

OCSC

O'CONNOR · SUTTON · CRONIN

MULTIDISCIPLINARY CONSULTING ENGINEERS

G538: BAKERS FORGE STUDENT ACCOMMODATION

ENGINEERING SERVICES REPORT

For

Bakers Forge Properties Ltd

19 January 2026

NOTICE

This document has been produced by O'Connor Sutton Cronin & Associates for its client, Bakers Forge Properties Ltd. It may not be used for any purpose other than that specified by any other person without the written permission of the authors.

DOCUMENT CONTROL & HISTORY

OCSC Job No: G538	Project Code	Originator	Zone Volume	Level	File Type	Role Type	Number	Status / Suitability Code	Revision
	G538	OCSC	XX	XX	RP	C	001	S4	P02

Rev.	Status	Authors	Checked	Authorised	Issue Date
P01	S4	Shaun Doody	Mark Killian	Shaun Doody	19/01/2026
P02	S4	Shaun Doody	Mark Killian	Shaun Doody	19/02/2026

TABLE OF CONTENTS

1 INTRODUCTION 1
1.1 APPOINTMENT 1
1.2 ADMINISTRATIVE JURISDICTION 1
1.3 SITE LOCATION 1
1.4 PROPOSED DEVELOPMENT CONTEXT 2
2 SCOPE OF SERVICES REPORT 5
3 SURFACE WATER DRAINAGE 6
3.1 DESIGN GUIDELINES OVERVIEW 6
3.2 SURFACE WATER DESIGN STRATEGY OVERVIEW 6
3.3 EXISTING SITE DRAINAGE 7
3.3.1 EXISTING SITE CATCHMENT AREA 7
3.3.2 EXISTING SURFACE WATER DRAINAGE INFRASTRUCTURE 7
3.3.3 EXISTING SITE RAINFALL RUNOFF 8
3.4 PROPOSED SURFACE WATER DRAINAGE DESIGN STRATEGY 8
3.4.1 PROPOSED SURFACE WATER STRATEGY 8
3.4.2 PROPOSED SURFACE WATER NETWORK STRATEGY 9
3.5 PROPOSED SURFACE WATER NETWORK DETAILED DESIGN 13
3.5.1 SOFTWARE DESIGN CRITERIA 13
3.5.2 CLIMATE CHANGE ALLOWANCE 14
3.5.3 PROPOSED DEVELOPMENT RAINFALL RUNOFF 14
3.5.4 PROPOSED SURFACE WATER PIPE NETWORK DESIGN 14
3.6 SURFACE WATER OUTFALL LOCATION 15
3.7 WATER QUALITY 15
3.8 MAINTENANCE 16
3.9 TAKING IN CHARGE 16
3.10 SURFACE WATER IMPACT ASSESSMENT 16
3.11 CRITERION 1 – RIVER WATER QUALITY PROTECTION 16
3.12 CRITERION 2 – RIVER REGIME PROTECTION 17
3.13 CRITERION 3 – LEVEL OF SERVICE (FLOODING) SITE 17
3.13.1 SUB-CRITERION 3.1 17
3.13.2 SUB-CRITERION 3.2 17
3.13.3 SUB-CRITERION 3.3 18
3.13.4 SUB-CRITERION 3.4 18
3.14 CRITERION 4 – RIVER FLOOD PROTECTION 18
4 WASTEWATER DRAINAGE 19
4.1 OVERVIEW 19
4.2 EXISTING WASTEWATER DRAINAGE 19

4.3 CONSULTATION 19
4.4 PROPOSED WASTEWATER DRAINAGE STRATEGY 20
4.5 WASTEWATER NETWORK DESIGN CALCULATIONS 20
4.6 TAKING IN CHARGE 20
5 POTABLE WATER SUPPLY 21
5.1 OVERVIEW 21
5.2 EXISTING WATERMAIN INFRASTRUCTURE 21
5.3 CONSULTATION 21
5.4 CONNECTION TO THE EXISTING NETWORK 21
5.5 WATER SAVING DEVICES 22
5.6 WATER METERS 22
5.7 TAKING IN CHARGE 22
6 VERIFICATION 23

APPENDICES

APPENDIX A SURFACE WATER CALCULATIONS
APPENDIX B WASTEWATER CALCULATIONS
APPENDIX C UISCE ÉIREANN CDS RESPONSE
APPENDIX D OCSC DRAWINGS

1 INTRODUCTION

1.1 APPOINTMENT

O'Connor Sutton Cronin & Associates (OCSC) have been appointed by Bakers Forge Properties Ltd to provide Multidisciplinary Engineering Services associated with the proposed student accommodation development located Bakers Corner, Deansgrange, Dublin.

1.2 ADMINISTRATIVE JURISDICTION

The proposed development is located in the jurisdiction of Dun Laoghaire-Rathdown County Council (DLRCC), and therefore this assessment has given due consideration to the relevant guidelines including:

- Dun Laoghaire-Rathdown County Council Development Plan (2022 – 2028).
- Greater Dublin Strategic Drainage Study (GDSDS).
- The Planning System and Flood Risk Management Guidelines for Planning Authorities (Department of Environment, Heritage and Local Government and the Office of Public Works).

1.3 SITE LOCATION

The subject site is located approximately 13 km southeast of Dublin City Centre, as shown below. It is situated on the southeastern corner of the intersection between the R828 (Rochestown Avenue) and the R830 (Kill Lane). The development occupies the site of the former Baker's Corner pub and is bound by the R830 Kill Lane to the north, residential and amenity space to the south, the Holy Family Church to the east and the R828 Rochestown Avenue to the east.

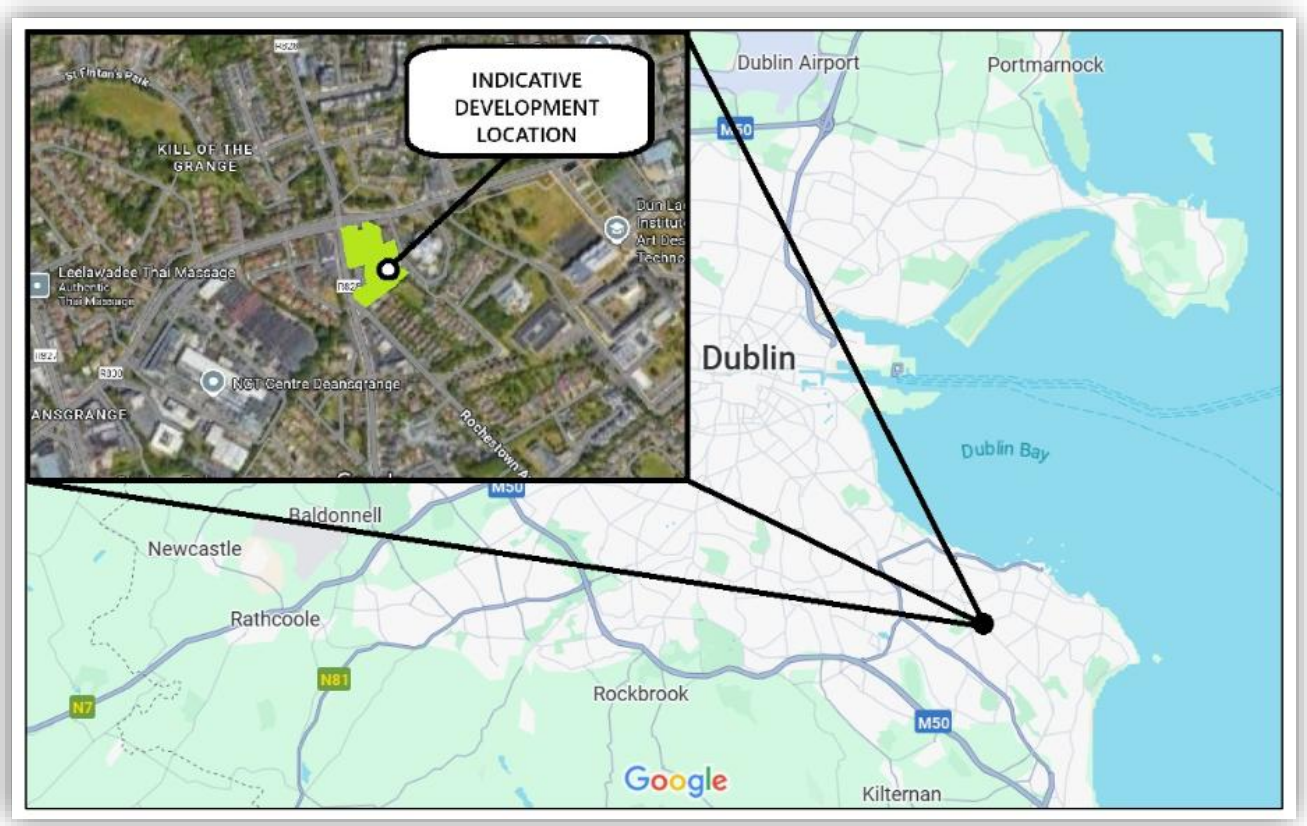


Figure 1: Site Location

1.4 PROPOSED DEVELOPMENT CONTEXT

Baker's Forge Properties Limited intend to apply for permission for a Large-Scale Residential Development comprising amendments to the permitted Strategic Housing Development Ref. ABP-311411-21 on a site of 0.483 ha at a site 'Baker's Hall', (formally known as Baker's Corner), Rochestown Avenue and Kill Avenue, Dun Laoghaire, Co. Dublin.

The proposed development comprising amendments to the permitted Strategic Housing Development consists of:

- A 4 storey over ground extension of c. 436 sqm to the rear / courtyard elevation of Block A to provide for an additional 12 no. student accommodation units.
- The reconfiguration of permitted internal circulation and communal amenity spaces to provide for 10 no. additional student accommodation units within Block A.
- The internalisation of an overhanging roof canopy on the roof terrace of Block A to provide 2 no. additional student accommodation units.
- The total number of additional student accommodation units proposed is 24 no. providing a total of 300 no. units on site. **276 units are permitted on site**.

The proposed development amendment works to Block A also comprise of the :-

- Removal of the permitted building overhang at 5th floor level of Block A.
- Relocation of a switch room and substation to the north-eastern corner of Block A.
- Provision of additional window and escape door to permitted licenced premises on northern elevation.
- Amendment of the permitted entrance to provide for a recessed entrance arrangement to the permitted licenced premises in Block A.
- Omission of the roof terrace to the south of Block A, and the increase in size of the permitted roof terrace to the east of Block B from c. 60sqm to c. 95sqm.
- Minor amendment of fenestration at 1st-5th floor level on the southern elevation of Block A to accommodate proposed internal rooms.
- Additional plant space within permitted commercial units in Block A with a reduction in net internal floor space.
- Omission of louvred plant screen on roof level of Block A.
- Changes to the design treatment of the permitted elevation of Block A at Rochestown Avenue, minorly changing the total permitted floor area of Block A.

The proposed development amendment works to Block B also comprise of the:-

- Reduction in size of the screened roof-top terrace area to Block B (from 450 sqm to 150 sqm).
- Reduction in height of stair core and lift shaft to western stair core of Block B.
- Relocation of the permitted bike shelter to the east elevation of Block B. The number of bicycle parking spaces remains unchanged.
- Minor elevation alterations to eastern and western elevations of Block B to account for relocation of permitted internal building services.
- Additional plant space within permitted commercial unit in Block B with a reduction in net internal floor space

The proposed amendments to the development will also include a minor increase to the overall height of both permitted blocks (of c. 550 mm) due to building structure design; as well as minor changes to the scheme as agreed at compliance stage including inter alia the reconfiguration of the central open space area to provide for 30 no. car park spaces (unchanged from agreed compliance); and all associated elevational changes, site development and landscape treatment works necessary to facilitate the proposed development and consequent amendments proposed.



Figure 2 Proposed site layout

2 SCOPE OF SERVICES REPORT

This Engineering Services Report was prepared by reviewing the available data from the Local Authority sources and national bodies *i.e.* Dun Laoghaire Rathdown County Council, Uisce Éireann, The OPW, and the wider Design Team.
The following services are addressed within this report, with respect to the proposed development:

- Surface Water Drainage.
- Wastewater Drainage.
- Potable Water Supply.

The proposed design, for the aforementioned services, have been carried out in accordance with the following technical guidelines and information:

- Dun Laoghaire Rathdown County Council Development Plan (2022 – 2028).
- Greater Dublin Strategic Drainage Study (GDSDS).
- Greater Dublin Regional Code of Practice for Drainage Works (GDRCOP).
- Uisce Éireann Code of Practice for Wastewater, IW-CDS-5030-03 (Revision 2).
- Uisce Éireann Code of Practice for Water Supply, IW-CDS-5020-03 (Revision 2).
- The Building Regulations – Technical Guidance Document Part H.
- BE EN 752 – Drainage Outside Buildings.
- BS 7533-13 – Guide for Design of Permeable Pavements.
- The Office of Public Works, the Planning System and Flood Risk Management.
- OPW website **www.floodinfo.ie** & **www.floodmaps.ie**;
- DECLG website **www.myplan.ie**;
- EPA website **http://gis.epa.ie/EPAMaps**;
- Geological Survey of Ireland Maps.
- Architectural drawings.
- Topographical survey of the proposed site.
- Dún Laoghaire-Rathdown County Council's and Uisce Éireann's Drainage and Watermain Records.

Members of the wider design team cover all other elements of the application pertaining to traffic, sustainability, landscaping, planning, ecological, and architectural detail.
This report should be read in conjunction with the set of OCSC Civil Engineering design drawings that accompany this submission.

3 SURFACE WATER DRAINAGE

3.1 DESIGN GUIDELINES OVERVIEW

Any planning permission sought on the subject lands are required to adhere to the Local Authority requirements *i.e.* the Dun Laoghaire-Rathdown County Development Plan (2022 – 2028), and as such, the Greater Dublin Strategic Drainage Study (Dublin City Council, 2005).

New development must ensure that a comprehensive Sustainable Drainage System (SuDS), is incorporated into the development. SuDS requires that post development run-off rates be maintained at equivalent, or lower, levels than pre-development levels. Thus, the development must be able to retain, within its boundaries, surface water volumes from extreme rainfall events up to a 1 in 100-year rainfall event, more commonly expressed as a 1.0% AEP (Annual Exceedance Probability). Furthermore, the design must allow for *an additional **20%** increase in rainfall intensity due to climate change, and a further **10%** increase to the drainage design and attenuation volumes to accommodate urban creep*. These are in accordance with Appendix 7 of the Dun Laoghaire-Rathdown County Development Plan (2022 - 2028).

Any new development must also have the physical capacity to retain surface water volumes as directed under the Greater Dublin Strategic Drainage Strategy (GDSDS) and, if necessary, release these attenuated surface water volumes to an outfall at a controlled flow rate, not greater than the greenfield runoff equivalent.

A further component of the SuDS protocol is to increase the overall water quality of surface water runoff before it enters a natural watercourse or a public sewer, which ultimately discharges to a water body. This is to ensure the highest possible standard of surface water quality.

SuDS are designed in accordance with best practice and the CIRIA C753 (The SuDS Manual) guidance material.

3.2 SURFACE WATER DESIGN STRATEGY OVERVIEW

The proposed development is to be served by a gravity surface water network comprising a single catchment as a result of the natural topography, with attenuated surface water runoff generated within the new development site boundary to be discharged to the surface water sewer on Pottery Road/ Rochestown Avenue, which bounds the site to the west of the site.

Sustainable Drainage Systems are to be provided, wherever practicable, and these are discussed in more detail in *Section 3.5*, with discharge rates from site being restricted to the greenfield equivalent runoff rate, for design rainfall events up to, and including, the 1% AEP, in accordance with the Dun Laoghaire-Rathdown County Development Plan and the GDSDS.

3.3 EXISTING SITE DRAINAGE

3.3.1 EXISTING SITE CATCHMENT AREA

As detailed in *Section 1.4*, the existing c. 3.86-hectare site is greenfield in nature and is graded from south-west towards north-east. The site in its current condition drains naturally as there is no surface water infrastructure within the site.

3.3.2 EXISTING SURFACE WATER DRAINAGE INFRASTRUCTURE

Existing services records indicate that surface water sewers are present to South west of the site currently. Refer to *below figure* for an excerpt from the OCSC proposed drainage



Figure 3 Existing Drainage Infrastructure Records shown on OCSC drawings

3.3.3 EXISTING SITE RAINFALL RUNOFF

The existing site surface water management strategy consist of a direct connection to the mains network as suggested on the above Drainage records sheet. No evidence of attention was found to date on site, and it must be noted that site is almost entirely encompassed with hardstanding as you can see by the below previous site layout from historic google maps.



Figure 4 Previous historic site layout

3.4 PROPOSED SURFACE WATER DRAINAGE DESIGN STRATEGY

3.4.1 PROPOSED SURFACE WATER STRATEGY

It is proposed to separate the surface water and wastewater drainage networks, which will serve the proposed development, and provide independent connections to the surface water sewer and local wastewater sewer networks, respectively. Refer to *Section 4* for details of the proposed wastewater drainage design.
Refer to detailed drawing **G538-OCSC-XX-XX-DR-C-0500** for the proposed drainage network layout, which is to serve the proposed development.

3.4.2 PROPOSED SURFACE WATER NETWORK STRATEGY

The proposed surface water network consists of a single surface water drainage catchment, replicating the natural site catchments. Our aim to provide interception and treatment to the rainfall runoff, either at source or through site design. Infiltration systems cannot be used on site due to failure of BRE Digest 365 testing on site.

The proposed surface water networks are to typically comprise a gravity pipe network, with significant Sustainable Drainage Systems e.g green roofs, filter drains, permeable paving in footpaths and parking spaces, trapped road gullies, tree pits, flow control devices, attenuation storage implemented and integrated, wherever practicable. As per the granted Planning application which exists on the site currently and which is currently under construction the proposed attenuation system consists of permeable paving and a proposed geocellular tank as shown below.

Interim attenuation benefits are to be provided at roof level, through the provision of green roofs (>50% total roof area for Intensive green roofs), and throughout the external drainage network: within the landscape features, and pervious paving systems. However, in order to reduce development flow rates to the agreed limit of QBAR Rates, further attenuation is to be provided; before discharging from the site. As outlined on our drawing this attenuation is to be catered for below the proposed road via geocellular storage system. The typical traditional and Sustainable Drainage Systems (SuDS) to be provided, all of which will be designed in accordance with CIRIA C753, the SuDS Manual, and the design guidance material listed in Section 2.

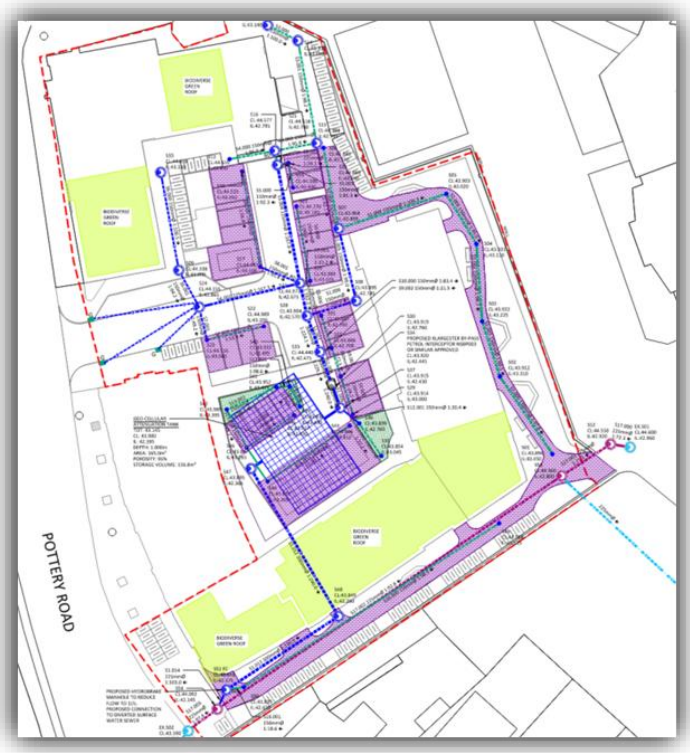


Figure 5 Proposed Surface Water Drainage Strategy

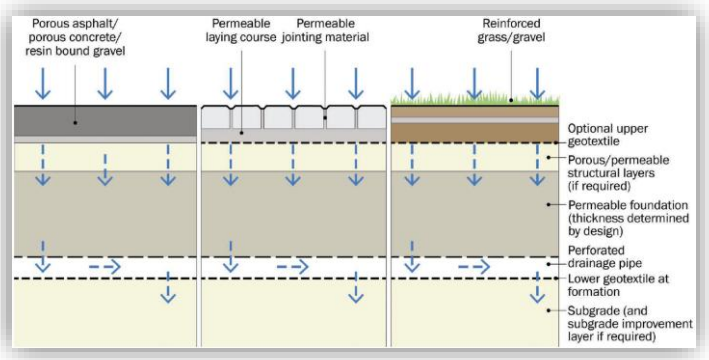
3.4.2.1 GREEN/BLUE ROOFS

It is proposed to provide green roofs on all of the blocks within the development where permitted and coordinated with PV and roof terraces. Green roofs pose many advantages to sustainability, providing at source treatment prior to entering the surface water network. Aside from the obvious boon to biodiversity, the slow filtration of rainwater increases the time it takes for that falling on the roof to enter the drainage system, thus decreasing the local discharge rate of runoff. It additionally allows time for transpiration and evaporation of a portion of the attenuated rainwater back into the atmosphere, reducing the overall quantity of runoff to the public system.

While PV panels are also being proposed at roof level as a further sustainability measure, these are generally considered incompatible with green roof productivity however there is no impact on blue roof layout.

3.4.2.2 PERMEABLE PAVING

Permeable pavements provide a pavement finish suitable for both pedestrian and vehicular traffic, while also allowing rainwater to infiltrate the surface layer and into the underlying pervious structural layers. Here, we have proposed permeable paving on podium level, where the rainwater is temporarily stored beneath the overlying finished surface in our proposed blue roof system,



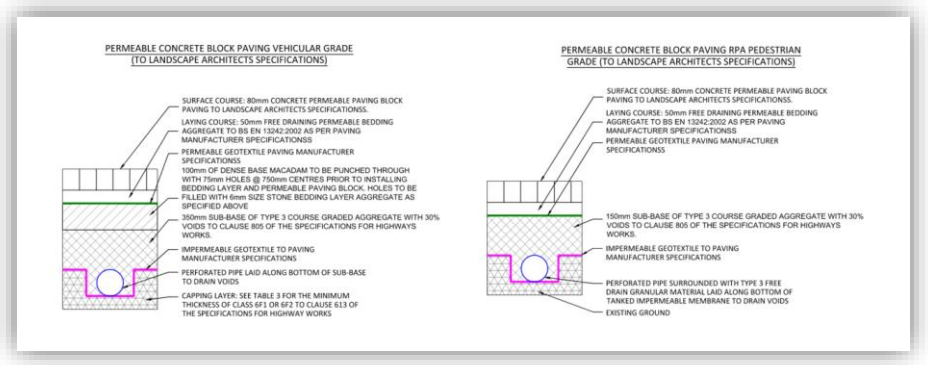


Figure 6 Detail of Type B Permeable Paving (CIRIA C753)

Permeable paving systems are an efficient means of treating the rainwater at source by providing initial interception of the rainwater, reducing the volume and frequency of the runoff, and improving the surface water

quality by providing at source treatment of the rainfall runoff leaving the site. This is achieved by helping remove and retain pollutants prior to discharge to the drainage system and / or groundwater system.

3.4.2.3 TRAPPED ROAD GULLIES

All road gullies serving the proposed development are to be trapped, to help prevent sediment and gross pollutants from entering the surface water network, and thus improving the water quality discharging from site. The grated covers are to have a minimum load classification of D400, for frequent vehicular traffic.

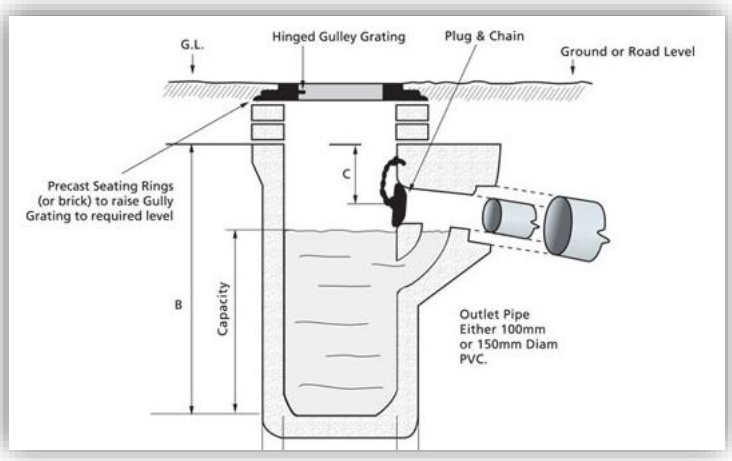


Figure 3.8 - Trapped Road Gully (Typical Detail)

3.4.2.4 UNDERGROUND PIPE NETWORK

A traditional gravity pipe and manhole network will be provided, to convey the collected rainfall runoff as far as the development's outfall. Manholes, compliant with the GDSDS and GDRCOP, are provided for maintenance access at branched connections, changes in pipe size and gradient, and at intervals no greater than 90m distance.

3.4.2.5 SILT TRAPS

All manholes upstream of attenuation systems and fuel separators are to contain a 600mm sump, below invert level of outlet pipe, in order to trap sediment and other gross pollutants, and prevent them from entering the downstream watercourse; thus improving the water quality discharging from site.

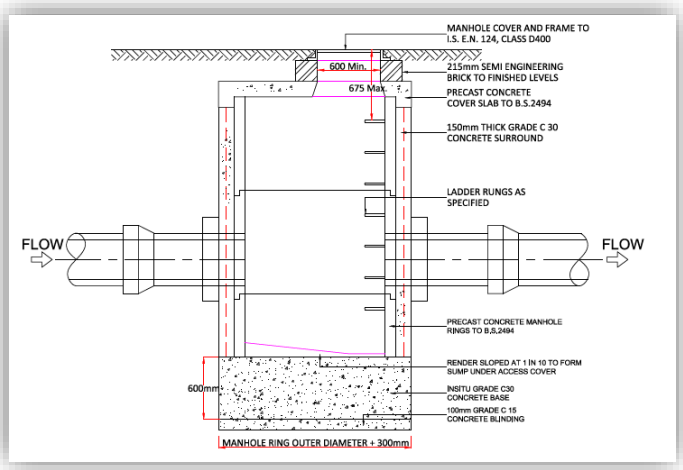


Figure 7 Typical Detail of Silt Trap Manhole

3.4.2.6 GEOCELLULAR STORAGE SYSTEMS

Proprietary geocellular storage units are to be provided for the attenuation of rainfall runoff for the developed catchment area. Typical geocellular storage systems comprise plastic cellular units of high porosity (typically >95%), structurally arranged in rows and layers, with a perforated distribution pipe through the centre. Access chambers for inspection and maintenance are also to be provided.

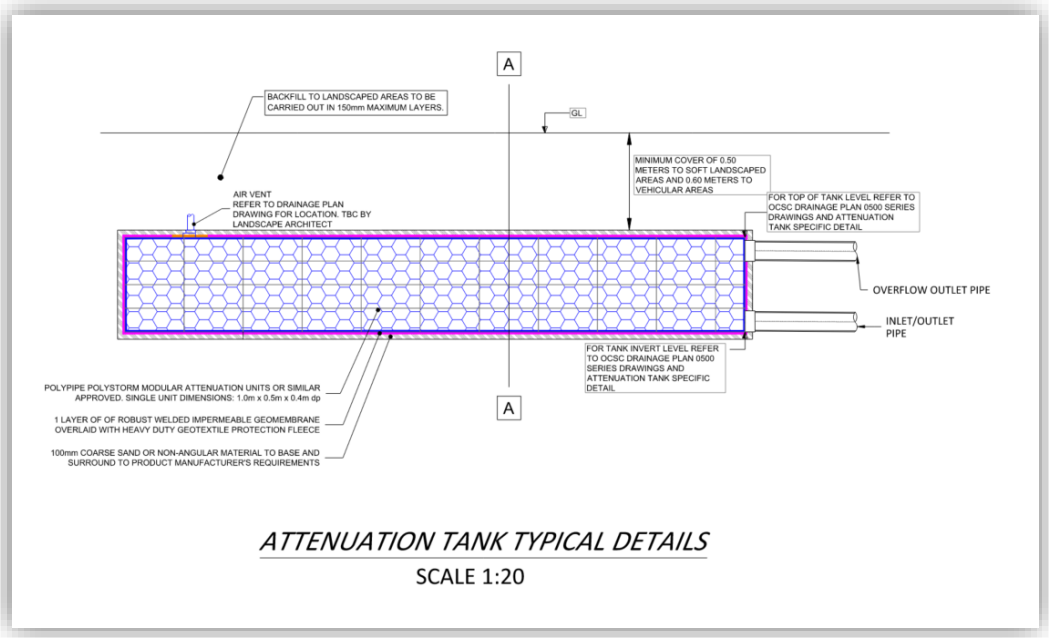


Figure 8 Typical Section of Geocellular System (CIRIA C753)

3.4.2.7 FLOW CONTROL DEVICE

A flow control device is to be provided immediately downstream of the final underground attenuation system, in order to restrict the surface water discharge from site to a flow rate equivalent, or below, the natural greenfield runoff rate. The overall flow rate for the proposed development would be no greater than **5.5 l/s**. It is proposed to provide the Hydro-brake optimum vortex flow control unit (or similar approved by DLRCC) in the manhole downstream of each of the final attenuation systems to achieve this rate of flow.
Further, it is noted that the required aperture of the proposed Hydro-Brake outlets have been designed to be **at least 50mm diameter**, to mitigate the risk of blockage. Any outlets less then 50mm to have a protective orifice plate. The flow control chamber is to be 1200x1200mm cast in-situ concrete and should be fitted with a penstock valve at the inlet and a silt trap, to allow for easy access and maintenance.



Figure 9 Typical Vortex Hydro-Brake Flow Control Unit (Hydro International)

3.5 PROPOSED SURFACE WATER NETWORK DETAILED DESIGN

3.5.1 SOFTWARE DESIGN CRITERIA

The proposed surface water network has been designed in accordance with the regulations and guidelines outlined in *Section 2*, using Causeway Flow by Causeway Technologies Ltd., which simulates the performance of the integrated drainage network for varying rainfall return periods and storm durations.
This software applies the Flood Studies Report (FSR) methodology for analysis of the rainfall profiles. However, the input design parameters that were used, as part of this design, were based on the available Flood Studies Update (FSU) data, *i.e.* the return period rainfall depths for sliding durations, which determine the $\mathbf{M_{5\text{-}60}}$ and **R** values, and the standard annual average rainfall (SAAR); as sourced from Met Éireann. Copies of the calculations for this development are included to the rear.

3.5.2 CLIMATE CHANGE ALLOWANCE

As noted earlier the proposed network is to be designed to allow for an additional 20% increase in rainfall intensity, to allow for Climate Change projections, in accordance with the Dún Laoghaire-Rathdown County Council Development Plan and the GDSDS.
All discussion within this report, with regard to surface water network design calculations and results, include for the allowance of an increase of 20% in rainfall intensity, as required.
.

3.5.3 PROPOSED DEVELOPMENT RAINFALL RUNOFF

The proposed run off from the site has been set to 1.8l/s as noted on drawing 500.
This is to be achieved with the provision of a flow restrictor (Hydro-Brake Optimum by Hydro-International, or similar approved) prior to discharging to the existing surface water network to the north of the site, with the appropriate measures of attenuation provided. Sub-catchment flow-control devices and associated attenuation are also to be strategically provided, in order to maximise SuDS benefits and avail of the open space for preliminary attenuation. See below extracts from the flow calculations to assist.

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	100	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00
FSR Region	Scotland and Ireland	Connection Type	Level Soffits
M5-60 (mm)	16.100	Minimum Backdrop Height (m)	0.200
Ratio-R	0.273	Preferred Cover Depth (m)	0.900
CV	0.750	Include Intermediate Ground	✓
Time of Entry (mins)	5.00	Enforce best practice design rules	x

Figure 10 Extract from Flow Hydrobrake details

3.5.4 PROPOSED SURFACE WATER PIPE NETWORK DESIGN

The overall surface water drainage system, serving the proposed development, is to consist of a gravity sewer network that will convey runoff from the roofs and paved areas to the outfall manhole. The new gravity networks will discharge a controlled attenuated flow rate to the existing public network to the new surface water sewer to the north of the site.
The proposed piped-network has been designed in accordance with BS EN 752 and all new infrastructure is to be compliant with the requirements of the GDSDS and the GDRCOP for Drainage Works, with minimum full bore velocities of **1.0 m/s** achieved throughout.
All main surface water carrier pipes have been sized to ensure no surcharging of the proposed drainage network for rainfall events up to, and including, the 1 in 5-year ARI event.

Refer to drawings **G538-OCSC-XX-XX-DR-C-0500** for the proposed drainage infrastructure layout.

3.6 SURFACE WATER OUTFALL LOCATION

The surface water drainage is to discharge attenuated flows to the public surface water network, which is located to the north of the site. A new connection to this existing sewer is to be provided on Pottery road.

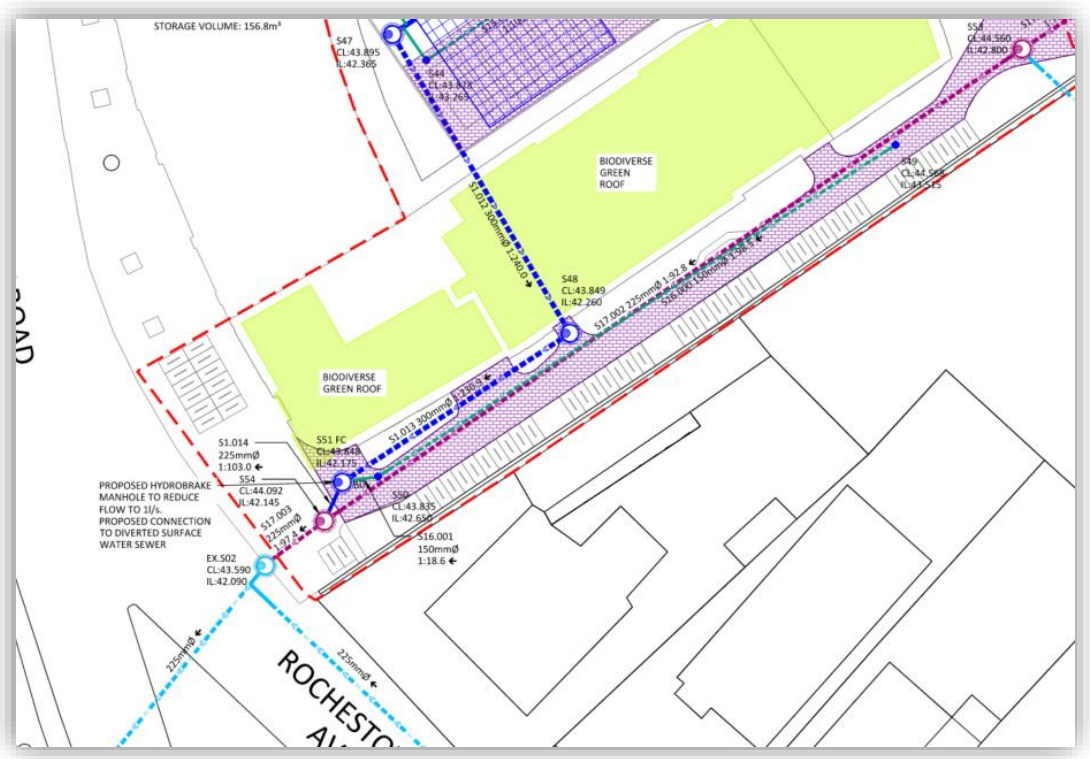


Figure 11 Outfall connection from site

3.7 WATER QUALITY

The quality of the surface water discharging from site is to be improved through the following provisions, each of which is discussed in greater detail in *Section 3.4.3*:

- Pervious Paving on podium area where required
- Green roofs.
- Intensive landscaping, where practical.
- Interception storage.
- Trapped road gullies on the road carriageway, to trap silt and gross pollutants.
- Class 2 bypass fuel separators to be provided in basement car park prior to joining network

3.8 MAINTENANCE

The proposed surface water drainage network has been carefully designed to minimise risk of blockage throughout the network, mainly through the following provisions that limit and restrict the size of pollutants entering the network:

- Pervious paving.
- Trapped road gullies.
- Silt trap manhole.
- Flow control appropriately sized.
- Orifice plates – none less than 50mm dia.

All devices, including road gullies, silt trap, flow control device and the attenuation system, should be inspected regularly and maintained, as appropriate and in accordance with manufacturer's recommendations and guidelines. Items such as the flow controls and fuel separators have been located so as to provide easy vehicular access for inspection and maintenance.

3.9 TAKING IN CHARGE

It is proposed that all new surface water infrastructure associated within the redline boundary **is not** to be offered to be taken in charge by Dun Laoghaire Rathdown County Council.

3.10 SURFACE WATER IMPACT ASSESSMENT

The design criteria for the drainage system are established in *GDSDS-RDP Volume 2*, *Section 6.3.4* and explained further in *GDSDS-RDP Volume 2, Appendix E*. There are four design criteria, each of which has been considered for the subject site:

- River Water Quality Protection.
- River Regime Protection.
- Level of Service (flooding) for the site and.
- River Flood Protection.

3.11 CRITERION 1 – RIVER WATER QUALITY PROTECTION

It is proposed that the overall drainage system, serving this development, will contain a range of surface water treatment methods, as outlined previously in *Section 3.4,* which will improve the quality of surface water being discharged from the proposed development.

Gross pollutants, sediments, hydrocarbons, and other impurities, will be removed at source with the following provisions:

a) Pervious paving on podium where possible.

b) Intensive landscaping, where practicable.
c) Interception storage at attenuation systems.
d) All road gullies and linear channel drains are to be trapped.
e) Silt-trap prior to attenuation storage area.
f) Class 1 bypass fuel separators to be provided in basement car park prior to joining network

3.12 CRITERION 2 – RIVER REGIME PROTECTION

Surface water discharge from the overall development will be restricted to an equivalent rural runoff rate of **1L /s**, as per GDSDS and Dun Laoghaire Rathdown County Council requirements.
This will be achieved with the provision of a flow control devices (Hydro-Brake Optimum, by Hydro-International, or similar approved) upstream of the outfall manhole.

3.13 CRITERION 3 – LEVEL OF SERVICE (FLOODING) SITE

There are four sub-criteria for the required level of service, for a new development; as set out in the *GDSDS Volume 2, Section 6.3.4 (Table 6.3).*

- No flooding on site except where planned (30-year high intensity rainfall event).
- No internal property flooding (100-year high intensity rainfall event).
- No internal property flooding (100-year river event and critical duration for site) and.
- No flood routing off site except where specifically planned. (100-year high intensity rainfall event).

3.13.1 SUB-CRITERION 3.1

The surface water drainage systems, serving the proposed development, have been designed to accommodate the 100-year return period rainfall event (including an allowance of 20% increase in rainfall intensity for climate change) without flooding. Therefore, the system has capacity for the 30-year return period rainfall event without flooding.
The performance of the proposed drainage system has been analysed for design rainfall events up to, and including, the 1% AEP event (including 20% climate change allowance) using the *Causeway Flow network design software*, by Causeway Technologies Ltd. Refer to the rear of this document for details of design criteria, calculations, and results. The analyses indicate that no flooding will occur for design rainfall events up to, and including, the 1% AEP.

3.13.2 SUB-CRITERION 3.2

The surface water drainage systems, serving the proposed development, have been designed to accommodate the 100-year return period rainfall event (including an allowance of 20% increase in rainfall intensity for climate change) without flooding.

The performance of the proposed drainage system in 100-year return period storm events (including 20% climate change allowance) has been analysed – Refer to the rear of this document for details

3.13.3 SUB-CRITERION 3.3

Details of the flood risk assessment associated with the proposed development is outlined in *Section 7* of this report. The assessment indicates that there is no apparent risk of internal property flooding for a design 100-year return period pluvial rainfall event (including 20% climate change allowance).

3.13.4 SUB-CRITERION 3.4

The surface water drainage systems, serving the proposed development, have been designed to accommodate the 100-year return period rainfall event (including an allowance of 20% increase in rainfall intensity for climate change) without flooding, so no flood routing off site will be experienced for such a rainfall event.

3.14 CRITERION 4 – RIVER FLOOD PROTECTION

As outlined in *Section 3.13* (Criterion 2), the surface water runoff from the development's catchment will be limited to a maximum of **1.0 l/s**
Attenuation storage is to be provided for the 100-year return period rainfall event (including an increased 20% rainfall intensity; to allow for climate change). Discharge from site is to be achieved through the use of a vortex flow control device (e.g. Hydro-Brake Optimum, by Hydro-International, or similar approved), which will reduce the risk of blockage present with other flow devices.

4 WASTEWATER DRAINAGE

4.1 OVERVIEW

The proposed gravity wastewater sewer design has been carried out in accordance with Irish Water's Code of Practice for Wastewater Infrastructure.

4.2 EXISTING WASTEWATER DRAINAGE

There is foul network to the south and west of the site as can be seen in the below OCSC drawings. Refer to the below extract from these documents for reference

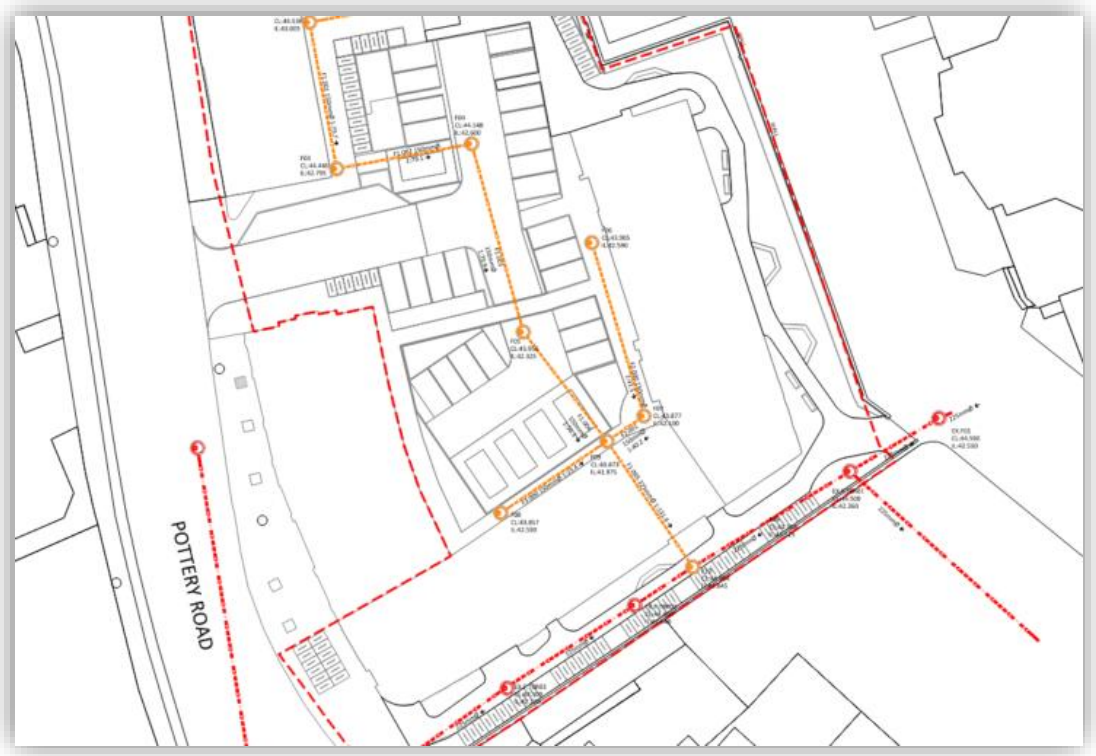


Figure 12 Irish Water Public Records (Excerpt)

4.3 CONSULTATION

A Pre-Connection Enquiry Form ***(IW Ref Nr. CDS25009754)*** was submitted 22nd December 2025 to Irish Water for a total of 300nr Student accommodation units with associated elements. A confirmation of feasibility was received on the 13th of February 2026 noting the proposed increase in demand is feasible without infrastructure upgrades by Uisce Eireann. Please refer to the COF included in the appendices

4.4 PROPOSED WASTEWATER DRAINAGE STRATEGY

It is proposed to separate the wastewater and surface water drainage networks, which will serve the proposed development, and provide independent connections to the public wastewater infrastructure.
Refer to *Section 3* for details of the proposed surface water drainage design strategy.
The overall development is to be drained by a gravity wastewater network, based on the natural topography of the development site. The buildings wastewater network is to connect to the new development's gravity wastewater network at the ground level which will connect the existing foul sewer network on Pottery Road

4.5 WASTEWATER NETWORK DESIGN CALCULATIONS

It is proposed to separate the wastewater and surface water drainage networks, which will serve the proposed development, and provide independent connections to the adjacent watercourse and local wastewater sewer network, respectively.
Wastewater (volumetric) calculations have been compiled in accordance with *Irish Water's Code of Practice Wastewater Infrastructure, IW-CDS-5030-03* and are included to the rear of this document. Pipe design calculations have been compiled using Causeway Flow software and are included. Design flow has been calculated using the Discharge Unit method described in *I.S. EN 752*. The calculations demonstrate that conveyance capacity is provided for all development of zoned lands within the catchment, that self-cleansing velocity will be achieved with the expected design flow rates and that the flow velocities will not exceed the upper limit of 3.0m/s.

4.6 TAKING IN CHARGE

It is proposed that all new wastewater drainage infrastructure installed to serve the proposed development within the redline boundary **is not** to be offered to Irish Water for to be taken-in-charge.

5 POTABLE WATER SUPPLY

5.1 OVERVIEW

All proposed potable water design has been carried out in accordance with *Irish Water's Code of Practice for Water Infrastructure, IW-CDS-5020-03.*
A new 150mm-diameter HDPE watermain connection is to be provided from the existing 150mm Ø watermain on the Pottery Road. along the Western site boundary.

5.2 EXISTING WATERMAIN INFRASTRUCTURE

The Irish Water public drainage records indicate that there is an existing public 6" cast iron watermain along Pottery Road.

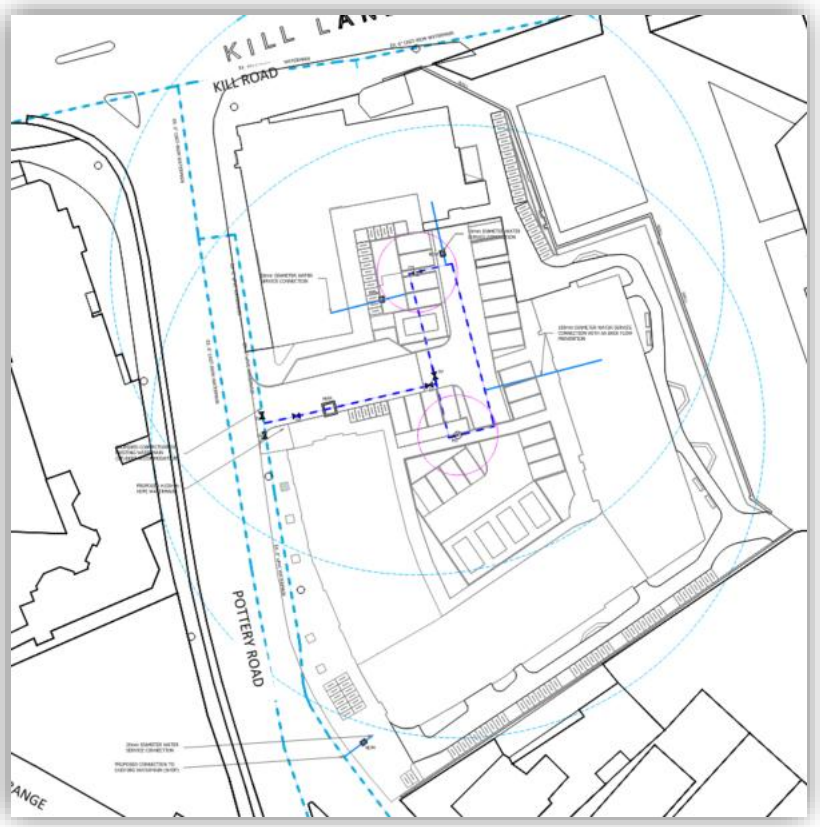


Figure 13 Irish Water Public Records (Excerpt)

5.3 CONSULTATION

A Pre-Connection Enquiry Form ***(IW Ref Nr. CDS25009754)*** was submitted 22nd December 2025 to Irish Water for a total of 300nr Student accommodation units with associated elements. A confirmation of feasibility was received on the 13th of February 2026 noting the proposed increase in demand is feasible subject to

infrastructure upgrades by Uisce Eireann which consist of 10m of existing 3 inch cast iron main. Please refer to the COF included in the appendices

5.4 CONNECTION TO THE EXISTING NETWORK

It is proposed to serve the proposed development by providing a new 150mm high density polyethylene (HDPE) connection to the existing 6" cast iron watermain on Pottery Road to the west of the site.
The proposed connection is to be carried out in accordance with *Uisce Éireann's Code of Practice for Water Infrastructure*, following a New Connection agreement with Uisce Éireann, with a bulk water meter to be provided at the development's entrance.
Refer to drawing **G538-OCSC-XX-XX-DR-C-0550** for the proposed watermain layout.

5.5 WATER SAVING DEVICES

Water saving devices are to be considered for use within the proposed development, in order to conserve the use of water, as part of the internal fit-out.

5.6 WATER METERS

A bulk water meter is to be provided at the connection to the public watermain, at the development entrance, along with individual meters provided at the connection to each unit. All metering is to be provided in accordance with Irish Water's requirements.

5.7 TAKING IN CHARGE

All new watermain infrastructure, installed to serve the proposed development after the bulk meter **is not** to be offered to Irish Water for to be taken-in-charge.

6 VERIFICATION

This report was compiled and verified by:

Shaun Doody BE MSc CEng MIEI MIStructE FConsEI

Director

O'Connor Sutton Cronin & Associates

Appendix A SURFACE WATER CALCULATIONS

- Generated by Causeway Flow (Causeway Technologies Ltd.)

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	100	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00
FSR Region	Scotland and Ireland	Connection Type	Level Soffits
M5-60 (mm)	16.100	Minimum Backdrop Height (m)	0.200
Ratio-R	0.273	Preferred Cover Depth (m)	0.900
CV	0.750	Include Intermediate Ground	✓
Time of Entry (mins)	5.00	Enforce best practice design rules	x

Nodes

	Name	Area (ha)	T of E (mins)	Cover Level (m)	Node Type	Manhole Type	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
✓	1	0.006	5.00	44.618	Manhole	Adoptable	450	722914.234	727123.658	1.068
✓	5	0.004	5.00	44.657	Manhole	TYPE D 450	450	722898.723	727161.688	1.537
✓	6	0.005	5.00	44.749	Manhole	Adoptable	450	722880.789	727168.418	1.354
✓	7			44.601	Manhole	TYPE D 450	450	722882.973	727156.628	1.646
✓	8	0.006	5.00	44.579	Manhole	Adoptable	450	722885.349	727146.007	1.734
✓	9	0.046	5.00	44.465	Manhole	Adoptable	450	722859.712	727149.991	1.050
✓	10	0.005	5.00	44.625	Manhole	Adoptable	450	722856.523	727167.206	1.385
✓	15	0.002	5.00	44.704	Manhole	TYPE D 450	450	722879.833	727168.775	1.604
✓	16	0.013	5.00	44.594	Manhole	Adoptable	450	722873.712	727167.640	1.634
✓	19	0.003	5.00	44.552	Manhole	Adoptable	450	722876.301	727162.585	1.352
✓	20			44.576	Manhole	Adoptable	450	722875.629	727166.216	1.511
✓	21	0.009	5.00	44.584	Manhole	Adoptable	1200	722874.031	727165.920	1.704
✓	25	0.007	5.00	44.493	Manhole	Adoptable	450	722876.808	727159.849	1.353
✓	26			44.422	Manhole	Adoptable	450	722878.824	727148.970	1.397
✓	27	0.004	5.00	44.409	Manhole	Adoptable	1200	722877.241	727148.595	1.604
✓	23			44.248	Manhole	Adoptable	450	722863.725	727140.340	1.093
✓	22	0.005	5.00	44.299	Manhole	Adoptable	450	722872.044	727142.312	1.059
✓	28	0.021	5.00	44.403	Manhole	Adoptable	1200	722878.349	727143.857	1.783
✓	31	0.005	5.00	44.421	Manhole	Adoptable	450	722880.432	727143.903	1.661

Flow+ v14.0 Copyright © 1988-2025 Causeway Technologies Ltd

Nodes

	Name	Area (ha)	T of E (mins)	Cover Level (m)	Node Type	Manhole Type	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
✓	32			44.436	Manhole	Adoptable	450	722881.963	727139.137	1.736
✓	29	0.003	5.00	44.554	Manhole	Adoptable	450	722885.071	727129.465	1.554
✓	30	0.004	5.00	44.490	Manhole	Adoptable	450	722883.294	727134.994	1.730
✓	33	0.041	5.00	44.440	Manhole	Adoptable	1200	722880.261	727138.591	1.965
✓	34			44.474	Manhole	Adoptable	1200	722882.003	727133.844	2.024
✓	38			44.497	Junction			722875.966	727125.464	2.102
✓	43	0.011	5.00	44.464	Manhole	Adoptable	450	722884.600	727127.807	1.054
✓	44	0.008	5.00	44.416	Manhole	Adoptable	450	722871.835	727119.110	1.161
✓	45	0.005	5.00	44.468	Manhole	Adoptable	450	722876.475	727129.350	1.353
✓	46			44.421	Manhole	Adoptable	450	722869.522	727124.613	1.651
✓	47	0.009	5.00	44.496	Manhole	Adoptable	1200	722867.381	727119.614	2.146
✓	49	0.011	5.00	44.568	Manhole	Adoptable	450	722906.457	727113.537	1.053
✓	50	0.006	5.00	44.114	Manhole	Adoptable	450	722869.214	727088.280	1.064
✓	48	0.036	5.00	44.556	Manhole	Adoptable	1200	722879.735	727097.819	2.311
✓	51	0.019	5.00	44.404	Manhole	Adoptable	1200	722866.546	727089.186	2.224
✓	EX.S.DUMMY		5.00	44.100	Junction			722936.812	727100.563	1.005
✓	EX.S01		5.00	44.600	Manhole	Adoptable	1200	722925.598	727124.659	1.640
✓	52			44.550	Manhole	Adoptable	1200	722922.741	727125.104	1.630
✓	53			44.560	Manhole	Adoptable	1200	722915.580	727120.465	1.760
✓	54			44.092	Manhole	Adoptable	1200	722865.257	727086.378	1.947
✓	EX.S02			43.590	Manhole	Adoptable	1200	722860.986	727083.172	1.500
✓	17	0.006	5.00	44.534	Manhole	Adoptable	450	722872.045	727151.113	1.354
✓	12	0.001	5.00	44.681	Manhole	Adoptable	450	722867.103	727166.416	1.576
✓	18	0.004	5.00	44.675	Manhole	Adoptable	450	722869.459	727165.073	1.640
✓	2	0.002	5.00	44.622	Manhole	TYPE D 450	450	722906.560	727134.990	1.212
✓	3	0.002	5.00	44.616	Manhole	TYPE D 450	450	722903.966	727143.038	1.291

Flow+ v14.0 Copyright © 1988-2025 Causeway Technologies Ltd

Nodes

	Name	Area (ha)	T of E (mins)	Cover Level (m)	Node Type	Manhole Type	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
✓	4	0.002	5.00	44.718	Manhole	TYPE D 450	450	722903.132	727154.359	1.508
✓	11	0.017	5.00	44.631	Manhole	TYPE D 450	450	722866.611	727169.075	1.496
✓	13	0.008	5.00	45.790	Manhole	TYPE D 450	450	722872.601	727186.328	1.695
✓	14	0.007	5.00	45.332	Manhole	TYPE D 450	450	722877.031	727184.080	1.482
✓	24	0.029	5.00	44.226	Manhole	Adoptable	1200	722862.590	727145.128	1.196
✓	37	0.012	5.00	44.472	Manhole	Adoptable	1200	722883.232	727130.414	2.037
✓	39	0.001	5.00	44.596	Manhole	TYPE D 450	450	722877.323	727130.593	1.051
✓	40			44.561	Manhole	TYPE D 450	450	722875.838	727133.547	1.051
✓	41	0.002	5.00	44.540	Manhole	TYPE D 450	450	722873.869	727133.444	1.115
✓	42			44.530	Manhole	TYPE D 450	450	722866.613	727130.164	1.500
✓	35	0.002	5.00	44.614	Manhole	TYPE D 450	450	722889.226	727123.365	1.569
✓	36			44.604	Manhole	TYPE D 450	450	722885.977	727128.133	1.844

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	Velocity Equation	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	Link Type	T of C (mins)	Rain (mm/hr)
1.000	1	2	13.686	0.600	Colebrook-White	43.550	43.410	0.140	97.8	150	Circular	5.22	50.0
1.001	2	3	8.456	0.600	Colebrook-White	43.410	43.325	0.085	99.5	150	Circular	5.36	50.0
1.002	3	4	11.352	0.600	Colebrook-White	43.325	43.210	0.115	98.7	150	Circular	5.55	50.0
1.003	4	5	8.553	0.600	Colebrook-White	43.210	43.120	0.090	95.0	150	Circular	5.69	50.0
1.004	5	7	16.543	0.600	Colebrook-White	43.120	42.955	0.165	100.3	150	Circular	5.96	50.0

Name	US Node	DS Node	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Minimum Depth (m)	Maximum Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	1	2	1.016	18.0	0.8	0.918	1.062	0.918	1.062	0.006	0.0	21	0.507
1.001	2	3	1.007	17.8	1.0	1.062	1.141	1.062	1.141	0.007	0.0	24	0.545
1.002	3	4	1.011	17.9	1.3	1.141	1.358	1.141	1.358	0.010	0.0	28	0.595
1.003	4	5	1.031	18.2	1.6	1.358	1.387	1.358	1.387	0.012	0.0	30	0.630
1.004	5	7	1.003	17.7	2.2	1.387	1.496	1.376	1.496	0.016	0.0	35	0.682

Flow+ v14.0 Copyright © 1988-2025 Causeway Technologies Ltd

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	Velocity Equation	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	Link Type	T of C (mins)	Rain (mm/hr)
2.000	6	7	11.991	0.600	Colebrook-White	43.395	42.955	0.440	27.3	150	Circular	5.10	50.0
1.005	7	8	10.884	0.600	Colebrook-White	42.955	42.845	0.110	98.9	150	Circular	6.14	50.0
1.006	8	28	7.323	0.600	Colebrook-White	42.845	42.770	0.075	97.6	150	Circular	6.26	50.0
3.000	9	10	17.508	0.600	Colebrook-White	43.415	43.240	0.175	100.0	150	Circular	5.29	50.0
3.001	10	11	10.260	0.600	Colebrook-White	43.240	43.135	0.105	97.7	150	Circular	5.46	50.0
3.002	11	12	2.704	0.600	Colebrook-White	43.135	43.105	0.030	90.1	150	Circular	5.50	50.0
3.003	12	16	6.721	0.600	Colebrook-White	43.105	43.035	0.070	96.0	150	Circular	5.61	50.0
4.000	13	14	4.968	0.600	Colebrook-White	44.095	43.850	0.245	20.3	150	Circular	5.04	50.0
4.001	14	15	15.559	0.600	Colebrook-White	43.850	43.100	0.750	20.7	150	Circular	5.15	50.0
4.002	15	16	6.225	0.600	Colebrook-White	43.100	43.035	0.065	95.8	150	Circular	5.25	50.0
3.004	16	21	1.749	0.600	Colebrook-White	42.960	42.910	0.050	35.0	225	Circular	5.62	50.0
5.000	17	18	14.197	0.600	Colebrook-White	43.180	43.035	0.145	97.9	150	Circular	5.23	50.0
5.001	18	21	4.650	0.600	Colebrook-White	43.035	42.985	0.050	93.0	150	Circular	5.31	50.0
6.000	19	20	3.693	0.600	Colebrook-White	43.200	43.065	0.135	27.4	150	Circular	5.03	50.0

Name	US Node	DS Node	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Minimum Depth (m)	Maximum Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
2.000	6	7	1.936	34.2	0.7	1.204	1.496	1.204	1.496	0.005	0.0	14	0.750
1.005	7	8	1.010	17.8	2.8	1.496	1.584	1.496	1.584	0.021	0.0	40	0.737
1.006	8	28	1.017	18.0	3.7	1.584	1.483	1.449	1.586	0.027	0.0	46	0.801
3.000	9	10	1.004	17.7	6.2	0.900	1.235	0.900	1.235	0.046	0.0	61	0.916
3.001	10	11	1.016	18.0	6.9	1.235	1.346	1.235	1.352	0.051	0.0	65	0.952
3.002	11	12	1.059	18.7	9.3	1.346	1.426	1.346	1.426	0.068	0.0	75	1.057
3.003	12	16	1.025	18.1	9.4	1.426	1.409	1.364	1.452	0.069	0.0	76	1.034
4.000	13	14	2.246	39.7	1.1	1.545	1.332	1.282	1.609	0.008	0.0	17	0.963
4.001	14	15	2.221	39.2	2.0	1.332	1.454	1.046	1.454	0.015	0.0	23	1.172
4.002	15	16	1.027	18.1	2.2	1.454	1.409	1.388	1.463	0.016	0.0	35	0.698
3.004	16	21	2.219	88.2	13.3	1.409	1.449	1.409	1.449	0.098	0.0	58	1.604
5.000	17	18	1.015	17.9	0.8	1.204	1.490	1.204	1.529	0.006	0.0	21	0.507
5.001	18	21	1.042	18.4	1.4	1.490	1.449	1.374	1.490	0.010	0.0	28	0.613
6.000	19	20	1.932	34.1	0.4	1.202	1.361	1.202	1.361	0.003	0.0	11	0.643

Flow+ v14.0 Copyright © 1988-2025 Causeway Technologies Ltd

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	Velocity Equation	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	Link Type	T of C (mins)	Rain (mm/hr)
6.001	20	21	1.625	0.600	Colebrook-White	43.065	42.985	0.080	20.3	150	Circular	5.04	50.0
3.005	21	27	17.620	0.600	Colebrook-White	42.880	42.805	0.075	234.9	300	Circular	5.91	50.0
7.000	22	23	8.550	0.600	Colebrook-White	43.240	43.155	0.085	100.6	150	Circular	5.14	50.0
7.001	23	24	4.921	0.600	Colebrook-White	43.155	43.105	0.050	98.4	150	Circular	5.22	50.0
7.002	24	27	15.056	0.600	Colebrook-White	43.030	42.880	0.150	100.4	225	Circular	5.42	50.0
8.000	25	26	11.064	0.600	Colebrook-White	43.140	43.025	0.115	96.2	150	Circular	5.18	50.0
8.001	26	27	1.627	0.600	Colebrook-White	43.025	42.955	0.070	23.2	150	Circular	5.19	50.0
3.006	27	28	4.866	0.600	Colebrook-White	42.805	42.620	0.185	26.3	300	Circular	5.94	50.0
1.007	28	33	5.602	0.600	Colebrook-White	42.620	42.475	0.145	38.6	300	Circular	6.30	50.0
9.000	29	30	5.808	0.600	Colebrook-White	43.000	42.760	0.240	24.2	150	Circular	5.05	50.0
9.001	30	32	4.352	0.600	Colebrook-White	42.760	42.700	0.060	72.5	150	Circular	5.11	50.0
10.000	31	32	5.006	0.600	Colebrook-White	42.760	42.700	0.060	83.4	150	Circular	5.08	50.0
9.002	32	33	1.787	0.600	Colebrook-White	42.700	42.617	0.083	21.5	150	Circular	5.12	50.0
1.008	33	34	5.057	0.600	Colebrook-White	42.475	42.450	0.025	202.3	300	Circular	6.38	50.0

Name	US Node	DS Node	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Minimum Depth (m)	Maximum Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
6.001	20	21	2.244	39.7	0.4	1.361	1.449	1.361	1.449	0.003	0.0	11	0.721
3.005	21	27	1.021	72.2	16.4	1.404	1.304	1.304	1.404	0.121	0.0	97	0.831
7.000	22	23	1.002	17.7	0.7	0.909	0.943	0.909	0.943	0.005	0.0	21	0.491
7.001	23	24	1.013	17.9	0.7	0.943	0.971	0.886	0.991	0.005	0.0	21	0.496
7.002	24	27	1.305	51.9	4.7	0.971	1.304	0.971	1.328	0.035	0.0	45	0.813
8.000	25	26	1.024	18.1	0.9	1.203	1.247	1.203	1.247	0.007	0.0	23	0.529
8.001	26	27	2.097	37.1	0.9	1.247	1.304	1.228	1.304	0.007	0.0	16	0.878
3.006	27	28	3.077	217.5	22.6	1.304	1.483	1.304	1.483	0.167	0.0	65	2.012
1.007	28	33	2.537	179.3	29.2	1.483	1.665	1.483	1.665	0.215	0.0	81	1.881
9.000	29	30	2.055	36.3	0.4	1.404	1.580	1.404	1.580	0.003	0.0	11	0.684
9.001	30	32	1.182	20.9	1.0	1.580	1.586	1.574	1.716	0.007	0.0	23	0.611
10.000	31	32	1.101	19.5	0.7	1.511	1.586	1.511	1.586	0.005	0.0	19	0.510
9.002	32	33	2.179	38.5	1.7	1.586	1.673	1.586	1.673	0.012	0.0	21	1.094
1.008	33	34	1.102	77.9	36.3	1.665	1.724	1.665	1.724	0.268	0.0	144	1.083

Flow+ v14.0 Copyright © 1988-2025 Causeway Technologies Ltd

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	Velocity Equation	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	Link Type	T of C (mins)	Rain (mm/hr)
1.009	34	37	3.644	0.600	Colebrook-White	42.450	42.435	0.015	242.9	300	Circular	6.44	50.0
11.000	35	36	5.770	0.600	Colebrook-White	43.045	42.760	0.285	20.2	150	Circular	5.04	50.0
11.001	36	37	3.569	0.600	Colebrook-White	42.760	42.585	0.175	20.4	150	Circular	5.07	50.0
1.010	37	38	8.792	0.600	Colebrook-White	42.435	42.395	0.040	219.8	300	Circular	6.58	50.0
1.011	38	47	10.389	0.600	Colebrook-White	42.395	42.350	0.045	230.9	300	Circular	6.74	50.0
12.000	39	40	3.306	0.600	Colebrook-White	43.545	43.510	0.035	94.5	150	Circular	5.05	50.0
12.001	40	41	1.972	0.600	Colebrook-White	43.510	43.425	0.085	23.2	150	Circular	5.07	50.0
12.002	41	42	7.963	0.600	Colebrook-White	43.425	43.030	0.395	20.2	150	Circular	5.13	50.0
12.003	42	47	10.578	0.600	Colebrook-White	43.030	42.500	0.530	20.0	150	Circular	5.21	50.0
13.000	43	44	15.446	0.600	Colebrook-White	43.410	43.255	0.155	99.7	150	Circular	5.26	50.0
13.001	44	47	4.482	0.600	Colebrook-White	43.255	42.500	0.755	5.9	150	Circular	5.27	50.0
14.000	45	46	8.413	0.600	Colebrook-White	43.115	42.770	0.345	24.4	150	Circular	5.07	50.0
14.001	46	47	5.438	0.600	Colebrook-White	42.770	42.500	0.270	20.1	150	Circular	5.11	50.0
1.012	47	48	25.053	0.600	Colebrook-White	42.350	42.245	0.105	238.6	300	Circular	7.16	50.0

Name	US Node	DS Node	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Minimum Depth (m)	Maximum Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.009	34	37	1.004	71.0	36.3	1.724	1.737	1.724	1.737	0.268	0.0	152	1.010
11.000	35	36	2.248	39.7	0.3	1.419	1.694	1.419	1.694	0.002	0.0	10	0.668
11.001	36	37	2.240	39.6	0.3	1.694	1.737	1.669	1.792	0.002	0.0	10	0.666
1.010	37	38	1.056	74.7	38.3	1.737	1.802	1.737	1.814	0.283	0.0	152	1.062
1.011	38	47	1.030	72.8	38.3	1.802	1.846	1.766	1.892	0.283	0.0	154	1.042
12.000	39	40	1.034	18.3	0.1	0.901	0.901	0.887	0.901	0.001	0.0	8	0.277
12.001	40	41	2.099	37.1	0.1	0.901	0.965	0.808	0.965	0.001	0.0	6	0.453
12.002	41	42	2.253	39.8	0.4	0.965	1.350	0.965	1.350	0.003	0.0	11	0.724
12.003	42	47	2.264	40.0	0.4	1.350	1.846	1.341	1.846	0.003	0.0	11	0.728
13.000	43	44	1.006	17.8	1.4	0.904	1.011	0.904	1.011	0.011	0.0	29	0.607
13.001	44	47	4.163	73.6	2.5	1.011	1.846	1.011	1.846	0.018	0.0	19	1.947
14.000	45	46	2.047	36.2	0.7	1.203	1.501	1.203	1.501	0.005	0.0	14	0.794
14.001	46	47	2.254	39.8	0.7	1.501	1.846	1.501	1.846	0.005	0.0	14	0.851
1.012	47	48	1.013	71.6	43.1	1.846	2.011	1.828	2.201	0.318	0.0	168	1.058

Flow+ v14.0 Copyright © 1988-2025 Causeway Technologies Ltd

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	Velocity Equation	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	Link Type	T of C (mins)	Rain (mm/hr)
1.013	48	51	15.763	0.600	Colebrook-White	42.245	42.180	0.065	242.5	300	Circular	7.42	50.0
15.000	49	50	45.000	0.600	Colebrook-White	43.515	43.050	0.465	96.8	150	Circular	5.73	50.0
15.001	50	51	2.818	0.600	Colebrook-White	43.060	42.920	0.140	20.1	150	Circular	5.76	50.0
1.014	51	54	3.090	0.600	Colebrook-White	42.180	42.145	0.035	88.3	225	Circular	7.46	50.0
EX.S1.000	EX.S.DUMMY	53	29.112	0.600	Colebrook-White	43.095	42.800	0.295	98.7	225	Circular	5.37	50.0
17.000	EX.S01	52	2.891	0.600	Colebrook-White	42.960	42.920	0.040	72.3	225	Circular	5.03	50.0
17.001	52	53	8.532	0.600	Colebrook-White	42.920	42.800	0.120	71.1	225	Circular	5.12	50.0
17.002	53	54	60.781	0.600	Colebrook-White	42.800	42.145	0.655	92.8	225	Circular	6.11	50.0
17.003	54	EX.S02	5.357	0.600	Colebrook-White	42.145	42.090	0.055	97.4	225	Circular	7.52	50.0

Name	US Node	DS Node	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Minimum Depth (m)	Maximum Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.013	48	51	1.005	71.0	47.9	2.011	1.924	1.908	2.011	0.353	0.0	181	1.076
15.000	49	50	1.021	18.0	1.4	0.903	0.914	0.903	1.101	0.011	0.0	28	0.609
15.001	50	51	2.255	39.8	2.3	0.904	1.334	0.904	1.334	0.017	0.0	24	1.227
1.014	51	54	1.392	55.3	52.7	1.999	1.722	1.722	1.999	0.389	0.0	176	1.577
EX.S1.000	EX.S.DUMMY	53	1.316	52.3	0.0	0.780	1.535	0.780	1.571	0.000	0.0	0	0.000
17.000	EX.S01	52	1.540	61.2	0.0	1.415	1.405	1.405	1.415	0.000	0.0	0	0.000
17.001	52	53	1.553	61.7	0.0	1.405	1.535	1.405	1.535	0.000	0.0	0	0.000
17.002	53	54	1.357	54.0	0.0	1.535	1.722	1.535	1.913	0.000	0.0	0	0.000
17.003	54	EX.S02	1.325	52.7	52.7	1.722	1.275	1.189	1.722	0.389	0.0	186	1.502

Simulation Settings

Rainfall Methodology	FSR	Summer CV	0.750	Starting Level (m)	
Rainfall Events	Singular	Analysis Speed	Normal	Check Discharge Rate(s)	x
FSR Region	Scotland and Ireland	Skip Steady State	x	Check Discharge Volume	x
M5-60 (mm)	16.100	Drain Down Time (mins)	240		
Ratio-R	0.273	Additional Storage (m³/ha)	20.0		

Storm Durations

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

Flow+ v14.0 Copyright © 1988-2025 Causeway Technologies Ltd

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)	Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	0	0	100	20	0	0
30	0	0	0				

Node 51 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	42.180	Product Number	CTL-SHE-0042-1000-1500-1000
Design Depth (m)	1.500	Min Outlet Diameter (m)	0.075
Design Flow (l/s)	1.0	Min Node Diameter (mm)	1200

Node 38 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	42.395
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	133.5	133.5	0.800	133.5	166.3	0.801	0.0	166.3

Node 50 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Width (m)	2.500	Depth (m)	0.280
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	43.050	Length (m)	33.000	Inf Depth (m)	0.150
Safety Factor	2.0	Time to half empty (mins)		Slope (1:X)	100.0		

Node 18 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Width (m)	5.000	Depth (m)	0.380
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	43.035	Length (m)	13.000	Inf Depth (m)	0.150
Safety Factor	2.0	Time to half empty (mins)		Slope (1:X)	100.0		

Flow+ v14.0 Copyright © 1988-2025 Causeway Technologies Ltd

Results for 1 year Critical Storm Duration. Lowest mass balance: 90.13%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	1	11	43.569	0.019	0.6	0.0050	0.0000	OK
15 minute summer	5	11	43.151	0.031	1.6	0.0066	0.0000	OK
15 minute summer	6	11	43.408	0.013	0.5	0.0030	0.0000	OK
15 minute summer	7	12	42.990	0.035	2.1	0.0055	0.0000	OK
15 minute summer	8	12	42.885	0.040	2.6	0.0094	0.0000	OK
15 minute summer	9	10	43.469	0.054	4.8	0.0560	0.0000	OK
15 minute summer	10	10	43.298	0.058	5.3	0.0135	0.0000	OK
15 minute summer	15	11	43.132	0.032	1.7	0.0058	0.0000	OK
15 minute summer	16	11	43.023	0.063	10.1	0.0199	0.0000	OK
30 minute summer	19	17	43.210	0.010	0.3	0.0021	0.0000	OK
30 minute summer	20	18	43.075	0.010	0.3	0.0016	0.0000	OK
15 minute summer	21	11	42.966	0.086	12.4	0.1069	0.0000	OK
15 minute summer	25	10	43.161	0.021	0.7	0.0055	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	1	1.000	2	0.6	0.437	0.033	0.0194	
15 minute summer	5	1.004	7	1.6	0.579	0.092	0.0465	
15 minute summer	6	2.000	7	0.5	0.585	0.015	0.0225	
15 minute summer	7	1.005	8	2.1	0.601	0.116	0.0375	
15 minute summer	8	1.006	28	2.6	0.707	0.145	0.0270	
15 minute summer	9	3.000	10	4.8	0.794	0.268	0.1048	
15 minute summer	10	3.001	11	5.2	0.697	0.290	0.0768	
15 minute summer	15	4.002	16	1.7	0.629	0.094	0.0168	
15 minute summer	16	3.004	21	10.1	1.203	0.114	0.0147	
30 minute summer	19	6.000	20	0.3	0.603	0.009	0.0019	
30 minute summer	20	6.001	21	0.3	0.641	0.008	0.0008	
15 minute summer	21	3.005	27	12.4	0.923	0.171	0.2380	
15 minute summer	25	8.000	26	0.7	0.575	0.039	0.0136	

Flow+ v14.0 Copyright © 1988-2025 Causeway Technologies Ltd

Results for 1 year Critical Storm Duration. Lowest mass balance: 90.13%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	26	11	43.040	0.015	0.7	0.0024	0.0000	OK
15 minute summer	27	11	42.866	0.061	17.1	0.0726	0.0000	OK
15 minute summer	23	11	43.174	0.019	0.6	0.0030	0.0000	OK
15 minute summer	22	10	43.259	0.019	0.6	0.0049	0.0000	OK
960 minute summer	28	660	42.733	0.113	3.3	0.1550	0.0000	OK
15 minute summer	31	11	42.777	0.017	0.5	0.0036	0.0000	OK
960 minute summer	32	660	42.733	0.033	0.5	0.0052	0.0000	OK
15 minute summer	29	11	43.010	0.010	0.3	0.0020	0.0000	OK
30 minute summer	30	19	42.779	0.019	0.7	0.0040	0.0000	OK
960 minute summer	33	660	42.732	0.257	5.9	0.3973	0.0000	OK
960 minute summer	34	660	42.737	0.287	4.3	0.3241	0.0000	OK
960 minute summer	38	660	42.727	0.332	4.8	42.0805	0.0000	SURCHARGED
15 minute summer	43	11	43.437	0.027	1.1	0.0098	0.0000	OK
15 minute summer	44	11	43.272	0.017	1.9	0.0051	0.0000	OK
30 minute summer	45	17	43.128	0.013	0.5	0.0030	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	26	8.001	27	0.7	0.779	0.019	0.0015	
15 minute summer	27	3.006	28	17.1	1.343	0.078	0.0621	
15 minute summer	23	7.001	24	0.6	0.451	0.031	0.0061	
15 minute summer	22	7.000	23	0.6	0.459	0.032	0.0105	
15 minute summer	28	1.007	33	21.7	0.882	0.121	0.1394	
15 minute summer	31	10.000	32	0.5	0.413	0.026	0.0061	
15 minute summer	32	9.002	33	1.2	0.932	0.031	0.0023	
15 minute summer	29	9.000	30	0.3	0.367	0.008	0.0053	
30 minute summer	30	9.001	32	0.7	0.529	0.034	0.0058	
15 minute summer	33	1.008	34	26.9	0.793	0.345	0.1713	
15 minute summer	34	1.009	37	26.7	0.875	0.377	0.1114	
30 minute summer	38	1.011	47	-7.3	-0.369	-0.101	0.4110	
15 minute summer	43	13.000	44	1.1	0.680	0.062	0.0254	
15 minute summer	44	13.001	47	1.9	1.742	0.026	0.0049	
30 minute summer	45	14.000	46	0.5	0.734	0.014	0.0057	

Flow+ v14.0 Copyright © 1988-2025 Causeway Technologies Ltd

Results for 1 year Critical Storm Duration. Lowest mass balance: 90.13%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
30 minute summer	46	18	42.782	0.012	0.5	0.0019	0.0000	OK
960 minute summer	47	660	42.727	0.377	1.3	0.4569	0.0000	SURCHARGED
15 minute summer	49	11	43.540	0.025	1.1	0.0090	0.0000	OK
15 minute summer	50	11	43.083	0.033	1.8	0.0457	0.0000	OK
960 minute summer	48	645	42.727	0.482	1.2	0.6936	0.0000	SURCHARGED
960 minute summer	51	645	42.727	0.547	0.9	0.7107	0.0000	SURCHARGED
15 minute summer	EX.S.DUMMY	1	43.095	0.000	0.0	0.0000	0.0000	OK
15 minute summer	EX.S01	1	42.960	0.000	0.0	0.0000	0.0000	OK
15 minute summer	52	1	42.920	0.000	0.0	0.0000	0.0000	OK
15 minute summer	53	1	42.800	0.000	0.0	0.0000	0.0000	OK
960 minute summer	54	390	42.163	0.018	0.7	0.0205	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
30 minute summer	46	14.001	47	0.5	0.766	0.013	0.0094	
30 minute summer	47	1.012	48	-4.7	0.233	-0.065	1.4554	
15 minute summer	49	15.000	50	1.1	0.463	0.060	0.1064	
15 minute summer	50	15.001	51	1.7	1.073	0.043	0.0045	
15 minute summer	48	1.013	51	-4.5	0.206	-0.064	1.0558	
15 minute summer	51	1.014	54	0.7	0.533	0.012	0.0045	
15 minute summer	EX.S.DUMMY	EX.S1.000	53	0.0	0.000	0.000	0.0000	
15 minute summer	EX.S01	17.000	52	0.0	0.000	0.000	0.0000	
15 minute summer	52	17.001	53	0.0	0.000	0.000	0.0000	
15 minute summer	53	17.002	54	0.0	0.000	0.000	0.0450	
960 minute summer	54	17.003	EX.S02	0.7	0.450	0.012	0.0078	36.8

Flow+ v14.0 Copyright © 1988-2025 Causeway Technologies Ltd

Results for 1 year Critical Storm Duration. Lowest mass balance: 90.13%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
960 minute summer	EX.S02	390	42.108	0.018	0.7	0.0000	0.0000	OK
15 minute summer	17	11	43.199	0.019	0.6	0.0046	0.0000	OK
15 minute summer	12	11	43.175	0.070	7.1	0.0122	0.0000	OK
15 minute summer	18	11	43.060	0.025	1.1	0.0529	0.0000	OK
15 minute summer	2	11	43.432	0.022	0.8	0.0040	0.0000	OK
15 minute summer	3	11	43.350	0.025	1.1	0.0048	0.0000	OK
15 minute summer	4	11	43.237	0.027	1.2	0.0049	0.0000	OK
15 minute summer	11	11	43.210	0.075	7.0	0.0289	0.0000	OK
15 minute summer	13	11	44.110	0.015	0.8	0.0037	0.0000	OK
15 minute summer	14	11	43.870	0.020	1.5	0.0051	0.0000	OK
15 minute summer	24	11	43.071	0.041	3.6	0.0663	0.0000	OK
960 minute summer	37	630	42.727	0.292	4.2	0.3644	0.0000	OK
15 minute summer	39	11	43.554	0.009	0.1	0.0015	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	17	5.000	18	0.6	0.409	0.033	0.0224	
15 minute summer	12	3.003	16	7.1	0.918	0.391	0.0519	
15 minute summer	18	5.001	21	1.0	0.543	0.054	0.0085	
15 minute summer	2	1.001	3	0.8	0.464	0.045	0.0145	
15 minute summer	3	1.002	4	1.0	0.523	0.058	0.0226	
15 minute summer	4	1.003	5	1.2	0.525	0.067	0.0200	
15 minute summer	11	3.002	12	7.0	0.828	0.372	0.0228	
15 minute summer	13	4.000	14	0.8	0.702	0.020	0.0057	
15 minute summer	14	4.001	15	1.5	0.754	0.038	0.0325	
15 minute summer	24	7.002	27	3.6	0.743	0.069	0.0726	
15 minute summer	37	1.010	38	28.0	1.965	0.375	0.1577	
60 minute summer	39	12.000	40	0.1	0.376	0.006	0.0010	

Flow+ v14.0 Copyright © 1988-2025 Causeway Technologies Ltd

Results for 1 year Critical Storm Duration. Lowest mass balance: 90.13%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute summer	40	35	43.516	0.006	0.1	0.0009	0.0000	OK
60 minute summer	41	35	43.435	0.010	0.3	0.0019	0.0000	OK
60 minute summer	42	35	43.039	0.009	0.3	0.0015	0.0000	OK
15 minute summer	35	9	43.053	0.008	0.2	0.0015	0.0000	OK
15 minute summer	36	11	42.768	0.008	0.2	0.0013	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
60 minute summer	40	12.001	41	0.1	0.299	0.003	0.0007	
60 minute summer	41	12.002	42	0.3	0.661	0.008	0.0036	
60 minute summer	42	12.003	47	0.3	0.659	0.007	0.0529	
15 minute summer	35	11.000	36	0.2	0.625	0.005	0.0020	
15 minute summer	36	11.001	37	0.2	0.576	0.005	0.0012	

Flow+ v14.0 Copyright © 1988-2025 Causeway Technologies Ltd

Results for 30 year Critical Storm Duration. Lowest mass balance: 90.13%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	1	10	43.578	0.028	1.4	0.0075	0.0000	OK
15 minute summer	5	11	43.167	0.047	3.7	0.0100	0.0000	OK
15 minute summer	6	10	43.414	0.019	1.2	0.0044	0.0000	OK
1440 minute summer	7	1050	43.157	0.202	0.5	0.0321	0.0000	SURCHARGED
1440 minute summer	8	1020	43.157	0.312	0.6	0.0727	0.0000	SURCHARGED
15 minute summer	9	10	43.503	0.088	10.8	0.0911	0.0000	OK
15 minute summer	10	10	43.336	0.096	11.9	0.0223	0.0000	OK
1440 minute summer	15	1080	43.160	0.060	0.4	0.0107	0.0000	OK
1440 minute summer	16	1020	43.165	0.205	2.2	0.0642	0.0000	OK
15 minute summer	19	11	43.216	0.016	0.7	0.0032	0.0000	OK
1440 minute summer	20	1080	43.158	0.093	0.2	0.0148	0.0000	OK
1440 minute summer	21	1050	43.158	0.278	2.7	0.3457	0.0000	OK
15 minute summer	25	10	43.171	0.031	1.5	0.0079	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	1	1.000	2	1.4	0.550	0.076	0.0342	
15 minute summer	5	1.004	7	3.7	0.702	0.207	0.0867	
15 minute summer	6	2.000	7	1.2	0.550	0.034	0.0423	
15 minute summer	7	1.005	8	4.7	0.726	0.265	0.0709	
15 minute summer	8	1.006	28	6.1	0.880	0.338	0.0505	
15 minute summer	9	3.000	10	10.7	0.947	0.603	0.1976	
15 minute summer	10	3.001	11	11.7	0.804	0.653	0.1476	
15 minute summer	15	4.002	16	3.7	0.778	0.204	0.0296	
15 minute summer	16	3.004	21	22.4	1.259	0.254	0.0312	
15 minute summer	19	6.000	20	0.7	0.785	0.020	0.0033	
15 minute summer	20	6.001	21	0.7	0.776	0.018	0.0023	
15 minute summer	21	3.005	27	27.6	1.104	0.382	0.4412	
15 minute summer	25	8.000	26	1.5	0.707	0.083	0.0237	

Flow+ v14.0 Copyright © 1988-2025 Causeway Technologies Ltd

Results for 30 year Critical Storm Duration. Lowest mass balance: 90.13%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute summer	26	1050	43.157	0.132	0.3	0.0210	0.0000	OK
1440 minute summer	27	1080	43.159	0.354	3.7	0.4190	0.0000	SURCHARGED
15 minute summer	23	11	43.183	0.028	1.3	0.0045	0.0000	OK
15 minute summer	22	10	43.268	0.028	1.3	0.0073	0.0000	OK
1440 minute summer	28	1020	43.159	0.539	4.7	0.7385	0.0000	SURCHARGED
1440 minute summer	31	1050	43.157	0.397	0.1	0.0861	0.0000	SURCHARGED
1440 minute summer	32	1020	43.158	0.458	1.0	0.0728	0.0000	SURCHARGED
1440 minute summer	29	1080	43.156	0.156	0.3	0.0311	0.0000	SURCHARGED
1440 minute summer	30	1050	43.157	0.397	0.3	0.0825	0.0000	SURCHARGED
1440 minute summer	33	1050	43.157	0.682	9.7	1.0523	0.0000	SURCHARGED
1440 minute summer	34	1080	43.157	0.707	7.2	0.7991	0.0000	SURCHARGED
1440 minute summer	38	1050	43.155	0.760	9.0	96.4339	0.0000	SURCHARGED
15 minute summer	43	10	43.451	0.041	2.5	0.0147	0.0000	OK
15 minute summer	44	10	43.281	0.026	4.3	0.0076	0.0000	OK
1440 minute summer	45	1050	43.155	0.040	0.1	0.0094	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	26	8.001	27	1.5	0.957	0.040	0.0025	
15 minute summer	27	3.006	28	38.1	1.491	0.175	0.1252	
15 minute summer	23	7.001	24	1.3	0.570	0.070	0.0108	
15 minute summer	22	7.000	23	1.3	0.566	0.072	0.0193	
15 minute summer	28	1.007	33	48.9	1.001	0.273	0.2668	
180 minute summer	31	10.000	32	2.5	0.396	0.127	0.0881	
120 minute summer	32	9.002	33	-3.4	0.903	-0.088	0.0315	
15 minute summer	29	9.000	30	0.8	0.454	0.021	0.0103	
180 minute summer	30	9.001	32	2.6	0.553	0.124	0.0766	
15 minute summer	33	1.008	34	60.7	0.974	0.780	0.3148	
15 minute summer	34	1.009	37	60.6	1.091	0.854	0.2019	
15 minute summer	38	1.011	47	-21.2	-0.648	-0.291	0.6848	
15 minute summer	43	13.000	44	2.5	0.873	0.139	0.0453	
15 minute summer	44	13.001	47	4.3	2.137	0.058	0.0388	
15 minute summer	45	14.000	46	1.2	0.949	0.033	0.0104	

Flow+ v14.0 Copyright © 1988-2025 Causeway Technologies Ltd

Results for 30 year Critical Storm Duration. Lowest mass balance: 90.13%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute summer	46	1050	43.155	0.385	0.1	0.0613	0.0000	SURCHARGED
1440 minute summer	47	1050	43.155	0.805	1.6	0.9767	0.0000	SURCHARGED
15 minute summer	49	11	43.552	0.037	2.5	0.0134	0.0000	OK
1440 minute summer	50	1020	43.155	0.105	0.3	0.3910	0.0000	OK
1440 minute summer	48	1020	43.155	0.910	1.0	1.3104	0.0000	SURCHARGED
1440 minute summer	51	1020	43.155	0.975	1.1	1.2677	0.0000	SURCHARGED
15 minute summer	EX.S.DUMMY	1	43.095	0.000	0.0	0.0000	0.0000	OK
15 minute summer	EX.S01	1	42.960	0.000	0.0	0.0000	0.0000	OK
15 minute summer	52	1	42.920	0.000	0.0	0.0000	0.0000	OK
15 minute summer	53	1	42.800	0.000	0.0	0.0000	0.0000	OK
1440 minute summer	54	1050	42.165	0.020	0.8	0.0228	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	46	14.001	47	1.2	0.940	0.030	0.0470	
15 minute summer	47	1.012	48	-14.9	0.286	-0.207	1.7579	
15 minute summer	49	15.000	50	2.4	0.631	0.135	0.1756	
15 minute summer	50	15.001	51	3.8	1.333	0.097	0.0081	
15 minute summer	48	1.013	51	-9.6	0.230	-0.134	1.1100	
1440 minute summer	51	1.014	54	0.8	0.475	0.015	0.0053	
15 minute summer	EX.S.DUMMY	EX.S1.000	53	0.0	0.000	0.000	0.0000	
15 minute summer	EX.S01	17.000	52	0.0	0.000	0.000	0.0000	
15 minute summer	52	17.001	53	0.0	0.000	0.000	0.0000	
15 minute summer	53	17.002	54	0.0	0.000	0.000	0.0441	
1440 minute summer	54	17.003	EX.S02	0.8	0.482	0.016	0.0091	66.2

Flow+ v14.0 Copyright © 1988-2025 Causeway Technologies Ltd

Results for 30 year Critical Storm Duration. Lowest mass balance: 90.13%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute summer	EX.S02	1050	42.110	0.020	0.8	0.0000	0.0000	OK
15 minute summer	17	10	43.208	0.028	1.4	0.0069	0.0000	OK
15 minute summer	12	11	43.228	0.123	15.8	0.0213	0.0000	OK
1440 minute summer	18	1080	43.157	0.122	0.7	1.1530	0.0000	OK
15 minute summer	2	10	43.442	0.032	1.8	0.0059	0.0000	OK
15 minute summer	3	11	43.362	0.037	2.3	0.0073	0.0000	OK
15 minute summer	4	11	43.250	0.040	2.7	0.0074	0.0000	OK
15 minute summer	11	11	43.274	0.139	15.7	0.0540	0.0000	OK
15 minute summer	13	10	44.117	0.022	1.8	0.0055	0.0000	OK
15 minute summer	14	10	43.880	0.030	3.4	0.0075	0.0000	OK
1440 minute summer	24	1080	43.157	0.127	0.8	0.2068	0.0000	OK
1440 minute summer	37	1050	43.156	0.721	5.4	0.9005	0.0000	SURCHARGED
30 minute summer	39	19	43.557	0.012	0.2	0.0020	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	17	5.000	18	1.4	0.503	0.076	0.0403	
15 minute summer	12	3.003	16	15.9	1.089	0.878	0.0979	
15 minute summer	18	5.001	21	2.2	0.681	0.122	0.0154	
15 minute summer	2	1.001	3	1.7	0.561	0.095	0.0257	
15 minute summer	3	1.002	4	2.3	0.646	0.130	0.0408	
15 minute summer	4	1.003	5	2.7	0.642	0.149	0.0363	
15 minute summer	11	3.002	12	15.6	0.960	0.835	0.0440	
15 minute summer	13	4.000	14	1.8	0.892	0.045	0.0100	
15 minute summer	14	4.001	15	3.4	0.916	0.085	0.0577	
15 minute summer	24	7.002	27	8.0	0.930	0.154	0.1296	
15 minute summer	37	1.010	38	64.2	2.105	0.860	0.5000	
30 minute summer	39	12.000	40	0.2	0.412	0.011	0.0017	

Flow+ v14.0 Copyright © 1988-2025 Causeway Technologies Ltd

Results for 30 year Critical Storm Duration. Lowest mass balance: 90.13%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
30 minute summer	40	19	43.518	0.008	0.2	0.0013	0.0000	OK
30 minute summer	41	19	43.439	0.014	0.7	0.0028	0.0000	OK
1440 minute summer	42	1050	43.155	0.125	0.1	0.0199	0.0000	OK
1440 minute summer	35	1050	43.156	0.111	0.4	0.0209	0.0000	OK
1440 minute summer	36	1050	43.156	0.396	0.4	0.0630	0.0000	SURCHARGED

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
30 minute summer	40	12.001	41	0.2	0.344	0.005	0.0012	
30 minute summer	41	12.002	42	0.7	0.852	0.018	0.0065	
30 minute summer	42	12.003	47	0.7	0.675	0.017	0.0959	
15 minute summer	35	11.000	36	0.5	0.765	0.013	0.0038	
240 minute summer	36	11.001	37	-3.9	0.475	-0.098	0.0628	

Flow+ v14.0 Copyright © 1988-2025 Causeway Technologies Ltd

Results for 100 year +20% CC Critical Storm Duration. Lowest mass balance: 90.13%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute summer	1	1170	44.110	0.560	0.2	0.1501	0.0000	SURCHARGED
1440 minute summer	5	1170	44.110	0.990	0.7	0.2128	0.0000	SURCHARGED
1440 minute summer	6	1170	44.110	0.715	0.3	0.1660	0.0000	SURCHARGED
1440 minute summer	7	1170	44.110	1.155	0.8	0.1836	0.0000	SURCHARGED
1440 minute summer	8	1170	44.110	1.265	0.8	0.2947	0.0000	SURCHARGED
1440 minute summer	9	1110	44.120	0.705	1.5	0.7292	0.0000	SURCHARGED
1440 minute summer	10	1140	44.119	0.879	1.7	0.2048	0.0000	SURCHARGED
1440 minute summer	15	1170	44.118	1.018	0.6	0.1822	0.0000	SURCHARGED
1440 minute summer	16	1170	44.125	1.165	3.3	0.3657	0.0000	SURCHARGED
1440 minute summer	19	1170	44.114	0.914	0.3	0.1856	0.0000	SURCHARGED
1440 minute summer	20	1170	44.116	1.051	0.6	0.1670	0.0000	SURCHARGED
1440 minute summer	21	1200	44.109	1.229	5.1	1.5269	0.0000	SURCHARGED
1440 minute summer	25	1140	44.110	0.970	0.3	0.2484	0.0000	SURCHARGED

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	1	1.000	2	2.1	0.609	0.116	0.0467	
15 minute summer	5	1.004	7	5.7	0.772	0.321	0.1221	
15 minute summer	6	2.000	7	1.8	0.592	0.052	0.0598	
15 minute summer	7	1.005	8	7.4	0.780	0.413	0.1029	
15 minute summer	8	1.006	28	9.5	0.952	0.527	0.0879	
15 minute summer	9	3.000	10	15.7	0.981	0.885	0.3082	
15 minute summer	10	3.001	11	16.8	0.952	0.933	0.1806	
15 minute summer	15	4.002	16	5.8	0.853	0.317	0.0442	
15 minute summer	16	3.004	21	32.5	1.295	0.368	0.0443	
15 minute summer	19	6.000	20	1.1	0.892	0.032	0.0045	
720 minute summer	20	6.001	21	3.9	0.472	0.099	0.0286	
15 minute summer	21	3.005	27	40.3	1.167	0.558	0.6239	
15 minute summer	25	8.000	26	2.4	0.796	0.131	0.0332	

Flow+ v14.0 Copyright © 1988-2025 Causeway Technologies Ltd

Results for 100 year +20% CC Critical Storm Duration. Lowest mass balance: 90.13%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute summer	26	1170	44.110	1.085	0.5	0.1725	0.0000	SURCHARGED
1440 minute summer	27	1140	44.111	1.306	6.7	1.5465	0.0000	FLOOD RISK
1440 minute summer	23	1140	44.110	0.955	0.4	0.1518	0.0000	FLOOD RISK
1440 minute summer	22	1140	44.110	0.870	0.4	0.2271	0.0000	FLOOD RISK
1440 minute summer	28	1140	44.110	1.490	5.6	2.0425	0.0000	FLOOD RISK
1440 minute summer	31	1170	44.110	1.350	2.0	0.2930	0.0000	SURCHARGED
1440 minute summer	32	1170	44.110	1.410	2.4	0.2241	0.0000	SURCHARGED
1440 minute summer	29	1170	44.110	1.110	0.2	0.2220	0.0000	SURCHARGED
1440 minute summer	30	1170	44.111	1.351	2.1	0.2809	0.0000	SURCHARGED
1440 minute summer	33	1140	44.112	1.637	13.7	2.5271	0.0000	SURCHARGED
1440 minute summer	34	1140	44.112	1.662	9.6	1.8796	0.0000	SURCHARGED
1440 minute summer	38	1170	44.107	1.712	10.3	101.5234	0.0000	SURCHARGED
1440 minute summer	43	1140	44.107	0.697	0.4	0.2517	0.0000	SURCHARGED
1440 minute summer	44	1170	44.107	0.852	0.7	0.2495	0.0000	SURCHARGED
1440 minute summer	45	1170	44.107	0.992	0.3	0.2312	0.0000	SURCHARGED

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	26	8.001	27	2.4	1.074	0.064	0.0036	
15 minute summer	27	3.006	28	56.8	1.469	0.261	0.2319	
15 minute summer	23	7.001	24	2.0	0.644	0.109	0.0149	
15 minute summer	22	7.000	23	2.0	0.633	0.112	0.0267	
15 minute summer	28	1.007	33	72.7	1.038	0.405	0.3776	
15 minute summer	31	10.000	32	2.3	0.560	0.120	0.0674	
15 minute summer	32	9.002	33	5.2	1.019	0.136	0.0313	
360 minute summer	29	9.000	30	1.5	0.333	0.042	0.1022	
15 minute summer	30	9.001	32	3.0	0.724	0.142	0.0609	
15 minute summer	33	1.008	34	89.4	1.269	1.148	0.3561	
15 minute summer	34	1.009	37	89.2	1.311	1.257	0.2566	
15 minute summer	38	1.011	47	-32.3	-0.881	-0.444	0.7316	
15 minute summer	43	13.000	44	3.9	0.991	0.217	0.0609	
15 minute summer	44	13.001	47	6.6	2.241	0.090	0.0442	
15 minute summer	45	14.000	46	1.8	1.078	0.049	0.0139	

Flow+ v14.0 Copyright © 1988-2025 Causeway Technologies Ltd

Results for 100 year +20% CC Critical Storm Duration. Lowest mass balance: 90.13%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute summer	46	1170	44.107	1.337	0.4	0.2125	0.0000	SURCHARGED
1440 minute summer	47	1140	44.109	1.759	3.2	2.1331	0.0000	SURCHARGED
1440 minute summer	49	1140	44.108	0.593	0.6	0.2141	0.0000	SURCHARGED
1440 minute summer	50	1140	44.108	1.058	2.9	19.0704	0.0000	FLOOD RISK
1440 minute summer	48	1140	44.107	1.862	3.5	2.6819	0.0000	SURCHARGED
1440 minute summer	51	1140	44.108	1.928	3.7	2.5066	0.0000	FLOOD RISK
15 minute summer	EX.S.DUMMY	1	43.095	0.000	0.0	0.0000	0.0000	OK
15 minute summer	EX.S01	1	42.960	0.000	0.0	0.0000	0.0000	OK
15 minute summer	52	1	42.920	0.000	0.0	0.0000	0.0000	OK
15 minute summer	53	1	42.800	0.000	0.0	0.0000	0.0000	OK
1440 minute summer	54	1140	42.168	0.023	1.1	0.0265	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	46	14.001	47	1.8	0.982	0.044	0.0526	
15 minute summer	47	1.012	48	-23.0	-0.335	-0.321	1.7642	
15 minute summer	49	15.000	50	3.8	0.734	0.210	0.2348	
15 minute summer	50	15.001	51	6.0	1.487	0.151	0.0114	
15 minute summer	48	1.013	51	-12.8	0.247	-0.181	1.1100	
1440 minute summer	51	1.014	54	1.1	0.515	0.020	0.0067	
15 minute summer	EX.S.DUMMY	EX.S1.000	53	0.0	0.000	0.000	0.0000	
15 minute summer	EX.S01	17.000	52	0.0	0.000	0.000	0.0000	
15 minute summer	52	17.001	53	0.0	0.000	0.000	0.0000	
15 minute summer	53	17.002	54	0.0	0.000	0.000	0.0457	
1440 minute summer	54	17.003	EX.S02	1.1	0.526	0.021	0.0114	85.3

Flow+ v14.0 Copyright © 1988-2025 Causeway Technologies Ltd

Results for 100 year +20% CC Critical Storm Duration. Lowest mass balance: 90.13%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute summer	EX.S02	1140	42.113	0.023	1.1	0.0000	0.0000	OK
1440 minute summer	17	1140	44.111	0.931	0.2	0.2291	0.0000	SURCHARGED
1440 minute summer	12	1170	44.120	1.015	2.3	0.1756	0.0000	SURCHARGED
1440 minute summer	18	1170	44.113	1.078	2.2	6.3884	0.0000	SURCHARGED
1440 minute summer	2	1170	44.110	0.700	0.3	0.1288	0.0000	SURCHARGED
1440 minute summer	3	1170	44.110	0.785	0.4	0.1547	0.0000	SURCHARGED
1440 minute summer	4	1170	44.110	0.900	0.6	0.1647	0.0000	SURCHARGED
1440 minute summer	11	1140	44.120	0.985	2.3	0.3820	0.0000	SURCHARGED
15 minute summer	13	10	44.122	0.027	2.8	0.0068	0.0000	OK
1440 minute summer	14	1170	44.119	0.269	0.5	0.0677	0.0000	SURCHARGED
1440 minute summer	24	1140	44.110	1.080	1.2	1.7515	0.0000	FLOOD RISK
1440 minute summer	37	1170	44.107	1.672	10.1	2.0883	0.0000	SURCHARGED
1440 minute summer	39	1140	44.107	0.562	0.3	0.0973	0.0000	SURCHARGED

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	17	5.000	18	2.1	0.565	0.115	0.0559	
15 minute summer	12	3.003	16	22.5	1.280	1.243	0.1152	
360 minute summer	18	5.001	21	-4.6	0.526	-0.247	0.0819	
15 minute summer	2	1.001	3	2.6	0.626	0.146	0.0353	
15 minute summer	3	1.002	4	3.5	0.713	0.197	0.0562	
15 minute summer	4	1.003	5	4.2	0.709	0.228	0.0503	
15 minute summer	11	3.002	12	22.3	1.266	1.191	0.0476	
15 minute summer	13	4.000	14	2.8	1.013	0.070	0.0138	
15 minute summer	14	4.001	15	5.3	1.035	0.134	0.0808	
15 minute summer	24	7.002	27	12.4	1.045	0.240	0.1795	
15 minute summer	37	1.010	38	93.9	2.140	1.258	0.6191	
480 minute summer	39	12.000	40	0.5	0.329	0.027	0.0582	

Flow+ v14.0 Copyright © 1988-2025 Causeway Technologies Ltd

Results for 100 year +20% CC Critical Storm Duration. Lowest mass balance: 90.13%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute summer	40	1140	44.110	0.600	0.5	0.0954	0.0000	SURCHARGED
1440 minute summer	41	1110	44.108	0.683	0.6	0.1359	0.0000	SURCHARGED
1440 minute summer	42	1170	44.108	1.078	0.6	0.1714	0.0000	SURCHARGED
1440 minute summer	35	1170	44.108	1.063	0.3	0.2009	0.0000	SURCHARGED
1440 minute summer	36	1170	44.108	1.348	3.3	0.2143	0.0000	SURCHARGED

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
360 minute summer	40	12.001	41	0.8	0.300	0.021	0.0347	
15 minute summer	41	12.002	42	1.1	0.973	0.028	0.0090	
15 minute summer	42	12.003	47	1.1	0.781	0.027	0.0979	
15 minute summer	35	11.000	36	0.8	0.879	0.020	0.0087	
1440 minute summer	36	11.001	37	-3.2	-0.182	-0.081	0.0628	

Flow+ v14.0 Copyright © 1988-2025 Causeway Technologies Ltd

Appendix B WASTEWATER CALCULATIONS

- As per Uisce Éireann Code of Practice for Wastewater Infrastructure, IW-CDS-5030-03
- Generated by Causeway Flow (Causeway Technologies Ltd.)

Design Settings

Frequency of use (kDU)	0.00	Additional Flow (%)	0	Preferred Cover Depth (m)	1.200
Flow per dwelling per day (l/day)	600	Minimum Velocity (m/s)	0.75	Include Intermediate Ground	✓
Domestic Flow (l/s/ha)	0.0	Connection Type	Level Soffits		
Industrial Flow (l/s/ha)	0.0	Minimum Backdrop Height (m)	0.200		

Nodes

	Name	Dwellings	Add Inflow (l/s)	Cover Level (m)	Node Type	Manhole Type	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
✓	F01	124	0.6	44.668	Manhole	Adoptable	1200	722866.384	727170.299	1.518
✓	F02			44.538	Manhole	Adoptable	1200	722855.188	727168.225	1.533
✓	F03			44.446	Manhole	Adoptable	1200	722858.235	727151.774	1.651
✓	F04			44.148	Manhole	Adoptable	1200	722873.399	727154.569	1.548
✓	F05			43.956	Manhole	Adoptable	1200	722879.215	727133.428	1.631
✓	F06	88		43.905	Manhole	Adoptable	1200	722886.926	727143.450	1.315
✓	F07			43.877	Manhole	Adoptable	1200	722892.781	727123.972	1.777
✓	F08	88	0.6	43.857	Manhole	Adoptable	1200	722876.679	727113.084	1.267
✓	F09			43.873	Manhole	Adoptable	1200	722888.626	727121.142	1.898
✓	F10			44.554	Manhole	Adoptable	1200	722898.370	727106.862	2.709

Flow+ v14.0 Copyright © 1988-2025 Causeway Technologies Ltd

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	Velocity Equation	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	Link Type	Con Offset (m)
F1.000	F01	F02	11.386	1.500	Colebrook-White	43.150	43.005	0.145	78.5	150	Circular	
F1.001	F02	F03	16.731	1.500	Colebrook-White	43.005	42.795	0.210	79.7	150	Circular	
F1.002	F03	F04	15.419	1.500	Colebrook-White	42.795	42.600	0.195	79.1	150	Circular	
F1.003	F04	F05	21.926	1.500	Colebrook-White	42.600	42.325	0.275	79.7	150	Circular	
F1.004	F05	F09	15.476	1.500	Colebrook-White	42.325	42.050	0.275	56.3	150	Circular	
F2.000	F06	F07	20.339	1.500	Colebrook-White	42.590	42.100	0.490	41.5	150	Circular	
F2.001	F07	F09	5.027	1.500	Colebrook-White	42.100	41.975	0.125	40.2	150	Circular	
F3.000	F08	F09	14.410	1.500	Colebrook-White	42.590	41.975	0.615	23.4	150	Circular	0.000
F1.005	F09	F10	17.288	1.500	Colebrook-White	41.975	41.845	0.130	133.0	225	Circular	

Name	US Node	DS Node	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Minimum Depth (m)	Maximum Depth (m)	Σ Area (ha)	Σ Dwellings (ha)	Σ Units (ha)	Σ Add Inflow (ha)	Pro Depth (mm)	Pro Velocity (m/s)
F1.000	F01	F02	0.989	17.5	1.5	1.368	1.383	1.368	1.534	0.000	124	0.0	0.6	30	0.595
F1.001	F02	F03	0.982	17.3	1.5	1.383	1.501	1.383	1.588	0.000	124	0.0	0.6	30	0.591
F1.002	F03	F04	0.985	17.4	1.5	1.501	1.398	1.334	1.501	0.000	124	0.0	0.6	30	0.593
F1.003	F04	F05	0.981	17.3	1.5	1.398	1.481	1.336	1.481	0.000	124	0.0	0.6	30	0.590
F1.004	F05	F09	1.169	20.7	1.5	1.481	1.673	1.481	1.673	0.000	124	0.0	0.6	27	0.668
F2.000	F06	F07	1.362	24.1	0.6	1.165	1.627	1.165	1.627	0.000	88	0.0	0.0	17	0.564
F2.001	F07	F09	1.384	24.5	0.6	1.627	1.748	1.627	1.748	0.000	88	0.0	0.0	17	0.573
F3.000	F08	F09	1.815	32.1	1.2	1.117	1.748	1.117	1.748	0.000	88	0.0	0.6	20	0.856
F1.005	F09	F10	0.995	39.5	3.3	1.673	2.484	1.656	2.484	0.000	300	0.0	1.2	44	0.597

Flow+ v14.0 Copyright © 1988-2025 Causeway Technologies Ltd

Appendix C UISCE ÉIREANN COF

CONFIRMATION OF FEASIBILITY

Shaun Doody

O'Connor Sutton Cronin
9 Prussia Street
Dubin
D07KT57

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

Uisce Éireann
PO Box 448
South City
Delivery Office
Cork City

www.water.ie

13 February 2026

Our Ref: CDS25009754 Pre-Connection Enquiry
Bakers Corner, Rochestown Avenue & Kill Avenue, Dun Laoghaire, Dublin

Dear Applicant/Agent,

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

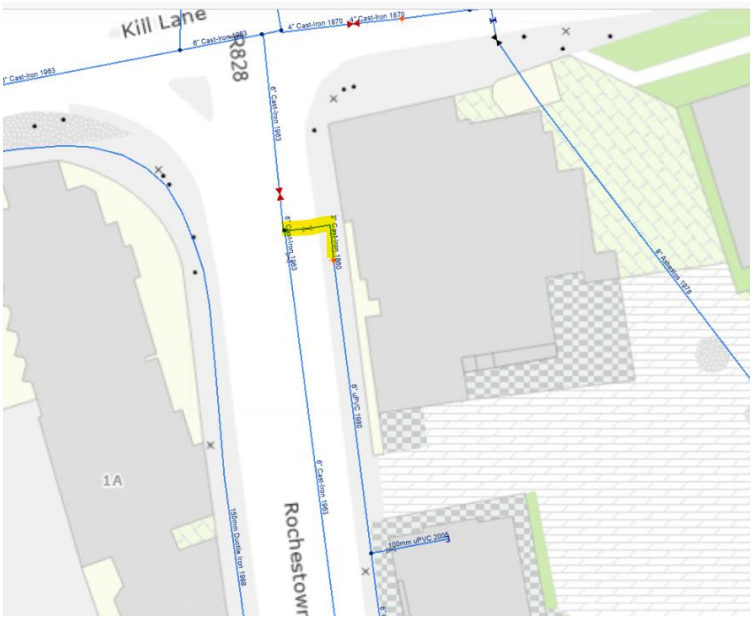
Uisce Éireann has reviewed the pre-connection enquiry in relation to a Water & Wastewater connection for a Multi/Mixed Use Development of 303 unit(s) at Bakers Corner, Rochestown Avenue & Kill Avenue, Dun Laoghaire, Dublin, (the **Development)**.

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

- **Water Connection** - Feasible Subject to upgrades

- In order to accommodate the proposed connection, approximately 10m of the existing 3" CI main (highlighted in yellow) on Rochestown Avenue must be upgraded to 6" main. The Developer will be required to fund the upgrade works. The fee will be calculated at a connection application stage.

Stiúrthóirí / Directors: Niall Gleeson (POF / CEO), Jerry Grant (Cathaoirleach / Chairperson), Gerard Britchfield, Liz Joyce, Michael Nolan, Patricia King, Eileen Maher, Cathy Mannion, Paul Reid, Michael Walsh.
Oifig Chláraithe / Registered Office: Teach Colvill, 24-26 Sráid Thalbóid, Baile Átha Cliath 1, D01 NP86 / Colvill House, 24-26 Talbot Street, Dublin, Ireland D01NP86
Is cuideachta ghníomhaíochta ainmnithe atá faoi theorainn scaireanna é Uisce Éireann / Uisce Éireann is a designated activity company, limited by shares.
Cláraithe in Éirinn Uimh.: 530363 / Registered in Ireland No.: 530363.



- As per Uisce Éireann GIS records (please see Section B of this letter), Uisce Éireann assets are present on the site. The Developer must demonstrate that proposed structures and works will not inhibit access for maintenance or endanger structural or functional integrity of the assets during and after the works. For design submissions and queries related to diversion/build near or over, please contact UÉ Diversion Team via email address diversions@water.ie

- **Wastewater Connection** - Feasible without infrastructure upgrade by Uisce Éireann

- As per Uisce Éireann GIS records (please see Section B of this letter), Uisce Éireann assets are present on the site. The Developer must demonstrate that proposed structures and works will not inhibit access for maintenance or endanger structural or functional integrity of the assets during and after the works. For design submissions and queries related to diversion/build near or over, please contact UÉ Diversion Team via email address diversions@water.ie

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

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

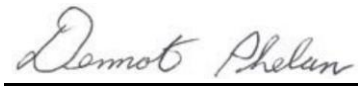
Where can you find more information?

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

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

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

Yours sincerely,



Dermot Phelan
Connections and Developer Services

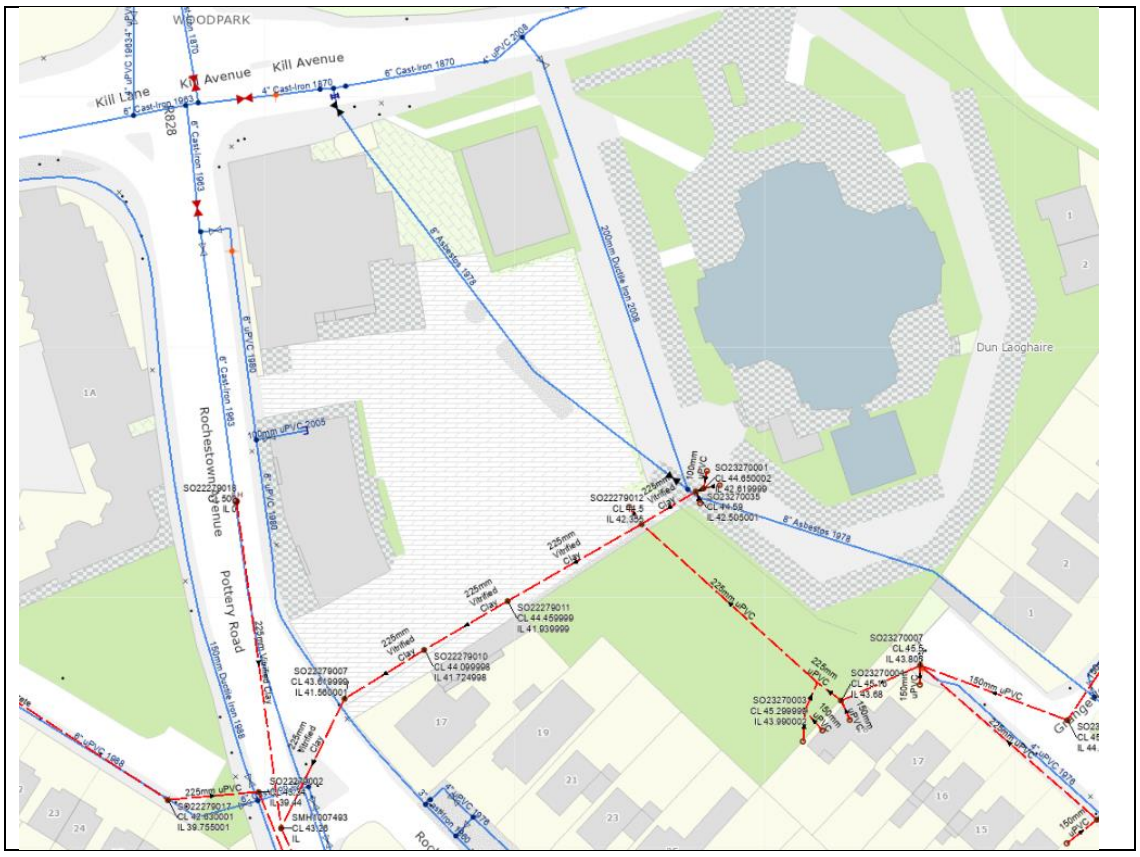
Section A - What is important to know?

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

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

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

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

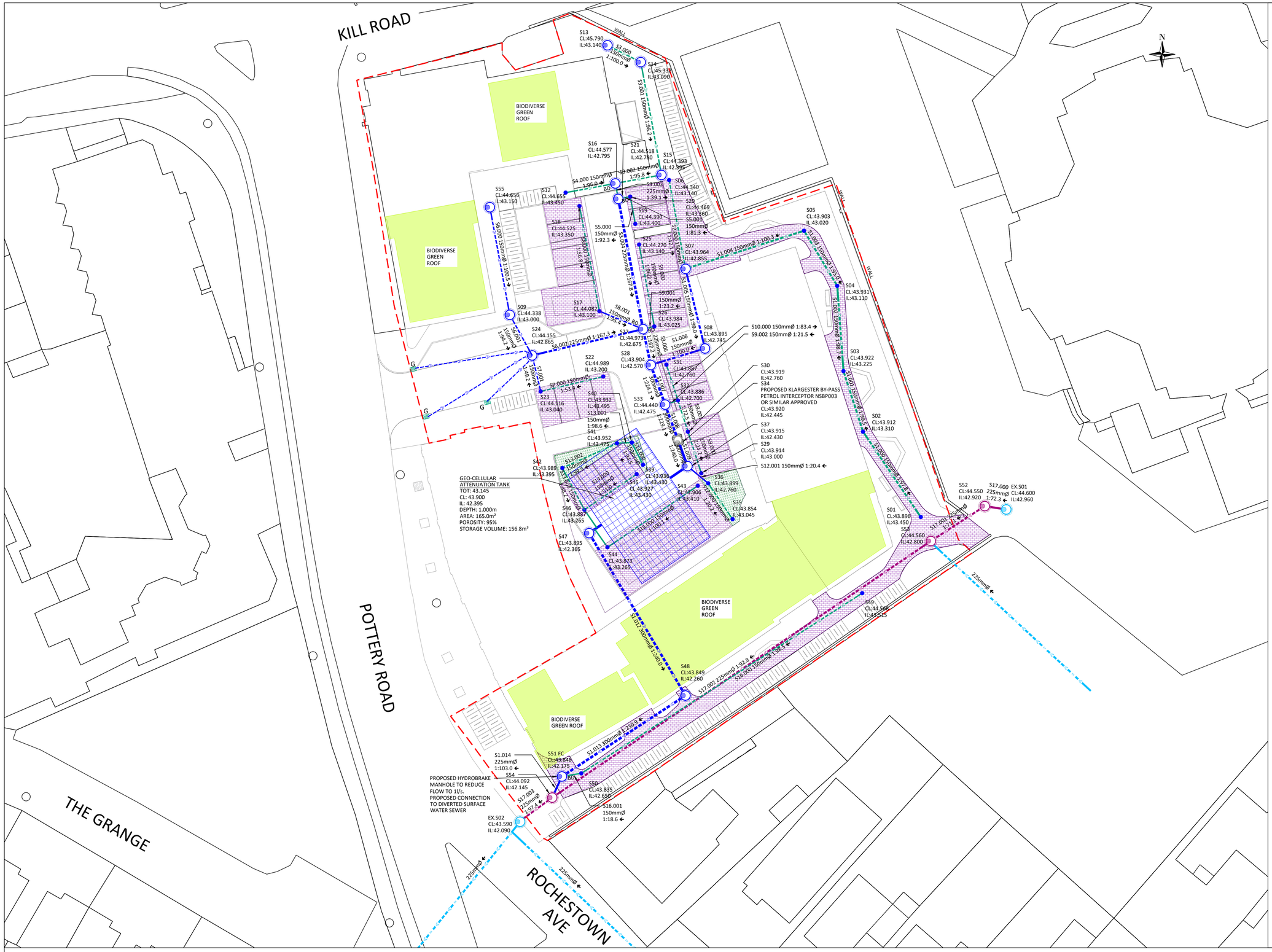


Reproduced from the Ordnance Survey of Ireland by Permission of the Government. License No. 3-3-34

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

Whilst every care has been taken in respect of the information on Uisce Éireann's network(s), Uisce Éireann assumes no responsibility for and gives no guarantees, undertakings or warranties concerning the accuracy, completeness or up to date nature of the information provided, nor does it accept any liability whatsoever arising from or out of any errors or omissions. This information should not be solely relied upon in the event of excavations or any other works being carried out in the vicinity of Uisce Éireann's underground network(s). The onus is on the parties carrying out excavations or any other works to ensure the exact location of Uisce Éireann's underground network(s) is identified prior to excavations or any other works being carried out. Service connection pipes are not generally shown but their presence should be anticipated.

Appendix D OCSC DRAWINGS



LEGEND:

- EXTENT OF WORKS BOUNDARY
- EXISTING SURFACE DRAINAGE
- uPVC TWINWALL SURFACE WATER DRAINAGE OR SIMILAR APPROVED
- 1200mmØ SURFACE DRAINAGE PRECAST CONCRETE MANHOLE
- PROPOSED SURFACE WATER DRAINAGE DIVERSION
- PROPOSED SURFACE PLASTIC INSPECTION CHAMBER
- TRAPPED ROAD GULLY
- SURFACE WATER ATTENUATION
- PERMEABLE SOFT LANDSCAPE
- PERMEABLE HARD LANDSCAPE
- GREEN ROOF CATCHMENT AREA
- uPVC TWINWALL PERFORATED SURFACE WATER DRAINAGE OR SIMILAR APPROVED
- PETROL INTERCEPTOR

FOR CONSTRUCTION

- THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DESIGN TEAM DRAWINGS AND SPECIFICATIONS.
- FOR SETTING OUT REFER TO ARCHITECT'S DRAWINGS. DO NOT SCALE THIS DRAWING. USE FIGURED DIMENSIONS ONLY.
- NO PART OF THIS DOCUMENT MAY BE REPRODUCED OR TRANSMITTED IN ANY FORM OR STORED IN ANY RETRIEVAL SYSTEM OF ANY NATURE WITHOUT THE WRITTEN PERMISSION OF O'CONNOR SUTTON CRONIN AS COPYRIGHT HOLDER EXCEPT AS AGREED FOR USE ON THE PROJECT FOR WHICH THE DOCUMENT WAS ORIGINALLY ISSUED.

Rev No.	Date	Revision Note	Drn by	Chkd by
C01	10.10.25	ISSUED FOR CONSTRUCTION	EK	SD
C02	18.12.25	ISSUED FOR CONSTRUCTION	EK	SD

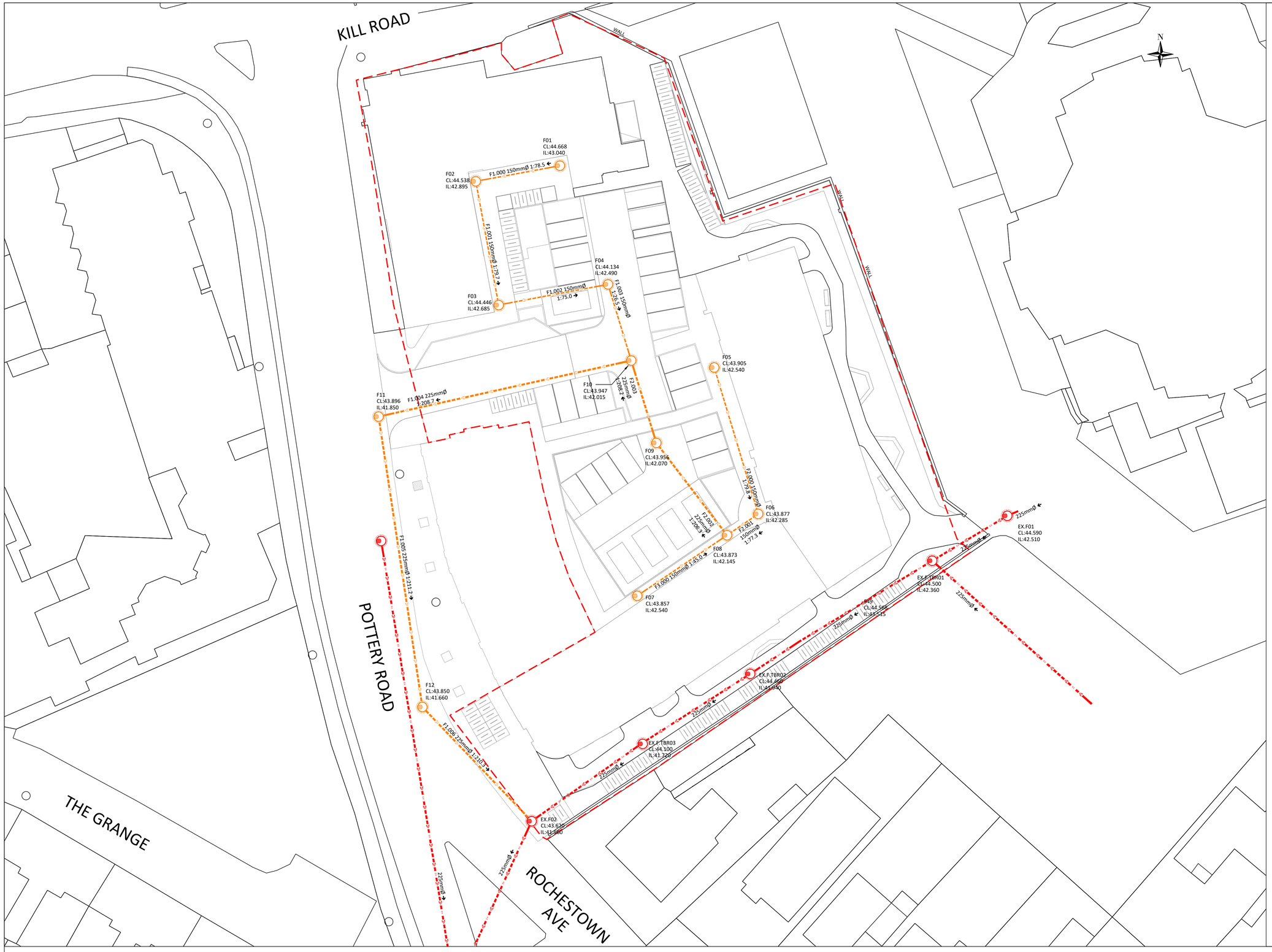
Rev No.	Date	Revision Note	Drn by	Chkd by

OCSC
O'CONNOR SUTTON CRONIN
MULTIDISCIPLINARY CONSULTING ENGINEERS
Civil / Structural / Environmental / Mechanical / Electrical / Sustainability
Dublin Office: 9 Prussia Street, Dublin 7. D07 KT57.
Tel: +353 (0)1 8682000 Web: www.ocsc.ie
Dublin · London · Belfast · Galway · Cork · Birmingham

Client: BAKERS FORGE PROPERTIES LTD
Project: BAKERS FORGE
22 WINDSOR PLACE, DUBLIN 2, D02 HK02
Title: SURFACE DRAINAGE PLAN

Code	Originator	Zone	Level	Type	Role	Number	Status	Revision
G538	OCSC	XX	XX	DR	C	0500	S2	C02

Date:SEP '25 Scale @ A1: 1:250 Drn by:EK Chkd by:SD Aprvd by:SD



LEGEND:

EXTENT OF WORKS BOUNDARY

EXISTING WASTEWATER DRAINAGE

uPVC SN8 WASTEWATER DRAINAGE
OR SIMILAR APPROVED

1200mmØ WASTEWATER DRAINAGE
PRECAST CONCRETE MANHOLE

PROPOSED FOUL WATER
PLASTIC INSPECTION CHAMBER

FOR CONSTRUCTION

- THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DESIGN TEAM DRAWINGS AND SPECIFICATIONS.
- FOR SETTING OUT REFER TO ARCHITECT'S DRAWINGS. DO NOT SCALE THIS DRAWING. USE FIGURED DIMENSIONS ONLY.
- NO PART OF THIS DOCUMENT MAY BE REPRODUCED OR TRANSMITTED IN ANY FORM OR STORED IN ANY RETRIEVAL SYSTEM OF ANY NATURE WITHOUT THE WRITTEN PERMISSION OF O'CONNOR SUTTON CRONIN AS COPYRIGHT HOLDER EXCEPT AS AGREED FOR USE ON THE PROJECT FOR WHICH THE DOCUMENT WAS ORIGINALLY ISSUED.

Rev No.	Date	Revision Note	Drn by	Chkd by
C01	10.10.25	ISSUED FOR CONSTRUCTION	EK	SD
C02	18.12.25	ISSUED FOR CONSTRUCTION	EK	SD
C03	28.01.26	ISSUED FOR CONSTRUCTION	EK	SD

Rev No.	Date	Revision Note	Drn by	Chkd by

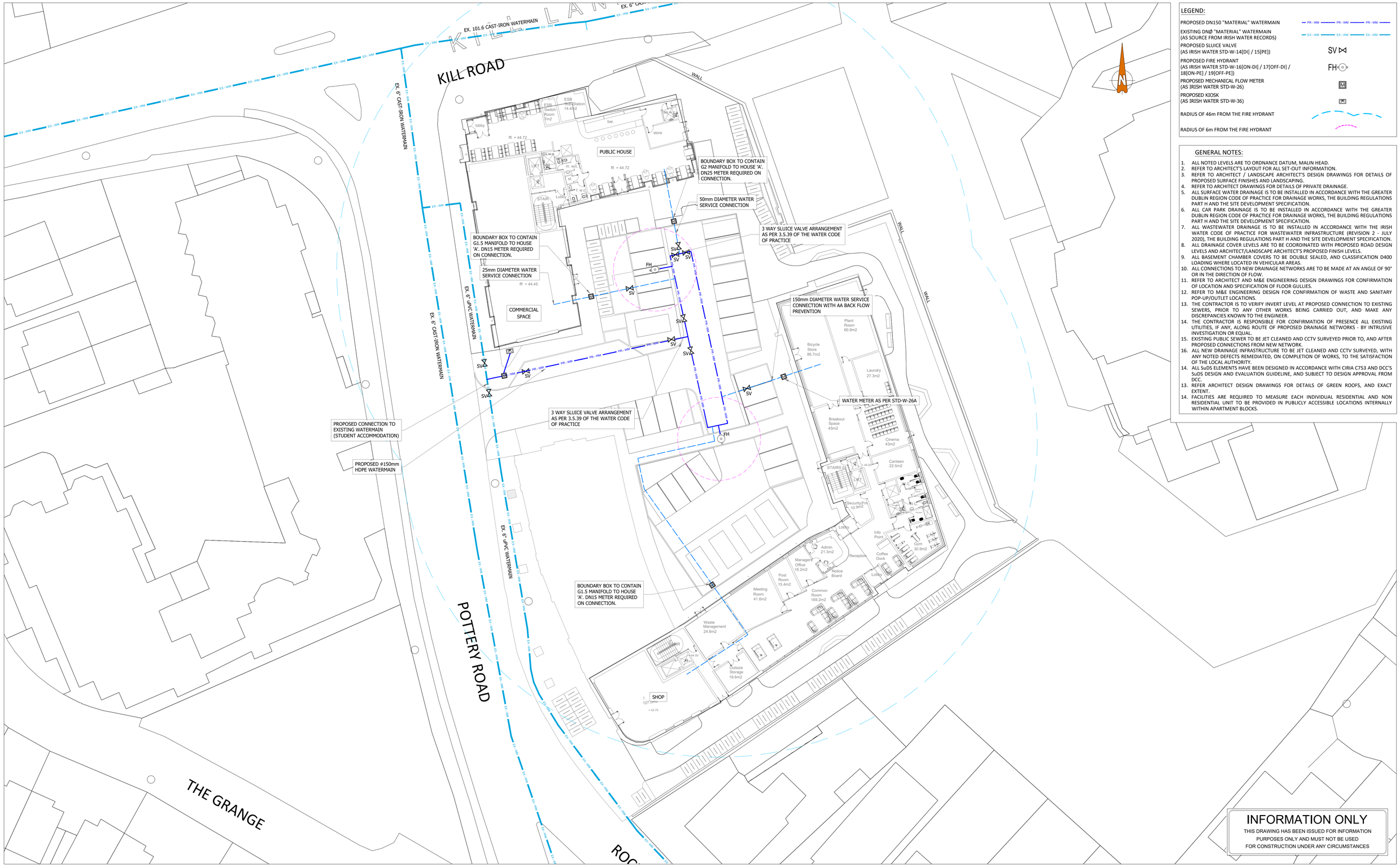
BIM Design and Construction VERIFIED

OCSC
O'CONNOR SUTTON CRONIN
MULTIDISCIPLINARY CONSULTING ENGINEERS
Civil / Structural / Environmental / Mechanical / Electrical / Sustainability
Dublin Office: 9 Prussia Street, Dublin 7. D07 KT57.
Tel: +353 (0)1 8682000 Web: www.ocsc.ie
Dublin · London · Belfast · Galway · Cork · Birmingham

Client: BAKERS FORGE PROPERTIES LTD
Project: BAKERS FORGE
22 WINDSOR PLACE, DUBLIN 2, D02 HK02
Title: FOUL DRAINAGE PLAN

Code	Originator	Zone	Level	Type	Role	Number	Status	Revision
G538	OCSC	XX	XX	DR	C	0501	S2	C03

Date:SEP '25 Scale @ A1:1:250 Drn by:EK Chkd by:SD Aprvd by:SD



LEGEND:

PROPOSED DN150 "MATERIAL" WATERMAIN	PR - WM
EXISTING DNØ "MATERIAL" WATERMAIN (AS SOURCE FROM IRISH WATER RECORDS)	EX - WM
PROPOSED SLUICE VALVE (AS IRISH WATER STD-W-14[DI] / 15[PE])	SV
PROPOSED FIRE HYDRANT (AS IRISH WATER STD-W-16[ON-DI] / 17[OFF-DI] / 18[ON-PE] / 19[OFF-PE])	FH
PROPOSED MECHANICAL FLOW METER (AS IRISH WATER STD-W-26)	M
PROPOSED KIOSK (AS IRISH WATER STD-W-36)	
RADIUS OF 46m FROM THE FIRE HYDRANT	
RADIUS OF 6m FROM THE FIRE HYDRANT	

GENERAL NOTES:

1. ALL NOTED LEVELS ARE TO ORDNANCE DATUM, MALIN HEAD.
2. REFER TO ARCHITECT'S LAYOUT FOR ALL SET-OUT INFORMATION.
3. REFER TO ARCHITECT / LANDSCAPE ARCHITECT'S DESIGN DRAWINGS FOR DETAILS OF PROPOSED SURFACE FINISHES AND LANDSCAPING.
4. REFER TO ARCHITECT DRAWINGS FOR DETAILS OF PRIVATE DRAINAGE.
5. ALL SURFACE WATER DRAINAGE IS TO BE INSTALLED IN ACCORDANCE WITH THE GREATER DUBLIN REGION CODE OF PRACTICE FOR DRAINAGE WORKS, THE BUILDING REGULATIONS PART H AND THE SITE DEVELOPMENT SPECIFICATION.
6. ALL CAR PARK DRAINAGE IS TO BE INSTALLED IN ACCORDANCE WITH THE GREATER DUBLIN REGION CODE OF PRACTICE FOR DRAINAGE WORKS, THE BUILDING REGULATIONS PART H AND THE SITE DEVELOPMENT SPECIFICATION.
7. ALL WASTEWATER DRAINAGE IS TO BE INSTALLED IN ACCORDANCE WITH THE IRISH WATER CODE OF PRACTICE FOR WASTEWATER INFRASTRUCTURE (REVISION 2 - JULY 2020), THE BUILDING REGULATIONS PART H AND THE SITE DEVELOPMENT SPECIFICATION.
8. ALL DRAINAGE COVER LEVELS ARE TO BE COORDINATED WITH PROPOSED ROAD DESIGN LEVELS AND ARCHITECT/LANDSCAPE ARCHITECT'S PROPOSED FINISH LEVELS.
9. ALL BASEMENT CHAMBER COVERS TO BE DOUBLE SEALED, AND CLASSIFICATION D400 LOADING WHERE LOCATED IN VEHICULAR AREAS.
10. ALL CONNECTIONS TO NEW DRAINAGE NETWORKS ARE TO BE MADE AT AN ANGLE OF 90° OR IN THE DIRECTION OF FLOW.
11. REFER TO ARCHITECT AND M&E ENGINEERING DESIGN DRAWINGS FOR CONFIRMATION OF LOCATION AND SPECIFICATION OF FLOOR GULLIES.
12. REFER TO M&E ENGINEERING DESIGN FOR CONFIRMATION OF WASTE AND SANITARY POP-UP/OUTLET LOCATIONS.
13. THE CONTRACTOR IS TO VERIFY INVERT LEVEL AT PROPOSED CONNECTION TO EXISTING SEWERS, PRIOR TO ANY OTHER WORKS BEING CARRIED OUT, AND MAKE ANY DISCREPANCIES KNOWN TO THE ENGINEER.
14. THE CONTRACTOR IS RESPONSIBLE FOR CONFIRMATION OF PRESENCE ALL EXISTING UTILITIES, IF ANY, ALONG ROUTE OF PROPOSED DRAINAGE NETWORKS - BY INTRUSIVE INVESTIGATION OR EQUAL.
15. EXISTING PUBLIC SEWER TO BE JET CLEANED AND CCTV SURVEYED PRIOR TO, AND AFTER PROPOSED CONNECTIONS FROM NEW NETWORK.
16. ALL NEW DRAINAGE INFRASTRUCTURE TO BE JET CLEANED AND CCTV SURVEYED, WITH ANY NOTED DEFECTS REMEDIATED, ON COMPLETION OF WORKS, TO THE SATISFACTION OF THE LOCAL AUTHORITY.
14. ALL SuDS ELEMENTS HAVE BEEN DESIGNED IN ACCORDANCE WITH CIRIA C753 AND DCC'S SuDS DESIGN AND EVALUATION GUIDELINE, AND SUBJECT TO DESIGN APPROVAL FROM DCC.
13. REFER ARCHITECT DESIGN DRAWINGS FOR DETAILS OF GREEN ROOFS, AND EXACT EXTENT.
14. FACILITIES ARE REQUIRED TO MEASURE EACH INDIVIDUAL RESIDENTIAL AND NON RESIDENTIAL UNIT TO BE PROVIDED IN PUBLICLY ACCESSIBLE LOCATIONS INTERNALLY WITHIN APARTMENT BLOCKS.

INFORMATION ONLY

THIS DRAWING HAS BEEN ISSUED FOR INFORMATION PURPOSES ONLY AND MUST NOT BE USED FOR CONSTRUCTION UNDER ANY CIRCUMSTANCES

- THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DESIGN TEAM DRAWINGS AND SPECIFICATIONS.
- FOR SETTING OUT REFER TO ARCHITECT'S DRAWINGS. DO NOT SCALE THIS DRAWING. USE FIGURED DIMENSIONS ONLY.
- NO PART OF THIS DOCUMENT MAY BE REPRODUCED OR TRANSMITTED IN ANY FORM OR STORED IN ANY RETRIEVAL SYSTEM OF ANY NATURE WITHOUT THE WRITTEN PERMISSION OF O'CONNOR SUTTON CRONIN AS COPYRIGHT HOLDER EXCEPT AS AGREED FOR USE ON THE PROJECT FOR WHICH THE DOCUMENT WAS ORIGINALLY ISSUED.

Rev No.	Date	Revision Note	Drn by	Chkd by
P01	22.10.25	SUITABLE FOR INFORMATION	TK	SD
P02	22.12.25	REVISED IN LINE WITH IRISH WATER COMMENTS	SD	SD
P03	04.02.26	REVISED AS PER IRISH WATER COMMENTS	RM	SD

Rev No.	Date	Revision Note	Drn by	Chkd by

BIM Design and Construction VERIFIED

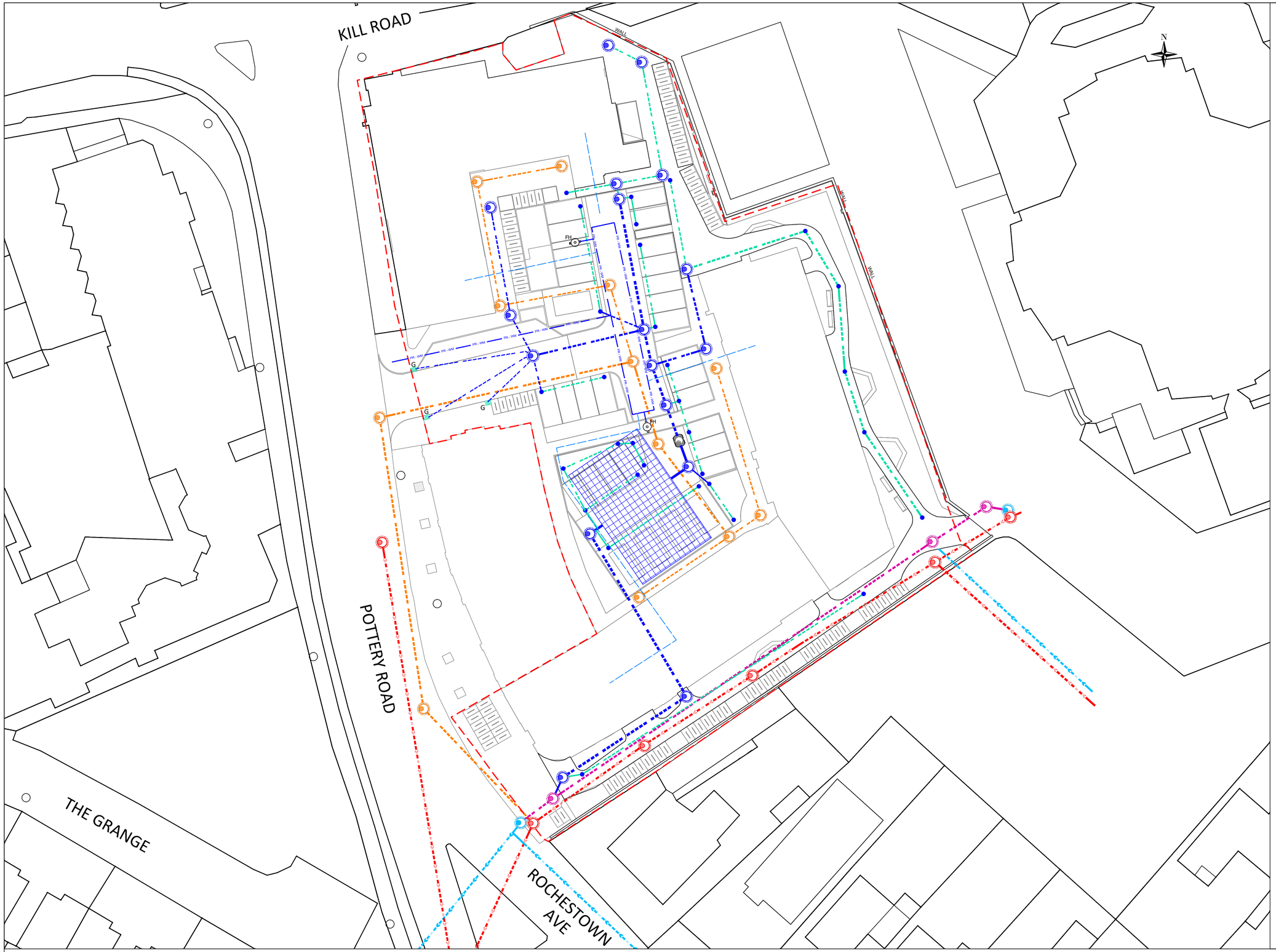
OCSC
O'CONNOR SUTTON CRONIN
MULTIDISCIPLINARY CONSULTING ENGINEERS
Civil / Structural / Environmental / Mechanical /Electrical / Sustainability
Dublin Office: 9 Prussia Street, Dublin 7. D07 KT57.
Tel: +353 (0)1 8682000 Web: www.ocsc.ie
Dublin · London · Belfast · Galway · Cork · Birmingham

Client: BAKER FORGE PROPERTIES LTD
Project: BAKERS FORGE

Title: PROPOSED WATERMAIN DESIGN

Code	Originator	Zone	Level	Type	Role	Number	Status	Revision
G538	OCSC	XX	XX	DR	C	0550	S2	P03

Date:SEP '25 Scale @ A1:1/250 Drn by:TK Chkd by:SD Aprvd by:SD



LEGEND:

EXTENT OF WORKS BOUNDARY

EXISTING SURFACE DRAINAGE

EXISTING WASTEWATER DRAINAGE

uPVC TWINWALL SURFACE WATER DRAINAGE OR SIMILAR APPROVED

uPVC SN8 WASTEWATER DRAINAGE OR SIMILAR APPROVED

1200mmØ SURFACE & FOUL DRAINAGE PRECAST CONCRETE MANHOLE

PROPOSED SURFACE WATER DRAINAGE DIVERSION

PROPOSED SURFACE & FOUL PLASTIC INSPECTION CHAMBER

TRAPPED ROAD GULLY

SURFACE WATER ATTENUATION

uPVC TWINWALL PERFORATED SURFACE WATER DRAINAGE OR SIMILAR APPROVED

PETROL INTERCEPTOR

LEGEND:

PROPOSED DN150 "MATERIAL" WATERMAIN

EXISTING DNØ "MATERIAL" WATERMAIN (AS SOURCE FROM IRISH WATER RECORDS)

PROPOSED SLUICE VALVE (AS IRISH WATER STD-W-14[DI] / 15[PE])

PROPOSED FIRE HYDRANT (AS IRISH WATER STD-W-16[ON-DI] / 17[OFF-DI] / 18[ON-PE] / 19[OFF-PE])

PROPOSED MECHANICAL FLOW METER (AS IRISH WATER STD-W-26)

PROPOSED KIOSK (AS IRISH WATER STD-W-36)

RADIUS OF 46m FROM THE FIRE HYDRANT

RADIUS OF 6m FROM THE FIRE HYDRANT

NOTE

FOR SURFACE AND FOUL WATER DRAINAGE LEVELS AND DETAILS, REFER TO DRAWINGS:

SURFACE DRAINAGE:	G538-OCSC-XX-XX-DR-C-500
FOUL DRAINAGE:	G538-OCSC-XX-XX-DR-C-501
WATERMAIN	G538-OCSC-XX-XX-DR-C-550

FOR CONSTRUCTION

- THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DESIGN TEAM DRAWINGS AND SPECIFICATIONS.
- FOR SETTING OUT REFER TO ARCHITECT'S DRAWINGS. DO NOT SCALE THIS DRAWING. USE FIGURED DIMENSIONS ONLY.
- NO PART OF THIS DOCUMENT MAY BE REPRODUCED OR TRANSMITTED IN ANY FORM OR STORED IN ANY RETRIEVAL SYSTEM OF ANY NATURE WITHOUT THE WRITTEN PERMISSION OF O'CONNOR SUTTON CRONIN AS COPYRIGHT HOLDER EXCEPT AS AGREED FOR USE ON THE PROJECT FOR WHICH THE DOCUMENT WAS ORIGINALLY ISSUED.

Rev No.	Date	Revision Note	Drn by	Chkd by
C01	18.12.25	ISSUED FOR CONSTRUCTION	EK	SD
C02	28.01.26	ISSUED FOR CONSTRUCTION	EK	SD

Rev No.	Date	Revision Note	Drn by	Chkd by

OCSC
O'CONNOR SUTTON CRONIN
MULTIDISCIPLINARY CONSULTING ENGINEERS
Civil / Structural / Environmental / Mechanical / Electrical / Sustainability
Dublin Office: 9 Prussia Street, Dublin 7. D07 KT57.
Tel: +353 (0)1 8682000 Web: www.ocsc.ie
Dublin · London · Belfast · Galway · Cork · Birmingham

Client: BAKERS FORGE PROPERTIES LTD
Project: BAKERS FORGE
22 WINDSOR PLACE, DUBLIN 2, D02 HK02
Title: SITEWIDE DRAINAGE PLAN

Code	Originator	Zone	Level	Type	Role	Number	Status	Revision
G538	OCSC	XX	XX	DR	C	0525	S2	C02

Date:SEP '25 Scale @ A1: 1:250 Drn by:EK Chkd by:SD Aprvd by:SD

OCSC

O'CONNOR · SUTTON · CRONIN

MULTIDISCIPLINARY CONSULTING ENGINEERS

Head Office

9 Prussia Street
Dublin 7
Ireland
D07KT57
T: +353 (0)1 8682000
E: ocsc@ocsc.ie | W: www.ocsc.ie

Civil | Structural | Mechanical | Electrical | Sustainability | Environmental