	37-1	37-2	73.376	0.600	86.272	85.840	0.432	169.9	225	7.08	50.0
37.000	37-0	37-1	51.420	0.600	86.575	86.272	0.303	169.7	225	5.86	50.0
38.000	38-0	38-1	43.565	0.600	85.677	85.420	0.257	169.5	225	5.73	50.0
39.000	39-0	38-1	6.921	0.600	86.115	86.074	0.041	168.8	225	5.11	50.0
31.013	31-14	31-15	14.958	0.600	84.717	84.691	0.026	575.3	450	10.36	43.7
31.012	31-13	31-14	33.595	0.600	84.775	84.717	0.058	579.2	450	10.06	44.3
31.011	31-12	31-13	55.310	0.600	84.933	84.775	0.158	350.1	400	9.39	45.7
36.004	36-4	31-13	42.767	0.600	86.319	85.891	0.428	100.0	225	6.56	50.0
36.003	36-3	36-4	14.574	0.600	86.465	86.319	0.146	100.0	225	6.01	50.0
36.002	36-2	36-3	11.007	0.600	86.575	86.465	0.110	100.0	225	5.83	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)
25.001	1.004	39.9	8.4	1.372	1.691	0.062	0.0	70
25.000	1.001	39.8	0.0	1.200	1.372	0.000	0.0	0
22.003	1.002	125.9	64.5	1.278	1.998	0.476	0.0	203
22.002	1.019	128.1	49.2	1.257	1.278	0.363	0.0	171
24.000	1.001	125.7	1.1	1.155	1.214	0.008	0.0	26
22.001	1.003	126.0	6.6	0.843	1.257	0.049	0.0	62
23.000	1.001	110.5	4.7	0.821	1.225	0.035	0.0	52
22.000	1.006	126.5	3.4	0.750	0.843	0.025	0.0	45
21.004	1.007	126.5	32.8	1.298	1.458	0.254	0.0	139
21.003	1.002	110.7	26.2	1.498	1.323	0.198	0.0	123
21.002	1.001	110.5	12.3	1.039	1.498	0.091	0.0	84
21.001	1.003	110.8	8.0	0.750	1.039	0.059	0.0	68
21.000	1.002	110.7	0.7	0.907	0.750	0.005	0.0	21
31.017	0.754	213.2	225.1	1.320	0.469	1.996	0.0	537
31.016	1.044	295.3	229.3	1.209	1.220	1.996	0.0	399
31.015	1.107	313.1	230.2	1.595	1.209	1.996	0.0	383
31.014	0.842	134.0	121.1	1.809	1.745	1.042	0.0	337
37.004	0.973	107.5	104.3	1.733	1.731	0.854	0.0	299
37.003	0.892	98.5	95.7	1.702	1.733	0.766	0.0	300
37.002	0.869	61.4	61.3	1.803	1.777	0.468	0.0	247
40.001	1.001	39.8	3.5	1.231	1.618	0.026	0.0	45
40.000	1.000	39.8	0.0	1.200	1.231	0.000	0.0	0
38.001	1.001	70.7	19.7	1.427	1.803	0.145	0.0	108
37.001	1.000	39.8	6.9	1.239	1.182	0.051	0.0	63
37.000	1.001	39.8	0.0	1.200	1.239	0.000	0.0	0
38.000	1.001	39.8	4.6	1.450	1.502	0.034	0.0	51
39.000	1.003	39.9	0.0	0.831	0.848	0.000	0.0	0
31.013	0.840	133.6	121.0	1.833	1.809	1.022	0.0	337
31.012	0.837	133.2	116.4	2.006	1.833	0.970	0.0	327
31.011	1.003	126.0	81.3	1.568	2.056	0.656	0.0	234
36.004	1.307	52.0	15.7	1.132	1.115	0.116	0.0	85
36.003	1.307	52.0	14.4	1.264	1.132	0.106	0.0	80
36.002	1.307	52.0	11.9	1.362	1.264	0.088	0.0	73

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Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
36.001	36-1	36-2	14.673	0.600	86.722	86.575	0.147	100.0	225	5.69	50.0
36.000	36-0	36-1	30.135	0.600	86.900	86.722	0.178	169.3	225	5.50	50.0
31.010	31-11	31-12	29.020	0.600	85.016	84.933	0.083	349.6	400	8.47	47.9
31.009	31-10	31-11	19.192	0.600	85.071	85.016	0.055	348.9	400	7.99	49.2
35.000	35-0	31-11	30.939	0.600	85.659	85.476	0.183	169.1	225	5.51	50.0
31.008	31-9	31-10	8.755	0.600	85.096	85.071	0.025	350.2	400	7.67	50.0
31.007	31-8	31-9	4.633	0.600	85.384	85.369	0.015	308.9	300	7.53	50.0
34.000	33-0	31-9	53.968	0.600	85.675	85.357	0.318	169.7	225	5.90	50.0
31.006	31-7	31-8	53.993	0.600	85.605	85.384	0.221	244.3	300	7.44	50.0
33.002	34-2	31-8	12.512	0.600	85.611	85.537	0.074	169.1	225	5.74	50.0
33.001	34-1	34-2	9.300	0.600	85.666	85.611	0.055	169.1	225	5.53	50.0
33.000	34-0	34-1	22.672	0.600	85.800	85.666	0.134	169.2	225	5.38	50.0
31.005	31-6	31-7	6.674	0.600	85.645	85.605	0.040	166.9	225	6.54	50.0
32.001	32-1	31-7	27.582	0.600	85.980	85.817	0.163	169.2	225	5.87	50.0
32.000	32-0	32-1	24.620	0.600	86.125	85.980	0.145	169.8	225	5.41	50.0
31.004	31-5	31-6	31.472	0.600	85.960	85.645	0.315	100.0	225	6.43	50.0
31.003	31-4	31-5	17.107	0.600	86.174	85.960	0.214	80.0	225	6.03	50.0
31.002	31-2	31-4	13.738	0.600	86.346	86.174	0.172	80.0	225	5.83	50.0
31.001	31-1	31-2	22.282	0.600	86.625	86.346	0.279	80.0	225	5.68	50.0
31.000	31-0	31-1	25.451	0.600	86.775	86.625	0.150	169.7	225	5.42	50.0
41.014	PI 5	Outfall 5	5.314	0.600	85.165	85.148	0.017	312.6	500	11.01	42.4
41.013	41-13	PI 5	5.268	0.600	85.275	85.265	0.010	526.8	500	10.94	42.6
41.012	41-12	41-13	24.728	0.600	85.347	85.275	0.072	343.4	400	10.84	42.7
48.000	48-0	41-13	54.165	0.600	86.300	85.758	0.542	100.0	225	5.69	50.0
41.011	41-11	41-12	14.015	0.600	85.385	85.347	0.038	368.8	400	10.44	43.5
41.010	41-10	41-11	5.101	0.600	85.400	85.385	0.015	340.1	400	10.20	44.0
41.009	41-9	41-10	31.084	0.600	85.674	85.578	0.096	323.8	375	10.11	44.2
47.001	47-1	41-10	49.677	0.600	86.108	85.815	0.293	169.5	225	6.53	50.0
47.000	47-0	47-1	50.028	0.600	86.525	86.108	0.417	120.0	225	5.70	50.0
41.008	41-8	41-9	13.682	0.600	85.717	85.674	0.043	318.2	375	9.60	45.3
46.000	46-0	41-9	9.566	0.600	86.005	85.948	0.057	167.8	225	5.16	50.0
41.007	41-7	41-8	5.218	0.600	85.738	85.717	0.021	248.5	375	9.37	45.8
41.006	41-6	41-7	52.111	0.600	85.899	85.738	0.161	323.7	375	9.29	46.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)
36.001	1.307	52.0	8.9	1.436	1.362	0.066	0.0	63
36.000	1.002	39.8	0.0	1.433	1.436	0.000	0.0	0
31.010	1.003	126.1	75.0	1.434	1.568	0.577	0.0	222
31.009	1.004	126.2	65.2	1.789	1.434	0.489	0.0	204
35.000	1.002	39.9	3.4	1.207	1.149	0.025	0.0	44
31.008	1.003	126.0	66.3	1.889	1.789	0.489	0.0	206
31.007	0.889	62.8	59.2	1.703	1.716	0.437	0.0	233
34.000	1.001	39.8	0.0	1.500	1.803	0.000	0.0	0
31.006	1.001	70.8	28.6	1.989	1.703	0.211	0.0	133
33.002	1.002	39.9	11.2	1.486	1.625	0.083	0.0	81
33.001	1.002	39.9	8.7	1.475	1.486	0.064	0.0	71
33.000	1.002	39.8	3.7	1.200	1.475	0.027	0.0	46
31.005	1.009	40.1	24.9	2.130	2.064	0.184	0.0	129
32.001	1.002	39.8	3.1	1.545	1.852	0.023	0.0	43
32.000	1.000	39.8	0.0	1.400	1.545	0.000	0.0	0
31.004	1.307	52.0	17.5	2.165	2.130	0.129	0.0	90
31.003	1.463	58.2	14.6	2.013	2.165	0.108	0.0	77
31.002	1.463	58.2	11.8	1.804	2.013	0.087	0.0	68
31.001	1.463	58.2	8.3	1.610	1.804	0.061	0.0	57
31.000	1.001	39.8	0.0	1.586	1.610	0.000	0.0	0
41.014	1.223	240.1	140.4	1.685	0.752	1.221	0.0	275
41.013	0.939	184.4	140.8	1.575	1.585	1.221	0.0	329
41.012	1.013	127.2	123.1	1.703	1.675	1.063	0.0	319
48.000	1.307	52.0	0.0	0.925	1.367	0.000	0.0	0
41.011	0.977	122.7	121.9	1.605	1.703	1.033	0.0	328
41.010	1.018	127.9	120.5	1.630	1.605	1.010	0.0	311
41.009	1.001	110.6	99.3	1.431	1.477	0.829	0.0	279
47.001	1.001	39.8	7.9	1.217	1.390	0.058	0.0	67
47.000	1.192	47.4	0.0	1.200	1.217	0.000	0.0	0
41.008	1.010	111.6	97.2	1.431	1.431	0.792	0.0	272
46.000	1.006	40.0	0.0	1.200	1.307	0.000	0.0	0
41.007	1.145	126.4	95.0	1.410	1.431	0.765	0.0	244
41.006	1.001	110.6	95.3	1.623	1.410	0.765	0.0	270

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Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
41.005	41-5	41-6	5.064	0.600	85.920	85.899	0.021	241.1	375	8.43	48.1
41.004	41-4	41-5	45.028	0.600	86.059	85.920	0.139	323.9	375	8.35	48.3
45.000	45-0	41-5	36.295	0.600	86.412	86.198	0.214	169.6	225	5.60	50.0
41.003	41-3	41-4	32.932	0.600	86.194	86.059	0.135	243.9	300	7.60	50.0
42.002	42-2	41-4	17.507	0.600	86.399	86.327	0.072	243.1	300	6.00	50.0
44.000	44-0	41-4	16.241	0.600	86.423	86.327	0.096	169.2	225	5.27	50.0
42.001	42-1	42-2	30.162	0.600	86.523	86.399	0.124	243.2	300	5.71	50.0
43.000	43-0	42-2	11.712	0.600	86.593	86.524	0.069	169.7	225	5.20	50.0
42.000	42-0	42-1	12.458	0.600	86.574	86.523	0.051	244.3	300	5.21	50.0
41.002	41-2	41-3	49.058	0.600	86.395	86.194	0.201	244.1	300	7.06	50.0
41.001	41-1	41-2	45.904	0.600	86.583	86.395	0.188	244.2	300	6.24	50.0
41.000	41-0	41-1	28.592	0.600	86.700	86.583	0.117	244.4	300	5.48	50.0
49.006	PI 2	Outfall 2	4.546	0.600	85.620	85.610	0.010	454.6	450	9.22	46.1
49.005	50-5	PI 2	18.999	0.600	85.821	85.763	0.058	327.6	400	9.14	46.3
49.004	50-4	50-5	82.625	0.600	86.002	85.821	0.181	456.5	400	8.84	47.0
49.003	50-3	50-4	63.994	0.600	86.200	86.002	0.198	323.2	400	7.27	50.0
49.002	50-2	50-3	27.221	0.600	87.200	86.860	0.340	80.0	225	6.25	50.0
49.001	50-1	50-2	36.427	0.600	88.000	87.545	0.455	80.0	225	5.94	50.0
49.000	50-0	50-1	45.692	0.600	88.900	88.329	0.571	80.0	225	5.52	50.0
50.006	PI 6	Outfall 6	5.797	0.600	85.526	85.504	0.022	263.5	450	9.69	45.1
50.005	49-5	PI 6	24.841	0.600	85.680	85.626	0.054	460.0	450	9.62	45.2
50.004	49-4	49-5	35.824	0.600	85.730	85.680	0.050	720.0	450	9.18	46.2
50.003	49-3	49-4	34.665	0.600	85.799	85.730	0.069	500.0	375	8.38	48.2
50.002	49-2	49-3	53.673	0.600	85.906	85.799	0.107	500.0	375	7.66	50.0
50.001	49-1	49-2	20.216	0.600	85.969	85.906	0.063	320.9	375	6.55	50.0
50.000	49-0	49-1	72.790	0.600	86.194	85.969	0.225	323.5	375	6.21	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)
41.005	1.162	128.4	99.7	1.584	1.623	0.765	0.0	249
41.004	1.001	110.6	81.2	1.792	1.584	0.621	0.0	240
45.000	1.001	39.8	7.7	0.936	1.456	0.057	0.0	67
41.003	1.002	70.8	25.7	1.006	1.867	0.190	0.0	125
42.002	1.004	70.9	43.8	1.449	1.599	0.323	0.0	171
44.000	1.002	39.8	2.6	1.600	1.674	0.019	0.0	38
42.001	1.003	70.9	28.3	1.173	1.449	0.209	0.0	132
43.000	1.000	39.8	2.4	1.200	1.399	0.018	0.0	37
42.000	1.001	70.8	11.8	0.994	1.173	0.087	0.0	82
41.002	1.002	70.8	19.8	1.105	1.006	0.146	0.0	108
41.001	1.001	70.8	11.7	1.367	1.105	0.086	0.0	82
41.000	1.001	70.8	6.9	1.250	1.367	0.051	0.0	63
49.006	0.947	150.6	50.5	1.030	0.441	0.404	0.0	179
49.005	1.037	130.3	50.7	1.879	0.937	0.404	0.0	173
49.004	0.877	110.2	33.5	2.025	1.879	0.263	0.0	151
49.003	1.044	131.2	20.9	2.231	2.025	0.154	0.0	107
49.002	1.463	58.2	16.0	1.921	1.746	0.118	0.0	80
49.001	1.463	58.2	10.2	1.980	1.576	0.075	0.0	64
49.000	1.463	58.2	0.0	1.916	1.651	0.000	0.0	0
50.006	1.247	198.4	44.3	1.913	0.536	0.363	0.0	144
50.005	0.941	149.7	44.5	1.769	1.813	0.363	0.0	167
50.004	0.750	119.3	39.1	1.554	1.769	0.312	0.0	177
50.003	0.803	88.7	33.3	1.373	1.629	0.255	0.0	159
50.002	0.803	88.7	19.9	0.964	1.373	0.147	0.0	120
50.001	1.006	111.1	17.6	0.847	0.964	0.130	0.0	101
50.000	1.002	110.6	0.0	1.237	0.847	0.000	0.0	0

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Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.017	7.171	652.0	600	Circular	87.100	85.584	0.916	86.490	85.573	0.317
1.016	22.093	789.0	600	Circular	87.570	85.712	1.258	87.100	85.684	0.816
1.015	27.613	1030.0	600	Circular	87.781	85.739	1.442	87.570	85.712	1.258
1.014	13.668	1030.0	600	Circular	87.871	85.752	1.519	87.781	85.739	1.442
1.013	25.701	1030.0	600	Circular	88.078	85.777	1.701	87.871	85.752	1.519
18.004	7.300	504.0	375	Circular	87.871	85.770	1.726	87.871	85.756	1.740
18.003	13.576	504.0	375	Circular	87.724	85.797	1.552	87.871	85.770	1.726
18.002	45.795	322.5	375	Circular	87.900	85.939	1.586	87.724	85.797	1.552
18.001	31.368	243.2	300	Circular	87.750	86.068	1.382	87.900	85.939	1.661
20.000	48.292	169.4	225	Circular	87.550	86.244	1.081	87.900	85.959	1.716
18.000	60.538	169.6	225	Circular	87.800	86.425	1.150	87.750	86.068	1.457
19.001	13.696	169.1	225	Circular	87.600	86.590	0.785	87.750	86.509	1.016
19.000	22.929	169.8	225	Circular	88.150	86.725	1.200	87.600	86.590	0.785
1.012	10.520	634.0	450	Circular	88.157	85.901	1.806	88.078	85.884	1.744
4.016	41.030	1030.0	600	Circular	87.823	85.817	1.406	88.078	85.777	1.701
16.000	35.288	169.7	225	Circular	88.000	86.575	1.200	87.823	86.367	1.231
17.000	33.300	169.0	225	Circular	87.625	86.200	1.200	87.823	86.003	1.595
4.015	32.945	908.0	600	Circular	87.418	85.853	0.965	87.823	85.817	1.406
14.002	13.040	504.0	375	Circular	87.521	85.887	1.259	87.418	85.861	1.182
4.014	21.547	908.0	600	Circular	87.500	85.877	1.023	87.418	85.853	0.965
4.013	19.264	723.0	500	Circular	87.400	85.904	0.996	87.500	85.877	1.123
13.000	29.498	169.5	225	Circular	87.600	86.175	1.200	87.400	86.001	1.174
4.012	28.941	723.0	500	Circular	87.850	85.944	1.406	87.400	85.904	0.996
4.011	6.084	723.0	500	Circular	87.850	85.952	1.398	87.850	85.944	1.406
4.010	27.773	545.0	400	Circular	87.822	86.003	1.419	87.850	85.952	1.498
10.003	19.085	264.0	225	Circular	87.724	86.099	1.400	87.850	86.027	1.598
10.002	18.982	169.5	225	Circular	87.700	86.294	1.181	87.724	86.182	1.317
12.000	16.776	264.0	225	Circular	87.588	86.163	1.200	87.724	86.099	1.400
11.001	26.210	169.1	225	Circular	87.700	86.449	1.026	87.700	86.294	1.181
10.001	34.125	169.8	225	Circular	87.816	86.665	0.926	87.700	86.464	1.011
10.000	16.252	169.3	225	Circular	87.635	86.761	0.649	87.816	86.665	0.926
11.000	12.853	169.1	225	Circular	87.700	86.525	0.950	87.700	86.449	1.026
4.009	19.118	504.0	375	Circular	87.721	86.041	1.305	87.822	86.003	1.444
8.001	28.505	243.6	300	Circular	87.400	86.120	0.980	87.822	86.003	1.519

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.017	PI 4	1500	Manhole	Adoptable	Outfall 4	1500	Manhole	Adoptable
1.016	1-16	2100	Manhole	Adoptable	PI 4	1500	Manhole	Adoptable
1.015	1-15	1500	Manhole	Adoptable	1-16	2100	Manhole	Adoptable
1.014	1-14	1500	Manhole	Adoptable	1-15	1500	Manhole	Adoptable
1.013	1-13	1500	Manhole	Adoptable	1-14	1500	Manhole	Adoptable
18.004	18-4	1350	Manhole	Adoptable	1-14	1500	Manhole	Adoptable
18.003	18-3	1350	Manhole	Adoptable	18-4	1350	Manhole	Adoptable
18.002	18-2	1350	Manhole	Adoptable	18-3	1350	Manhole	Adoptable
18.001	18-1	1200	Manhole	Adoptable	18-2	1350	Manhole	Adoptable
20.000	20-0	1200	Manhole	Adoptable	18-2	1350	Manhole	Adoptable
18.000	18-0	1200	Manhole	Adoptable	18-1	1200	Manhole	Adoptable
19.001	19-1	1200	Manhole	Adoptable	18-1	1200	Manhole	Adoptable
19.000	19-0	1200	Manhole	Adoptable	19-1	1200	Manhole	Adoptable
1.012	1-12	1350	Manhole	Adoptable	1-13	1500	Manhole	Adoptable
4.016	4-16	1500	Manhole	Adoptable	1-13	1500	Manhole	Adoptable
16.000	16-0	1200	Manhole	Adoptable	4-16	1500	Manhole	Adoptable
17.000	17-0	1200	Manhole	Adoptable	4-16	1500	Manhole	Adoptable
4.015	4-15	1500	Manhole	Adoptable	4-16	1500	Manhole	Adoptable
14.002	14-2	1350	Manhole	Adoptable	4-15	1500	Manhole	Adoptable
4.014	4-14	1500	Manhole	Adoptable	4-15	1500	Manhole	Adoptable
4.013	4-13	1500	Manhole	Adoptable	4-14	1500	Manhole	Adoptable
13.000	13-0	1200	Manhole	Adoptable	4-13	1500	Manhole	Adoptable
4.012	4-12	1500	Manhole	Adoptable	4-13	1500	Manhole	Adoptable
4.011	4-11	1500	Manhole	Adoptable	4-12	1500	Manhole	Adoptable
4.010	4-10	1350	Manhole	Adoptable	4-11	1500	Manhole	Adoptable
10.003	10-3	1200	Manhole	Adoptable	4-11	1500	Manhole	Adoptable
10.002	10-2	1200	Manhole	Adoptable	10-3	1200	Manhole	Adoptable
12.000	12-0	1200	Manhole	Adoptable	10-3	1200	Manhole	Adoptable
11.001	11-1	1200	Manhole	Adoptable	10-2	1200	Manhole	Adoptable
10.001	10-1	1200	Manhole	Adoptable	10-2	1200	Manhole	Adoptable
10.000	10-0	1200	Manhole	Adoptable	10-1	1200	Manhole	Adoptable
11.000	11-0	1200	Manhole	Adoptable	11-1	1200	Manhole	Adoptable
4.009	4-9	1350	Manhole	Adoptable	4-10	1350	Manhole	Adoptable
8.001	8-1	1200	Manhole	Adoptable	4-10	1350	Manhole	Adoptable

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Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
8.000	44.945	264.0	225	Circular	87.700	86.290	1.185	87.400	86.120	1.055
9.000	44.809	264.0	225	Circular	87.700	86.399	1.076	87.400	86.229	0.946
4.008	27.328	321.5	375	Circular	87.727	86.126	1.226	87.721	86.041	1.305
7.000	59.885	169.6	225	Circular	88.100	86.575	1.300	87.721	86.222	1.274
6.003	23.535	169.3	225	Circular	87.930	86.265	1.440	87.727	86.126	1.376
4.007	52.234	198.6	255	Circular	87.821	86.389	1.177	87.727	86.126	1.346
4.006	11.653	197.5	255	Circular	88.062	86.448	1.359	87.821	86.389	1.177
4.005	4.463	194.1	255	Circular	88.128	86.471	1.402	88.062	86.448	1.359
4.004	27.740	198.1	255	Circular	88.227	86.611	1.361	88.128	86.471	1.402
5.001	38.057	169.1	225	Circular	88.000	86.962	0.813	88.227	86.737	1.265
4.003	25.937	198.0	255	Circular	88.321	86.742	1.324	88.227	86.611	1.361
4.002	35.740	198.6	255	Circular	88.200	86.922	1.023	88.321	86.742	1.324
4.001	3.729	196.3	255	Circular	88.200	86.941	1.004	88.200	86.922	1.023
4.000	28.651	199.0	255	Circular	88.200	87.085	0.860	88.200	86.941	1.004
5.000	27.560	169.1	225	Circular	88.100	87.125	0.750	88.000	86.962	0.813
6.002	28.382	168.9	225	Circular	88.000	86.433	1.342	87.930	86.265	1.440
6.001	39.265	169.2	225	Circular	88.070	86.665	1.180	88.000	86.433	1.342
6.000	34.964	169.7	225	Circular	87.900	86.871	0.804	88.070	86.665	1.180
14.001	49.191	380.0	300	Circular	87.334	86.016	1.018	87.521	85.887	1.334
15.000	37.380	169.1	225	Circular	88.094	86.269	1.600	87.521	86.048	1.248
14.000	52.189	380.0	300	Circular	88.142	86.153	1.689	87.334	86.016	1.018
1.011	12.131	600.0	400	Circular	88.016	85.921	1.695	88.157	85.901	1.856
3.000	40.242	169.8	225	Circular	88.471	86.791	1.455	88.157	86.554	1.378
1.010	47.904	349.7	400	Circular	88.495	86.058	2.037	88.016	85.921	1.695
1.009	28.263	600.0	400	Circular	88.321	86.105	1.816	88.495	86.058	2.037
1.008	64.345	504.0	375	Circular	88.553	86.233	1.945	88.321	86.105	1.841
1.007	45.197	504.0	375	Circular	88.681	86.323	1.983	88.553	86.233	1.945
1.006	61.852	504.0	375	Circular	88.523	86.446	1.702	88.681	86.323	1.983
1.005	43.656	504.0	375	Circular	88.201	86.533	1.293	88.523	86.446	1.702
2.000	30.803	169.2	225	Circular	88.588	87.163	1.200	88.523	86.981	1.317
1.004	41.714	323.4	375	Circular	88.050	86.662	1.013	88.201	86.533	1.293
1.003	17.750	322.7	375	Circular	88.150	86.717	1.058	88.050	86.662	1.013
1.002	32.342	323.4	375	Circular	88.200	86.817	1.008	88.150	86.717	1.058
1.001	38.395	322.6	375	Circular	88.200	86.936	0.889	88.200	86.817	1.008

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
8.000	8-0	1200	Manhole	Adoptable	8-1	1200	Manhole	Adoptable
9.000	9-0	1200	Manhole	Adoptable	8-1	1200	Manhole	Adoptable
4.008	4-8	1350	Manhole	Adoptable	4-9	1350	Manhole	Adoptable
7.000	7-0	1200	Manhole	Adoptable	4-9	1350	Manhole	Adoptable
6.003	6-3	1200	Manhole	Adoptable	4-8	1350	Manhole	Adoptable
4.007	4-7	1200	Manhole	Adoptable	4-8	1350	Manhole	Adoptable
4.006	4-6	1200	Manhole	Adoptable	4-7	1200	Manhole	Adoptable
4.005	4-5	1200	Manhole	Adoptable	4-6	1200	Manhole	Adoptable
4.004	4-4	1200	Manhole	Adoptable	4-5	1200	Manhole	Adoptable
5.001	5-1	1200	Manhole	Adoptable	4-4	1200	Manhole	Adoptable
4.003	4-3	1200	Manhole	Adoptable	4-4	1200	Manhole	Adoptable
4.002	4-2	1200	Manhole	Adoptable	4-3	1200	Manhole	Adoptable
4.001	4-1	1200	Manhole	Adoptable	4-2	1200	Manhole	Adoptable
4.000	4-0	1200	Manhole	Adoptable	4-1	1200	Manhole	Adoptable
5.000	5-0	1200	Manhole	Adoptable	5-1	1200	Manhole	Adoptable
6.002	6-2	1200	Manhole	Adoptable	6-3	1200	Manhole	Adoptable
6.001	6-1	1200	Manhole	Adoptable	6-2	1200	Manhole	Adoptable
6.000	6-0	1200	Manhole	Adoptable	6-1	1200	Manhole	Adoptable
14.001	14-1	1200	Manhole	Adoptable	14-2	1350	Manhole	Adoptable
15.000	15-0	1200	Manhole	Adoptable	14-2	1350	Manhole	Adoptable
14.000	14-0	1200	Manhole	Adoptable	14-1	1200	Manhole	Adoptable
1.011	1-11	1800	Manhole	Adoptable	1-12	1350	Manhole	Adoptable
3.000	3-0	1200	Manhole	Adoptable	1-12	1350	Manhole	Adoptable
1.010	1-10	1350	Manhole	Adoptable	1-11	1800	Manhole	Adoptable
1.009	1-9	1350	Manhole	Adoptable	1-10	1350	Manhole	Adoptable
1.008	1-8	1350	Manhole	Adoptable	1-9	1350	Manhole	Adoptable
1.007	1-7	1350	Manhole	Adoptable	1-8	1350	Manhole	Adoptable
1.006	1-6	1350	Manhole	Adoptable	1-7	1350	Manhole	Adoptable
1.005	1-5	1350	Manhole	Adoptable	1-6	1350	Manhole	Adoptable
2.000	2-0	1200	Manhole	Adoptable	1-6	1350	Manhole	Adoptable
1.004	1-4	1350	Manhole	Adoptable	1-5	1350	Manhole	Adoptable
1.003	1-3	1350	Manhole	Adoptable	1-4	1350	Manhole	Adoptable
1.002	1-2	1350	Manhole	Adoptable	1-3	1350	Manhole	Adoptable
1.001	1-1	1350	Manhole	Adoptable	1-2	1350	Manhole	Adoptable

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Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	20.719	323.7	375	Circular	88.550	87.000	1.175	88.200	86.936	0.889
21.015	34.110	578.1	600	Circular	88.070	85.997	1.473	87.300	85.938	0.762
21.014	3.768	538.3	600	Circular	88.070	86.104	1.366	88.070	86.097	1.373
21.013	35.358	1030.0	600	Circular	88.850	86.138	2.112	88.070	86.104	1.366
21.012	31.554	1030.0	600	Circular	88.730	86.169	1.961	88.850	86.138	2.112
30.002	19.913	168.8	225	Circular	88.800	86.896	1.679	88.850	86.778	1.847
30.001	28.062	169.0	225	Circular	88.700	87.062	1.413	88.800	86.896	1.679
30.000	36.134	137.4	225	Circular	88.750	87.325	1.200	88.700	87.062	1.413
21.011	65.244	1030.0	600	Circular	88.117	86.232	1.285	88.730	86.169	1.961
29.005	35.580	169.4	225	Circular	88.851	86.487	2.139	88.730	86.277	2.228
29.004	32.236	163.6	225	Circular	88.880	86.684	1.971	88.851	86.487	2.139
29.003	16.189	168.6	225	Circular	88.782	86.780	1.777	88.880	86.684	1.971
29.002	52.121	169.2	225	Circular	88.289	87.088	0.976	88.782	86.780	1.777
29.001	12.256	167.9	225	Circular	88.500	87.161	1.114	88.289	87.088	0.976
29.000	37.960	169.5	225	Circular	88.510	87.385	0.900	88.500	87.161	1.114
21.010	23.315	582.9	500	Circular	87.929	86.272	1.157	88.117	86.232	1.385
27.001	43.903	1030.0	600	Circular	87.900	86.275	1.025	88.117	86.232	1.285
28.001	32.739	324.2	375	Circular	87.846	86.333	1.138	88.117	86.232	1.510
28.000	46.846	323.1	375	Circular	88.108	86.478	1.255	87.846	86.333	1.138
27.000	48.356	1030.0	600	Circular	88.114	86.322	1.192	87.900	86.275	1.025
21.009	43.935	578.1	500	Circular	88.083	86.348	1.235	87.929	86.272	1.157
21.008	15.307	566.9	500	Circular	88.218	86.375	1.343	88.083	86.348	1.235
21.007	14.038	561.5	500	Circular	88.161	86.400	1.261	88.218	86.375	1.343
21.006	51.829	462.8	500	Circular	88.369	86.512	1.357	88.161	86.400	1.261
21.005	22.318	348.7	400	Circular	88.456	86.598	1.458	88.369	86.534	1.435
22.007	6.699	394.1	400	Circular	88.500	86.529	1.571	88.369	86.512	1.457
22.006	18.119	402.7	400	Circular	88.890	86.574	1.916	88.500	86.529	1.571
22.005	15.182	399.5	400	Circular	88.931	86.612	1.919	88.890	86.574	1.916
26.001	33.167	169.2	225	Circular	88.550	87.022	1.303	88.890	86.826	1.839
26.000	17.489	169.8	225	Circular	88.550	87.125	1.200	88.550	87.022	1.303
22.004	49.431	350.6	400	Circular	89.151	86.753	1.998	88.931	86.612	1.919
25.001	14.843	168.7	225	Circular	88.700	87.103	1.372	88.931	87.015	1.691
25.000	29.832	169.5	225	Circular	88.704	87.279	1.200	88.700	87.103	1.372
22.003	46.319	350.9	400	Circular	88.563	86.885	1.278	89.151	86.753	1.998

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	1-0	1350	Manhole	Adoptable	1-1	1350	Manhole	Adoptable
21.015	PI 3	1500	Manhole	Adoptable	Outfall 3	1500	Manhole	Adoptable
21.014	21-14	1500	Manhole	Adoptable	PI 3	1500	Manhole	Adoptable
21.013	21-13	1500	Manhole	Adoptable	21-14	1500	Manhole	Adoptable
21.012	21-12	1500	Manhole	Adoptable	21-13	1500	Manhole	Adoptable
30.002	30-2	1200	Manhole	Adoptable	21-13	1500	Manhole	Adoptable
30.001	30-1	1200	Manhole	Adoptable	30-2	1200	Manhole	Adoptable
30.000	30-0	1200	Manhole	Adoptable	30-1	1200	Manhole	Adoptable
21.011	21-11	1500	Manhole	Adoptable	21-12	1500	Manhole	Adoptable
29.005	29-5	1200	Manhole	Adoptable	21-12	1500	Manhole	Adoptable
29.004	29-4	1200	Manhole	Adoptable	29-5	1200	Manhole	Adoptable
29.003	29-3	1200	Manhole	Adoptable	29-4	1200	Manhole	Adoptable
29.002	29-2	1200	Manhole	Adoptable	29-3	1200	Manhole	Adoptable
29.001	29-1	1200	Manhole	Adoptable	29-2	1200	Manhole	Adoptable
29.000	29-0	1200	Manhole	Adoptable	29-1	1200	Manhole	Adoptable
21.010	21-10	1500	Manhole	Adoptable	21-11	1500	Manhole	Adoptable
27.001	27-1	1500	Manhole	Adoptable	21-11	1500	Manhole	Adoptable
28.001	28-1	1350	Manhole	Adoptable	21-11	1500	Manhole	Adoptable
28.000	28-0	1350	Manhole	Adoptable	28-1	1350	Manhole	Adoptable
27.000	27-0	1500	Manhole	Adoptable	27-1	1500	Manhole	Adoptable
21.009	21-9	1500	Manhole	Adoptable	21-10	1500	Manhole	Adoptable
21.008	21-8	1500	Manhole	Adoptable	21-9	1500	Manhole	Adoptable
21.007	21-7	1500	Manhole	Adoptable	21-8	1500	Manhole	Adoptable
21.006	21-6	1500	Manhole	Adoptable	21-7	1500	Manhole	Adoptable
21.005	21-5	1350	Manhole	Adoptable	21-6	1500	Manhole	Adoptable
22.007	22-7	1350	Manhole	Adoptable	21-6	1500	Manhole	Adoptable
22.006	22-6	1350	Manhole	Adoptable	22-7	1350	Manhole	Adoptable
22.005	22-5	1350	Manhole	Adoptable	22-6	1350	Manhole	Adoptable
26.001	26-1	1200	Manhole	Adoptable	22-6	1350	Manhole	Adoptable
26.000	26-0	1200	Manhole	Adoptable	26-1	1200	Manhole	Adoptable
22.004	22-4	1350	Manhole	Adoptable	22-5	1350	Manhole	Adoptable
25.001	25-1	1200	Manhole	Adoptable	22-5	1350	Manhole	Adoptable
25.000	25-0	1200	Manhole	Adoptable	25-1	1200	Manhole	Adoptable
22.003	22-3	1350	Manhole	Adoptable	22-4	1350	Manhole	Adoptable

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Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
22.002	7.454	338.8	400	Circular	88.564	86.907	1.257	88.563	86.885	1.278
24.000	53.093	351.6	400	Circular	88.655	87.100	1.155	88.563	86.949	1.214
22.001	51.789	349.9	400	Circular	88.298	87.055	0.843	88.564	86.907	1.257
23.000	63.858	324.2	375	Circular	88.357	87.161	0.821	88.564	86.964	1.225
22.000	13.905	347.6	400	Circular	88.245	87.095	0.750	88.298	87.055	0.843
21.004	24.650	347.2	400	Circular	88.367	86.669	1.298	88.456	86.598	1.458
21.003	48.146	323.1	375	Circular	88.691	86.818	1.498	88.367	86.669	1.323
21.002	56.065	324.1	375	Circular	88.405	86.991	1.039	88.691	86.818	1.498
21.001	35.179	322.7	375	Circular	88.225	87.100	0.750	88.405	86.991	1.039
21.000	51.042	323.0	375	Circular	88.540	87.258	0.907	88.225	87.100	0.750
31.017	18.902	1020.0	600	Circular	86.440	84.520	1.320	85.570	84.501	0.469
31.016	5.899	536.2	600	Circular	86.440	84.631	1.209	86.440	84.620	1.220
31.015	11.460	477.5	600	Circular	86.850	84.655	1.595	86.440	84.631	1.209
31.014	20.609	572.5	450	Circular	86.950	84.691	1.809	86.850	84.655	1.745
37.004	26.698	342.3	375	Circular	86.930	84.822	1.733	86.850	84.744	1.731
37.003	49.639	406.9	375	Circular	87.021	84.944	1.702	86.930	84.822	1.733
37.002	64.636	323.2	300	Circular	87.247	85.144	1.803	87.021	84.944	1.777
40.001	74.807	169.6	225	Circular	87.075	85.619	1.231	87.021	85.178	1.618
40.000	26.496	169.8	225	Circular	87.200	85.775	1.200	87.075	85.619	1.231
38.001	67.475	244.5	300	Circular	87.147	85.420	1.427	87.247	85.144	1.803
37.001	73.376	169.9	225	Circular	87.736	86.272	1.239	87.247	85.840	1.182
37.000	51.420	169.7	225	Circular	88.000	86.575	1.200	87.736	86.272	1.239
38.000	43.565	169.5	225	Circular	87.352	85.677	1.450	87.147	85.420	1.502
39.000	6.921	168.8	225	Circular	87.171	86.115	0.831	87.147	86.074	0.848
31.013	14.958	575.3	450	Circular	87.000	84.717	1.833	86.950	84.691	1.809
31.012	33.595	579.2	450	Circular	87.231	84.775	2.006	87.000	84.717	1.833
31.011	55.310	350.1	400	Circular	86.901	84.933	1.568	87.231	84.775	2.056
36.004	42.767	100.0	225	Circular	87.676	86.319	1.132	87.231	85.891	1.115
36.003	14.574	100.0	225	Circular	87.954	86.465	1.264	87.676	86.319	1.132
36.002	11.007	100.0	225	Circular	88.162	86.575	1.362	87.954	86.465	1.264
36.001	14.673	100.0	225	Circular	88.383	86.722	1.436	88.162	86.575	1.362
36.000	30.135	169.3	225	Circular	88.558	86.900	1.433	88.383	86.722	1.436
31.010	29.020	349.6	400	Circular	86.850	85.016	1.434	86.901	84.933	1.568
31.009	19.192	348.9	400	Circular	87.260	85.071	1.789	86.850	85.016	1.434

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
22.002	22-2	1350	Manhole	Adoptable	22-3	1350	Manhole	Adoptable
24.000	24-0	1350	Manhole	Adoptable	22-3	1350	Manhole	Adoptable
22.001	22-1	1350	Manhole	Adoptable	22-2	1350	Manhole	Adoptable
23.000	23-0	1350	Manhole	Adoptable	22-2	1350	Manhole	Adoptable
22.000	22-0	1350	Manhole	Adoptable	22-1	1350	Manhole	Adoptable
21.004	21-4	1350	Manhole	Adoptable	21-5	1350	Manhole	Adoptable
21.003	21-3	1350	Manhole	Adoptable	21-4	1350	Manhole	Adoptable
21.002	21-2	1350	Manhole	Adoptable	21-3	1350	Manhole	Adoptable
21.001	21-1	1350	Manhole	Adoptable	21-2	1350	Manhole	Adoptable
21.000	21-0	1350	Manhole	Adoptable	21-1	1350	Manhole	Adoptable
31.017	PI 1	1500	Manhole	Adoptable	Outfall 1	1500	Manhole	Adoptable
31.016	31-17	2100	Manhole	Adoptable	PI 1	1500	Manhole	Adoptable
31.015	31-16	1500	Manhole	Adoptable	31-17	2100	Manhole	Adoptable
31.014	31-15	1350	Manhole	Adoptable	31-16	1500	Manhole	Adoptable
37.004	37-4	1350	Manhole	Adoptable	31-16	1500	Manhole	Adoptable
37.003	37-3	1350	Manhole	Adoptable	37-4	1350	Manhole	Adoptable
37.002	37-2	1200	Manhole	Adoptable	37-3	1350	Manhole	Adoptable
40.001	40-1	1200	Manhole	Adoptable	37-3	1350	Manhole	Adoptable
40.000	40-0	1200	Manhole	Adoptable	40-1	1200	Manhole	Adoptable
38.001	38-1	1200	Manhole	Adoptable	37-2	1200	Manhole	Adoptable
37.001	37-1	1200	Manhole	Adoptable	37-2	1200	Manhole	Adoptable
37.000	37-0	1200	Manhole	Adoptable	37-1	1200	Manhole	Adoptable
38.000	38-0	1200	Manhole	Adoptable	38-1	1200	Manhole	Adoptable
39.000	39-0	1200	Manhole	Adoptable	38-1	1200	Manhole	Adoptable
31.013	31-14	1350	Manhole	Adoptable	31-15	1350	Manhole	Adoptable
31.012	31-13	1350	Manhole	Adoptable	31-14	1350	Manhole	Adoptable
31.011	31-12	1350	Manhole	Adoptable	31-13	1350	Manhole	Adoptable
36.004	36-4	1200	Manhole	Adoptable	31-13	1350	Manhole	Adoptable
36.003	36-3	1200	Manhole	Adoptable	36-4	1200	Manhole	Adoptable
36.002	36-2	1200	Manhole	Adoptable	36-3	1200	Manhole	Adoptable
36.001	36-1	1200	Manhole	Adoptable	36-2	1200	Manhole	Adoptable
36.000	36-0	1200	Manhole	Adoptable	36-1	1200	Manhole	Adoptable
31.010	31-11	1350	Manhole	Adoptable	31-12	1350	Manhole	Adoptable
31.009	31-10	1800	Manhole	Adoptable	31-11	1350	Manhole	Adoptable

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Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
35.000	30.939	169.1	225	Circular	87.091	85.659	1.207	86.850	85.476	1.149
31.008	8.755	350.2	400	Circular	87.385	85.096	1.889	87.260	85.071	1.789
31.007	4.633	308.9	300	Circular	87.387	85.384	1.703	87.385	85.369	1.716
34.000	53.968	169.7	225	Circular	87.400	85.675	1.500	87.385	85.357	1.803
31.006	53.993	244.3	300	Circular	87.894	85.605	1.989	87.387	85.384	1.703
33.002	12.512	169.1	225	Circular	87.322	85.611	1.486	87.387	85.537	1.625
33.001	9.300	169.1	225	Circular	87.366	85.666	1.475	87.322	85.611	1.486
33.000	22.672	169.2	225	Circular	87.225	85.800	1.200	87.366	85.666	1.475
31.005	6.674	166.9	225	Circular	88.000	85.645	2.130	87.894	85.605	2.064
32.001	27.582	169.2	225	Circular	87.750	85.980	1.545	87.894	85.817	1.852
32.000	24.620	169.8	225	Circular	87.750	86.125	1.400	87.750	85.980	1.545
31.004	31.472	100.0	225	Circular	88.350	85.960	2.165	88.000	85.645	2.130
31.003	17.107	80.0	225	Circular	88.412	86.174	2.013	88.350	85.960	2.165
31.002	13.738	80.0	225	Circular	88.375	86.346	1.804	88.412	86.174	2.013
31.001	22.282	80.0	225	Circular	88.460	86.625	1.610	88.375	86.346	1.804
31.000	25.451	169.7	225	Circular	88.586	86.775	1.586	88.460	86.625	1.610
41.014	5.314	312.6	500	Circular	87.350	85.165	1.685	86.400	85.148	0.752
41.013	5.268	526.8	500	Circular	87.350	85.275	1.575	87.350	85.265	1.585
41.012	24.728	343.4	400	Circular	87.450	85.347	1.703	87.350	85.275	1.675
48.000	54.165	100.0	225	Circular	87.450	86.300	0.925	87.350	85.758	1.367
41.011	14.015	368.8	400	Circular	87.390	85.385	1.605	87.450	85.347	1.703
41.010	5.101	340.1	400	Circular	87.430	85.400	1.630	87.390	85.385	1.605
41.009	31.084	323.8	375	Circular	87.480	85.674	1.431	87.430	85.578	1.477
47.001	49.677	169.5	225	Circular	87.550	86.108	1.217	87.430	85.815	1.390
47.000	50.028	120.0	225	Circular	87.950	86.525	1.200	87.550	86.108	1.217
41.008	13.682	318.2	375	Circular	87.523	85.717	1.431	87.480	85.674	1.431
46.000	9.566	167.8	225	Circular	87.430	86.005	1.200	87.480	85.948	1.307
41.007	5.218	248.5	375	Circular	87.523	85.738	1.410	87.523	85.717	1.431
41.006	52.111	323.7	375	Circular	87.897	85.899	1.623	87.523	85.738	1.410
41.005	5.064	241.1	375	Circular	87.879	85.920	1.584	87.897	85.899	1.623
41.004	45.028	323.9	375	Circular	88.226	86.059	1.792	87.879	85.920	1.584
45.000	36.295	169.6	225	Circular	87.573	86.412	0.936	87.879	86.198	1.456
41.003	32.932	243.9	300	Circular	87.500	86.194	1.006	88.226	86.059	1.867
42.002	17.507	243.1	300	Circular	88.148	86.399	1.449	88.226	86.327	1.599

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
35.000	35-0	1200	Manhole	Adoptable	31-11	1350	Manhole	Adoptable
31.008	31-9	1350	Manhole	Adoptable	31-10	1800	Manhole	Adoptable
31.007	31-8	1200	Manhole	Adoptable	31-9	1350	Manhole	Adoptable
34.000	33-0	1200	Manhole	Adoptable	31-9	1350	Manhole	Adoptable
31.006	31-7	1200	Manhole	Adoptable	31-8	1200	Manhole	Adoptable
33.002	34-2	1200	Manhole	Adoptable	31-8	1200	Manhole	Adoptable
33.001	34-1	1200	Manhole	Adoptable	34-2	1200	Manhole	Adoptable
33.000	34-0	1200	Manhole	Adoptable	34-1	1200	Manhole	Adoptable
31.005	31-6	1200	Manhole	Adoptable	31-7	1200	Manhole	Adoptable
32.001	32-1	1200	Manhole	Adoptable	31-7	1200	Manhole	Adoptable
32.000	32-0	1200	Manhole	Adoptable	32-1	1200	Manhole	Adoptable
31.004	31-5	1200	Manhole	Adoptable	31-6	1200	Manhole	Adoptable
31.003	31-4	1200	Manhole	Adoptable	31-5	1200	Manhole	Adoptable
31.002	31-2	1200	Manhole	Adoptable	31-4	1200	Manhole	Adoptable
31.001	31-1	1200	Manhole	Adoptable	31-2	1200	Manhole	Adoptable
31.000	31-0	1200	Manhole	Adoptable	31-1	1200	Manhole	Adoptable
41.014	PI 5	1500	Manhole	Adoptable	Outfall 5	1500	Manhole	Adoptable
41.013	41-13	1800	Manhole	Adoptable	PI 5	1500	Manhole	Adoptable
41.012	41-12	1800	Manhole	Adoptable	41-13	1800	Manhole	Adoptable
48.000	48-0	1200	Manhole	Adoptable	41-13	1800	Manhole	Adoptable
41.011	41-11	1350	Manhole	Adoptable	41-12	1800	Manhole	Adoptable
41.010	41-10	1350	Manhole	Adoptable	41-11	1350	Manhole	Adoptable
41.009	41-9	1350	Manhole	Adoptable	41-10	1350	Manhole	Adoptable
47.001	47-1	1200	Manhole	Adoptable	41-10	1350	Manhole	Adoptable
47.000	47-0	1200	Manhole	Adoptable	47-1	1200	Manhole	Adoptable
41.008	41-8	1350	Manhole	Adoptable	41-9	1350	Manhole	Adoptable
46.000	46-0	1200	Manhole	Adoptable	41-9	1350	Manhole	Adoptable
41.007	41-7	1350	Manhole	Adoptable	41-8	1350	Manhole	Adoptable
41.006	41-6	1350	Manhole	Adoptable	41-7	1350	Manhole	Adoptable
41.005	41-5	1350	Manhole	Adoptable	41-6	1350	Manhole	Adoptable
41.004	41-4	1350	Manhole	Adoptable	41-5	1350	Manhole	Adoptable
45.000	45-0	1200	Manhole	Adoptable	41-5	1350	Manhole	Adoptable
41.003	41-3	1200	Manhole	Adoptable	41-4	1350	Manhole	Adoptable
42.002	42-2	1200	Manhole	Adoptable	41-4	1350	Manhole	Adoptable

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Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
44.000	16.241	169.2	225	Circular	88.248	86.423	1.600	88.226	86.327	1.674
42.001	30.162	243.2	300	Circular	87.996	86.523	1.173	88.148	86.399	1.449
43.000	11.712	169.7	225	Circular	88.018	86.593	1.200	88.148	86.524	1.399
42.000	12.458	244.3	300	Circular	87.868	86.574	0.994	87.996	86.523	1.173
41.002	49.058	244.1	300	Circular	87.800	86.395	1.105	87.500	86.194	1.006
41.001	45.904	244.2	300	Circular	88.250	86.583	1.367	87.800	86.395	1.105
41.000	28.592	244.4	300	Circular	88.250	86.700	1.250	88.250	86.583	1.367
49.006	4.546	454.6	450	Circular	87.100	85.620	1.030	86.501	85.610	0.441
49.005	18.999	327.6	400	Circular	88.100	85.821	1.879	87.100	85.763	0.937
49.004	82.625	456.5	400	Circular	88.427	86.002	2.025	88.100	85.821	1.879
49.003	63.994	323.2	400	Circular	88.831	86.200	2.231	88.427	86.002	2.025
49.002	27.221	80.0	225	Circular	89.346	87.200	1.921	88.831	86.860	1.746
49.001	36.427	80.0	225	Circular	90.205	88.000	1.980	89.346	87.545	1.576
49.000	45.692	80.0	225	Circular	91.041	88.900	1.916	90.205	88.329	1.651
50.006	5.797	263.5	450	Circular	87.889	85.526	1.913	86.490	85.504	0.536
50.005	24.841	460.0	450	Circular	87.899	85.680	1.769	87.889	85.626	1.813
50.004	35.824	720.0	450	Circular	87.734	85.730	1.554	87.899	85.680	1.769
50.003	34.665	500.0	375	Circular	87.547	85.799	1.373	87.734	85.730	1.629
50.002	53.673	500.0	375	Circular	87.245	85.906	0.964	87.547	85.799	1.373
50.001	20.216	320.9	375	Circular	87.191	85.969	0.847	87.245	85.906	0.964
50.000	72.790	323.5	375	Circular	87.806	86.194	1.237	87.191	85.969	0.847

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
44.000	44-0	1200	Manhole	Adoptable	41-4	1350	Manhole	Adoptable
42.001	42-1	1200	Manhole	Adoptable	42-2	1200	Manhole	Adoptable
43.000	43-0	1200	Manhole	Adoptable	42-2	1200	Manhole	Adoptable
42.000	42-0	1200	Manhole	Adoptable	42-1	1200	Manhole	Adoptable
41.002	41-2	1200	Manhole	Adoptable	41-3	1200	Manhole	Adoptable
41.001	41-1	1200	Manhole	Adoptable	41-2	1200	Manhole	Adoptable
41.000	41-0	1200	Manhole	Adoptable	41-1	1200	Manhole	Adoptable
49.006	PI 2	1350	Manhole	Adoptable	Outfall 2	1350	Manhole	Adoptable
49.005	50-5	1350	Manhole	Adoptable	PI 2	1350	Manhole	Adoptable
49.004	50-4	1350	Manhole	Adoptable	50-5	1350	Manhole	Adoptable
49.003	50-3	1350	Manhole	Adoptable	50-4	1350	Manhole	Adoptable
49.002	50-2	1200	Manhole	Adoptable	50-3	1350	Manhole	Adoptable
49.001	50-1	1200	Manhole	Adoptable	50-2	1200	Manhole	Adoptable
49.000	50-0	1200	Manhole	Adoptable	50-1	1200	Manhole	Adoptable
50.006	PI 6	1350	Manhole	Adoptable	Outfall 6	1350	Manhole	Adoptable
50.005	49-5	1350	Manhole	Adoptable	PI 6	1350	Manhole	Adoptable
50.004	49-4	1350	Manhole	Adoptable	49-5	1350	Manhole	Adoptable
50.003	49-3	1350	Manhole	Adoptable	49-4	1350	Manhole	Adoptable
50.002	49-2	1350	Manhole	Adoptable	49-3	1350	Manhole	Adoptable
50.001	49-1	1350	Manhole	Adoptable	49-2	1350	Manhole	Adoptable
50.000	49-0	1350	Manhole	Adoptable	49-1	1350	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
1-0	681728.297	714559.265	88.550	1.550	1350				
						0	1.000	87.000	375
1-1	681727.082	714579.948	88.200	1.264	1350		1	1.000	86.936	375
						0	1.001	86.936	375
1-2	681729.935	714618.237	88.200	1.383	1350		1	1.001	86.817	375
						0	1.002	86.817	375
1-3	681724.880	714650.182	88.150	1.433	1350		1	1.002	86.717	375
						0	1.003	86.717	375
1-4	681726.157	714667.886	88.050	1.388	1350		1	1.003	86.662	375
						0	1.004	86.662	375

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
1-5	681706.946	714704.913	88.201	1.668	1350	1	1.004	86.533	375
						0	1.005	86.533	375
2-0	681654.345	714711.728	88.588	1.425	1200	0	2.000	87.163	225
1-6	681668.442	714684.340	88.523	2.077	1350	1	2.000	86.981	225
						2	1.005	86.446	375
						0	1.006	86.446	375
1-7	681613.809	714655.342	88.681	2.358	1350	1	1.006	86.323	375
						0	1.007	86.323	375
1-8	681573.837	714634.246	88.553	2.320	1350	1	1.007	86.233	375
						0	1.008	86.233	375
1-9	681516.849	714604.369	88.321	2.216	1350	1	1.008	86.105	375
						0	1.009	86.105	400
1-10	681489.411	714611.148	88.495	2.437	1350	1	1.009	86.058	400
						0	1.010	86.058	400
1-11	681465.859	714652.863	88.016	2.095	1800	1	1.010	85.921	400
						0	1.011	85.921	400
3-0	681495.121	714623.928	88.471	1.680	1200	0	3.000	86.791	225
1-12	681476.088	714659.384	88.157	2.256	1350	1	3.000	86.554	225
						2	1.011	85.901	400
						0	1.012	85.901	450
4-0	681714.921	714722.862	88.200	1.115	1200	0	4.000	87.085	255
4-1	681700.576	714747.663	88.200	1.259	1200	1	4.000	86.941	255
						0	4.001	86.941	255
4-2	681696.983	714746.664	88.200	1.278	1200	1	4.001	86.922	255
						0	4.002	86.922	255
4-3	681679.139	714777.631	88.321	1.579	1200	1	4.002	86.742	255
						0	4.003	86.742	255
5-0	681687.188	714707.538	88.100	0.975	1200	0	5.000	87.125	225
5-1	681674.194	714731.842	88.000	1.038	1200	1	5.000	86.962	225
						0	5.001	86.962	225
4-4	681656.262	714765.409	88.227	1.616	1200	1	5.001	86.737	225
						2	4.003	86.611	255
						0	4.004	86.611	255

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
4-5	681631.788	714752.351	88.128	1.657	1200	1	4.004	86.471	255
						0	4.005	86.471	255
4-6	681629.584	714756.232	88.062	1.614	1200	1	4.005	86.448	255
						0	4.006	86.448	255
4-7	681618.718	714752.021	87.821	1.432	1200	1	4.006	86.389	255
						0	4.007	86.389	255
6-0	681651.744	714821.450	87.900	1.029	1200	0	6.000	86.871	225
6-1	681635.217	714852.261	88.070	1.405	1200	1	6.000	86.665	225
						0	6.001	86.665	225
6-2	681600.572	714833.783	88.000	1.567	1200	1	6.001	86.433	225
						0	6.002	86.433	225
6-3	681613.963	714808.759	87.930	1.665	1200	1	6.002	86.265	225
						0	6.003	86.265	225
4-8	681593.233	714797.616	87.727	1.601	1350	1	6.003	86.126	225
						2	4.007	86.126	255
						0	4.008	86.126	375
7-0	681598.010	714732.199	88.100	1.525	1200	0	7.000	86.575	225
4-9	681569.162	714784.678	87.721	1.680	1350	1	7.000	86.222	225
						2	4.008	86.041	375
						0	4.009	86.041	375
8-0	681578.569	714821.954	87.700	1.410	1200	0	8.000	86.290	225
9-0	681499.419	714779.633	87.700	1.301	1200	0	9.000	86.399	225
8-1	681538.921	714800.785	87.400	1.280	1200	1	9.000	86.229	225
						2	8.000	86.120	225
						0	8.001	86.120	300
4-10	681552.322	714775.627	87.822	1.819	1350	1	8.001	86.003	300
						2	4.009	86.003	375
						0	4.010	86.003	400
10-0	681456.887	714742.982	87.635	0.874	1200	0	10.000	86.761	225
10-1	681464.184	714728.460	87.816	1.151	1200	1	10.000	86.665	225
						0	10.001	86.665	225
11-0	681470.270	714761.709	87.700	1.175	1200	0	11.000	86.525	225

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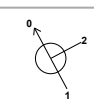
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
11-1	681481.748	714767.493	87.700	1.251	1200	1	11.000	86.449	225
						0	11.001	86.449	225
10-2	681494.310	714744.490	87.700	1.406	1200	1	11.001	86.294	225
						2	10.001	86.464	225
						0	10.002	86.294	225
12-0	681518.601	714738.418	87.588	1.425	1200				
						0	12.000	86.163	225
10-3	681511.067	714753.407	87.724	1.625	1200	1	12.000	86.099	225
						2	10.002	86.182	225
						0	10.003	86.099	225
4-11	681527.859	714762.478	87.850	1.898	1500	1	10.003	86.027	225
						2	4.010	85.952	400
						0	4.011	85.952	500
4-12	681530.789	714757.146	87.850	1.906	1500	1	4.011	85.944	500
						0	4.012	85.944	500
13-0	681570.228	714744.973	87.600	1.425	1200				
						0	13.000	86.175	225
4-13	681544.032	714731.413	87.400	1.496	1500	1	13.000	86.001	225
						2	4.012	85.904	500
						0	4.013	85.904	500
4-14	681526.924	714722.557	87.500	1.623	1500	1	4.013	85.877	500
						0	4.014	85.877	600
14-0	681632.181	714739.287	88.142	1.989	1200				
						0	14.000	86.153	300
14-1	681586.068	714714.847	87.334	1.318	1200	1	14.000	86.016	300
						0	14.001	86.016	300
15-0	681560.301	714658.807	88.094	1.825	1200				
						0	15.000	86.269	225
14-2	681542.637	714691.750	87.521	1.634	1350	1	15.000	86.048	225
									
						2	14.001	85.887	300
						0	14.002	85.887	375
4-15	681536.496	714703.253	87.418	1.565	1500	1	14.002	85.861	375
						2	4.014	85.853	600
						0	4.015	85.853	600
16-0	681524.006	714656.720	88.000	1.425	1200				
						0	16.000	86.575	225
17-0	681491.700	714717.223	87.625	1.425	1200				
						0	17.000	86.200	225
4-16	681507.377	714687.844	87.823	2.006	1500	1	17.000	86.003	225
						2	16.000	86.367	225
						3	4.015	85.817	600
						0	4.016	85.817	600

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
1-13	681471.112	714668.653	88.078	2.301	1500	1	4.016	85.777	600
						2	1.012	85.884	450
						0	1.013	85.777	600
18-0	681422.878	714707.549	87.800	1.375	1200	0	18.000	86.425	225
19-0	681367.542	714630.246	88.150	1.425	1200	0	19.000	86.725	225
19-1	681380.523	714649.147	87.600	1.010	1200	1	19.000	86.590	225
						0	19.001	86.590	225
18-1	681392.936	714654.934	87.750	1.682	1200	1	19.001	86.509	225
						2	18.000	86.068	225
						0	18.001	86.068	300
20-0	681458.635	714610.046	87.550	1.306	1200	0	20.000	86.244	225
18-2	681419.839	714638.804	87.900	1.961	1350	1	20.000	85.959	225
						2	18.001	85.939	300
						0	18.002	85.939	375
18-3	681442.714	714678.477	87.724	1.927	1350	1	18.002	85.797	375
						0	18.003	85.797	375
18-4	681452.487	714687.900	87.871	2.101	1350	1	18.003	85.770	375
						0	18.004	85.770	375
1-14	681458.950	714691.294	87.871	2.119	1500	1	18.004	85.756	375
						2	1.013	85.752	600
						0	1.014	85.752	600
1-15	681452.167	714703.160	87.781	2.042	1500	1	1.014	85.739	600
						0	1.015	85.739	600
1-16	681431.016	714720.912	87.570	1.858	2100	1	1.015	85.712	600
						0	1.016	85.712	600
PI 4	681413.439	714734.297	87.100	1.516	1500	1	1.016	85.684	600
						0	1.017	85.584	600
Outfall 4	681407.762	714738.679	86.490	0.917	1500	1	1.017	85.573	600
21-0	681732.623	714543.018	88.540	1.282	1350	0	21.000	87.258	375
21-1	681683.674	714528.552	88.225	1.125	1350	1	21.000	87.100	375
						0	21.001	87.100	375
21-2	681649.964	714518.491	88.405	1.414	1350	1	21.001	86.991	375
						0	21.002	86.991	375

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
21-3	681596.221	714502.522	88.691	1.873	1350	1	21.002	86.818	375
						0	21.003	86.818	375
21-4	681550.069	714488.810	88.367	1.698	1350	1	21.003	86.669	375
						0	21.004	86.669	400
21-5	681538.872	714510.770	88.456	1.858	1350	1	21.004	86.598	400
						0	21.005	86.598	400
22-0	681680.587	714541.754	88.245	1.150	1350				
						0	22.000	87.095	400
22-1	681676.628	714555.083	88.298	1.243	1350	1	22.000	87.055	400
						0	22.001	87.055	400
23-0	681708.590	714630.655	88.357	1.196	1350				
						0	23.000	87.161	375
22-2	681652.175	714600.736	88.564	1.657	1350	1	23.000	86.964	375
						2	22.001	86.907	400
						0	22.002	86.907	400
24-0	681619.602	714645.364	88.655	1.555	1350				
						0	24.000	87.100	400
22-3	681644.994	714598.737	88.563	1.678	1350	1	24.000	86.949	400
						2	22.002	86.885	400
						0	22.003	86.885	400
22-4	681604.492	714576.263	89.151	2.398	1350	1	22.003	86.753	400
						0	22.004	86.753	400
25-0	681578.956	714511.950	88.704	1.425	1200				
						0	25.000	87.279	225
25-1	681570.824	714540.652	88.700	1.597	1200	1	25.000	87.103	225
						0	25.001	87.103	225
22-5	681561.371	714552.096	88.931	2.319	1350	1	25.001	87.015	225
						2	22.004	86.612	400
						0	22.005	86.612	400
26-0	681520.981	714587.351	88.550	1.425	1200				
						0	26.000	87.125	225
26-1	681529.224	714571.926	88.550	1.528	1200	1	26.000	87.022	225
						0	26.001	87.022	225
22-6	681548.127	714544.673	88.890	2.316	1350	1	26.001	86.826	225
						2	22.005	86.574	400
						0	22.006	86.574	400
22-7	681533.514	714533.960	88.500	1.971	1350	1	22.006	86.529	400
						0	22.007	86.529	400

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
21-6	681527.948	714530.232	88.369	1.857	1500		1	22.007	86.512	400
							2	21.005	86.534	400
							0	21.006	86.512	500
21-7	681498.591	714572.945	88.161	1.761	1500		1	21.006	86.400	500
							0	21.007	86.400	500
21-8	681494.806	714586.463	88.218	1.843	1500		1	21.007	86.375	500
							0	21.008	86.375	500
21-9	681479.812	714583.385	88.083	1.735	1500		1	21.008	86.348	500
							0	21.009	86.348	500
21-10	681440.788	714563.200	87.929	1.657	1500		1	21.009	86.272	500
							0	21.010	86.272	500
27-0	681350.118	714601.420	88.114	1.792	1500		0	27.000	86.322	600
27-1	681391.219	714575.945	87.900	1.625	1500		1	27.000	86.275	600
							0	27.001	86.275	600
28-0	681472.874	714484.377	88.108	1.630	1350		0	28.000	86.478	375
28-1	681446.895	714523.359	87.846	1.513	1350		1	28.000	86.333	375
							0	28.001	86.333	375
21-11	681424.130	714546.888	88.117	1.885	1500		1	28.001	86.232	375
							2	27.001	86.232	600
							3	21.010	86.232	500
							0	21.011	86.232	600
29-0	681529.152	714477.102	88.510	1.125	1200		0	29.000	87.385	225
29-1	681493.847	714463.154	88.500	1.339	1200		1	29.000	87.161	225
							0	29.001	87.161	225
29-2	681481.690	714464.705	88.289	1.201	1200		1	29.001	87.088	225
							0	29.002	87.088	225
29-3	681435.452	714440.649	88.782	2.002	1200		1	29.002	86.780	225
							0	29.003	86.780	225
29-4	681420.740	714447.405	88.880	2.196	1200		1	29.003	86.684	225
							0	29.004	86.684	225
29-5	681401.736	714473.443	88.851	2.364	1200		1	29.004	86.487	225
							0	29.005	86.487	225
21-12	681378.428	714500.325	88.730	2.561	1500		1	29.005	86.277	225
							2	21.011	86.169	600
							0	21.012	86.169	600

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
30-0	681336.824	714583.857	88.750	1.425	1200	0	30.000	87.325	225
30-1	681318.656	714552.623	88.700	1.638	1200	1	30.000	87.062	225
						0	30.001	87.062	225
30-2	681338.498	714532.780	88.800	1.904	1200	1	30.001	86.896	225
						0	30.002	86.896	225
21-13	681354.275	714520.630	88.850	2.712	1500	1	30.002	86.778	225
						2	21.012	86.138	600
						0	21.013	86.138	600
21-14	681331.006	714494.008	88.070	1.966	1500	1	21.013	86.104	600
						0	21.014	86.104	600
PI 3	681328.921	714490.869	88.070	2.073	1500	1	21.014	86.097	600
						0	21.015	85.997	600
Outfall 3	681310.005	714462.485	87.300	1.362	1500	1	21.015	85.938	600
31-0	681241.100	714577.004	88.586	1.811	1200	0	31.000	86.775	225
31-1	681266.075	714572.105	88.460	1.835	1200	1	31.000	86.625	225
						0	31.001	86.625	225
31-2	681288.357	714572.144	88.375	2.029	1200	1	31.001	86.346	225
						0	31.002	86.346	225
31-4	681300.880	714577.792	88.412	2.238	1200	1	31.002	86.174	225
						0	31.003	86.174	225
31-5	681310.328	714592.053	88.350	2.390	1200	1	31.003	85.960	225
						0	31.004	85.960	225
31-6	681328.209	714617.952	88.000	2.355	1200	1	31.004	85.645	225
						0	31.005	85.645	225
32-0	681351.362	714665.315	87.750	1.625	1200	0	32.000	86.125	225
32-1	681337.837	714644.743	87.750	1.770	1200	1	32.000	85.980	225
						0	32.001	85.980	225
31-7	681322.684	714621.696	87.894	2.289	1200	1	32.001	85.817	225
						2	31.005	85.605	225
						0	31.006	85.605	300
34-0	681241.403	714640.836	87.225	1.425	1200	0	33.000	85.800	225

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
34-1	681263.636	714636.398	87.366	1.700	1200	1	33.000	85.666	225
						0	33.001	85.666	225
34-2	681271.591	714641.215	87.322	1.711	1200	1	33.001	85.611	225
						0	33.002	85.611	225
31-8	681277.979	714651.973	87.387	2.003	1200	1	33.002	85.537	225
						2	31.006	85.384	300
						0	31.007	85.384	300
33-0	681304.110	714699.473	87.400	1.725	1200				
						0	34.000	85.675	225
31-9	681274.152	714654.584	87.385	2.289	1350	1	34.000	85.357	225
						2	31.007	85.369	300
						0	31.008	85.096	400
31-10	681266.162	714658.164	87.260	2.189	1800	1	31.008	85.071	400
						0	31.009	85.071	400
35-0	681280.289	714692.365	87.091	1.432	1200				
						0	35.000	85.659	225
31-11	681255.367	714674.032	86.850	1.834	1350	1	35.000	85.476	225
						2	31.009	85.016	400
						0	31.010	85.016	400
31-12	681230.026	714659.891	86.901	1.968	1350	1	31.010	84.933	400
						0	31.011	84.933	400
36-0	681231.376	714579.073	88.558	1.658	1200				
						0	36.000	86.900	225
36-1	681201.801	714584.854	88.383	1.661	1200	1	36.000	86.722	225
						0	36.001	86.722	225
36-2	681188.714	714591.490	88.162	1.587	1200	1	36.001	86.575	225
						0	36.002	86.575	225
36-3	681182.045	714600.247	87.954	1.489	1200	1	36.002	86.465	225
						0	36.003	86.465	225
36-4	681178.035	714614.258	87.676	1.357	1200	1	36.003	86.319	225
						0	36.004	86.319	225
31-13	681174.797	714656.902	87.231	2.456	1350	1	36.004	85.891	225
						2	31.011	84.775	400
						0	31.012	84.775	450
31-14	681172.134	714690.391	87.000	2.283	1350	1	31.012	84.717	450
						0	31.013	84.717	450
31-15	681178.112	714704.102	86.950	2.259	1350	1	31.013	84.691	450
						0	31.014	84.691	450

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
37-0	681393.391	714716.054	88.000	1.425	1200		0	37.000	86.575	225
37-1	681364.767	714673.338	87.736	1.464	1200		1	37.000	86.272	225
							0	37.001	86.272	225
38-0	681384.526	714741.184	87.352	1.675	1200		0	38.000	85.677	225
39-0	681352.807	714770.696	87.171	1.056	1200		0	39.000	86.115	225
38-1	681348.326	714765.422	87.147	1.727	1200		1	39.000	86.074	225
							2	38.000	85.420	225
							0	38.001	85.420	300
37-2	681304.036	714714.518	87.247	2.103	1200		1	38.001	85.144	300
							2	37.001	85.840	225
							0	37.002	85.144	300
40-0	681328.813	714803.744	87.200	1.425	1200		0	40.000	85.775	225
40-1	681305.668	714816.641	87.075	1.456	1200		1	40.000	85.619	225
							0	40.001	85.619	225
37-3	681257.516	714759.392	87.021	2.077	1350		1	40.001	85.178	225
							2	37.002	84.944	300
							0	37.003	84.944	375
37-4	681218.378	714728.860	86.930	2.108	1350		1	37.003	84.822	375
							0	37.004	84.822	375
31-16	681195.150	714715.697	86.850	2.195	1500		1	37.004	84.744	375
							2	31.014	84.655	450
							0	31.015	84.655	600
31-17	681189.329	714725.568	86.440	1.809	2100		1	31.015	84.631	600
							0	31.016	84.631	600
PI 1	681186.333	714730.649	86.440	1.920	1500		1	31.016	84.620	600
							0	31.017	84.520	600
Outfall 1	681181.220	714748.846	85.570	1.069	1500		1	31.017	84.501	600
41-0	681603.924	714908.556	88.250	1.550	1200		0	41.000	86.700	300
41-1	681618.947	714884.229	88.250	1.667	1200		1	41.000	86.583	300
							0	41.001	86.583	300
41-2	681580.497	714859.153	87.800	1.405	1200		1	41.001	86.395	300
							0	41.002	86.395	300

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
41-3	681539.046	714832.914	87.500	1.306	1200	1 0	41.002 41.003	86.194 86.194	300 300
42-0	681554.612	714897.046	87.868	1.294	1200	0	42.000	86.574	300
42-1	681561.361	714886.575	87.996	1.473	1200	1 0	42.000 42.001	86.523 86.523	300 300
43-0	681529.669	714880.070	88.018	1.425	1200	0	43.000	86.593	225
42-2	681536.014	714870.226	88.148	1.749	1200	1 2 0	43.000 42.001 42.002	86.524 86.399 86.399	225 300 300
44-0	681512.910	714874.563	88.248	1.825	1200	0	44.000	86.423	225
41-4	681521.339	714860.680	88.226	2.167	1350	1 2 3 0	44.000 42.002 41.003 41.004	86.327 86.327 86.059 86.059	225 300 300 375
45-0	681450.416	714820.912	87.573	1.161	1200	0	45.000	86.412	225
41-5	681482.391	714838.085	87.879	1.959	1350	1 2 0	45.000 41.004 41.005	86.198 85.920 85.920	225 375 375
41-6	681480.058	714842.579	87.897	1.998	1350	1 0	41.005 41.006	85.899 85.899	375 375
41-7	681434.036	714818.133	87.523	1.785	1350	1 0	41.006 41.007	85.738 85.738	375 375
41-8	681436.400	714813.481	87.523	1.806	1350	1 0	41.007 41.008	85.717 85.717	375 375
46-0	681419.932	714815.536	87.430	1.425	1200	0	46.000	86.005	225
41-9	681424.329	714807.040	87.480	1.806	1350	1 2 0	46.000 41.008 41.009	85.948 85.674 85.674	225 375 375
47-0	681526.464	714826.290	87.950	1.425	1200	0	47.000	86.525	225
47-1	681482.339	714802.714	87.550	1.442	1200	1 0	47.000 47.001	86.108 86.108	225 225
41-10	681438.489	714779.369	87.430	2.030	1350	1 2 0	47.001 41.009 41.010	85.815 85.578 85.400	225 375 400

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
41-11	681441.127	714775.003	87.390	2.005	1350	1	41.010	85.385	400
						0	41.011	85.385	400
41-12	681437.310	714761.518	87.450	2.103	1800	1	41.011	85.347	400
						0	41.012	85.347	400
48-0	681389.971	714797.634	87.450	1.150	1200	0	48.000	86.300	225
41-13	681415.501	714749.863	87.350	2.075	1800	1	48.000	85.758	225
						2	41.012	85.275	400
						0	41.013	85.275	500
PI 5	681410.913	714747.274	87.350	2.185	1500	1	41.013	85.265	500
						0	41.014	85.165	500
Outfall 5	681406.210	714744.800	86.400	1.252	1500	1	41.014	85.148	500
50-0	681272.880	714510.934	91.041	2.141	1200	0	49.000	88.900	225
50-1	681305.334	714543.097	90.205	2.205	1200	1	49.000	88.329	225
						0	49.001	88.000	225
50-2	681326.122	714573.010	89.346	2.146	1200	1	49.001	87.545	225
						0	49.002	87.200	225
50-3	681341.206	714595.670	88.831	2.631	1350	1	49.002	86.860	225
						0	49.003	86.200	400
50-4	681376.057	714649.341	88.427	2.425	1350	1	49.003	86.002	400
						0	49.004	86.002	400
50-5	681423.923	714716.689	88.100	2.279	1350	1	49.004	85.821	400
						0	49.005	85.821	400
PI 2	681408.828	714728.225	87.100	1.480	1350	1	49.005	85.763	400
						0	49.006	85.620	450
Outfall 2	681405.225	714730.997	86.501	0.891	1350	1	49.006	85.610	450
49-0	681617.771	714850.092	87.806	1.612	1350	0	50.000	86.194	375
49-1	681553.609	714815.717	87.191	1.222	1350	1	50.000	85.969	375
						0	50.001	85.969	375
49-2	681537.854	714803.050	87.245	1.339	1350	1	50.001	85.906	375
						0	50.002	85.906	375

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
49-3	681490.130	714778.489	87.547	1.748	1350	1	50.002	85.799	375
						0	50.003	85.799	375
49-4	681460.413	714760.641	87.734	2.004	1350	1	50.003	85.730	375
						0	50.004	85.730	450
49-5	681437.601	714733.019	87.899	2.219	1350	1	50.004	85.680	450
						0	50.005	85.680	450
PI 6	681413.647	714739.599	87.889	2.363	1350	1	50.005	85.626	450
						0	50.006	85.526	450
Outfall 6	681408.322	714741.891	86.490	0.986	1350	1	50.006	85.504	450

Simulation Settings

Rainfall Methodology	FSR	Summer CV	0.750	Drain Down Time (mins)	240
FSR Region	Scotland and Ireland	Winter CV	0.840	Additional Storage (m³/ha)	20.0
M5-60 (mm)	15.600	Analysis Speed	Normal	Check Discharge Rate(s)	x
Ratio-R	0.286	Skip Steady State	x	Check Discharge Volume	x

Storm Durations

15	60	180	360	600	960	2160	4320	7200	10080
30	120	240	480	720	1440	2880	5760	8640	

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
5	20	0	0

Node 21-14 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	86.104	Product Number	CTL-SHE-0093-4000-1143-4000
Design Depth (m)	1.143	Min Outlet Diameter (m)	0.150
Design Flow (l/s)	4.0	Min Node Diameter (mm)	1200

Node 31-17 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	84.631	Product Number	CTL-SHE-0143-9900-1143-9900
Design Depth (m)	1.143	Min Outlet Diameter (m)	0.225
Design Flow (l/s)	9.9	Min Node Diameter (mm)	1200

Node 50-5 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	85.821	Product Number	CTL-SHE-0065-2000-1143-2000
Design Depth (m)	1.143	Min Outlet Diameter (m)	0.100
Design Flow (l/s)	2.0	Min Node Diameter (mm)	1200

Node 1-11 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	85.921	Product Number	CTL-SHE-0173-1500-1143-1500
Design Depth (m)	1.143	Min Outlet Diameter (m)	0.225
Design Flow (l/s)	15.0	Min Node Diameter (mm)	1500

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Node 41-13 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	85.275	Product Number	CTL-SHE-0193-2100-1661-2100
Design Depth (m)	1.661	Min Outlet Diameter (m)	0.225
Design Flow (l/s)	21.0	Min Node Diameter (mm)	1800

Node 1-16 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	85.712	Product Number	CTL-SHE-0250-3740-1800-3740
Design Depth (m)	1.800	Min Outlet Diameter (m)	0.300
Design Flow (l/s)	37.4	Min Node Diameter (mm)	1800

Node 49-5 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	85.680	Product Number	CTL-SHE-0065-2000-1143-2000
Design Depth (m)	1.143	Min Outlet Diameter (m)	0.100
Design Flow (l/s)	2.0	Min Node Diameter (mm)	1200

Node 21-14 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	10.0	Invert Level (m)	86.104
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.91	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	2120.0	0.0	1.143	2120.0	0.0	1.144	0.0	0.0

Node 31-17 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	10.0	Invert Level (m)	84.631
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.91	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	540.0	0.0	1.143	540.0	0.0	1.144	0.0	0.0

Node 41-7 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	10.0	Invert Level (m)	85.738
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.89	Time to half empty (mins)	0

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	350.0	0.0	1.143	350.0	0.0	1.144	0.0	0.0

Node 31-10 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	10.0	Invert Level (m)	85.071
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.90	Time to half empty (mins)	960

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	500.0	0.0	1.143	500.0	0.0	1.144	0.0	0.0

Node 4-12 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	10.0	Invert Level (m)	85.944
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.89	Time to half empty (mins)	0

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	680.0	0.0	1.143	680.0	0.0	1.144	0.0	0.0

Node 1-11 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	10.0	Invert Level (m)	85.921
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.91	Time to half empty (mins)	0

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Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	655.0	0.0	1.143	655.0	0.0	1.144	0.0	0.0

Node 49-3 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	10.0	Invert Level (m)	85.799
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.87	Time to half empty (mins)	0

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	150.0	0.0	1.143	150.0	0.0	1.144	0.0	0.0

Node 50-5 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	10.0	Invert Level (m)	85.821
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.87	Time to half empty (mins)	0

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	183.0	0.0	1.143	183.0	0.0	1.144	0.0	0.0

Node 22-7 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	10.0	Invert Level (m)	86.529
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.88	Time to half empty (mins)	0

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	360.0	0.0	1.143	360.0	0.0	1.144	0.0	0.0

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Results for 5 year +20% CC Critical Storm Duration. Lowest mass balance: 85.59%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1-0	10	87.037	0.037	2.4	0.0586	0.0000	OK
15 minute winter	1-1	11	86.999	0.063	7.3	0.1152	0.0000	OK
15 minute winter	1-2	11	86.902	0.085	13.0	0.1603	0.0000	OK
15 minute winter	1-3	13	86.878	0.161	22.7	0.2859	0.0000	OK
15 minute winter	1-4	13	86.849	0.187	25.7	0.3001	0.0000	OK
15 minute winter	1-5	12	86.880	0.347	33.4	0.6708	0.0000	OK
15 minute winter	2-0	11	87.200	0.037	2.4	0.0475	0.0000	OK
15 minute summer	1-6	12	86.811	0.365	55.3	1.1190	0.0000	OK
15 minute summer	1-7	11	86.820	0.497	72.9	1.4311	0.0000	SURCHARGED
15 minute winter	1-8	11	86.812	0.579	90.6	1.4925	0.0000	SURCHARGED
15 minute winter	1-9	11	86.758	0.653	110.2	2.0067	0.0000	SURCHARGED
15 minute summer	1-10	11	86.672	0.614	111.2	1.1567	0.0000	SURCHARGED
600 minute winter	1-11	480	86.388	0.467	22.4	279.3361	0.0000	SURCHARGED
15 minute winter	3-0	11	86.829	0.038	2.6	0.0486	0.0000	OK
240 minute winter	1-12	176	86.396	0.495	11.2	1.1523	0.0000	SURCHARGED
15 minute summer	4-0	1	87.085	0.000	0.0	0.0000	0.0000	OK
15 minute winter	4-1	11	87.000	0.059	5.5	0.0937	0.0000	OK
15 minute winter	4-2	11	86.977	0.055	5.3	0.0621	0.0000	OK
15 minute winter	4-3	12	86.964	0.222	19.2	0.3331	0.0000	OK
15 minute summer	5-0	1	87.125	0.000	0.0	0.0000	0.0000	OK
15 minute winter	5-1	11	87.031	0.069	8.5	0.1348	0.0000	OK
15 minute winter	4-4	13	86.957	0.346	32.8	0.7178	0.0000	SURCHARGED
15 minute winter	4-5	13	86.920	0.449	34.2	0.7243	0.0000	SURCHARGED
15 minute winter	4-6	13	86.903	0.455	37.1	0.5149	0.0000	SURCHARGED
15 minute winter	4-7	13	86.871	0.482	41.4	0.9899	0.0000	SURCHARGED
15 minute winter	6-0	10	86.918	0.047	4.0	0.0712	0.0000	OK
15 minute winter	6-1	12	86.913	0.248	18.6	0.4220	0.0000	SURCHARGED
15 minute winter	6-2	12	86.877	0.444	18.1	0.6206	0.0000	SURCHARGED
15 minute winter	6-3	12	86.835	0.570	35.6	1.3163	0.0000	SURCHARGED
15 minute winter	4-8	11	86.803	0.677	87.8	2.0858	0.0000	SURCHARGED
15 minute winter	7-0	12	86.756	0.181	16.7	0.2042	0.0000	OK
15 minute winter	4-9	11	86.752	0.711	117.3	2.2883	0.0000	SURCHARGED
15 minute winter	8-0	11	86.810	0.520	19.4	0.5876	0.0000	SURCHARGED
15 minute summer	9-0	11	86.809	0.410	15.8	0.4642	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	1-0	1.000	1-1	2.3	0.269	0.021	0.1838	
15 minute winter	1-1	1.001	1-2	7.0	0.458	0.063	0.5907	
15 minute winter	1-2	1.002	1-3	12.7	0.587	0.115	0.9929	
15 minute winter	1-3	1.003	1-4	20.8	0.695	0.188	0.8871	
15 minute winter	1-4	1.004	1-5	30.1	0.594	0.272	3.0271	
15 minute winter	1-5	1.005	1-6	43.0	0.520	0.486	4.5058	
15 minute winter	2-0	2.000	1-6	2.3	0.546	0.057	0.1278	
15 minute summer	1-6	1.006	1-7	62.0	0.645	0.701	6.7936	
15 minute summer	1-7	1.007	1-8	80.4	0.747	0.910	4.9851	
15 minute winter	1-8	1.008	1-9	94.7	0.881	1.072	7.0971	
15 minute winter	1-9	1.009	1-10	109.2	1.008	1.139	3.5382	
15 minute summer	1-10	1.010	1-11	123.6	2.073	0.981	3.0782	
600 minute winter	1-11	Hydro-Brake®	1-12	11.8				
15 minute winter	3-0	3.000	1-12	2.4	0.557	0.061	0.1752	
240 minute winter	1-12	1.012	1-13	11.2	0.270	0.088	1.6668	
15 minute summer	4-0	4.000	4-1	0.0	0.000	0.000	0.1253	
15 minute winter	4-1	4.001	4-2	5.3	0.634	0.103	0.0318	
15 minute winter	4-2	4.002	4-3	5.3	0.497	0.103	0.9806	
15 minute winter	4-3	4.003	4-4	14.1	0.449	0.276	1.2743	
15 minute summer	5-0	5.000	5-1	0.0	0.000	0.000	0.1381	
15 minute winter	5-1	5.001	4-4	8.2	0.771	0.206	0.9079	
15 minute winter	4-4	4.004	4-5	32.1	0.820	0.626	1.4164	
15 minute winter	4-5	4.005	4-6	37.1	0.875	0.718	0.2279	
15 minute winter	4-6	4.006	4-7	38.7	0.820	0.754	0.5950	
15 minute winter	4-7	4.007	4-8	44.0	0.897	0.860	2.6670	
15 minute winter	6-0	6.000	6-1	3.8	0.412	0.096	0.7927	
15 minute winter	6-1	6.001	6-2	16.4	0.751	0.412	1.5616	
15 minute winter	6-2	6.002	6-3	22.3	0.561	0.560	1.1288	
15 minute winter	6-3	6.003	4-8	33.5	0.844	0.842	0.9360	
15 minute winter	4-8	4.008	4-9	92.7	0.841	0.836	3.0142	
15 minute winter	7-0	7.000	4-9	-16.7	-0.475	-0.419	2.2135	
15 minute winter	4-9	4.009	4-10	130.4	1.182	1.475	2.1087	
15 minute winter	8-0	8.000	8-1	-19.4	-0.559	-0.609	1.7875	
15 minute summer	9-0	9.000	8-1	-15.8	-0.494	-0.497	1.7821	

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Results for 5 year +20% CC Critical Storm Duration. Lowest mass balance: 85.59%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	8-1	11	86.722	0.602	45.3	1.5746	0.0000	SURCHARGED
15 minute summer	4-10	11	86.693	0.690	154.5	1.3748	0.0000	SURCHARGED
15 minute winter	10-0	13	86.770	0.009	0.8	0.0105	0.0000	OK
15 minute winter	10-1	12	86.778	0.113	7.7	0.2035	0.0000	OK
15 minute winter	11-0	11	86.799	0.274	10.2	0.3101	0.0000	SURCHARGED
15 minute winter	11-1	11	86.795	0.346	18.9	0.5911	0.0000	SURCHARGED
15 minute winter	10-2	11	86.767	0.473	28.5	1.0405	0.0000	SURCHARGED
15 minute winter	12-0	11	86.706	0.543	6.5	0.6142	0.0000	SURCHARGED
15 minute winter	10-3	11	86.701	0.602	48.4	1.4510	0.0000	SURCHARGED
15 minute winter	4-11	10	86.623	0.671	229.4	1.9719	0.0000	SURCHARGED
240 minute winter	4-12	176	86.400	0.456	60.3	276.6558	0.0000	OK
240 minute winter	13-0	176	86.399	0.224	0.5	0.2533	0.0000	OK
240 minute winter	4-13	176	86.399	0.495	28.8	1.1529	0.0000	OK
240 minute winter	4-14	176	86.398	0.521	29.3	1.1719	0.0000	OK
240 minute winter	14-0	176	86.398	0.245	1.2	0.3439	0.0000	OK
240 minute winter	14-1	176	86.398	0.382	7.0	1.2621	0.0000	SURCHARGED
240 minute winter	15-0	176	86.398	0.129	0.5	0.1560	0.0000	OK
240 minute winter	14-2	176	86.398	0.511	15.7	2.1205	0.0000	SURCHARGED
240 minute winter	4-15	176	86.398	0.545	30.8	1.4920	0.0000	OK
15 minute summer	16-0	1	86.575	0.000	0.0	0.0000	0.0000	OK
240 minute winter	17-0	176	86.397	0.197	0.6	0.2231	0.0000	OK
240 minute winter	4-16	176	86.397	0.580	31.8	2.5410	0.0000	OK
240 minute winter	1-13	176	86.396	0.619	34.2	1.5412	0.0000	SURCHARGED
15 minute summer	18-0	1	86.425	0.000	0.0	0.0000	0.0000	OK
15 minute winter	19-0	10	86.778	0.053	5.0	0.0784	0.0000	OK
15 minute winter	19-1	11	86.664	0.074	8.9	0.1133	0.0000	OK
240 minute winter	18-1	176	86.396	0.328	5.4	0.6638	0.0000	SURCHARGED
15 minute winter	20-0	13	86.397	0.153	10.3	0.2289	0.0000	OK
240 minute winter	18-2	176	86.396	0.457	13.4	1.4841	0.0000	SURCHARGED
240 minute winter	18-3	176	86.396	0.599	16.8	1.4911	0.0000	SURCHARGED
240 minute winter	18-4	176	86.396	0.626	17.7	1.0680	0.0000	SURCHARGED
240 minute winter	1-14	176	86.396	0.644	36.2	1.5322	0.0000	SURCHARGED
240 minute winter	1-15	176	86.395	0.656	36.6	1.3646	0.0000	SURCHARGED
240 minute winter	1-16	176	86.394	0.682	37.3	2.7711	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 summer	8-1	8.001	4-10	30.7	0.436	0.433	2.0073	
15 minute summer	4-10	4.010	4-11	157.8	1.261	1.567	3.4769	
15 minute winter	10-0	10.000	10-1	-0.8	-0.099	-0.021	0.1633	
15 minute winter	10-1	10.001	10-2	8.3	0.656	0.209	1.0171	
15 minute winter	11-0	11.000	11-1	-10.2	-0.444	-0.256	0.5112	
15 minute winter	11-1	11.001	10-2	14.2	0.387	0.356	1.0424	
15 minute winter	10-2	10.002	10-3	34.5	0.868	0.868	0.7549	
15 minute winter	12-0	12.000	10-3	-6.5	-0.286	-0.204	0.6672	
15 minute winter	10-3	10.003	4-11	53.1	1.337	1.671	0.7590	
15 minute winter	4-11	4.011	4-12	237.3	2.807	1.510	0.6096	
240 minute winter	4-12	4.012	4-13	28.6	-0.206	0.182	5.5354	
240 minute winter	13-0	13.000	4-13	-0.5	-0.029	-0.012	1.1725	
240 minute winter	4-13	4.013	4-14	29.3	0.166	0.187	3.7656	
240 minute winter	4-14	4.014	4-15	29.7	0.132	0.131	5.6975	
240 minute winter	14-0	14.000	14-1	1.1	0.128	0.019	3.4467	
240 minute winter	14-1	14.001	14-2	5.6	0.236	0.099	3.4640	
240 minute winter	15-0	15.000	14-2	0.3	0.248	0.008	1.1839	
240 minute winter	14-2	14.002	4-15	14.8	0.375	0.168	1.4383	
240 minute winter	4-15	4.015	4-16	31.5	0.266	0.139	9.0246	
15 minute summer	16-0	16.000	4-16	0.0	0.000	0.000	0.0000	
240 minute winter	17-0	17.000	4-16	-0.6	-0.032	-0.015	1.2769	
240 minute winter	4-16	4.016	1-13	32.6	0.286	0.154	11.5021	
240 minute winter	1-13	1.013	1-14	34.8	0.250	0.164	7.2394	
15 minute summer	18-0	18.000	18-1	0.0	0.000	0.000	1.2038	
15 minute winter	19-0	19.000	19-1	4.9	0.535	0.123	0.2109	
15 minute winter	19-1	19.001	18-1	8.7	0.787	0.218	0.1512	
240 minute winter	18-1	18.001	18-2	4.3	0.250	0.061	2.2089	
15 minute winter	20-0	20.000	18-2	7.7	0.233	0.195	1.6530	
240 minute winter	18-2	18.002	18-3	12.2	0.333	0.110	5.0511	
240 minute winter	18-3	18.003	18-4	16.4	0.290	0.186	1.4974	
240 minute winter	18-4	18.004	1-14	17.6	0.205	0.199	0.8052	
240 minute winter	1-14	1.014	1-15	36.3	0.304	0.171	3.8500	
240 minute winter	1-15	1.015	1-16	36.6	0.263	0.173	7.7780	
240 minute winter	1-16	1.016	PI 4	37.2	0.401	0.153	2.0490	

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Results for 5 year +20% CC Critical Storm Duration. Lowest mass balance: 85.59%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	PI 4	11	85.914	0.330	36.6	0.5837	0.0000	OK
15 minute summer	Outfall 4	1	85.910	0.337	37.1	0.0000	0.0000	OK
15 minute winter	21-0	11	87.281	0.023	1.0	0.0353	0.0000	OK
15 minute winter	21-1	11	87.178	0.078	11.5	0.1875	0.0000	OK
15 minute winter	21-2	11	87.087	0.096	16.9	0.1800	0.0000	OK
10080 minute winter	21-3	9960	87.072	0.254	0.7	0.6529	0.0000	OK
10080 minute winter	21-4	9960	87.072	0.403	0.9	0.8419	0.0000	SURCHARGED
10080 minute winter	21-5	9960	87.072	0.474	1.1	0.9942	0.0000	SURCHARGED
15 minute summer	22-0	12	87.221	0.126	4.7	0.2348	0.0000	OK
15 minute winter	22-1	12	87.220	0.165	14.4	0.3006	0.0000	OK
15 minute winter	23-0	11	87.222	0.061	6.9	0.1230	0.0000	OK
15 minute winter	22-2	11	87.183	0.276	65.1	1.3249	0.0000	OK
15 minute winter	24-0	12	87.187	0.087	8.1	0.1336	0.0000	OK
15 minute winter	22-3	11	87.170	0.285	82.4	0.7646	0.0000	OK
15 minute summer	22-4	10	87.144	0.391	96.5	0.9924	0.0000	OK
15 minute summer	25-0	1	87.279	0.000	0.0	0.0000	0.0000	OK
15 minute winter	25-1	10	87.192	0.089	12.3	0.1689	0.0000	OK
15 minute summer	22-5	10	87.085	0.473	133.1	1.1876	0.0000	SURCHARGED
15 minute summer	26-0	1	87.125	0.000	0.0	0.0000	0.0000	OK
10080 minute winter	26-1	9960	87.072	0.050	0.1	0.0673	0.0000	OK
10080 minute winter	22-6	9960	87.072	0.498	3.2	0.9660	0.0000	SURCHARGED
10080 minute winter	22-7	9960	87.072	0.543	3.2	172.6898	0.0000	SURCHARGED
10080 minute winter	21-6	9960	87.072	0.560	4.5	1.4051	0.0000	SURCHARGED
10080 minute winter	21-7	9960	87.071	0.671	5.0	2.3138	0.0000	SURCHARGED
10080 minute winter	21-8	10320	87.074	0.699	5.1	1.4543	0.0000	SURCHARGED
10080 minute winter	21-9	10200	87.069	0.721	5.0	1.3824	0.0000	SURCHARGED
10080 minute winter	21-10	10320	87.071	0.799	5.2	2.2518	0.0000	SURCHARGED
10080 minute winter	27-0	10260	87.071	0.749	0.3	1.3237	0.0000	SURCHARGED
10080 minute winter	27-1	10320	87.071	0.796	0.9	2.8175	0.0000	SURCHARGED
10080 minute winter	28-0	10260	87.071	0.593	0.2	1.1331	0.0000	SURCHARGED
10080 minute winter	28-1	10020	87.071	0.738	0.7	2.6375	0.0000	SURCHARGED
10080 minute winter	21-11	10320	87.071	0.839	6.8	3.3787	0.0000	SURCHARGED
15 minute winter	29-0	11	87.400	0.015	0.4	0.0180	0.0000	OK
15 minute winter	29-1	11	87.217	0.056	5.5	0.0857	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	PI 4	1.017	Outfall 4	37.1	0.231	0.139	1.1542	181.3
15 minute winter	21-0	21.000	21-1	0.9	0.100	0.008	0.4976	
15 minute winter	21-1	21.001	21-2	10.9	0.574	0.099	0.6818	
15 minute winter	21-2	21.002	21-3	16.2	0.539	0.147	1.7161	
10080 minute winter	21-3	21.003	21-4	0.7	0.261	0.006	4.5647	
10080 minute winter	21-4	21.004	21-5	0.9	0.277	0.007	3.0854	
10080 minute winter	21-5	21.005	21-6	1.1	0.308	0.009	2.7940	
15 minute summer	22-0	22.000	22-1	5.7	0.405	0.045	0.5210	
15 minute winter	22-1	22.001	22-2	17.8	0.292	0.141	3.6088	
15 minute winter	23-0	23.000	22-2	6.5	0.283	0.059	2.5043	
15 minute winter	22-2	22.002	22-3	63.8	0.794	0.498	0.6994	
15 minute winter	24-0	24.000	22-3	7.2	0.242	0.057	2.3591	
15 minute winter	22-3	22.003	22-4	87.4	0.870	0.694	4.9504	
15 minute summer	22-4	22.004	22-5	104.4	0.942	0.829	6.1691	
15 minute summer	25-0	25.000	25-1	0.0	0.000	0.000	0.2076	
15 minute winter	25-1	25.001	22-5	11.9	0.858	0.299	0.2071	
15 minute summer	22-5	22.005	22-6	136.8	1.189	1.161	1.9006	
15 minute summer	26-0	26.000	26-1	0.0	0.000	0.000	0.0451	
10080 minute winter	26-1	26.001	22-6	0.1	0.246	0.003	0.7674	
10080 minute winter	22-6	22.006	22-7	3.2	0.395	0.027	2.2683	
10080 minute winter	22-7	22.007	21-6	3.1	0.355	0.026	0.8386	
10080 minute winter	21-6	21.006	21-7	4.5	0.369	0.023	10.1382	
10080 minute winter	21-7	21.007	21-8	5.0	0.368	0.028	2.7460	
10080 minute winter	21-8	21.008	21-9	5.0	0.373	0.028	2.9942	
10080 minute winter	21-9	21.009	21-10	4.9	0.328	0.028	8.5941	
10080 minute winter	21-10	21.010	21-11	5.2	0.274	0.029	4.5606	
10080 minute winter	27-0	27.000	27-1	-0.3	-0.003	-0.001	13.6208	
10080 minute winter	27-1	27.001	21-11	-0.8	0.057	-0.004	12.3665	
10080 minute winter	28-0	28.000	28-1	0.2	0.103	0.002	5.1670	
10080 minute winter	28-1	28.001	21-11	0.6	0.102	0.006	3.6110	
10080 minute winter	21-11	21.011	21-12	6.6	0.227	0.031	18.3778	
15 minute winter	29-0	29.000	29-1	0.4	0.094	0.009	0.1697	
15 minute winter	29-1	29.001	29-2	5.3	0.587	0.134	0.1122	

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Results for 5 year +20% CC Critical Storm Duration. Lowest mass balance: 85.59%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	29-2	11	87.158	0.070	8.6	0.0991	0.0000	OK
10080 minute winter	29-3	10140	87.071	0.291	0.4	0.5010	0.0000	SURCHARGED
10080 minute winter	29-4	10140	87.071	0.387	0.5	0.5262	0.0000	SURCHARGED
10080 minute winter	29-5	10200	87.071	0.584	0.7	0.9574	0.0000	SURCHARGED
10080 minute winter	21-12	10320	87.071	0.902	8.0	2.8622	0.0000	SURCHARGED
15 minute winter	30-0	11	87.357	0.032	2.0	0.0405	0.0000	OK
15 minute winter	30-1	11	87.120	0.058	6.1	0.0805	0.0000	OK
10080 minute winter	30-2	10320	87.071	0.175	0.3	0.2879	0.0000	OK
10080 minute winter	21-13	10320	87.071	0.933	8.5	2.2952	0.0000	SURCHARGED
10080 minute winter	21-14	10260	87.071	0.967	8.4	1867.1700	0.0000	SURCHARGED
10080 minute winter	PI 3	10320	87.071	1.074	0.1	1.8976	0.0000	SURCHARGED
15 minute summer	Outfall 3	1	87.530	1.592	0.0	0.0000	0.0000	OK
15 minute summer	31-0	1	86.775	0.000	0.0	0.0000	0.0000	OK
15 minute winter	31-1	10	86.694	0.069	12.1	0.1239	0.0000	OK
15 minute winter	31-2	10	86.433	0.087	17.1	0.1211	0.0000	OK
15 minute winter	31-4	10	86.271	0.097	21.0	0.1282	0.0000	OK
15 minute winter	31-5	11	86.069	0.109	24.8	0.1424	0.0000	OK
15 minute winter	31-6	11	85.840	0.195	35.3	0.3120	0.0000	OK
15 minute summer	32-0	1	86.125	0.000	0.0	0.0000	0.0000	OK
15 minute winter	32-1	11	86.031	0.051	4.6	0.0709	0.0000	OK
15 minute winter	31-7	10	85.787	0.182	41.7	0.2125	0.0000	OK
15 minute winter	34-0	10	85.854	0.054	5.3	0.0823	0.0000	OK
15 minute winter	34-1	10	85.772	0.106	12.5	0.1661	0.0000	OK
15 minute summer	34-2	10	85.758	0.147	15.8	0.1990	0.0000	OK
5760 minute winter	31-8	3660	85.748	0.364	2.2	0.9325	0.0000	SURCHARGED
5760 minute winter	33-0	3660	85.748	0.073	0.0	0.0829	0.0000	OK
5760 minute winter	31-9	3660	85.748	0.652	2.4	1.2304	0.0000	SURCHARGED
5760 minute winter	31-10	3660	85.748	0.677	4.8	306.5415	0.0000	SURCHARGED
5760 minute winter	35-0	3660	85.748	0.089	0.1	0.1322	0.0000	OK
5760 minute winter	31-11	3660	85.748	0.732	3.2	1.5511	0.0000	SURCHARGED
5760 minute winter	31-12	3660	85.748	0.815	3.0	1.8214	0.0000	SURCHARGED
15 minute summer	36-0	1	86.900	0.000	0.0	0.0000	0.0000	OK
15 minute winter	36-1	10	86.802	0.080	13.1	0.1532	0.0000	OK
15 minute winter	36-2	10	86.671	0.096	17.2	0.1354	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	29-2	29.002	29-3	8.5	0.539	0.214	0.8297	
10080 minute winter	29-3	29.003	29-4	0.4	0.302	0.010	0.6439	
10080 minute winter	29-4	29.004	29-5	0.5	0.311	0.012	1.2821	
10080 minute winter	29-5	29.005	21-12	0.7	0.270	0.018	1.4151	
10080 minute winter	21-12	21.012	21-13	7.9	0.208	0.037	8.8880	
15 minute winter	30-0	30.000	30-1	1.9	0.347	0.044	0.2080	
15 minute winter	30-1	30.001	30-2	5.9	0.475	0.148	0.3525	
10080 minute winter	30-2	30.002	21-13	-0.3	0.307	-0.008	0.7258	
10080 minute winter	21-13	21.013	21-14	8.4	0.397	0.039	9.9595	
10080 minute winter	21-14	Hydro-Brake®	PI 3	0.1				
10080 minute winter	PI 3	21.015	Outfall 3	0.0	0.000	0.000	9.6080	0.0
15 minute summer	31-0	31.000	31-1	0.0	0.000	0.000	0.1265	
15 minute winter	31-1	31.001	31-2	11.9	0.970	0.204	0.2732	
15 minute winter	31-2	31.002	31-4	16.8	1.098	0.288	0.2104	
15 minute winter	31-4	31.003	31-5	20.9	1.179	0.359	0.3032	
15 minute winter	31-5	31.004	31-6	25.0	0.891	0.481	0.8756	
15 minute winter	31-6	31.005	31-7	36.6	1.067	0.913	0.2347	
15 minute summer	32-0	32.000	32-1	0.0	0.000	0.000	0.0794	
15 minute winter	32-1	32.001	31-7	4.4	0.660	0.110	0.1833	
15 minute winter	31-7	31.006	31-8	43.7	0.728	0.617	3.1101	
15 minute winter	34-0	33.000	34-1	5.2	0.448	0.130	0.2923	
15 minute winter	34-1	33.001	34-2	12.7	0.705	0.319	0.1910	
15 minute summer	34-2	33.002	31-8	16.4	0.773	0.412	0.3944	
5760 minute winter	31-8	31.007	31-9	2.1	0.439	0.034	0.3263	
5760 minute winter	33-0	34.000	31-9	0.0	-0.002	-0.001	1.3755	
5760 minute winter	31-9	31.008	31-10	2.4	0.363	0.019	1.0960	
5760 minute winter	31-10	31.009	31-11	3.2	0.294	0.026	2.4026	
5760 minute winter	35-0	35.000	31-11	0.1	0.246	0.003	0.8422	
5760 minute winter	31-11	31.010	31-12	3.0	0.262	0.024	3.6330	
5760 minute winter	31-12	31.011	31-13	2.5	0.205	0.020	6.9243	
15 minute summer	36-0	36.000	36-1	0.0	0.000	0.000	0.1818	
15 minute winter	36-1	36.001	36-2	12.8	0.891	0.246	0.2107	
15 minute winter	36-2	36.002	36-3	16.9	0.993	0.326	0.1878	

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Results for 5 year +20% CC Critical Storm Duration. Lowest mass balance: 85.59%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	36-3	11	86.570	0.105	20.5	0.1435	0.0000	OK
15 minute winter	36-4	11	86.425	0.106	22.5	0.1349	0.0000	OK
5760 minute winter	31-13	3660	85.748	0.973	3.5	2.9626	0.0000	SURCHARGED
5760 minute winter	31-14	3660	85.748	1.031	3.7	1.9459	0.0000	SURCHARGED
7200 minute winter	31-15	4500	85.748	1.057	3.7	1.7003	0.0000	SURCHARGED
15 minute summer	37-0	1	86.575	0.000	0.0	0.0000	0.0000	OK
15 minute winter	37-1	11	86.345	0.073	10.1	0.1330	0.0000	OK
15 minute winter	38-0	12	85.819	0.142	10.7	0.2183	0.0000	OK
15 minute summer	39-0	1	86.115	0.000	0.0	0.0000	0.0000	OK
15 minute summer	38-1	12	85.784	0.364	33.1	0.8794	0.0000	SURCHARGED
15 minute winter	37-2	12	85.793	0.649	81.9	2.4134	0.0000	SURCHARGED
15 minute summer	40-0	1	85.775	0.000	0.0	0.0000	0.0000	OK
5760 minute winter	40-1	3660	85.748	0.129	0.1	0.1924	0.0000	OK
5760 minute winter	37-3	3660	85.748	0.804	4.0	3.2582	0.0000	SURCHARGED
5760 minute winter	37-4	3660	85.748	0.926	4.4	2.0987	0.0000	SURCHARGED
5760 minute winter	31-16	3660	85.748	1.093	7.4	2.9274	0.0000	SURCHARGED
5760 minute winter	31-17	3660	85.748	1.117	7.4	552.8057	0.0000	SURCHARGED
7200 minute winter	PI 1	4020	85.625	1.105	143.4	1.9523	0.0000	SURCHARGED
15 minute summer	Outfall 1	1	85.620	1.119	0.0	0.0000	0.0000	OK
15 minute winter	41-0	10	86.775	0.075	10.1	0.1340	0.0000	OK
15 minute winter	41-1	12	86.682	0.099	16.8	0.1529	0.0000	OK
15 minute winter	41-2	12	86.670	0.275	35.5	0.5458	0.0000	OK
15 minute winter	41-3	11	86.652	0.458	51.5	0.8272	0.0000	SURCHARGED
15 minute winter	42-0	11	86.701	0.127	17.2	0.3144	0.0000	OK
15 minute winter	42-1	11	86.694	0.171	40.7	0.4769	0.0000	OK
15 minute winter	43-0	11	86.657	0.064	3.6	0.0886	0.0000	OK
15 minute winter	42-2	12	86.649	0.250	62.0	0.5573	0.0000	OK
15 minute summer	44-0	12	86.596	0.173	3.6	0.2318	0.0000	OK
15 minute winter	41-4	11	86.589	0.530	107.9	1.1936	0.0000	SURCHARGED
15 minute winter	45-0	10	86.492	0.080	11.3	0.1695	0.0000	OK
15 minute winter	41-5	10	86.454	0.534	138.1	1.2391	0.0000	SURCHARGED
15 minute summer	41-6	10	86.416	0.517	131.3	0.7392	0.0000	SURCHARGED
240 minute winter	41-7	172	86.252	0.514	38.4	160.7457	0.0000	SURCHARGED
240 minute winter	41-8	172	86.251	0.534	17.3	0.9240	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	36-3	36.003	36-4	20.6	1.143	0.396	0.2647	
15 minute winter	36-4	36.004	31-13	22.3	1.248	0.430	0.7658	
5760 minute winter	31-13	31.012	31-14	3.5	0.227	0.027	5.3229	
5760 minute winter	31-14	31.013	31-15	3.7	0.220	0.028	2.3700	
7200 minute winter	31-15	31.014	31-16	3.7	0.162	0.027	3.2654	
15 minute summer	37-0	37.000	37-1	0.0	0.000	0.000	0.2735	
15 minute winter	37-1	37.001	37-2	8.9	0.812	0.223	0.8052	
15 minute winter	38-0	38.000	38-1	10.4	0.413	0.261	1.4413	
15 minute summer	39-0	39.000	38-1	0.0	0.000	0.000	0.0000	
15 minute summer	38-1	38.001	37-2	33.5	0.528	0.474	4.7515	
15 minute winter	37-2	37.002	37-3	73.4	1.043	1.195	4.5516	
15 minute summer	40-0	40.000	40-1	0.0	0.000	0.000	0.0885	
5760 minute winter	40-1	40.001	37-3	0.1	0.246	0.003	2.3702	
5760 minute winter	37-3	37.003	37-4	3.9	0.271	0.039	5.4750	
5760 minute winter	37-4	37.004	31-16	4.3	0.316	0.040	2.9447	
5760 minute winter	31-16	31.015	31-17	7.4	0.438	0.024	3.2280	
5760 minute winter	31-17	31.016	PI 1	12.3	0.160	0.042	1.6616	
7200 minute winter	PI 1	31.017	Outfall 1	6.6	0.024	0.031	5.3243	151.3
15 minute winter	41-0	41.000	41-1	9.9	0.603	0.139	0.4743	
15 minute winter	41-1	41.001	41-2	16.3	0.654	0.231	2.0145	
15 minute winter	41-2	41.002	41-3	34.0	0.740	0.480	3.3863	
15 minute winter	41-3	41.003	41-4	46.7	0.742	0.660	2.3190	
15 minute winter	42-0	42.000	42-1	16.5	0.494	0.233	0.4352	
15 minute winter	42-1	42.001	42-2	39.4	0.799	0.556	1.5674	
15 minute winter	43-0	43.000	42-2	3.5	0.497	0.089	0.1851	
15 minute winter	42-2	42.002	41-4	61.5	1.077	0.866	1.1173	
15 minute summer	44-0	44.000	41-4	15.2	0.587	0.381	0.5872	
15 minute winter	41-4	41.004	41-5	115.1	1.044	1.041	4.9665	
15 minute winter	45-0	45.000	41-5	11.0	0.667	0.276	0.9518	
15 minute winter	41-5	41.005	41-6	140.6	1.275	1.095	0.5585	
15 minute summer	41-6	41.006	41-7	138.3	1.822	1.250	3.6098	
240 minute winter	41-7	41.007	41-8	17.3	0.409	0.137	0.5755	
240 minute winter	41-8	41.008	41-9	17.4	0.411	0.156	1.5091	

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Results for 5 year +20% CC Critical Storm Duration. Lowest mass balance: 85.59%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
240 minute winter	46-0	172	86.250	0.245	0.2	0.2772	0.0000	SURCHARGED
240 minute winter	41-9	172	86.250	0.576	17.5	1.0605	0.0000	SURCHARGED
15 minute summer	47-0	1	86.525	0.000	0.0	0.0000	0.0000	OK
240 minute winter	47-1	172	86.248	0.140	2.6	0.2713	0.0000	OK
240 minute winter	41-10	172	86.248	0.848	18.2	2.2414	0.0000	SURCHARGED
240 minute winter	41-11	172	86.247	0.862	18.4	1.4323	0.0000	SURCHARGED
240 minute winter	41-12	172	86.246	0.899	18.7	2.5442	0.0000	SURCHARGED
15 minute summer	48-0	1	86.300	0.000	0.0	0.0000	0.0000	OK
240 minute winter	41-13	172	86.244	0.969	20.6	3.9420	0.0000	SURCHARGED
4320 minute winter	PI 5	1500	85.911	0.746	7.9	1.3184	0.0000	SURCHARGED
15 minute summer	Outfall 5	1	85.910	0.762	7.0	0.0000	0.0000	OK
15 minute summer	50-0	1	88.900	0.000	0.0	0.0000	0.0000	OK
15 minute winter	50-1	10	88.078	0.078	14.9	0.1415	0.0000	OK
15 minute winter	50-2	11	87.301	0.101	22.9	0.1548	0.0000	OK
960 minute winter	50-3	735	86.372	0.172	2.9	0.2939	0.0000	OK
960 minute winter	50-4	735	86.372	0.370	4.9	0.8631	0.0000	OK
960 minute winter	50-5	735	86.372	0.551	6.6	89.2589	0.0000	SURCHARGED
15 minute summer	PI 2	17	85.911	0.291	1.7	0.4165	0.0000	OK
15 minute summer	Outfall 2	1	85.910	0.300	1.5	0.0000	0.0000	OK
960 minute winter	49-0	720	86.308	0.114	0.3	0.1628	0.0000	OK
960 minute winter	49-1	720	86.308	0.339	2.4	1.2057	0.0000	OK
960 minute winter	49-2	720	86.308	0.402	2.2	0.6770	0.0000	SURCHARGED
960 minute winter	49-3	720	86.308	0.509	3.9	67.7485	0.0000	SURCHARGED
960 minute winter	49-4	720	86.308	0.578	1.8	1.1555	0.0000	SURCHARGED
960 minute winter	49-5	720	86.308	0.628	1.9	1.1870	0.0000	SURCHARGED
60 minute summer	PI 6	34	85.910	0.384	1.7	0.5501	0.0000	OK
15 minute summer	Outfall 6	1	85.910	0.406	0.9	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
240 minute winter	46-0	46.000	41-9	-0.2	-0.052	-0.006	0.3805	
240 minute winter	41-9	41.009	41-10	17.6	0.392	0.159	3.4285	
15 minute summer	47-0	47.000	47-1	0.0	0.000	0.000	0.3045	
240 minute winter	47-1	47.001	41-10	2.6	0.428	0.065	1.6338	
240 minute winter	41-10	41.010	41-11	18.4	0.338	0.144	0.6386	
240 minute winter	41-11	41.011	41-12	18.5	0.352	0.151	1.7545	
240 minute winter	41-12	41.012	41-13	18.7	0.209	0.147	3.0957	
15 minute summer	48-0	48.000	41-13	0.0	0.000	0.000	1.0771	
240 minute winter	41-13	Hydro-Brake®	PI 5	20.5				
4320 minute winter	PI 5	41.014	Outfall 5	7.9	0.041	0.033	1.0395	737.0
15 minute summer	50-0	49.000	50-1	0.0	0.000	0.000	0.0000	
15 minute winter	50-1	49.001	50-2	14.4	1.207	0.248	0.4371	
15 minute winter	50-2	49.002	50-3	22.7	1.352	0.391	0.4576	
960 minute winter	50-3	49.003	50-4	2.9	0.310	0.022	5.5259	
960 minute winter	50-4	49.004	50-5	4.1	0.384	0.037	10.1737	
960 minute winter	50-5	Hydro-Brake®	PI 2	1.8				
15 minute summer	PI 2	49.006	Outfall 2	1.5	0.013	0.010	0.5017	12.0
960 minute winter	49-0	50.000	49-1	-0.3	-0.009	-0.002	4.8409	
960 minute winter	49-1	50.001	49-2	1.9	0.284	0.017	2.1743	
960 minute winter	49-2	50.002	49-3	1.9	0.322	0.021	5.9200	
960 minute winter	49-3	50.003	49-4	1.8	0.092	0.020	3.8234	
960 minute winter	49-4	50.004	49-5	1.8	0.067	0.015	5.6761	
960 minute winter	49-5	Hydro-Brake®	PI 6	1.8				
60 minute summer	PI 6	50.006	Outfall 6	1.7	0.011	0.008	0.8544	22.3

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Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	5	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00
FSR Region	Scotland and Ireland	Connection Type	Level Inverts
M5-60 (mm)	15.600	Minimum Backdrop Height (m)	0.000
Ratio-R	0.286	Preferred Cover Depth (m)	1.200
CV	0.750	Include Intermediate Ground	✓
Time of Entry (mins)	5.00	Enforce best practice design rules	x

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
1-0	0.012	5.00	88.550	1350	681728.297	714559.265	1.550
1-1	0.025	5.00	88.200	1350	681727.082	714579.948	1.264
1-2	0.032	5.00	88.200	1350	681729.935	714618.237	1.383
1-3	0.025	5.00	88.150	1350	681724.880	714650.182	1.433
1-4	0.012	5.00	88.050	1350	681726.157	714667.886	1.388
1-5	0.042	5.00	88.201	1350	681706.946	714704.913	1.668
2-0	0.012	5.00	88.588	1200	681654.345	714711.728	1.425
1-6	0.170	5.00	88.523	1350	681668.442	714684.340	2.077
1-7	0.171	5.00	88.681	1350	681613.809	714655.342	2.358
1-8	0.133	5.00	88.553	1350	681573.837	714634.246	2.320
1-9	0.182	5.00	88.321	1350	681516.849	714604.369	2.216
1-10	0.055	5.00	88.495	1350	681489.411	714611.148	2.437
1-11			88.016	1800	681465.859	714652.863	2.095
3-0	0.013	5.00	88.471	1200	681495.121	714623.928	1.680
1-12	0.101	5.00	88.157	1350	681476.088	714659.384	2.256
4-0		5.00	88.200	1200	681714.921	714722.862	1.115
4-1	0.028	5.00	88.200	1200	681700.576	714747.663	1.259
4-2			88.200	1200	681696.983	714746.664	1.278
4-3	0.029	5.00	88.321	1200	681679.139	714777.631	1.579
5-0		5.00	88.100	1200	681687.188	714707.538	0.975
5-1	0.043	5.00	88.000	1200	681674.194	714731.842	1.038
4-4	0.076	5.00	88.227	1200	681656.262	714765.409	1.616
4-5	0.040	5.00	88.128	1200	681631.788	714752.351	1.657
4-6			88.062	1200	681629.584	714756.232	1.614
4-7	0.066	5.00	87.821	1200	681618.718	714752.021	1.432
6-0	0.020	5.00	87.900	1200	681651.744	714821.450	1.029
6-1	0.040	5.00	88.070	1200	681635.217	714852.261	1.405
6-2	0.021	5.00	88.000	1200	681600.572	714833.783	1.567
6-3	0.098	5.00	87.930	1200	681613.963	714808.759	1.665
4-8	0.132	5.00	87.727	1350	681593.233	714797.616	1.601
7-0		5.00	88.100	1200	681598.010	714732.199	1.525
4-9	0.150	5.00	87.721	1350	681569.162	714784.678	1.680
8-0		5.00	87.700	1200	681578.569	714821.954	1.410
9-0		5.00	87.700	1200	681499.419	714779.633	1.301
8-1	0.095	5.00	87.400	1200	681538.921	714800.785	1.280
4-10	0.051	5.00	87.822	1350	681552.322	714775.627	1.819
10-0		5.00	87.635	1200	681456.887	714742.982	0.874
10-1	0.039	5.00	87.816	1200	681464.184	714728.460	1.151
11-0		5.00	87.700	1200	681470.270	714761.709	1.175
11-1	0.036	5.00	87.700	1200	681481.748	714767.493	1.251
10-2	0.075	5.00	87.700	1200	681494.310	714744.490	1.406
12-0		5.00	87.588	1200	681518.601	714738.418	1.425
10-3	0.104	5.00	87.724	1200	681511.067	714753.407	1.625
4-11	0.111	5.00	87.850	1500	681527.859	714762.478	1.898
4-12			87.850	1500	681530.789	714757.146	1.906
13-0		5.00	87.600	1200	681570.228	714744.973	1.425
4-13	0.042	5.00	87.400	1500	681544.032	714731.413	1.496
4-14	0.039	5.00	87.500	1500	681526.924	714722.557	1.623
14-0	0.027	5.00	88.142	1200	681632.181	714739.287	1.989
14-1	0.143	5.00	87.334	1200	681586.068	714714.847	1.318
15-0	0.007	5.00	88.094	1200	681560.301	714658.807	1.825
14-2	0.222	5.00	87.521	1350	681542.637	714691.750	1.634
4-15	0.076	5.00	87.418	1500	681536.496	714703.253	1.565
16-0		5.00	88.000	1200	681524.006	714656.720	1.425
17-0		5.00	87.625	1200	681491.700	714717.223	1.425
4-16	0.262	5.00	87.823	1500	681507.377	714687.844	2.006
1-13	0.083	5.00	88.078	1500	681471.112	714668.653	2.301
18-0		5.00	87.800	1200	681422.878	714707.549	1.375
19-0	0.025	5.00	88.150	1200	681367.542	714630.246	1.425

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Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
19-1	0.020	5.00	87.600	1200	681380.523	714649.147	1.010
18-1	0.075	5.00	87.750	1200	681392.936	714654.934	1.682
20-0	0.024	5.00	87.550	1200	681458.635	714610.046	1.306
18-2	0.178	5.00	87.900	1350	681419.839	714638.804	1.961
18-3	0.102	5.00	87.724	1350	681442.714	714678.477	1.927
18-4	0.029	5.00	87.871	1350	681452.487	714687.900	2.101
1-14	0.065	5.00	87.871	1500	681458.950	714691.294	2.119
1-15	0.032	5.00	87.781	1500	681452.167	714703.160	2.042
1-16	0.056	5.00	87.570	2100	681431.016	714720.912	1.858
PI 4			87.100	1500	681413.439	714734.297	1.516
Outfall 4			86.490	1500	681407.762	714738.679	0.917
21-0	0.005	5.00	88.540	1350	681732.623	714543.018	1.282
21-1	0.054	5.00	88.225	1350	681683.674	714528.552	1.125
21-2	0.032	5.00	88.405	1350	681649.964	714518.491	1.414
21-3	0.107	5.00	88.691	1350	681596.221	714502.522	1.873
21-4	0.056	5.00	88.367	1350	681550.069	714488.810	1.698
21-5	0.062	5.00	88.456	1350	681538.872	714510.770	1.858
22-0	0.025	5.00	88.245	1350	681680.587	714541.754	1.150
22-1	0.024	5.00	88.298	1350	681676.628	714555.083	1.243
23-0	0.035	5.00	88.357	1350	681708.590	714630.655	1.196
22-2	0.279	5.00	88.564	1350	681652.175	714600.736	1.657
24-0	0.008	5.00	88.655	1350	681619.602	714645.364	1.555
22-3	0.105	5.00	88.563	1350	681644.994	714598.737	1.678
22-4	0.133	5.00	89.151	1350	681604.492	714576.263	2.398
25-0		5.00	88.704	1200	681578.956	714511.950	1.425
25-1	0.062	5.00	88.700	1200	681570.824	714540.652	1.597
22-5	0.125	5.00	88.931	1350	681561.371	714552.096	2.319
26-0		5.00	88.550	1200	681520.981	714587.351	1.425
26-1	0.017	5.00	88.550	1200	681529.224	714571.926	1.528
22-6	0.059	5.00	88.890	1350	681548.127	714544.673	2.316
22-7			88.500	1350	681533.514	714533.960	1.971
21-6	0.069	5.00	88.369	1500	681527.948	714530.232	1.857
21-7	0.148	5.00	88.161	1500	681498.591	714572.945	1.761
21-8	0.029	5.00	88.218	1500	681494.806	714586.463	1.843
21-9	0.013	5.00	88.083	1500	681479.812	714583.385	1.735
21-10	0.087	5.00	87.929	1500	681440.788	714563.200	1.657
27-0		5.00	88.114	1500	681350.118	714601.420	1.792
27-1	0.144	5.00	87.900	1500	681391.219	714575.945	1.625
28-0	0.039	5.00	88.108	1350	681472.874	714484.377	1.630
28-1	0.162	5.00	87.846	1350	681446.895	714523.359	1.513
21-11	0.213	5.00	88.117	1500	681424.130	714546.888	1.885
29-0	0.002	5.00	88.510	1200	681529.152	714477.102	1.125
29-1	0.026	5.00	88.500	1200	681493.847	714463.154	1.339
29-2	0.017	5.00	88.289	1200	681481.690	714464.705	1.201
29-3	0.059	5.00	88.782	1200	681435.452	714440.649	2.002
29-4	0.025	5.00	88.880	1200	681420.740	714447.405	2.196
29-5	0.060	5.00	88.851	1200	681401.736	714473.443	2.364
21-12	0.180	5.00	88.730	1500	681378.428	714500.325	2.561
30-0	0.010	5.00	88.750	1200	681336.824	714583.857	1.425
30-1	0.021	5.00	88.700	1200	681318.656	714552.623	1.638
30-2	0.049	5.00	88.800	1200	681338.498	714532.780	1.904
21-13	0.094	5.00	88.850	1500	681354.275	714520.630	2.712
21-14			88.070	1500	681331.006	714494.008	1.966
PI 3			88.070	1500	681328.921	714490.869	2.073
Outfall 3			87.300	1500	681310.005	714462.485	1.362
31-0		5.00	88.586	1200	681241.100	714577.004	1.811
31-1	0.061	5.00	88.460	1200	681266.075	714572.105	1.835
31-2	0.026	5.00	88.375	1200	681288.357	714572.144	2.029
31-4	0.021	5.00	88.412	1200	681300.880	714577.792	2.238
31-5	0.021	5.00	88.350	1200	681310.328	714592.053	2.390
31-6	0.055	5.00	88.000	1200	681328.209	714617.952	2.355
32-0		5.00	87.750	1200	681351.362	714665.315	1.625
32-1	0.023	5.00	87.750	1200	681337.837	714644.743	1.770
31-7	0.004	5.00	87.894	1200	681322.684	714621.696	2.289
34-0	0.027	5.00	87.225	1200	681241.403	714640.836	1.425
34-1	0.037	5.00	87.366	1200	681263.636	714636.398	1.700
34-2	0.019	5.00	87.322	1200	681271.591	714641.215	1.711
31-8	0.143	5.00	87.387	1200	681277.979	714651.973	2.003
33-0		5.00	87.400	1200	681304.110	714699.473	1.725
31-9	0.052	5.00	87.385	1350	681274.152	714654.584	2.289

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Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
31-10			87.260	1800	681266.162	714658.164	2.189
35-0	0.025	5.00	87.091	1200	681280.289	714692.365	1.432
31-11	0.063	5.00	86.850	1350	681255.367	714674.032	1.834
31-12	0.079	5.00	86.901	1350	681230.026	714659.891	1.968
36-0		5.00	88.558	1200	681231.376	714579.073	1.658
36-1	0.066	5.00	88.383	1200	681201.801	714584.854	1.661
36-2	0.022	5.00	88.162	1200	681188.714	714591.490	1.587
36-3	0.018	5.00	87.954	1200	681182.045	714600.247	1.489
36-4	0.010	5.00	87.676	1200	681178.035	714614.258	1.357
31-13	0.198	5.00	87.231	1350	681174.797	714656.902	2.456
31-14	0.052	5.00	87.000	1350	681172.134	714690.391	2.283
31-15	0.020	5.00	86.950	1350	681178.112	714704.102	2.259
37-0		5.00	88.000	1200	681393.391	714716.054	1.425
37-1	0.051	5.00	87.736	1200	681364.767	714673.338	1.464
38-0	0.034	5.00	87.352	1200	681384.526	714741.184	1.675
39-0		5.00	87.171	1200	681352.807	714770.696	1.056
38-1	0.111	5.00	87.147	1200	681348.326	714765.422	1.727
37-2	0.272	5.00	87.247	1200	681304.036	714714.518	2.103
40-0		5.00	87.200	1200	681328.813	714803.744	1.425
40-1	0.026	5.00	87.075	1200	681305.668	714816.641	1.456
37-3	0.272	5.00	87.021	1350	681257.516	714759.392	2.077
37-4	0.088	5.00	86.930	1350	681218.378	714728.860	2.108
31-16	0.100	5.00	86.850	1500	681195.150	714715.697	2.195
31-17			86.440	2100	681189.329	714725.568	1.809
PI 1			86.440	1500	681186.333	714730.649	1.920
Outfall 1			85.570	1500	681181.220	714748.846	1.069
41-0	0.051	5.00	88.250	1200	681603.924	714908.556	1.550
41-1	0.035	5.00	88.250	1200	681618.947	714884.229	1.667
41-2	0.060	5.00	87.800	1200	681580.497	714859.153	1.405
41-3	0.044	5.00	87.500	1200	681539.046	714832.914	1.306
42-0	0.087	5.00	87.868	1200	681554.612	714897.046	1.294
42-1	0.122	5.00	87.996	1200	681561.361	714886.575	1.473
43-0	0.018	5.00	88.018	1200	681529.669	714880.070	1.425
42-2	0.096	5.00	88.148	1200	681536.014	714870.226	1.749
44-0	0.019	5.00	88.248	1200	681512.910	714874.563	1.825
41-4	0.089	5.00	88.226	1350	681521.339	714860.680	2.167
45-0	0.057	5.00	87.573	1200	681450.416	714820.912	1.161
41-5	0.087	5.00	87.879	1350	681482.391	714838.085	1.959
41-6			87.897	1350	681480.058	714842.579	1.998
41-7			87.523	1350	681434.036	714818.133	1.785
41-8	0.027	5.00	87.523	1350	681436.400	714813.481	1.806
46-0		5.00	87.430	1200	681419.932	714815.536	1.425
41-9	0.037	5.00	87.480	1350	681424.329	714807.040	1.806
47-0		5.00	87.950	1200	681526.464	714826.290	1.425
47-1	0.058	5.00	87.550	1200	681482.339	714802.714	1.442
41-10	0.123	5.00	87.430	1350	681438.489	714779.369	2.030
41-11	0.023	5.00	87.390	1350	681441.127	714775.003	2.005
41-12	0.030	5.00	87.450	1800	681437.310	714761.518	2.103
48-0		5.00	87.450	1200	681389.971	714797.634	1.150
41-13	0.158	5.00	87.350	1800	681415.501	714749.863	2.075
PI 5			87.350	1500	681410.913	714747.274	2.185
Outfall 5			86.400	1500	681406.210	714744.800	1.252
50-0		5.00	91.041	1200	681272.880	714510.934	2.141
50-1	0.075	5.00	90.205	1200	681305.334	714543.097	2.205
50-2	0.043	5.00	89.346	1200	681326.122	714573.010	2.146
50-3	0.036	5.00	88.831	1350	681341.206	714595.670	2.631
50-4	0.109	5.00	88.427	1350	681376.057	714649.341	2.425
50-5	0.141	5.00	88.100	1350	681423.923	714716.689	2.279
PI 2			87.100	1350	681408.828	714728.225	1.480
Outfall 2			86.501	1350	681405.225	714730.997	0.891
49-0		5.00	87.806	1350	681617.771	714850.092	1.612
49-1	0.130	5.00	87.191	1350	681553.609	714815.717	1.222
49-2	0.017	5.00	87.245	1350	681537.854	714803.050	1.339
49-3	0.108	5.00	87.547	1350	681490.130	714778.489	1.748
49-4	0.057	5.00	87.734	1350	681460.413	714760.641	2.004
49-5	0.051	5.00	87.899	1350	681437.601	714733.019	2.219
PI 6			87.889	1350	681413.647	714739.599	2.363
Outfall 6			86.490	1350	681408.322	714741.891	0.986

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Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.017	PI 4	Outfall 4	7.171	0.600	85.584	85.573	0.011	652.0	600	15.93	35.2
1.016	1-16	PI 4	22.093	0.600	85.712	85.684	0.028	789.0	600	15.80	35.3
1.015	1-15	1-16	27.613	0.600	85.739	85.712	0.027	1030.0	600	15.37	35.8
1.014	1-14	1-15	13.668	0.600	85.752	85.739	0.013	1030.0	600	14.76	36.6
1.013	1-13	1-14	25.701	0.600	85.777	85.752	0.025	1030.0	600	14.46	37.0
18.004	18-4	1-14	7.300	0.600	85.770	85.756	0.014	504.0	375	7.72	50.0
18.003	18-3	18-4	13.576	0.600	85.797	85.770	0.027	504.0	375	7.57	50.0
18.002	18-2	18-3	45.795	0.600	85.939	85.797	0.142	322.5	375	7.29	50.0
18.001	18-1	18-2	31.368	0.600	86.068	85.939	0.129	243.2	300	6.53	50.0
20.000	20-0	18-2	48.292	0.600	86.244	85.959	0.285	169.4	225	5.80	50.0
18.000	18-0	18-1	60.538	0.600	86.425	86.068	0.357	169.6	225	6.01	50.0
19.001	19-1	18-1	13.696	0.600	86.590	86.509	0.081	169.1	225	5.61	50.0
19.000	19-0	19-1	22.929	0.600	86.725	86.590	0.135	169.8	225	5.38	50.0
1.012	1-12	1-13	10.520	0.600	85.901	85.884	0.017	634.0	450	13.89	37.8
4.016	4-16	1-13	41.030	0.600	85.817	85.777	0.040	1030.0	600	12.77	39.4
16.000	16-0	4-16	35.288	0.600	86.575	86.367	0.208	169.7	225	5.59	50.0
17.000	17-0	4-16	33.300	0.600	86.200	86.003	0.197	169.0	225	5.55	50.0
4.015	4-15	4-16	32.945	0.600	85.853	85.817	0.036	908.0	600	11.86	40.9
14.002	14-2	4-15	13.040	0.600	85.887	85.861	0.026	504.0	375	7.38	50.0
4.014	4-14	4-15	21.547	0.600	85.877	85.853	0.024	908.0	600	11.17	42.1
4.013	4-13	4-14	19.264	0.600	85.904	85.877	0.027	723.0	500	10.72	43.0
13.000	13-0	4-13	29.498	0.600	86.175	86.001	0.174	169.5	225	5.49	50.0
4.012	4-12	4-13	28.941	0.600	85.944	85.904	0.040	723.0	500	10.32	43.8
4.011	4-11	4-12	6.084	0.600	85.952	85.944	0.008	723.0	500	9.72	45.0
4.010	4-10	4-11	27.773	0.600	86.003	85.952	0.051	545.0	400	9.59	45.3
10.003	10-3	4-11	19.085	0.600	86.099	86.027	0.072	264.0	225	6.55	50.0
10.002	10-2	10-3	18.982	0.600	86.294	86.182	0.112	169.5	225	6.15	50.0
12.000	12-0	10-3	16.776	0.600	86.163	86.099	0.064	264.0	225	5.35	50.0
11.001	11-1	10-2	26.210	0.600	86.449	86.294	0.155	169.1	225	5.65	50.0
10.001	10-1	10-2	34.125	0.600	86.665	86.464	0.201	169.8	225	5.84	50.0
10.000	10-0	10-1	16.252	0.600	86.761	86.665	0.096	169.3	225	5.27	50.0
11.000	11-0	11-1	12.853	0.600	86.525	86.449	0.076	169.1	225	5.21	50.0
4.009	4-9	4-10	19.118	0.600	86.041	86.003	0.038	504.0	375	9.01	46.6

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)
1.017	0.946	267.5	356.9	0.916	0.317	3.746	0.0	600
1.016	0.859	242.8	358.4	1.258	0.816	3.746	0.0	600
1.015	0.750	212.1	358.2	1.442	1.258	3.690	0.0	600
1.014	0.750	212.1	362.8	1.519	1.442	3.658	0.0	600
1.013	0.750	212.1	314.8	1.701	1.519	3.140	0.0	600
18.004	0.800	88.4	61.3	1.726	1.740	0.453	0.0	230
18.003	0.800	88.4	57.5	1.552	1.726	0.424	0.0	221
18.002	1.003	110.8	43.6	1.586	1.552	0.322	0.0	163
18.001	1.004	70.9	16.3	1.382	1.661	0.120	0.0	98
20.000	1.001	39.8	3.3	1.081	1.716	0.024	0.0	44
18.000	1.001	39.8	0.0	1.150	1.457	0.000	0.0	0
19.001	1.002	39.9	6.1	0.785	1.016	0.045	0.0	59
19.000	1.000	39.8	3.4	1.200	0.785	0.025	0.0	44
1.012	0.800	127.2	100.8	1.806	1.744	0.985	0.0	304
4.016	0.750	212.1	221.3	1.406	1.701	2.072	0.0	525
16.000	1.001	39.8	0.0	1.200	1.231	0.000	0.0	0
17.000	1.003	39.9	0.0	1.200	1.595	0.000	0.0	0
4.015	0.800	226.1	200.7	0.965	1.406	1.810	0.0	442
14.002	0.800	88.4	54.1	1.259	1.182	0.399	0.0	212
4.014	0.800	226.1	152.4	1.023	0.965	1.335	0.0	362
4.013	0.800	157.1	150.9	0.996	1.123	1.296	0.0	396
13.000	1.001	39.8	0.0	1.200	1.174	0.000	0.0	0
4.012	0.800	157.1	148.7	1.406	0.996	1.254	0.0	390
4.011	0.800	157.1	153.0	1.398	1.406	1.254	0.0	402
4.010	0.801	100.7	109.2	1.419	1.498	0.889	0.0	400
10.003	0.800	31.8	34.4	1.400	1.598	0.254	0.0	225
10.002	1.001	39.8	20.3	1.181	1.317	0.150	0.0	114
12.000	0.800	31.8	0.0	1.200	1.400	0.000	0.0	0
11.001	1.002	39.9	4.9	1.026	1.181	0.036	0.0	53
10.001	1.000	39.8	5.3	0.926	1.011	0.039	0.0	55
10.000	1.002	39.8	0.0	0.649	0.926	0.000	0.0	0
11.000	1.002	39.9	0.0	0.950	1.026	0.000	0.0	0
4.009	0.800	88.4	93.9	1.305	1.444	0.743	0.0	339

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Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
8.001	8-1	4-10	28.505	0.600	86.120	86.003	0.117	243.6	300	6.41	50.0
8.000	8-0	8-1	44.945	0.600	86.290	86.120	0.170	264.0	225	5.94	50.0
9.000	9-0	8-1	44.809	0.600	86.399	86.229	0.170	264.0	225	5.93	50.0
4.008	4-8	4-9	27.328	0.600	86.126	86.041	0.085	321.5	375	8.61	47.6
7.000	7-0	4-9	59.885	0.600	86.575	86.222	0.353	169.6	225	6.00	50.0
6.003	6-3	4-8	23.535	0.600	86.265	86.126	0.139	169.3	225	7.10	50.0
4.007	4-7	4-8	52.234	0.600	86.389	86.126	0.263	198.6	255	8.16	48.8
4.006	4-6	4-7	11.653	0.600	86.448	86.389	0.059	197.5	255	7.29	50.0
4.005	4-5	4-6	4.463	0.600	86.471	86.448	0.023	194.1	255	7.10	50.0
4.004	4-4	4-5	27.740	0.600	86.611	86.471	0.140	198.1	255	7.03	50.0
5.001	5-1	4-4	38.057	0.600	86.962	86.737	0.225	169.1	225	6.09	50.0
4.003	4-3	4-4	25.937	0.600	86.742	86.611	0.131	198.0	255	6.56	50.0
4.002	4-2	4-3	35.740	0.600	86.922	86.742	0.180	198.6	255	6.13	50.0
4.001	4-1	4-2	3.729	0.600	86.941	86.922	0.019	196.3	255	5.54	50.0
4.000	4-0	4-1	28.651	0.600	87.085	86.941	0.144	199.0	255	5.48	50.0
5.000	5-0	5-1	27.560	0.600	87.125	86.962	0.163	169.1	225	5.46	50.0
6.002	6-2	6-3	28.382	0.600	86.433	86.265	0.168	168.9	225	6.71	50.0
6.001	6-1	6-2	39.265	0.600	86.665	86.433	0.232	169.2	225	6.24	50.0
6.000	6-0	6-1	34.964	0.600	86.871	86.665	0.206	169.7	225	5.58	50.0
14.001	14-1	14-2	49.191	0.600	86.016	85.887	0.129	380.0	300	7.11	50.0
15.000	15-0	14-2	37.380	0.600	86.269	86.048	0.221	169.1	225	5.62	50.0
14.000	14-0	14-1	52.189	0.600	86.153	86.016	0.137	380.0	300	6.09	50.0
1.011	1-11	1-12	12.131	0.600	85.921	85.901	0.020	600.0	400	13.67	38.1
3.000	3-0	1-12	40.242	0.600	86.791	86.554	0.237	169.8	225	5.67	50.0
1.010	1-10	1-11	47.904	0.600	86.058	85.921	0.137	349.7	400	13.40	38.5
1.009	1-9	1-10	28.263	0.600	86.105	86.058	0.047	600.0	400	12.61	39.7
1.008	1-8	1-9	64.345	0.600	86.233	86.105	0.128	504.0	375	11.99	40.7
1.007	1-7	1-8	45.197	0.600	86.323	86.233	0.090	504.0	375	10.65	43.1
1.006	1-6	1-7	61.852	0.600	86.446	86.323	0.123	504.0	375	9.71	45.0
1.005	1-5	1-6	43.656	0.600	86.533	86.446	0.087	504.0	375	8.42	48.1
2.000	2-0	1-6	30.803	0.600	87.163	86.981	0.182	169.2	225	5.51	50.0
1.004	1-4	1-5	41.714	0.600	86.662	86.533	0.129	323.4	375	7.51	50.0
1.003	1-3	1-4	17.750	0.600	86.717	86.662	0.055	322.7	375	6.82	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)
8.001	1.003	70.9	12.9	0.980	1.519	0.095	0.0	86
8.000	0.800	31.8	0.0	1.185	1.055	0.000	0.0	0
9.000	0.800	31.8	0.0	1.076	0.946	0.000	0.0	0
4.008	1.005	111.0	76.5	1.226	1.305	0.593	0.0	230
7.000	1.001	39.8	0.0	1.300	1.274	0.000	0.0	0
6.003	1.002	39.8	24.3	1.440	1.376	0.179	0.0	127
4.007	1.002	51.2	37.3	1.177	1.346	0.282	0.0	162
4.006	1.004	51.3	29.3	1.359	1.177	0.216	0.0	138
4.005	1.013	51.8	29.3	1.402	1.359	0.216	0.0	137
4.004	1.003	51.2	23.9	1.361	1.402	0.176	0.0	122
5.001	1.002	39.8	5.8	0.813	1.265	0.043	0.0	58
4.003	1.003	51.2	7.7	1.324	1.361	0.057	0.0	66
4.002	1.002	51.2	3.8	1.023	1.324	0.028	0.0	46
4.001	1.008	51.5	3.8	1.004	1.023	0.028	0.0	46
4.000	1.001	51.1	0.0	0.860	1.004	0.000	0.0	0
5.000	1.002	39.9	0.0	0.750	0.813	0.000	0.0	0
6.002	1.003	39.9	11.0	1.342	1.440	0.081	0.0	80
6.001	1.002	39.8	8.1	1.180	1.342	0.060	0.0	69
6.000	1.000	39.8	2.7	0.804	1.180	0.020	0.0	40
14.001	0.800	56.6	23.0	1.018	1.334	0.170	0.0	133
15.000	1.002	39.8	0.9	1.600	1.248	0.007	0.0	24
14.000	0.800	56.6	3.7	1.689	1.018	0.027	0.0	51
1.011	0.763	95.9	89.9	1.695	1.856	0.871	0.0	309
3.000	1.000	39.8	1.8	1.455	1.378	0.013	0.0	32
1.010	1.003	126.1	90.8	2.037	1.695	0.871	0.0	252
1.009	0.763	95.9	87.7	1.816	2.037	0.816	0.0	303
1.008	0.800	88.4	69.9	1.945	1.841	0.634	0.0	252
1.007	0.800	88.4	58.5	1.983	1.945	0.501	0.0	223
1.006	0.800	88.4	40.3	1.702	1.983	0.330	0.0	178
1.005	0.800	88.4	19.3	1.293	1.702	0.148	0.0	118
2.000	1.002	39.8	1.6	1.200	1.317	0.012	0.0	31
1.004	1.002	110.7	14.4	1.013	1.293	0.106	0.0	90
1.003	1.003	110.8	12.7	1.058	1.013	0.094	0.0	85

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Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.002	1-2	1-3	32.342	0.600	86.817	86.717	0.100	323.4	375	6.52	50.0
1.001	1-1	1-2	38.395	0.600	86.936	86.817	0.119	322.6	375	5.98	50.0
1.000	1-0	1-1	20.719	0.600	87.000	86.936	0.064	323.7	375	5.34	50.0
21.015	PI 3	Outfall 3	34.110	0.600	85.997	85.938	0.059	578.1	600	15.16	36.1
21.014	21-14	PI 3	3.768	0.600	86.104	86.097	0.007	538.3	600	14.60	36.8
21.013	21-13	21-14	35.358	0.600	86.138	86.104	0.034	1030.0	600	14.53	36.9
21.012	21-12	21-13	31.554	0.600	86.169	86.138	0.031	1030.0	600	13.75	38.0
30.002	30-2	21-13	19.913	0.600	86.896	86.778	0.118	168.8	225	6.34	50.0
30.001	30-1	30-2	28.062	0.600	87.062	86.896	0.166	169.0	225	6.01	50.0
30.000	30-0	30-1	36.134	0.600	87.325	87.062	0.263	137.4	225	5.54	50.0
21.011	21-11	21-12	65.244	0.600	86.232	86.169	0.063	1030.0	600	13.05	39.0
29.005	29-5	21-12	35.580	0.600	86.487	86.277	0.210	169.4	225	8.09	48.9
29.004	29-4	29-5	32.236	0.600	86.684	86.487	0.197	163.6	225	7.50	50.0
29.003	29-3	29-4	16.189	0.600	86.780	86.684	0.096	168.6	225	6.97	50.0
29.002	29-2	29-3	52.121	0.600	87.088	86.780	0.308	169.2	225	6.70	50.0
29.001	29-1	29-2	12.256	0.600	87.161	87.088	0.073	167.9	225	5.83	50.0
29.000	29-0	29-1	37.960	0.600	87.385	87.161	0.224	169.5	225	5.63	50.0
21.010	21-10	21-11	23.315	0.600	86.272	86.232	0.040	582.9	500	11.60	41.3
27.001	27-1	21-11	43.903	0.600	86.275	86.232	0.043	1030.0	600	7.05	50.0
28.001	28-1	21-11	32.739	0.600	86.333	86.232	0.101	324.2	375	6.32	50.0
28.000	28-0	28-1	46.846	0.600	86.478	86.333	0.145	323.1	375	5.78	50.0
27.000	27-0	27-1	48.356	0.600	86.322	86.275	0.047	1030.0	600	6.07	50.0
21.009	21-9	21-10	43.935	0.600	86.348	86.272	0.076	578.1	500	11.16	42.1
21.008	21-8	21-9	15.307	0.600	86.375	86.348	0.027	566.9	500	10.35	43.7
21.007	21-7	21-8	14.038	0.600	86.400	86.375	0.025	561.5	500	10.06	44.3
21.006	21-6	21-7	51.829	0.600	86.512	86.400	0.112	462.8	500	9.81	44.8
21.005	21-5	21-6	22.318	0.600	86.598	86.534	0.064	348.7	400	8.95	46.8
22.007	22-7	21-6	6.699	0.600	86.529	86.512	0.017	394.1	400	8.52	47.8
22.006	22-6	22-7	18.119	0.600	86.574	86.529	0.045	402.7	400	8.40	48.1
22.005	22-5	22-6	15.182	0.600	86.612	86.574	0.038	399.5	400	8.08	49.0
26.001	26-1	22-6	33.167	0.600	87.022	86.826	0.196	169.2	225	5.84	50.0
26.000	26-0	26-1	17.489	0.600	87.125	87.022	0.103	169.8	225	5.29	50.0
22.004	22-4	22-5	49.431	0.600	86.753	86.612	0.141	350.6	400	7.81	49.7

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)
1.002	1.002	110.6	9.4	1.008	1.058	0.069	0.0	73
1.001	1.003	110.8	5.0	0.889	1.008	0.037	0.0	54
1.000	1.001	110.6	1.6	1.175	0.889	0.012	0.0	32
21.015	1.005	284.3	257.7	1.473	0.762	2.635	0.0	451
21.014	1.042	294.7	262.9	1.366	1.373	2.635	0.0	444
21.013	0.750	212.1	263.4	2.112	1.366	2.635	0.0	600
21.012	0.750	212.1	253.2	1.961	2.112	2.461	0.0	600
30.002	1.003	39.9	10.8	1.679	1.847	0.080	0.0	80
30.001	1.003	39.9	4.2	1.413	1.679	0.031	0.0	49
30.000	1.113	44.3	1.4	1.200	1.413	0.010	0.0	27
21.011	0.750	212.1	221.0	1.285	1.961	2.092	0.0	524
29.005	1.001	39.8	25.1	2.139	2.228	0.189	0.0	130
29.004	1.019	40.5	17.5	1.971	2.139	0.129	0.0	103
29.003	1.004	39.9	14.1	1.777	1.971	0.104	0.0	92
29.002	1.002	39.8	6.1	0.976	1.777	0.045	0.0	59
29.001	1.006	40.0	3.8	1.114	0.976	0.028	0.0	47
29.000	1.001	39.8	0.3	0.900	1.114	0.002	0.0	14
21.010	0.892	175.2	171.9	1.157	1.385	1.534	0.0	405
27.001	0.750	212.1	19.5	1.025	1.285	0.144	0.0	122
28.001	1.001	110.5	27.2	1.138	1.510	0.201	0.0	126
28.000	1.002	110.7	5.3	1.255	1.138	0.039	0.0	55
27.000	0.750	212.1	0.0	1.192	1.025	0.000	0.0	0
21.009	0.896	175.9	165.2	1.235	1.157	1.447	0.0	387
21.008	0.905	177.7	169.9	1.343	1.235	1.434	0.0	394
21.007	0.909	178.6	168.6	1.261	1.343	1.405	0.0	389
21.006	1.003	196.9	152.7	1.357	1.261	1.257	0.0	333
21.005	1.005	126.3	40.1	1.458	1.435	0.316	0.0	154
22.007	0.944	118.7	113.1	1.571	1.457	0.872	0.0	314
22.006	0.934	117.4	113.8	1.916	1.571	0.872	0.0	319
22.005	0.938	117.9	105.7	1.919	1.916	0.796	0.0	297
26.001	1.002	39.8	2.3	1.303	1.839	0.017	0.0	36
26.000	1.000	39.8	0.0	1.200	1.303	0.000	0.0	0
22.004	1.002	125.9	82.1	1.998	1.919	0.609	0.0	236

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Links

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25.001	25-1	22-5	14.843	0.600	87.103	87.015	0.088	168.7	225	5.74	50.0
25.000	25-0	25-1	29.832	0.600	87.279	87.103	0.176	169.5	225	5.50	50.0
22.003	22-3	22-4	46.319	0.600	86.885	86.753	0.132	350.9	400	6.98	50.0
22.002	22-2	22-3	7.454	0.600	86.907	86.885	0.022	338.8	400	6.21	50.0
24.000	24-0	22-3	53.093	0.600	87.100	86.949	0.151	351.6	400	5.88	50.0
22.001	22-1	22-2	51.789	0.600	87.055	86.907	0.148	349.9	400	6.09	50.0
23.000	23-0	22-2	63.858	0.600	87.161	86.964	0.197	324.2	375	6.06	50.0
22.000	22-0	22-1	13.905	0.600	87.095	87.055	0.040	347.6	400	5.23	50.0
21.004	21-4	21-5	24.650	0.600	86.669	86.598	0.071	347.2	400	8.58	47.7
21.003	21-3	21-4	48.146	0.600	86.818	86.669	0.149	323.1	375	8.17	48.7
21.002	21-2	21-3	56.065	0.600	86.991	86.818	0.173	324.1	375	7.37	50.0
21.001	21-1	21-2	35.179	0.600	87.100	86.991	0.109	322.7	375	6.43	50.0
21.000	21-0	21-1	51.042	0.600	87.258	87.100	0.158	323.0	375	5.85	50.0
31.017	PI 1	Outfall 1	18.902	0.600	84.520	84.501	0.019	1020.0	600	11.45	41.6
31.016	31-17	PI 1	5.899	0.600	84.631	84.620	0.011	536.2	600	11.03	42.4
31.015	31-16	31-17	11.460	0.600	84.655	84.631	0.024	477.5	600	10.94	42.6
31.014	31-15	31-16	20.609	0.600	84.691	84.655	0.036	572.5	450	10.76	42.9
37.004	37-4	31-16	26.698	0.600	84.822	84.744	0.078	342.3	375	9.70	45.0
37.003	37-3	37-4	49.639	0.600	84.944	84.822	0.122	406.9	375	9.25	46.1
37.002	37-2	37-3	64.636	0.600	85.144	84.944	0.200	323.2	300	8.32	48.3
40.001	40-1	37-3	74.807	0.600	85.619	85.178	0.441	169.6	225	6.69	50.0
40.000	40-0	40-1	26.496	0.600	85.775	85.619	0.156	169.8	225	5.44	50.0
38.001	38-1	37-2	67.475	0.600	85.420	85.144	0.276	244.5	300	6.85	50.0
37.001	37-1	37-2	73.376	0.600	86.272	85.840	0.432	169.9	225	7.08	50.0
37.000	37-0	37-1	51.420	0.600	86.575	86.272	0.303	169.7	225	5.86	50.0
38.000	38-0	38-1	43.565	0.600	85.677	85.420	0.257	169.5	225	5.73	50.0
39.000	39-0	38-1	6.921	0.600	86.115	86.074	0.041	168.8	225	5.11	50.0
31.013	31-14	31-15	14.958	0.600	84.717	84.691	0.026	575.3	450	10.36	43.7
31.012	31-13	31-14	33.595	0.600	84.775	84.717	0.058	579.2	450	10.06	44.3
31.011	31-12	31-13	55.310	0.600	84.933	84.775	0.158	350.1	400	9.39	45.7
36.004	36-4	31-13	42.767	0.600	86.319	85.891	0.428	100.0	225	6.56	50.0
36.003	36-3	36-4	14.574	0.600	86.465	86.319	0.146	100.0	225	6.01	50.0
36.002	36-2	36-3	11.007	0.600	86.575	86.465	0.110	100.0	225	5.83	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)
25.001	1.004	39.9	8.4	1.372	1.691	0.062	0.0	70
25.000	1.001	39.8	0.0	1.200	1.372	0.000	0.0	0
22.003	1.002	125.9	64.5	1.278	1.998	0.476	0.0	203
22.002	1.019	128.1	49.2	1.257	1.278	0.363	0.0	171
24.000	1.001	125.7	1.1	1.155	1.214	0.008	0.0	26
22.001	1.003	126.0	6.6	0.843	1.257	0.049	0.0	62
23.000	1.001	110.5	4.7	0.821	1.225	0.035	0.0	52
22.000	1.006	126.5	3.4	0.750	0.843	0.025	0.0	45
21.004	1.007	126.5	32.8	1.298	1.458	0.254	0.0	139
21.003	1.002	110.7	26.2	1.498	1.323	0.198	0.0	123
21.002	1.001	110.5	12.3	1.039	1.498	0.091	0.0	84
21.001	1.003	110.8	8.0	0.750	1.039	0.059	0.0	68
21.000	1.002	110.7	0.7	0.907	0.750	0.005	0.0	21
31.017	0.754	213.2	225.1	1.320	0.469	1.996	0.0	537
31.016	1.044	295.3	229.3	1.209	1.220	1.996	0.0	399
31.015	1.107	313.1	230.2	1.595	1.209	1.996	0.0	383
31.014	0.842	134.0	121.1	1.809	1.745	1.042	0.0	337
37.004	0.973	107.5	104.3	1.733	1.731	0.854	0.0	299
37.003	0.892	98.5	95.7	1.702	1.733	0.766	0.0	300
37.002	0.869	61.4	61.3	1.803	1.777	0.468	0.0	247
40.001	1.001	39.8	3.5	1.231	1.618	0.026	0.0	45
40.000	1.000	39.8	0.0	1.200	1.231	0.000	0.0	0
38.001	1.001	70.7	19.7	1.427	1.803	0.145	0.0	108
37.001	1.000	39.8	6.9	1.239	1.182	0.051	0.0	63
37.000	1.001	39.8	0.0	1.200	1.239	0.000	0.0	0
38.000	1.001	39.8	4.6	1.450	1.502	0.034	0.0	51
39.000	1.003	39.9	0.0	0.831	0.848	0.000	0.0	0
31.013	0.840	133.6	121.0	1.833	1.809	1.022	0.0	337
31.012	0.837	133.2	116.4	2.006	1.833	0.970	0.0	327
31.011	1.003	126.0	81.3	1.568	2.056	0.656	0.0	234
36.004	1.307	52.0	15.7	1.132	1.115	0.116	0.0	85
36.003	1.307	52.0	14.4	1.264	1.132	0.106	0.0	80
36.002	1.307	52.0	11.9	1.362	1.264	0.088	0.0	73

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Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
36.001	36-1	36-2	14.673	0.600	86.722	86.575	0.147	100.0	225	5.69	50.0
36.000	36-0	36-1	30.135	0.600	86.900	86.722	0.178	169.3	225	5.50	50.0
31.010	31-11	31-12	29.020	0.600	85.016	84.933	0.083	349.6	400	8.47	47.9
31.009	31-10	31-11	19.192	0.600	85.071	85.016	0.055	348.9	400	7.99	49.2
35.000	35-0	31-11	30.939	0.600	85.659	85.476	0.183	169.1	225	5.51	50.0
31.008	31-9	31-10	8.755	0.600	85.096	85.071	0.025	350.2	400	7.67	50.0
31.007	31-8	31-9	4.633	0.600	85.384	85.369	0.015	308.9	300	7.53	50.0
34.000	33-0	31-9	53.968	0.600	85.675	85.357	0.318	169.7	225	5.90	50.0
31.006	31-7	31-8	53.993	0.600	85.605	85.384	0.221	244.3	300	7.44	50.0
33.002	34-2	31-8	12.512	0.600	85.611	85.537	0.074	169.1	225	5.74	50.0
33.001	34-1	34-2	9.300	0.600	85.666	85.611	0.055	169.1	225	5.53	50.0
33.000	34-0	34-1	22.672	0.600	85.800	85.666	0.134	169.2	225	5.38	50.0
31.005	31-6	31-7	6.674	0.600	85.645	85.605	0.040	166.9	225	6.54	50.0
32.001	32-1	31-7	27.582	0.600	85.980	85.817	0.163	169.2	225	5.87	50.0
32.000	32-0	32-1	24.620	0.600	86.125	85.980	0.145	169.8	225	5.41	50.0
31.004	31-5	31-6	31.472	0.600	85.960	85.645	0.315	100.0	225	6.43	50.0
31.003	31-4	31-5	17.107	0.600	86.174	85.960	0.214	80.0	225	6.03	50.0
31.002	31-2	31-4	13.738	0.600	86.346	86.174	0.172	80.0	225	5.83	50.0
31.001	31-1	31-2	22.282	0.600	86.625	86.346	0.279	80.0	225	5.68	50.0
31.000	31-0	31-1	25.451	0.600	86.775	86.625	0.150	169.7	225	5.42	50.0
41.014	PI 5	Outfall 5	5.314	0.600	85.165	85.148	0.017	312.6	500	11.01	42.4
41.013	41-13	PI 5	5.268	0.600	85.275	85.265	0.010	526.8	500	10.94	42.6
41.012	41-12	41-13	24.728	0.600	85.347	85.275	0.072	343.4	400	10.84	42.7
48.000	48-0	41-13	54.165	0.600	86.300	85.758	0.542	100.0	225	5.69	50.0
41.011	41-11	41-12	14.015	0.600	85.385	85.347	0.038	368.8	400	10.44	43.5
41.010	41-10	41-11	5.101	0.600	85.400	85.385	0.015	340.1	400	10.20	44.0
41.009	41-9	41-10	31.084	0.600	85.674	85.578	0.096	323.8	375	10.11	44.2
47.001	47-1	41-10	49.677	0.600	86.108	85.815	0.293	169.5	225	6.53	50.0
47.000	47-0	47-1	50.028	0.600	86.525	86.108	0.417	120.0	225	5.70	50.0
41.008	41-8	41-9	13.682	0.600	85.717	85.674	0.043	318.2	375	9.60	45.3
46.000	46-0	41-9	9.566	0.600	86.005	85.948	0.057	167.8	225	5.16	50.0
41.007	41-7	41-8	5.218	0.600	85.738	85.717	0.021	248.5	375	9.37	45.8
41.006	41-6	41-7	52.111	0.600	85.899	85.738	0.161	323.7	375	9.29	46.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)
36.001	1.307	52.0	8.9	1.436	1.362	0.066	0.0	63
36.000	1.002	39.8	0.0	1.433	1.436	0.000	0.0	0
31.010	1.003	126.1	75.0	1.434	1.568	0.577	0.0	222
31.009	1.004	126.2	65.2	1.789	1.434	0.489	0.0	204
35.000	1.002	39.9	3.4	1.207	1.149	0.025	0.0	44
31.008	1.003	126.0	66.3	1.889	1.789	0.489	0.0	206
31.007	0.889	62.8	59.2	1.703	1.716	0.437	0.0	233
34.000	1.001	39.8	0.0	1.500	1.803	0.000	0.0	0
31.006	1.001	70.8	28.6	1.989	1.703	0.211	0.0	133
33.002	1.002	39.9	11.2	1.486	1.625	0.083	0.0	81
33.001	1.002	39.9	8.7	1.475	1.486	0.064	0.0	71
33.000	1.002	39.8	3.7	1.200	1.475	0.027	0.0	46
31.005	1.009	40.1	24.9	2.130	2.064	0.184	0.0	129
32.001	1.002	39.8	3.1	1.545	1.852	0.023	0.0	43
32.000	1.000	39.8	0.0	1.400	1.545	0.000	0.0	0
31.004	1.307	52.0	17.5	2.165	2.130	0.129	0.0	90
31.003	1.463	58.2	14.6	2.013	2.165	0.108	0.0	77
31.002	1.463	58.2	11.8	1.804	2.013	0.087	0.0	68
31.001	1.463	58.2	8.3	1.610	1.804	0.061	0.0	57
31.000	1.001	39.8	0.0	1.586	1.610	0.000	0.0	0
41.014	1.223	240.1	140.4	1.685	0.752	1.221	0.0	275
41.013	0.939	184.4	140.8	1.575	1.585	1.221	0.0	329
41.012	1.013	127.2	123.1	1.703	1.675	1.063	0.0	319
48.000	1.307	52.0	0.0	0.925	1.367	0.000	0.0	0
41.011	0.977	122.7	121.9	1.605	1.703	1.033	0.0	328
41.010	1.018	127.9	120.5	1.630	1.605	1.010	0.0	311
41.009	1.001	110.6	99.3	1.431	1.477	0.829	0.0	279
47.001	1.001	39.8	7.9	1.217	1.390	0.058	0.0	67
47.000	1.192	47.4	0.0	1.200	1.217	0.000	0.0	0
41.008	1.010	111.6	97.2	1.431	1.431	0.792	0.0	272
46.000	1.006	40.0	0.0	1.200	1.307	0.000	0.0	0
41.007	1.145	126.4	95.0	1.410	1.431	0.765	0.0	244
41.006	1.001	110.6	95.3	1.623	1.410	0.765	0.0	270

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Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
41.005	41-5	41-6	5.064	0.600	85.920	85.899	0.021	241.1	375	8.43	48.1
41.004	41-4	41-5	45.028	0.600	86.059	85.920	0.139	323.9	375	8.35	48.3
45.000	45-0	41-5	36.295	0.600	86.412	86.198	0.214	169.6	225	5.60	50.0
41.003	41-3	41-4	32.932	0.600	86.194	86.059	0.135	243.9	300	7.60	50.0
42.002	42-2	41-4	17.507	0.600	86.399	86.327	0.072	243.1	300	6.00	50.0
44.000	44-0	41-4	16.241	0.600	86.423	86.327	0.096	169.2	225	5.27	50.0
42.001	42-1	42-2	30.162	0.600	86.523	86.399	0.124	243.2	300	5.71	50.0
43.000	43-0	42-2	11.712	0.600	86.593	86.524	0.069	169.7	225	5.20	50.0
42.000	42-0	42-1	12.458	0.600	86.574	86.523	0.051	244.3	300	5.21	50.0
41.002	41-2	41-3	49.058	0.600	86.395	86.194	0.201	244.1	300	7.06	50.0
41.001	41-1	41-2	45.904	0.600	86.583	86.395	0.188	244.2	300	6.24	50.0
41.000	41-0	41-1	28.592	0.600	86.700	86.583	0.117	244.4	300	5.48	50.0
49.006	PI 2	Outfall 2	4.546	0.600	85.620	85.610	0.010	454.6	450	9.22	46.1
49.005	50-5	PI 2	18.999	0.600	85.821	85.763	0.058	327.6	400	9.14	46.3
49.004	50-4	50-5	82.625	0.600	86.002	85.821	0.181	456.5	400	8.84	47.0
49.003	50-3	50-4	63.994	0.600	86.200	86.002	0.198	323.2	400	7.27	50.0
49.002	50-2	50-3	27.221	0.600	87.200	86.860	0.340	80.0	225	6.25	50.0
49.001	50-1	50-2	36.427	0.600	88.000	87.545	0.455	80.0	225	5.94	50.0
49.000	50-0	50-1	45.692	0.600	88.900	88.329	0.571	80.0	225	5.52	50.0
50.006	PI 6	Outfall 6	5.797	0.600	85.526	85.504	0.022	263.5	450	9.69	45.1
50.005	49-5	PI 6	24.841	0.600	85.680	85.626	0.054	460.0	450	9.62	45.2
50.004	49-4	49-5	35.824	0.600	85.730	85.680	0.050	720.0	450	9.18	46.2
50.003	49-3	49-4	34.665	0.600	85.799	85.730	0.069	500.0	375	8.38	48.2
50.002	49-2	49-3	53.673	0.600	85.906	85.799	0.107	500.0	375	7.66	50.0
50.001	49-1	49-2	20.216	0.600	85.969	85.906	0.063	320.9	375	6.55	50.0
50.000	49-0	49-1	72.790	0.600	86.194	85.969	0.225	323.5	375	6.21	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)
41.005	1.162	128.4	99.7	1.584	1.623	0.765	0.0	249
41.004	1.001	110.6	81.2	1.792	1.584	0.621	0.0	240
45.000	1.001	39.8	7.7	0.936	1.456	0.057	0.0	67
41.003	1.002	70.8	25.7	1.006	1.867	0.190	0.0	125
42.002	1.004	70.9	43.8	1.449	1.599	0.323	0.0	171
44.000	1.002	39.8	2.6	1.600	1.674	0.019	0.0	38
42.001	1.003	70.9	28.3	1.173	1.449	0.209	0.0	132
43.000	1.000	39.8	2.4	1.200	1.399	0.018	0.0	37
42.000	1.001	70.8	11.8	0.994	1.173	0.087	0.0	82
41.002	1.002	70.8	19.8	1.105	1.006	0.146	0.0	108
41.001	1.001	70.8	11.7	1.367	1.105	0.086	0.0	82
41.000	1.001	70.8	6.9	1.250	1.367	0.051	0.0	63
49.006	0.947	150.6	50.5	1.030	0.441	0.404	0.0	179
49.005	1.037	130.3	50.7	1.879	0.937	0.404	0.0	173
49.004	0.877	110.2	33.5	2.025	1.879	0.263	0.0	151
49.003	1.044	131.2	20.9	2.231	2.025	0.154	0.0	107
49.002	1.463	58.2	16.0	1.921	1.746	0.118	0.0	80
49.001	1.463	58.2	10.2	1.980	1.576	0.075	0.0	64
49.000	1.463	58.2	0.0	1.916	1.651	0.000	0.0	0
50.006	1.247	198.4	44.3	1.913	0.536	0.363	0.0	144
50.005	0.941	149.7	44.5	1.769	1.813	0.363	0.0	167
50.004	0.750	119.3	39.1	1.554	1.769	0.312	0.0	177
50.003	0.803	88.7	33.3	1.373	1.629	0.255	0.0	159
50.002	0.803	88.7	19.9	0.964	1.373	0.147	0.0	120
50.001	1.006	111.1	17.6	0.847	0.964	0.130	0.0	101
50.000	1.002	110.6	0.0	1.237	0.847	0.000	0.0	0

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Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.017	7.171	652.0	600	Circular	87.100	85.584	0.916	86.490	85.573	0.317
1.016	22.093	789.0	600	Circular	87.570	85.712	1.258	87.100	85.684	0.816
1.015	27.613	1030.0	600	Circular	87.781	85.739	1.442	87.570	85.712	1.258
1.014	13.668	1030.0	600	Circular	87.871	85.752	1.519	87.781	85.739	1.442
1.013	25.701	1030.0	600	Circular	88.078	85.777	1.701	87.871	85.752	1.519
18.004	7.300	504.0	375	Circular	87.871	85.770	1.726	87.871	85.756	1.740
18.003	13.576	504.0	375	Circular	87.724	85.797	1.552	87.871	85.770	1.726
18.002	45.795	322.5	375	Circular	87.900	85.939	1.586	87.724	85.797	1.552
18.001	31.368	243.2	300	Circular	87.750	86.068	1.382	87.900	85.939	1.661
20.000	48.292	169.4	225	Circular	87.550	86.244	1.081	87.900	85.959	1.716
18.000	60.538	169.6	225	Circular	87.800	86.425	1.150	87.750	86.068	1.457
19.001	13.696	169.1	225	Circular	87.600	86.590	0.785	87.750	86.509	1.016
19.000	22.929	169.8	225	Circular	88.150	86.725	1.200	87.600	86.590	0.785
1.012	10.520	634.0	450	Circular	88.157	85.901	1.806	88.078	85.884	1.744
4.016	41.030	1030.0	600	Circular	87.823	85.817	1.406	88.078	85.777	1.701
16.000	35.288	169.7	225	Circular	88.000	86.575	1.200	87.823	86.367	1.231
17.000	33.300	169.0	225	Circular	87.625	86.200	1.200	87.823	86.003	1.595
4.015	32.945	908.0	600	Circular	87.418	85.853	0.965	87.823	85.817	1.406
14.002	13.040	504.0	375	Circular	87.521	85.887	1.259	87.418	85.861	1.182
4.014	21.547	908.0	600	Circular	87.500	85.877	1.023	87.418	85.853	0.965
4.013	19.264	723.0	500	Circular	87.400	85.904	0.996	87.500	85.877	1.123
13.000	29.498	169.5	225	Circular	87.600	86.175	1.200	87.400	86.001	1.174
4.012	28.941	723.0	500	Circular	87.850	85.944	1.406	87.400	85.904	0.996
4.011	6.084	723.0	500	Circular	87.850	85.952	1.398	87.850	85.944	1.406
4.010	27.773	545.0	400	Circular	87.822	86.003	1.419	87.850	85.952	1.498
10.003	19.085	264.0	225	Circular	87.724	86.099	1.400	87.850	86.027	1.598
10.002	18.982	169.5	225	Circular	87.700	86.294	1.181	87.724	86.182	1.317
12.000	16.776	264.0	225	Circular	87.588	86.163	1.200	87.724	86.099	1.400
11.001	26.210	169.1	225	Circular	87.700	86.449	1.026	87.700	86.294	1.181
10.001	34.125	169.8	225	Circular	87.816	86.665	0.926	87.700	86.464	1.011
10.000	16.252	169.3	225	Circular	87.635	86.761	0.649	87.816	86.665	0.926
11.000	12.853	169.1	225	Circular	87.700	86.525	0.950	87.700	86.449	1.026
4.009	19.118	504.0	375	Circular	87.721	86.041	1.305	87.822	86.003	1.444
8.001	28.505	243.6	300	Circular	87.400	86.120	0.980	87.822	86.003	1.519

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.017	PI 4	1500	Manhole	Adoptable	Outfall 4	1500	Manhole	Adoptable
1.016	1-16	2100	Manhole	Adoptable	PI 4	1500	Manhole	Adoptable
1.015	1-15	1500	Manhole	Adoptable	1-16	2100	Manhole	Adoptable
1.014	1-14	1500	Manhole	Adoptable	1-15	1500	Manhole	Adoptable
1.013	1-13	1500	Manhole	Adoptable	1-14	1500	Manhole	Adoptable
18.004	18-4	1350	Manhole	Adoptable	1-14	1500	Manhole	Adoptable
18.003	18-3	1350	Manhole	Adoptable	18-4	1350	Manhole	Adoptable
18.002	18-2	1350	Manhole	Adoptable	18-3	1350	Manhole	Adoptable
18.001	18-1	1200	Manhole	Adoptable	18-2	1350	Manhole	Adoptable
20.000	20-0	1200	Manhole	Adoptable	18-2	1350	Manhole	Adoptable
18.000	18-0	1200	Manhole	Adoptable	18-1	1200	Manhole	Adoptable
19.001	19-1	1200	Manhole	Adoptable	18-1	1200	Manhole	Adoptable
19.000	19-0	1200	Manhole	Adoptable	19-1	1200	Manhole	Adoptable
1.012	1-12	1350	Manhole	Adoptable	1-13	1500	Manhole	Adoptable
4.016	4-16	1500	Manhole	Adoptable	1-13	1500	Manhole	Adoptable
16.000	16-0	1200	Manhole	Adoptable	4-16	1500	Manhole	Adoptable
17.000	17-0	1200	Manhole	Adoptable	4-16	1500	Manhole	Adoptable
4.015	4-15	1500	Manhole	Adoptable	4-16	1500	Manhole	Adoptable
14.002	14-2	1350	Manhole	Adoptable	4-15	1500	Manhole	Adoptable
4.014	4-14	1500	Manhole	Adoptable	4-15	1500	Manhole	Adoptable
4.013	4-13	1500	Manhole	Adoptable	4-14	1500	Manhole	Adoptable
13.000	13-0	1200	Manhole	Adoptable	4-13	1500	Manhole	Adoptable
4.012	4-12	1500	Manhole	Adoptable	4-13	1500	Manhole	Adoptable
4.011	4-11	1500	Manhole	Adoptable	4-12	1500	Manhole	Adoptable
4.010	4-10	1350	Manhole	Adoptable	4-11	1500	Manhole	Adoptable
10.003	10-3	1200	Manhole	Adoptable	4-11	1500	Manhole	Adoptable
10.002	10-2	1200	Manhole	Adoptable	10-3	1200	Manhole	Adoptable
12.000	12-0	1200	Manhole	Adoptable	10-3	1200	Manhole	Adoptable
11.001	11-1	1200	Manhole	Adoptable	10-2	1200	Manhole	Adoptable
10.001	10-1	1200	Manhole	Adoptable	10-2	1200	Manhole	Adoptable
10.000	10-0	1200	Manhole	Adoptable	10-1	1200	Manhole	Adoptable
11.000	11-0	1200	Manhole	Adoptable	11-1	1200	Manhole	Adoptable
4.009	4-9	1350	Manhole	Adoptable	4-10	1350	Manhole	Adoptable
8.001	8-1	1200	Manhole	Adoptable	4-10	1350	Manhole	Adoptable

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Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
8.000	44.945	264.0	225	Circular	87.700	86.290	1.185	87.400	86.120	1.055
9.000	44.809	264.0	225	Circular	87.700	86.399	1.076	87.400	86.229	0.946
4.008	27.328	321.5	375	Circular	87.727	86.126	1.226	87.721	86.041	1.305
7.000	59.885	169.6	225	Circular	88.100	86.575	1.300	87.721	86.222	1.274
6.003	23.535	169.3	225	Circular	87.930	86.265	1.440	87.727	86.126	1.376
4.007	52.234	198.6	255	Circular	87.821	86.389	1.177	87.727	86.126	1.346
4.006	11.653	197.5	255	Circular	88.062	86.448	1.359	87.821	86.389	1.177
4.005	4.463	194.1	255	Circular	88.128	86.471	1.402	88.062	86.448	1.359
4.004	27.740	198.1	255	Circular	88.227	86.611	1.361	88.128	86.471	1.402
5.001	38.057	169.1	225	Circular	88.000	86.962	0.813	88.227	86.737	1.265
4.003	25.937	198.0	255	Circular	88.321	86.742	1.324	88.227	86.611	1.361
4.002	35.740	198.6	255	Circular	88.200	86.922	1.023	88.321	86.742	1.324
4.001	3.729	196.3	255	Circular	88.200	86.941	1.004	88.200	86.922	1.023
4.000	28.651	199.0	255	Circular	88.200	87.085	0.860	88.200	86.941	1.004
5.000	27.560	169.1	225	Circular	88.100	87.125	0.750	88.000	86.962	0.813
6.002	28.382	168.9	225	Circular	88.000	86.433	1.342	87.930	86.265	1.440
6.001	39.265	169.2	225	Circular	88.070	86.665	1.180	88.000	86.433	1.342
6.000	34.964	169.7	225	Circular	87.900	86.871	0.804	88.070	86.665	1.180
14.001	49.191	380.0	300	Circular	87.334	86.016	1.018	87.521	85.887	1.334
15.000	37.380	169.1	225	Circular	88.094	86.269	1.600	87.521	86.048	1.248
14.000	52.189	380.0	300	Circular	88.142	86.153	1.689	87.334	86.016	1.018
1.011	12.131	600.0	400	Circular	88.016	85.921	1.695	88.157	85.901	1.856
3.000	40.242	169.8	225	Circular	88.471	86.791	1.455	88.157	86.554	1.378
1.010	47.904	349.7	400	Circular	88.495	86.058	2.037	88.016	85.921	1.695
1.009	28.263	600.0	400	Circular	88.321	86.105	1.816	88.495	86.058	2.037
1.008	64.345	504.0	375	Circular	88.553	86.233	1.945	88.321	86.105	1.841
1.007	45.197	504.0	375	Circular	88.681	86.323	1.983	88.553	86.233	1.945
1.006	61.852	504.0	375	Circular	88.523	86.446	1.702	88.681	86.323	1.983
1.005	43.656	504.0	375	Circular	88.201	86.533	1.293	88.523	86.446	1.702
2.000	30.803	169.2	225	Circular	88.588	87.163	1.200	88.523	86.981	1.317
1.004	41.714	323.4	375	Circular	88.050	86.662	1.013	88.201	86.533	1.293
1.003	17.750	322.7	375	Circular	88.150	86.717	1.058	88.050	86.662	1.013
1.002	32.342	323.4	375	Circular	88.200	86.817	1.008	88.150	86.717	1.058
1.001	38.395	322.6	375	Circular	88.200	86.936	0.889	88.200	86.817	1.008

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
8.000	8-0	1200	Manhole	Adoptable	8-1	1200	Manhole	Adoptable
9.000	9-0	1200	Manhole	Adoptable	8-1	1200	Manhole	Adoptable
4.008	4-8	1350	Manhole	Adoptable	4-9	1350	Manhole	Adoptable
7.000	7-0	1200	Manhole	Adoptable	4-9	1350	Manhole	Adoptable
6.003	6-3	1200	Manhole	Adoptable	4-8	1350	Manhole	Adoptable
4.007	4-7	1200	Manhole	Adoptable	4-8	1350	Manhole	Adoptable
4.006	4-6	1200	Manhole	Adoptable	4-7	1200	Manhole	Adoptable
4.005	4-5	1200	Manhole	Adoptable	4-6	1200	Manhole	Adoptable
4.004	4-4	1200	Manhole	Adoptable	4-5	1200	Manhole	Adoptable
5.001	5-1	1200	Manhole	Adoptable	4-4	1200	Manhole	Adoptable
4.003	4-3	1200	Manhole	Adoptable	4-4	1200	Manhole	Adoptable
4.002	4-2	1200	Manhole	Adoptable	4-3	1200	Manhole	Adoptable
4.001	4-1	1200	Manhole	Adoptable	4-2	1200	Manhole	Adoptable
4.000	4-0	1200	Manhole	Adoptable	4-1	1200	Manhole	Adoptable
5.000	5-0	1200	Manhole	Adoptable	5-1	1200	Manhole	Adoptable
6.002	6-2	1200	Manhole	Adoptable	6-3	1200	Manhole	Adoptable
6.001	6-1	1200	Manhole	Adoptable	6-2	1200	Manhole	Adoptable
6.000	6-0	1200	Manhole	Adoptable	6-1	1200	Manhole	Adoptable
14.001	14-1	1200	Manhole	Adoptable	14-2	1350	Manhole	Adoptable
15.000	15-0	1200	Manhole	Adoptable	14-2	1350	Manhole	Adoptable
14.000	14-0	1200	Manhole	Adoptable	14-1	1200	Manhole	Adoptable
1.011	1-11	1800	Manhole	Adoptable	1-12	1350	Manhole	Adoptable
3.000	3-0	1200	Manhole	Adoptable	1-12	1350	Manhole	Adoptable
1.010	1-10	1350	Manhole	Adoptable	1-11	1800	Manhole	Adoptable
1.009	1-9	1350	Manhole	Adoptable	1-10	1350	Manhole	Adoptable
1.008	1-8	1350	Manhole	Adoptable	1-9	1350	Manhole	Adoptable
1.007	1-7	1350	Manhole	Adoptable	1-8	1350	Manhole	Adoptable
1.006	1-6	1350	Manhole	Adoptable	1-7	1350	Manhole	Adoptable
1.005	1-5	1350	Manhole	Adoptable	1-6	1350	Manhole	Adoptable
2.000	2-0	1200	Manhole	Adoptable	1-6	1350	Manhole	Adoptable
1.004	1-4	1350	Manhole	Adoptable	1-5	1350	Manhole	Adoptable
1.003	1-3	1350	Manhole	Adoptable	1-4	1350	Manhole	Adoptable
1.002	1-2	1350	Manhole	Adoptable	1-3	1350	Manhole	Adoptable
1.001	1-1	1350	Manhole	Adoptable	1-2	1350	Manhole	Adoptable

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Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	20.719	323.7	375	Circular	88.550	87.000	1.175	88.200	86.936	0.889
21.015	34.110	578.1	600	Circular	88.070	85.997	1.473	87.300	85.938	0.762
21.014	3.768	538.3	600	Circular	88.070	86.104	1.366	88.070	86.097	1.373
21.013	35.358	1030.0	600	Circular	88.850	86.138	2.112	88.070	86.104	1.366
21.012	31.554	1030.0	600	Circular	88.730	86.169	1.961	88.850	86.138	2.112
30.002	19.913	168.8	225	Circular	88.800	86.896	1.679	88.850	86.778	1.847
30.001	28.062	169.0	225	Circular	88.700	87.062	1.413	88.800	86.896	1.679
30.000	36.134	137.4	225	Circular	88.750	87.325	1.200	88.700	87.062	1.413
21.011	65.244	1030.0	600	Circular	88.117	86.232	1.285	88.730	86.169	1.961
29.005	35.580	169.4	225	Circular	88.851	86.487	2.139	88.730	86.277	2.228
29.004	32.236	163.6	225	Circular	88.880	86.684	1.971	88.851	86.487	2.139
29.003	16.189	168.6	225	Circular	88.782	86.780	1.777	88.880	86.684	1.971
29.002	52.121	169.2	225	Circular	88.289	87.088	0.976	88.782	86.780	1.777
29.001	12.256	167.9	225	Circular	88.500	87.161	1.114	88.289	87.088	0.976
29.000	37.960	169.5	225	Circular	88.510	87.385	0.900	88.500	87.161	1.114
21.010	23.315	582.9	500	Circular	87.929	86.272	1.157	88.117	86.232	1.385
27.001	43.903	1030.0	600	Circular	87.900	86.275	1.025	88.117	86.232	1.285
28.001	32.739	324.2	375	Circular	87.846	86.333	1.138	88.117	86.232	1.510
28.000	46.846	323.1	375	Circular	88.108	86.478	1.255	87.846	86.333	1.138
27.000	48.356	1030.0	600	Circular	88.114	86.322	1.192	87.900	86.275	1.025
21.009	43.935	578.1	500	Circular	88.083	86.348	1.235	87.929	86.272	1.157
21.008	15.307	566.9	500	Circular	88.218	86.375	1.343	88.083	86.348	1.235
21.007	14.038	561.5	500	Circular	88.161	86.400	1.261	88.218	86.375	1.343
21.006	51.829	462.8	500	Circular	88.369	86.512	1.357	88.161	86.400	1.261
21.005	22.318	348.7	400	Circular	88.456	86.598	1.458	88.369	86.534	1.435
22.007	6.699	394.1	400	Circular	88.500	86.529	1.571	88.369	86.512	1.457
22.006	18.119	402.7	400	Circular	88.890	86.574	1.916	88.500	86.529	1.571
22.005	15.182	399.5	400	Circular	88.931	86.612	1.919	88.890	86.574	1.916
26.001	33.167	169.2	225	Circular	88.550	87.022	1.303	88.890	86.826	1.839
26.000	17.489	169.8	225	Circular	88.550	87.125	1.200	88.550	87.022	1.303
22.004	49.431	350.6	400	Circular	89.151	86.753	1.998	88.931	86.612	1.919
25.001	14.843	168.7	225	Circular	88.700	87.103	1.372	88.931	87.015	1.691
25.000	29.832	169.5	225	Circular	88.704	87.279	1.200	88.700	87.103	1.372
22.003	46.319	350.9	400	Circular	88.563	86.885	1.278	89.151	86.753	1.998

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	1-0	1350	Manhole	Adoptable	1-1	1350	Manhole	Adoptable
21.015	PI 3	1500	Manhole	Adoptable	Outfall 3	1500	Manhole	Adoptable
21.014	21-14	1500	Manhole	Adoptable	PI 3	1500	Manhole	Adoptable
21.013	21-13	1500	Manhole	Adoptable	21-14	1500	Manhole	Adoptable
21.012	21-12	1500	Manhole	Adoptable	21-13	1500	Manhole	Adoptable
30.002	30-2	1200	Manhole	Adoptable	21-13	1500	Manhole	Adoptable
30.001	30-1	1200	Manhole	Adoptable	30-2	1200	Manhole	Adoptable
30.000	30-0	1200	Manhole	Adoptable	30-1	1200	Manhole	Adoptable
21.011	21-11	1500	Manhole	Adoptable	21-12	1500	Manhole	Adoptable
29.005	29-5	1200	Manhole	Adoptable	21-12	1500	Manhole	Adoptable
29.004	29-4	1200	Manhole	Adoptable	29-5	1200	Manhole	Adoptable
29.003	29-3	1200	Manhole	Adoptable	29-4	1200	Manhole	Adoptable
29.002	29-2	1200	Manhole	Adoptable	29-3	1200	Manhole	Adoptable
29.001	29-1	1200	Manhole	Adoptable	29-2	1200	Manhole	Adoptable
29.000	29-0	1200	Manhole	Adoptable	29-1	1200	Manhole	Adoptable
21.010	21-10	1500	Manhole	Adoptable	21-11	1500	Manhole	Adoptable
27.001	27-1	1500	Manhole	Adoptable	21-11	1500	Manhole	Adoptable
28.001	28-1	1350	Manhole	Adoptable	21-11	1500	Manhole	Adoptable
28.000	28-0	1350	Manhole	Adoptable	28-1	1350	Manhole	Adoptable
27.000	27-0	1500	Manhole	Adoptable	27-1	1500	Manhole	Adoptable
21.009	21-9	1500	Manhole	Adoptable	21-10	1500	Manhole	Adoptable
21.008	21-8	1500	Manhole	Adoptable	21-9	1500	Manhole	Adoptable
21.007	21-7	1500	Manhole	Adoptable	21-8	1500	Manhole	Adoptable
21.006	21-6	1500	Manhole	Adoptable	21-7	1500	Manhole	Adoptable
21.005	21-5	1350	Manhole	Adoptable	21-6	1500	Manhole	Adoptable
22.007	22-7	1350	Manhole	Adoptable	21-6	1500	Manhole	Adoptable
22.006	22-6	1350	Manhole	Adoptable	22-7	1350	Manhole	Adoptable
22.005	22-5	1350	Manhole	Adoptable	22-6	1350	Manhole	Adoptable
26.001	26-1	1200	Manhole	Adoptable	22-6	1350	Manhole	Adoptable
26.000	26-0	1200	Manhole	Adoptable	26-1	1200	Manhole	Adoptable
22.004	22-4	1350	Manhole	Adoptable	22-5	1350	Manhole	Adoptable
25.001	25-1	1200	Manhole	Adoptable	22-5	1350	Manhole	Adoptable
25.000	25-0	1200	Manhole	Adoptable	25-1	1200	Manhole	Adoptable
22.003	22-3	1350	Manhole	Adoptable	22-4	1350	Manhole	Adoptable

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Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
22.002	7.454	338.8	400	Circular	88.564	86.907	1.257	88.563	86.885	1.278
24.000	53.093	351.6	400	Circular	88.655	87.100	1.155	88.563	86.949	1.214
22.001	51.789	349.9	400	Circular	88.298	87.055	0.843	88.564	86.907	1.257
23.000	63.858	324.2	375	Circular	88.357	87.161	0.821	88.564	86.964	1.225
22.000	13.905	347.6	400	Circular	88.245	87.095	0.750	88.298	87.055	0.843
21.004	24.650	347.2	400	Circular	88.367	86.669	1.298	88.456	86.598	1.458
21.003	48.146	323.1	375	Circular	88.691	86.818	1.498	88.367	86.669	1.323
21.002	56.065	324.1	375	Circular	88.405	86.991	1.039	88.691	86.818	1.498
21.001	35.179	322.7	375	Circular	88.225	87.100	0.750	88.405	86.991	1.039
21.000	51.042	323.0	375	Circular	88.540	87.258	0.907	88.225	87.100	0.750
31.017	18.902	1020.0	600	Circular	86.440	84.520	1.320	85.570	84.501	0.469
31.016	5.899	536.2	600	Circular	86.440	84.631	1.209	86.440	84.620	1.220
31.015	11.460	477.5	600	Circular	86.850	84.655	1.595	86.440	84.631	1.209
31.014	20.609	572.5	450	Circular	86.950	84.691	1.809	86.850	84.655	1.745
37.004	26.698	342.3	375	Circular	86.930	84.822	1.733	86.850	84.744	1.731
37.003	49.639	406.9	375	Circular	87.021	84.944	1.702	86.930	84.822	1.733
37.002	64.636	323.2	300	Circular	87.247	85.144	1.803	87.021	84.944	1.777
40.001	74.807	169.6	225	Circular	87.075	85.619	1.231	87.021	85.178	1.618
40.000	26.496	169.8	225	Circular	87.200	85.775	1.200	87.075	85.619	1.231
38.001	67.475	244.5	300	Circular	87.147	85.420	1.427	87.247	85.144	1.803
37.001	73.376	169.9	225	Circular	87.736	86.272	1.239	87.247	85.840	1.182
37.000	51.420	169.7	225	Circular	88.000	86.575	1.200	87.736	86.272	1.239
38.000	43.565	169.5	225	Circular	87.352	85.677	1.450	87.147	85.420	1.502
39.000	6.921	168.8	225	Circular	87.171	86.115	0.831	87.147	86.074	0.848
31.013	14.958	575.3	450	Circular	87.000	84.717	1.833	86.950	84.691	1.809
31.012	33.595	579.2	450	Circular	87.231	84.775	2.006	87.000	84.717	1.833
31.011	55.310	350.1	400	Circular	86.901	84.933	1.568	87.231	84.775	2.056
36.004	42.767	100.0	225	Circular	87.676	86.319	1.132	87.231	85.891	1.115
36.003	14.574	100.0	225	Circular	87.954	86.465	1.264	87.676	86.319	1.132
36.002	11.007	100.0	225	Circular	88.162	86.575	1.362	87.954	86.465	1.264
36.001	14.673	100.0	225	Circular	88.383	86.722	1.436	88.162	86.575	1.362
36.000	30.135	169.3	225	Circular	88.558	86.900	1.433	88.383	86.722	1.436
31.010	29.020	349.6	400	Circular	86.850	85.016	1.434	86.901	84.933	1.568
31.009	19.192	348.9	400	Circular	87.260	85.071	1.789	86.850	85.016	1.434

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
22.002	22-2	1350	Manhole	Adoptable	22-3	1350	Manhole	Adoptable
24.000	24-0	1350	Manhole	Adoptable	22-3	1350	Manhole	Adoptable
22.001	22-1	1350	Manhole	Adoptable	22-2	1350	Manhole	Adoptable
23.000	23-0	1350	Manhole	Adoptable	22-2	1350	Manhole	Adoptable
22.000	22-0	1350	Manhole	Adoptable	22-1	1350	Manhole	Adoptable
21.004	21-4	1350	Manhole	Adoptable	21-5	1350	Manhole	Adoptable
21.003	21-3	1350	Manhole	Adoptable	21-4	1350	Manhole	Adoptable
21.002	21-2	1350	Manhole	Adoptable	21-3	1350	Manhole	Adoptable
21.001	21-1	1350	Manhole	Adoptable	21-2	1350	Manhole	Adoptable
21.000	21-0	1350	Manhole	Adoptable	21-1	1350	Manhole	Adoptable
31.017	PI 1	1500	Manhole	Adoptable	Outfall 1	1500	Manhole	Adoptable
31.016	31-17	2100	Manhole	Adoptable	PI 1	1500	Manhole	Adoptable
31.015	31-16	1500	Manhole	Adoptable	31-17	2100	Manhole	Adoptable
31.014	31-15	1350	Manhole	Adoptable	31-16	1500	Manhole	Adoptable
37.004	37-4	1350	Manhole	Adoptable	31-16	1500	Manhole	Adoptable
37.003	37-3	1350	Manhole	Adoptable	37-4	1350	Manhole	Adoptable
37.002	37-2	1200	Manhole	Adoptable	37-3	1350	Manhole	Adoptable
40.001	40-1	1200	Manhole	Adoptable	37-3	1350	Manhole	Adoptable
40.000	40-0	1200	Manhole	Adoptable	40-1	1200	Manhole	Adoptable
38.001	38-1	1200	Manhole	Adoptable	37-2	1200	Manhole	Adoptable
37.001	37-1	1200	Manhole	Adoptable	37-2	1200	Manhole	Adoptable
37.000	37-0	1200	Manhole	Adoptable	37-1	1200	Manhole	Adoptable
38.000	38-0	1200	Manhole	Adoptable	38-1	1200	Manhole	Adoptable
39.000	39-0	1200	Manhole	Adoptable	38-1	1200	Manhole	Adoptable
31.013	31-14	1350	Manhole	Adoptable	31-15	1350	Manhole	Adoptable
31.012	31-13	1350	Manhole	Adoptable	31-14	1350	Manhole	Adoptable
31.011	31-12	1350	Manhole	Adoptable	31-13	1350	Manhole	Adoptable
36.004	36-4	1200	Manhole	Adoptable	31-13	1350	Manhole	Adoptable
36.003	36-3	1200	Manhole	Adoptable	36-4	1200	Manhole	Adoptable
36.002	36-2	1200	Manhole	Adoptable	36-3	1200	Manhole	Adoptable
36.001	36-1	1200	Manhole	Adoptable	36-2	1200	Manhole	Adoptable
36.000	36-0	1200	Manhole	Adoptable	36-1	1200	Manhole	Adoptable
31.010	31-11	1350	Manhole	Adoptable	31-12	1350	Manhole	Adoptable
31.009	31-10	1800	Manhole	Adoptable	31-11	1350	Manhole	Adoptable

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Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
35.000	30.939	169.1	225	Circular	87.091	85.659	1.207	86.850	85.476	1.149
31.008	8.755	350.2	400	Circular	87.385	85.096	1.889	87.260	85.071	1.789
31.007	4.633	308.9	300	Circular	87.387	85.384	1.703	87.385	85.369	1.716
34.000	53.968	169.7	225	Circular	87.400	85.675	1.500	87.385	85.357	1.803
31.006	53.993	244.3	300	Circular	87.894	85.605	1.989	87.387	85.384	1.703
33.002	12.512	169.1	225	Circular	87.322	85.611	1.486	87.387	85.537	1.625
33.001	9.300	169.1	225	Circular	87.366	85.666	1.475	87.322	85.611	1.486
33.000	22.672	169.2	225	Circular	87.225	85.800	1.200	87.366	85.666	1.475
31.005	6.674	166.9	225	Circular	88.000	85.645	2.130	87.894	85.605	2.064
32.001	27.582	169.2	225	Circular	87.750	85.980	1.545	87.894	85.817	1.852
32.000	24.620	169.8	225	Circular	87.750	86.125	1.400	87.750	85.980	1.545
31.004	31.472	100.0	225	Circular	88.350	85.960	2.165	88.000	85.645	2.130
31.003	17.107	80.0	225	Circular	88.412	86.174	2.013	88.350	85.960	2.165
31.002	13.738	80.0	225	Circular	88.375	86.346	1.804	88.412	86.174	2.013
31.001	22.282	80.0	225	Circular	88.460	86.625	1.610	88.375	86.346	1.804
31.000	25.451	169.7	225	Circular	88.586	86.775	1.586	88.460	86.625	1.610
41.014	5.314	312.6	500	Circular	87.350	85.165	1.685	86.400	85.148	0.752
41.013	5.268	526.8	500	Circular	87.350	85.275	1.575	87.350	85.265	1.585
41.012	24.728	343.4	400	Circular	87.450	85.347	1.703	87.350	85.275	1.675
48.000	54.165	100.0	225	Circular	87.450	86.300	0.925	87.350	85.758	1.367
41.011	14.015	368.8	400	Circular	87.390	85.385	1.605	87.450	85.347	1.703
41.010	5.101	340.1	400	Circular	87.430	85.400	1.630	87.390	85.385	1.605
41.009	31.084	323.8	375	Circular	87.480	85.674	1.431	87.430	85.578	1.477
47.001	49.677	169.5	225	Circular	87.550	86.108	1.217	87.430	85.815	1.390
47.000	50.028	120.0	225	Circular	87.950	86.525	1.200	87.550	86.108	1.217
41.008	13.682	318.2	375	Circular	87.523	85.717	1.431	87.480	85.674	1.431
46.000	9.566	167.8	225	Circular	87.430	86.005	1.200	87.480	85.948	1.307
41.007	5.218	248.5	375	Circular	87.523	85.738	1.410	87.523	85.717	1.431
41.006	52.111	323.7	375	Circular	87.897	85.899	1.623	87.523	85.738	1.410
41.005	5.064	241.1	375	Circular	87.879	85.920	1.584	87.897	85.899	1.623
41.004	45.028	323.9	375	Circular	88.226	86.059	1.792	87.879	85.920	1.584
45.000	36.295	169.6	225	Circular	87.573	86.412	0.936	87.879	86.198	1.456
41.003	32.932	243.9	300	Circular	87.500	86.194	1.006	88.226	86.059	1.867
42.002	17.507	243.1	300	Circular	88.148	86.399	1.449	88.226	86.327	1.599

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
35.000	35-0	1200	Manhole	Adoptable	31-11	1350	Manhole	Adoptable
31.008	31-9	1350	Manhole	Adoptable	31-10	1800	Manhole	Adoptable
31.007	31-8	1200	Manhole	Adoptable	31-9	1350	Manhole	Adoptable
34.000	33-0	1200	Manhole	Adoptable	31-9	1350	Manhole	Adoptable
31.006	31-7	1200	Manhole	Adoptable	31-8	1200	Manhole	Adoptable
33.002	34-2	1200	Manhole	Adoptable	31-8	1200	Manhole	Adoptable
33.001	34-1	1200	Manhole	Adoptable	34-2	1200	Manhole	Adoptable
33.000	34-0	1200	Manhole	Adoptable	34-1	1200	Manhole	Adoptable
31.005	31-6	1200	Manhole	Adoptable	31-7	1200	Manhole	Adoptable
32.001	32-1	1200	Manhole	Adoptable	31-7	1200	Manhole	Adoptable
32.000	32-0	1200	Manhole	Adoptable	32-1	1200	Manhole	Adoptable
31.004	31-5	1200	Manhole	Adoptable	31-6	1200	Manhole	Adoptable
31.003	31-4	1200	Manhole	Adoptable	31-5	1200	Manhole	Adoptable
31.002	31-2	1200	Manhole	Adoptable	31-4	1200	Manhole	Adoptable
31.001	31-1	1200	Manhole	Adoptable	31-2	1200	Manhole	Adoptable
31.000	31-0	1200	Manhole	Adoptable	31-1	1200	Manhole	Adoptable
41.014	PI 5	1500	Manhole	Adoptable	Outfall 5	1500	Manhole	Adoptable
41.013	41-13	1800	Manhole	Adoptable	PI 5	1500	Manhole	Adoptable
41.012	41-12	1800	Manhole	Adoptable	41-13	1800	Manhole	Adoptable
48.000	48-0	1200	Manhole	Adoptable	41-13	1800	Manhole	Adoptable
41.011	41-11	1350	Manhole	Adoptable	41-12	1800	Manhole	Adoptable
41.010	41-10	1350	Manhole	Adoptable	41-11	1350	Manhole	Adoptable
41.009	41-9	1350	Manhole	Adoptable	41-10	1350	Manhole	Adoptable
47.001	47-1	1200	Manhole	Adoptable	41-10	1350	Manhole	Adoptable
47.000	47-0	1200	Manhole	Adoptable	47-1	1200	Manhole	Adoptable
41.008	41-8	1350	Manhole	Adoptable	41-9	1350	Manhole	Adoptable
46.000	46-0	1200	Manhole	Adoptable	41-9	1350	Manhole	Adoptable
41.007	41-7	1350	Manhole	Adoptable	41-8	1350	Manhole	Adoptable
41.006	41-6	1350	Manhole	Adoptable	41-7	1350	Manhole	Adoptable
41.005	41-5	1350	Manhole	Adoptable	41-6	1350	Manhole	Adoptable
41.004	41-4	1350	Manhole	Adoptable	41-5	1350	Manhole	Adoptable
45.000	45-0	1200	Manhole	Adoptable	41-5	1350	Manhole	Adoptable
41.003	41-3	1200	Manhole	Adoptable	41-4	1350	Manhole	Adoptable
42.002	42-2	1200	Manhole	Adoptable	41-4	1350	Manhole	Adoptable

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Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
44.000	16.241	169.2	225	Circular	88.248	86.423	1.600	88.226	86.327	1.674
42.001	30.162	243.2	300	Circular	87.996	86.523	1.173	88.148	86.399	1.449
43.000	11.712	169.7	225	Circular	88.018	86.593	1.200	88.148	86.524	1.399
42.000	12.458	244.3	300	Circular	87.868	86.574	0.994	87.996	86.523	1.173
41.002	49.058	244.1	300	Circular	87.800	86.395	1.105	87.500	86.194	1.006
41.001	45.904	244.2	300	Circular	88.250	86.583	1.367	87.800	86.395	1.105
41.000	28.592	244.4	300	Circular	88.250	86.700	1.250	88.250	86.583	1.367
49.006	4.546	454.6	450	Circular	87.100	85.620	1.030	86.501	85.610	0.441
49.005	18.999	327.6	400	Circular	88.100	85.821	1.879	87.100	85.763	0.937
49.004	82.625	456.5	400	Circular	88.427	86.002	2.025	88.100	85.821	1.879
49.003	63.994	323.2	400	Circular	88.831	86.200	2.231	88.427	86.002	2.025
49.002	27.221	80.0	225	Circular	89.346	87.200	1.921	88.831	86.860	1.746
49.001	36.427	80.0	225	Circular	90.205	88.000	1.980	89.346	87.545	1.576
49.000	45.692	80.0	225	Circular	91.041	88.900	1.916	90.205	88.329	1.651
50.006	5.797	263.5	450	Circular	87.889	85.526	1.913	86.490	85.504	0.536
50.005	24.841	460.0	450	Circular	87.899	85.680	1.769	87.889	85.626	1.813
50.004	35.824	720.0	450	Circular	87.734	85.730	1.554	87.899	85.680	1.769
50.003	34.665	500.0	375	Circular	87.547	85.799	1.373	87.734	85.730	1.629
50.002	53.673	500.0	375	Circular	87.245	85.906	0.964	87.547	85.799	1.373
50.001	20.216	320.9	375	Circular	87.191	85.969	0.847	87.245	85.906	0.964
50.000	72.790	323.5	375	Circular	87.806	86.194	1.237	87.191	85.969	0.847

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
44.000	44-0	1200	Manhole	Adoptable	41-4	1350	Manhole	Adoptable
42.001	42-1	1200	Manhole	Adoptable	42-2	1200	Manhole	Adoptable
43.000	43-0	1200	Manhole	Adoptable	42-2	1200	Manhole	Adoptable
42.000	42-0	1200	Manhole	Adoptable	42-1	1200	Manhole	Adoptable
41.002	41-2	1200	Manhole	Adoptable	41-3	1200	Manhole	Adoptable
41.001	41-1	1200	Manhole	Adoptable	41-2	1200	Manhole	Adoptable
41.000	41-0	1200	Manhole	Adoptable	41-1	1200	Manhole	Adoptable
49.006	PI 2	1350	Manhole	Adoptable	Outfall 2	1350	Manhole	Adoptable
49.005	50-5	1350	Manhole	Adoptable	PI 2	1350	Manhole	Adoptable
49.004	50-4	1350	Manhole	Adoptable	50-5	1350	Manhole	Adoptable
49.003	50-3	1350	Manhole	Adoptable	50-4	1350	Manhole	Adoptable
49.002	50-2	1200	Manhole	Adoptable	50-3	1350	Manhole	Adoptable
49.001	50-1	1200	Manhole	Adoptable	50-2	1200	Manhole	Adoptable
49.000	50-0	1200	Manhole	Adoptable	50-1	1200	Manhole	Adoptable
50.006	PI 6	1350	Manhole	Adoptable	Outfall 6	1350	Manhole	Adoptable
50.005	49-5	1350	Manhole	Adoptable	PI 6	1350	Manhole	Adoptable
50.004	49-4	1350	Manhole	Adoptable	49-5	1350	Manhole	Adoptable
50.003	49-3	1350	Manhole	Adoptable	49-4	1350	Manhole	Adoptable
50.002	49-2	1350	Manhole	Adoptable	49-3	1350	Manhole	Adoptable
50.001	49-1	1350	Manhole	Adoptable	49-2	1350	Manhole	Adoptable
50.000	49-0	1350	Manhole	Adoptable	49-1	1350	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
1-0	681728.297	714559.265	88.550	1.550	1350				
						0	1.000	87.000	375
1-1	681727.082	714579.948	88.200	1.264	1350		1	1.000	86.936	375
							0	1.001	86.936	375
1-2	681729.935	714618.237	88.200	1.383	1350		1	1.001	86.817	375
							0	1.002	86.817	375
1-3	681724.880	714650.182	88.150	1.433	1350		1	1.002	86.717	375
							0	1.003	86.717	375
1-4	681726.157	714667.886	88.050	1.388	1350		1	1.003	86.662	375
							0	1.004	86.662	375

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
1-5	681706.946	714704.913	88.201	1.668	1350	1	1.004	86.533	375
						0	1.005	86.533	375
2-0	681654.345	714711.728	88.588	1.425	1200	0	2.000	87.163	225
1-6	681668.442	714684.340	88.523	2.077	1350	1	2.000	86.981	225
						2	1.005	86.446	375
						0	1.006	86.446	375
1-7	681613.809	714655.342	88.681	2.358	1350	1	1.006	86.323	375
						0	1.007	86.323	375
1-8	681573.837	714634.246	88.553	2.320	1350	1	1.007	86.233	375
						0	1.008	86.233	375
1-9	681516.849	714604.369	88.321	2.216	1350	1	1.008	86.105	375
						0	1.009	86.105	400
1-10	681489.411	714611.148	88.495	2.437	1350	1	1.009	86.058	400
						0	1.010	86.058	400
1-11	681465.859	714652.863	88.016	2.095	1800	1	1.010	85.921	400
						0	1.011	85.921	400
3-0	681495.121	714623.928	88.471	1.680	1200	0	3.000	86.791	225
1-12	681476.088	714659.384	88.157	2.256	1350	1	3.000	86.554	225
						2	1.011	85.901	400
						0	1.012	85.901	450
4-0	681714.921	714722.862	88.200	1.115	1200	0	4.000	87.085	255
4-1	681700.576	714747.663	88.200	1.259	1200	1	4.000	86.941	255
						0	4.001	86.941	255
4-2	681696.983	714746.664	88.200	1.278	1200	1	4.001	86.922	255
						0	4.002	86.922	255
4-3	681679.139	714777.631	88.321	1.579	1200	1	4.002	86.742	255
						0	4.003	86.742	255
5-0	681687.188	714707.538	88.100	0.975	1200	0	5.000	87.125	225
5-1	681674.194	714731.842	88.000	1.038	1200	1	5.000	86.962	225
						0	5.001	86.962	225
4-4	681656.262	714765.409	88.227	1.616	1200	1	5.001	86.737	225
						2	4.003	86.611	255
						0	4.004	86.611	255

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
4-5	681631.788	714752.351	88.128	1.657	1200	1	4.004	86.471	255
						0	4.005	86.471	255
4-6	681629.584	714756.232	88.062	1.614	1200	1	4.005	86.448	255
						0	4.006	86.448	255
4-7	681618.718	714752.021	87.821	1.432	1200	1	4.006	86.389	255
						0	4.007	86.389	255
6-0	681651.744	714821.450	87.900	1.029	1200	0	6.000	86.871	225
6-1	681635.217	714852.261	88.070	1.405	1200	1	6.000	86.665	225
						0	6.001	86.665	225
6-2	681600.572	714833.783	88.000	1.567	1200	1	6.001	86.433	225
						0	6.002	86.433	225
6-3	681613.963	714808.759	87.930	1.665	1200	1	6.002	86.265	225
						0	6.003	86.265	225
4-8	681593.233	714797.616	87.727	1.601	1350	1	6.003	86.126	225
						2	4.007	86.126	255
						0	4.008	86.126	375
7-0	681598.010	714732.199	88.100	1.525	1200	0	7.000	86.575	225
4-9	681569.162	714784.678	87.721	1.680	1350	1	7.000	86.222	225
						2	4.008	86.041	375
						0	4.009	86.041	375
8-0	681578.569	714821.954	87.700	1.410	1200	0	8.000	86.290	225
9-0	681499.419	714779.633	87.700	1.301	1200	0	9.000	86.399	225
8-1	681538.921	714800.785	87.400	1.280	1200	1	9.000	86.229	225
						2	8.000	86.120	225
						0	8.001	86.120	300
4-10	681552.322	714775.627	87.822	1.819	1350	1	8.001	86.003	300
						2	4.009	86.003	375
						0	4.010	86.003	400
10-0	681456.887	714742.982	87.635	0.874	1200	0	10.000	86.761	225
10-1	681464.184	714728.460	87.816	1.151	1200	1	10.000	86.665	225
						0	10.001	86.665	225
11-0	681470.270	714761.709	87.700	1.175	1200	0	11.000	86.525	225

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
11-1	681481.748	714767.493	87.700	1.251	1200	1	11.000	86.449	225
						0	11.001	86.449	225
10-2	681494.310	714744.490	87.700	1.406	1200	1	11.001	86.294	225
						2	10.001	86.464	225
						0	10.002	86.294	225
12-0	681518.601	714738.418	87.588	1.425	1200				
						0	12.000	86.163	225
10-3	681511.067	714753.407	87.724	1.625	1200	1	12.000	86.099	225
						2	10.002	86.182	225
						0	10.003	86.099	225
4-11	681527.859	714762.478	87.850	1.898	1500	1	10.003	86.027	225
						2	4.010	85.952	400
						0	4.011	85.952	500
4-12	681530.789	714757.146	87.850	1.906	1500	1	4.011	85.944	500
						0	4.012	85.944	500
13-0	681570.228	714744.973	87.600	1.425	1200				
						0	13.000	86.175	225
4-13	681544.032	714731.413	87.400	1.496	1500	1	13.000	86.001	225
						2	4.012	85.904	500
						0	4.013	85.904	500
4-14	681526.924	714722.557	87.500	1.623	1500	1	4.013	85.877	500
						0	4.014	85.877	600
14-0	681632.181	714739.287	88.142	1.989	1200				
						0	14.000	86.153	300
14-1	681586.068	714714.847	87.334	1.318	1200	1	14.000	86.016	300
						0	14.001	86.016	300
15-0	681560.301	714658.807	88.094	1.825	1200				
						0	15.000	86.269	225
14-2	681542.637	714691.750	87.521	1.634	1350	1	15.000	86.048	225
						2	14.001	85.887	300
						0	14.002	85.887	375
4-15	681536.496	714703.253	87.418	1.565	1500	1	14.002	85.861	375
						2	4.014	85.853	600
						0	4.015	85.853	600
16-0	681524.006	714656.720	88.000	1.425	1200				
						0	16.000	86.575	225
17-0	681491.700	714717.223	87.625	1.425	1200				
						0	17.000	86.200	225
4-16	681507.377	714687.844	87.823	2.006	1500	1	17.000	86.003	225
						2	16.000	86.367	225
						3	4.015	85.817	600
						0	4.016	85.817	600

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
1-13	681471.112	714668.653	88.078	2.301	1500	1	4.016	85.777	600
						2	1.012	85.884	450
						0	1.013	85.777	600
18-0	681422.878	714707.549	87.800	1.375	1200	0	18.000	86.425	225
19-0	681367.542	714630.246	88.150	1.425	1200	0	19.000	86.725	225
19-1	681380.523	714649.147	87.600	1.010	1200	1	19.000	86.590	225
						0	19.001	86.590	225
18-1	681392.936	714654.934	87.750	1.682	1200	1	19.001	86.509	225
						2	18.000	86.068	225
						0	18.001	86.068	300
20-0	681458.635	714610.046	87.550	1.306	1200	0	20.000	86.244	225
18-2	681419.839	714638.804	87.900	1.961	1350	1	20.000	85.959	225
						2	18.001	85.939	300
						0	18.002	85.939	375
18-3	681442.714	714678.477	87.724	1.927	1350	1	18.002	85.797	375
						0	18.003	85.797	375
18-4	681452.487	714687.900	87.871	2.101	1350	1	18.003	85.770	375
						0	18.004	85.770	375
1-14	681458.950	714691.294	87.871	2.119	1500	1	18.004	85.756	375
						2	1.013	85.752	600
						0	1.014	85.752	600
1-15	681452.167	714703.160	87.781	2.042	1500	1	1.014	85.739	600
						0	1.015	85.739	600
1-16	681431.016	714720.912	87.570	1.858	2100	1	1.015	85.712	600
						0	1.016	85.712	600
PI 4	681413.439	714734.297	87.100	1.516	1500	1	1.016	85.684	600
						0	1.017	85.584	600
Outfall 4	681407.762	714738.679	86.490	0.917	1500	1	1.017	85.573	600
21-0	681732.623	714543.018	88.540	1.282	1350	0	21.000	87.258	375
21-1	681683.674	714528.552	88.225	1.125	1350	1	21.000	87.100	375
						0	21.001	87.100	375
21-2	681649.964	714518.491	88.405	1.414	1350	1	21.001	86.991	375
						0	21.002	86.991	375

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
21-3	681596.221	714502.522	88.691	1.873	1350	1	21.002	86.818	375
						0	21.003	86.818	375
21-4	681550.069	714488.810	88.367	1.698	1350	1	21.003	86.669	375
						0	21.004	86.669	400
21-5	681538.872	714510.770	88.456	1.858	1350	1	21.004	86.598	400
						0	21.005	86.598	400
22-0	681680.587	714541.754	88.245	1.150	1350				
						0	22.000	87.095	400
22-1	681676.628	714555.083	88.298	1.243	1350	1	22.000	87.055	400
						0	22.001	87.055	400
23-0	681708.590	714630.655	88.357	1.196	1350				
						0	23.000	87.161	375
22-2	681652.175	714600.736	88.564	1.657	1350	1	23.000	86.964	375
						2	22.001	86.907	400
						0	22.002	86.907	400
24-0	681619.602	714645.364	88.655	1.555	1350				
						0	24.000	87.100	400
22-3	681644.994	714598.737	88.563	1.678	1350	1	24.000	86.949	400
						2	22.002	86.885	400
						0	22.003	86.885	400
22-4	681604.492	714576.263	89.151	2.398	1350	1	22.003	86.753	400
						0	22.004	86.753	400
25-0	681578.956	714511.950	88.704	1.425	1200				
						0	25.000	87.279	225
25-1	681570.824	714540.652	88.700	1.597	1200	1	25.000	87.103	225
						0	25.001	87.103	225
22-5	681561.371	714552.096	88.931	2.319	1350	1	25.001	87.015	225
						2	22.004	86.612	400
						0	22.005	86.612	400
26-0	681520.981	714587.351	88.550	1.425	1200				
						0	26.000	87.125	225
26-1	681529.224	714571.926	88.550	1.528	1200	1	26.000	87.022	225
						0	26.001	87.022	225
22-6	681548.127	714544.673	88.890	2.316	1350	1	26.001	86.826	225
						2	22.005	86.574	400
						0	22.006	86.574	400
22-7	681533.514	714533.960	88.500	1.971	1350	1	22.006	86.529	400
						0	22.007	86.529	400

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
21-6	681527.948	714530.232	88.369	1.857	1500		1	22.007	86.512	400
							2	21.005	86.534	400
							0	21.006	86.512	500
21-7	681498.591	714572.945	88.161	1.761	1500		1	21.006	86.400	500
							0	21.007	86.400	500
21-8	681494.806	714586.463	88.218	1.843	1500		1	21.007	86.375	500
							0	21.008	86.375	500
21-9	681479.812	714583.385	88.083	1.735	1500		1	21.008	86.348	500
							0	21.009	86.348	500
21-10	681440.788	714563.200	87.929	1.657	1500		1	21.009	86.272	500
							0	21.010	86.272	500
27-0	681350.118	714601.420	88.114	1.792	1500		0	27.000	86.322	600
27-1	681391.219	714575.945	87.900	1.625	1500		1	27.000	86.275	600
							0	27.001	86.275	600
28-0	681472.874	714484.377	88.108	1.630	1350		0	28.000	86.478	375
28-1	681446.895	714523.359	87.846	1.513	1350		1	28.000	86.333	375
							0	28.001	86.333	375
21-11	681424.130	714546.888	88.117	1.885	1500		1	28.001	86.232	375
							2	27.001	86.232	600
							3	21.010	86.232	500
							0	21.011	86.232	600
29-0	681529.152	714477.102	88.510	1.125	1200		0	29.000	87.385	225
29-1	681493.847	714463.154	88.500	1.339	1200		1	29.000	87.161	225
							0	29.001	87.161	225
29-2	681481.690	714464.705	88.289	1.201	1200		1	29.001	87.088	225
							0	29.002	87.088	225
29-3	681435.452	714440.649	88.782	2.002	1200		1	29.002	86.780	225
							0	29.003	86.780	225
29-4	681420.740	714447.405	88.880	2.196	1200		1	29.003	86.684	225
							0	29.004	86.684	225
29-5	681401.736	714473.443	88.851	2.364	1200		1	29.004	86.487	225
							0	29.005	86.487	225
21-12	681378.428	714500.325	88.730	2.561	1500		1	29.005	86.277	225
							2	21.011	86.169	600
							0	21.012	86.169	600

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
30-0	681336.824	714583.857	88.750	1.425	1200	0	30.000	87.325	225
30-1	681318.656	714552.623	88.700	1.638	1200	1	30.000	87.062	225
						0	30.001	87.062	225
30-2	681338.498	714532.780	88.800	1.904	1200	1	30.001	86.896	225
						0	30.002	86.896	225
21-13	681354.275	714520.630	88.850	2.712	1500	1	30.002	86.778	225
						2	21.012	86.138	600
						0	21.013	86.138	600
21-14	681331.006	714494.008	88.070	1.966	1500	1	21.013	86.104	600
						0	21.014	86.104	600
PI 3	681328.921	714490.869	88.070	2.073	1500	1	21.014	86.097	600
						0	21.015	85.997	600
Outfall 3	681310.005	714462.485	87.300	1.362	1500	1	21.015	85.938	600
31-0	681241.100	714577.004	88.586	1.811	1200	0	31.000	86.775	225
31-1	681266.075	714572.105	88.460	1.835	1200	1	31.000	86.625	225
						0	31.001	86.625	225
31-2	681288.357	714572.144	88.375	2.029	1200	1	31.001	86.346	225
						0	31.002	86.346	225
31-4	681300.880	714577.792	88.412	2.238	1200	1	31.002	86.174	225
						0	31.003	86.174	225
31-5	681310.328	714592.053	88.350	2.390	1200	1	31.003	85.960	225
						0	31.004	85.960	225
31-6	681328.209	714617.952	88.000	2.355	1200	1	31.004	85.645	225
						0	31.005	85.645	225
32-0	681351.362	714665.315	87.750	1.625	1200	0	32.000	86.125	225
32-1	681337.837	714644.743	87.750	1.770	1200	1	32.000	85.980	225
						0	32.001	85.980	225
31-7	681322.684	714621.696	87.894	2.289	1200	1	32.001	85.817	225
						2	31.005	85.605	225
						0	31.006	85.605	300
34-0	681241.403	714640.836	87.225	1.425	1200	0	33.000	85.800	225

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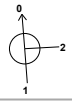
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
34-1	681263.636	714636.398	87.366	1.700	1200	1	33.000	85.666	225
						0	33.001	85.666	225
34-2	681271.591	714641.215	87.322	1.711	1200	1	33.001	85.611	225
						0	33.002	85.611	225
31-8	681277.979	714651.973	87.387	2.003	1200	1	33.002	85.537	225
						2	31.006	85.384	300
						0	31.007	85.384	300
33-0	681304.110	714699.473	87.400	1.725	1200	0	34.000	85.675	225
31-9	681274.152	714654.584	87.385	2.289	1350	1	34.000	85.357	225
						2	31.007	85.369	300
						0	31.008	85.096	400
31-10	681266.162	714658.164	87.260	2.189	1800	1	31.008	85.071	400
						0	31.009	85.071	400
35-0	681280.289	714692.365	87.091	1.432	1200	0	35.000	85.659	225
31-11	681255.367	714674.032	86.850	1.834	1350	1	35.000	85.476	225
						2	31.009	85.016	400
						0	31.010	85.016	400
31-12	681230.026	714659.891	86.901	1.968	1350	1	31.010	84.933	400
						0	31.011	84.933	400
36-0	681231.376	714579.073	88.558	1.658	1200	0	36.000	86.900	225
36-1	681201.801	714584.854	88.383	1.661	1200	1	36.000	86.722	225
						0	36.001	86.722	225
36-2	681188.714	714591.490	88.162	1.587	1200	1	36.001	86.575	225
						0	36.002	86.575	225
36-3	681182.045	714600.247	87.954	1.489	1200	1	36.002	86.465	225
						0	36.003	86.465	225
36-4	681178.035	714614.258	87.676	1.357	1200	1	36.003	86.319	225
						0	36.004	86.319	225
31-13	681174.797	714656.902	87.231	2.456	1350	 1	36.004	85.891	225
						2	31.011	84.775	400
						0	31.012	84.775	450
31-14	681172.134	714690.391	87.000	2.283	1350	1	31.012	84.717	450
						0	31.013	84.717	450
31-15	681178.112	714704.102	86.950	2.259	1350	1	31.013	84.691	450
						0	31.014	84.691	450

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
37-0	681393.391	714716.054	88.000	1.425	1200		0	37.000	86.575	225
37-1	681364.767	714673.338	87.736	1.464	1200		1	37.000	86.272	225
							0	37.001	86.272	225
38-0	681384.526	714741.184	87.352	1.675	1200		0	38.000	85.677	225
39-0	681352.807	714770.696	87.171	1.056	1200		0	39.000	86.115	225
38-1	681348.326	714765.422	87.147	1.727	1200		1	39.000	86.074	225
							2	38.000	85.420	225
							0	38.001	85.420	300
37-2	681304.036	714714.518	87.247	2.103	1200		1	38.001	85.144	300
							2	37.001	85.840	225
							0	37.002	85.144	300
40-0	681328.813	714803.744	87.200	1.425	1200		0	40.000	85.775	225
40-1	681305.668	714816.641	87.075	1.456	1200		1	40.000	85.619	225
							0	40.001	85.619	225
37-3	681257.516	714759.392	87.021	2.077	1350		1	40.001	85.178	225
							2	37.002	84.944	300
							0	37.003	84.944	375
37-4	681218.378	714728.860	86.930	2.108	1350		1	37.003	84.822	375
							0	37.004	84.822	375
31-16	681195.150	714715.697	86.850	2.195	1500		1	37.004	84.744	375
							2	31.014	84.655	450
							0	31.015	84.655	600
31-17	681189.329	714725.568	86.440	1.809	2100		1	31.015	84.631	600
							0	31.016	84.631	600
PI 1	681186.333	714730.649	86.440	1.920	1500		1	31.016	84.620	600
							0	31.017	84.520	600
Outfall 1	681181.220	714748.846	85.570	1.069	1500		1	31.017	84.501	600
41-0	681603.924	714908.556	88.250	1.550	1200		0	41.000	86.700	300
41-1	681618.947	714884.229	88.250	1.667	1200		1	41.000	86.583	300
							0	41.001	86.583	300
41-2	681580.497	714859.153	87.800	1.405	1200		1	41.001	86.395	300
							0	41.002	86.395	300

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
41-3	681539.046	714832.914	87.500	1.306	1200	1 0	41.002 41.003	86.194 86.194	300 300
42-0	681554.612	714897.046	87.868	1.294	1200	0	42.000	86.574	300
42-1	681561.361	714886.575	87.996	1.473	1200	1 0	42.000 42.001	86.523 86.523	300 300
43-0	681529.669	714880.070	88.018	1.425	1200	0	43.000	86.593	225
42-2	681536.014	714870.226	88.148	1.749	1200	1 2 0	43.000 42.001 42.002	86.524 86.399 86.399	225 300 300
44-0	681512.910	714874.563	88.248	1.825	1200	0	44.000	86.423	225
41-4	681521.339	714860.680	88.226	2.167	1350	1 2 3 0	44.000 42.002 41.003 41.004	86.327 86.327 86.059 86.059	225 300 300 375
45-0	681450.416	714820.912	87.573	1.161	1200	0	45.000	86.412	225
41-5	681482.391	714838.085	87.879	1.959	1350	1 2 0	45.000 41.004 41.005	86.198 85.920 85.920	225 375 375
41-6	681480.058	714842.579	87.897	1.998	1350	1 0	41.005 41.006	85.899 85.899	375 375
41-7	681434.036	714818.133	87.523	1.785	1350	1 0	41.006 41.007	85.738 85.738	375 375
41-8	681436.400	714813.481	87.523	1.806	1350	1 0	41.007 41.008	85.717 85.717	375 375
46-0	681419.932	714815.536	87.430	1.425	1200	0	46.000	86.005	225
41-9	681424.329	714807.040	87.480	1.806	1350	1 2 0	46.000 41.008 41.009	85.948 85.674 85.674	225 375 375
47-0	681526.464	714826.290	87.950	1.425	1200	0	47.000	86.525	225
47-1	681482.339	714802.714	87.550	1.442	1200	1 0	47.000 47.001	86.108 86.108	225 225
41-10	681438.489	714779.369	87.430	2.030	1350	1 2 0	47.001 41.009 41.010	85.815 85.578 85.400	225 375 400

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
41-11	681441.127	714775.003	87.390	2.005	1350	1	41.010	85.385	400
						0	41.011	85.385	400
41-12	681437.310	714761.518	87.450	2.103	1800	1	41.011	85.347	400
						0	41.012	85.347	400
48-0	681389.971	714797.634	87.450	1.150	1200	0	48.000	86.300	225
41-13	681415.501	714749.863	87.350	2.075	1800	1	48.000	85.758	225
						2	41.012	85.275	400
						0	41.013	85.275	500
PI 5	681410.913	714747.274	87.350	2.185	1500	1	41.013	85.265	500
						0	41.014	85.165	500
Outfall 5	681406.210	714744.800	86.400	1.252	1500	1	41.014	85.148	500
50-0	681272.880	714510.934	91.041	2.141	1200	0	49.000	88.900	225
50-1	681305.334	714543.097	90.205	2.205	1200	1	49.000	88.329	225
						0	49.001	88.000	225
50-2	681326.122	714573.010	89.346	2.146	1200	1	49.001	87.545	225
						0	49.002	87.200	225
50-3	681341.206	714595.670	88.831	2.631	1350	1	49.002	86.860	225
						0	49.003	86.200	400
50-4	681376.057	714649.341	88.427	2.425	1350	1	49.003	86.002	400
						0	49.004	86.002	400
50-5	681423.923	714716.689	88.100	2.279	1350	1	49.004	85.821	400
						0	49.005	85.821	400
PI 2	681408.828	714728.225	87.100	1.480	1350	1	49.005	85.763	400
						0	49.006	85.620	450
Outfall 2	681405.225	714730.997	86.501	0.891	1350	1	49.006	85.610	450
49-0	681617.771	714850.092	87.806	1.612	1350	0	50.000	86.194	375
49-1	681553.609	714815.717	87.191	1.222	1350	1	50.000	85.969	375
						0	50.001	85.969	375
49-2	681537.854	714803.050	87.245	1.339	1350	1	50.001	85.906	375
						0	50.002	85.906	375

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
49-3	681490.130	714778.489	87.547	1.748	1350	1	50.002	85.799	375
						0	50.003	85.799	375
49-4	681460.413	714760.641	87.734	2.004	1350	1	50.003	85.730	375
						0	50.004	85.730	450
49-5	681437.601	714733.019	87.899	2.219	1350	1	50.004	85.680	450
						0	50.005	85.680	450
PI 6	681413.647	714739.599	87.889	2.363	1350	1	50.005	85.626	450
						0	50.006	85.526	450
Outfall 6	681408.322	714741.891	86.490	0.986	1350	1	50.006	85.504	450

Simulation Settings

Rainfall Methodology	FSR	Summer CV	0.750	Drain Down Time (mins)	240
FSR Region	Scotland and Ireland	Winter CV	0.840	Additional Storage (m³/ha)	20.0
M5-60 (mm)	15.600	Analysis Speed	Normal	Check Discharge Rate(s)	x
Ratio-R	0.286	Skip Steady State	x	Check Discharge Volume	x

Storm Durations

15	60	180	360	600	960	2160	4320	7200	10080
30	120	240	480	720	1440	2880	5760	8640	

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
5	20	0	0

Node 21-14 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	86.104	Product Number	CTL-SHE-0093-4000-1143-4000
Design Depth (m)	1.143	Min Outlet Diameter (m)	0.150
Design Flow (l/s)	4.0	Min Node Diameter (mm)	1200

Node 31-17 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	84.631	Product Number	CTL-SHE-0143-9900-1143-9900
Design Depth (m)	1.143	Min Outlet Diameter (m)	0.225
Design Flow (l/s)	9.9	Min Node Diameter (mm)	1200

Node 50-5 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	85.821	Product Number	CTL-SHE-0065-2000-1143-2000
Design Depth (m)	1.143	Min Outlet Diameter (m)	0.100
Design Flow (l/s)	2.0	Min Node Diameter (mm)	1200

Node 1-11 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	85.921	Product Number	CTL-SHE-0173-1500-1143-1500
Design Depth (m)	1.143	Min Outlet Diameter (m)	0.225
Design Flow (l/s)	15.0	Min Node Diameter (mm)	1500

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Node 41-13 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	85.275	Product Number	CTL-SHE-0193-2100-1661-2100
Design Depth (m)	1.661	Min Outlet Diameter (m)	0.225
Design Flow (l/s)	21.0	Min Node Diameter (mm)	1800

Node 1-16 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	85.712	Product Number	CTL-SHE-0250-3740-1800-3740
Design Depth (m)	1.800	Min Outlet Diameter (m)	0.300
Design Flow (l/s)	37.4	Min Node Diameter (mm)	1800

Node 49-5 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	85.680	Product Number	CTL-SHE-0065-2000-1143-2000
Design Depth (m)	1.143	Min Outlet Diameter (m)	0.100
Design Flow (l/s)	2.0	Min Node Diameter (mm)	1200

Node 21-14 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	10.0	Invert Level (m)	86.104
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.91	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	2120.0	0.0	1.143	2120.0	0.0	1.144	0.0	0.0

Node 31-17 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	10.0	Invert Level (m)	84.631
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.91	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	540.0	0.0	1.143	540.0	0.0	1.144	0.0	0.0

Node 41-7 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	10.0	Invert Level (m)	85.738
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.89	Time to half empty (mins)	0

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	350.0	0.0	1.143	350.0	0.0	1.144	0.0	0.0

Node 31-10 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	10.0	Invert Level (m)	85.071
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.90	Time to half empty (mins)	0

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	500.0	0.0	1.143	500.0	0.0	1.144	0.0	0.0

Node 4-12 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	10.0	Invert Level (m)	85.944
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.89	Time to half empty (mins)	0

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	680.0	0.0	1.143	680.0	0.0	1.144	0.0	0.0

Node 1-11 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	10.0	Invert Level (m)	85.921
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.91	Time to half empty (mins)	0

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Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	655.0	0.0	1.143	655.0	0.0	1.144	0.0	0.0

Node 49-3 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	10.0	Invert Level (m)	85.799
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.87	Time to half empty (mins)	0

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	150.0	0.0	1.143	150.0	0.0	1.144	0.0	0.0

Node 50-5 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	10.0	Invert Level (m)	85.821
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.87	Time to half empty (mins)	0

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	183.0	0.0	1.143	183.0	0.0	1.144	0.0	0.0

Node 22-7 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	10.0	Invert Level (m)	86.529
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.88	Time to half empty (mins)	0

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	360.0	0.0	1.143	360.0	0.0	1.144	0.0	0.0

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Results for 5 year +20% CC Critical Storm Duration. Lowest mass balance: 86.61%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1-0	10	87.037	0.037	2.4	0.0586	0.0000	OK
15 minute winter	1-1	11	86.999	0.063	7.3	0.1152	0.0000	OK
15 minute winter	1-2	11	86.902	0.085	13.0	0.1603	0.0000	OK
15 minute winter	1-3	13	86.878	0.161	22.7	0.2860	0.0000	OK
15 minute winter	1-4	13	86.849	0.187	25.7	0.3000	0.0000	OK
15 minute winter	1-5	12	86.880	0.347	33.4	0.6710	0.0000	OK
15 minute winter	2-0	11	87.200	0.037	2.4	0.0475	0.0000	OK
15 minute summer	1-6	12	86.811	0.365	55.3	1.1191	0.0000	OK
15 minute summer	1-7	11	86.820	0.497	72.9	1.4311	0.0000	SURCHARGED
15 minute winter	1-8	11	86.812	0.579	90.6	1.4918	0.0000	SURCHARGED
15 minute winter	1-9	11	86.758	0.653	110.2	2.0066	0.0000	SURCHARGED
15 minute summer	1-10	11	86.672	0.614	111.2	1.1567	0.0000	SURCHARGED
600 minute winter	1-11	465	86.383	0.462	22.3	276.4980	0.0000	SURCHARGED
15 minute winter	3-0	11	86.829	0.038	2.6	0.0486	0.0000	OK
240 minute winter	1-12	176	86.393	0.492	11.3	1.1442	0.0000	SURCHARGED
15 minute summer	4-0	1	87.085	0.000	0.0	0.0000	0.0000	OK
15 minute winter	4-1	11	87.000	0.059	5.5	0.0937	0.0000	OK
15 minute winter	4-2	11	86.977	0.055	5.3	0.0621	0.0000	OK
15 minute winter	4-3	12	86.965	0.223	19.3	0.3334	0.0000	OK
15 minute summer	5-0	1	87.125	0.000	0.0	0.0000	0.0000	OK
15 minute winter	5-1	11	87.031	0.069	8.5	0.1347	0.0000	OK
15 minute winter	4-4	13	86.958	0.347	32.8	0.7183	0.0000	SURCHARGED
15 minute winter	4-5	13	86.920	0.449	34.2	0.7245	0.0000	SURCHARGED
15 minute winter	4-6	13	86.903	0.455	37.1	0.5151	0.0000	SURCHARGED
15 minute winter	4-7	13	86.871	0.482	41.4	0.9902	0.0000	SURCHARGED
15 minute winter	6-0	10	86.918	0.047	4.0	0.0712	0.0000	OK
15 minute winter	6-1	12	86.913	0.248	18.6	0.4222	0.0000	SURCHARGED
15 minute winter	6-2	12	86.877	0.444	18.1	0.6208	0.0000	SURCHARGED
15 minute winter	6-3	12	86.835	0.570	35.6	1.3164	0.0000	SURCHARGED
15 minute winter	4-8	11	86.803	0.677	87.9	2.0862	0.0000	SURCHARGED
15 minute winter	7-0	12	86.756	0.181	16.7	0.2043	0.0000	OK
15 minute winter	4-9	11	86.752	0.711	117.3	2.2884	0.0000	SURCHARGED
15 minute winter	8-0	11	86.809	0.519	19.4	0.5874	0.0000	SURCHARGED
15 minute summer	9-0	11	86.810	0.411	15.8	0.4643	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	1-0	1.000	1-1	2.3	0.269	0.021	0.1838	
15 minute winter	1-1	1.001	1-2	7.0	0.458	0.063	0.5907	
15 minute winter	1-2	1.002	1-3	12.7	0.587	0.115	0.9933	
15 minute winter	1-3	1.003	1-4	20.8	0.695	0.188	0.8872	
15 minute winter	1-4	1.004	1-5	30.1	0.594	0.272	3.0266	
15 minute winter	1-5	1.005	1-6	43.0	0.520	0.486	4.5059	
15 minute winter	2-0	2.000	1-6	2.3	0.546	0.057	0.1278	
15 minute summer	1-6	1.006	1-7	62.0	0.645	0.701	6.7936	
15 minute summer	1-7	1.007	1-8	80.4	0.747	0.910	4.9851	
15 minute winter	1-8	1.008	1-9	94.7	0.881	1.072	7.0971	
15 minute winter	1-9	1.009	1-10	109.2	1.009	1.139	3.5382	
15 minute summer	1-10	1.010	1-11	123.6	2.073	0.981	3.0782	
600 minute winter	1-11	Hydro-Brake®	1-12	11.9				
15 minute winter	3-0	3.000	1-12	2.4	0.557	0.061	0.1752	
240 minute winter	1-12	1.012	1-13	11.4	0.270	0.089	1.6668	
15 minute summer	4-0	4.000	4-1	0.0	0.000	0.000	0.1253	
15 minute winter	4-1	4.001	4-2	5.3	0.634	0.103	0.0318	
15 minute winter	4-2	4.002	4-3	5.3	0.497	0.103	0.9811	
15 minute winter	4-3	4.003	4-4	14.1	0.449	0.276	1.2747	
15 minute summer	5-0	5.000	5-1	0.0	0.000	0.000	0.1381	
15 minute winter	5-1	5.001	4-4	8.2	0.771	0.206	0.9081	
15 minute winter	4-4	4.004	4-5	32.1	0.820	0.626	1.4164	
15 minute winter	4-5	4.005	4-6	37.1	0.875	0.718	0.2279	
15 minute winter	4-6	4.006	4-7	38.7	0.820	0.754	0.5950	
15 minute winter	4-7	4.007	4-8	44.0	0.897	0.860	2.6670	
15 minute winter	6-0	6.000	6-1	3.8	0.412	0.096	0.7929	
15 minute winter	6-1	6.001	6-2	16.4	0.751	0.412	1.5616	
15 minute winter	6-2	6.002	6-3	22.3	0.561	0.560	1.1288	
15 minute winter	6-3	6.003	4-8	33.5	0.844	0.842	0.9360	
15 minute winter	4-8	4.008	4-9	92.7	0.841	0.836	3.0142	
15 minute winter	7-0	7.000	4-9	-16.7	-0.475	-0.420	2.2138	
15 minute winter	4-9	4.009	4-10	130.4	1.183	1.476	2.1087	
15 minute winter	8-0	8.000	8-1	-19.4	-0.559	-0.609	1.7875	
15 minute summer	9-0	9.000	8-1	-15.8	-0.494	-0.497	1.7821	

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Results for 5 year +20% CC Critical Storm Duration. Lowest mass balance: 86.61%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	8-1	11	86.722	0.602	45.3	1.5745	0.0000	SURCHARGED
15 minute summer	4-10	11	86.693	0.690	154.5	1.3748	0.0000	SURCHARGED
15 minute winter	10-0	13	86.770	0.009	0.8	0.0105	0.0000	OK
15 minute winter	10-1	12	86.778	0.113	7.7	0.2036	0.0000	OK
15 minute winter	11-0	11	86.799	0.274	10.2	0.3101	0.0000	SURCHARGED
15 minute winter	11-1	11	86.795	0.346	18.9	0.5912	0.0000	SURCHARGED
15 minute winter	10-2	11	86.767	0.473	28.5	1.0406	0.0000	SURCHARGED
15 minute winter	12-0	11	86.706	0.543	6.5	0.6143	0.0000	SURCHARGED
15 minute winter	10-3	11	86.701	0.602	48.4	1.4512	0.0000	SURCHARGED
15 minute winter	4-11	10	86.623	0.671	229.4	1.9719	0.0000	SURCHARGED
240 minute winter	4-12	176	86.396	0.452	60.5	274.5162	0.0000	OK
240 minute winter	13-0	176	86.395	0.220	0.5	0.2494	0.0000	OK
240 minute winter	4-13	176	86.395	0.491	28.7	1.1447	0.0000	OK
240 minute winter	4-14	176	86.395	0.518	29.2	1.1639	0.0000	OK
240 minute winter	14-0	176	86.395	0.242	1.2	0.3390	0.0000	OK
240 minute winter	14-1	176	86.395	0.379	7.2	1.2503	0.0000	SURCHARGED
240 minute winter	15-0	176	86.395	0.126	0.5	0.1520	0.0000	OK
240 minute winter	14-2	176	86.395	0.508	15.7	2.1060	0.0000	SURCHARGED
240 minute winter	4-15	176	86.394	0.541	30.8	1.4824	0.0000	OK
15 minute summer	16-0	1	86.575	0.000	0.0	0.0000	0.0000	OK
240 minute winter	17-0	176	86.394	0.194	0.5	0.2192	0.0000	OK
240 minute winter	4-16	176	86.394	0.577	31.7	2.5256	0.0000	OK
240 minute winter	1-13	176	86.393	0.616	34.2	1.5325	0.0000	SURCHARGED
15 minute summer	18-0	1	86.425	0.000	0.0	0.0000	0.0000	OK
15 minute winter	19-0	10	86.778	0.053	5.0	0.0784	0.0000	OK
15 minute winter	19-1	11	86.664	0.074	8.9	0.1133	0.0000	OK
240 minute winter	18-1	176	86.393	0.325	5.4	0.6568	0.0000	SURCHARGED
15 minute winter	20-0	13	86.396	0.152	10.2	0.2285	0.0000	OK
240 minute winter	18-2	176	86.393	0.454	13.4	1.4728	0.0000	SURCHARGED
240 minute winter	18-3	176	86.392	0.595	16.7	1.4824	0.0000	SURCHARGED
240 minute winter	18-4	176	86.392	0.622	17.6	1.0620	0.0000	SURCHARGED
240 minute winter	1-14	176	86.392	0.640	36.3	1.5239	0.0000	SURCHARGED
240 minute winter	1-15	176	86.391	0.652	36.6	1.3573	0.0000	SURCHARGED
240 minute winter	1-16	176	86.390	0.678	37.3	2.7569	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 summer	8-1	8.001	4-10	30.7	0.436	0.433	2.0073	
15 minute summer	4-10	4.010	4-11	157.8	1.261	1.567	3.4769	
15 minute winter	10-0	10.000	10-1	-0.8	-0.099	-0.021	0.1634	
15 minute winter	10-1	10.001	10-2	8.3	0.656	0.209	1.0172	
15 minute winter	11-0	11.000	11-1	-10.2	-0.444	-0.256	0.5112	
15 minute winter	11-1	11.001	10-2	14.2	0.387	0.356	1.0424	
15 minute winter	10-2	10.002	10-3	34.5	0.868	0.867	0.7549	
15 minute winter	12-0	12.000	10-3	-6.5	-0.286	-0.203	0.6672	
15 minute winter	10-3	10.003	4-11	53.1	1.336	1.671	0.7590	
15 minute winter	4-11	4.011	4-12	237.3	2.807	1.510	0.6096	
240 minute winter	4-12	4.012	4-13	28.5	-0.190	0.182	5.5141	
240 minute winter	13-0	13.000	4-13	-0.5	-0.028	-0.011	1.1699	
240 minute winter	4-13	4.013	4-14	29.2	0.166	0.186	3.7610	
240 minute winter	4-14	4.014	4-15	29.7	0.132	0.131	5.6694	
240 minute winter	14-0	14.000	14-1	1.1	0.128	0.019	3.4254	
240 minute winter	14-1	14.001	14-2	5.7	0.236	0.100	3.4640	
240 minute winter	15-0	15.000	14-2	0.3	0.248	0.008	1.1698	
240 minute winter	14-2	14.002	4-15	14.8	0.375	0.167	1.4383	
240 minute winter	4-15	4.015	4-16	31.4	0.266	0.139	8.9913	
15 minute summer	16-0	16.000	4-16	0.0	0.000	0.000	0.0000	
240 minute winter	17-0	17.000	4-16	-0.5	-0.022	-0.013	1.2681	
240 minute winter	4-16	4.016	1-13	32.5	0.286	0.153	11.4848	
240 minute winter	1-13	1.013	1-14	34.8	0.250	0.164	7.2394	
15 minute summer	18-0	18.000	18-1	0.0	0.000	0.000	1.2038	
15 minute winter	19-0	19.000	19-1	4.9	0.535	0.123	0.2109	
15 minute winter	19-1	19.001	18-1	8.7	0.787	0.218	0.1512	
240 minute winter	18-1	18.001	18-2	4.6	0.250	0.065	2.2089	
15 minute winter	20-0	20.000	18-2	7.8	0.233	0.196	1.6516	
240 minute winter	18-2	18.002	18-3	12.1	0.333	0.109	5.0511	
240 minute winter	18-3	18.003	18-4	16.3	0.290	0.185	1.4974	
240 minute winter	18-4	18.004	1-14	17.5	0.205	0.198	0.8052	
240 minute winter	1-14	1.014	1-15	36.3	0.304	0.171	3.8500	
240 minute winter	1-15	1.015	1-16	36.6	0.263	0.173	7.7780	
240 minute winter	1-16	1.016	PI 4	37.2	0.425	0.153	1.9346	

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Results for 5 year +20% CC Critical Storm Duration. Lowest mass balance: 86.61%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	PI 4	9	85.905	0.321	37.1	0.5675	0.0000	OK
15 minute summer	Outfall 4	1	85.900	0.327	37.2	0.0000	0.0000	OK
15 minute winter	21-0	11	87.281	0.023	1.0	0.0353	0.0000	OK
15 minute winter	21-1	11	87.178	0.078	11.5	0.1875	0.0000	OK
15 minute winter	21-2	11	87.087	0.096	16.9	0.1800	0.0000	OK
10080 minute winter	21-3	10020	87.072	0.254	0.7	0.6525	0.0000	OK
10080 minute winter	21-4	10020	87.072	0.403	0.9	0.8417	0.0000	SURCHARGED
10080 minute winter	21-5	10020	87.072	0.474	1.1	0.9939	0.0000	SURCHARGED
15 minute summer	22-0	12	87.221	0.126	4.7	0.2348	0.0000	OK
15 minute winter	22-1	12	87.220	0.165	14.4	0.3006	0.0000	OK
15 minute winter	23-0	11	87.222	0.061	6.9	0.1230	0.0000	OK
15 minute winter	22-2	11	87.183	0.276	65.1	1.3248	0.0000	OK
15 minute winter	24-0	12	87.187	0.087	8.1	0.1336	0.0000	OK
15 minute winter	22-3	11	87.170	0.285	82.4	0.7646	0.0000	OK
15 minute summer	22-4	10	87.144	0.391	96.5	0.9924	0.0000	OK
15 minute summer	25-0	1	87.279	0.000	0.0	0.0000	0.0000	OK
15 minute winter	25-1	10	87.192	0.089	12.3	0.1689	0.0000	OK
15 minute summer	22-5	10	87.085	0.473	133.1	1.1876	0.0000	SURCHARGED
15 minute summer	26-0	1	87.125	0.000	0.0	0.0000	0.0000	OK
10080 minute winter	26-1	9960	87.072	0.050	0.1	0.0671	0.0000	OK
10080 minute winter	22-6	9960	87.072	0.498	3.2	0.9658	0.0000	SURCHARGED
10080 minute winter	22-7	9960	87.072	0.543	3.2	172.6563	0.0000	SURCHARGED
10080 minute winter	21-6	9960	87.072	0.560	4.5	1.4050	0.0000	SURCHARGED
10080 minute winter	21-7	9960	87.071	0.671	5.0	2.3140	0.0000	SURCHARGED
10080 minute winter	21-8	10320	87.074	0.699	5.1	1.4543	0.0000	SURCHARGED
10080 minute winter	21-9	10200	87.069	0.721	5.0	1.3823	0.0000	SURCHARGED
10080 minute winter	21-10	10140	87.071	0.799	5.2	2.2519	0.0000	SURCHARGED
10080 minute winter	27-0	10200	87.071	0.749	0.3	1.3237	0.0000	SURCHARGED
10080 minute winter	27-1	10140	87.071	0.796	0.9	2.8174	0.0000	SURCHARGED
10080 minute winter	28-0	10320	87.071	0.593	0.3	1.1330	0.0000	SURCHARGED
10080 minute winter	28-1	10080	87.071	0.738	0.7	2.6375	0.0000	SURCHARGED
10080 minute winter	21-11	10200	87.071	0.839	6.8	3.3785	0.0000	SURCHARGED
15 minute winter	29-0	11	87.400	0.015	0.4	0.0180	0.0000	OK
15 minute winter	29-1	11	87.217	0.056	5.5	0.0857	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	PI 4	1.017	Outfall 4	38.7	0.252	0.145	1.1134	215.0
15 minute winter	21-0	21.000	21-1	0.9	0.100	0.008	0.4976	
15 minute winter	21-1	21.001	21-2	10.9	0.574	0.099	0.6818	
15 minute winter	21-2	21.002	21-3	16.2	0.539	0.147	1.7161	
10080 minute winter	21-3	21.003	21-4	0.7	0.261	0.006	4.5635	
10080 minute winter	21-4	21.004	21-5	0.9	0.277	0.007	3.0854	
10080 minute winter	21-5	21.005	21-6	1.1	0.308	0.009	2.7940	
15 minute summer	22-0	22.000	22-1	5.7	0.405	0.045	0.5211	
15 minute winter	22-1	22.001	22-2	17.8	0.292	0.141	3.6088	
15 minute winter	23-0	23.000	22-2	6.5	0.283	0.059	2.5043	
15 minute winter	22-2	22.002	22-3	63.8	0.794	0.498	0.6994	
15 minute winter	24-0	24.000	22-3	7.2	0.242	0.057	2.3594	
15 minute winter	22-3	22.003	22-4	87.4	0.870	0.694	4.9502	
15 minute summer	22-4	22.004	22-5	104.4	0.942	0.829	6.1691	
15 minute summer	25-0	25.000	25-1	0.0	0.000	0.000	0.2076	
15 minute winter	25-1	25.001	22-5	11.9	0.858	0.299	0.2071	
15 minute summer	22-5	22.005	22-6	136.8	1.189	1.161	1.9006	
15 minute summer	26-0	26.000	26-1	0.0	0.000	0.000	0.0451	
10080 minute winter	26-1	26.001	22-6	-0.1	0.246	-0.003	0.7669	
10080 minute winter	22-6	22.006	22-7	3.2	0.395	0.027	2.2683	
10080 minute winter	22-7	22.007	21-6	3.1	0.355	0.026	0.8386	
10080 minute winter	21-6	21.006	21-7	4.5	0.369	0.023	10.1382	
10080 minute winter	21-7	21.007	21-8	5.0	0.368	0.028	2.7460	
10080 minute winter	21-8	21.008	21-9	5.0	0.373	0.028	2.9942	
10080 minute winter	21-9	21.009	21-10	4.9	0.328	0.028	8.5941	
10080 minute winter	21-10	21.010	21-11	5.2	0.274	0.029	4.5606	
10080 minute winter	27-0	27.000	27-1	0.4	-0.003	0.002	13.6208	
10080 minute winter	27-1	27.001	21-11	0.9	0.057	0.004	12.3665	
10080 minute winter	28-0	28.000	28-1	0.2	0.103	0.002	5.1670	
10080 minute winter	28-1	28.001	21-11	0.6	0.102	0.006	3.6110	
10080 minute winter	21-11	21.011	21-12	6.6	0.227	0.031	18.3778	
15 minute winter	29-0	29.000	29-1	0.4	0.094	0.009	0.1697	
15 minute winter	29-1	29.001	29-2	5.3	0.587	0.134	0.1122	

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Results for 5 year +20% CC Critical Storm Duration. Lowest mass balance: 86.61%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	29-2	11	87.158	0.070	8.6	0.0991	0.0000	OK
10080 minute winter	29-3	10140	87.071	0.291	0.4	0.5008	0.0000	SURCHARGED
10080 minute winter	29-4	10140	87.071	0.387	0.5	0.5259	0.0000	SURCHARGED
10080 minute winter	29-5	10140	87.071	0.584	0.7	0.9573	0.0000	SURCHARGED
10080 minute winter	21-12	10320	87.071	0.902	8.0	2.8620	0.0000	SURCHARGED
15 minute winter	30-0	11	87.357	0.032	2.0	0.0405	0.0000	OK
15 minute winter	30-1	11	87.120	0.058	6.1	0.0805	0.0000	OK
10080 minute winter	30-2	10200	87.071	0.175	0.4	0.2881	0.0000	OK
10080 minute winter	21-13	10320	87.071	0.933	8.5	2.2952	0.0000	SURCHARGED
10080 minute winter	21-14	10320	87.071	0.967	8.4	1867.1510	0.0000	SURCHARGED
10080 minute winter	PI 3	10320	87.071	1.074	0.1	1.8976	0.0000	SURCHARGED
15 minute summer	Outfall 3	1	87.150	1.212	0.0	0.0000	0.0000	OK
15 minute summer	31-0	1	86.775	0.000	0.0	0.0000	0.0000	OK
15 minute winter	31-1	10	86.694	0.069	12.1	0.1239	0.0000	OK
15 minute winter	31-2	10	86.433	0.087	17.1	0.1211	0.0000	OK
15 minute winter	31-4	10	86.271	0.097	21.0	0.1282	0.0000	OK
15 minute winter	31-5	11	86.069	0.109	24.8	0.1424	0.0000	OK
15 minute winter	31-6	11	85.840	0.195	35.3	0.3119	0.0000	OK
15 minute summer	32-0	1	86.125	0.000	0.0	0.0000	0.0000	OK
15 minute winter	32-1	11	86.031	0.051	4.6	0.0709	0.0000	OK
15 minute winter	31-7	10	85.787	0.182	41.7	0.2125	0.0000	OK
15 minute winter	34-0	10	85.854	0.054	5.3	0.0823	0.0000	OK
15 minute winter	34-1	10	85.772	0.106	12.5	0.1661	0.0000	OK
15 minute summer	34-2	10	85.758	0.147	15.8	0.1990	0.0000	OK
15 minute winter	31-8	9	85.731	0.347	86.8	0.8876	0.0000	SURCHARGED
15 minute winter	33-0	10	85.690	0.015	0.7	0.0170	0.0000	OK
15 minute winter	31-9	9	85.703	0.607	98.8	1.1449	0.0000	SURCHARGED
2880 minute winter	31-10	1860	85.515	0.444	7.3	201.1402	0.0000	SURCHARGED
15 minute winter	35-0	11	85.712	0.053	5.0	0.0789	0.0000	OK
2880 minute winter	31-11	1860	85.515	0.499	3.6	1.0578	0.0000	SURCHARGED
2880 minute winter	31-12	1860	85.515	0.582	3.8	1.3011	0.0000	SURCHARGED
15 minute summer	36-0	1	86.900	0.000	0.0	0.0000	0.0000	OK
15 minute winter	36-1	10	86.802	0.080	13.1	0.1532	0.0000	OK
15 minute winter	36-2	10	86.671	0.096	17.2	0.1354	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	29-2	29.002	29-3	8.5	0.539	0.214	0.8297	
10080 minute winter	29-3	29.003	29-4	0.4	0.302	0.011	0.6439	
10080 minute winter	29-4	29.004	29-5	0.5	0.311	0.012	1.2821	
10080 minute winter	29-5	29.005	21-12	0.7	0.270	0.018	1.4151	
10080 minute winter	21-12	21.012	21-13	7.9	0.208	0.037	8.8880	
15 minute winter	30-0	30.000	30-1	1.9	0.347	0.044	0.2080	
15 minute winter	30-1	30.001	30-2	5.9	0.475	0.148	0.3525	
10080 minute winter	30-2	30.002	21-13	0.3	0.307	0.008	0.7260	
10080 minute winter	21-13	21.013	21-14	8.4	0.397	0.039	9.9595	
10080 minute winter	21-14	Hydro-Brake®	PI 3	0.1				
10080 minute winter	PI 3	21.015	Outfall 3	0.0	0.000	0.000	9.6080	0.0
15 minute summer	31-0	31.000	31-1	0.0	0.000	0.000	0.1265	
15 minute winter	31-1	31.001	31-2	11.9	0.970	0.204	0.2732	
15 minute winter	31-2	31.002	31-4	16.8	1.098	0.288	0.2104	
15 minute winter	31-4	31.003	31-5	20.9	1.179	0.359	0.3032	
15 minute winter	31-5	31.004	31-6	25.0	0.891	0.481	0.8756	
15 minute winter	31-6	31.005	31-7	36.6	1.067	0.913	0.2347	
15 minute summer	32-0	32.000	32-1	0.0	0.000	0.000	0.0794	
15 minute winter	32-1	32.001	31-7	4.4	0.660	0.110	0.1833	
15 minute winter	31-7	31.006	31-8	43.7	0.728	0.617	3.1100	
15 minute winter	34-0	33.000	34-1	5.2	0.448	0.130	0.2923	
15 minute winter	34-1	33.001	34-2	12.7	0.705	0.319	0.1910	
15 minute summer	34-2	33.002	31-8	16.4	0.773	0.412	0.3944	
15 minute winter	31-8	31.007	31-9	88.7	1.326	1.411	0.3263	
15 minute winter	33-0	34.000	31-9	-0.7	0.248	-0.019	1.1032	
15 minute winter	31-9	31.008	31-10	121.0	2.284	0.961	0.5612	
2880 minute winter	31-10	31.009	31-11	3.3	0.363	0.027	2.4026	
15 minute winter	35-0	35.000	31-11	4.8	0.679	0.121	0.2195	
2880 minute winter	31-11	31.010	31-12	3.6	0.358	0.029	3.6330	
2880 minute winter	31-12	31.011	31-13	3.8	0.251	0.030	6.9243	
15 minute summer	36-0	36.000	36-1	0.0	0.000	0.000	0.1818	
15 minute winter	36-1	36.001	36-2	12.8	0.891	0.246	0.2107	
15 minute winter	36-2	36.002	36-3	16.9	0.993	0.326	0.1878	

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Results for 5 year +20% CC Critical Storm Duration. Lowest mass balance: 86.61%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	36-3	11	86.570	0.105	20.5	0.1435	0.0000	OK
15 minute winter	36-4	11	86.425	0.106	22.5	0.1349	0.0000	OK
2880 minute winter	31-13	1860	85.515	0.740	4.7	2.2534	0.0000	SURCHARGED
2880 minute winter	31-14	1860	85.515	0.798	5.1	1.5062	0.0000	SURCHARGED
2880 minute winter	31-15	1860	85.515	0.824	5.2	1.3252	0.0000	SURCHARGED
15 minute summer	37-0	1	86.575	0.000	0.0	0.0000	0.0000	OK
15 minute winter	37-1	11	86.345	0.073	10.1	0.1330	0.0000	OK
15 minute winter	38-0	12	85.819	0.142	10.7	0.2183	0.0000	OK
15 minute summer	39-0	1	86.115	0.000	0.0	0.0000	0.0000	OK
15 minute summer	38-1	12	85.784	0.364	33.1	0.8793	0.0000	SURCHARGED
15 minute winter	37-2	12	85.793	0.649	81.9	2.4135	0.0000	SURCHARGED
15 minute summer	40-0	1	85.775	0.000	0.0	0.0000	0.0000	OK
15 minute winter	40-1	11	85.671	0.052	5.2	0.0775	0.0000	OK
15 minute winter	37-3	11	85.535	0.591	120.0	2.3940	0.0000	SURCHARGED
2880 minute winter	37-4	1860	85.515	0.693	7.0	1.5709	0.0000	SURCHARGED
2880 minute winter	31-16	1860	85.515	0.860	12.3	2.3033	0.0000	SURCHARGED
2880 minute winter	31-17	1860	85.515	0.884	12.3	437.4695	0.0000	SURCHARGED
2880 minute winter	PI 1	1980	85.309	0.789	15.3	1.3940	0.0000	SURCHARGED
15 minute summer	Outfall 1	1	85.300	0.799	0.0	0.0000	0.0000	OK
15 minute winter	41-0	10	86.775	0.075	10.1	0.1340	0.0000	OK
15 minute winter	41-1	12	86.682	0.099	16.8	0.1530	0.0000	OK
15 minute winter	41-2	12	86.670	0.275	35.5	0.5459	0.0000	OK
15 minute winter	41-3	11	86.652	0.458	51.6	0.8267	0.0000	SURCHARGED
15 minute winter	42-0	11	86.701	0.127	17.2	0.3144	0.0000	OK
15 minute winter	42-1	11	86.694	0.171	40.7	0.4769	0.0000	OK
15 minute winter	43-0	11	86.657	0.064	3.6	0.0887	0.0000	OK
15 minute winter	42-2	12	86.649	0.250	62.0	0.5574	0.0000	OK
15 minute summer	44-0	12	86.596	0.173	3.6	0.2318	0.0000	OK
15 minute winter	41-4	11	86.589	0.530	107.9	1.1939	0.0000	SURCHARGED
15 minute winter	45-0	10	86.492	0.080	11.3	0.1695	0.0000	OK
15 minute winter	41-5	10	86.454	0.534	138.1	1.2393	0.0000	SURCHARGED
15 minute summer	41-6	10	86.416	0.517	131.3	0.7392	0.0000	SURCHARGED
240 minute winter	41-7	172	86.248	0.510	37.6	159.5190	0.0000	SURCHARGED
240 minute winter	41-8	172	86.247	0.530	17.4	0.9172	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	36-3	36.003	36-4	20.6	1.143	0.396	0.2647	
15 minute winter	36-4	36.004	31-13	22.3	1.248	0.430	0.7658	
2880 minute winter	31-13	31.012	31-14	4.7	0.251	0.035	5.3229	
2880 minute winter	31-14	31.013	31-15	5.1	0.255	0.038	2.3700	
2880 minute winter	31-15	31.014	31-16	5.2	0.185	0.039	3.2654	
15 minute summer	37-0	37.000	37-1	0.0	0.000	0.000	0.2735	
15 minute winter	37-1	37.001	37-2	8.9	0.812	0.223	0.8052	
15 minute winter	38-0	38.000	38-1	10.4	0.413	0.261	1.4414	
15 minute summer	39-0	39.000	38-1	0.0	0.000	0.000	0.0000	
15 minute summer	38-1	38.001	37-2	33.5	0.528	0.474	4.7515	
15 minute winter	37-2	37.002	37-3	73.4	1.043	1.196	4.5516	
15 minute summer	40-0	40.000	40-1	0.0	0.000	0.000	0.0885	
15 minute winter	40-1	40.001	37-3	4.7	0.531	0.119	1.7474	
15 minute winter	37-3	37.003	37-4	121.5	1.101	1.233	5.4750	
2880 minute winter	37-4	37.004	31-16	7.0	0.369	0.065	2.9447	
2880 minute winter	31-16	31.015	31-17	12.3	0.546	0.039	3.2280	
2880 minute winter	31-17	31.016	PI 1	15.3	0.261	0.052	1.6616	
2880 minute winter	PI 1	31.017	Outfall 1	10.3	0.037	0.048	5.3243	422.8
15 minute winter	41-0	41.000	41-1	9.9	0.603	0.139	0.4743	
15 minute winter	41-1	41.001	41-2	16.3	0.654	0.231	2.0149	
15 minute winter	41-2	41.002	41-3	34.0	0.740	0.480	3.3865	
15 minute winter	41-3	41.003	41-4	46.8	0.742	0.660	2.3190	
15 minute winter	42-0	42.000	42-1	16.5	0.494	0.233	0.4352	
15 minute winter	42-1	42.001	42-2	39.4	0.799	0.556	1.5674	
15 minute winter	43-0	43.000	42-2	3.5	0.497	0.089	0.1852	
15 minute winter	42-2	42.002	41-4	61.5	1.077	0.866	1.1175	
15 minute summer	44-0	44.000	41-4	15.2	0.587	0.381	0.5873	
15 minute winter	41-4	41.004	41-5	115.1	1.044	1.041	4.9665	
15 minute winter	45-0	45.000	41-5	11.0	0.667	0.276	0.9518	
15 minute winter	41-5	41.005	41-6	140.6	1.275	1.095	0.5585	
15 minute summer	41-6	41.006	41-7	138.3	1.823	1.250	3.6074	
240 minute winter	41-7	41.007	41-8	17.4	0.409	0.138	0.5755	
240 minute winter	41-8	41.008	41-9	17.5	0.411	0.157	1.5091	

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Results for 5 year +20% CC Critical Storm Duration. Lowest mass balance: 86.61%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
240 minute winter	46-0	172	86.246	0.241	0.2	0.2727	0.0000	SURCHARGED
240 minute winter	41-9	172	86.246	0.572	17.6	1.0533	0.0000	SURCHARGED
15 minute summer	47-0	1	86.525	0.000	0.0	0.0000	0.0000	OK
240 minute winter	47-1	172	86.244	0.136	2.6	0.2636	0.0000	OK
240 minute winter	41-10	172	86.244	0.844	18.3	2.2309	0.0000	SURCHARGED
240 minute winter	41-11	172	86.243	0.858	18.5	1.4257	0.0000	SURCHARGED
240 minute winter	41-12	172	86.242	0.895	18.7	2.5330	0.0000	SURCHARGED
15 minute summer	48-0	1	86.300	0.000	0.0	0.0000	0.0000	OK
240 minute winter	41-13	172	86.240	0.965	20.6	3.9258	0.0000	SURCHARGED
30 minute summer	PI 5	17	85.902	0.737	11.3	1.3023	0.0000	SURCHARGED
15 minute summer	Outfall 5	1	85.900	0.752	8.0	0.0000	0.0000	OK
15 minute summer	50-0	1	88.900	0.000	0.0	0.0000	0.0000	OK
15 minute winter	50-1	10	88.078	0.078	14.9	0.1415	0.0000	OK
15 minute winter	50-2	11	87.301	0.101	22.9	0.1548	0.0000	OK
960 minute winter	50-3	735	86.368	0.168	2.9	0.2861	0.0000	OK
960 minute winter	50-4	735	86.368	0.366	4.9	0.8523	0.0000	OK
960 minute winter	50-5	735	86.368	0.547	6.6	88.5125	0.0000	SURCHARGED
15 minute winter	PI 2	19	85.901	0.281	1.7	0.4019	0.0000	OK
15 minute summer	Outfall 2	1	85.900	0.290	1.7	0.0000	0.0000	OK
960 minute winter	49-0	720	86.303	0.109	0.2	0.1558	0.0000	OK
960 minute winter	49-1	720	86.303	0.334	2.4	1.1883	0.0000	OK
960 minute winter	49-2	720	86.303	0.397	2.2	0.6687	0.0000	SURCHARGED
960 minute winter	49-3	720	86.303	0.504	3.9	67.0993	0.0000	SURCHARGED
960 minute winter	49-4	720	86.303	0.573	1.8	1.1457	0.0000	SURCHARGED
960 minute winter	49-5	720	86.303	0.623	1.9	1.1778	0.0000	SURCHARGED
30 minute summer	PI 6	20	85.901	0.375	1.6	0.5360	0.0000	OK
15 minute summer	Outfall 6	1	85.900	0.396	1.4	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
240 minute winter	46-0	46.000	41-9	-0.2	-0.036	-0.006	0.3805	
240 minute winter	41-9	41.009	41-10	17.8	0.392	0.161	3.4285	
15 minute summer	47-0	47.000	47-1	0.0	0.000	0.000	0.3045	
240 minute winter	47-1	47.001	41-10	2.6	0.428	0.065	1.6122	
240 minute winter	41-10	41.010	41-11	18.5	0.338	0.145	0.6386	
240 minute winter	41-11	41.011	41-12	18.6	0.352	0.151	1.7545	
240 minute winter	41-12	41.012	41-13	18.8	0.209	0.148	3.0957	
15 minute summer	48-0	48.000	41-13	0.0	0.000	0.000	1.0771	
240 minute winter	41-13	Hydro-Brake®	PI 5	20.5				
30 minute summer	PI 5	41.014	Outfall 5	11.3	0.058	0.047	1.0395	53.2
15 minute summer	50-0	49.000	50-1	0.0	0.000	0.000	0.0000	
15 minute winter	50-1	49.001	50-2	14.4	1.207	0.248	0.4371	
15 minute winter	50-2	49.002	50-3	22.7	1.352	0.391	0.4576	
960 minute winter	50-3	49.003	50-4	2.9	0.310	0.022	5.4354	
960 minute winter	50-4	49.004	50-5	4.1	0.384	0.037	10.1318	
960 minute winter	50-5	Hydro-Brake®	PI 2	1.8				
15 minute winter	PI 2	49.006	Outfall 2	2.9	0.028	0.019	0.4819	16.7
960 minute winter	49-0	50.000	49-1	-0.2	-0.006	-0.002	4.7378	
960 minute winter	49-1	50.001	49-2	1.9	0.284	0.017	2.1628	
960 minute winter	49-2	50.002	49-3	1.9	0.322	0.021	5.9200	
960 minute winter	49-3	50.003	49-4	1.8	0.092	0.020	3.8234	
960 minute winter	49-4	50.004	49-5	1.8	0.067	0.015	5.6761	
960 minute winter	49-5	Hydro-Brake®	PI 6	1.8				
30 minute summer	PI 6	50.006	Outfall 6	1.6	0.011	0.008	0.8370	15.0

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Appendix E Foul Water Calculations – Causeway Flow Modelling

Design Settings

Frequency of use (kDU)	0.00	Additional Flow (%)	10	Preferred Cover Depth (m)	1.200
Flow per dwelling per day (l/day)	900	Minimum Velocity (m/s)	0.75	Include Intermediate Ground	✓
Domestic Flow (l/s/ha)	0.0	Connection Type	Level Soffits		
Industrial Flow (l/s/ha)	0.0	Minimum Backdrop Height (m)	0.000		

Nodes

Name	Dwellings	Add Inflow (l/s)	Cover Level (m)	Manhole Type	Easting (m)	Northing (m)	Depth (m)
F1-0	1		88.635	Adoptable	681605.904	714507.116	0.900
F1-1	6		88.440	Adoptable	681643.639	714518.395	1.361
F2-0	1		88.422	Adoptable	681705.935	714537.000	1.322
F1-2	11		88.210	Adoptable	681681.768	714529.791	1.869
F1-3	13		88.330	Adoptable	681674.642	714555.156	2.165
F3-0	1		88.431	Adoptable	681703.061	714625.818	1.277
F1-4	29		88.564	Adoptable	681650.788	714598.067	2.726
F4-0	1		88.704	Adoptable	681582.191	714510.863	0.900
F4-1	5		88.978	Adoptable	681569.307	714553.991	1.924
F4-2	19		89.156	Adoptable	681609.685	714576.614	2.948
F1-5	56		88.564	Adoptable	681647.322	714598.040	2.749
F5-0	1		89.000	Adoptable	681536.138	714558.239	1.350
F5-1	2		88.550	Adoptable	681526.925	714572.301	1.180
F5-2	4		88.316	Adoptable	681515.254	714595.415	1.378
F5-3	4		88.316	Adoptable	681520.512	714603.858	1.544
F5-4	15		88.485	Adoptable	681563.804	714626.666	2.114
F1-6	89		88.684	Adoptable	681617.082	714654.736	3.226
F6-0	1		88.550	Adoptable	681726.249	714560.543	0.900
F6-1	3		88.200	Adoptable	681725.107	714581.547	0.901
F6-2	6		88.200	Adoptable	681728.107	714619.460	1.535
F6-3	7		88.150	Adoptable	681722.615	714651.566	2.028
F6-4	8		88.050	Adoptable	681723.730	714668.118	2.204
F6-5	10		88.198	Adoptable	681705.206	714702.021	2.685
F1-7	114		88.525	Adoptable	681671.450	714684.025	3.410
F1-8	118		88.332	Adoptable	681638.950	714744.328	3.645
F7-0	1		87.800	Adoptable	681490.078	714715.528	1.954
F8-0	2		88.020	Adoptable	681521.402	714656.903	1.220
F7-1	16		87.985	Adoptable	681506.482	714684.820	2.794
F7-2	16		87.408	Adoptable	681536.163	714700.675	2.441
F9-0	1		88.058	Adoptable	681558.286	714659.263	2.088
F7-3	24		87.543	Adoptable	681540.601	714692.368	2.623
F7-4	34		87.333	Adoptable	681586.773	714716.877	2.674
F1-9	160		87.991	Adoptable	681623.827	714736.480	3.594
F10-0	1		88.200	Adoptable	681713.509	714720.549	1.350
F10-1	4		88.200	Adoptable	681700.576	714744.800	1.808
F10-2	4		88.200	Adoptable	681695.873	714742.686	1.894
F10-3	8		88.321	Adoptable	681678.365	714775.602	2.636
F11-0	1		88.220	Adoptable	681688.371	714709.683	1.270
F10-4	16		88.230	Adoptable	681658.788	714765.122	2.693
F1-10	177		88.100	Adoptable	681619.645	714744.287	3.758
F1-11	181		88.100	Adoptable	681607.012	714767.873	3.925
F14-0	1		87.600	Adoptable	681573.282	714744.034	1.550
F14-1	8		87.477	Adoptable	681526.341	714718.957	2.314
F13-0	1		87.700	Adoptable	681465.808	714761.926	1.350
F13-1	4		87.700	Adoptable	681481.785	714770.408	1.651
F12-0	1		87.794	Adoptable	681467.425	714728.011	1.350
F12-1	9		87.674	Adoptable	681496.840	714743.682	2.136
F12-2	27		87.699	Adoptable	681509.560	714750.477	2.849
F15-0	0		88.100	Adoptable	681598.067	714736.123	1.350
F12-3	62		87.699	Adoptable	681572.350	714784.040	3.205
F1-12	251		87.687	Adoptable	681592.328	714794.696	3.703
F1-13	272		87.926	Adoptable	681616.616	714807.658	4.114
F1-14	285		88.000	Adoptable	681600.550	714837.960	4.402
F1-15	285		88.000	Adoptable	681586.729	714830.424	4.650
F1-16	57		87.800	Adoptable	681571.873	714847.882	4.542
F1-17	57		87.221	Adoptable	681541.687	714831.363	4.090
F1-18	14		87.950	Adoptable	681524.354	714827.481	4.885
F19-0	1		87.550	Adoptable	681449.454	714787.470	1.050
F1-19	6		87.550	Adoptable	681481.406	714804.537	4.665
F16-0	5	0.1	87.868	Adoptable	681552.176	714897.692	1.568
F16-1	10	0.5	87.984	Adoptable	681560.903	714884.154	2.087
F16-3	43	0.5	88.191	Adoptable	681524.134	714860.453	3.388
F16-4	28		88.091	Adoptable	681503.825	714847.235	3.530

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Nodes

Name	Dwellings	Add Inflow (l/s)	Cover Level (m)	Manhole Type	Easting (m)	Northing (m)	Depth (m)
F16-5	19		87.537	Adoptable	681450.686	714818.852	3.277
F17-0	1		87.437	Adoptable	681419.260	714812.458	1.350
F16-6	16		87.473	Adoptable	681423.611	714804.389	3.366
F1-20	10		87.394	Adoptable	681436.252	714780.387	4.699
F1-21	9		87.390	Adoptable	681439.149	714773.907	4.721
F1-22	8		87.450	Adoptable	681436.168	714763.355	4.822
F18-0	1		87.450	Adoptable	681392.894	714797.345	0.866
F1-23	8		87.450	Adoptable	681416.521	714752.922	4.904
F1-24	0		87.158	Adoptable	681378.751	714742.826	4.757
F20-0	1		88.726	Adoptable	681439.291	714444.344	1.226
F20-1	3		88.561	Adoptable	681465.939	714458.303	1.562
F20-2	5		88.279	Adoptable	681484.092	714467.811	1.622
F20-3	11		88.000	Adoptable	681469.215	714494.805	1.932
F20-4	20		87.834	Adoptable	681447.197	714525.527	2.018
F21-0	0		89.246	Adoptable	681321.207	714553.285	0.900
F21-1	2		89.030	Adoptable	681341.209	714533.837	1.149
F22-0	1		88.906	Adoptable	681412.481	714461.119	1.350
F22-1	3		88.802	Adoptable	681400.498	714478.287	1.670
F21-2	13		88.686	Adoptable	681381.331	714500.780	2.247
F20-5	37		88.075	Adoptable	681426.659	714547.155	2.717
F20-6	43		87.822	Adoptable	681390.976	714578.100	2.700
F23-0	1		88.900	Adoptable	681332.220	714579.790	1.900
F20-7	54		87.588	Adoptable	681349.719	714603.726	2.709
F20-8	54		88.100	Adoptable	681358.300	714617.873	3.304
F24-0	1		88.510	Adoptable	681526.742	714478.429	1.050
F24-1	2		88.367	Adoptable	681547.942	714488.332	1.492
F24-2	4		88.445	Adoptable	681536.421	714512.184	2.086
F24-3	7		88.308	Adoptable	681522.814	714534.939	2.126
F24-4	12		88.130	Adoptable	681495.671	714572.910	2.259
F24-5	13		88.135	Adoptable	681492.512	714583.791	2.340
F24-6	13		87.942	Adoptable	681478.757	714581.170	2.217
F25-0	3		87.905	Adoptable	681440.096	714560.424	1.027
F24-7	22		87.942	Adoptable	681475.059	714579.186	2.238
F24-8	22		87.539	Adoptable	681460.126	714604.741	1.983
F26-0	1		88.380	Adoptable	681496.301	714626.098	2.380
F26-1	6		87.879	Adoptable	681474.131	714667.516	2.879
F26-2	11		87.720	Adoptable	681459.717	714694.230	2.922
F26-3	12		87.677	Adoptable	681452.414	714690.031	2.935
F26-4	14		87.689	Adoptable	681442.036	714680.474	3.018
F24-9	47		87.351	Adoptable	681417.272	714637.714	2.927
F27-0	1		87.587	Adoptable	681420.559	714707.290	1.050
F27-1	8		87.650	Adoptable	681396.370	714665.633	1.916
F24-10	57		87.600	Adoptable	681386.517	714655.975	3.355
F20-9	114		87.600	Adoptable	681376.792	714647.689	3.460
F28-0	1		88.556	Adoptable	681241.932	714575.312	1.350
F28-1	4		88.417	Adoptable	681268.719	714570.058	1.666
F28-2	5		88.332	Adoptable	681288.354	714570.205	1.908
F28-3	6		88.143	Adoptable	681302.827	714577.426	1.989
F28-4	10		87.215	Adoptable	681330.785	714619.384	1.901
F28-5	10		87.179	Adoptable	681327.278	714625.076	2.051
F20-10	128		87.250	Adoptable	681352.693	714663.072	3.253
F29-0	1		88.000	Adoptable	681392.820	714718.858	1.350
F29-2	4		88.000	Adoptable	681375.025	714691.965	1.887
F20-11	132		87.710	Adoptable	681362.184	714676.885	3.797
F30-0	1		87.229	Adoptable	681241.977	714638.304	1.350
F30-1	3		87.360	Adoptable	681262.902	714634.330	2.013
F30-2	4		87.319	Adoptable	681272.752	714638.737	2.202
F31-0	1		87.286	Adoptable	681306.931	714634.640	1.350
F30-3	10		87.322	Adoptable	681281.103	714652.031	2.542
F30-4	10		87.293	Adoptable	681277.468	714654.479	2.542
F20-12	153		87.326	Adoptable	681314.190	714709.602	3.703
F32-0	1		88.543	Adoptable	681232.207	714577.382	1.350
F32-1	4		88.353	Adoptable	681200.253	714583.628	1.703
F32-2	4		88.119	Adoptable	681186.751	714590.812	1.724
F32-3	6		87.912	Adoptable	681179.482	714600.756	1.722
F32-4	6		87.677	Adoptable	681176.174	714614.144	1.717
F32-5	10		87.218	Adoptable	681173.612	714654.293	2.138
F32-6	15		86.876	Adoptable	681230.561	714657.804	2.276
F32-7	20		86.748	Adoptable	681258.083	714673.091	2.305
F32-8	25		87.071	Adoptable	681283.967	714692.649	2.790

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Nodes

Name	Dwellings	Add Inflow (l/s)	Cover Level (m)	Manhole Type	Easting (m)	Northing (m)	Depth (m)
F33-0	1		87.112	Adoptable	681175.802	714667.406	1.350
F33-1	3		86.998	Adoptable	681174.873	714691.996	1.646
F33-2	4		86.913	Adoptable	681181.559	714704.513	1.798
F33-3	10		86.905	Adoptable	681222.482	714728.838	2.345
F34-0	1		87.200	Adoptable	681329.047	714800.041	0.850
F34-1	3		87.075	Adoptable	681304.981	714813.451	1.184
F33-4	20		86.994	Adoptable	681260.017	714759.534	2.676
F20-13	208		87.260	Adoptable	681307.001	714714.391	3.680
F20-14	224		87.141	Adoptable	681349.491	714762.841	4.946
F20-15	227		87.218	Adoptable	681358.981	714774.201	5.097
F20-16 OUT			87.202	Adoptable	681374.034	714763.264	5.174
ExFMH_1			88.894	Adoptable	681413.756	714450.016	3.624
F36-0			88.906	Adoptable	681397.961	714472.633	3.682
F36-1			88.725	Adoptable	681375.805	714497.797	3.557
F36-2			89.006	Adoptable	681339.022	714527.788	3.917
F36-3			90.084	Adoptable	681309.438	714555.727	5.063
F36-4			89.346	Adoptable	681337.470	714597.780	4.409
F36-5			88.100	Adoptable	681370.964	714653.690	3.272
EX Air Valve			87.785	Adoptable	681210.765	714542.261	1.835
EX 45 Bend			87.300	Adoptable	681308.803	714570.782	1.800
EX DM 1 (IW)/MH 4 (MURPHY)			88.200	Adoptable	681360.686	714661.144	3.697
EX EI 1.00			87.628	Adoptable	681407.527	714717.638	3.270
EX EI 1.01			87.200	Adoptable	681461.913	714782.816	3.010
EX EI 1.02			87.321	Adoptable	681521.417	714814.365	3.266
EX EI 1.03	342		87.167	Adoptable	681580.377	714847.065	3.248

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)
F1.000	F1-0	F1-1	39.385	0.150	87.735	87.079	0.656	60.0	150
F1.001	F1-1	F1-2	39.796	0.150	87.079	86.416	0.663	60.0	150
F2.000	F2-0	F1-2	25.219	0.150	87.100	86.680	0.420	60.0	150
F1.002	F1-2	F1-3	26.347	0.150	86.341	86.165	0.176	150.0	225
F1.003	F1-3	F1-4	49.095	0.150	86.165	85.838	0.327	150.0	225
F3.000	F3-0	F1-4	59.183	0.150	87.154	86.168	0.986	60.0	150
F1.004	F1-4	F1-5	3.466	0.150	85.838	85.815	0.023	150.0	225
F4.000	F4-0	F4-1	45.011	0.150	87.804	87.054	0.750	60.0	150
F4.001	F4-1	F4-2	46.284	0.150	87.054	86.283	0.771	60.0	150
F4.002	F4-2	F1-5	43.308	0.150	86.208	85.919	0.289	150.0	225
F1.005	F1-5	F1-6	64.256	0.150	85.815	85.458	0.357	180.0	225
F5.000	F5-0	F5-1	16.811	0.150	87.650	87.370	0.280	60.0	150
F5.001	F5-1	F5-2	25.893	0.150	87.370	86.938	0.432	60.0	150
F5.002	F5-2	F5-3	9.962	0.150	86.938	86.772	0.166	60.0	150
F5.003	F5-3	F5-4	48.933	0.150	86.772	86.446	0.326	150.0	150
F5.004	F5-4	F1-6	60.220	0.150	86.371	86.036	0.335	180.0	225
F1.006	F1-6	F1-7	61.755	0.150	85.458	85.115	0.343	180.0	225
F6.000	F6-0	F6-1	21.035	0.150	87.650	87.299	0.351	60.0	150

Name	Pro Vel @ 1/3 Q (m/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Dwellings (ha)	Σ Units (ha)	Σ Add Inflow (ha)	Pro Depth (mm)
F1.000	0.110	1.533	27.1	0.0	0.750	1.211	0.000	1	0.0	0.0	3
F1.001	0.238	1.533	27.1	0.1	1.211	1.644	0.000	7	0.0	0.0	6
F2.000	0.110	1.533	27.1	0.0	1.172	1.380	0.000	1	0.0	0.0	3
F1.002	0.216	1.238	49.2	0.2	1.644	1.940	0.000	19	0.0	0.0	11
F1.003	0.256	1.238	49.2	0.4	1.940	2.501	0.000	32	0.0	0.0	14
F3.000	0.110	1.533	27.1	0.0	1.127	2.246	0.000	1	0.0	0.0	3
F1.004	0.311	1.238	49.2	0.7	2.501	2.524	0.000	62	0.0	0.0	19
F4.000	0.110	1.533	27.1	0.0	0.750	1.774	0.000	1	0.0	0.0	3
F4.001	0.209	1.533	27.1	0.1	1.774	2.723	0.000	6	0.0	0.0	6
F4.002	0.237	1.238	49.2	0.3	2.723	2.420	0.000	25	0.0	0.0	13
F1.005	0.382	1.127	44.8	1.6	2.524	3.001	0.000	143	0.0	0.0	29
F5.000	0.110	1.533	27.1	0.0	1.200	1.030	0.000	1	0.0	0.0	3
F5.001	0.179	1.533	27.1	0.0	1.030	1.228	0.000	3	0.0	0.0	4
F5.002	0.238	1.533	27.1	0.1	1.228	1.394	0.000	7	0.0	0.0	6
F5.003	0.190	0.955	16.9	0.1	1.394	1.889	0.000	11	0.0	0.0	9
F5.004	0.232	1.127	44.8	0.3	1.889	2.423	0.000	26	0.0	0.0	13
F1.006	0.468	1.127	44.8	3.0	3.001	3.185	0.000	258	0.0	0.0	39
F6.000	0.110	1.533	27.1	0.0	0.750	0.751	0.000	1	0.0	0.0	3

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Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)
F6.001	F6-1	F6-2	38.032	0.150	87.299	86.665	0.634	60.0	150
F6.002	F6-2	F6-3	32.572	0.150	86.665	86.122	0.543	60.0	150
F6.003	F6-3	F6-4	16.590	0.150	86.122	85.846	0.276	60.0	150
F6.004	F6-4	F6-5	38.634	0.150	85.846	85.588	0.258	150.0	150
F6.005	F6-5	F1-7	38.253	0.150	85.513	85.300	0.213	180.0	225
F1.007	F1-7	F1-8	68.503	0.150	85.115	84.687	0.428	160.0	225
F1.008	F1-8	F1-9	17.038	0.150	84.687	84.581	0.106	160.0	225
F7.000	F7-0	F7-1	34.815	0.150	85.846	85.266	0.580	60.0	150
F8.000	F8-0	F7-1	31.654	0.150	86.800	86.272	0.528	60.0	150
F7.001	F7-1	F7-2	33.650	0.150	85.191	84.967	0.224	150.0	225
F7.002	F7-2	F7-3	9.418	0.150	84.967	84.920	0.047	200.0	225
F9.000	F9-0	F7-3	37.533	0.150	85.970	85.344	0.626	60.0	150
F7.003	F7-3	F7-4	52.274	0.150	84.920	84.659	0.261	200.0	225
F7.004	F7-4	F1-9	41.920	0.150	84.659	84.397	0.262	160.0	225
F1.009	F1-9	F1-10	8.857	0.150	84.397	84.342	0.055	160.0	225
F10.000	F10-0	F10-1	27.484	0.150	86.850	86.392	0.458	60.0	150
F10.001	F10-1	F10-2	5.156	0.150	86.392	86.306	0.086	60.0	150
F10.002	F10-2	F10-3	37.283	0.150	86.306	85.685	0.621	60.0	150
F10.003	F10-3	F10-4	22.206	0.150	85.685	85.537	0.148	150.0	150
F11.000	F11-0	F10-4	62.839	0.150	86.950	85.903	1.047	60.0	150
F10.004	F10-4	F1-10	44.343	0.150	85.537	85.260	0.277	160.0	150
F1.010	F1-10	F1-11	26.756	0.150	84.342	84.175	0.167	160.0	225
F1.011	F1-11	F1-12	30.579	0.150	84.175	83.984	0.191	160.0	225
F12.000	F14-0	F14-1	53.219	0.150	86.050	85.163	0.887	60.0	150
F12.001	F14-1	F12-2	35.709	0.150	85.163	84.925	0.238	150.0	150
F13.000	F13-0	F13-1	18.089	0.150	86.350	86.049	0.301	60.0	150
F13.001	F13-1	F12-1	30.675	0.150	86.049	85.538	0.511	60.0	150
F14.000	F12-0	F12-1	33.329	0.150	86.444	85.889	0.555	60.0	150
F13.002	F12-1	F12-2	14.421	0.150	85.538	85.298	0.240	60.0	150
F12.002	F12-2	F12-3	71.197	0.150	84.850	84.494	0.356	200.0	225
F15.000	F15-0	F12-3	54.382	0.150	86.750	85.844	0.906	60.0	150
F12.003	F12-3	F1-12	22.642	0.150	84.494	84.268	0.226	100.0	225
F1.012	F1-12	F1-13	27.530	0.150	83.984	83.812	0.172	160.0	225

Name	Pro Vel @ 1/3 Q (m/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Dwellings (ha)	Σ Units (ha)	Σ Add Inflow (ha)	Pro Depth (mm)
F6.001	0.179	1.533	27.1	0.0	0.751	1.385	0.000	4	0.0	0.0	5
F6.002	0.264	1.533	27.1	0.1	1.385	1.878	0.000	10	0.0	0.0	7
F6.003	0.314	1.533	27.1	0.2	1.878	2.054	0.000	17	0.0	0.0	9
F6.004	0.258	0.955	16.9	0.3	2.054	2.460	0.000	25	0.0	0.0	14
F6.005	0.249	1.127	44.8	0.4	2.460	3.000	0.000	35	0.0	0.0	15
F1.007	0.556	1.198	47.6	4.7	3.185	3.420	0.000	407	0.0	0.0	47
F1.008	0.599	1.198	47.6	6.0	3.420	3.185	0.000	525	0.0	0.0	54
F7.000	0.110	1.533	27.1	0.0	1.804	2.569	0.000	1	0.0	0.0	3
F8.000	0.146	1.533	27.1	0.0	1.070	1.563	0.000	2	0.0	0.0	3
F7.001	0.216	1.238	49.2	0.2	2.569	2.216	0.000	19	0.0	0.0	11
F7.002	0.235	1.067	42.4	0.4	2.216	2.398	0.000	35	0.0	0.0	15
F9.000	0.110	1.533	27.1	0.0	1.938	2.049	0.000	1	0.0	0.0	3
F7.003	0.281	1.067	42.4	0.7	2.398	2.449	0.000	60	0.0	0.0	20
F7.004	0.349	1.198	47.6	1.1	2.449	3.369	0.000	94	0.0	0.0	23
F1.009	0.678	1.198	47.6	8.9	3.369	3.533	0.000	779	0.0	0.0	65
F10.000	0.110	1.533	27.1	0.0	1.200	1.658	0.000	1	0.0	0.0	3
F10.001	0.209	1.533	27.1	0.1	1.658	1.744	0.000	5	0.0	0.0	5
F10.002	0.264	1.533	27.1	0.1	1.744	2.486	0.000	9	0.0	0.0	7
F10.003	0.218	0.955	16.9	0.2	2.486	2.543	0.000	17	0.0	0.0	11
F11.000	0.110	1.533	27.1	0.0	1.120	2.177	0.000	1	0.0	0.0	3
F10.004	0.273	0.923	16.3	0.4	2.543	2.690	0.000	34	0.0	0.0	16
F1.010	0.724	1.198	47.6	11.3	3.533	3.700	0.000	990	0.0	0.0	74
F1.011	0.759	1.198	47.6	13.4	3.700	3.478	0.000	1171	0.0	0.0	81
F12.000	0.110	1.533	27.1	0.0	1.400	2.164	0.000	1	0.0	0.0	3
F12.001	0.174	0.955	16.9	0.1	2.164	2.624	0.000	9	0.0	0.0	8
F13.000	0.110	1.533	27.1	0.0	1.200	1.501	0.000	1	0.0	0.0	3
F13.001	0.209	1.533	27.1	0.1	1.501	1.986	0.000	5	0.0	0.0	5
F14.000	0.110	1.533	27.1	0.0	1.200	1.635	0.000	1	0.0	0.0	3
F13.002	0.290	1.533	27.1	0.2	1.986	2.251	0.000	15	0.0	0.0	8
F12.002	0.266	1.067	42.4	0.6	2.624	2.980	0.000	51	0.0	0.0	18
F15.000	0.000	1.533	27.1	0.0	1.200	1.705	0.000	0	0.0	0.0	0
F12.003	0.449	1.526	60.7	1.3	2.980	3.194	0.000	113	0.0	0.0	22
F1.012	0.823	1.198	47.6	17.6	3.478	3.889	0.000	1535	0.0	0.0	94

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Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)
F1.013	F1-13	F1-14	34.298	0.150	83.812	83.598	0.214	160.0	225
F1.014	F1-14	F1-15	15.742	0.150	83.598	83.500	0.098	160.0	225
F1.015	F1-15	F1-16	22.923	0.150	83.350	83.258	0.092	250.0	225
F1.016	F1-16	F1-17	34.410	0.150	83.258	83.131	0.127	270.0	225
F1.017	F1-17	F1-18	17.762	0.150	83.131	83.065	0.066	270.0	225
F1.018	F1-18	F1-19	48.692	0.150	83.065	82.885	0.180	270.0	225
F19.000	F19-0	F1-19	36.224	0.150	86.500	85.896	0.604	60.0	150
F1.019	F1-19	F1-20	51.207	0.150	82.885	82.695	0.190	270.0	225
F18.000	F16-0	F16-1	16.107	0.150	86.300	85.897	0.403	40.0	150
F18.001	F16-1	F16-3	43.746	0.150	85.897	84.803	1.094	40.0	150
17.002	F16-3	F16-4	24.232	0.150	84.803	84.561	0.242	100.0	150
17.003	F16-4	F16-5	60.244	0.150	84.561	84.260	0.301	200.0	150
17.004	F16-5	F16-6	30.696	0.150	84.260	84.107	0.153	200.0	150
F17.000	F17-0	F16-6	9.167	0.150	86.087	85.934	0.153	60.0	150
17.005	F16-6	F1-20	27.127	0.150	84.107	83.971	0.136	200.0	150
F1.020	F1-20	F1-21	7.098	0.150	82.695	82.669	0.026	270.0	225
F1.021	F1-21	F1-22	10.965	0.150	82.669	82.628	0.041	270.0	225
F1.022	F1-22	F1-23	22.245	0.150	82.628	82.546	0.082	270.0	225
F16.000	F18-0	F1-23	50.315	0.150	86.584	85.745	0.839	60.0	150
F1.023	F1-23	F1-24	39.096	0.150	82.546	82.401	0.145	270.0	225
F1.024	F1-24	F20-14	35.451	0.150	82.401	82.270	0.131	270.0	225
F20.000	F20-0	F20-1	30.083	0.150	87.500	86.999	0.501	60.0	150
F20.001	F20-1	F20-2	20.492	0.150	86.999	86.657	0.342	60.0	150
F20.002	F20-2	F20-3	30.822	0.150	86.657	86.143	0.514	60.0	150
F20.003	F20-3	F20-4	37.797	0.150	86.068	85.816	0.252	150.0	225
F20.004	F20-4	F20-5	29.826	0.150	85.816	85.617	0.199	150.0	225
F21.000	F21-0	F21-1	27.898	0.150	88.346	87.881	0.465	60.0	150
F21.001	F21-1	F21-2	51.986	0.150	87.881	87.138	0.743	70.0	150
F22.000	F22-0	F22-1	20.936	0.150	87.556	87.207	0.349	60.0	150
F22.001	F22-1	F21-2	29.552	0.150	87.132	86.639	0.493	60.0	225
F21.002	F21-2	F20-5	64.848	0.150	86.439	85.358	1.081	60.0	225
F20.005	F20-5	F20-6	47.232	0.150	85.358	85.122	0.236	200.0	225
F20.006	F20-6	F20-7	48.568	0.150	85.122	84.879	0.243	200.0	225

Name	Pro Vel @ 1/3 Q (m/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Dwellings (ha)	Σ Units (ha)	Σ Add Inflow (ha)	Pro Depth (mm)
F1.013	0.861	1.198	47.6	20.7	3.889	4.177	0.000	1807	0.0	0.0	103
F1.014	0.896	1.198	47.6	24.0	4.177	4.275	0.000	2092	0.0	0.0	113
F1.015	0.787	0.951	37.8	27.2	4.425	4.317	0.000	2377	0.0	0.0	142
F1.016	0.769	0.913	36.3	27.9	4.317	3.865	0.000	2434	0.0	0.0	148
F1.017	0.774	0.913	36.3	28.5	3.865	4.660	0.000	2491	0.0	0.0	151
F1.018	0.774	0.913	36.3	28.7	4.660	4.440	0.000	2505	0.0	0.0	152
F19.000	0.110	1.533	27.1	0.0	0.900	1.504	0.000	1	0.0	0.0	3
F1.019	0.774	0.913	36.3	28.8	4.440	4.474	0.000	2512	0.0	0.0	152
F18.000	0.330	1.887	33.3	0.2	1.418	1.937	0.000	5	0.0	0.1	8
F18.001	0.575	1.887	33.3	0.8	1.937	3.238	0.000	15	0.0	0.6	16
17.002	0.531	1.178	20.8	1.9	3.238	3.380	0.000	58	0.0	1.1	30
17.003	0.432	0.822	14.5	2.2	3.380	3.127	0.000	86	0.0	1.1	40
17.004	0.439	0.822	14.5	2.4	3.127	3.216	0.000	105	0.0	1.1	41
F17.000	0.110	1.533	27.1	0.0	1.200	1.389	0.000	1	0.0	0.0	3
17.005	0.453	0.822	14.5	2.6	3.216	3.273	0.000	122	0.0	1.1	43
F1.020	0.795	0.913	36.3	31.5	4.474	4.496	0.000	2644	0.0	1.1	162
F1.021	0.795	0.913	36.3	31.6	4.496	4.597	0.000	2653	0.0	1.1	163
F1.022	0.795	0.913	36.3	31.7	4.597	4.679	0.000	2661	0.0	1.1	163
F16.000	0.110	1.533	27.1	0.0	0.716	1.555	0.000	1	0.0	0.0	3
F1.023	0.795	0.913	36.3	31.8	4.679	4.532	0.000	2670	0.0	1.1	164
F1.024	0.795	0.913	36.3	31.8	4.532	4.646	0.000	2670	0.0	1.1	164
F20.000	0.110	1.533	27.1	0.0	1.076	1.412	0.000	1	0.0	0.0	3
F20.001	0.179	1.533	27.1	0.0	1.412	1.472	0.000	4	0.0	0.0	5
F20.002	0.264	1.533	27.1	0.1	1.472	1.707	0.000	9	0.0	0.0	7
F20.003	0.216	1.238	49.2	0.2	1.707	1.793	0.000	20	0.0	0.0	11
F20.004	0.275	1.238	49.2	0.5	1.793	2.233	0.000	40	0.0	0.0	15
F21.000	0.000	1.533	27.1	0.0	0.750	0.999	0.000	0	0.0	0.0	0
F21.001	0.134	1.416	25.0	0.0	0.999	1.398	0.000	2	0.0	0.0	4
F22.000	0.110	1.533	27.1	0.0	1.200	1.445	0.000	1	0.0	0.0	3
F22.001	0.155	1.982	78.8	0.0	1.445	1.822	0.000	4	0.0	0.0	4
F21.002	0.285	1.982	78.8	0.2	2.022	2.492	0.000	19	0.0	0.0	8
F20.005	0.323	1.067	42.4	1.1	2.492	2.475	0.000	96	0.0	0.0	25
F20.006	0.373	1.067	42.4	1.6	2.475	2.484	0.000	139	0.0	0.0	29

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Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)
F23.000	F23-0	F20-7	29.650	0.150	87.000	86.259	0.741	40.0	150
F20.007	F20-7	F20-8	16.546	0.150	84.879	84.796	0.083	200.0	225
F20.008	F20-8	F20-9	35.085	0.150	84.796	84.621	0.175	200.0	225
F24.000	F24-0	F24-1	23.399	0.150	87.460	86.875	0.585	40.0	150
F24.001	F24-1	F24-2	26.489	0.150	86.875	86.434	0.441	60.0	150
F24.002	F24-2	F24-3	26.513	0.150	86.359	86.182	0.177	150.0	225
F24.003	F24-3	F24-4	46.675	0.150	86.182	85.871	0.311	150.0	225
F24.004	F24-4	F24-5	11.330	0.150	85.871	85.795	0.076	150.0	225
F24.005	F24-5	F24-6	14.002	0.150	85.795	85.725	0.070	200.0	225
F24.006	F24-6	F24-7	4.197	0.150	85.725	85.704	0.021	200.0	225
F25.000	F25-0	F24-7	39.679	0.150	86.878	86.217	0.661	60.0	150
F24.007	F24-7	F24-8	29.598	0.150	85.704	85.556	0.148	200.0	225
F24.008	F24-8	F24-9	54.071	0.150	85.556	85.286	0.270	200.0	225
F26.000	F26-0	F26-1	46.978	0.150	86.000	85.217	0.783	60.0	150
F26.001	F26-1	F26-2	30.355	0.150	85.000	84.798	0.202	150.0	225
F26.002	F26-2	F26-3	8.424	0.150	84.798	84.742	0.056	150.0	225
F26.003	F26-3	F26-4	14.108	0.150	84.742	84.671	0.071	200.0	225
F26.004	F26-4	F24-9	49.413	0.150	84.671	84.424	0.247	200.0	225
F24.009	F24-9	F24-10	35.768	0.150	84.424	84.245	0.179	200.0	225
F27.000	F27-0	F27-1	48.171	0.150	86.537	85.734	0.803	60.0	150
F27.001	F27-1	F24-10	13.797	0.150	85.734	85.504	0.230	60.0	150
F24.010	F24-10	F20-9	12.776	0.150	84.245	84.181	0.064	200.0	225
F20.009	F20-9	F20-10	28.590	0.150	84.140	83.997	0.143	200.0	225
F28.000	F28-0	F28-1	27.297	0.150	87.206	86.751	0.455	60.0	150
F28.001	F28-1	F28-2	19.636	0.150	86.751	86.424	0.327	60.0	150
F28.002	F28-2	F28-3	16.174	0.150	86.424	86.154	0.270	60.0	150
F28.003	F28-3	F28-4	50.419	0.150	86.154	85.314	0.840	60.0	150
F28.004	F28-4	F28-5	6.686	0.150	85.314	85.203	0.111	60.0	150
F28.005	F28-5	F20-10	45.712	0.150	85.128	84.823	0.305	150.0	225
F20.010	F20-10	F20-11	16.759	0.150	83.997	83.913	0.084	200.0	225
F29.000	F29-0	F29-2	32.247	0.150	86.650	86.113	0.537	60.0	150
F29.001	F29-2	F20-11	19.807	0.150	86.113	85.783	0.330	60.0	150
F20.011	F20-11	F20-12	58.085	0.150	83.913	83.623	0.290	200.0	225

Name	Pro Vel @ 1/3 Q (m/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Dwellings (ha)	Σ Units (ha)	Σ Add Inflow (ha)	Pro Depth (mm)
F23.000	0.140	1.887	33.3	0.0	1.750	1.179	0.000	1	0.0	0.0	2
F20.007	0.409	1.067	42.4	2.2	2.484	3.079	0.000	194	0.0	0.0	35
F20.008	0.442	1.067	42.4	2.8	3.079	2.754	0.000	248	0.0	0.0	39
F24.000	0.140	1.887	33.3	0.0	0.900	1.342	0.000	1	0.0	0.0	2
F24.001	0.179	1.533	27.1	0.0	1.342	1.861	0.000	3	0.0	0.0	4
F24.002	0.147	1.238	49.2	0.1	1.861	1.901	0.000	7	0.0	0.0	7
F24.003	0.194	1.238	49.2	0.2	1.901	2.034	0.000	14	0.0	0.0	9
F24.004	0.237	1.238	49.2	0.3	2.034	2.115	0.000	26	0.0	0.0	13
F24.005	0.251	1.067	42.4	0.4	2.115	1.992	0.000	39	0.0	0.0	16
F24.006	0.266	1.067	42.4	0.6	1.992	2.013	0.000	52	0.0	0.0	19
F25.000	0.179	1.533	27.1	0.0	0.877	1.575	0.000	3	0.0	0.0	4
F24.007	0.309	1.067	42.4	0.9	2.013	1.758	0.000	77	0.0	0.0	22
F24.008	0.336	1.067	42.4	1.1	1.758	1.840	0.000	99	0.0	0.0	25
F26.000	0.110	1.533	27.1	0.0	2.230	2.512	0.000	1	0.0	0.0	3
F26.001	0.147	1.238	49.2	0.1	2.654	2.697	0.000	7	0.0	0.0	7
F26.002	0.216	1.238	49.2	0.2	2.697	2.710	0.000	18	0.0	0.0	11
F26.003	0.219	1.067	42.4	0.3	2.710	2.793	0.000	30	0.0	0.0	15
F26.004	0.251	1.067	42.4	0.5	2.793	2.702	0.000	44	0.0	0.0	17
F24.009	0.409	1.067	42.4	2.2	2.702	3.130	0.000	190	0.0	0.0	35
F27.000	0.110	1.533	27.1	0.0	0.900	1.766	0.000	1	0.0	0.0	3
F27.001	0.264	1.533	27.1	0.1	1.766	1.946	0.000	9	0.0	0.0	7
F24.010	0.442	1.067	42.4	2.9	3.130	3.194	0.000	256	0.0	0.0	40
F20.009	0.578	1.067	42.4	7.1	3.235	3.028	0.000	618	0.0	0.0	62
F28.000	0.110	1.533	27.1	0.0	1.200	1.516	0.000	1	0.0	0.0	3
F28.001	0.209	1.533	27.1	0.1	1.516	1.758	0.000	5	0.0	0.0	5
F28.002	0.264	1.533	27.1	0.1	1.758	1.839	0.000	10	0.0	0.0	7
F28.003	0.314	1.533	27.1	0.2	1.839	1.751	0.000	16	0.0	0.0	9
F28.004	0.361	1.533	27.1	0.3	1.751	1.826	0.000	26	0.0	0.0	11
F28.005	0.275	1.238	49.2	0.4	1.826	2.202	0.000	36	0.0	0.0	15
F20.010	0.620	1.067	42.4	9.0	3.028	3.572	0.000	782	0.0	0.0	70
F29.000	0.110	1.533	27.1	0.0	1.200	1.737	0.000	1	0.0	0.0	3
F29.001	0.209	1.533	27.1	0.1	1.737	1.777	0.000	5	0.0	0.0	5
F20.011	0.652	1.067	42.4	10.5	3.572	3.478	0.000	919	0.0	0.0	76

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Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)
F30.000	F30-0	F30-1	21.299	0.150	85.879	85.347	0.532	40.0	150
F30.001	F30-1	F30-2	10.791	0.150	85.347	85.167	0.180	60.0	150
F30.002	F30-2	F30-3	15.699	0.150	85.117	84.855	0.262	60.0	150
F31.000	F31-0	F30-3	31.137	0.150	85.936	85.417	0.519	60.0	150
F30.003	F30-3	F30-4	4.382	0.150	84.780	84.751	0.029	150.0	225
F30.004	F30-4	F20-12	66.235	0.150	84.751	84.309	0.442	150.0	225
F20.012	F20-12	F20-13	8.638	0.150	83.623	83.580	0.043	200.0	225
F32.000	F32-0	F32-1	32.559	0.150	87.193	86.650	0.543	60.0	150
F32.001	F32-1	F32-2	15.294	0.150	86.650	86.395	0.255	60.0	150
F32.002	F32-2	F32-3	12.318	0.150	86.395	86.190	0.205	60.0	150
F32.003	F32-3	F32-4	13.791	0.150	86.190	85.960	0.230	60.0	150
F32.004	F32-4	F32-5	40.231	0.150	85.960	85.155	0.805	50.0	150
F32.005	F32-5	F32-6	57.057	0.150	85.080	84.795	0.285	200.0	225
F32.006	F32-6	F32-7	31.483	0.150	84.600	84.443	0.157	200.0	225
F32.007	F32-7	F32-8	32.442	0.150	84.443	84.281	0.162	200.0	225
F32.008	F32-8	F20-13	31.675	0.150	84.281	84.123	0.158	200.0	225
F33.000	F33-0	F33-1	24.608	0.150	85.762	85.352	0.410	60.0	150
F33.001	F33-1	F33-2	14.191	0.150	85.352	85.115	0.237	60.0	150
F33.002	F33-2	F33-3	47.607	0.150	85.115	84.798	0.317	150.0	150
F33.003	F33-3	F33-4	48.488	0.150	84.560	84.318	0.242	200.0	225
F34.000	F34-0	F34-1	27.550	0.150	86.350	85.891	0.459	60.0	150
F34.001	F34-1	F33-4	70.205	0.150	85.891	84.721	1.170	60.0	150
F33.004	F33-4	F20-13	65.157	0.150	84.318	83.992	0.326	200.0	225
F20.013	F20-13	F20-14	64.442	0.150	83.580	83.258	0.322	200.0	225
F20.014	F20-14	F20-15	14.802	0.150	82.195	82.121	0.074	200.0	300
F20.015	F20-15	F20-16 OUT	18.607	0.150	82.121	82.028	0.093	200.0	300
F36.000	ExFMH_1	F36-0	27.586	0.150	85.270	85.224	0.046	600.0	600
F36.001	F36-0	F36-1	33.528	0.150	85.224	85.168	0.056	600.0	600
F36.002	F36-1	F36-2	47.460	0.150	85.168	85.089	0.079	600.0	600
F36.003	F36-2	F36-3	40.692	0.150	85.089	85.021	0.068	600.0	600
F36.004	F36-3	F36-4	50.540	0.150	85.021	84.937	0.084	600.0	600
F36.005	F36-4	F36-5	65.175	0.150	84.937	84.828	0.109	600.0	600
F36.006	F36-5	EX DM 1 (IW)/MH 4 (MURPHY)	12.696	1.500	84.828	84.807	0.021	600.0	600

Name	Pro Vel @ 1/3 Q (m/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Dwellings (ha)	Σ Units (ha)	Σ Add Inflow (ha)	Pro Depth (mm)
F30.000	0.140	1.887	33.3	0.0	1.200	1.863	0.000	1	0.0	0.0	2
F30.001	0.179	1.533	27.1	0.0	1.863	2.002	0.000	4	0.0	0.0	5
F30.002	0.238	1.533	27.1	0.1	2.052	2.317	0.000	8	0.0	0.0	6
F31.000	0.110	1.533	27.1	0.0	1.200	1.755	0.000	1	0.0	0.0	3
F30.003	0.216	1.238	49.2	0.2	2.317	2.317	0.000	19	0.0	0.0	11
F30.004	0.256	1.238	49.2	0.3	2.317	2.792	0.000	29	0.0	0.0	14
F20.012	0.690	1.067	42.4	12.6	3.478	3.455	0.000	1101	0.0	0.0	84
F32.000	0.110	1.533	27.1	0.0	1.200	1.553	0.000	1	0.0	0.0	3
F32.001	0.209	1.533	27.1	0.1	1.553	1.574	0.000	5	0.0	0.0	5
F32.002	0.264	1.533	27.1	0.1	1.574	1.572	0.000	9	0.0	0.0	7
F32.003	0.290	1.533	27.1	0.2	1.572	1.567	0.000	15	0.0	0.0	8
F32.004	0.347	1.683	29.7	0.2	1.567	1.913	0.000	21	0.0	0.0	10
F32.005	0.235	1.067	42.4	0.4	1.913	1.856	0.000	31	0.0	0.0	15
F32.006	0.266	1.067	42.4	0.5	2.051	2.080	0.000	46	0.0	0.0	17
F32.007	0.295	1.067	42.4	0.8	2.080	2.565	0.000	66	0.0	0.0	21
F32.008	0.323	1.067	42.4	1.0	2.565	2.912	0.000	91	0.0	0.0	24
F33.000	0.110	1.533	27.1	0.0	1.200	1.496	0.000	1	0.0	0.0	3
F33.001	0.179	1.533	27.1	0.0	1.496	1.648	0.000	4	0.0	0.0	5
F33.002	0.174	0.955	16.9	0.1	1.648	1.957	0.000	8	0.0	0.0	8
F33.003	0.184	1.067	42.4	0.2	2.120	2.451	0.000	18	0.0	0.0	11
F34.000	0.110	1.533	27.1	0.0	0.700	1.034	0.000	1	0.0	0.0	3
F34.001	0.179	1.533	27.1	0.0	1.034	2.123	0.000	4	0.0	0.0	5
F33.004	0.251	1.067	42.4	0.5	2.451	3.043	0.000	42	0.0	0.0	17
F20.013	0.739	1.067	42.4	16.5	3.455	3.658	0.000	1442	0.0	0.0	97
F20.014	0.992	1.281	90.6	50.9	4.646	4.797	0.000	4336	0.0	1.1	161
F20.015	1.006	1.281	90.6	53.5	4.797	4.874	0.000	4563	0.0	1.1	166
F36.000	0.000	1.123	317.6	0.0	3.024	3.082	0.000	0	0.0	0.0	0
F36.001	0.000	1.123	317.6	0.0	3.082	2.957	0.000	0	0.0	0.0	0
F36.002	0.000	1.123	317.6	0.0	2.957	3.317	0.000	0	0.0	0.0	0
F36.003	0.000	1.123	317.6	0.0	3.317	4.463	0.000	0	0.0	0.0	0
F36.004	0.000	1.123	317.6	0.0	4.463	3.809	0.000	0	0.0	0.0	0
F36.005	0.000	1.123	317.6	0.0	3.809	2.672	0.000	0	0.0	0.0	0
F36.006	0.000	0.883	249.6	0.0	2.672	2.793	0.000	0	0.0	0.0	0

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Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)
EX 2.001	EX Air Valve	EX 45 Bend	102.102	1.500	85.950	85.500	0.450	226.9	600
EX 2.002	EX 45 Bend	EX DM 1 (IW)/MH 4 (MURPHY)	104.198	1.500	85.500	84.803	0.697	149.5	600
EX 2.003	EX DM 1 (IW)/MH 4 (MURPHY)	EX EI 1.00	73.387	1.500	84.503	84.358	0.145	506.1	600
EX 2.004	EX EI 1.00	EX EI 1.01	84.888	1.500	84.358	84.190	0.168	505.3	900
EX 2.005	EX EI 1.01	EX EI 1.02	67.350	1.500	84.190	84.055	0.135	498.9	900
EX 2.006	EX EI 1.02	EX EI 1.03	67.421	1.500	84.055	83.919	0.136	495.7	900

Name	Pro Vel @ 1/3 Q (m/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Dwellings (ha)	Σ Units (ha)	Σ Add Inflow (ha)	Pro Depth (mm)
EX 2.001	0.000	1.439	406.8	0.0	1.235	1.200	0.000	0	0.0	0.0	0
EX 2.002	0.000	1.774	501.5	0.0	1.200	2.797	0.000	0	0.0	0.0	0
EX 2.003	0.000	0.962	271.9	0.0	3.097	2.670	0.000	0	0.0	0.0	0
EX 2.004	0.000	1.246	792.4	0.0	2.370	2.110	0.000	0	0.0	0.0	0
EX 2.005	0.000	1.254	797.5	0.0	2.110	2.366	0.000	0	0.0	0.0	0
EX 2.006	0.000	1.258	800.0	0.0	2.366	2.348	0.000	0	0.0	0.0	0

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)
F1.000	39.385	60.0	150	Circular	88.635	87.735	0.750	88.440	87.079	1.211
F1.001	39.796	60.0	150	Circular	88.440	87.079	1.211	88.210	86.416	1.644
F2.000	25.219	60.0	150	Circular	88.422	87.100	1.172	88.210	86.680	1.380
F1.002	26.347	150.0	225	Circular	88.210	86.341	1.644	88.330	86.165	1.940
F1.003	49.095	150.0	225	Circular	88.330	86.165	1.940	88.564	85.838	2.501
F3.000	59.183	60.0	150	Circular	88.431	87.154	1.127	88.564	86.168	2.246
F1.004	3.466	150.0	225	Circular	88.564	85.838	2.501	88.564	85.815	2.524
F4.000	45.011	60.0	150	Circular	88.704	87.804	0.750	88.978	87.054	1.774
F4.001	46.284	60.0	150	Circular	88.978	87.054	1.774	89.156	86.283	2.723
F4.002	43.308	150.0	225	Circular	89.156	86.208	2.723	88.564	85.919	2.420
F1.005	64.256	180.0	225	Circular	88.564	85.815	2.524	88.684	85.458	3.001
F5.000	16.811	60.0	150	Circular	89.000	87.650	1.200	88.550	87.370	1.030
F5.001	25.893	60.0	150	Circular	88.550	87.370	1.030	88.316	86.938	1.228
F5.002	9.962	60.0	150	Circular	88.316	86.938	1.228	88.316	86.772	1.394
F5.003	48.933	150.0	150	Circular	88.316	86.772	1.394	88.485	86.446	1.889
F5.004	60.220	180.0	225	Circular	88.485	86.371	1.889	88.684	86.036	2.423
F1.006	61.755	180.0	225	Circular	88.684	85.458	3.001	88.525	85.115	3.185
F6.000	21.035	60.0	150	Circular	88.550	87.650	0.750	88.200	87.299	0.751
F6.001	38.032	60.0	150	Circular	88.200	87.299	0.751	88.200	86.665	1.385
F6.002	32.572	60.0	150	Circular	88.200	86.665	1.385	88.150	86.122	1.878
F6.003	16.590	60.0	150	Circular	88.150	86.122	1.878	88.050	85.846	2.054
F6.004	38.634	150.0	150	Circular	88.050	85.846	2.054	88.198	85.588	2.460
F6.005	38.253	180.0	225	Circular	88.198	85.513	2.460	88.525	85.300	3.000

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
F1.000	F1-0	1200	Manhole	Adoptable	F1-1	1200	Manhole	Adoptable
F1.001	F1-1	1200	Manhole	Adoptable	F1-2	1200	Manhole	Adoptable
F2.000	F2-0	1200	Manhole	Adoptable	F1-2	1200	Manhole	Adoptable
F1.002	F1-2	1200	Manhole	Adoptable	F1-3	1200	Manhole	Adoptable
F1.003	F1-3	1200	Manhole	Adoptable	F1-4	1200	Manhole	Adoptable
F3.000	F3-0	1200	Manhole	Adoptable	F1-4	1200	Manhole	Adoptable
F1.004	F1-4	1200	Manhole	Adoptable	F1-5	1200	Manhole	Adoptable
F4.000	F4-0	1200	Manhole	Adoptable	F4-1	1200	Manhole	Adoptable
F4.001	F4-1	1200	Manhole	Adoptable	F4-2	1200	Manhole	Adoptable
F4.002	F4-2	1200	Manhole	Adoptable	F1-5	1200	Manhole	Adoptable
F1.005	F1-5	1200	Manhole	Adoptable	F1-6	1200	Manhole	Adoptable
F5.000	F5-0	1200	Manhole	Adoptable	F5-1	1200	Manhole	Adoptable
F5.001	F5-1	1200	Manhole	Adoptable	F5-2	1200	Manhole	Adoptable
F5.002	F5-2	1200	Manhole	Adoptable	F5-3	1200	Manhole	Adoptable
F5.003	F5-3	1200	Manhole	Adoptable	F5-4	1200	Manhole	Adoptable
F5.004	F5-4	1200	Manhole	Adoptable	F1-6	1200	Manhole	Adoptable
F1.006	F1-6	1200	Manhole	Adoptable	F1-7	1200	Manhole	Adoptable
F6.000	F6-0	1200	Manhole	Adoptable	F6-1	1200	Manhole	Adoptable
F6.001	F6-1	1200	Manhole	Adoptable	F6-2	1200	Manhole	Adoptable
F6.002	F6-2	1200	Manhole	Adoptable	F6-3	1200	Manhole	Adoptable
F6.003	F6-3	1200	Manhole	Adoptable	F6-4	1200	Manhole	Adoptable
F6.004	F6-4	1200	Manhole	Adoptable	F6-5	1200	Manhole	Adoptable
F6.005	F6-5	1200	Manhole	Adoptable	F1-7	1200	Manhole	Adoptable

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Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
F1.007	68.503	160.0	225	Circular	88.525	85.115	3.185	88.332	84.687	3.420
F1.008	17.038	160.0	225	Circular	88.332	84.687	3.420	87.991	84.581	3.185
F7.000	34.815	60.0	150	Circular	87.800	85.846	1.804	87.985	85.266	2.569
F8.000	31.654	60.0	150	Circular	88.020	86.800	1.070	87.985	86.272	1.563
F7.001	33.650	150.0	225	Circular	87.985	85.191	2.569	87.408	84.967	2.216
F7.002	9.418	200.0	225	Circular	87.408	84.967	2.216	87.543	84.920	2.398
F9.000	37.533	60.0	150	Circular	88.058	85.970	1.938	87.543	85.344	2.049
F7.003	52.274	200.0	225	Circular	87.543	84.920	2.398	87.333	84.659	2.449
F7.004	41.920	160.0	225	Circular	87.333	84.659	2.449	87.991	84.397	3.369
F1.009	8.857	160.0	225	Circular	87.991	84.397	3.369	88.100	84.342	3.533
F10.000	27.484	60.0	150	Circular	88.200	86.850	1.200	88.200	86.392	1.658
F10.001	5.156	60.0	150	Circular	88.200	86.392	1.658	88.200	86.306	1.744
F10.002	37.283	60.0	150	Circular	88.200	86.306	1.744	88.321	85.685	2.486
F10.003	22.206	150.0	150	Circular	88.321	85.685	2.486	88.230	85.537	2.543
F11.000	62.839	60.0	150	Circular	88.220	86.950	1.120	88.230	85.903	2.177
F10.004	44.343	160.0	150	Circular	88.230	85.537	2.543	88.100	85.260	2.690
F1.010	26.756	160.0	225	Circular	88.100	84.342	3.533	88.100	84.175	3.700
F1.011	30.579	160.0	225	Circular	88.100	84.175	3.700	87.687	83.984	3.478
F12.000	53.219	60.0	150	Circular	87.600	86.050	1.400	87.477	85.163	2.164
F12.001	35.709	150.0	150	Circular	87.477	85.163	2.164	87.699	84.925	2.624
F13.000	18.089	60.0	150	Circular	87.700	86.350	1.200	87.700	86.049	1.501
F13.001	30.675	60.0	150	Circular	87.700	86.049	1.501	87.674	85.538	1.986
F14.000	33.329	60.0	150	Circular	87.794	86.444	1.200	87.674	85.889	1.635
F13.002	14.421	60.0	150	Circular	87.674	85.538	1.986	87.699	85.298	2.251
F12.002	71.197	200.0	225	Circular	87.699	84.850	2.624	87.699	84.494	2.980
F15.000	54.382	60.0	150	Circular	88.100	86.750	1.200	87.699	85.844	1.705
F12.003	22.642	100.0	225	Circular	87.699	84.494	2.980	87.687	84.268	3.194
F1.012	27.530	160.0	225	Circular	87.687	83.984	3.478	87.926	83.812	3.889
F1.013	34.298	160.0	225	Circular	87.926	83.812	3.889	88.000	83.598	4.177
F1.014	15.742	160.0	225	Circular	88.000	83.598	4.177	88.000	83.500	4.275
F1.015	22.923	250.0	225	Circular	88.000	83.350	4.425	87.800	83.258	4.317
F1.016	34.410	270.0	225	Circular	87.800	83.258	4.317	87.221	83.131	3.865
F1.017	17.762	270.0	225	Circular	87.221	83.131	3.865	87.950	83.065	4.660
F1.018	48.692	270.0	225	Circular	87.950	83.065	4.660	87.550	82.885	4.440

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
F1.007	F1-7	1200	Manhole	Adoptable	F1-8	1200	Manhole	Adoptable
F1.008	F1-8	1200	Manhole	Adoptable	F1-9	1200	Manhole	Adoptable
F7.000	F7-0	1200	Manhole	Adoptable	F7-1	1200	Manhole	Adoptable
F8.000	F8-0	1200	Manhole	Adoptable	F7-1	1200	Manhole	Adoptable
F7.001	F7-1	1200	Manhole	Adoptable	F7-2	1200	Manhole	Adoptable
F7.002	F7-2	1200	Manhole	Adoptable	F7-3	1200	Manhole	Adoptable
F9.000	F9-0	1200	Manhole	Adoptable	F7-3	1200	Manhole	Adoptable
F7.003	F7-3	1200	Manhole	Adoptable	F7-4	1200	Manhole	Adoptable
F7.004	F7-4	1200	Manhole	Adoptable	F1-9	1200	Manhole	Adoptable
F1.009	F1-9	1200	Manhole	Adoptable	F1-10	1200	Manhole	Adoptable
F10.000	F10-0	1200	Manhole	Adoptable	F10-1	1200	Manhole	Adoptable
F10.001	F10-1	1200	Manhole	Adoptable	F10-2	1200	Manhole	Adoptable
F10.002	F10-2	1200	Manhole	Adoptable	F10-3	1200	Manhole	Adoptable
F10.003	F10-3	1200	Manhole	Adoptable	F10-4	1200	Manhole	Adoptable
F11.000	F11-0	1200	Manhole	Adoptable	F10-4	1200	Manhole	Adoptable
F10.004	F10-4	1200	Manhole	Adoptable	F1-10	1200	Manhole	Adoptable
F1.010	F1-10	1200	Manhole	Adoptable	F1-11	1200	Manhole	Adoptable
F1.011	F1-11	1200	Manhole	Adoptable	F1-12	1200	Manhole	Adoptable
F12.000	F14-0	1200	Manhole	Adoptable	F14-1	1200	Manhole	Adoptable
F12.001	F14-1	1200	Manhole	Adoptable	F12-2	1200	Manhole	Adoptable
F13.000	F13-0	1200	Manhole	Adoptable	F13-1	1200	Manhole	Adoptable
F13.001	F13-1	1200	Manhole	Adoptable	F12-1	1200	Manhole	Adoptable
F14.000	F12-0	1200	Manhole	Adoptable	F12-1	1200	Manhole	Adoptable
F13.002	F12-1	1200	Manhole	Adoptable	F12-2	1200	Manhole	Adoptable
F12.002	F12-2	1200	Manhole	Adoptable	F12-3	1200	Manhole	Adoptable
F15.000	F15-0	1200	Manhole	Adoptable	F12-3	1200	Manhole	Adoptable
F12.003	F12-3	1200	Manhole	Adoptable	F1-12	1200	Manhole	Adoptable
F1.012	F1-12	1200	Manhole	Adoptable	F1-13	1200	Manhole	Adoptable
F1.013	F1-13	1200	Manhole	Adoptable	F1-14	1200	Manhole	Adoptable
F1.014	F1-14	1200	Manhole	Adoptable	F1-15	1200	Manhole	Adoptable
F1.015	F1-15	1200	Manhole	Adoptable	F1-16	1200	Manhole	Adoptable
F1.016	F1-16	1200	Manhole	Adoptable	F1-17	1200	Manhole	Adoptable
F1.017	F1-17	1200	Manhole	Adoptable	F1-18	1200	Manhole	Adoptable
F1.018	F1-18	1200	Manhole	Adoptable	F1-19	1200	Manhole	Adoptable

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Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
F19.000	36.224	60.0	150	Circular	87.550	86.500	0.900	87.550	85.896	1.504
F1.019	51.207	270.0	225	Circular	87.550	82.885	4.440	87.394	82.695	4.474
F18.000	16.107	40.0	150	Circular	87.868	86.300	1.418	87.984	85.897	1.937
F18.001	43.746	40.0	150	Circular	87.984	85.897	1.937	88.191	84.803	3.238
17.002	24.232	100.0	150	Circular	88.191	84.803	3.238	88.091	84.561	3.380
17.003	60.244	200.0	150	Circular	88.091	84.561	3.380	87.537	84.260	3.127
17.004	30.696	200.0	150	Circular	87.537	84.260	3.127	87.473	84.107	3.216
F17.000	9.167	60.0	150	Circular	87.437	86.087	1.200	87.473	85.934	1.389
17.005	27.127	200.0	150	Circular	87.473	84.107	3.216	87.394	83.971	3.273
F1.020	7.098	270.0	225	Circular	87.394	82.695	4.474	87.390	82.669	4.496
F1.021	10.965	270.0	225	Circular	87.390	82.669	4.496	87.450	82.628	4.597
F1.022	22.245	270.0	225	Circular	87.450	82.628	4.597	87.450	82.546	4.679
F16.000	50.315	60.0	150	Circular	87.450	86.584	0.716	87.450	85.745	1.555
F1.023	39.096	270.0	225	Circular	87.450	82.546	4.679	87.158	82.401	4.532
F1.024	35.451	270.0	225	Circular	87.158	82.401	4.532	87.141	82.270	4.646
F20.000	30.083	60.0	150	Circular	88.726	87.500	1.076	88.561	86.999	1.412
F20.001	20.492	60.0	150	Circular	88.561	86.999	1.412	88.279	86.657	1.472
F20.002	30.822	60.0	150	Circular	88.279	86.657	1.472	88.000	86.143	1.707
F20.003	37.797	150.0	225	Circular	88.000	86.068	1.707	87.834	85.816	1.793
F20.004	29.826	150.0	225	Circular	87.834	85.816	1.793	88.075	85.617	2.233
F21.000	27.898	60.0	150	Circular	89.246	88.346	0.750	89.030	87.881	0.999
F21.001	51.986	70.0	150	Circular	89.030	87.881	0.999	88.686	87.138	1.398
F22.000	20.936	60.0	150	Circular	88.906	87.556	1.200	88.802	87.207	1.445
F22.001	29.552	60.0	225	Circular	88.802	87.132	1.445	88.686	86.639	1.822
F21.002	64.848	60.0	225	Circular	88.686	86.439	2.022	88.075	85.358	2.492
F20.005	47.232	200.0	225	Circular	88.075	85.358	2.492	87.822	85.122	2.475
F20.006	48.568	200.0	225	Circular	87.822	85.122	2.475	87.588	84.879	2.484
F23.000	29.650	40.0	150	Circular	88.900	87.000	1.750	87.588	86.259	1.179
F20.007	16.546	200.0	225	Circular	87.588	84.879	2.484	88.100	84.796	3.079
F20.008	35.085	200.0	225	Circular	88.100	84.796	3.079	87.600	84.621	2.754
F24.000	23.399	40.0	150	Circular	88.510	87.460	0.900	88.367	86.875	1.342
F24.001	26.489	60.0	150	Circular	88.367	86.875	1.342	88.445	86.434	1.861
F24.002	26.513	150.0	225	Circular	88.445	86.359	1.861	88.308	86.182	1.901
F24.003	46.675	150.0	225	Circular	88.308	86.182	1.901	88.130	85.871	2.034

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
F19.000	F19-0	1200	Manhole	Adoptable	F1-19	1200	Manhole	Adoptable
F1.019	F1-19	1200	Manhole	Adoptable	F1-20	1200	Manhole	Adoptable
F18.000	F16-0	1200	Manhole	Adoptable	F16-1	1200	Manhole	Adoptable
F18.001	F16-1	1200	Manhole	Adoptable	F16-3	1200	Manhole	Adoptable
17.002	F16-3	1200	Manhole	Adoptable	F16-4	1200	Manhole	Adoptable
17.003	F16-4	1200	Manhole	Adoptable	F16-5	1200	Manhole	Adoptable
17.004	F16-5	1200	Manhole	Adoptable	F16-6	1200	Manhole	Adoptable
F17.000	F17-0	1200	Manhole	Adoptable	F16-6	1200	Manhole	Adoptable
17.005	F16-6	1200	Manhole	Adoptable	F1-20	1200	Manhole	Adoptable
F1.020	F1-20	1200	Manhole	Adoptable	F1-21	1200	Manhole	Adoptable
F1.021	F1-21	1200	Manhole	Adoptable	F1-22	1200	Manhole	Adoptable
F1.022	F1-22	1200	Manhole	Adoptable	F1-23	1200	Manhole	Adoptable
F16.000	F18-0	1200	Manhole	Adoptable	F1-23	1200	Manhole	Adoptable
F1.023	F1-23	1200	Manhole	Adoptable	F1-24	1200	Manhole	Adoptable
F1.024	F1-24	1200	Manhole	Adoptable	F20-14	1200	Manhole	Adoptable
F20.000	F20-0	1200	Manhole	Adoptable	F20-1	1200	Manhole	Adoptable
F20.001	F20-1	1200	Manhole	Adoptable	F20-2	1200	Manhole	Adoptable
F20.002	F20-2	1200	Manhole	Adoptable	F20-3	1200	Manhole	Adoptable
F20.003	F20-3	1200	Manhole	Adoptable	F20-4	1200	Manhole	Adoptable
F20.004	F20-4	1200	Manhole	Adoptable	F20-5	1200	Manhole	Adoptable
F21.000	F21-0	1200	Manhole	Adoptable	F21-1	1200	Manhole	Adoptable
F21.001	F21-1	1200	Manhole	Adoptable	F21-2	1200	Manhole	Adoptable
F22.000	F22-0	1200	Manhole	Adoptable	F22-1	1200	Manhole	Adoptable
F22.001	F22-1	1200	Manhole	Adoptable	F21-2	1200	Manhole	Adoptable
F21.002	F21-2	1200	Manhole	Adoptable	F20-5	1200	Manhole	Adoptable
F20.005	F20-5	1200	Manhole	Adoptable	F20-6	1200	Manhole	Adoptable
F20.006	F20-6	1200	Manhole	Adoptable	F20-7	1200	Manhole	Adoptable
F23.000	F23-0	1200	Manhole	Adoptable	F20-7	1200	Manhole	Adoptable
F20.007	F20-7	1200	Manhole	Adoptable	F20-8	1200	Manhole	Adoptable
F20.008	F20-8	1200	Manhole	Adoptable	F20-9	1200	Manhole	Adoptable
F24.000	F24-0	1200	Manhole	Adoptable	F24-1	1200	Manhole	Adoptable
F24.001	F24-1	1200	Manhole	Adoptable	F24-2	1200	Manhole	Adoptable
F24.002	F24-2	1200	Manhole	Adoptable	F24-3	1200	Manhole	Adoptable
F24.003	F24-3	1200	Manhole	Adoptable	F24-4	1200	Manhole	Adoptable

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Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
F24.004	11.330	150.0	225	Circular	88.130	85.871	2.034	88.135	85.795	2.115
F24.005	14.002	200.0	225	Circular	88.135	85.795	2.115	87.942	85.725	1.992
F24.006	4.197	200.0	225	Circular	87.942	85.725	1.992	87.942	85.704	2.013
F25.000	39.679	60.0	150	Circular	87.905	86.878	0.877	87.942	86.217	1.575
F24.007	29.598	200.0	225	Circular	87.942	85.704	2.013	87.539	85.556	1.758
F24.008	54.071	200.0	225	Circular	87.539	85.556	1.758	87.351	85.286	1.840
F26.000	46.978	60.0	150	Circular	88.380	86.000	2.230	87.879	85.217	2.512
F26.001	30.355	150.0	225	Circular	87.879	85.000	2.654	87.720	84.798	2.697
F26.002	8.424	150.0	225	Circular	87.720	84.798	2.697	87.677	84.742	2.710
F26.003	14.108	200.0	225	Circular	87.677	84.742	2.710	87.689	84.671	2.793
F26.004	49.413	200.0	225	Circular	87.689	84.671	2.793	87.351	84.424	2.702
F24.009	35.768	200.0	225	Circular	87.351	84.424	2.702	87.600	84.245	3.130
F27.000	48.171	60.0	150	Circular	87.587	86.537	0.900	87.650	85.734	1.766
F27.001	13.797	60.0	150	Circular	87.650	85.734	1.766	87.600	85.504	1.946
F24.010	12.776	200.0	225	Circular	87.600	84.245	3.130	87.600	84.181	3.194
F20.009	28.590	200.0	225	Circular	87.600	84.140	3.235	87.250	83.997	3.028
F28.000	27.297	60.0	150	Circular	88.556	87.206	1.200	88.417	86.751	1.516
F28.001	19.636	60.0	150	Circular	88.417	86.751	1.516	88.332	86.424	1.758
F28.002	16.174	60.0	150	Circular	88.332	86.424	1.758	88.143	86.154	1.839
F28.003	50.419	60.0	150	Circular	88.143	86.154	1.839	87.215	85.314	1.751
F28.004	6.686	60.0	150	Circular	87.215	85.314	1.751	87.179	85.203	1.826
F28.005	45.712	150.0	225	Circular	87.179	85.128	1.826	87.250	84.823	2.202
F20.010	16.759	200.0	225	Circular	87.250	83.997	3.028	87.710	83.913	3.572
F29.000	32.247	60.0	150	Circular	88.000	86.650	1.200	88.000	86.113	1.737
F29.001	19.807	60.0	150	Circular	88.000	86.113	1.737	87.710	85.783	1.777
F20.011	58.085	200.0	225	Circular	87.710	83.913	3.572	87.326	83.623	3.478
F30.000	21.299	40.0	150	Circular	87.229	85.879	1.200	87.360	85.347	1.863
F30.001	10.791	60.0	150	Circular	87.360	85.347	1.863	87.319	85.167	2.002
F30.002	15.699	60.0	150	Circular	87.319	85.117	2.052	87.322	84.855	2.317
F31.000	31.137	60.0	150	Circular	87.286	85.936	1.200	87.322	85.417	1.755
F30.003	4.382	150.0	225	Circular	87.322	84.780	2.317	87.293	84.751	2.317
F30.004	66.235	150.0	225	Circular	87.293	84.751	2.317	87.326	84.309	2.792
F20.012	8.638	200.0	225	Circular	87.326	83.623	3.478	87.260	83.580	3.455
F32.000	32.559	60.0	150	Circular	88.543	87.193	1.200	88.353	86.650	1.553

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
F24.004	F24-4	1200	Manhole	Adoptable	F24-5	1200	Manhole	Adoptable
F24.005	F24-5	1200	Manhole	Adoptable	F24-6	1200	Manhole	Adoptable
F24.006	F24-6	1200	Manhole	Adoptable	F24-7	1200	Manhole	Adoptable
F25.000	F25-0	1200	Manhole	Adoptable	F24-7	1200	Manhole	Adoptable
F24.007	F24-7	1200	Manhole	Adoptable	F24-8	1200	Manhole	Adoptable
F24.008	F24-8	1200	Manhole	Adoptable	F24-9	1200	Manhole	Adoptable
F26.000	F26-0	1200	Manhole	Adoptable	F26-1	1200	Manhole	Adoptable
F26.001	F26-1	1200	Manhole	Adoptable	F26-2	1200	Manhole	Adoptable
F26.002	F26-2	1200	Manhole	Adoptable	F26-3	1200	Manhole	Adoptable
F26.003	F26-3	1200	Manhole	Adoptable	F26-4	1200	Manhole	Adoptable
F26.004	F26-4	1200	Manhole	Adoptable	F24-9	1200	Manhole	Adoptable
F24.009	F24-9	1200	Manhole	Adoptable	F24-10	1200	Manhole	Adoptable
F27.000	F27-0	1200	Manhole	Adoptable	F27-1	1200	Manhole	Adoptable
F27.001	F27-1	1200	Manhole	Adoptable	F24-10	1200	Manhole	Adoptable
F24.010	F24-10	1200	Manhole	Adoptable	F20-9	1200	Manhole	Adoptable
F20.009	F20-9	1200	Manhole	Adoptable	F20-10	1200	Manhole	Adoptable
F28.000	F28-0	1200	Manhole	Adoptable	F28-1	1200	Manhole	Adoptable
F28.001	F28-1	1200	Manhole	Adoptable	F28-2	1200	Manhole	Adoptable
F28.002	F28-2	1200	Manhole	Adoptable	F28-3	1200	Manhole	Adoptable
F28.003	F28-3	1200	Manhole	Adoptable	F28-4	1200	Manhole	Adoptable
F28.004	F28-4	1200	Manhole	Adoptable	F28-5	1200	Manhole	Adoptable
F28.005	F28-5	1200	Manhole	Adoptable	F20-10	1200	Manhole	Adoptable
F20.010	F20-10	1200	Manhole	Adoptable	F20-11	1200	Manhole	Adoptable
F29.000	F29-0	1200	Manhole	Adoptable	F29-2	1200	Manhole	Adoptable
F29.001	F29-2	1200	Manhole	Adoptable	F20-11	1200	Manhole	Adoptable
F20.011	F20-11	1200	Manhole	Adoptable	F20-12	1200	Manhole	Adoptable
F30.000	F30-0	1200	Manhole	Adoptable	F30-1	1200	Manhole	Adoptable
F30.001	F30-1	1200	Manhole	Adoptable	F30-2	1200	Manhole	Adoptable
F30.002	F30-2	1200	Manhole	Adoptable	F30-3	1200	Manhole	Adoptable
F31.000	F31-0	1200	Manhole	Adoptable	F30-3	1200	Manhole	Adoptable
F30.003	F30-3	1200	Manhole	Adoptable	F30-4	1200	Manhole	Adoptable
F30.004	F30-4	1200	Manhole	Adoptable	F20-12	1200	Manhole	Adoptable
F20.012	F20-12	1200	Manhole	Adoptable	F20-13	1200	Manhole	Adoptable
F32.000	F32-0	1200	Manhole	Adoptable	F32-1	1200	Manhole	Adoptable

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Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
F32.001	15.294	60.0	150	Circular	88.353	86.650	1.553	88.119	86.395	1.574
F32.002	12.318	60.0	150	Circular	88.119	86.395	1.574	87.912	86.190	1.572
F32.003	13.791	60.0	150	Circular	87.912	86.190	1.572	87.677	85.960	1.567
F32.004	40.231	50.0	150	Circular	87.677	85.960	1.567	87.218	85.155	1.913
F32.005	57.057	200.0	225	Circular	87.218	85.080	1.913	86.876	84.795	1.856
F32.006	31.483	200.0	225	Circular	86.876	84.600	2.051	86.748	84.443	2.080
F32.007	32.442	200.0	225	Circular	86.748	84.443	2.080	87.071	84.281	2.565
F32.008	31.675	200.0	225	Circular	87.071	84.281	2.565	87.260	84.123	2.912
F33.000	24.608	60.0	150	Circular	87.112	85.762	1.200	86.998	85.352	1.496
F33.001	14.191	60.0	150	Circular	86.998	85.352	1.496	86.913	85.115	1.648
F33.002	47.607	150.0	150	Circular	86.913	85.115	1.648	86.905	84.798	1.957
F33.003	48.488	200.0	225	Circular	86.905	84.560	2.120	86.994	84.318	2.451
F34.000	27.550	60.0	150	Circular	87.200	86.350	0.700	87.075	85.891	1.034
F34.001	70.205	60.0	150	Circular	87.075	85.891	1.034	86.994	84.721	2.123
F33.004	65.157	200.0	225	Circular	86.994	84.318	2.451	87.260	83.992	3.043
F20.013	64.442	200.0	225	Circular	87.260	83.580	3.455	87.141	83.258	3.658
F20.014	14.802	200.0	300	Circular	87.141	82.195	4.646	87.218	82.121	4.797
F20.015	18.607	200.0	300	Circular	87.218	82.121	4.797	87.202	82.028	4.874
F36.000	27.586	600.0	600	Circular	88.894	85.270	3.024	88.906	85.224	3.082
F36.001	33.528	600.0	600	Circular	88.906	85.224	3.082	88.725	85.168	2.957
F36.002	47.460	600.0	600	Circular	88.725	85.168	2.957	89.006	85.089	3.317
F36.003	40.692	600.0	600	Circular	89.006	85.089	3.317	90.084	85.021	4.463
F36.004	50.540	600.0	600	Circular	90.084	85.021	4.463	89.346	84.937	3.809
F36.005	65.175	600.0	600	Circular	89.346	84.937	3.809	88.100	84.828	2.672
F36.006	12.696	600.0	600	Circular	88.100	84.828	2.672	88.200	84.807	2.793
EX 2.001	102.102	226.9	600	Circular	87.785	85.950	1.235	87.300	85.500	1.200
EX 2.002	104.198	149.5	600	Circular	87.300	85.500	1.200	88.200	84.803	2.797
EX 2.003	73.387	506.1	600	Circular	88.200	84.503	3.097	87.628	84.358	2.670
EX 2.004	84.888	505.3	900	Circular	87.628	84.358	2.370	87.200	84.190	2.110
EX 2.005	67.350	498.9	900	Circular	87.200	84.190	2.110	87.321	84.055	2.366
EX 2.006	67.421	495.7	900	Circular	87.321	84.055	2.366	87.167	83.919	2.348

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
F32.001	F32-1	1200	Manhole	Adoptable	F32-2	1200	Manhole	Adoptable
F32.002	F32-2	1200	Manhole	Adoptable	F32-3	1200	Manhole	Adoptable
F32.003	F32-3	1200	Manhole	Adoptable	F32-4	1200	Manhole	Adoptable
F32.004	F32-4	1200	Manhole	Adoptable	F32-5	1200	Manhole	Adoptable
F32.005	F32-5	1200	Manhole	Adoptable	F32-6	1200	Manhole	Adoptable
F32.006	F32-6	1200	Manhole	Adoptable	F32-7	1200	Manhole	Adoptable
F32.007	F32-7	1200	Manhole	Adoptable	F32-8	1200	Manhole	Adoptable
F32.008	F32-8	1200	Manhole	Adoptable	F20-13	1200	Manhole	Adoptable
F33.000	F33-0	1200	Manhole	Adoptable	F33-1	1200	Manhole	Adoptable
F33.001	F33-1	1200	Manhole	Adoptable	F33-2	1200	Manhole	Adoptable
F33.002	F33-2	1200	Manhole	Adoptable	F33-3	1200	Manhole	Adoptable
F33.003	F33-3	1200	Manhole	Adoptable	F33-4	1200	Manhole	Adoptable
F34.000	F34-0	1200	Manhole	Adoptable	F34-1	1200	Manhole	Adoptable
F34.001	F34-1	1200	Manhole	Adoptable	F33-4	1200	Manhole	Adoptable
F33.004	F33-4	1200	Manhole	Adoptable	F20-13	1200	Manhole	Adoptable
F20.013	F20-13	1200	Manhole	Adoptable	F20-14	1200	Manhole	Adoptable
F20.014	F20-14	1200	Manhole	Adoptable	F20-15	1200	Manhole	Adoptable
F20.015	F20-15	1200	Manhole	Adoptable	F20-16 OUT	1200	Manhole	Adoptable
F36.000	ExFMH_1	1500	Manhole	Adoptable	F36-0	1500	Manhole	Adoptable
F36.001	F36-0	1500	Manhole	Adoptable	F36-1	1500	Manhole	Adoptable
F36.002	F36-1	1500	Manhole	Adoptable	F36-2	1500	Manhole	Adoptable
F36.003	F36-2	1500	Manhole	Adoptable	F36-3	1500	Manhole	Adoptable
F36.004	F36-3	1500	Manhole	Adoptable	F36-4	1500	Manhole	Adoptable
F36.005	F36-4	1500	Manhole	Adoptable	F36-5	1500	Manhole	Adoptable
F36.006	F36-5	1500	Manhole	Adoptable	EX DM 1 (IW)/MH 4 (MURPHY)	1500	Manhole	Adoptable
EX 2.001	EX Air Valve	1200	Manhole	Adoptable	EX 45 Bend	1200	Manhole	Adoptable
EX 2.002	EX 45 Bend	1200	Manhole	Adoptable	EX DM 1 (IW)/MH 4 (MURPHY)	1500	Manhole	Adoptable
EX 2.003	EX DM 1 (IW)/MH 4 (MURPHY)	1500	Manhole	Adoptable	EX EI 1.00	1800	Manhole	Adoptable
EX 2.004	EX EI 1.00	1800	Manhole	Adoptable	EX EI 1.01	1800	Manhole	Adoptable
EX 2.005	EX EI 1.01	1800	Manhole	Adoptable	EX EI 1.02	1800	Manhole	Adoptable
EX 2.006	EX EI 1.02	1800	Manhole	Adoptable	EX EI 1.03	1800	Manhole	Adoptable

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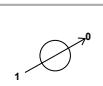
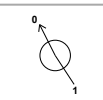
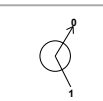
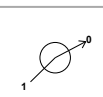
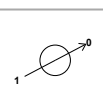
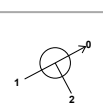
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
F1-0	681605.904	714507.116	88.635	0.900	1200		0 F1.000	87.735	150
F1-1	681643.639	714518.395	88.440	1.361	1200		1 F1.000 0 F1.001	87.079 87.079	150 150
F2-0	681705.935	714537.000	88.422	1.322	1200		0 F2.000	87.100	150
F1-2	681681.768	714529.791	88.210	1.869	1200		1 F2.000 2 F1.001 0 F1.002	86.680 86.416 86.341	150 150 225
F1-3	681674.642	714555.156	88.330	2.165	1200		1 F1.002 0 F1.003	86.165 86.165	225 225
F3-0	681703.061	714625.818	88.431	1.277	1200		0 F3.000	87.154	150
F1-4	681650.788	714598.067	88.564	2.726	1200		1 F3.000 2 F1.003 0 F1.004	86.168 85.838 85.838	150 225 225
F4-0	681582.191	714510.863	88.704	0.900	1200		0 F4.000	87.804	150
F4-1	681569.307	714553.991	88.978	1.924	1200		1 F4.000 0 F4.001	87.054 87.054	150 150
F4-2	681609.685	714576.614	89.156	2.948	1200		1 F4.001 0 F4.002	86.283 86.208	150 225
F1-5	681647.322	714598.040	88.564	2.749	1200		1 F4.002 2 F1.004 0 F1.005	85.919 85.815 85.815	225 225 225
F5-0	681536.138	714558.239	89.000	1.350	1200		0 F5.000	87.650	150
F5-1	681526.925	714572.301	88.550	1.180	1200		1 F5.000 0 F5.001	87.370 87.370	150 150
F5-2	681515.254	714595.415	88.316	1.378	1200		1 F5.001 0 F5.002	86.938 86.938	150 150
F5-3	681520.512	714603.858	88.316	1.544	1200		1 F5.002 0 F5.003	86.772 86.772	150 150
F5-4	681563.804	714626.666	88.485	2.114	1200		1 F5.003 0 F5.004	86.446 86.371	150 225
F1-6	681617.082	714654.736	88.684	3.226	1200		1 F5.004 2 F1.005 0 F1.006	86.036 85.458 85.458	225 225 225

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
F6-0	681726.249	714560.543	88.550	0.900	1200				
						0	F6.000	87.650	150
F6-1	681725.107	714581.547	88.200	0.901	1200		1	F6.000	87.299	150
							0	F6.001	87.299	150
F6-2	681728.107	714619.460	88.200	1.535	1200		1	F6.001	86.665	150
							0	F6.002	86.665	150
F6-3	681722.615	714651.566	88.150	2.028	1200		1	F6.002	86.122	150
							0	F6.003	86.122	150
F6-4	681723.730	714668.118	88.050	2.204	1200		1	F6.003	85.846	150
							0	F6.004	85.846	150
F6-5	681705.206	714702.021	88.198	2.685	1200		1	F6.004	85.588	150
							0	F6.005	85.513	225
F1-7	681671.450	714684.025	88.525	3.410	1200		1	F6.005	85.300	225
							2	F1.006	85.115	225
							0	F1.007	85.115	225
F1-8	681638.950	714744.328	88.332	3.645	1200		1	F1.007	84.687	225
							0	F1.008	84.687	225
F7-0	681490.078	714715.528	87.800	1.954	1200				
						0	F7.000	85.846	150
F8-0	681521.402	714656.903	88.020	1.220	1200				
						0	F8.000	86.800	150
F7-1	681506.482	714684.820	87.985	2.794	1200		1	F8.000	86.272	150
							2	F7.000	85.266	150
							0	F7.001	85.191	225
F7-2	681536.163	714700.675	87.408	2.441	1200		1	F7.001	84.967	225
							0	F7.002	84.967	225
F9-0	681558.286	714659.263	88.058	2.088	1200				
						0	F9.000	85.970	150
F7-3	681540.601	714692.368	87.543	2.623	1200		1	F9.000	85.344	150
							2	F7.002	84.920	225
							0	F7.003	84.920	225
F7-4	681586.773	714716.877	87.333	2.674	1200		1	F7.003	84.659	225
							0	F7.004	84.659	225
F1-9	681623.827	714736.480	87.991	3.594	1200		1	F7.004	84.397	225
							2	F1.008	84.581	225
							0	F1.009	84.397	225
F10-0	681713.509	714720.549	88.200	1.350	1200				
						0	F10.000	86.850	150

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
F10-1	681700.576	714744.800	88.200	1.808	1200	1	F10.000	86.392	150
						0	F10.001	86.392	150
F10-2	681695.873	714742.686	88.200	1.894	1200	1	F10.001	86.306	150
						0	F10.002	86.306	150
F10-3	681678.365	714775.602	88.321	2.636	1200	1	F10.002	85.685	150
						0	F10.003	85.685	150
F11-0	681688.371	714709.683	88.220	1.270	1200				
						0	F11.000	86.950	150
F10-4	681658.788	714765.122	88.230	2.693	1200	1	F11.000	85.903	150
						2	F10.003	85.537	150
						0	F10.004	85.537	150
F1-10	681619.645	714744.287	88.100	3.758	1200	1	F10.004	85.260	150
						2	F1.009	84.342	225
						0	F1.010	84.342	225
F1-11	681607.012	714767.873	88.100	3.925	1200	1	F1.010	84.175	225
						0	F1.011	84.175	225
F14-0	681573.282	714744.034	87.600	1.550	1200				
						0	F12.000	86.050	150
F14-1	681526.341	714718.957	87.477	2.314	1200	1	F12.000	85.163	150
						0	F12.001	85.163	150
F13-0	681465.808	714761.926	87.700	1.350	1200				
						0	F13.000	86.350	150
F13-1	681481.785	714770.408	87.700	1.651	1200	1	F13.000	86.049	150
						0	F13.001	86.049	150
F12-0	681467.425	714728.011	87.794	1.350	1200				
						0	F14.000	86.444	150
F12-1	681496.840	714743.682	87.674	2.136	1200	1	F14.000	85.889	150
						2	F13.001	85.538	150
						0	F13.002	85.538	150
F12-2	681509.560	714750.477	87.699	2.849	1200	1	F13.002	85.298	150
						2	F12.001	84.925	150
						0	F12.002	84.850	225
F15-0	681598.067	714736.123	88.100	1.350	1200				
						0	F15.000	86.750	150
F12-3	681572.350	714784.040	87.699	3.205	1200	1	F15.000	85.844	150
						2	F12.002	84.494	225
						0	F12.003	84.494	225
F1-12	681592.328	714794.696	87.687	3.703	1200	1	F12.003	84.268	225
						2	F1.011	83.984	225
						0	F1.012	83.984	225

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
F1-13	681616.616	714807.658	87.926	4.114	1200	1	F1.012	83.812	225
						0	F1.013	83.812	225
F1-14	681600.550	714837.960	88.000	4.402	1200	1	F1.013	83.598	225
						0	F1.014	83.598	225
F1-15	681586.729	714830.424	88.000	4.650	1200	1	F1.014	83.500	225
						0	F1.015	83.350	225
F1-16	681571.873	714847.882	87.800	4.542	1200	1	F1.015	83.258	225
						0	F1.016	83.258	225
F1-17	681541.687	714831.363	87.221	4.090	1200	1	F1.016	83.131	225
						0	F1.017	83.131	225
F1-18	681524.354	714827.481	87.950	4.885	1200	1	F1.017	83.065	225
						0	F1.018	83.065	225
F19-0	681449.454	714787.470	87.550	1.050	1200	0	F19.000	86.500	150
F1-19	681481.406	714804.537	87.550	4.665	1200	1	F19.000	85.896	150
						2	F1.018	82.885	225
						0	F1.019	82.885	225
F16-0	681552.176	714897.692	87.868	1.568	1200	0	F18.000	86.300	150
F16-1	681560.903	714884.154	87.984	2.087	1200	1	F18.000	85.897	150
						0	F18.001	85.897	150
F16-3	681524.134	714860.453	88.191	3.388	1200	1	F18.001	84.803	150
						0	17.002	84.803	150
F16-4	681503.825	714847.235	88.091	3.530	1200	1	17.002	84.561	150
						0	17.003	84.561	150
F16-5	681450.686	714818.852	87.537	3.277	1200	1	17.003	84.260	150
						0	17.004	84.260	150
F17-0	681419.260	714812.458	87.437	1.350	1200	0	F17.000	86.087	150
F16-6	681423.611	714804.389	87.473	3.366	1200	1	F17.000	85.934	150
						2	17.004	84.107	150
						0	17.005	84.107	150
F1-20	681436.252	714780.387	87.394	4.699	1200	1	17.005	83.971	150
						2	F1.019	82.695	225
						0	F1.020	82.695	225
F1-21	681439.149	714773.907	87.390	4.721	1200	1	F1.020	82.669	225
						0	F1.021	82.669	225

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
F1-22	681436.168	714763.355	87.450	4.822	1200	1	F1.021	82.628	225
						0	F1.022	82.628	225
F18-0	681392.894	714797.345	87.450	0.866	1200	0	F16.000	86.584	150
F1-23	681416.521	714752.922	87.450	4.904	1200	1	F16.000	85.745	150
						2	F1.022	82.546	225
						0	F1.023	82.546	225
F1-24	681378.751	714742.826	87.158	4.757	1200	1	F1.023	82.401	225
						0	F1.024	82.401	225
F20-0	681439.291	714444.344	88.726	1.226	1200	0	F20.000	87.500	150
F20-1	681465.939	714458.303	88.561	1.562	1200	1	F20.000	86.999	150
						0	F20.001	86.999	150
F20-2	681484.092	714467.811	88.279	1.622	1200	1	F20.001	86.657	150
						0	F20.002	86.657	150
F20-3	681469.215	714494.805	88.000	1.932	1200	1	F20.002	86.143	150
						0	F20.003	86.068	225
F20-4	681447.197	714525.527	87.834	2.018	1200	1	F20.003	85.816	225
						0	F20.004	85.816	225
F21-0	681321.207	714553.285	89.246	0.900	1200	0	F21.000	88.346	150
F21-1	681341.209	714533.837	89.030	1.149	1200	1	F21.000	87.881	150
						0	F21.001	87.881	150
F22-0	681412.481	714461.119	88.906	1.350	1200	0	F22.000	87.556	150
F22-1	681400.498	714478.287	88.802	1.670	1200	1	F22.000	87.207	150
						0	F22.001	87.132	225
F21-2	681381.331	714500.780	88.686	2.247	1200	1	F22.001	86.639	225
						2	F21.001	87.138	150
						0	F21.002	86.439	225
F20-5	681426.659	714547.155	88.075	2.717	1200	1	F21.002	85.358	225
						2	F20.004	85.617	225
						0	F20.005	85.358	225
F20-6	681390.976	714578.100	87.822	2.700	1200	1	F20.005	85.122	225
						0	F20.006	85.122	225
F23-0	681332.220	714579.790	88.900	1.900	1200	0	F23.000	87.000	150

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
F20-7	681349.719	714603.726	87.588	2.709	1200	1	F23.000	86.259	150
						2	F20.006	84.879	225
						0	F20.007	84.879	225
F20-8	681358.300	714617.873	88.100	3.304	1200	1	F20.007	84.796	225
						0	F20.008	84.796	225
F24-0	681526.742	714478.429	88.510	1.050	1200	0	F24.000	87.460	150
F24-1	681547.942	714488.332	88.367	1.492	1200	1	F24.000	86.875	150
						0	F24.001	86.875	150
F24-2	681536.421	714512.184	88.445	2.086	1200	1	F24.001	86.434	150
						0	F24.002	86.359	225
F24-3	681522.814	714534.939	88.308	2.126	1200	1	F24.002	86.182	225
						0	F24.003	86.182	225
F24-4	681495.671	714572.910	88.130	2.259	1200	1	F24.003	85.871	225
						0	F24.004	85.871	225
F24-5	681492.512	714583.791	88.135	2.340	1200	1	F24.004	85.795	225
						0	F24.005	85.795	225
F24-6	681478.757	714581.170	87.942	2.217	1200	1	F24.005	85.725	225
						0	F24.006	85.725	225
F25-0	681440.096	714560.424	87.905	1.027	1200	0	F25.000	86.878	150
F24-7	681475.059	714579.186	87.942	2.238	1200	1	F25.000	86.217	150
						2	F24.006	85.704	225
						0	F24.007	85.704	225
F24-8	681460.126	714604.741	87.539	1.983	1200	1	F24.007	85.556	225
						0	F24.008	85.556	225
F26-0	681496.301	714626.098	88.380	2.380	1200	0	F26.000	86.000	150
F26-1	681474.131	714667.516	87.879	2.879	1200	1	F26.000	85.217	150
						0	F26.001	85.000	225
F26-2	681459.717	714694.230	87.720	2.922	1200	1	F26.001	84.798	225
						0	F26.002	84.798	225
F26-3	681452.414	714690.031	87.677	2.935	1200	1	F26.002	84.742	225
						0	F26.003	84.742	225
F26-4	681442.036	714680.474	87.689	3.018	1200	1	F26.003	84.671	225
						0	F26.004	84.671	225

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
F24-9	681417.272	714637.714	87.351	2.927	1200	1	F26.004	84.424	225
						2	F24.008	85.286	225
						0	F24.009	84.424	225
F27-0	681420.559	714707.290	87.587	1.050	1200	0	F27.000	86.537	150
F27-1	681396.370	714665.633	87.650	1.916	1200	1	F27.000	85.734	150
						0	F27.001	85.734	150
F24-10	681386.517	714655.975	87.600	3.355	1200	1	F27.001	85.504	150
						2	F24.009	84.245	225
						0	F24.010	84.245	225
F20-9	681376.792	714647.689	87.600	3.460	1200	1	F24.010	84.181	225
						2	F20.008	84.621	225
						0	F20.009	84.140	225
F28-0	681241.932	714575.312	88.556	1.350	1200	0	F28.000	87.206	150
F28-1	681268.719	714570.058	88.417	1.666	1200	1	F28.000	86.751	150
						0	F28.001	86.751	150
F28-2	681288.354	714570.205	88.332	1.908	1200	1	F28.001	86.424	150
						0	F28.002	86.424	150
F28-3	681302.827	714577.426	88.143	1.989	1200	1	F28.002	86.154	150
						0	F28.003	86.154	150
F28-4	681330.785	714619.384	87.215	1.901	1200	1	F28.003	85.314	150
						0	F28.004	85.314	150
F28-5	681327.278	714625.076	87.179	2.051	1200	1	F28.004	85.203	150
						0	F28.005	85.128	225
F20-10	681352.693	714663.072	87.250	3.253	1200	1	F28.005	84.823	225
						2	F20.009	83.997	225
						0	F20.010	83.997	225
F29-0	681392.820	714718.858	88.000	1.350	1200	0	F29.000	86.650	150
F29-2	681375.025	714691.965	88.000	1.887	1200	1	F29.000	86.113	150
						0	F29.001	86.113	150
F20-11	681362.184	714676.885	87.710	3.797	1200	1	F29.001	85.783	150
						2	F20.010	83.913	225
						0	F20.011	83.913	225
F30-0	681241.977	714638.304	87.229	1.350	1200	0	F30.000	85.879	150
F30-1	681262.902	714634.330	87.360	2.013	1200	1	F30.000	85.347	150
						0	F30.001	85.347	150

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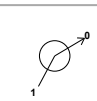
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
F30-2	681272.752	714638.737	87.319	2.202	1200	1	F30.001	85.167	150
						0	F30.002	85.117	150
F31-0	681306.931	714634.640	87.286	1.350	1200	0	F31.000	85.936	150
F30-3	681281.103	714652.031	87.322	2.542	1200	1	F31.000	85.417	150
						2	F30.002	84.855	150
						0	F30.003	84.780	225
F30-4	681277.468	714654.479	87.293	2.542	1200	1	F30.003	84.751	225
						0	F30.004	84.751	225
F20-12	681314.190	714709.602	87.326	3.703	1200	1	F30.004	84.309	225
						2	F20.011	83.623	225
						0	F20.012	83.623	225
F32-0	681232.207	714577.382	88.543	1.350	1200	0	F32.000	87.193	150
F32-1	681200.253	714583.628	88.353	1.703	1200	1	F32.000	86.650	150
						0	F32.001	86.650	150
F32-2	681186.751	714590.812	88.119	1.724	1200	1	F32.001	86.395	150
						0	F32.002	86.395	150
F32-3	681179.482	714600.756	87.912	1.722	1200	1	F32.002	86.190	150
						0	F32.003	86.190	150
F32-4	681176.174	714614.144	87.677	1.717	1200	1	F32.003	85.960	150
						0	F32.004	85.960	150
F32-5	681173.612	714654.293	87.218	2.138	1200	1	F32.004	85.155	150
						0	F32.005	85.080	225
F32-6	681230.561	714657.804	86.876	2.276	1200	1	F32.005	84.795	225
						0	F32.006	84.600	225
F32-7	681258.083	714673.091	86.748	2.305	1200	1	F32.006	84.443	225
						0	F32.007	84.443	225
F32-8	681283.967	714692.649	87.071	2.790	1200	1	F32.007	84.281	225
						0	F32.008	84.281	225
F33-0	681175.802	714667.406	87.112	1.350	1200	0	F33.000	85.762	150
F33-1	681174.873	714691.996	86.998	1.646	1200	1	F33.000	85.352	150
						0	F33.001	85.352	150
F33-2	681181.559	714704.513	86.913	1.798	1200	1	F33.001	85.115	150
						 0	F33.002	85.115	150

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
F33-3	681222.482	714728.838	86.905	2.345	1200	1	F33.002	84.798	150
						0	F33.003	84.560	225
F34-0	681329.047	714800.041	87.200	0.850	1200				
						0	F34.000	86.350	150
F34-1	681304.981	714813.451	87.075	1.184	1200	1	F34.000	85.891	150
						0	F34.001	85.891	150
F33-4	681260.017	714759.534	86.994	2.676	1200	1	F34.001	84.721	150
						2	F33.003	84.318	225
						0	F33.004	84.318	225
F20-13	681307.001	714714.391	87.260	3.680	1200	1	F33.004	83.992	225
						2	F32.008	84.123	225
						3	F20.012	83.580	225
						0	F20.013	83.580	225
F20-14	681349.491	714762.841	87.141	4.946	1200	1	F20.013	83.258	225
						2	F1.024	82.270	225
						0	F20.014	82.195	300
F20-15	681358.981	714774.201	87.218	5.097	1200	1	F20.014	82.121	300
						0	F20.015	82.121	300
F20-16 OUT	681374.034	714763.264	87.202	5.174	1200	1	F20.015	82.028	300
ExFMH_1	681413.756	714450.016	88.894	3.624	1500				
						0	F36.000	85.270	600
F36-0	681397.961	714472.633	88.906	3.682	1500	1	F36.000	85.224	600
						0	F36.001	85.224	600
F36-1	681375.805	714497.797	88.725	3.557	1500	1	F36.001	85.168	600
						0	F36.002	85.168	600
F36-2	681339.022	714527.788	89.006	3.917	1500	1	F36.002	85.089	600
						0	F36.003	85.089	600
F36-3	681309.438	714555.727	90.084	5.063	1500	1	F36.003	85.021	600
						0	F36.004	85.021	600
F36-4	681337.470	714597.780	89.346	4.409	1500	1	F36.004	84.937	600
						0	F36.005	84.937	600
F36-5	681370.964	714653.690	88.100	3.272	1500	1	F36.005	84.828	600
						0	F36.006	84.828	600
EX Air Valve	681210.765	714542.261	87.785	1.835	1200				
						0	EX 2.001	85.950	600
EX 45 Bend	681308.803	714570.782	87.300	1.800	1200	1	EX 2.001	85.500	600
						0	EX 2.002	85.500	600

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
EX DM 1 (IW)/MH 4 (MURPHY)	681360.686	714661.144	88.200	3.697	1500		1	EX 2.002	84.803	600
							2	F36.006	84.807	600
							0	EX 2.003	84.503	600
EX EI 1.00	681407.527	714717.638	87.628	3.270	1800		1	EX 2.003	84.358	600
							0	EX 2.004	84.358	900
EX EI 1.01	681461.913	714782.816	87.200	3.010	1800		1	EX 2.004	84.190	900
							0	EX 2.005	84.190	900
EX EI 1.02	681521.417	714814.365	87.321	3.266	1800		1	EX 2.005	84.055	900
							0	EX 2.006	84.055	900
EX EI 1.03	681580.377	714847.065	87.167	3.248	1800		1	EX 2.006	83.919	900

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Appendix F Irish Water – Confirmation of Feasibility

Damien Egan

Punch Consulting Engineers
97 Henry Street
Co.Limerick
V94YC2H
Ireland

Uisce Éireann
Bosca OP 448
Oifig Sheachadta na
Cathrach Theas
Cathair Chorcaí

Irish Water
PO Box 448,
South City
Delivery Office,
Cork City.

www.water.ie

28 January 2021

Re: CDS20007443 pre-connection enquiry - Subject to contract | Contract denied

Connection for Multi/Mixed Use Development of 620 unit(s) at Greatconnell, Newbridge, Co. Kildare

Dear Sir/Madam,

Irish Water has reviewed your pre-connection enquiry in relation to a Water & Wastewater connection at Greatconnell, Newbridge, Co. Kildare (the **Premises**). Based upon the details you have provided with your pre-connection enquiry and on our desk top analysis of the capacity currently available in the Irish Water network(s) as assessed by Irish Water, we wish to advise you that your proposed connection to the Irish Water network(s) can be facilitated at this moment in time.

SERVICE	**OUTCOME OF PRE-CONNECTION ENQUIRY** **THIS IS NOT A CONNECTION OFFER. YOU MUST APPLY FOR A CONNECTION(S) TO THE IRISH WATER NETWORK(S) IF YOU WISH TO PROCEED.**
Water Connection	Feasible without infrastructure upgrade by Irish Water
Wastewater Connection	Feasible without infrastructure upgrade by Irish Water
SITE SPECIFIC COMMENTS	
Water Connection	Connection is feasible to the existing 300 mm DI main. New connection main has to be a 200mm ID pipe. Bulk meter to be installed on the connection main, meter to be connected to telemetry online. On site storage for the average day peak week demand rate of the commercial section for 24-hour period. This separate storage is required to supply this demand and will have a re-fill time of 12 hours. This Confirmation of Feasibility to connect to the Irish Water infrastructure also does not extend to your fire flow requirements. Please note that Irish Water can not guarantee a flow rate to meet fire flow requirements and in order to guarantee a flow to meet the Fire Authority requirements, you should provide adequate fire storage capacity within your development.

Stiúrthóirí / Directors: Cathal Marley (Chairman), Niall Gleeson, Eamon Gallen, Yvonne Harris, Brendan Murphy, Maria O'Dwyer
Oifig Chláraithe / Registered Office: Teach Colvill, 24-26 Sráid Thalbóid, Baile Átha Cliath 1, D01 NP86 / Colvill House, 24-26 Talbot Street, Dublin 1, D01 NP86
Is cuideachta ghníomhaíochta ainmnithe atá faoi theorainn scaireanna é Uisce Éireann / Irish Water is a designated activity company, limited by shares.
Uimhir Chláraithe in Éirinn / Registered in Ireland No.: 530363
IW-HP-BUS
REV012

Wastewater Connection	Connection must be made to the new 900 mm traversing the proposed site (not shown on GIS map bellow).
Strategic Housing Development	Irish Water notes that the scale of this development dictates that it is subject to the Strategic Housing Development planning process. In advance of submitting your full application to An Bord Pleanala for assessment, you must have reviewed this development with Irish Water and received a Statement of Design Acceptance in relation to the layout of water and wastewater services.
The design and construction of the Water & Wastewater pipes and related infrastructure to be installed in this development shall comply with the Irish Water Connections and Developer Services Standard Details and Codes of Practice that are available on the Irish Water website. Irish Water reserves the right to supplement these requirements with Codes of Practice and these will be issued with the connection agreement.	

The map included below outlines the current Irish Water infrastructure adjacent to your site:

Reproduced from the Ordnance Survey of Ireland by Permission of the Government. License No. 3-3-34

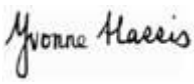
Whilst every care has been taken in its compilation Irish Water gives this information as to the position of its underground network as a general guide only on the strict understanding that it is based on the best available information provided by each Local Authority in Ireland to Irish Water. Irish Water can assume no responsibility for and give no guarantees, undertakings or warranties concerning the accuracy, completeness or up to date nature of the information provided and does not accept any liability whatsoever arising from any errors or omissions. This information should not be relied upon in the event of excavations or any other works being carried out in the vicinity of the Irish Water underground network. The onus is on the parties carrying out excavations or any other works to ensure the exact location of the Irish Water underground network is identified prior to excavations or any other works being carried out. Service connection pipes are not generally shown but their presence should be anticipated.

General Notes:

1) The initial assessment referred to above is carried out taking into account water demand and wastewater discharge volumes and infrastructure details on the date of the assessment. **The availability of capacity may change at any date after this assessment.**
2) This feedback does not constitute a contract in whole or in part to provide a connection to any Irish Water infrastructure. All feasibility assessments are subject to the constraints of the Irish Water Capital Investment Plan.
3) The feedback provided is subject to a Connection Agreement/contract being signed at a later date.
4) A Connection Agreement will be required to commencing the connection works associated with the enquiry this can be applied for at https://www.water.ie/connections/get-connected/
5) A Connection Agreement cannot be issued until all statutory approvals are successfully in place.
6) Irish Water Connection Policy/ Charges can be found at https://www.water.ie/connections/information/connection-charges/
7) Please note the Confirmation of Feasibility does not extend to your fire flow requirements.
8) Irish Water is not responsible for the management or disposal of storm water or ground waters. You are advised to contact the relevant Local Authority to discuss the management or disposal of proposed storm water or ground water discharges
9) To access Irish Water Maps email datarequests@water.ie
10) All works to the Irish Water infrastructure, including works in the Public Space, shall have to be carried out by Irish Water.

If you have any further questions, please contact Marko Komso from the design team on 022 54611 or email mkomso@water.ie For further information, visit **www.water.ie/connections.**

Yours sincerely,



Yvonne Harris

Head of Customer Operations

Appendix G Irish Water Statement of Design Acceptance

Damien Egan
Punch Consulting Engineers
97 Henry Street
V94YC2H
Co.Limerick
Ireland

Uisce Éireann
Bosca OP 448
Oifig Sheachadta na
Cathrach Theas
Cathair Chorcaí

Irish Water
PO Box 448,
South City
Delivery Office,
Cork City.

www.water.ie

4 April 2022

Re: Design Submission for Greatconnell, Newbridge, Co. Kildare (the "Development") (the "Design Submission") / Connection Reference No: CDS20007443

Dear Damien Egan,

Many thanks for your recent Design Submission.

We have reviewed your proposal for the connection(s) at the Development. Based on the information provided, which included the documents outlined in Appendix A to this letter, Irish Water has no objection to your proposals.

This letter does not constitute an offer, in whole or in part, to provide a connection to any Irish Water infrastructure. Before you can connect to our network you must sign a connection agreement with Irish Water. This can be applied for by completing the connection application form at www.water.ie/connections. Irish Water's current charges for water and wastewater connections are set out in the Water Charges Plan as approved by the Commission for Regulation of Utilities (CRU)(https://www.cru.ie/document_group/irish-waters-water-charges-plan-2018/).

You the Customer (including any designers/contractors or other related parties appointed by you) is entirely responsible for the design and construction of all water and/or wastewater infrastructure within the Development which is necessary to facilitate connection(s) from the boundary of the Development to Irish Water's network(s) (the "**Self-Lay Works**"), as reflected in your Design Submission. Acceptance of the Design Submission by Irish Water does not, in any way, render Irish Water liable for any elements of the design and/or construction of the Self-Lay Works.

If you have any further questions, please contact your Irish Water representative:
Name: Paul Lowry
Phone:
Email: paullowr@water.ie

Yours sincerely,

Yvonne Harris

Yvonne Harris
Head of Customer Operations

Appendix A

Document Title & Revision

- 192229-PUNCH-XX-XX-DR-C-0101 - C02 PROPOSED DRAINAGE LAYOUT
- 192229-PUNCH-XX-XX-DR-C-0102 - C02 PROPOSED DRAINAGE LAYOUT
- 192229-PUNCH-XX-XX-DR-C-0103 - C02 PROPOSED DRAINAGE LAYOUT
- 192229-PUNCH-XX-XX-DR-C-0104 - C02 PROPOSED DRAINAGE LAYOUT
- 192229-PUNCH-XX-XX-DR-C-0175 - C02 PROPOSED FOUL WATER NETWORK LONG SECTIONS
- 192229-PUNCH-XX-XX-DR-C-0176 A0 - PROPOSED FOUL WATER NETWORK LONG SECTIONS
- 192229-PUNCH-XX-XX-DR-C-0177 - C02 PROPOSED FOUL WATER NETWORK LONG SECTIONS
- 192229-PUNCH-XX-XX-DR-C-0178 - C02 PROPOSED FOUL WATER NETWORK LONG SECTIONS
- 192229-PUNCH-XX-XX-DR-C-0179 - C02 PROPOSED FOUL WATER NETWORK LONG SECTIONS
- 192229-PUNCH-XX-XX-DR-C-0180 - C02 PROPOSED FOUL WATER NETWORK LONG SECTIONS
- 192229-PUNCH-XX-XX-DR-C-0181 - C02 PROPOSED FOUL WATER NETWORK LONG SECTIONS
- 192229-PUNCH-XX-XX-DR-C-0182 - C02 PROPOSED FOUL WATER NETWORK LONG SECTIONS
- 192229-PUNCH-XX-XX-DR-C-0183 - C02 PROPOSED FOUL WATER NETWORK LONG SECTIONS
- 192229-PUNCH-XX-XX-DR-C-0184 - C01 PROPOSED FOUL WATER NETWORK LONG SECTIONS

Notes:

- A full detailed design submission for the proposed wastewater pump station(s) shall be submitted at connection application stage and will be subject to detailed design review. The impact of any Irish Water Capital projects will require review and further site design assessment at connection application stage.
- The diversion design for the proposed development shall be design accepted by the diversions@water.ie

*For further information, visit **www.water.ie/connections***

Notwithstanding any matters listed above, the Customer (including any appointed designers/contractors, etc.) is entirely responsible for the design and construction of the Self-Lay Works. Acceptance of the Design Submission by Irish Water will not, in any way, render Irish Water liable for any elements of the design and/or construction of the Self-Lay Works.

Stiúrthóirí / Directors: Cathal Marley (Chairman), Niall Gleeson, Eamon Gallen, Yvonne Harris, Brendan Murphy, Dawn O'Driscoll, Maria O'Dwyer
Oifig Chláraithe / Registered Office: Teach Colvill, 24-26 Sráid Thalbóid, Baile Átha Cliath 1, D01 NP86 / Colvill House, 24-26 Talbot Street, Dublin 1 D01 NP86
Is cuideachta ghníomhaíochta ainmnithe atá faoi theorainn scaireanna é Uisce Éireann / Irish Water is a designated activity company, limited by shares.
Uimhir Chláraithe in Éirinn / Registered in Ireland No.: 530363

Appendix H Irish Water Diversion Confirmation of Feasibility

Aston Limited
C/O Punch Consulting Engineers,
Carnegie House,
Library Road,
Dun Laoghaire,
Co Dublin.
A96 C7W7.

Uisce Éireann
Bosca OP 448
Oifig Sheachadta na
Cathrach Theas
Cathair Chorcaí

Irish Water
PO Box 448,
South City
Delivery Office
Cork City

www.water.ie

28 March 2022

Dear Ms Fenton,

Re: DIV21230 – Great Connell, Newbridge, Co Kildare

Irish Water has reviewed your enquiry in relation to the diversion of an Irish Water Asset application to the existing sewer at – Great Connell, Newbridge, Co Kildare.

Based upon the details you have provided with your enquiry and as assessed by Irish Water, we wish to advise you that Irish Water have no objection to the application to divert the sewer, subject to below conditions and easement agreement being put in place.

1. The construction shall be in strict accordance with drawings number 192229-PUNCH-XX-XX-DR-C-0130-C04, 192229-PUNCH-XX-XX-DR-C-0131-C04, 192229-PUNCH-XX-XX-DR-C-0184-C02 and 192229-PUNCH-XX-XX-DR-C-0508-C01.
2. A CCTV survey must be submitted for the extent of the existing wastewater sewers to be diverted when applying for the wastewater diversion agreement.
3. You shall enter into a deed of grant of easement with Irish Water and shall provide all necessary maps, drawings, schematics or other document or certificates necessary to complete the grant of deed of easement to the satisfaction of Irish Water and having a protected strip of 9metres in width (8.4m plus the diameter of the sewer). see drawing 192229-PUNCH-XX-XX-DR-C-0130-C04.
4. On receipt of planning permission for the development the applicant shall apply for and enter into a diversion agreement with Irish Water for the diversion of the impacted wastewater sewer.

If you have any further questions, please contact Stephen O'Beirne from the diversions team on 083 087 8334 or email sobeirne@water.ie. For further information, visit **www.water.ie/connections.**

Yours sincerely,

Yvonne Harris

Yvonne Harris
Head of Customer Operations

Appendix I Extracts from IGSL Limited Factual Ground Investigation Report (Report No. 23110, April 2021)

Appendix 5

Infiltration Test Records

Soakaway Design f -value from field tests IGSL

Contract: Aston, Greatconnell, Newbridge Contract No. 23110
Test No. SA03 Cycle 1
Engineer: Byrne Looby
Date: 23rd February 2021

Summary of ground conditions

from	to	Description	Ground water
0.00	0.30	Soft brown sandy SILT/CLAY	Moderate seepage at 1.20m
0.30	0.70	Firm brown very sandy SILT/CLAY	
0.70	1.20	Grey very sandy fine to coarse rounded GRAVEL	
		(Note: Slumping of sands and gravels reduced pit depth to 1.15)	

Field Data

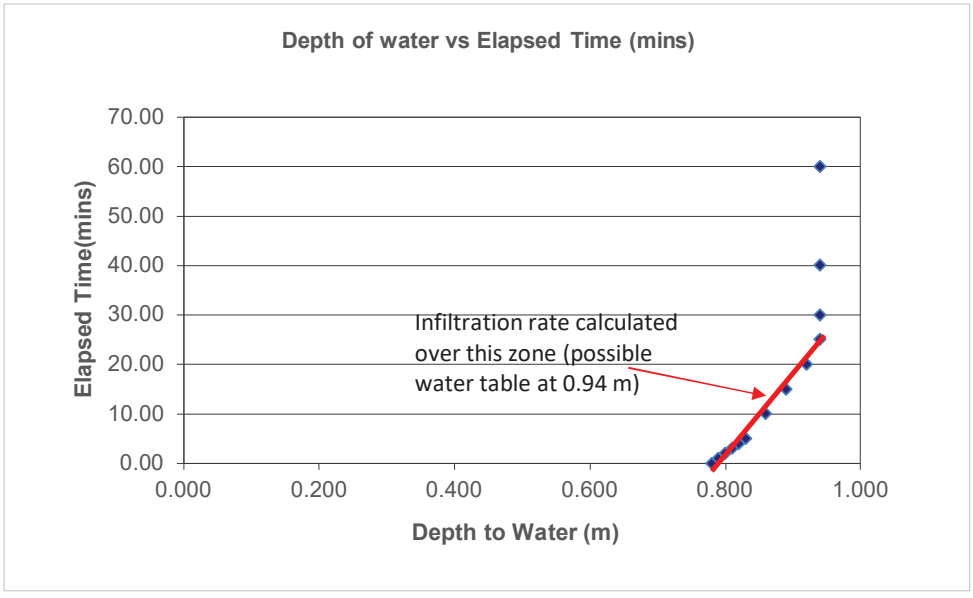
Depth to Water (m)	Elapsed Time (min)	
0.780	0.00	Start of infiltration
0.790	1.00	
0.800	2.00	
0.810	3.00	
0.820	4.00	
0.830	5.00	
0.860	10.00	
0.890	15.00	
0.920	20.00	
0.940	25.00	End of infiltration
0.940	30.00	
0.940	40.00	
0.940	60.00	

Field Test

Depth of Pit (D)	1.20	m
Width of Pit (B)	0.50	m
Length of Pit (L)	1.30	m
Initial depth to Water =	0.78	m
Final depth to water =	0.94	m
Elapsed time (mins)=	25.00	
Top of permeable soil		m
Base of permeable soil		m
Base area=	0.65	m2
*Av. side area of permeable stratum over test period=	1.224	m2
Total Exposed area =	1.874	m2

Infiltration rate (f) = Volume of water used/unit exposed area / unit time

f= 0.0022 m/min or 3.69975E-05 m/sec



Soakaway Design f -value from field tests IGSL

Contract: Aston, Greatconnell, Newbridge Contract No. 23110
Test No. SA05 Cycle 1
Engineer: Byrne Looby
Date: 23rd February 2021

Summary of ground conditions

from	to	Description	Ground water
0.00	0.30	Soft brown sandy SILT/CLAY	
0.30	1.50	Grey very sandy fine to coarse rounded GRAVEL	None observed
		(Note: Slumping of sands and gravels reduced pit depth to 1.41)	

Field Data

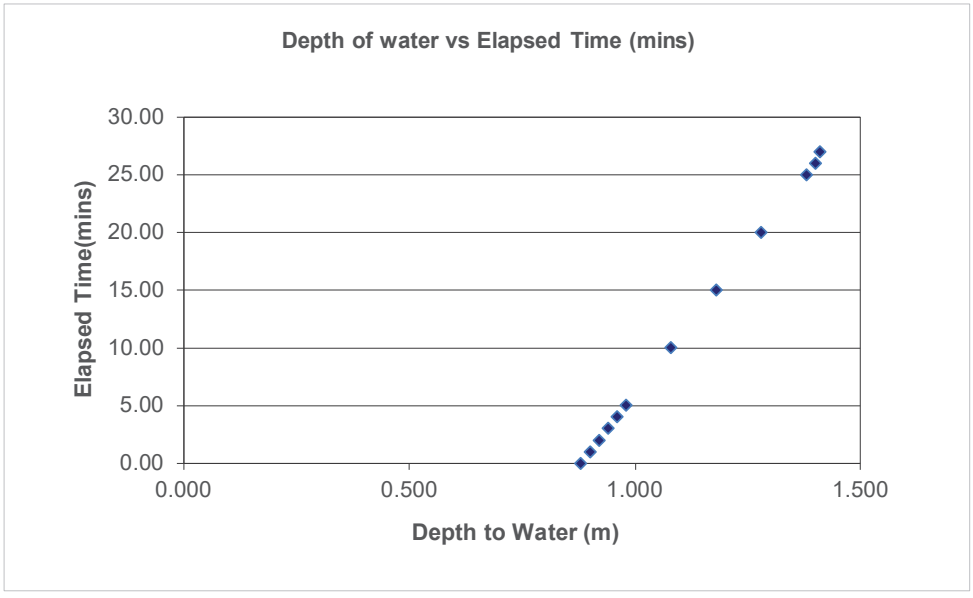
Depth to Water (m)	Elapsed Time (min)
0.880	0.00
0.900	1.00
0.920	2.00
0.940	3.00
0.960	4.00
0.980	5.00
1.080	10.00
1.180	15.00
1.280	20.00
1.380	25.00
1.400	26.00
1.410	27.00

Field Test

Depth of Pit (D)	1.50	m
Width of Pit (B)	0.50	m
Length of Pit (L)	1.50	m
Initial depth to Water =	0.88	m
Final depth to water =	1.41	m
Elapsed time (mins)=	27.00	
Top of permeable soil		m
Base of permeable soil		m
Base area=	0.75	m2
*Av. side area of permeable stratum over test period=	1.42	m2
Total Exposed area =	2.17	m2

Infiltration rate (f) = Volume of water used/unit exposed area / unit time

f= 0.0068 m/min or 0.000113074 m/sec



Soakaway Design f -value from field tests IGSL

Contract: Aston, Greatconnell, Newbridge Contract No. 23110
Test No. SA05 Cycle 2
Engineer: Byrne Looby
Date: 23rd February 2021

Summary of ground conditions

from	to	Description	Ground water
0.00	0.30	Soft brown sandy SILT/CLAY	
0.30	1.50	Grey very sandy fine to coarse rounded GRAVEL	None observed
		(Note: Slumping of sands and gravels reduced pit depth to 1.41)	

Field Data

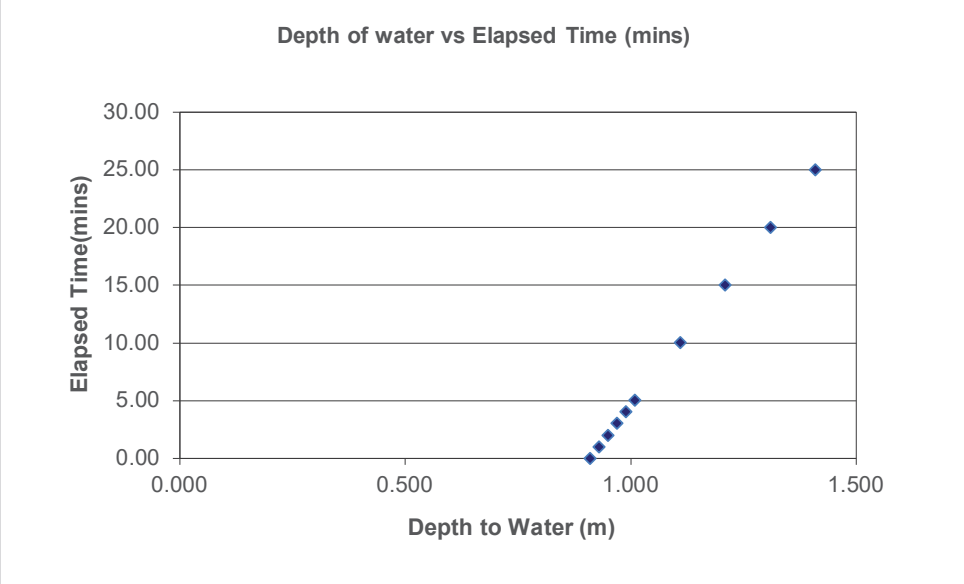
Depth to Water (m)	Elapsed Time (min)
0.910	0.00
0.930	1.00
0.950	2.00
0.970	3.00
0.990	4.00
1.010	5.00
1.110	10.00
1.210	15.00
1.310	20.00
1.410	25.00

Field Test

Depth of Pit (D)	1.50	m
Width of Pit (B)	0.50	m
Length of Pit (L)	1.50	m
Initial depth to Water =	0.91	m
Final depth to water =	1.41	m
Elapsed time (mins)=	25.00	
Top of permeable soil		m
Base of permeable soil		m
Base area=	0.75	m2
*Av. side area of permeable stratum over test period=	1.36	m2
Total Exposed area =	2.11	m2

Infiltration rate (f) = Volume of water used/unit exposed area / unit time

f= 0.0071 m/min or 0.000118483 m/sec



Soakaway Design f -value from field tests IGSL

Contract: Aston, Greatconnell, Newbridge Contract No. 23110
Test No. SA07 Cycle 1
Engineer: Byrne Looby
Date: 23rd February 2021

Summary of ground conditions

from	to	Description	Ground water
0.00	0.30	Brown sandy SILT/CLAY	
0.30	0.70	Brown very silty fine to medium SAND	None Observed
0.70	1.50	Grey silty very sandy fine to coarse rounded GRAVEL	
		(Note: Slumping of sands and gravels reduced pit depth to 1.25)	

Field Data

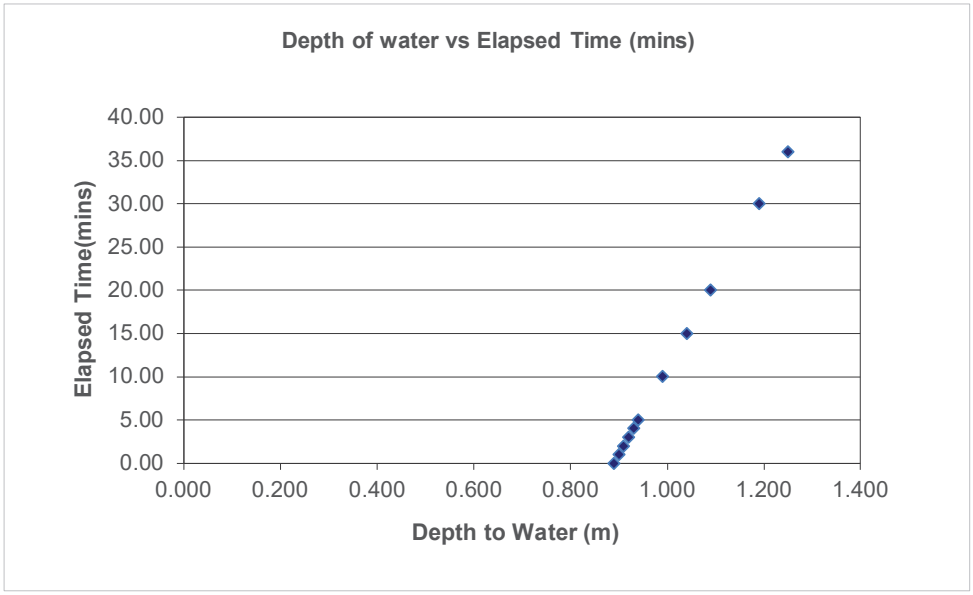
Depth to Water (m)	Elapsed Time (min)
0.890	0.00
0.900	1.00
0.910	2.00
0.920	3.00
0.930	4.00
0.940	5.00
0.990	10.00
1.040	15.00
1.090	20.00
1.190	30.00
1.250	36.00

Field Test

Depth of Pit (D)	1.50	m
Width of Pit (B)	0.50	m
Length of Pit (L)	1.50	m
Initial depth to Water =	0.89	m
Final depth to water =	1.25	m
Elapsed time (mins)=	36.00	
Top of permeable soil		m
Base of permeable soil		m
Base area=	0.75	m2
*Av. side area of permeable stratum over test period=	1.72	m2
Total Exposed area =	2.47	m2

Infiltration rate (f) = Volume of water used/unit exposed area / unit time

f= 0.003 m/min or 5.06073E-05 m/sec



Soakaway Design f -value from field tests IGSL

Contract: Aston, Greatconnell, Newbridge Contract No. 23110
Test No. SA07 Cycle 2
Engineer: Byrne Looby
Date: 23rd February 2021

Summary of ground conditions

from	to	Description	Ground water
0.00	0.30	Brown sandy SILT/CLAY	
0.30	0.70	Brown very silty fine to medium SAND	None Observed
0.70	1.50	Grey silty very sandy fine to coarse rounded GRAVEL	
		(Note: Slumping of sands and gravels reduced pit depth to 1.25)	

Field Data

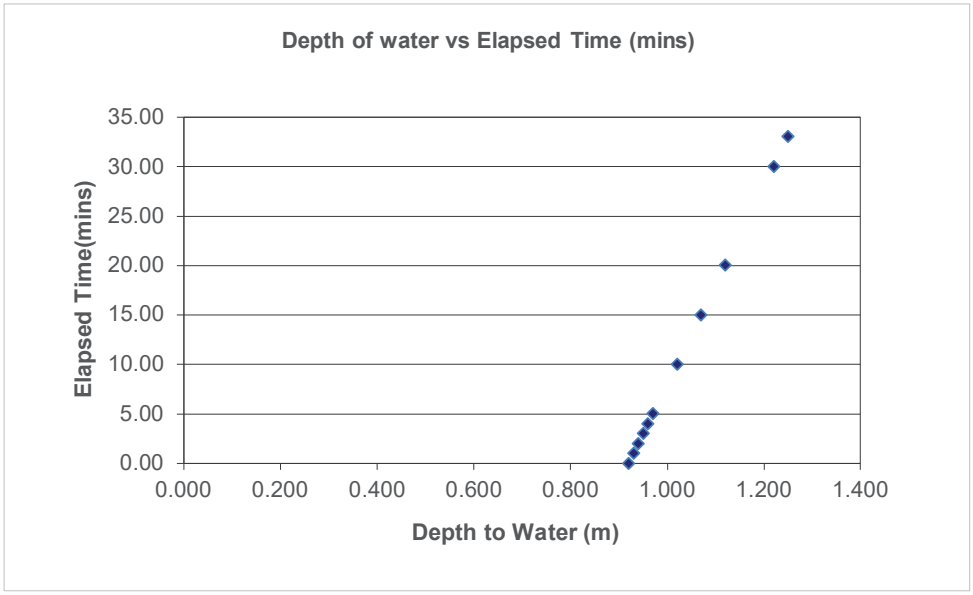
Depth to Water (m)	Elapsed Time (min)
0.920	0.00
0.930	1.00
0.940	2.00
0.950	3.00
0.960	4.00
0.970	5.00
1.020	10.00
1.070	15.00
1.120	20.00
1.220	30.00
1.250	33.00

Field Test

Depth of Pit (D)	1.50	m
Width of Pit (B)	0.50	m
Length of Pit (L)	1.50	m
Initial depth to Water =	0.92	m
Final depth to water =	1.25	m
Elapsed time (mins)=	33.00	
Top of permeable soil		m
Base of permeable soil		m
Base area=	0.75	m2
*Av. side area of permeable stratum over test period=	1.66	m2
Total Exposed area =	2.41	m2

Infiltration rate (f) = Volume of water used/unit exposed area / unit time

f= 0.0031 m/min or 5.18672E-05 m/sec



Soakaway Design f -value from field tests IGSL

Contract: Aston, Greatconnell, Newbridge Contract No. 23110
Test No. SA11 Cycle 1
Engineer: Byrne Looby
Date: 23rd February 2021

Summary of ground conditions

from	to	Description	Ground water
0.00	0.30	Brown slightly gravelly sandy SILT/CLAY	Moderate seepage at 1.20m
0.30	1.30	Grey silty very sandy fine to coarse rounded GRAVEL with cobbles	

Note: Two cycles conducted with results of the first cycle below.

Field Data

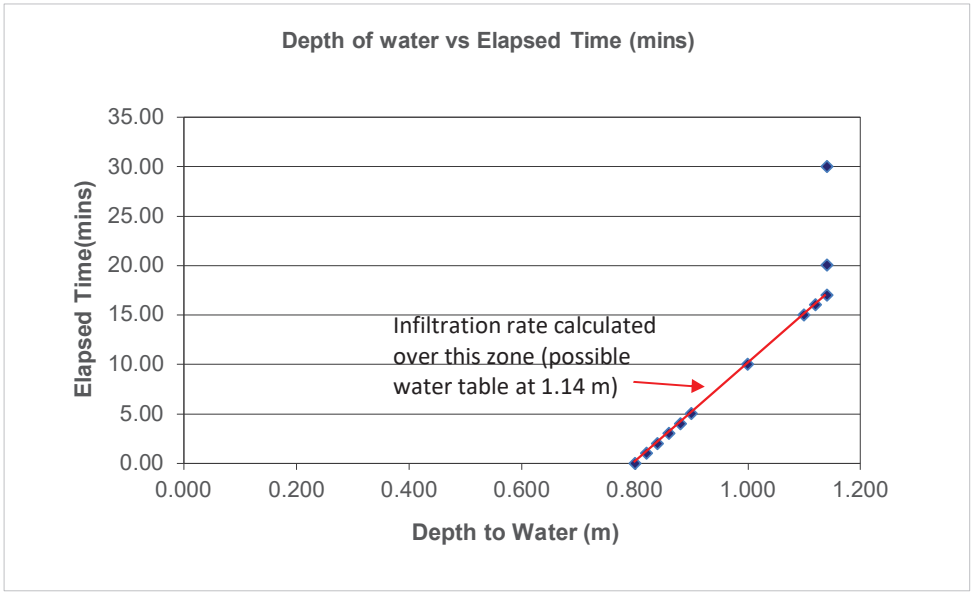
Depth to Water (m)	Elapsed Time (min)
0.800	0.00
0.820	1.00
0.840	2.00
0.860	3.00
0.880	4.00
0.900	5.00
1.000	10.00
1.100	15.00
1.120	16.00
1.140	17.00
1.140	20.00
1.140	30.00

Field Test

Depth of Pit (D)	1.30	m
Width of Pit (B)	0.50	m
Length of Pit (L)	1.50	m
Initial depth to Water =	0.80	m
Final depth to water =	1.14	m
Elapsed time (mins)=	17.00	
Top of permeable soil		m
Base of permeable soil		m
Base area=	0.75	m2
*Av. side area of permeable stratum over test pe	1.32	m2
Total Exposed area =	2.07	m2

Infiltration rate (f) = Volume of water used/unit exposed area / unit time

f= 0.0072 m/min or 0.000120773 m/sec



Soakaway Design f -value from field tests IGSL

Contract: Aston, Greatconnell, Newbridge Contract No. 23110
Test No. SA11 Cycle 2
Engineer: Byrne Looby
Date: 23rd February 2021

Summary of ground conditions

from	to	Description	Ground water
0.00	0.30	Brown slightly gravelly sandy SILT/CLAY	Moderate seepage at 1.20m
0.30	1.30	Grey silty very sandy fine to coarse rounded GRAVEL with cobbles	

Note: Two cycles conducted with results of the second cycle below.

Field Data

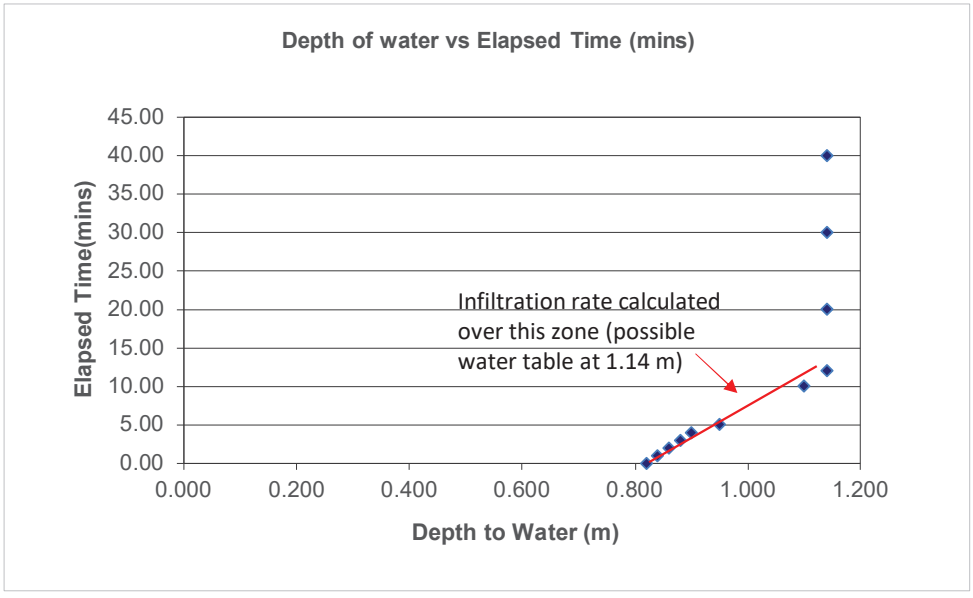
Depth to Water (m)	Elapsed Time (min)
0.820	0.00
0.840	1.00
0.860	2.00
0.880	3.00
0.900	4.00
0.950	5.00
1.100	10.00
1.140	12.00
1.140	20.00
1.140	30.00
1.140	40.00

Field Test

Depth of Pit (D)	1.30	m
Width of Pit (B)	0.50	m
Length of Pit (L)	1.50	m
Initial depth to Water =	0.82	m
Final depth to water =	1.14	m
Elapsed time (mins)=	12.00	
Top of permeable soil		m
Base of permeable soil		m
Base area=	0.75	m2
*Av. side area of permeable stratum over test period=	1.28	m2
Total Exposed area =	2.03	m2

Infiltration rate (f) = Volume of water used/unit exposed area / unit time

f= 0.0099 m/min or 0.000164204 m/sec



Soakaway Design f -value from field tests IGSL

Contract: Aston, Greatconnell, Newbridge Contract No. 23110
Test No. SA13 Cycle 1
Engineer: Byrne Looby
Date: 23rd February 2021

Summary of ground conditions

from	to	Description	Ground water
0.00	0.30	Soft brown sandy SILT/CLAY	Moderate seepage at 1.00m
0.30	1.00	Firm grey-brown very sandy SILT/CLAY	
1.00	1.20	Grey very sandy fine to coarse rounded GRAVEL	
		(Note: Slumping of sands and gravels reduced pit depth to 1.15)	

Field Data

Depth to Water (m)	Elapsed Time (min)
0.750	0.00
0.750	2.00
0.750	4.00
0.750	6.00
0.750	4.00
0.750	5.00
0.740	10.00
0.740	15.00
0.740	20.00
0.740	25.00
0.730	30.00
0.730	40.00
0.730	60.00

Field Test

Depth of Pit (D)	1.20	m
Width of Pit (B)	0.50	m
Length of Pit (L)	1.30	m
Initial depth to Water =	0.75	m
Final depth to water =	0.73	m
Elapsed time (mins)=	30.00	
Top of permeable soil		m
Base of permeable soil		m

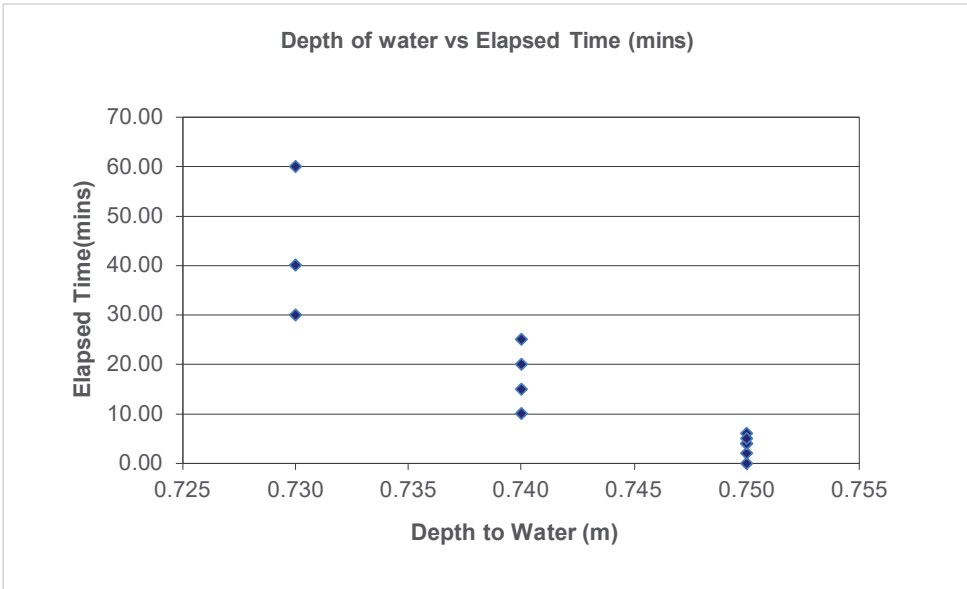
Note: Water level rose due to influx of groundwater

Base area=	0.65	m2
*Av. side area of permeable stratum over test period=	1.656	m2
Total Exposed area =	2.306	m2

Infiltration rate (f) = Volume of water used/unit exposed area / unit time

f= 0 m/min or 0 m/sec

Water level rose due to influx of groundwater - test failed



Soakaway Design f -value from field tests IGSL

Contract: Aston, Greatconnell, Newbridge Contract No. 23110
Test No. SA16 Cycle 1
Engineer: Byrne Looby
Date: 23rd February 2021

Summary of ground conditions

from	to	Description	Ground water
0.00	0.30	Soft brown sandy SILT/CLAY	
0.30	1.45	Firm brown very sandy SILT/CLAY	None observed
1.45	2.00	Grey very sandy fine to coarse rounded GRAVEL	
		(Note: Slumping of sands and gravels reduced pit depth to 1.75)	

Field Data

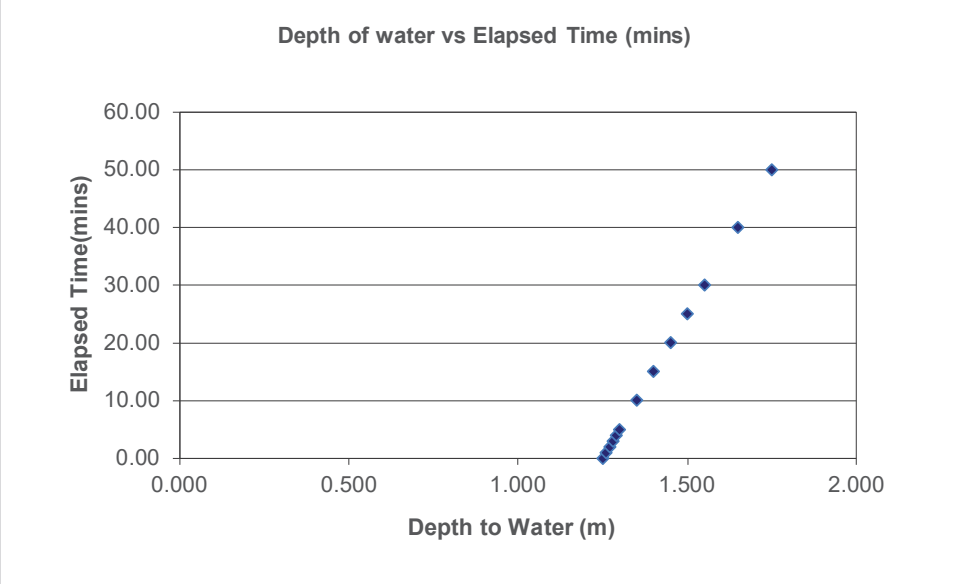
Depth to Water (m)	Elapsed Time (min)
1.250	0.00
1.260	1.00
1.270	2.00
1.280	3.00
1.290	4.00
1.300	5.00
1.350	10.00
1.400	15.00
1.450	20.00
1.500	25.00
1.550	30.00
1.650	40.00
1.750	50.00

Field Test

Depth of Pit (D)	2.00	m
Width of Pit (B)	0.50	m
Length of Pit (L)	1.60	m
Initial depth to Water =	1.25	m
Final depth to water =	1.75	m
Elapsed time (mins)=	50.00	
Top of permeable soil		m
Base of permeable soil		m
Base area=	0.8	m2
*Av. side area of permeable stratum over test period=	2.1	m2
Total Exposed area =	2.9	m2

Infiltration rate (f) = Volume of water used/unit exposed area / unit time

f= 0.0028 m/min or 4.5977E-05 m/sec



Soakaway Design f -value from field tests IGSL

Contract: Aston, Greatconnell, Newbridge Contract No. 23110
Test No. SA16 Cycle 2
Engineer: Byrne Looby
Date: 23rd February 2021

Summary of ground conditions

from	to	Description	Ground water
0.00	0.30	Soft brown sandy SILT/CLAY	None observed
0.30	1.45	Firm brown very sandy SILT/CLAY	
1.45	2.00	Grey very sandy fine to coarse rounded GRAVEL	
		(Note: Slumping of sands and gravels reduced pit depth to 1.75)	

Field Data

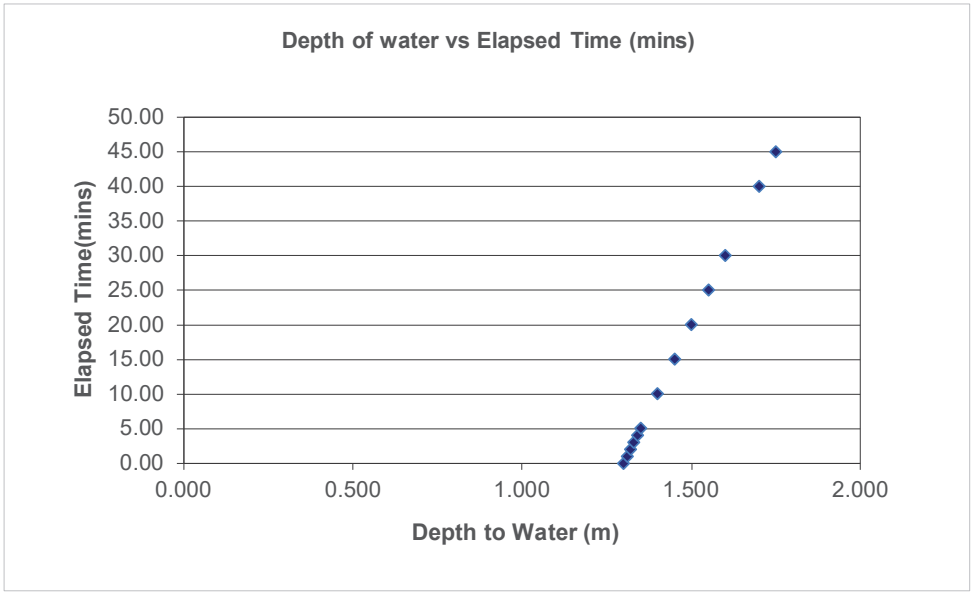
Depth to Water (m)	Elapsed Time (min)
1.300	0.00
1.310	1.00
1.320	2.00
1.330	3.00
1.340	4.00
1.350	5.00
1.400	10.00
1.450	15.00
1.500	20.00
1.550	25.00
1.600	30.00
1.700	40.00
1.750	45.00

Field Test

Depth of Pit (D)	2.00	m
Width of Pit (B)	0.50	m
Length of Pit (L)	1.60	m
Initial depth to Water =	1.30	m
Final depth to water =	1.75	m
Elapsed time (mins)=	45.00	
Top of permeable soil		m
Base of permeable soil		m
Base area=	0.8	m2
*Av. side area of permeable stratum over test period=	1.995	m2
Total Exposed area =	2.795	m2

Infiltration rate (f) = Volume of water used/unit exposed area / unit time

f= 0.0029 m/min or 4.77042E-05 m/sec



Appendix 7

Groundwater Monitoring

Groundwater Monitoring

Project No.	23110 - Great Connell, Newbridge
Client	Aston Lands Ltd.
Date	06-Apr-21
Engineer	Byrne Looby
Equipment	Dipmeter / Groundwater Monitor
Time/Weather/Temperature	9.00am-10.30am. 8 Degrees Celsius. Sunny, Dry.
Location ID	**BH02**
Water Level (mbgl)	**1.10m**
Location ID	**BH05**
Water Level (mbgl)	**2.30m**
Location ID	**BH07**
Water Level (mbgl)	**2.15m**
Location ID	**BH09**
Water Level (mbgl)	**1.90m**
Location ID	**BH12**
Water Level (mbgl)	**1.65m**
Location ID	**BH15**
Water Level (mbgl)	**1.70m**
Location ID	**BH17**
Water Level (mbgl)	**1.50m**
Location ID	**BH23**
Water Level (mbgl)	**1.50m**
Location ID	**BH29**
Water Level (mbgl)	**2.35m**
Location ID	**BH30**
Water Level (mbgl)	**1.85m**

Appendix 10

As-Surveyed Site Plans

ExpertGPS

23110 Aston Lands, Great Connell, Newbridge

50 m

MN

2°23'

ExpertGPS

23110 Aston Lands, Great Connell, Newbridge

10 m

MN

2°23'

Appendix J Additional Groundwater Monitoring Records

Table 1: B1747 Greatconnell
Groundwater Monitoring

Borehole ID	Date Standpipe Installed	Ground Level (mAOD)	Total Depth of Standpipe (mBGL)	Bottom of Response Zone (mBGL)	Top of Response Zone (mBGL)	Response Strata (Shallow to deep)	Date	Time	Water Level (mBGL)	Water Level (m AOD)	Comment
BH02	16/03/2021	86.31	5.7	5.7	1	GRAVEL, CLAY, GRAVEL, CLAY	22/04/2021	10:04:00	1.15	**85.16**	Top of steel casing is 0.25m above ground level
							18/05/2021	10:31:00	1.17	**85.14**	
							24/06/2021	11:33	1.25	**85.06**	
							20/07/2021	09:23	1.22	**85.09**	
							03/11/2021	10:40	1.01	**85.3**	
							26/11/2021	10:07	1.15	**85.16**	
							11/01/2022	12:19	0.93	**85.38**	
BH5A	15/02/2021	87.58	5.14	5.14	1	GRAVEL, SAND	22/04/2021	09:48:00	2.175	**85.405**	Top of steel casing is 0.36m above ground level
							18/05/2021	10:25:00	2.33	**85.25**	
							24/06/2021	10:32	2.32	**85.26**	
							20/07/2021	10:38	2.39	**85.19**	
							03/11/2021	10:10	2.28	**85.3**	
							26/11/2021	09:23	2.39	**85.19**	
							11/01/2022	11:40	2.18	**85.4**	
BH7	29/03/2021	87.7	7.98	7.98	4	GRAVEL	22/04/2021	10:13:00	2.24	**85.46**	
							18/05/2021	10:53:00	2.28	**85.42**	
							24/06/2021	NM	NM	**NM**	
							20/07/2021	09:48	2.3	**85.4**	
							03/11/2021	10:47	2.08	**85.62**	
							26/11/2021	09:49	2.23	**85.47**	
							11/01/2022	12:02	2.06	**85.64**	
BH12	12/02/2021	87.38	5.81	5.81	1	GRAVEL, SILT/CLAY, SAND, GRAVEL.	22/04/2021	09:54:00	1.84	**85.54**	Top of steel casing is 0.19m above ground level
							18/05/2021	10:22:00	1.92	**85.46**	
							24/06/2021	10:38	1.91	**85.47**	
							20/07/2021	11:04	2.03	**85.35**	
							03/11/2021	10:15	1.945	**85.435**	
							26/11/2021	09:27	2.02	**85.36**	
							11/01/2022	12:24	1.69	**85.69**	
BH15	02/03/2021	87.57	5.82	5.82	1	GRAVEL, SILT/CLAY, GRAVEL.	22/04/2021	10:46:00	1.77	**85.8**	Top of steel casing is 0.26m above ground level
							18/05/2021	10:57:00	1.82	**85.75**	
							24/06/2021	11:41	1.84	**85.73**	
							20/07/2021	09:58	1.88	**85.69**	
							03/11/2021	10:33	1.68	**85.89**	
							26/11/2021	09:43	1.81	**85.76**	
							11/01/2022	11:57	1.54	**86.03**	
BH17	25/02/2021	88.54	9.41	9.41	1	GRAVEL, SAND, CLAY	22/04/2021	10:54:00	2.64	**85.9**	Top of steel casing is 0.3m above ground level
							18/05/2021	11:00:00	2.745	**85.795**	
							24/06/2021	10:53	2.73	**85.81**	
							20/07/2021	10:06	2.86	**85.68**	
							03/11/2021	10:23	2.92	**85.62**	
							26/11/2021	09:35	2.89	**85.65**	
							11/01/2022	11:50	2.53	**86.01**	
BH19	09/03/2021	NM	NM	NM	NM	GRAVEL	22/04/2021	NM	NM	**NM**	
							18/05/2021	NM	NM	**NM**	
							24/06/2021	13:02	1.6		
							03/11/2021	NM	NM	**NM**	
							26/11/2021	NM	NM	**NM**	
							11/01/2022	NM	NM	**NM**	
BH23	23/02/2021	87.8	7.32	7.32	1	GRAVEL, CLAY, GRAVEL, CLAY	22/04/2021	10:57:00	1.63	**86.17**	Top of steel casing is 0.28m above ground level
							18/05/2021	11:03:00	1.755	**86.045**	
							24/06/2021	10:57	1.81	**85.99**	
							20/07/2021	10:13	1.88	**85.92**	
							03/11/2021	10:27	1.94	**85.86**	
							26/11/2021	09:39	1.92	**85.88**	
							11/01/2022	11:53	1.54	**86.26**	
BH29	25/03/2021	-	13.77	13.77	1	GRAVEL, SILT/CLAY, GRAVEL.	22/04/2021	10:24:00	2.38		Top of steel casing is 0.26m above ground level
							18/05/2021	NM	NM	**NM**	
							24/06/2021	NM	NM	**NM**	
							03/11/2021	11:02	2.15		
							26/11/2021	10:00	2.35		
							11/01/2022	12:10	2.12		
BH30	19/03/2021	87.01	9.15	9.15	1	GRAVEL	22/04/2021	10:20	1.77	**85.24**	Top of steel casing is 0.39m above ground level
							18/05/2021	10:34	1.815	**85.195**	
							24/06/2021	NM	NM	**NM**	
							20/07/2021	09:33	1.84	**85.17**	
							03/11/2021	10:52	1.66	**85.35**	
							26/11/2021	09:52	1.81	**85.2**	
							11/01/2022	12:07	1.63	**85.38**	
Comments											
Weather											
Air Temperature											
Status of instruments											
Site observations											
Site observations 2											
Site observations 3											
Site observations 4											

11/01/2022

NM = Not Measured