PROPOSED RESIDENTIAL DEVELOPMENT AT GORDON PARK, OLD NAAS ROAD, DUBLIN 22

Engineering Services Report for Planning Submission

November 2021

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Document Verification

Client:	Greenwalk Developments Limited
Job Title:	Proposed Residential Development at Gordon Park
Job No:	21003
Document Ref:	Engineering Services Report for Planning Submission
File Name:	21003-TJOC-ZZ-ZZ-RP-C-3701.doc

Revision Number	Suitability	Description of Revision	Prepared By	Checked By	Approved By	Date of Issue
C01	AP	Issued for Planning	JM/NS	DC	JM	18.11.2021

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APPENDICES

1. EXECUTIVE SUMMARY

The site of the proposed development is located at Gordon Park, Old Naas Road, Kingswood, Dublin 22. The site is currently undeveloped apart from a small club house and car park area to the north west of the site.

There is a large watermain traversing the site and the extent of wayleave associated with this watermain and the restrictions to development in proximity to this watermain have been confirmed by Irish Water. Due to the existing arrangement, extent and location of existing services on the Old Naas Road in proximity to this site, there are restrictions on where the foul sewer and surface water sewer outfalls can be located. There is also upgrade works required to the watermain on the Old Naas Road to serve the proposed development. The constraints noted above are summarised on the following drawings and further details of these constraints and the solutions proposed to form connections to the site are provided in Section 3 of this report and on the engineering drawings that accompany this planning application:

- 21003-TJOC-ZZ-ZZ-DR-C-0052 Overview of Constraints
- 21003-TJOC-ZZ-ZZ-DR-C-0053 Foul Drainage Constraints
- 21003-TJOC-ZZ-ZZ-DR-C-0054 Surface Water Drainage Constraints

Set out below is a summary of the relevant information relating to the proposed surface water drainage, foul drainage and watermains design/layouts. The proposed drainage and watermain layouts for this proposed residential development are presented on the following drawings:

- 21003-TJOC-ZZ-ZZ-DR-C-0056 Proposed Foul Layout
- 21003-TJOC-ZZ-ZZ-DR-C-0061 Proposed Watermain Layout
- 21003-TJOC-ZZ-ZZ-DR-C-0064 Proposed Surface Water Layout

These proposed foul and surface water drainage drawings show the location of all manholes, pipe sizes and direction of flow. The proposed pipe material for the foul and surface water drainage is shown on the longitudinal section drawings.

The surface water drainage system has been designed in accordance with the Greater Dublin Strategic Drainage Study Vol. 2 New Development Regional Policy, South Dublin County Council Development Plan and the UK CIRIA SUDS Manual C753 2015. SuDS features have been adopted throughout the development including permeable paved driveways and carparks, filter drains, and a bioretention swale.

A number of infiltration tests were carried out on the site. The results indicate that, due to the existing clay soil conditions, infiltration on the western side of the site is poor and only nominal infiltration is achievable. The infiltration rate on the eastern side of the site is slightly better, but the underlying soil conditions are clay

which is typically not a good media for infiltration. The results of the infiltration tests are consistent with infiltration tests carried out in similar ground conditions in the Citywest region.

Based on the investigations, the proposed surface water drainage has been designed with an appropriate allowance for infiltration to suit the existing clay ground conditions. However, it is not possible to discharge all surface water to the ground via infiltration. Therefore, a hybrid solution of infiltration to the ground where possible and collection of surface water with a piped network is proposed for this development.

A summary of the typical surface water arrangement for the proposed houses is as follows. The driveways of houses will be provided with permeable paving. Rainwater from the front roofs of the houses will discharge to the subbase of the permeable paved driveways where it will be stored and released to ground via infiltration or to the surface water network via a fin drain within the subbase. Rainwater from the rear roofs of the houses will be collected in a filter drain in the rear gardens of the house. These filter drains will allow infiltration to the ground where possible but will also be connected to the surface water network to allow larger rainfall events to be managed in the surface water network. For the surface water design, only a nominal allowance/rate for infiltration has been adopted in the calculations for the infiltration rate into the ground. This is consistent with the design of infiltration features in clay soil conditions. However, in practice, the provision of SuDs features such as permeable paving and filter/infiltration drains may allow for greater levels of infiltration than the nominal rates adopted in the calculations.

Given that it is proposed that the roads and footpaths will be taken in charge in the future, they have been designed and detailed in accordance with the Local Authority taking in charge standards. The roads and footpaths will discharge to a surface water piped network within the roads. The overall main attenuation for the site will be provided in two areas at the site, namely at the northwest of the site and at the east of the site adjacent to the proposed surface water outfall location.

The surface water drainage system design has been undertaken using Innovyze MicroDrainage Software to initially design the sewer network and to then simulate its performance across a range of storm events comprising 1 in 2 year, 1 in 30 year and 1 in 100 year return periods, The rainfall (based on the location of the site) is generated for summer and winter storm profiles, with storm durations ranging from 15 minutes through to 10080 minutes (7 days).

The simulation of surface water runoff from this development is presented in Appendix F. Page 45 of the calculations indicates that an allowance of 10% has been made for an increase of rainfall for climate change in accordance with Cl 3.12 of GDSDS. Pages 45 to 48 of the calculation results at Appendix F comprises summary data on the performance of the drainage system as simulated for the range of storm events described above. These results confirm that no flooding occurs in any event up to the 1 in 100 year event.

The water level column in the Innovyze MicroDrainage drainage calculation results at Pages 45 to 48 of Appendix F indicates the maximum water level predicted at each manhole node for the design scenario considered, across the range of storm events simulated. The hydraulic profile does not rise above ground level at any manhole node and maintains a positive gradient from the head of the drainage system to the outfall.

A summary of the permeable and impermeable areas is presented in Table 1 below. A runoff factor of 0% has been used for all permeable areas and a factor of 100% has been used for all impermeable areas including buildings, roads, pathways and permeable paved areas that are connected to the piped network. This is consistent with the Surface Water Design Criteria in Table 6.4 of Vol 2 of the GDSDS and with Section 24.11.2 of the SUDS Manual, CIRIA C753. The extent of proposed permeable and impermeable areas is shown at Drawing Nr. 21003-TJOC-ZZ-ZZ-DR-C-0067.

	Permeable/Open Space & Green Areas hA	**Impermeable/ Drained Area hA**	**Total Area hA**
Application	0.9276	1.3544 (including permeable paved areas connected to the drainage network)	2.282

Table 1. Summary of Permeable and Impermeable Areas – Refer to Drg Nr.21003-TJOC-ZZ-ZZ-DR-C-0067

Surface water attenuation of 893m³ for the proposed development is provided by two Stormtech attenuation storage systems located on the northwest and east sides of the proposed development site for this application. A further 84m³ of storage capacity is provided in the pipe network and manholes. In addition to the above, there is 7m³ of storage capacity provided in the Bioswale area at the southwest corner of the site Including the total volume of all pipes and manholes in the network, the total storage provided is 984m³. The surface water attenuation provision is summarised in Table 2 below.

Feature	**Volume**	**Comments**
Stormtech Attenuation MC3500	757m³	Located at east of site
Stormtech Attenuation SC740	136m³	Located at northwest of site
Piped Network and Manholes	84m³	
Bioretention Swale	7m³	Located at southwest of site
Total Volume	***984m³***	

Table 2. Attenuation Storage Volumes

The Greenfield runoff rates for the site have been determined using the HR Wallingford Greenfield runoff estimation tool. The HR Wallingford Surface water storage estimation tool was used to establish an initial estimate of storage requirement for the site. Both estimation reports are provided in Appendix D.

This volume of storage indicated in Table 2 is generally consistent with the volume of storage predicted by the HR Wallingford Surface Water Storage Requirements for sites (Appendix D). However, we note that some optimisation of the attenuation storage volume has been achieved by using the Innovyze MicroDrainage simulation capabilities and through the modelling of the SuDS features such as permeable paved driveways and filter drains in the in the Microdrainage software.

It is proposed to create an outfall for the surface water sewer at the existing watercourse on the eastern side of the site as set out in Section 4 below.

The foul drainage for the proposed development has been designed in accordance with the Irish Water's Connection and Developer Services "Code of Practice for Wastewater Infrastructure" and "Wastewater Infrastructure Standard Details" documents references IW-CDS-5030-03 and IW-CDS-5030-01 respectively. 150mm and 225mm diameter foul sewers will be laid within the access roads and public areas to serve the proposed development. The foul sewer will connect to the existing 600mm diameter sewer on the Old Naas Road at the southwest corner of the site.

The watermains for the proposed development has been designed in accordance with the Irish Water's Developer Services "Code of Practice for Water Infrastructure" and Water Infrastructure Standard Details" documents references IW-CDS-5020-03 and IW-CDS-5020-01 respectively. The watermain layout for the proposed development is shown on Drg. No. 21003-TJOC-ZZ-ZZ-DR-C-0061. A new 100mm dia. watermain will be laid within the site to serve the development. Upgrade works are required to extend the length of the 150mm diameter watermain network in the Old Naas Road by approximately 140m to form the connection for the proposed development, refer to Confirmation of Feasibility Letter in Appendix B.

2. INTRODUCTION AND SITE DESCRIPTION

Greenwalk Developments Ltd. are seeking to develop 77 No. residential units at a site on the Old Naas Road which is currently occupied by Clondalkin Rugby Football Club (RFC). Clondalkin RFC have recently acquired other lands in the area to allow their club and playing facilities to expand to meet their growing requirements.

The site, named locally as Gordon Park, is bounded by the Roadstone Group Sports Club and sports facilities to the north and east, the Silken Park Residential Development to the south and the Old Naas Road to the west. The site is relatively flat, with the ground levels falling from a level of 95.20mOD at the southwest corner of the site to a level of 92.00mOD at the existing site entrance at the northwest corner of the site.

The Fettercairn Stream, a tributary of the Camac River, abuts the eastern boundary of the site and runs northwards for a distance of approximately 80m from the south eastern corner of the site boundary, before turning 90 degrees and heading in an easterly direction away from the site. Figure 1 below shows the location of the site.

Set out below is relevant information relating to the proposed surface water drainage, foul drainage and watermain infrastructure. This engineering services report should also be read in conjunction with the engineering planning drawings and all other planning submission documents/reports.

Figure 1: Site Location

3. EXISTING SERVICES AND SITE CONSTRAINTS

Existing service record drawings for the area in proximity to the site were obtained from the Local Authority, Irish Water, Gas Networks Ireland and various utility providers. Following a review of the available information, a number of service constraints were identified on the site, as set out hereunder.

3.1 Watermains

There is an existing 400mm diameter trunk watermain traversing the site, refer to Figure 2 below. The applicant submitted a Diversion/Build-Near application to Irish Water and have liaised with Irish Water's Diversions/Build-Near department in relation to the proposed development in proximity to this existing infrastructure. Irish Water confirmed the wayleave associated with this existing watermain is 10.4m wide, i.e. 5m separation distance on each side of the watermain. Irish Water also confirmed the permitted vertical and horizontal separation distances for any new services in proximity to the existing watermain is 500mm i.e. for services crossing the watermain and services laid parallel to the watermain. Based on the above, Irish Water Diversions/Build-Near department confirmed they have no objection to the proposed development and provided a Confirmation of Feasibility Letter, a copy of which is included in Appendix A.

Figure 2: Site Plan Showing Existing 400mm Watermain and Associated Wayleave

Separately, a pre-connection enquiry was submitted to the Connection & Developer Services Department of Irish Water. Whilst Irish Water confirmed that there is sufficient capacity in the existing water services network in this area for this proposed development, they confirmed that upgrade works are required to extend the length of the 150mm diameter watermain network in the Old Naas Road by approximately 140m, refer to Confirmation of Feasibility Letter in Appendix B. The proposed upgrade works are subject to ongoing discussions between the applicant and Irish Water in relation to the timing of the works and the associated costs.

3.2 Gas Main

There is an existing 500mm Gas Transmission line in the Old Naas Road along the western boundary of the site. The applicant consulted with Gas Networks Ireland (GNI) to establish the required separation distance for any new dwellings in proximity to the gas main. GNI advised that a minimum of 7m separation distance is required from the existing gas main and any proposed new dwelling. A Ground Penetrating Radar survey was undertaken along the Old Naas road in proximity to the site the determine the location of the gas main. Based on the findings, the proposed dwellings are set out at least 7m from the gas transmission main.

3.3 Foul Drainage

There is an existing 600mm diameter Foul Sewer on the western side of the Old Naas Road. Site investigations, including a GPR Survey, were carried out to determine the as-built levels of the Foul Sewer. On review it was determined that a connection from the proposed development to the existing foul sewer cannot be achieved at the northwest corner of the site (the lowest part of the site), as the route to the existing public Foul Sewer is blocked by the existing 500mm diameter gas transmission line.

Therefore, following consultation between the applicant, GNI and Irish Water, the only possible connection point for the new development to the existing foul sewer is at the southwest corner of the site as shown in Figure 3 below. Due to the level of the existing sewer at this point, the ground levels within the north western part of the site need to be raised to allow the site foul drainage to discharge by gravity to the existing foul sewer. The proposed ground levels are set out on Drg No. 21003-TJOC-ZZ-ZZ-DR-C-0055 – Proposed Site Plan, which accompanies this application. However, in summary, the ground levels to the northern part of the site need to be raised by circa 1-1.5m above existing ground level to achieve the required falls in the foul network to serve the proposed development.

The applicant submitted a pre-connection enquiry to Irish Water for the proposed development and received a Confirmation of Feasibility from Irish Water, a copy of which is included in Appendix B.

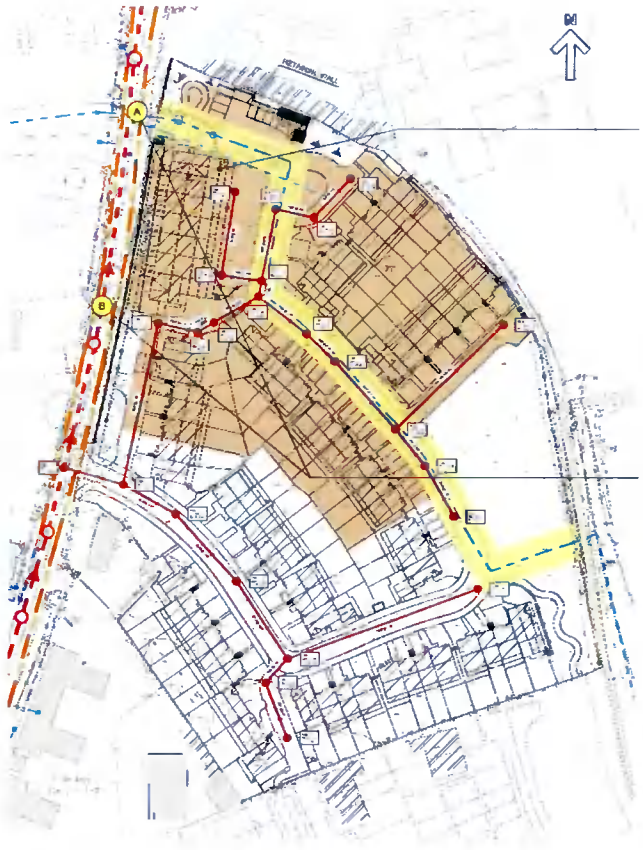


Figure 3: Site Plan Showing Extent of ground levels to be raised to achieve foul sewer discharge by gravity.

3.4 Surface Water

There is no public surface water drainage infrastructure in the Old Naas Road in proximity to the site. A number of infiltration tests were carried out on the site, refer to Drg No. 21003-TJOC-ZZ-ZZ-DR-C-0054 for test locations and Appendix C for test results. The results indicate that, due to the existing clay soil conditions, infiltration on the western side of the site is poor and only nominal infiltration is achievable. The infiltration rate on the eastern side of the site is slightly better, but the underlying soil conditions are clay which is not a very good media for infiltration. This is consistent with infiltration tests carried out in similar ground conditions in the Citywest region.

Based on the investigations, the proposed surface water drainage has been designed with an allowance for infiltration to suit the existing clay ground conditions. However, it is not possible to discharge all surface water to the ground via infiltration. Therefore, the only possible surface water outfall from the site is via the existing watercourse on the eastern boundary of the site. The location of the watercourse is not at the lowest part of the site. Therefore, the ground levels at the north western part of the site need to be raised above existing ground levels to allow the surface water to discharge by gravity from the site.

The proposed ground levels are set out on Drg No. 21003-TJOC-ZZ-ZZ-DR-C-0055 – Proposed Site Plan, which accompanies this application. However, in summary, the ground levels on the western part of the site need to be raised by circa 0.75 to 1.5m above existing ground level to achieve the required falls in the surface water network for the proposed development.

Figure 3: Site Plan Showing Extent of ground levels to be raised to achieve surface water outfall by gravity.

4. PROPOSED SURFACE WATER DRAINAGE & SUDS MEASURES

The surface water drainage network for the proposed development has been designed using the Innovyze MicroDrainage design software which is based on the Wallingford procedure. The surface water drainage pipe network has been sized based on 1 in 2-year return event.

The proposed surface water drainage system has been designed not to flood in a 1 in 30-year event and flooding occurring during a 1 in 100-year event will be retained on site in accordance with the Greater Dublin Strategic Drainage Study Design Criteria. The existing site is 2.282hA in size. For this planning application the proposed site area is 2.282hA i.e. the full area of the site. The total impervious area of the proposed development including permeable paved areas that are connected to surface water piped network is 1.3544hA. The total permeable Open Space, grass and landscaped areas is 0.9276hA. A runoff factor of 0% has been used for all permeable areas and a factor of 100% has been used for all impermeable areas including buildings, roads, pathways and permeable paved areas that are connected to the surface water network. This is consistent with the Surface Water Design Criteria in Table 6.4 of Vol 2 of the GDSDS and with Section 24.11.2 of the SUDS Manual, CIRIA C753. The limiting flow discharge from the proposed development is 5.39 l/s.

In summary, the design criteria for the surface water drainage system are as follows:

Return Period:	Minimum pipe full criteria	1 in 2 years
	Attenuation	1 in 30 years
	Flood Storage on site	1 in 100 years
	M5-60	17.700mm
	Ratio = M5-60/M5-2 day	0.270
	Limiting Discharge in storm event	5.39 l/s

A number of infiltration tests were carried out on the site. The results indicate that, due to the existing clay soil conditions, infiltration on the western side of the site is poor and only nominal infiltration is achievable. The infiltration rate on the eastern side of the site is slightly better, but the underlying soil conditions are clay which is typically not a good media for infiltration. The results of the infiltration tests are consistent with infiltration tests carried out in similar ground conditions in the Citywest region.

Based on the investigations, the proposed surface water drainage has been designed with an appropriate allowance for infiltration to suit the existing clay ground conditions. However, it is not possible to discharge all surface water to the ground via infiltration. Therefore, a hybrid solution of infiltration to the ground where possible and collection of surface water with a piped network is proposed for this development.

The typical surface water arrangement for the proposed houses is as follows. The driveways of houses will be provided with permeable paving. Rainwater from the front roofs of the houses will discharge to the subbase of the permeable paved driveways where it will be stored and released to ground via infiltration or to the surface water network via a fin drain within the subbase. The base of the driveway build-up with be provided with a geotextile membrane to allow surface water to infiltrate to ground where possible. For surface water calculation purposes, the infiltration rate adopted for the base of the driveway subbase is $2.7x10^{-6}$ m/sec or 0.010m/hr. This infiltration rate is lower than the infiltration rate obtained for the soakaway tests undertaken on the east side of the site, but is consistent with an infiltration rate for clay soils with low/poor infiltration as encountered in the soakaway pits on the west side of the site.

Rainwater from the rear roofs of the houses will be collected in a filter drain in the rear gardens of the house. These filter drains will allow infiltration to the ground but will also be connected to the surface water network to allow larger rainfall events to be managed in the surface water network. As for the driveways, only a nominal allowance/rate for infiltration has been adopted in the surface water calculations for the infiltration rate into the ground. This is consistent with the design of infiltration features in clay soil conditions. However, in practice, the provision of SuDs features such as permeable paving and filter/infiltration drains may allow for greater levels of infiltration than the nominal rates adopted in the calculations.

Given that it is proposed that the roads and footpaths will be taken in charge in the future, they have been designed and detailed in accordance with the Local Authority taking in charge standards. The roads and footpaths will discharge to a surface water piped network within the roads. The overall attenuation for the site will be provided in two main areas at the site, namely at the northwest of the site and at the east of the site adjacent to the proposed surface water outfall location. There is also a small Bioswale area to the southwest corner of the site that collects surface water from the rear roofs of House No's 16-23.

The proposed Suds features, below ground drainage network and Stormtech attenuation system provides sufficient storage for the 1:30 year and the 1:100 critical storm events without flooding.

With reference to Drg. No. 21003-TJOC-ZZ-ZZ-DR-C-0064 and the proposed surface water MicroDrainage Calculations we note the following: Pages 13-22 of the calculations indicate the manhole references and proposed invert and cover levels of the manholes. Page 45 of the calculations indicates that an allowance of 10% has been made for an increase of rainfall for climate change. Page 45-48 of the calculations indicates that no flooding of the proposed surface water network occurs during the critical 1 in 100 return period. The proposed MicroDrainage Surface Water Calculations for this application are provided in Appendix F.

The water level column in the results at Pages 45-48 of Appendix F indicates the maximum water level predicted at each manhole node for the design scenario considered, across the range of storm events simulated. The hydraulic profile does not rise above ground level at any manhole node and maintains a positive gradient from the head of the drainage system to the outfall.

Surface water attenuation of 893m³ for the proposed development is provided by two Stormtech attenuation storage systems located on the northwest and east sides of the proposed development site for this application. The stormtech system will be installed with an isolator row and inspection manholes to permit routine inspection and maintenance of the system. The storage volumes will be mobilised in both chambers by Hydrobrake outlet control devices. Please refer to Drg. No. 21003-TJOC-ZZ-ZZ-DR-C-0071 and 21003-TJOC-ZZ-ZZ-DR-C-0072 for details of the Stormtech Attenuation System.

The discharge from the proposed development will be limited to 5.39l/s (equivalent to the Greenfield Run-off) by the use of Hydrobrake flow control device in MH S2 prior to discharging to the existing watercourse on the eastern boundary of the site.

It is proposed to install a Klargester petrol interceptor NSBE025 (by-pass separator) along the outfall surface water pipeline, to provide oil separation and storage, for any possible risk of contamination and potential oil spills from the carpark/road area within the site.

It is proposed that the outfall pipe from the site will be set at a level of circa 250mm above the bed level of the adjacent watercourse. A non-return valve will be provided in an outfall/inspection chamber at MH S1 within the boundary of the site, refer to Drg. No. 21003-TJOC-ZZ-ZZ-DR-C-0073. The non-return valve in the outfall chamber will prevent backflow of water into the site surface water network during high water levels in the adjacent watercourse, The site surface water network and surface water storage measures within the site of the proposed development have been designed with freeboard and sufficient head within the system to allow the surface water to discharge from the site during high water levels in the adjacent watercourse, whilst complying with the requirement to retain surface water on site for critical storm events.

5. PROPOSED FOUL DRAINAGE

The foul sewer layout for the proposed development is shown on Drg. No. 21003-TJOC-ZZ-ZZ-DR-C-0056. As noted above, there is a constraint in the location of the foul sewer connection from the site due to the presence of the existing 500mm gas transmission line in the Old Naas Road. It is proposed to connect the development to the existing 600 diameter foul sewer at the southwest corner of the site. The new connection will be a 225mm diameter foul sewer and the connection will be formed crown to crown with the existing 600mm foul sewer, refer to Detail 4 on Drg No. 21003-TJOC-ZZ-ZZ-DR-C-0060. The applicant has consulted with Gas Networks Ireland and GNI have confirmed that the separation distance from the gas transmission line to the proposed foul sewer connection is acceptable. Slit trenches will be carried out in advance of the works in the presence of GNI to verify all existing service locations and levels.

Within the development site, 150mm and 225mm diameter foul sewers will be laid within the access roads and public areas to serve the proposed development. The proposed pipe sizes comply with the requirements of Clause 3.6 of Irish Water Code of Practice for Wastewater Infrastructure.

The foul drainage will be installed in accordance with the Irish Water's Connection and Developer Services "Code of Practice for Wastewater Infrastructure" and "Wastewater Infrastructure Standard Details" documents references IW-CDS-5030-03 and IW-CDS-5030-01 respectively.

The applicant has received a Confirmation of Feasibility from Irish Water for the proposed development, a copy of which is included in Appendix B

6. PROPOSED WATERMAINS

The watermain layout for the proposed development is shown on Drg. No. 21003-TJOC-ZZ-ZZ-DR-C-0061. A new 100mm diameter watermain will be installed within the proposed development site to serve the 77 No. proposed dwellings on the site. This is in accordance with Clause 3.7 of Irish Water Code of Practice for Water Infrastructure.

As noted above, a pre-connection enquiry was submitted to the Connection & Developer Services Department of Irish Water. Irish Water confirmed that upgrade works are required to extend the length of the 150mm diameter watermain network in the Old Naas Road by approximately 140m, refer to Confirmation of Feasibility Letter in Appendix B. The proposed upgrade works are shown indicatively on Drg No. 21003-TJOC-ZZ-ZZ-DR-C-0062 and are subject to ongoing discussions between the applicant and Irish Water in relation to the timing of the works and associated costs.

The new watermains will be laid in accordance with the Irish Water's Developer Services "Code of Practice for Water Infrastructure" and Water Infrastructure Standard Details" documents references IW-CDS-5020-03 and IW-CDS-5020-01 respectively.

The hydrant provision complies with Part B of the Building Regulations. A total of 5 hydrants are proposed and they are set out such that each hydrant is not less than 6m or more than 46 m from each dwelling.

The applicant has received a Confirmation of Feasibility from Irish Water for the proposed development, a copy of which is included in Appendix B.

APPENDIX A

Irish Water Diversions/Build Near Confirmation of Feasibility

Rory Hickey
Director
Greenwalk Limited
1a Sandymount Castle Park
Sandymount
Dublin 4
D04N1W3

19 July 2021

Uisce Éireann
Irish Water
www.water.ie

Dear Rory,

Re: Diversion Reference DIV21164 Diversion enquiry. Subject to Contract | Contract Denied

Irish Water has reviewed your enquiry in relation to building within proximity to Irish Water's existing 400mm diameter water main as part of the proposed Development at Kingswood Lands, Old Naas Road, Citywest, Dublin 24 as indicated on attached drawing nos. 21003-TJOC-ZZ-ZZ-DR-C-0011-P06 Dated 15/07/2021, 21003-TJOC-ZZ-ZZ-DR-C-0012-P06 Dated 15/07/2021, 21003-TJOC-ZZ-ZZ-DR-C-0013-P05 Dated 15/07/2021 & 21003-TJOC-ZZ-ZZ-DR-C-0016-P01 Dated 15/07/2021.

Based upon the details you have provided with your enquiry and as assessed by Irish Water, we wish to advise you that Irish Water have no objection to the proposed development. This is provided subject to the below conditions which are in accordance with Irish Water's Standard Details and Codes of Practice;

- The applicant agrees to provide a wayleave over the 400mm water main by entering into a Deed of Easement agreement with Irish Water. The Deed of Easement will be incorporated into the new connection/self-lay agreement for the development; and
- Wayleave dimensions to be 5m from each side of the existing 400mm water main pipe. i.e. total wayleave width to be 10.4m.

Please note this enquiry and assessment relates to building within proximity to the existing 400mm diameter water main traversing the development site and if a Pre Connection Enquiry or a Connection Agreement is required, this can be applied for separately by completing the forms available at www.water.ie\connections.

If you have any further questions, please contact Kieran O'Neill from the diversions team on 0044 2830 889633 or email kioneill@water.ie.

Yours sincerely,

Yvonne Harris

Yvonne Harris
Head of Customer Operations

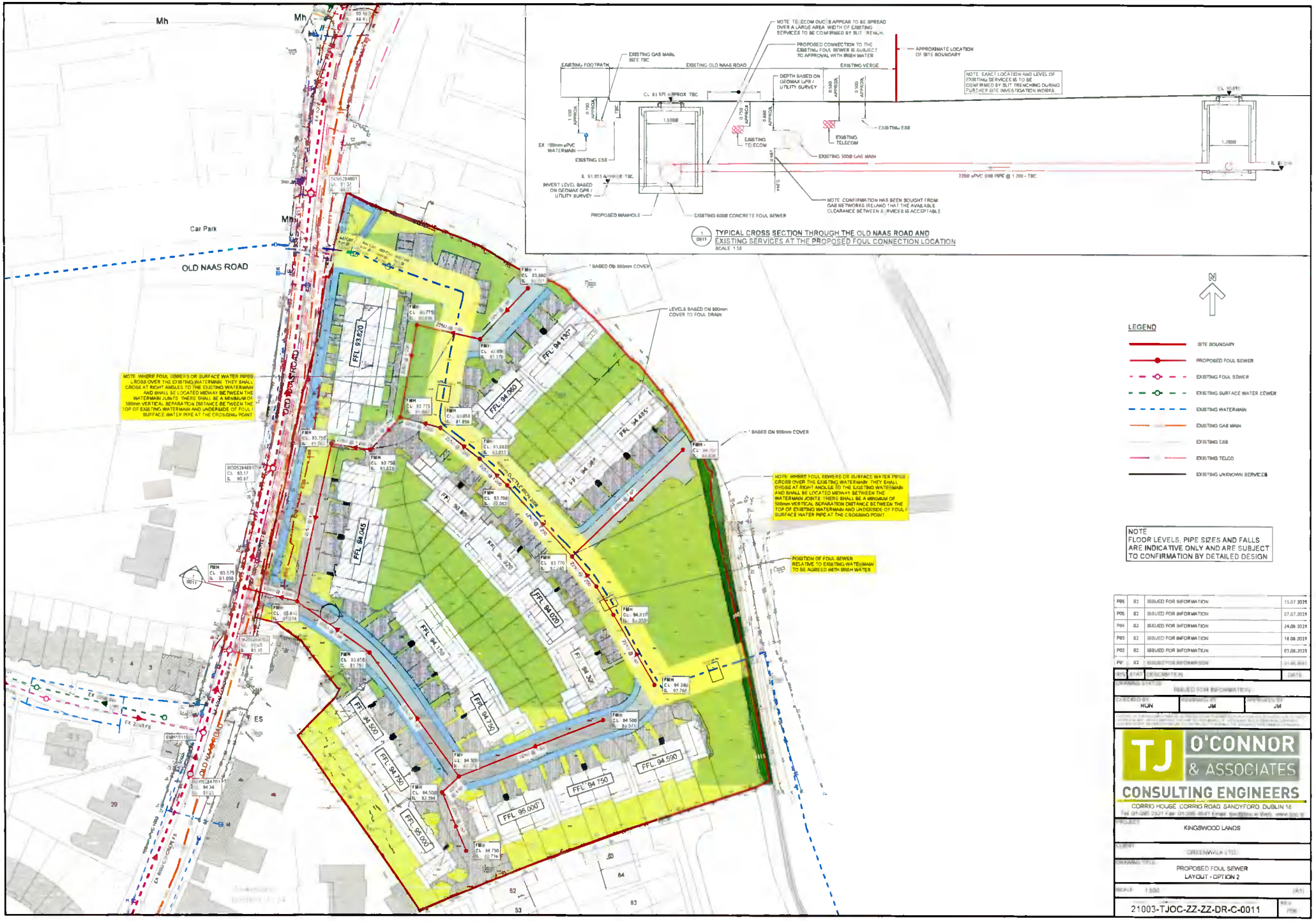
Attachments:

21003-TJOC-ZZ-ZZ-DR-C-0016-P01 Dated 15/07/2021

21003-TJOC-ZZ-ZZ-DR-C-0011-P06 Dated 15/07/2021

21003-TJOC-ZZ-ZZ-DR-C-0012-P06 Dated 15/07/2021

21003-TJOC-ZZ-ZZ-DR-C-0013-P05 Dated 15/07/2021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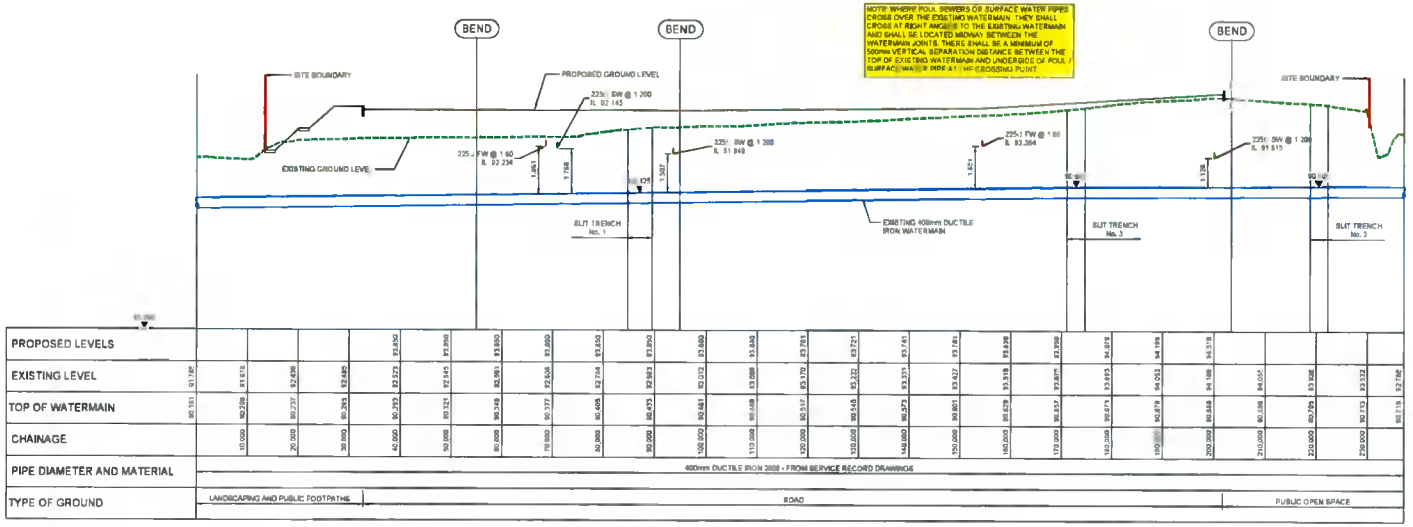
FFL 95.000
FFL 95.000
FFL 94.590
FFL 94.750
NOTE WHERE FOUL SEWERS OR SURFACE WATER PIPES CROSS OVER THE EXISTING WATERMAIN THEY SHALL CROSS AT RIGHT ANGLES TO THE EXISTING WATERMAIN AND SHALL BE LOCATED MIDWAY BETWEEN THE WATERMAIN JOINTS. THERE SHALL BE A MINIMUM OF 500mm VERTICAL SEPARATION DISTANCE BETWEEN THE TOP OF EXISTING WATERMAIN AND UNDERSIDE OF FOUL / SURFACE WATER PIPE AT THE CROSSING POINT
NOTE WHERE FOUL SEWERS OR SURFACE WATER PIPES CROSS OVER THE EXISTING WATERMAIN THEY SHALL CROSS AT RIGHT ANGLES TO THE EXISTING WATERMAIN AND SHALL BE LOCATED MIDWAY BETWEEN THE WATERMAIN JOINTS. THERE SHALL BE A MINIMUM OF 500mm VERTICAL SEPARATION DISTANCE BETWEEN THE TOP OF EXISTING WATERMAIN AND UNDERSIDE OF FOUL / SURFACE WATER PIPE AT THE CROSSING POINT
POSITION OF FOUL SEWER RELATIVE TO EXISTING WATERMAIN TO BE AGREED WITH IRISH WATER
LEVELS BASED ON 900mm COVER TO FOUL DRAIN
* BASED ON 900mm COVER
* BASED ON 900mm COVER
EXISTING GAS MAIN SIZE TBC
EXISTING FOOTPATH
EXISTING OLD NAAS ROAD
EXISTING VERGE
APPROXIMATE LOCATION OF SITE BOUNDARY
DEPTH BASED ON GEOMAX GPR / UTILITY SURVEY
EXISTING ESB
EXISTING TELECOM
EXISTING 500Ø GAS MAIN
EXISTING ESB
EXISTING TELECOM
PROPOSED MANHOLE
EXISTING 600Ø CONCRETE FOUL SEWER
TYPICAL CROSS SECTION THROUGH THE OLD NAAS ROAD AND EXISTING SERVICES AT THE PROPOSED FOUL CONNECTION LOCATION
SCALE 1:50
N
LEGEND
SITE BOUNDARY
PROPOSED FOUL SEWER
EXISTING FOUL SEWER
EXISTING SURFACE WATER SEWER
EXISTING WATERMAIN
EXISTING GAS MAIN
EXISTING ESB
EXISTING TELCO
EXISTING UNKNOWN SERVICES
NOTE
FLOOR LEVELS, PIPE SIZES AND FALLS ARE INDICATIVE ONLY AND ARE SUBJECT TO CONFIRMATION BY DETAILED DESIGN
P06 02 ISSUED FOR INFORMATION 15.07.2021
P05 02 ISSUED FOR INFORMATION 07.07.2021
P04 02 ISSUED FOR INFORMATION 24.06.2021
P03 02 ISSUED FOR INFORMATION 18.06.2021
P02 02 ISSUED FOR INFORMATION 01.06.2021
P01 02 ISSUED FOR INFORMATION
REV STAT DESCRIPTION DATE
DRAWING STATUS: ISSUED FOR INFORMATION
CHECKED BY RON
DRAWN BY JM
APPROVED BY JM
TJ O'CONNOR & ASSOCIATES
CONSULTING ENGINEERS
CORRIG HOUSE, CORRIG ROAD, SANDYFORD, DUBLIN 18
PROJECT KINGSWOOD LANDS
CLIENT GREENWAY LTD
DRAWING TITLE PROPOSED FOUL SEWER LAYOUT - OPTION 2
SCALE 1:500 (A1)
21003-TJOC-ZZ-ZZ-DR-C-0011
REV P06


N
LEGEND
SITE BOUNDARY
PROPOSED SURFACE WATER SEWER
EXISTING FOUL SEWER
EXISTING SURFACE WATER SEWER
EXISTING WATERMAIN
EXISTING GAS MAIN
EXISTING ESB
EXISTING TELCO
EXISTING UNKNOWN SERVICES
NOTE
FLOOR LEVELS, PIPE SIZES AND FALLS ARE INDICATIVE ONLY AND ARE SUBJECT TO CONFIRMATION BY DETAILED DESIGN.
Car Park
OLD NAAS ROAD
NOTE WHERE FOUL SEWERS OR SURFACE WATER PIPES CROSS OVER THE EXISTING WATERMAIN, THEY SHALL CROSS AT RIGHT ANGLES TO THE EXISTING WATERMAIN AND SHALL BE LOCATED MIDWAY BETWEEN THE WATERMAIN JOINTS. THERE SHALL BE A MINIMUM OF 500mm VERTICAL SEPARATION DISTANCE BETWEEN THE TOP OF EXISTING WATERMAIN AND UNDERSIDE OF FOUL / SURFACE WATER PIPE AT THE CROSSING POINT
POSITION OF SURFACE WATER PIPE RELATIVE TO THE EXISTING WATERMAIN TO BE AGREED WITH IRISH WATER
DETENTION BASIN ARE SHOWN INDICATIVELY AND ARE SUBJECT TO CONFIRMATION BY DETAILED DESIGN.
OUTFALL MANHOLE WITH FLOW CONTROL DEVICE
EXISTING 1.1m DEEP CULVERT
FFL 93.820
FFL 94.135
FFL 94.000
FFL 94.455
FFL 94.085
FFL 94.045
FFL 93.920
FFL 94.020
FFL 94.150
FFL 94.300
FFL 94.500
FFL 94.750
FFL 94.590
FFL 95.000
FFL 95.000
P06 02 ISSUED FOR INFORMATION 13.07.2021
P05 02 ISSUED FOR INFORMATION 07.07.2021
P04 02 ISSUED FOR INFORMATION 24.06.2021
P03 02 ISSUED FOR INFORMATION 18.06.2021
P02 02 ISSUED FOR INFORMATION 03.06.2021
ISSUED FOR INFORMATION
TJ O'CONNOR & ASSOCIATES
CONSULTING ENGINEERS
KINGSWOOD LANDS
PROPOSED SURFACE WATER LAYOUT
21008-TJOC-ZZ-ZZ-DR-C-0012

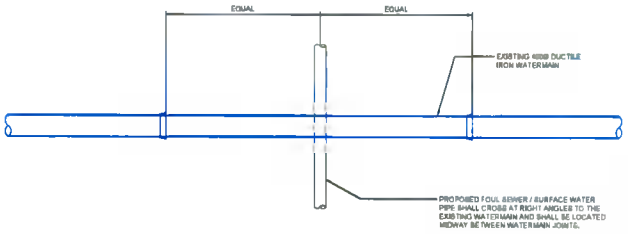

N
LEGEND
SITE BOUNDARY
PROPOSED FOUL SEWER
PROPOSED SURFACE WATER SEWER
EXISTING FOUL SEWER
EXISTING SURFACE WATER SEWER
EXISTING WATERMAIN
EXISTING GAS MAIN
EXISTING ESB
EXISTING TELCO
EXISTING UNKNOWN SERVICES
NOTE
FLOOR LEVELS, PIPE SIZES AND FALLS ARE INDICATIVE ONLY AND ARE SUBJECT TO CONFIRMATION BY DETAILED DESIGN.
Car Park
OLD NAAS ROAD
NOTE WHERE FOUL SEWERS OR SURFACE WATER PIPES CROSS OVER THE EXISTING WATERMAIN, THEY SHALL CROSS AT RIGHT ANGLES TO THE EXISTING WATERMAIN AND SHALL BE LOCATED MIDWAY BETWEEN THE WATERMAIN JOINTS. THERE SHALL BE A MINIMUM OF 500mm VERTICAL SEPARATION DISTANCE BETWEEN THE TOP OF EXISTING WATERMAIN AND UNDERSIDE OF FOUL SURFACE WATER PIPE AT THE CROSSING POINT.
POSITION OF SURFACE WATER PIPE RELATIVE TO THE EXISTING WATERMAIN TO BE AGREED WITH IRISH WATER
POSITION OF FOUL SEWER RELATIVE TO EXISTING WATERMAIN TO BE AGREED WITH IRISH WATER
DETENTION BASIN ARE SHOWN INDICATIVELY AND ARE SUBJECT TO CONFIRMATION BY DETAILED DESIGN.
OUTFALL MANHOLE WITH FLOW CONTROL DEVICE
EXISTING 1.1m DEEP CULVERT
IL 91.435
FFL 93.500
FFL 94.135
FFL 94.060
FFL 94.485
FFL 94.085
FFL 94.045
FFL 94.020
FFL 94.300
FFL 94.500
FFL 94.750
FFL 95.000
FFL 94.590
P05 S3 ISSUED FOR INFORMATION 15.07.2021
P04 S3 ISSUED FOR INFORMATION 07.07.2021
P03 S3 ISSUED FOR INFORMATION 18.06.2021
P02 S3 ISSUED FOR INFORMATION 03.06.2021
RON JM JM
TJ O'CONNOR & ASSOCIATES
CONSULTING ENGINEERS
CORRIG HOUSE, CORRIG ROAD, SANDYFORD, DUBLIN 18
KINGSWOOD LANDS
PROPOSED COMBINED SERVICES
21003-TJOC-ZZ-ZZ-DR-C-0013



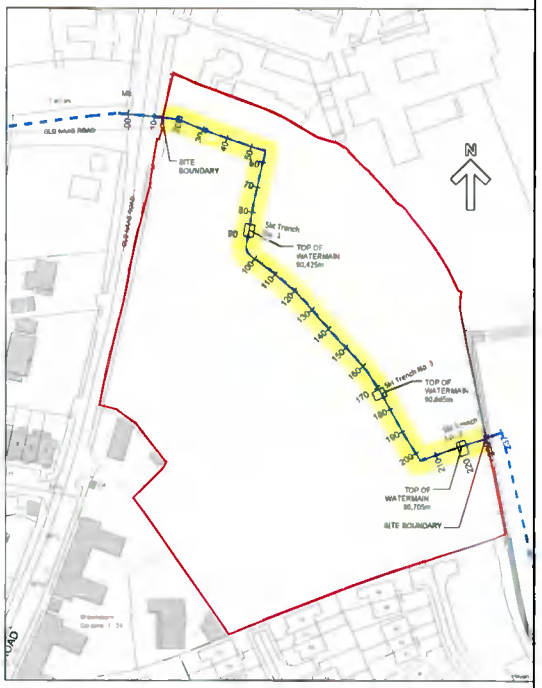
1 / 9016 EXISTING 400Ø WATERMAIN LONGITUDINAL SECTION
SCALE 1:500 H 1:100 V

NOTES

1. LONGITUDINAL SECTION HAS BEEN DEVELOPED BASED ON THE INFORMATION OBTAINED FROM THE 3 BLIT TRENCHES.
2. THE WATERMAIN IS SHOWN GRADED BETWEEN THE TOP OF PIPE LEVELS OBTAINED FROM THE 3 BLIT TRENCHES.
3. NOTE OTHER SERVICES SUCH AS TELCOS, ESB AND WATERMAIN FOR THE PROPOSED DEVELOPMENT WILL BE LOCATED WITHIN THE PUBLIC FOOTPATHS. THESE WILL BE LOCATED AT SHALLOW DEPTHS. THERE WILL BE GREATER THAN 500mm SEPARATION DISTANCE BETWEEN THE UNDERSIDE OF SERVICES AND THE TOP OF THE EXISTING WATERMAIN



2 / 9016 PLAN OF PROPOSED FOUL SEWER / SURFACE WATER PIPE CROSSING EXISTING WATERMAIN
SCALE 1:50



KEYPLAN
SCALE 1:1000

P01	S2	ISSUED FOR INFORMATION
REV	SUIT	DESCRIPTION
CHECKED BY RON	REVIEWED BY JM	APPROVED BY JM

TJ O'CONNOR & ASSOCIATES
CONSULTING ENGINEERS

KINGSWOOD LANDS

EXISTING WATERMAIN LONGITUDINAL SECTION

21003-TJOC-ZZ-ZZ-DR-C-0016

APPENDIX B

Irish Water CDS Confirmation of Feasibility

John Meade

Corrig House,
Corrig Road,
Sandyford,
Dublin
D18Y663

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

Irish Water
PO Box 448,
South City
Delivery Office,
Cork City.

www.water.ie

25 August 2021

Re: CDS21004323 pre-connection enquiry - Subject to contract | Contract denied

Connection for Housing Development of 90 unit(s) at Kingswood Lands, Old Naas, Dublin

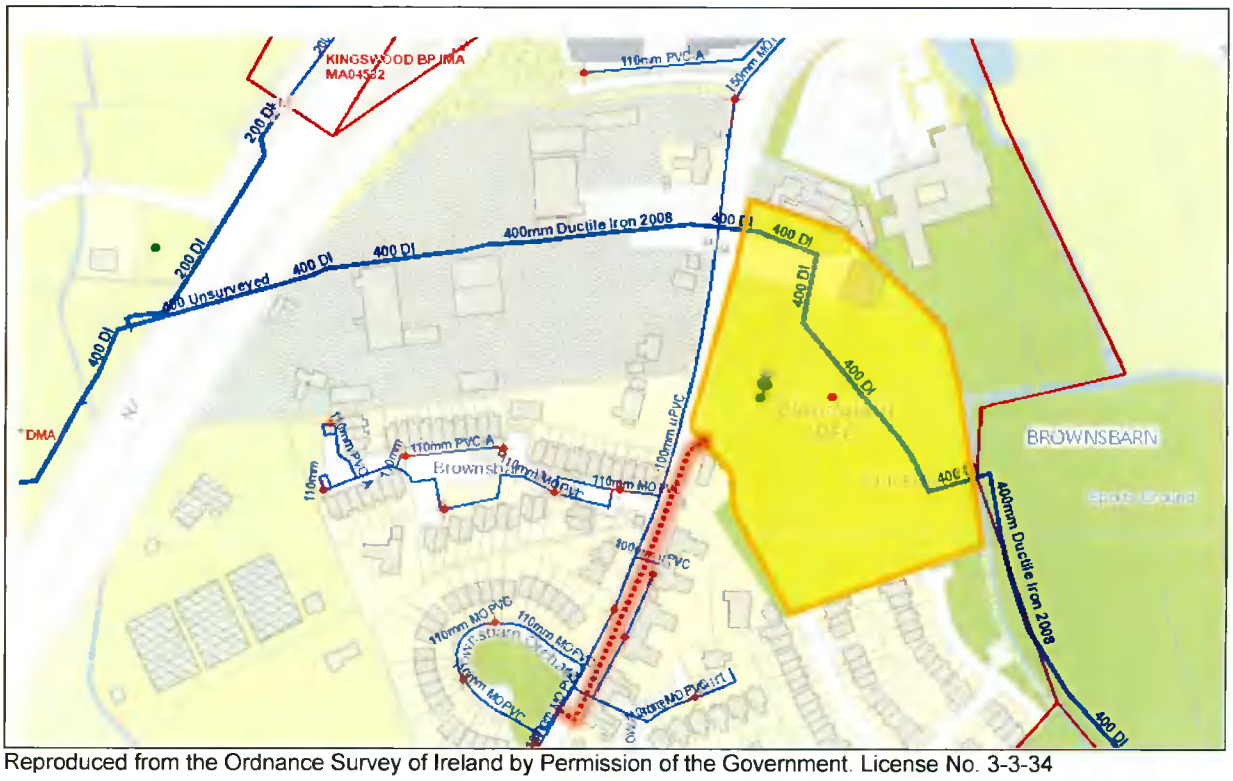
Dear Sir/Madam,

Irish Water has reviewed your pre-connection enquiry in relation to a Water & Wastewater connection at Kingswood Lands, Old Naas, Dublin (the **Premises**). Based upon the details you have provided with your pre-connection enquiry and on our desk top analysis of the capacity currently available in the Irish Water network(s) as assessed by Irish Water, we wish to advise you that your proposed connection to the Irish Water network(s) can be facilitated at this moment in time.

SERVICE	OUTCOME OF PRE-CONNECTION ENQUIRY THIS IS NOT A CONNECTION OFFER. YOU MUST APPLY FOR A CONNECTION(S) TO THE IRISH WATER NETWORK(S) IF YOU WISH TO PROCEED.
Water Connection	Feasible subject to upgrades
Wastewater Connection	Feasible without infrastructure upgrade by Irish Water
SITE SPECIFIC COMMENTS	
Water Connection	In order to accommodate the proposed connection to Irish Water water network at the Premises, upgrade works are required to extend the length of the 150mm diameter watermain network in Old Naas Road by approximately 140m (please find attached network GIS records showing required extension). Irish Water currently does not have any plans to extend its network in this area. Should you wish to progress with the connection you will be required to fund this network extension. There is an important Irish Water asset within and in close proximity of the site boundaries (please find attached Irish Water GIS record of the area as a general guide only). A wayleave shall be provided in the interest of Irish Water along the route of the existing watermain which traverses the site.
Wastewater Connection	Connection feasible to the 600mm diameter foul sewer in Old Naas Road.

The design and construction of the Water & Wastewater pipes and related infrastructure to be installed in this development shall comply with the Irish Water Connections and Developer Services Standard Details and Codes of Practice that are available on the Irish Water website. Irish Water reserves the right to supplement these requirements with Codes of Practice and these will be issued with the connection agreement.

The map included below outlines the current Irish Water infrastructure adjacent to your site:



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

Whilst every care has been taken in its compilation Irish Water gives this information as to the position of its underground network as a general guide only on the strict understanding that it is based on the best available information provided by each Local Authority in Ireland to Irish Water. Irish Water can assume no responsibility for and give no guarantees, undertakings or warranties concerning the accuracy, completeness or up to date nature of the information provided and does not accept any liability whatsoever arising from any errors or omissions. This information should not be relied upon in the event of excavations or any other works being carried out in the vicinity of the Irish Water underground network. The onus is on the parties carrying out excavations or any other works to ensure the exact location of the Irish Water underground network is identified prior to excavations or any other works being carried out. Service connection pipes are not generally shown but their presence should be anticipated.

General Notes:

1) The initial assessment referred to above is carried out taking into account water demand and wastewater discharge volumes and infrastructure details on the date of the assessment. **The availability of capacity may change at any date after this assessment.**
2) This feedback does not constitute a contract in whole or in part to provide a connection to any Irish Water infrastructure. All feasibility assessments are subject to the constraints of the Irish Water Capital Investment Plan.

3) The feedback provided is subject to a Connection Agreement/contract being signed at a later date.
4) A Connection Agreement will be required to commencing the connection works associated with the enquiry this can be applied for at https://www.water.ie/connections/get-connected/
5) A Connection Agreement cannot be issued until all statutory approvals are successfully in place.
6) Irish Water Connection Policy/ Charges can be found at https://www.water.ie/connections/information/connection-charges/
7) Please note the Confirmation of Feasibility does not extend to your fire flow requirements.
8) Irish Water is not responsible for the management or disposal of storm water or ground waters. You are advised to contact the relevant Local Authority to discuss the management or disposal of proposed storm water or ground water discharges
9) To access Irish Water Maps email datarequests@water.ie
10) All works to the Irish Water infrastructure, including works in the Public Space, shall have to be carried out by Irish Water.

If you have any further questions, please contact Dario Alvarez from the design team on + 353 2254621 or email dalvarez@water.ie For further information, visit **www.water.ie/connections.**

Yours sincerely,

Yvonne Harris

Yvonne Harris

Head of Customer Operations

APPENDIX C

Soakaway Test Results

TJ O'CONNOR & ASSOCIATES CONSULTING ENGINEERS TJ O'Connor & Associates Corrig House Corrig Road Sandyford, Dublin 18	Project Gordon Park, Old Naas Road			Job Ref. 21003	
	Soakaway Test Results			Sheet no./rev. 1	
	Test undertaken by Glide Construction and HSK	Date of Test: 16/07/2021	Weather at time of Test: Dry	Logged by: Ciaran Sweeney	Calcs by: NS / TJOC

Soakaway Pit Dimensions		
S1_T3	**1.5**	m long
	0.9	m wide
	1.3	m deep

Time [min]	Water Level [m]	% Full [%]	Water Depth [m]	Change [m]	Cumulative [m]
0	0	100%	**1.3**		0.00
10	0.1	80%	**1.2**	-0.1	0.10
20	0.2	73%	**1.1**	-0.1	0.20
30	0.26	69%	**1.04**	-0.06	0.26
40	0.34	64%	**0.96**	-0.08	0.34
50	0.42	59%	**0.88**	-0.08	0.42
60	0.49	54%	**0.81**	-0.07	0.49
70	0.54	51%	**0.76**	-0.05	0.54
80	0.61	46%	**0.69**	-0.07	0.61
90	0.67	42%	**0.63**	-0.06	0.67
100	0.71	39%	**0.59**	-0.04	0.71
110	0.75	37%	**0.55**	-0.04	0.75
120	0.8	33%	**0.5**	-0.05	0.80
130	0.84	31%	**0.46**	-0.04	0.84
140	0.88	28%	**0.42**	-0.04	0.88
150	0.93	25%	**0.37**	-0.05	0.93
160	0.95	23%	**0.35**	-0.02	0.95
170	1	20%	**0.3**	-0.05	1.00
180	1.04	17%	**0.26**	-0.04	1.04

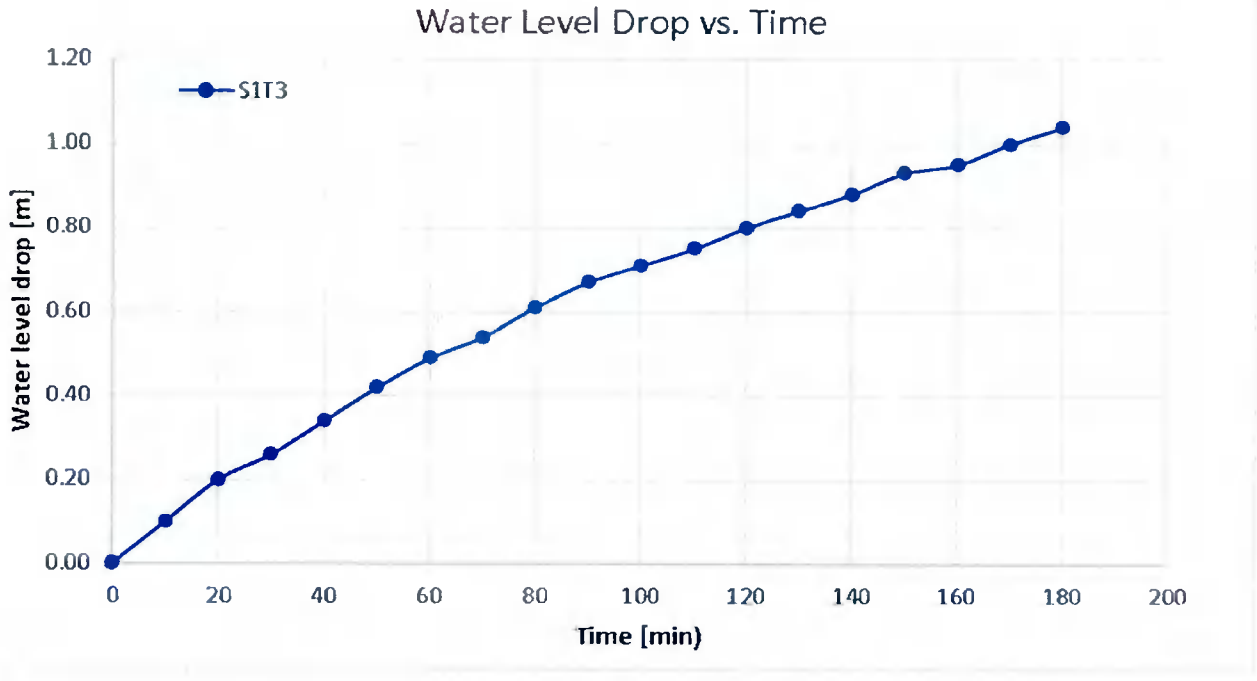
Time [min]	Water Level [m]	% Full [%]	Water Depth [m]
0.00	0.00	100%	1.300
17.50	0.18	75%	1.125
71.43	0.55	50%	0.750
149.00	0.93	25%	0.375
	0.00	0%	1.300

Volume between 75% and 50%	V_{p75-25} =	1.02	m^3		
Surface area at 50%	a_{s50} =	4.95	m^2		
Time between 75% and 25%	t_{p75-25} =	131.5	min	2.19	hrs
Soil infiltration Rate	f =	2.6E-05	m/second	9.4E-02	m/hr
	f =	0.000026	m/second	0.094	m/hr

Notes:

- **Ground conditions – Brown Boulder Clay**
- **No Groundwater encountered**
- **Results based on 3rd test carried out at this pit.**

TJ O'CONNOR & ASSOCIATES CONSULTING ENGINEERS TJ O'Connor & Associates Corrig House Corrig Road Sandyford, Dublin 18	Project Gordon Park, Old Naas Road			Job Ref. 21003	
	Soakaway Test Results			Sheet no./rev. 2	
	Test undertaken by Glide Construction and HSK	Date of Test. 16/07/2021	Weather at time of Test. Dry	Logged by: Ciaran Sweeney	Calcs by: NS / TJOC



TJ O'Connor & Associates Corrig House Corrig Road Sandyford, Dublin 18	Project: Gordon Park, Old Naas Road			Job Ref: 21003	
	Soakaway Test Results			Sheet no./rev.: 3	
	Test undertaken by Glide Construction and HSK	Date of Test: 16/07/2021	Weather at time of Test: Dry	Logged by: Ciaran Sweeney	Calcs by: NS / TJOC

Soakaway Pit Dimensions

S2_T1

1.5	m long
0.9	m wide
1.3	m deep

Time [min]	Water Level [m]	% Full [%]	Water Depth [m]	Change [m]	Cumulative [m]
0	0	100%	1.30		0.0
10	0.05	83%	1.25	-0.05	0.05
20	0.1	80%	1.20	-0.05	0.1
30	0.13	78%	1.17	-0.03	0.13
40	0.15	77%	1.15	-0.02	0.15
50	0.18	75%	1.12	-0.03	0.18
60	0.2	73%	1.10	-0.02	0.2
70	0.22	72%	1.08	-0.02	0.22
80	0.245	70%	1.06	-0.025	0.245
90	0.25	70%	1.05	-0.005	0.25
100	0.29	67%	1.01	-0.04	0.29
110	0.3	67%	1.00	-0.01	0.3
120	0.31	66%	0.99	-0.01	0.31
130	0.33	65%	0.97	-0.02	0.33
140	0.35	63%	0.95	-0.02	0.35
150	0.38	61%	0.92	-0.03	0.38
160	0.39	61%	0.91	-0.01	0.39
170	0.41	59%	0.89	-0.02	0.41
180	0.42	59%	0.88	-0.01	0.42
190	0.44	57%	0.86	-0.02	0.44
200	0.46	56%	0.84	-0.02	0.46
210	0.48	55%	0.82	-0.02	0.48
220	0.5	53%	0.80	-0.02	0.5
230	0.51	53%	0.79	-0.01	0.51
240	0.52	52%	0.78	-0.01	0.52
250	0.53	51%	0.77	-0.01	0.53
260	0.54	51%	0.76	-0.01	0.54
270	0.55	50%	0.75	-0.01	0.55
280	0.56	49%	0.74	-0.01	0.56
290	0.58	48%	0.72	-0.02	0.58
300	0.59	47%	0.71	-0.01	0.59
310	0.6	47%	0.70	-0.01	0.6
320	0.61	46%	0.69	-0.01	0.61
330	0.62	45%	0.68	-0.01	0.62
340	0.63	45%	0.67	-0.01	0.63
350	0.64	44%	0.66	-0.01	0.64
360	0.65	43%	0.65	-0.01	0.65
370	0.65	43%	0.65	0	0.65

TJ O'CONNOR & ASSOCIATES CONSULTING ENGINEERS TJ O'Connor & Associates Corrig House Corrig Road Sandyford, Dublin 18	Project Gordon Park, Old Naas Road			Job Ref. 21003	
	Soakaway Test Results			Sheet no./rev. 4	
	Test undertaken by Glide Construction and HSK	Date of Test: 16/07/2021	Weather at time of Test: Dry	Logged by: Ciaran Sweeney	Calcs by: NS / TJOC

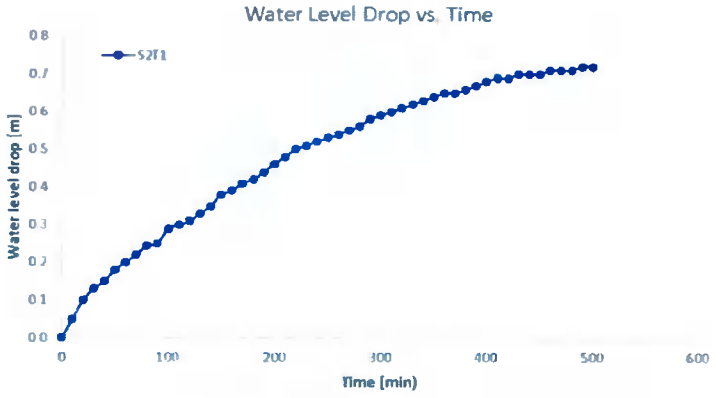
	380	0.66	43%	**0.64**	-0.01	0.66
	390	0.67	42%	**0.63**	-0.01	0.67
	400	0.68	41%	**0.62**	-0.01	0.68
	410	0.69	41%	**0.61**	-0.01	0.69
	420	0.69	41%	**0.61**	0	0.69
	430	0.7	40%	**0.60**	-0.01	0.7
	440	0.7	40%	**0.60**	0	0.7
	450	0.7	40%	**0.60**	0	0.7
	460	0.71	39%	**0.59**	-0.01	0.71
	470	0.71	39%	**0.59**	0	0.71
	480	0.71	39%	**0.59**	0	0.71
	490	0.72	39%	**0.58**	-0.01	0.72
	500	0.72	39%	**0.58**	0	0.72

	Time [min]	**Water Level [m]**	**% Full [%]**	**Water Depth [m]**	
	0.00	0.00	100%	1.300	100.0
	48.33	0.18	75%	1.125	75.0
	270.00	0.55	50%	0.750	50.0
	499.99	**0.72**	**25%**	**0.581**	**38.7**
		0.00	0%	1.300	0.0

Volume between 75% and 50%	V_{p75-25} =	0.74	m^3		
Surface area at 50%	a_{s50} =	4.95	m^2		
Time between 75 and 25%	t_{p75-25} =	451.7	min	7.53	hrs
Soil infiltration Rate	f =	5.5E-06	m/second	2.0E-02	m/hr
	f =	0.000006	m/second	0.020	m/hr

Notes:

- **Ground conditions – Brown Boulder Clay**
- **No Groundwater encountered**
- **Poor infiltration recorded at this test pit.**



TJ O'Connor & Associates Corrig House Corrig Road Sandyford, Dublin 18	Project: Gordon Park, Old Naas Road			Job Ref.: 21003	
	Soakaway Test Results			Sheet no./rev.: 5	
	Test undertaken by Glide Construction and HSK	Date of Test: 16/07/2021	Weather at time of Test: Dry	Logged by: Ciaran Sweeney	Calcs by: NS / TJOC

Soakaway Pit Dimensions

S3_T3

1.5	m long
0.9	m wide
1.3	m deep

Time [min]	Water Level [m]	% Full [%]	Water Depth [m]	Change [m]	Cumulative [m]
0	0	100%	1.30		0.0
10	0.22	72%	1.08	-0.22	0.22
20	0.3	67%	1.00	-0.08	0.3
30	0.38	61%	0.92	-0.08	0.38
40	0.45	57%	0.85	-0.07	0.45
50	0.53	51%	0.77	-0.08	0.53
60	0.59	47%	0.71	-0.06	0.59
70	0.64	44%	0.66	-0.05	0.64
80	0.69	41%	0.61	-0.05	0.69
90	0.72	39%	0.58	-0.03	0.72
100	0.75	37%	0.55	-0.03	0.75
110	0.79	34%	0.51	-0.04	0.79
120	0.82	32%	0.48	-0.03	0.82
130	0.86	29%	0.44	-0.04	0.86
140	0.89	27%	0.41	-0.03	0.89
150	0.92	25%	0.38	-0.03	0.92
160	0.94	24%	0.36	-0.02	0.94
170	0.97	22%	0.33	-0.03	0.97
180	1.01	19%	0.29	-0.04	1.01

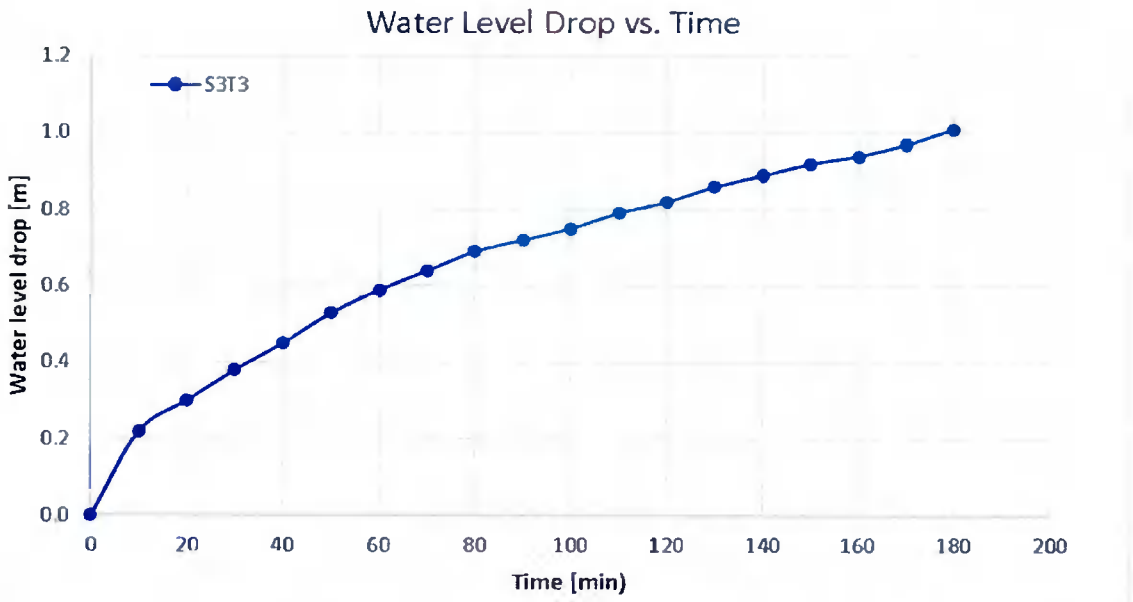
Time [min]	Water Level [m]	% Full [%]	Water Depth [m]	
0.00	0.00	100%	1.300	100
8.93	0.20	75%	1.104	75
53.33	0.55	50%	0.750	50
152.50	0.93	25%	0.375	25
	0.00	0%	1.300	0

Volume between 75% and 50%	V_{p75-25} =	0.99	m^3		
Surface area at 50%	a_{s50} =	4.95	m^2		
Time between 75% and 25%	t_{p75-25} =	143.6	min	2.39	hrs
Soil infiltration Rate	f =	2.3E-05	m/second	8.4E-02	m/hr
	f =	0.000023	m/second	0.084	m/hr

Notes:

- **Ground conditions – Brown Boulder Clay**
- **No Groundwater encountered**
- **Results based on 3rd test carried out at this pit.**

TJ O'CONNOR & ASSOCIATES CONSULTING ENGINEERS TJ O'Connor & Associates Corrig House Corrig Road Sandyford, Dublin 18	Project Gordon Park, Old Naas Road			Job Ref. 21003	
	Soakaway Test Results			Sheet no./rev. 6	
	Test undertaken by Glide Construction and HSK	Date of Test: 16/07/2021	Weather at time of Test: Dry	Logged by: Ciaran Sweeney	Calcs by: NS / TJOC



TJ O'CONNOR & ASSOCIATES CONSULTING ENGINEERS TJ O'Connor & Associates Corrig House Corrig Road Sandyford, Dublin 18	Project Gordon Park, Old Naas Road			Job Ref. 21003	
	Soakaway Test Results			Sheet no./rev. 7	
	Test undertaken by Glide Construction and HSK	Date of Test 16/07/2021	Weather at time of Test: Dry	Logged by Ciaran Sweeney	Calcs by NS / TJOC

Soakaway Pit Dimensions

S4_T1

1.5	m long
0.9	m wide
1.3	m deep

Time [min]	Water Level [m]	% Full [%]	Water Depth [m]	Change [m]	Cumulative [m]
0	0	100%	1.30		0.0
10	0.2	73%	1.10	-0.2	0.2
20	0.3	67%	1.00	-0.1	0.3
30	0.4	60%	0.90	-0.1	0.4
40	0.45	57%	0.85	-0.05	0.45
60	0.5	53%	0.80	-0.05	0.5
80	0.56	49%	0.74	-0.06	0.56
100	0.61	46%	0.69	-0.05	0.61
120	0.68	41%	0.62	-0.07	0.68
140	0.74	37%	0.56	-0.06	0.74
160	0.78	35%	0.52	-0.04	0.78
180	0.81	33%	0.49	-0.03	0.81
200	0.85	30%	0.45	-0.04	0.85
220	0.88	28%	0.42	-0.03	0.88
240	0.92	25%	0.38	-0.04	0.92
260	0.96	23%	0.34	-0.04	0.96

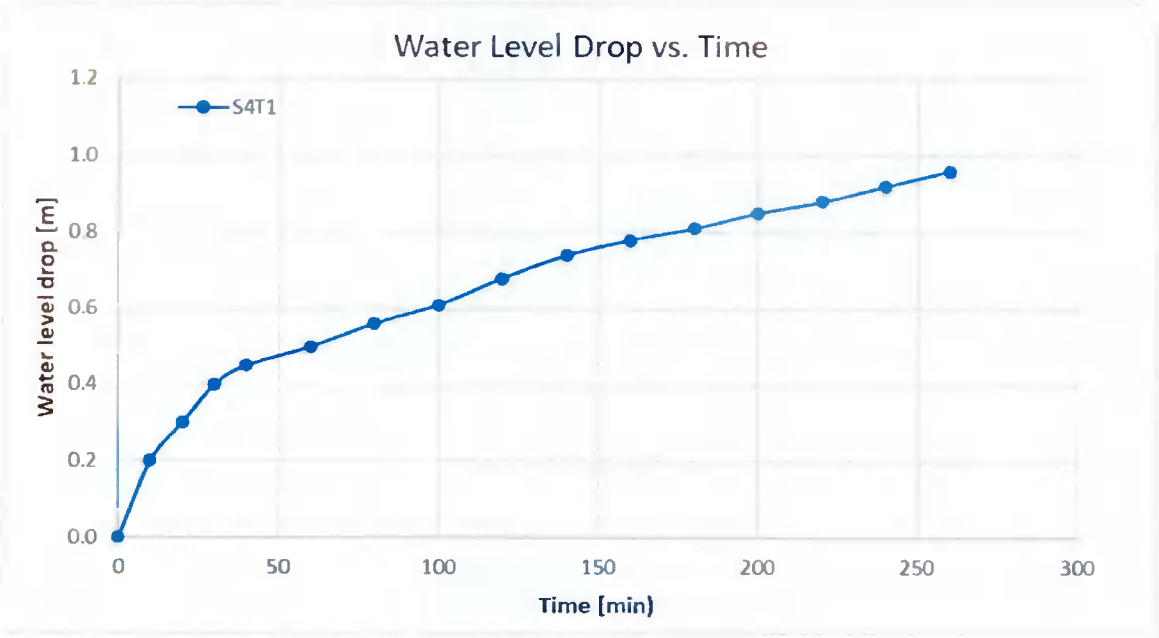
Time [min]	Water Level [m]	% Full [%]	Water Depth [m]	
0.00	0.00	100%	1.300	100
9.38	0.19	75%	1.113	75
76.67	0.55	50%	0.750	50
242.50	0.93	25%	0.375	25
	0.00	0%	1.300	0

Volume between 75% and 50%	V_{p75-25} =	1.00	m^3		
Surface area at 50%	a_{s50} =	4.95	m^2		
Time between 75% and 25%	t_{p75-25} =	233.1	min	3.89	hrs
Soil infiltration Rate	f =	1.4E-05	m/second	5.2E-02	m/hr
	f =	0.000014	m/second	0.052	m/hr

Notes:

- **Ground conditions – Brown Boulder Clay**
- **No Groundwater encountered**
- **Poor infiltration recorded at this test pit.**

TJ O'CONNOR & ASSOCIATES CONSULTING ENGINEERS TJ O'Connor & Associates Corrig House Corrig Road Sandyford, Dublin 18	Project Gordon Park, Old Naas Road			Job Ref. 21003	
	Soakaway Test Results			Sheet no./rev. 8	
	Test undertaken by Glide Construction and HSK	Date of Test: 16/07/2021	Weather at time of Test: Dry	Logged by: Ciaran Sweeney	Calcs by: NS / TJOC



APPENDIX D

HR Wallingford Greenfield Runoff Report & HR Wallingford Surface Water Storage Estimation Tool Report

Greenfield runoff rate estimation for sites

www.uksuds.com | Greenfield runoff tool

Calculated by:	Niall Scollard
Site name:	Kingswood Lands
Site location:	Old Naas Road

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

Site Details

Latitude:	53.29909° N
Longitude:	6.41783° W
Reference:	3419991023
Date:	Oct 05 2021 09:33

Runoff estimation approach IH124

Site characteristics

Total site area (ha): 2.282

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):	873	873
Hydrological region:	12	12
Growth curve factor 1 year:	0.85	0.85
Growth curve factor 30 years:	2.13	2.13
Growth curve factor 100 years:	2.61	2.61
Growth curve factor 200 years:	2.86	2.86

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):	5.39	5.39
1 in 1 year (l/s):	4.58	4.58
1 in 30 years (l/s):	11.47	11.47
1 in 100 year (l/s):	14.06	14.06
1 in 200 years (l/s):	15.4	15.4

HR Wallingford
Working with water

Surface water storage requirements for sites

www.uksuds.com | Storage estimation tool

Calculated by:	John Meade
Site name:	Gordon Park
Site location:	Old Naas Road

This is an estimation of the storage volume requirements that are needed 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). It is not to be used for detailed design of drainage systems. It is recommended that hydraulic modelling software is used to calculate volume requirements and design details before finalising the design of the drainage scheme.

Site Details

Latitude:	53.29929° N
Longitude:	6.41804° W
Reference:	232860756
Date:	Nov 01 2021 10:26

Site characteristics

Total site area (ha):	2.282
Significant public open space (ha):	0.9276
Area positively drained (ha):	1.3544
Impermeable area (ha):	1.3544
Percentage of drained area that is impermeable (%):	100
Impervious area drained via infiltration (ha):	0
Return period for infiltration system design (year):	10
Impervious area drained to rainwater harvesting (ha):	0
Return period for rainwater harvesting system (year):	10
Compliance factor for rainwater harvesting system (%):	66
Net site area for storage volume design (ha):	1.35
Net impermeable area for storage volume design (ha):	1.35
Pervious area contribution to runoff (%):	30

* where rainwater harvesting or infiltration has been used for managing surface water runoff such that the effective impermeable area is less than 50% of the 'area positively drained', the 'net site area' and the estimates of Q_{BAR} and other flow rates will have been reduced accordingly.

Design criteria

Climate change allowance factor:	1.1
Urban creep allowance factor:	1.1
Volume control approach	Flow control to max of 2 l/s/ha or Qbar
Interception rainfall depth (mm):	5
Minimum flow rate (l/s):	2

Methodology

esti	IH124
Q_{BAR} estimation method:	Calculate from SPR and SAAR
SPR estimation method:	Calculate from SOIL type

Soil characteristics	Default	Edited
SOIL type:	2	2
SPR:	0.3	0.3

Hydrological characteristics	Default	Edited
Rainfall 100 yrs 6 hrs:	--	61
Rainfall 100 yrs 12 hrs:	--	73
FEH / FSR conversion factor:	1	1
SAAR (mm):	873	873
M5-60 Rainfall Depth (mm):	17	17
'r' Ratio M5-60/M5-2 day:	0.3	0.3
Hydological region:	12	12
Growth curve factor 1 year:	0.85	0.85
Growth curve factor 10 year:	1.72	1.72
Growth curve factor 30 year:	2.13	2.13
Growth curve factor 100 years:	2.61	2.61
Q_{BAR} for total site area (l/s):	5.39	5.39
Q_{BAR} for net site area (l/s):	3.2	3.2

Site discharge rates	Default	Edited	Estimated storage volumes	Default	Edited
1 in 1 year (l/s):	2.7	2.7	Attenuation storage 1/100 years (m^3):	1099	1099
1 in 30 years (l/s):	3.2	3.2	Long term storage 1/100 years (m^3):	0	0
1 in 100 year (l/s):	3.2	3.2	Total storage 1/100 years (m^3):	1099	1099

This report was produced using the storage estimation tool developed by HRWallingford and available at www.uksuds.com. The use of this tool is subject to the UK SuDS terms and conditions and licence agreement, which can both be found at http://uksuds.com/terms-and-conditions.htm. The outputs from this tool have been used to estimate storage volume requirements. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, CEH, Hydrosolutions or any other organisation for the use of these data in the design or operational characteristics of any drainage scheme.

APPENDIX E

Met Eireann Rainfall Data

Met Eireann
Return Period Rainfall Depths for sliding Durations
Irish Grid: Easting: 305514, Northing: 228798,

	Interval		Years												
DURATION	6months,	1year,	2,	3,	4,	5,	10,	20,	30,	50,	75,	100,	150,	200,	250,	500,
5 mins	2.4,	3.6,	4.3,	5.3,	6.0,	6.6,	8.4,	10.6,	12.1,	14.2,	16.1,	17.7,	20.0,	21.9,	23.5,	N/A ,
10 mins	3.4,	5.0,	6.0,	7.4,	8.4,	9.1,	11.7,	14.8,	16.8,	19.8,	22.5,	24.6,	27.9,	30.5,	32.7,	N/A ,
15 mins	4.0,	5.9,	7.0,	8.7,	9.8,	10.7,	13.8,	17.4,	19.8,	23.3,	26.5,	28.9,	32.8,	35.9,	38.5,	N/A ,
30 mins	5.2,	7.7,	9.1,	11.2,	12.7,	13.8,	17.6,	22.1,	25.1,	29.4,	33.3,	36.4,	41.1,	44.9,	48.0,	N/A ,
1 hours	6.9,	10.0,	11.8,	14.5,	16.3,	17.7,	22.5,	28.1,	31.8,	37.1,	41.9,	45.7,	51.5,	56.1,	60.0,	N/A ,
2 hours	9.0,	13.1,	15.3,	18.7,	21.0,	22.8,	28.8,	35.7,	40.3,	46.9,	52.8,	57.4,	64.6,	70.2,	74.8,	N/A ,
3 hours	10.6,	15.2,	17.8,	21.7,	24.3,	26.4,	33.2,	41.0,	46.3,	53.7,	60.4,	65.6,	73.6,	80.0,	85.2,	N/A ,
4 hours	11.8,	17.0,	19.8,	24.1,	27.0,	29.3,	36.7,	45.3,	51.0,	59.2,	66.4,	72.1,	80.9,	87.7,	93.4,	N/A ,
6 hours	13.9,	19.8,	23.1,	27.9,	31.3,	33.9,	42.4,	52.1,	58.6,	67.8,	76.0,	82.4,	92.3,	99.9,	106.4,	N/A ,
9 hours	16.3,	23.1,	26.9,	32.4,	36.2,	39.2,	48.9,	60.0,	67.3,	77.7,	86.9,	94.1,	105.2,	113.9,	121.1,	N/A ,
12 hours	18.2,	25.8,	29.9,	36.1,	40.2,	43.5,	54.1,	66.3,	74.3,	85.6,	95.7,	103.5,	115.6,	124.9,	132.7,	N/A ,
18 hours	21.4,	30.1,	34.8,	41.9,	46.6,	50.4,	62.5,	76.2,	85.3,	98.1,	109.4,	118.2,	131.8,	142.4,	151.1,	N/A ,
24 hours	24.0,	33.6,	38.8,	46.6,	51.8,	55.9,	69.2,	84.2,	94.1,	108.0,	120.4,	130.0,	144.7,	156.2,	165.7,	199.0,
2 days	30.2,	41.2,	47.0,	55.5,	61.2,	65.5,	79.7,	95.4,	105.6,	119.8,	132.3,	141.9,	156.6,	167.9,	177.2,	209.4,
3 days	35.3,	47.3,	53.5,	62.7,	68.7,	73.4,	88.2,	104.6,	115.2,	129.8,	142.5,	152.3,	167.1,	178.5,	187.8,	220.0,
4 days	39.7,	52.6,	59.2,	68.9,	75.3,	80.2,	95.7,	112.6,	123.5,	138.5,	151.5,	161.5,	176.5,	188.0,	197.5,	229.8,
6 days	47.5,	61.9,	69.2,	79.7,	86.6,	91.9,	108.5,	126.5,	138.0,	153.7,	167.2,	177.5,	193.0,	204.8,	214.5,	247.4,
8 days	54.4,	70.0,	77.9,	89.2,	96.6,	102.2,	119.7,	138.6,	150.6,	166.9,	180.9,	191.5,	207.5,	219.6,	229.4,	262.9,
10 days	60.7,	77.4,	85.8,	97.8,	105.6,	111.4,	129.9,	149.5,	161.9,	178.7,	193.2,	204.1,	220.5,	232.8,	242.9,	276.9,
12 days	66.7,	84.3,	93.2,	105.7,	113.9,	120.0,	139.2,	159.5,	172.4,	189.7,	204.5,	215.7,	232.4,	245.0,	255.3,	289.9,
16 days	77.7,	97.1,	106.7,	120.4,	129.1,	135.7,	156.2,	177.8,	191.3,	209.6,	225.1,	236.7,	254.1,	267.2,	277.8,	313.3,
20 days	87.9,	108.9,	119.2,	133.7,	143.0,	150.0,	171.7,	194.4,	208.5,	227.5,	243.6,	255.7,	273.7,	287.1,	298.0,	334.5,
25 days	99.9,	122.5,	133.6,	149.2,	159.1,	166.6,	189.5,	213.4,	228.2,	248.0,	264.8,	277.4,	296.0,	309.9,	321.1,	358.7,

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

APPENDIX F

Proposed Surface Water Innovyze MicroDrainage Calculations

T J O'Connor & Asso
Corrig Hse Corrig Rd
Sandyford Dublin 8
Ireland

Date 05/10/2021 14:40
File Drainage_Network_01.10.2021_M66_All_Time_Steps.MDX
CADS

Designed by Niall Scollard
Checked by John Meade
Network 2020.1.3

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - Scotland and Ireland

Return Period (years)	2	Maximum Time of Concentration (mins)	30	Add Flow / Climate Change (%)	0	Min Vel for Auto Design only (m/s)	1.00
M5-60 (mm)	17.700	Foul Sewage (l/s/ha)	0.000	Minimum Backdrop Height (m)	0.200	Min Slope for Optimisation (1:X)	500
Ratio R	0.270	Volumetric Runoff Coeff.	0.750	Maximum Backdrop Height (m)	3.000		
Maximum Rainfall (mm/hr)	50	PIMP (%)	100	Min Design Depth for Optimisation (m)	1.200		

Designed with Level Soffits

Network Design Table for Storm

« - Indicates pipe capacity < flow

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
1.000	12.702	0.064	198.5	0.000	5.00	0.0		0.075	→|_|→		Infiltration Trench	
1.001	16.947	0.085	199.4	0.000	0.00	0.0	0.600		o	150	Pipe/Conduit	
1.002	14.385	0.240	59.9	0.000	0.00	0.0	0.600		o	150	Pipe/Conduit	
2.000	4.975	0.025	199.0	0.000	5.00	0.0		0.075	→|↓|→		Porous Car Park	
2.001	6.420	0.107	60.0	0.000	0.00	0.0	0.600		o	150	Pipe/Conduit	
3.000	4.756	0.024	198.2	0.000	5.00	0.0		0.075	→|↓|→		Porous Car Park	
3.001	10.755	0.179	60.1	0.000	0.00	0.0	0.600		o	150	Pipe/Conduit	
1.003	19.978	0.100	199.8	0.023	0.00	0.0	0.600		o	225	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.000	46.85	6.77	94.000	0.000	0.0	0.0	0.0	0.12	12.9	0.0
1.001	45.74	7.17	93.886	0.000	0.0	0.0	0.0	0.71	12.5	0.0
1.002	45.25	7.35	93.801	0.000	0.0	0.0	0.0	1.30	23.0	0.0
2.000	50.00	5.70	94.190	0.000	0.0	0.0	0.0	0.12	205.6	0.0
2.001	49.90	5.78	94.165	0.000	0.0	0.0	0.0	1.30	23.0	0.0
3.000	50.00	5.60	94.190	0.000	0.0	0.0	0.0	0.13	288.7	0.0
3.001	50.00	5.74	94.166	0.000	0.0	0.0	0.0	1.30	23.0	0.0
1.003	44.33	7.71	93.486	0.023	0.0	0.0	0.0	0.92	36.6	2.8

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
4.000	21.334	0.107	199.4	0.025	5.00	0.0	0.600		o	225	Pipe/Conduit	
4.001	7.901	0.040	197.5	0.000	0.00	0.0	0.600		o	225	Pipe/Conduit	
5.000	6.877	0.034	202.3	0.000	5.00	0.0		0.075			Porous Car Park	
5.001	10.286	0.171	60.2	0.000	0.00	0.0		0.075	o	150	Pipe/Conduit	
6.000	2.500	0.013	192.3	0.000	5.00	0.0		0.075			Porous Car Park	
6.001	7.206	0.127	56.7	0.000	0.00	0.0		0.075	o	150	Pipe/Conduit	
1.004	22.873	0.114	200.6	0.031	0.00	0.0	0.600		o	225	Pipe/Conduit	
7.000	5.100	0.026	196.2	0.000	5.00	0.0		0.075			Porous Car Park	
7.001	5.293	0.088	60.1	0.000	0.00	0.0		0.075	o	150	Pipe/Conduit	
8.000	22.568	0.113	199.7	0.000	5.00	0.0		0.075			Infiltration Trench	
8.001	26.567	0.133	199.8	0.000	0.00	0.0		0.075	o	150	Pipe/Conduit	
1.005	9.608	0.048	200.2	0.000	0.00	0.0		0.075	o	225	Pipe/Conduit	
1.006	15.627	0.078	200.3	0.033	0.00	0.0		0.075	o	225	Pipe/Conduit	
9.000	5.200	0.026	200.0	0.000	5.00	0.0		0.075			Porous Car Park	
9.001	5.800	0.097	59.8	0.000	0.00	0.0		0.075	o	150	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
4.000	50.00	5.39	92.306	0.025	0.0	0.0	0.0	0.92	36.7	3.4
4.001	50.00	5.53	92.199	0.025	0.0	0.0	0.0	0.93	36.8	3.4
5.000	49.24	5.98	94.640	0.000	0.0	0.0	0.0	0.12	137.7	0.0
5.001	46.55	6.87	94.606	0.000	0.0	0.0	0.0	0.19	3.4	0.0
6.000	50.00	5.35	94.665	0.000	0.0	0.0	0.0	0.12	142.4	0.0
6.001	49.33	5.95	94.653	0.000	0.0	0.0	0.0	0.20	3.5	0.0
1.004	43.33	8.13	92.160	0.079	0.0	0.0	0.0	0.92	36.6	9.3
7.000	50.00	5.71	94.440	0.000	0.0	0.0	0.0	0.12	201.6	0.0
7.001	48.64	6.17	94.414	0.000	0.0	0.0	0.0	0.19	3.4	0.0
8.000	44.25	7.74	94.273	0.000	0.0	0.0	0.0	0.14	19.3	0.0
8.001	36.21	11.93	94.160	0.000	0.0	0.0	0.0	0.11	1.9	0.0
1.005	34.58	13.09	92.046	0.079	0.0	0.0	0.0	0.14	5.5*	9.3
1.006	32.28	14.97	91.998	0.112	0.0	0.0	0.0	0.14	5.5*	9.8
9.000	50.00	5.73	94.190	0.000	0.0	0.0	0.0	0.12	253.4	0.0
9.001	48.44	6.23	94.164	0.000	0.0	0.0	0.0	0.19	3.4	0.0

Corrig Hse Corrig Rd
Sandyford Dublin 8
Ireland

Date 05/10/2021 14:40
File Drainage_Network_01.10.2021_M66_All_Time_Steps.MDX
CADS

Designed by Admin
Checked by
Network 2020.1.3

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
10.000	22.836	0.114	200.3	0.000	5.00	0.0		0.075	→|_|→		Infiltration Trench	
10.001	27.438	0.137	200.3	0.000	0.00	0.0		0.075	o	225	Pipe/Conduit	
1.007	10.126	0.051	198.5	0.000	0.00	0.0		0.075	o	225	Pipe/Conduit	
11.000	5.200	0.026	200.0	0.000	5.00	0.0		0.075	→|↓|→		Porous Car Park	
11.001	6.000	0.100	60.0	0.000	0.00	0.0		0.075	o	150	Pipe/Conduit	
1.008	9.068	0.045	201.5	0.000	0.00	0.0	0.600		o	225	Pipe/Conduit	
12.000	25.661	0.128	200.5	0.000	5.00	0.0		0.075	→|_|→		Infiltration Trench	
12.001	22.481	0.112	200.7	0.000	0.00	0.0	0.600		o	150	Pipe/Conduit	
12.002	18.920	0.095	199.2	0.000	0.00	0.0	0.600		o	150	Pipe/Conduit	
1.009	6.046	0.030	201.5	0.000	0.00	0.0	0.600		o	225	Pipe/Conduit	
13.000	6.000	0.030	200.0	0.000	5.00	0.0		0.075	→|↓|→		Porous Car Park	
13.001	16.200	0.270	60.0	0.000	0.00	0.0	0.600		o	150	Pipe/Conduit	
1.010	22.964	0.115	199.7	0.033	0.00	0.0	0.600		o	225	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
10.000	43.91	7.88	94.000	0.000	0.0	0.0	0.0	0.13	16.6	0.0
10.001	37.37	11.19	93.886	0.000	0.0	0.0	0.0	0.14	5.5	0.0
1.007	31.00	16.19	91.920	0.112	0.0	0.0	0.0	0.14	5.5*	9.8
11.000	50.00	5.73	94.040	0.000	0.0	0.0	0.0	0.12	288.8	0.0
11.001	48.39	6.25	94.014	0.000	0.0	0.0	0.0	0.19	3.4	0.0
1.008	30.84	16.35	91.869	0.112	0.0	0.0	0.0	0.92	36.5	9.8
12.000	43.06	8.24	93.850	0.000	0.0	0.0	0.0	0.13	16.6	0.0
12.001	41.88	8.77	93.722	0.000	0.0	0.0	0.0	0.71	12.5	0.0
12.002	40.95	9.22	93.610	0.000	0.0	0.0	0.0	0.71	12.5	0.0
1.009	30.74	16.46	91.824	0.112	0.0	0.0	0.0	0.92	36.5	9.8
13.000	49.67	5.85	93.890	0.000	0.0	0.0	0.0	0.12	128.9	0.0
13.001	48.99	6.06	93.860	0.000	0.0	0.0	0.0	1.30	23.0	0.0
1.010	30.34	16.88	91.794	0.145	0.0	0.0	0.0	0.92	36.6	11.9

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
14.000	11.533	0.058	198.8	0.000	5.00	0.0		0.075	→|_|→		Infiltration Trench	
14.001	16.960	0.085	199.5	0.000	0.00	0.0	0.600		o	150	Pipe/Conduit	
14.002	13.994	0.070	199.9	0.000	0.00	0.0	0.600		o	150	Pipe/Conduit	
1.011	7.237	0.036	201.0	0.000	0.00	0.0	0.600		o	225	Pipe/Conduit	
1.012	7.200	0.036	200.0	0.000	0.00	0.0	0.600		o	225	Pipe/Conduit	
15.000	5.232	0.026	201.2	0.000	5.00	0.0		0.075	→|↓|→		Porous Car Park	
15.001	5.400	0.090	60.0	0.000	0.00	0.0	0.600		o	150	Pipe/Conduit	
16.000	6.221	0.031	200.7	0.000	5.00	0.0		0.075	→|↓|→		Porous Car Park	
16.001	9.359	0.156	60.0	0.000	0.00	0.0	0.600		o	150	Pipe/Conduit	
15.002	25.983	0.130	199.9	0.030	0.00	0.0	0.600		o	225	Pipe/Conduit	
17.000	6.952	0.035	198.6	0.000	5.00	0.0		0.075	→|↓|→		Porous Car Park	
17.001	8.258	0.138	59.8	0.000	0.00	0.0	0.600		o	150	Pipe/Conduit	
18.000	20.311	0.102	199.1	0.000	5.00	0.0		0.075	→|_|→		Infiltration Trench	
18.001	12.993	0.065	199.9	0.000	0.00	0.0		0.075	→|_|→		Infiltration Trench	
18.002	16.730	0.084	199.2	0.000	0.00	0.0	0.600		o	150	Pipe/Conduit	
18.003	15.344	0.077	199.3	0.000	0.00	0.0	0.600		o	150	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
14.000	47.31	6.61	93.550	0.000	0.0	0.0	0.0	0.12	12.9	0.0
14.001	46.18	7.01	93.492	0.000	0.0	0.0	0.0	0.71	12.5	0.0
14.002	45.29	7.34	93.407	0.000	0.0	0.0	0.0	0.71	12.5	0.0
1.011	30.22	17.01	91.679	0.145	0.0	0.0	0.0	0.92	36.5	11.9
1.012	30.10	17.14	91.643	0.145	0.0	0.0	0.0	0.92	36.6	11.9
15.000	50.00	5.75	93.965	0.000	0.0	0.0	0.0	0.12	124.2	0.0
15.001	49.79	5.81	93.939	0.000	0.0	0.0	0.0	1.30	23.0	0.0
16.000	49.57	5.88	93.965	0.000	0.0	0.0	0.0	0.12	201.5	0.0
16.001	49.18	6.00	93.934	0.000	0.0	0.0	0.0	1.30	23.0	0.0
15.002	47.72	6.47	92.663	0.030	0.0	0.0	0.0	0.92	36.6	3.9
17.000	49.23	5.98	93.740	0.000	0.0	0.0	0.0	0.12	130.4	0.0
17.001	48.90	6.09	93.555	0.000	0.0	0.0	0.0	1.30	23.0	0.0
18.000	44.52	7.63	93.702	0.000	0.0	0.0	0.0	0.13	14.8	0.0
18.001	40.83	9.27	93.550	0.000	0.0	0.0	0.0	0.13	16.7	0.0
18.002	40.05	9.67	93.435	0.000	0.0	0.0	0.0	0.71	12.5	0.0
18.003	39.37	10.03	93.351	0.000	0.0	0.0	0.0	0.71	12.5	0.0

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Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
15.003	20.391	0.102	199.9	0.036	0.00	0.0	0.600		o	225	Pipe/Conduit	
19.000	17.678	0.227	77.9	0.000	5.00	0.0		0.075	→|_|→		Infiltration Trench	
19.001	12.792	0.128	99.9	0.000	0.00	0.0		0.075	→|_|→		Infiltration Trench	
19.002	17.417	0.290	60.1	0.000	0.00	0.0		0.075	o	150	Pipe/Conduit	
19.003	6.458	0.065	99.4	0.000	0.00	0.0		0.075	o	150	Pipe/Conduit	
19.004	13.276	0.027	491.7	0.000	0.00	0.0		0.035	→_/→		Infiltration Basin	
19.005	5.446	0.027	201.7	0.000	0.00	0.0		0.075	o	225	Pipe/Conduit	
19.006	5.379	0.027	199.2	0.000	0.00	0.0		0.075	o	225	Pipe/Conduit	
20.000	6.570	0.033	199.1	0.000	5.00	0.0		0.075	→|_|→		Porous Car Park	
20.001	12.739	0.212	60.1	0.000	0.00	0.0	0.600		o	150	Pipe/Conduit	
15.004	51.961	0.260	199.9	0.024	0.00	0.0	0.600		o	225	Pipe/Conduit	
15.005	12.244	0.061	200.7	0.000	0.00	0.0	0.600		o	225	Pipe/Conduit	
15.006	9.948	0.050	199.0	0.024	0.00	0.0	0.600		o	225	Pipe/Conduit	
21.000	16.200	0.081	200.0	0.000	5.00	0.0		0.075	→|_|→		Infiltration Trench	
21.001	8.203	0.041	200.1	0.000	0.00	0.0		0.075	→|_|→		Infiltration Trench	
21.002	15.243	0.076	200.6	0.000	0.00	0.0		0.075	→|_|→		Infiltration Trench	
21.003	7.611	0.038	200.3	0.000	0.00	0.0	0.600		o	150	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
15.003	38.71	10.40	92.533	0.066	0.0	0.0	0.0	0.92	36.6	6.9
19.000	47.96	6.39	94.000	0.000	0.0	0.0	0.0	0.21	26.7	0.0
19.001	44.99	7.45	93.619	0.000	0.0	0.0	0.0	0.20	31.9	0.0
19.002	41.48	8.96	93.267	0.000	0.0	0.0	0.0	0.19	3.4	0.0
19.003	40.03	9.68	92.977	0.000	0.0	0.0	0.0	0.15	2.6	0.0
19.004	39.25	10.09	92.912	0.000	0.0	0.0	0.0	0.53	403.4	0.0
19.005	38.09	10.75	92.485	0.000	0.0	0.0	0.0	0.14	5.5	0.0
19.006	37.03	11.40	92.458	0.000	0.0	0.0	0.0	0.14	5.5	0.0
20.000	49.43	5.92	93.485	0.000	0.0	0.0	0.0	0.12	227.1	0.0
20.001	48.90	6.09	93.452	0.000	0.0	0.0	0.0	1.30	23.0	0.0
15.004	35.61	12.34	92.431	0.090	0.0	0.0	0.0	0.92	36.6	8.7
15.005	35.30	12.56	92.171	0.090	0.0	0.0	0.0	0.92	36.5	8.7
15.006	35.05	12.74	92.110	0.114	0.0	0.0	0.0	0.92	36.7	10.8
21.000	46.08	7.04	93.295	0.000	0.0	0.0	0.0	0.13	16.7	0.0
21.001	43.59	8.01	93.164	0.000	0.0	0.0	0.0	0.14	21.6	0.0
21.002	39.84	9.77	93.073	0.000	0.0	0.0	0.0	0.14	24.2	0.0
21.003	39.51	9.95	92.562	0.000	0.0	0.0	0.0	0.71	12.5	0.0

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Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
15.007	4.097	0.020	204.9	0.016	0.00	0.0	0.600		o	225	Pipe/Conduit	
15.008	5.743	0.029	198.0	0.000	0.00	0.0	0.600		o	225	Pipe/Conduit	
22.000	10.592	0.053	199.8	0.000	5.00	0.0		0.075	→|↓|→		Porous Car Park	
23.000	5.400	0.027	200.0	0.000	5.00	0.0		0.075	→|↓|→		Porous Car Park	
23.001	9.512	0.159	59.8	0.000	0.00	0.0	0.600		o	150	Pipe/Conduit	
23.002	9.647	0.048	201.0	0.000	0.00	0.0	0.600		o	225	Pipe/Conduit	
24.000	6.750	0.034	198.5	0.000	5.00	0.0		0.075	→|↓|→		Porous Car Park	
24.001	8.660	0.144	60.1	0.000	0.00	0.0	0.600		o	150	Pipe/Conduit	
24.002	8.459	0.042	201.4	0.000	0.00	0.0	0.600		o	225	Pipe/Conduit	
25.000	12.500	0.025	500.0	0.000	5.00	0.0	0.600		o	100	Pipe/Conduit	
23.003	18.547	0.093	199.4	0.000	0.00	0.0	0.600		o	225	Pipe/Conduit	
26.000	22.748	0.114	199.5	0.000	5.00	0.0	0.600		o	225	Pipe/Conduit	
26.001	22.445	0.112	200.4	0.000	0.00	0.0	0.600		o	225	Pipe/Conduit	
26.002	15.387	0.077	199.8	0.000	0.00	0.0	0.600		o	225	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
15.007	34.95	12.82	92.060	0.130	0.0	0.0	0.0	0.91	36.2	12.3
15.008	34.81	12.92	92.040	0.130	0.0	0.0	0.0	0.93	36.8	12.3
22.000	50.00	5.58	92.148	0.000	0.0	0.0	0.0	0.31	4360.7	0.0
23.000	49.97	5.76	93.740	0.000	0.0	0.0	0.0	0.12	255.5	0.0
23.001	49.57	5.88	93.713	0.000	0.0	0.0	0.0	1.30	23.0	0.0
23.002	49.00	6.06	92.236	0.000	0.0	0.0	0.0	0.92	36.5	0.0
24.000	49.35	5.95	93.500	0.000	0.0	0.0	0.0	0.12	201.5	0.0
24.001	48.99	6.06	93.466	0.000	0.0	0.0	0.0	1.30	23.0	0.0
24.002	48.50	6.21	92.230	0.000	0.0	0.0	0.0	0.92	36.5	0.0
25.000	50.00	5.62	92.700	0.000	0.0	0.0	0.0	0.34	2.7	0.0
23.003	47.48	6.55	92.188	0.000	0.0	0.0	0.0	0.92	36.7	0.0
26.000	50.00	5.41	93.340	0.000	0.0	0.0	0.0	0.92	36.7	0.0
26.001	49.78	5.82	93.226	0.000	0.0	0.0	0.0	0.92	36.6	0.0
26.002	48.87	6.10	93.114	0.000	0.0	0.0	0.0	0.92	36.6	0.0

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
27.000	18.014	0.090	200.2	0.000	5.00	0.0	0.600		o	225	Pipe/Conduit	
27.001	14.719	0.213	69.1	0.000	0.00	0.0	0.600		o	225	Pipe/Conduit	
26.003	12.980	0.065	199.7	0.000	0.00	0.0	0.600		o	225	Pipe/Conduit	
22.001	3.500	0.018	194.4	0.000	0.00	0.0	0.600		o	225	Pipe/Conduit	
22.002	28.142	0.048	586.3	0.049	0.00	0.0		0.050	→[↓]		Cellular Storage	
22.003	3.605	0.018	200.3	0.000	0.00	0.0		0.050	o	225	Pipe/Conduit	
15.009	9.910	0.050	198.2	0.000	0.00	0.0	0.600		o	225	Pipe/Conduit	
15.010	4.285	0.021	204.0	0.000	0.00	0.0	0.600		o	225	Pipe/Conduit	
15.011	12.967	0.065	199.5	0.033	0.00	0.0	0.600		o	225	Pipe/Conduit	
15.012	6.043	0.030	201.4	0.000	0.00	0.0	0.600		o	225	Pipe/Conduit	
28.000	22.392	0.112	199.9	0.000	5.00	0.0		0.075	→|_|→		Infiltration Trench	
28.001	13.233	0.066	200.5	0.000	0.00	0.0		0.075	→|_|→		Infiltration Trench	
28.002	12.869	0.064	201.1	0.000	0.00	0.0		0.075	o	150	Pipe/Conduit	
15.013	6.306	0.032	197.1	0.000	0.00	0.0	0.600		o	225	Pipe/Conduit	
29.000	5.000	0.025	200.0	0.000	5.00	0.0		0.075	→|||→		Porous Car Park	
29.001	11.100	0.185	60.0	0.000	0.00	0.0	0.600		o	150	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
27.000	50.00	5.33	93.340	0.000	0.0	0.0	0.0	0.92	36.6	0.0
27.001	50.00	5.48	93.250	0.000	0.0	0.0	0.0	1.58	62.6	0.0
26.003	48.14	6.33	93.037	0.000	0.0	0.0	0.0	0.92	36.6	0.0
22.001	47.30	6.61	92.095	0.000	0.0	0.0	0.0	0.93	37.1	0.0
22.002	44.40	7.68	92.078	0.049	0.0	0.0	0.0	0.44	2110.4	5.9
22.003	43.69	7.97	92.030	0.049	0.0	0.0	0.0	0.21	8.2	5.9
15.009	34.57	13.10	92.011	0.179	0.0	0.0	0.0	0.93	36.8	16.8
15.010	34.46	13.18	91.961	0.179	0.0	0.0	0.0	0.91	36.2	16.8
15.011	34.16	13.41	91.940	0.212	0.0	0.0	0.0	0.92	36.7	19.6
15.012	34.02	13.52	91.875	0.212	0.0	0.0	0.0	0.92	36.5	19.6
28.000	44.06	7.82	93.550	0.000	0.0	0.0	0.0	0.13	16.7	0.0
28.001	40.47	9.45	93.310	0.000	0.0	0.0	0.0	0.14	18.5	0.0
28.002	36.89	11.49	92.472	0.000	0.0	0.0	0.0	0.11	1.9	0.0
15.013	33.87	13.63	91.845	0.212	0.0	0.0	0.0	0.93	36.9	19.6
29.000	50.00	5.71	93.590	0.000	0.0	0.0	0.0	0.12	158.9	0.0
29.001	49.67	5.85	93.565	0.000	0.0	0.0	0.0	1.30	23.0	0.0

Corrig Hse Corrig Rd
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CADS | Network 2020.1.3

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
30.000	17.857	0.089	200.6	0.000	5.00	0.0		0.075			Infiltration Trench	
30.001	17.475	0.087	200.9	0.000	0.00	0.0		0.075			Infiltration Trench	
30.002	13.076	0.065	201.2	0.000	0.00	0.0		0.075	o	150	Pipe/Conduit	
31.000	20.489	0.102	200.9	0.000	5.00	0.0		0.075			Infiltration Trench	
32.000	15.560	0.078	199.5	0.000	5.00	0.0		0.075			Infiltration Trench	
31.001	16.943	0.085	199.3	0.000	0.00	0.0		0.075	o	150	Pipe/Conduit	
31.002	13.606	0.068	200.1	0.000	0.00	0.0		0.075	o	150	Pipe/Conduit	
15.014	21.973	0.110	199.8	0.030	0.00	0.0	0.600		o	225	Pipe/Conduit	
33.000	5.600	0.028	200.0	0.000	5.00	0.0		0.075			Porous Car Park	
33.001	10.500	0.175	60.0	0.000	0.00	0.0	0.600		o	150	Pipe/Conduit	
15.015	6.467	0.032	202.1	0.000	0.00	0.0	0.600		o	225	Pipe/Conduit	
34.000	5.200	0.026	200.0	0.000	5.00	0.0		0.075			Porous Car Park	
34.001	5.900	0.098	60.2	0.000	0.00	0.0	0.600		o	150	Pipe/Conduit	
34.002	44.743	0.224	199.7	0.028	0.00	0.0	0.600		o	225	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
30.000	45.50	7.26	93.735	0.000	0.0	0.0	0.0	0.13	16.6	0.0
30.001	40.63	9.37	93.285	0.000	0.0	0.0	0.0	0.14	19.8	0.0
30.002	36.96	11.44	92.517	0.000	0.0	0.0	0.0	0.11	1.9	0.0
31.000	44.73	7.55	93.424	0.000	0.0	0.0	0.0	0.13	17.6	0.0
32.000	46.31	6.96	93.400	0.000	0.0	0.0	0.0	0.13	16.7	0.0
31.001	39.02	10.22	93.272	0.000	0.0	0.0	0.0	0.11	1.9	0.0
31.002	35.57	12.37	93.187	0.000	0.0	0.0	0.0	0.11	1.9	0.0
15.014	33.38	14.03	91.813	0.242	0.0	0.0	0.0	0.92	36.6	21.9
33.000	49.87	5.79	93.640	0.000	0.0	0.0	0.0	0.12	208.3	0.0
33.001	49.43	5.92	93.612	0.000	0.0	0.0	0.0	1.30	23.0	0.0
15.015	33.24	14.15	91.703	0.242	0.0	0.0	0.0	0.92	36.4	21.9
34.000	50.00	5.73	93.925	0.000	0.0	0.0	0.0	0.12	198.6	0.0
34.001	49.81	5.81	93.899	0.000	0.0	0.0	0.0	1.30	22.9	0.0
34.002	47.28	6.62	93.135	0.028	0.0	0.0	0.0	0.92	36.6	3.6

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Ireland

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CADS | Network 2020.1.3

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
35.000	5.200	0.025	208.0	0.000	5.00	0.0		0.075			Porous Car Park	
35.001	6.500	0.108	60.2	0.000	0.00	0.0		0.075	o	150	Pipe/Conduit	
36.000	18.820	0.094	200.2	0.000	5.00	0.0		0.075			Infiltration Trench	
36.001	17.126	0.086	199.1	0.000	0.00	0.0		0.075	o	150	Pipe/Conduit	
36.002	13.516	0.068	198.8	0.000	0.00	0.0		0.075	o	150	Pipe/Conduit	
15.016	6.287	0.031	202.8	0.016	0.00	0.0	0.600		o	225	Pipe/Conduit	
37.000	5.740	0.029	197.9	0.000	5.00	0.0		0.075			Porous Car Park	
37.001	11.632	0.058	200.6	0.000	0.00	0.0	0.600		o	150	Pipe/Conduit	
15.017	7.021	0.035	200.6	0.000	0.00	0.0	0.600		o	225	Pipe/Conduit	
1.013	3.017	0.006	502.8	0.000	0.00	0.0	0.600		o	225	Pipe/Conduit	
1.014	24.822	0.050	496.4	0.000	0.00	0.0		0.050			Cellular Storage	
1.015	4.410	0.022	200.5	0.000	0.00	0.0	0.600		o	225	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
35.000	50.00	5.75	93.475	0.000	0.0	0.0	0.0	0.12	271.6	0.0
35.001	48.21	6.31	93.200	0.000	0.0	0.0	0.0	0.19	3.4	0.0
36.000	45.19	7.37	93.550	0.000	0.0	0.0	0.0	0.13	16.6	0.0
36.001	39.29	10.07	93.406	0.000	0.0	0.0	0.0	0.11	1.9	0.0
36.002	35.82	12.20	93.320	0.000	0.0	0.0	0.0	0.11	1.9	0.0
15.016	33.10	14.26	91.671	0.286	0.0	0.0	0.0	0.91	36.4	25.6
37.000	49.82	5.81	93.740	0.000	0.0	0.0	0.0	0.12	193.2	0.0
37.001	48.92	6.08	93.711	0.000	0.0	0.0	0.0	0.71	12.5	0.0
15.017	32.95	14.39	91.640	0.286	0.0	0.0	0.0	0.92	36.6	25.6
1.013	30.02	17.23	91.607	0.431	0.0	0.0	0.0	0.58	22.9	35.0
1.014	29.42	17.91	91.601	0.431	0.0	0.0	0.0	0.61	18572.5	35.0
1.015	29.35	17.99	91.447	0.431	0.0	0.0	0.0	0.92	36.6	35.0

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Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	PN	Pipe Out Invert Level (m)	Diameter (mm)	PN	Pipes In Invert Level (m)	Diameter (mm)	Backdrop (mm)
CP15	94.600	0.600	Open Manhole	600	1.000	94.000					
CP14	94.600	0.714	Open Manhole	600	1.001	93.886	150	1.000	93.936		500
AJ13	94.400	0.599	Open Manhole	600	1.002	93.801	150	1.001	93.801	150	
Dr23	94.600	0.410	Open Manhole	600	2.000	94.190					
Dr24	94.600	0.435	Open Manhole	600	2.001	94.165	150	2.000	94.165		
Dr25	94.600	0.410	Open Manhole	600	3.000	94.190					
Dr26	94.600	0.434	Open Manhole	600	3.001	94.166	150	3.000	94.166		
S11	94.558	1.072	Open Manhole	1200	1.003	93.486	225	1.002	93.561	150	
								2.001	94.058	150	497
								3.001	93.987	150	426
S17	95.501	3.195	Open Manhole	1200	4.000	92.306	225				
S16	94.954	2.755	Open Manhole	1200	4.001	92.199	225	4.000	92.199	225	
Dr27	95.050	0.410	Open Manhole	600	5.000	94.640					
Dr28	95.050	0.444	Open Manhole	600	5.001	94.606	150	5.000	94.606		
Dr29	95.075	0.410	Open Manhole	600	6.000	94.665					
Dr30	95.075	0.423	Open Manhole	600	6.001	94.653	150	6.000	94.652		
S10	94.783	2.624	Open Manhole	1200	1.004	92.160	225	1.003	93.386	225	1226
								4.001	92.159	225	
								5.001	94.435	150	2200
								6.001	94.526	150	2291
Dr31	94.850	0.410	Open Manhole	600	7.000	94.440					
Dr32	94.850	0.436	Open Manhole	600	7.001	94.414	150	7.000	94.414		
CP20	95.075	0.802	Open Manhole	600	8.000	94.273					
CP19	94.850	0.690	Open Manhole	600	8.001	94.160	150	8.000	94.160		
S9.1	94.660	2.614	Open Manhole	1200	1.005	92.046	225	1.004	92.046	225	
								7.001	94.326	150	2205
								8.001	94.027	150	1906
S9	94.596	2.598	Open Manhole	1200	1.006	91.998	225	1.005	91.998	225	
Dr33	94.600	0.410	Open Manhole	600	9.000	94.190					
Dr34	94.600	0.436	Open Manhole	600	9.001	94.164	150	9.000	94.164		
CP23	94.600	0.600	Open Manhole	600	10.000	94.000					
CP22	94.600	0.714	Open Manhole	600	10.001	93.886	225	10.000	93.886		
S8.1	94.378	2.458	Open Manhole	1200	1.007	91.920	225	1.006	91.920	225	
								9.001	94.067	150	2072
								10.001	93.749	225	1829
Dr35	94.450	0.410	Open Manhole	600	11.000	94.040					
Dr36	94.450	0.436	Open Manhole	600	11.001	94.014	150	11.000	94.014		

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	PN	Pipe Out Invert Level (m)	Diameter (mm)	PN	Pipes In Invert Level (m)	Diameter (mm)	Backdrop (mm)
S8	94.361	2.492	Open Manhole	1200	1.008	91.869	225	1.007	91.869	225	
								11.001	93.914	150	1970
CP26	94.450	0.600	Open Manhole	600	12.000	93.850					
CP25	94.450	0.728	Open Manhole	600	12.001	93.722	150	12.000	93.722		
AJ24	94.400	0.790	Open Manhole	600	12.002	93.610	150	12.001	93.610	150	
S7	94.286	2.462	Open Manhole	1200	1.009	91.824	225	1.008	91.824	225	
								12.002	93.515	150	1616
Dr37	94.300	0.410	Open Manhole	600	13.000	93.890					
Dr38	94.300	0.440	Open Manhole	600	13.001	93.860	150	13.000	93.860		
S6	94.347	2.553	Open Manhole	1200	1.010	91.794	225	1.009	91.794	225	
								13.001	93.590	150	1721
CP30	94.150	0.600	Open Manhole	600	14.000	93.550					
CP29	94.150	0.658	Open Manhole	600	14.001	93.492	150	14.000	93.492		
CP29.1	94.100	0.693	Open Manhole	600	14.002	93.407	150	14.001	93.407	150	
S5.1	94.074	2.395	Open Manhole	1200	1.011	91.679	225	1.010	91.679	225	
								14.002	93.337	150	1583
S5	93.988	2.345	Open Manhole	1200	1.012	91.643	225	1.011	91.643	225	
Dr01	94.375	0.410	Open Manhole	600	15.000	93.965					
Dr02	94.375	0.436	Open Manhole	600	15.001	93.939	150	15.000	93.939		
Dr03	94.375	0.410	Open Manhole	600	16.000	93.965					
Dr04	94.375	0.441	Open Manhole	600	16.001	93.934	150	16.000	93.934		
S46	94.437	1.774	Open Manhole	1200	15.002	92.663	225	15.001	93.849	150	1111
								16.001	93.778	150	1040
Dr05	94.150	0.410	Open Manhole	600	17.000	93.740					
Dr06	94.150	0.595	Open Manhole	600	17.001	93.555	150	17.000	93.705		300
CP50	94.375	0.673	Open Manhole	600	18.000	93.702					
CP49	94.150	0.600	Open Manhole	600	18.001	93.550		18.000	93.600		
CP48	94.150	0.715	Open Manhole	600	18.002	93.435	150	18.001	93.485		500
AJ47	94.280	0.929	Open Manhole	600	18.003	93.351	150	18.002	93.351	150	
S45	94.093	1.560	Open Manhole	1200	15.003	92.533	225	15.002	92.533	225	
								17.001	93.417	150	809
								18.003	93.274	150	666
CP55	94.600	0.600	Open Manhole	600	19.000	94.000					
CP54	94.375	0.756	Open Manhole	600	19.001	93.619		19.000	93.773		
CP53	94.375	1.108	Open Manhole	600	19.002	93.267	150	19.001	93.491		830
CP52	94.375	1.398	Open Manhole	600	19.003	92.977	150	19.002	92.977	150	
J54	94.375	1.463	Open Manhole	1200	19.004	92.912		19.003	92.912	150	

Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	PN	Pipe Out Invert Level (m)	Diameter (mm)	PN	Pipes In Invert Level (m)	Diameter (mm)	Backdrop (mm)	MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	PN	Pipe Out Invert Level (m)	Diameter (mm)	PN	Pipes In Invert Level (m)	Diameter (mm)	Backdrop (mm)
J55	94.000	1.515	Open Manhole	1200	19.005	92.485	225	19.004	92.885		1290	S61.1	93.775	1.698	Open Manhole	1200	22.002	92.078		22.001	92.077	225	
S51	93.834	1.376	Open Manhole	1200	19.006	92.458	225	19.005	92.458	225		S60	93.872	1.842	Open Manhole	1200	22.003	92.030	225	22.002	92.030		
Dr07	93.895	0.410	Open Manhole	600	20.000	93.485						S39	93.872	1.861	Open Manhole	1200	15.009	92.011	225	15.008	92.011	225	
Dr08	93.895	0.443	Open Manhole	600	20.001	93.452	150	20.000	93.452											22.003	92.012	225	1
S44	93.831	1.400	Open Manhole	1200	15.004	92.431	225	15.003	92.431	225		S38	93.881	1.920	Open Manhole	1200	15.010	91.961	225	15.009	91.961	225	
								19.006	92.431	225		S37	93.910	1.970	Open Manhole	1200	15.011	91.940	225	15.010	91.940	225	
								20.001	93.240	150	734	S36	93.809	1.934	Open Manhole	1200	15.012	91.875	225	15.011	91.875	225	
S43	93.667	1.496	Open Manhole	1200	15.005	92.171	225	15.004	92.171	225		CP68	94.150	0.600	Open Manhole	600	28.000	93.550					
S42	93.712	1.602	Open Manhole	1200	15.006	92.110	225	15.005	92.110	225		CP67	94.150	0.840	Open Manhole	600	28.001	93.310		28.000	93.438		
CP59	93.895	0.600	Open Manhole	600	21.000	93.295						CP66	93.910	1.438	Open Manhole	600	28.002	92.472	150	28.001	93.244		1462
CP58	93.895	0.731	Open Manhole	600	21.001	93.164		21.000	93.214			S35	93.757	1.912	Open Manhole	1200	15.013	91.845	225	15.012	91.845	225	
CP57	93.895	0.822	Open Manhole	600	21.002	93.073		21.001	93.123											28.002	92.408	150	488
CP56	93.895	1.333	Open Manhole	600	21.003	92.562	150	21.002	92.997		1085	Dr13	94.000	0.410	Open Manhole	600	29.000	93.590					
S41	93.672	1.612	Open Manhole	1200	15.007	92.060	225	15.006	92.060	225		Dr14	94.000	0.435	Open Manhole	600	29.001	93.565	150	29.000	93.565		
								21.003	92.524	150	389	CP71	94.335	0.600	Open Manhole	600	30.000	93.735					
S40	93.633	1.593	Open Manhole	1200	15.008	92.040	225	15.007	92.040	225		CP70	94.335	1.050	Open Manhole	600	30.001	93.285		30.000	93.646		276
S62	93.536	1.388	Open Manhole	600	22.000	92.148						CP69	93.885	1.368	Open Manhole	600	30.002	92.517	150	30.001	93.198		1216
Dr09	94.150	0.410	Open Manhole	600	23.000	93.740						CP75	94.050	0.626	Open Manhole	600	31.000	93.424					
Dr10	94.150	0.437	Open Manhole	600	23.001	93.713	150	23.000	93.713			CP76	94.000	0.600	Open Manhole	600	32.000	93.400					
S64	94.009	1.773	Open Manhole	600	23.002	92.236	225	23.001	93.554	150	1243	CP74	94.000	0.728	Open Manhole	600	31.001	93.272	150	31.000	93.322		526
Dr11	93.910	0.410	Open Manhole	600	24.000	93.500														32.000	93.322		500
Dr12	93.910	0.444	Open Manhole	600	24.001	93.466	150	24.000	93.466			AJ73	94.130	0.943	Open Manhole	600	31.002	93.187	150	31.001	93.187	150	
S65	93.911	1.681	Open Manhole	600	24.002	92.230	225	24.001	93.322	150	1017	S34	93.801	1.988	Open Manhole	1200	15.014	91.813	225	15.013	91.813	225	
XX1	93.600	0.900	Open Manhole	600	25.000	92.700	100													29.001	93.380	150	1492
S63	93.600	1.412	Open Manhole	1200	23.003	92.188	225	23.002	92.188	225										30.002	92.452	150	564
								24.002	92.188	225										31.002	93.119	150	1231
								25.000	92.675	100	362	Dr15	94.050	0.410	Open Manhole	600	33.000	93.640					
AJDP01	93.750	0.410	Open Manhole	1200	26.000	93.340	225					Dr16	94.050	0.438	Open Manhole	600	33.001	93.612	150	33.000	93.612		
AJDP02	93.750	0.524	Open Manhole	1200	26.001	93.226	225	26.000	93.226	225		S33	93.922	2.219	Open Manhole	1200	15.015	91.703	225	15.014	91.703	225	
AJDP03	93.750	0.636	Open Manhole	1200	26.002	93.114	225	26.001	93.114	225										33.001	93.437	150	1659
AJDP05	93.750	0.410	Open Manhole	1200	27.000	93.340	225					Dr17	94.335	0.410	Open Manhole	600	34.000	93.925					
AJDP06	93.750	0.500	Open Manhole	1200	27.001	93.250	225	27.000	93.250	225		Dr18	94.335	0.436	Open Manhole	600	34.001	93.899	150	34.000	93.899		
AJDP04	93.750	0.713	Open Manhole	1200	26.003	93.037	225	26.002	93.037	225		S77	94.225	1.090	Open Manhole	1200	34.002	93.135	225	34.001	93.801	150	591
								27.001	93.037	225		Dr19	93.885	0.410	Open Manhole	600	35.000	93.475					
S61	93.820	1.725	Open Manhole	1200	22.001	92.095	225	22.000	92.095			Dr20	93.885	0.685	Open Manhole	600	35.001	93.200	150	35.000	93.450		400
								23.003	92.095	225		CP81	94.150	0.600	Open Manhole	600	36.000	93.550					
								26.003	92.972	225	877	CP80	94.150	0.744	Open Manhole	600	36.001	93.406	150	36.000	93.456		500

Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	PN	Pipe Out Invert Level (m)	Diameter (mm)	PN	Pipes In Invert Level (m)	Diameter (mm)	Backdrop (mm)	MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	PN	Pipe Out Invert Level (m)	Diameter (mm)	PN	Pipes In Invert Level (m)	Diameter (mm)	Backdrop (mm)
AP79	94.280	0.960	Open Manhole	600	36.002	93.320	150	36.001	93.320	150		S31	93.900	2.260	Open Manhole	1200	15.017	91.640	225	15.016	91.640	225	
S32	93.898	2.227	Open Manhole	1200	15.016	91.671	225	15.015	91.671	225										37.001	93.653	150	1938
								34.002	92.911	225	1240	S4	94.059	2.454	Open Manhole	1200	1.013	91.607	225	1.012	91.607	225	
								35.001	93.092	150	1346									15.017	91.605	225	
								36.002	93.252	150	1506	S3	94.078	2.477	Open Manhole	1200	1.014	91.601		1.013	91.601	225	
Dr21	94.150	0.410	Open Manhole	1200	37.000	93.740						S2	93.415	1.968	Open Manhole	1200	1.015	91.447	225	1.014	91.551		1626
Dr22	94.150	0.439	Open Manhole	1200	37.001	93.711	150	37.000	93.711				91.916	0.491	Open Manhole	1200		OUTFALL		1.015	91.425	225	

No coordinates have been specified, layout information cannot be produced.

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Ireland

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PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	→|_|→		CP15	94.600	94.000	0.000	Open Manhole	600
1.001	o	150	CP14	94.600	93.886	0.564	Open Manhole	600
1.002	o	150	AJ13	94.400	93.801	0.449	Open Manhole	600
2.000	→|↓|→		Dr23	94.600	94.190	0.110	Open Manhole	600
2.001	o	150	Dr24	94.600	94.165	0.285	Open Manhole	600
3.000	→|↓|→		Dr25	94.600	94.190	0.110	Open Manhole	600
3.001	o	150	Dr26	94.600	94.166	0.284	Open Manhole	600
1.003	o	225	S11	94.558	93.486	0.847	Open Manhole	1200
4.000	o	225	S17	95.501	92.306	2.970	Open Manhole	1200
4.001	o	225	S16	94.954	92.199	2.530	Open Manhole	1200
5.000	→|↓|→		Dr27	95.050	94.640	0.110	Open Manhole	600
5.001	o	150	Dr28	95.050	94.606	0.294	Open Manhole	600
6.000	→|↓|→		Dr29	95.075	94.665	0.110	Open Manhole	600
6.001	o	150	Dr30	95.075	94.653	0.272	Open Manhole	600

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	12.702	198.5	CP14	94.600	93.936	0.064	Open Manhole	600
1.001	16.947	199.4	AJ13	94.400	93.801	0.449	Open Manhole	600
1.002	14.385	59.9	S11	94.558	93.561	0.847	Open Manhole	1200
2.000	4.975	199.0	Dr24	94.600	94.165	0.135	Open Manhole	600
2.001	6.420	60.0	S11	94.558	94.058	0.350	Open Manhole	1200
3.000	4.756	198.2	Dr26	94.600	94.166	0.134	Open Manhole	600
3.001	10.755	60.1	S11	94.558	93.987	0.421	Open Manhole	1200
1.003	19.978	199.8	S10	94.783	93.386	1.172	Open Manhole	1200
4.000	21.334	199.4	S16	94.954	92.199	2.530	Open Manhole	1200
4.001	7.901	197.5	S10	94.783	92.159	2.399	Open Manhole	1200
5.000	6.877	202.3	Dr28	95.050	94.606	0.144	Open Manhole	600
5.001	10.286	60.2	S10	94.783	94.435	0.198	Open Manhole	1200
6.000	2.500	192.3	Dr30	95.075	94.652	0.123	Open Manhole	600
6.001	7.206	56.7	S10	94.783	94.526	0.107	Open Manhole	1200

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PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.004	o	225	S10	94.783	92.160	2.398	Open Manhole	1200
7.000	→|↓|→		Dr31	94.850	94.440	0.110	Open Manhole	600
7.001	o	150	Dr32	94.850	94.414	0.286	Open Manhole	600
8.000	→|_|→		CP20	95.075	94.273	0.132	Open Manhole	600
8.001	o	150	CP19	94.850	94.160	0.540	Open Manhole	600
1.005	o	225	S9.1	94.660	92.046	2.389	Open Manhole	1200
1.006	o	225	S9	94.596	91.998	2.373	Open Manhole	1200
9.000	→|↓|→		Dr33	94.600	94.190	0.110	Open Manhole	600
9.001	o	150	Dr34	94.600	94.164	0.286	Open Manhole	600
10.000	→|_|→		CP23	94.600	94.000	0.000	Open Manhole	600
10.001	o	225	CP22	94.600	93.886	0.489	Open Manhole	600
1.007	o	225	S8.1	94.378	91.920	2.233	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.004	22.873	200.6	S9.1	94.660	92.046	2.389	Open Manhole	1200
7.000	5.100	196.2	Dr32	94.850	94.414	0.136	Open Manhole	600
7.001	5.293	60.1	S9.1	94.660	94.326	0.184	Open Manhole	1200
8.000	22.568	199.7	CP19	94.850	94.160	0.020	Open Manhole	600
8.001	26.567	199.8	S9.1	94.660	94.027	0.483	Open Manhole	1200
1.005	9.608	200.2	S9	94.596	91.998	2.373	Open Manhole	1200
1.006	15.627	200.3	S8.1	94.378	91.920	2.233	Open Manhole	1200
9.000	5.200	200.0	Dr34	94.600	94.164	0.136	Open Manhole	600
9.001	5.800	59.8	S8.1	94.378	94.067	0.161	Open Manhole	1200
10.000	22.836	200.3	CP22	94.600	93.886	0.114	Open Manhole	600
10.001	27.438	200.3	S8.1	94.378	93.749	0.404	Open Manhole	1200
1.007	10.126	198.5	S8	94.361	91.869	2.267	Open Manhole	1200

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
11.000	→|↓|→		Dr35	94.450	94.040	0.110	Open Manhole	600
11.001	o	150	Dr36	94.450	94.014	0.286	Open Manhole	600
1.008	o	225	S8	94.361	91.869	2.267	Open Manhole	1200
12.000	→|_|→		CP26	94.450	93.850	0.000	Open Manhole	600
12.001	o	150	CP25	94.450	93.722	0.578	Open Manhole	600
12.002	o	150	AJ24	94.400	93.610	0.640	Open Manhole	600
1.009	o	225	S7	94.286	91.824	2.237	Open Manhole	1200
13.000	→|↓|→		Dr37	94.300	93.890	0.110	Open Manhole	600
13.001	o	150	Dr38	94.300	93.860	0.290	Open Manhole	600
1.010	o	225	S6	94.347	91.794	2.328	Open Manhole	1200
14.000	→|_|→		CP30	94.150	93.550	0.000	Open Manhole	600
14.001	o	150	CP29	94.150	93.492	0.508	Open Manhole	600
14.002	o	150	CP29.1	94.100	93.407	0.543	Open Manhole	600

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
11.000	5.200	200.0	Dr36	94.450	94.014	0.136	Open Manhole	600
11.001	6.000	60.0	S8	94.361	93.914	0.297	Open Manhole	1200
1.008	9.068	201.5	S7	94.286	91.824	2.237	Open Manhole	1200
12.000	25.661	200.5	CP25	94.450	93.722	0.128	Open Manhole	600
12.001	22.481	200.7	AJ24	94.400	93.610	0.640	Open Manhole	600
12.002	18.920	199.2	S7	94.286	93.515	0.621	Open Manhole	1200
1.009	6.046	201.5	S6	94.347	91.794	2.328	Open Manhole	1200
13.000	6.000	200.0	Dr38	94.300	93.860	0.140	Open Manhole	600
13.001	16.200	60.0	S6	94.347	93.590	0.607	Open Manhole	1200
1.010	22.964	199.7	S5.1	94.074	91.679	2.170	Open Manhole	1200
14.000	11.533	198.8	CP29	94.150	93.492	0.058	Open Manhole	600
14.001	16.960	199.5	CP29.1	94.100	93.407	0.543	Open Manhole	600
14.002	13.994	199.9	S5.1	94.074	93.337	0.587	Open Manhole	1200

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.011	o	225	S5.1	94.074	91.679	2.170	Open Manhole	1200
1.012	o	225	S5	93.988	91.643	2.120	Open Manhole	1200
15.000	→|↓|→		Dr01	94.375	93.965	0.110	Open Manhole	600
15.001	o	150	Dr02	94.375	93.939	0.286	Open Manhole	600
16.000	→|↓|→		Dr03	94.375	93.965	0.110	Open Manhole	600
16.001	o	150	Dr04	94.375	93.934	0.291	Open Manhole	600
15.002	o	225	S46	94.437	92.663	1.549	Open Manhole	1200
17.000	→|↓|→		Dr05	94.150	93.740	0.110	Open Manhole	600
17.001	o	150	Dr06	94.150	93.555	0.445	Open Manhole	600
18.000	→|_|→		CP50	94.375	93.702	0.124	Open Manhole	600
18.001	→|_|→		CP49	94.150	93.550	0.000	Open Manhole	600
18.002	o	150	CP48	94.150	93.435	0.565	Open Manhole	600
18.003	o	150	AJ47	94.280	93.351	0.779	Open Manhole	600
15.003	o	225	S45	94.093	92.533	1.335	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.011	7.237	201.0	S5	93.988	91.643	2.120	Open Manhole	1200
1.012	7.200	200.0	S4	94.059	91.607	2.227	Open Manhole	1200
15.000	5.232	201.2	Dr02	94.375	93.939	0.136	Open Manhole	600
15.001	5.400	60.0	S46	94.437	93.849	0.438	Open Manhole	1200
16.000	6.221	200.7	Dr04	94.375	93.934	0.141	Open Manhole	600
16.001	9.359	60.0	S46	94.437	93.778	0.509	Open Manhole	1200
15.002	25.983	199.9	S45	94.093	92.533	1.335	Open Manhole	1200
17.000	6.952	198.6	Dr06	94.150	93.705	0.145	Open Manhole	600
17.001	8.258	59.8	S45	94.093	93.417	0.526	Open Manhole	1200
18.000	20.311	199.1	CP49	94.150	93.600	0.001	Open Manhole	600
18.001	12.993	199.9	CP48	94.150	93.485	0.065	Open Manhole	600
18.002	16.730	199.2	AJ47	94.280	93.351	0.779	Open Manhole	600
18.003	15.344	199.3	S45	94.093	93.274	0.669	Open Manhole	1200
15.003	20.391	199.9	S44	93.831	92.431	1.175	Open Manhole	1200

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PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
19.000	→|_|→		CP55	94.600	94.000	0.000	Open Manhole	600
19.001	→|_|→		CP54	94.375	93.619	0.000	Open Manhole	600
19.002	o	150	CP53	94.375	93.267	0.958	Open Manhole	600
19.003	o	150	CP52	94.375	92.977	1.248	Open Manhole	600
19.004	→\↓/→		J54	94.375	92.912	0.348	Open Manhole	1200
19.005	o	225	J55	94.000	92.485	1.290	Open Manhole	1200
19.006	o	225	S51	93.834	92.458	1.151	Open Manhole	1200
20.000	→|↓|→		Dr07	93.895	93.485	0.110	Open Manhole	600
20.001	o	150	Dr08	93.895	93.452	0.293	Open Manhole	600
15.004	o	225	S44	93.831	92.431	1.175	Open Manhole	1200
15.005	o	225	S43	93.667	92.171	1.271	Open Manhole	1200
15.006	o	225	S42	93.712	92.110	1.377	Open Manhole	1200
21.000	→|_|→		CP59	93.895	93.295	0.000	Open Manhole	600
21.001	→|_|→		CP58	93.895	93.164	0.000	Open Manhole	600
21.002	→|_|→		CP57	93.895	93.073	0.022	Open Manhole	600
21.003	o	150	CP56	93.895	92.562	1.183	Open Manhole	600

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
19.000	17.678	77.9	CP54	94.375	93.773	0.002	Open Manhole	600
19.001	12.792	99.9	CP53	94.375	93.491	0.128	Open Manhole	600
19.002	17.417	60.1	CP52	94.375	92.977	1.248	Open Manhole	600
19.003	6.458	99.4	J54	94.375	92.912	1.313	Open Manhole	1200
19.004	13.276	491.7	J55	94.000	92.885	0.000	Open Manhole	1200
19.005	5.446	201.7	S51	93.834	92.458	1.151	Open Manhole	1200
19.006	5.379	199.2	S44	93.831	92.431	1.175	Open Manhole	1200
20.000	6.570	199.1	Dr08	93.895	93.452	0.143	Open Manhole	600
20.001	12.739	60.1	S44	93.831	93.240	0.441	Open Manhole	1200
15.004	51.961	199.9	S43	93.667	92.171	1.271	Open Manhole	1200
15.005	12.244	200.7	S42	93.712	92.110	1.377	Open Manhole	1200
15.006	9.948	199.0	S41	93.672	92.060	1.387	Open Manhole	1200
21.000	16.200	200.0	CP58	93.895	93.214	0.081	Open Manhole	600
21.001	8.203	200.1	CP57	93.895	93.123	0.041	Open Manhole	600
21.002	15.243	200.6	CP56	93.895	92.997	0.098	Open Manhole	600
21.003	7.611	200.3	S41	93.672	92.524	0.998	Open Manhole	1200

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PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
15.007	o	225	S41	93.672	92.060	1.387	Open Manhole	1200
15.008	o	225	S40	93.633	92.040	1.368	Open Manhole	1200
22.000	→|↓|→		S62	93.536	92.148	0.110	Open Manhole	600
23.000	→|↓|→		Dr09	94.150	93.740	0.110	Open Manhole	600
23.001	o	150	Dr10	94.150	93.713	0.287	Open Manhole	600
23.002	o	225	S64	94.009	92.236	1.548	Open Manhole	600
24.000	→|↓|→		Dr11	93.910	93.500	0.110	Open Manhole	600
24.001	o	150	Dr12	93.910	93.466	0.294	Open Manhole	600
24.002	o	225	S65	93.911	92.230	1.456	Open Manhole	600
25.000	o	100	XX1	93.600	92.700	0.800	Open Manhole	600
23.003	o	225	S63	93.600	92.188	1.187	Open Manhole	1200
26.000	o	225	AJDP01	93.750	93.340	0.185	Open Manhole	1200
26.001	o	225	AJDP02	93.750	93.226	0.299	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
15.007	4.097	204.9	S40	93.633	92.040	1.368	Open Manhole	1200
15.008	5.743	198.0	S39	93.872	92.011	1.636	Open Manhole	1200
22.000	10.592	199.8	S61	93.820	92.095	0.447	Open Manhole	1200
23.000	5.400	200.0	Dr10	94.150	93.713	0.137	Open Manhole	600
23.001	9.512	59.8	S64	94.009	93.554	0.305	Open Manhole	600
23.002	9.647	201.0	S63	93.600	92.188	1.187	Open Manhole	1200
24.000	6.750	198.5	Dr12	93.910	93.466	0.144	Open Manhole	600
24.001	8.660	60.1	S65	93.911	93.322	0.439	Open Manhole	600
24.002	8.459	201.4	S63	93.600	92.188	1.187	Open Manhole	1200
25.000	12.500	500.0	S63	93.600	92.675	0.825	Open Manhole	1200
23.003	18.547	199.4	S61	93.820	92.095	1.500	Open Manhole	1200
26.000	22.748	199.5	AJDP02	93.750	93.226	0.299	Open Manhole	1200
26.001	22.445	200.4	AJDP03	93.750	93.114	0.411	Open Manhole	1200

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
26.002	o	225	AJDP03	93.750	93.114	0.411	Open Manhole	1200
27.000	o	225	AJDP05	93.750	93.340	0.185	Open Manhole	1200
27.001	o	225	AJDP06	93.750	93.250	0.275	Open Manhole	1200
26.003	o	225	AJDP04	93.750	93.037	0.488	Open Manhole	1200
22.001	o	225	S61	93.820	92.095	1.500	Open Manhole	1200
22.002	→[↓]		S61.1	93.775	92.078	0.335	Open Manhole	1200
22.003	o	225	S60	93.872	92.030	1.617	Open Manhole	1200
15.009	o	225	S39	93.872	92.011	1.636	Open Manhole	1200
15.010	o	225	S38	93.881	91.961	1.695	Open Manhole	1200
15.011	o	225	S37	93.910	91.940	1.745	Open Manhole	1200
15.012	o	225	S36	93.809	91.875	1.709	Open Manhole	1200
28.000	→|_|→		CP68	94.150	93.550	0.000	Open Manhole	600
28.001	→|_|→		CP67	94.150	93.310	0.000	Open Manhole	600
28.002	o	150	CP66	93.910	92.472	1.288	Open Manhole	600

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
26.002	15.387	199.8	AJDP04	93.750	93.037	0.488	Open Manhole	1200
27.000	18.014	200.2	AJDP06	93.750	93.250	0.275	Open Manhole	1200
27.001	14.719	69.1	AJDP04	93.750	93.037	0.488	Open Manhole	1200
26.003	12.980	199.7	S61	93.820	92.972	0.623	Open Manhole	1200
22.001	3.500	194.4	S61.1	93.775	92.077	1.473	Open Manhole	1200
22.002	28.142	586.3	S60	93.872	92.030	0.480	Open Manhole	1200
22.003	3.605	200.3	S39	93.872	92.012	1.635	Open Manhole	1200
15.009	9.910	198.2	S38	93.881	91.961	1.695	Open Manhole	1200
15.010	4.285	204.0	S37	93.910	91.940	1.745	Open Manhole	1200
15.011	12.967	199.5	S36	93.809	91.875	1.709	Open Manhole	1200
15.012	6.043	201.4	S35	93.757	91.845	1.687	Open Manhole	1200
28.000	22.392	199.9	CP67	94.150	93.438	0.112	Open Manhole	600
28.001	13.233	200.5	CP66	93.910	93.244	-0.174	Open Manhole	600
28.002	12.869	201.1	S35	93.757	92.408	1.199	Open Manhole	1200

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
15.013	o	225	S35	93.757	91.845	1.687	Open Manhole	1200
29.000	→|↓|→		Dr13	94.000	93.590	0.110	Open Manhole	600
29.001	o	150	Dr14	94.000	93.565	0.285	Open Manhole	600
30.000	→|_|→		CP71	94.335	93.735	0.000	Open Manhole	600
30.001	→|_|→		CP70	94.335	93.285	0.365	Open Manhole	600
30.002	o	150	CP69	93.885	92.517	1.218	Open Manhole	600
31.000	→|_|→		CP75	94.050	93.424	0.000	Open Manhole	600
32.000	→|_|→		CP76	94.000	93.400	0.000	Open Manhole	600
31.001	o	150	CP74	94.000	93.272	0.578	Open Manhole	600
31.002	o	150	AJ73	94.130	93.187	0.793	Open Manhole	600
15.014	o	225	S34	93.801	91.813	1.763	Open Manhole	1200
33.000	→|↓|→		Dr15	94.050	93.640	0.110	Open Manhole	600
33.001	o	150	Dr16	94.050	93.612	0.288	Open Manhole	600

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
15.013	6.306	197.1	S34	93.801	91.813	1.763	Open Manhole	1200
29.000	5.000	200.0	Dr14	94.000	93.565	0.135	Open Manhole	600
29.001	11.100	60.0	S34	93.801	93.380	0.271	Open Manhole	1200
30.000	17.857	200.6	CP70	94.335	93.646	0.089	Open Manhole	600
30.001	17.475	200.9	CP69	93.885	93.198	0.002	Open Manhole	600
30.002	13.076	201.2	S34	93.801	92.452	1.199	Open Manhole	1200
31.000	20.489	200.9	CP74	94.000	93.322	0.052	Open Manhole	600
32.000	15.560	199.5	CP74	94.000	93.322	0.078	Open Manhole	600
31.001	16.943	199.3	AJ73	94.130	93.187	0.793	Open Manhole	600
31.002	13.606	200.1	S34	93.801	93.119	0.532	Open Manhole	1200
15.014	21.973	199.8	S33	93.922	91.703	1.994	Open Manhole	1200
33.000	5.600	200.0	Dr16	94.050	93.612	0.138	Open Manhole	600
33.001	10.500	60.0	S33	93.922	93.437	0.335	Open Manhole	1200

Corrig Hse Corrig Rd
Sandyford Dublin 8
Ireland

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CADS | Network 2020.1.3

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
15.015	o	225	S33	93.922	91.703	1.994	Open Manhole	1200
34.000	→|↓|→		Dr17	94.335	93.925	0.110	Open Manhole	600
34.001	o	150	Dr18	94.335	93.899	0.286	Open Manhole	600
34.002	o	225	S77	94.225	93.135	0.865	Open Manhole	1200
35.000	→|↓|→		Dr19	93.885	93.475	0.110	Open Manhole	600
35.001	o	150	Dr20	93.885	93.200	0.535	Open Manhole	600
36.000	→|_|→		CP81	94.150	93.550	0.000	Open Manhole	600
36.001	o	150	CP80	94.150	93.406	0.594	Open Manhole	600
36.002	o	150	AP79	94.280	93.320	0.810	Open Manhole	600
15.016	o	225	S32	93.898	91.671	2.002	Open Manhole	1200
37.000	→|↓|→		Dr21	94.150	93.740	0.110	Open Manhole	1200
37.001	o	150	Dr22	94.150	93.711	0.289	Open Manhole	1200
15.017	o	225	S31	93.900	91.640	2.035	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
15.015	6.467	202.1	S32	93.898	91.671	2.002	Open Manhole	1200
34.000	5.200	200.0	Dr18	94.335	93.899	0.136	Open Manhole	600
34.001	5.900	60.2	S77	94.225	93.801	0.274	Open Manhole	1200
34.002	44.743	199.7	S32	93.898	92.911	0.762	Open Manhole	1200
35.000	5.200	208.0	Dr20	93.885	93.450	0.135	Open Manhole	600
35.001	6.500	60.2	S32	93.898	93.092	0.656	Open Manhole	1200
36.000	18.820	200.2	CP80	94.150	93.456	0.094	Open Manhole	600
36.001	17.126	199.1	AP79	94.280	93.320	0.810	Open Manhole	600
36.002	13.516	198.8	S32	93.898	93.252	0.496	Open Manhole	1200
15.016	6.287	202.8	S31	93.900	91.640	2.035	Open Manhole	1200
37.000	5.740	197.9	Dr22	94.150	93.711	0.139	Open Manhole	1200
37.001	11.632	200.6	S31	93.900	93.653	0.097	Open Manhole	1200
15.017	7.021	200.6	S4	94.059	91.605	2.229	Open Manhole	1200

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.013	o	225	S4	94.059	91.607	2.227	Open Manhole	1200
1.014	→[↓]		S3	94.078	91.601	0.730	Open Manhole	1200
1.015	o	225	S2	93.415	91.447	1.743	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.013	3.017	502.8	S3	94.078	91.601	2.252	Open Manhole	1200
1.014	24.822	496.4	S2	93.415	91.551	0.117	Open Manhole	1200
1.015	4.410	200.5		91.916	91.425	0.266	Open Manhole	1200

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
1.015		91.916	91.425	0.000	1200	0

Simulation Criteria for Storm

Volumetric Runoff Coeff 0.750 Hot Start Level (mm) 0 Additional Flow - % of Total Flow 0.000 Flow per Person per Day (l/per/day) 0.000
Areal Reduction Factor 1.000 Manhole Headloss Coeff (Global) 0.500 MADD Factor * 10m³/ha Storage 2.000 Run Time (mins) 60
Hot Start (mins) 0 Foul Sewage per hectare (l/s) 0.000 Inlet Coeffiecient 0.800 Output Interval (mins) 1

Number of Input Hydrographs 0 Number of Online Controls 21 Number of Offline Controls 0 Number of Storage Structures 42 Number of Time/Area Diagrams 61 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR Region Scotland and Ireland Ratio R 0.278 Cv (Summer) 0.750 Storm Duration (mins) 30
Return Period (years) 2 M5-60 (mm) 16.300 Profile Type Summer Cv (Winter) 0.840

Corrig Hse Corrig Rd
Sandyford Dublin 8
Ireland

Date 05/10/2021 14:40
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CADS

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Checked by
Network 2020.1.3

Online Controls for Storm

Orifice Manhole: Dr24, DS/PN: 2.001, Volume (m³): 7.7

Diameter (m) 0.050 Discharge Coefficient 0.600 Invert Level (m) 94.165

Orifice Manhole: Dr26, DS/PN: 3.001, Volume (m³): 9.2

Diameter (m) 0.050 Discharge Coefficient 0.600 Invert Level (m) 94.166

Orifice Manhole: Dr28, DS/PN: 5.001, Volume (m³): 7.5

Diameter (m) 0.050 Discharge Coefficient 0.600 Invert Level (m) 94.606

Orifice Manhole: Dr30, DS/PN: 6.001, Volume (m³): 2.4

Diameter (m) 0.050 Discharge Coefficient 0.600 Invert Level (m) 94.653

Orifice Manhole: Dr32, DS/PN: 7.001, Volume (m³): 7.7

Diameter (m) 0.050 Discharge Coefficient 0.600 Invert Level (m) 94.414

Orifice Manhole: Dr34, DS/PN: 9.001, Volume (m³): 10.0

Diameter (m) 0.050 Discharge Coefficient 0.600 Invert Level (m) 94.164

Orifice Manhole: Dr36, DS/PN: 11.001, Volume (m³): 11.3

Diameter (m) 0.050 Discharge Coefficient 0.600 Invert Level (m) 94.014

Orifice Manhole: Dr38, DS/PN: 13.001, Volume (m³): 6.1

Diameter (m) 0.050 Discharge Coefficient 0.600 Invert Level (m) 93.860

Orifice Manhole: Dr02, DS/PN: 15.001, Volume (m³): 5.0

Diameter (m) 0.050 Discharge Coefficient 0.600 Invert Level (m) 93.939

Orifice Manhole: Dr04, DS/PN: 16.001, Volume (m³): 9.7

Diameter (m) 0.050 Discharge Coefficient 0.600 Invert Level (m) 93.934

Orifice Manhole: Dr06, DS/PN: 17.001, Volume (m³): 7.2

Diameter (m) 0.050 Discharge Coefficient 0.600 Invert Level (m) 93.555

Orifice Manhole: Dr08, DS/PN: 20.001, Volume (m³): 11.6

Diameter (m) 0.050 Discharge Coefficient 0.600 Invert Level (m) 93.452

Orifice Manhole: Dr10, DS/PN: 23.001, Volume (m³): 10.5

Diameter (m) 0.050 Discharge Coefficient 0.600 Invert Level (m) 93.713

Orifice Manhole: Dr12, DS/PN: 24.001, Volume (m³): 10.6

Diameter (m) 0.050 Discharge Coefficient 0.600 Invert Level (m) 93.466

Hydro-Brake® Optimum Manhole: S60, DS/PN: 22.003, Volume (m³): 131.9

Unit Reference	MD-SHE-0095-6500-3000-6500	Objective	Minimise upstream storage	Invert Level (m)	92.030
Design Head (m)	3.000	Application	Surface	Minimum Outlet Pipe Diameter (mm)	150
Design Flow (l/s)	6.5	Sump Available	Yes	Suggested Manhole Diameter (mm)	1200
Flush-Flo™	Calculated	Diameter (mm)	95		

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	3.000	6.5	Flush-Flo™	0.414	4.5	Kick-Flo®	0.851	3.6	Mean Flow over Head Range	-	4.8

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	3.1	0.400	4.5	0.800	3.9	1.400	4.5	2.000	5.4	2.600	6.1	4.000	7.4	5.500	8.6	7.000	9.7	8.500	10.6
0.200	4.2	0.500	4.5	1.000	3.9	1.600	4.8	2.200	5.6	3.000	6.5	4.500	7.9	6.000	9.0	7.500	10.0	9.000	10.9
0.300	4.5	0.600	4.4	1.200	4.2	1.800	5.1	2.400	5.8	3.500	7.0	5.000	8.3	6.500	9.4	8.000	10.3	9.500	11.2

Orifice Manhole: Dr14, DS/PN: 29.001, Volume (m³): 6.1

Diameter (m) 0.050 Discharge Coefficient 0.600 Invert Level (m) 93.565

Orifice Manhole: Dr16, DS/PN: 33.001, Volume (m³): 8.9

Diameter (m) 0.050 Discharge Coefficient 0.600 Invert Level (m) 93.612

Orifice Manhole: Dr18, DS/PN: 34.001, Volume (m³): 7.9

Diameter (m) 0.050 Discharge Coefficient 0.600 Invert Level (m) 93.899

Orifice Manhole: Dr20, DS/PN: 35.001, Volume (m³): 11.0

Diameter (m) 0.050 Discharge Coefficient 0.600 Invert Level (m) 93.200

Orifice Manhole: Dr22, DS/PN: 37.001, Volume (m³): 7.9

Diameter (m) 0.050 Discharge Coefficient 0.600 Invert Level (m) 93.711

Hydro-Brake® Optimum Manhole: S2, DS/PN: 1.015, Volume (m³): 723.3

Unit Reference	MD-SHE-0100-5400-1650-5400	Objective	Minimise upstream storage	Invert Level (m)	91.462
Design Head (m)	1.650	Application	Surface	Minimum Outlet Pipe Diameter (mm)	150
Design Flow (l/s)	5.4	Sump Available	Yes	Suggested Manhole Diameter (mm)	1200
Flush-Flo™	Calculated	Diameter (mm)	100		

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.650	5.4	Flush-Flo™	0.437	5.1	Kick-Flo®	0.892	4.1	Mean Flow over Head Range	-	4.6

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	3.3	0.400	5.1	0.800	4.5	1.400	5.0	2.000	5.9	2.600	6.7	4.000	8.2	5.500	9.5	7.000	10.7	8.500	11.7
0.200	4.6	0.500	5.1	1.000	4.3	1.600	5.3	2.200	6.2	3.000	7.1	4.500	8.7	6.000	9.9	7.500	11.0	9.000	12.0
0.300	5.0	0.600	5.0	1.200	4.7	1.800	5.6	2.400	6.4	3.500	7.7	5.000	9.1	6.500	10.3	8.000	11.4	9.500	12.3

Storage Structures for Storm

Infiltration Trench Pipe: 1.000

Manning's N	0.075	Safety Factor	2.0	Trench Width (m)	0.6	Cap Volume Depth (m)	0.800
Infiltration Coefficient Base (m/hr)	0.01000	Porosity	0.30	Trench Length (m)	12.7	Cap Infiltration Depth (m)	0.800
Infiltration Coefficient Side (m/hr)	0.01000	Invert Level (m)	94.000	Slope (1:X)	198.5		

Porous Car Park Pipe: 2.000

Manning's N	0.075	Safety Factor	2.0	Length (m)	5.0	Membrane Depth (mm)	110
Infiltration Coefficient Base (m/hr)	0.00000	Porosity	0.30	Slope (1:X)	199.0		
Membrane Percolation (mm/hr)	1000	Invert Level (m)	94.190	Depression Storage (mm)	5		
Max Percolation (l/s)	26.7	Width (m)	19.3	Evaporation (mm/day)	3		

Porous Car Park Pipe: 3.000

Manning's N	0.075	Safety Factor	2.0	Length (m)	4.8	Membrane Depth (mm)	110
Infiltration Coefficient Base (m/hr)	0.00000	Porosity	0.35	Slope (1:X)	198.2		
Membrane Percolation (mm/hr)	1000	Invert Level (m)	94.190	Depression Storage (mm)	5		
Max Percolation (l/s)	27.6	Width (m)	20.9	Evaporation (mm/day)	3		

Porous Car Park Pipe: 5.000

Manning's N	0.075	Safety Factor	2.0	Length (m)	6.9	Membrane Depth (mm)	110
Infiltration Coefficient Base (m/hr)	0.00000	Porosity	0.30	Slope (1:X)	202.3		
Membrane Percolation (mm/hr)	1000	Invert Level (m)	94.640	Depression Storage (mm)	5		
Max Percolation (l/s)	25.0	Width (m)	13.1	Evaporation (mm/day)	3		

Porous Car Park Pipe: 6.000

Manning's N	0.075	Safety Factor	2.0	Length (m)	2.5	Membrane Depth (mm)	110
Infiltration Coefficient Base (m/hr)	0.00000	Porosity	0.30	Slope (1:X)	192.3		
Membrane Percolation (mm/hr)	1000	Invert Level (m)	94.665	Depression Storage (mm)	5		
Max Percolation (l/s)	9.2	Width (m)	13.2	Evaporation (mm/day)	3		

Porous Car Park Pipe: 7.000

Manning's N	0.075	Safety Factor	2.0	Length (m)	5.1	Membrane Depth (mm)	110
Infiltration Coefficient Base (m/hr)	0.00000	Porosity	0.30	Slope (1:X)	196.2		
Membrane Percolation (mm/hr)	1000	Invert Level (m)	94.440	Depression Storage (mm)	5		
Max Percolation (l/s)	26.6	Width (m)	18.8	Evaporation (mm/day)	3		

Infiltration Trench Pipe: 8.000

Manning's N	0.075	Safety Factor	2.0	Trench Width (m)	0.6	Cap Volume Depth (m)	0.670
Infiltration Coefficient Base (m/hr)	0.01000	Porosity	0.35	Trench Length (m)	22.6	Cap Infiltration Depth (m)	0.670
Infiltration Coefficient Side (m/hr)	0.01000	Invert Level (m)	94.273	Slope (1:X)	199.7		

Porous Car Park Pipe: 9.000

Manning's N	0.075	Safety Factor	2.0	Length (m)	5.2	Membrane Depth (mm)	110
Infiltration Coefficient Base (m/hr)	0.00000	Porosity	0.30	Slope (1:X)	200.0		
Membrane Percolation (mm/hr)	1000	Invert Level (m)	94.190	Depression Storage (mm)	5		
Max Percolation (l/s)	34.4	Width (m)	23.8	Evaporation (mm/day)	3		

Infiltration Trench Pipe: 10.000

Manning's N	0.075	Safety Factor	2.0	Trench Width (m)	0.6	Cap Volume Depth (m)	0.800
Infiltration Coefficient Base (m/hr)	0.01000	Porosity	0.35	Trench Length (m)	22.8	Cap Infiltration Depth (m)	0.800
Infiltration Coefficient Side (m/hr)	0.01000	Invert Level (m)	94.000	Slope (1:X)	200.3		

Porous Car Park Pipe: 11.000

Manning's N	0.075	Safety Factor	2.0	Length (m)	5.2	Membrane Depth (mm)	110
Infiltration Coefficient Base (m/hr)	0.00000	Porosity	0.30	Slope (1:X)	200.0		
Membrane Percolation (mm/hr)	1000	Invert Level (m)	94.040	Depression Storage (mm)	5		
Max Percolation (l/s)	39.1	Width (m)	27.1	Evaporation (mm/day)	3		

Infiltration Trench Pipe: 12.000

Manning's N	0.075	Safety Factor	2.0	Trench Width (m)	0.6	Cap Volume Depth (m)	0.800
Infiltration Coefficient Base (m/hr)	0.01000	Porosity	0.35	Trench Length (m)	25.7	Cap Infiltration Depth (m)	0.800
Infiltration Coefficient Side (m/hr)	0.01000	Invert Level (m)	93.850	Slope (1:X)	200.5		

Porous Car Park Pipe: 13.000

Manning's N	0.075	Safety Factor	2.0	Length (m)	6.0	Membrane Depth (mm)	110
Infiltration Coefficient Base (m/hr)	0.00000	Porosity	0.30	Slope (1:X)	200.0		
Membrane Percolation (mm/hr)	1000	Invert Level (m)	93.890	Depression Storage (mm)	5		
Max Percolation (l/s)	20.3	Width (m)	12.2	Evaporation (mm/day)	3		

Infiltration Trench Pipe: 14.000

Manning's N	0.075	Safety Factor	2.0	Trench Width (m)	0.6	Cap Volume Depth (m)	0.800
Infiltration Coefficient Base (m/hr)	0.01000	Porosity	0.30	Trench Length (m)	11.5	Cap Infiltration Depth (m)	0.800
Infiltration Coefficient Side (m/hr)	0.01000	Invert Level (m)	93.550	Slope (1:X)	198.8		

Porous Car Park Pipe: 15.000

Manning's N	0.075	Safety Factor	2.0	Length (m)	5.2	Membrane Depth (mm)	110
Infiltration Coefficient Base (m/hr)	0.00000	Porosity	0.30	Slope (1:X)	201.2		
Membrane Percolation (mm/hr)	1000	Invert Level (m)	93.965	Depression Storage (mm)	5		
Max Percolation (l/s)	17.1	Width (m)	11.8	Evaporation (mm/day)	3		

Porous Car Park Pipe: 16.000

Manning's N	0.075	Membrane Percolation (mm/hr)	1000	Safety Factor	2.0	Invert Level (m)	93.965
Infiltration Coefficient Base (m/hr)	0.00000	Max Percolation (l/s)	32.8	Porosity	0.30	Width (m)	19.0

Porous Car Park Pipe: 16.000

Length (m) 6.2 Depression Storage (mm) 5 Membrane Depth (mm) 110
Slope (1:X) 200.7 Evaporation (mm/day) 3

Porous Car Park Pipe: 17.000

Manning's N 0.075 Safety Factor 2.0 Length (m) 7.0 Membrane Depth (mm) 110
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.30 Slope (1:X) 198.6
Membrane Percolation (mm/hr) 1000 Invert Level (m) 93.740 Depression Storage (mm) 5
Max Percolation (l/s) 23.8 Width (m) 12.3 Evaporation (mm/day) 3

Infiltration Trench Pipe: 18.000

Manning's N 0.075 Safety Factor 2.0 Trench Width (m) 0.6 Cap Volume Depth (m) 0.549
Infiltration Coefficient Base (m/hr) 0.01000 Porosity 0.35 Trench Length (m) 20.3 Cap Infiltration Depth (m) 0.549
Infiltration Coefficient Side (m/hr) 0.01000 Invert Level (m) 93.702 Slope (1:X) 199.1

Infiltration Trench Pipe: 18.001

Manning's N 0.075 Safety Factor 2.0 Trench Width (m) 0.6 Cap Volume Depth (m) 0.600
Infiltration Coefficient Base (m/hr) 0.01000 Porosity 0.35 Trench Length (m) 13.0 Cap Infiltration Depth (m) 0.600
Infiltration Coefficient Side (m/hr) 0.01000 Invert Level (m) 93.550 Slope (1:X) 199.9

Infiltration Trench Pipe: 19.000

Manning's N 0.075 Safety Factor 2.0 Trench Width (m) 0.6 Cap Volume Depth (m) 0.800
Infiltration Coefficient Base (m/hr) 0.01000 Porosity 0.35 Trench Length (m) 17.7 Cap Infiltration Depth (m) 0.800
Infiltration Coefficient Side (m/hr) 0.01000 Invert Level (m) 94.000 Slope (1:X) 77.9

Infiltration Trench Pipe: 19.001

Manning's N 0.075 Safety Factor 2.0 Trench Width (m) 0.6 Cap Volume Depth (m) 0.800
Infiltration Coefficient Base (m/hr) 0.01000 Porosity 0.35 Trench Length (m) 12.8 Cap Infiltration Depth (m) 0.800
Infiltration Coefficient Side (m/hr) 0.01000 Invert Level (m) 93.619 Slope (1:X) 99.9

Infiltration Basin Pipe: 19.004

Manning's N 0.035 Infiltration Coefficient Base (m/hr) 0.01000 Safety Factor 2.0
Invert Level (m) 92.912 Infiltration Coefficient Side (m/hr) 0.01000 Porosity 1.00

Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	9.1	1.100	9.1

Porous Car Park Pipe: 20.000

Manning's N 0.075 Max Percolation (l/s) 38.9 Invert Level (m) 93.485 Slope (1:X) 199.1
Infiltration Coefficient Base (m/hr) 0.00000 Safety Factor 2.0 Width (m) 21.3 Depression Storage (mm) 5
Membrane Percolation (mm/hr) 1000 Porosity 0.30 Length (m) 6.6 Evaporation (mm/day) 3

Porous Car Park Pipe: 20.000

Membrane Depth (mm) 110

Infiltration Trench Pipe: 21.000

Manning's N	0.075	Safety Factor	2.0	Trench Width (m)	0.6	Cap Volume Depth (m)	0.800
Infiltration Coefficient Base (m/hr)	0.01000	Porosity	0.35	Trench Length (m)	16.2	Cap Infiltration Depth (m)	0.800
Infiltration Coefficient Side (m/hr)	0.01000	Invert Level (m)	93.295	Slope (1:X)	200.0		

Infiltration Trench Pipe: 21.001

Manning's N	0.075	Safety Factor	2.0	Trench Width (m)	0.6	Cap Volume Depth (m)	0.800
Infiltration Coefficient Base (m/hr)	0.01000	Porosity	0.35	Trench Length (m)	8.2	Cap Infiltration Depth (m)	0.800
Infiltration Coefficient Side (m/hr)	0.01000	Invert Level (m)	93.164	Slope (1:X)	200.1		

Infiltration Trench Pipe: 21.002

Manning's N	0.075	Safety Factor	2.0	Trench Width (m)	0.6	Cap Volume Depth (m)	0.800
Infiltration Coefficient Base (m/hr)	0.01000	Porosity	0.35	Trench Length (m)	15.2	Cap Infiltration Depth (m)	0.800
Infiltration Coefficient Side (m/hr)	0.01000	Invert Level (m)	93.073	Slope (1:X)	200.6		

Porous Car Park Pipe: 22.000

Manning's N	0.075	Safety Factor	2.0	Length (m)	10.6	Membrane Depth (mm)	110
Infiltration Coefficient Base (m/hr)	0.00000	Porosity	0.30	Slope (1:X)	199.8		
Membrane Percolation (mm/hr)	1000	Invert Level (m)	92.148	Depression Storage (mm)	5		
Max Percolation (l/s)	109.2	Width (m)	37.1	Evaporation (mm/day)	3		

Porous Car Park Pipe: 23.000

Manning's N	0.075	Safety Factor	2.0	Length (m)	5.4	Membrane Depth (mm)	110
Infiltration Coefficient Base (m/hr)	0.00000	Porosity	0.30	Slope (1:X)	200.0		
Membrane Percolation (mm/hr)	1000	Invert Level (m)	93.740	Depression Storage (mm)	5		
Max Percolation (l/s)	36.0	Width (m)	24.0	Evaporation (mm/day)	3		

Porous Car Park Pipe: 24.000

Manning's N	0.075	Safety Factor	2.0	Length (m)	6.8	Membrane Depth (mm)	110
Infiltration Coefficient Base (m/hr)	0.00000	Porosity	0.30	Slope (1:X)	198.5		
Membrane Percolation (mm/hr)	1000	Invert Level (m)	93.500	Depression Storage (mm)	5		
Max Percolation (l/s)	35.4	Width (m)	18.9	Evaporation (mm/day)	3		

Cellular Storage Pipe: 22.002

Manning's N	0.050	Infiltration Coefficient Base (m/hr)	0.01000	Safety Factor	2.0
Invert Level (m)	92.078	Infiltration Coefficient Side (m/hr)	0.01000	Porosity	1.00

Cellular Storage Pipe: 22.002

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	66.6	166.6	0.377	145.2	166.6	0.605	124.4	166.6	0.833	103.6	166.6	1.061	82.8	166.6
0.300	71.2	166.6	0.453	138.3	166.6	0.681	117.5	166.6	0.909	96.6	166.6	1.361	87.3	166.6
0.301	152.1	166.6	0.529	131.3	166.6	0.757	110.5	166.6	0.985	89.7	166.6	1.362	0.0	166.6

Infiltration Trench Pipe: 28.000

Manning's N 0.075 Safety Factor 2.0 Trench Width (m) 0.6 Cap Volume Depth (m) 0.800
Infiltration Coefficient Base (m/hr) 0.01000 Porosity 0.35 Trench Length (m) 22.4 Cap Infiltration Depth (m) 0.800
Infiltration Coefficient Side (m/hr) 0.01000 Invert Level (m) 93.550 Slope (1:X) 199.9

Infiltration Trench Pipe: 28.001

Manning's N 0.075 Safety Factor 2.0 Trench Width (m) 0.6 Cap Volume Depth (m) 0.650
Infiltration Coefficient Base (m/hr) 0.01000 Porosity 0.35 Trench Length (m) 13.2 Cap Infiltration Depth (m) 0.650
Infiltration Coefficient Side (m/hr) 0.01000 Invert Level (m) 93.310 Slope (1:X) 200.5

Porous Car Park Pipe: 29.000

Manning's N 0.075 Safety Factor 2.0 Length (m) 5.0 Membrane Depth (mm) 110
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.30 Slope (1:X) 200.0
Membrane Percolation (mm/hr) 1000 Invert Level (m) 93.590 Depression Storage (mm) 5
Max Percolation (l/s) 20.8 Width (m) 15.0 Evaporation (mm/day) 3

Infiltration Trench Pipe: 30.000

Manning's N 0.075 Safety Factor 2.0 Trench Width (m) 0.6 Cap Volume Depth (m) 0.800
Infiltration Coefficient Base (m/hr) 0.01000 Porosity 0.35 Trench Length (m) 17.9 Cap Infiltration Depth (m) 0.800
Infiltration Coefficient Side (m/hr) 0.01000 Invert Level (m) 93.735 Slope (1:X) 200.6

Infiltration Trench Pipe: 30.001

Manning's N 0.075 Safety Factor 2.0 Trench Width (m) 0.6 Cap Volume Depth (m) 0.685
Infiltration Coefficient Base (m/hr) 0.01000 Porosity 0.35 Trench Length (m) 17.5 Cap Infiltration Depth (m) 0.685
Infiltration Coefficient Side (m/hr) 0.01000 Invert Level (m) 93.285 Slope (1:X) 200.9

Infiltration Trench Pipe: 31.000

Manning's N 0.075 Safety Factor 2.0 Trench Width (m) 0.6 Cap Volume Depth (m) 0.800
Infiltration Coefficient Base (m/hr) 0.01000 Porosity 0.35 Trench Length (m) 20.5 Cap Infiltration Depth (m) 0.800
Infiltration Coefficient Side (m/hr) 0.01000 Invert Level (m) 93.424 Slope (1:X) 200.9

Infiltration Trench Pipe: 32.000

Manning's N 0.075 Safety Factor 2.0 Trench Width (m) 0.6 Cap Volume Depth (m) 0.800
Infiltration Coefficient Base (m/hr) 0.01000 Porosity 0.35 Trench Length (m) 15.6 Cap Infiltration Depth (m) 0.800
Infiltration Coefficient Side (m/hr) 0.01000 Invert Level (m) 93.400 Slope (1:X) 199.5

Corrig Hse Corrig Rd
Sandyford Dublin 8
Ireland

Date 05/10/2021 14:40
File Drainage_Network_01.10.2021_M66_All_Time_Steps.MDX
CADS

Designed by Admin
Checked by
Network 2020.1.3

Porous Car Park Pipe: 33.000

Manning's N	0.075	Safety Factor	2.0	Length (m)	5.6	Membrane Depth (mm)	110
Infiltration Coefficient Base (m/hr)	0.00000	Porosity	0.30	Slope (1:X)	200.0		
Membrane Percolation (mm/hr)	1000	Invert Level (m)	93.640	Depression Storage (mm)	5		
Max Percolation (l/s)	30.5	Width (m)	19.6	Evaporation (mm/day)	3		

Porous Car Park Pipe: 34.000

Manning's N	0.075	Safety Factor	2.0	Length (m)	5.2	Membrane Depth (mm)	110
Infiltration Coefficient Base (m/hr)	0.00000	Porosity	0.30	Slope (1:X)	200.0		
Membrane Percolation (mm/hr)	1000	Invert Level (m)	93.925	Depression Storage (mm)	5		
Max Percolation (l/s)	27.0	Width (m)	18.7	Evaporation (mm/day)	3		

Porous Car Park Pipe: 35.000

Manning's N	0.075	Safety Factor	2.0	Length (m)	5.2	Membrane Depth (mm)	110
Infiltration Coefficient Base (m/hr)	0.00000	Porosity	0.30	Slope (1:X)	208.0		
Membrane Percolation (mm/hr)	1000	Invert Level (m)	93.475	Depression Storage (mm)	5		
Max Percolation (l/s)	37.6	Width (m)	26.0	Evaporation (mm/day)	3		

Infiltration Trench Pipe: 36.000

Manning's N	0.075	Safety Factor	2.0	Trench Width (m)	0.6	Cap Volume Depth (m)	0.800
Infiltration Coefficient Base (m/hr)	0.01000	Porosity	0.35	Trench Length (m)	18.8	Cap Infiltration Depth (m)	0.800
Infiltration Coefficient Side (m/hr)	0.01000	Invert Level (m)	93.550	Slope (1:X)	200.2		

Porous Car Park Pipe: 37.000

Manning's N	0.075	Safety Factor	2.0	Length (m)	5.7	Membrane Depth (mm)	110
Infiltration Coefficient Base (m/hr)	0.00000	Porosity	0.30	Slope (1:X)	197.9		
Membrane Percolation (mm/hr)	1000	Invert Level (m)	93.740	Depression Storage (mm)	5		
Max Percolation (l/s)	28.9	Width (m)	18.1	Evaporation (mm/day)	3		

Cellular Storage Pipe: 1.014

Manning's N 0.050 Infiltration Coefficient Base (m/hr) 0.01000 Safety Factor 2.0
Invert Level (m) 91.601 Infiltration Coefficient Side (m/hr) 0.01000 Porosity 1.00

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	286.1	715.3	0.416	626.0	715.3	0.759	528.6	715.3	1.103	431.2	715.3	1.446	333.7	715.3
0.300	296.0	715.3	0.530	593.5	715.3	0.874	496.1	715.3	1.217	398.7	715.3	1.746	343.6	715.3
0.301	658.5	715.3	0.645	561.1	715.3	0.988	463.6	715.3	1.332	366.2	715.3	1.747	0.0	715.3

Time Area Diagram at Pipe Number 1.000 for Storm

Total Area (ha) 0.014

Time Area Diagram at Pipe Number 1.000 for Storm

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.000	12	16	0.000	24	28	0.000	36	40	0.000	48	52	0.000	60	64	0.001	72	76	0.001	84	88	0.001	96	100	0.001	108	112	0.001
4	8	0.000	16	20	0.000	28	32	0.000	40	44	0.000	52	56	0.000	64	68	0.001	76	80	0.001	88	92	0.001	100	104	0.001	112	116	0.001
8	12	0.000	20	24	0.000	32	36	0.000	44	48	0.000	56	60	0.000	68	72	0.001	80	84	0.001	92	96	0.001	104	108	0.001			

Time Area Diagram at Pipe Number 2.000 for Storm

Total Area (ha) 0.010

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.000	4	8	0.000	8	12	0.001	12	16	0.001	16	20	0.001	20	24	0.001	24	28	0.001	28	32	0.001	32	36	0.002	36	40	0.002

Time Area Diagram at Pipe Number 2.000 for Storm

Total Area (ha) 0.011

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.000	12	16	0.000	24	28	0.000	36	40	0.000	48	52	0.000	60	64	0.001	72	76	0.001	84	88	0.001	96	100	0.001			
4	8	0.000	16	20	0.000	28	32	0.000	40	44	0.000	52	56	0.000	64	68	0.001	76	80	0.001	88	92	0.001	100	104	0.001			
8	12	0.000	20	24	0.000	32	36	0.000	44	48	0.000	56	60	0.000	68	72	0.001	80	84	0.001	92	96	0.001						

Time Area Diagram at Pipe Number 3.000 for Storm

Total Area (ha) 0.010

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.000	4	8	0.000	8	12	0.001	12	16	0.001	16	20	0.001	20	24	0.001	24	28	0.001	28	32	0.001	32	36	0.002	36	40	0.002

Time Area Diagram at Pipe Number 3.000 for Storm

Total Area (ha) 0.014

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.000	12	16	0.000	24	28	0.000	36	40	0.000	48	52	0.000	60	64	0.001	72	76	0.001	84	88	0.001	96	100	0.001	108	112	0.001
4	8	0.000	16	20	0.000	28	32	0.000	40	44	0.000	52	56	0.000	64	68	0.001	76	80	0.001	88	92	0.001	100	104	0.001	112	116	0.001
8	12	0.000	20	24	0.000	32	36	0.000	44	48	0.000	56	60	0.000	68	72	0.001	80	84	0.001	92	96	0.001	104	108	0.001			

Time Area Diagram at Pipe Number 4.000 for Storm

Total Area (ha) 0.022

Time Area Diagram at Pipe Number 4.000 for Storm

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.000	4	8	0.000	8	12	0.002	12	16	0.002	16	20	0.003	20	24	0.003	24	28	0.003	28	32	0.003	32	36	0.003	36	40	0.003

Time Area Diagram at Pipe Number 4.000 for Storm

Total Area (ha) 0.009

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.000	4	8	0.000	8	12	0.001	12	16	0.001	16	20	0.001	20	24	0.001	24	28	0.001	28	32	0.001	32	36	0.001	36	40	0.002

Time Area Diagram at Pipe Number 4.000 for Storm

Total Area (ha) 0.024

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.000	12	16	0.000	24	28	0.000	36	40	0.000	48	52	0.000	60	64	0.001	72	76	0.001	84	88	0.002	96	100	0.002	108	112	0.002
4	8	0.000	16	20	0.000	28	32	0.000	40	44	0.000	52	56	0.000	64	68	0.001	76	80	0.001	88	92	0.002	100	104	0.002	112	116	0.002
8	12	0.000	20	24	0.000	32	36	0.000	44	48	0.000	56	60	0.000	68	72	0.001	80	84	0.001	92	96	0.002	104	108	0.002	116	120	0.002

Time Area Diagram at Pipe Number 6.000 for Storm

Total Area (ha) 0.003

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.000	4	8	0.000	8	12	0.001	12	16	0.001	16	20	0.001

Time Area Diagram at Pipe Number 6.000 for Storm

Total Area (ha) 0.007

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.000	8	12	0.000	16	20	0.000	24	28	0.000	32	36	0.000	40	44	0.000	48	52	0.000	56	60	0.000	64	68	0.001	72	76	0.001	80	84	0.001
4	8	0.000	12	16	0.000	20	24	0.000	28	32	0.000	36	40	0.000	44	48	0.000	52	56	0.000	60	64	0.001	68	72	0.001	76	80	0.001	84	88	0.001

Time Area Diagram at Pipe Number 7.000 for Storm

Total Area (ha) 0.010

Time Area Diagram at Pipe Number 7.000 for Storm

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.000	4	8	0.000	8	12	0.001	12	16	0.001	16	20	0.001	20	24	0.001	24	28	0.001	28	32	0.001	32	36	0.002	36	40	0.002

Time Area Diagram at Pipe Number 7.000 for Storm

Total Area (ha) 0.012

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.000	12	16	0.000	24	28	0.000	36	40	0.000	48	52	0.000	60	64	0.001	72	76	0.001	84	88	0.001	96	100	0.001
4	8	0.000	16	20	0.000	28	32	0.000	40	44	0.000	52	56	0.000	64	68	0.001	76	80	0.001	88	92	0.001	100	104	0.001
8	12	0.000	20	24	0.000	32	36	0.000	44	48	0.000	56	60	0.000	68	72	0.001	80	84	0.001	92	96	0.001	104	108	0.001

Time Area Diagram at Pipe Number 8.000 for Storm

Total Area (ha) 0.013

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.000	12	16	0.000	24	28	0.000	36	40	0.000	48	52	0.000	60	64	0.001	72	76	0.001	84	88	0.001	96	100	0.001	108	112	0.001
4	8	0.000	16	20	0.000	28	32	0.000	40	44	0.000	52	56	0.000	64	68	0.001	76	80	0.001	88	92	0.001	100	104	0.001			
8	12	0.000	20	24	0.000	32	36	0.000	44	48	0.000	56	60	0.000	68	72	0.001	80	84	0.001	92	96	0.001	104	108	0.001			

Time Area Diagram at Pipe Number 9.000 for Storm

Total Area (ha) 0.011

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.000	4	8	0.000	8	12	0.001	12	16	0.001	16	20	0.001	20	24	0.001	24	28	0.001	28	32	0.002	32	36	0.002	36	40	0.002

Time Area Diagram at Pipe Number 9.000 for Storm

Total Area (ha) 0.015

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.000	12	16	0.000	24	28	0.000	36	40	0.000	48	52	0.000	60	64	0.001	72	76	0.001	84	88	0.001	96	100	0.001	108	112	0.001
4	8	0.000	16	20	0.000	28	32	0.000	40	44	0.000	52	56	0.000	64	68	0.001	76	80	0.001	88	92	0.001	100	104	0.001	112	116	0.001
8	12	0.000	20	24	0.000	32	36	0.000	44	48	0.000	56	60	0.000	68	72	0.001	80	84	0.001	92	96	0.001	104	108	0.001	116	120	0.001

Time Area Diagram at Pipe Number 10.000 for Storm

Total Area (ha) 0.015

Time Area Diagram at Pipe Number 10.000 for Storm

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.000	12	16	0.000	24	28	0.000	36	40	0.000	48	52	0.000	60	64	0.001	72	76	0.001	84	88	0.001	96	100	0.001	108	112	0.001
4	8	0.000	16	20	0.000	28	32	0.000	40	44	0.000	52	56	0.000	64	68	0.001	76	80	0.001	88	92	0.001	100	104	0.001	112	116	0.001
8	12	0.000	20	24	0.000	32	36	0.000	44	48	0.000	56	60	0.000	68	72	0.001	80	84	0.001	92	96	0.001	104	108	0.001	116	120	0.001

Time Area Diagram at Pipe Number 11.000 for Storm

Total Area (ha) 0.014

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.000	4	8	0.000	8	12	0.001	12	16	0.001	16	20	0.002	20	24	0.002	24	28	0.002	28	32	0.002	32	36	0.002	36	40	0.002

Time Area Diagram at Pipe Number 11.000 for Storm

Total Area (ha) 0.015

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.000	12	16	0.000	24	28	0.000	36	40	0.000	48	52	0.000	60	64	0.001	72	76	0.001	84	88	0.001	96	100	0.001	108	112	0.001
4	8	0.000	16	20	0.000	28	32	0.000	40	44	0.000	52	56	0.000	64	68	0.001	76	80	0.001	88	92	0.001	100	104	0.001	112	116	0.001
8	12	0.000	20	24	0.000	32	36	0.000	44	48	0.000	56	60	0.000	68	72	0.001	80	84	0.001	92	96	0.001	104	108	0.001	116	120	0.001

Time Area Diagram at Pipe Number 12.000 for Storm

Total Area (ha) 0.015

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.000	12	16	0.000	24	28	0.000	36	40	0.000	48	52	0.000	60	64	0.001	72	76	0.001	84	88	0.001	96	100	0.001	108	112	0.001
4	8	0.000	16	20	0.000	28	32	0.000	40	44	0.000	52	56	0.000	64	68	0.001	76	80	0.001	88	92	0.001	100	104	0.001	112	116	0.001
8	12	0.000	20	24	0.000	32	36	0.000	44	48	0.000	56	60	0.000	68	72	0.001	80	84	0.001	92	96	0.001	104	108	0.001	116	120	0.001

Time Area Diagram at Pipe Number 13.000 for Storm

Total Area (ha) 0.006

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.000	4	8	0.000	8	12	0.001	12	16	0.001	16	20	0.001	20	24	0.001	24	28	0.001	28	32	0.001						

Time Area Diagram at Pipe Number 13.000 for Storm

Total Area (ha) 0.015

Corrig Hse Corrig Rd
Sandyford Dublin 8
Ireland

Date 05/10/2021 14:40
File Drainage_Network_01.10.2021_M66_All_Time_Steps.MDX
CADS

Designed by Admin
Checked by
Network 2020.1.3

Time Area Diagram at Pipe Number 11.000 for Storm

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.000	12	16	0.000	24	28	0.000	36	40	0.000	48	52	0.000	60	64	0.001	72	76	0.001	84	88	0.001	96	100	0.001	108	112	0.001
4	8	0.000	16	20	0.000	28	32	0.000	40	44	0.000	52	56	0.000	64	68	0.001	76	80	0.001	88	92	0.001	100	104	0.001	112	116	0.001
8	12	0.000	20	24	0.000	32	36	0.000	44	48	0.000	56	60	0.000	68	72	0.001	80	84	0.001	92	96	0.001	104	108	0.001	116	120	0.001

Time Area Diagram at Pipe Number 14.000 for Storm

Total Area (ha) 0.015

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.000	12	16	0.000	24	28	0.000	36	40	0.000	48	52	0.000	60	64	0.001	72	76	0.001	84	88	0.001	96	100	0.001	108	112	0.001
4	8	0.000	16	20	0.000	28	32	0.000	40	44	0.000	52	56	0.000	64	68	0.001	76	80	0.001	88	92	0.001	100	104	0.001	112	116	0.001
8	12	0.000	20	24	0.000	32	36	0.000	44	48	0.000	56	60	0.000	68	72	0.001	80	84	0.001	92	96	0.001	104	108	0.001	116	120	0.001

Time Area Diagram at Pipe Number 15.000 for Storm

Total Area (ha) 0.006

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.000	4	8	0.000	8	12	0.001	12	16	0.001	16	20	0.001	20	24	0.001	24	28	0.001	28	32	0.001						

Time Area Diagram at Pipe Number 15.000 for Storm

Total Area (ha) 0.013

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.000	12	16	0.000	24	28	0.000	36	40	0.000	48	52	0.000	60	64	0.001	72	76	0.001	84	88	0.001	96	100	0.001	108	112	0.001
4	8	0.000	16	20	0.000	28	32	0.000	40	44	0.000	52	56	0.000	64	68	0.001	76	80	0.001	88	92	0.001	100	104	0.001			
8	12	0.000	20	24	0.000	32	36	0.000	44	48	0.000	56	60	0.000	68	72	0.001	80	84	0.001	92	96	0.001	104	108	0.001			

Time Area Diagram at Pipe Number 16.000 for Storm

Total Area (ha) 0.012

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.000	4	8	0.000	8	12	0.001	12	16	0.001	16	20	0.001	20	24	0.001	24	28	0.002	28	32	0.002	32	36	0.002	36	40	0.002

Time Area Diagram at Pipe Number 16.000 for Storm

Total Area (ha) 0.013

Time Area Diagram at Pipe Number 16.000 for Storm

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.000	12	16	0.000	24	28	0.000	36	40	0.000	48	52	0.000	60	64	0.001	72	76	0.001	84	88	0.001	96	100	0.001	108	112	0.001
4	8	0.000	16	20	0.000	28	32	0.000	40	44	0.000	52	56	0.000	64	68	0.001	76	80	0.001	88	92	0.001	100	104	0.001			
8	12	0.000	20	24	0.000	32	36	0.000	44	48	0.000	56	60	0.000	68	72	0.001	80	84	0.001	92	96	0.001	104	108	0.001			

Time Area Diagram at Pipe Number 17.000 for Storm

Total Area (ha) 0.009

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.000	4	8	0.000	8	12	0.001	12	16	0.001	16	20	0.001	20	24	0.001	24	28	0.001	28	32	0.001	32	36	0.001	36	40	0.002

Time Area Diagram at Pipe Number 17.000 for Storm

Total Area (ha) 0.009

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.000	12	16	0.000	24	28	0.000	36	40	0.000	48	52	0.000	60	64	0.001	72	76	0.001	84	88	0.001			
4	8	0.000	16	20	0.000	28	32	0.000	40	44	0.000	52	56	0.000	64	68	0.001	76	80	0.001	88	92	0.001			
8	12	0.000	20	24	0.000	32	36	0.000	44	48	0.000	56	60	0.000	68	72	0.001	80	84	0.001	92	96	0.001			

Time Area Diagram at Pipe Number 18.000 for Storm

Total Area (ha) 0.013

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.000	12	16	0.000	24	28	0.000	36	40	0.000	48	52	0.000	60	64	0.001	72	76	0.001	84	88	0.001	96	100	0.001			
4	8	0.000	16	20	0.000	28	32	0.000	40	44	0.000	52	56	0.000	64	68	0.001	76	80	0.001	88	92	0.001	100	104	0.001			
8	12	0.000	20	24	0.000	32	36	0.000	44	48	0.000	56	60	0.001	68	72	0.001	80	84	0.001	92	96	0.001	104	108	0.001			

Time Area Diagram at Pipe Number 18.001 for Storm

Total Area (ha) 0.009

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.000	12	16	0.000	24	28	0.000	36	40	0.000	48	52	0.000	60	64	0.001	72	76	0.001	84	88	0.001			
4	8	0.000	16	20	0.000	28	32	0.000	40	44	0.000	52	56	0.000	64	68	0.001	76	80	0.001	88	92	0.001			
8	12	0.000	20	24	0.000	32	36	0.000	44	48	0.000	56	60	0.000	68	72	0.001	80	84	0.001	92	96	0.001			

Time Area Diagram at Pipe Number 19.000 for Storm

Total Area (ha) 0.012

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.000	12	16	0.000	24	28	0.000	36	40	0.000	48	52	0.000	60	64	0.001	72	76	0.001	84	88	0.001	96	100	0.001
4	8	0.000	16	20	0.000	28	32	0.000	40	44	0.000	52	56	0.000	64	68	0.001	76	80	0.001	88	92	0.001	100	104	0.001
8	12	0.000	20	24	0.000	32	36	0.000	44	48	0.000	56	60	0.000	68	72	0.001	80	84	0.001	92	96	0.001	104	108	0.001

Time Area Diagram at Pipe Number 19.001 for Storm

Total Area (ha) 0.013

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.000	12	16	0.000	24	28	0.000	36	40	0.000	48	52	0.000	60	64	0.001	72	76	0.001	84	88	0.001	96	100	0.001	108	112	0.001
4	8	0.000	16	20	0.000	28	32	0.000	40	44	0.000	52	56	0.000	64	68	0.001	76	80	0.001	88	92	0.001	100	104	0.001			
8	12	0.000	20	24	0.000	32	36	0.000	44	48	0.000	56	60	0.000	68	72	0.001	80	84	0.001	92	96	0.001	104	108	0.001			

Time Area Diagram at Pipe Number 20.000 for Storm

Total Area (ha) 0.014

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.000	4	8	0.000	8	12	0.002	12	16	0.001	16	20	0.001	20	24	0.002	24	28	0.002	28	32	0.002	32	36	0.002	36	40	0.002

Time Area Diagram at Pipe Number 20.000 for Storm

Total Area (ha) 0.025

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.000	12	16	0.000	24	28	0.000	36	40	0.000	48	52	0.000	60	64	0.002	72	76	0.002	84	88	0.002	96	100	0.002	108	112	0.001
4	8	0.000	16	20	0.000	28	32	0.000	40	44	0.000	52	56	0.000	64	68	0.002	76	80	0.002	88	92	0.002	100	104	0.001	112	116	0.001
8	12	0.000	20	24	0.000	32	36	0.000	44	48	0.000	56	60	0.000	68	72	0.002	80	84	0.002	92	96	0.002	104	108	0.001	116	120	0.001

Time Area Diagram at Pipe Number 21.000 for Storm

Total Area (ha) 0.025

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.000	12	16	0.000	24	28	0.000	36	40	0.000	48	52	0.000	60	64	0.002	72	76	0.002	84	88	0.002	96	100	0.002	108	112	0.001
4	8	0.000	16	20	0.000	28	32	0.000	40	44	0.000	52	56	0.000	64	68	0.002	76	80	0.002	88	92	0.002	100	104	0.001	112	116	0.001
8	12	0.000	20	24	0.000	32	36	0.000	44	48	0.000	56	60	0.000	68	72	0.002	80	84	0.002	92	96	0.002	104	108	0.001	116	120	0.001

Time Area Diagram at Pipe Number 21.000 for Storm

Total Area (ha) 0.005

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.000	4	8	0.000	8	12	0.001	12	16	0.001	16	20	0.001	20	24	0.001	24	28	0.001

Time Area Diagram at Pipe Number 15.008 for Storm

Total Area (ha) 0.031

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.000	4	8	0.000	8	12	0.003	12	16	0.004	16	20	0.004	20	24	0.004	24	28	0.004	28	32	0.004	32	36	0.004	36	40	0.004

Time Area Diagram at Pipe Number 15.008 for Storm

Total Area (ha) 0.075

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.000	12	16	0.000	24	28	0.000	36	40	0.000	48	52	0.000	60	64	0.005	72	76	0.005	84	88	0.005	96	100	0.005	108	112	0.005
4	8	0.000	16	20	0.000	28	32	0.000	40	44	0.000	52	56	0.000	64	68	0.005	76	80	0.005	88	92	0.005	100	104	0.005	112	116	0.005
8	12	0.000	20	24	0.000	32	36	0.000	44	48	0.000	56	60	0.000	68	72	0.005	80	84	0.005	92	96	0.005	104	108	0.005	116	120	0.005

Time Area Diagram at Pipe Number 22.000 for Storm

Total Area (ha) 0.039

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.000	4	8	0.000	8	12	0.004	12	16	0.005	16	20	0.005	20	24	0.005	24	28	0.005	28	32	0.005	32	36	0.005	36	40	0.005

Time Area Diagram at Pipe Number 23.000 for Storm

Total Area (ha) 0.013

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.000	4	8	0.000	8	12	0.001	12	16	0.001	16	20	0.001	20	24	0.002	24	28	0.002	28	32	0.002	32	36	0.002	36	40	0.002

Time Area Diagram at Pipe Number 23.000 for Storm

Total Area (ha) 0.017

Time Area Diagram at Pipe Number 23.000 for Storm

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.000	12	16	0.000	24	28	0.000	36	40	0.000	48	52	0.000	60	64	0.001	72	76	0.001	84	88	0.001	96	100	0.001	108	112	0.001
4	8	0.000	16	20	0.000	28	32	0.000	40	44	0.000	52	56	0.000	64	68	0.001	76	80	0.001	88	92	0.001	100	104	0.001	112	116	0.002
8	12	0.000	20	24	0.000	32	36	0.000	44	48	0.000	56	60	0.000	68	72	0.001	80	84	0.001	92	96	0.001	104	108	0.001	116	120	0.002

Time Area Diagram at Pipe Number 24.000 for Storm

Total Area (ha) 0.013

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.000	4	8	0.000	8	12	0.001	12	16	0.001	16	20	0.001	20	24	0.002	24	28	0.002	28	32	0.002	32	36	0.002	36	40	0.002

Time Area Diagram at Pipe Number 24.000 for Storm

Total Area (ha) 0.014

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.000	12	16	0.000	24	28	0.000	36	40	0.000	48	52	0.000	60	64	0.001	72	76	0.001	84	88	0.001	96	100	0.001	108	112	0.001
4	8	0.000	16	20	0.000	28	32	0.000	40	44	0.000	52	56	0.000	64	68	0.001	76	80	0.001	88	92	0.001	100	104	0.001	112	116	0.001
8	12	0.000	20	24	0.000	32	36	0.000	44	48	0.000	56	60	0.000	68	72	0.001	80	84	0.001	92	96	0.001	104	108	0.001			

Time Area Diagram at Pipe Number 26.000 for Storm

Total Area (ha) 0.034

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.000	8	12	0.000	16	20	0.003	24	28	0.003	32	36	0.003	40	44	0.004	48	52	0.004			
4	8	0.000	12	16	0.003	20	24	0.003	28	32	0.003	36	40	0.004	44	48	0.004						

Time Area Diagram at Pipe Number 27.000 for Storm

Total Area (ha) 0.034

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.000	8	12	0.000	16	20	0.003	24	28	0.003	32	36	0.003	40	44	0.004	48	52	0.004			
4	8	0.000	12	16	0.003	20	24	0.003	28	32	0.003	36	40	0.004	44	48	0.004						

Time Area Diagram at Pipe Number 28.000 for Storm

Total Area (ha) 0.016

Time Area Diagram at Pipe Number 28.000 for Storm

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.000	12	16	0.000	24	28	0.000	36	40	0.000	48	52	0.000	60	64	0.001	72	76	0.001	84	88	0.001	96	100	0.001	108	112	0.001
4	8	0.000	16	20	0.000	28	32	0.000	40	44	0.000	52	56	0.000	64	68	0.001	76	80	0.001	88	92	0.001	100	104	0.001	112	116	0.001
8	12	0.000	20	24	0.000	32	36	0.000	44	48	0.000	56	60	0.000	68	72	0.001	80	84	0.001	92	96	0.001	104	108	0.001	116	120	0.002

Time Area Diagram at Pipe Number 28.001 for Storm

Total Area (ha) 0.013

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.000	12	16	0.000	24	28	0.000	36	40	0.000	48	52	0.000	60	64	0.001	72	76	0.001	84	88	0.001	96	100	0.001	108	112	0.001
4	8	0.000	16	20	0.000	28	32	0.000	40	44	0.000	52	56	0.000	64	68	0.001	76	80	0.001	88	92	0.001	100	104	0.001			
8	12	0.000	20	24	0.000	32	36	0.000	44	48	0.000	56	60	0.000	68	72	0.001	80	84	0.001	92	96	0.001	104	108	0.001			

Time Area Diagram at Pipe Number 29.000 for Storm

Total Area (ha) 0.008

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.000	4	8	0.000	8	12	0.001	12	16	0.001	16	20	0.001	20	24	0.001	24	28	0.001	28	32	0.001	32	36	0.001	36	40	0.001

Time Area Diagram at Pipe Number 29.000 for Storm

Total Area (ha) 0.011

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.000	12	16	0.000	24	28	0.000	36	40	0.000	48	52	0.000	60	64	0.001	72	76	0.001	84	88	0.001	96	100	0.001			
4	8	0.000	16	20	0.000	28	32	0.000	40	44	0.000	52	56	0.000	64	68	0.001	76	80	0.001	88	92	0.001	100	104	0.001			
8	12	0.000	20	24	0.000	32	36	0.000	44	48	0.000	56	60	0.000	68	72	0.001	80	84	0.001	92	96	0.001						

Time Area Diagram at Pipe Number 30.000 for Storm

Total Area (ha) 0.013

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.000	12	16	0.000	24	28	0.000	36	40	0.000	48	52	0.000	60	64	0.001	72	76	0.001	84	88	0.001	96	100	0.001			
4	8	0.000	16	20	0.000	28	32	0.000	40	44	0.000	52	56	0.000	64	68	0.001	76	80	0.001	88	92	0.001	100	104	0.001			
8	12	0.000	20	24	0.000	32	36	0.000	44	48	0.000	56	60	0.000	68	72	0.001	80	84	0.001	92	96	0.001	104	108	0.002			

Time Area Diagram at Pipe Number 30.001 for Storm

Total Area (ha) 0.017

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.000	12	16	0.000	24	28	0.000	36	40	0.000	48	52	0.000	60	64	0.001	72	76	0.001	84	88	0.001	96	100	0.001	108	112	0.001
4	8	0.000	16	20	0.000	28	32	0.000	40	44	0.000	52	56	0.000	64	68	0.001	76	80	0.001	88	92	0.001	100	104	0.001	112	116	0.002
8	12	0.000	20	24	0.000	32	36	0.000	44	48	0.000	56	60	0.000	68	72	0.001	80	84	0.001	92	96	0.001	104	108	0.001	116	120	0.002

Time Area Diagram at Pipe Number 32.000 for Storm

Total Area (ha) 0.011

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.000	12	16	0.000	24	28	0.000	36	40	0.000	48	52	0.000	60	64	0.001	72	76	0.001	84	88	0.001	96	100	0.001
4	8	0.000	16	20	0.000	28	32	0.000	40	44	0.000	52	56	0.000	64	68	0.001	76	80	0.001	88	92	0.001	100	104	0.001
8	12	0.000	20	24	0.000	32	36	0.000	44	48	0.000	56	60	0.000	68	72	0.001	80	84	0.001	92	96	0.001			

Time Area Diagram at Pipe Number 33.000 for Storm

Total Area (ha) 0.011

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.000	4	8	0.000	8	12	0.001	12	16	0.001	16	20	0.001	20	24	0.001	24	28	0.001	28	32	0.002	32	36	0.001	36	40	0.001	40	44	0.002

Time Area Diagram at Pipe Number 33.000 for Storm

Total Area (ha) 0.013

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.000	12	16	0.000	24	28	0.000	36	40	0.000	48	52	0.000	60	64	0.001	72	76	0.001	84	88	0.001	96	100	0.001	108	112	0.001
4	8	0.000	16	20	0.000	28	32	0.000	40	44	0.000	52	56	0.000	64	68	0.001	76	80	0.001	88	92	0.001	100	104	0.001			
8	12	0.000	20	24	0.000	32	36	0.000	44	48	0.000	56	60	0.000	68	72	0.001	80	84	0.001	92	96	0.001	104	108	0.001			

Time Area Diagram at Pipe Number 34.000 for Storm

Total Area (ha) 0.013

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.000	12	16	0.000	24	28	0.000	36	40	0.000	48	52	0.000	60	64	0.001	72	76	0.001	84	88	0.001	96	100	0.001	108	112	0.001
4	8	0.000	16	20	0.000	28	32	0.000	40	44	0.000	52	56	0.000	64	68	0.001	76	80	0.001	88	92	0.001	100	104	0.001			
8	12	0.000	20	24	0.000	32	36	0.000	44	48	0.000	56	60	0.000	68	72	0.001	80	84	0.001	92	96	0.001	104	108	0.001			

Time Area Diagram at Pipe Number 34.000 for Storm

Total Area (ha) 0.009

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.000	4	8	0.000	8	12	0.001	12	16	0.001	16	20	0.001	20	24	0.001	24	28	0.001	28	32	0.001	32	36	0.001	36	40	0.002

Time Area Diagram at Pipe Number 35.000 for Storm

Total Area (ha) 0.012

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.000	4	8	0.000	8	12	0.001	12	16	0.001	16	20	0.002	20	24	0.002	24	28	0.002	28	32	0.002	32	36	0.002

Time Area Diagram at Pipe Number 35.000 for Storm

Total Area (ha) 0.017

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.000	12	16	0.000	24	28	0.000	36	40	0.000	48	52	0.000	60	64	0.001	72	76	0.001	84	88	0.001	96	100	0.001	108	112	0.001
4	8	0.000	16	20	0.000	28	32	0.000	40	44	0.000	52	56	0.000	64	68	0.001	76	80	0.001	88	92	0.001	100	104	0.001	112	116	0.002
8	12	0.000	20	24	0.000	32	36	0.000	44	48	0.000	56	60	0.000	68	72	0.001	80	84	0.001	92	96	0.001	104	108	0.001	116	120	0.002

Time Area Diagram at Pipe Number 36.000 for Storm

Total Area (ha) 0.014

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.000	12	16	0.000	24	28	0.000	36	40	0.000	48	52	0.000	60	64	0.001	72	76	0.001	84	88	0.001	96	100	0.001	108	112	0.001
4	8	0.000	16	20	0.000	28	32	0.000	40	44	0.000	52	56	0.000	64	68	0.001	76	80	0.001	88	92	0.001	100	104	0.001	112	116	0.001
8	12	0.000	20	24	0.000	32	36	0.000	44	48	0.000	56	60	0.000	68	72	0.001	80	84	0.001	92	96	0.001	104	108	0.001			

Time Area Diagram at Pipe Number 37.000 for Storm

Total Area (ha) 0.010

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.000	4	8	0.000	8	12	0.001	12	16	0.001	16	20	0.001	20	24	0.001	24	28	0.001	28	32	0.001	32	36	0.002	36	40	0.002

Time Area Diagram at Pipe Number 37.000 for Storm

Total Area (ha) 0.014

Corrig Hse Corrig Rd
Sandyford Dublin 8
Ireland

Date 05/10/2021 14:40 | Designed by Admin
File Drainage_Network_01.10.2021_M66_All_Time_Steps.MDX | Checked by
CADS | Network 2020.1.3

Time Area Diagram at Pipe Number 37.000 for Storm

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.000	12	16	0.000	24	28	0.000	36	40	0.000	48	52	0.000	60	64	0.001	72	76	0.001	84	88	0.001	96	100	0.001	108	112	0.001
4	8	0.000	16	20	0.000	28	32	0.000	40	44	0.000	52	56	0.000	64	68	0.001	76	80	0.001	88	92	0.001	100	104	0.001	112	116	0.001
8	12	0.000	20	24	0.000	32	36	0.000	44	48	0.000	56	60	0.000	68	72	0.001	80	84	0.001	92	96	0.001	104	108	0.001			

Corrig Hse Corrig Rd
Sandyford Dublin 8
Ireland

Date 05/10/2021 14:40 | Designed by Admin
File Drainage_Network_01.10.2021_M66_All_Time_Steps.MDX | Checked by
CADS | Network 2020.1.3

Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Hot Start Level (mm) 0 Foul Sewage per hectare (l/s) 0.000 MADD Factor * 10m³/ha Storage 2.000 Flow per Person per Day (l/per/day) 0.000
Hot Start (mins) 0 Manhole Headloss Coeff (Global) 0.500 Additional Flow - % of Total Flow 0.000 Inlet Coeffiecient 0.800

Number of Input Hydrographs 0 Number of Online Controls 21 Number of Offline Controls 0 Number of Storage Structures 42 Number of Time/Area Diagrams 61 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 17.700 Cv (Summer) 0.950
Region Scotland and Ireland Ratio R 0.270 Cv (Winter) 0.950

Margin for Flood Risk Warning (mm) 300.0 DTS Status ON Inertia Status ON
Analysis Timestep 2.5 Second Increment (Extended) DVD Status ON

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years)	1, 30, 100
Climate Change (%)	10, 10, 10

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	CP15	60 Winter	100	+10%					94.107	-0.493	0.000	0.11		33	1.5	OK	
1.001	CP14	120 Summer	100	+10%					93.921	-0.115	0.000	0.13			1.5	OK	
1.002	AJ13	120 Summer	100	+10%					93.827	-0.124	0.000	0.07			1.5	OK	
2.000	Dr23	180 Summer	100	+10%					94.258	-0.232	0.000	0.01		35	1.5	OK	
2.001	Dr24	180 Summer	100	+10%					94.258	-0.057	0.000	0.07			1.4	OK	
3.000	Dr25	180 Summer	100	+10%					94.267	-0.223	0.000	0.01		37	1.6	OK	
3.001	Dr26	180 Summer	100	+10%					94.267	-0.049	0.000	0.07			1.4	OK	
1.003	S11	15 Summer	100	+10%					93.579	-0.132	0.000	0.36			11.9	OK	
4.000	S17	60 Summer	100	+10%	30/15 Summer				93.441	0.910	0.000	0.16			5.4	SURCHARGED	
4.001	S16	60 Summer	100	+10%	30/15 Summer				93.435	1.011	0.000	0.20			6.0	SURCHARGED	
5.000	Dr27	15 Summer	1	+10%					94.640	-0.300	0.000	0.00			0.0	OK	
5.001	Dr28	15 Summer	1	+10%					94.606	-0.150	0.000	0.00			0.0	OK	
6.000	Dr29	60 Summer	100	+10%					94.724	-0.241	0.000	0.01		17	1.2	OK	
6.001	Dr30	60 Summer	100	+10%					94.724	-0.079	0.000	0.32			1.1	OK	
1.004	S10	30 Summer	100	+10%	30/15 Summer				93.432	1.047	0.000	0.31			10.3	SURCHARGED	
7.000	Dr31	180 Summer	100	+10%					94.511	-0.229	0.000	0.01		34	1.5	OK	
7.001	Dr32	180 Summer	100	+10%					94.511	-0.053	0.000	0.41			1.4	OK	
8.000	CP20	60 Winter	100	+10%					94.362	-0.581	0.000	0.07		31	1.4	OK	
8.001	CP19	60 Winter	100	+10%					94.259	-0.051	0.000	0.77			1.4	OK	
1.005	S9.1	30 Summer	100	+10%	1/15 Summer				93.412	1.141	0.000	2.02			11.0	SURCHARGED	
1.006	S9	30 Summer	100	+10%	1/15 Summer				93.287	1.064	0.000	2.90			15.9	SURCHARGED	
9.000	Dr33	180 Summer	100	+10%					94.270	-0.220	0.000	0.01		40	1.6	OK	
9.001	Dr34	180 Summer	100	+10%					94.270	-0.044	0.000	0.44			1.5	OK	
10.000	CP23	120 Summer	100	+10%					94.092	-0.508	0.000	0.09		40	1.5	OK	
10.001	CP22	120 Summer	100	+10%					93.966	-0.145	0.000	0.27			1.5	OK	

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.007	S8.1	240 Summer	100	+10%	1/15 Summer				92.925	0.780	0.000	2.73			15.0	SURCHARGED	
11.000	Dr35	180 Summer	100	+10%					94.128	-0.212	0.000	0.01		45	1.8	OK	
11.001	Dr36	180 Summer	100	+10%					94.128	-0.036	0.000	0.46			1.6	OK	
1.008	S8	960 Winter	100	+10%	30/30 Summer				92.909	0.815	0.000	0.35			10.4	SURCHARGED	
12.000	CP26	120 Summer	100	+10%					93.942	-0.508	0.000	0.09		40	1.5	OK	
12.001	CP25	120 Summer	100	+10%					93.757	-0.115	0.000	0.13			1.5	OK	
12.002	AJ24	120 Summer	100	+10%					93.645	-0.115	0.000	0.13			1.5	OK	
1.009	S7	960 Winter	100	+10%	1/360 Summer				92.907	0.858	0.000	0.39			10.8	SURCHARGED	
13.000	Dr37	180 Summer	100	+10%					93.958	-0.232	0.000	0.01		30	1.5	OK	
13.001	Dr38	180 Summer	100	+10%					93.958	-0.052	0.000	0.07			1.4	OK	
1.010	S6	960 Winter	100	+10%	1/240 Summer				92.905	0.886	0.000	0.37			12.6	SURCHARGED	
14.000	CP30	120 Summer	100	+10%					93.658	-0.492	0.000	0.12		40	1.5	OK	
14.001	CP29	120 Summer	100	+10%					93.528	-0.114	0.000	0.13			1.5	OK	
14.002	CP29.1	120 Summer	100	+10%					93.443	-0.114	0.000	0.13			1.5	OK	
1.011	S5.1	960 Winter	100	+10%	1/120 Summer				92.901	0.997	0.000	0.45			13.0	SURCHARGED	
1.012	S5	960 Winter	100	+10%	1/120 Summer				92.898	1.030	0.000	0.45			13.0	SURCHARGED	
15.000	Dr01	180 Summer	100	+10%					94.032	-0.233	0.000	0.01		28	1.4	OK	
15.001	Dr02	180 Summer	100	+10%					94.032	-0.057	0.000	0.07			1.4	OK	
16.000	Dr03	180 Summer	100	+10%					94.038	-0.227	0.000	0.01		36	1.5	OK	
16.001	Dr04	180 Summer	100	+10%					94.038	-0.046	0.000	0.07			1.5	OK	
15.002	S46	30 Summer	100	+10%	100/15 Summer				93.031	0.143	0.000	0.40			13.6	SURCHARGED	
17.000	Dr05	120 Summer	100	+10%					93.755	-0.285	0.000	0.01		69	1.5	OK	
17.001	Dr06	120 Summer	100	+10%					93.659	-0.046	0.000	0.07			1.5	OK	
18.000	CP50	60 Winter	100	+10%					93.791	-0.460	0.000	0.10		31	1.4	OK	
18.001	CP49	60 Winter	100	+10%					93.684	-0.466	0.000	0.16		31	2.7	OK	
18.002	CP48	60 Winter	100	+10%					93.483	-0.102	0.000	0.23			2.7	OK	
18.003	AJ47	60 Winter	100	+10%					93.399	-0.102	0.000	0.23			2.7	OK	
15.003	S45	30 Summer	100	+10%	100/15 Summer				93.015	0.257	0.000	0.78			25.9	SURCHARGED	
19.000	CP55	60 Winter	100	+10%					94.064	-0.536	0.000	0.05		29	1.4	OK	
19.001	CP54	60 Winter	100	+10%					93.729	-0.646	0.000	0.09		29	2.9	OK	
19.002	CP53	60 Winter	100	+10%					93.372	-0.045	0.000	0.84			2.8	OK	
19.003	CP52	60 Winter	100	+10%	100/60 Summer				93.130	0.003	0.000	1.08			2.8	SURCHARGED	
19.004	J54	240 Summer	100	+10%					92.972	-1.403	0.000	0.01		13	2.6	OK	
19.005	J55	240 Summer	100	+10%	100/15 Summer				92.970	0.260	0.000	0.43			2.3	SURCHARGED	
19.006	S51	240 Summer	100	+10%	100/15 Summer				92.962	0.279	0.000	0.45			2.5	SURCHARGED	
20.000	Dr07	180 Summer	100	+10%					93.632	-0.153	0.000	0.01		54	2.3	FLOOD RISK	
20.001	Dr08	180 Summer	100	+10%	100/120 Summer				93.632	0.030	0.000	0.10			2.1	FLOOD RISK	
15.004	S44	30 Summer	100	+10%	30/15 Summer				92.983	0.327	0.000	0.80			28.1	SURCHARGED	
15.005	S43	960 Winter	100	+10%	30/15 Summer				92.935	0.539	0.000	0.24			7.5	SURCHARGED	
15.006	S42	960 Winter	100	+10%	30/15 Summer				92.933	0.598	0.000	0.27			8.3	SURCHARGED	
21.000	CP59	120 Summer	100	+10%					93.435	-0.460	0.000	0.17		44	2.8	OK	
21.001	CP58	120 Summer	100	+10%					93.304	-0.591	0.000	0.13		41	2.8	OK	
21.002	CP57	120 Summer	100	+10%					93.212	-0.661	0.000	0.12		42	2.8	OK	
21.003	CP56	960 Winter	100	+10%	100/15 Summer				92.932	0.220	0.000	0.10			1.1	SURCHARGED	
15.007	S41	960 Winter	100	+10%	30/15 Summer				92.931	0.646	0.000	0.39			9.7	SURCHARGED	
15.008	S40	960 Winter	100	+10%	30/15 Summer				92.930	0.665	0.000	0.48			13.1	SURCHARGED	
22.000	S62	1440 Winter	100	+10%					92.947	-0.479	0.000	0.00		883	4.6	OK	
23.000	Dr09	180 Summer	100	+10%					93.833	-0.207	0.000	0.01		42	1.8	OK	

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
23.001	Dr10	180 Summer	100	+10%					93.834	-0.029	0.000	0.08			1.6	OK	
23.002	S64	1440 Winter	100	+10%	30/180 Summer				92.948	0.487	0.000	0.03			0.8	SURCHARGED	
24.000	Dr11	180 Summer	100	+10%					93.576	-0.224	0.000	0.01		37	1.6	OK	
24.001	Dr12	180 Summer	100	+10%					93.576	-0.040	0.000	0.08			1.5	OK	
24.002	S65	1440 Winter	100	+10%	30/180 Summer				92.948	0.493	0.000	0.02			0.7	SURCHARGED	
25.000	XX1	1440 Winter	100	+10%	100/480 Summer				92.948	0.148	0.000	0.00			0.0	SURCHARGED	
23.003	S63	1440 Winter	100	+10%	30/120 Summer				92.948	0.535	0.000	0.05			1.5	SURCHARGED	
26.000	AJDP01	60 Summer	100	+10%					93.396	-0.169	0.000	0.14			4.8	OK	
26.001	AJDP02	60 Summer	100	+10%					93.282	-0.169	0.000	0.14			4.8	OK	
26.002	AJDP03	60 Summer	100	+10%					93.171	-0.168	0.000	0.15			4.8	OK	
27.000	AJDP05	60 Summer	100	+10%					93.397	-0.168	0.000	0.14			4.8	OK	
27.001	AJDP06	60 Summer	100	+10%					93.294	-0.181	0.000	0.09			4.8	OK	
26.003	AJDP04	60 Summer	100	+10%					93.121	-0.141	0.000	0.30			9.5	OK	
22.001	S61	1440 Winter	100	+10%	30/60 Summer				92.947	0.627	0.000	0.15			3.8	SURCHARGED	
22.002	S61.1	1440 Winter	100	+10%					92.947	-0.493	0.000	0.00		1056	3.3	OK	
22.003	S60	1440 Winter	100	+10%	30/60 Summer				92.947	0.692	0.000	0.27			2.3	SURCHARGED	
15.009	S39	960 Winter	100	+10%	30/15 Summer				92.928	0.692	0.000	0.39			12.0	SURCHARGED	
15.010	S38	960 Winter	100	+10%	30/15 Summer				92.925	0.739	0.000	0.47			11.9	SURCHARGED	
15.011	S37	960 Winter	100	+10%	30/15 Summer				92.923	0.758	0.000	0.41			12.9	SURCHARGED	
15.012	S36	960 Winter	100	+10%	1/480 Summer				92.919	0.819	0.000	0.46			12.8	SURCHARGED	
28.000	CP68	120 Winter	100	+10%					93.643	-0.507	0.000	0.09		41	1.5	OK	
28.001	CP67	120 Summer	100	+10%					93.454	-0.506	0.000	0.16		40	3.0	OK	
28.002	CP66	960 Winter	100	+10%	30/60 Summer				92.921	0.299	0.000	0.56			1.0	SURCHARGED	
15.013	S35	960 Winter	100	+10%	1/360 Summer				92.916	0.846	0.000	0.47			13.3	SURCHARGED	
29.000	Dr13	180 Summer	100	+10%					93.653	-0.237	0.000	0.01		30	1.4	OK	
29.001	Dr14	180 Summer	100	+10%					93.653	-0.062	0.000	0.06			1.3	OK	
30.000	CP71	120 Summer	100	+10%					93.824	-0.511	0.000	0.09		31	1.5	OK	
30.001	CP70	120 Summer	100	+10%					93.432	-0.538	0.000	0.15		33	3.1	OK	
30.002	CP69	960 Winter	100	+10%	30/30 Summer				92.918	0.251	0.000	0.58			1.1	SURCHARGED	
31.000	CP75	15 Summer	1	+10%					93.424	-0.626	0.000	0.00			0.0	OK	
32.000	CP76	60 Winter	100	+10%					93.485	-0.515	0.000	0.08		27	1.4	OK	
31.001	CP74	60 Winter	100	+10%					93.366	-0.056	0.000	0.72			1.3	OK	
31.002	AJ73	60 Winter	100	+10%					93.282	-0.055	0.000	0.72			1.3	OK	
15.014	S34	960 Winter	100	+10%	1/240 Summer				92.914	0.876	0.000	0.48			15.9	SURCHARGED	
33.000	Dr15	180 Summer	100	+10%					93.715	-0.225	0.000	0.01		35	1.6	OK	
33.001	Dr16	180 Summer	100	+10%					93.715	-0.047	0.000	0.07			1.5	OK	
15.015	S33	960 Winter	100	+10%	1/30 Summer				92.907	0.979	0.000	0.59			16.7	SURCHARGED	
34.000	Dr17	180 Summer	100	+10%					93.995	-0.230	0.000	0.01		33	1.5	OK	
34.001	Dr18	180 Summer	100	+10%					93.995	-0.054	0.000	0.07			1.4	OK	
34.002	S77	15 Summer	100	+10%					93.236	-0.124	0.000	0.41			14.4	OK	
35.000	Dr19	60 Summer	100	+10%					93.488	-0.287	0.000	0.01		97	2.2	OK	
35.001	Dr20	60 Summer	100	+10%	100/30 Summer				93.401	0.051	0.000	0.65			2.2	SURCHARGED	
36.000	CP81	60 Winter	100	+10%					93.640	-0.510	0.000	0.09		33	1.5	OK	
36.001	CP80	120 Summer	100	+10%					93.507	-0.049	0.000	0.79			1.5	OK	
36.002	AP79	120 Summer	100	+10%					93.421	-0.049	0.000	0.79			1.5	OK	
15.016	S32	960 Winter	100	+10%	1/30 Summer				92.904	1.008	0.000	0.73			20.3	SURCHARGED	
37.000	Dr21	180 Summer	100	+10%					93.814	-0.226	0.000	0.01		34	1.5	OK	
37.001	Dr22	180 Summer	100	+10%					93.815	-0.046	0.000	0.13			1.5	OK	

Corrig Hse Corrig Rd
Sandyford Dublin 8
Ireland

Date 05/10/2021 14:40
File Drainage_Network_01.10.2021_M66_All_Time_Steps.MDX
CADS

Designed by Admin
Checked by
Network 2020.1.3

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
15.017	S31	960 Winter	100	+10%	1/30 Summer				92.900	1.035	0.000	0.74			21.1	SURCHARGED	
1.013	S4	960 Winter	100	+10%	1/30 Summer				92.896	1.064	0.000	1.25			33.7	SURCHARGED	
1.014	S3	960 Winter	100	+10%					92.893	-0.455	0.000	0.00			33.6	OK	
1.015	S2	960 Winter	100	+10%	1/15 Summer				92.892	1.220	0.000	0.20			5.1	SURCHARGED	

APPENDIX G

Hydrobrake Data Sheets

Technical Specification

Control Point	Head (m)	Flow (l/s)
Primary Design	3.000	6.500
Flush-Flo™	0.414	4.533
Kick-Flo®	0.851	3.614
Mean Flow		4.842

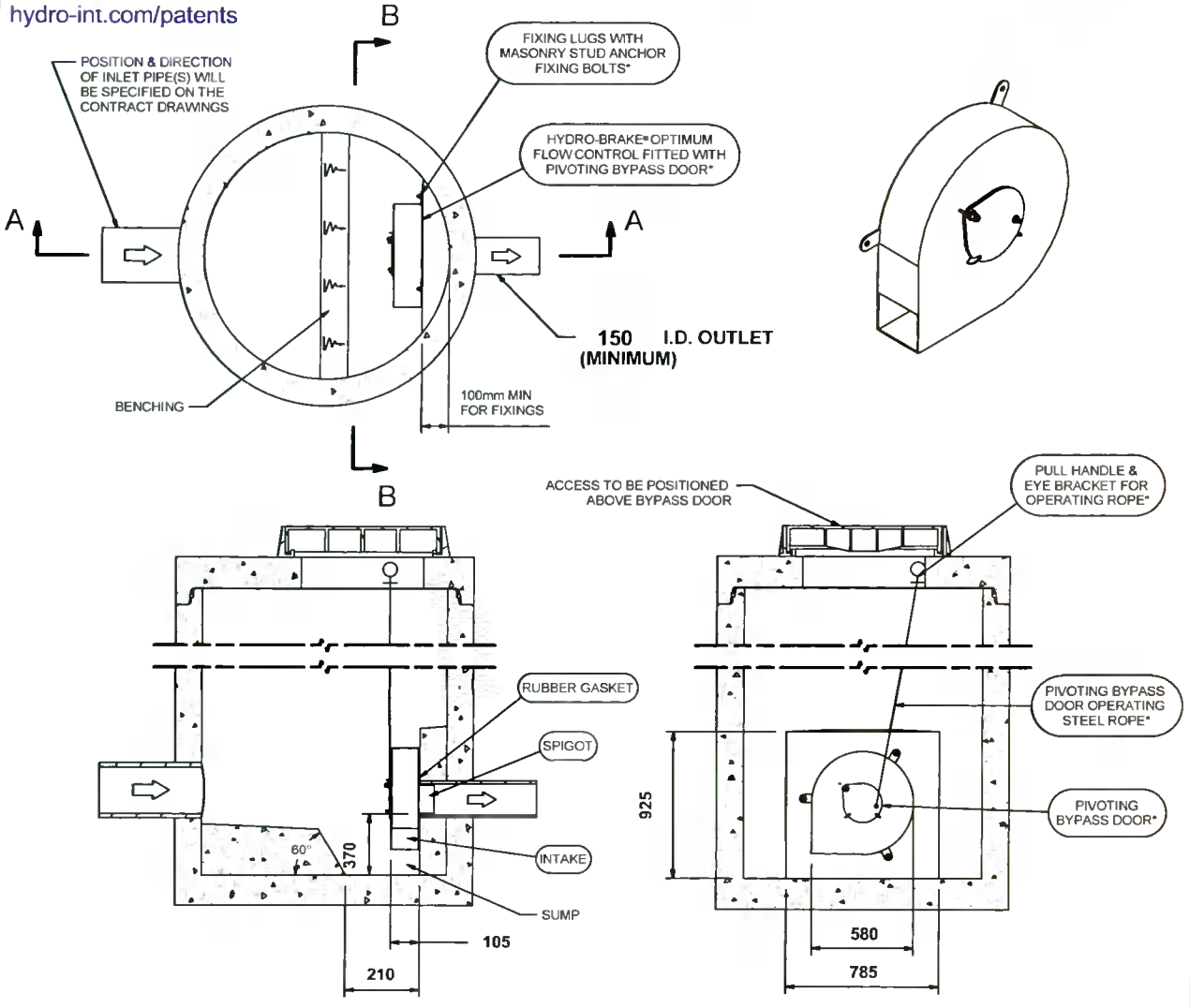
Hydro-Brake® Optimum Flow Control including:

- 3 mm grade 304L stainless steel
- Integral stainless steel pivoting by-pass door allowing clear line of sight through to outlet, c/w stainless steel operating rope
- Beed blasted finish to maximise corrosion resistance
- Stainless steel fixings
- Rubber gasket to seal outlet

BBA APPROVAL INSPECTION TESTING CERTIFICATION CERTIFICATE 08/4598

WRc Approved PT/329/0412

hydro-int.com/patents



SECTION A-A SECTION B-B

IMPORTANT: ⬭ LIMIT OF HYDRO INTERNATIONAL SUPPLY
THE DEVICE WILL BE HANDED TO SUIT SITE CONDITIONS
FOR SITE SPECIFIC DETAILS AND MINIMUM CHAMBER SIZE REFER TO HYDRO INTERNATIONAL
ALL CIVIL AND INSTALLATION WORK BY OTHERS
* WHERE SUPPLIED
HYDRO-BRAKE® FLOW CONTROL & HYDRO-BRAKE® OPTIMUM FLOW CONTROL ARE REGISTERED TRADEMARKS FOR FLOW CONTROLS DESIGNED AND MANUFACTURED EXCLUSIVELY BY HYDRO INTERNATIONAL

THIS DESIGN LAYOUT IS FOR ILLUSTRATIVE PURPOSES ONLY. NOT TO SCALE.

DESIGN ADVICE !

The head/flow characteristics of this SHE-0095-6500-3000-6500 Hydro-Brake® Optimum Flow Control are unique. Dynamic hydraulic modelling evaluates the full head/flow characteristic curve.
The use of any other flow control will invalidate any design based on this data and could constitute a flood risk

Hydro International®

DATE	10/5/2021 3:41 PM
SITE	Kingswood Lands
DESIGNER	Niall Scollard
REF	20008

SHE-0095-6500-3000-6500
Hydro-Brake® Optimum

nscollard@tjoc.ie

Technical Specification

Control Point	Head (m)	Flow (l/s)
Primary Design	3.000	6.500
Flush-Flo	0.414	4.533
Kick-Flo®	0.851	3.614
Mean Flow		4.842

BBA APPROVAL INSPECTION TESTING CERTIFICATION
CERTIFICATE No 08/4596

WRc APPROVED
PT/329/0412

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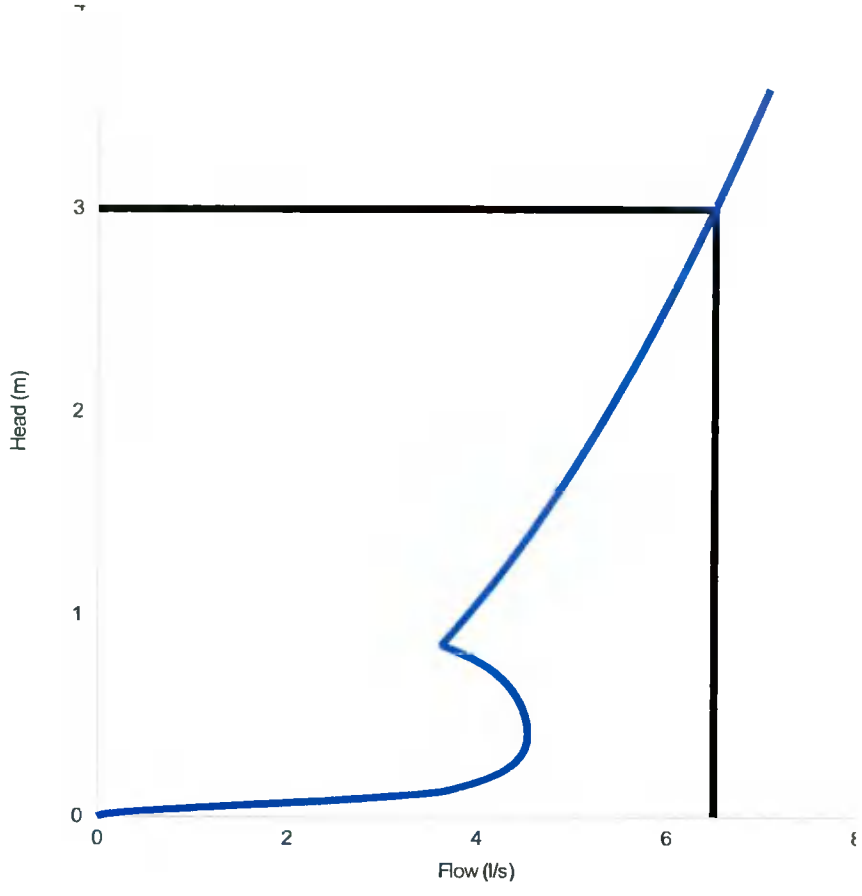

Head (m)	Flow (l/s)
0.000	0.000
0.103	3.153
0.207	4.182
0.310	4.467
0.414	4.533
0.517	4.493
0.621	4.382
0.724	4.165
0.828	3.752
0.931	3.767
1.034	3.954
1.138	4.132
1.241	4.302
1.345	4.464
1.448	4.620
1.552	4.771
1.655	4.916
1.759	5.057
1.862	5.193
1.966	5.326
2.069	5.455
2.172	5.580
2.276	5.703
2.379	5.823
2.483	5.940
2.586	6.055
2.690	6.167
2.793	6.278
2.897	6.386
3.000	6.492

DESIGN ADVICE

The head/flow characteristics of this SHE-0095-6500-3000-6500 Hydro-Brake Optimum® Flow Control are unique. Dynamic hydraulic modelling evaluates the full head/flow characteristic curve.

! **The use of any other flow control will invalidate any design based on this data and could constitute a flood risk.**

Hydro International®

DATE	05/10/2021 15:41
Site	Kingswood Lands
DESIGNER	Niall Scollard
Ref	20008

SHE-0095-6500-3000-6500

Hydro-Brake Optimum®

Technical Specification

Control Point	Head (m)	Flow (l/s)
Primary Design	1.650	5.400
Flush-Flo™	0.437	5.091
Kick-Flo®	0.892	4.061
Mean Flow		4.565

Hydro-Brake® Optimum Flow Control including:

- 3 mm grade 304L stainless steel
- Integral stainless steel pivoting by-pass door allowing clear line of sight through to outlet, c/w stainless steel operating rope
- Beed blasted finish to maximise corrosion resistance
- Stainless steel fixings
- Rubber gasket to seal outlet

BBA APPROVAL INSPECTION TESTING CERTIFICATION CERTIFICATE 08/4598

WRc Approved PT/329/0412

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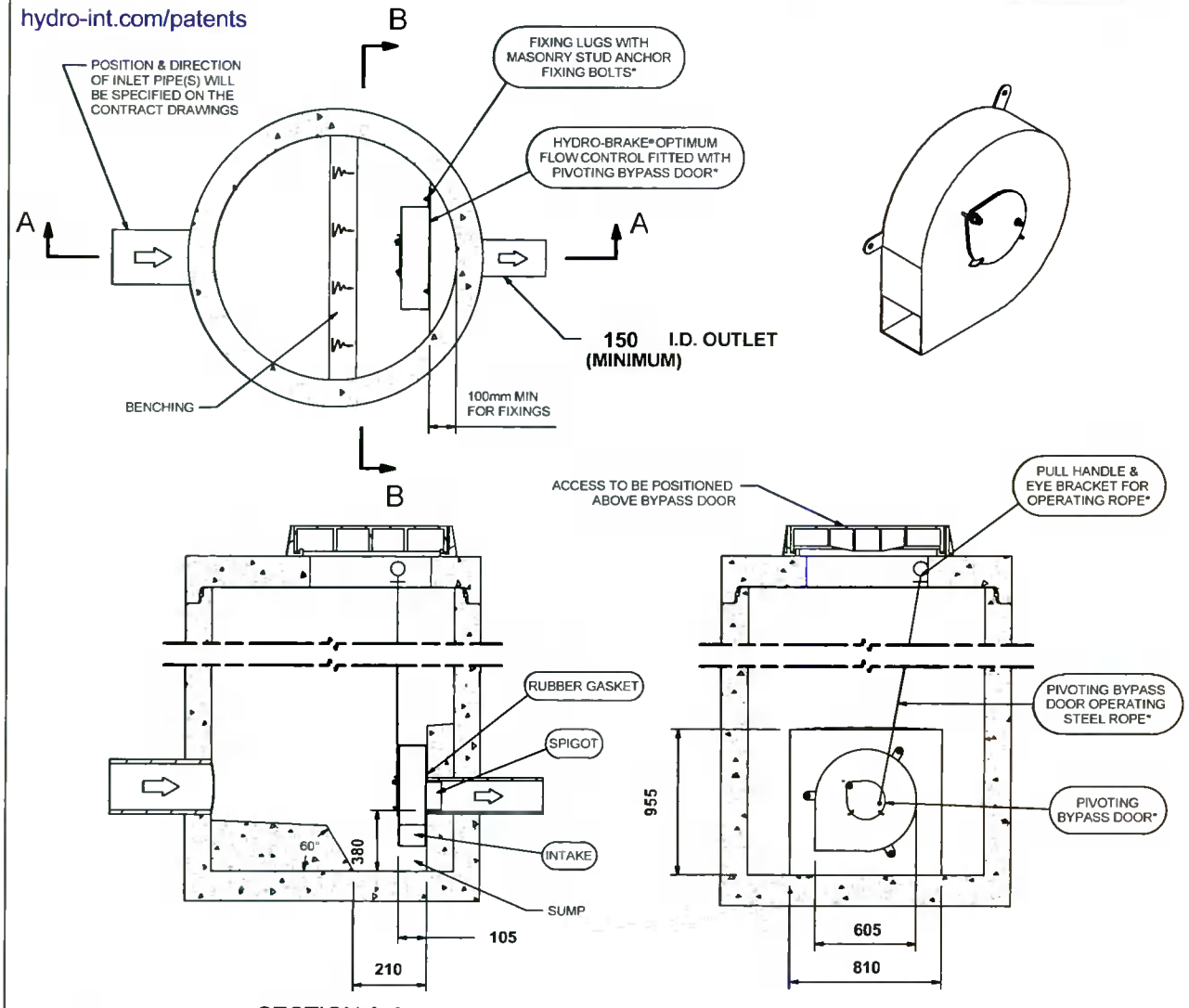


SECTION A-A

SECTION B-B

IMPORTANT:
LIMIT OF HYDRO INTERNATIONAL SUPPLY
THE DEVICE WILL BE HANDED TO SUIT SITE CONDITIONS
FOR SITE SPECIFIC DETAILS AND MINIMUM CHAMBER SIZE REFER TO HYDRO INTERNATIONAL
ALL CIVIL AND INSTALLATION WORK BY OTHERS
* WHERE SUPPLIED
HYDRO-BRAKE® FLOW CONTROL & HYDRO-BRAKE® OPTIMUM FLOW CONTROL ARE REGISTERED TRADEMARKS FOR FLOW CONTROLS DESIGNED AND MANUFACTURED EXCLUSIVELY BY HYDRO INTERNATIONAL

THIS DESIGN LAYOUT IS FOR ILLUSTRATIVE PURPOSES ONLY. NOT TO SCALE.

DESIGN ADVICE !

The head/flow characteristics of this SHE-0100-5400-1650-5400 Hydro-Brake® Optimum Flow Control are unique. Dynamic hydraulic modelling evaluates the full head/flow characteristic curve.
The use of any other flow control will invalidate any design based on this data and could constitute a flood risk.

Hydro International®

DATE	10/5/2021 3:43 PM
SITE	Kingswood Lands
DESIGNER	Niall Scollard
REF	20008

SHE-0100-5400-1650-5400
Hydro-Brake® Optimum

nscollard@tjoc.ie

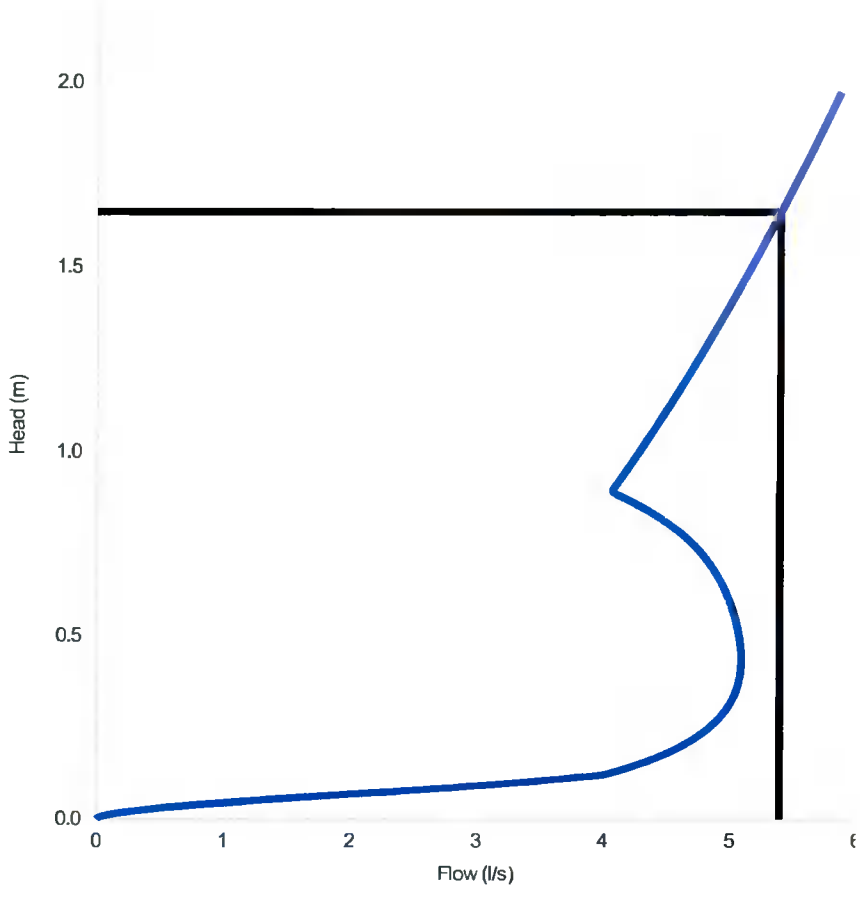
Technical Specification

Control Point	Head (m)	Flow (l/s)
Primary Design	1.650	5.400
Flush-Flo	0.437	5.091
Kick-Flo®	0.892	4.061
Mean Flow		4.565

BBA APPROVAL INSPECTION TESTING CERTIFICATION
CERTIFICATE No 08/4596

WRc APPROVED
PT/329/0412

hydro-int.com/patents



Head (m)	Flow (l/s)
0.000	0.000
0.057	1.501
0.114	3.723
0.171	4.422
0.228	4.742
0.284	4.933
0.341	5.038
0.398	5.084
0.455	5.090
0.512	5.068
0.569	5.025
0.626	4.960
0.683	4.868
0.740	4.737
0.797	4.552
0.853	4.295
0.910	4.099
0.967	4.215
1.024	4.327
1.081	4.437
1.138	4.543
1.195	4.647
1.252	4.748
1.309	4.847
1.366	4.944
1.422	5.039
1.479	5.131
1.536	5.222
1.593	5.311
1.650	5.399

DESIGN ADVICE

The head/flow characteristics of this SHE-0100-5400-1650-5400 Hydro-Brake Optimum® Flow Control are unique. Dynamic hydraulic modelling evaluates the full head/flow characteristic curve.

! **The use of any other flow control will invalidate any design based on this data and could constitute a flood risk.**

Hydro International

DATE	05/10/2021 15:43
Site	Kingswood Lands
DESIGNER	Niall Scollard
Ref	20008

SHE-0100-5400-1650-5400

Hydro-Brake Optimum®

APPENDIX H

Non-Return Valve Details

Althon

Tel: 01603 488700 Email: sales@althon.co.uk

Web: www.althon.co.uk

Technical Data

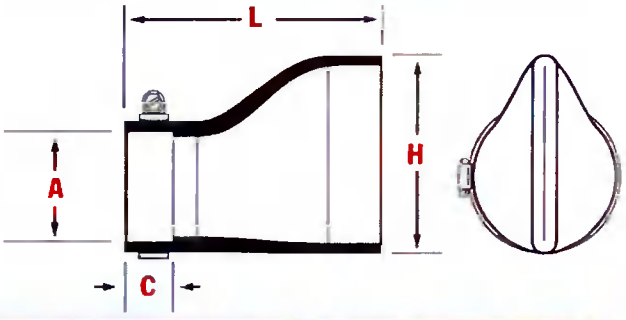
Series TF-1—Tideflex® Check Valve

Features & Benefits

- Ideal for manhole installations
- Lightweight, all-elastomer design
- Seals around entrapped solids
- Cost-effective, maintenance-free design

Materials of Construction

- Elastomers available in Pure Gum Rubber, Neoprene, Hypalon®, Chlorobutyl, Buna-N, EPDM, and Viton®



We are pleased to announce the introduction of the revolutionary TF-1 Check Valve. It functions and operates under the same simple principle of operation as the original TF-2 Tideflex®.

This design is ideal for existing manhole installations where the invert of the pipe is close to the floor of the vault. There are many check valves in interceptors, manholes, and vaults. These vaults are designed so that there would be a maximum gravity head; thus, the invert pipe is as close to the base as possible. The TF-1 allows installations in such applications.

The Tideflex® Technologies Series TF-1 Tideflex® Check Valve is designed for applications in manholes, where the bottom of the manhole is close to the invert of the pipe. The TF-1 configuration allows the valve to be properly installed without manhole modification, ensuring positive backflow prevention and a lifetime of maintenance-free performance.

Pipe O.D. (A)	Length (L)	Bill Height (H)	Cuff Length (C)
4	10	8	1 1/2
5	10	8	1 1/2
6	16	12	2
8	18	16	2
10	23	19	3
12	27	23	4
14	27	23	4
16	35	30	5
18	36	34	6
20	44	37	8
22	44	37	8
24	48	43	8
26	48	43	8
28	48	43	8
30	56	55	9
32	56	55	9
36	67	69	10
38	67	69	10
40	67	69	10
42	61	71	10
44	61	71	10
48	66	78	10
50	66	78	10
54	66	78	10
58	66	78	10
60	73	91	14
68	73	91	14
72	96	115	16

Numbers indicate maximum dimensions in inches.