APPENDIX 4-3

CIVILS WORKS DESIGN REPORT

TOBIN

Kingston Stables Ltd.

Residential Development at Kingston, Knocknacarra, Galway.

Civil Works Design Report

BUILT ON KNOWLEDGE

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1. INTRODUCTION

TOBIN were appointed by Kingston Stables Ltd. to provide engineering consultancy services for a proposed Large Residential Development (LRD) at Kingston, Knocknacarra, Galway, off the Western Distributor Road in Knocknacarra. The site development description is as follows:

Planning permission is sought by Kingston Stables Ltd for development of a Large-Scale Residential Development (LRD) for a 10-year planning permission, on a site which extends to 5.37 ha on lands located at Knocknacarra, Galway.

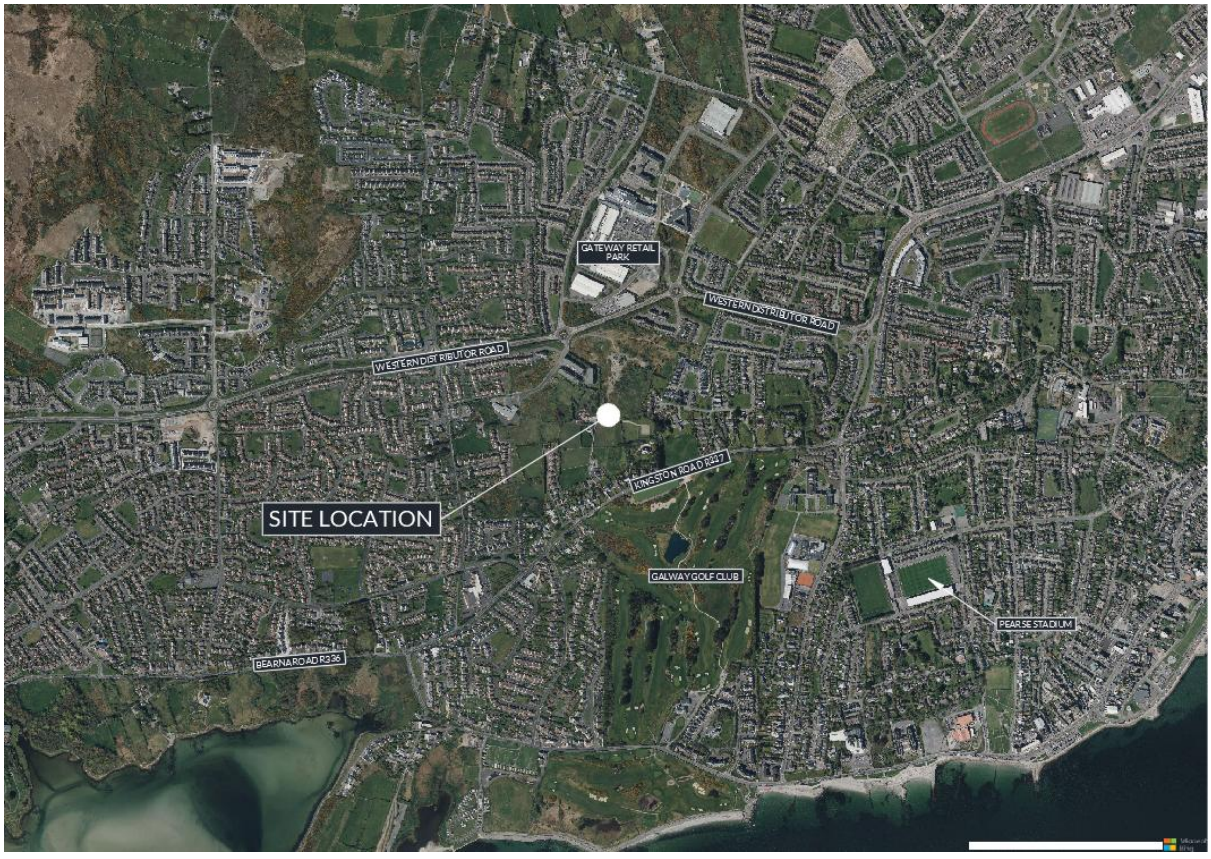
The proposed development will consist of the following:

1. Provision of 362 no. residential units in 4 no. development areas with a mix of apartment and house types on a site area of 5.37 ha. The buildings range between 2 no. and 6 no. storeys in height. The development will comprise the following:
    - 4 no. 2-bed townhouses;
    - 40 no. 3-bed townhouses;
    - 21 no. 4-bed townhouses;
    - 15 no. 1-bedroom duplex apartments;
    - 46 no. 2-bedroon duplex apartments;
    - 15 no. 2-bedroom duplex houses;
    - 46 no. 3-bedroom duplex houses;
    - 114 no. 1-bedroom apartments;
    - 56 no. 2-bedroon apartments;
    - 5 no. 3-bedroom apartments.
2. Demolition of existing structures (333.8 sqm);
3. Vehicular access to the proposed development from a permitted road (Planning Reference 24/60370 refers);
4. The provision of new active travel cycle and pedestrian access from Millers Lane;
5. Upgrades to the existing access at Kingston Road
6. The provision of a childcare facility (440 sq.m.);
7. The provision of public open space;
8. The provision of 665 no. bicycle parking spaces;
9. The provision of 313 no. car parking spaces;
10. Public lighting, bin stores, signage, services, ESB substation, site landscaping and all ancillary site development and enabling works.

An Environmental Impact Assessment (EIAR) and Natura Impact Statement (NIS) have been prepared in respect of the proposed development.

This report outlines the civil works planning submission for the proposed development, detailing the wastewater drainage, proposed surface water drainage, watermain design and connection details, roads design, and SuDS measures. The site location is presented in Figure 1 below, and the site layout is shown graphically in the design team drawings accompanying this application. This report should be read in conjunction with the foul and storm drainage, watermain, roads, and SuDS design drawings submitted as part of the planning application. It is to be noted that this planning application forms part of a wider strategic 'Masterplan' for the comprehensive development of the area. All aspects of the proposed development—including water supply, wastewater infrastructure, and surface water management—have been fully integrated with and informed by the overarching Masterplan for the area. Further details regarding the design intent, phasing, and integration with surrounding lands are provided in the Architect's Design Statement, submitted separately as part of this application.

Figure 1 – Site Location (Microsoft Bing)



1.1 WASTEWATER DRAINAGE OVERVIEW

Wastewater generated from the proposed development will outfall to an existing Uisce Eireann (UE) owned 225mm foul sewer line located west of the development along the southern arm junction of the adjacent Western Distributor Road roundabout and Altan Road. The 225mm foul sewer outfalls to an existing Uisce Eireann 375mm foul network. It is envisaged that the 225mm sewer line will require upgrading to a 300mm sewer line to service the development as the number of units flowing through this network will exceed the maximum 330 units allowable for a 225mm pipe.

The foul sewer network has been designed using Causeway Flow drainage modelling software. All gravity pipes will be thermoplastic structured wall pipes, with diameters ranging from 150mm to 225mm. Gradients will vary between 1/21 and 1/200, and flow velocities will remain within the required range of 0.75 to 2.5 m/s, in accordance with Uisce Éireann standards. The proposed foul sewer network is presented graphically on engineering design drawings that accompany this report as separate documents.

A pre-connection application was submitted to Uisce Eireann for the wastewater demand from the proposed development, and a Confirmation of Feasibility (CoF) statement has been received.

All foul sewer designs were also submitted to Uisce Éireann for design vetting to obtain a Statement of Design Acceptance (SoDA) prior to the submission of the planning application. Both the CoF and SoDA are included in **Appendix E**.

Following the grant of planning permission, the final sewer designs will be submitted to Uisce Éireann for review and approval prior to the issuance of a connection offer.

1.2 SURFACE WATER DRAINAGE OVERVIEW

The storm water drainage infrastructure incorporates the philosophies of nature-based Sustainable Drainage Systems, (SuDS), to manage surface water runoff quantity and quality in line with the Galway City Development Plan 2023-2029, Policy 9.5. However, in accordance with the CIRIA SuDS guidelines, exceedance measures have been provided in that seasonal under-performance or outright failure of surface SuDS features can be accommodated by a conventional drainage network design, and in the instance that any or all surface SuDS features are overwhelmed, exceedance flow is directed back into the piped network. The piped network has been sized to achieve controlled outflows without the presence of surface SuDS features, thereby providing an additional factor of safety to the stormwater management system.

Infiltration testing has been conducted on site to establish infiltration rates at various strategic locations for possible reduction of attenuation units and inclusion of soakaways and other proposed SuDS measures, Refer to **Appendix B** for Soakaway testing locations and results.

The proposed storm water drainage system has been designed to cater for all surface water runoff from all hard surfaces in the proposed development including roadways, roofs, parking areas, etc. All stormwater generated on site from roadways and roofs will discharge via an oil/petrol Interceptor to soakaways/attenuation units to remove possible hydrocarbons. The soakaway/attenuation units have been strategically situated within the site.

The maximum and minimum pipe sizes being between 450mm and 225mm respectively with the maximum and minimum stormwater pipe gradients between 1/50 and 1/450. All velocities at said gradients fall within the limits of 0.75m/sec and 3m/sec as set out in 'Recommendations for Site Development Works' as published by the Department of Environment.

Where there is adequate infiltration storm water will discharge to ground via soakaways, otherwise at a controlled Greenfield runoff rate to the existing 450mm storm sewer network located west of the development along the southern arm junction of the adjacent roundabout and Altan Road. It is stressed that the current design is not reliant fully on infiltration to ground

(in anticipation of extensive bedrock across the site). However, a conservative use of infiltration has been adopted into the design where applicable.

It is proposed to install by-pass separators prior to discharging to the proposed soakaways/attenuation units and existing storm sewer. The separators have been sized to cater for the impermeable areas, i.e., roads, car parking and footpath areas of the site to which they have been allocated.

The entire stormwater network, including the detention basin, have been designed to handle a 100-year storm event plus an additional 20% capacity to account for climate change.

1.3 WATERMAIN OVERVIEW

The watermain layout has been designed in accordance with Uisce Eireann Code of Practice for Watermain Infrastructure IW-CDS-5020-03.

In accordance with Local authority/Uisce Eireann standards, a water meter and Logging Device (Larson Type) are proposed at the entrance of the connection into the proposed site. A sluice valve, strainer and 150mm diameter by-pass arrangement are also proposed to allow for possible disconnection of water meters by the Local Authority/ Uisce Eireann.

A Pre-Connection Enquiry for the water demand from the proposed residential development was submitted to Uisce Éireann, and a subsequent Confirmation of Feasibility (CoF) statement has been received. All watermain designs were also submitted to Uisce Éireann for design vetting to obtain a Statement of Design Acceptance (SoDA) prior to the submission of the planning application. Both the CoF and SoDA are included in **Appendix E**.

Following the grant of planning permission, the final designs will be submitted to Uisce Éireann for review and approval, prior to the issuance of a connection offer.

1.4 ROADS OVERVIEW

Vehicular access is proposed from an existing roundabout on the Western Distributor Road, off the southern arm junction. Due to the large scale of the Masterplan development, upgrade works to the southern arm junction have been permitted by Galway City Council (Planning Reference 24/60370). Currently the junction services Altan, an existing residential development, and Knocknacarra National School. The permitted road layout, (Planning Reference 24/60370), amends the alignment of this road to have the access to the proposed development as the major road, with the school access being the minor road. Discussions have been held with Galway City Council to include arrangements to tie in with the Active Travel Scheme proposed for the area.

At the southern boundary of the site, pedestrian and cyclist access is proposed via an existing laneway off Kingston Road. This laneway will be upgraded in accordance with the *Design Manual for Urban Roads and Streets (DMURS)* and will feature a shared active travel facility for pedestrians and cyclists on the right-hand side upon entry to the development. This access route will extend northward, providing a continuous link through the scheme.

Additional pedestrian and cyclist connections are proposed throughout the development to enhance permeability and promote sustainable modes of transport. Notably, Millers Lane will be extended at the northeast corner of the site, introducing a 4-metre-wide shared pedestrian

and cycleway. This route will traverse the entire development, ensuring connectivity to all key areas.

The proposed maximum speed limit within the development is to be 30km/h, with appropriate traffic control measures where suitable.

Proposed road widths throughout the development will vary from 4.8m for 'Homezone' areas, to 5.5m where footpaths are separated from the vehicle carriageway for pedestrian mobility. All internal roads have been designed in accordance with the requirements of DMURS and the Recommendations for Site Development Works for Housing Areas.

Autotrack vehicle swept path analysis have been completed for the proposed site layout for a Large Car, a Refuse Truck and a Fire Tender to ensure the vehicles can safely manoeuvre around the site.

2. WASTEWATER DRAINAGE NETWORK DESIGN

2.1 INTRODUCTION

All wastewater generated from the proposed development will outfall, via gravity, to an existing Uisce Eireann (UE) owned 225mm foul sewer line located west of the development along the southern arm junction of the adjacent roundabout and Altan Road.

The 225mm foul sewer outfalls to an existing Uisce Eireann 375mm foul network. It is envisaged that the 225mm sewer line will require upgrading to a 300mm sewer line to service the development as the number of units flowing through this network will exceed the maximum 330 units allowable for a 225mm pipe.

The pipework for the wastewater drainage system has been designed to provide for six times the dry weather flow in accordance with the Uisce Eireann's Code of practice and standard details. The proposed foul sewer network has been designed using Causeway Flow modelling software. Modelling outputs and foul sewer long sections from the software are included in **Appendix A**. The existing foul line and proposed foul sewer network and connection is graphically represented on the engineering drainage drawings which accompany this document.

2.2 LOADING RATES

An average rate of 2.7 P.E. per dwelling has been taken for the development to account for the varying unit occupancies. The sewer network has been designed to cater for six times the dry weather flow rate. The occupancy per dwelling figures have been obtained from the Uisce Eireann Codes of Practice as per Wastewater Code of Practice, Appendix B – Gravity Sewer Design Requirements, section 2.2.1 Housing Density & Occupancy.

A flow of 150 litres per head per day plus an additional 10% allowance to account for infiltration within a new development have been considered in the foul sewer design as per Uisce Eireann Code of Practice for Wastewater Infrastructure - Section 3.6 Hydraulic Design for Gravity Sewers.

A pre-connection enquiry was submitted to Uisce Eireann for the wastewater demand of the development and subsequent confirmation of feasibility letter received confirms the existing network has sufficient capacity to cater for the proposed development - **Appendix E**.

2.3 WASTEWATER NETWORK DESIGN

The foul sewer drainage services have been designed to take account of the requirements of the Civil Engineering Specification for the Water Industry (CESWI), subject to the requirements applied to it by Uisce Eireann, as outlined in the Uisce Eireann Code of Practice for Wastewater Infrastructure. Other design guidelines adhered to include the Department of Environment 'Recommendations for Site Development Works for Housing Areas", 1998, and "Sewers for Adoption' published by WRC, UK.

It is proposed that all pipes will be thermoplastic structured wall pipes with the maximum and minimum pipe sizes being between 300mm and 150mm respectively. The maximum and minimum pipe gradients shall fall between 1/30 and 1/200. All velocities at said gradients will fall within the limits of 0.75m/sec and 3m/sec as set out in Uisce Eireann Code of Practice for

Wastewater Infrastructure and 'Recommendations for Site Development Works' as published by the Department of Environment.

The pipework for the drainage system has been designed to provide for six times the dry weather flow in accordance with the Recommendations for Site Development Works as published by the Department of the Environment and Local Government and to Uisce Eireann Code of Practice and Standard Details.

3. SURFACE WATER DRAINAGE NETWORK DESIGN

3.1 INTRODUCTION

The surface water drainage design has been undertaken using Causeway Flow modelling software. The analysis considered both the 1-in-30-year and 1-in-100-year storm events with an additional allowance of 10% and 20% respectively to account for the anticipated impacts of climate change. The design inputs, modelling results, and outputs from the Causeway Flow analysis are included in the appendices of this report. The proposed stormwater drainage networks are illustrated on the engineering drainage and SuDS layout drawings, which accompany this report as separate documents. The design also considers the wider site of the Masterplan for the area, ensuring that any potential future development can be accommodated within the surface water management strategy.

Due to the topography and constraints of the site, the surface water drainage has been split into several networks and catchment areas. There is an existing Galway City Council 450mm surface water network located west of the proposed development. All surface water within development has been designed to flow via gravity and attenuate within the site boundaries. Strategically placed SuDS measures and attenuation tanks will attenuate the surface water prior to any outfall to the existing network at a controlled Greenfield run-off rate using hydrobrake manholes and/or orifices. High-level outfalls have been set at such levels below the lowest ground level on the network should the attenuation storage reach its full capacity to eliminate the risk of flooding in extreme weather events.

The amount of water discharged from the final hydro brake manhole before entering the existing stormwater network has been determined by using the calculated allowable Greenfield Runoff rate for the developable area of the site. The greenfield runoff rate was calculated for the developable area using the site location and the HR Wallingford Greenfield Runoff Tool online. Refer to **Appendix C** for the Greenfield Runoff estimation report for the site.

The surface water entering the network will include run-off from the roadways and parking areas throughout the site and therefore may require the removal of hydrocarbons. Prior to discharge to the existing network the surface water will flow through an oil/petrol interceptor, sized to cater for the catchment area it services, which will remove these hydrocarbons.

Where appropriate, storage units have been lined with a permeable geotextile membrane to facilitate surface water infiltration through the perimeter into the surrounding medium, thereby leveraging any infiltration capacity identified in the surrounding soils. Infiltration testing has been undertaken as part of the site assessment, and the results have been incorporated into the design. While infiltration is not relied upon for all attenuation units, it has been applied selectively where ground conditions have been confirmed to be suitable.

A range of Sustainable Drainage Systems (SuDS) measures—including tree pits, infiltration trenches, swales, and rain gardens—have been strategically located across the development to manage surface water and achieve greenfield runoff rates. These features have been carefully coordinated with the landscape architect throughout the planning and design process to ensure integration with the overall site layout and landscape strategy. Where ground conditions permit, surface water will infiltrate naturally. To ensure resilience and safeguard against exceedance events, each SuDS element will incorporate a high-level outfall connected to the surface water drainage network. This approach aligns with best practice in sustainable urban

drainage and supports compliance with planning policy objectives for climate adaptation and water management.

Precast concrete gullies, including lockable cast iron grating and frame, and drainage kerbs will be provided where needed to collect run-off from road and parking areas to mitigate any flooding. The proposed surface water pipe diameters are between 225mm and 450mm and will be laid at gradients varying between 1/60 and 1/250.

All velocities within said gradients fall within the limits of 0.75 and 3m/sec as set out in 'Recommendations for Site Development Works' as published by the Department for the Environment.

The following parameters formed the basis of the design for all networks:

- A design return period of 1 year has been adopted for the sewer network in accordance with good design practice.
- The rainfall intensity is based on rainfall data received from Met Eireann at the coordinates of the site in question.
- Minimum self-cleansing velocity of 0.75m/s
- M5-60 = 15.400mm
- Ratio R = 0.254

In accordance with the requirements of Galway City Council, a Storm Water Audit has been carried out on the proposed design. The audit report has been submitted as a separate document as part of this planning application.

3.2 SUSTAINABLE URBAN DRAINAGE SYSTEMS

The existing site is currently a greenfield site with no existing surface water drainage or SuDS measures in place. To limit surface water runoff from the site, the surface water drainage for the proposed development has been designed in accordance with the principles of Sustainable Urban Drainage Systems (SuDS) as embodied in the recommendations of the Greater Dublin Strategic Drainage Study (GDSDS) and align with the Galway City Development Plan 2023-2029, Policy 9.5. These address the issue of sustainability by requiring designs to comply with a set of drainage criteria which aim to minimise the impact of urbanisation by replicating the runoff characteristics of the partly brownfield site.

The requirements of SuDS are typically addressed by provision of the following:

- ✓ Interception storage
- ✓ Treatment storage (not required if interception storage is provided)
- ✓ Attenuation storage
- ✓ Long term storage (if this is not required growth rates should not be applied to Q_{bar})

In the case of the subject site, interception storage has been achieved by implementing SuDS measures and attenuation storage tanks. Growth factors have been applied to the allowable discharge for the 100-year event. This means that both treatment storage and long-term storage, neither of which would be practical on this site, are not required.

Consideration has been given to the opportunity for green/blue roofs on this development. However, due to the amply opportunity for ground-level attenuation, the inherent risks of roof-level storage have been designed out. In addition, feasible storage volumes are greater at

ground level than at roof level, which implies that the scale of the *benefit* of storage is greater at ground level, and may be more economically achieved. For these reasons, green/blue roofs have not been incorporated into the proposal.

SuDS measures proposed would be a combination of water butts, (not reflected on the SuDS layout), tree pits, rain gardens, permeable paving (in-curtilage parking only), detention swales and drainage kerbs with infiltration trenches. These measures would seek to achieve interception storage as a minimum. Attenuation storage capacity has been calculated and provided as though no interception storage were provided. Thereby is mitigated any seasonal performance of interception storage measures.

SuDS objectives relate to:

1. Water Quality
2. Water Quantity
3. Amenity
4. Biodiversity

3.2.1 Water Quality

Water quality is managed in the form of the proposed petrol interceptors and the inclusion of nature-based SuDS measures. Drainage kerbs with an infiltration trench, swale or rain garden combination allows for isolation of hydrocarbons for nature-based treatment within green zones adjacent to roads where appropriate. Hydrocarbon-tolerant planting mixes will be used in the SuDS measures adjacent to roads where water treatment will be required.

3.2.2 Water Quantity

The extensive usage of SuDS measures, (as mentioned above) plus additional attenuation structures achieve this requirement throughout the development. The main drainage system is also designed to achieve the required thresholds in the event of localized exceedance of SuDS measures, or seasonally sensitive capacity reductions, thereby ensuring the quantity of water is kept within the site and that greenfield run-off rates are maintained.

3.2.3 Amenity

A number of SuDS measures such as proposed rain gardens, tree pits and detention swales proposed in the landscape plan would meet this requirement. There is scope for further small-scale SuDS features to be developed during the detailed design stage towards the provision of further public amenity and will be considered as part of the landscape plan.

3.2.4 Biodiversity

The landscaping design addresses measures for biodiversity. The SuDS measures proposed support the landscaping measures as might be employed to meet the biodiversity goals of the development.

3.3 SOAKAWAY/ATTENUATION DESIGN

The attenuation units are designed to function as ‘offline’ storage for surface water during extreme storm events, particularly when the network may surcharge. These storage areas will be constructed using cellular units in locations with spatial constraints requiring higher void

ratios, or stone where suitable to reduce void ratios. Storage requirements have been calculated using Causeway Flow. Infiltration testing has been undertaken across the site, and the results have informed the design. Where infiltration capacity has been confirmed, it has been incorporated into the relevant storage areas to reduce their footprint. Infiltration is not relied upon universally, but is applied selectively where ground conditions permit.

The proposed cellular units will be constructed providing a minimum 95% porosity. They will be constructed on a clean stone base which will provide additional capacity. This additional capacity has not been considered in the design of the units. The proposed stone attenuation beds will provide a minimum of 43% porosity and will be wrapped in a permeable or impermeable geotextile membrane, as is appropriate to their location.

Hydrobrake manholes have been installed at strategic locations to control the flow of surface water to allow the soakaway/attenuation areas fill to their capacity.

All storage areas will be sized to attenuate the water generated for the largest storage required over a 48-hour storm period with rainfall depths taken for the 100-year return period + 20% for climate change for sliding durations obtained from Met Eireann.

Outputs, including the storage area information, from Causeway Flow modelling software form part of the appendices of this report and can be sourced in **Appendix B**. The proposed storage locations are shown in the engineering drainage and SuDS layout drawings.

3.4 Oil/Petrol Interceptors

It is proposed to install separators prior to the outfall to the existing surface water network and immediately downstream of any hydrobrake manholes. The surface water will include run-off from the roadways and parking areas therefore may contain hydrocarbons. The installation of the separators will allow for the removal of these pollutants and prevent them for being discharged to the environment. The locations of the separators are shown graphically on the engineering drainage and SuDS layout drawings.

An example of a Separator Product Brochure is presented in **Appendix D**. The separators are selected by capacity based of the catchment area for which they are catering. These separators will also trap sand and silt in surface water runoff prior to outfall allowing for easy removal of the debris. Debris build-up can cause reduction in the available void space and storage capacity of an attenuation unit. Therefore, a regular maintenance regime is necessary to maintain the efficiency of these separators.

3.5 Surface Water Maintenance

To ensure the long-term effectiveness of the surface water management strategy, all drainage infrastructure—including road gullies, silt traps, flow control devices, and attenuation systems—shall be subject to a routine inspection and maintenance programme. This programme will be carried out in accordance with the manufacturer's specifications and industry best practices. Regular maintenance will help prevent blockages, ensure optimal hydraulic performance, and reduce the risk of localised flooding. Records of inspections and maintenance activities should be kept and reviewed periodically to inform future asset management and ensure compliance with planning and environmental requirements.

4. WATERMAIN NETWORK DESIGN

The proposed watermain layout is presented in the engineering watermain layout drawings. The watermain layout has been designed in accordance with Uisce Eireann Code of Practice for Watermain Infrastructure IW-CDS-5020-03.

Hydrants, sluice valves, air valves and scour valves have been positioned within the site as shown on the layout drawings. All watermains are to be commissioned and pressure tested to Uisce Eireann standards. The typical construction details and the meter details are outlined in the engineering Standard Watermain Details drawing.

4.1 GENERAL WATERMAIN LAYOUT

There are currently 2No. Uisce Eireann owned watermain networks near the proposed site boundary. A 315mm HDPE watermain runs along the Kingston Road at the southern boundary of the development and a 150mm watermain runs along the western boundary along the southern arm junction of the adjacent Western Distributor Road roundabout and Altan Road.

It is proposed to connect the watermain to supply the proposed development at the existing 315mm watermain on the Kingston Road as per Uisce Eireann confirmation of feasibility letter. The water supply will be via a 200mm 'arterial' watermain which will run through the development to cater for the demand. 150mm, where required, and a 100mm watermain will branch off this arterial watermain to service the housing blocks, apartments and cul-de-sacs.

In accordance with Local authority/Uisce Eireann standards, a water meter and Logging Device (Larson Type) are proposed at the entrance of the connection into the proposed site. A sluice valve, strainer and 150mm diameter by-pass arrangement are also proposed to allow for possible disconnection of water meters by the Local Authority/ Uisce Eireann.

A Pre-Connection Enquiry for the water demand from the proposed residential development was submitted to Uisce Éireann, and a Confirmation of Feasibility (CoF) statement has been received. All watermain designs have been submitted to Uisce Éireann for design vetting to obtain a Statement of Design Acceptance (SoDA). Both the CoF and SoDA are included in **Appendix E**.

4.2 FIRE FIGHTING FLOWS

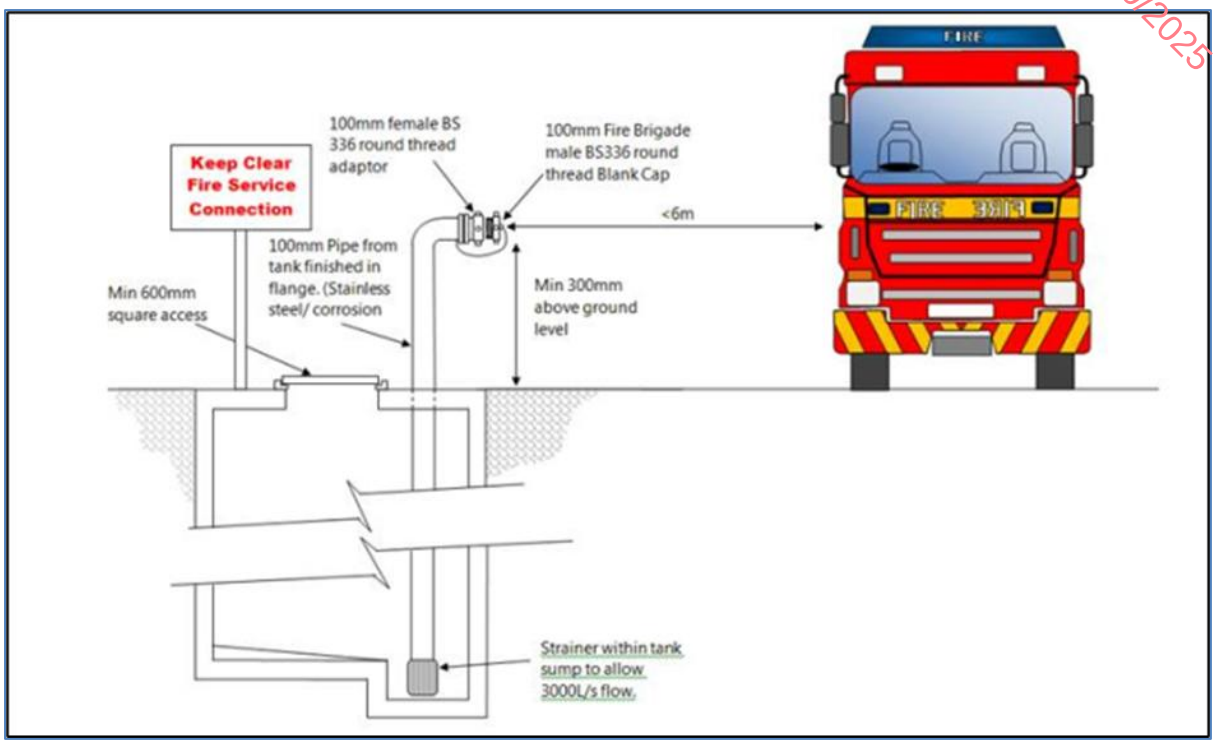
To meet required fire flow requirements, it is proposed to install a static storage capacity within the site. This is being provided as Uisce Eireann will not guarantee available fire flow within the hydrants located on site. It is proposed to provide an underground storage tank capable of supplying 20-35l/s of flow for a 1-hour period. This equates to a minimum volume required for the site of 72,000 litres (72m^3 of storage).

The flow range of 20-35l/s is derived from the 'National Guidance Document on the provisions of water for Firefighting – Water UK 3rd Edition'. The tank shall be located within a grassed area and easily accessible by fire tenders and tankers should they need access. A top up supply from the 150mm water main will be provided.

It is noted that in addition to the static storage tank, a significant volume of water will still be available from hydrants located throughout the development. Any specific requirements as requested by the local fire authority will be incorporated at the detail design stage.

The above is subject to Uisce Eireann network performance testing. Should Uisce Eireann confirm that 20-35l/s can be achieved within the network then the above tank maybe omitted at the discretion of the local Fire Dept allowing the development to be serviced by the hydrants solely. Any such omissions will be agreed with the Fire Officer of at construction stage.

Figure 2 Typical detail of a below ground static storage tank for firefighting.



5. ROADS LAYOUT

All internal roads have been designed in accordance with the Design Manual for Urban Roads and Streets (DMURS), May 2019 and the Recommendations for Site Development Works for Housing Areas, 1998. Auto track vehicle swept path analysis has been completed for the proposed site layout for a Large Car, a Refuse Truck, and a Fire Tender to ensure the vehicles can safely manoeuvre around the site. The swept paths are shown on the engineering Auto tracking drawings that accompany this report as separate documents.

Vehicular access is proposed from an existing roundabout on the Western Distributor Road, off the southern arm junction. Due to the large scale of the Masterplan development, upgrade works to the southern arm junction have been permitted by Galway City Council (Planning Reference 24/60370). Currently the junction services Altan, an existing residential development, and Knocknacarra National School. The permitted road layout, (Planning Reference 24/60370), amends the alignment of this road to have the access to the proposed development as the major road, with the school access being the minor road. Discussions have been held with Galway City Council to include arrangements to tie in with the Active Travel Scheme proposed for the area.

At the southern boundary of the site, pedestrian and cyclist access is proposed via an existing laneway off Kingston Road. This laneway will be upgraded in accordance with the *Design Manual for Urban Roads and Streets (DMURS)* and will feature a shared active travel facility for pedestrians and cyclists on the right-hand side upon entry to the development. This access route will extend northward, providing a continuous link through the scheme.

Discussions have been held with Galway City Council regarding the proposed southern arm junction upgrade works and to include arrangements to tie in with the Active Travel Scheme proposed for the area. There are additional pedestrian and cyclist linkages proposed around the development which encourages permeability and promotes sustainable modes of transport.

It is proposed to extend Millers Lane in the northeast corner of the development bringing a 4m wide pedestrian and cycleway throughout the development with linkages to all surrounding areas.

The proposed maximum speed limit within the development is to be 30km/h, with appropriate traffic control measures where required. Road widths within the development are generally 5.5m wide and 4.8m wide where 'Homezone' areas are proposed. Footpaths are 2m wide in general and are delineated where they are needed in the 'Homezone' areas. Pedestrian paths have been provided throughout the site adjacent to the roads, behind parking where feasible and throughout the green open spaces.

Road levels for the site have been derived taking cognisance of the existing topography and ground conditions. Road build-up shall be in accordance with Galway City Council Taking In-Charge requirements and as per the engineering Typical Site Works Details drawing. The use of raised junctions/crossings and pedestrian crossing points along with strategically positioned drop kerbs and tactile paving will allow for full linkage for visually impaired and less-able pedestrians. Refer to the DMURS 2019 Statement of Consistency for further details on the road's layout. The 'Homezone' areas, shall be finished in a distinct surface material to differentiate them from vehicle priority roads. Roads will include a 1:40 camber from the centre of the road or a 1:40 crossfall from one side to the other and longitudinal gradients of road sections lie between 1:21 and 1:200 to ensure adequate surface water drainage is achieved.

Lockable gullies are located, at a minimum, every 200m^2 with local low points allowing for double gullies as per Recommendations for Site Development Works for Housing Areas to ensure surface water drainage will not be blocked.

A Traffic and Transport Assessment, (TTA), has also been conducted on the proposed development and accompanies this report as a separate document. An independent Road Safety Audit has also been carried out on the site during the final stage of this LRD planning process. The Auditor's report is included as an appendix of the TTA Report. The items raised by the Road Safety Audit have been addressed in detail within a section of the TTA.

6. RETAINING AND SUBSURFACE STRUCTURES

Proposed road and finished floor levels have been designed to keep any retaining structures at an absolute minimum, whether they are retaining the proposed development or the neighbouring ground. However, due to the large scale of the development and constraints such as road-tie in points, road gradients and surrounding sites, some retaining is required. All required retained heights have been kept to a minimum.

The construction of subsurface structures such as attenuation tanks and structural elements such as building foundations are necessary for the proposed development. It is envisaged that buildings will be founded upon either raft or strip foundations. The possibility of piling also remains. The type of foundation to be employed will be confirmed through detailed design considering the ground conditions.

All structures will be required to be founded upon firm subgrade or bedrock to be confirmed by onsite testing prior to the construction of any structure or foundation.

7. CONCLUSION

The report should be read in conjunction with the associated drawings, layouts, and specifications. We trust that adequate detail has been provided for the wastewater drainage layout and the surface water drainage layout, watermain design layout, SuDS design layout and road layouts. Should any further detail be required, we will be happy to meet and supply same, as may be deemed appropriate.

8. REFERENCES

Uisce Éireann Code of Practice for Wastewater Infrastructure IW-CDS-5030-03, Revision 2, July 2020

Uisce Éireann Code of Practice for Water Infrastructure IW-CDS-5020-03, Revision 2, July 2020

Design Manual for Urban Roads and Streets, Department of Transport, Tourism and Sport / Department of Housing, Planning and Local Government

National Guidance Document on the Provision of Water for Fire Fighting, 3rd Edition, January 2007, Local Government Association / Water UK

Recommendations for Site Development Works for Housing Areas, October 1998, Government of Ireland

Public Health and Plumbing Engineering CIBSE Guide G: 2014, Chartered Institute of Building Services Engineers

Traffic Signs Manual, August 2019, Department of Transport, Tourism and Sport

The SuDS Manual C753, 2015, CIRIA

BRE Digest 365, Building Research Establishment

HR Wallingford, www.uksuds.com

Galway City Development Plan 2023–2029, Galway City Council, adopted 13 June 2023. Available at: www.galwaycity.ie/development-plan

Design Settings

Frequency of use (kDU)	0.50	Minimum Velocity (m/s)	0.75
Flow per dwelling per day (l/day)	450	Connection Type	Level Inverts
Domestic Flow (l/s/ha)	0.0	Minimum Backdrop Height (m)	0.500
Industrial Flow (l/s/ha)	0.0	Preferred Cover Depth (m)	1.200
Additional Flow (%)	0	Include Intermediate Ground	✓

Nodes

Name	Units	Cover Level (m)	Manhole Type	Easting (m)	Northing (m)	Depth (m)
MQF 1	16.0	32.036	Adoptable	526938.359	724921.203	1.374
MQF 2		32.164	Adoptable	526930.300	724895.288	1.954
MQF 3	4.0	30.622	Adoptable	526899.285	724904.722	1.372
MQF 4.1	8.0	29.246	Adoptable	526882.671	724937.877	1.129
MQF 4		29.403	Adoptable	526874.768	724912.196	1.734
MQF 5	12.0	28.910	Adoptable	526864.393	724911.907	1.817
MQF 7	5.0	27.110	Adoptable	526825.334	724877.171	2.669
MQF 8.1	2.0	26.698	Adoptable	526815.876	724843.845	1.598
MQF 8		26.331	Adoptable	526804.046	724856.447	2.039
MQF 9		25.850	Adoptable	526793.326	724839.986	1.656
MQF 10		25.572	Adoptable	526778.314	724809.121	1.550
MQF 11		25.460	Adoptable	526772.316	724797.102	1.505
MQF 12.2	18.0	25.050	Adoptable	526747.053	724773.026	1.360
MQF 12.1	22.0	25.041	Adoptable	526732.124	724779.561	1.623
MQF 12		25.471	Adoptable	526745.158	724809.129	2.571
MQF 13.2	20.0	25.021	Adoptable	526769.768	724836.451	1.441
MQF 13.1	20.0	25.294	Adoptable	526753.504	724843.610	2.010
MQF 13	5.0	25.459	Adoptable	526738.988	724812.242	2.602
PF 1	80.0	25.431	Adoptable	526787.806	724905.442	1.546
MQF 14	5.0	25.726	Adoptable	526782.974	724866.719	1.857
MQF 15	15.0	25.411	Adoptable	526772.947	724871.485	1.896
MQF 16	15.0	24.428	Adoptable	526741.307	724885.820	1.436
MQF 17	5.0	24.696	Adoptable	526723.936	724847.480	1.915
MQF 18	10.0	24.871	Adoptable	526712.992	724823.327	2.222
MQF 19	20.0	25.029	Adoptable	526699.899	724794.432	2.575
MQF 20	5.0	25.199	Adoptable	526758.371	724753.103	1.350
MQF 21	5.0	25.170	Adoptable	526745.364	724735.451	1.686
MQF 22.1	4.0	26.154	Adoptable	526715.295	724721.052	1.946
MQF 22	10.0	25.174	Adoptable	526717.755	724741.222	1.954
MQF 23		25.003	Adoptable	526683.244	724756.246	2.758
FR 1	1.0	24.995	Adoptable	526677.847	724760.341	2.784
TF 1	5.0	27.526	Adoptable	526704.417	724603.093	1.346
TF 2	4.0	27.261	Adoptable	526708.077	724582.510	1.429
TF 3	6.0	27.012	Adoptable	526711.325	724565.318	1.472
TF 4	6.0	26.721	Adoptable	526687.114	724558.477	1.371
TF 5		26.382	Adoptable	526650.093	724548.359	1.598
TF 6	10.0	25.585	Adoptable	526628.798	724552.408	1.475
TF 7	6.0	25.659	Adoptable	526633.900	724589.000	1.734
TF 9.1	2.0	27.371	Adoptable	526686.583	724651.622	1.341
TF 8	3.0	27.824	Adoptable	526707.958	724621.075	1.364
TF 9	8.0	27.228	Adoptable	526689.352	724619.423	1.740
TF 10		26.175	Adoptable	526654.370	724615.859	1.375
TF 11	10.0	25.835	Adoptable	526638.017	724617.875	2.056
TF 12	8.0	26.548	Adoptable	526642.741	724654.741	2.954

Nodes

Name	Units	Cover Level (m)	Manhole Type	Easting (m)	Northing (m)	Depth (m)
TF 13	3.0	29.311	Adoptable	526796.036	724628.912	1.341
TF 14	6.0	29.514	Adoptable	526794.668	724642.327	1.769
TF 15	8.0	29.622	Adoptable	526787.059	724657.765	2.164
TF 16	4.0	28.762	Adoptable	526772.602	724706.162	1.722
TF 17	4.0	28.505	Adoptable	526750.499	724703.109	1.625
TF 18		28.222	Adoptable	526730.598	724700.316	1.442
TF 19	10.0	29.419	Adoptable	526785.454	724621.282	1.389
TF 20	1.0	29.192	Adoptable	526757.389	724618.525	1.642
TF 21	1.0	29.067	Adoptable	526744.396	724617.249	1.747
TF 22	18.0	28.579	Adoptable	526735.001	724629.955	1.459
TF 23		28.228	Adoptable	526728.981	724692.449	1.424
TF 24	3.0	27.906	Adoptable	526720.025	724692.475	1.466
TF 25	2.0	26.889	Adoptable	526689.692	724687.121	1.459
TF 26	1.0	26.629	Adoptable	526677.911	724682.169	1.629
TF 27	4.0	26.252	Adoptable	526649.398	724684.777	2.812
AF 12	14.0	26.724	Adoptable	526704.320	724705.527	1.604
AF 13	11.0	26.034	Adoptable	526652.278	724711.364	2.728
FR 2	1.0	25.171	Adoptable	526658.545	724762.977	3.057
AF 7	2.0	25.698	Adoptable	526622.270	724693.410	1.418
AF 8	1.0	25.179	Adoptable	526598.916	724692.935	1.389
AF 9		24.344	Adoptable	526590.728	724732.267	1.374
AF 10	4.0	24.065	Adoptable	526594.891	724744.510	1.415
AF 11		24.184	Adoptable	526603.252	724743.909	1.716
FR 3	16.0	23.917	Adoptable	526609.773	724774.197	2.302
KF 1	1.0	24.304	Adoptable	526610.235	724552.254	1.644
KF 2	2.0	24.283	Adoptable	526609.577	724537.265	1.873
KF 4	2.0	23.030	Adoptable	526576.677	724522.437	1.350
KF 5	4.0	22.782	Adoptable	526571.969	724517.342	1.342
KF 6.1	5.0	21.317	Adoptable	526533.565	724497.870	1.285
KF 6	2.0	22.225	Adoptable	526557.350	724511.469	2.650
KF 7		21.768	Adoptable	526550.116	724528.858	2.287
KF 8	2.0	21.585	Adoptable	526546.695	724543.520	2.179
KF 9	3.0	21.484	Adoptable	526548.093	724574.099	2.231
KF 10.3	3.0	23.184	Adoptable	526586.984	724568.053	1.184
KF 10.2.1		22.734	Adoptable	526578.201	724564.898	1.139
KF 10.2		22.870	Adoptable	526579.723	724572.994	1.412
KF 10.1	2.0	22.540	Adoptable	526572.315	724578.035	1.232
KF 10	5.0	21.623	Adoptable	526546.138	724583.981	2.421
KF 11	3.0	22.064	Adoptable	526547.796	724608.249	2.983
KF 12	4.0	24.183	Adoptable	526611.611	724571.580	1.513
KF 13	1.0	24.830	Adoptable	526617.248	724604.387	2.715
KF 14	5.0	24.543	Adoptable	526621.546	724633.553	2.919
KF 15	1.0	23.221	Adoptable	526568.005	724644.060	2.458
KF 16		22.929	Adoptable	526555.365	724644.442	4.033
KF 17		23.419	Adoptable	526556.217	724651.307	4.558
AF 1		24.485	Adoptable	526533.122	724676.224	5.794
AF 2	5.0	22.643	Adoptable	526530.179	724702.668	4.085
AF 3.1	5.0	23.181	Adoptable	526565.676	724711.407	4.664
AF 3	11.0	22.508	Adoptable	526550.075	724710.064	4.091
AF 4	3.0	22.283	Adoptable	526545.981	724747.596	4.055
AF 5	4.0	22.250	Adoptable	526543.122	724752.514	4.051
AF 6		22.214	Adoptable	526542.349	724761.261	4.058

Nodes

Name	Units	Cover Level (m)	Manhole Type	Easting (m)	Northing (m)	Depth (m)
FR 4	8.0	22.380	Adoptable	526548.282	724788.609	4.439
FR 5		21.674	Adoptable	526513.065	724799.367	3.918
Ex.F 9		21.378	Adoptable	526501.258	724809.532	3.828
Ex.F 10		21.292	Adoptable	526489.319	724819.743	3.817

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)
1.000	MQF 1	MQF 2	27.139	1.500	30.662	30.210	0.452	60.0	150
1.001	MQF 2	MQF 3	32.418	1.500	30.210	29.250	0.960	33.8	150
1.002	MQF 3	MQF 4	25.631	1.500	29.250	28.350	0.900	28.5	150
2.000	MQF 4.1	MQF 4	26.870	1.500	28.117	27.669	0.448	60.0	150
1.003	MQF 4	MQF 5	10.378	1.500	27.669	27.460	0.209	49.7	225
1.004	MQF 5	MQF 7	52.271	1.500	27.093	25.600	1.493	35.0	225
1.005	MQF 7	MQF 8	29.709	1.500	24.441	24.292	0.149	199.4	225
3.000	MQF 8.1	MQF 8	17.285	1.500	25.100	24.292	0.808	21.4	150
1.006	MQF 8	MQF 9	19.644	1.500	24.292	24.194	0.098	200.4	225
1.007	MQF 9	MQF 10	34.323	1.500	24.194	24.022	0.172	199.6	225
1.008	MQF 10	MQF 11	13.433	1.500	24.022	23.955	0.067	200.5	225
1.009	MQF 11	MQF 12	29.702	1.500	23.955	23.807	0.148	200.7	225
4.000	MQF 12.2	MQF 12.1	16.297	1.500	23.690	23.418	0.272	59.9	150
4.001	MQF 12.1	MQF 12	32.314	1.500	23.418	23.203	0.215	150.3	225
1.010	MQF 12	MQF 13	6.911	1.500	22.900	22.857	0.043	160.7	225
5.000	MQF 13.2	MQF 13.1	17.771	1.500	23.580	23.284	0.296	60.0	225
5.001	MQF 13.1	MQF 13	34.565	1.500	23.284	23.051	0.233	148.3	225
1.011	MQF 13	MQF 18	28.261	1.500	22.857	22.715	0.142	199.0	225
6.000	PF 1	MQF 15	37.066	1.500	23.885	23.529	0.356	104.1	300

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)	Pro Velocity (m/s)
1.000	0.512	1.132	20.0	2.0	1.224	1.804	0.000	0	16.0	0.0	32	0.714
1.001	0.626	1.511	26.7	2.0	1.804	1.222	0.000	0	16.0	0.0	28	0.876
1.002	0.682	1.646	29.1	2.2	1.222	0.903	0.000	0	20.0	0.0	28	0.967
2.000	0.457	1.132	20.0	1.4	0.979	1.584	0.000	0	8.0	0.0	27	0.647
1.003	0.569	1.631	64.8	2.6	1.509	1.225	0.000	0	28.0	0.0	31	0.795
1.004	0.679	1.943	77.3	3.2	1.592	1.285	0.000	0	40.0	0.0	31	0.947
1.005	0.372	0.811	32.3	3.4	2.444	1.814	0.000	0	45.0	0.0	49	0.521
3.000	0.513	1.899	33.6	0.7	1.448	1.889	0.000	0	2.0	0.0	16	0.750
1.006	0.378	0.809	32.2	3.4	1.814	1.431	0.000	0	47.0	0.0	50	0.526
1.007	0.379	0.811	32.2	3.4	1.431	1.325	0.000	0	47.0	0.0	50	0.527
1.008	0.378	0.809	32.2	3.4	1.325	1.280	0.000	0	47.0	0.0	50	0.525
1.009	0.378	0.809	32.2	3.4	1.280	1.439	0.000	0	47.0	0.0	50	0.525
4.000	0.523	1.133	20.0	2.1	1.210	1.473	0.000	0	18.0	0.0	33	0.731
4.001	0.403	0.935	37.2	3.2	1.398	2.043	0.000	0	40.0	0.0	44	0.568
1.010	0.447	0.904	36.0	4.7	2.346	2.377	0.000	0	87.0	0.0	55	0.624
5.000	0.500	1.483	59.0	2.2	1.216	1.785	0.000	0	20.0	0.0	30	0.709
5.001	0.405	0.941	37.4	3.2	1.785	2.183	0.000	0	40.0	0.0	44	0.572
1.011	0.443	0.812	32.3	5.7	2.377	1.931	0.000	0	132.0	0.0	65	0.615
6.000	0.492	1.359	96.1	4.5	1.246	1.582	0.000	0	80.0	0.0	44	0.694

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)
7.000	MQF 14	MQF 15	11.102	1.500	23.869	23.515	0.354	31.4	225
6.001	MQF 15	MQF 16	34.735	1.500	23.515	23.068	0.447	77.7	300
6.002	MQF 16	MQF 17	42.092	1.500	22.992	22.781	0.211	199.5	300
6.003	MQF 17	MQF 18	26.517	1.500	22.781	22.649	0.132	200.9	300
1.012	MQF 18	MQF 19	31.723	1.500	22.649	22.454	0.195	162.7	300
1.013	MQF 19	MQF 23	41.659	1.500	22.454	22.245	0.209	199.3	300
8.000	MQF 20	MQF 21	21.927	1.500	23.849	23.484	0.365	60.1	150
8.001	MQF 21	MQF 22	28.206	1.500	23.484	23.220	0.264	106.8	150
9.000	MQF 22.1	MQF 22	20.320	1.500	24.208	23.700	0.508	40.0	150
8.002	MQF 22	MQF 23	37.639	1.500	23.220	22.743	0.477	78.9	225
1.014	MQF 23	FR 1	6.775	1.500	22.245	22.211	0.034	199.3	300
1.015	FR 1	FR 2	19.481	1.500	22.211	22.114	0.097	200.8	300
10.000	TF 1	TF 2	20.906	1.500	26.180	25.832	0.348	60.1	150
10.001	TF 2	TF 3	17.496	1.500	25.832	25.540	0.292	59.9	150
10.002	TF 3	TF 4	25.158	1.500	25.540	25.350	0.190	132.4	150
10.003	TF 4	TF 5	38.379	1.500	25.350	25.000	0.350	109.7	150
10.004	TF 5	TF 6	21.676	1.500	24.784	24.110	0.674	32.2	225
10.005	TF 6	TF 7	36.947	1.500	24.110	23.925	0.185	199.7	225
10.006	TF 7	TF 11	29.167	1.500	23.925	23.779	0.146	199.8	225
11.000	TF 9.1	TF 9	32.318	1.500	26.030	25.488	0.542	59.6	150
12.000	TF 8	TF 9	18.680	1.500	26.460	25.850	0.610	30.6	150
11.001	TF 9	TF 10	35.162	1.500	25.488	24.800	0.688	51.1	150
11.002	TF 10	TF 11	16.478	1.500	24.800	24.329	0.471	35.0	150
10.007	TF 11	TF 12	37.167	1.500	23.779	23.594	0.185	200.9	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)	Pro Velocity (m/s)
7.000	0.489	2.054	81.6	1.1	1.632	1.671	0.000	0	5.0	0.0	19	0.717
6.001	0.570	1.574	111.2	5.0	1.596	1.060	0.000	0	100.0	0.0	43	0.791
6.002	0.415	0.980	69.3	5.4	1.136	1.615	0.000	0	115.0	0.0	57	0.582
6.003	0.418	0.977	69.0	5.5	1.615	1.922	0.000	0	120.0	0.0	57	0.584
1.012	0.506	1.086	76.8	8.1	1.922	2.275	0.000	0	262.0	0.0	66	0.708
1.013	0.479	0.981	69.3	8.4	2.275	2.458	0.000	0	282.0	0.0	71	0.665
8.000	0.422	1.131	20.0	1.1	1.200	1.536	0.000	0	5.0	0.0	24	0.601
8.001	0.390	0.847	15.0	1.6	1.536	1.804	0.000	0	10.0	0.0	33	0.546
9.000	0.473	1.388	24.5	1.0	1.796	1.324	0.000	0	4.0	0.0	21	0.666
8.002	0.465	1.293	51.4	2.4	1.729	2.035	0.000	0	24.0	0.0	34	0.663
1.014	0.483	0.981	69.3	8.7	2.458	2.484	0.000	0	306.0	0.0	72	0.672
1.015	0.481	0.977	69.1	8.8	2.484	2.757	0.000	0	307.0	0.0	72	0.672
10.000	0.422	1.131	20.0	1.1	1.196	1.279	0.000	0	5.0	0.0	24	0.601
10.001	0.469	1.133	20.0	1.5	1.279	1.322	0.000	0	9.0	0.0	28	0.656
10.002	0.384	0.760	13.4	1.9	1.322	1.221	0.000	0	15.0	0.0	38	0.535
10.003	0.430	0.836	14.8	2.3	1.221	1.232	0.000	0	21.0	0.0	40	0.605
10.004	0.614	2.028	80.6	2.3	1.373	1.250	0.000	0	21.0	0.0	26	0.876
10.005	0.356	0.811	32.2	2.8	1.250	1.509	0.000	0	31.0	0.0	44	0.492
10.006	0.364	0.810	32.2	3.0	1.509	1.831	0.000	0	37.0	0.0	47	0.509
11.000	0.374	1.136	20.1	0.7	1.191	1.590	0.000	0	2.0	0.0	20	0.524
12.000	0.486	1.587	28.0	0.9	1.214	1.228	0.000	0	3.0	0.0	18	0.704
11.001	0.520	1.227	21.7	1.8	1.590	1.225	0.000	0	13.0	0.0	30	0.739
11.002	0.600	1.484	26.2	1.8	1.225	1.356	0.000	0	13.0	0.0	27	0.837
10.007	0.392	0.808	32.1	3.9	1.831	2.729	0.000	0	60.0	0.0	53	0.547

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)
10.008	TF 12	TF 27	30.766	1.500	23.594	23.440	0.154	199.8	225
13.000	TF 13	TF 14	13.485	1.500	27.970	27.745	0.225	59.9	150
13.001	TF 14	TF 15	17.211	1.500	27.745	27.458	0.287	60.0	150
13.002	TF 15	TF 16	50.510	1.500	27.458	27.040	0.418	120.8	150
13.003	TF 16	TF 17	22.313	1.500	27.040	26.880	0.160	139.5	225
13.004	TF 17	TF 18	20.096	1.500	26.880	26.780	0.100	201.0	225
13.005	TF 18	TF 24	13.163	1.500	26.780	26.440	0.340	38.7	225
14.000	TF 19	TF 20	28.200	1.500	28.030	27.560	0.470	60.0	150
14.001	TF 20	TF 21	13.055	1.500	27.550	27.320	0.230	56.8	150
14.002	TF 21	TF 22	15.802	1.500	27.320	27.120	0.200	79.0	150
14.003	TF 22	TF 23	62.783	1.500	27.120	26.804	0.316	198.7	225
14.004	TF 23	TF 24	8.956	1.500	26.804	26.440	0.364	24.6	225
13.006	TF 24	TF 25	30.803	1.500	26.440	25.430	1.010	30.5	225
13.007	TF 25	TF 26	12.779	1.500	25.430	25.000	0.430	29.7	225
13.008	TF 26	TF 27	28.632	1.500	25.000	24.700	0.300	95.4	225
10.009	TF 27	AF 13	26.742	1.500	23.440	23.306	0.134	199.6	225
15.000	AF 12	AF 13	52.369	1.500	25.120	24.588	0.532	98.4	150
10.010	AF 13	FR 2	51.992	1.500	23.306	23.046	0.260	200.0	225
1.016	FR 2	FR 3	50.046	1.500	22.114	21.615	0.499	100.3	300
16.000	AF 7	AF 8	23.359	1.500	24.280	23.790	0.490	47.7	150
16.001	AF 8	AF 9	40.176	1.500	23.790	22.970	0.820	49.0	150
16.002	AF 9	AF 10	12.931	1.500	22.970	22.650	0.320	40.4	150
16.003	AF 10	AF 11	8.383	1.500	22.650	22.468	0.182	46.1	150
16.004	AF 11	FR 3	30.982	1.500	22.468	21.990	0.478	64.8	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)	Pro Velocity (m/s)
10.008	0.401	0.810	32.2	4.1	2.729	2.587	0.000	0	68.0	0.0	54	0.554
13.000	0.398	1.133	20.0	0.9	1.191	1.619	0.000	0	3.0	0.0	21	0.553
13.001	0.469	1.132	20.0	1.5	1.619	2.014	0.000	0	9.0	0.0	28	0.656
13.002	0.402	0.796	14.1	2.1	2.014	1.572	0.000	0	17.0	0.0	39	0.566
13.003	0.379	0.971	38.6	2.3	1.497	1.400	0.000	0	21.0	0.0	37	0.530
13.004	0.340	0.808	32.1	2.5	1.400	1.217	0.000	0	25.0	0.0	43	0.478
13.005	0.603	1.848	73.5	2.5	1.217	1.241	0.000	0	25.0	0.0	29	0.851
14.000	0.480	1.132	20.0	1.6	1.239	1.482	0.000	0	10.0	0.0	29	0.673
14.001	0.493	1.164	20.6	1.7	1.492	1.597	0.000	0	11.0	0.0	29	0.692
14.002	0.446	0.986	17.4	1.7	1.597	1.309	0.000	0	12.0	0.0	32	0.622
14.003	0.349	0.813	32.3	2.7	1.234	1.199	0.000	0	30.0	0.0	44	0.493
14.004	0.731	2.319	92.2	2.7	1.199	1.241	0.000	0	30.0	0.0	27	1.025
13.006	0.750	2.082	82.8	3.8	1.241	1.234	0.000	0	58.0	0.0	33	1.052
13.007	0.760	2.110	83.9	3.9	1.234	1.404	0.000	0	60.0	0.0	33	1.066
13.008	0.506	1.175	46.7	3.9	1.404	1.327	0.000	0	61.0	0.0	44	0.714
10.009	0.442	0.811	32.2	5.8	2.587	2.503	0.000	0	133.0	0.0	65	0.614
15.000	0.423	0.883	15.6	1.9	1.454	1.296	0.000	0	14.0	0.0	35	0.593
10.010	0.454	0.810	32.2	6.3	2.503	1.900	0.000	0	158.0	0.0	67	0.627
1.016	0.659	1.385	97.9	10.8	2.757	2.002	0.000	0	466.0	0.0	67	0.912
16.000	0.404	1.271	22.5	0.7	1.268	1.239	0.000	0	2.0	0.0	18	0.563
16.001	0.427	1.253	22.1	0.9	1.239	1.224	0.000	0	3.0	0.0	21	0.602
16.002	0.455	1.381	24.4	0.9	1.224	1.265	0.000	0	3.0	0.0	20	0.638
16.003	0.496	1.293	22.8	1.3	1.265	1.566	0.000	0	7.0	0.0	25	0.698
16.004	0.440	1.089	19.2	1.3	1.566	1.777	0.000	0	7.0	0.0	27	0.614

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)
1.017	FR 3	FR 4	63.157	1.500	21.615	20.200	1.415	44.6	300
17.000	KF 1	KF 2	15.004	1.500	22.660	22.410	0.250	60.0	150
17.001	KF 2	KF 4	36.087	1.500	22.410	21.680	0.730	49.4	150
17.002	KF 4	KF 5	6.937	1.500	21.680	21.440	0.240	28.9	150
17.003	KF 5	KF 6	15.754	1.500	21.440	20.800	0.640	24.6	150
18.000	KF 6.1	KF 6	27.398	1.500	20.032	19.575	0.457	60.0	150
17.004	KF 6	KF 7	18.833	1.500	19.575	19.481	0.094	200.4	225
17.005	KF 7	KF 8	15.056	1.500	19.481	19.406	0.075	200.7	225
17.006	KF 8	KF 9	30.611	1.500	19.406	19.253	0.153	200.1	225
17.007	KF 9	KF 10	10.073	1.500	19.253	19.202	0.051	197.5	225
19.000	KF 10.3	KF 10.2	8.783	1.500	22.000	21.700	0.300	29.3	150
20.000	KF 10.2.1	KF 10.2	8.238	1.500	21.595	21.458	0.137	60.1	150
19.001	KF 10.2	KF 10.1	8.960	1.500	21.458	21.308	0.150	59.7	150
19.002	KF 10.1	KF 10	26.844	1.500	21.308	20.800	0.508	52.8	150
17.008	KF 10	KF 11	24.325	1.500	19.202	19.081	0.121	201.0	225
17.009	KF 11	KF 16	36.976	1.500	19.081	18.896	0.185	199.9	225
21.000	KF 12	KF 13	33.288	1.500	22.670	22.115	0.555	60.0	150
21.001	KF 13	KF 14	29.481	1.500	22.115	21.624	0.491	60.0	150
21.002	KF 14	KF 15	54.562	1.500	21.624	21.160	0.464	117.6	150
21.003	KF 15	KF 16	12.646	1.500	20.763	20.700	0.063	200.7	225
17.010	KF 16	KF 17	6.919	1.500	18.896	18.861	0.035	197.7	225
17.011	KF 17	AF 1	33.974	1.500	18.861	18.691	0.170	199.8	225
17.012	AF 1	AF 2	26.607	1.500	18.691	18.558	0.133	200.1	225
17.013	AF 2	AF 3	21.226	1.500	18.558	18.453	0.105	202.2	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)	Pro Velocity (m/s)
1.017	0.882	2.078	146.9	11.1	2.002	1.880	0.000	0	489.0	0.0	55	1.221
17.000	0.332	1.132	20.0	0.5	1.494	1.723	0.000	0	1.0	0.0	17	0.468
17.001	0.425	1.248	22.0	0.9	1.723	1.200	0.000	0	3.0	0.0	21	0.599
17.002	0.539	1.633	28.9	1.1	1.200	1.192	0.000	0	5.0	0.0	20	0.770
17.003	0.643	1.770	31.3	1.5	1.192	1.275	0.000	0	9.0	0.0	23	0.897
18.000	0.422	1.133	20.0	1.1	1.135	2.500	0.000	0	5.0	0.0	24	0.602
17.004	0.316	0.809	32.2	2.0	2.425	2.062	0.000	0	16.0	0.0	38	0.448
17.005	0.315	0.808	32.1	2.0	2.062	1.954	0.000	0	16.0	0.0	38	0.447
17.006	0.324	0.810	32.2	2.1	1.954	2.006	0.000	0	18.0	0.0	39	0.454
17.007	0.334	0.815	32.4	2.3	2.006	2.196	0.000	0	21.0	0.0	41	0.470
19.000	0.498	1.623	28.7	0.9	1.034	1.020	0.000	0	3.0	0.0	18	0.705
20.000	0.000	1.131	20.0	0.0	0.989	1.262	0.000	0	0.0	0.0	0	0.000
19.001	0.386	1.135	20.0	0.9	1.262	1.082	0.000	0	3.0	0.0	21	0.554
19.002	0.450	1.207	21.3	1.1	1.082	0.673	0.000	0	5.0	0.0	24	0.631
17.008	0.355	0.808	32.1	2.8	2.196	2.758	0.000	0	31.0	0.0	45	0.496
17.009	0.356	0.810	32.2	2.9	2.758	3.808	0.000	0	34.0	0.0	46	0.503
21.000	0.410	1.132	20.0	1.0	1.363	2.565	0.000	0	4.0	0.0	23	0.583
21.001	0.422	1.132	20.0	1.1	2.565	2.769	0.000	0	5.0	0.0	24	0.601
21.002	0.379	0.807	14.3	1.6	2.769	1.911	0.000	0	10.0	0.0	34	0.526
21.003	0.298	0.809	32.1	1.7	2.233	2.004	0.000	0	11.0	0.0	35	0.421
17.010	0.374	0.815	32.4	3.4	3.808	4.333	0.000	0	45.0	0.0	49	0.524
17.011	0.371	0.810	32.2	3.4	4.333	5.569	0.000	0	45.0	0.0	49	0.521
17.012	0.371	0.810	32.2	3.4	5.569	3.860	0.000	0	45.0	0.0	49	0.520
17.013	0.377	0.806	32.0	3.5	3.860	3.830	0.000	0	50.0	0.0	51	0.529

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)
22.000	AF 3.1	AF 3	15.659	1.500	18.517	18.417	0.100	156.6	225
17.014	AF 3	AF 4	37.754	1.500	18.417	18.228	0.189	199.8	225
17.015	AF 4	AF 5	5.688	1.500	18.228	18.199	0.029	196.1	225
17.016	AF 5	AF 6	8.782	1.500	18.199	18.156	0.043	204.2	225
17.017	AF 6	FR 4	27.984	1.500	18.156	18.016	0.140	199.9	225
1.018	FR 4	FR 5	36.824	1.500	17.941	17.756	0.185	199.0	300
1.019	FR 5	Ex.F 9	15.579	1.500	17.756	17.679	0.077	202.3	300
1.020	Ex.F 9	Ex.F 10	15.710	1.500	17.550	17.475	0.075	209.5	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)	Pro Velocity (m/s)
22.000	0.287	0.916	36.4	1.1	4.439	3.866	0.000	0	5.0	0.0	28	0.412
17.014	0.401	0.810	32.2	4.1	3.866	3.830	0.000	0	66.0	0.0	54	0.554
17.015	0.405	0.818	32.5	4.2	3.830	3.826	0.000	0	69.0	0.0	54	0.559
17.016	0.403	0.802	31.9	4.3	3.826	3.833	0.000	0	73.0	0.0	56	0.558
17.017	0.401	0.810	32.2	4.3	3.833	4.139	0.000	0	73.0	0.0	56	0.564
1.018	0.533	0.981	69.4	11.9	4.139	3.618	0.000	0	570.0	0.0	84	0.735
1.019	0.529	0.973	68.8	11.9	3.618	3.399	0.000	0	570.0	0.0	85	0.732
1.020	0.541	0.791	31.5	11.9	3.603	3.592	0.000	0	570.0	0.0	96	0.738

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	27.139	60.0	150	Circular	32.036	30.662	1.224	32.164	30.210	1.804
1.001	32.418	33.8	150	Circular	32.164	30.210	1.804	30.622	29.250	1.222
1.002	25.631	28.5	150	Circular	30.622	29.250	1.222	29.403	28.350	0.903
2.000	26.870	60.0	150	Circular	29.246	28.117	0.979	29.403	27.669	1.584
1.003	10.378	49.7	225	Circular	29.403	27.669	1.509	28.910	27.460	1.225
1.004	52.271	35.0	225	Circular	28.910	27.093	1.592	27.110	25.600	1.285
1.005	29.709	199.4	225	Circular	27.110	24.441	2.444	26.331	24.292	1.814
3.000	17.285	21.4	150	Circular	26.698	25.100	1.448	26.331	24.292	1.889
1.006	19.644	200.4	225	Circular	26.331	24.292	1.814	25.850	24.194	1.431
1.007	34.323	199.6	225	Circular	25.850	24.194	1.431	25.572	24.022	1.325
1.008	13.433	200.5	225	Circular	25.572	24.022	1.325	25.460	23.955	1.280
1.009	29.702	200.7	225	Circular	25.460	23.955	1.280	25.471	23.807	1.439

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	MQF 1	1350	Manhole	Adoptable	MQF 2	1350	Manhole	Adoptable
1.001	MQF 2	1350	Manhole	Adoptable	MQF 3	1350	Manhole	Adoptable
1.002	MQF 3	1350	Manhole	Adoptable	MQF 4	1350	Manhole	Adoptable
2.000	MQF 4.1	1350	Manhole	Adoptable	MQF 4	1350	Manhole	Adoptable
1.003	MQF 4	1350	Manhole	Adoptable	MQF 5	1350	Manhole	Adoptable
1.004	MQF 5	1350	Manhole	Adoptable	MQF 7	1350	Manhole	Adoptable
1.005	MQF 7	1350	Manhole	Adoptable	MQF 8	1350	Manhole	Adoptable
3.000	MQF 8.1	1350	Manhole	Adoptable	MQF 8	1350	Manhole	Adoptable
1.006	MQF 8	1350	Manhole	Adoptable	MQF 9	1350	Manhole	Adoptable
1.007	MQF 9	1350	Manhole	Adoptable	MQF 10	1350	Manhole	Adoptable
1.008	MQF 10	1350	Manhole	Adoptable	MQF 11	1350	Manhole	Adoptable
1.009	MQF 11	1350	Manhole	Adoptable	MQF 12	1350	Manhole	Adoptable

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
4.000	16.297	59.9	150	Circular	25.050	23.690	1.210	25.041	23.418	1.473
4.001	32.314	150.3	225	Circular	25.041	23.418	1.398	25.471	23.203	2.043
1.010	6.911	160.7	225	Circular	25.471	22.900	2.346	25.459	22.857	2.377
5.000	17.771	60.0	225	Circular	25.021	23.580	1.216	25.294	23.284	1.785
5.001	34.565	148.3	225	Circular	25.294	23.284	1.785	25.459	23.051	2.183
1.011	28.261	199.0	225	Circular	25.459	22.857	2.377	24.871	22.715	1.931
6.000	37.066	104.1	300	Circular	25.431	23.885	1.246	25.411	23.529	1.582
7.000	11.102	31.4	225	Circular	25.726	23.869	1.632	25.411	23.515	1.671
6.001	34.735	77.7	300	Circular	25.411	23.515	1.596	24.428	23.068	1.060
6.002	42.092	199.5	300	Circular	24.428	22.992	1.136	24.696	22.781	1.615
6.003	26.517	200.9	300	Circular	24.696	22.781	1.615	24.871	22.649	1.922
1.012	31.723	162.7	300	Circular	24.871	22.649	1.922	25.029	22.454	2.275
1.013	41.659	199.3	300	Circular	25.029	22.454	2.275	25.003	22.245	2.458
8.000	21.927	60.1	150	Circular	25.199	23.849	1.200	25.170	23.484	1.536
8.001	28.206	106.8	150	Circular	25.170	23.484	1.536	25.174	23.220	1.804
9.000	20.320	40.0	150	Circular	26.154	24.208	1.796	25.174	23.700	1.324
8.002	37.639	78.9	225	Circular	25.174	23.220	1.729	25.003	22.743	2.035
1.014	6.775	199.3	300	Circular	25.003	22.245	2.458	24.995	22.211	2.484
1.015	19.481	200.8	300	Circular	24.995	22.211	2.484	25.171	22.114	2.757
10.000	20.906	60.1	150	Circular	27.526	26.180	1.196	27.261	25.832	1.279
10.001	17.496	59.9	150	Circular	27.261	25.832	1.279	27.012	25.540	1.322
10.002	25.158	132.4	150	Circular	27.012	25.540	1.322	26.721	25.350	1.221
10.003	38.379	109.7	150	Circular	26.721	25.350	1.221	26.382	25.000	1.232
10.004	21.676	32.2	225	Circular	26.382	24.784	1.373	25.585	24.110	1.250
10.005	36.947	199.7	225	Circular	25.585	24.110	1.250	25.659	23.925	1.509

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
4.000	MQF 12.2	1350	Manhole	Adoptable	MQF 12.1	1350	Manhole	Adoptable
4.001	MQF 12.1	1350	Manhole	Adoptable	MQF 12	1350	Manhole	Adoptable
1.010	MQF 12	1350	Manhole	Adoptable	MQF 13	1350	Manhole	Adoptable
5.000	MQF 13.2	1350	Manhole	Adoptable	MQF 13.1	1350	Manhole	Adoptable
5.001	MQF 13.1	1350	Manhole	Adoptable	MQF 13	1350	Manhole	Adoptable
1.011	MQF 13	1350	Manhole	Adoptable	MQF 18	1350	Manhole	Adoptable
6.000	PF 1	1350	Manhole	Adoptable	MQF 15	1350	Manhole	Adoptable
7.000	MQF 14	1350	Manhole	Adoptable	MQF 15	1350	Manhole	Adoptable
6.001	MQF 15	1350	Manhole	Adoptable	MQF 16	1350	Manhole	Adoptable
6.002	MQF 16	1350	Manhole	Adoptable	MQF 17	1350	Manhole	Adoptable
6.003	MQF 17	1350	Manhole	Adoptable	MQF 18	1350	Manhole	Adoptable
1.012	MQF 18	1350	Manhole	Adoptable	MQF 19	1350	Manhole	Adoptable
1.013	MQF 19	1350	Manhole	Adoptable	MQF 23	1350	Manhole	Adoptable
8.000	MQF 20	1350	Manhole	Adoptable	MQF 21	1200	Manhole	Adoptable
8.001	MQF 21	1200	Manhole	Adoptable	MQF 22	1350	Manhole	Adoptable
9.000	MQF 22.1	1350	Manhole	Adoptable	MQF 22	1350	Manhole	Adoptable
8.002	MQF 22	1350	Manhole	Adoptable	MQF 23	1350	Manhole	Adoptable
1.014	MQF 23	1350	Manhole	Adoptable	FR 1	1350	Manhole	Adoptable
1.015	FR 1	1350	Manhole	Adoptable	FR 2	1350	Manhole	Adoptable
10.000	TF 1	1350	Manhole	Adoptable	TF 2	1350	Manhole	Adoptable
10.001	TF 2	1350	Manhole	Adoptable	TF 3	1350	Manhole	Adoptable
10.002	TF 3	1350	Manhole	Adoptable	TF 4	1350	Manhole	Adoptable
10.003	TF 4	1350	Manhole	Adoptable	TF 5	1350	Manhole	Adoptable
10.004	TF 5	1350	Manhole	Adoptable	TF 6	1350	Manhole	Adoptable
10.005	TF 6	1350	Manhole	Adoptable	TF 7	1350	Manhole	Adoptable

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
10.006	29.167	199.8	225	Circular	25.659	23.925	1.509	25.835	23.779	1.831
11.000	32.318	59.6	150	Circular	27.371	26.030	1.191	27.228	25.488	1.590
12.000	18.680	30.6	150	Circular	27.824	26.460	1.214	27.228	25.850	1.228
11.001	35.162	51.1	150	Circular	27.228	25.488	1.590	26.175	24.800	1.225
11.002	16.478	35.0	150	Circular	26.175	24.800	1.225	25.835	24.329	1.356
10.007	37.167	200.9	225	Circular	25.835	23.779	1.831	26.548	23.594	2.729
10.008	30.766	199.8	225	Circular	26.548	23.594	2.729	26.252	23.440	2.587
13.000	13.485	59.9	150	Circular	29.311	27.970	1.191	29.514	27.745	1.619
13.001	17.211	60.0	150	Circular	29.514	27.745	1.619	29.622	27.458	2.014
13.002	50.510	120.8	150	Circular	29.622	27.458	2.014	28.762	27.040	1.572
13.003	22.313	139.5	225	Circular	28.762	27.040	1.497	28.505	26.880	1.400
13.004	20.096	201.0	225	Circular	28.505	26.880	1.400	28.222	26.780	1.217
13.005	13.163	38.7	225	Circular	28.222	26.780	1.217	27.906	26.440	1.241
14.000	28.200	60.0	150	Circular	29.419	28.030	1.239	29.192	27.560	1.482
14.001	13.055	56.8	150	Circular	29.192	27.550	1.492	29.067	27.320	1.597
14.002	15.802	79.0	150	Circular	29.067	27.320	1.597	28.579	27.120	1.309
14.003	62.783	198.7	225	Circular	28.579	27.120	1.234	28.228	26.804	1.199
14.004	8.956	24.6	225	Circular	28.228	26.804	1.199	27.906	26.440	1.241
13.006	30.803	30.5	225	Circular	27.906	26.440	1.241	26.889	25.430	1.234
13.007	12.779	29.7	225	Circular	26.889	25.430	1.234	26.629	25.000	1.404
13.008	28.632	95.4	225	Circular	26.629	25.000	1.404	26.252	24.700	1.327
10.009	26.742	199.6	225	Circular	26.252	23.440	2.587	26.034	23.306	2.503
15.000	52.369	98.4	150	Circular	26.724	25.120	1.454	26.034	24.588	1.296
10.010	51.992	200.0	225	Circular	26.034	23.306	2.503	25.171	23.046	1.900
1.016	50.046	100.3	300	Circular	25.171	22.114	2.757	23.917	21.615	2.002

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
10.006	TF 7	1350	Manhole	Adoptable	TF 11	1350	Manhole	Adoptable
11.000	TF 9.1	1350	Manhole	Adoptable	TF 9	1350	Manhole	Adoptable
12.000	TF 8	1350	Manhole	Adoptable	TF 9	1350	Manhole	Adoptable
11.001	TF 9	1350	Manhole	Adoptable	TF 10	1350	Manhole	Adoptable
11.002	TF 10	1350	Manhole	Adoptable	TF 11	1350	Manhole	Adoptable
10.007	TF 11	1350	Manhole	Adoptable	TF 12	1350	Manhole	Adoptable
10.008	TF 12	1350	Manhole	Adoptable	TF 27	1350	Manhole	Adoptable
13.000	TF 13	1350	Manhole	Adoptable	TF 14	1350	Manhole	Adoptable
13.001	TF 14	1350	Manhole	Adoptable	TF 15	1350	Manhole	Adoptable
13.002	TF 15	1350	Manhole	Adoptable	TF 16	1350	Manhole	Adoptable
13.003	TF 16	1350	Manhole	Adoptable	TF 17	1350	Manhole	Adoptable
13.004	TF 17	1350	Manhole	Adoptable	TF 18	1350	Manhole	Adoptable
13.005	TF 18	1350	Manhole	Adoptable	TF 24	1350	Manhole	Adoptable
14.000	TF 19	1350	Manhole	Adoptable	TF 20	1350	Manhole	Adoptable
14.001	TF 20	1350	Manhole	Adoptable	TF 21	1350	Manhole	Adoptable
14.002	TF 21	1350	Manhole	Adoptable	TF 22	1350	Manhole	Adoptable
14.003	TF 22	1350	Manhole	Adoptable	TF 23	1350	Manhole	Adoptable
14.004	TF 23	1350	Manhole	Adoptable	TF 24	1350	Manhole	Adoptable
13.006	TF 24	1350	Manhole	Adoptable	TF 25	1350	Manhole	Adoptable
13.007	TF 25	1350	Manhole	Adoptable	TF 26	1350	Manhole	Adoptable
13.008	TF 26	1350	Manhole	Adoptable	TF 27	1350	Manhole	Adoptable
10.009	TF 27	1350	Manhole	Adoptable	AF 13	1350	Manhole	Adoptable
15.000	AF 12	1350	Manhole	Adoptable	AF 13	1350	Manhole	Adoptable
10.010	AF 13	1350	Manhole	Adoptable	FR 2	1350	Manhole	Adoptable
1.016	FR 2	1350	Manhole	Adoptable	FR 3	1350	Manhole	Adoptable

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
16.000	23.359	47.7	150	Circular	25.698	24.280	1.268	25.179	23.790	1.239
16.001	40.176	49.0	150	Circular	25.179	23.790	1.239	24.344	22.970	1.224
16.002	12.931	40.4	150	Circular	24.344	22.970	1.224	24.065	22.650	1.265
16.003	8.383	46.1	150	Circular	24.065	22.650	1.265	24.184	22.468	1.566
16.004	30.982	64.8	150	Circular	24.184	22.468	1.566	23.917	21.990	1.777
1.017	63.157	44.6	300	Circular	23.917	21.615	2.002	22.380	20.200	1.880
17.000	15.004	60.0	150	Circular	24.304	22.660	1.494	24.283	22.410	1.723
17.001	36.087	49.4	150	Circular	24.283	22.410	1.723	23.030	21.680	1.200
17.002	6.937	28.9	150	Circular	23.030	21.680	1.200	22.782	21.440	1.192
17.003	15.754	24.6	150	Circular	22.782	21.440	1.192	22.225	20.800	1.275
18.000	27.398	60.0	150	Circular	21.317	20.032	1.135	22.225	19.575	2.500
17.004	18.833	200.4	225	Circular	22.225	19.575	2.425	21.768	19.481	2.062
17.005	15.056	200.7	225	Circular	21.768	19.481	2.062	21.585	19.406	1.954
17.006	30.611	200.1	225	Circular	21.585	19.406	1.954	21.484	19.253	2.006
17.007	10.073	197.5	225	Circular	21.484	19.253	2.006	21.623	19.202	2.196
19.000	8.783	29.3	150	Circular	23.184	22.000	1.034	22.870	21.700	1.020
20.000	8.238	60.1	150	Circular	22.734	21.595	0.989	22.870	21.458	1.262
19.001	8.960	59.7	150	Circular	22.870	21.458	1.262	22.540	21.308	1.082
19.002	26.844	52.8	150	Circular	22.540	21.308	1.082	21.623	20.800	0.673
17.008	24.325	201.0	225	Circular	21.623	19.202	2.196	22.064	19.081	2.758
17.009	36.976	199.9	225	Circular	22.064	19.081	2.758	22.929	18.896	3.808
21.000	33.288	60.0	150	Circular	24.183	22.670	1.363	24.830	22.115	2.565
21.001	29.481	60.0	150	Circular	24.830	22.115	2.565	24.543	21.624	2.769
21.002	54.562	117.6	150	Circular	24.543	21.624	2.769	23.221	21.160	1.911
21.003	12.646	200.7	225	Circular	23.221	20.763	2.233	22.929	20.700	2.004

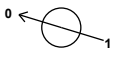
Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
16.000	AF 7	1350	Manhole	Adoptable	AF 8	1350	Manhole	Adoptable
16.001	AF 8	1350	Manhole	Adoptable	AF 9	1350	Manhole	Adoptable
16.002	AF 9	1350	Manhole	Adoptable	AF 10	1350	Manhole	Adoptable
16.003	AF 10	1350	Manhole	Adoptable	AF 11	1350	Manhole	Adoptable
16.004	AF 11	1350	Manhole	Adoptable	FR 3	1350	Manhole	Adoptable
1.017	FR 3	1350	Manhole	Adoptable	FR 4	1350	Manhole	Adoptable
17.000	KF 1	1350	Manhole	Adoptable	KF 2	1350	Manhole	Adoptable
17.001	KF 2	1350	Manhole	Adoptable	KF 4	1350	Manhole	Adoptable
17.002	KF 4	1350	Manhole	Adoptable	KF 5	1350	Manhole	Adoptable
17.003	KF 5	1350	Manhole	Adoptable	KF 6	1350	Manhole	Adoptable
18.000	KF 6.1	1350	Manhole	Adoptable	KF 6	1350	Manhole	Adoptable
17.004	KF 6	1350	Manhole	Adoptable	KF 7	1350	Manhole	Adoptable
17.005	KF 7	1350	Manhole	Adoptable	KF 8	1350	Manhole	Adoptable
17.006	KF 8	1350	Manhole	Adoptable	KF 9	1350	Manhole	Adoptable
17.007	KF 9	1350	Manhole	Adoptable	KF 10	1350	Manhole	Adoptable
19.000	KF 10.3	1350	Manhole	Adoptable	KF 10.2	1200	Manhole	Adoptable
20.000	KF 10.2.1	1350	Manhole	Adoptable	KF 10.2	1200	Manhole	Adoptable
19.001	KF 10.2	1200	Manhole	Adoptable	KF 10.1	1350	Manhole	Adoptable
19.002	KF 10.1	1350	Manhole	Adoptable	KF 10	1350	Manhole	Adoptable
17.008	KF 10	1350	Manhole	Adoptable	KF 11	1350	Manhole	Adoptable
17.009	KF 11	1350	Manhole	Adoptable	KF 16	1350	Manhole	Adoptable
21.000	KF 12	1350	Manhole	Adoptable	KF 13	1350	Manhole	Adoptable
21.001	KF 13	1350	Manhole	Adoptable	KF 14	1350	Manhole	Adoptable
21.002	KF 14	1350	Manhole	Adoptable	KF 15	1350	Manhole	Adoptable
21.003	KF 15	1350	Manhole	Adoptable	KF 16	1350	Manhole	Adoptable

Pipeline Schedule

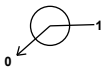
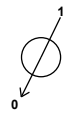
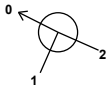
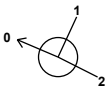
Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
17.010	6.919	197.7	225	Circular	22.929	18.896	3.808	23.419	18.861	4.333
17.011	33.974	199.8	225	Circular	23.419	18.861	4.333	24.485	18.691	5.569
17.012	26.607	200.1	225	Circular	24.485	18.691	5.569	22.643	18.558	3.860
17.013	21.226	202.2	225	Circular	22.643	18.558	3.860	22.508	18.453	3.830
22.000	15.659	156.6	225	Circular	23.181	18.517	4.439	22.508	18.417	3.866
17.014	37.754	199.8	225	Circular	22.508	18.417	3.866	22.283	18.228	3.830
17.015	5.688	196.1	225	Circular	22.283	18.228	3.830	22.250	18.199	3.826
17.016	8.782	204.2	225	Circular	22.250	18.199	3.826	22.214	18.156	3.833
17.017	27.984	199.9	225	Circular	22.214	18.156	3.833	22.380	18.016	4.139
1.018	36.824	199.0	300	Circular	22.380	17.941	4.139	21.674	17.756	3.618
1.019	15.579	202.3	300	Circular	21.674	17.756	3.618	21.378	17.679	3.399
1.020	15.710	209.5	225	Circular	21.378	17.550	3.603	21.292	17.475	3.592

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
17.010	KF 16	1350	Manhole	Adoptable	KF 17	1200	Manhole	Adoptable
17.011	KF 17	1200	Manhole	Adoptable	AF 1	1200	Manhole	Adoptable
17.012	AF 1	1200	Manhole	Adoptable	AF 2	1350	Manhole	Adoptable
17.013	AF 2	1350	Manhole	Adoptable	AF 3	1350	Manhole	Adoptable
22.000	AF 3.1	1350	Manhole	Adoptable	AF 3	1350	Manhole	Adoptable
17.014	AF 3	1350	Manhole	Adoptable	AF 4	1350	Manhole	Adoptable
17.015	AF 4	1350	Manhole	Adoptable	AF 5	1350	Manhole	Adoptable
17.016	AF 5	1350	Manhole	Adoptable	AF 6	1350	Manhole	Adoptable
17.017	AF 6	1350	Manhole	Adoptable	FR 4	1350	Manhole	Adoptable
1.018	FR 4	1350	Manhole	Adoptable	FR 5	1350	Manhole	Adoptable
1.019	FR 5	1350	Manhole	Adoptable	Ex.F 9	1200	Manhole	Adoptable
1.020	Ex.F 9	1200	Manhole	Adoptable	Ex.F 10	1350	Manhole	Adoptable

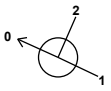
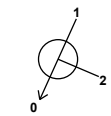
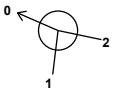
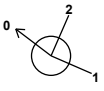
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
MQF 1	526938.359	724921.203	32.036	1.374	1350	 0	1.000	30.662	150
MQF 2	526930.300	724895.288	32.164	1.954	1350	 1	1.000	30.210	150
						0	1.001	30.210	150
MQF 3	526899.285	724904.722	30.622	1.372	1350	 1	1.001	29.250	150
						0	1.002	29.250	150
MQF 4.1	526882.671	724937.877	29.246	1.129	1350	 0	2.000	28.117	150
MQF 4	526874.768	724912.196	29.403	1.734	1350	 1	2.000	27.669	150
						2	1.002	28.350	150
						0	1.003	27.669	225

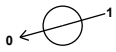
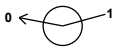
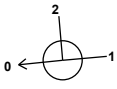
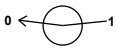
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
MQF 5	526864.393	724911.907	28.910	1.817	1350		1 0	1.003 1.004	27.460 27.093	225 225
MQF 7	526825.334	724877.171	27.110	2.669	1350		1 0	1.004 1.005	25.600 24.441	225 225
MQF 8.1	526815.876	724843.845	26.698	1.598	1350		0	3.000	25.100	150
MQF 8	526804.046	724856.447	26.331	2.039	1350		1 2 0	3.000 1.005 1.006	24.292 24.292 24.292	150 225 225
MQF 9	526793.326	724839.986	25.850	1.656	1350		1 0	1.006 1.007	24.194 24.194	225 225
MQF 10	526778.314	724809.121	25.572	1.550	1350		1 0	1.007 1.008	24.022 24.022	225 225
MQF 11	526772.316	724797.102	25.460	1.505	1350		1 0	1.008 1.009	23.955 23.955	225 225
MQF 12.2	526747.053	724773.026	25.050	1.360	1350		0	4.000	23.690	150
MQF 12.1	526732.124	724779.561	25.041	1.623	1350		1 0	4.000 4.001	23.418 23.418	150 225
MQF 12	526745.158	724809.129	25.471	2.571	1350		1 2 0	4.001 1.009 1.010	23.203 23.807 22.900	225 225 225
MQF 13.2	526769.768	724836.451	25.021	1.441	1350		0	5.000	23.580	225
MQF 13.1	526753.504	724843.610	25.294	2.010	1350		1 0	5.000 5.001	23.284 23.284	225 225
MQF 13	526738.988	724812.242	25.459	2.602	1350		1 2 0	5.001 1.010 1.011	23.051 22.857 22.857	225 225 225

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
PF 1	526787.806	724905.442	25.431	1.546	1350		0	6.000	23.885	300
MQF 14	526782.974	724866.719	25.726	1.857	1350		0	7.000	23.869	225
MQF 15	526772.947	724871.485	25.411	1.896	1350		1	7.000	23.515	225
							2	6.000	23.529	300
							0	6.001	23.515	300
MQF 16	526741.307	724885.820	24.428	1.436	1350		1	6.001	23.068	300
							0	6.002	22.992	300
MQF 17	526723.936	724847.480	24.696	1.915	1350		1	6.002	22.781	300
							0	6.003	22.781	300
MQF 18	526712.992	724823.327	24.871	2.222	1350		1	6.003	22.649	300
							2	1.011	22.715	225
							0	1.012	22.649	300
MQF 19	526699.899	724794.432	25.029	2.575	1350		1	1.012	22.454	300
							0	1.013	22.454	300
MQF 20	526758.371	724753.103	25.199	1.350	1350		0	8.000	23.849	150
MQF 21	526745.364	724735.451	25.170	1.686	1200		1	8.000	23.484	150
							0	8.001	23.484	150
MQF 22.1	526715.295	724721.052	26.154	1.946	1350		0	9.000	24.208	150
MQF 22	526717.755	724741.222	25.174	1.954	1350		1	9.000	23.700	150
							2	8.001	23.220	150
							0	8.002	23.220	225
MQF 23	526683.244	724756.246	25.003	2.758	1350		1	8.002	22.743	225
							2	1.013	22.245	300
							0	1.014	22.245	300
FR 1	526677.847	724760.341	24.995	2.784	1350		1	1.014	22.211	300
							0	1.015	22.211	300

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
TF 1	526704.417	724603.093	27.526	1.346	1350		0	10.000	26.180	150
TF 2	526708.077	724582.510	27.261	1.429	1350		1	10.000	25.832	150
							0	10.001	25.832	150
TF 3	526711.325	724565.318	27.012	1.472	1350		1	10.001	25.540	150
							0	10.002	25.540	150
TF 4	526687.114	724558.477	26.721	1.371	1350		1	10.002	25.350	150
							0	10.003	25.350	150
TF 5	526650.093	724548.359	26.382	1.598	1350		1	10.003	25.000	150
							0	10.004	24.784	225
TF 6	526628.798	724552.408	25.585	1.475	1350		1	10.004	24.110	225
							0	10.005	24.110	225
TF 7	526633.900	724589.000	25.659	1.734	1350		1	10.005	23.925	225
							0	10.006	23.925	225
TF 9.1	526686.583	724651.622	27.371	1.341	1350		0	11.000	26.030	150
TF 8	526707.958	724621.075	27.824	1.364	1350		0	12.000	26.460	150
TF 9	526689.352	724619.423	27.228	1.740	1350		1	12.000	25.850	150
							2	11.000	25.488	150
							0	11.001	25.488	150
TF 10	526654.370	724615.859	26.175	1.375	1350		1	11.001	24.800	150
							0	11.002	24.800	150
TF 11	526638.017	724617.875	25.835	2.056	1350		1	11.002	24.329	150
							2	10.006	23.779	225
							0	10.007	23.779	225
TF 12	526642.741	724654.741	26.548	2.954	1350		1	10.007	23.594	225
							0	10.008	23.594	225

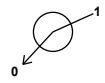
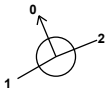
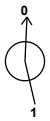
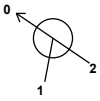
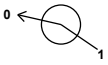
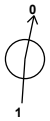
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
TF 13	526796.036	724628.912	29.311	1.341	1350		0	13.000	27.970	150
TF 14	526794.668	724642.327	29.514	1.769	1350		1	13.000	27.745	150
							0	13.001	27.745	150
TF 15	526787.059	724657.765	29.622	2.164	1350		1	13.001	27.458	150
							0	13.002	27.458	150
TF 16	526772.602	724706.162	28.762	1.722	1350		1	13.002	27.040	150
							0	13.003	27.040	225
TF 17	526750.499	724703.109	28.505	1.625	1350		1	13.003	26.880	225
							0	13.004	26.880	225
TF 18	526730.598	724700.316	28.222	1.442	1350		1	13.004	26.780	225
							0	13.005	26.780	225
TF 19	526785.454	724621.282	29.419	1.389	1350		0	14.000	28.030	150
TF 20	526757.389	724618.525	29.192	1.642	1350		1	14.000	27.560	150
							0	14.001	27.550	150
TF 21	526744.396	724617.249	29.067	1.747	1350		1	14.001	27.320	150
							0	14.002	27.320	150
TF 22	526735.001	724629.955	28.579	1.459	1350		1	14.002	27.120	150
							0	14.003	27.120	225
TF 23	526728.981	724692.449	28.228	1.424	1350		1	14.003	26.804	225
							0	14.004	26.804	225
TF 24	526720.025	724692.475	27.906	1.466	1350		1	14.004	26.440	225
							2	13.005	26.440	225
							0	13.006	26.440	225
TF 25	526689.692	724687.121	26.889	1.459	1350		1	13.006	25.430	225
							0	13.007	25.430	225

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
TF 26	526677.911	724682.169	26.629	1.629	1350	1	13.007	25.000	225
						0	13.008	25.000	225
TF 27	526649.398	724684.777	26.252	2.812	1350	1	13.008	24.700	225
						2	10.008	23.440	225
						0	10.009	23.440	225
AF 12	526704.320	724705.527	26.724	1.604	1350				
						0	15.000	25.120	150
AF 13	526652.278	724711.364	26.034	2.728	1350	1	15.000	24.588	150
						2	10.009	23.306	225
						0	10.010	23.306	225
FR 2	526658.545	724762.977	25.171	3.057	1350	1	10.010	23.046	225
						2	1.015	22.114	300
						0	1.016	22.114	300
AF 7	526622.270	724693.410	25.698	1.418	1350				
						0	16.000	24.280	150
AF 8	526598.916	724692.935	25.179	1.389	1350	1	16.000	23.790	150
						0	16.001	23.790	150
AF 9	526590.728	724732.267	24.344	1.374	1350	1	16.001	22.970	150
						0	16.002	22.970	150
AF 10	526594.891	724744.510	24.065	1.415	1350	1	16.002	22.650	150
						0	16.003	22.650	150
AF 11	526603.252	724743.909	24.184	1.716	1350	1	16.003	22.468	150
						0	16.004	22.468	150
FR 3	526609.773	724774.197	23.917	2.302	1350	1	16.004	21.990	150
						2	1.016	21.615	300
						0	1.017	21.615	300
KF 1	526610.235	724552.254	24.304	1.644	1350				
						0	17.000	22.660	150
KF 2	526609.577	724537.265	24.283	1.873	1350	1	17.000	22.410	150
						0	17.001	22.410	150

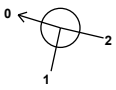
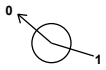
Manhole Schedule

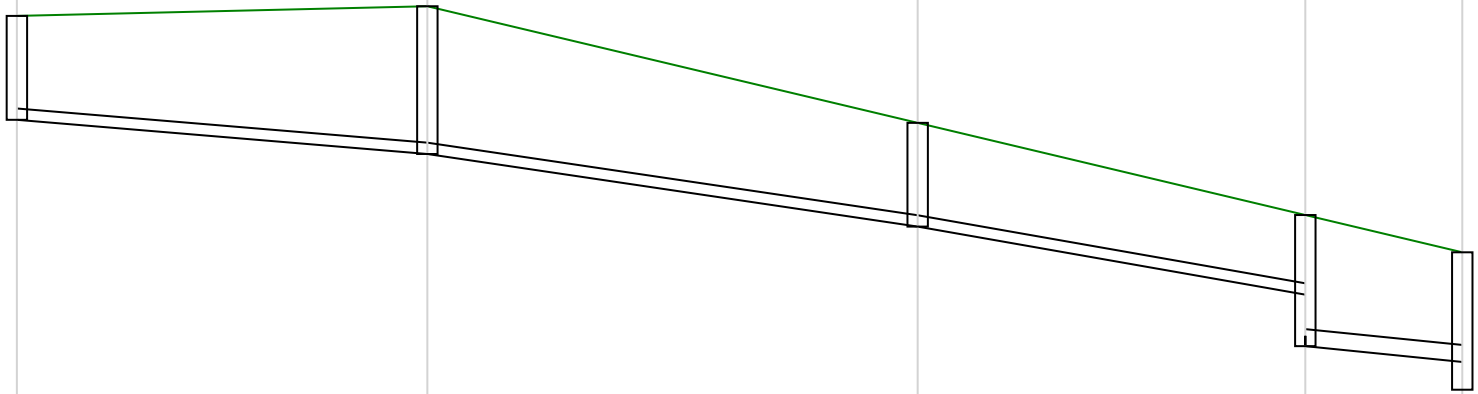
Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
KF 4	526576.677	724522.437	23.030	1.350	1350		1	17.001	21.680	150
							0	17.002	21.680	150
KF 5	526571.969	724517.342	22.782	1.342	1350		1	17.002	21.440	150
							0	17.003	21.440	150
KF 6.1	526533.565	724497.870	21.317	1.285	1350		0	18.000	20.032	150
KF 6	526557.350	724511.469	22.225	2.650	1350		1	18.000	19.575	150
							2	17.003	20.800	150
							0	17.004	19.575	225
KF 7	526550.116	724528.858	21.768	2.287	1350		1	17.004	19.481	225
							0	17.005	19.481	225
KF 8	526546.695	724543.520	21.585	2.179	1350		1	17.005	19.406	225
							0	17.006	19.406	225
KF 9	526548.093	724574.099	21.484	2.231	1350		1	17.006	19.253	225
							0	17.007	19.253	225
KF 10.3	526586.984	724568.053	23.184	1.184	1350		0	19.000	22.000	150
KF 10.2.1	526578.201	724564.898	22.734	1.139	1350		0	20.000	21.595	150
KF 10.2	526579.723	724572.994	22.870	1.412	1200		1	20.000	21.458	150
							2	19.000	21.700	150
							0	19.001	21.458	150
KF 10.1	526572.315	724578.035	22.540	1.232	1350		1	19.001	21.308	150
							0	19.002	21.308	150
KF 10	526546.138	724583.981	21.623	2.421	1350		1	19.002	20.800	150
							2	17.007	19.202	225
							0	17.008	19.202	225
KF 11	526547.796	724608.249	22.064	2.983	1350		1	17.008	19.081	225
							0	17.009	19.081	225

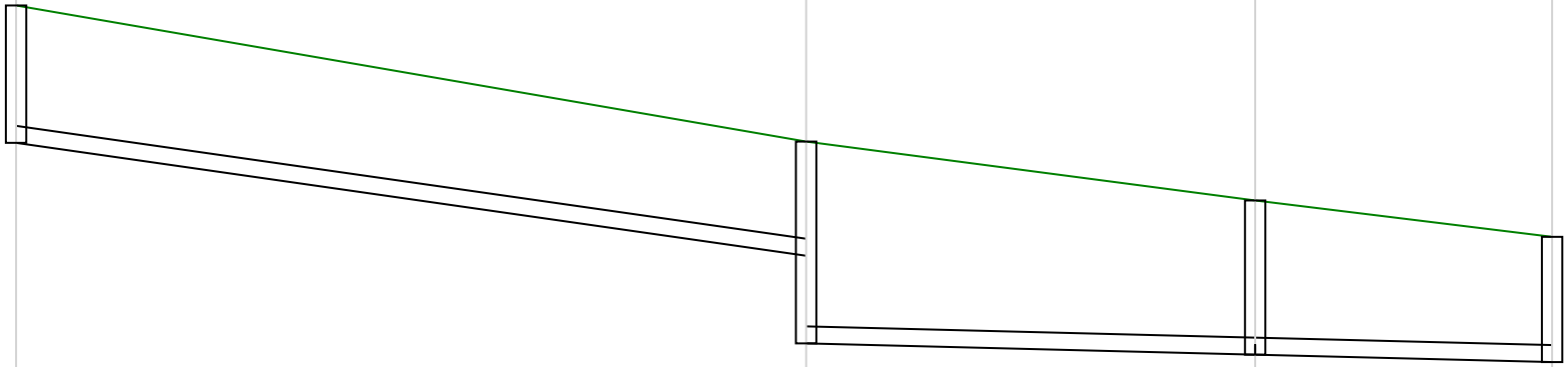
Manhole Schedule

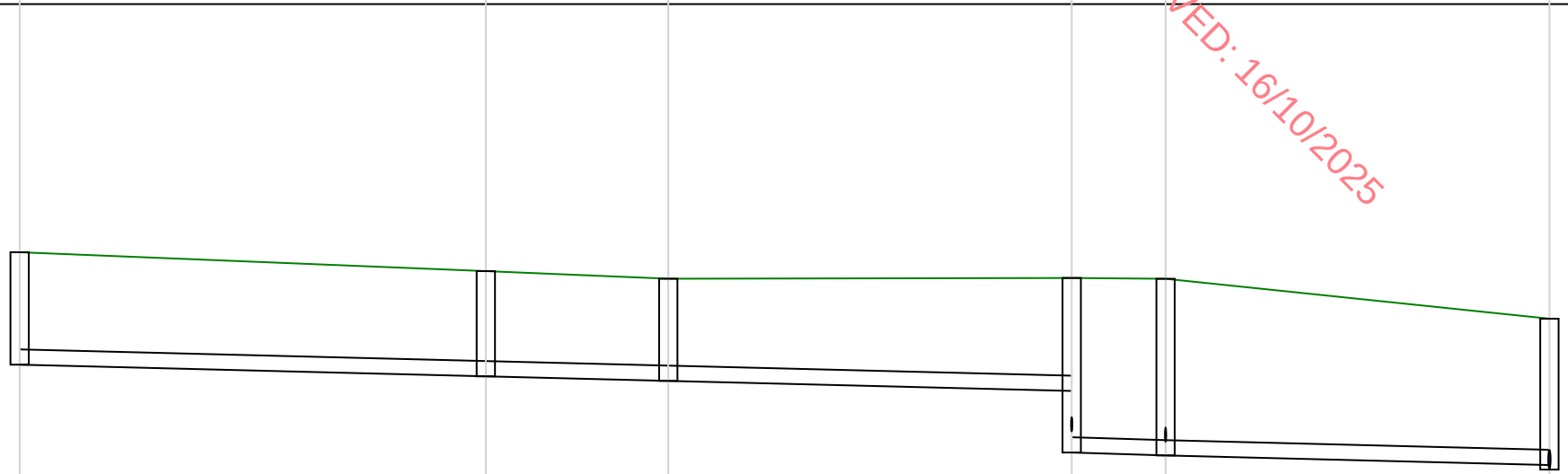
Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
KF 12	526611.611	724571.580	24.183	1.513	1350		0	21.000	22.670	150
KF 13	526617.248	724604.387	24.830	2.715	1350		1	21.000	22.115	150
							0	21.001	22.115	150
KF 14	526621.546	724633.553	24.543	2.919	1350		1	21.001	21.624	150
							0	21.002	21.624	150
KF 15	526568.005	724644.060	23.221	2.458	1350		1	21.002	21.160	150
							0	21.003	20.763	225
KF 16	526555.365	724644.442	22.929	4.033	1350		1	21.003	20.700	225
							2	17.009	18.896	225
							0	17.010	18.896	225
KF 17	526556.217	724651.307	23.419	4.558	1200		1	17.010	18.861	225
							0	17.011	18.861	225
AF 1	526533.122	724676.224	24.485	5.794	1200		1	17.011	18.691	225
							0	17.012	18.691	225
AF 2	526530.179	724702.668	22.643	4.085	1350		1	17.012	18.558	225
							0	17.013	18.558	225
AF 3.1	526565.676	724711.407	23.181	4.664	1350		0	22.000	18.517	225
AF 3	526550.075	724710.064	22.508	4.091	1350		1	22.000	18.417	225
							2	17.013	18.453	225
							0	17.014	18.417	225
AF 4	526545.981	724747.596	22.283	4.055	1350		1	17.014	18.228	225
							0	17.015	18.228	225
AF 5	526543.122	724752.514	22.250	4.051	1350		1	17.015	18.199	225
							0	17.016	18.199	225
AF 6	526542.349	724761.261	22.214	4.058	1350		1	17.016	18.156	225
							0	17.017	18.156	225

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
FR 4	526548.282	724788.609	22.380	4.439	1350		1	17.017	18.016	225
							2	1.017	20.200	300
							0	1.018	17.941	300
FR 5	526513.065	724799.367	21.674	3.918	1350		1	1.018	17.756	300
							0	1.019	17.756	300
Ex.F 9	526501.258	724809.532	21.378	3.828	1200		1	1.019	17.679	300
							0	1.020	17.550	225
Ex.F 10	526489.319	724819.743	21.292	3.817	1350		1	1.020	17.475	225

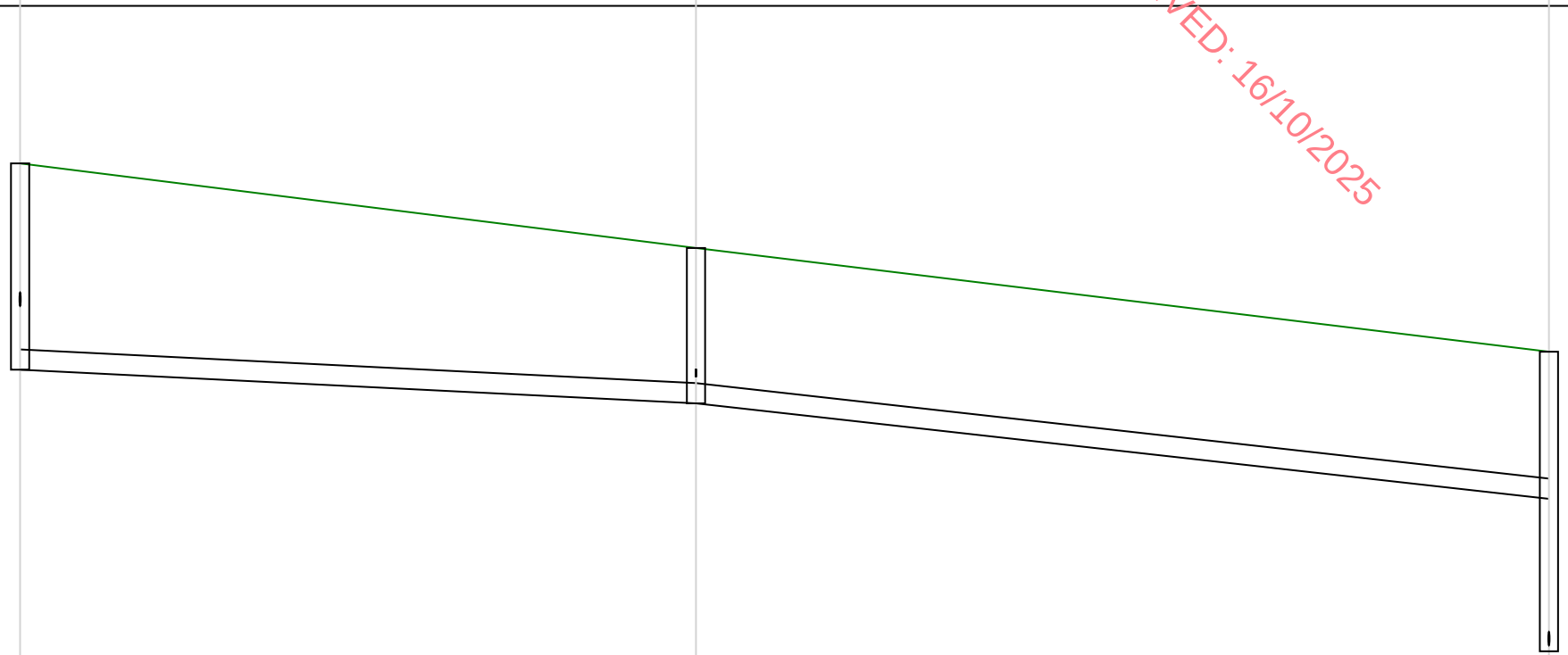
Node Name	MQF 1	MQF 2	MQF 3	MQF 4	MQF 5
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 24.000					
Link Name	1.000	1.001	1.002	1.003	
Section Type	150mm	150mm	150mm	225mm	
Slope (1:X)	60.0	33.8	28.5	49.7	
Cover Level (m)	32.036	32.164	30.622	29.403	28.910
Invert Level (m)	30.662	30.210 / 30.210	29.250 / 29.250	28.350	27.669 / 27.460
Length (m)	27.139	32.418	25.631	10.378	

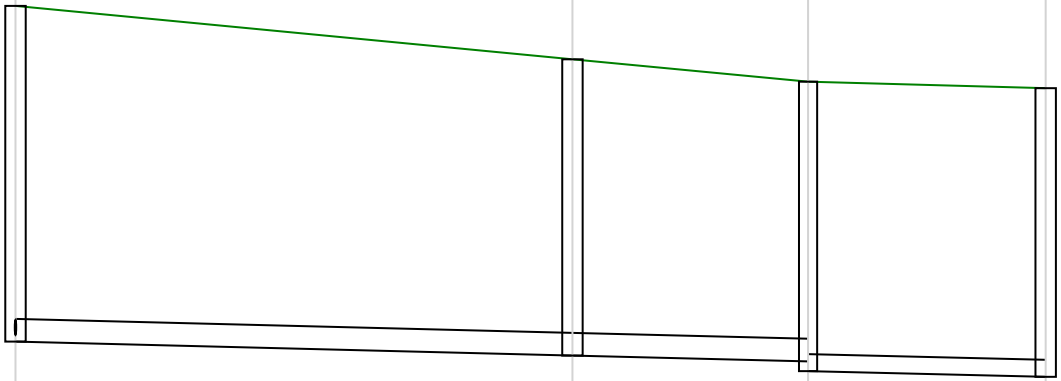
Node Name	MQF 5	MQF 7	MQF 8	MQF 9
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 21.000				
Link Name	1.004	1.005	1.006	
Section Type	225mm	225mm	225mm	
Slope (1:X)	35.0	199.4	200.4	
Cover Level (m)	28.910	27.110	26.331	25.850
Invert Level (m)	27.093	25.600 / 24.441	24.292 / 24.292	24.194
Length (m)	52.271	29.709	19.644	

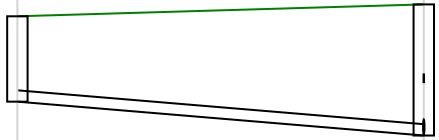


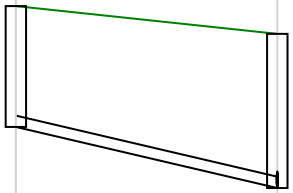
Node Name	MQF 9		MQF 10		MQF 11		MQF 12	MQF 13		MQF 18
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 18.000										
Link Name	1.007		1.008		1.009		1.010	1.011		
Section Type	225mm		225mm		225mm		225mm	225mm		
Slope (1:X)	199.6		200.5		200.7		160.7	199.0		
Cover Level (m)	25.850		25.572		25.460		25.471	25.459		24.871
Invert Level (m)	24.194	24.022	24.022	23.955	23.955	23.807	22.900	22.857	22.857	22.715
Length (m)	34.323		13.433		29.702		6.911	28.261		

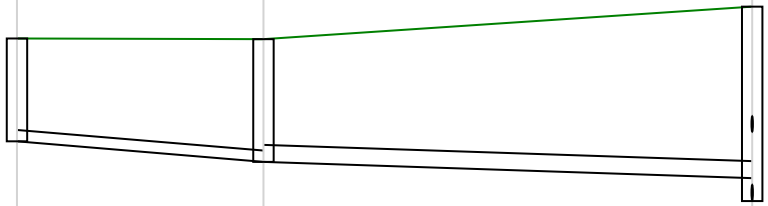
Node Name	MQF 18	MQF 19	MQF 23	FR 1	FR 2
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 18.000					
Link Name	1.012	1.013	1.014	1.015	
Section Type	300mm	300mm	300mm	300mm	
Slope (1:X)	162.7	199.3	199.3	200.8	
Cover Level (m)	24.871	25.029	25.003	24.995	25.171
Invert Level (m)	22.649	22.454 / 22.454	22.245 / 22.245	22.211 / 22.211	22.114
Length (m)	31.723	41.659	6.775	19.481	

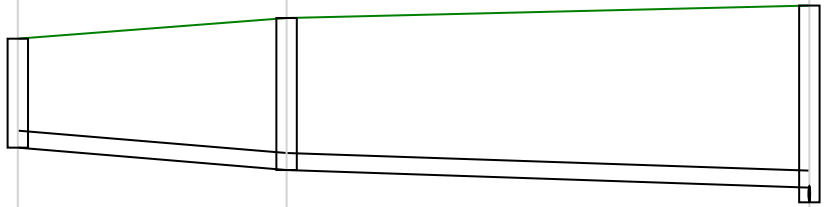
Node Name	FR 2	FR 3	FR 4
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 16.000			
Link Name	1.016	1.017	
Section Type	300mm	300mm	
Slope (1:X)	100.3	44.6	
Cover Level (m)	25.171	23.917	22.380
Invert Level (m)	22.114	21.615 / 21.615	20.200
Length (m)	50.046	63.157	

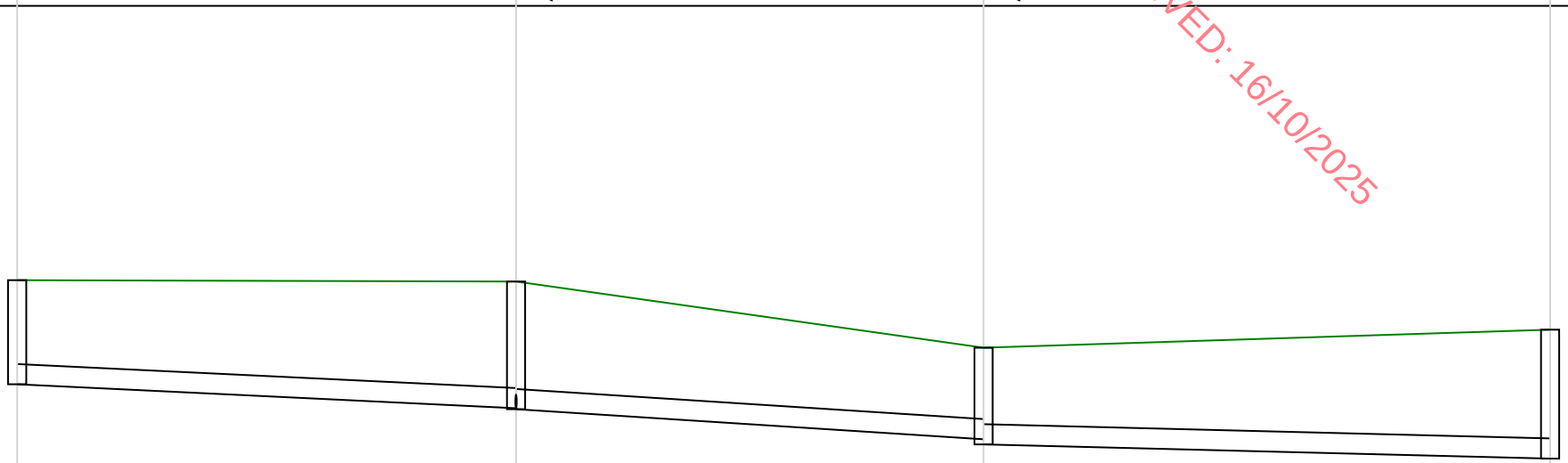
Node Name	FR 4	FR 5	Ex.F 9	Ex.F 10
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 14.000				
Link Name	1.018	1.019	1.020	
Section Type	300mm	300mm	225mm	
Slope (1:X)	199.0	202.3	209.5	
Cover Level (m)	22.380	21.674	21.378	21.292
Invert Level (m)	17.941	17.756 / 17.756	17.679 / 17.550	17.475
Length (m)	36.824	15.579	15.710	

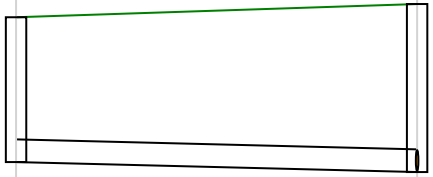
Node Name		MQF 4.1	MQF 4
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 23.000			
Link Name		2.000	
Section Type		150mm	
Slope (1:X)		60.0	
Cover Level (m)		29.246	29.403
Invert Level (m)		28.117	27.669
Length (m)		26.870	

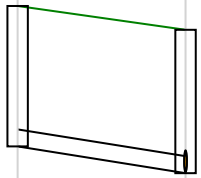
Node Name		MQF 8.1	MQF 8
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 20.000			
Link Name		3.000	
Section Type		150mm	
Slope (1:X)		21.4	
Cover Level (m)		26.698	26.331
Invert Level (m)		25.100	24.292
Length (m)		17.285	

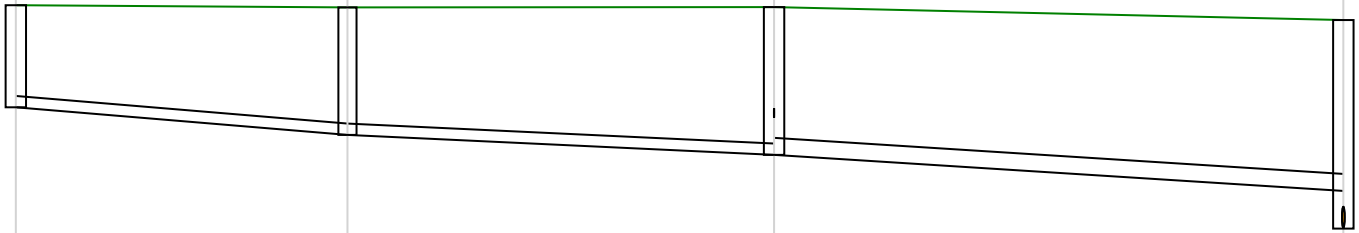
Node Name		MQF 12.2	MQF 12.1	MQF J2
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 18.000				
Link Name		4.000	4.001	
Section Type		150mm	225mm	
Slope (1:X)		59.9	150.3	
Cover Level (m)		25.050	25.041	25.471
Invert Level (m)		23.690 / 23.418	23.418	23.203
Length (m)		16.297	32.314	

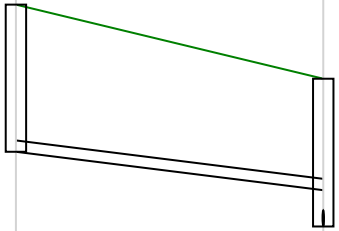
Node Name		MQF 13.2	MQF 13.1	MQF 13
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 18.000				
Link Name		5.000	5.001	
Section Type		225mm	225mm	
Slope (1:X)		60.0	148.3	
Cover Level (m)		25.021	25.294	25.459
Invert Level (m)		23.580 / 23.284	23.284 / 23.051	
Length (m)		17.771	34.565	

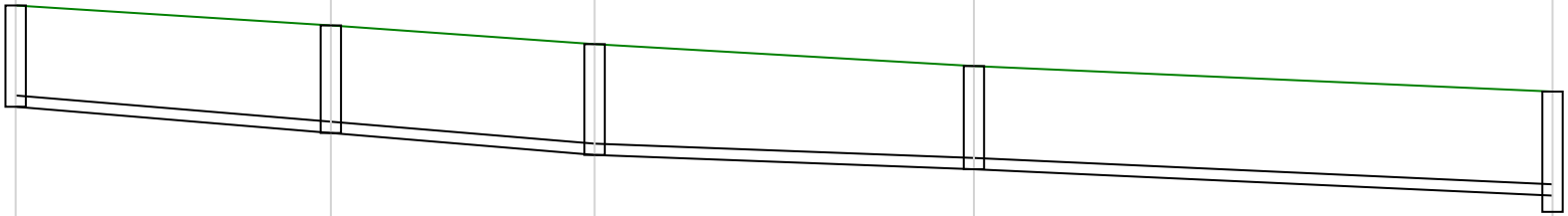
Node Name	PF 1	MQF 15	MQF 16	MQF 17
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 18.000				
Link Name	6.000	6.001	6.002	
Section Type	300mm	300mm	300mm	
Slope (1:X)	104.1	77.7	199.5	
Cover Level (m)	25.431	25.411	24.428	24.696
Invert Level (m)	23.885	23.529 / 23.515	23.068 / 22.992	22.781
Length (m)	37.066	34.735	42.092	

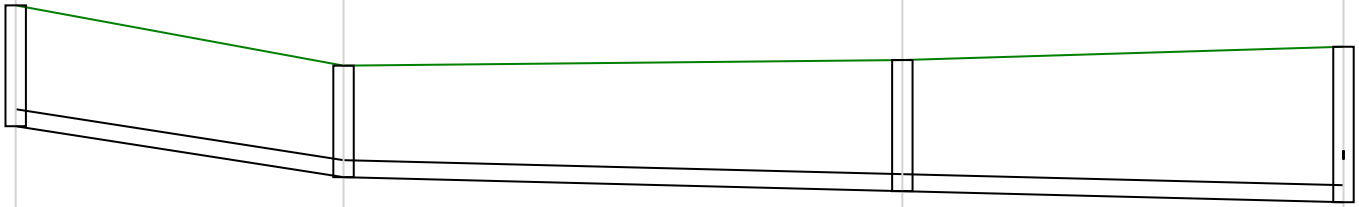
Node Name		MQF 17	MQF 18
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 18.000			
Link Name		6.003	
Section Type		300mm	
Slope (1:X)		200.9	
Cover Level (m)		24.696	24.871
Invert Level (m)		22.781	22.649
Length (m)		26.517	

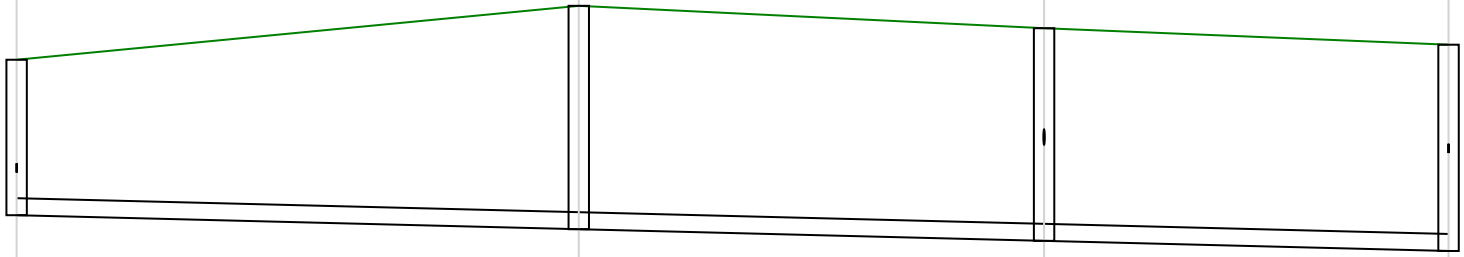
Node Name		MQF 14	MQF 15
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 19.000			
Link Name		7.000	
Section Type		225mm	
Slope (1:X)		31.4	
Cover Level (m)		25.726	25.411
Invert Level (m)		23.869	23.515
Length (m)		11.102	

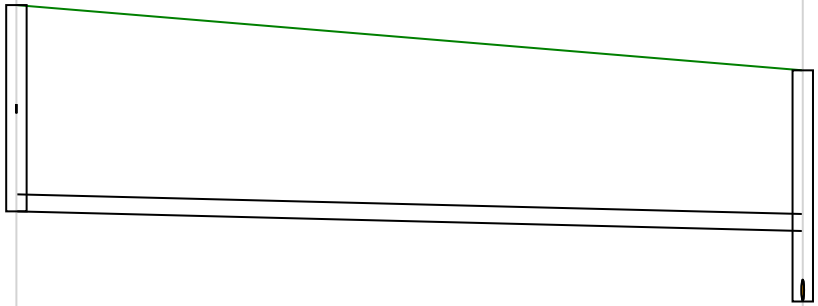
Node Name	MQF 20	MQF 21	MQF 22	MQF 23
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 18.000				
Link Name	8.000	8.001	8.002	
Section Type	150mm	150mm	225mm	
Slope (1:X)	60.1	106.8	78.9	
Cover Level (m)	25.199	25.170	25.174	25.003
Invert Level (m)	23.849	23.484 / 23.484	23.220 / 23.220	22.743
Length (m)	21.927	28.206	37.639	

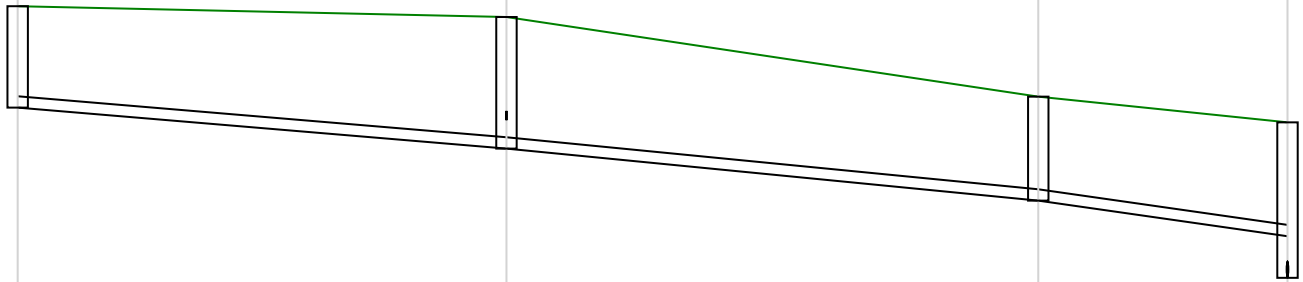
Node Name		MQF 22.1	MQF 22
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 19.000			
Link Name		9.000	
Section Type		150mm	
Slope (1:X)		40.0	
Cover Level (m)		26.154	25.174
Invert Level (m)		24.208	23.700
Length (m)		20.320	

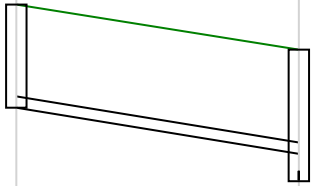
Node Name	TF 1	TF 2	TF 3	TF 4	TF 5
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 20.000					
Link Name	10.000	10.001	10.002	10.003	
Section Type	150mm	150mm	150mm	150mm	
Slope (1:X)	60.1	59.9	132.4	109.7	
Cover Level (m)	27.526	27.261	27.012	26.721	26.382
Invert Level (m)	26.180	25.832 / 25.832	25.540 / 25.540	25.350 / 25.350	25.000
Length (m)	20.906	17.496	25.158	38.379	

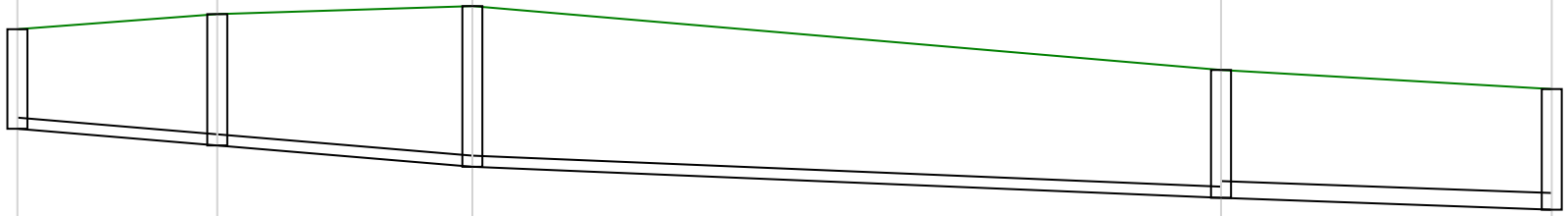
Node Name	TF 5	TF 6	TF 7	TF 11
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 19.000				
Link Name	10.004	10.005	10.006	
Section Type	225mm	225mm	225mm	
Slope (1:X)	32.2	199.7	199.8	
Cover Level (m)	26.382	25.585	25.659	25.835
Invert Level (m)	24.784	24.110 24.110	23.925 23.925	23.779
Length (m)	21.676	36.947	29.167	

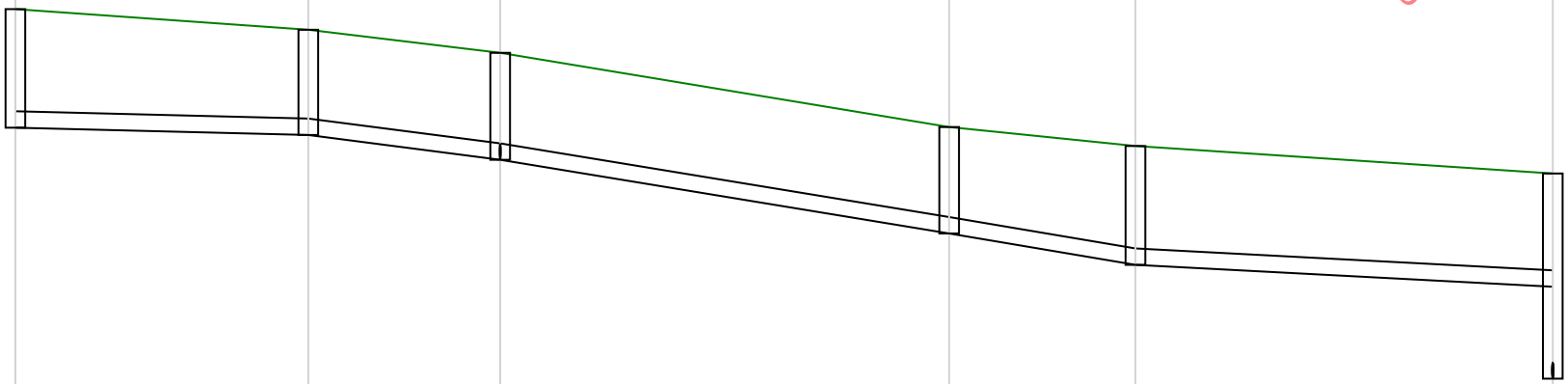
Node Name	TF 11		TF 12		TF 27		AF 13
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 19.000							
Link Name		10.007		10.008		10.009	
Section Type		225mm		225mm		225mm	
Slope (1:X)		200.9		199.8		199.6	
Cover Level (m)	25.835		26.548		26.252		26.034
Invert Level (m)	23.779	23.594	23.594	23.440	23.440	23.306	
Length (m)		37.167		30.766		26.742	

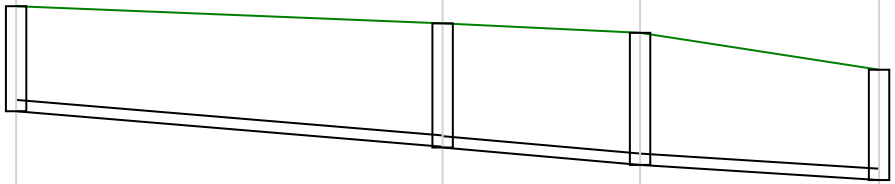
Node Name	AF 13	FR 2
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 18.000		
Link Name	10.010	
Section Type	225mm	
Slope (1:X)	200.0	
Cover Level (m)	26.034	25.171
Invert Level (m)	23.306	23.046
Length (m)	51.992	

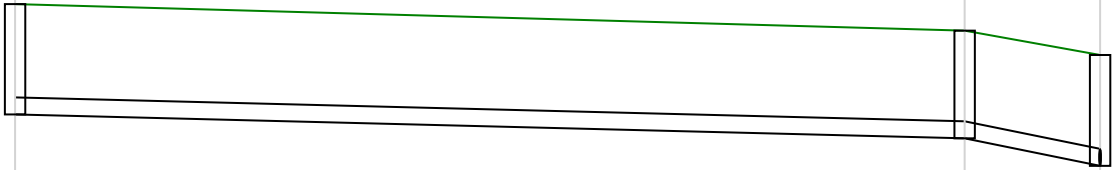
Node Name	TF 9.1	TF 9	TF 10	TF 11
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 20.000				
Link Name	11.000	11.001	11.002	
Section Type	150mm	150mm	150mm	
Slope (1:X)	59.6	51.1	35.0	
Cover Level (m)	27.371	27.228	26.175	25.835
Invert Level (m)	26.030	25.488 / 25.488	24.800 / 24.800	24.329
Length (m)	32.318	35.162	16.478	

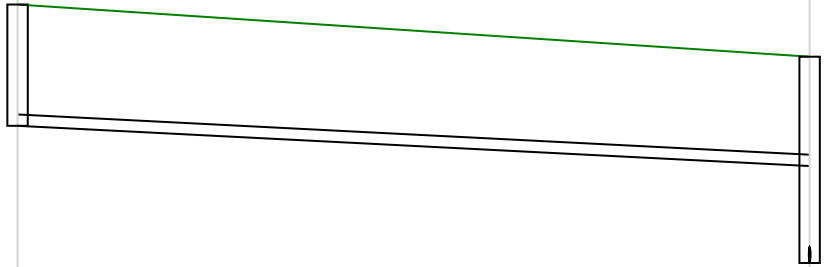
Node Name		TF 8	TF 9
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 21.000			
Link Name		12.000	
Section Type		150mm	
Slope (1:X)		30.6	
Cover Level (m)		27.824	27.228
Invert Level (m)		26.460	25.850
Length (m)		18.680	

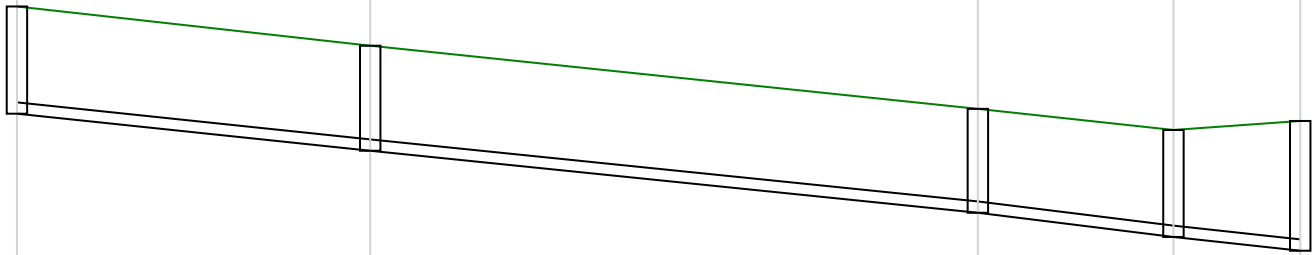
Node Name	TF 13	TF 14	TF 15	TF 16	TF 17
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 22.000					
Link Name	13.000	13.001	13.002	13.003	
Section Type	150mm	150mm	150mm	225mm	
Slope (1:X)	59.9	60.0	120.8	139.5	
Cover Level (m)	29.311	29.514	29.622	28.762	28.505
Invert Level (m)	27.970	27.745 / 27.745	27.458 / 27.458	27.040 / 27.040	26.880
Length (m)	13.485	17.211	50.510	22.313	

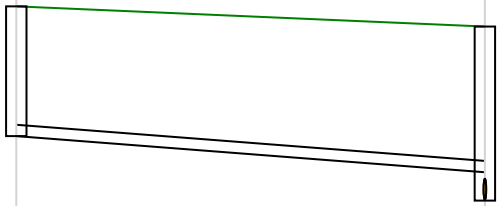
Node Name	TF 17	TF 18	TF 24	TF 25	TF 26	TF 27
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 20.000						
Link Name	13.004	13.005	13.006	13.007	13.008	
Section Type	225mm	225mm	225mm	225mm	225mm	
Slope (1:X)	201.0	38.7	30.5	29.7	95.4	
Cover Level (m)	28.505	28.222	27.906	26.889	26.629	26.252
Invert Level (m)	26.880	26.780 / 26.780	26.440 / 26.440	25.430 / 25.430	25.000 / 25.000	24.700
Length (m)	20.096	13.163	30.803	12.779	28.632	

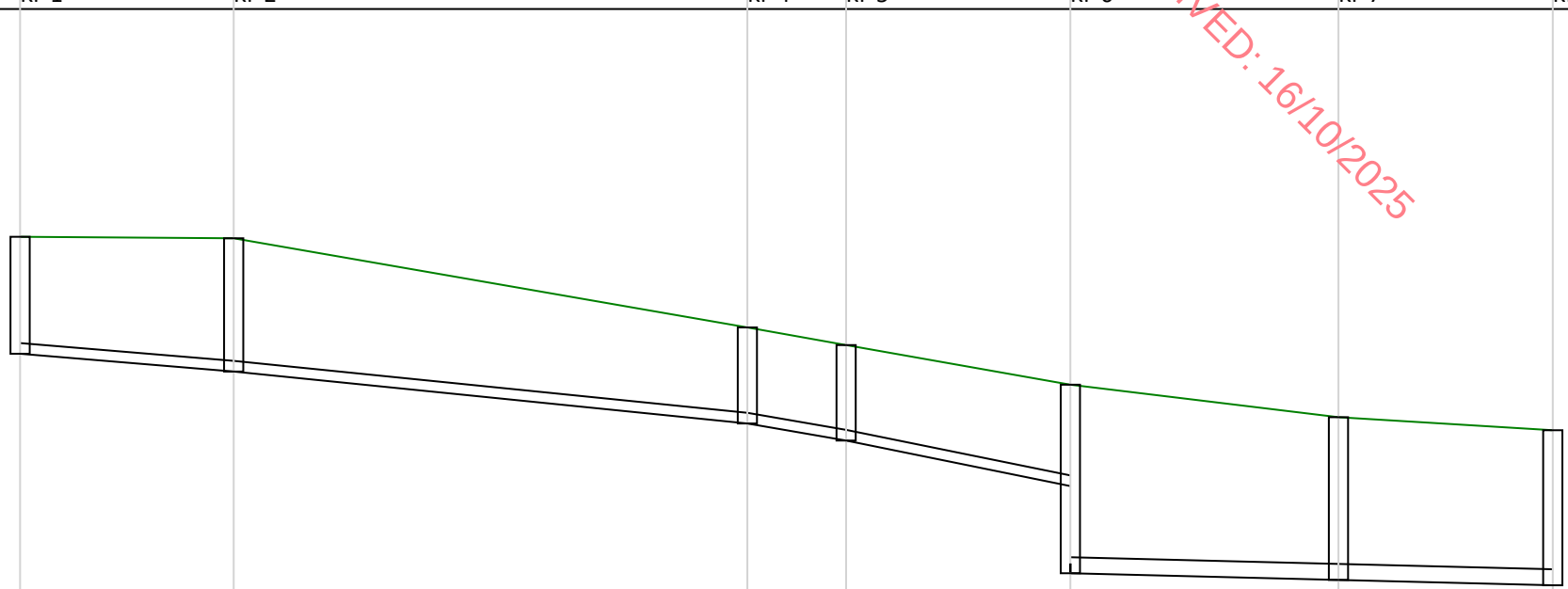
Node Name		TF 19		TF 20		TF 21		TF 22
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 23.000								
Link Name		14.000		14.001		14.002		
Section Type		150mm		150mm		150mm		
Slope (1:X)		60.0		56.8		79.0		
Cover Level (m)		29.419		29.192		29.067		28.579
Invert Level (m)		28.030	27.560	27.550	27.320	27.320	27.120	
Length (m)		28.200		13.055		15.802		

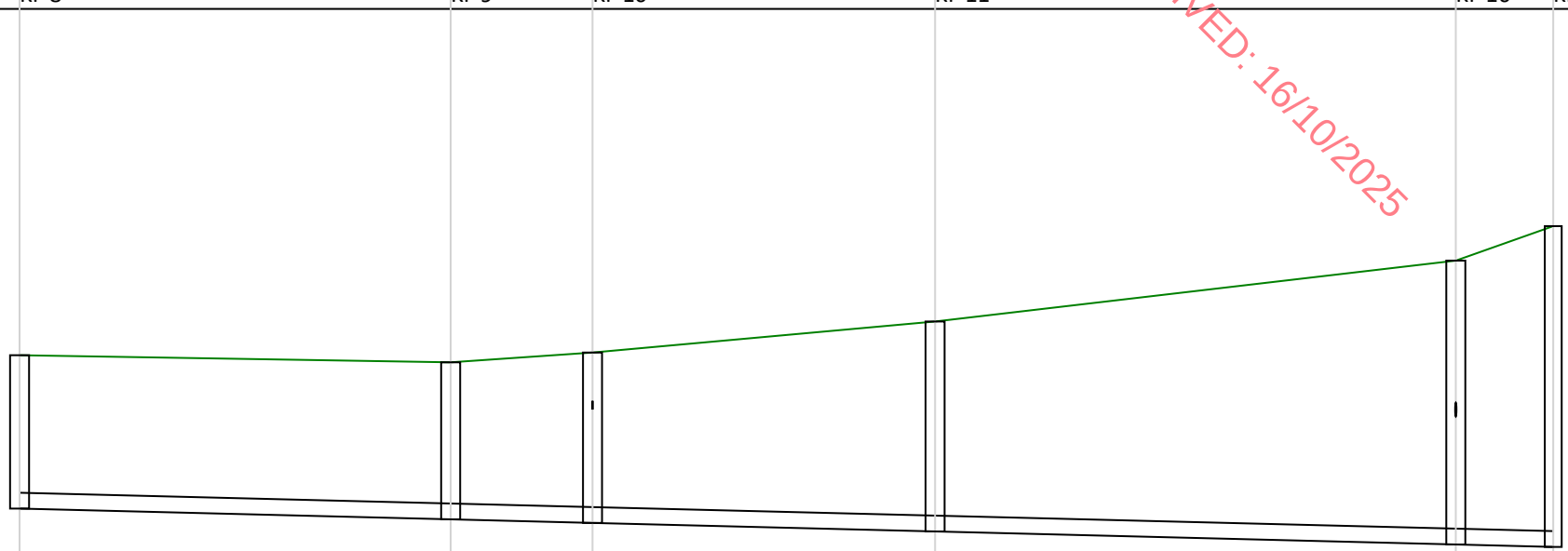
Node Name	TF 22		TF 23	TF 24
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 22.000				
Link Name		14.003	14.004	
Section Type		225mm	225mm	
Slope (1:X)		198.7	24.6	
Cover Level (m)	28.579		28.228	27.906
Invert Level (m)	27.120	26.804	26.804	26.440
Length (m)		62.783	8.956	

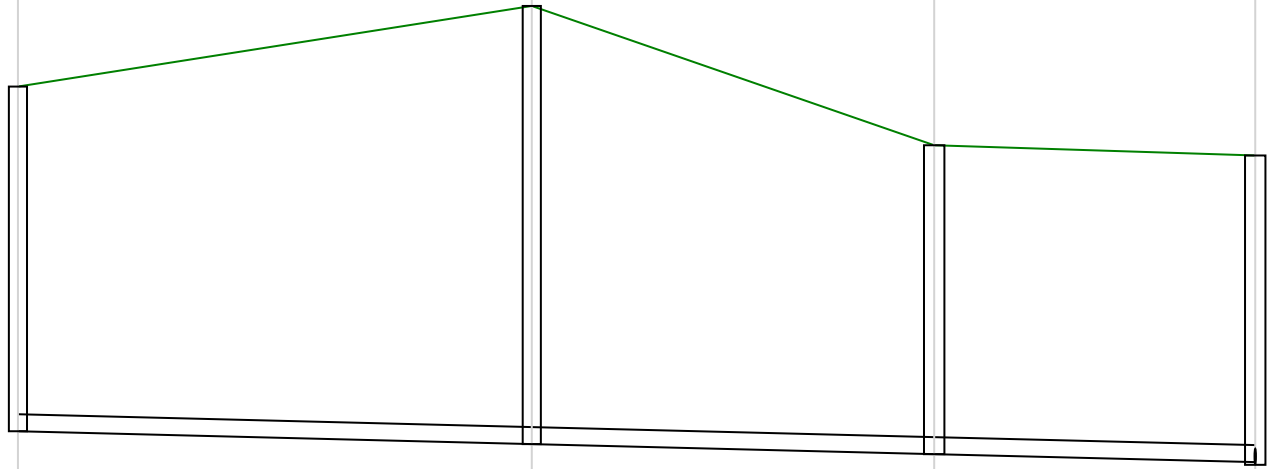
Node Name	AF 12	AF 13
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 19.000		
Link Name	15.000	
Section Type	150mm	
Slope (1:X)	98.4	
Cover Level (m)	26.724	26.034
Invert Level (m)	25.120	24.588
Length (m)	52.369	

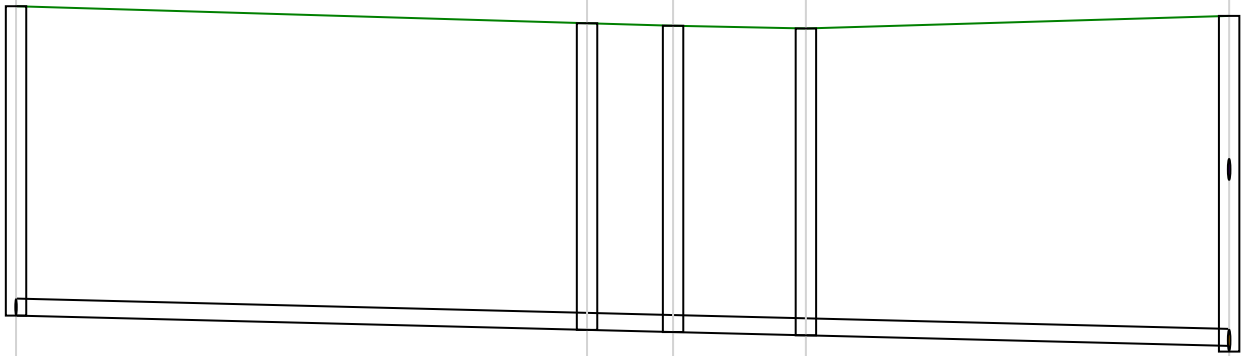
Node Name	AF 7	AF 8	AF 9	AF 10	AF 11
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 18.000					
Link Name	16.000	16.001	16.002	16.003	
Section Type	150mm	150mm	150mm	150mm	
Slope (1:X)	47.7	49.0	40.4	46.1	
Cover Level (m)	25.698	25.179	24.344	24.065	24.184
Invert Level (m)	24.280	23.790 / 23.790	22.970 / 22.970	22.650 / 22.650	22.468
Length (m)	23.359	40.176	12.931	8.383	

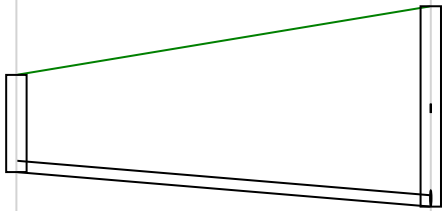
Node Name	AF 11	FR 3
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 17.000		
Link Name	16.004	
Section Type	150mm	
Slope (1:X)	64.8	
Cover Level (m)	24.184	23.917
Invert Level (m)	22.468	21.990
Length (m)	30.982	

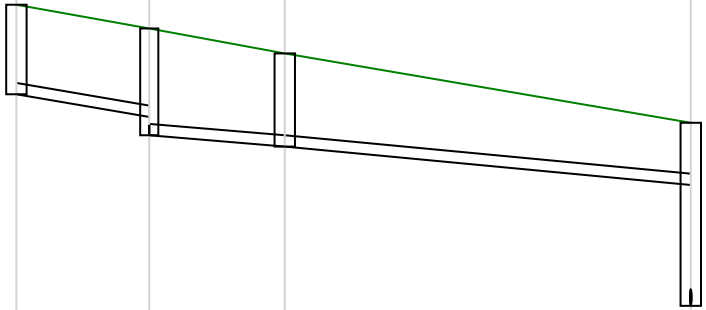
Node Name	KF 1	KF 2	KF 4	KF 5	KF 6	KF 7	KF 8
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 16.000							
Link Name	17.000	17.001	17.002	17.003	17.004	17.005	
Section Type	150mm	150mm	150mm	150mm	225mm	225mm	
Slope (1:X)	60.0	49.4	28.9	24.6	200.4	200.7	
Cover Level (m)	24.304	24.283	23.030	22.782	22.225	21.768	21.585
Invert Level (m)	22.660	22.410 / 22.410	21.680	21.680 / 21.440	21.440 / 20.800	19.575 / 19.481	19.481 / 19.406
Length (m)	15.004	36.087	6.937	15.754	18.833	15.056	

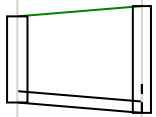
Node Name	KF 8	KF 9	KF 10	KF 11	KF 16	KF 17
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 15.000						
Link Name	17.006	17.007	17.008	17.009	17.010	
Section Type	225mm	225mm	225mm	225mm	225mm	
Slope (1:X)	200.1	197.5	201.0	199.9	197.7	
Cover Level (m)	21.585	21.484	21.623	22.064	22.929	23.419
Invert Level (m)	19.406	19.253 / 19.253	19.202 / 19.202	19.081 / 19.081	18.896 / 18.896	18.861
Length (m)	30.611	10.073	24.325	36.976	6.919	

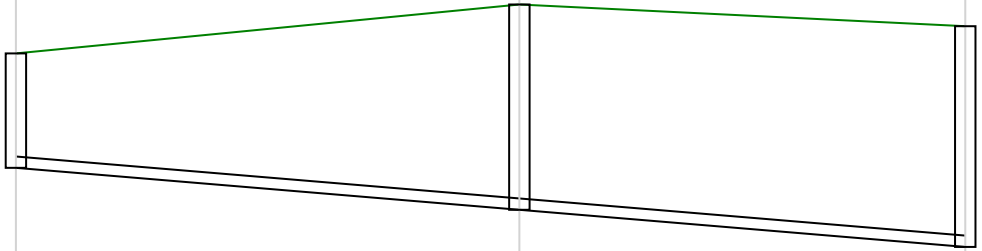
Node Name		KF 17	AF 1	AF 2	AF 3
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 16.000					
Link Name		17.011	17.012	17.013	
Section Type		225mm	225mm	225mm	
Slope (1:X)		199.8	200.1	202.2	
Cover Level (m)		23.419	24.485	22.643	22.508
Invert Level (m)		18.861	18.691 18.691	18.558 18.558	18.453
Length (m)		33.974	26.607	21.226	

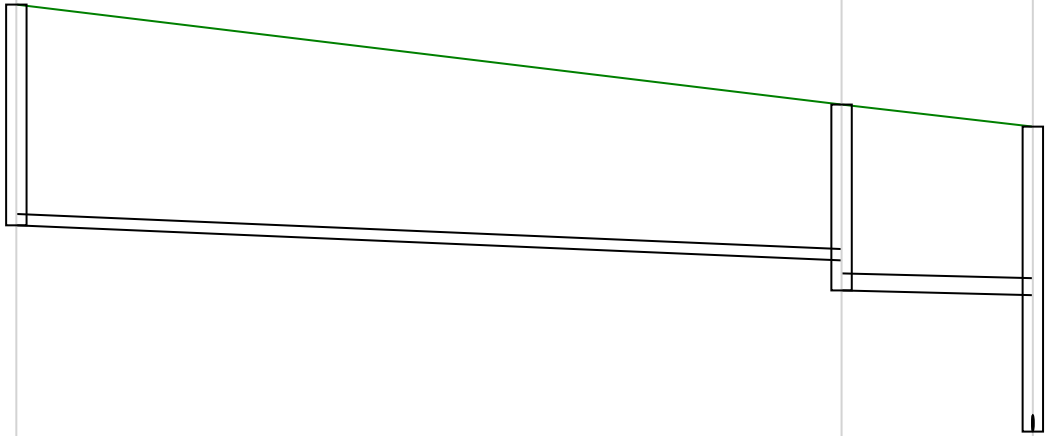
Node Name	AF 3		AF 4	AF 5	AF 6		FR 4
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 14.000							
Link Name	17.014		17.015	17.016	17.017		
Section Type	225mm		225mm	225mm	225mm		
Slope (1:X)	199.8		196.1	204.2	199.9		
Cover Level (m)	22.508		22.283	22.250	22.214		22.380
Invert Level (m)	18.417	18.228	18.228	18.199	18.156	18.156	18.016
Length (m)	37.754		5.688	8.782	27.984		

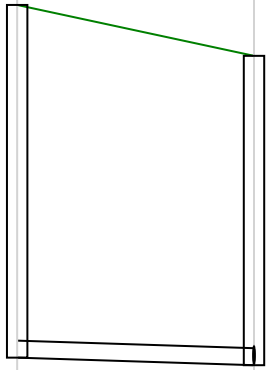
Node Name		KF 6.1	KF 6
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 15.000			
Link Name		18.000	
Section Type		150mm	
Slope (1:X)		60.0	
Cover Level (m)		21.317	22.225
Invert Level (m)		20.032	19.575
Length (m)		27.398	

Node Name		KF 10.3	KF 10.2	KF 10.1	KF 10
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 15.000					
Link Name		19.000	19.001	19.002	
Section Type		150mm	150mm	150mm	
Slope (1:X)		29.3	59.7	52.8	
Cover Level (m)		23.184	22.870	22.540	21.623
Invert Level (m)		22.000 / 21.700	21.458 / 21.308	21.308 / 20.800	
Length (m)		8.783	8.960	26.844	

Node Name		KF 10.2.1	KF 10.2
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 16.000			
Link Name		20.000	
Section Type		150mm	
Slope (1:X)		60.1	
Cover Level (m)		22.734	22.870
Invert Level (m)		21.595	21.458
Length (m)		8.238	

Node Name		KF 12	KF 13	KF 14
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 17.000				
Link Name		21.000	21.001	
Section Type		150mm	150mm	
Slope (1:X)		60.0	60.0	
Cover Level (m)		24.183	24.830	24.543
Invert Level (m)		22.670	22.115 / 22.115	21.624
Length (m)		33.288	29.481	

Node Name	KF 14	KF 15	KF 16
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 16.000			
Link Name	21.002	21.003	
Section Type	150mm	225mm	
Slope (1:X)	117.6	200.7	
Cover Level (m)	24.543	23.221	22.929
Invert Level (m)	21.624	21.160 20.763	20.700
Length (m)	54.562	12.646	

Node Name		AF 3.1	AF 3
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 15.000			
Link Name		22.000	
Section Type		225mm	
Slope (1:X)		156.6	
Cover Level (m)		23.181	22.508
Invert Level (m)		18.517	18.417
Length (m)		15.659	

Appendix B Storm Sewer Network Design, Longsections and Soakaway Testing Results

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	1	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	0	Minimum Velocity (m/s)	0.75
FSR Region	Scotland and Ireland	Connection Type	Level Inverts
M5-60 (mm)	15.400	Minimum Backdrop Height (m)	0.300
Ratio-R	0.314	Preferred Cover Depth (m)	1.200
CV	0.750	Include Intermediate Ground	✓
Time of Entry (mins)	5.00	Enforce best practice design rules	✓

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
MQS 4.2	0.108	5.00	30.045	1350	526870.223	724826.167	1.145
MQS 4.1			31.061	1200	526895.189	724892.496	2.444
MQS 1	0.163	5.00	32.080	1350	526934.959	724922.895	1.478
MQS 2	0.014	5.00	32.141	1350	526924.996	724890.777	1.703
MQS 3	0.035	5.00	31.887	1200	526920.314	724892.216	2.320
MQS 4	0.017	5.00	30.589	1200	526896.401	724899.565	2.079
MQS 5.1	0.050	5.00	29.278	1350	526884.457	724938.587	1.208
MQS 5	0.006	5.00	29.404	1200	526874.563	724906.276	2.074
MQS 6	0.031	5.00	28.820	1200	526863.730	724909.605	2.185
MQS 7	0.050	5.00	28.020	1200	526851.181	724898.332	2.054
MQS 8	0.047	5.00	27.099	1200	526825.514	724874.882	3.109
MQS 9.3	0.111	5.00	26.459	1200	526871.694	724879.356	2.157
MQS 9.2	0.054	5.00	26.554	1200	526851.826	724826.537	2.534
MQS 9.1	0.012	5.00	26.604	1200	526819.707	724838.018	2.755
MQS 9	0.010	5.00	26.269	1200	526803.619	724853.370	2.524
MQS 10	0.055	5.00	25.894	1200	526795.087	724840.358	2.226
MQS 11	0.058	5.00	25.611	1200	526779.892	724809.550	2.094
MQS 12.1		5.00	25.461	1350	526783.259	724790.611	2.808
MQS 12	0.026	5.00	25.486	1200	526772.990	724795.181	2.833
MQS 13.2	0.076	5.00	25.062	1350	526746.327	724774.776	1.396
MQS 13.1	0.104	5.00	25.088	1350	526733.862	724780.477	1.498
MQS 13			25.435	1200	526745.746	724807.407	2.987
MQS 14.2	0.095	5.00	24.979	1350	526770.160	724834.761	1.419
MQS 14.1	0.098	5.00	25.255	1350	526754.188	724841.990	1.855
MQS 14	0.048	5.00	25.434	1200	526739.372	724810.041	3.029
PS 1	0.217	5.00	25.450	1200	526855.290	724937.094	1.914
PS 2	0.076	5.00	25.400	1200	526781.245	724969.274	2.095
PS 3	0.113	5.00	24.810	1350	526757.183	724917.227	1.669
PS 4	0.259	5.00	25.364	1350	526785.711	724904.550	2.312
PS 5.1		5.00	25.618	1350	526778.316	724879.229	2.641
PS 5			25.534	1200	526774.690	724880.116	2.558
MQS 15	0.031	5.00	25.724	1350	526783.348	724865.256	1.918
MQS 16	0.035	5.00	25.321	1200	526770.898	724870.933	2.395
MQS 17	0.038	5.00	24.472	1350	526742.179	724884.048	1.965
MQS 18	0.028	5.00	24.697	1200	526725.790	724847.878	2.389
MQS 19	0.024	5.00	24.908	1200	526713.892	724821.619	2.749
MQS 20	0.039	5.00	25.041	1350	526701.775	724794.877	3.028
MQS 21			25.104	1200	526688.760	724765.164	3.404
MQS 12	0.026		25.486	1200	526772.990	724795.181	
MQS 22	0.034	5.00	25.355	1200	526767.366	724778.071	2.822
MQS 23	0.044	5.00	25.229	1200	526758.324	724755.205	2.860

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
MQS 24	0.075	5.00	25.206	1200	526744.910	724736.809	2.989
MQS 25.1	0.043	5.00	26.141	1200	526714.244	724717.954	1.861
MQS 25	0.081	5.00	25.195	1200	526717.205	724742.488	3.167
MQS 26.1	0.021	5.00	25.299	1200	526689.702	724735.233	1.706
MQS 26	0.025	5.00	25.018	1200	526692.366	724753.706	3.268
SR 1			24.997	1350	526679.344	724761.441	3.348
TS 1	0.099	5.00	27.514	1350	526705.451	724604.310	1.664
TS 2	0.079	5.00	26.967	1350	526712.783	724564.380	1.522
TS 3	0.078	5.00	26.755	1350	526688.909	724557.716	1.557
TS 4	0.029	5.00	26.405	1350	526649.887	724547.018	2.268
TS 5.1		5.00	25.567	1350	526625.740	724549.343	1.481
TS 5	0.148	5.00	25.514	1350	526626.649	724551.510	1.614
TS 28	0.063	5.00	27.422	1350	526687.757	724653.511	1.693
TS 9	0.069	5.00	28.107	1200	526714.700	724619.967	1.813
TS 10	0.101	5.00	27.312	1200	526691.121	724618.270	2.219
TS 12	0.034	5.00	26.232	1350	526655.224	724614.516	1.838
TS 13			25.844	1200	526636.526	724616.756	2.274
TS 14	0.163	5.00	26.546	1200	526641.254	724653.932	3.163
TS 15	0.122	5.00	29.339	1350	526797.014	724630.595	2.024
TS 16	0.069	5.00	29.561	1350	526795.746	724643.868	2.313
TS 17	0.118	5.00	29.660	1350	526787.961	724659.238	2.498
TS 18			28.724	1200	526773.501	724708.184	1.817
TS 19	0.094	5.00	28.177	1350	526729.395	724701.348	1.560
TS 20		5.00	29.428	1350	526787.260	724620.199	1.632
TS 21	0.017	5.00	29.047	1350	526743.042	724615.832	1.858
TS 22.1		5.00	28.529	1200	526731.672	724629.251	2.110
TS 22	0.147	5.00	28.531	1200	526733.189	724630.582	2.113
TS 23.1	0.050	5.00	29.293	1200	526763.113	724672.140	2.626
TS 23	0.036	5.00	28.481	1200	526729.921	724669.407	2.250
TS 24	0.013	5.00	28.215	1200	526727.798	724690.572	2.124
TS 25	0.052	5.00	27.960	1200	526721.490	724695.402	2.443
TS 26.1		5.00	27.224	1350	526686.659	724693.562	2.126
TS 26	0.024	5.00	26.817	1350	526688.649	724689.219	1.719
TS 31	0.035	5.00	26.585	1200	526678.808	724684.312	1.567
TS 32	0.051	5.00	26.284	1200	526648.479	724688.035	3.076
AS 13.1	0.045	5.00	26.487	1200	526685.111	724706.135	1.437
AS 13	0.171	5.00	26.102	1200	526650.646	724709.747	3.003
SR 2	0.064	5.00	25.228	1350	526657.470	724765.138	3.690
AS 8	0.094	5.00	24.988	1200	526598.091	724702.249	1.760
AS 9	0.018	5.00	24.354	1350	526591.856	724732.198	1.636
AS 10	0.035	5.00	24.130	1350	526595.663	724742.371	1.495
AS 11	0.044	5.00	24.251	1350	526603.828	724740.877	1.680
SR 3	0.147	5.00	23.993	1350	526611.596	724775.223	4.205
KS 3		5.00	23.807	1200	526597.240	724530.009	2.002
KS 4	0.125	5.00	23.084	1350	526578.044	724521.686	1.652
KS 5	0.059	5.00	22.859	1200	526573.946	724516.898	2.022
KS 6.1	0.064	5.00	21.432	1350	526537.467	724498.723	1.270
KS 6	0.062	5.00	22.187	1200	526556.006	724509.477	2.098
KS 7.1	0.039	5.00	22.365	1200	526575.538	724550.365	2.198
KS 7	0.028	5.00	21.576	1350	526545.622	724537.329	1.572
KS 8	0.050	5.00	21.486	1350	526544.633	724554.724	1.532
KS 9			21.495	1200	526545.991	724578.267	1.608

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
KS 10.3	0.030	5.00	23.259	1200	526588.788	724568.322	1.703
KS 10.2	0.023	5.00	22.858	1350	526579.462	724574.654	1.442
KS 10.1	0.031	5.00	22.547	1200	526572.079	724579.666	2.109
KS 10	0.074	5.00	21.632	1200	526544.291	724586.271	1.768
KS 11	0.107	5.00	22.064	1200	526546.654	724609.749	2.268
KS 12	0.052	5.00	24.303	1350	526610.740	724536.107	1.498
KS 13	0.044	5.00	24.165	1350	526612.431	724568.964	1.525
KS 14.1	0.030	5.00	24.230	1350	526606.218	724593.139	1.390
KS 14	0.047	5.00	24.636	1350	526616.377	724592.100	2.188
KS 15			24.914	1200	526623.798	724635.615	2.687
KS 16.1		5.00	24.948	1350	526616.352	724643.802	3.216
KS 16	0.035	5.00	24.392	1200	526615.319	724637.835	2.660
KS 17	0.058	5.00	23.990	1350	526598.901	724639.899	2.750
KS 18			23.295	1200	526569.838	724645.209	2.203
KS 19			23.596	1200	526554.857	724654.511	3.930
AS 1	0.077	5.00	25.694	1200	526621.142	724692.197	2.383
AS 2			24.588	1200	526581.197	724678.600	2.650
AS 3			24.488	1200	526534.254	724676.739	4.908
AS 4	0.054	5.00	22.524	1200	526531.363	724704.346	3.024
AS 5.1	0.038	5.00	22.934	1200	526560.258	724712.151	1.814
AS 5			22.523	1200	526551.180	724711.862	3.083
AS 6	0.164	5.00	22.331	1200	526547.869	724745.508	2.988
AS 7.1	0.017	5.00	22.570	1200	526552.522	724759.129	1.739
AS 7	0.027	5.00	22.245	1200	526543.701	724759.905	2.945
SR 4.1		5.00	22.478	1350	526552.611	724790.316	3.324
SR 4	0.081	5.00	22.436	1350	526549.766	724789.579	3.282
SR 5	0.032	5.00	21.738	1800	526514.900	724800.369	3.538
Ex.S 6			21.385	1350	526501.572	724811.078	3.655
Ex.S 7			21.290	1350	526487.565	724822.741	3.682

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.000	MQS 4.2	MQS 4.1	70.872	0.600	28.900	28.617	0.283	250.4	225	6.44	36.6
1.001	MQS 4.1	MQS 4	7.172	0.600	28.617	28.581	0.036	199.2	225	6.57	36.3
2.000	MQS 1	MQS 2	33.628	0.600	30.602	30.438	0.164	205.0	225	5.62	38.7
2.001	MQS 2	MQS 3	4.898	0.600	30.438	30.383	0.055	89.1	225	5.68	38.6
2.002	MQS 3	MQS 4	25.017	0.600	29.567	29.400	0.167	149.8	225	6.07	37.5
1.002	MQS 4	MQS 5	22.846	0.600	28.510	28.396	0.114	200.4	225	6.98	35.4
3.000	MQS 5.1	MQS 5	33.791	0.600	28.070	27.882	0.188	179.7	225	5.58	38.8

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	0.821	32.7	10.8	0.920	2.219	0.108	0.0	89	0.740
1.001	0.922	36.7	10.7	2.219	1.783	0.108	0.0	83	0.802
2.000	0.909	36.1	17.1	1.253	1.478	0.163	0.0	109	0.899
2.001	1.386	55.1	18.5	1.478	1.279	0.177	0.0	90	1.255
2.002	1.066	42.4	21.6	2.095	0.964	0.213	0.0	114	1.071
1.002	0.920	36.6	32.4	1.854	0.783	0.338	0.0	166	1.035
3.000	0.972	38.6	5.2	0.983	1.297	0.050	0.0	56	0.683

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)
1.003	MQS 5	MQS 6	11.333	0.600	27.330	27.230	0.100	113.3	225	7.14	35.0
1.004	MQS 6	MQS 7	16.870	0.600	26.635	26.470	0.165	102.2	225	7.35	34.6
1.005	MQS 7	MQS 8	34.766	0.600	25.966	25.619	0.347	100.2	225	7.80	33.7
1.006	MQS 8	MQS 9	30.694	0.600	23.990	23.745	0.245	125.3	300	8.16	33.0
4.000	MQS 9.3	MQS 9.2	56.432	0.600	24.302	24.020	0.282	200.1	225	6.02	37.6
4.001	MQS 9.2	MQS 9.1	34.109	0.600	24.020	23.849	0.171	199.5	300	6.53	36.4
4.002	MQS 9.1	MQS 9	22.238	0.600	23.849	23.745	0.104	213.8	300	6.88	35.6
1.007	MQS 9	MQS 10	15.560	0.600	23.745	23.668	0.077	202.1	300	8.40	32.6
1.008	MQS 10	MQS 11	34.351	0.600	23.668	23.517	0.151	227.5	300	8.95	31.6
1.009	MQS 11	MQS 12	15.941	0.600	23.517	23.400	0.117	136.2	300	9.15	31.3
5.000	MQS 12.1	MQS 12	11.240	0.600	22.653	22.653	0.000	0.0	300	5.25	39.8
1.010	MQS 12	MQS 13	29.862	0.600	22.653	22.523	0.130	229.7	300	9.63	30.5
6.000	MQS 13.2	MQS 13.1	13.707	0.600	23.666	23.590	0.076	180.4	225	5.24	39.8
6.001	MQS 13.1	MQS 13	29.436	0.600	23.590	23.430	0.160	184.0	225	5.75	38.4
1.011	MQS 13	MQS 14	6.897	0.600	22.448	22.405	0.043	160.4	300	9.72	30.4
7.000	MQS 14.2	MQS 14.1	17.532	0.600	23.560	23.400	0.160	109.6	225	5.23	39.8
7.001	MQS 14.1	MQS 14	35.217	0.600	23.400	22.405	0.995	35.4	225	5.50	39.0
1.012	MQS 14	MQS 19	27.987	0.600	22.405	22.159	0.246	113.8	300	10.04	29.9
8.000	PS 1	PS 2	80.736	0.600	23.536	23.305	0.231	349.5	300	6.61	36.2
8.001	PS 2	PS 3	57.340	0.600	23.305	23.141	0.164	349.6	300	7.76	33.8
8.002	PS 3	PS 4	31.218	0.600	23.141	23.052	0.089	350.8	300	8.38	32.6
8.003	PS 4	PS 5	26.805	0.600	23.052	22.976	0.076	352.7	300	8.92	31.7
9.000	PS 5.1	PS 5	3.732	0.600	22.977	22.976	0.001	3732.0	300	5.25	39.8
8.004	PS 5	MQS 16	9.935	0.600	22.976	22.926	0.050	198.7	300	9.07	31.4

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.003	1.227	48.8	37.4	1.849	1.365	0.394	0.0	148	1.349
1.004	1.293	51.4	39.8	1.960	1.325	0.425	0.0	149	1.423
1.005	1.306	51.9	43.4	1.829	1.255	0.475	0.0	158	1.457
1.006	1.403	99.2	46.7	2.809	2.224	0.522	0.0	145	1.384
4.000	0.920	36.6	11.3	1.932	2.309	0.111	0.0	86	0.813
4.001	1.109	78.4	16.3	2.234	2.455	0.165	0.0	92	0.880
4.002	1.071	75.7	17.1	2.455	2.224	0.177	0.0	96	0.869
1.007	1.102	77.9	62.7	2.224	1.926	0.710	0.0	205	1.221
1.008	1.038	73.4	65.6	1.926	1.794	0.765	0.0	222	1.168
1.009	1.345	95.1	69.8	1.794	1.786	0.823	0.0	192	1.466
5.000	0.750	53.0	0.0	2.508	2.533	0.000	0.0	0	0.000
1.010	1.033	73.0	70.3	2.533	2.612	0.849	0.0	238	1.170
6.000	0.970	38.6	8.2	1.171	1.273	0.076	0.0	71	0.777
6.001	0.960	38.2	18.8	1.273	1.780	0.181	0.0	111	0.956
1.011	1.239	87.5	84.8	2.687	2.729	1.029	0.0	239	1.403
7.000	1.248	49.6	10.2	1.194	1.630	0.095	0.0	69	0.987
7.001	2.206	87.7	20.4	1.630	2.804	0.193	0.0	73	1.803
1.012	1.473	104.1	103.1	2.729	2.449	1.270	0.0	245	1.669
8.000	0.835	59.0	21.3	1.614	1.795	0.217	0.0	125	0.769
8.001	0.835	59.0	26.9	1.795	1.369	0.294	0.0	142	0.816
8.002	0.834	58.9	36.0	1.369	2.012	0.407	0.0	170	0.874
8.003	0.831	58.8	57.1	2.012	2.258	0.666	0.0	240	0.942
9.000	0.248	17.5	0.0	2.341	2.258	0.000	0.0	0	0.000
8.004	1.112	78.6	56.7	2.258	2.095	0.666	0.0	189	1.206

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)
10.000	MQS 15	MQS 16	13.683	0.600	23.806	23.680	0.126	108.6	225	5.68	40.0
8.005	MQS 16	MQS 17	31.572	0.600	22.926	22.766	0.160	197.3	300	9.54	30.7
8.006	MQS 17	MQS 18	39.709	0.600	22.507	22.308	0.199	199.5	300	10.13	29.8
8.007	MQS 18	MQS 19	28.829	0.600	22.308	22.164	0.144	200.2	300	10.57	29.2
1.013	MQS 19	MQS 20	29.359	0.600	22.159	22.013	0.146	201.1	300	11.01	28.6
1.014	MQS 20	MQS 21	32.439	0.600	22.013	21.700	0.313	103.6	300	11.36	28.1
1.015	MQS 21	SR 1	10.125	0.600	21.700	21.649	0.051	198.5	300	11.51	28.0
11.000	MQS 12	MQS 22	18.011	0.600	22.653	22.533	0.120	150.1	300	5.23	39.8
11.001	MQS 22	MQS 23	24.589	0.600	22.533	22.369	0.164	149.9	300	5.55	38.9
11.002	MQS 23	MQS 24	22.768	0.600	22.369	22.217	0.152	149.8	300	5.85	38.1
11.003	MQS 24	MQS 25	28.281	0.600	22.217	22.028	0.189	149.6	300	6.22	37.2
12.000	MQS 25.1	MQS 25	24.712	0.600	24.280	23.700	0.580	42.6	225	5.20	39.9
11.004	MQS 25	MQS 26	27.254	0.600	22.028	21.847	0.181	150.6	300	6.57	36.3
13.000	MQS 26.1	MQS 26	18.664	0.600	23.593	23.500	0.093	200.7	225	5.34	39.5
11.005	MQS 26	SR 1	15.147	0.600	21.750	21.649	0.101	150.0	300	6.77	35.8
1.016	SR 1	SR 2	22.184	0.600	21.649	21.538	0.111	199.9	450	11.77	27.6
14.000	TS 1	TS 2	40.597	0.600	25.850	25.445	0.405	100.2	225	5.52	39.0
14.001	TS 2	TS 3	24.787	0.600	25.445	25.198	0.247	100.4	225	5.83	38.1
14.002	TS 3	TS 4	40.462	0.600	25.198	24.920	0.278	145.5	225	6.46	36.6
14.003	TS 4	TS 5	23.668	0.600	24.137	23.900	0.237	99.9	300	6.71	36.0
15.000	TS 5.1	TS 5	2.350	0.600	24.086	24.085	0.001	2350.0	300	5.12	40.1
14.004	TS 5	TS 13	65.990	0.600	23.900	23.570	0.330	200.0	300	7.70	33.9
16.000	TS 28	TS 10	35.401	0.600	25.729	25.325	0.404	87.6	225	5.42	39.3
17.000	TS 9	TS 10	23.640	0.600	26.294	25.900	0.394	60.0	225	5.23	39.8

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
10.000	1.254	49.9	3.3	1.693	1.416	0.031	0.0	39	0.716
8.005	1.115	78.8	60.8	2.095	1.406	0.732	0.0	198	1.227
8.006	1.109	78.4	62.2	1.665	2.089	0.770	0.0	202	1.226
8.007	1.107	78.3	63.1	2.089	2.444	0.798	0.0	205	1.227
1.013	1.105	78.1	162.1	2.449	2.728	2.092	0.0	300	1.119
1.014	1.544	109.1	162.6	2.728	3.104	2.131	0.0	300	1.564
1.015	1.112	78.6	161.5	3.104	3.048	2.131	0.0	300	1.126
11.000	1.281	90.5	0.0	2.533	2.522	0.000	0.0	0	0.000
11.001	1.281	90.6	3.6	2.522	2.560	0.034	0.0	41	0.632
11.002	1.282	90.6	8.1	2.560	2.689	0.079	0.0	60	0.800
11.003	1.283	90.7	15.4	2.689	2.867	0.153	0.0	83	0.965
12.000	2.009	79.9	4.7	1.636	1.270	0.043	0.0	36	1.102
11.004	1.279	90.4	27.3	2.867	2.871	0.277	0.0	113	1.124
13.000	0.919	36.5	2.3	1.481	1.293	0.021	0.0	38	0.516
11.005	1.281	90.6	31.4	2.968	3.048	0.324	0.0	122	1.168
1.016	1.434	228.1	183.9	2.898	3.240	2.455	0.0	307	1.587
14.000	1.306	51.9	10.5	1.439	1.297	0.099	0.0	68	1.025
14.001	1.305	51.9	18.4	1.297	1.332	0.178	0.0	93	1.198
14.002	1.081	43.0	25.4	1.332	1.260	0.256	0.0	124	1.125
14.003	1.573	111.2	27.8	1.968	1.314	0.285	0.0	102	1.313
15.000	0.315	22.3	0.0	1.181	1.129	0.000	0.0	0	0.000
14.004	1.108	78.3	39.7	1.314	1.974	0.433	0.0	151	1.112
16.000	1.397	55.6	6.7	1.468	1.762	0.063	0.0	52	0.947
17.000	1.691	67.2	7.4	1.588	1.187	0.069	0.0	51	1.125

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)
16.001	TS 10	TS 12	36.093	0.600	25.093	24.800	0.293	123.2	225	5.93	37.9
16.002	TS 12	TS 13	18.831	0.600	24.394	24.300	0.094	200.3	225	6.27	37.0
14.005	TS 13	TS 14	37.475	0.600	23.570	23.383	0.187	200.4	300	8.27	32.8
14.006	TS 14	TS 32	34.861	0.600	23.383	23.208	0.175	199.2	300	8.79	31.9
18.000	TS 15	TS 16	13.333	0.600	27.315	27.248	0.067	199.0	300	5.20	39.9
18.001	TS 16	TS 17	17.229	0.600	27.248	27.162	0.086	200.3	300	5.46	39.2
18.002	TS 17	TS 18	51.037	0.600	27.162	26.907	0.255	200.1	300	6.23	37.1
18.003	TS 18	TS 19	44.633	0.600	26.907	26.617	0.290	153.9	300	6.82	35.7
18.004	TS 19	TS 25	9.892	0.600	26.617	26.425	0.192	51.5	300	6.89	35.6
19.000	TS 20	TS 21	44.433	0.600	27.796	27.500	0.296	150.1	225	5.70	38.5
19.001	TS 21	TS 22	17.738	0.600	27.189	27.100	0.089	199.3	225	6.02	37.7
20.000	TS 22.1	TS 22	2.017	0.600	26.419	26.418	0.001	2017.0	300	5.10	40.2
19.002	TS 22	TS 23	38.962	0.600	26.418	26.231	0.187	208.4	225	6.74	35.9
21.000	TS 23.1	TS 23	33.305	0.600	26.667	26.500	0.167	199.4	225	5.60	38.8
19.003	TS 23	TS 24	21.272	0.600	26.231	26.091	0.140	151.9	225	7.07	35.2
19.004	TS 24	TS 25	7.945	0.600	26.091	26.030	0.061	130.2	225	7.19	34.9
18.005	TS 25	TS 26	33.418	0.600	25.517	25.300	0.217	154.0	300	7.63	34.0
22.000	TS 26.1	TS 26	4.778	0.600	25.098	25.098	0.000	0.0	300	5.11	40.2
18.006	TS 26	TS 31	10.996	0.600	25.098	25.018	0.080	137.5	225	7.79	33.7
18.007	TS 31	TS 32	30.557	0.600	25.018	24.690	0.328	93.2	225	8.17	33.0
14.007	TS 32	AS 13	21.820	0.600	23.208	23.099	0.109	200.2	300	9.12	31.3
23.000	AS 13.1	AS 13	34.653	0.600	25.050	24.475	0.575	60.3	225	5.34	39.5
14.008	AS 13	SR 2	55.810	0.600	23.099	22.820	0.279	200.0	300	9.96	30.0
1.017	SR 2	SR 3	46.969	0.600	21.538	21.385	0.153	307.0	450	12.45	26.9

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
16.001	1.177	46.8	23.9	1.994	1.207	0.233	0.0	114	1.182
16.002	0.920	36.6	26.8	1.613	1.319	0.267	0.0	143	1.001
14.005	1.107	78.2	62.2	1.974	2.863	0.700	0.0	203	1.224
14.006	1.110	78.5	74.6	2.863	2.776	0.863	0.0	235	1.257
18.000	1.111	78.5	13.2	1.724	2.013	0.122	0.0	83	0.832
18.001	1.107	78.2	20.2	2.013	2.198	0.190	0.0	103	0.932
18.002	1.107	78.3	31.0	2.198	1.517	0.308	0.0	131	1.045
18.003	1.265	89.4	29.9	1.517	1.260	0.308	0.0	119	1.142
18.004	2.195	155.2	38.8	1.260	1.235	0.402	0.0	102	1.833
19.000	1.065	42.3	0.0	1.407	1.322	0.000	0.0	0	0.000
19.001	0.922	36.7	1.7	1.633	1.206	0.017	0.0	33	0.472
20.000	0.341	24.1	0.0	1.810	1.813	0.000	0.0	0	0.000
19.002	0.902	35.9	15.9	1.888	2.025	0.163	0.0	105	0.876
21.000	0.922	36.7	5.3	2.401	1.756	0.050	0.0	58	0.659
19.003	1.058	42.1	23.7	2.025	1.899	0.249	0.0	121	1.089
19.004	1.144	45.5	24.8	1.899	1.705	0.262	0.0	118	1.167
18.005	1.264	89.4	66.0	2.143	1.217	0.716	0.0	192	1.379
22.000	0.750	53.0	0.0	1.826	1.419	0.000	0.0	0	0.000
18.006	1.113	44.3	67.6	1.494	1.342	0.740	0.0	225	1.134
18.007	1.355	53.9	69.3	1.342	1.369	0.775	0.0	225	1.380
14.007	1.107	78.3	143.4	2.776	2.703	1.689	0.0	300	1.122
23.000	1.687	67.1	4.8	1.212	1.402	0.045	0.0	41	0.991
14.008	1.108	78.3	155.1	2.703	2.108	1.905	0.0	300	1.122
1.017	1.155	183.7	322.0	3.240	2.158	4.424	0.0	450	1.169

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)
24.000	AS 8	AS 9	30.591	0.600	23.228	22.718	0.510	60.0	225	5.30	39.6
24.001	AS 9	AS 10	10.862	0.600	22.718	22.635	0.083	130.9	225	5.46	39.2
24.002	AS 10	AS 11	8.300	0.600	22.635	22.571	0.064	129.7	225	5.58	38.8
24.003	AS 11	SR 3	35.214	0.600	22.571	22.300	0.271	129.9	225	6.09	37.5
1.018	SR 3	SR 4	63.476	0.600	19.788	19.154	0.634	100.1	450	12.97	26.3
25.000	KS 3	KS 4	20.923	0.600	21.805	21.700	0.105	199.3	225	5.38	39.4
25.001	KS 4	KS 5	6.302	0.600	21.432	21.400	0.032	196.9	225	5.49	39.1
25.002	KS 5	KS 6	19.414	0.600	20.837	20.740	0.097	200.1	225	5.84	38.1
26.000	KS 6.1	KS 6	21.432	0.600	20.162	20.089	0.073	293.6	225	5.47	39.1
25.003	KS 6	KS 7	29.725	0.600	20.089	20.004	0.085	349.7	300	6.44	36.6
27.000	KS 7.1	KS 7	32.633	0.600	20.167	20.004	0.163	200.2	300	5.49	39.1
25.004	KS 7	KS 8	17.423	0.600	20.004	19.954	0.050	348.5	300	6.78	35.8
25.005	KS 8	KS 9	23.582	0.600	19.954	19.887	0.067	352.0	300	7.26	34.8
25.006	KS 9	KS 10	8.183	0.600	19.887	19.864	0.023	355.8	300	7.42	34.4
28.000	KS 10.3	KS 10.2	11.272	0.600	21.556	21.416	0.140	80.5	225	5.13	40.1
28.001	KS 10.2	KS 10.1	8.923	0.600	21.416	21.070	0.346	25.8	225	5.19	39.9
28.002	KS 10.1	KS 10	28.562	0.600	20.438	20.200	0.238	120.0	225	5.59	38.8
25.007	KS 10	KS 11	23.596	0.600	19.864	19.796	0.068	347.0	300	7.89	33.5
25.008	KS 11	KS 19	45.508	0.600	19.796	19.666	0.130	350.1	375	8.68	32.1
29.000	KS 12	KS 13	32.900	0.600	22.805	22.640	0.165	199.4	225	5.59	38.8
29.001	KS 13	KS 14	23.470	0.600	22.640	22.523	0.117	200.6	225	6.02	37.7
30.000	KS 14.1	KS 14	10.212	0.600	22.840	22.789	0.051	200.2	225	5.18	39.9
29.002	KS 14	KS 15	44.143	0.600	22.448	22.227	0.221	199.7	300	6.68	36.0
29.003	KS 15	KS 16	8.764	0.600	22.227	22.183	0.044	199.2	300	6.82	35.7

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)	Pro Velocity (m/s)
24.000	1.691	67.3	10.1	1.535	1.411	0.094	0.0	58	1.222
24.001	1.141	45.4	11.8	1.411	1.270	0.111	0.0	78	0.960
24.002	1.146	45.6	15.4	1.270	1.455	0.146	0.0	90	1.038
24.003	1.145	45.5	19.3	1.455	1.468	0.190	0.0	102	1.100
1.018	2.032	323.1	339.3	3.755	2.832	4.761	0.0	399	2.278
25.000	0.922	36.7	0.0	1.777	1.159	0.000	0.0	0	0.000
25.001	0.928	36.9	13.3	1.427	1.234	0.125	0.0	93	0.851
25.002	0.920	36.6	19.1	1.797	1.222	0.185	0.0	116	0.930
26.000	0.758	30.1	6.8	1.045	1.873	0.064	0.0	73	0.614
25.003	0.835	59.0	30.9	1.798	1.272	0.311	0.0	154	0.845
27.000	1.107	78.3	4.2	1.898	1.272	0.039	0.0	47	0.593
25.004	0.836	59.1	36.8	1.272	1.232	0.379	0.0	171	0.880
25.005	0.832	58.8	40.4	1.232	1.308	0.428	0.0	183	0.895
25.006	0.828	58.5	40.0	1.308	1.468	0.428	0.0	183	0.889
28.000	1.458	58.0	3.2	1.478	1.217	0.030	0.0	36	0.787
28.001	2.586	102.8	5.7	1.217	1.252	0.052	0.0	36	1.399
28.002	1.192	47.4	8.8	1.884	1.207	0.084	0.0	65	0.916
25.007	0.838	59.2	53.3	1.468	1.968	0.586	0.0	224	0.944
25.008	0.962	106.3	60.3	1.893	3.555	0.694	0.0	203	0.992
29.000	0.922	36.7	5.4	1.273	1.300	0.052	0.0	58	0.665
29.001	0.919	36.6	9.7	1.300	1.888	0.095	0.0	79	0.778
30.000	0.920	36.6	3.2	1.165	1.622	0.030	0.0	45	0.572
29.002	1.109	78.4	16.8	1.888	2.387	0.172	0.0	94	0.888
29.003	1.110	78.5	16.6	2.387	1.909	0.172	0.0	93	0.887

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)
31.000	KS 16.1	KS 16	6.056	0.600	21.732	21.732	0.000	0.0	300	5.13	40.1
29.004	KS 16	KS 17	16.548	0.600	21.732	21.650	0.082	201.8	300	7.07	35.2
29.005	KS 17	KS 18	29.545	0.600	21.240	21.092	0.148	199.6	300	7.51	34.3
29.006	KS 18	KS 19	17.634	0.600	21.092	21.004	0.088	200.4	300	7.78	33.5
25.009	KS 19	AS 3	30.308	0.600	19.666	19.580	0.086	352.4	300	9.29	31.1
32.000	AS 1	AS 2	42.195	0.600	23.311	23.100	0.211	200.0	225	5.76	38.3
32.001	AS 2	AS 3	46.980	0.600	21.938	21.680	0.258	182.1	225	6.57	36.3
25.010	AS 3	AS 4	27.758	0.600	19.580	19.500	0.080	347.0	375	9.76	30.3
25.011	AS 4	AS 5	21.195	0.600	19.500	19.440	0.060	353.3	375	10.13	29.8
33.000	AS 5.1	AS 5	9.082	0.600	21.120	21.070	0.050	181.6	300	5.13	40.1
25.012	AS 5	AS 6	33.809	0.600	19.440	19.343	0.097	348.5	375	10.72	29.0
25.013	AS 6	AS 7	14.988	0.600	19.343	19.300	0.043	348.6	375	10.98	28.6
34.000	AS 7.1	AS 7	8.855	0.600	20.831	20.750	0.081	109.3	225	5.12	40.1
25.014	AS 7	SR 4	30.287	0.600	19.300	19.154	0.146	207.4	375	11.38	28.1
35.000	SR 4.1	SR 4	2.940	0.600	19.154	19.154	0.000	0.0	450	5.07	40.3
1.019	SR 4	SR 5	36.497	0.600	19.154	18.698	0.456	80.0	450	13.24	26.0
1.020	SR 5	Ex.S 6	17.098	0.600	18.200	18.114	0.086	198.8	450	13.44	25.8
1.021	Ex.S 6	Ex.S 7	18.227	0.600	17.730	17.608	0.122	149.4	450	13.62	25.6

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
31.000	0.750	53.0	0.0	2.916	2.360	0.000	0.0	0	0.000
29.004	1.103	78.0	19.7	2.360	2.040	0.207	0.0	102	0.923
29.005	1.109	78.4	24.6	2.450	1.903	0.265	0.0	115	0.984
29.006	1.107	78.2	24.2	1.903	2.292	0.265	0.0	115	0.980
25.009	0.832	58.8	80.7	3.630	4.608	0.958	0.0	300	0.842
32.000	0.921	36.6	8.0	2.158	1.263	0.077	0.0	72	0.742
32.001	0.965	38.4	7.6	2.425	2.583	0.077	0.0	67	0.752
25.010	0.967	106.8	85.1	4.533	2.649	1.036	0.0	254	1.069
25.011	0.958	105.8	88.0	2.649	2.708	1.090	0.0	263	1.067
33.000	1.163	82.2	4.2	1.514	1.153	0.038	0.0	45	0.613
25.012	0.965	106.5	88.6	2.708	2.613	1.128	0.0	263	1.074
25.013	0.965	106.5	100.3	2.613	2.570	1.292	0.0	291	1.091
34.000	1.250	49.7	1.9	1.514	1.270	0.017	0.0	29	0.598
25.014	1.254	138.5	101.9	2.570	2.907	1.337	0.0	240	1.366
35.000	0.750	119.3	0.0	2.874	2.832	0.000	0.0	0	0.000
1.019	2.274	361.7	435.7	2.832	2.590	6.178	0.0	450	2.303
1.020	1.438	228.7	434.5	3.088	2.821	6.211	0.0	450	1.456
1.021	1.661	264.1	431.5	3.205	3.232	6.211	0.0	450	1.682

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	70.872	250.4	225	Circular	30.045	28.900	0.920	31.061	28.617	2.219
1.001	7.172	199.2	225	Circular	31.061	28.617	2.219	30.589	28.581	1.783
2.000	33.628	205.0	225	Circular	32.080	30.602	1.253	32.141	30.438	1.478
2.001	4.898	89.1	225	Circular	32.141	30.438	1.478	31.887	30.383	1.279
2.002	25.017	149.8	225	Circular	31.887	29.567	2.095	30.589	29.400	0.964
1.002	22.846	200.4	225	Circular	30.589	28.510	1.854	29.404	28.396	0.783
3.000	33.791	179.7	225	Circular	29.278	28.070	0.983	29.404	27.882	1.297
1.003	11.333	113.3	225	Circular	29.404	27.330	1.849	28.820	27.230	1.365
1.004	16.870	102.2	225	Circular	28.820	26.635	1.960	28.020	26.470	1.325
1.005	34.766	100.2	225	Circular	28.020	25.966	1.829	27.099	25.619	1.255
1.006	30.694	125.3	300	Circular	27.099	23.990	2.809	26.269	23.745	2.224
4.000	56.432	200.1	225	Circular	26.459	24.302	1.932	26.554	24.020	2.309
4.001	34.109	199.5	300	Circular	26.554	24.020	2.234	26.604	23.849	2.455
4.002	22.238	213.8	300	Circular	26.604	23.849	2.455	26.269	23.745	2.224
1.007	15.560	202.1	300	Circular	26.269	23.745	2.224	25.894	23.668	1.926
1.008	34.351	227.5	300	Circular	25.894	23.668	1.926	25.611	23.517	1.794
1.009	15.941	136.2	300	Circular	25.611	23.517	1.794	25.486	23.400	1.786
5.000	11.240	0.0	300	Circular	25.461	22.653	2.508	25.486	22.653	2.533
1.010	29.862	229.7	300	Circular	25.486	22.653	2.533	25.435	22.523	2.612
6.000	13.707	180.4	225	Circular	25.062	23.666	1.171	25.088	23.590	1.273
6.001	29.436	184.0	225	Circular	25.088	23.590	1.273	25.435	23.430	1.780
1.011	6.897	160.4	300	Circular	25.435	22.448	2.687	25.434	22.405	2.729
7.000	17.532	109.6	225	Circular	24.979	23.560	1.194	25.255	23.400	1.630
7.001	35.217	35.4	225	Circular	25.255	23.400	1.630	25.434	22.405	2.804
1.012	27.987	113.8	300	Circular	25.434	22.405	2.729	24.908	22.159	2.449

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	MQS 4.2	1350	Manhole	Adoptable	MQS 4.1	1200	Manhole	Adoptable
1.001	MQS 4.1	1200	Manhole	Adoptable	MQS 4	1200	Manhole	Adoptable
2.000	MQS 1	1350	Manhole	Adoptable	MQS 2	1350	Manhole	Adoptable
2.001	MQS 2	1350	Manhole	Adoptable	MQS 3	1200	Manhole	Adoptable
2.002	MQS 3	1200	Manhole	Adoptable	MQS 4	1200	Manhole	Adoptable
1.002	MQS 4	1200	Manhole	Adoptable	MQS 5	1200	Manhole	Adoptable
3.000	MQS 5.1	1350	Manhole	Adoptable	MQS 5	1200	Manhole	Adoptable
1.003	MQS 5	1200	Manhole	Adoptable	MQS 6	1200	Manhole	Adoptable
1.004	MQS 6	1200	Manhole	Adoptable	MQS 7	1200	Manhole	Adoptable
1.005	MQS 7	1200	Manhole	Adoptable	MQS 8	1200	Manhole	Adoptable
1.006	MQS 8	1200	Manhole	Adoptable	MQS 9	1200	Manhole	Adoptable
4.000	MQS 9.3	1200	Manhole	Adoptable	MQS 9.2	1200	Manhole	Adoptable
4.001	MQS 9.2	1200	Manhole	Adoptable	MQS 9.1	1200	Manhole	Adoptable
4.002	MQS 9.1	1200	Manhole	Adoptable	MQS 9	1200	Manhole	Adoptable
1.007	MQS 9	1200	Manhole	Adoptable	MQS 10	1200	Manhole	Adoptable
1.008	MQS 10	1200	Manhole	Adoptable	MQS 11	1200	Manhole	Adoptable
1.009	MQS 11	1200	Manhole	Adoptable	MQS 12	1200	Manhole	Adoptable
5.000	MQS 12.1	1350	Manhole	Adoptable	MQS 12	1200	Manhole	Adoptable
1.010	MQS 12	1200	Manhole	Adoptable	MQS 13	1200	Manhole	Adoptable
6.000	MQS 13.2	1350	Manhole	Adoptable	MQS 13.1	1350	Manhole	Adoptable
6.001	MQS 13.1	1350	Manhole	Adoptable	MQS 13	1200	Manhole	Adoptable
1.011	MQS 13	1200	Manhole	Adoptable	MQS 14	1200	Manhole	Adoptable
7.000	MQS 14.2	1350	Manhole	Adoptable	MQS 14.1	1350	Manhole	Adoptable
7.001	MQS 14.1	1350	Manhole	Adoptable	MQS 14	1200	Manhole	Adoptable
1.012	MQS 14	1200	Manhole	Adoptable	MQS 19	1200	Manhole	Adoptable

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
8.000	80.736	349.5	300	Circular	25.450	23.536	1.614	25.400	23.305	1.795
8.001	57.340	349.6	300	Circular	25.400	23.305	1.795	24.810	23.141	1.369
8.002	31.218	350.8	300	Circular	24.810	23.141	1.369	25.364	23.052	2.012
8.003	26.805	352.7	300	Circular	25.364	23.052	2.012	25.534	22.976	2.258
9.000	3.732	3732.0	300	Circular	25.618	22.977	2.341	25.534	22.976	2.258
8.004	9.935	198.7	300	Circular	25.534	22.976	2.258	25.321	22.926	2.095
10.000	13.683	108.6	225	Circular	25.724	23.806	1.693	25.321	23.680	1.416
8.005	31.572	197.3	300	Circular	25.321	22.926	2.095	24.472	22.766	1.406
8.006	39.709	199.5	300	Circular	24.472	22.507	1.665	24.697	22.308	2.089
8.007	28.829	200.2	300	Circular	24.697	22.308	2.089	24.908	22.164	2.444
1.013	29.359	201.1	300	Circular	24.908	22.159	2.449	25.041	22.013	2.728
1.014	32.439	103.6	300	Circular	25.041	22.013	2.728	25.104	21.700	3.104
1.015	10.125	198.5	300	Circular	25.104	21.700	3.104	24.997	21.649	3.048
11.000	18.011	150.1	300	Circular	25.486	22.653	2.533	25.355	22.533	2.522
11.001	24.589	149.9	300	Circular	25.355	22.533	2.522	25.229	22.369	2.560
11.002	22.768	149.8	300	Circular	25.229	22.369	2.560	25.206	22.217	2.689
11.003	28.281	149.6	300	Circular	25.206	22.217	2.689	25.195	22.028	2.867
12.000	24.712	42.6	225	Circular	26.141	24.280	1.636	25.195	23.700	1.270
11.004	27.254	150.6	300	Circular	25.195	22.028	2.867	25.018	21.847	2.871
13.000	18.664	200.7	225	Circular	25.299	23.593	1.481	25.018	23.500	1.293
11.005	15.147	150.0	300	Circular	25.018	21.750	2.968	24.997	21.649	3.048
1.016	22.184	199.9	450	Circular	24.997	21.649	2.898	25.228	21.538	3.240
14.000	40.597	100.2	225	Circular	27.514	25.850	1.439	26.967	25.445	1.297
14.001	24.787	100.4	225	Circular	26.967	25.445	1.297	26.755	25.198	1.332
14.002	40.462	145.5	225	Circular	26.755	25.198	1.332	26.405	24.920	1.260

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
8.000	PS 1	1200	Manhole	Adoptable	PS 2	1200	Manhole	Adoptable
8.001	PS 2	1200	Manhole	Adoptable	PS 3	1350	Manhole	Adoptable
8.002	PS 3	1350	Manhole	Adoptable	PS 4	1350	Manhole	Adoptable
8.003	PS 4	1350	Manhole	Adoptable	PS 5	1200	Manhole	Adoptable
9.000	PS 5.1	1350	Manhole	Adoptable	PS 5	1200	Manhole	Adoptable
8.004	PS 5	1200	Manhole	Adoptable	MQS 16	1200	Manhole	Adoptable
10.000	MQS 15	1350	Manhole	Adoptable	MQS 16	1200	Manhole	Adoptable
8.005	MQS 16	1200	Manhole	Adoptable	MQS 17	1350	Manhole	Adoptable
8.006	MQS 17	1350	Manhole	Adoptable	MQS 18	1200	Manhole	Adoptable
8.007	MQS 18	1200	Manhole	Adoptable	MQS 19	1200	Manhole	Adoptable
1.013	MQS 19	1200	Manhole	Adoptable	MQS 20	1350	Manhole	Adoptable
1.014	MQS 20	1350	Manhole	Adoptable	MQS 21	1200	Manhole	Adoptable
1.015	MQS 21	1200	Manhole	Adoptable	SR 1	1350	Manhole	Adoptable
11.000	MQS 12	1200	Manhole	Adoptable	MQS 22	1200	Manhole	Adoptable
11.001	MQS 22	1200	Manhole	Adoptable	MQS 23	1200	Manhole	Adoptable
11.002	MQS 23	1200	Manhole	Adoptable	MQS 24	1200	Manhole	Adoptable
11.003	MQS 24	1200	Manhole	Adoptable	MQS 25	1200	Manhole	Adoptable
12.000	MQS 25.1	1200	Manhole	Adoptable	MQS 25	1200	Manhole	Adoptable
11.004	MQS 25	1200	Manhole	Adoptable	MQS 26	1200	Manhole	Adoptable
13.000	MQS 26.1	1200	Manhole	Adoptable	MQS 26	1200	Manhole	Adoptable
11.005	MQS 26	1200	Manhole	Adoptable	SR 1	1350	Manhole	Adoptable
1.016	SR 1	1350	Manhole	Adoptable	SR 2	1350	Manhole	Adoptable
14.000	TS 1	1350	Manhole	Adoptable	TS 2	1350	Manhole	Adoptable
14.001	TS 2	1350	Manhole	Adoptable	TS 3	1350	Manhole	Adoptable
14.002	TS 3	1350	Manhole	Adoptable	TS 4	1350	Manhole	Adoptable

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
14.003	23.668	99.9	300	Circular	26.405	24.137	1.968	25.514	23.900	1.314
15.000	2.350	2350.0	300	Circular	25.567	24.086	1.181	25.514	24.085	1.129
14.004	65.990	200.0	300	Circular	25.514	23.900	1.314	25.844	23.570	1.974
16.000	35.401	87.6	225	Circular	27.422	25.729	1.468	27.312	25.325	1.762
17.000	23.640	60.0	225	Circular	28.107	26.294	1.588	27.312	25.900	1.187
16.001	36.093	123.2	225	Circular	27.312	25.093	1.994	26.232	24.800	1.207
16.002	18.831	200.3	225	Circular	26.232	24.394	1.613	25.844	24.300	1.319
14.005	37.475	200.4	300	Circular	25.844	23.570	1.974	26.546	23.383	2.863
14.006	34.861	199.2	300	Circular	26.546	23.383	2.863	26.284	23.208	2.776
18.000	13.333	199.0	300	Circular	29.339	27.315	1.724	29.561	27.248	2.013
18.001	17.229	200.3	300	Circular	29.561	27.248	2.013	29.660	27.162	2.198
18.002	51.037	200.1	300	Circular	29.660	27.162	2.198	28.724	26.907	1.517
18.003	44.633	153.9	300	Circular	28.724	26.907	1.517	28.177	26.617	1.260
18.004	9.892	51.5	300	Circular	28.177	26.617	1.260	27.960	26.425	1.235
19.000	44.433	150.1	225	Circular	29.428	27.796	1.407	29.047	27.500	1.322
19.001	17.738	199.3	225	Circular	29.047	27.189	1.633	28.531	27.100	1.206
20.000	2.017	2017.0	300	Circular	28.529	26.419	1.810	28.531	26.418	1.813
19.002	38.962	208.4	225	Circular	28.531	26.418	1.888	28.481	26.231	2.025
21.000	33.305	199.4	225	Circular	29.293	26.667	2.401	28.481	26.500	1.756
19.003	21.272	151.9	225	Circular	28.481	26.231	2.025	28.215	26.091	1.899
19.004	7.945	130.2	225	Circular	28.215	26.091	1.899	27.960	26.030	1.705
18.005	33.418	154.0	300	Circular	27.960	25.517	2.143	26.817	25.300	1.217
22.000	4.778	0.0	300	Circular	27.224	25.098	1.826	26.817	25.098	1.419
18.006	10.996	137.5	225	Circular	26.817	25.098	1.494	26.585	25.018	1.342
18.007	30.557	93.2	225	Circular	26.585	25.018	1.342	26.284	24.690	1.369

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
14.003	TS 4	1350	Manhole	Adoptable	TS 5	1350	Manhole	Adoptable
15.000	TS 5.1	1350	Manhole	Adoptable	TS 5	1350	Manhole	Adoptable
14.004	TS 5	1350	Manhole	Adoptable	TS 13	1200	Manhole	Adoptable
16.000	TS 28	1350	Manhole	Adoptable	TS 10	1200	Manhole	Adoptable
17.000	TS 9	1200	Manhole	Adoptable	TS 10	1200	Manhole	Adoptable
16.001	TS 10	1200	Manhole	Adoptable	TS 12	1350	Manhole	Adoptable
16.002	TS 12	1350	Manhole	Adoptable	TS 13	1200	Manhole	Adoptable
14.005	TS 13	1200	Manhole	Adoptable	TS 14	1200	Manhole	Adoptable
14.006	TS 14	1200	Manhole	Adoptable	TS 32	1200	Manhole	Adoptable
18.000	TS 15	1350	Manhole	Adoptable	TS 16	1350	Manhole	Adoptable
18.001	TS 16	1350	Manhole	Adoptable	TS 17	1350	Manhole	Adoptable
18.002	TS 17	1350	Manhole	Adoptable	TS 18	1200	Manhole	Adoptable
18.003	TS 18	1200	Manhole	Adoptable	TS 19	1350	Manhole	Adoptable
18.004	TS 19	1350	Manhole	Adoptable	TS 25	1200	Manhole	Adoptable
19.000	TS 20	1350	Manhole	Adoptable	TS 21	1350	Manhole	Adoptable
19.001	TS 21	1350	Manhole	Adoptable	TS 22	1200	Manhole	Adoptable
20.000	TS 22.1	1200	Manhole	Adoptable	TS 22	1200	Manhole	Adoptable
19.002	TS 22	1200	Manhole	Adoptable	TS 23	1200	Manhole	Adoptable
21.000	TS 23.1	1200	Manhole	Adoptable	TS 23	1200	Manhole	Adoptable
19.003	TS 23	1200	Manhole	Adoptable	TS 24	1200	Manhole	Adoptable
19.004	TS 24	1200	Manhole	Adoptable	TS 25	1200	Manhole	Adoptable
18.005	TS 25	1200	Manhole	Adoptable	TS 26	1350	Manhole	Adoptable
22.000	TS 26.1	1350	Manhole	Adoptable	TS 26	1350	Manhole	Adoptable
18.006	TS 26	1350	Manhole	Adoptable	TS 31	1200	Manhole	Adoptable
18.007	TS 31	1200	Manhole	Adoptable	TS 32	1200	Manhole	Adoptable

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
14.007	21.820	200.2	300	Circular	26.284	23.208	2.776	26.102	23.099	2.703
23.000	34.653	60.3	225	Circular	26.487	25.050	1.212	26.102	24.475	1.402
14.008	55.810	200.0	300	Circular	26.102	23.099	2.703	25.228	22.820	2.108
1.017	46.969	307.0	450	Circular	25.228	21.538	3.240	23.993	21.385	2.158
24.000	30.591	60.0	225	Circular	24.988	23.228	1.535	24.354	22.718	1.411
24.001	10.862	130.9	225	Circular	24.354	22.718	1.411	24.130	22.635	1.270
24.002	8.300	129.7	225	Circular	24.130	22.635	1.270	24.251	22.571	1.455
24.003	35.214	129.9	225	Circular	24.251	22.571	1.455	23.993	22.300	1.468
1.018	63.476	100.1	450	Circular	23.993	19.788	3.755	22.436	19.154	2.832
25.000	20.923	199.3	225	Circular	23.807	21.805	1.777	23.084	21.700	1.159
25.001	6.302	196.9	225	Circular	23.084	21.432	1.427	22.859	21.400	1.234
25.002	19.414	200.1	225	Circular	22.859	20.837	1.797	22.187	20.740	1.222
26.000	21.432	293.6	225	Circular	21.432	20.162	1.045	22.187	20.089	1.873
25.003	29.725	349.7	300	Circular	22.187	20.089	1.798	21.576	20.004	1.272
27.000	32.633	200.2	300	Circular	22.365	20.167	1.898	21.576	20.004	1.272
25.004	17.423	348.5	300	Circular	21.576	20.004	1.272	21.486	19.954	1.232
25.005	23.582	352.0	300	Circular	21.486	19.954	1.232	21.495	19.887	1.308
25.006	8.183	355.8	300	Circular	21.495	19.887	1.308	21.632	19.864	1.468
28.000	11.272	80.5	225	Circular	23.259	21.556	1.478	22.858	21.416	1.217
28.001	8.923	25.8	225	Circular	22.858	21.416	1.217	22.547	21.070	1.252
28.002	28.562	120.0	225	Circular	22.547	20.438	1.884	21.632	20.200	1.207
25.007	23.596	347.0	300	Circular	21.632	19.864	1.468	22.064	19.796	1.968
25.008	45.508	350.1	375	Circular	22.064	19.796	1.893	23.596	19.666	3.555
29.000	32.900	199.4	225	Circular	24.303	22.805	1.273	24.165	22.640	1.300
29.001	23.470	200.6	225	Circular	24.165	22.640	1.300	24.636	22.523	1.888

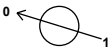
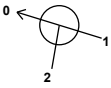
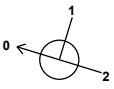
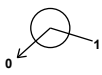
Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
14.007	TS 32	1200	Manhole	Adoptable	AS 13	1200	Manhole	Adoptable
23.000	AS 13.1	1200	Manhole	Adoptable	AS 13	1200	Manhole	Adoptable
14.008	AS 13	1200	Manhole	Adoptable	SR 2	1350	Manhole	Adoptable
1.017	SR 2	1350	Manhole	Adoptable	SR 3	1350	Manhole	Adoptable
24.000	AS 8	1200	Manhole	Adoptable	AS 9	1350	Manhole	Adoptable
24.001	AS 9	1350	Manhole	Adoptable	AS 10	1350	Manhole	Adoptable
24.002	AS 10	1350	Manhole	Adoptable	AS 11	1350	Manhole	Adoptable
24.003	AS 11	1350	Manhole	Adoptable	SR 3	1350	Manhole	Adoptable
1.018	SR 3	1350	Manhole	Adoptable	SR 4	1350	Manhole	Adoptable
25.000	KS 3	1200	Manhole	Adoptable	KS 4	1350	Manhole	Adoptable
25.001	KS 4	1350	Manhole	Adoptable	KS 5	1200	Manhole	Adoptable
25.002	KS 5	1200	Manhole	Adoptable	KS 6	1200	Manhole	Adoptable
26.000	KS 6.1	1350	Manhole	Adoptable	KS 6	1200	Manhole	Adoptable
25.003	KS 6	1200	Manhole	Adoptable	KS 7	1350	Manhole	Adoptable
27.000	KS 7.1	1200	Manhole	Adoptable	KS 7	1350	Manhole	Adoptable
25.004	KS 7	1350	Manhole	Adoptable	KS 8	1350	Manhole	Adoptable
25.005	KS 8	1350	Manhole	Adoptable	KS 9	1200	Manhole	Adoptable
25.006	KS 9	1200	Manhole	Adoptable	KS 10	1200	Manhole	Adoptable
28.000	KS 10.3	1200	Manhole	Adoptable	KS 10.2	1350	Manhole	Adoptable
28.001	KS 10.2	1350	Manhole	Adoptable	KS 10.1	1200	Manhole	Adoptable
28.002	KS 10.1	1200	Manhole	Adoptable	KS 10	1200	Manhole	Adoptable
25.007	KS 10	1200	Manhole	Adoptable	KS 11	1200	Manhole	Adoptable
25.008	KS 11	1200	Manhole	Adoptable	KS 19	1200	Manhole	Adoptable
29.000	KS 12	1350	Manhole	Adoptable	KS 13	1350	Manhole	Adoptable
29.001	KS 13	1350	Manhole	Adoptable	KS 14	1350	Manhole	Adoptable

Pipeline Schedule

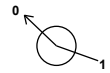
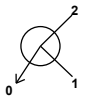
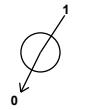
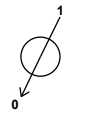
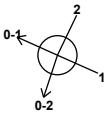
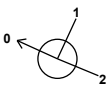
Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
30.000	10.212	200.2	225	Circular	24.230	22.840	1.165	24.636	22.789	1.622
29.002	44.143	199.7	300	Circular	24.636	22.448	1.888	24.914	22.227	2.387
29.003	8.764	199.2	300	Circular	24.914	22.227	2.387	24.392	22.183	1.909
31.000	6.056	0.0	300	Circular	24.948	21.732	2.916	24.392	21.732	2.360
29.004	16.548	201.8	300	Circular	24.392	21.732	2.360	23.990	21.650	2.040
29.005	29.545	199.6	300	Circular	23.990	21.240	2.450	23.295	21.092	1.903
29.006	17.634	200.4	300	Circular	23.295	21.092	1.903	23.596	21.004	2.292
25.009	30.308	352.4	300	Circular	23.596	19.666	3.630	24.488	19.580	4.608
32.000	42.195	200.0	225	Circular	25.694	23.311	2.158	24.588	23.100	1.263
32.001	46.980	182.1	225	Circular	24.588	21.938	2.425	24.488	21.680	2.583
25.010	27.758	347.0	375	Circular	24.488	19.580	4.533	22.524	19.500	2.649
25.011	21.195	353.3	375	Circular	22.524	19.500	2.649	22.523	19.440	2.708
33.000	9.082	181.6	300	Circular	22.934	21.120	1.514	22.523	21.070	1.153
25.012	33.809	348.5	375	Circular	22.523	19.440	2.708	22.331	19.343	2.613
25.013	14.988	348.6	375	Circular	22.331	19.343	2.613	22.245	19.300	2.570
34.000	8.855	109.3	225	Circular	22.570	20.831	1.514	22.245	20.750	1.270
25.014	30.287	207.4	375	Circular	22.245	19.300	2.570	22.436	19.154	2.907
35.000	2.940	0.0	450	Circular	22.478	19.154	2.874	22.436	19.154	2.832
1.019	36.497	80.0	450	Circular	22.436	19.154	2.832	21.738	18.698	2.590
1.020	17.098	198.8	450	Circular	21.738	18.200	3.088	21.385	18.114	2.821
1.021	18.227	149.4	450	Circular	21.385	17.730	3.205	21.290	17.608	3.232

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
30.000	KS 14.1	1350	Manhole	Adoptable	KS 14	1350	Manhole	Adoptable
29.002	KS 14	1350	Manhole	Adoptable	KS 15	1200	Manhole	Adoptable
29.003	KS 15	1200	Manhole	Adoptable	KS 16	1200	Manhole	Adoptable
31.000	KS 16.1	1350	Manhole	Adoptable	KS 16	1200	Manhole	Adoptable
29.004	KS 16	1200	Manhole	Adoptable	KS 17	1350	Manhole	Adoptable
29.005	KS 17	1350	Manhole	Adoptable	KS 18	1200	Manhole	Adoptable
29.006	KS 18	1200	Manhole	Adoptable	KS 19	1200	Manhole	Adoptable
25.009	KS 19	1200	Manhole	Adoptable	AS 3	1200	Manhole	Adoptable
32.000	AS 1	1200	Manhole	Adoptable	AS 2	1200	Manhole	Adoptable
32.001	AS 2	1200	Manhole	Adoptable	AS 3	1200	Manhole	Adoptable
25.010	AS 3	1200	Manhole	Adoptable	AS 4	1200	Manhole	Adoptable
25.011	AS 4	1200	Manhole	Adoptable	AS 5	1200	Manhole	Adoptable
33.000	AS 5.1	1200	Manhole	Adoptable	AS 5	1200	Manhole	Adoptable
25.012	AS 5	1200	Manhole	Adoptable	AS 6	1200	Manhole	Adoptable
25.013	AS 6	1200	Manhole	Adoptable	AS 7	1200	Manhole	Adoptable
34.000	AS 7.1	1200	Manhole	Adoptable	AS 7	1200	Manhole	Adoptable
25.014	AS 7	1200	Manhole	Adoptable	SR 4	1350	Manhole	Adoptable
35.000	SR 4.1	1350	Manhole	Adoptable	SR 4	1350	Manhole	Adoptable
1.019	SR 4	1350	Manhole	Adoptable	SR 5	1800	Manhole	Adoptable
1.020	SR 5	1800	Manhole	Adoptable	Ex.S 6	1350	Manhole	Adoptable
1.021	Ex.S 6	1350	Manhole	Adoptable	Ex.S 7	1350	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
MQS 4.2	526870.223	724826.167	30.045	1.145	1350		0	1.000	28.900	225
MQS 4.1	526895.189	724892.496	31.061	2.444	1200		1 0	1.000 1.001	28.617 28.617	225 225
MQS 1	526934.959	724922.895	32.080	1.478	1350		0	2.000	30.602	225
MQS 2	526924.996	724890.777	32.141	1.703	1350		1 0	2.000 2.001	30.438 30.438	225 225
MQS 3	526920.314	724892.216	31.887	2.320	1200		1 0	2.001 2.002	30.383 29.567	225 225
MQS 4	526896.401	724899.565	30.589	2.079	1200		1 2 0	2.002 1.001 1.002	29.400 28.581 28.510	225 225 225
MQS 5.1	526884.457	724938.587	29.278	1.208	1350		0	3.000	28.070	225
MQS 5	526874.563	724906.276	29.404	2.074	1200		1 2 0	3.000 1.002 1.003	27.882 28.396 27.330	225 225 225
MQS 6	526863.730	724909.605	28.820	2.185	1200		1 0	1.003 1.004	27.230 26.635	225 225
MQS 7	526851.181	724898.332	28.020	2.054	1200		1 0	1.004 1.005	26.470 25.966	225 225
MQS 8	526825.514	724874.882	27.099	3.109	1200		1 0	1.005 1.006	25.619 23.990	225 300
MQS 9.3	526871.694	724879.356	26.459	2.157	1200		0	4.000	24.302	225
MQS 9.2	526851.826	724826.537	26.554	2.534	1200		1 0	4.000 4.001	24.020 24.020	225 300

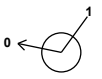
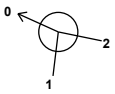
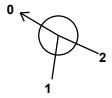
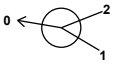
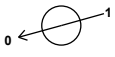
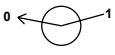
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
MQS 9.1	526819.707	724838.018	26.604	2.755	1200		1	4.001	23.849	300
							0	4.002	23.849	300
MQS 9	526803.619	724853.370	26.269	2.524	1200		1	4.002	23.745	300
							2	1.006	23.745	300
							0	1.007	23.745	300
MQS 10	526795.087	724840.358	25.894	2.226	1200		1	1.007	23.668	300
							0	1.008	23.668	300
MQS 11	526779.892	724809.550	25.611	2.094	1200		1	1.008	23.517	300
							0	1.009	23.517	300
MQS 12.1	526783.259	724790.611	25.461	2.808	1350		0	5.000	22.653	300
MQS 12	526772.990	724795.181	25.486	2.833	1200		1	5.000	22.653	300
							2	1.009	23.400	300
							0-1	1.010	22.653	300
							0-2	11.000	22.653	300
MQS 13.2	526746.327	724774.776	25.062	1.396	1350		0	6.000	23.666	225
MQS 13.1	526733.862	724780.477	25.088	1.498	1350		1	6.000	23.590	225
							0	6.001	23.590	225
MQS 13	526745.746	724807.407	25.435	2.987	1200		1	6.001	23.430	225
							2	1.010	22.523	300
							0	1.011	22.448	300
MQS 14.2	526770.160	724834.761	24.979	1.419	1350		0	7.000	23.560	225
MQS 14.1	526754.188	724841.990	25.255	1.855	1350		1	7.000	23.400	225
							0	7.001	23.400	225
MQS 14	526739.372	724810.041	25.434	3.029	1200		1	7.001	22.405	225
							2	1.011	22.405	300
							0	1.012	22.405	300
PS 1	526855.290	724937.094	25.450	1.914	1200		0	8.000	23.536	300

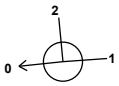
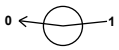
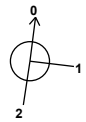
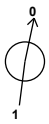
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
PS 2	526781.245	724969.274	25.400	2.095	1200	1	8.000	23.305	300
						0	8.001	23.305	300
PS 3	526757.183	724917.227	24.810	1.669	1350	1	8.001	23.141	300
						0	8.002	23.141	300
PS 4	526785.711	724904.550	25.364	2.312	1350	1	8.002	23.052	300
						0	8.003	23.052	300
PS 5.1	526778.316	724879.229	25.618	2.641	1350	0	9.000	22.977	300
PS 5	526774.690	724880.116	25.534	2.558	1200	1	9.000	22.976	300
						2	8.003	22.976	300
						0	8.004	22.976	300
MQS 15	526783.348	724865.256	25.724	1.918	1350	0	10.000	23.806	225
MQS 16	526770.898	724870.933	25.321	2.395	1200	1	10.000	23.680	225
						2	8.004	22.926	300
						0	8.005	22.926	300
MQS 17	526742.179	724884.048	24.472	1.965	1350	1	8.005	22.766	300
						0	8.006	22.507	300
MQS 18	526725.790	724847.878	24.697	2.389	1200	1	8.006	22.308	300
						0	8.007	22.308	300
MQS 19	526713.892	724821.619	24.908	2.749	1200	1	8.007	22.164	300
						2	1.012	22.159	300
						0	1.013	22.159	300
MQS 20	526701.775	724794.877	25.041	3.028	1350	1	1.013	22.013	300
						0	1.014	22.013	300
MQS 21	526688.760	724765.164	25.104	3.404	1200	1	1.014	21.700	300
						0	1.015	21.700	300
MQS 12	526772.990	724795.181	25.486		1200				

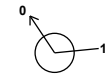
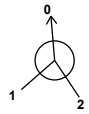
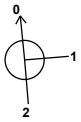
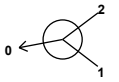
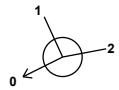
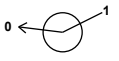
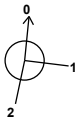
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
MQS 22	526767.366	724778.071	25.355	2.822	1200	 1	11.000	22.533	300
						0	11.001	22.533	300
MQS 23	526758.324	724755.205	25.229	2.860	1200	 1	11.001	22.369	300
						0	11.002	22.369	300
MQS 24	526744.910	724736.809	25.206	2.989	1200	 1	11.002	22.217	300
						0	11.003	22.217	300
MQS 25.1	526714.244	724717.954	26.141	1.861	1200	 0	12.000	24.280	225
MQS 25	526717.205	724742.488	25.195	3.167	1200	 1	12.000	23.700	225
						2	11.003	22.028	300
						0	11.004	22.028	300
MQS 26.1	526689.702	724735.233	25.299	1.706	1200	 0	13.000	23.593	225
MQS 26	526692.366	724753.706	25.018	3.268	1200	 1	13.000	23.500	225
						2	11.004	21.847	300
						0	11.005	21.750	300
SR 1	526679.344	724761.441	24.997	3.348	1350	 1	11.005	21.649	300
						2	1.015	21.649	300
						0	1.016	21.649	450
TS 1	526705.451	724604.310	27.514	1.664	1350	 0	14.000	25.850	225
TS 2	526712.783	724564.380	26.967	1.522	1350	 1	14.000	25.445	225
						0	14.001	25.445	225
TS 3	526688.909	724557.716	26.755	1.557	1350	 1	14.001	25.198	225
						0	14.002	25.198	225
TS 4	526649.887	724547.018	26.405	2.268	1350	 1	14.002	24.920	225
						0	14.003	24.137	300
TS 5.1	526625.740	724549.343	25.567	1.481	1350	 0	15.000	24.086	300

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
TS 5	526626.649	724551.510	25.514	1.614	1350		1	15.000	24.085	300
							2	14.003	23.900	300
							0	14.004	23.900	300
TS 28	526687.757	724653.511	27.422	1.693	1350		0	16.000	25.729	225
TS 9	526714.700	724619.967	28.107	1.813	1200		0	17.000	26.294	225
TS 10	526691.121	724618.270	27.312	2.219	1200		1	17.000	25.900	225
							2	16.000	25.325	225
							0	16.001	25.093	225
TS 12	526655.224	724614.516	26.232	1.838	1350		1	16.001	24.800	225
							0	16.002	24.394	225
TS 13	526636.526	724616.756	25.844	2.274	1200		1	16.002	24.300	225
							2	14.004	23.570	300
							0	14.005	23.570	300
TS 14	526641.254	724653.932	26.546	3.163	1200		1	14.005	23.383	300
							0	14.006	23.383	300
TS 15	526797.014	724630.595	29.339	2.024	1350		0	18.000	27.315	300
TS 16	526795.746	724643.868	29.561	2.313	1350		1	18.000	27.248	300
							0	18.001	27.248	300
TS 17	526787.961	724659.238	29.660	2.498	1350		1	18.001	27.162	300
							0	18.002	27.162	300
TS 18	526773.501	724708.184	28.724	1.817	1200		1	18.002	26.907	300
							0	18.003	26.907	300
TS 19	526729.395	724701.348	28.177	1.560	1350		1	18.003	26.617	300
							0	18.004	26.617	300
TS 20	526787.260	724620.199	29.428	1.632	1350		0	19.000	27.796	225

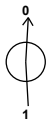
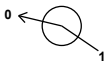
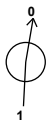
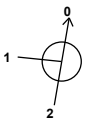
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
TS 21	526743.042	724615.832	29.047	1.858	1350		1	19.000	27.500	225
							0	19.001	27.189	225
TS 22.1	526731.672	724629.251	28.529	2.110	1200		0	20.000	26.419	300
TS 22	526733.189	724630.582	28.531	2.113	1200		1	20.000	26.418	300
							2	19.001	27.100	225
							0	19.002	26.418	225
TS 23.1	526763.113	724672.140	29.293	2.626	1200		0	21.000	26.667	225
TS 23	526729.921	724669.407	28.481	2.250	1200		1	21.000	26.500	225
							2	19.002	26.231	225
							0	19.003	26.231	225
TS 24	526727.798	724690.572	28.215	2.124	1200		1	19.003	26.091	225
							0	19.004	26.091	225
TS 25	526721.490	724695.402	27.960	2.443	1200		1	19.004	26.030	225
							2	18.004	26.425	300
							0	18.005	25.517	300
TS 26.1	526686.659	724693.562	27.224	2.126	1350		0	22.000	25.098	300
TS 26	526688.649	724689.219	26.817	1.719	1350		1	22.000	25.098	300
							2	18.005	25.300	300
							0	18.006	25.098	225
TS 31	526678.808	724684.312	26.585	1.567	1200		1	18.006	25.018	225
							0	18.007	25.018	225
TS 32	526648.479	724688.035	26.284	3.076	1200		1	18.007	24.690	225
							2	14.006	23.208	300
							0	14.007	23.208	300
AS 13.1	526685.111	724706.135	26.487	1.437	1200		0	23.000	25.050	225
AS 13	526650.646	724709.747	26.102	3.003	1200		1	23.000	24.475	225
							2	14.007	23.099	300
							0	14.008	23.099	300

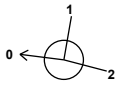
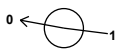
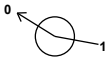
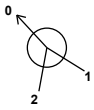
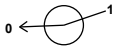
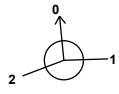
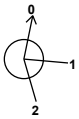
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
SR 2	526657.470	724765.138	25.228	3.690	1350	1	14.008	22.820	300
						2	1.016	21.538	450
						0	1.017	21.538	450
AS 8	526598.091	724702.249	24.988	1.760	1200	0	24.000	23.228	225
AS 9	526591.856	724732.198	24.354	1.636	1350	1	24.000	22.718	225
						0	24.001	22.718	225
AS 10	526595.663	724742.371	24.130	1.495	1350	1	24.001	22.635	225
						0	24.002	22.635	225
AS 11	526603.828	724740.877	24.251	1.680	1350	1	24.002	22.571	225
						0	24.003	22.571	225
SR 3	526611.596	724775.223	23.993	4.205	1350	1	24.003	22.300	225
						2	1.017	21.385	450
						0	1.018	19.788	450
KS 3	526597.240	724530.009	23.807	2.002	1200	0	25.000	21.805	225
KS 4	526578.044	724521.686	23.084	1.652	1350	1	25.000	21.700	225
						0	25.001	21.432	225
KS 5	526573.946	724516.898	22.859	2.022	1200	1	25.001	21.400	225
						0	25.002	20.837	225
KS 6.1	526537.467	724498.723	21.432	1.270	1350	0	26.000	20.162	225
KS 6	526556.006	724509.477	22.187	2.098	1200	1	26.000	20.089	225
						2	25.002	20.740	225
						0	25.003	20.089	300
KS 7.1	526575.538	724550.365	22.365	2.198	1200	0	27.000	20.167	300
KS 7	526545.622	724537.329	21.576	1.572	1350	1	27.000	20.004	300
						2	25.003	20.004	300
						0	25.004	20.004	300

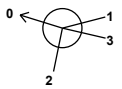
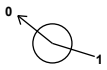
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
KS 8	526544.633	724554.724	21.486	1.532	1350		1	25.004	19.954	300
							0	25.005	19.954	300
KS 9	526545.991	724578.267	21.495	1.608	1200		1	25.005	19.887	300
							0	25.006	19.887	300
KS 10.3	526588.788	724568.322	23.259	1.703	1200		0	28.000	21.556	225
KS 10.2	526579.462	724574.654	22.858	1.442	1350		1	28.000	21.416	225
							0	28.001	21.416	225
KS 10.1	526572.079	724579.666	22.547	2.109	1200		1	28.001	21.070	225
							0	28.002	20.438	225
KS 10	526544.291	724586.271	21.632	1.768	1200		1	28.002	20.200	225
							2	25.006	19.864	300
							0	25.007	19.864	300
KS 11	526546.654	724609.749	22.064	2.268	1200		1	25.007	19.796	300
							0	25.008	19.796	375
KS 12	526610.740	724536.107	24.303	1.498	1350		0	29.000	22.805	225
KS 13	526612.431	724568.964	24.165	1.525	1350		1	29.000	22.640	225
							0	29.001	22.640	225
KS 14.1	526606.218	724593.139	24.230	1.390	1350		0	30.000	22.840	225
KS 14	526616.377	724592.100	24.636	2.188	1350		1	30.000	22.789	225
							2	29.001	22.523	225
							0	29.002	22.448	300
KS 15	526623.798	724635.615	24.914	2.687	1200		1	29.002	22.227	300
							0	29.003	22.227	300
KS 16.1	526616.352	724643.802	24.948	3.216	1350		0	31.000	21.732	300

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
KS 16	526615.319	724637.835	24.392	2.660	1200		1	31.000	21.732	300
							2	29.003	22.183	300
							0	29.004	21.732	300
KS 17	526598.901	724639.899	23.990	2.750	1350		1	29.004	21.650	300
							0	29.005	21.240	300
KS 18	526569.838	724645.209	23.295	2.203	1200		1	29.005	21.092	300
							0	29.006	21.092	300
KS 19	526554.857	724654.511	23.596	3.930	1200		1	29.006	21.004	300
							2	25.008	19.666	375
							0	25.009	19.666	300
AS 1	526621.142	724692.197	25.694	2.383	1200		0	32.000	23.311	225
AS 2	526581.197	724678.600	24.588	2.650	1200		1	32.000	23.100	225
							0	32.001	21.938	225
AS 3	526534.254	724676.739	24.488	4.908	1200		1	32.001	21.680	225
							2	25.009	19.580	300
							0	25.010	19.580	375
AS 4	526531.363	724704.346	22.524	3.024	1200		1	25.010	19.500	375
							0	25.011	19.500	375
AS 5.1	526560.258	724712.151	22.934	1.814	1200		0	33.000	21.120	300
AS 5	526551.180	724711.862	22.523	3.083	1200		1	33.000	21.070	300
							2	25.011	19.440	375
							0	25.012	19.440	375
AS 6	526547.869	724745.508	22.331	2.988	1200		1	25.012	19.343	375
							0	25.013	19.343	375
AS 7.1	526552.522	724759.129	22.570	1.739	1200		0	34.000	20.831	225
AS 7	526543.701	724759.905	22.245	2.945	1200		1	34.000	20.750	225
							2	25.013	19.300	375
							0	25.014	19.300	375

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
SR 4.1	526552.611	724790.316	22.478	3.324	1350		0	35.000	19.154	450
SR 4	526549.766	724789.579	22.436	3.282	1350		1	35.000	19.154	450
							2	25.014	19.154	375
							3	1.018	19.154	450
							0	1.019	19.154	450
SR 5	526514.900	724800.369	21.738	3.538	1800		1	1.019	18.698	450
							0	1.020	18.200	450
Ex.S 6	526501.572	724811.078	21.385	3.655	1350		1	1.020	18.114	450
							0	1.021	17.730	450
Ex.S 7	526487.565	724822.741	21.290	3.682	1350		1	1.021	17.608	450

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
1 year 15 minute summer	86.031	24.344
1 year 15 minute winter	60.372	24.344
1 year 30 minute summer	57.849	16.369
1 year 30 minute winter	40.596	16.369
1 year 60 minute summer	40.255	10.638
1 year 60 minute winter	26.745	10.638
1 year 120 minute summer	25.681	6.787
1 year 120 minute winter	17.062	6.787
1 year 180 minute summer	20.185	5.194
1 year 180 minute winter	13.121	5.194
1 year 240 minute summer	16.242	4.292
1 year 240 minute winter	10.791	4.292
1 year 360 minute summer	12.738	3.278
1 year 360 minute winter	8.280	3.278
1 year 480 minute summer	10.241	2.706
1 year 480 minute winter	6.804	2.706
1 year 600 minute summer	8.517	2.330
1 year 600 minute winter	5.819	2.330
1 year 720 minute summer	7.690	2.061
1 year 720 minute winter	5.168	2.061
1 year 960 minute summer	6.452	1.699
1 year 960 minute winter	4.274	1.699
1 year 1440 minute summer	4.857	1.302
1 year 1440 minute winter	3.264	1.302
1 year 2160 minute summer	3.579	0.989
1 year 2160 minute winter	2.466	0.989
1 year 2880 minute summer	3.037	0.814

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
1 year 2880 minute winter	2.041	0.814
1 year 4320 minute summer	2.365	0.618
1 year 4320 minute winter	1.557	0.618
1 year 5760 minute summer	1.988	0.509
1 year 5760 minute winter	1.287	0.509
1 year 7200 minute summer	1.716	0.438
1 year 7200 minute winter	1.107	0.438
1 year 8640 minute summer	1.517	0.387
1 year 8640 minute winter	0.979	0.387
1 year 10080 minute summer	1.367	0.349
1 year 10080 minute winter	0.882	0.349
30 year +10% CC 15 minute summer	210.081	59.446
30 year +10% CC 15 minute winter	147.425	59.446
30 year +10% CC 30 minute summer	141.587	40.064
30 year +10% CC 30 minute winter	99.359	40.064
30 year +10% CC 60 minute summer	97.193	25.685
30 year +10% CC 60 minute winter	64.573	25.685
30 year +10% CC 120 minute summer	60.652	16.029
30 year +10% CC 120 minute winter	40.296	16.029
30 year +10% CC 180 minute summer	46.946	12.081
30 year +10% CC 180 minute winter	30.516	12.081
30 year +10% CC 240 minute summer	37.314	9.861
30 year +10% CC 240 minute winter	24.790	9.861
30 year +10% CC 360 minute summer	28.736	7.395
30 year +10% CC 360 minute winter	18.679	7.395
30 year +10% CC 480 minute summer	22.784	6.021
30 year +10% CC 480 minute winter	15.137	6.021
30 year +10% CC 600 minute summer	18.760	5.131
30 year +10% CC 600 minute winter	12.818	5.131
30 year +10% CC 720 minute summer	16.797	4.502
30 year +10% CC 720 minute winter	11.288	4.502
30 year +10% CC 960 minute summer	13.899	3.660
30 year +10% CC 960 minute winter	9.207	3.660
30 year +10% CC 1440 minute summer	10.194	2.732
30 year +10% CC 1440 minute winter	6.851	2.732
30 year +10% CC 2160 minute summer	7.377	2.039
30 year +10% CC 2160 minute winter	5.083	2.039
30 year +10% CC 2880 minute summer	6.180	1.656
30 year +10% CC 2880 minute winter	4.153	1.656
30 year +10% CC 4320 minute summer	4.724	1.235
30 year +10% CC 4320 minute winter	3.111	1.235
30 year +10% CC 5760 minute summer	3.916	1.003
30 year +10% CC 5760 minute winter	2.535	1.003
30 year +10% CC 7200 minute summer	3.342	0.853
30 year +10% CC 7200 minute winter	2.157	0.853
30 year +10% CC 8640 minute summer	2.927	0.747
30 year +10% CC 8640 minute winter	1.889	0.747
30 year +10% CC 10080 minute summer	2.616	0.667
30 year +10% CC 10080 minute winter	1.688	0.667
100 year +20% CC 15 minute summer	296.897	84.012
100 year +20% CC 15 minute winter	208.349	84.012
100 year +20% CC 30 minute summer	201.507	57.019

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
100 year +20% CC 30 minute winter	141.408	57.019
100 year +20% CC 60 minute summer	138.007	36.471
100 year +20% CC 60 minute winter	91.688	36.471
100 year +20% CC 120 minute summer	85.551	22.609
100 year +20% CC 120 minute winter	56.838	22.609
100 year +20% CC 180 minute summer	65.898	16.958
100 year +20% CC 180 minute winter	42.835	16.958
100 year +20% CC 240 minute summer	52.169	13.787
100 year +20% CC 240 minute winter	34.660	13.787
100 year +20% CC 360 minute summer	39.949	10.280
100 year +20% CC 360 minute winter	25.968	10.280
100 year +20% CC 480 minute summer	31.537	8.334
100 year +20% CC 480 minute winter	20.953	8.334
100 year +20% CC 600 minute summer	25.877	7.078
100 year +20% CC 600 minute winter	17.681	7.078
100 year +20% CC 720 minute summer	23.101	6.191
100 year +20% CC 720 minute winter	15.525	6.191
100 year +20% CC 960 minute summer	19.026	5.010
100 year +20% CC 960 minute winter	12.603	5.010
100 year +20% CC 1440 minute summer	13.860	3.715
100 year +20% CC 1440 minute winter	9.315	3.715
100 year +20% CC 2160 minute summer	9.962	2.753
100 year +20% CC 2160 minute winter	6.864	2.753
100 year +20% CC 2880 minute summer	8.306	2.226
100 year +20% CC 2880 minute winter	5.582	2.226
100 year +20% CC 4320 minute summer	6.306	1.649
100 year +20% CC 4320 minute winter	4.152	1.649
100 year +20% CC 5760 minute summer	5.200	1.331
100 year +20% CC 5760 minute winter	3.366	1.331
100 year +20% CC 7200 minute summer	4.418	1.127
100 year +20% CC 7200 minute winter	2.852	1.127
100 year +20% CC 8640 minute summer	3.856	0.984
100 year +20% CC 8640 minute winter	2.489	0.984
100 year +20% CC 10080 minute summer	3.436	0.877
100 year +20% CC 10080 minute winter	2.218	0.877

Results for 1 year Critical Storm Duration. Lowest mass balance: 99.27%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	MQS 4.2	10	28.994	0.094	12.0	0.1344	0.0000	OK
60 minute winter	MQS 4.1	48	28.834	0.217	6.6	0.2454	0.0000	OK
15 minute winter	MQS 1	10	30.717	0.115	18.1	0.1644	0.0000	OK
15 minute winter	MQS 2	11	30.542	0.104	19.4	0.1493	0.0000	OK
30 minute winter	MQS 3	23	29.860	0.293	18.6	6.5665	0.0000	SURCHARGED
60 minute winter	MQS 4	48	28.834	0.324	13.5	7.2716	0.0000	SURCHARGED
15 minute winter	MQS 5.1	11	28.127	0.057	5.5	0.0814	0.0000	OK
60 minute winter	MQS 5	58	27.634	0.304	11.9	6.8377	0.0000	SURCHARGED
60 minute winter	MQS 6	59	26.706	0.071	10.3	0.0803	0.0000	OK
60 minute summer	MQS 7	34	26.041	0.075	11.9	0.0843	0.0000	OK
30 minute winter	MQS 8	20	24.069	0.079	15.4	0.0896	0.0000	OK
15 minute winter	MQS 9.3	10	24.390	0.088	12.3	0.0998	0.0000	OK
15 minute winter	MQS 9.2	11	24.119	0.099	17.9	0.1121	0.0000	OK
15 minute winter	MQS 9.1	11	23.950	0.101	19.1	0.1139	0.0000	OK
15 minute winter	MQS 9	12	23.899	0.154	34.7	0.1742	0.0000	OK
15 minute winter	MQS 10	12	23.831	0.163	39.1	0.1844	0.0000	OK
15 minute winter	MQS 11	12	23.673	0.156	44.5	0.1769	0.0000	OK
960 minute winter	MQS 12.1	630	22.700	0.047	1.7	23.6166	0.0000	OK
15 minute winter	MQS 12	12	22.812	0.159	46.9	0.1799	0.0000	OK
15 minute winter	MQS 13.2	10	23.737	0.071	8.5	0.1012	0.0000	OK
15 minute winter	MQS 13.1	11	23.707	0.117	19.9	0.1677	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	MQS 4.2	1.000	MQS 4.1	11.7	0.770	0.359	1.1120	
60 minute winter	MQS 4.1	1.001	MQS 4	5.2	0.590	0.143	0.2835	
15 minute winter	MQS 1	2.000	MQS 2	17.8	0.930	0.491	0.6426	
15 minute winter	MQS 2	2.001	MQS 3	19.2	1.164	0.349	0.0809	
30 minute winter	MQS 3	2.002	MQS 4	9.7	0.858	0.230	0.2840	
30 minute winter	MQS 3	Infiltration		0.0				
60 minute winter	MQS 4	1.002	MQS 5	10.2	0.781	0.280	0.2993	
60 minute winter	MQS 4	Infiltration		0.0				
15 minute winter	MQS 5.1	3.000	MQS 5	5.3	0.684	0.138	0.2627	
60 minute winter	MQS 5	1.003	MQS 6	10.0	0.938	0.206	0.1213	
60 minute winter	MQS 5	Infiltration		0.0				
60 minute winter	MQS 6	1.004	MQS 7	10.3	0.993	0.201	0.1757	
60 minute summer	MQS 7	1.005	MQS 8	11.9	1.053	0.229	0.3920	
30 minute winter	MQS 8	1.006	MQS 9	15.4	0.785	0.156	0.7460	
15 minute winter	MQS 9.3	4.000	MQS 9.2	11.9	0.774	0.326	0.8751	
15 minute winter	MQS 9.2	4.001	MQS 9.1	17.8	0.868	0.227	0.6995	
15 minute winter	MQS 9.1	4.002	MQS 9	18.8	0.665	0.248	0.6316	
15 minute winter	MQS 9	1.007	MQS 10	34.3	0.908	0.440	0.5877	
15 minute winter	MQS 10	1.008	MQS 11	39.5	1.037	0.539	1.3095	
15 minute winter	MQS 11	1.009	MQS 12	44.7	1.273	0.470	0.5598	
960 minute winter	MQS 12.1	5.000	MQS 12	-1.7	-0.306	-0.033	0.0795	
15 minute winter	MQS 12	1.010	MQS 13	1.5	0.421	0.020	0.1594	
15 minute winter	MQS 12	11.000	MQS 22	43.0	1.120	0.475	0.6921	
15 minute winter	MQS 13.2	6.000	MQS 13.1	8.4	0.537	0.218	0.2157	
15 minute winter	MQS 13.1	6.001	MQS 13	19.5	0.955	0.510	0.5996	

Results for 1 year Critical Storm Duration. Lowest mass balance: 99.27%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	MQS 13	11	22.571	0.123	20.9	0.1389	0.0000	OK
15 minute winter	MQS 14.2	10	23.632	0.072	10.5	0.1034	0.0000	OK
15 minute winter	MQS 14.1	10	23.474	0.074	21.2	0.1066	0.0000	OK
15 minute winter	MQS 14	11	22.549	0.144	46.5	0.1626	0.0000	OK
15 minute winter	PS 1	11	23.664	0.128	24.1	0.1453	0.0000	OK
15 minute winter	PS 2	11	23.514	0.209	31.1	0.2363	0.0000	OK
360 minute winter	PS 3	240	23.195	0.054	7.9	37.1119	0.0000	OK
15 minute winter	PS 4	11	23.323	0.271	28.7	0.3876	0.0000	OK
1440 minute winter	PS 5.1	1110	23.128	0.151	3.3	83.8982	0.0000	OK
15 minute winter	PS 5	11	23.321	0.345	13.4	0.3903	0.0000	SURCHARGED
15 minute winter	MQS 15	10	23.846	0.040	3.4	0.0578	0.0000	OK
15 minute winter	MQS 16	11	22.996	0.070	9.2	0.0787	0.0000	OK
15 minute winter	MQS 17	11	22.591	0.084	13.1	0.1197	0.0000	OK
15 minute winter	MQS 18	11	22.399	0.091	16.1	0.1025	0.0000	OK
15 minute winter	MQS 19	11	22.373	0.214	65.5	0.2421	0.0000	OK
15 minute winter	MQS 20	13	22.197	0.184	68.5	0.2633	0.0000	OK
15 minute winter	MQS 21	13	22.121	0.421	67.7	0.4762	0.0000	SURCHARGED
	MQS 12							
15 minute winter	MQS 22	12	22.695	0.162	46.0	0.1837	0.0000	OK
15 minute winter	MQS 23	12	22.541	0.172	49.8	0.1943	0.0000	OK
15 minute winter	MQS 24	12	22.399	0.182	56.0	0.2059	0.0000	OK
15 minute winter	MQS 25.1	10	24.318	0.038	4.8	0.0424	0.0000	OK
15 minute winter	MQS 25	13	22.234	0.206	66.4	0.2335	0.0000	OK
15 minute winter	MQS 26.1	11	23.631	0.038	2.3	0.0432	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	MQS 13	1.011	MQS 14	21.0	0.710	0.240	0.2085	
15 minute winter	MQS 14.2	7.000	MQS 14.1	10.4	0.925	0.209	0.1967	
15 minute winter	MQS 14.1	7.001	MQS 14	20.9	1.105	0.238	0.6700	
15 minute winter	MQS 14	1.012	MQS 19	47.1	1.077	0.452	1.2192	
15 minute winter	PS 1	8.000	PS 2	23.1	0.586	0.392	3.2775	
15 minute winter	PS 2	8.001	PS 3	33.8	1.507	0.573	1.5360	
360 minute winter	PS 3	8.002	PS 4	4.2	0.429	0.072	0.3328	
15 minute winter	PS 4	8.003	PS 5	13.4	0.507	0.227	1.8410	
1440 minute winter	PS 5.1	9.000	PS 5	-3.3	-0.337	-0.189	0.1335	
1440 minute winter	PS 5.1	Infiltration		0.0				
15 minute winter	PS 5	8.004	MQS 16	2.0	0.372	0.025	0.0819	
15 minute winter	MQS 15	10.000	MQS 16	3.3	0.704	0.067	0.0645	
15 minute winter	MQS 16	8.005	MQS 17	9.1	0.745	0.115	0.3839	
15 minute winter	MQS 17	8.006	MQS 18	13.2	0.777	0.168	0.6740	
15 minute winter	MQS 18	8.007	MQS 19	15.9	0.451	0.203	1.0140	
15 minute winter	MQS 19	1.013	MQS 20	64.4	1.356	0.824	1.4053	
15 minute winter	MQS 20	1.014	MQS 21	67.7	1.189	0.621	1.8768	
15 minute winter	MQS 21	1.015	SR 1	62.6	0.890	0.797	0.7130	
15 minute winter	MQS 22	11.001	MQS 23	46.0	1.140	0.508	0.9916	
15 minute winter	MQS 23	11.002	MQS 24	49.5	1.152	0.546	0.9842	
15 minute winter	MQS 24	11.003	MQS 25	55.5	1.151	0.612	1.3621	
15 minute winter	MQS 25.1	12.000	MQS 25	4.7	1.095	0.059	0.1058	
15 minute winter	MQS 25	11.004	MQS 26	66.1	1.320	0.731	1.6641	
15 minute winter	MQS 26.1	13.000	MQS 26	2.2	0.510	0.061	0.0820	

Results for 1 year Critical Storm Duration. Lowest mass balance: 99.27%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	MQS 26	13	22.151	0.401	70.3	0.4539	0.0000	SURCHARGED
15 minute winter	SR 1	13	22.073	0.424	127.8	0.6061	0.0000	OK
15 minute winter	TS 1	10	25.919	0.069	11.0	0.0989	0.0000	OK
15 minute winter	TS 2	10	25.541	0.096	19.6	0.1375	0.0000	OK
15 minute winter	TS 3	11	25.332	0.134	27.6	0.1923	0.0000	OK
15 minute winter	TS 4	11	24.247	0.110	30.4	0.1571	0.0000	OK
15 minute summer	TS 5.1	1	24.086	0.000	0.0	0.0000	0.0000	OK
15 minute winter	TS 5	13	24.075	0.175	45.7	0.2497	0.0000	OK
15 minute winter	TS 28	10	25.783	0.054	7.0	0.0768	0.0000	OK
15 minute winter	TS 9	10	26.346	0.052	7.6	0.0585	0.0000	OK
15 minute winter	TS 10	11	25.214	0.121	25.4	0.1366	0.0000	OK
15 minute winter	TS 12	11	24.554	0.160	28.6	0.2284	0.0000	OK
15 minute winter	TS 13	12	24.018	0.448	73.5	0.5071	0.0000	SURCHARGED
15 minute winter	TS 14	12	23.876	0.493	77.9	0.5574	0.0000	SURCHARGED
15 minute winter	TS 15	10	27.403	0.088	13.5	0.1263	0.0000	OK
15 minute winter	TS 16	10	27.359	0.111	20.9	0.1588	0.0000	OK
15 minute winter	TS 17	11	27.302	0.140	33.7	0.2000	0.0000	OK
15 minute winter	TS 18	11	27.037	0.130	33.5	0.1475	0.0000	OK
15 minute winter	TS 19	11	26.737	0.120	42.9	0.1717	0.0000	OK
15 minute summer	TS 20	1	27.796	0.000	0.0	0.0000	0.0000	OK
15 minute winter	TS 21	11	27.223	0.034	1.8	0.0482	0.0000	OK
180 minute winter	TS 22.1	168	26.510	0.091	6.5	17.5948	0.0000	OK
15 minute summer	TS 22	11	26.792	0.374	27.1	0.4226	0.0000	SURCHARGED
15 minute winter	TS 23.1	11	26.820	0.153	5.6	0.1729	0.0000	OK
15 minute winter	TS 23	11	26.787	0.556	18.6	0.6289	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	MQS 26	11.005	SR 1	66.6	0.946	0.736	1.0666	
15 minute winter	SR 1	1.016	SR 2	126.2	0.842	0.553	3.4739	
15 minute winter	TS 1	14.000	TS 2	10.8	0.816	0.207	0.5376	
15 minute winter	TS 2	14.001	TS 3	19.2	0.951	0.370	0.5062	
15 minute winter	TS 3	14.002	TS 4	27.4	1.134	0.636	0.9761	
15 minute winter	TS 4	14.003	TS 5	30.3	0.986	0.273	0.7316	
15 minute summer	TS 5.1	15.000	TS 5	0.0	0.000	0.000	0.0000	
15 minute winter	TS 5	14.004	TS 13	44.8	0.918	0.571	3.7261	
15 minute winter	TS 28	16.000	TS 10	6.8	0.947	0.122	0.2528	
15 minute winter	TS 9	17.000	TS 10	7.5	1.107	0.111	0.1594	
15 minute winter	TS 10	16.001	TS 12	25.1	1.185	0.537	0.7648	
15 minute winter	TS 12	16.002	TS 13	28.7	1.018	0.786	0.5315	
15 minute winter	TS 13	14.005	TS 14	63.0	1.042	0.805	2.6390	
15 minute winter	TS 14	14.006	TS 32	73.0	1.066	0.930	2.4549	
15 minute winter	TS 15	18.000	TS 16	13.3	0.653	0.170	0.2730	
15 minute winter	TS 16	18.001	TS 17	20.6	0.740	0.263	0.4798	
15 minute winter	TS 17	18.002	TS 18	33.5	1.092	0.428	1.5698	
15 minute winter	TS 18	18.003	TS 19	33.1	1.197	0.371	1.2423	
15 minute winter	TS 19	18.004	TS 25	42.4	1.747	0.273	0.2404	
15 minute summer	TS 20	19.000	TS 21	0.0	0.000	0.000	0.0000	
15 minute winter	TS 21	19.001	TS 22	1.7	0.475	0.047	0.0649	
180 minute winter	TS 22.1	20.000	TS 22	-6.5	-0.816	-0.268	0.0368	
15 minute summer	TS 22	19.002	TS 23	-18.4	0.639	-0.514	1.5496	
15 minute winter	TS 23.1	21.000	TS 23	8.4	0.570	0.229	1.1405	
15 minute winter	TS 23	19.003	TS 24	6.7	0.458	0.159	0.8460	

Results for 1 year Critical Storm Duration. Lowest mass balance: 99.27%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	TS 24	12	26.783	0.692	8.1	0.7831	0.0000	SURCHARGED
15 minute winter	TS 25	11	25.900	0.382	49.3	0.4326	0.0000	SURCHARGED
960 minute winter	TS 26.1	675	25.295	0.197	3.5	68.2450	0.0000	OK
15 minute summer	TS 26	11	25.815	0.717	59.2	1.0256	0.0000	SURCHARGED
15 minute winter	TS 31	11	25.074	0.056	7.0	0.0629	0.0000	OK
15 minute winter	TS 32	13	23.690	0.482	83.8	0.5447	0.0000	SURCHARGED
15 minute winter	AS 13.1	10	25.091	0.041	5.0	0.0467	0.0000	OK
15 minute winter	AS 13	13	23.530	0.431	102.6	0.4880	0.0000	SURCHARGED
15 minute winter	SR 2	13	22.026	0.488	230.0	0.6978	0.0000	SURCHARGED
15 minute winter	AS 8	10	23.287	0.059	10.4	0.0669	0.0000	OK
15 minute winter	AS 9	10	22.803	0.085	12.2	0.1214	0.0000	OK
15 minute winter	AS 10	11	22.738	0.103	15.7	0.1469	0.0000	OK
15 minute winter	AS 11	11	22.680	0.109	20.4	0.1554	0.0000	OK
15 minute winter	SR 3	13	20.105	0.317	255.8	0.4532	0.0000	OK
15 minute summer	KS 3	1	21.805	0.000	0.0	0.0000	0.0000	OK
15 minute winter	KS 4	10	21.536	0.104	13.9	0.1486	0.0000	OK
120 minute winter	KS 5	88	21.151	0.314	7.2	11.5342	0.0000	SURCHARGED
15 minute winter	KS 6.1	10	20.240	0.078	7.1	0.1121	0.0000	OK
60 minute winter	KS 6	42	20.155	0.066	10.0	7.1979	0.0000	OK
60 minute winter	KS 7.1	41	20.194	0.027	2.4	1.9077	0.0000	OK
15 minute winter	KS 7	12	20.113	0.109	8.6	0.1564	0.0000	OK
15 minute winter	KS 8	11	20.096	0.142	13.9	0.2028	0.0000	OK
15 minute winter	KS 9	11	20.087	0.200	16.1	0.2262	0.0000	OK
15 minute winter	KS 10.3	10	21.593	0.037	3.3	0.0420	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	TS 24	19.004	TS 25	1.5	0.521	0.033	0.0229	
15 minute winter	TS 25	18.005	TS 26	60.3	1.234	0.674	2.3533	
960 minute winter	TS 26.1	22.000	TS 26	-3.5	-0.333	-0.065	0.2340	
15 minute summer	TS 26	18.006	TS 31	3.5	0.649	0.079	0.0687	
15 minute winter	TS 31	18.007	TS 32	7.0	0.933	0.130	0.2293	
15 minute winter	TS 32	14.007	AS 13	82.5	1.172	1.054	1.5365	
15 minute winter	AS 13.1	23.000	AS 13	4.8	0.981	0.072	0.1707	
15 minute winter	AS 13	14.008	SR 2	99.7	1.436	1.273	3.6826	
15 minute winter	SR 2	1.017	SR 3	230.0	1.510	1.253	6.7243	
15 minute winter	AS 8	24.000	AS 9	10.3	0.940	0.153	0.3364	
15 minute winter	AS 9	24.001	AS 10	12.0	0.765	0.264	0.1700	
15 minute winter	AS 10	24.002	AS 11	15.8	0.867	0.346	0.1518	
15 minute winter	AS 11	24.003	SR 3	20.4	1.103	0.448	0.6519	
15 minute winter	SR 3	1.018	SR 4	254.8	1.906	0.789	8.5934	
15 minute summer	KS 3	25.000	KS 4	0.0	0.000	0.000	0.0000	
15 minute winter	KS 4	25.001	KS 5	13.7	0.817	0.372	0.1059	
120 minute winter	KS 5	25.002	KS 6	2.5	0.526	0.068	0.0919	
15 minute winter	KS 6.1	26.000	KS 6	7.1	1.033	0.235	0.1659	
60 minute winter	KS 6	25.003	KS 7	6.3	0.485	0.108	0.3910	
60 minute winter	KS 7.1	27.000	KS 7	1.3	0.156	0.017	0.2942	
60 minute winter	KS 7.1	Infiltration		0.0				
15 minute winter	KS 7	25.004	KS 8	9.6	0.497	0.163	0.4862	
15 minute winter	KS 8	25.005	KS 9	16.1	0.504	0.274	0.9744	
15 minute winter	KS 9	25.006	KS 10	18.9	0.469	0.323	0.4303	
15 minute winter	KS 10.3	28.000	KS 10.2	3.3	0.760	0.056	0.0484	

Results for 1 year Critical Storm Duration. Lowest mass balance: 99.27%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	KS 10.2	10	21.453	0.037	5.8	0.0535	0.0000	OK
15 minute winter	KS 10.1	11	20.506	0.068	9.2	0.0768	0.0000	OK
15 minute summer	KS 10	11	20.084	0.220	28.2	0.2490	0.0000	OK
15 minute winter	KS 11	10	20.072	0.276	42.0	0.3117	0.0000	OK
15 minute winter	KS 12	10	22.864	0.059	5.7	0.0840	0.0000	OK
15 minute winter	KS 13	11	22.723	0.083	10.4	0.1194	0.0000	OK
15 minute winter	KS 14.1	10	22.887	0.047	3.3	0.0667	0.0000	OK
15 minute winter	KS 14	11	22.548	0.100	18.3	0.1429	0.0000	OK
15 minute winter	KS 15	12	22.343	0.116	18.5	0.1316	0.0000	OK
180 minute winter	KS 16.1	148	21.797	0.065	6.5	17.6826	0.0000	OK
15 minute winter	KS 16	11	22.323	0.591	30.5	0.6689	0.0000	SURCHARGED
15 minute winter	KS 17	11	22.357	1.117	17.1	1.5981	0.0000	SURCHARGED
15 minute summer	KS 18	13	21.127	0.035	2.3	0.0396	0.0000	OK
180 minute winter	KS 19	124	19.763	0.097	17.9	35.9015	0.0000	OK
15 minute winter	AS 1	11	23.384	0.073	8.6	0.0831	0.0000	OK
15 minute winter	AS 2	12	22.008	0.070	8.3	0.0794	0.0000	OK
60 minute winter	AS 3	51	19.746	0.166	11.9	0.1878	0.0000	OK
60 minute winter	AS 4	50	19.746	0.246	13.6	0.2781	0.0000	OK
15 minute winter	AS 5.1	10	21.168	0.048	4.2	0.0537	0.0000	OK
60 minute winter	AS 5	50	19.744	0.304	15.3	0.3440	0.0000	OK
60 minute winter	AS 6	50	19.743	0.400	22.0	0.4527	0.0000	SURCHARGED
15 minute winter	AS 7.1	10	20.862	0.031	1.9	0.0346	0.0000	OK
60 minute winter	AS 7	50	19.742	0.442	23.5	0.5004	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	KS 10.2	28.001	KS 10.1	5.7	1.360	0.055	0.0374	
15 minute winter	KS 10.1	28.002	KS 10	9.1	0.916	0.191	0.2830	
15 minute summer	KS 10	25.007	KS 11	30.6	0.691	0.517	1.4508	
15 minute winter	KS 11	25.008	KS 19	48.2	1.680	0.454	1.9849	
15 minute winter	KS 12	29.000	KS 13	5.5	0.526	0.151	0.3543	
15 minute winter	KS 13	29.001	KS 14	10.2	0.781	0.279	0.3064	
15 minute winter	KS 14.1	30.000	KS 14	3.2	0.559	0.088	0.0588	
15 minute winter	KS 14	29.002	KS 15	18.5	0.865	0.236	0.9755	
15 minute winter	KS 15	29.003	KS 16	21.1	0.896	0.269	0.2454	
180 minute winter	KS 16.1	31.000	KS 16	-6.5	-0.721	-0.123	0.0724	
180 minute winter	KS 16.1	Infiltration		0.0				
15 minute winter	KS 16	29.004	KS 17	11.0	0.577	0.141	1.1653	
15 minute winter	KS 17	29.005	KS 18	2.3	0.550	0.029	0.1354	
15 minute summer	KS 18	29.006	KS 19	2.2	0.488	0.028	0.0795	
180 minute winter	KS 19	25.009	AS 3	12.7	0.679	0.217	0.5702	
180 minute winter	KS 19	Infiltration		0.0				
15 minute winter	AS 1	32.000	AS 2	8.3	0.746	0.226	0.4686	
15 minute winter	AS 2	32.001	AS 3	8.0	0.767	0.209	0.4908	
60 minute winter	AS 3	25.010	AS 4	13.0	0.587	0.122	1.7092	
60 minute winter	AS 4	25.011	AS 5	14.9	0.586	0.141	1.8264	
15 minute winter	AS 5.1	33.000	AS 5	4.1	0.600	0.050	0.0628	
60 minute winter	AS 5	25.012	AS 6	16.2	0.554	0.152	3.4834	
60 minute winter	AS 6	25.013	AS 7	20.8	0.771	0.196	1.6531	
15 minute winter	AS 7.1	34.000	AS 7	1.9	0.591	0.038	0.0279	
60 minute winter	AS 7	25.014	SR 4	22.0	0.588	0.159	3.3406	

Results for 1 year Critical Storm Duration. Lowest mass balance: 99.27%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute winter	SR 4.1	50	19.741	0.587	115.8	105.7486	0.0000	SURCHARGED
60 minute winter	SR 4	50	19.741	0.587	202.6	0.8399	0.0000	SURCHARGED
60 minute winter	SR 5	50	19.710	1.510	93.6	3.8434	0.0000	SURCHARGED
60 minute winter	Ex.S 6	50	17.917	0.187	82.5	0.2672	0.0000	OK
60 minute winter	Ex.S 7	50	17.778	0.170	82.5	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
60 minute winter	SR 4.1	35.000	SR 4	-115.8	-1.615	-0.971	0.4658	
60 minute winter	SR 4	1.019	SR 5	91.9	1.714	0.254	5.7827	
60 minute winter	SR 5	1.020	Ex.S 6	82.5	1.276	0.361	1.1054	
60 minute winter	Ex.S 6	1.021	Ex.S 7	82.5	1.414	0.312	1.0640	378.1

Results for 30 year +10% CC Critical Storm Duration. Lowest mass balance: 99.27%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute winter	MQS 4.2	53	29.405	0.505	15.9	0.7230	0.0000	SURCHARGED
60 minute winter	MQS 4.1	53	29.403	0.786	15.3	0.8890	0.0000	SURCHARGED
15 minute winter	MQS 1	10	30.866	0.264	44.1	0.3771	0.0000	SURCHARGED
15 minute winter	MQS 2	11	30.627	0.189	46.5	0.2703	0.0000	OK
30 minute winter	MQS 3	24	30.413	0.846	45.7	18.9927	0.0000	SURCHARGED
60 minute winter	MQS 4	53	29.403	0.893	31.2	20.0952	0.0000	SURCHARGED
15 minute winter	MQS 5.1	10	28.162	0.092	13.4	0.1313	0.0000	OK
120 minute winter	MQS 5	104	28.106	0.776	20.4	17.4823	0.0000	SURCHARGED
120 minute winter	MQS 6	100	26.731	0.096	17.7	0.1086	0.0000	OK
15 minute winter	MQS 7	11	26.086	0.120	27.6	0.1362	0.0000	OK
15 minute winter	MQS 8	12	24.262	0.272	39.4	0.3072	0.0000	OK
15 minute winter	MQS 9.3	10	24.456	0.154	29.9	0.1744	0.0000	OK
15 minute winter	MQS 9.2	13	24.298	0.278	43.8	0.3146	0.0000	OK
15 minute winter	MQS 9.1	13	24.257	0.408	46.3	0.4613	0.0000	SURCHARGED
15 minute winter	MQS 9	12	24.231	0.486	76.2	0.5492	0.0000	SURCHARGED
15 minute winter	MQS 10	12	24.162	0.494	83.7	0.5583	0.0000	SURCHARGED
15 minute winter	MQS 11	12	23.980	0.463	94.5	0.5241	0.0000	SURCHARGED
360 minute winter	MQS 12.1	256	22.753	0.100	8.5	49.9914	0.0000	OK
15 minute winter	MQS 12	12	23.845	1.192	100.5	1.3482	0.0000	SURCHARGED
15 minute winter	MQS 13.2	11	23.892	0.226	20.6	0.3238	0.0000	SURCHARGED
15 minute winter	MQS 13.1	11	23.867	0.277	46.2	0.3961	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)
60 minute winter	MQS 4.2	1.000	MQS 4.1	15.3	0.649	0.468	2.8187	
60 minute winter	MQS 4.1	1.001	MQS 4	13.2	0.575	0.359	0.2852	
15 minute winter	MQS 1	2.000	MQS 2	42.7	1.086	1.181	1.2673	
15 minute winter	MQS 2	2.001	MQS 3	46.5	1.421	0.844	0.1595	
30 minute winter	MQS 3	2.002	MQS 4	18.0	1.006	0.424	0.4467	
30 minute winter	MQS 3	Infiltration		0.0				
60 minute winter	MQS 4	1.002	MQS 5	18.4	0.905	0.503	0.4640	
60 minute winter	MQS 4	Infiltration		0.0				
15 minute winter	MQS 5.1	3.000	MQS 5	13.0	0.873	0.336	0.5020	
120 minute winter	MQS 5	1.003	MQS 6	17.2	1.077	0.352	0.1808	
120 minute winter	MQS 5	Infiltration		0.0				
120 minute winter	MQS 6	1.004	MQS 7	17.7	1.143	0.345	0.2621	
15 minute winter	MQS 7	1.005	MQS 8	27.5	1.306	0.529	0.7317	
15 minute winter	MQS 8	1.006	MQS 9	37.1	0.863	0.374	2.1102	
15 minute winter	MQS 9.3	4.000	MQS 9.2	29.1	0.981	0.796	1.8299	
15 minute winter	MQS 9.2	4.001	MQS 9.1	42.9	0.993	0.547	2.3633	
15 minute winter	MQS 9.1	4.002	MQS 9	42.5	0.696	0.561	1.5660	
15 minute winter	MQS 9	1.007	MQS 10	77.8	1.105	0.999	1.0957	
15 minute winter	MQS 10	1.008	MQS 11	85.1	1.208	1.159	2.4190	
15 minute winter	MQS 11	1.009	MQS 12	96.5	1.458	1.015	1.1226	
360 minute winter	MQS 12.1	5.000	MQS 12	-8.5	-0.624	-0.161	0.2302	
15 minute winter	MQS 12	1.010	MQS 13	-38.4	-0.588	-0.526	2.1029	
15 minute winter	MQS 12	11.000	MQS 22	68.6	1.192	0.758	1.2683	
15 minute winter	MQS 13.2	6.000	MQS 13.1	19.5	0.581	0.505	0.5450	
15 minute winter	MQS 13.1	6.001	MQS 13	46.1	1.182	1.207	1.0849	

Results for 30 year +10% CC Critical Storm Duration. Lowest mass balance: 99.27%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	MQS 13	13	23.646	1.198	51.6	1.3547	0.0000	SURCHARGED
15 minute winter	MQS 14.2	13	23.737	0.177	25.6	0.2530	0.0000	OK
15 minute winter	MQS 14.1	13	23.722	0.322	51.8	0.4614	0.0000	SURCHARGED
15 minute winter	MQS 14	13	23.635	1.230	97.2	1.3908	0.0000	SURCHARGED
15 minute winter	PS 1	11	23.995	0.459	58.8	0.5186	0.0000	SURCHARGED
15 minute winter	PS 2	11	23.772	0.467	74.2	0.5283	0.0000	SURCHARGED
2160 minute winter	PS 3	1680	23.272	0.131	4.8	90.2091	0.0000	OK
15 minute winter	PS 4	9	23.635	0.583	70.0	0.8344	0.0000	SURCHARGED
2160 minute winter	PS 5.1	1680	23.272	0.295	5.3	163.5454	0.0000	OK
15 minute winter	PS 5	9	23.619	0.643	27.0	0.7268	0.0000	SURCHARGED
15 minute winter	MQS 15	10	23.870	0.064	8.3	0.0919	0.0000	OK
15 minute winter	MQS 16	13	23.470	0.544	19.2	0.6149	0.0000	SURCHARGED
15 minute winter	MQS 17	13	23.479	0.972	31.4	1.3915	0.0000	SURCHARGED
15 minute winter	MQS 18	13	23.486	1.178	43.5	1.3321	0.0000	SURCHARGED
15 minute winter	MQS 19	13	23.485	1.326	98.5	1.4991	0.0000	SURCHARGED
15 minute winter	MQS 20	13	23.191	1.178	104.2	1.6858	0.0000	SURCHARGED
15 minute winter	MQS 21	13	22.834	1.134	105.7	1.2823	0.0000	SURCHARGED
	MQS 12							
15 minute winter	MQS 22	12	23.795	1.262	77.3	1.4274	0.0000	SURCHARGED
15 minute winter	MQS 23	12	23.709	1.340	83.1	1.5152	0.0000	SURCHARGED
15 minute winter	MQS 24	12	23.595	1.378	89.0	1.5587	0.0000	SURCHARGED
15 minute winter	MQS 25.1	10	24.339	0.059	11.7	0.0669	0.0000	OK
15 minute winter	MQS 25	12	23.383	1.355	116.2	1.5322	0.0000	SURCHARGED
15 minute winter	MQS 26.1	10	23.654	0.061	5.7	0.0688	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	MQS 13	1.011	MQS 14	43.9	0.644	0.502	0.4857	
15 minute winter	MQS 14.2	7.000	MQS 14.1	25.3	1.128	0.510	0.6421	
15 minute winter	MQS 14.1	7.001	MQS 14	49.8	1.407	0.567	1.4006	
15 minute winter	MQS 14	1.012	MQS 19	90.1	1.280	0.865	1.9708	
15 minute winter	PS 1	8.000	PS 2	54.8	0.779	0.929	5.6854	
15 minute winter	PS 2	8.001	PS 3	75.2	1.648	1.274	2.3664	
2160 minute winter	PS 3	8.002	PS 4	4.3	0.354	0.073	1.3264	
15 minute winter	PS 4	8.003	PS 5	25.2	0.623	0.429	1.8876	
2160 minute winter	PS 5.1	9.000	PS 5	-5.3	-0.287	-0.303	0.2620	
2160 minute winter	PS 5.1	Infiltration		0.0				
15 minute winter	PS 5	8.004	MQS 16	-6.7	0.401	-0.086	0.6996	
15 minute winter	MQS 15	10.000	MQS 16	8.2	0.905	0.164	0.1233	
15 minute winter	MQS 16	8.005	MQS 17	20.4	0.900	0.259	2.2233	
15 minute winter	MQS 17	8.006	MQS 18	42.6	0.853	0.544	2.7963	
15 minute winter	MQS 18	8.007	MQS 19	46.8	0.664	0.598	2.0301	
15 minute winter	MQS 19	1.013	MQS 20	98.5	1.399	1.262	2.0674	
15 minute winter	MQS 20	1.014	MQS 21	105.7	1.501	0.969	2.2843	
15 minute winter	MQS 21	1.015	SR 1	108.1	1.535	1.375	0.7130	
15 minute winter	MQS 22	11.001	MQS 23	71.8	1.182	0.793	1.7315	
15 minute winter	MQS 23	11.002	MQS 24	70.0	1.097	0.772	1.6033	
15 minute winter	MQS 24	11.003	MQS 25	85.5	1.214	0.943	1.9915	
15 minute winter	MQS 25.1	12.000	MQS 25	11.5	1.414	0.144	0.2012	
15 minute winter	MQS 25	11.004	MQS 26	113.8	1.617	1.260	1.9192	
15 minute winter	MQS 26.1	13.000	MQS 26	5.5	0.659	0.152	0.1576	

Results for 30 year +10% CC Critical Storm Duration. Lowest mass balance: 99.27%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	MQS 26	12	23.015	1.265	124.1	1.4308	0.0000	SURCHARGED
15 minute winter	SR 1	12	22.729	1.080	221.6	1.5451	0.0000	SURCHARGED
15 minute winter	TS 1	12	25.997	0.147	26.8	0.2106	0.0000	OK
15 minute winter	TS 2	11	25.947	0.502	47.8	0.7187	0.0000	SURCHARGED
15 minute winter	TS 3	11	25.753	0.555	60.6	0.7937	0.0000	SURCHARGED
15 minute winter	TS 4	10	25.306	1.169	70.3	1.6730	0.0000	SURCHARGED
30 minute winter	TS 5.1	24	24.375	0.289	137.9	39.5095	0.0000	OK
15 minute winter	TS 5	10	25.198	1.298	158.4	1.8579	0.0000	SURCHARGED
15 minute winter	TS 28	12	25.874	0.145	17.1	0.2076	0.0000	OK
15 minute winter	TS 9	10	26.377	0.083	18.6	0.0942	0.0000	OK
15 minute winter	TS 10	11	25.868	0.775	62.7	0.8765	0.0000	SURCHARGED
15 minute summer	TS 12	11	25.459	1.065	63.7	1.5239	0.0000	SURCHARGED
15 minute winter	TS 13	10	25.265	1.695	99.5	1.9167	0.0000	SURCHARGED
15 minute winter	TS 14	10	25.165	1.782	103.0	2.0157	0.0000	SURCHARGED
15 minute winter	TS 15	11	27.483	0.168	32.9	0.2406	0.0000	OK
15 minute winter	TS 16	11	27.467	0.219	50.7	0.3134	0.0000	OK
15 minute winter	TS 17	11	27.430	0.268	80.9	0.3829	0.0000	OK
15 minute winter	TS 18	11	27.139	0.232	79.9	0.2629	0.0000	OK
15 minute winter	TS 19	10	26.839	0.222	103.1	0.3171	0.0000	OK
15 minute summer	TS 20	1	27.796	0.000	0.0	0.0000	0.0000	OK
15 minute winter	TS 21	10	27.243	0.054	4.5	0.0767	0.0000	OK
360 minute winter	TS 22.1	352	26.750	0.331	9.4	63.8955	0.0000	SURCHARGED
15 minute winter	TS 22	9	27.152	0.734	81.7	0.8296	0.0000	SURCHARGED
15 minute summer	TS 23.1	10	27.272	0.605	12.9	0.6843	0.0000	SURCHARGED
15 minute summer	TS 23	10	27.232	1.001	34.2	1.1319	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	MQS 26	11.005	SR 1	126.0	1.789	1.391	1.0666	
15 minute winter	SR 1	1.016	SR 2	223.3	1.410	0.979	3.5149	
15 minute winter	TS 1	14.000	TS 2	26.4	0.988	0.509	1.3657	
15 minute winter	TS 2	14.001	TS 3	43.2	1.085	0.832	0.9858	
15 minute winter	TS 3	14.002	TS 4	62.9	1.582	1.462	1.6092	
15 minute winter	TS 4	14.003	TS 5	80.3	1.140	0.722	1.6667	
30 minute winter	TS 5.1	15.000	TS 5	-137.9	-2.660	-6.189	0.1637	
15 minute winter	TS 5	14.004	TS 13	68.4	0.988	0.873	4.6470	
15 minute winter	TS 28	16.000	TS 10	19.7	1.166	0.355	1.1830	
15 minute winter	TS 9	17.000	TS 10	18.3	1.413	0.272	0.3064	
15 minute winter	TS 10	16.001	TS 12	62.4	1.572	1.335	1.4355	
15 minute summer	TS 12	16.002	TS 13	71.7	1.804	1.961	0.7489	
15 minute winter	TS 13	14.005	TS 14	74.6	1.067	0.953	2.6390	
15 minute winter	TS 14	14.006	TS 32	100.0	1.420	1.274	2.4549	
15 minute winter	TS 15	18.000	TS 16	32.1	0.718	0.409	0.6382	
15 minute winter	TS 16	18.001	TS 17	49.1	0.838	0.627	1.0463	
15 minute winter	TS 17	18.002	TS 18	79.9	1.283	1.020	3.1877	
15 minute winter	TS 18	18.003	TS 19	79.2	1.435	0.886	2.5053	
15 minute winter	TS 19	18.004	TS 25	103.3	2.127	0.666	0.5969	
15 minute summer	TS 20	19.000	TS 21	0.0	0.000	0.000	0.0000	
15 minute winter	TS 21	19.001	TS 22	4.3	0.617	0.118	0.1252	
360 minute winter	TS 22.1	20.000	TS 22	-9.4	-0.655	-0.390	0.1420	
15 minute winter	TS 22	19.002	TS 23	-37.6	-0.947	-1.050	1.5496	
15 minute summer	TS 23.1	21.000	TS 23	18.7	0.565	0.510	1.3246	
15 minute summer	TS 23	19.003	TS 24	13.0	0.512	0.308	0.8460	

Results for 30 year +10% CC Critical Storm Duration. Lowest mass balance: 99.27%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	TS 24	10	27.263	1.172	16.1	1.3257	0.0000	SURCHARGED
15 minute winter	TS 25	10	26.685	1.168	123.8	1.3212	0.0000	SURCHARGED
960 minute winter	TS 26.1	825	25.568	0.470	8.0	163.1741	0.0000	SURCHARGED
15 minute winter	TS 26	9	26.392	1.294	137.3	1.8513	0.0000	SURCHARGED
15 minute winter	TS 31	10	25.096	0.078	13.6	0.0882	0.0000	OK
15 minute winter	TS 32	11	24.855	1.647	127.8	1.8630	0.0000	SURCHARGED
15 minute winter	AS 13.1	10	25.115	0.065	12.2	0.0740	0.0000	OK
15 minute winter	AS 13	11	24.562	1.463	169.6	1.6541	0.0000	SURCHARGED
15 minute winter	SR 2	12	22.583	1.045	379.8	1.4951	0.0000	SURCHARGED
15 minute winter	AS 8	10	23.323	0.095	25.3	0.1069	0.0000	OK
15 minute winter	AS 9	11	22.882	0.164	29.8	0.2342	0.0000	OK
15 minute winter	AS 10	11	22.848	0.213	38.1	0.3045	0.0000	OK
15 minute winter	AS 11	11	22.791	0.220	48.9	0.3154	0.0000	OK
15 minute winter	SR 3	12	21.397	1.609	460.7	2.3019	0.0000	SURCHARGED
180 minute winter	KS 3	152	21.806	0.001	0.0	0.0009	0.0000	OK
180 minute winter	KS 4	152	21.806	0.374	8.8	0.5348	0.0000	SURCHARGED
180 minute winter	KS 5	152	21.806	0.969	13.0	35.7667	0.0000	SURCHARGED
120 minute winter	KS 6.1	110	20.401	0.239	6.0	0.3418	0.0000	SURCHARGED
120 minute winter	KS 6	110	20.401	0.312	18.3	34.1854	0.0000	SURCHARGED
120 minute winter	KS 7.1	110	20.400	0.233	12.4	16.5008	0.0000	OK
120 minute winter	KS 7	112	20.399	0.395	24.0	0.5649	0.0000	SURCHARGED
120 minute winter	KS 8	112	20.397	0.443	23.5	0.6334	0.0000	SURCHARGED
120 minute winter	KS 9	110	20.394	0.507	22.7	0.5730	0.0000	SURCHARGED
15 minute winter	KS 10.3	10	21.615	0.059	8.0	0.0664	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	TS 24	19.004	TS 25	8.6	0.526	0.189	0.3160	
15 minute winter	TS 25	18.005	TS 26	131.3	1.865	1.469	2.3533	
960 minute winter	TS 26.1	22.000	TS 26	-8.0	-0.480	-0.151	0.3365	
15 minute winter	TS 26	18.006	TS 31	4.3	0.677	0.097	0.0990	
15 minute winter	TS 31	18.007	TS 32	14.1	1.082	0.261	0.6515	
15 minute winter	TS 32	14.007	AS 13	112.7	1.600	1.440	1.5365	
15 minute winter	AS 13.1	23.000	AS 13	11.9	1.266	0.177	0.4012	
15 minute winter	AS 13	14.008	SR 2	171.1	2.430	2.185	3.8904	
15 minute winter	SR 2	1.017	SR 3	382.5	2.414	2.083	7.3108	
15 minute winter	AS 8	24.000	AS 9	25.1	1.124	0.373	0.7083	
15 minute winter	AS 9	24.001	AS 10	28.6	0.863	0.629	0.3793	
15 minute winter	AS 10	24.002	AS 11	37.1	1.004	0.815	0.3256	
15 minute winter	AS 11	24.003	SR 3	47.5	1.295	1.043	1.3013	
15 minute winter	SR 3	1.018	SR 4	463.3	2.925	1.434	10.0574	
180 minute winter	KS 3	25.000	KS 4	0.0	0.000	0.000	0.1919	
180 minute winter	KS 4	25.001	KS 5	8.8	0.731	0.239	0.2506	
180 minute winter	KS 5	25.002	KS 6	2.5	0.526	0.068	0.0919	
120 minute winter	KS 6.1	26.000	KS 6	6.0	0.623	0.199	0.8524	
120 minute winter	KS 6	25.003	KS 7	12.8	0.552	0.217	2.0932	
120 minute winter	KS 7.1	27.000	KS 7	-11.5	-0.250	-0.147	2.1060	
120 minute winter	KS 7.1	Infiltration		0.0				
120 minute winter	KS 7	25.004	KS 8	-23.3	0.618	-0.394	1.2269	
120 minute winter	KS 8	25.005	KS 9	22.7	0.613	0.386	1.6606	
120 minute winter	KS 9	25.006	KS 10	22.8	0.525	0.389	0.5762	
15 minute winter	KS 10.3	28.000	KS 10.2	7.9	0.952	0.137	0.0940	

Results for 30 year +10% CC Critical Storm Duration. Lowest mass balance: 99.27%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	KS 10.2	10	21.476	0.060	14.1	0.0858	0.0000	OK
15 minute winter	KS 10.1	10	20.550	0.112	22.5	0.1268	0.0000	OK
120 minute winter	KS 10	110	20.393	0.529	36.9	0.5979	0.0000	SURCHARGED
120 minute winter	KS 11	108	20.391	0.595	46.7	0.6726	0.0000	SURCHARGED
15 minute winter	KS 12	10	22.899	0.094	13.9	0.1346	0.0000	OK
15 minute winter	KS 13	11	22.785	0.145	25.4	0.2071	0.0000	OK
15 minute winter	KS 14.1	10	22.915	0.075	8.0	0.1067	0.0000	OK
15 minute summer	KS 14	11	22.681	0.233	42.5	0.3336	0.0000	OK
15 minute summer	KS 15	10	22.614	0.387	50.6	0.4378	0.0000	SURCHARGED
240 minute winter	KS 16.1	236	21.955	0.223	13.3	60.4262	0.0000	OK
15 minute summer	KS 16	10	22.622	0.890	89.4	1.0061	0.0000	SURCHARGED
15 minute summer	KS 17	10	22.658	1.418	15.0	2.0290	0.0000	SURCHARGED
15 minute winter	KS 18	11	21.129	0.037	2.5	0.0418	0.0000	OK
120 minute winter	KS 19	106	20.390	0.724	128.8	266.8495	0.0000	SURCHARGED
15 minute winter	AS 1	11	23.433	0.122	20.9	0.1380	0.0000	OK
15 minute winter	AS 2	11	22.056	0.118	20.3	0.1332	0.0000	OK
120 minute winter	AS 3	88	20.459	0.879	88.4	0.9946	0.0000	SURCHARGED
120 minute winter	AS 4	86	20.508	1.008	83.3	1.1406	0.0000	SURCHARGED
15 minute winter	AS 5.1	10	21.196	0.076	10.4	0.0858	0.0000	OK
120 minute winter	AS 5	86	20.548	1.108	80.2	1.2535	0.0000	SURCHARGED
60 minute winter	AS 6	50	20.610	1.267	87.8	1.4333	0.0000	SURCHARGED
15 minute winter	AS 7.1	10	20.880	0.049	4.7	0.0549	0.0000	OK
60 minute winter	AS 7	50	20.648	1.348	81.6	1.5249	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	KS 10.2	28.001	KS 10.1	14.0	1.736	0.136	0.0720	
15 minute winter	KS 10.1	28.002	KS 10	22.1	1.156	0.466	0.5467	
120 minute winter	KS 10	25.007	KS 11	36.9	0.844	0.623	1.6616	
120 minute winter	KS 11	25.008	KS 19	46.8	1.171	0.440	5.0194	
15 minute winter	KS 12	29.000	KS 13	13.6	0.651	0.371	0.6981	
15 minute winter	KS 13	29.001	KS 14	24.7	0.971	0.676	0.6440	
15 minute winter	KS 14.1	30.000	KS 14	7.8	0.713	0.214	0.1124	
15 minute summer	KS 14	29.002	KS 15	50.6	0.950	0.646	2.8508	
15 minute summer	KS 15	29.003	KS 16	62.1	1.209	0.792	0.6172	
240 minute winter	KS 16.1	31.000	KS 16	-13.3	-0.737	-0.250	0.3405	
240 minute winter	KS 16.1	Infiltration		0.0				
15 minute summer	KS 16	29.004	KS 17	-20.2	0.555	-0.259	1.1653	
15 minute summer	KS 17	29.005	KS 18	2.5	0.572	0.032	0.1459	
15 minute winter	KS 18	29.006	KS 19	2.5	0.505	0.032	0.0863	
120 minute winter	KS 19	25.009	AS 3	-88.1	-1.251	-1.498	2.1343	
120 minute winter	KS 19	Infiltration		0.0				
15 minute winter	AS 1	32.000	AS 2	20.3	0.941	0.554	0.9085	
15 minute winter	AS 2	32.001	AS 3	19.9	0.972	0.519	0.9665	
120 minute winter	AS 3	25.010	AS 4	-83.0	-0.752	-0.777	3.0616	
120 minute winter	AS 4	25.011	AS 5	-80.0	-0.725	-0.756	2.3377	
15 minute winter	AS 5.1	33.000	AS 5	10.3	0.770	0.125	0.1211	
120 minute winter	AS 5	25.012	AS 6	-77.9	-0.706	-0.731	3.7290	
60 minute winter	AS 6	25.013	AS 7	-81.5	0.792	-0.765	1.6531	
15 minute winter	AS 7.1	34.000	AS 7	4.6	0.764	0.093	0.0536	
60 minute winter	AS 7	25.014	SR 4	-80.0	-0.725	-0.578	3.3406	

Results for 30 year +10% CC Critical Storm Duration. Lowest mass balance: 99.27%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute winter	SR 4.1	49	20.710	1.556	264.6	280.9040	0.0000	SURCHARGED
60 minute winter	SR 4	49	20.709	1.555	355.7	2.2257	0.0000	SURCHARGED
60 minute winter	SR 5	50	20.658	2.458	106.9	6.2568	0.0000	SURCHARGED
60 minute winter	Ex.S 6	50	17.947	0.217	106.7	0.3109	0.0000	OK
60 minute winter	Ex.S 7	50	17.803	0.195	106.7	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
60 minute winter	SR 4.1	35.000	SR 4	-264.6	-1.670	-2.218	0.4658	
60 minute winter	SR 4	1.019	SR 5	105.7	1.720	0.292	5.7827	
60 minute winter	SR 5	1.020	Ex.S 6	106.7	1.361	0.467	1.3411	
60 minute winter	Ex.S 6	1.021	Ex.S 7	106.7	1.507	0.404	1.2913	601.8

Results for 100 year +20% CC Critical Storm Duration. Lowest mass balance: 99.27%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute winter	MQS 4.2	55	29.812	0.912	22.6	1.3046	0.0000	FLOOD RISK
60 minute winter	MQS 4.1	55	29.807	1.190	21.0	1.3454	0.0000	SURCHARGED
15 minute winter	MQS 1	11	31.270	0.668	62.4	0.9566	0.0000	SURCHARGED
30 minute winter	MQS 2	24	30.807	0.369	53.6	0.5283	0.0000	SURCHARGED
30 minute winter	MQS 3	25	30.794	1.227	64.1	27.5948	0.0000	SURCHARGED
60 minute winter	MQS 4	55	29.806	1.296	41.5	29.2168	0.0000	SURCHARGED
120 minute winter	MQS 5.1	114	28.483	0.413	6.5	0.5906	0.0000	SURCHARGED
120 minute winter	MQS 5	114	28.483	1.153	26.1	26.0261	0.0000	SURCHARGED
120 minute winter	MQS 6	114	26.744	0.109	22.0	0.1233	0.0000	OK
15 minute winter	MQS 7	11	26.115	0.149	38.0	0.1690	0.0000	OK
15 minute winter	MQS 8	12	25.447	1.457	54.8	1.6474	0.0000	SURCHARGED
15 minute winter	MQS 9.3	12	25.706	1.404	42.3	1.5884	0.0000	SURCHARGED
15 minute winter	MQS 9.2	12	25.493	1.473	55.6	1.6662	0.0000	SURCHARGED
15 minute winter	MQS 9.1	12	25.427	1.578	58.5	1.7851	0.0000	SURCHARGED
15 minute winter	MQS 9	12	25.376	1.631	98.9	1.8451	0.0000	SURCHARGED
15 minute winter	MQS 10	12	25.216	1.548	114.9	1.7503	0.0000	SURCHARGED
15 minute winter	MQS 11	12	24.811	1.294	132.3	1.4636	0.0000	SURCHARGED
60 minute winter	MQS 12.1	57	22.792	0.139	81.2	69.4612	0.0000	OK
15 minute winter	MQS 12	12	24.516	1.863	145.7	2.1066	0.0000	SURCHARGED
15 minute winter	MQS 13.2	13	24.891	1.225	29.2	1.7534	0.0000	FLOOD RISK
15 minute winter	MQS 13.1	13	24.873	1.283	62.6	1.8355	0.0000	FLOOD RISK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
60 minute winter	MQS 4.2	1.000	MQS 4.1	21.0	0.625	0.644	2.8187	
60 minute winter	MQS 4.1	1.001	MQS 4	19.8	0.603	0.540	0.2852	
15 minute winter	MQS 1	2.000	MQS 2	60.1	1.511	1.663	1.3374	
30 minute winter	MQS 2	2.001	MQS 3	53.3	1.439	0.968	0.1948	
30 minute winter	MQS 3	2.002	MQS 4	22.4	1.052	0.529	0.8368	
30 minute winter	MQS 3	Infiltration		0.0				
60 minute winter	MQS 4	1.002	MQS 5	22.5	0.954	0.615	0.5387	
60 minute winter	MQS 4	Infiltration		0.0				
120 minute winter	MQS 5.1	3.000	MQS 5	6.5	0.723	0.168	1.3439	
120 minute winter	MQS 5	1.003	MQS 6	21.3	1.135	0.436	0.2127	
120 minute winter	MQS 5	Infiltration		0.0				
120 minute winter	MQS 6	1.004	MQS 7	22.0	1.205	0.428	0.3080	
15 minute winter	MQS 7	1.005	MQS 8	38.0	1.401	0.733	0.9436	
15 minute winter	MQS 8	1.006	MQS 9	47.5	0.907	0.479	2.1615	
15 minute winter	MQS 9.3	4.000	MQS 9.2	36.1	1.014	0.987	2.2444	
15 minute winter	MQS 9.2	4.001	MQS 9.1	54.0	1.010	0.689	2.4019	
15 minute winter	MQS 9.1	4.002	MQS 9	53.9	0.765	0.712	1.5660	
15 minute winter	MQS 9	1.007	MQS 10	106.5	1.513	1.367	1.0957	
15 minute winter	MQS 10	1.008	MQS 11	123.4	1.752	1.681	2.4190	
15 minute winter	MQS 11	1.009	MQS 12	140.3	1.993	1.476	1.1226	
60 minute winter	MQS 12.1	5.000	MQS 12	-81.2	-1.678	-1.532	0.4926	
15 minute winter	MQS 12	1.010	MQS 13	-30.4	0.436	-0.416	2.1029	
15 minute winter	MQS 12	11.000	MQS 22	70.7	1.192	0.781	1.2683	
15 minute winter	MQS 13.2	6.000	MQS 13.1	22.8	0.586	0.590	0.5451	
15 minute winter	MQS 13.1	6.001	MQS 13	55.6	1.399	1.457	1.1707	

Results for 100 year +20% CC Critical Storm Duration. Lowest mass balance: 99.27%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	MQS 13	13	24.677	2.229	55.6	2.5211	0.0000	SURCHARGED
15 minute winter	MQS 14.2	13	24.978	1.418	36.2	2.0290	0.0000	FLOOD RISK
15 minute winter	MQS 14.1	13	24.940	1.540	68.1	2.2041	0.0000	SURCHARGED
15 minute winter	MQS 14	13	24.661	2.256	100.2	2.5517	0.0000	SURCHARGED
15 minute winter	PS 1	11	24.650	1.114	83.1	1.2599	0.0000	SURCHARGED
15 minute winter	PS 2	11	24.198	0.893	108.4	1.0100	0.0000	SURCHARGED
1440 minute winter	PS 3	1380	23.368	0.227	8.9	155.8985	0.0000	OK
15 minute summer	PS 4	9	23.788	0.736	94.1	1.0539	0.0000	SURCHARGED
1440 minute winter	PS 5.1	1380	23.367	0.390	9.4	216.4772	0.0000	SURCHARGED
15 minute summer	PS 5	9	23.768	0.792	33.0	0.8961	0.0000	SURCHARGED
15 minute winter	MQS 15	13	24.481	0.675	16.4	0.9657	0.0000	SURCHARGED
15 minute winter	MQS 16	13	24.468	1.542	63.4	1.7437	0.0000	SURCHARGED
15 minute winter	MQS 17	13	24.469	1.962	46.9	2.8080	0.0000	FLOOD RISK
15 minute winter	MQS 18	13	24.458	2.150	45.2	2.4316	0.0000	FLOOD RISK
15 minute winter	MQS 19	13	24.436	2.277	121.3	2.5750	0.0000	SURCHARGED
15 minute winter	MQS 20	13	24.059	2.046	129.8	2.9275	0.0000	SURCHARGED
15 minute winter	MQS 21	13	23.590	1.890	136.5	2.1378	0.0000	SURCHARGED
	MQS 12							
15 minute winter	MQS 22	12	24.490	1.957	81.0	2.2139	0.0000	SURCHARGED
15 minute winter	MQS 23	12	24.432	2.063	86.7	2.3327	0.0000	SURCHARGED
15 minute winter	MQS 24	12	24.336	2.119	96.1	2.3965	0.0000	SURCHARGED
15 minute winter	MQS 25.1	10	24.351	0.071	16.5	0.0803	0.0000	OK
15 minute winter	MQS 25	12	24.123	2.095	135.2	2.3693	0.0000	SURCHARGED
15 minute winter	MQS 26.1	13	23.698	0.105	8.1	0.1186	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	MQS 13	1.011	MQS 14	44.2	0.630	0.505	0.4857	
15 minute winter	MQS 14.2	7.000	MQS 14.1	32.9	1.162	0.664	0.6973	
15 minute winter	MQS 14.1	7.001	MQS 14	62.0	1.617	0.707	1.4006	
15 minute winter	MQS 14	1.012	MQS 19	100.2	1.423	0.962	1.9708	
15 minute winter	PS 1	8.000	PS 2	79.3	1.126	1.343	5.6854	
15 minute winter	PS 2	8.001	PS 3	106.7	2.147	1.807	2.7018	
1440 minute winter	PS 3	8.002	PS 4	6.5	0.400	0.110	1.9904	
15 minute summer	PS 4	8.003	PS 5	31.1	0.694	0.530	1.8876	
1440 minute winter	PS 5.1	9.000	PS 5	-9.4	-0.376	-0.533	0.2628	
1440 minute winter	PS 5.1	Infiltration		0.0				
15 minute summer	PS 5	8.004	MQS 16	-14.1	0.426	-0.179	0.6996	
15 minute winter	MQS 15	10.000	MQS 16	11.5	0.991	0.231	0.5442	
15 minute winter	MQS 16	8.005	MQS 17	-38.4	0.871	-0.487	2.2233	
15 minute winter	MQS 17	8.006	MQS 18	45.2	0.859	0.577	2.7963	
15 minute winter	MQS 18	8.007	MQS 19	49.8	0.708	0.637	2.0301	
15 minute winter	MQS 19	1.013	MQS 20	127.2	1.806	1.628	2.0674	
15 minute winter	MQS 20	1.014	MQS 21	136.5	1.939	1.251	2.2843	
15 minute winter	MQS 21	1.015	SR 1	142.6	2.025	1.814	0.7130	
15 minute winter	MQS 22	11.001	MQS 23	73.4	1.188	0.811	1.7315	
15 minute winter	MQS 23	11.002	MQS 24	69.3	1.077	0.765	1.6033	
15 minute winter	MQS 24	11.003	MQS 25	90.5	1.285	0.998	1.9915	
15 minute winter	MQS 25.1	12.000	MQS 25	16.3	1.554	0.203	0.6141	
15 minute winter	MQS 25	11.004	MQS 26	123.2	1.750	1.364	1.9192	
15 minute winter	MQS 26.1	13.000	MQS 26	8.7	0.725	0.237	0.5007	

Results for 100 year +20% CC Critical Storm Duration. Lowest mass balance: 99.27%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	MQS 26	12	23.694	1.944	140.4	2.1991	0.0000	SURCHARGED
15 minute winter	SR 1	13	23.391	1.742	249.7	2.4923	0.0000	SURCHARGED
15 minute winter	TS 1	11	26.937	1.087	37.9	1.5560	0.0000	SURCHARGED
15 minute winter	TS 2	11	26.743	1.298	61.2	1.8571	0.0000	FLOOD RISK
15 minute winter	TS 3	11	26.348	1.150	87.1	1.6462	0.0000	SURCHARGED
15 minute winter	TS 4	9	25.541	1.404	96.1	2.0092	0.0000	SURCHARGED
30 minute winter	TS 5.1	26	24.693	0.607	183.8	82.8391	0.0000	SURCHARGED
15 minute winter	TS 5	9	25.423	1.523	237.7	2.1795	0.0000	FLOOD RISK
15 minute winter	TS 28	12	26.756	1.027	24.1	1.4697	0.0000	SURCHARGED
15 minute winter	TS 9	12	26.745	0.451	26.3	0.5101	0.0000	SURCHARGED
15 minute winter	TS 10	12	26.690	1.597	80.7	1.8060	0.0000	SURCHARGED
15 minute winter	TS 12	11	25.845	1.451	85.0	2.0765	0.0000	SURCHARGED
15 minute summer	TS 13	10	25.544	1.974	86.3	2.2329	0.0000	FLOOD RISK
15 minute summer	TS 14	10	25.533	2.150	111.0	2.4315	0.0000	SURCHARGED
15 minute winter	TS 15	11	28.220	0.905	46.5	1.2947	0.0000	SURCHARGED
15 minute winter	TS 16	11	28.191	0.943	66.3	1.3489	0.0000	SURCHARGED
15 minute winter	TS 17	11	28.108	0.946	106.6	1.3532	0.0000	SURCHARGED
15 minute winter	TS 18	11	27.569	0.662	107.5	0.7490	0.0000	SURCHARGED
15 minute winter	TS 19	10	27.116	0.499	138.5	0.7140	0.0000	SURCHARGED
15 minute summer	TS 20	1	27.796	0.000	0.0	0.0000	0.0000	OK
15 minute summer	TS 21	10	27.256	0.067	6.0	0.0953	0.0000	OK
600 minute winter	TS 22.1	570	26.939	0.520	9.3	100.1723	0.0000	SURCHARGED
15 minute summer	TS 22	9	27.261	0.843	108.0	0.9530	0.0000	SURCHARGED
15 minute summer	TS 23.1	9	27.481	0.814	18.2	0.9206	0.0000	SURCHARGED
15 minute winter	TS 23	9	27.399	1.168	44.4	1.3205	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	MQS 26	11.005	SR 1	132.7	1.885	1.466	1.0666	
15 minute winter	SR 1	1.016	SR 2	256.4	1.619	1.124	3.5149	
15 minute winter	TS 1	14.000	TS 2	33.0	0.987	0.635	1.6146	
15 minute winter	TS 2	14.001	TS 3	59.6	1.498	1.148	0.9858	
15 minute winter	TS 3	14.002	TS 4	85.7	2.155	1.993	1.6092	
15 minute winter	TS 4	14.003	TS 5	101.2	1.438	0.911	1.6667	
30 minute winter	TS 5.1	15.000	TS 5	-183.8	-3.244	-8.247	0.1655	
15 minute winter	TS 5	14.004	TS 13	-83.4	-1.184	-1.065	4.6470	
15 minute winter	TS 28	16.000	TS 10	22.6	1.166	0.407	1.4079	
15 minute winter	TS 9	17.000	TS 10	23.7	1.504	0.353	0.9402	
15 minute winter	TS 10	16.001	TS 12	75.0	1.885	1.603	1.4355	
15 minute winter	TS 12	16.002	TS 13	86.8	2.182	2.373	0.7489	
15 minute summer	TS 13	14.005	TS 14	80.0	1.136	1.022	2.6390	
15 minute summer	TS 14	14.006	TS 32	103.1	1.465	1.314	2.4549	
15 minute winter	TS 15	18.000	TS 16	41.6	0.724	0.529	0.9389	
15 minute winter	TS 16	18.001	TS 17	67.1	0.953	0.858	1.2133	
15 minute winter	TS 17	18.002	TS 18	107.5	1.526	1.373	3.5940	
15 minute winter	TS 18	18.003	TS 19	110.5	1.570	1.236	3.1430	
15 minute winter	TS 19	18.004	TS 25	142.2	2.214	0.917	0.6966	
15 minute summer	TS 20	19.000	TS 21	0.0	0.000	0.000	0.0000	
15 minute summer	TS 21	19.001	TS 22	7.0	0.715	0.190	0.3546	
600 minute winter	TS 22.1	20.000	TS 22	-9.3	-0.506	-0.385	0.1420	
15 minute summer	TS 22	19.002	TS 23	-47.6	-1.197	-1.328	1.5496	
15 minute summer	TS 23.1	21.000	TS 23	23.4	0.589	0.639	1.3246	
15 minute winter	TS 23	19.003	TS 24	9.9	0.561	0.235	0.8460	

Results for 100 year +20% CC Critical Storm Duration. Lowest mass balance: 99.27%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	TS 24	9	27.409	1.318	10.7	1.4901	0.0000	SURCHARGED
15 minute winter	TS 25	9	26.930	1.413	163.5	1.5985	0.0000	SURCHARGED
960 minute winter	TS 26.1	930	25.812	0.714	11.8	247.7013	0.0000	SURCHARGED
15 minute winter	TS 26	8	26.541	1.443	174.6	2.0655	0.0000	FLOOD RISK
15 minute summer	TS 31	11	25.217	0.199	24.8	0.2248	0.0000	OK
15 minute summer	TS 32	10	25.190	1.982	127.7	2.2416	0.0000	SURCHARGED
15 minute winter	AS 13.1	10	25.127	0.077	17.2	0.0869	0.0000	OK
15 minute winter	AS 13	10	24.911	1.812	196.8	2.0491	0.0000	SURCHARGED
15 minute winter	SR 2	12	23.204	1.666	431.0	2.3834	0.0000	SURCHARGED
15 minute winter	AS 8	11	23.354	0.126	35.8	0.1420	0.0000	OK
15 minute winter	AS 9	12	23.237	0.519	42.2	0.7433	0.0000	SURCHARGED
15 minute winter	AS 10	12	23.158	0.523	48.9	0.7486	0.0000	SURCHARGED
15 minute winter	AS 11	12	23.046	0.475	63.4	0.6795	0.0000	SURCHARGED
120 minute winter	SR 3	80	22.220	2.432	330.8	3.4802	0.0000	SURCHARGED
180 minute winter	KS 3	168	22.483	0.678	1.1	0.7672	0.0000	SURCHARGED
180 minute winter	KS 4	168	22.482	1.050	12.4	1.5030	0.0000	SURCHARGED
180 minute winter	KS 5	168	22.482	1.645	17.5	52.1526	0.0000	SURCHARGED
180 minute winter	KS 6.1	156	20.843	0.681	6.4	0.9744	0.0000	SURCHARGED
180 minute winter	KS 6	156	20.843	0.754	27.1	82.8305	0.0000	SURCHARGED
180 minute winter	KS 7.1	156	20.842	0.675	19.7	47.9101	0.0000	SURCHARGED
180 minute winter	KS 7	156	20.841	0.837	33.5	1.1977	0.0000	SURCHARGED
180 minute winter	KS 8	156	20.839	0.885	32.4	1.2667	0.0000	SURCHARGED
180 minute winter	KS 9	156	20.837	0.950	30.3	1.0741	0.0000	SURCHARGED
15 minute winter	KS 10.3	10	21.627	0.071	11.3	0.0800	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	TS 24	19.004	TS 25	-10.3	0.519	-0.227	0.3160	
15 minute winter	TS 25	18.005	TS 26	167.6	2.380	1.875	2.3533	
960 minute winter	TS 26.1	22.000	TS 26	-11.8	-0.547	-0.222	0.3365	
15 minute winter	TS 26	18.006	TS 31	4.5	0.690	0.101	0.2932	
15 minute summer	TS 31	18.007	TS 32	20.1	1.107	0.374	1.1750	
15 minute summer	TS 32	14.007	AS 13	121.6	1.727	1.554	1.5365	
15 minute winter	AS 13.1	23.000	AS 13	17.0	1.262	0.254	0.8962	
15 minute winter	AS 13	14.008	SR 2	190.2	2.701	2.429	3.9301	
15 minute winter	SR 2	1.017	SR 3	429.2	2.709	2.337	7.4419	
15 minute winter	AS 8	24.000	AS 9	35.5	1.170	0.528	0.9564	
15 minute winter	AS 9	24.001	AS 10	36.9	0.928	0.814	0.4320	
15 minute winter	AS 10	24.002	AS 11	48.3	1.213	1.059	0.3301	
15 minute winter	AS 11	24.003	SR 3	62.3	1.569	1.369	1.3631	
120 minute winter	SR 3	1.018	SR 4	329.4	2.079	1.020	10.0574	
180 minute winter	KS 3	25.000	KS 4	-1.1	-0.052	-0.031	0.8321	
180 minute winter	KS 4	25.001	KS 5	11.7	0.775	0.316	0.2506	
180 minute winter	KS 5	25.002	KS 6	3.1	0.555	0.085	0.2240	
180 minute winter	KS 6.1	26.000	KS 6	6.4	0.601	0.212	0.8524	
180 minute winter	KS 6	25.003	KS 7	-17.9	0.549	-0.303	2.0932	
180 minute winter	KS 7.1	27.000	KS 7	-16.8	-0.291	-0.214	2.2980	
180 minute winter	KS 7.1	Infiltration		0.0				
180 minute winter	KS 7	25.004	KS 8	-32.0	0.606	-0.542	1.2269	
180 minute winter	KS 8	25.005	KS 9	-30.1	0.603	-0.511	1.6606	
180 minute winter	KS 9	25.006	KS 10	-30.3	0.500	-0.518	0.5762	
15 minute winter	KS 10.3	28.000	KS 10.2	11.2	1.034	0.194	0.1224	

Results for 100 year +20% CC Critical Storm Duration. Lowest mass balance: 99.27%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	KS 10.2	10	21.489	0.073	19.9	0.1038	0.0000	OK
180 minute winter	KS 10.1	156	20.836	0.398	8.2	0.4501	0.0000	SURCHARGED
180 minute winter	KS 10	156	20.836	0.972	36.7	1.0990	0.0000	SURCHARGED
180 minute winter	KS 11	156	20.832	1.036	46.3	1.1720	0.0000	SURCHARGED
15 minute winter	KS 12	11	23.011	0.206	19.7	0.2944	0.0000	OK
15 minute winter	KS 13	10	22.962	0.322	38.2	0.4611	0.0000	SURCHARGED
15 minute winter	KS 14.1	10	22.933	0.093	11.3	0.1335	0.0000	OK
15 minute winter	KS 14	10	22.878	0.430	69.9	0.6154	0.0000	SURCHARGED
15 minute summer	KS 15	10	22.742	0.515	70.3	0.5825	0.0000	SURCHARGED
360 minute winter	KS 16.1	352	22.087	0.355	13.8	95.9898	0.0000	SURCHARGED
15 minute summer	KS 16	10	22.706	0.974	109.3	1.1012	0.0000	SURCHARGED
15 minute summer	KS 17	10	22.721	1.481	21.1	2.1191	0.0000	SURCHARGED
15 minute summer	KS 18	11	21.130	0.038	2.6	0.0426	0.0000	OK
180 minute winter	KS 19	152	20.829	1.163	134.8	429.1565	0.0000	SURCHARGED
15 minute winter	AS 1	11	23.465	0.154	29.5	0.1745	0.0000	OK
15 minute winter	AS 2	11	22.086	0.148	28.6	0.1672	0.0000	OK
120 minute winter	AS 3	84	21.095	1.515	146.1	1.7133	0.0000	SURCHARGED
120 minute winter	AS 4	82	21.263	1.763	140.1	1.9945	0.0000	SURCHARGED
120 minute winter	AS 5.1	82	21.399	0.279	5.0	0.3155	0.0000	OK
120 minute winter	AS 5	82	21.399	1.959	136.4	2.2155	0.0000	SURCHARGED
120 minute winter	AS 6	82	21.585	2.242	137.8	2.5355	0.0000	SURCHARGED
120 minute winter	AS 7.1	82	21.671	0.840	16.6	0.9504	0.0000	SURCHARGED
120 minute winter	AS 7	82	21.671	2.371	127.2	2.6819	0.0000	SURCHARGED

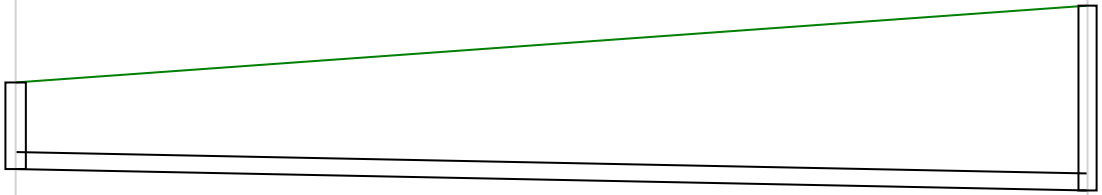
Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	KS 10.2	28.001	KS 10.1	19.7	1.897	0.192	0.0930	
180 minute winter	KS 10.1	28.002	KS 10	8.2	0.890	0.173	1.1359	
180 minute winter	KS 10	25.007	KS 11	36.2	0.828	0.612	1.6616	
180 minute winter	KS 11	25.008	KS 19	42.9	1.012	0.403	5.0194	
15 minute winter	KS 12	29.000	KS 13	22.4	0.682	0.611	1.2807	
15 minute winter	KS 13	29.001	KS 14	42.2	1.101	1.155	0.9334	
15 minute winter	KS 14.1	30.000	KS 14	10.9	0.780	0.297	0.1539	
15 minute winter	KS 14	29.002	KS 15	75.6	1.149	0.965	3.1085	
15 minute summer	KS 15	29.003	KS 16	75.2	1.268	0.959	0.6172	
360 minute winter	KS 16.1	31.000	KS 16	-13.8	-0.584	-0.259	0.4265	
360 minute winter	KS 16.1	Infiltration		0.0				
15 minute summer	KS 16	29.004	KS 17	-24.6	0.604	-0.316	1.1653	
15 minute summer	KS 17	29.005	KS 18	2.6	0.593	0.033	0.1496	
15 minute summer	KS 18	29.006	KS 19	2.6	0.511	0.033	0.0887	
180 minute winter	KS 19	25.009	AS 3	-120.8	-1.715	-2.055	2.1343	
180 minute winter	KS 19	Infiltration		0.0				
15 minute winter	AS 1	32.000	AS 2	28.6	1.035	0.781	1.1662	
15 minute winter	AS 2	32.001	AS 3	28.2	1.053	0.734	1.2607	
120 minute winter	AS 3	25.010	AS 4	-139.7	-1.267	-1.309	3.0616	
120 minute winter	AS 4	25.011	AS 5	-136.0	-1.233	-1.285	2.3377	
120 minute winter	AS 5.1	33.000	AS 5	5.0	0.632	0.061	0.6298	
120 minute winter	AS 5	25.012	AS 6	-136.3	-1.236	-1.280	3.7290	
120 minute winter	AS 6	25.013	AS 7	-124.1	-1.125	-1.165	1.6531	
120 minute winter	AS 7.1	34.000	AS 7	-15.0	0.629	-0.302	0.3522	
120 minute winter	AS 7	25.014	SR 4	-124.7	-1.131	-0.900	3.3406	

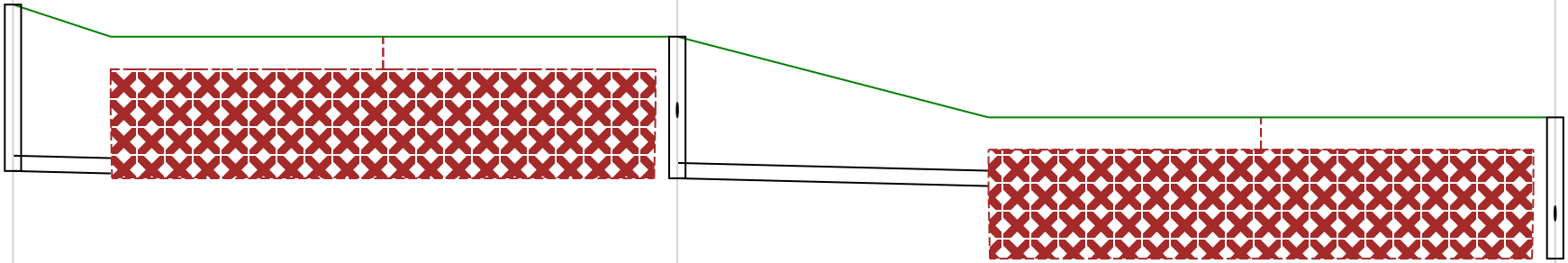
Results for 100 year +20% CC Critical Storm Duration. Lowest mass balance: 99.27%

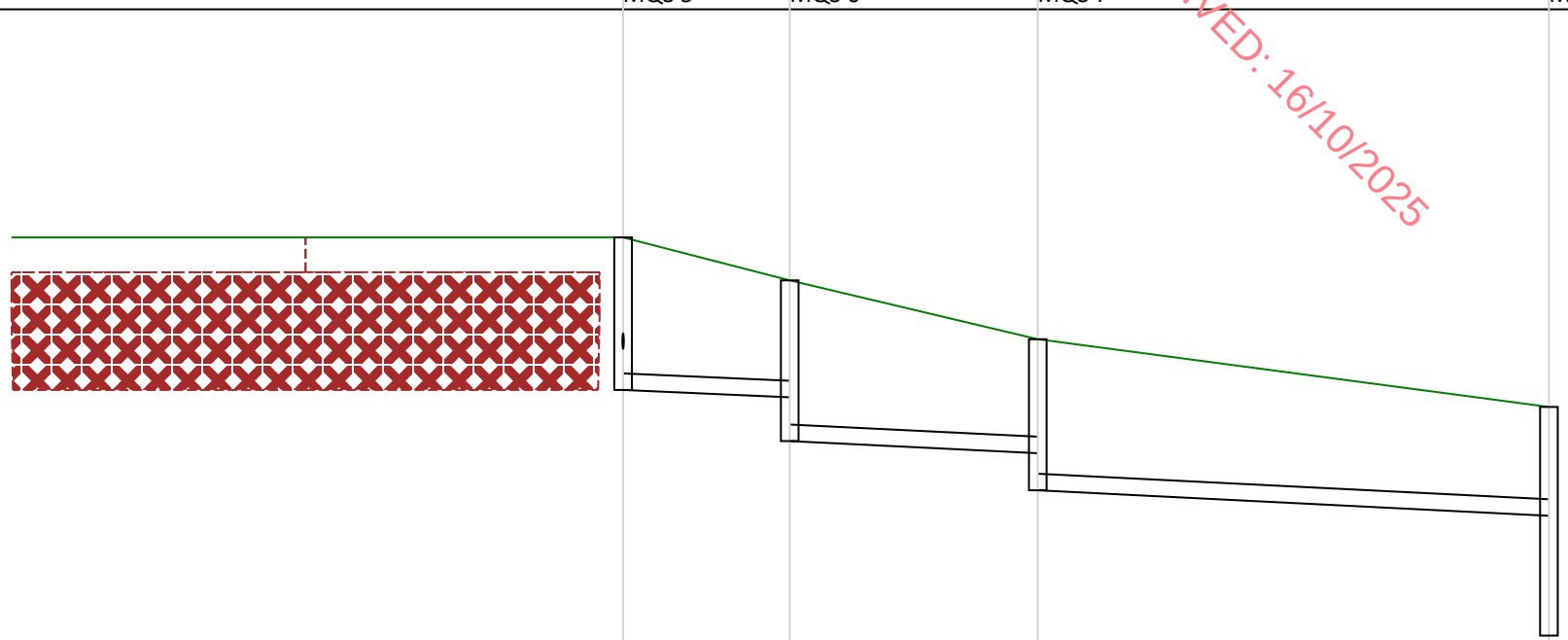
Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute winter	SR 4.1	82	21.807	2.653	179.9	362.5115	0.0000	SURCHARGED
120 minute winter	SR 4	82	21.807	2.653	339.8	3.7964	0.0000	SURCHARGED
120 minute winter	SR 5	82	21.734	3.534	169.5	8.9947	0.0000	FLOOD RISK
120 minute winter	Ex.S 6	82	17.974	0.244	128.8	0.3488	0.0000	OK
120 minute winter	Ex.S 7	82	17.825	0.217	128.9	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)
120 minute winter	SR 4.1	35.000	SR 4	-179.9	-1.149	-1.508	0.4658	
120 minute winter	SR 4	1.019	SR 5	166.5	1.713	0.460	5.7827	
120 minute winter	SR 5	1.020	Ex.S 6	128.8	1.424	0.563	1.5465	
120 minute winter	Ex.S 6	1.021	Ex.S 7	128.9	1.577	0.488	1.4894	995.7

CAUSEWAY	TOBIN Fairgreen House, Fairgreen Road, Galway. H91 AXK8	File: 11893 - Storm Network.pfd Network: TOBIN B&I 09/10/2025	Page 1

Node Name	MQS 4.2	MQS 4.1
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 24.000		
Link Name	1.000	
Section Type	225mm	
Slope (1:X)	250.4	
Cover Level (m)	30.045	31.061
Invert Level (m)	28.900	28.617
Length (m)	70.872	

Node Name	MQS 4.1	MQS 4	MQS 5
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 23.000			
Link Name	1.001	1.002	
Section Type	225mm	225mm	
Slope (1:X)	199.2	200.4	
Cover Level (m)	31.061	30.589	29.404
Invert Level (m)	28.617	28.581 / 28.510	28.396
Length (m)	7.172	22.846	

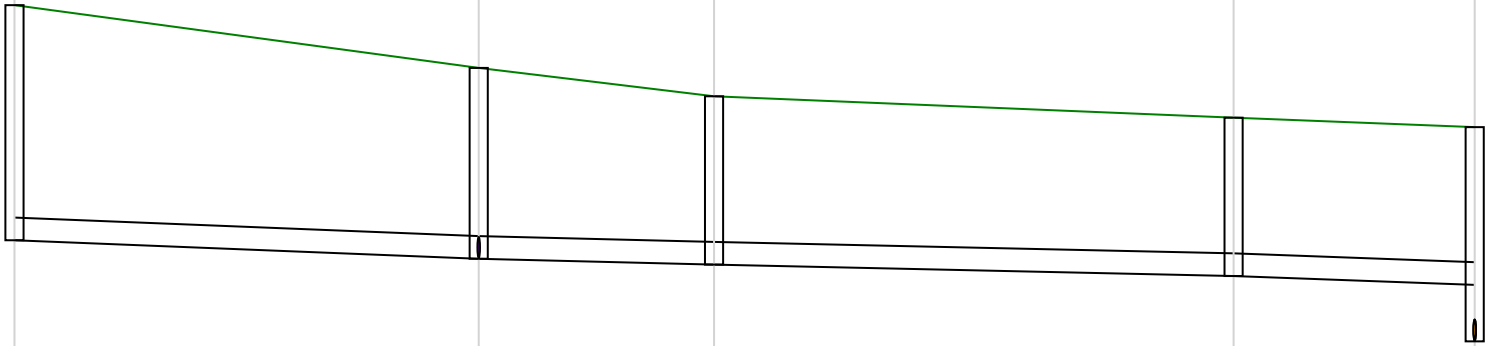


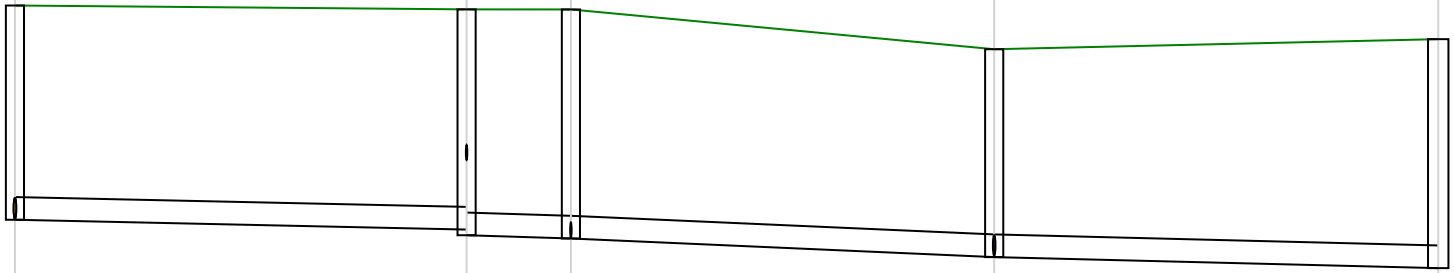
A4 drawing

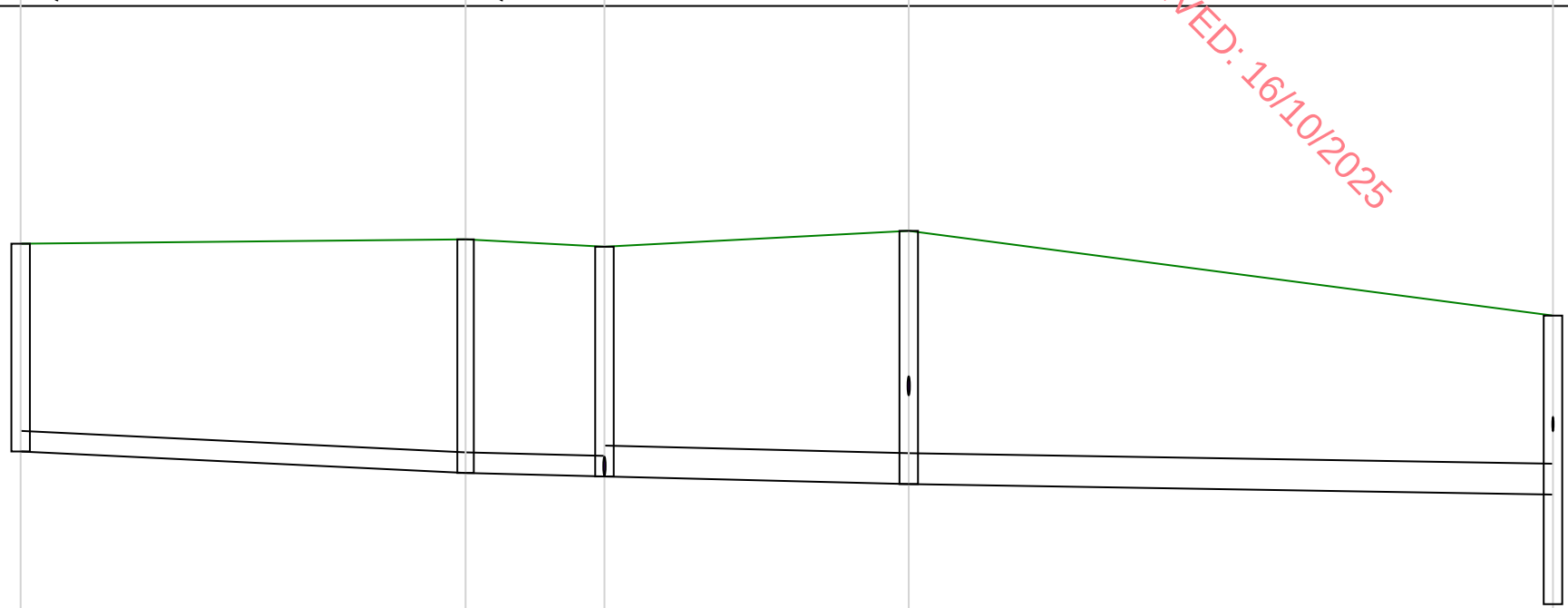
Hor Scale 500
Ver Scale 100

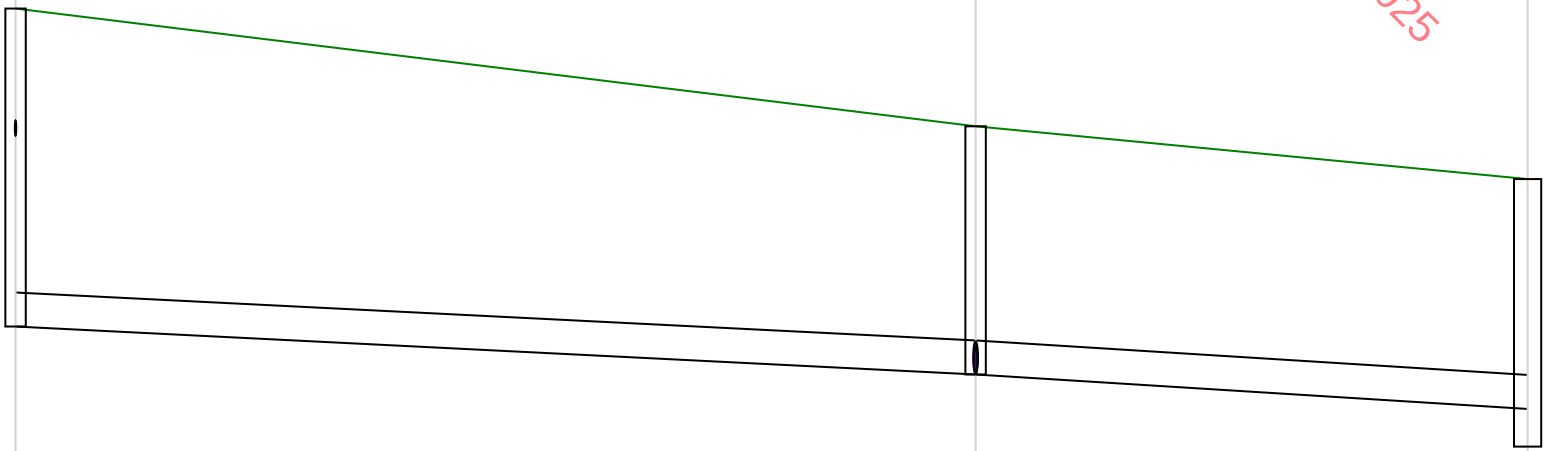
Datum (m) 21.000

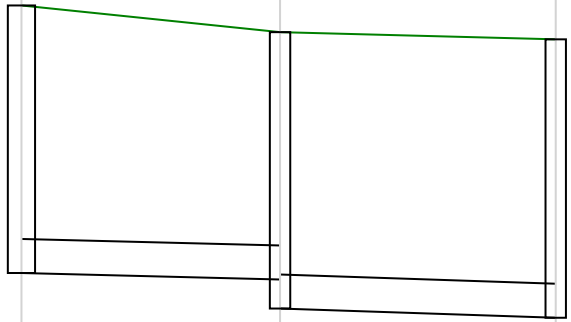
Node Name	MQS 5	MQS 6	MQS 7	MQS 8
Link Name	1.003	1.004	1.005	
Section Type	225mm	225mm	225mm	
Slope (1:X)	113.3	102.2	100.2	
Cover Level (m)	29.404	28.820	28.020	27.099
Invert Level (m)	27.330 / 27.230	26.635 / 26.470	25.966 / 25.619	
Length (m)	11.333	16.870	34.766	

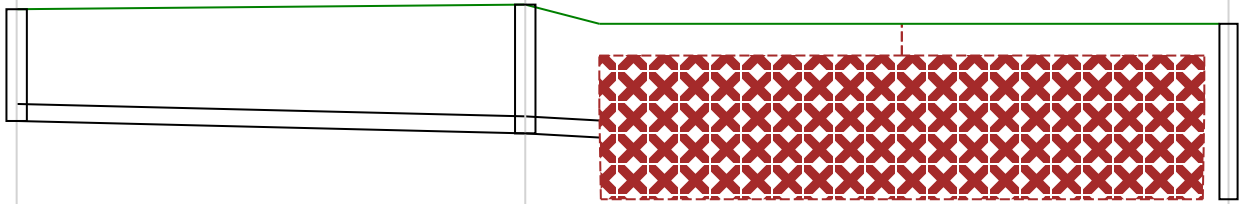
Node Name	MQS 8	MQS 9	MQS 10	MQS 11	MQS 12
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 19.000					
Link Name	1.006	1.007	1.008	1.009	
Section Type	300mm	300mm	300mm	300mm	
Slope (1:X)	125.3	202.1	227.5	136.2	
Cover Level (m)	27.099	26.269	25.894	25.611	25.486
Invert Level (m)	23.990	23.745 / 23.745	23.668 / 23.668	23.517 / 23.517	23.400
Length (m)	30.694	15.560	34.351	15.941	

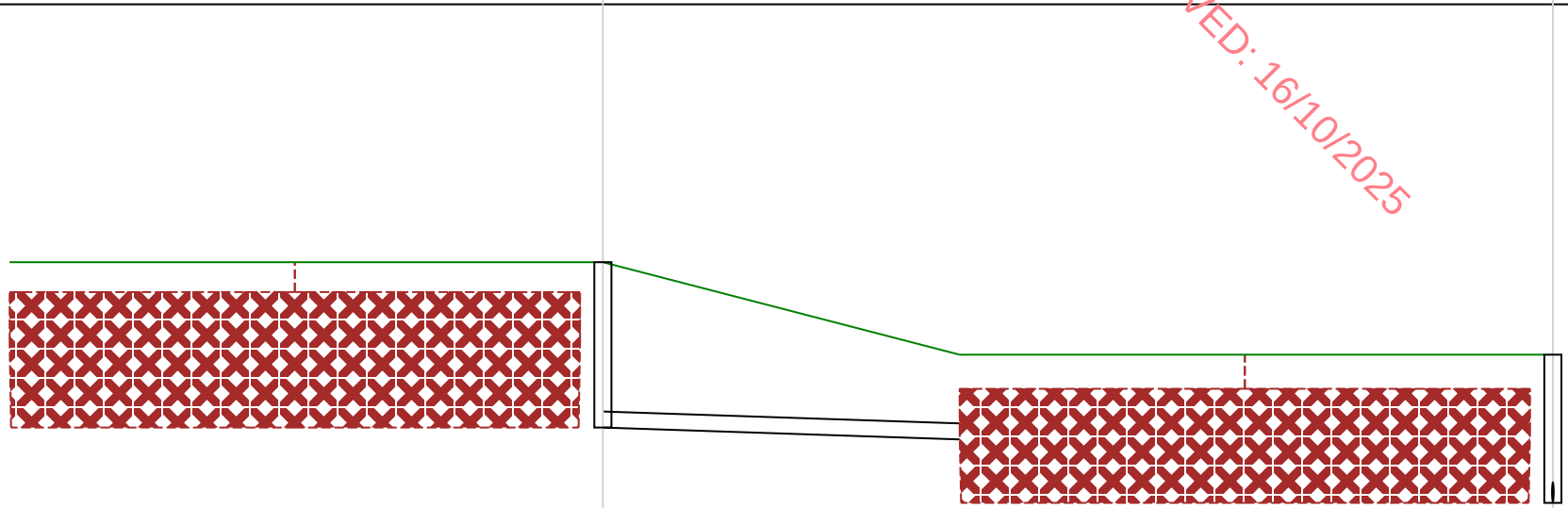
Node Name	MQS 12	MQS 13	MQS 14	MQS 19	MQS 20
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 18.000					
Link Name	1.010	1.011	1.012	1.013	
Section Type	300mm	300mm	300mm	300mm	
Slope (1:X)	229.7	160.4	113.8	201.1	
Cover Level (m)	25.486	25.435	25.434	24.908	25.041
Invert Level (m)	22.653	22.523 22.448	22.405 22.405	22.159 22.159	22.013
Length (m)	29.862	6.897	27.987	29.359	

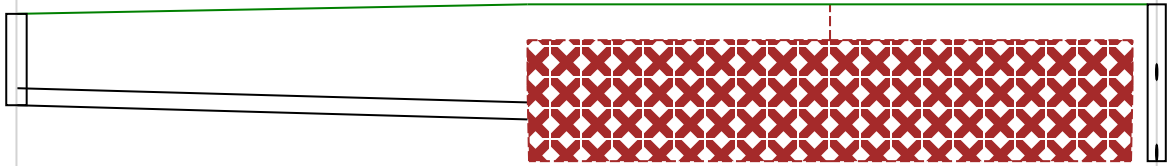
Node Name	MQS 20	MQS 21	SR 1	SR 2	SR 3
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 17.000					
Link Name	1.014	1.015	1.016	1.017	
Section Type	300mm	300mm	450mm	450mm	
Slope (1:X)	103.6	198.5	199.9	307.0	
Cover Level (m)	25.041	25.104	24.997	25.228	23.993
Invert Level (m)	22.013	21.700 / 21.700	21.649 / 21.649	21.538 / 21.538	21.385
Length (m)	32.439	10.125	22.184	46.969	

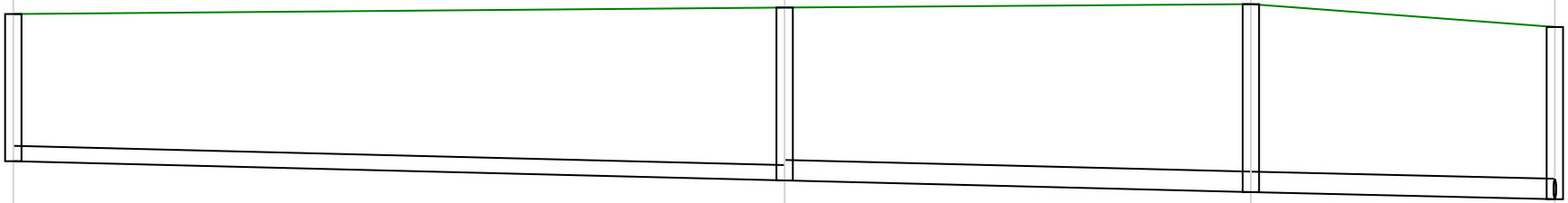
Node Name	SR 3	SR 4	SR 5
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 15.000			
Link Name	1.018	1.019	
Section Type	450mm	450mm	
Slope (1:X)	100.1	80.0	
Cover Level (m)	23.993	22.436	21.738
Invert Level (m)	19.788	19.154 19.154	18.698
Length (m)	63.476	36.497	

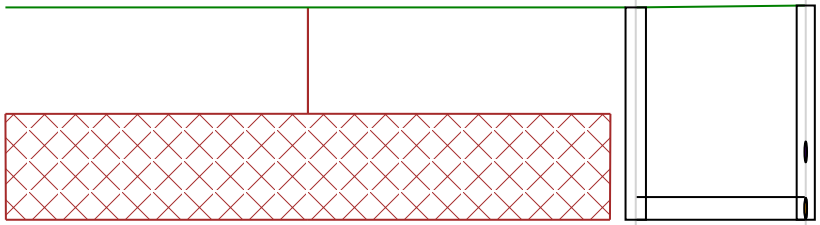
Node Name		SR 5	Ex.S 6	Ex.S 7
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 14.000				
Link Name		1.020	1.021	
Section Type		450mm	450mm	
Slope (1:X)		198.8	149.4	
Cover Level (m)		21.738	21.385	21.290
Invert Level (m)		18.200 / 18.114	17.730 / 17.608	
Length (m)		17.098	18.227	

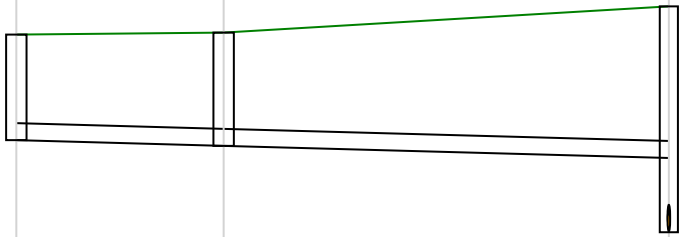
Node Name	MQS 1	MQS 2	MQS 3
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 25.000			
Link Name	2.000		2.001
Section Type	225mm		225mm
Slope (1:X)	205.0		89.1
Cover Level (m)	32.080		32.141 31.887
Invert Level (m)	30.602	30.438	30.438 30.383
Length (m)	33.628		4.898

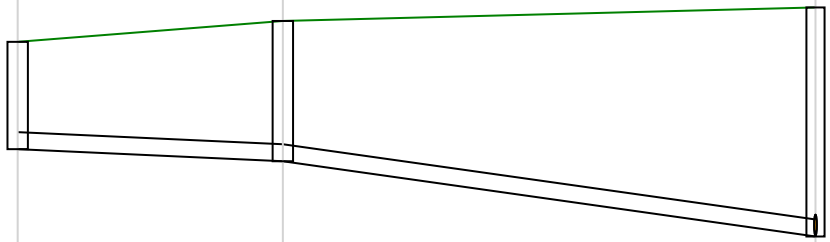
Node Name	MQS 3	MQS 4
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 24.000		
Link Name	2.002	
Section Type	225mm	
Slope (1:X)	149.8	
Cover Level (m)	31.887	30.589
Invert Level (m)	29.567	29.400
Length (m)	25.017	

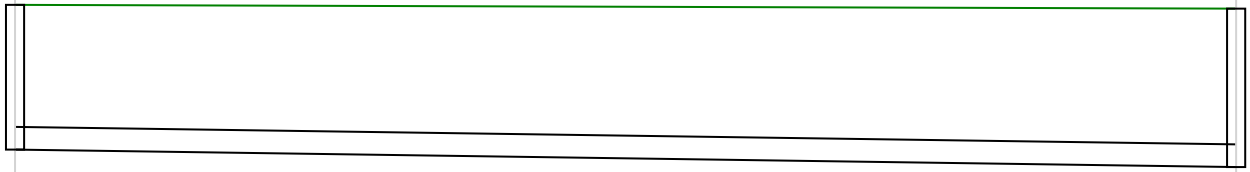
Node Name	MQS 5.1	MQS 5
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 23.000		
Link Name	3.000	
Section Type	225mm	
Slope (1:X)	179.7	
Cover Level (m)	29.278	29.404
Invert Level (m)	28.070	27.882
Length (m)	33.791	

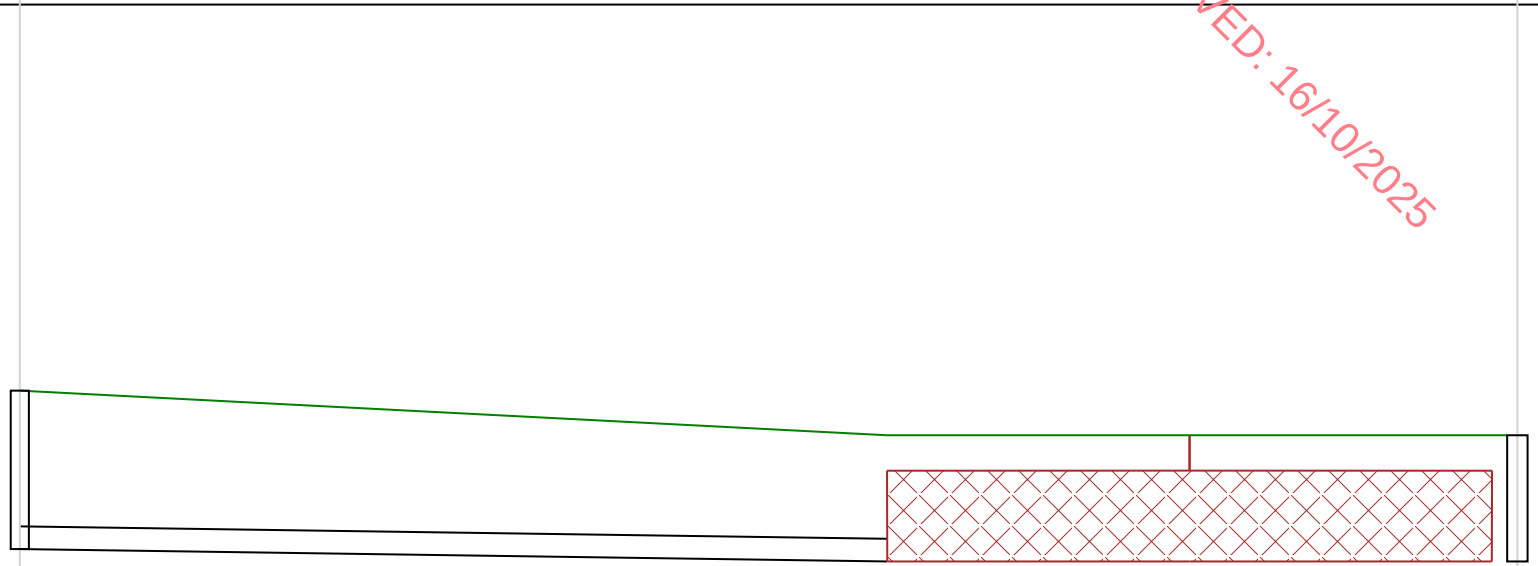
Node Name	MQS 9.3	MQS 9.2	MQS 9.1	MQS 9
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 19.000				
Link Name	4.000	4.001	4.002	
Section Type	225mm	300mm	300mm	
Slope (1:X)	200.1	199.5	213.8	
Cover Level (m)	26.459	26.554	26.604	26.269
Invert Level (m)	24.302	24.020 / 24.020	23.849 / 23.849	23.745
Length (m)	56.432	34.109	22.238	

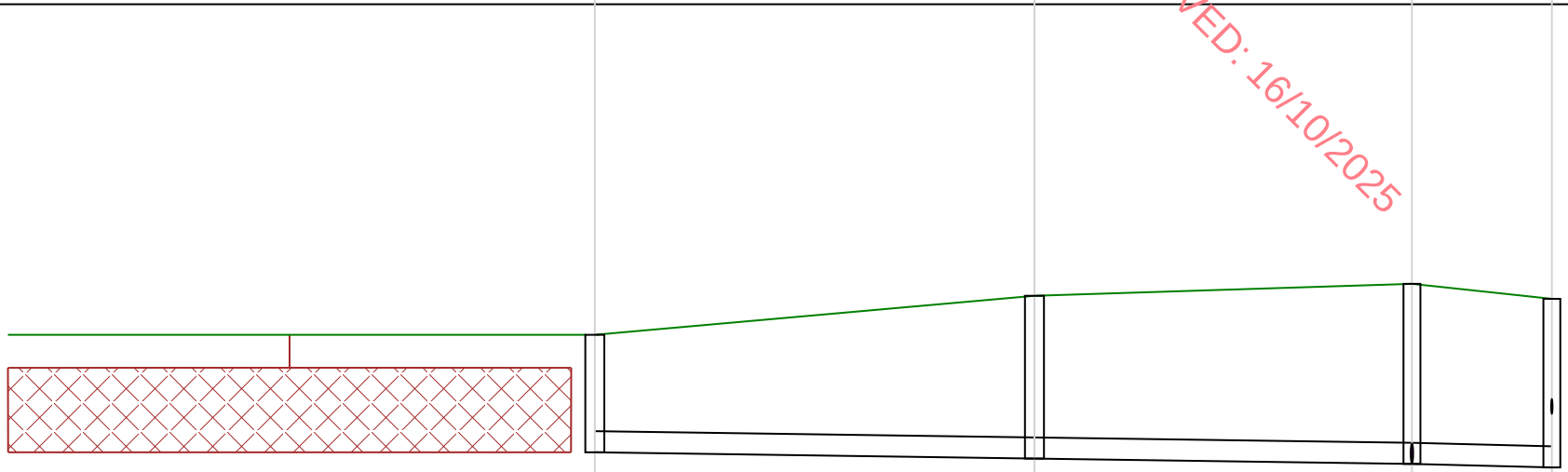
Node Name		MQS 12.1	MQS 12
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 18.000			
Link Name		5.000	
Section Type		300mm	
Slope (1:X)		0.0	
Cover Level (m)		25.461	25.486
Invert Level (m)		22.653	22.653
Length (m)		11.240	

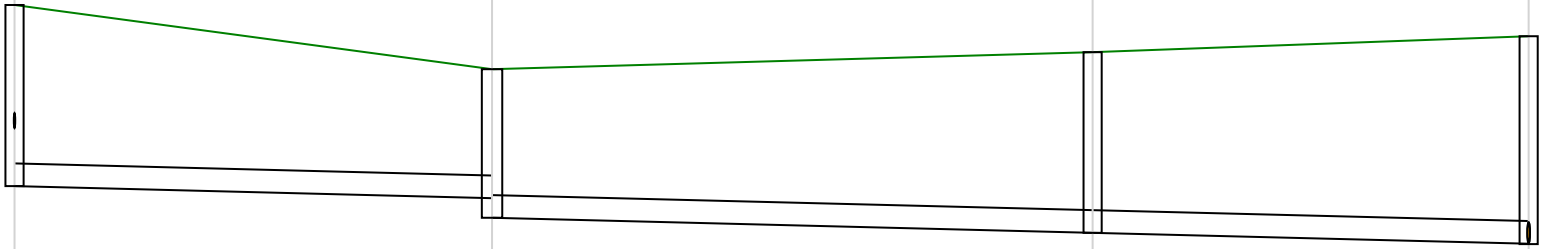
Node Name		MQS 13.2	MQS 13.1	MQS 13
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 18.000				
Link Name		6.000	6.001	
Section Type		225mm	225mm	
Slope (1:X)		180.4	184.0	
Cover Level (m)		25.062	25.088	25.435
Invert Level (m)		23.666 / 23.590	23.590	23.430
Length (m)		13.707	29.436	

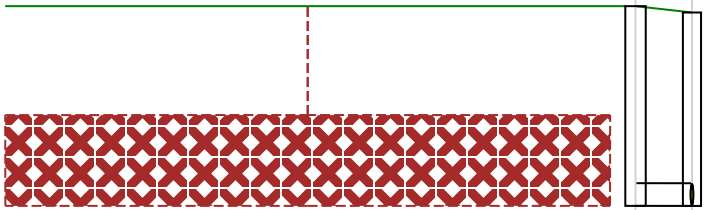
Node Name		MQS 14.2	MQS 14.1	MQS 14
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 18.000				
Link Name		7.000	7.001	
Section Type		225mm	225mm	
Slope (1:X)		109.6	35.4	
Cover Level (m)		24.979	25.255	25.434
Invert Level (m)		23.560	23.400 / 23.400	22.405
Length (m)		17.532	35.217	

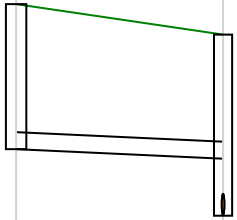
Node Name	PS 1		PS 2
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 19.000			
Link Name		8.000	
Section Type		300mm	
Slope (1:X)		349.5	
Cover Level (m)	25.450		25.400
Invert Level (m)	23.536		23.305
Length (m)		80.736	

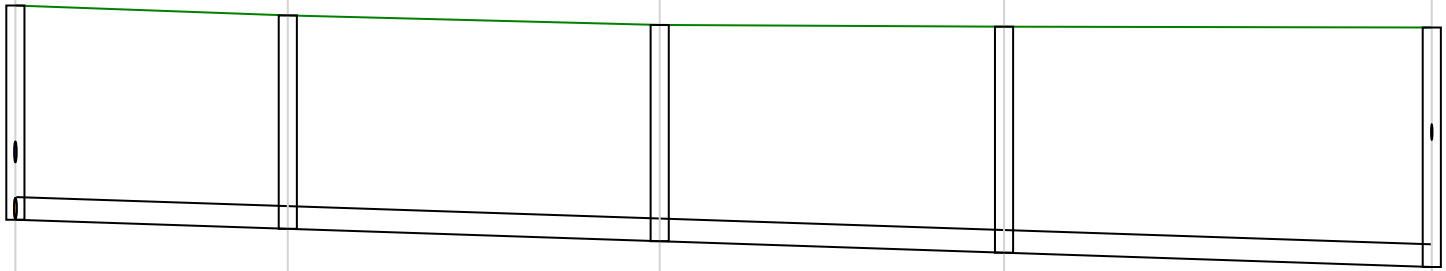
Node Name	PS 2	PS 3
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 19.000		
Link Name	8.001	
Section Type	300mm	
Slope (1:X)	349.6	
Cover Level (m)	25.400	24.810
Invert Level (m)	23.305	23.141
Length (m)	57.340	

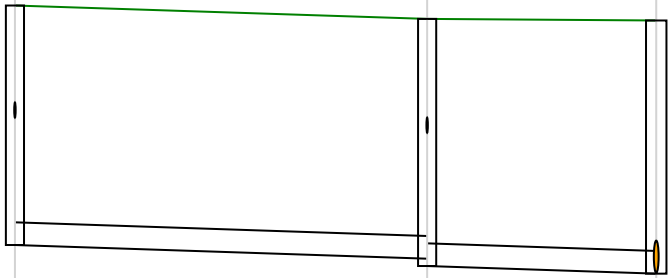
Node Name		PS 3		PS 4		PS 5	MQS 16
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 18.000							
Link Name		8.002		8.003		8.004	
Section Type		300mm		300mm		300mm	
Slope (1:X)		350.8		352.7		198.7	
Cover Level (m)		24.810		25.364		25.534	25.321
Invert Level (m)		23.141	23.052	23.052	22.976	22.976	22.926
Length (m)		31.218		26.805		9.935	

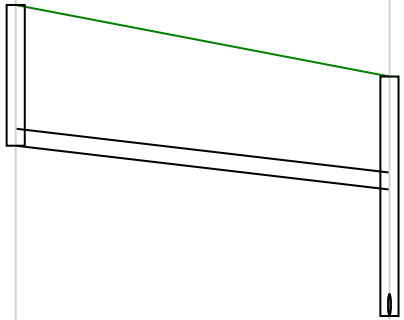
Node Name	MQS 16	MQS 17	MQS 18	MQS 19
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 18.000				
Link Name	8.005	8.006	8.007	
Section Type	300mm	300mm	300mm	
Slope (1:X)	197.3	199.5	200.2	
Cover Level (m)	25.321	24.472	24.697	24.908
Invert Level (m)	22.926	22.766 / 22.507	22.308 / 22.308	22.164
Length (m)	31.572	39.709	28.829	

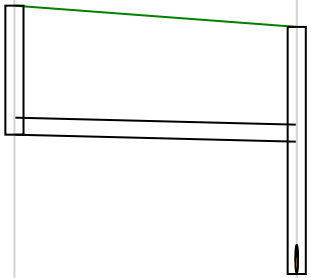
Node Name	PS 5.1	PS 5
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 19.000		
Link Name	9.000	
Section Type	300m	
Slope (1:X)	3732	
Cover Level (m)	25.618	25.534
Invert Level (m)	22.977	22.976
Length (m)	3.732	

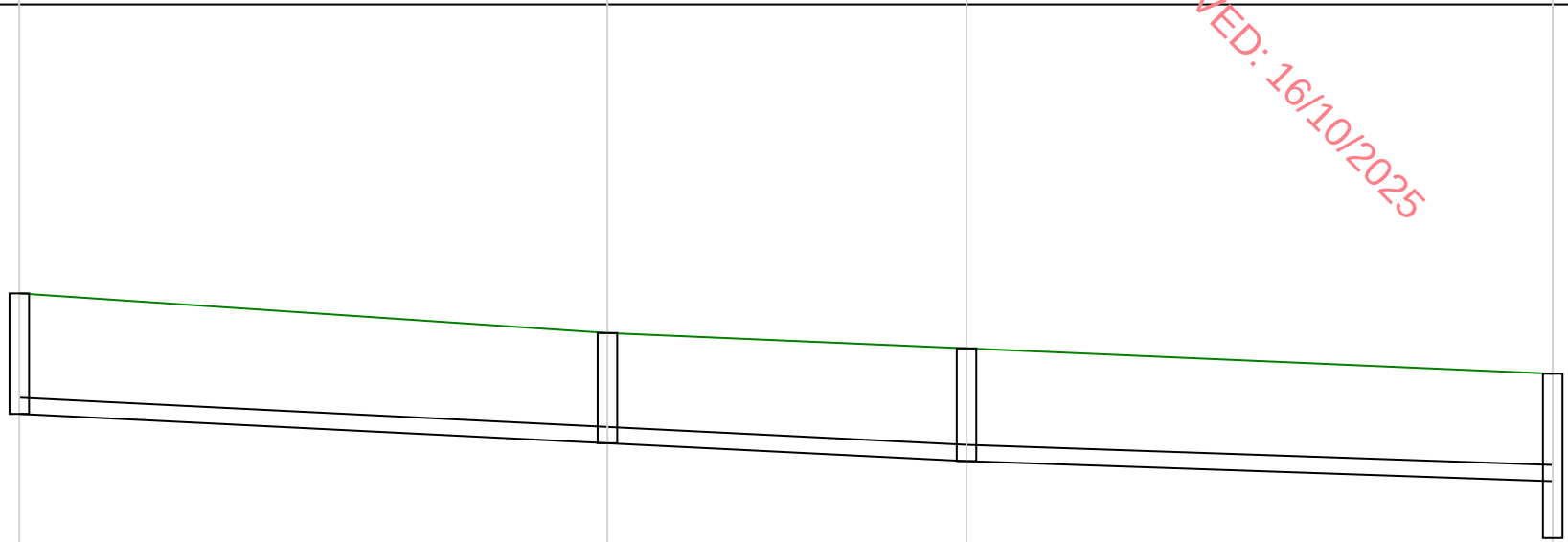
Node Name		MQS 15	MQS 16
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 19.000			
Link Name		10.000	
Section Type		225mm	
Slope (1:X)		108.6	
Cover Level (m)		25.724	25.321
Invert Level (m)		23.806	23.680
Length (m)		13.683	

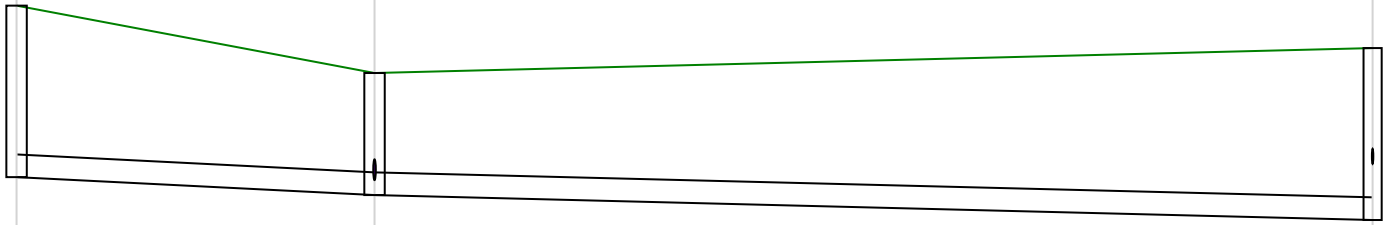
Node Name	MQS 12	MQS 22	MQS 23	MQS 24	MQS 25
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 18.000					
Link Name	11.000	11.001	11.002	11.003	
Section Type	300mm	300mm	300mm	300mm	
Slope (1:X)	150.1	149.9	149.8	149.6	
Cover Level (m)	25.486	25.355	25.229	25.206	25.195
Invert Level (m)	22.653	22.533 / 22.533	22.369 / 22.369	22.217 / 22.217	22.028
Length (m)	18.011	24.589	22.768	28.281	

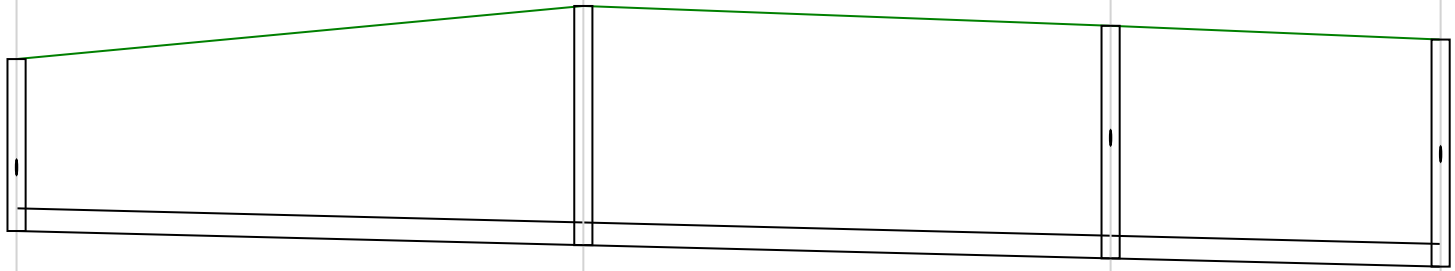
Node Name		MQS 25	MQS 26	SR 1
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 18.000				
Link Name		11.004	11.005	
Section Type		300mm	300mm	
Slope (1:X)		150.6	150.0	
Cover Level (m)		25.195	25.018	24.997
Invert Level (m)		22.028 / 21.847	21.750 / 21.649	
Length (m)		27.254	15.147	

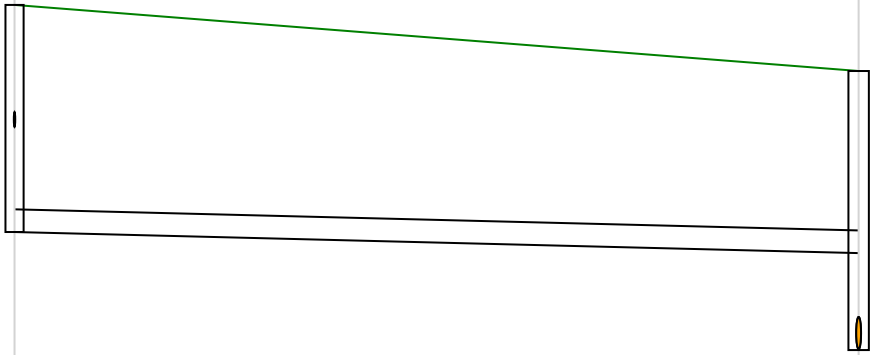
Node Name		MQS 25.1	MQS 25
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 18.000			
Link Name		12.000	
Section Type		225mm	
Slope (1:X)		42.6	
Cover Level (m)		26.141	25.195
Invert Level (m)		24.280	23.700
Length (m)		24.712	

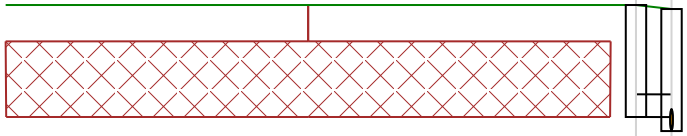
Node Name		MQS 26.1	MQS 26
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 18.000			
Link Name		13.000	
Section Type		225mm	
Slope (1:X)		200.7	
Cover Level (m)		25.299	25.018
Invert Level (m)		23.593	23.500
Length (m)		18.664	

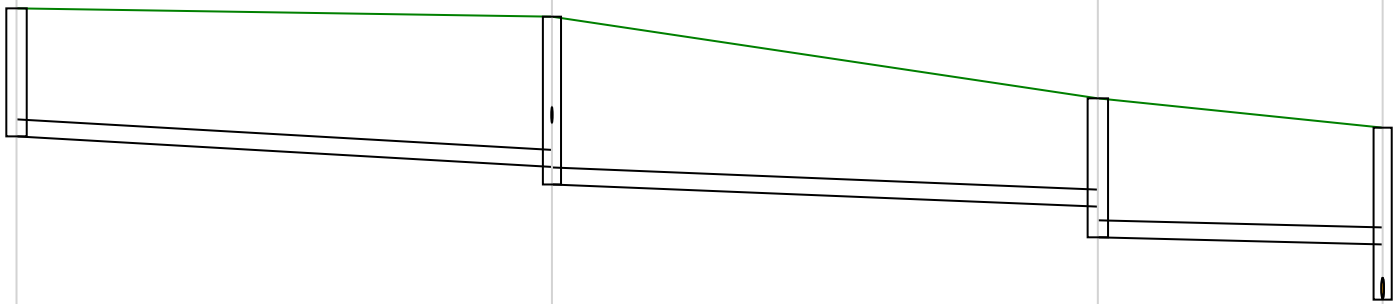
Node Name	TS 1	TS 2	TS 3	TS 4
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 20.000				
Link Name	14.000	14.001	14.002	
Section Type	225mm	225mm	225mm	
Slope (1:X)	100.2	100.4	145.5	
Cover Level (m)	27.514	26.967	26.755	26.405
Invert Level (m)	25.850	25.445 / 25.445	25.198 / 25.198	24.920
Length (m)	40.597	24.787	40.462	

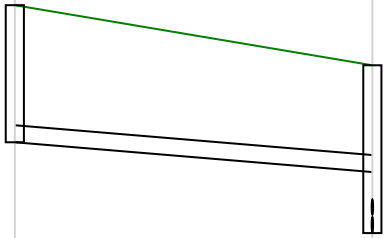
Node Name	TS 4	TS 5	TS 13
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 19.000			
Link Name	14.003	14.004	
Section Type	300mm	300mm	
Slope (1:X)	99.9	200.0	
Cover Level (m)	26.405	25.514	25.844
Invert Level (m)	24.137	23.900 23.900	23.570
Length (m)	23.668	65.990	

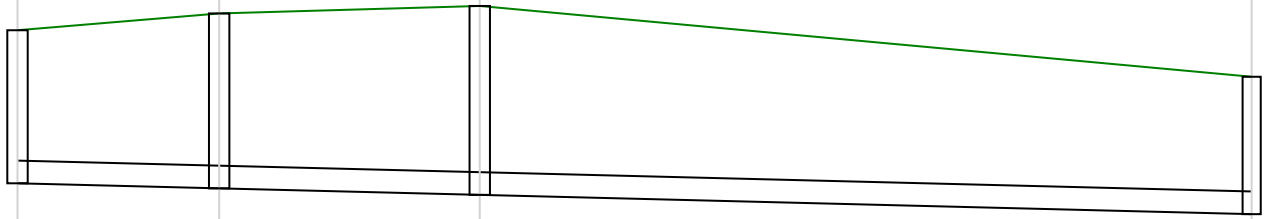
Node Name	TS 13	TS 14	TS 12	AS 13
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 19.000				
Link Name	14.005	14.006	14.007	
Section Type	300mm	300mm	300mm	
Slope (1:X)	200.4	199.2	200.2	
Cover Level (m)	25.844	26.546	26.284	26.102
Invert Level (m)	23.570	23.383 / 23.383	23.208 / 23.208	23.099
Length (m)	37.475	34.861	21.820	

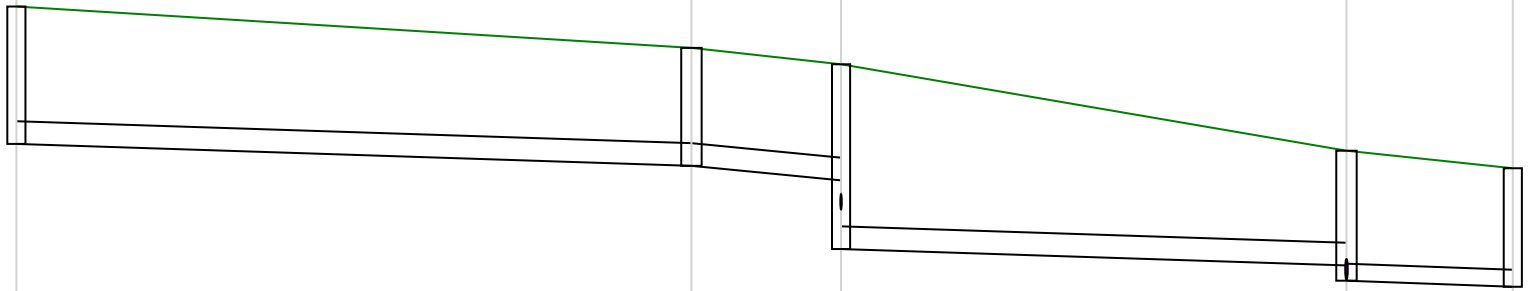
Node Name	AS 13	SR 2
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 18.000		
Link Name	14.008	
Section Type	300mm	
Slope (1:X)	200.0	
Cover Level (m)	26.102	25.228
Invert Level (m)	23.099	22.820
Length (m)	55.810	

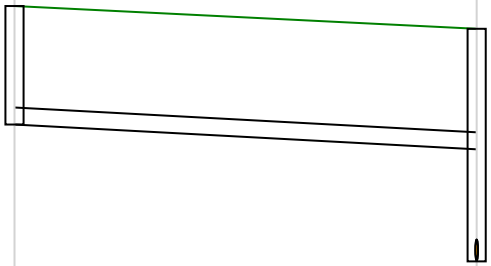
Node Name		TS 15	TS
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 19.000			
Link Name		15.	
Section Type		300	
Slope (1:X)		235	
Cover Level (m)		25.567	25.514
Invert Level (m)		24.086	
Length (m)		2.3	

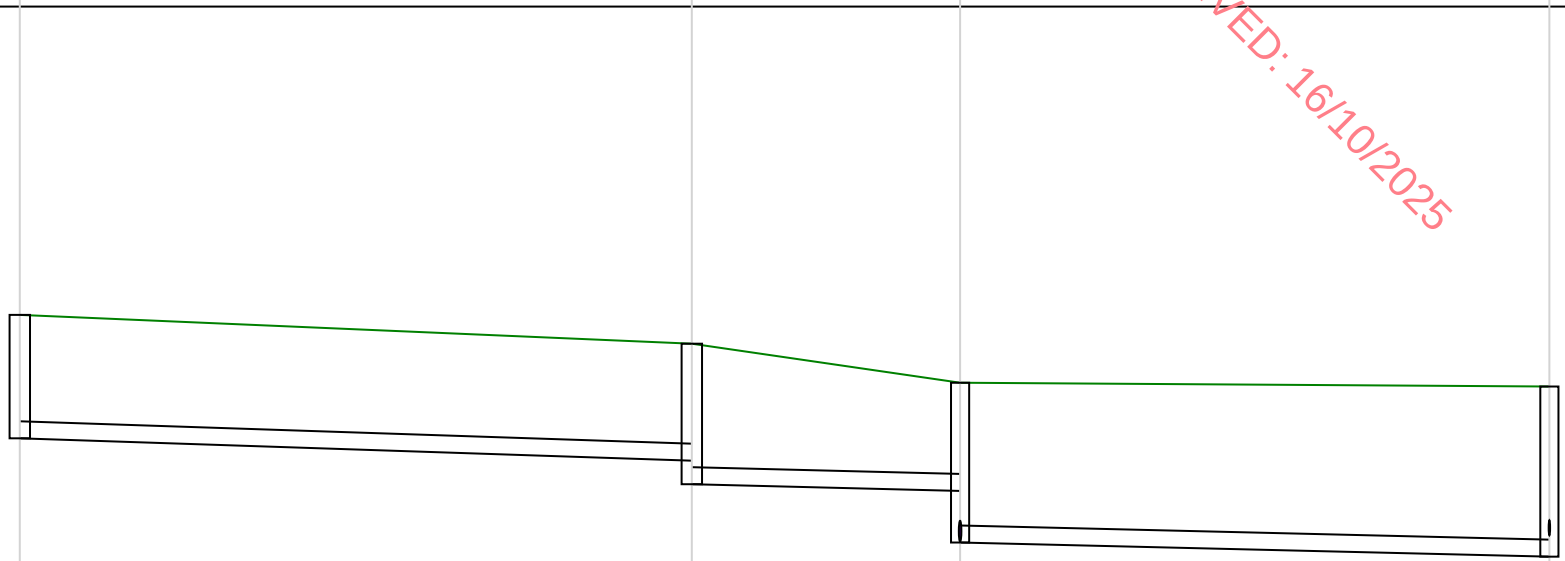
Node Name	TS 28	TS 10	TS 12	TS 13
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 20.000				
Link Name	16.000	16.001	16.002	
Section Type	225mm	225mm	225mm	
Slope (1:X)	87.6	123.2	200.3	
Cover Level (m)	27.422	27.312	26.232	25.844
Invert Level (m)	25.729	25.325 25.093	24.800 24.394	24.300
Length (m)	35.401	36.093	18.831	

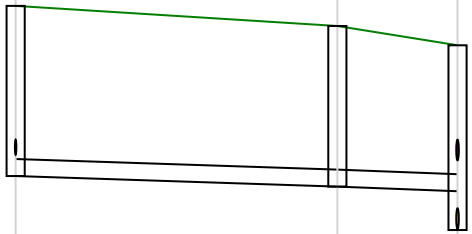
Node Name	TS 9	TS 10
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 21.000		
Link Name	17.000	
Section Type	225mm	
Slope (1:X)	60.0	
Cover Level (m)	28.107	27.312
Invert Level (m)	26.294	25.900
Length (m)	23.640	

Node Name		TS 15	TS 16	TS 17	TS 18
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 23.000					
Link Name		18.000	18.001	18.002	
Section Type		300mm	300mm	300mm	
Slope (1:X)		199.0	200.3	200.1	
Cover Level (m)		29.339	29.561	29.660	28.724
Invert Level (m)		27.315 / 27.248	27.248 / 27.162	27.162 / 26.907	
Length (m)		13.333	17.229	51.037	

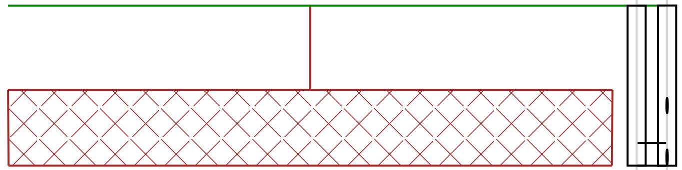
Node Name	TS 18		TS 19		TS 25		TS 26	TS 31
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 21.000								
Link Name	18.003		18.004		18.005		18.006	
Section Type	300mm		300mm		300mm		225mm	
Slope (1:X)	153.9		51.5		154.0		137.5	
Cover Level (m)	28.724		28.177		27.960		26.817	26.585
Invert Level (m)	26.907	26.617	26.617	26.425	25.517	25.300	25.098	25.018
Length (m)	44.633		9.892		33.418		10.996	

Node Name		TS 31	TS 32
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 19.000			
Link Name		18.007	
Section Type		225mm	
Slope (1:X)		93.2	
Cover Level (m)		26.585	26.284
Invert Level (m)		25.018	24.690
Length (m)		30.557	

Node Name	TS 20	TS 21	TS 22	TS 23
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 22.000				
Link Name	19.000	19.001	19.002	
Section Type	225mm	225mm	225mm	
Slope (1:X)	150.1	199.3	208.4	
Cover Level (m)	29.428	29.047	28.531	28.481
Invert Level (m)	27.796	27.500 27.189	27.100 26.418	26.231
Length (m)	44.433	17.738	38.962	

Node Name		TS 23	TS 24	TS 25	
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 21.000					
Link Name		19.003	19.004		
Section Type		225mm	225mm		
Slope (1:X)		151.9	130.2		
Cover Level (m)		28.481	28.215	27.960	
Invert Level (m)		26.231	26.091 / 26.091	26.030	
Length (m)		21.272	7.945		

Node Name: TS 19.12

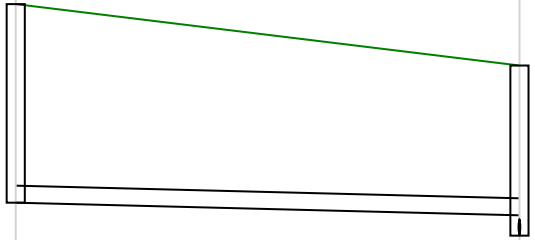


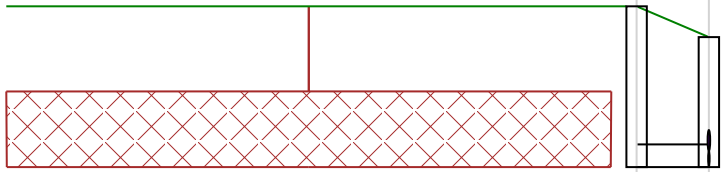
A4 drawing

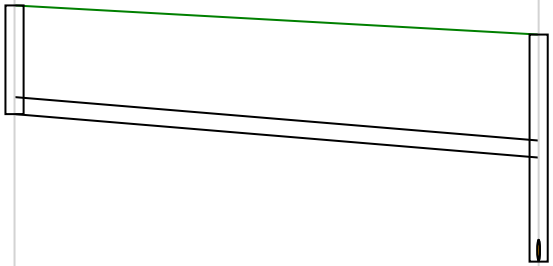
Hor Scale 500
Ver Scale 100

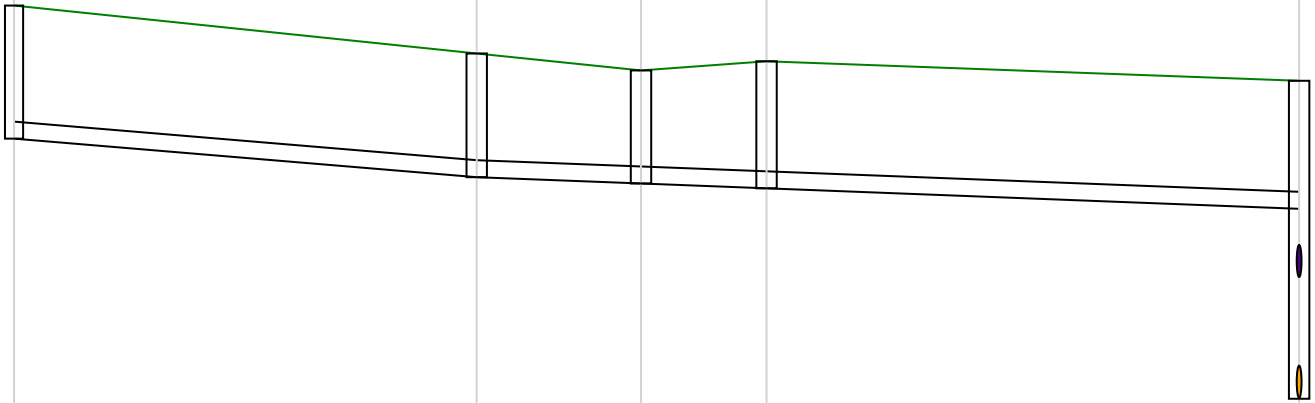
Datum (m) 22.000

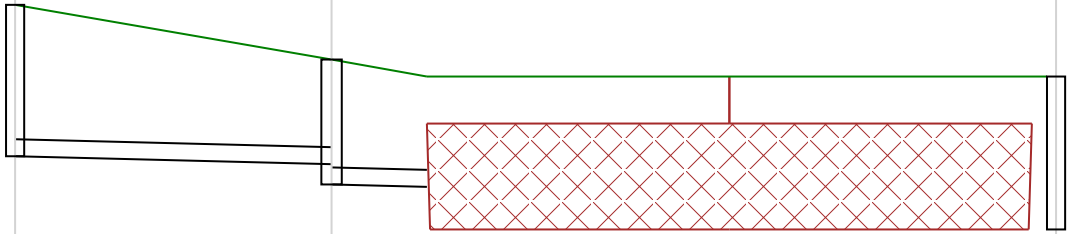
Link Name	20
Section Type	30
Slope (1:X)	20
Cover Level (m)	28.529 / 28.531
Invert Level (m)	26.419 / 26.418
Length (m)	2.0

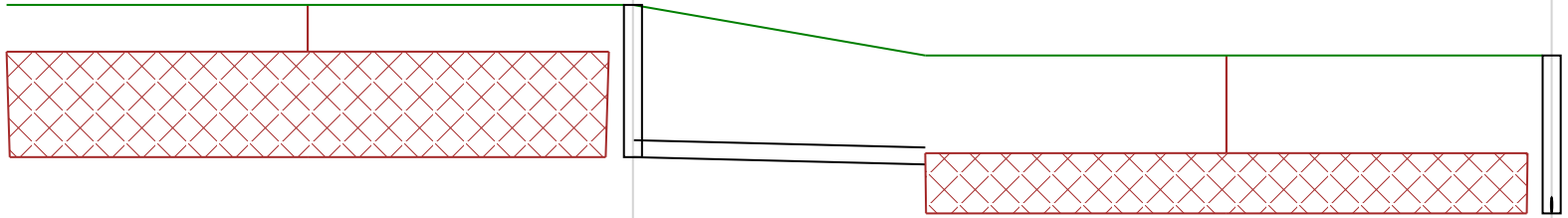
Node Name		TS 23.1	TS 23
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 22.000			
Link Name		21.000	
Section Type		225mm	
Slope (1:X)		199.4	
Cover Level (m)		29.293	28.481
Invert Level (m)		26.667	26.500
Length (m)		33.305	

Node Name		TS 26.1	TS 26
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 20.000			
Link Name		22.000	
Section Type		300mr	
Slope (1:X)		0.0	
Cover Level (m)		27.224	26.817
Invert Level (m)		25.098	25.098
Length (m)		4.778	

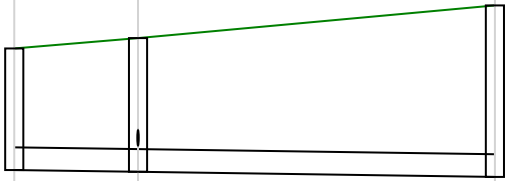
Node Name	AS 13.1	AS 13
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 19.000		
Link Name	23.000	
Section Type	225mm	
Slope (1:X)	60.3	
Cover Level (m)	26.487	26.102
Invert Level (m)	25.050	24.475
Length (m)	34.653	

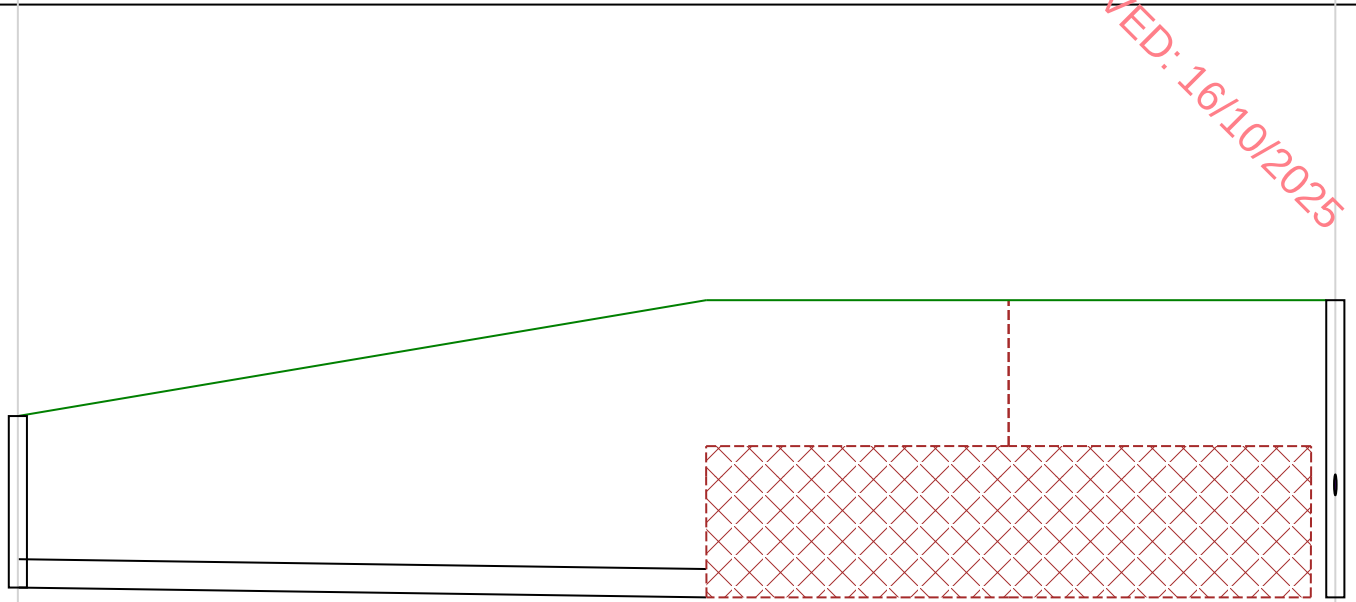
Node Name	AS 8	AS 9	AS 10	AS 11	SR 3
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 17.000					
Link Name	24.000	24.001	24.002	24.003	
Section Type	225mm	225mm	225mm	225mm	
Slope (1:X)	60.0	130.9	129.7	129.9	
Cover Level (m)	24.988	24.354	24.130	24.251	23.993
Invert Level (m)	23.228 / 22.718	22.718 / 22.635	22.635 / 22.571	22.571 / 22.300	
Length (m)	30.591	10.862	8.300	35.214	

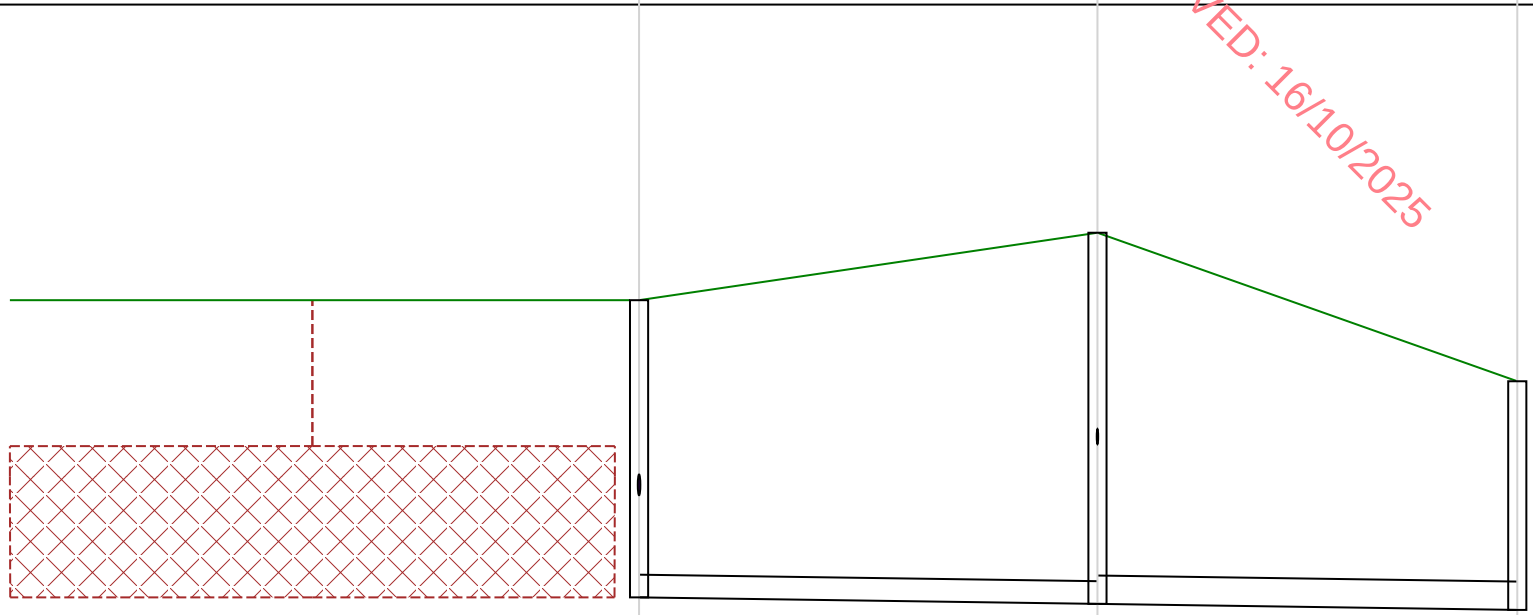
Node Name		KS 3	KS 4	KS 5
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 17.000				
Link Name		25.000	25.001	
Section Type		225mm	225mm	
Slope (1:X)		199.3	196.9	
Cover Level (m)		23.807	23.084	22.859
Invert Level (m)		21.805	21.700 21.432	21.400
Length (m)		20.923	6.302	

Node Name	KS 5	KS 6
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 16.000		
Link Name	25.002	
Section Type	225mm	
Slope (1:X)	200.1	
Cover Level (m)	22.859	22.187
Invert Level (m)	20.837	20.740
Length (m)	19.414	

Node Name		KS 6		KS 7		KS 8		KS 9
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 15.000								
Link Name		25.003		25.004		25.005		
Section Type		300mm		300mm		300mm		
Slope (1:X)		349.7		348.5		352.0		
Cover Level (m)		22.187		21.576		21.486		21.495
Invert Level (m)		20.089	20.004	20.004	19.954	19.954	19.887	
Length (m)		29.725		17.423		23.582		

Node Name		KS 9	KS 10	KS 11
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 15.000				
Link Name		25.006	25.007	
Section Type		300mm	300mm	
Slope (1:X)		355.8	347.0	
Cover Level (m)		21.495	21.632	22.064
Invert Level (m)		19.887 / 19.864	19.864	19.796
Length (m)		8.183	23.596	

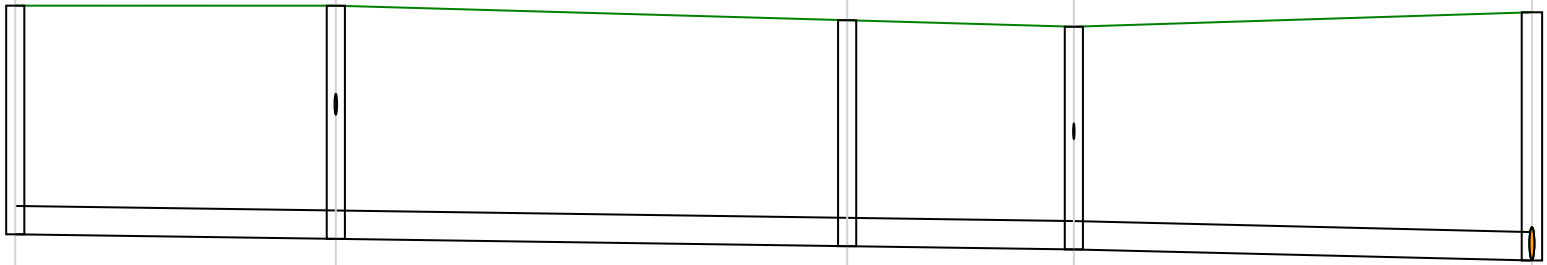
Node Name	KS 11	KS 19
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 16.000		
Link Name	25.008	
Section Type	375mm	
Slope (1:X)	350.1	
Cover Level (m)	22.064	23.596
Invert Level (m)	19.796	19.666
Length (m)	45.508	

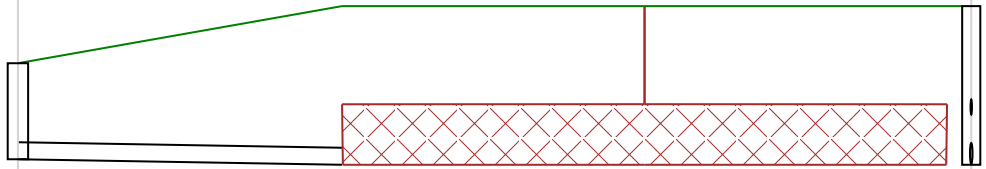
Node Name		KS 19	AS 3	AS 4
				
Link Name		25.009	25.010	
Section Type		300mm	375mm	
Slope (1:X)		352.4	347.0	
Cover Level (m)		23.596	24.488	22.524
Invert Level (m)		19.666	19.580 19.580	19.500
Length (m)		30.308	27.758	

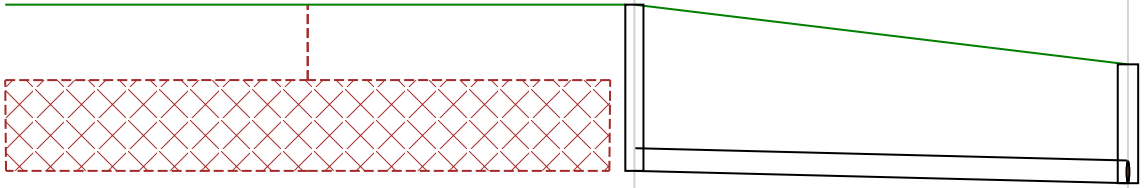
A4 drawing

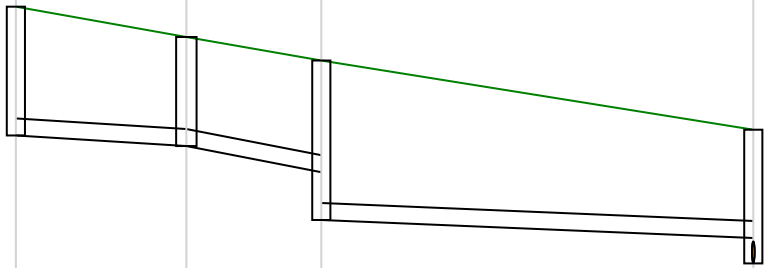
Hor Scale 500
Ver Scale 100

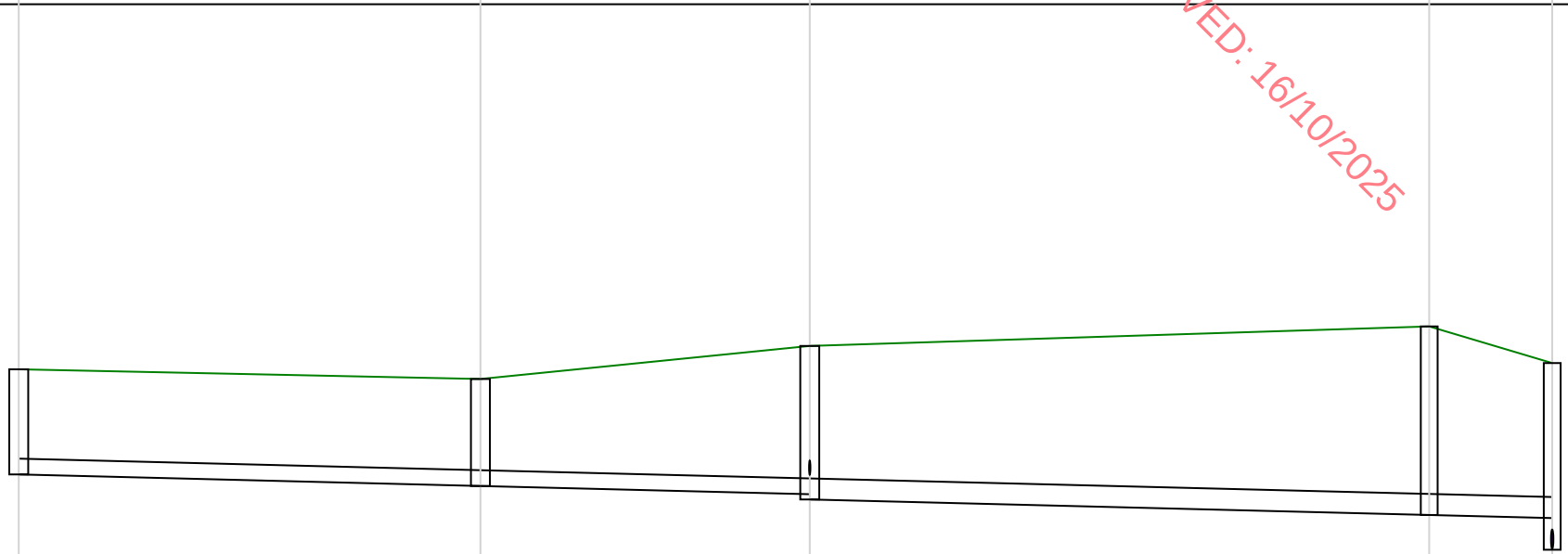
Datum (m) 16.000

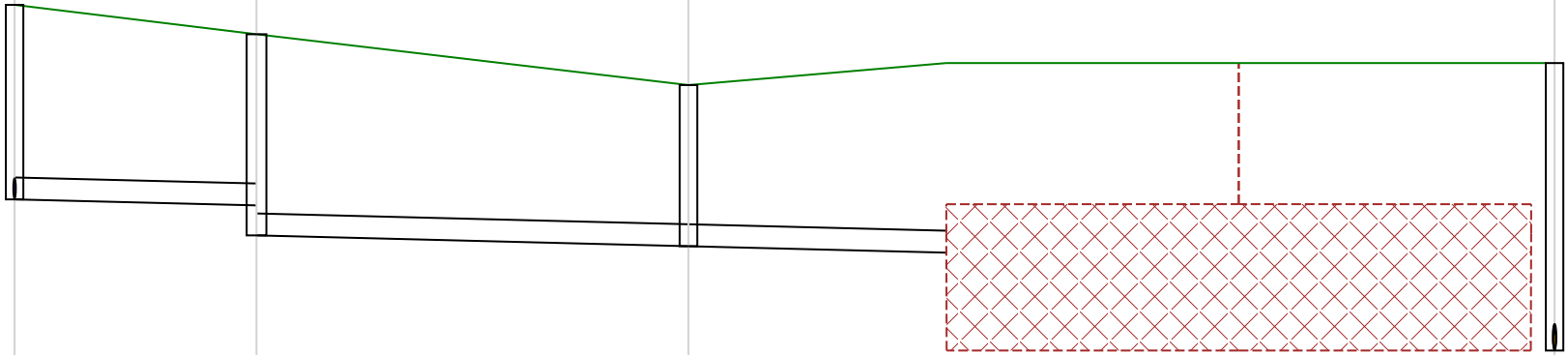
Node Name	AS 4	AS 5	AS 6	AS 7	SR 4
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 15.000					
Link Name	25.011	25.012	25.013	25.014	
Section Type	375mm	375mm	375mm	375mm	
Slope (1:X)	353.3	348.5	348.6	207.4	
Cover Level (m)	22.524	22.523	22.331	22.245	22.436
Invert Level (m)	19.500	19.440 / 19.440	19.343 / 19.343	19.300 / 19.300	19.154
Length (m)	21.195	33.809	14.988	30.287	

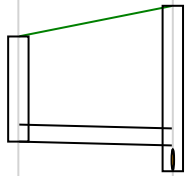
Node Name		KS 6.1	KS 6	
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 15.000				
Link Name		26.000		
Section Type		225mm		
Slope (1:X)		293.6		
Cover Level (m)		21.432	22.187	
Invert Level (m)		20.162	20.089	
Length (m)		21.432		

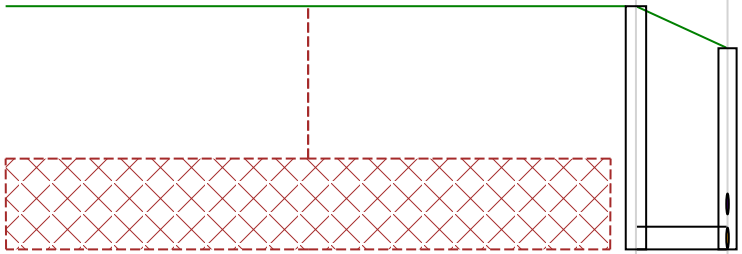
Node Name		KS 7.1	KS 7
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 15.000			
Link Name		27.000	
Section Type		300mm	
Slope (1:X)		200.2	
Cover Level (m)		22.365	21.576
Invert Level (m)		20.167	20.004
Length (m)		32.633	

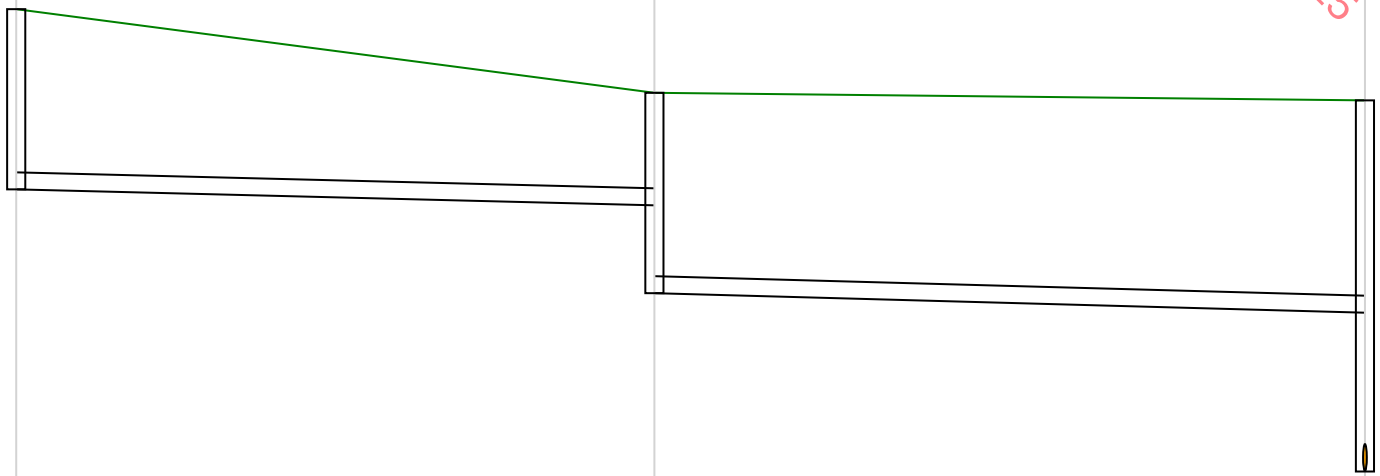
Node Name		KS 10.3	KS 10.2	KS 10.1	KS 10
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 16.000					
Link Name		28.000	28.001	28.002	
Section Type		225mm	225mm	225mm	
Slope (1:X)		80.5	25.8	120.0	
Cover Level (m)		23.259	22.858	22.547	21.632
Invert Level (m)		21.556 / 21.416	21.416 / 21.070	20.438 / 20.200	
Length (m)		11.272	8.923	28.562	

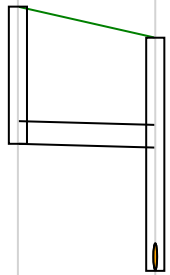
Node Name	KS 12	KS 13	KS 14	KS 15	KS 16
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 18.000					
Link Name	29.000	29.001	29.002	29.003	
Section Type	225mm	225mm	300mm	300mm	
Slope (1:X)	199.4	200.6	199.7	199.2	
Cover Level (m)	24.303	24.165	24.636	24.914	24.392
Invert Level (m)	22.805	22.640 / 22.640	22.523 / 22.448	22.227 / 22.227	22.183
Length (m)	32.900	23.470	44.143	8.764	

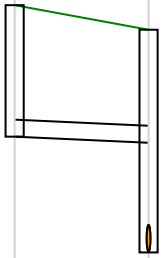
Node Name	KS 16	KS 17	KS 18	KS 19
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 16.000				
Link Name	29.004	29.005	29.006	
Section Type	300mm	300mm	300mm	
Slope (1:X)	201.8	199.6	200.4	
Cover Level (m)	24.392	23.990	23.295	23.596
Invert Level (m)	21.732	21.650 21.240	21.092 21.092	21.004
Length (m)	16.548	29.545	17.634	

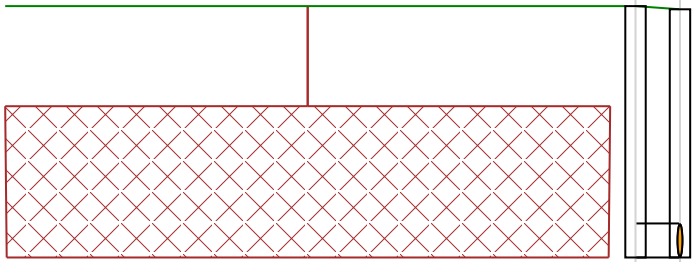
Node Name		KS 14.1	KS 14
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 18.000			
Link Name		30.000	
Section Type		225mm	
Slope (1:X)		200.2	
Cover Level (m)		24.230	24.636
Invert Level (m)		22.840	22.789
Length (m)		10.212	

Node Name		KS 16.1	KS 16
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 18.000			
Link Name		31.000	
Section Type		300mm	
Slope (1:X)		0.0	
Cover Level (m)		24.948	24.392
Invert Level (m)		21.732	21.732
Length (m)		6.056	

Node Name	AS 1	AS 2	AS 3
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 17.000			
Link Name	32.000	32.001	
Section Type	225mm	225mm	
Slope (1:X)	200.0	182.1	
Cover Level (m)	25.694	24.588	24.488
Invert Level (m)	23.311	23.100 21.938	21.680
Length (m)	42.195	46.980	

Node Name		AS 5.1	AS 5
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 15.000			
Link Name		33.000	
Section Type		300mm	
Slope (1:X)		181.6	
Cover Level (m)		22.934	22.523
Invert Level (m)		21.120	21.070
Length (m)		9.082	

Node Name		AS 7.1	AS 7
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 15.000			
Link Name		34.000	
Section Type		225mm	
Slope (1:X)		109.3	
Cover Level (m)		22.570	22.245
Invert Level (m)		20.831	20.750
Length (m)		8.855	

Node Name		SR 4	SR 4
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) 15.000			
Link Name		35.0	
Section Type		450	
Slope (1:X)		0.0	
Cover Level (m)		22.478	22.436
Invert Level (m)		19.154	19.154
Length (m)		2.94	

RECEIVED: 16/10/2025

Legend Key

- Locations By Type - CP
- Locations By Type - DCP
- Locations By Type - RC
- Locations By Type - RO
- Locations By Type - TP

Project No.	24-0211
Client	Kingston Lands, Galway
Client's Rep	King Construction

Site Location Plan

Kingston Lands, Galway

CAUSEWAY GEOTECH

Last Revision	04/06/2025
Scale	1:3000

Soakaway Infiltration Test

Project No.: 24-0211
Site: Kingston Lands, Galway
Test Location: SA01
Test Date: 04 June 2025

Analysis using method as described in BRE DG 365 (2016) and CIRIA Report C753-The SUDS Manual (2015)

	width (m)	length (m)
test pit top dimensions	1.40	2.45
test pit base dimensions	1.40	2.20
test pit depth (m)	1.80	

depth to groundwater before adding water (m) = Dry

Time (mins)	Depth to water surface (m)	Head of water in pit (m)
0	1.00	0.80
2	1.05	0.75
4	1.05	0.75
6	1.05	0.75
8	1.10	0.70
10	1.17	0.63
14	1.22	0.58
18	1.25	0.55
22	1.30	0.50
26	1.39	0.41
31	1.39	0.41
36	1.45	0.35
46	1.54	0.26
56	1.80	0.00

RESULTS (FROM GRAPH BELOW)

Test start

75% head of water at 0.60 m
depth to water surface (target) 1.20 m
time to reach target depth 12.0 mins

Test end

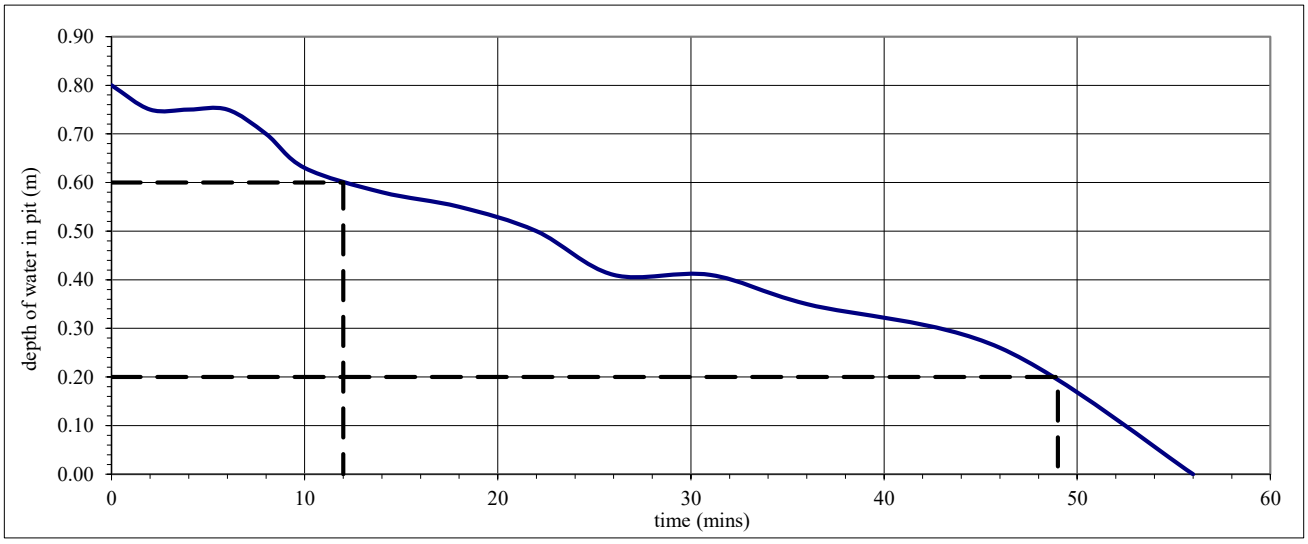
25% head of water at 0.20 m
depth to water surface (target) 1.60 m
time to reach target depth 49.0 mins

soil infiltration rate $f = \frac{V_{p75\text{-}25}}{a_{s50} \times t_{p75\text{-}25}}$

Test infiltration rate (f) = 9.50E-05 m/s

TARGET DEPTHS AND CALCULATED VALUES

Time (mins)	Depth to water surface (m)	Head of water in pit (m)	Time elapsed, $t_{p75\text{-}25}$ (mins)	Volume of water lost, $V_{p75\text{-}25}$ (m^3)	Area of walls and base at 50% drop, a_{s50} (m^2)	Soil infiltration rate, (m/min)	Soil infiltration rate, f (m/h)
12	1.20	0.60	37	1.26	5.99	5.7E-03	0.342
49	1.60	0.20					



Soakaway Infiltration Test

Project No.: 24-0211
Site: Kingston Lands, Galway
Test Location: SA02
Test Date: 04 June 2025

	width (m)	length (m)
test pit top dimensions	1.90	3.35
test pit base dimensions	1.55	2.85
test pit depth (m)	1.80	

Analysis using method as described in BRE DG 365 (2016) and CIRIA Report C753-The SUDS Manual (2015)

depth to groundwater before adding water (m) = Dry

Time (mins)	Depth to water surface (m)	Head of water in pit (m)
0	1.00	0.80
2	1.04	0.76
4	1.05	0.75
6	1.06	0.74
8	1.10	0.70
11	1.17	0.63
13	1.22	0.58
15	1.25	0.55
18	1.30	0.50
23	1.38	0.42
28	1.40	0.40
33	1.45	0.35
40	1.54	0.26
50	1.60	0.20
62	1.68	0.12

RESULTS (FROM GRAPH BELOW)

Test start

75% head of water at 0.60 m

depth to water surface (target) 1.20 m

time to reach target depth 12.0 mins

Test end

25% head of water at 0.20 m

depth to water surface (target) 1.60 m

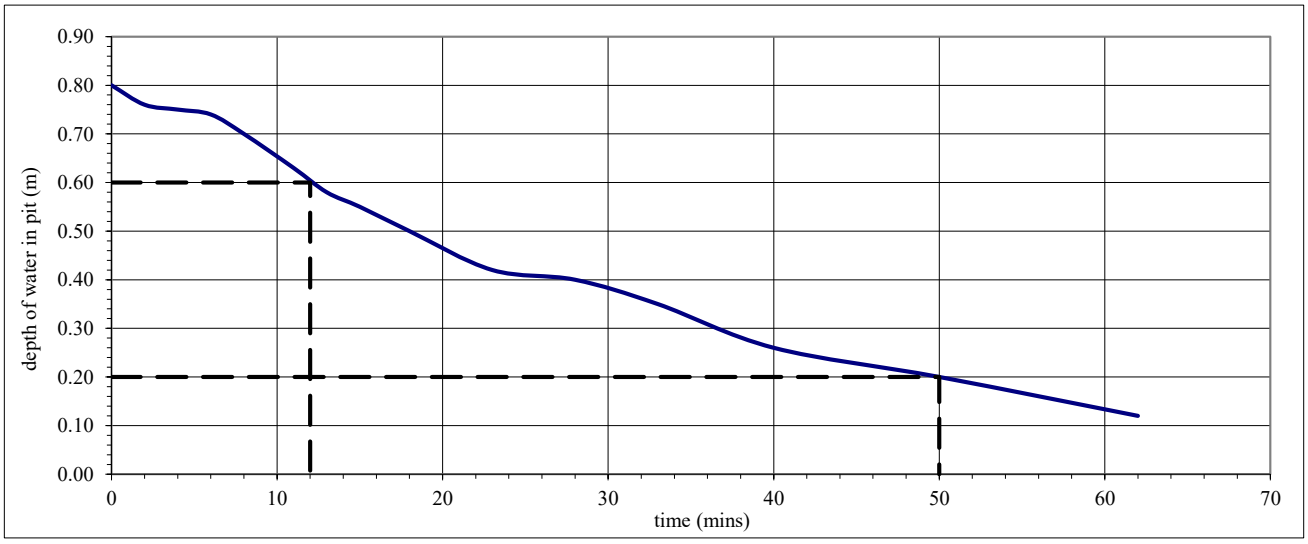
time to reach target depth 50.0 mins

soil infiltration rate $f = \frac{V_{p75-25}}{a_{s50} \times t_{p75-25}}$

Test infiltration rate (f) = 1.05E-04 m/s

TARGET DEPTHS AND CALCULATED VALUES

Time (mins)	Depth to water surface (m)	Head of water in pit (m)	Time elapsed, t_{p75-25} (mins)	Volume of water lost, V_{p75-25} (m^3)	Area of walls and base at 50% drop, a_{s50} (m^2)	Soil infiltration rate, (m/min)	Soil infiltration rate, f (m/h)
12	1.20	0.60	38	1.93	8.03	6.3E-03	0.379
50	1.60	0.20					



Soakaway Infiltration Test

Project No.: 24-0211
Site: Kingston Lands, Galway
Test Location: SA03
Test Date: 04 June 2025

Analysis using method as described in BRE DG 365 (2016) and CIRIA Report C753-The SUDS Manual (2015)

	width (m)	length (m)
test pit top dimensions	3.15	3.70
test pit base dimensions	3.15	3.70
test pit depth (m)	1.30	

depth to groundwater before adding water (m) = 0.60

Time (mins)	Depth to water surface (m)	Head of water in pit (m)
0	0.55	0.05
5	0.55	0.05
10	0.55	0.05
20	0.55	0.05
34	0.54	0.06
49	0.50	0.10

RESULTS (FROM GRAPH BELOW)

Test start

75% head of water at 0.04 m
depth to water surface (target) 0.56 m
time to reach target depth not reached

Test end

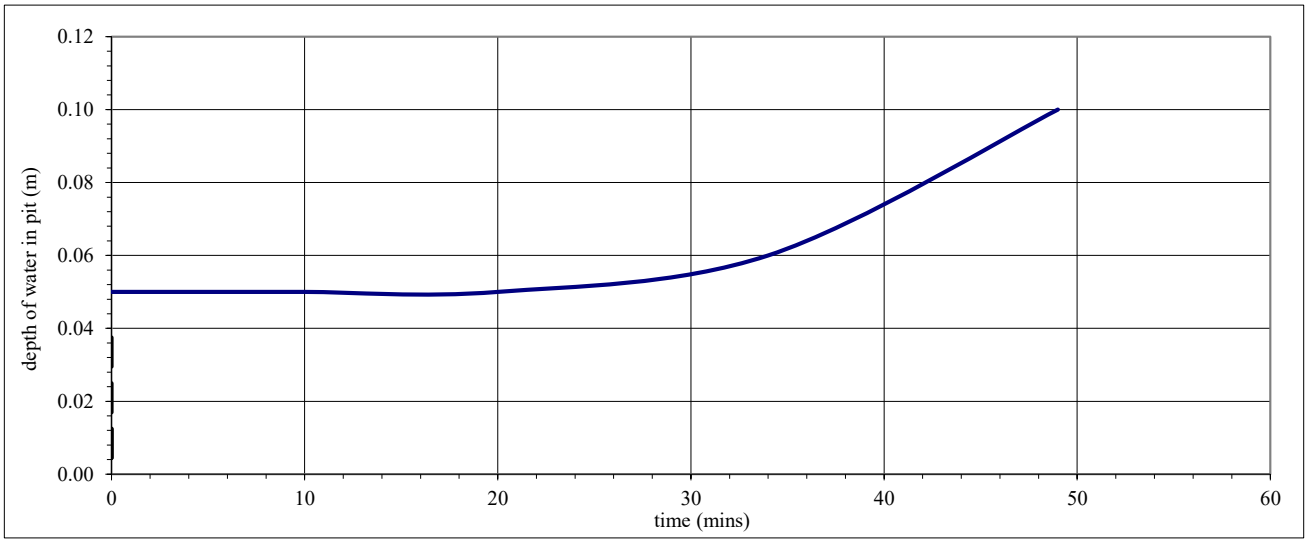
25% head of water at 0.01 m
depth to water surface (target) 0.59 m
time to reach target depth not reached

soil infiltration rate $f = \frac{V_{p75-25}}{a_{s50} \times t_{p75-25}}$

Infiltration rate (f) not calculated
(water level rose during course of test)

TARGET DEPTHS AND CALCULATED VALUES

Time (mins)	Depth to water surface (m)	Head of water in pit (m)	Time elapsed, t_{p75-25} (mins)	Volume of water lost, V_{p75-25} (m^3)	Area of walls and base at 50% drop, a_{s50} (m^2)	Soil infiltration rate, (m/min)	Soil infiltration rate, f (m/h)
	0.56	0.04	N/A				
	0.59	0.01					



Soakaway Infiltration Test

Project No.: 24-0211
Site: Kingston Lands, Galway
Test Location: SA04
Test Date: 04 June 2025

Analysis using method as described in BRE DG 365 (2016) and CIRIA Report C753-The SUDS Manual (2015)

	width (m)	length (m)
test pit top dimensions	2.10	3.05
test pit base dimensions	1.80	2.60
test pit depth (m)	1.55	

depth to groundwater before adding water (m) = 1.01

Time (mins)	Depth to water surface (m)	Head of water in pit (m)
0	0.25	0.76
5	0.28	0.73
25	0.36	0.65
53	0.40	0.61
61	0.40	0.61

RESULTS (FROM GRAPH BELOW)

Test start

75% head of water at 0.57 m
depth to water surface (target) 0.44 m
time to reach target depth not reached

Test end

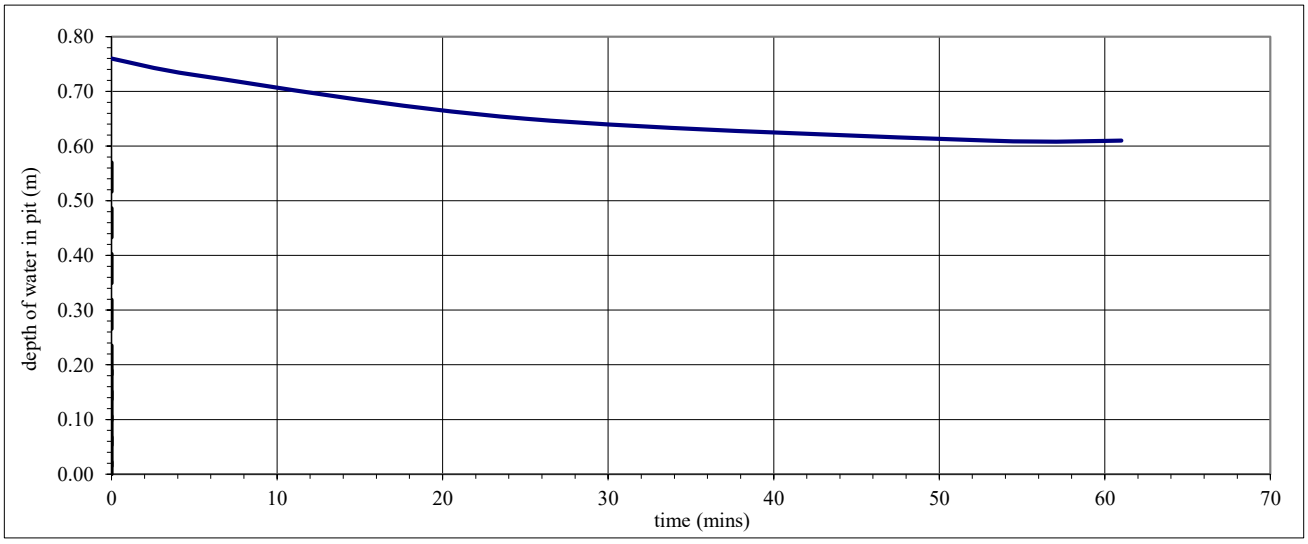
25% head of water at 0.19 m
depth to water surface (target) 0.82 m
time to reach target depth not reached

soil infiltration rate $f = \frac{V_{p75\text{-}25}}{a_{s50} \times t_{p75\text{-}25}}$

Infiltration rate (f) is very low

TARGET DEPTHS AND CALCULATED VALUES

Time (mins)	Depth to water surface (m)	Head of water in pit (m)	Time elapsed, $t_{p75\text{-}25}$ (mins)	Volume of water lost, $V_{p75\text{-}25}$ (m^3)	Area of walls and base at 50% drop, a_{s50} (m^2)	Soil infiltration rate, (m/min)	Soil infiltration rate, f (m/h)
	0.44	0.57	N/A				
	0.82	0.19					



Soakaway Infiltration Test

Project No.: 24-0211
Site: Kingston Lands, Galway
Test Location: SA05
Test Date: 06 June 2025

Analysis using method as described in BRE DG 365 (2016) and CIRIA Report C753-The SUDS Manual (2015)

	width (m)	length (m)
test pit top dimensions	2.10	3.55
test pit base dimensions	2.10	2.30
test pit depth (m)	1.55	

depth to groundwater before adding water (m) = Dry

Time (mins)	Depth to water surface (m)	Head of water in pit (m)
0	0.60	0.95
10	0.69	0.86
20	0.76	0.79
30	0.83	0.72
50	0.88	0.67
79	0.95	0.60

RESULTS (FROM GRAPH BELOW)

Test start

75% head of water at 0.71 m
depth to water surface (target) 0.84 m
time to reach target depth 32.0 mins

Test end

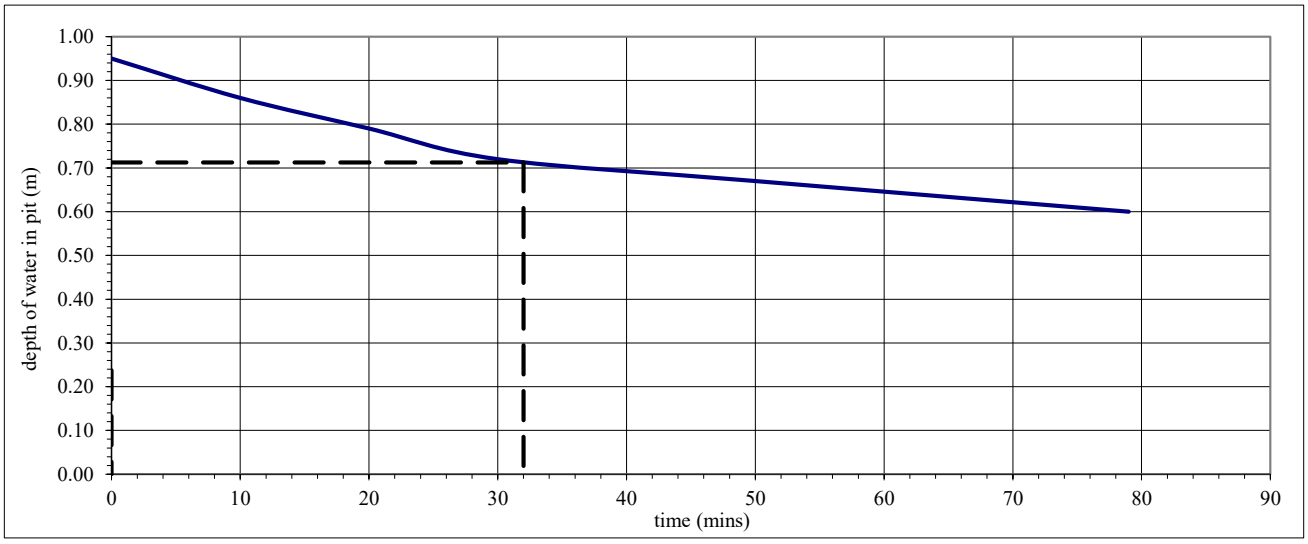
25% head of water at 0.24 m
depth to water surface (target) 1.31 m
time to reach target depth not reached

soil infiltration rate $f = \frac{V_{p75-25}}{a_{s50} \times t_{p75-25}}$

Infiltration rate (f) is very low

TARGET DEPTHS AND CALCULATED VALUES

Time (mins)	Depth to water surface (m)	Head of water in pit (m)	Time elapsed, t_{p75-25} (mins)	Volume of water lost, V_{p75-25} (m^3)	Area of walls and base at 50% drop, a_{s50} (m^2)	Soil infiltration rate, (m/min)	Soil infiltration rate, f (m/h)
32	0.84	0.71	N/A				
	1.31	0.24					



Soakaway Infiltration Test

Project No.: 24-0211
Site: Kingston Lands, Galway
Test Location: SA06
Test Date: 06 June 2025

	width (m)	length (m)
test pit top dimensions	1.60	2.15
test pit base dimensions	1.60	1.30
test pit depth (m)	0.80	

Analysis using method as described in BRE DG 365 (2016) and CIRIA Report C753-The SUDS Manual (2015)

depth to groundwater before adding water (m) = Dry

Time (mins)	Depth to water surface (m)	Head of water in pit (m)
0	0.40	0.40
4	0.44	0.36
9	0.47	0.33
20	0.49	0.31
28	0.50	0.30
41	0.52	0.28
66	0.56	0.24
78	0.57	0.23
93	0.59	0.21

RESULTS (FROM GRAPH BELOW)

Test start

75% head of water at 0.30 m
depth to water surface (target) 0.50 m
time to reach target depth 28.0 mins

Test end

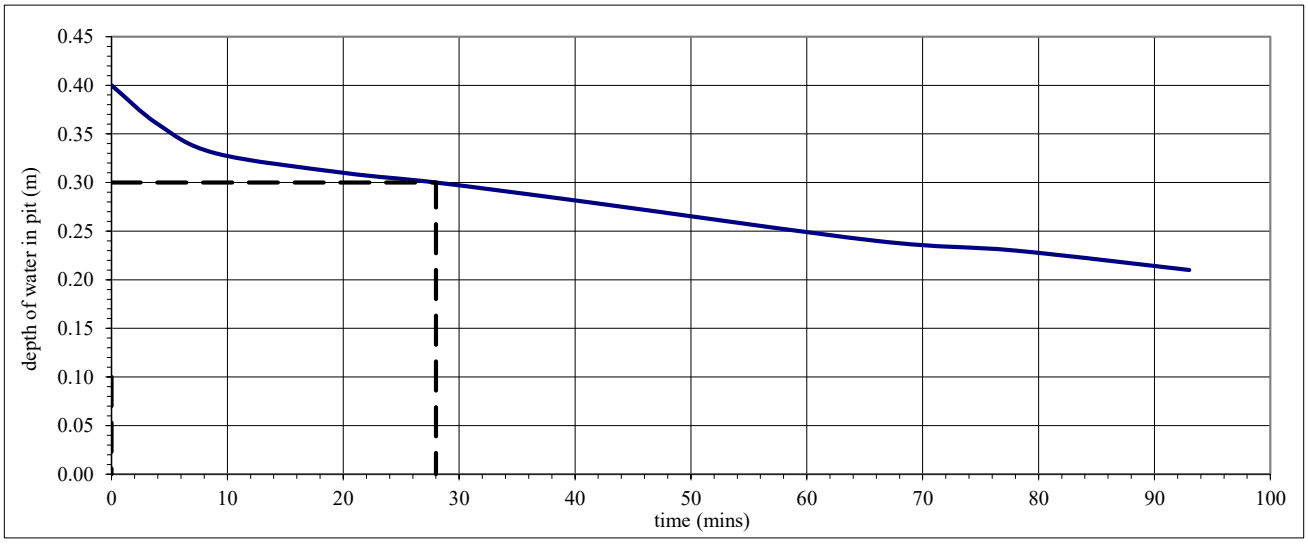
25% head of water at 0.10 m
depth to water surface (target) 0.70 m
time to reach target depth not reached

soil infiltration rate $f = \frac{V_{p75-25}}{a_{s50} \times t_{p75-25}}$

Infiltration rate (f) is very low

TARGET DEPTHS AND CALCULATED VALUES

Time (mins)	Depth to water surface (m)	Head of water in pit (m)	Time elapsed, t_{p75-25} (mins)	Volume of water lost, V_{p75-25} (m^3)	Area of walls and base at 50% drop, a_{s50} (m^2)	Soil infiltration rate, (m/min)	Soil infiltration rate, f (m/h)
28	0.50	0.30	N/A				
	0.70	0.10					



Soakaway Infiltration Test

Project No.: 24-0211
Site: Kingston Lands, Galway
Test Location: SA07
Test Date: 06 June 2025

	width (m)	length (m)
test pit top dimensions	2.10	4.10
test pit base dimensions	1.70	2.20
test pit depth (m)	1.90	

Analysis using method as described in BRE DG 365 (2016) and CIRIA Report C753-The SUDS Manual (2015)

depth to groundwater before adding water (m) = Dry

Time (mins)	Depth to water surface (m)	Head of water in pit (m)
0	0.60	1.30
7	0.75	1.15
16	0.80	1.10
24	0.83	1.07
28	0.85	1.05
40	0.94	0.96
48	1.01	0.89
61	1.04	0.86

RESULTS (FROM GRAPH BELOW)

Test start

75% head of water at 0.98 m
depth to water surface (target) 0.93 m
time to reach target depth 38.0 mins

Test end

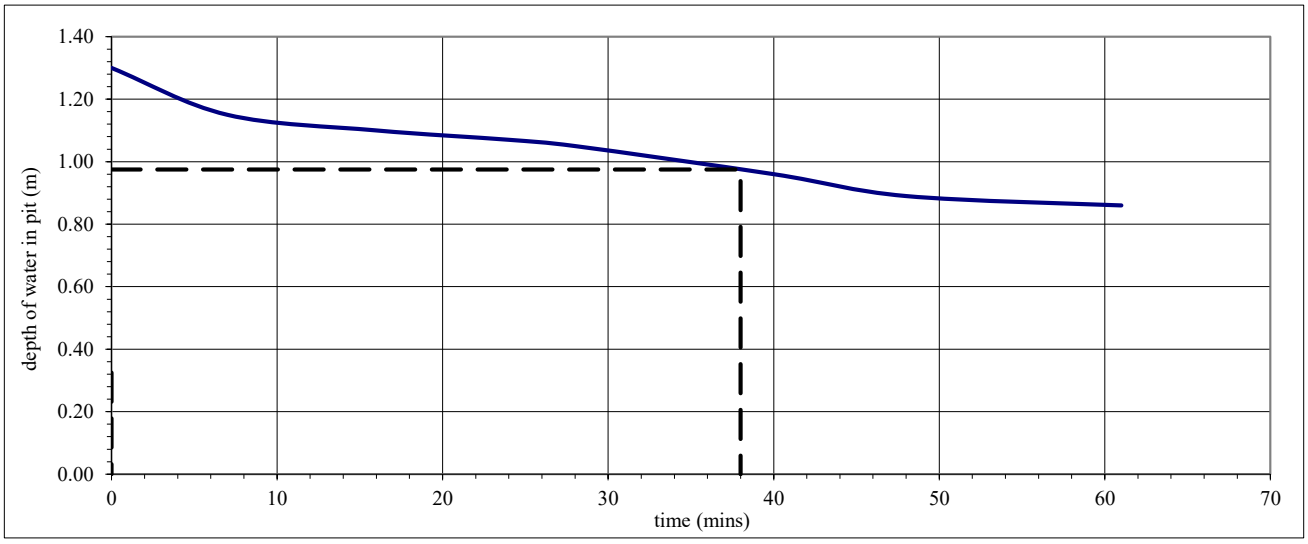
25% head of water at 0.33 m
depth to water surface (target) 1.58 m
time to reach target depth not reached

soil infiltration rate $f = \frac{V_{p75\text{-}25}}{a_{s50} \times t_{p75\text{-}25}}$

Infiltration rate (f) is very low

TARGET DEPTHS AND CALCULATED VALUES

Time (mins)	Depth to water surface (m)	Head of water in pit (m)	Time elapsed, $t_{p75\text{-}25}$ (mins)	Volume of water lost, $V_{p75\text{-}25}$ (m^3)	Area of walls and base at 50% drop, a_{s50} (m^2)	Soil infiltration rate, (m/min)	Soil infiltration rate, f (m/h)
38	0.93	0.98	N/A				
	1.58	0.33					



Soakaway Infiltration Test

Project No.: 24-0211
Site: Kingston Lands, Galway
Test Location: SA08 (A)
Test Date: 06 June 2025

	width (m)	length (m)
test pit top dimensions	3.05	2.65
test pit base dimensions	1.70	2.15
test pit depth (m)	2.20	

Analysis using method as described in BRE DG 365 (2016) and CIRIA Report C753-The SUDS Manual (2015)

depth to groundwater before adding water (m) = Dry

Time (mins)	Depth to water surface (m)	Head of water in pit (m)
0	0.90	1.30
2	1.15	1.05
4	1.30	0.90
6	1.41	0.79
18	2.19	0.01

RESULTS (FROM GRAPH BELOW)

Test start
75% head of water at 0.98 m
depth to water surface (target) 1.23 m
time to reach target depth 3.0 mins

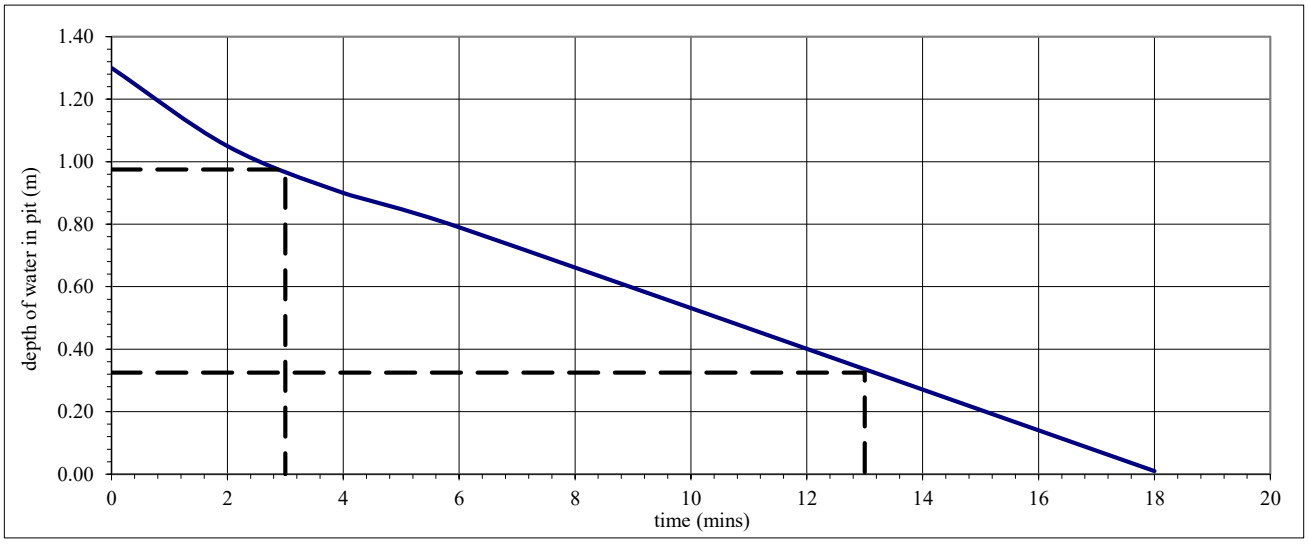
Test end
25% head of water at 0.33 m
depth to water surface (target) 1.88 m
time to reach target depth 13.0 mins

soil infiltration rate $f = \frac{V_{p75-25}}{a_{s50} \times t_{p75-25}}$

Test infiltration rate (f) = 5.76E-04 m/s

TARGET DEPTHS AND CALCULATED VALUES

Time (mins)	Depth to water surface (m)	Head of water in pit (m)	Time elapsed, t_{p75-25} (mins)	Volume of water lost, V_{p75-25} (m^3)	Area of walls and base at 50% drop, a_{s50} (m^2)	Soil infiltration rate, (m/min)	Soil infiltration rate, f (m/h)
3	1.23	0.98	10	3.14	9.10	3.5E-02	2.072
13	1.88	0.33					



Soakaway Infiltration Test

Project No.: 24-0211
Site: Kingston Lands, Galway
Test Location: SA08 (B)
Test Date: 06 June 2025

Analysis using method as described in BRE DG 365 (2016) and CIRIA Report C753-The SUDS Manual (2015)

	width (m)	length (m)
test pit top dimensions	3.05	2.65
test pit base dimensions	1.70	2.15
test pit depth (m)	2.20	

depth to groundwater before adding water (m) = Dry

Time (mins)	Depth to water surface (m)	Head of water in pit (m)
0	0.80	1.40
3	0.97	1.23
4	1.06	1.14
5	1.10	1.10
7	1.20	1.00
9	1.27	0.93
13	1.37	0.83
17	1.49	0.71
20	1.56	0.64
26	1.62	0.58
65	1.90	0.30

RESULTS (FROM GRAPH BELOW)

Test start

75% head of water at 1.05 m
depth to water surface (target) 1.15 m
time to reach target depth 6.0 mins

Test end

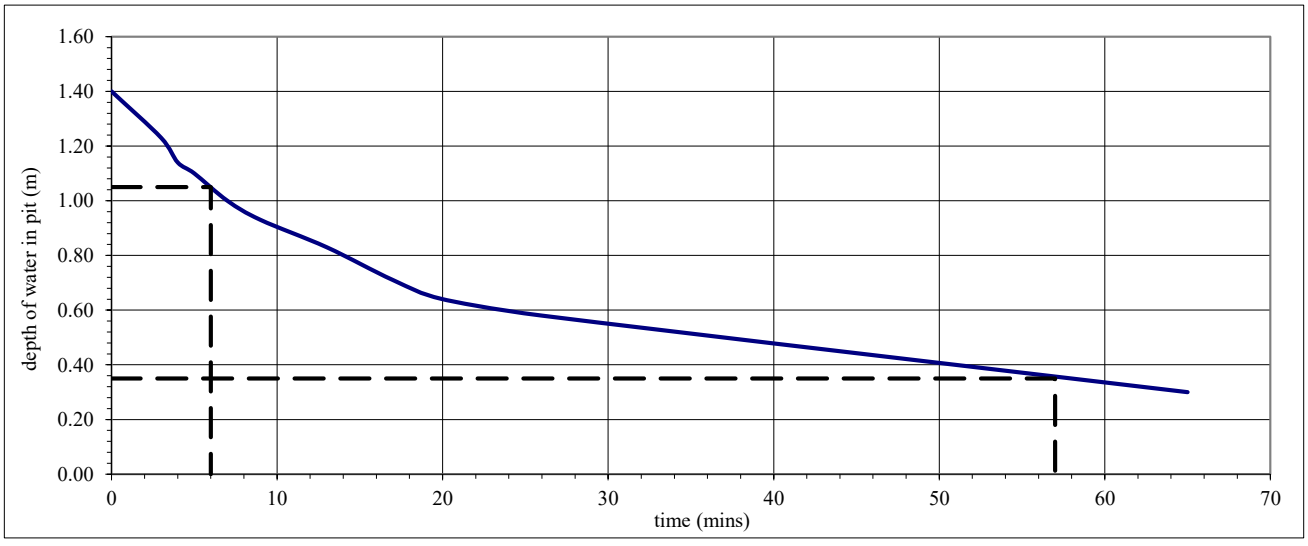
25% head of water at 0.35 m
depth to water surface (target) 1.85 m
time to reach target depth 57.0 mins

soil infiltration rate $f = \frac{V_{p75\text{-}25}}{a_{s50} \times t_{p75\text{-}25}}$

Test infiltration rate (f) = 1.18E-04 m/s

TARGET DEPTHS AND CALCULATED VALUES

Time (mins)	Depth to water surface (m)	Head of water in pit (m)	Time elapsed, $t_{p75\text{-}25}$ (mins)	Volume of water lost, $V_{p75\text{-}25}$ (m^3)	Area of walls and base at 50% drop, a_{s50} (m^2)	Soil infiltration rate, (m/min)	Soil infiltration rate, f (m/h)
6	1.15	1.05	51	3.45	9.56	7.1E-03	0.425
57	1.85	0.35					



Soakaway Infiltration Test

Project No.: 24-0211
Site: Kingston Lands, Galway
Test Location: SA08 (C)
Test Date: 06 June 2025

	width (m)	length (m)
test pit top dimensions	3.05	2.65
test pit base dimensions	1.70	2.15
test pit depth (m)	2.20	

Analysis using method as described in BRE DG 365 (2016) and CIRIA Report C753-The SUDS Manual (2015)

depth to groundwater before adding water (m) = Dry

Time (mins)	Depth to water surface (m)	Head of water in pit (m)
0	0.69	1.51
2	0.80	1.40
13	1.20	1.00
18	1.33	0.87
24	1.43	0.77
35	1.60	0.60
55	1.77	0.43
75	1.86	0.34

RESULTS (FROM GRAPH BELOW)

Test start

75% head of water at 1.13 m
depth to water surface (target) 1.07 m
time to reach target depth 9.0 mins

Test end

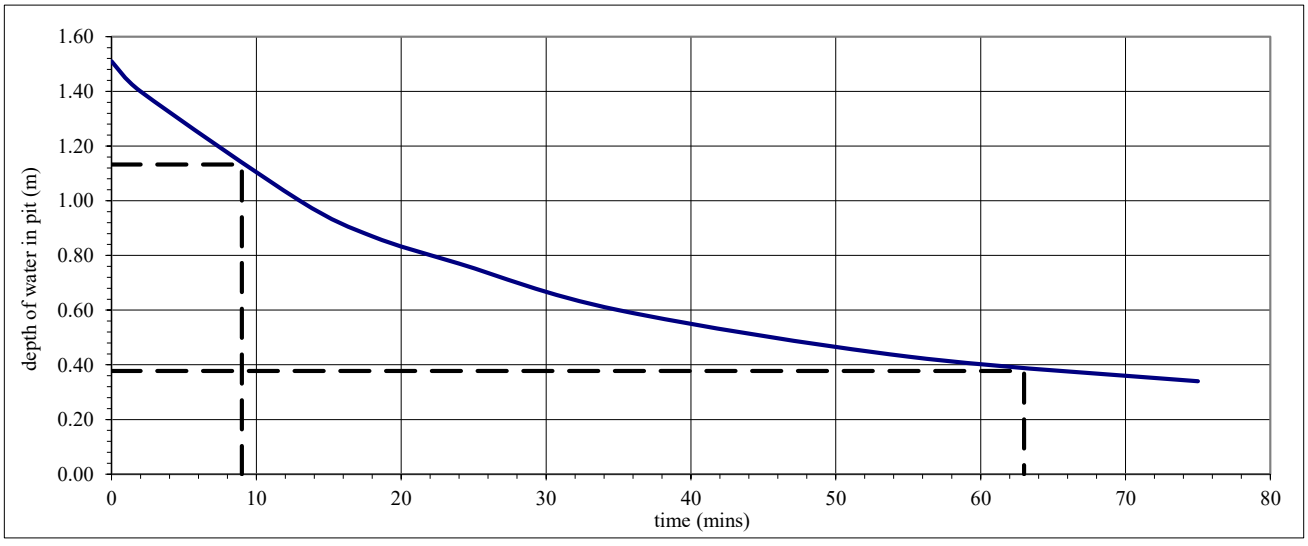
25% head of water at 0.38 m
depth to water surface (target) 1.82 m
time to reach target depth 63.0 mins

soil infiltration rate $f = \frac{V_{p75\text{-}25}}{a_{s50} \times t_{p75\text{-}25}}$

Test infiltration rate (f) = 1.17E-04 m/s

TARGET DEPTHS AND CALCULATED VALUES

Time (mins)	Depth to water surface (m)	Head of water in pit (m)	Time elapsed, $t_{p75\text{-}25}$ (mins)	Volume of water lost, $V_{p75\text{-}25}$ (m^3)	Area of walls and base at 50% drop, a_{s50} (m^2)	Soil infiltration rate, (m/min)	Soil infiltration rate, f (m/h)
9	1.07	1.13	54	3.81	10.07	7.0E-03	0.420
63	1.82	0.38					



Soakaway Infiltration Test

Project No.: 24-0211
Site: Kingston Lands, Galway
Test Location: SA09
Test Date: 05 June 2025

	width (m)	length (m)
test pit top dimensions	2.25	3.00
test pit base dimensions	2.25	3.00
test pit depth (m)	1.20	

Analysis using method as described in BRE DG 365 (2016) and CIRIA Report C753-The SUDS Manual (2015)

depth to groundwater before adding water (m) = 0.65

Time (mins)	Depth to water surface (m)	Head of water in pit (m)
0	0.49	0.16
7	0.50	0.15
22	0.51	0.14
44	0.52	0.13
60	0.54	0.11
76	0.55	0.10

RESULTS (FROM GRAPH BELOW)

Test start

75% head of water at 0.12 m
depth to water surface (target) 0.53 m
time to reach target depth 52.0 mins

Test end

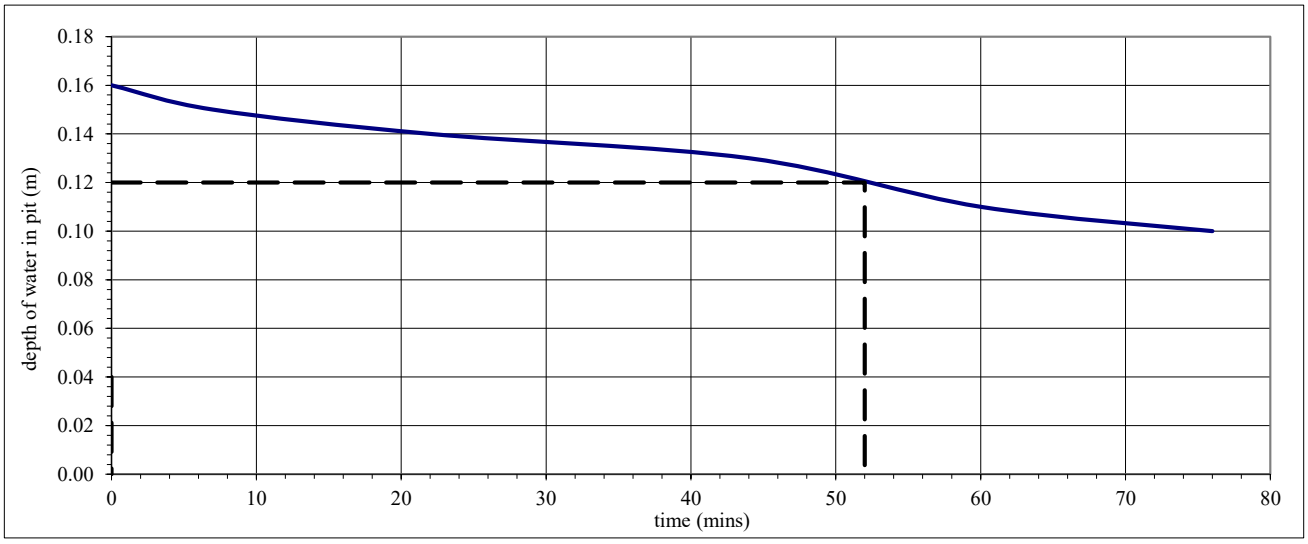
25% head of water at 0.04 m
depth to water surface (target) 0.61 m
time to reach target depth not reached

soil infiltration rate $f = \frac{V_{p75-25}}{a_{s50} \times t_{p75-25}}$

Infiltration rate (f) is very low

TARGET DEPTHS AND CALCULATED VALUES

Time (mins)	Depth to water surface (m)	Head of water in pit (m)	Time elapsed, t_{p75-25} (mins)	Volume of water lost, V_{p75-25} (m^3)	Area of walls and base at 50% drop, a_{s50} (m^2)	Soil infiltration rate, (m/min)	Soil infiltration rate, f (m/h)
52	0.53	0.12	N/A				
	0.61	0.04					



Soakaway Infiltration Test

Project No.: 24-0211
Site: Kingston Lands, Galway
Test Location: SA10
Test Date: 05 June 2025

	width (m)	length (m)
test pit top dimensions	1.50	3.30
test pit base dimensions	1.40	1.50
test pit depth (m)	1.40	

Analysis using method as described in BRE DG 365 (2016) and CIRIA Report C753-The SUDS Manual (2015)

depth to groundwater before adding water (m) = 1.35

Time (mins)	Depth to water surface (m)	Head of water in pit (m)
0	0.50	0.85
2	0.55	0.80
4	0.70	0.65
8	0.77	0.58
16	0.84	0.51
20	0.85	0.50
31	0.88	0.47
37	0.94	0.41
41	0.96	0.39
51	0.97	0.38
69	1.02	0.33
85	1.10	0.25
96	1.14	0.21
106	1.15	0.20

RESULTS (FROM GRAPH BELOW)

Test start

75% head of water at 0.64 m
depth to water surface (target) 0.71 m
time to reach target depth 4.0 mins

Test end

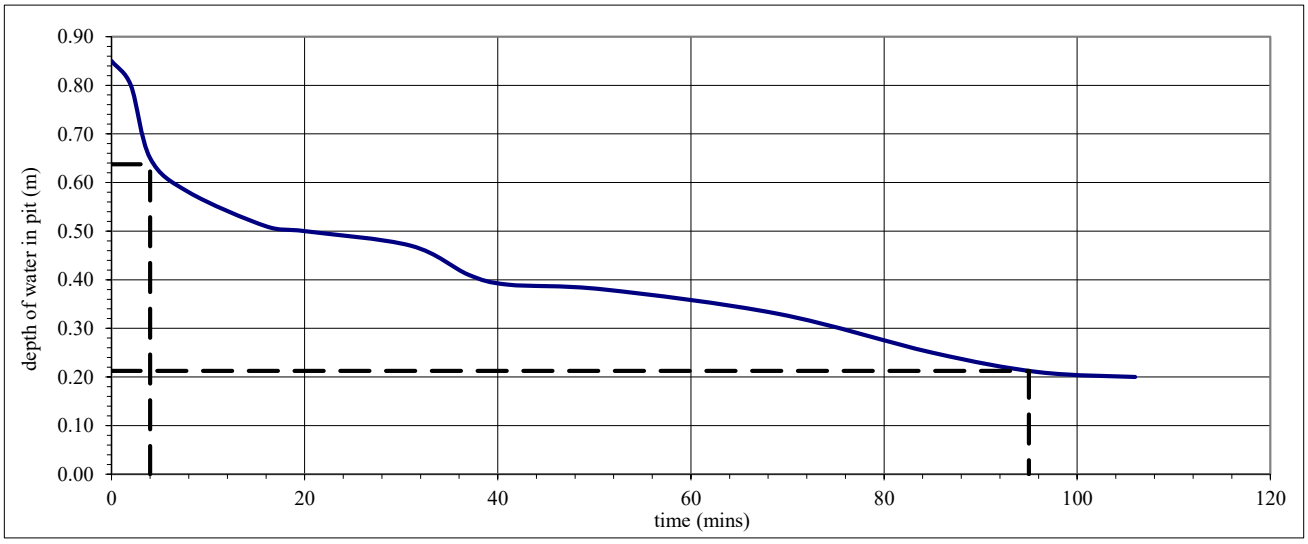
25% head of water at 0.21 m
depth to water surface (target) 1.14 m
time to reach target depth 95.0 mins

soil infiltration rate $f = \frac{V_{p75-25}}{a_{s50} \times t_{p75-25}}$

Test infiltration rate (f) = 4.52E-05 m/s

TARGET DEPTHS AND CALCULATED VALUES

Time (mins)	Depth to water surface (m)	Head of water in pit (m)	Time elapsed, t_{p75-25} (mins)	Volume of water lost, V_{p75-25} (m^3)	Area of walls and base at 50% drop, a_{s50} (m^2)	Soil infiltration rate, (m/min)	Soil infiltration rate, f (m/h)
4	0.71	0.64	91	1.29	5.22	2.7E-03	0.163
95	1.14	0.21					



Soakaway Infiltration Test

Project No.: 24-0211
Site: Kingston Lands, Galway
Test Location: SA11
Test Date: 05 June 2025

Analysis using method as described in BRE DG 365 (2016) and CIRIA Report C753-The SUDS Manual (2015)

	width (m)	length (m)
test pit top dimensions	1.80	2.65
test pit base dimensions	1.80	2.30
test pit depth (m)	1.15	

depth to groundwater before adding water (m) = Dry

Time (mins)	Depth to water surface (m)	Head of water in pit (m)
0	0.40	0.75
5	0.44	0.71
16	0.50	0.65
26	0.57	0.58
42	0.61	0.54
55	0.63	0.52
75	0.67	0.48
92	0.70	0.45
114	0.76	0.39
121	0.78	0.37

RESULTS (FROM GRAPH BELOW)

Test start

75% head of water at 0.56 m

depth to water surface (target) 0.59 m

time to reach target depth 33.0 mins

Test end

25% head of water at 0.19 m

depth to water surface (target) 0.96 m

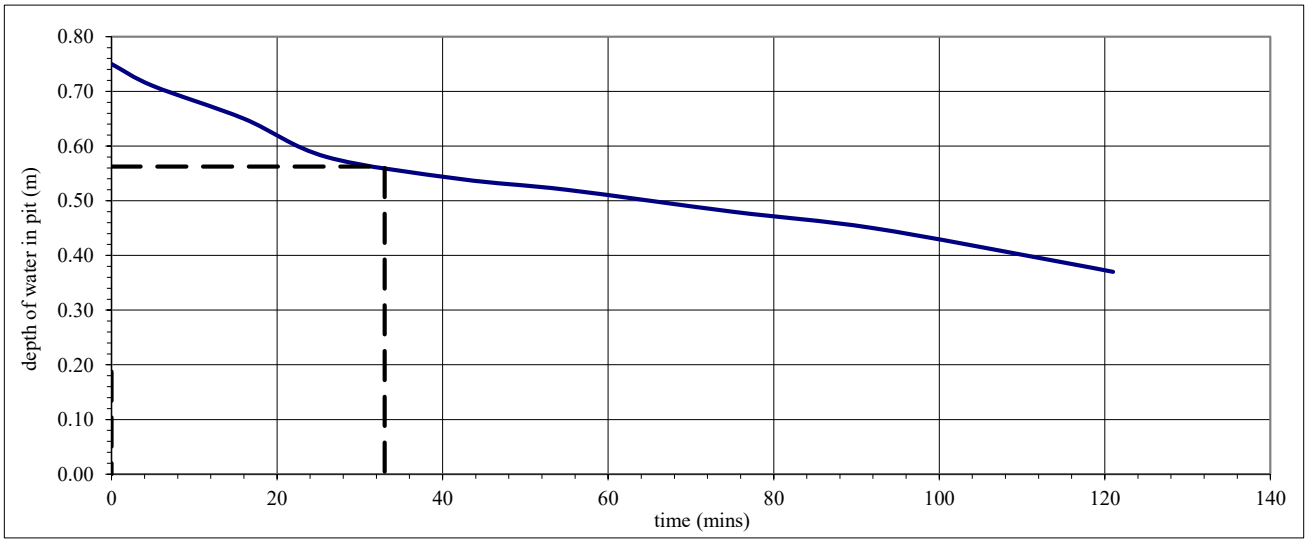
time to reach target depth not reached

soil infiltration rate $f = \frac{V_{p75\text{-}25}}{a_{s50} \times t_{p75\text{-}25}}$

Infiltration rate (f) is very low

TARGET DEPTHS AND CALCULATED VALUES

Time (mins)	Depth to water surface (m)	Head of water in pit (m)	Time elapsed, $t_{p75\text{-}25}$ (mins)	Volume of water lost, $V_{p75\text{-}25}$ (m^3)	Area of walls and base at 50% drop, a_{s50} (m^2)	Soil infiltration rate, (m/min)	Soil infiltration rate, f (m/h)
33	0.59	0.56	N/A				
	0.96	0.19					



Soakaway Infiltration Test

Project No.: 24-0211
Site: Kingston Lands, Galway
Test Location: SA12
Test Date: 09 June 2025

	width (m)	length (m)
test pit top dimensions	1.50	2.65
test pit base dimensions	1.50	1.15
test pit depth (m)	1.60	

Analysis using method as described in BRE DG 365 (2016) and CIRIA Report C753-The SUDS Manual (2015)

depth to groundwater before adding water (m) = Dry

Time (mins)	Depth to water surface (m)	Head of water in pit (m)
0	0.30	1.30
26	1.00	0.60
55	1.45	0.15
109	1.60	0.00

RESULTS (FROM GRAPH BELOW)

Test start
75% head of water at 0.98 m
depth to water surface (target) 0.63 m
time to reach target depth 11.0 mins

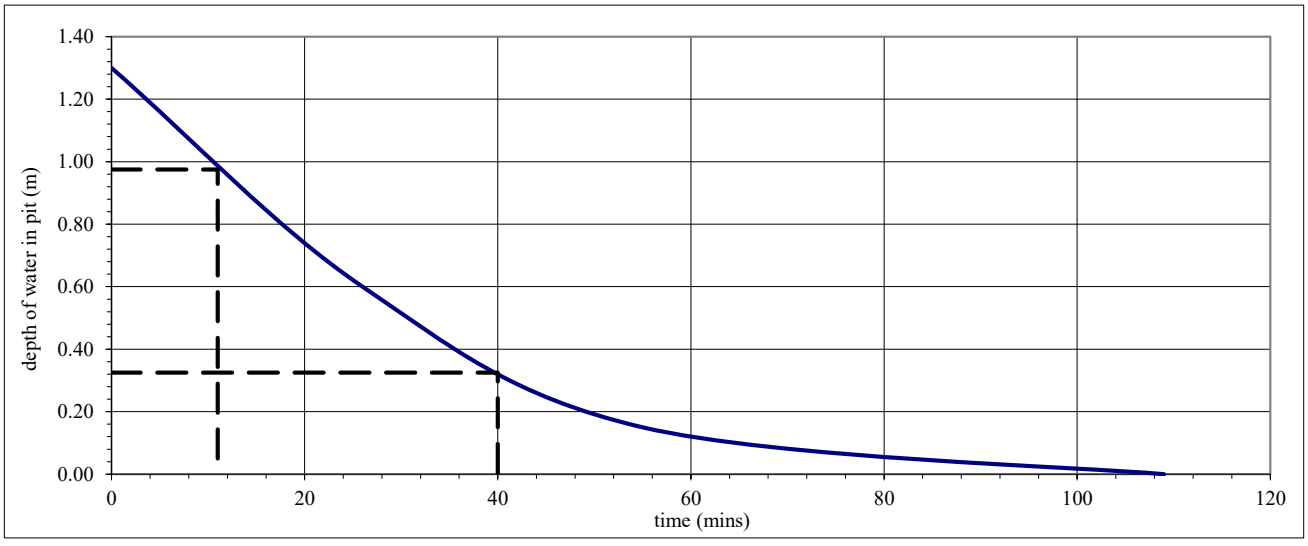
Test end
25% head of water at 0.33 m
depth to water surface (target) 1.28 m
time to reach target depth 40.0 mins

soil infiltration rate $f = \frac{V_{p75\text{-}25}}{a_{s50} \times t_{p75\text{-}25}}$

Test infiltration rate (f) = 1.74E-04 m/s

TARGET DEPTHS AND CALCULATED VALUES

Time (mins)	Depth to water surface (m)	Head of water in pit (m)	Time elapsed, $t_{p75\text{-}25}$ (mins)	Volume of water lost, $V_{p75\text{-}25}$ (m^3)	Area of walls and base at 50% drop, a_{s50} (m^2)	Soil infiltration rate, (m/min)	Soil infiltration rate, f (m/h)
11	0.63	0.98	29	1.72	5.67	1.0E-02	0.626
40	1.28	0.33					



Soakaway Infiltration Test

Project No.: 24-0211
Site: Kingston Lands, Galway
Test Location: SA13
Test Date: 09 June 2025

	width (m)	length (m)
test pit top dimensions	2.80	3.40
test pit base dimensions	1.90	2.00
test pit depth (m)	2.10	

Analysis using method as described in BRE DG 365 (2016) and CIRIA Report C753-The SUDS Manual (2015)

depth to groundwater before adding water (m) = Dry

Time (mins)	Depth to water surface (m)	Head of water in pit (m)
0	0.95	1.15
78	1.11	0.99
104	1.18	0.92
140	1.30	0.80
155	1.58	0.52
170	1.73	0.37
253	1.76	0.34

RESULTS (FROM GRAPH BELOW)

Test start

75% head of water at 0.86 m
depth to water surface (target) 1.24 m
time to reach target depth 127.0 mins

Test end

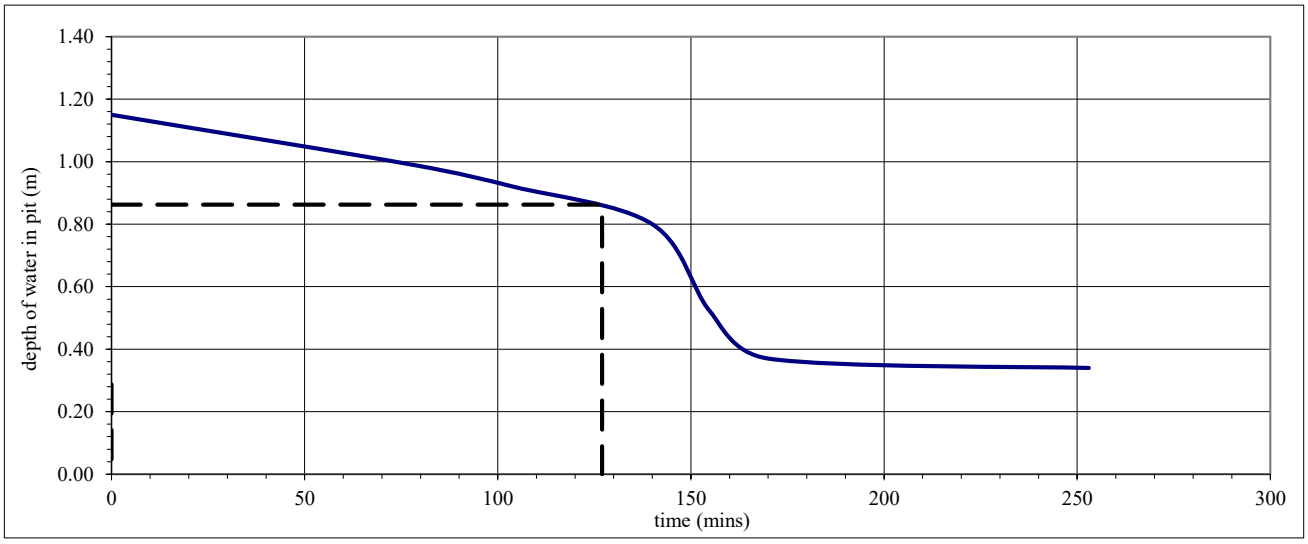
25% head of water at 0.29 m
depth to water surface (target) 1.81 m
time to reach target depth not reached

soil infiltration rate $f = \frac{V_{p75\text{-}25}}{a_{s50} \times t_{p75\text{-}25}}$

Infiltration rate (f) is very low

TARGET DEPTHS AND CALCULATED VALUES

Time (mins)	Depth to water surface (m)	Head of water in pit (m)	Time elapsed, $t_{p75\text{-}25}$ (mins)	Volume of water lost, $V_{p75\text{-}25}$ (m^3)	Area of walls and base at 50% drop, a_{s50} (m^2)	Soil infiltration rate, (m/min)	Soil infiltration rate, f (m/h)
127	1.24	0.86	N/A				
	1.81	0.29					



Soakaway Infiltration Test

Project No.: 24-0211
Site: Kingston Lands, Galway
Test Location: SA15
Test Date: 09 June 2025

	width (m)	length (m)
test pit top dimensions	1.80	3.45
test pit base dimensions	1.80	2.50

Analysis using method as described in BRE DG 365 (2016) and CIRIA Report C753-The SUDS Manual (2015)

test pit depth (m) 0.65

depth to groundwater before adding water (m) = Dry

Time (mins)	Depth to water surface (m)	Head of water in pit (m)
0	0.05	0.60
9	0.10	0.55
31	0.15	0.50
55	0.16	0.49
125	0.22	0.43
159	0.22	0.43
188	0.23	0.42
218	0.24	0.41
301	0.29	0.36

RESULTS (FROM GRAPH BELOW)

Test start

75% head of water at 0.45 m

depth to water surface (target) 0.20 m

time to reach target depth 100.0 mins

Test end

25% head of water at 0.15 m

depth to water surface (target) 0.50 m

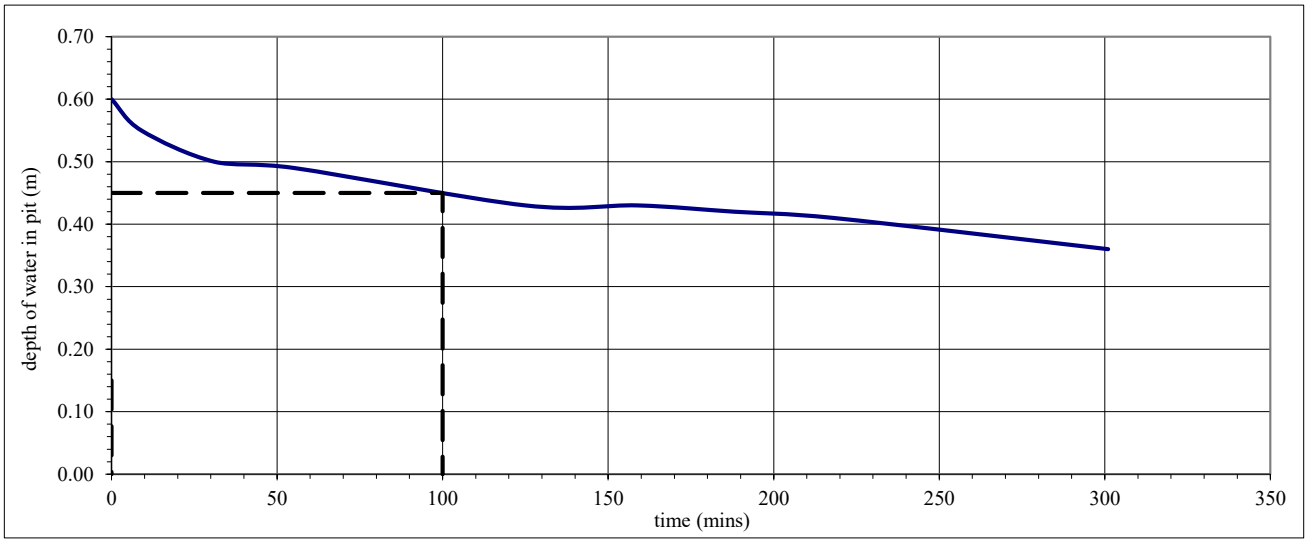
time to reach target depth not reached

soil infiltration rate $f = \frac{V_{p75-25}}{a_{s50} \times t_{p75-25}}$

Infiltration rate (f) is very low

TARGET DEPTHS AND CALCULATED VALUES

Time (mins)	Depth to water surface (m)	Head of water in pit (m)	Time elapsed, t_{p75-25} (mins)	Volume of water lost, V_{p75-25} (m^3)	Area of walls and base at 50% drop, a_{s50} (m^2)	Soil infiltration rate, (m/min)	Soil infiltration rate, f (m/h)
100	0.20	0.45	N/A				
	0.50	0.15					



Soakaway Infiltration Test

Project No.: 24-0211
Site: Kingston Lands, Galway
Test Location: SA16
Test Date: 09 June 2025

Analysis using method as described in BRE DG 365 (2016) and CIRIA Report C753-The SUDS Manual (2015)

	width (m)	length (m)
test pit top dimensions	1.80	2.50
test pit base dimensions	1.80	1.15
test pit depth (m)	2.00	

depth to groundwater before adding water (m) = Dry

Time (mins)	Depth to water surface (m)	Head of water in pit (m)
0	0.60	1.40
20	0.68	1.32
39	0.73	1.27
112	0.88	1.12
142	0.90	1.10
175	1.00	1.00
205	1.06	0.94
288	1.16	0.84

RESULTS (FROM GRAPH BELOW)

Test start

75% head of water at 1.05 m
depth to water surface (target) 0.95 m
time to reach target depth 159.0 mins

Test end

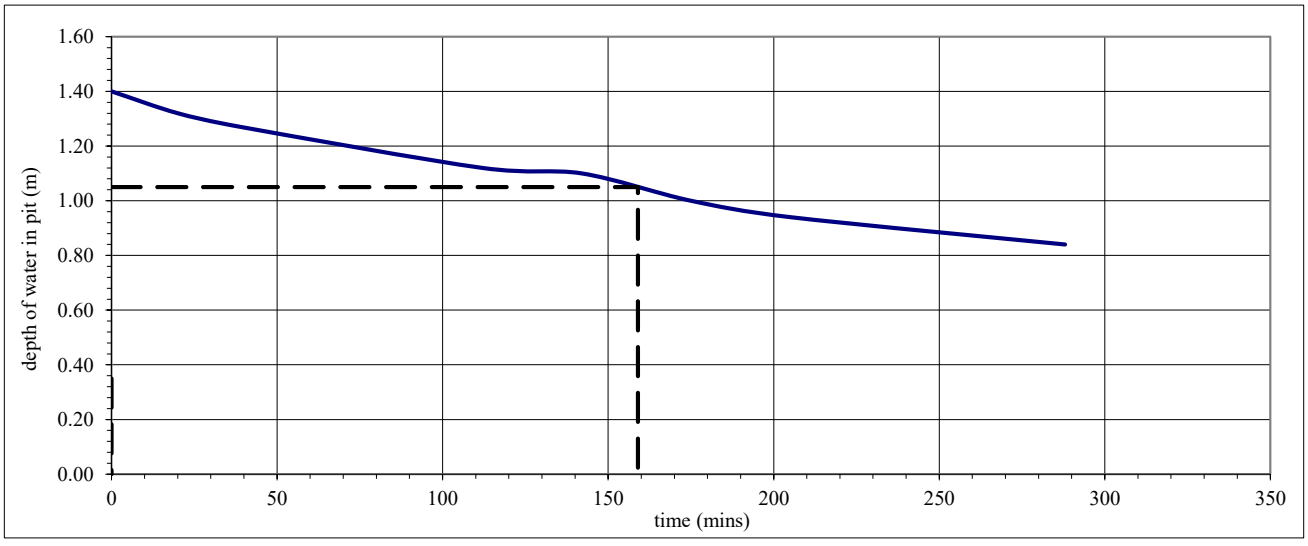
25% head of water at 0.35 m
depth to water surface (target) 1.65 m
time to reach target depth not reached

soil infiltration rate $f = \frac{V_{p75\text{-}25}}{a_{s50} \times t_{p75\text{-}25}}$

Infiltration rate (f) is very low

TARGET DEPTHS AND CALCULATED VALUES

Time (mins)	Depth to water surface (m)	Head of water in pit (m)	Time elapsed, $t_{p75\text{-}25}$ (mins)	Volume of water lost, $V_{p75\text{-}25}$ (m^3)	Area of walls and base at 50% drop, a_{s50} (m^2)	Soil infiltration rate, (m/min)	Soil infiltration rate, f (m/h)
159	0.95	1.05	N/A				
	1.65	0.35					



Soakaway Infiltration Test

Project No.: 24-0211
Site: Kingston Lands, Galway
Test Location: SA18
Test Date: 05 June 2025

	width (m)	length (m)
test pit top dimensions	1.60	2.35
test pit base dimensions	1.60	1.10
test pit depth (m)	1.20	

Analysis using method as described in BRE DG 365 (2016) and CIRIA Report C753-The SUDS Manual (2015)

depth to groundwater before adding water (m) = Dry

Time (mins)	Depth to water surface (m)	Head of water in pit (m)
0	0.50	0.70
5	0.55	0.65
16	0.58	0.62
30	0.66	0.54
79	0.98	0.22
96	1.07	0.13
110	1.12	0.08
120	1.19	0.01

RESULTS (FROM GRAPH BELOW)

Test start
75% head of water at 0.53 m
depth to water surface (target) 0.68 m
time to reach target depth 32.0 mins

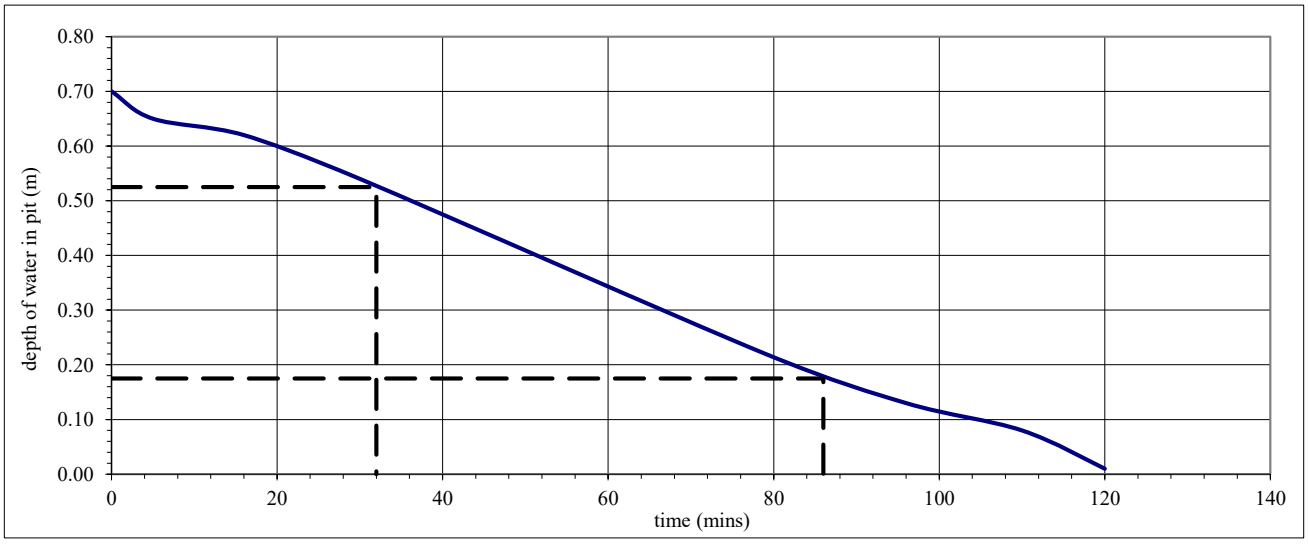
Test end
25% head of water at 0.18 m
depth to water surface (target) 1.03 m
time to reach target depth 86.0 mins

soil infiltration rate $f = \frac{V_{p75-25}}{a_{s50} \times t_{p75-25}}$

Test infiltration rate (f) = 6.64E-05 m/s

TARGET DEPTHS AND CALCULATED VALUES

Time (mins)	Depth to water surface (m)	Head of water in pit (m)	Time elapsed, t_{p75-25} (mins)	Volume of water lost, V_{p75-25} (m^3)	Area of walls and base at 50% drop, a_{s50} (m^2)	Soil infiltration rate, (m/min)	Soil infiltration rate, f (m/h)
32	0.68	0.53	54	0.82	3.81	4.0E-03	0.239
86	1.03	0.18					



Soakaway Infiltration Test

Project No.: 24-0211
Site: Kingston Lands, Galway
Test Location: SA19
Test Date: 05 June 2025

	width (m)	length (m)
test pit top dimensions	1.70	2.50
test pit base dimensions	1.70	1.15
test pit depth (m)	1.90	

Analysis using method as described in BRE DG 365 (2016) and CIRIA Report C753-The SUDS Manual (2015)

depth to groundwater before adding water (m) = Dry

Time (mins)	Depth to water surface (m)	Head of water in pit (m)
0	0.40	1.50
6	0.44	1.46
22	0.61	1.29
41	0.65	1.25
59	0.72	1.18
76	0.80	1.10
92	0.90	1.00
103	0.95	0.95
118	1.00	0.90
133	1.04	0.86
146	1.09	0.81
154	1.10	0.80
174	1.19	0.71

RESULTS (FROM GRAPH BELOW)

Test start

75% head of water at 1.13 m

depth to water surface (target) 0.78 m

time to reach target depth 71.0 mins

Test end

25% head of water at 0.38 m

depth to water surface (target) 1.53 m

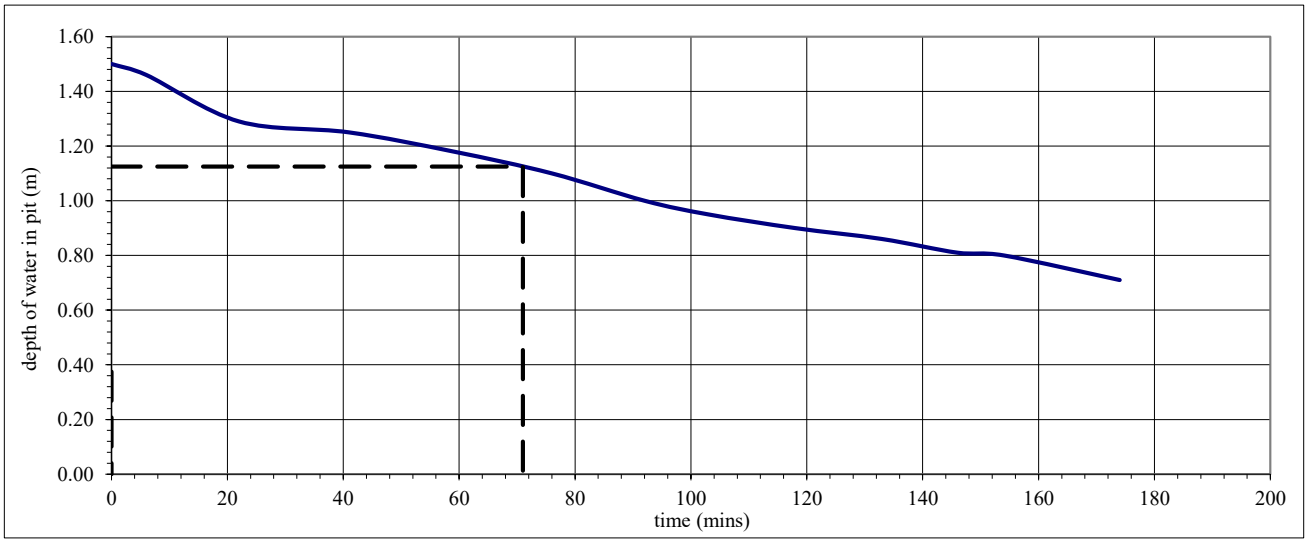
time to reach target depth not reached

soil infiltration rate $f = \frac{V_{p75\text{-}25}}{a_{s50} \times t_{p75\text{-}25}}$

Infiltration rate (f) is very low

TARGET DEPTHS AND CALCULATED VALUES

Time (mins)	Depth to water surface (m)	Head of water in pit (m)	Time elapsed, $t_{p75\text{-}25}$ (mins)	Volume of water lost, $V_{p75\text{-}25}$ (m^3)	Area of walls and base at 50% drop, a_{s50} (m^2)	Soil infiltration rate, (m/min)	Soil infiltration rate, f (m/h)
71	0.78	1.13	N/A				
	1.53	0.38					



Soakaway Infiltration Test

Project No.: 24-0211
Site: Kingston Lands, Galway
Test Location: SA20
Test Date: 06 June 2025

Analysis using method as described in BRE DG 365 (2016) and CIRIA Report C753-The SUDS Manual (2015)

	width (m)	length (m)
test pit top dimensions	1.60	2.60
test pit base dimensions	1.55	1.30
test pit depth (m)	1.25	

depth to groundwater before adding water (m) = Dry

Time (mins)	Depth to water surface (m)	Head of water in pit (m)
0	0.54	0.71
5	0.56	0.69
21	0.66	0.59
56	0.75	0.50
67	0.80	0.45
87	0.89	0.36
97	0.90	0.35
116	0.91	0.34
128	0.93	0.32
158	1.00	0.25
175	1.02	0.23
182	1.05	0.20
190	1.08	0.17

RESULTS (FROM GRAPH BELOW)

Test start

75% head of water at 0.53 m
depth to water surface (target) 0.72 m
time to reach target depth 41.0 mins

Test end

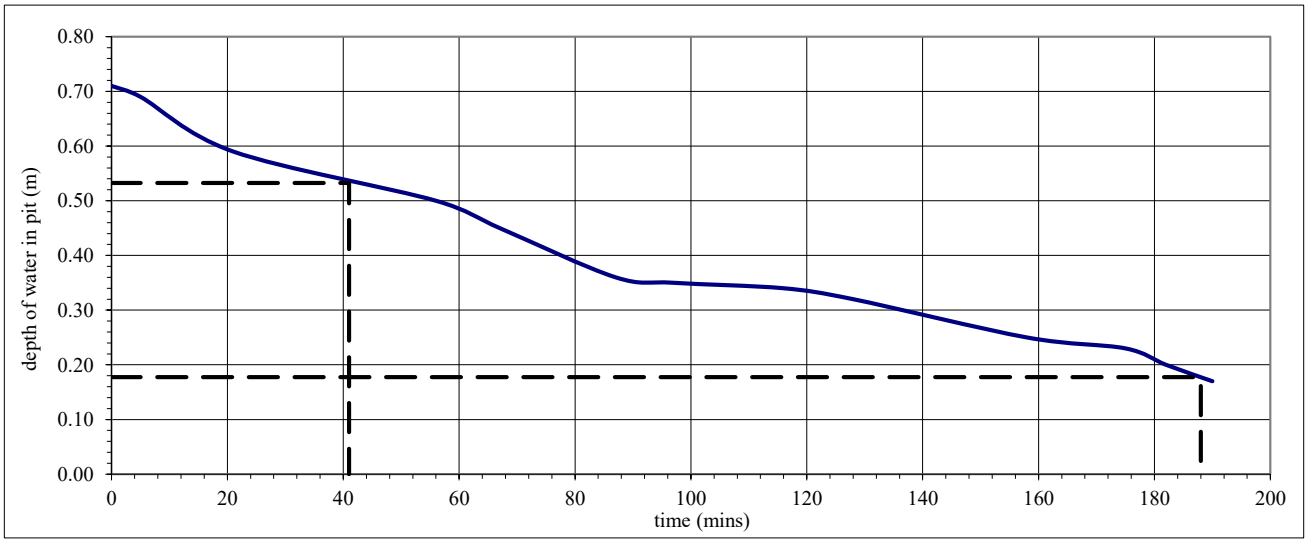
25% head of water at 0.18 m
depth to water surface (target) 1.07 m
time to reach target depth 188.0 mins

soil infiltration rate $f = \frac{V_{p75\text{-}25}}{a_{s50} \times t_{p75\text{-}25}}$

Test infiltration rate (f) = 2.50E-05 m/s

TARGET DEPTHS AND CALCULATED VALUES

Time (mins)	Depth to water surface (m)	Head of water in pit (m)	Time elapsed, $t_{p75\text{-}25}$ (mins)	Volume of water lost, $V_{p75\text{-}25}$ (m^3)	Area of walls and base at 50% drop, a_{s50} (m^2)	Soil infiltration rate, (m/min)	Soil infiltration rate, f (m/h)
41	0.72	0.53	147	0.93	4.21	1.5E-03	0.090
188	1.07	0.18					



Appendix C HR Wallingford Greenfield Runoff Rate Report

Greenfield runoff rate estimation for sites

www.uksuds.com | Greenfield runoff tool

Calculated by:	Michael Naughton
Site name:	Kingston Stables
Site location:	Kingston, Galway

Site Details

Latitude:	53.26758° N
Longitude:	9.09988° W
Reference:	3056089139
Date:	Feb 04 2025 10:59

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

Runoff estimation approach

IH124

Site characteristics

Total site area (ha): 8.74

Methodology

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

Soil characteristics

	Default	Edited
SOIL type:	2	2
HOST class:	N/A	N/A
SPR/SPRHOST:	0.3	0.3

Hydrological characteristics

	Default	Edited
SAAR (mm):	1272	1272
Hydrological region:	13	13
Growth curve factor 1 year:	0.85	0.85
Growth curve factor 30 years:	1.65	1.65
Growth curve factor 100 years:	1.95	1.95
Growth curve factor 200 years:	2.15	2.15

Notes

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

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

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

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

(3) Is SPR/SPRHOST ≤ 0.3?

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

Greenfield runoff rates

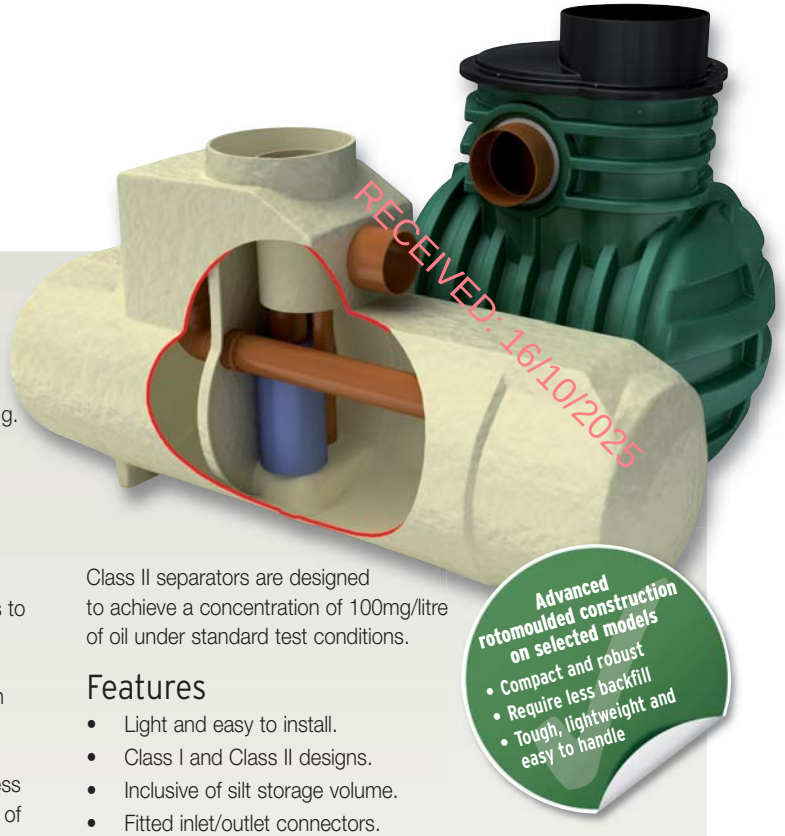
	Default	Edited

Q_{BAR} (l/s):	32.04	32.04
1 in 1 year (l/s):	27.23	27.23
1 in 30 years (l/s):	52.86	52.86
1 in 100 year (l/s):	62.47	62.47
1 in 200 years (l/s):	68.88	68.88

Appendix D Petrol Interceptor Brochure

Bypass Separator

NSBP Range



Application

Bypass separators are used when it is considered an acceptable risk not to provide full treatment, for very high flows, and are used, for example, where the risk of a large spillage and heavy rainfall occurring at the same time is small, e.g.

- Surface car parks.
- Roadways.
- Lightly contaminated commercial areas.

Performance

Klargester Environmental were one of the first UK manufacturers to have separators tested to EN 858-1 and have now added the NSBP bypass range to their portfolio of certified and tested models. The NSBP number denotes the maximum flow at which the separator treats liquids. The British Standards Institute (BSI) tested the required range of Klargester full retention separators and certified their performance in relation to their flow and process performance assessing the effluent qualities to the requirements of BS EN 858-1. Klargester bypass separator designs follow the parameters determined during the testing of the required range of bypass separators.

Each bypass separator design includes the necessary volume requirements for:

- Oil separation capacity.
- Oil storage volume.
- Silt storage capacity.
- Coalescer.

The unit is designed to treat 10% of peak flow. The calculated drainage areas served by each separator are indicated according to the formula given by PPG3 NSB = 0.0018A(m^2).
Flows generated by higher rainfall rates will pass through part of the separator and bypass the main separation chamber.

Class I separators are designed to achieve a concentration of 5mg/litre of oil under standard test conditions.

Class II separators are designed to achieve a concentration of 100mg/litre of oil under standard test conditions.

Advanced rotomoulded construction on selected models
- Compact and robust
- Require less backfill
- Tough, lightweight and easy to handle

Features

- Light and easy to install.
- Class I and Class II designs.
- Inclusive of silt storage volume.
- Fitted inlet/outlet connectors.
- Vent points within necks.
- Oil alarm system available (required by BS EN 858-1 and PPG3).
- Extension access shafts for deep inverts.
- Maintenance from ground level.
- GRP or rotomoulded construction (subject to model).

To specify a nominal size bypass separator, the following information is needed:-

- The calculated flow rate for the drainage area served. Our designs are based on the assumption that any interconnecting pipework fitted elsewhere on site does not impede flow into or out of the separator and that the flow is not pumped .
- The required discharge standard. This will decide whether a Class I or Class II unit is required.
- The drain invert inlet depth.
- Pipework type, size and orientation.

Sizes & Specifications:

Unit Nominal Size	Flow (l/s)	Peak Flow Rate (l/s)	Drainage Area (m^2)	Storage Capacity (litres) Silt	Oil	Unit Length (mm)	Unit Dia. (mm)	Access Shaft Diameter (mm)	Base to Inlet Invert (mm)	Base to Outlet Invert (mm)	Standard Fall Across Unit	Min. Inlet Invert (mm)	Standard Pipework Diameter (mm)
NSBP003	3	30	1670	300	45	1700	1350	600	1420	1320	100	500	315
NSBP004	4.5	45	2500	450	68	1700	1350	600	1420	1320	100	500	315
NSBP006	6	60	3335	600	90	1700	1350	600	1420	1320	100	500	315
NSBP008	8	80	4445	800	120	3065	1225	750	1450	1350	100	500	315
NSBP010	10	100	5560	1000	150	3065	1225	750	1450	1350	100	500	315
NSBP012	12	120	6670	1200	180	3915	1225	750	1450	1350	100	500	315
NSBP015	15	150	8335	1500	225	3915	1225	750	1450	1350	100	500	315
NSBP018	18	180	10000	1800	270	3200	2012	600	2110	2010	100	1000	375
NSBP024	24	240	13340	2400	360	3200	2012	600	2110	2010	100	1000	375
NSBP030	30	300	16670	3000	450	3915	2012	600	2110	2010	100	1000	450
NSBP036	36	360	20000	3600	540	3915	2012	600	2110	2010	100	1000	525
NSBP055	55	550	30560	5500	825	5085	2820	600	2310	2060	250	1000	750
NSBP072	72	720	40000	7200	1080	5820	2820	600	2310	2060	250	1500	750
NSBP084	84	840	46670	8400	1260	6200	2820	600	2310	2010	300	1500	750
NSBP096	96	960	53340	9600	1440	7375	2820	600	2310	2010	300	1500	825
NSBP110	110	1100	61110	11000	1650	7925	2820	600	2360	2010	350	1500	825
NSBP130	130	1300	72225	13000	1950	8725	2820	600	2360	2010	350	1500	825

Rotomoulded chamber construction *GRP chamber construction*

Appendix E Uisce Eireann Correspondence (COF & SoDA)

CONFIRMATION OF FEASIBILITY

Uisce Éireann
Bosca OP 448
Oifig Sheachadta na
Cathrach Theas
Lathair Chorcaí

Uisce Éireann
PO Box 448
South City
Delivery Office
Cork City

www.water.ie

Michael Naughton

Tobins Consulting Engineers

Fairgreen House
Fairgreen Road
Galway
H91AXK8

24 September 2025

Our Ref: CDS24003705 Pre-Connection Enquiry
Site At, Kingston Lands, Galway

Dear Applicant/Agent,

We have completed the review of the Pre-Connection Enquiry.

Uisce Éireann has reviewed the pre-connection enquiry in relation to a Water & Wastewater connection for a Housing Development of 363 unit(s) (Phase 1) at Site At, Kingston Lands, Galway, (the **Development)**.

Based upon the details provided we can advise the following regarding connecting to the networks;

- **Water Connection**
  - Feasible without infrastructure upgrade by Irish Water
  - Water Treatment Plant (WTP)
    There is sufficient capacity for the proposed development.

  - Water Network
    - The preferred connection point for the proposed development would be to the 315mm diameter HDPE water main on the Kingston Road.
    - Please ensure a phasing plan for the proposed development is submitted with each Connection Application for our review.

- **Wastewater Connection**
  - Feasible without infrastructure upgrade by Irish Water
  - Wastewater Treatment Plant (WWTP) There is sufficient capacity for the proposed development.

    Wastewater Network

  - Please ensure a phasing plan for the proposed development is submitted at connection application stage for Uisce Éireann (UE) review.
  - Additional units/phases will be subject to a separate UE pre-connection enquiry (PCE) submission.

This letter does not constitute an offer, in whole or in part, to provide a connection to any Uisce Éireann infrastructure. Before the Development can be connected to our network(s) you must submit a connection application and be granted and sign a connection agreement with Uisce Éireann.

As the network capacity changes constantly, this review is only valid at the time of its completion. As soon as planning permission has been granted for the Development, a completed connection application should be submitted. The connection application is available at www.water.ie/connections/get-connected/

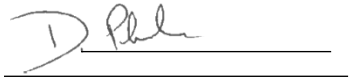
Where can you find more information?

- **Section A -** What is important to know?
- **Section B -** Details of Uisce Éireann's Network(s)

This letter is issued to provide information about the current feasibility of the proposed connection(s) to Uisce Éireann's network(s). This is not a connection offer and capacity in Uisce Éireann's network(s) may only be secured by entering into a connection agreement with Uisce Éireann.

For any further information, visit **www.water.ie/connections**, **email newconnections@water.ie** or contact 1800 278 278**.**

Yours sincerely,



Dermot Phelan
Connections Delivery Manager

Section A - What is important to know?

What is important to know?	Why is this important?
Do you need a contract to connect?	• Yes, a contract is required to connect. This letter does not constitute a contract or an offer in whole or in part to provide a connection to Uisce Éireann's network(s). • Before the Development can connect to Uisce Éireann's network(s), you must submit a connection application and be granted and sign a connection agreement with Uisce Éireann.
When should I submit a Connection Application?	• A connection application should only be submitted after planning permission has been granted.
Where can I find information on connection charges?	• Uisce Éireann connection charges can be found at: https://www.water.ie/connections/information/charges/
Who will carry out the connection work?	• All works to Uisce Éireann's network(s), including works in the public space, must be carried out by Uisce Éireann*. *Where a Developer has been granted specific permission and has been issued a connection offer for Self-Lay in the Public Road/Area, they may complete the relevant connection works
Fire flow Requirements	• The Confirmation of Feasibility does not extend to fire flow requirements for the Development. Fire flow requirements are a matter for the Developer to determine. • **What to do?** - Contact the relevant Local Fire Authority
Plan for disposal of storm water	• The Confirmation of Feasibility does not extend to the management or disposal of storm water or ground waters. • **What to do?** - Contact the relevant Local Authority to discuss the management or disposal of proposed storm water or ground water discharges.
Where do I find details of Uisce Éireann's network(s)?	• Requests for maps showing Uisce Éireann's network(s) can be submitted to: datarequests@water.ie

What are the design requirements for the connection(s)?	• The design and construction of the Water & Wastewater pipes and related infrastructure to be installed in this Development shall comply with ***the Uisce Éireann Connections and Developer Services Standard Details and Codes of Practice,*** available at www.water.ie/connections
Trade Effluent Licensing	• Any person discharging trade effluent** to a sewer, must have a Trade Effluent Licence issued pursuant to section 16 of the Local Government (Water Pollution) Act, 1977 (as amended). • More information and an application form for a Trade Effluent License can be found at the following link: https://www.water.ie/business/trade-effluent/about/ **trade effluent is defined in the Local Government (Water Pollution) Act, 1977 (as amended)

Section B – Details of Uisce Éireann's Network(s)

The map included below outlines the current Uisce Éireann infrastructure adjacent the Development: To access Uisce Éireann Maps email datarequests@water.ie

Reproduced from the Ordnance Survey of Ireland by Permission of the Government. License No. 3-3-34

Note: The information provided on the included maps as to the position of Uisce Éireann's underground network(s) is provided as a general guide only. The information is based on the best available information provided by each Local Authority in Ireland to Uisce Éireann.

Whilst every care has been taken in respect of the information on Uisce Éireann's network(s), Uisce Éireann assumes no responsibility for and gives no guarantees, undertakings or warranties concerning the accuracy, completeness

or up to date nature of the information provided, nor does it accept any liability whatsoever arising from or out of any errors or omissions. This information should not be solely relied upon in the event of excavations or any other works being carried out in the vicinity of Uisce Éireann's underground network(s). The onus is on the parties carrying out excavations or any other works to ensure the exact location of Uisce Éireann's underground network(s) 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.

Michael Naughton
TOBIN
Fairgreen House
Fairgreen Road
Galway
H91AXK8

Uisce Éireann
Bosca OP 448
Oifig Sheachadta na
Cathrach Theas
Cathair Chorcaí

Uisce Éireann
PO Box 448
South City
Delivery Office
Cork City

www.water.ie

22 July 2025

Re: Design Submission for Site At, Kingston Lands, Galway (the "Development") (the "Design Submission") / Connection Reference No: CDS24003705

Dear Michael Naughton,

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, Uisce Éireann has no objection to your proposals.

This letter does not constitute an offer, in whole or in part, to provide a connection to any Uisce Éireann infrastructure. Before you can connect to our network you must sign a connection agreement with Uisce Éireann. This can be applied for by completing the connection application form at www.water.ie/connections. Uisce Éireann'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 Uisce Éireann's network(s) (the "**Self-Lay Works**"), as reflected in your Design Submission. Acceptance of the Design Submission by Uisce Éireann does not, in any way, render Uisce Éireann liable for any elements of the design and/or construction of the Self-Lay Works.

If you have any further questions, please contact your Uisce Éireann representative:
Name: Alicia Ros Bernal
Email: ailciarosbernal.bernal@water.ie

Yours sincerely,

Dermot Phelan
Connections Delivery Manager

Appendix A

Document Title & Revision

- 11893-2005 Proposed Watermain Layout- Sheet 1 of 2
- 11893-2006 Proposed Watermain Layout- Sheet 2 of 2

- 11893-2001 Proposed Drainage Layout- Sheet 1 of 2
- 11893-2002 Proposed Drainage Layout- Sheet 2 of 2

- 11893-2090 Foul Network Longsections (Sheet 1 of 4)
- 11893-2091 Foul Network Longsections (Sheet 2 of 4)
- 11893-2092 Foul Network Longsections (Sheet 3 of 4)
- 11893-2093 Foul Network Longsections (Sheet 4 of 4)

Additional Comments

The design submission will be subject to further technical review at connection application stage.

Uisce Éireann cannot guarantee that its Network in any location will have the capacity to deliver a particular flow rate and associated residual pressure to meet the requirements of the relevant Fire Authority, see Section 1.17 of Water Code of Practice.

*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 Uisce Éireann will not, in any way, render Uisce Éireann liable for any elements of the design and/or construction of the Self-Lay Works.

RECEIVED: 16/10/2025