TORQUE
CIVIL STRUCTURAL CONSULTING ENGINEERS

6th November 2025

ENGINEERING SERVICES REPORT

FOR A MIXED-USE DEVELOPMENT AT

OLD BLESSINGTON ROAD, BELGARD ROAD & BELGARD SQUARE EAST

TALLAGHT

DUBLIN 24.

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APPENDED:

NOTICE

DOCUMENT CONTROL & HISTORY

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1.0 INTRODUCTION

The following Engineering Services Report forms part of a planning application for a proposed residential led mixed use development at Old Blessington Road, Belgard Road & Belgard Square East, Tallaght, Dublin 24.

This report serves to provide information and details on the following engineering services:

- Foul Drainage
- Surface Water Drainage
- Potable Water Supply

The proposed development includes:

- 199 Unit residential units.
- Public open space at ground with access route from the east and west.
- Communal open space at podium level.
- Vehicular access from the west into ground floor parking.
- Part-basement to house M&E water sprinkler tanks (non-habitable).
- 2,123 sq m of non-residential commercial and community use floor space.

The layout of the proposed development is detailed in a series of planning drawings provided by Donnelly Turpin Architects.

Midsal Homes Limited intends to apply for permission for a Large-Scale Residential Development (LRD) at a site of approximately 1.19 Ha at Belgard Square East, Belgard Road and Old Blessington Road, Tallaght, Dublin 24. The main development site (approximately 0.91 Ha) is generally bound: to the north by Old Blessington Road; to the east by Belgard Road (R113); to the south by McDonald's Restaurant property (D24 HW74); and to the west by Belgard Square East. The site also includes parts of the carriageways and verges of Belgard Square East, Belgard Road and Old Blessington Road (approximately 0.28 Ha) for the provision of landscaping, 2 No. pedestrian crossings, accesses/junctions, minor road and footpath works, cycle infrastructure and water services infrastructure.

The proposed development principally comprises: the demolition and removal of existing boundary walls and railings on the main development site's eastern, western and northern sides; and the construction of a mixed-use development in 2 No. blocks (Block A to the south and Block B to the north) with a gross floor area of 23,540 sq m (excluding basement of 275 sq m) and ranging in height from 1 No. to 7 No. storeys (with mezzanine level) over basement.

The development includes a total of 199 No. residential dwellings (6 No. studios, 47 No. 1-bed, 98 No. 2-bed and 48 No. 3-bed) in the 2 No. blocks, with Block A comprising 49 No. 'senior living' apartment units and Block B comprising 150 No. 'standard' apartment units. The development also includes 2,123 sq m of non-residential floor space, with the following uses proposed: 4 No. retail units (totalling 331 sq m); 4 No. class 1 / class 2 commercial units (totalling 387 sq m); a bicycle sales and repair shop (81 sq m); an off-licence (64 sq m); a bar (151 sq m); a café (87 sq m); a medical centre (210 sq m); a dental practice (72 sq m); a pharmacy (195 sq m); a beauty/health salon (195 sq m); and a crèche (350 sq m) with external play area.

The development also comprises: an undercroft car park accessed via a new entrance/exit at Belgard Square East which provides 58 No. car parking spaces; a gated service lane to the south of Block A, with entrances/exits off Belgard Square East and Belgard Road; 2 No. pedestrian/cycle crossings, at Belgard Square East and Belgard Road; continuation of the northbound cycle lane from Belgard Road onto Old Blessington Road; alteration to the median and northbound right turn at Belgard Road onto Abberley Square; cycle parking; internal communal amenity spaces for the senior living units; hard and soft landscaping, including public open space, communal amenity space and incidental spaces; private amenity spaces (as balconies and terraces facing all directions); boundary treatments; 2 No. sub-stations; plant/operational rooms; bin stores; public lighting; blue roofs; rooftop PV arrays; lift overruns and rooftop opening vents atop both blocks; 4 No. 0.3 m diameter microwave link dishes mounted on 2 No. steel support poles affixed to the Block B lift overrun, all enclosed in radio-friendly GRP shrouds; and all associated works above and below ground.

The exact location of the site can be seen in Figure 1 below.

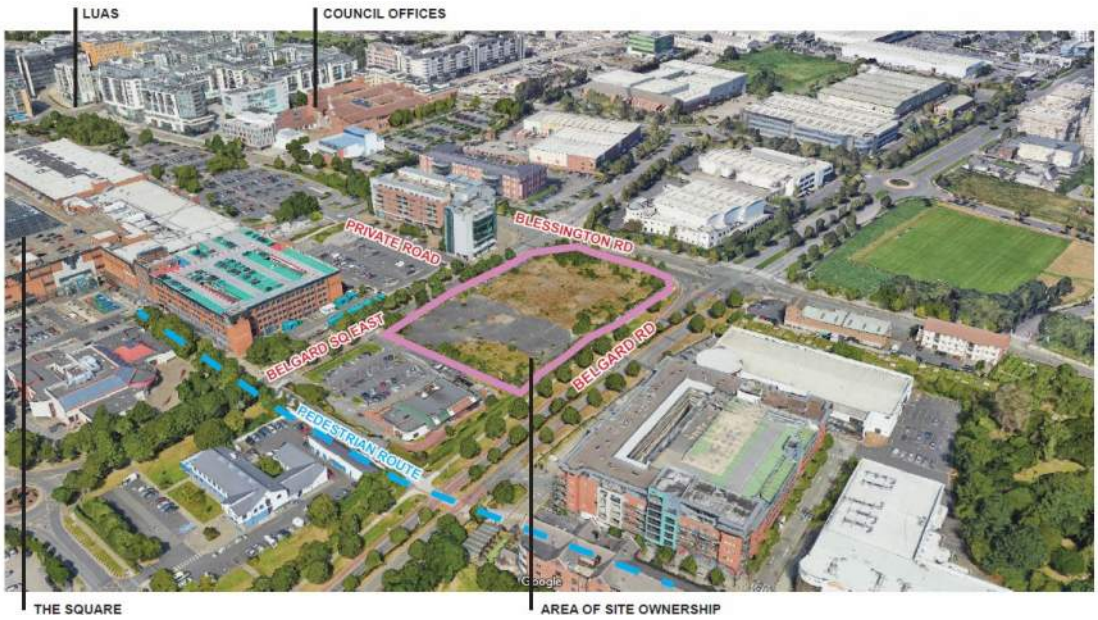


Figure 1: Site Location

2.0 SCOPE

This report has been compiled based on the available information provided by the Client/Architect, Uisce Éireann and South Dublin County Council.

The drainage systems for the development shall be designed and constructed in accordance with the following documents: -

1. Greater Dublin Regional Code of Practice for Drainage Works Version
2. Greater Dublin Strategic Drainage Study (GDSDS) – April 2006.
3. "Recommendations for Site Development Works for Housing Areas" by the Department of the Environment and Local Government.
4. Code of Practice of Wastewater Infrastructure - Connections and Developer Services – Design and Construction Requirements for Self-Lay Developments – July 2020 (Revision 2).
5. Code of Practice of Water Infrastructure - Connections and Developer Services – Design and Construction Requirements for Self-Lay Developments – July 2020 (Revision 2).
6. South Dublin County Development Plan 2022-2028, Chapter 4 – Green Infrastructure and Chapter 13 – Infrastructure and Environmental Services.

2.1. Confirmation statement

The infrastructure enclosed (designs, layouts etc.) are designed and detailed to comply with Uisce Éireann's Standard details and Codes of Practice for water and wastewater.

We have also designed the scheme to meet the requirements of the County Development Plan 2022-2028.

This report should be read in conjunction with the Flood Risk Assessment Report and Torque Consulting Engineers' Drainage Drawings.

3.0 FOUL DRAINAGE

The existing public drainage network is documented on the Uisce Éireann records, see Appendix H. There is an existing 225mm concrete foul sewer running along Belgard Square East. Uisce Éireann identified in their COF letter that this sewer will require an upgrade over a length of approximately 400m. Although queried, the exact location was not identified by Uisce Éireann. These works will be carried out by Uisce Éireann, with a quote for the cost of the works to be provided to Midsal Homes Limited at connection stage. Notwithstanding this, the current design proposes to tie into the existing infrastructure.

The foul pipe network has been designed to the following design criteria:

I. Pipe Ks of 0.6mm (uPVC)150
II. Minimum velocity of 0.75 m/s (self-cleaning velocity)
III. Maximum velocity 3 m/s
IV. Minimum gradient – as per design 1:60

Note: Please refer to the Appendix C for the foul sewer calculations.

The foul water system has been designed for a population equivalent of persons as per the architectural scheme. From Uisce Éireann's "Code of Practise for Wastewater Infrastructure" the recommended flow per person is 150 litres/person/day for a standard residence.

An occupancy factor of 2.7 people per apartment has been applied to the senior living and residential apartment blocks. With an occupancy factor equivalent of one person per 7sq-m applied to the Retail and Creche facilities (Irish Building Regulations Part B Fire). The total assumed capacity has been used to calculate the daily total volume of wastewater coming from the proposed development. Please refer to the following pages for calculation of the foul water flow rates from the proposed development.

Flow Rates for Design

Per person / activity / day (unless otherwise specified)	FLOW (Litres)
DOMESTIC DWELLINGS	
Standard residential	**150**
Mobile home type caravans with full services	**150**
INDUSTRIAL	
Office / Factory without canteen	**50**
Office / Factory with canteen	**100**
Open industrial site, e.g. construction, quarry, without canteen	**60**
*Full-time Day Staff	**90**
*Part-time Staff (4 hr shift)	**45**
SCHOOLS	
Non-residential with canteen cooking on site	**90**
Non-residential without a canteen	**50**
Boarding school (i) residents	**175**
Boarding school (ii) day staff (including mid-day meal)	**90**
HOTELS, PUBS & CLUBS	
Hotel Guests	**250**
Residential Training/Conference Guest (inclusive all meals)	**350**
Non residential Conference Guest	**60**
Public House Patrons	**12**

Figure 2: Extract from Uisce Éireann's Codes of Practice for Wastewater Infrastructure

Foul flow rate calculation

Population Equivalent:

Standard Residence- Apartment	2.7 people per apartment
Total Number of Apartments	199
Retail & non-residential spaces	2123m^2
Population allowance	1person per 7m^2 (TGD-B Fire)

Flow Allocation:

Standard Residence (Uisce Éireann guidelines) 150 l/person/day

Daily Flow:

841 people X 150l/person/day = 126m^3

Total Daily Flow (including 10% allowance for infiltration) = **139m^3**

Average flowrate (DWF): 2.75 litres/sec
(over 14-hour duration)

Estimated peak flow (6 DWF): 16.51 litres/sec

Please refer to **Appendix C** for detailed foul water volume calculations.

It is intended to drain the upper floors of the apartment blocks separately via gravity, to the ground floor level where they will discharge into a foul water drainage system. The foul sewer from the new buildings will connect via a newly constructed 225mm Diameter uPVC pipe network, within the site boundary, to the existing public drainage system along Belgard Square East.

The foul drainage system is designed to comply with the specified Design Standards and Criteria as discussed in the above section. All uPVC pipes will be laid to suitable falls to accommodate and ensure self-cleansing velocities (minimum velocity of 0.75m/s and a maximum velocity of 3m/s).

The outfall manhole from this development will be fitted with a non-return valve to prevent any surcharging of the public foul sewer which may compromise the foul drainage system associated with this development.

Trapped manholes will not be used, to comply with the Uisce Éireann guidance and recommendations.

Refer to **Appendix A** for the Proposed Foul Water, Surface Water and Watermain layout drawings.

Refer to Appendix G for Uisce Éireann COF letter.

4.0 SURFACE WATER DRAINAGE (SuDs) MEASURES

4.1. General

The surface water drainage for the proposed development will be designed as an independent system to the foul water drainage system.

South Dublin County Council (SDCC) guidelines for the design of surface water require the incorporation of Sustainable Drainage Systems as per the Greater Dublin Strategic Drainage Study Regional Drainage Policies Volume 2. SuDS features aim to mitigate the adverse effects of urban stormwater runoff by reducing runoff rates and volumes and reducing pollutant concentrations in stormwater. The proposed SuDS features, and measures will not be taken in charge by South Dublin County Council.

4.2. Suds Objectives

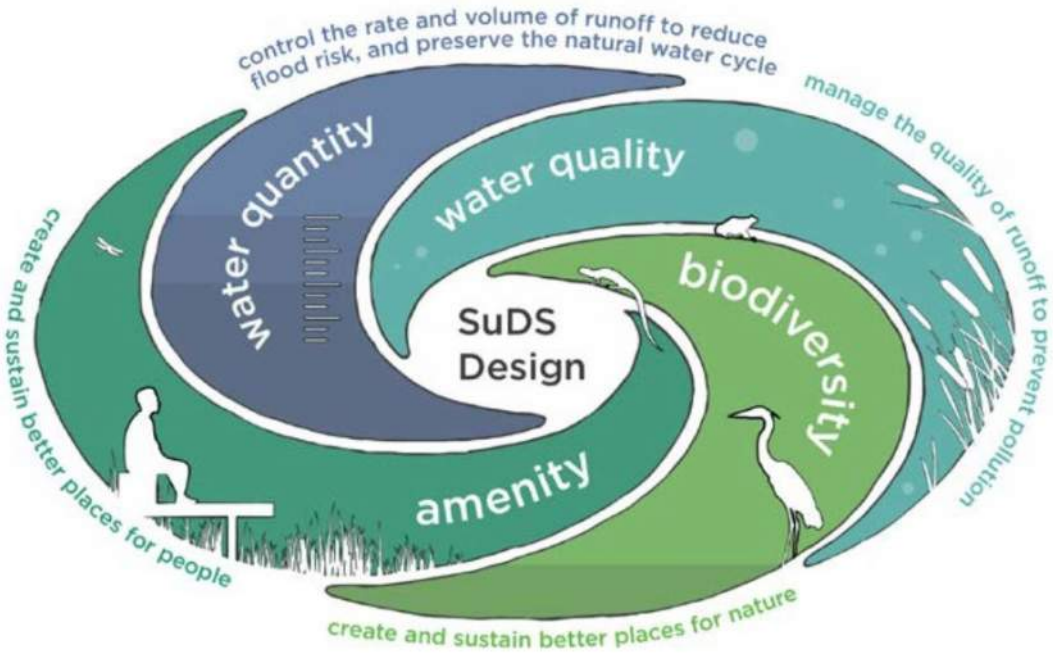


Figure 3: Suds objectives (Ref: SDCC SuDs Evaluation Guide 2022)

Water Quantity: Water quantity is controlled by the inclusion of blue/green roofs, permeable paving, tree pits and raised planters which slow run-off rates and distribute the rainwater into the soil within the site,

before being discharged into the existing surface water sewer below Belgard Square East at a reduced outfall rate of 1.92L/sec.

Water Quality: A filtering effect occurs as the rainwater passes through the soil medium present in each SuDS element, including the blue/green roof, tree pits and the coarse fill in the permeable paving. In addition to these elements, silt traps will also provide an extra stage of prevention for debris entering the surface water drainage system.

Amenity: Raised planters on the communal podium area and the central walkway between the two blocks will provide a visual and natural amenity which will support biodiversity. A blue /green roof planted with local wildflower will also provide additional amenity to the proposed development, which will improve on the current site conditions which are presently a mixture of gravel and tarmacadam surfaces.

Biodiversity: The raised planters and tree pits in the podium and central walkway, together with the wildflower planted blue/green roof will create zones which will support biodiversity with the provision of a diverse range of vegetation.

4.3. Flow Route Analysis

Reviewing the natural topography of the existing site using the topographical survey conducted by Land Surveys in February 2021, we can see that the high point of the site is to the northeast, there is a gradual even slope through the site falling to the southwest. The ground surface encountered is a mixture of gravel and tarmacadam. There are several gullies located throughout the site, these are however fully silted up and apparently no longer serviceable.

Taking the current conditions into consideration, it is proposed that a portion of the surface water will be infiltrated into the ground at the source while a portion will run over ground and off the site to the southwest.

The following SuDS proposal will aim to mimic the existing conditions by infiltrating some of the surface water into the ground at source using permeable paving and tree pits. The remainder of the water on site will be attenuated on site and released at a rate of 1.92L/sec so as to not exceed the current run-off rate calculated for the site.

4.4. SuDS Measures

The mixed-use development integrates blue roofs, permeable paving, tree pits and raised planters into the design to comply with the County Development Plan requirement to incorporate more Sustainable Drainage Systems (SuDS) into new developments.

Blue/Green Roofs

Blue/green roofs will cover the majority of the total roof area of the buildings with roof areas greater than 6000m^2. The blue roofs will function as attenuation storage and assist in slowing stormwater flows, increasing evaporation, and treating the stormwater. Refer to the Suds Masterplan and Surface Water Conveyance Plan within Appendix A for the extent Blue/Green roof areas proposed within the development.

Attenuation Calculations

The total roof area vs proposed blue roof areas per block is as follows:

Block No.	Total Roof Area	Blue Roof Area	Percentage Blue Roof
B	5065	3798	75
A	1480	1140	77

Table 1 – Total Roof Area vs Blue Roof Areas for Respective Blocks

The prospective supplier provided the details of the blue/green roof downpipes and gullies, which are shown in the figure below.

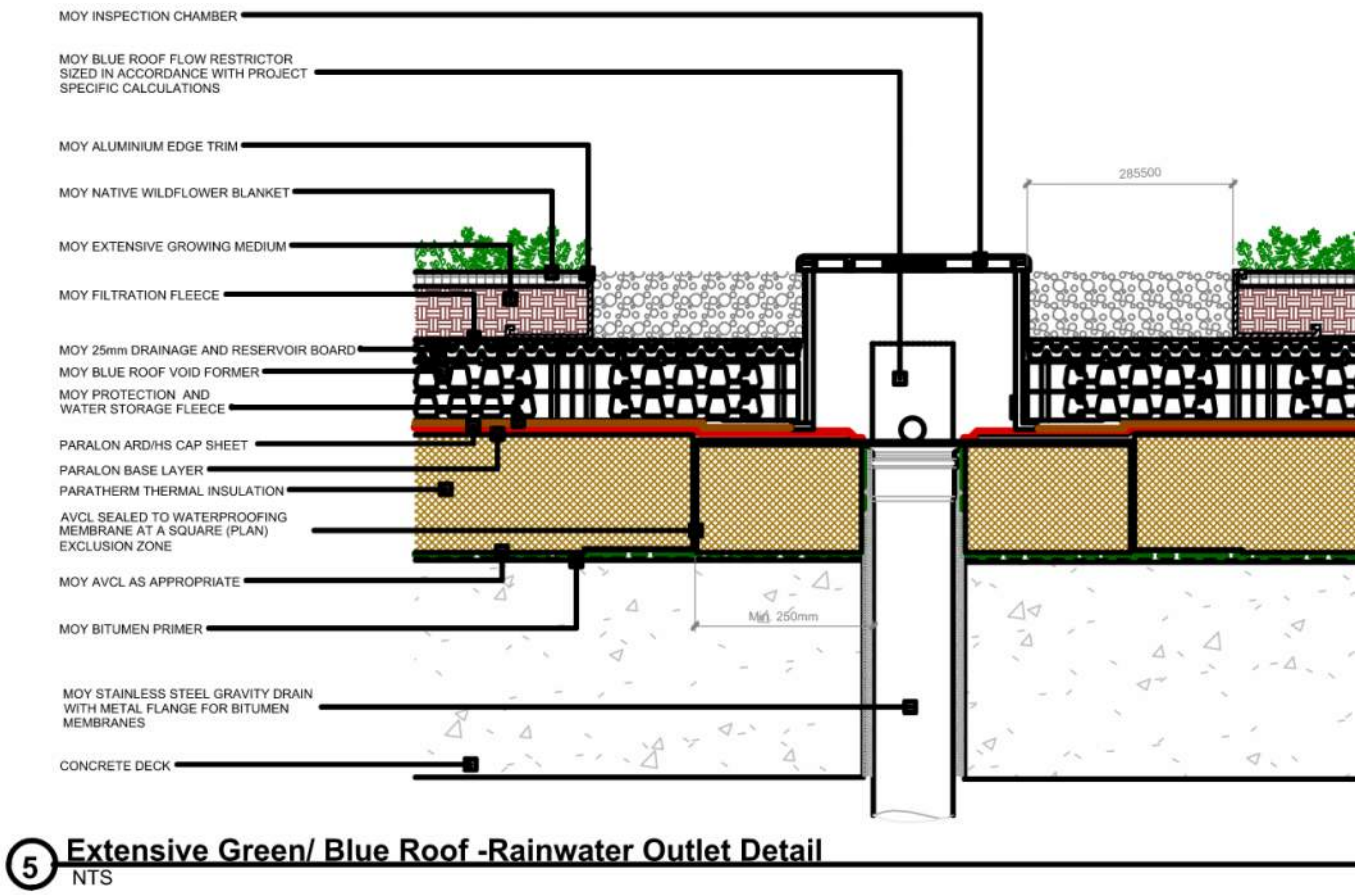


Figure 4: Blue Roof Detail

The combined storage of the blue roofs is required to have a capacity of 696m^3 according to our calculations based on available rainfall data for a 1 in 100-year storm event, but to cater for exceedance flows the proposed blue roofs will have an actual storage capacity of 774m^3. It is intended to construct the proposed blue roofs using the MOY Extensive Blue Roof System. The system provides a solution that provides attenuation facilities as well as options for green spaces that improves SUDS measures on the site. It is proposed to plant the blue/green roof with native Irish wildflower, as opposed to the standard sedum blanket often associated with these types of systems. Please refer to **Appendix D and F** for Stormwater Attenuation Volumes.

The respective blue roof outfalls will be connected to internal surface water drainage system that conveys, via gravity, the storm run off to the proposed connection to existing infrastructure. No pumping will be required. A silt trap will be constructed in the surface water network before the outfall to the municipal infrastructure reducing the pollutants transferred into the existing network.

Permeable Paving

With over 1000m^2 of permeable paving proposed for the development, approximately 10% of the total surface area within the development will consist of permeable paving. The permeable surface will allow the surface water pass into the porous material below, with some of the water percolating back into the ground at the source. Any remaining surface water will be slowed and partially treated by the coarse bedding material. Refer to the Suds Masterplan and Surface Water Conveyance Plan within Appendix A for the proposed extent of permeable paving within the development.

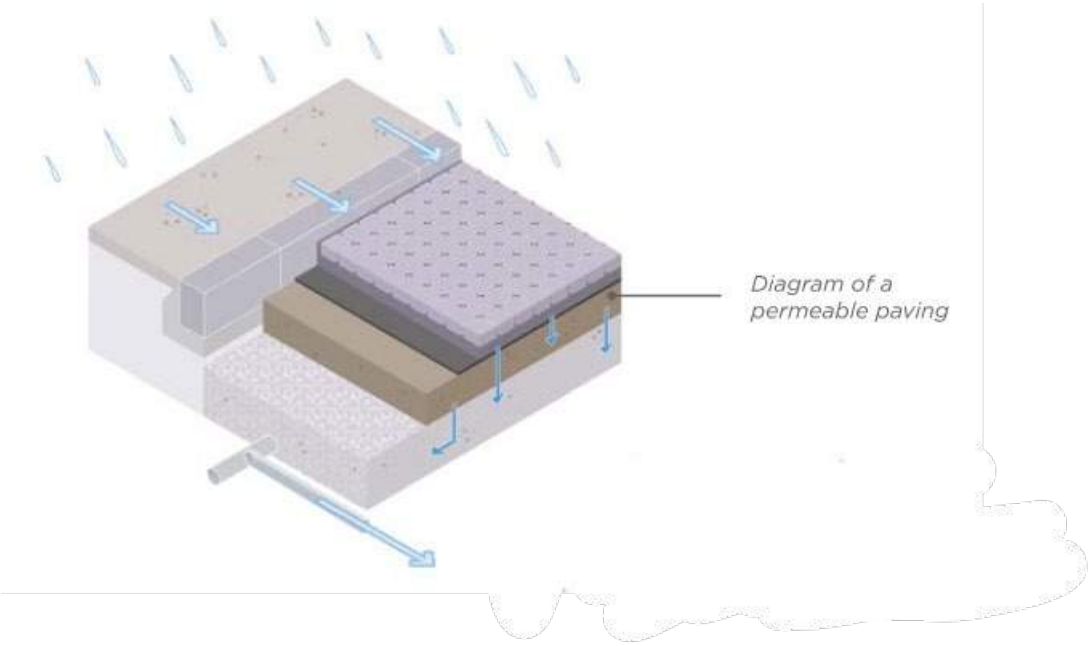


Figure 5: Tree Pit Detail (Ref: SDCC SuDS Explanatory Guide 2022)

Tree Pits/Raised Planters

On the communal podium area and the ground floor communal area, tree pits and raised planter beds are proposed within the development which will help retain water run-off from impermeable surfaces and increase the public amenity and biodiversity. Refer to the Suds Masterplan and Surface Water Conveyance Plan within Appendix A for the proposed extent of tree pits and raised planters within the development.

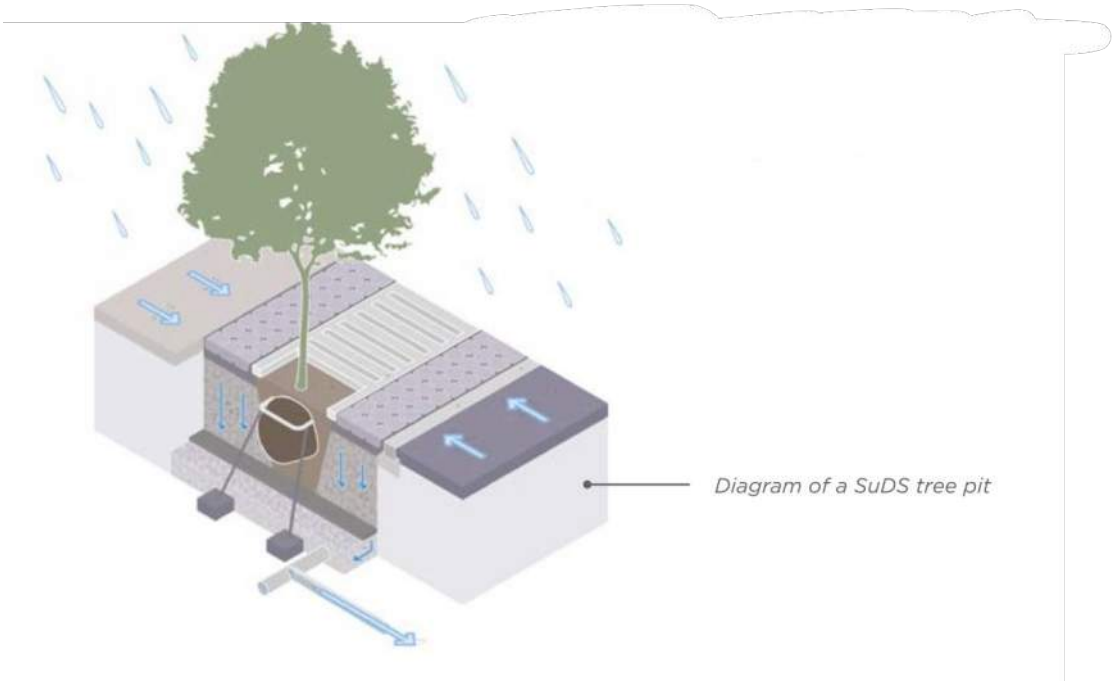


Figure 6: Tree Pit Detail (Ref: SDCC SuDS Explanatory Guide 2022)

4.5. Permeable and impermeable areas

The proposed development will increase the impermeable areas on the site, noting that the site is currently a brownfield site which is covered by approximately 25% tarmacadam impermeable surface.

The existing site surface areas are as follows:

Total Site Area: c. 9072m^2 (A) *

Existing impermeable surfaces: c. 2268m^2 (B)

Existing Permeable surfaces: c. 6804m^2 (C)

The proposed development consists of the following areas:

Table 2.

Mixed Use Development at Belgard Sq. East	**Area (m^2)**	**Runoff coefficient**
Blue Roofs	4938	1
Conventional Roof Area - out falling to stone media than SW drains	0	1
Gardens / Landscaping/ Permeable Paving (infiltrate to soil)	322	0.17
Permeable Paving	2205	0.9
Impermeable Areas discharging to SW System	1606	0.9

A. Landscaped areas (including gardens)

Rainwater falling on these areas is not directed immediately to the stormwater drainage system, in order to maximise the amount of natural rainwater drainage. These areas will percolate directly into the ground.

* 9072m^2 is the main developable site; the balance of the gross site area (1.19 Ha – 0.9072 Ha) is outside of the Client's control.

4.6. Interception Storage

It is good practice that no runoff should pass directly to a receiving system for rainfall depths of 5mm. The benefit of providing interception storage is that it allows for some form of storage for small rainfall events which results in water evaporation and adsorption in small quantities, thus mimicking the natural response for a catchment. See Table 3 below.

4.7. Treatment volume

It is good practice in sustainable surface water drainage design that a treatment volume is provided to prevent any pollutants or sediments discharging from the site. See Table 3 below**.** The interception storage volume is calculated based on:

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

Storm Water Design - Interception & treatment volumes

Date Nov-25

Project: Belgard Square East Mixed Use Development

TORQUE CONSULTING ENGINEERS

DETERMINATION OF INTERCEPTION AND TREATMENT VOLUMES

A. CHECK 5mm INTERCEPTION STORAGE

No run-off should pass directly to a receiving surface water system for rainfall depths of 5mm. The benefit of providing interception storage is that it allows some from storage for small rainfall events which results in water evaporation and adsorption in small quantities, resulting in less run-off and thus mimicking the natural response

	AREA (m^2)	INTERCEPTION STORAGE REQUIRED (0.8x5mmxarea) (m^3)	INTERCEPTION STORAGE PROVIDED BY STONE BASE (m^3)
Blue roofs	4938	19.8	172.8 (100mm stone base)
Conventional Roofs	0	0.0	0.0 (250mm stone base)
Gardens/Landscaping	322	0.0	0.0
Permeable area	2205	8.8	192.9 (250mm stone base)
Impermeable area	1606	6.4	140.5 (250mm stone base)

B. CHECK 15mm TREATMENT VOLUME

The volume of treatment required is based on 15mm of rainfall depth from 80% of the runoff from impermeable areas:

	AREA (m^2)	INTERCEPTION STORAGE REQUIRED (0.8x15mmxarea) (m^3)	INTERCEPTION STORAGE PROVIDED BY STONE BASE (m^3)
Blue roofs	4938	59.3	172.8 (100mm stone base)
Conventional Roofs	0	0.0	0.0 (250mm stone base)
Gardens/Landscaping	322	0.0	0.0
Permeable area	2205	26.5	192.9 (250mm stone base)
Impermeable area	1606	19.3	140.5 (250mm stone base)

Table 3

4.8. Interception mechanisms

The SuDS manual requires compliance with Table 24.6 for interception mechanisms. The non-blue roof area is a small fraction of the paving and landscaping area. Table 24.6 states that the interception area should be unlined. However, as the design maximised the usage of SuDS features throughout (blue roof areas approximately 80% of total roof areas greater than 300m^2) and are only draining the final 10% of roof area to the lined area, it is deemed that we have complied with the intent of the requirements. See extract below:

TABLE 24.6 Interception mechanisms

Systems	Interception methods that can be assumed to be compliant for zero runoff from the first 5 mm rainfall for 80% of events during the summer and 50% in winter
Green roofs	All surfaces that have green roofs
Rainwater harvesting systems	All surfaces drained to RWH systems designed to BS 8515:2009+A1:2013 whether for surface water management or just water supply, provided the RWH system design is based on regular daily demand for non-potable water.
Soakaway or other infiltration system[2]	Areas of the site drained to systems that are designed to infiltrate runoff for events greater than a 1 month return period. Note: design of the infiltration system should be in accordance with Chapters 14 and 25.
Permeable pavements[2]	All permeable pavements, whether lined or not, can be assumed to comply, provided there is no extra area drained to the permeable pavement. Where the pavement also drains an adjacent impermeable area, compliance can be assumed for all soil types where the pavement is unlined, as long as the extra paved area is no greater than the permeable pavement area. Where the infiltration capacity of the ground below the pavement is greater than 1×10^{-6} m/s, up to 5 times the permeable pavement area can be added as extra contributing area. Where the permeable pavement also drains an adjacent impermeable area and is lined, compliance cannot be deemed to have been achieved and extra downstream Interception components will be required.*

The interception capacity of the various suds elements vs. the impermeable drained areas are be presented in an area-by-area comparison in Table 4.

Table 4

Surface Type	Area (m^2)	Interception required (m^3)	Intrinsic Interception	Interception Capacity	Surplus interception Capacity
Blue Roofs	4938	19.8	Y	172.8	153.1
Conventional Roofs	0	0	N	0	0
Gardens/ Landscaping	322	0	Y		0
Permeable Paving	2205	8.8	Y	192.9	184.1
Impermeable	1606	6.4	N	0	0

The green-blue roofs and permeable paving areas themselves intercept their own areas. The remaining impermeable surfaces (1606m2) needs to be intercepted. The only means of interception is via the unlined permeable paving which has an area of 2205m2 with a surplus interception storage volume of 184.1m3 (Table 24.6 CIRIA C753). It is thus the intention to drain the impermeable surfaces to the permeable paving.
. Refer to **Appendix A** for-Site Drainage Details on drawings S058-TCE-B1-ZZ-DR-S-S-500 and S058-TCE-B1-ZZ-DR-S-S-504.

4.9. Permissible site discharge

According to the GDSGS, the method used for determining peak flow rates for small greenfield catchments is the 'Institute of hydrology report 124, flood estimation for small catchments. This method calculates QBAR rural which is the mean annual flood flow from a rural catchment.

If long term storage cannot be provided on-site the discharge rate from the site should be kept to QBAR rural or 2 L/s/ha. This is the case with this development. The IH124 method calculates QBAR rural. As the subject site is less than 50 hectares, the calculated QBAR is to be linearly interpolated from the calculated value to produce a reduced allowable outflow based on the actual site area, as per GDSDS section 6.6.1. The UKSUDS.com website tool for calculating site hydrology was used to determine the QBAR for the Mixed-Use Development. See calculation on next page.

Table 5

hrwallingford

Greenfield runoff rate estimation for sites

www.uksuds.com | Greenfield runoff tool

Calculated by:	Dimitri Sarjoo
Site name:	Tallaght Belgard
Site location:	Tallaght

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

Site Details

Latitude:	53.28816° N
Longitude:	6.36842° W
Reference:	903204530
Date:	Jan 08 2025 15:26

Runoff estimation approach

IH124

Site characteristics

Total site area (ha): 0.91

Methodology

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

Soil characteristics

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

Hydrological characteristics

	Default	Edited
SAAR (mm):	1047	792
Hydrological region:	12	12
Growth curve factor 1 year:	0.85	0.85
Growth curve factor 30 years:	2.13	2.13
Growth curve factor 100 years:	2.61	2.61
Growth curve factor 200 years:	2.86	2.86

Notes

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

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

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

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

(3) Is SPR/SPRHOST ≤ 0.3?

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

Greenfield runoff rates

Default Edited

Q_{BAR} (l/s):	2.66	1.92
1 in 1 year (l/s):	2.26	1.63
1 in 30 years (l/s):	5.66	4.08
1 in 100 year (l/s):	6.93	5
1 in 200 years (l/s):	7.6	5.48

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

Therefore, the permissible site discharge for the development is 1.92 L/s (QBAR rural)

4.10. Surface water attenuation design

The proposed development includes buildings with a footprint that covers majority of the site. To reduce the run-off coefficient of the site and provide the required attenuation that enhances the SuDS features on the site, Blue Roofs systems will be design on the building roofs. The respective Blue Roofs will discharge storm water at controlled rate into the internal surface water network which discharges to the existing surface water system which runs along the west of the site.

The design intention is to utilise as many SuDS features as possible and allow for partial infiltration within the design:

- Maximising Roof area of required roofs with Blue Roof systems.
- Permeable paving and grassed areas where possible (linked to the surface water network).
- Where not possible, footpaths and grassed areas will drain via a stone media layer enroute to the surface water network to remove sediments and pollutants and provide interceptions volumes.
- Attenuation within the Blue Roofs to reduce flows to green field rates.
- A Silt Trap will be constructed at the outfall of the network to reduce pollutants and sediment entering public sewers.

During extreme rainfall storm events, discharge from the site will be limited to greenfield runoff rates. The attenuation storage volume for the design 100-year return period storm event has been provided in the Blue Roofs (MOY Extensive Blue Roof System).

During the flood event with a 1 in 100 probability, the surface water drainage sewers are designed to collect, convey, and proportionally attenuate runoff water. Model analyses support that the network can accommodate the flow and storage of water, while ensuring no manholes surge to the point of overflowing.

As required under the GDSDS, a climate change allowance of 20% was applied to the rainfall intensities. No Urban Creep factor was added as it is only required for new housing developments. A network analysis of the surface water system has been conducted to confirm the attenuation storage required is 774m^3 for a 1 in 100-year storm.

4.11. Surface Water Sewers

Surface water from the proposed development will be discharged after attenuation to the existing surface water network along Belgard Square East. The initial design of these pipes is based on a rainfall intensity of 50mm over an hour, but a computer model of the network was undertaken to ensure all pipes perform.

The surface water pipe network has been designed to the following design criteria:

I. Pipe Ks of 0.6mm (uPVC)
II. Minimum velocity of 0.75 m/s (self-cleaning velocity)
III. Maximum velocity 3 m/s
IV. Minimum gradient – as per design 1:100

A separate network analysis of the surface water system has been conducted to confirm the above initial assumptions. Refer to **Appendix A**

for the Proposed Foul Water, Surface Water and Watermain layout drawings.

4.12. Exceedance flows

Exceedance flows are those rainfall flows which result from storm events that are over and above the 100-year storm events. The Blue Roofs have been provided with additional capacity to that required by design capacity to allow for exceedance flows and ensure that it does not overflow.

The Blue Roof System design includes upstand and 'overflow' details which allows for storage above the reservoir layer and in the event that this is still insufficient, any water overflowing from the roofs will overflow onto the internal site and drain to the surface water network.

4.13. Surface water simulation

The surface water system was modelled using AutoDesk InfoDrainage. The model included pipes that are designed soffit to soffit with an attenuation tank (Blue Roof).

Stormwater outflow from the entire site was controlled using a Hydro-Brake flow control unit, which limited discharge to the site's QBAR rural value. The outflows are directed through an internal network, channelling runoff to the existing public surface water sewer beneath Belgard Square East.

The QBAR of 1.92 L/s is discharged into the existing stormwater system through a controlled flow mechanism. This is accomplished by restricting the flow at the blue roof outlets and utilizing a Hydrobrake device, which is installed in the manhole prior to the connection with the existing stormwater infrastructure.

The corresponding depth (stormwater height above invert level of final outfall manhole) vs. outflow graph for Hydrobrake is provided below.

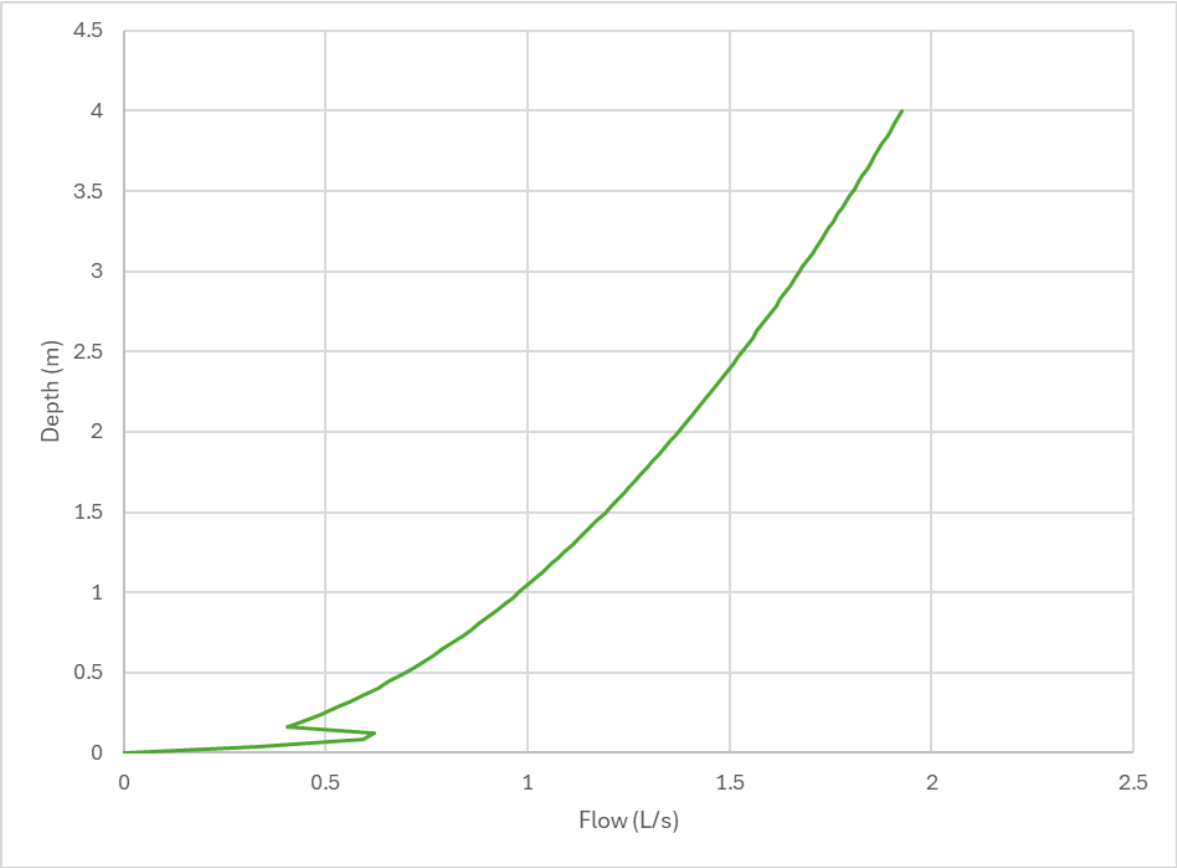


Figure 7: Hydrobrake Outflow graph

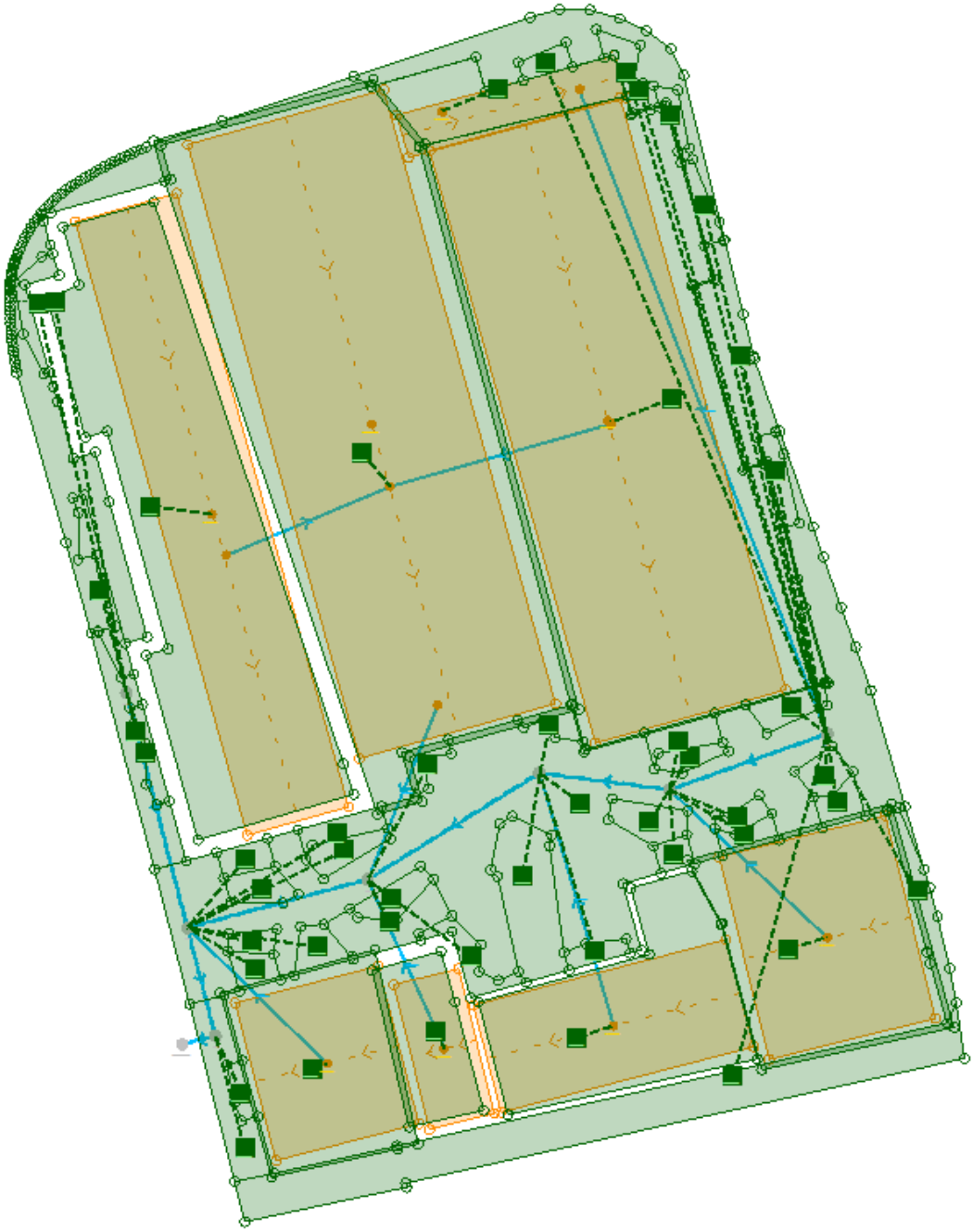
The site development area was split into three different catchment types: Blue Roofs, Pavement and Roofs and Lawns. The catchments that consisted of paving areas were separated into permeable paving and impermeable paving via area percentages. These percentages varied for each defined catchment. The following table illustrates the various runoff coefficients for the diverse types of catchments.

Table 7

Catchment description	Volumetric Runoff Coefficient	Depression Storage
Blue Roof	1	200mm
Pavement and Roofs	1	n/a
Lawns	0	n/a

In accordance with SDCC's development plan (2022-2028), the CV value was set to 1 when analyses were conducted on the proposed model.

The image below illustrates the extents of the catchments within the site



and the nodes where the respective catchments drain and connect to the proposed stormwater system.

The circular manholes (nodes) were assigned an internal diameter of 1.2m, the depth at each node determined the available 'storage' during surcharged conditions The analysis indicated no flooding/overtopping on the manholes for the 1:100-year flood. Refer to **Appendix D** for detailed results of the simulation.

Fifty percent pipe blockage simulation

The surface water network model also accounted for a 50% blockage in the critical lengths of pipe for the 1:100-year storm return. A blockage in the critical pipes will result in the manholes surcharging but not overflowing in both cases.

Refer to **Appendix D** for the SuDS calculations and SuDS summary.

4.14. Existing public surface water sewer Belgard Square East

A review of the Uisce Éireann public surface water records, shows there is an existing 1050mm diameter concrete gravity surface water sewer mains which runs beneath Belgard Square East to the west of the proposed development site. The invert level of the existing surface water sewer is at a depth of approximately 4.1m below ground level. In Appendix A, drawing S058-TCE-B1-ZZ-DR-C-520 shows the location of the surface water main in relation to the proposed development.

To comply with the GDSDS Regional Drainage Policies, Chapter 7.4 – Building Over or Near Sewers, the following steps have been incorporated into the proposed design:

- Maintain a clear distance of 6m from the sewer, 3m either side of the centreline.
- As the invert level of the sewer exceeds 3m in depth, the clear distance to the structure is not within the 45-degreee line of influence from the edge of the sewer trench.
- No building surcharge loading will be applied to the existing sewer.

In addition to the points above, the first-floor balconies have been relocated internally to create a clear distance from the edge of the trench of 5m, to a clear height of 8.685m to the underside of the second-floor balconies, see Figure 8 below for details.

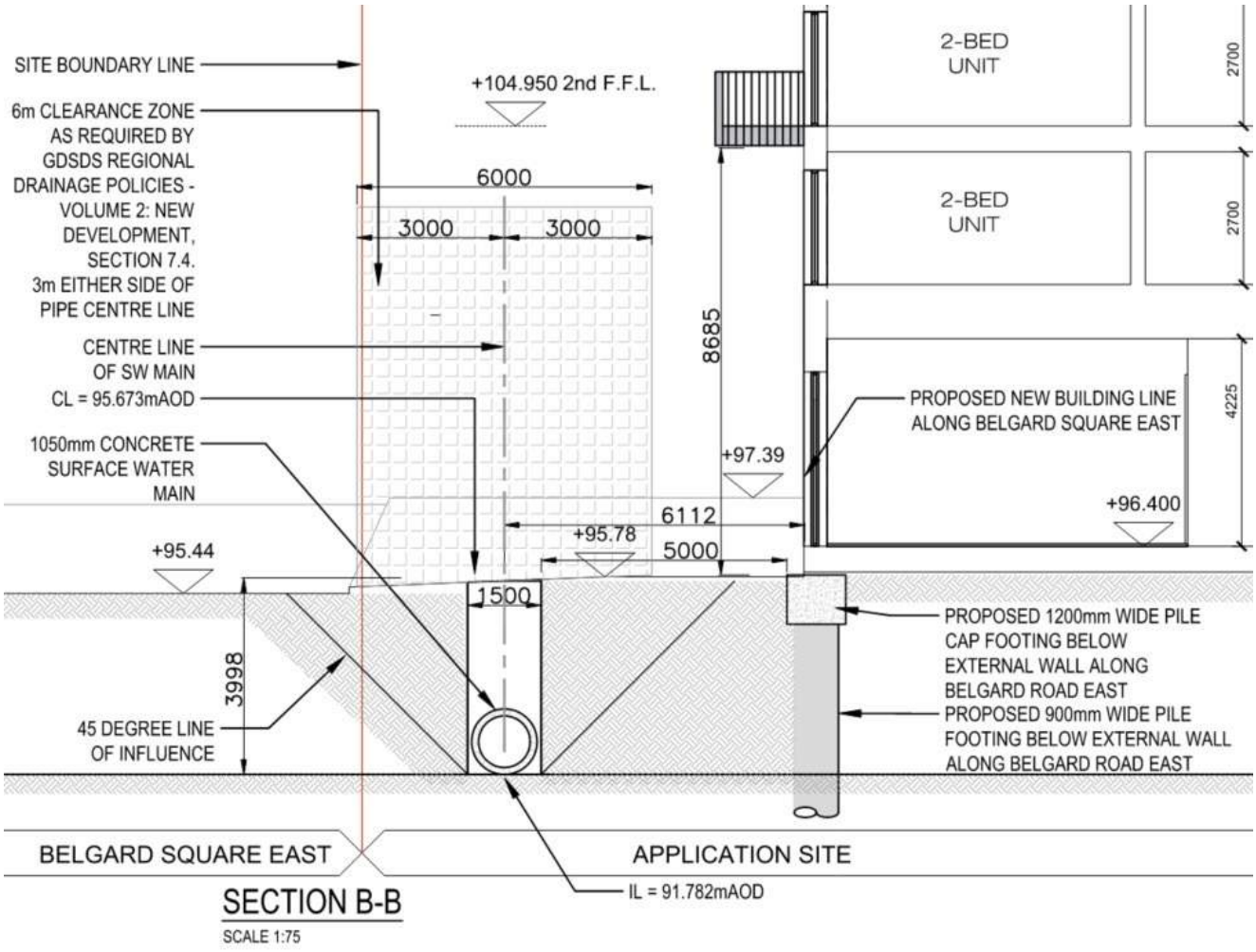


Figure 8: Section taken through the existing SW sewer along Belgard Square East

5.0 GROUNDWATER / STORMWATER MANAGEMENT DURING CONSTRUCTION PHASE

It is expected that groundwater and/or surface will have to be pumped and discharged to the Local Authority (LA) Stormwater sewer during the course of construction.

Treatment of the groundwater/stormwater will consist of the following treatments:

- Fine sand filtration
- Carbon Filtration
- Silt Settlement Tanks

The Contractor will be made aware that they are to engage with the Local Authority's drainage division to obtain all permissions and discharge licenses prior to any discharge from site entering the LA sewer.

The Contractor would typically employ a specialist company to manage the discharge from site and monitor on-site filtration. The contractor shall forward this information to the LA for review and approval.

All waters discharged from site will comply with the requirements of the Local Government (Water Pollution) Acts, 1977 and 1990.

6.0 POTABLE WATER SUPPLY

It is proposed to connect to the existing 150mm dia. water main (uPVC) located along Old Blessington Road with a new connection serving the proposed development.

To reduce the level of water consumption it is intended to install water reduction devices throughout the development. These will include the following:

- Dual flush cisterns.
- Aerated spray taps with variable flow rate.
- Shower heads that limit the volume of water used.

A Woltman water meter (WS-MFD Model 233) or equivalent will be installed on the incoming watermain serving the development. Water meters will also be installed for each apartment in an accessible area for reading purposes. The following outlines the expected potable water supply demand for the overall development.

Potable Water Supply Demand calculation

Standard Residence- Apartment	2.7 people per apartment
Total Number of Apartments	199
Retail, Senior Living & Creche Spaces	2123m^2
Population allowance	1person per 7m^2 (TGD-B Fire)

Flow Allocation:

Standard Residence (Uisce Éireann guidelines) 150 l/person/day

Average Daily Demand (ADD):

841 people X 150l/person/day = 126m^3

Average flowrate (over 14-hour duration):	2.5 litres/sec
Estimated Average Day/Peak Week (1.25 ADD):	157.6 m^3/day
Estimated peak flow (5 DWF):	12.5 litres/sec

Please refer to **Appendix E** for detailed potable water supply demand calculations.

7.0 WATERMAIN DIVERSION

As part of the LRD Opinion Report (LRDOP002/25), observations issued by Uisce Éireann state that all existing watermains should maintain the minimum separation distances from the new building and there is no permit from UE to build over its assets.

TCEL engaged in discussions with UE to review the observations made. A UE representative advised that the existing watermain within the existing boundary line should be GPR located and excavated to confirm its presence and location. Also, the existing 150mm uPVC watermain which runs to the north of the proposed development site along Old Blessington Road is currently situated within the 3m separation zone from the proposed new building.

Following these discussions, Midsal Homes Limited engaged Murphy Surveys to complete a detailed GPR scanned survey of the existing watermains within the vicinity of the site. When the initial survey was completed, the watermain within the existing bounds of the site was confirmed by excavation of several trial pits around the positions of the scanned GPR survey to confirm the exact position of the existing watermain. Subsequently Murphy Surveys returned to site to capture the existing watermain position once exposed, this information has been documented on the watermain diversion drawings submitted in Appendix B for review.

As a result of these investigative works, it is proposed that:

- The existing watermain within the site be capped off at the boundary and decommissioned within the existing site boundary, pending approval from UE. This deals with the UE observation regarding building above UE assets, when this element is decommissioned, there are no other instances of watermains located below the proposed new development.

-

- The existing 150mm uPVC watermain to the north of the site running along Old Blessington Road will require a diversion over a portion of its length to maintain the 3m separation required from this watermain to the proposed building. A detailed WM diversion plan is submitted in Appendix B; this plan is detailed as per UE watermain diversion guidelines and has been reviewed by a UE representative.

- With the above described watermain diversion there are no longer any instances of watermains within the 3m separation distance around the building, this is demonstrated with measurements setting out the remaining watermains from the new building on drawing S058-TCE-B1-ZZ-DR-S-S-603 in Appendix B

- A new watermain connection is proposed for the site along Blessington Road to the north of the development, with a proposed new connection detail shown on the watermain plan within Appendix B. The proposed new connection is detailed as per UE guidelines.

- The proposed development site red line boundary has been extended to incorporate the new diversion, including a 3m wayleave either side of the diversion, as requested by UE.

8.0 REFERENCES

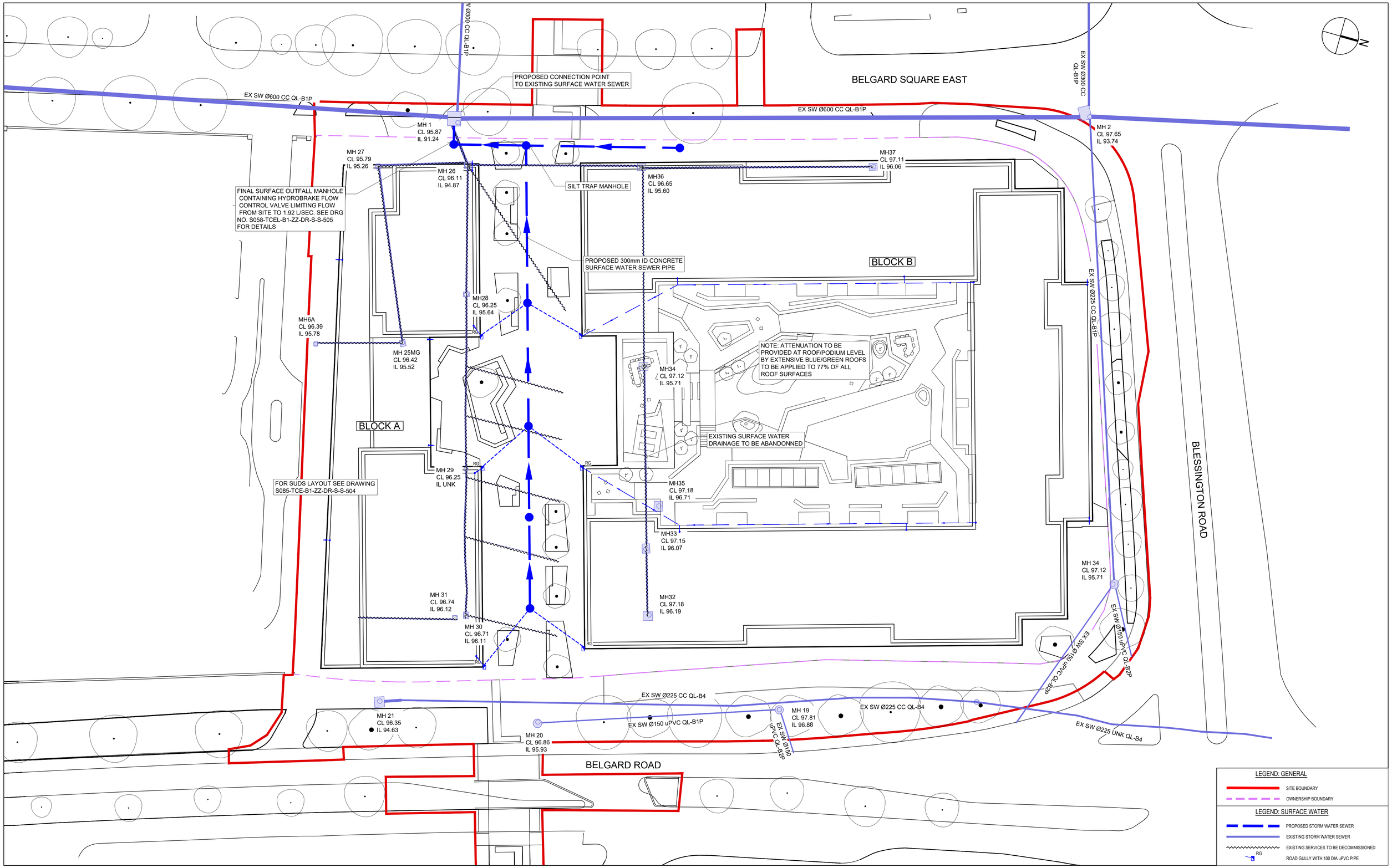
- Greater Dublin Regional Code of Practice for Drainage Works Version 6.0 (April 2006).
- IS EN 752: Drain and Sewer Systems Outside Buildings.
- 'Recommendations for Site Development Works for Housing Areas' by the Department of the Environment and Local Government (November 1998).
- 'Wastewater Infrastructure Standard Details' by Uisce Éireann (July 2020).
- 'Water Infrastructure Standard Details' by Uisce Éireann (July 2020).
- BRE Digest 365 (2007) - *Soakaway Design* - Building Research Establishment.
- CIRIA Report C697 (2007) – *The SUDS Manual* – Construction Industry Research Association.
- CIRIA Report C522 (2000) – *Sustainable Urban Drainage Systems – Design Manual for England and Wales* - Construction Industry Research Association.
- Greater Dublin Strategic Drainage Study (2005) – *Regional Drainage Policies Technical Documents* – Dublin Drainage.
- Technical Guidance Document H (2010) – *Drainage and Wastewater Disposal* – Department of the Environment, Community and Local Government.
- 'Guidelines for drinking water supply' – Water Services Department (February 2009).
- Code of Practice: Wastewater Treatment and Disposal Systems Serving Single Houses.
- Uisce Éireann specification and details.

Ken Moriarty C.Eng, F.I.E.I.
Chartered Engineer
Torque Consulting Engineers Ltd.

APPENDICES

APPENDIX A

Proposed Services Layout Drawings



Notes:
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Rev	Drn	Chkd	Amendments	Date
P07	EL	JdP	ISSUED FOR INFORMATION	03/11/2025
P06	EL	JdP	ISSUED FOR INFORMATION	28/07/2025
P05	EL	JdP	ISSUED FOR INFORMATION	17/03/2025
P04	EL	JdP	ISSUED FOR INFORMATION	11/03/2025
P03	EL	JdP	ISSUED FOR INFORMATION	25/02/2025
P02	EL	JdP	ISSUED FOR INFORMATION	20/02/2025
P01	EL	JdP	ISSUED FOR INFORMATION	17/01/2025

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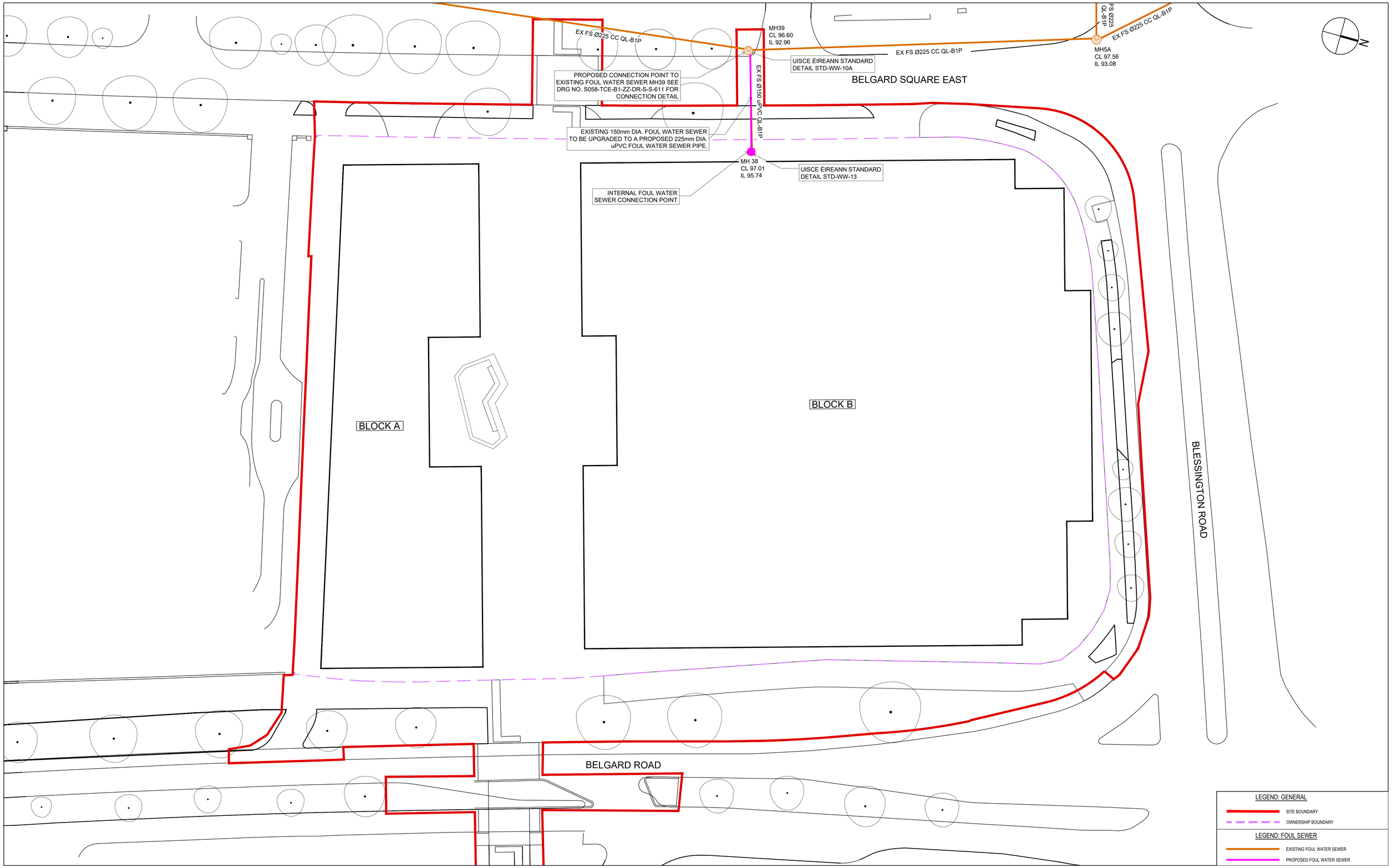
P08	EL	JdP	ISSUED FOR INFORMATION	07/11/2025

FOR PLANNING

Drawing Sheet Size A1

Architect	DONNELLY TURPIN ARCHITECTS		
Project :	MIXED USE DEVELOPMENT BELGARD SQ. EAST, BELGARD RD, TALLAGHT		
Title :	SITE DRAINAGE - SURFACE WATER DRAINAGE PLAN		
Drg No :	S058-TCE-B1-ZZ-DR-S-S-500	Revision :	P08
Scale :	1: 250	Date : 07/11/2025	Status : PLANNING
Drn By :	EL	Chkd By : JdP	Aprvd By : JdP

TORQUE CONSULTING ENGINEERS
CIVIL & STRUCTURAL
Unit K26,
Drinan Enterprise Centre,
Swords Enterprise Park,
Swords,
K67 E722
Ireland
T: +353 (0)1 4853933
E: contactus@tcel.ie
W: www.tcel.ie



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P06	EL	JdP	ISSUED FOR INFORMATION	17/10/2025
P05	EL	JdP	ISSUED FOR INFORMATION	28/07/2025
P04	EL	JdP	ISSUED FOR INFORMATION	17/03/2025
P03	EL	JdP	ISSUED FOR INFORMATION	11/03/2025
P02	EL	JdP	ISSUED FOR INFORMATION	25/02/2025
P01	EL	JdP	ISSUED FOR INFORMATION	17/01/2025

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Architect	DONNELLY TURPIN ARCHITECTS		
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Title :	SITE DRAINAGE - FOUL DRAINAGE PLAN		
Drg No :	S058-TCE-B1-ZZ-DR-S-S-501		Revision : P06
Scale :	1: 250	Date : 17/10/2025	Status : PLANNING
Drn By :	EL	Chkd By : JdP	Aprvd By : JdP

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CIVIL & STRUCTURAL
Unit K26,
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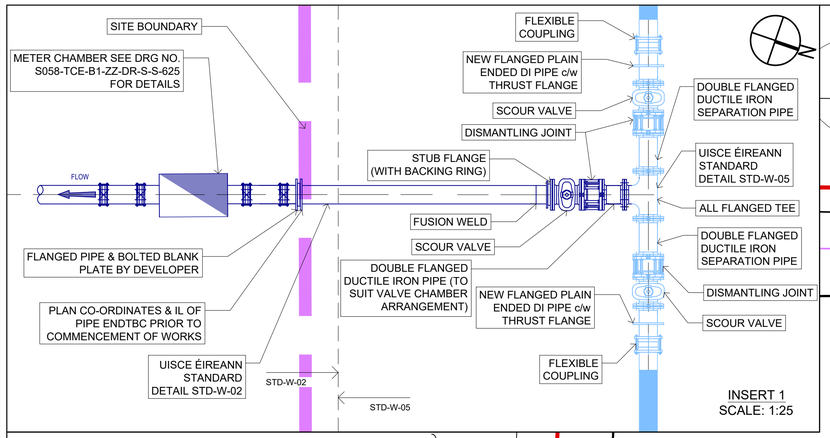

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Title :	SITE DRAINAGE - PROPOSED WATERMAIN CONNECTION		
Drg No :	S058-TCE-B1-ZZ-DR-S-S-502	Revision :	P06
Scale :	AS SHOWN	Date : 17/10/2025	Status : PLANNING
Drn By :	EL	Chkd By : JdP	Aprvd By : JdP

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CIVIL & STRUCTURAL
Unit K26,
Drinan Enterprise Centre,
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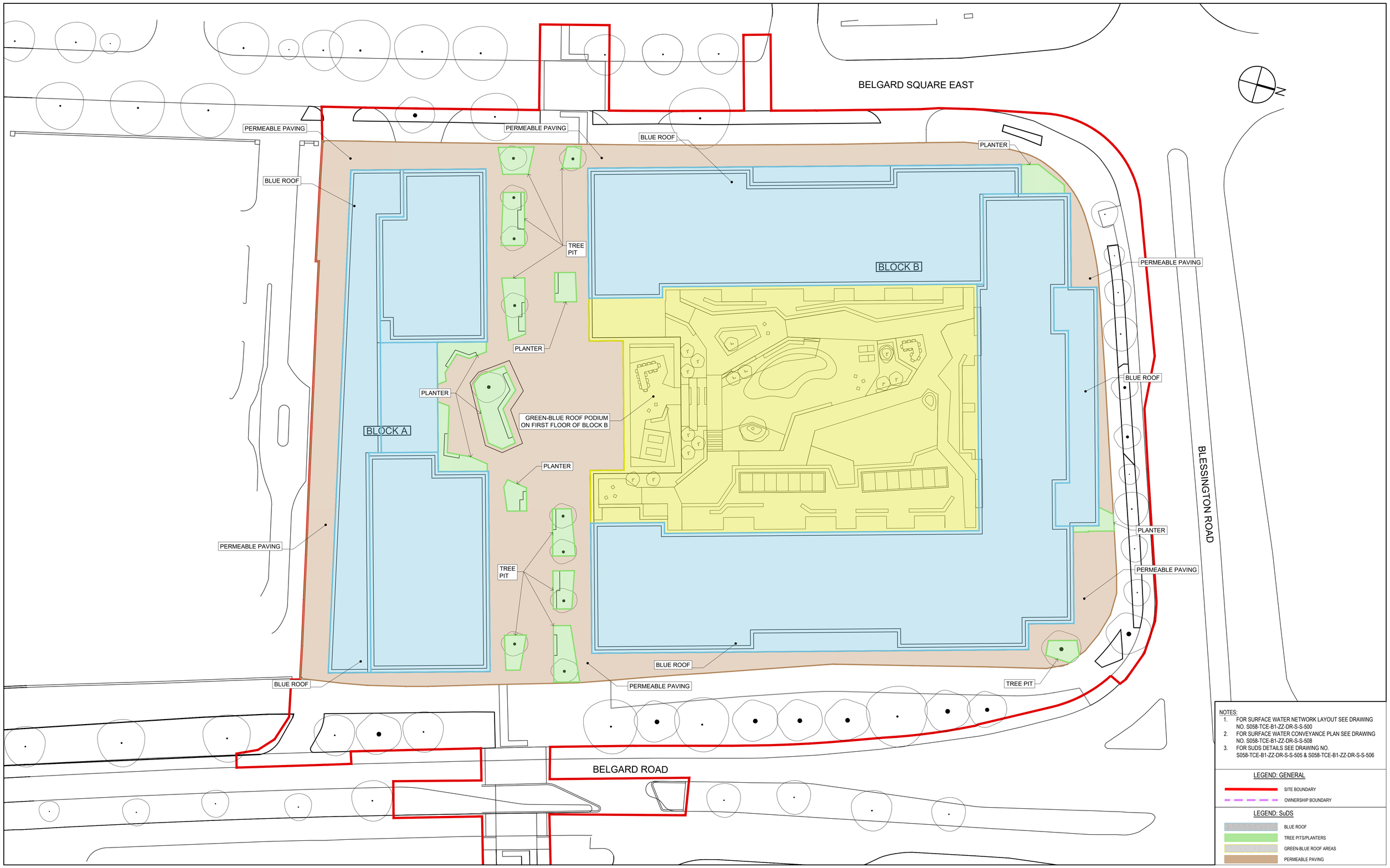

NOTES:
1. FOR SURFACE WATER NETWORK LAYOUT SEE DRAWING NO. S058-TCE-B1-ZZ-DR-S-S-500
2. FOR SURFACE WATER CONVEYANCE PLAN SEE DRAWING NO. S058-TCE-B1-ZZ-DR-S-S-508
3. FOR SUDS DETAILS SEE DRAWING NO. S058-TCE-B1-ZZ-DR-S-S-505 & S058-TCE-B1-ZZ-DR-S-S-506

LEGEND: GENERAL
- SITE BOUNDARY
- OWNERSHIP BOUNDARY

LEGEND: SuDS
- BLUE ROOF
- TREE PITS/PLANTERS
- GREEN-BLUE ROOF AREAS
- PERMEABLE PAVING

Notes:
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Project :	MIXED USE DEVELOPMENT BELGARD SQ. EAST, BELGARD RD, TALLAGHT		
Title :	SUDS MASTER PLAN		
Drg No :	S058-TCE-B1-ZZ-DR-S-S-504	Revision :	P07
Scale :	1: 250	Date : 07/11/2025	Status : PLANNING
Drn By :	EL	Chkd By : JdP	Aprvd By : JdP

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CIVIL & STRUCTURAL
Unit K26,
Drinan Enterprise Centre,
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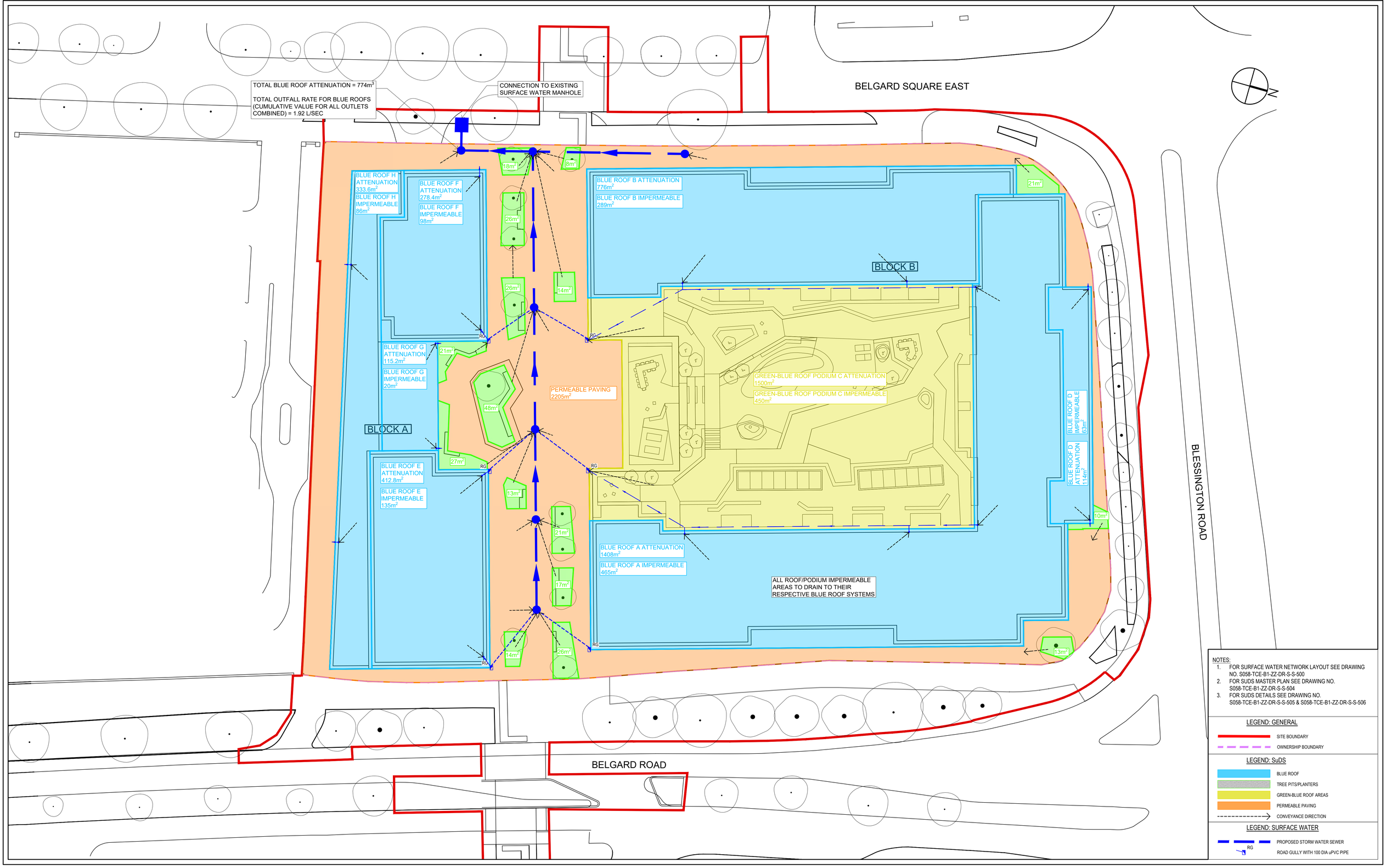

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2. FOR SUDS MASTER PLAN SEE DRAWING NO. S058-TCE-B1-ZZ-DR-S-S-504
3. FOR SUDS DETAILS SEE DRAWING NO. S058-TCE-B1-ZZ-DR-S-S-505 & S058-TCE-B1-ZZ-DR-S-S-506

LEGEND: GENERAL
- SITE BOUNDARY
- OWNERSHIP BOUNDARY

LEGEND: SuDS
- BLUE ROOF
- TREE PITS/PLANTERS
- GREEN-BLUE ROOF AREAS
- PERMEABLE PAVING
- CONVEYANCE DIRECTION

LEGEND: SURFACE WATER
- PROPOSED STORM WATER SEWER
- ROAD GULLY WITH 100 DIA uPVC PIPE

Notes:
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P02	KdR	JdP	ISSUED FOR INFORMATION	06/11/2025
P01	KdR	JdP	ISSUED FOR INFORMATION	03/11/2025

Rev	Drn	Chkd	Amendments	Date

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Drawing Sheet Size A1

Architect	DONNELLY TURPIN ARCHITECTS
Project :	MIXED USE DEVELOPMENT BELGARD SQ. EAST, BELGARD RD, TALLAGHT
Title :	SURFACE WATER CONVEYANCE PLAN

Drg No :	S058-TCE-B1-ZZ-DR-S-S-508	Revision :	P02
Scale :	1: 250	Date : 06/11/2025	Status : PLANNING
Drn By :	KdR	Chkd By : JdP	Aprvd By : JdP

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CIVIL & STRUCTURAL
Unit K26,
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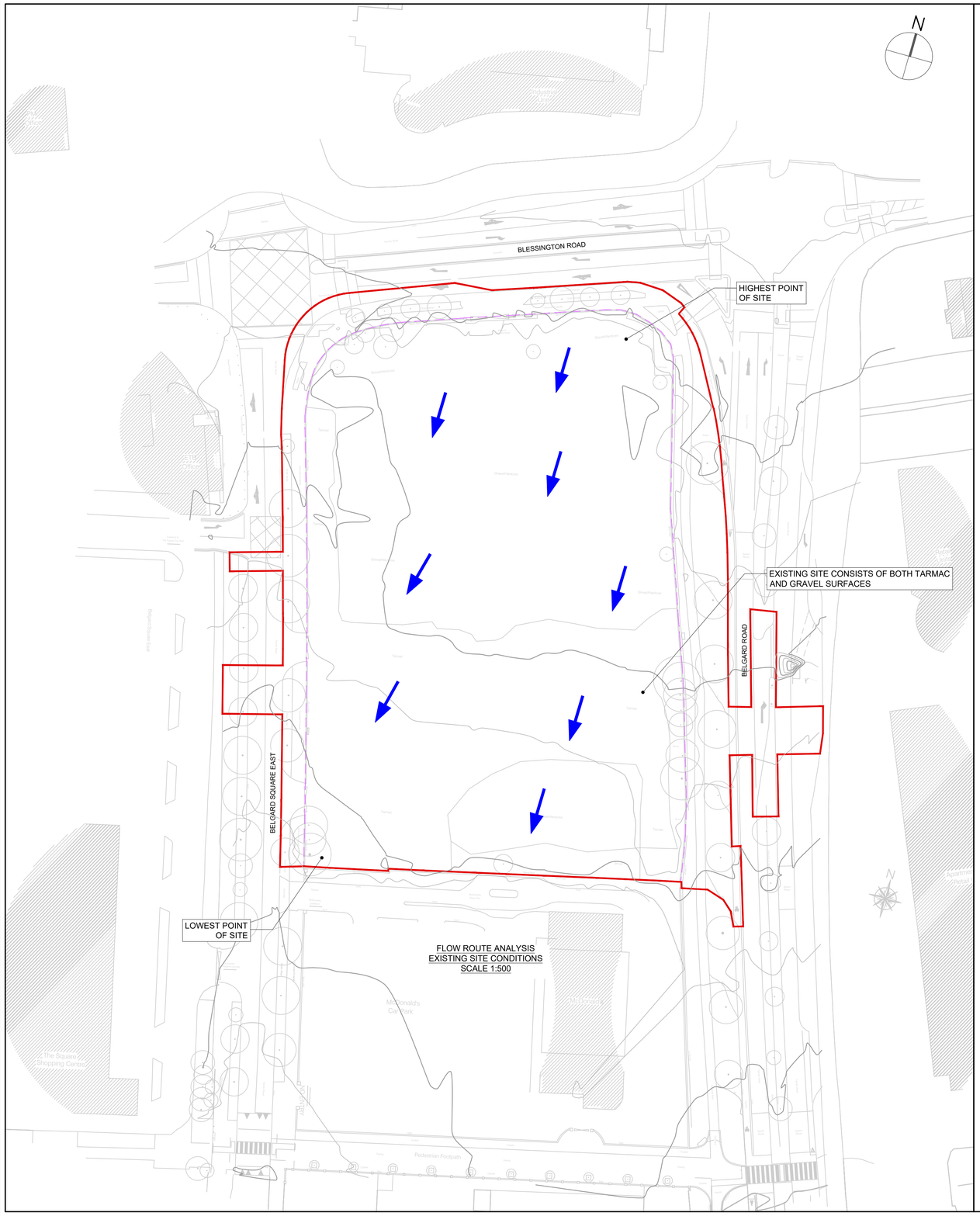

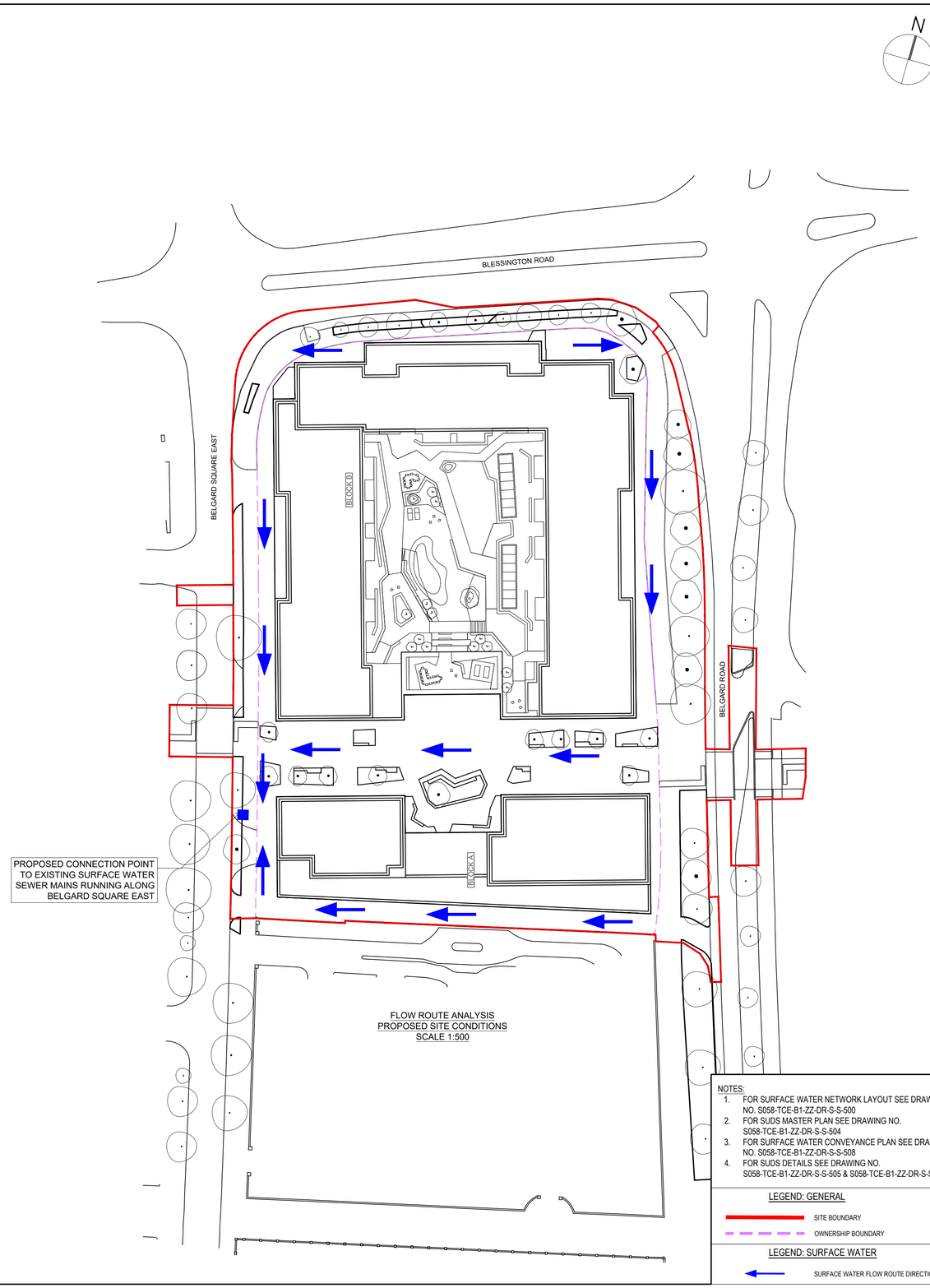

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4. FOR SUDS DETAILS SEE DRAWING NO. S058-TCE-B1-ZZ-DR-S-S-505 & S058-TCE-B1-ZZ-DR-S-S-506

LEGEND: GENERAL

SITE BOUNDARY

OWNERSHIP BOUNDARY

LEGEND: SURFACE WATER

SURFACE WATER FLOW ROUTE DIRECTION

Notes:
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Rev	Drn	Chkd	Amendments	Date

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Title :	SURFACE WATER FLOW ROUTE PLAN		
Drg No :	S058-TCE-B1-ZZ-DR-S-S-509	Revision :	P02
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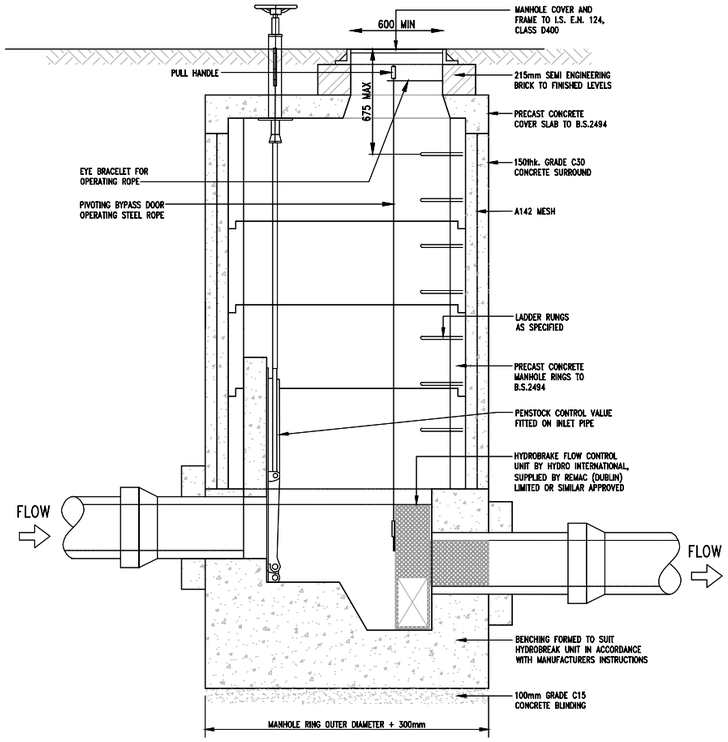
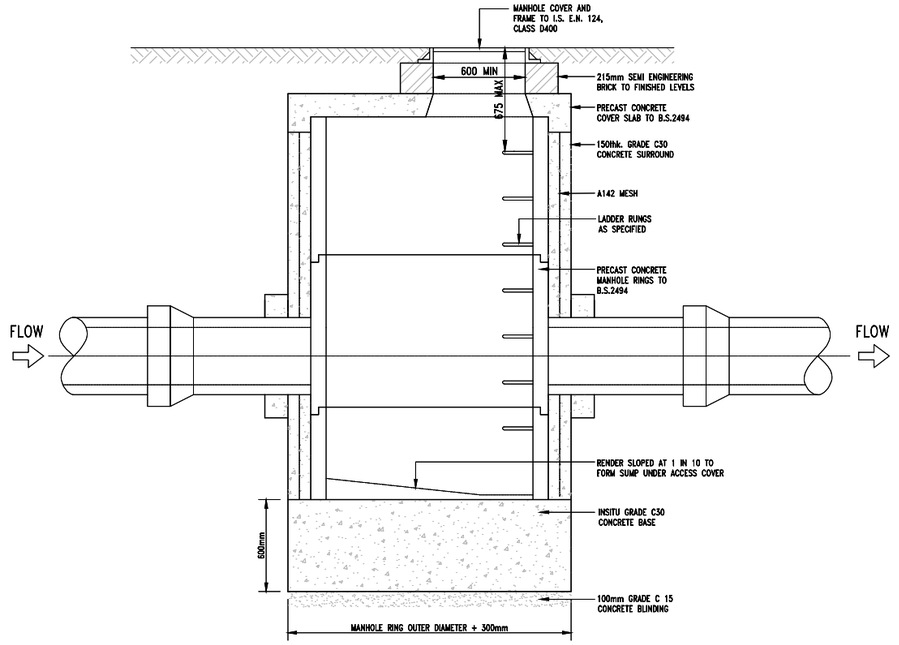
TORQUE CONSULTING ENGINEERS
CIVIL & STRUCTURAL
Unit K26,
Drinan Enterprise Centre,
Swords Enterprise Park,
Swords,
K67 E722
Ireland
T: +353 (0)1 4853933
E: contactus@tcel.ie
W: www.tcel.ie



HYDROBRAKE CHAMBER
MAX. DEPTH G.L. TO I.L. - 3.0m
SCALE 1:20



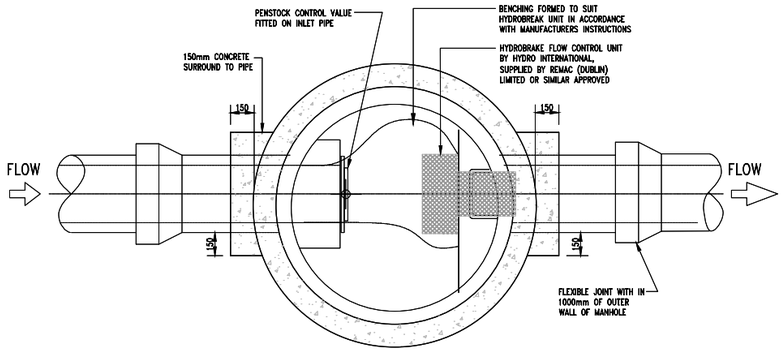
TYPICAL CATCH PIT
MAX. DEPTH G.L. TO I.L. - 3.0m
SCALE 1:20

NOTES :

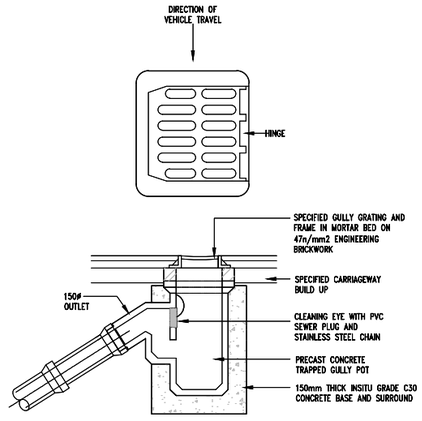
1. DO NOT SCALE FROM THIS DRAWING USE STATED DIMENSIONS ONLY. IF IN DOUBT CONSULT THE ENGINEER.
2. LEVELS REFER TO O.S. DATUM MALIN HEAD.
3. PRECAST MANHOLE RINGS, COVER SLABS AND REDUCING SLABS SHALL COMPLY WITH I.S. 420 :1999.
4. PRECAST MANHOLE RINGS, COVER SLABS AND REDUCING SLABS SHALL BE INSTALLED COMPLETE WITH TYPE 2 RUBBER GASKETS AND JOINTING RINGS WHICH COMPLY WITH B.S. 2494.
5. CONCRETE TO MANHOLE BASES AND SURROUNDS SHALL BE GRADE C30. SURROUND SHALL BE A MINIMUM OF 150mm THICK AND CONTAIN ONE LAYER OF A142 REINFORCEMENT MESH.
6. BLINDING CONCRETE SHALL BE GRADE C15. BLINDING SHALL BE A MINIMUM THICKNESS OF 100mm.
7. SAND CEMENT RENDER 25mm THICK SHALL BE APPLIED TO THE BENCHING AND CHANNEL WITH A STEEL TROWEL FINISH.
8. LADDER RUNGS SHALL BE P.V.C. COATED STEEL. FOR MANHOLES WITH A DEPTH TO INVERT GREATER THEN 4.0m USE GRADE 316 STAINLESS STEEL LADDERS.
9. DROP PIPE WORK SHALL BE SIZED IN ACCORDANCE WITH TABLE NO. 1. WHERE THE CONNECTION < 1.0m ABOVE INVERT USE RAMP CONNECTION, WHERE CONNECTION IS > 1.0m ABOVE INVERT USE DROP CONNECTION.
10. MANHOLE COVERS AND FRAMES SHALL COMPLY WITH I.S. E.N. 124, AND SHALL BE CLASS D400 WITH A CIRCULAR OPENING OF 600mm MINIMUM AND A SQUARE FRAME.
11. SUITABLE SHORT LENGTHS OF PIPE OR ROCKER PIPES SHALL BE INSTALLED TO PROVIDE A FLEXIBLE JOINT WITHIN 1000mm OF THE OUTER FACE OF THE MANHOLE ON ALL SEWERS AND BRANCHES.
12. SEMI ENGINEERING BRICK SHALL BE GRADE 47N/mm².
13. FOR ALL INLETS, OUTLETS AND BRANCHES MATCH CROWN LEVELS UNLESS INDICATED OTHERWISE ELSEWHERE.
14. STORMCELL STORM WATER ATTENUATION SYSTEM SHALL BE SUPPLIED BY HYDRO INTERNATIONAL/REMAC DUBLIN LIMITED OR SIMILAR APPROVED. THE SYSTEM SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
15. HYDROBRAKE FLOW CONTROL SYSTEM SHALL BE SUPPLIED BY HYDRO INTERNATIONAL/REMAC DUBLIN LIMITED OR SIMILAR APPROVED. THE SYSTEM SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
16. TIDEFLEX VALVES BY REDVALVE USA SHALL BE SUPPLIED BY WYTEC LIMITED OR SIMILAR APPROVED. THE VALVES SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
17. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE SPECIFICATION.

TABLE NO. 1	
DX	DY
mm	mm
100	100
150	150
225	225
300	225
375	225
450	300
525	300
600	375

TABLE NO. 2	
Ø OF LARGEST PIPE IN MH (mm)	INTERNAL Ø OF MH (mm)
LESS THEN 375	1050
375	1200
450	1200
525	1500
600	1500
750	1800
900	1800
1050	2100
1200	2100



PLAN ON HYDROBRAKE CHAMBER
MAX. DEPTH G.L. TO I.L. -3.0m
SCALE 1:20



PRECAST CONCRETE TRAPPED GULLY POT
SCALE 1:25

Notes:
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DO NOT SCALE FROM THIS DRAWING. Use figured dimensions only.
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Rev	Drn	Chkd	Amendments	Date
P02	DCS	JDP	ISSUED FOR PLANNING	17/03/2025
P01	DCS	JDP	ISSUED FOR PLANNING	25/02/2025

Rev	Drn	Chkd	Amendments	Date

FOR PLANNING

Drawing Sheet Size A1

Architect	DONNELLY TURPIN ARCHITECTS		
Project :	MIXED USE DEVELOPMENT BELGARD SQ. EAST, BELGARD RD, TALLAGHT		
Title :	SITE DRAINAGE - PROPOSED DETAILS SHEET 1		
Drg No :	S058-TCE-B1-ZZ-DR-S-S-505	Revision :	P01
Scale :	AS SHOWN	Date : 17/03/2025	Status : PLANNING
Drn By :	EL	Chkd By : JdP	Aprvd By : KM

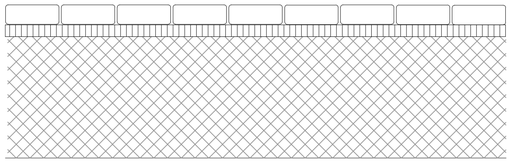
TORQUE CONSULTING ENGINEERS
CIVIL & STRUCTURAL
Unit K26,
Drinan Enterprise Centre,
Swords Enterprise Park,
Swords,
K67 E722
Ireland
T: +353 (0)1 4853933
E: contactus@tcel.ie
W: www.tcel.ie

ADJUSTMENT TO THICKNESS OF AGGREGATE LAYER (AL) BASED ON SUBGRADE CBR TEST VALUE

Subgrade CBR (%)	Additional thickness of AL (mm)	Depth of capping required (mm)
1	+300	600
2	+175	350
3	+125	250
4	+100	200
5-10%	+50	150
>10%	Design thickness	0

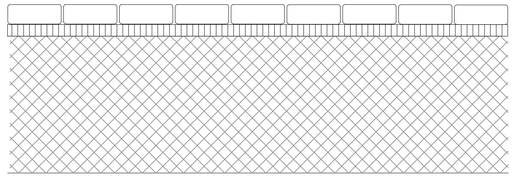
MATERIAL SPECIFICATION
Permeable Asphalt or paving (100mm dp.)
25mm Layer of sand/ grit
Upper 2000 gauge permeable geotextile
250mm dp. coarse graded aggregate with a min. void ratio of 0.3 (attenuation layer)
Upper 2000 gauge permeable geotextile
Capping layer (if required) see table above

THE ATTENUATION STONE SUBGRADE REQUIRES FLAT GROUND OR WITH VERY SLIGHT SLOPE)



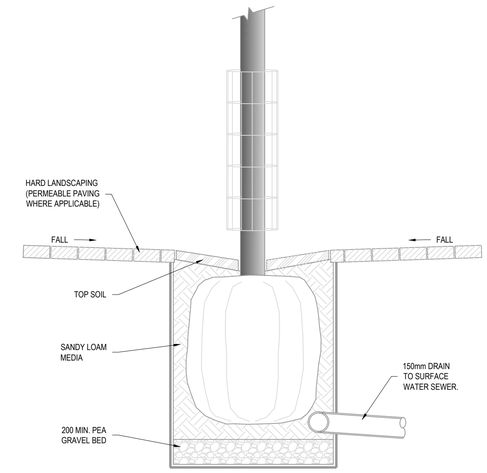
-80mm PERMEABLE PAVING BLOCK TO BS EN 1338 & ARCHITECTS SPECIFICATION & APPROVAL & LAYING PATTERN ON.
-50mm LAYING MATERIAL & JOINTING TO MANUFACTURERS SPECIFICATION (TYPICALLY TYPE 2/6.3 GC 80/20 TO I.S. EN 13342) ON
-GEOTEXTILE LAYER TO CLAUSE 609 (NRA) ON
-300mm SUB-BASE ATTENUATION LAYER 4mm TO 20mm COARSE GRADE CLEAR CRUSHED ROCK TO I.S. EN 13242:2002 (SEE NOTE ON PARTICLE SIZE DISTRIBUTION) ON
-GEOTEXTILE LAYER TO CLAUSE 609 (NRA)

TYPICAL PERMEABLE PAVING CONSTRUCTION IN PEDESTRIAN ONLY AREAS
Scale 1:5

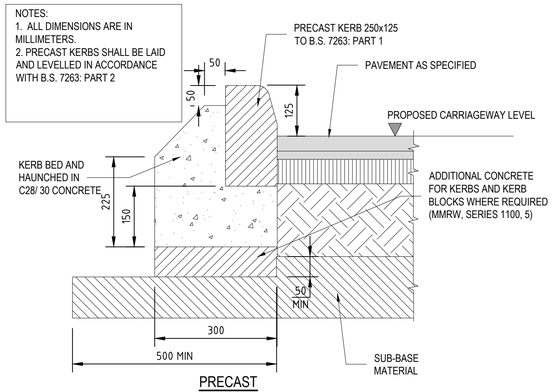


-80mm PERMEABLE PAVING BLOCK TO BS EN 1338 & ARCHITECTS SPECIFICATION & APPROVAL & LAYING PATTERN ON.
-50mm LAYING MATERIAL & JOINTING TO MANUFACTURERS SPECIFICATION (TYPICALLY TYPE 2/6.3 GC 80/20 TO I.S. EN 13342) ON
-GEOTEXTILE LAYER TO CLAUSE 609 (NRA) ON
-350mm SUB-BASE ATTENUATION LAYER 4mm TO 20mm COARSE GRADE CLEAR CRUSHED ROCK TO I.S. EN 13242:2002 (SEE NOTE ON PARTICLE SIZE DISTRIBUTION) ON
-GEOTEXTILE LAYER TO CLAUSE 609 (NRA)

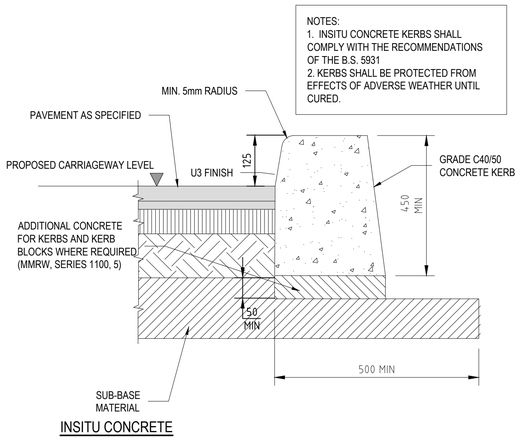
TYPICAL PERMEABLE PAVING CONSTRUCTION IN TRAFFICKED AREAS
Scale 1:5



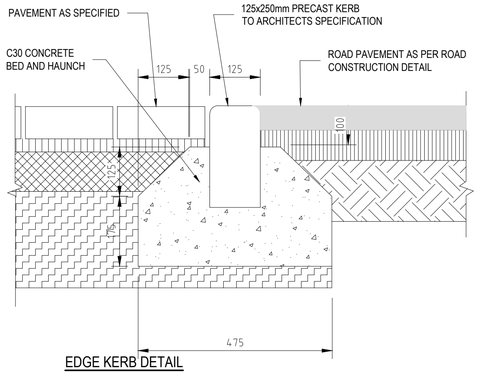
TYPICAL TREE PIT INSTALLATION
SEE LANDSCAPE ARCHITECTS DRAWINGS FOR POSITIONING BUT FINAL LOCATIONS TO BE APPROVED BY TCEL TO INSURE SUFFICIENT CLEARANCE PROVIDED TO SuDS INSTALLATIONS AND STRUCTURE
Scale NTS



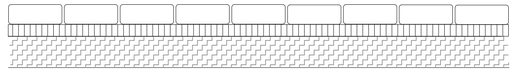
PRECAST KERB DETAIL
Scale 1:5



INSITU CONCRETE KERB DETAIL
Scale 1:5

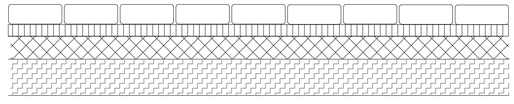


EDGE KERB DETAIL (DBM TO PAVING BLOCK)
Scale 1:5



-80mm PAVING BRICK / BLOCK AS PER ARCHITECTS SPECIFICATION
-30mm BEDDING (AS PER ARCHITECTS SPECIFICATION)
-150mm LAYER OF GRANULAR SUB-BASE (VOIDS RATIO 35%)
ON CLASS 6F2 CAPPING STONE (DEPTH TBC)

TYPICAL STANDARD PAVING CONSTRUCTION IN PEDESTRIAN ONLY AREAS
Scale 1:5



-80mm PAVING BRICK / BLOCK AS PER ARCHITECTS SPECIFICATION
-50mm SAND/ GRIT BEDDING
-250mm LAYER OF GRANULAR SUB-BASE (VOIDS RATIO 35%)
ON CLASS 6F2 CAPPING STONE (DEPTH TBC)

TYPICAL STANDARD PAVING CONSTRUCTION IN TRAFFICKED AREAS
Scale 1:5

Notes:
For setting out refer to Architect's drawings.
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Rev	Drn	Chkd	Amendments	Date
P04	DCS	JDP	ISSUED FOR PLANNING	03/11/2025
P03	DCS	JDP	ISSUED FOR PLANNING	17/03/2025
P02	DCS	JDP	ISSUED FOR PLANNING	11/03/2025
P01	DCS	JDP	ISSUED FOR PLANNING	25/02/2025

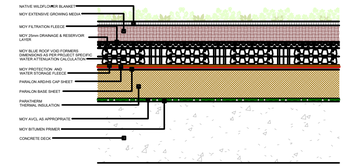
Rev	Drn	Chkd	Amendments	Date

FOR PLANNING

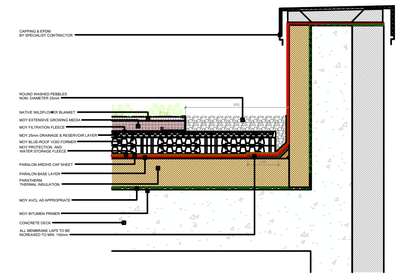
Drawing Sheet Size A1

Architect	DONNELLY TURPIN ARCHITECTS		
Project :	MIXED USE DEVELOPMENT BELGARD SQ. EAST, BELGARD RD, TALLAGHT		
Title :	SITE DRAINAGE - PROPOSED DETAILS SHEET 2		
Drg No :	S058-TCE-B1-ZZ-DR-S-S-506		Revision : P04
Scale :	AS SHOWN	Date : 03/11/2025	Status : PLANNING
Drn By :	DCS	Chkd By : JdP	Aprvd By : KM

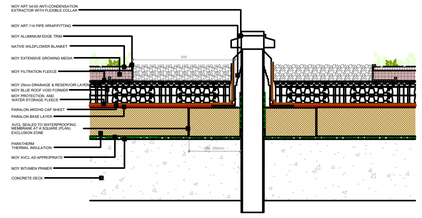
TORQUE CONSULTING ENGINEERS
CIVIL & STRUCTURAL
Unit K26,
Drinan Enterprise Centre,
Swords Enterprise Park,
Swords,
K67 E722
Ireland
T: +353 (0)1 4853933
E: contactus@tcel.ie
W: www.tcel.ie



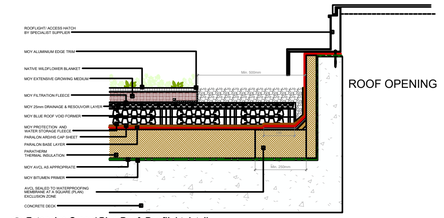
1 **Extensive Green/ Blue roof system assembly**
NTS



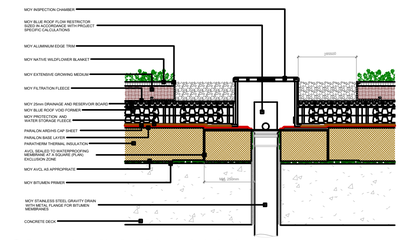
2 **Extensive Green/ Blue roof -Upstand detail**
NTS



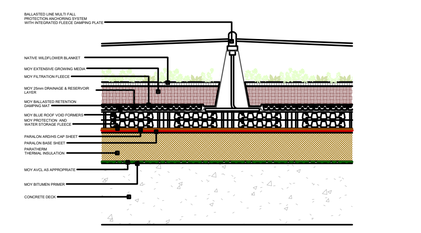
3 **Extensive Green/ Blue Roof -Vent pipe detail**
NTS



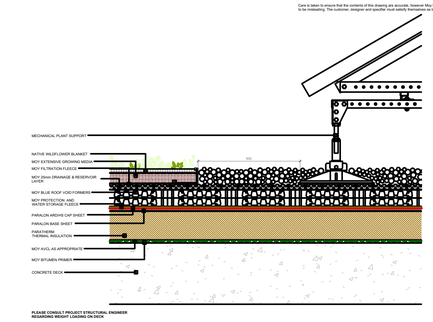
4 **Extensive Green/ Blue Roof -Rooflight detail**
NTS



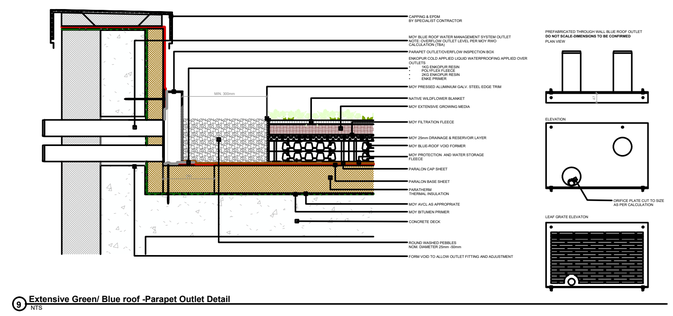
5 **Extensive Green/ Blue Roof -Rainwater Outlet Detail**
NTS



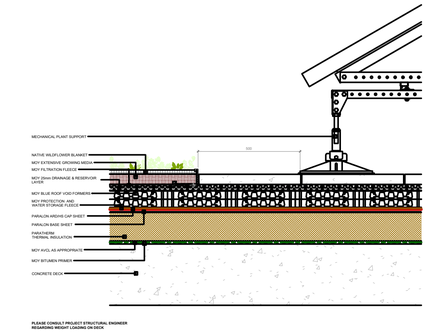
6 **Extensive Green/ Blue roof -Protection anchoring system detail**
NTS



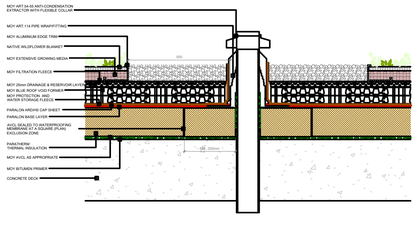
7 **Extensive Green/ Blue roof -PV Array Panel Detail**
NTS



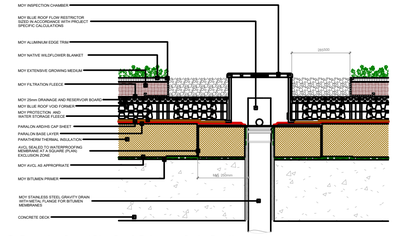
9 **Extensive Green/ Blue roof -Parapet Outlet Detail**
NTS



8 **Extensive Green/ Blue roof -PV Array Panel Detail Option 2**
NTS



3 **Extensive Green/ Blue Roof -Vent pipe detail**
NTS



5 **Extensive Green/ Blue Roof -Rainwater Outlet Detail**
NTS

Notes:
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Rev	Drn	Chkd	Amendments	Date
P02	KdR	JDP	ISSUED FOR PLANNING	06/11/2025
P01	KdR	JDP	ISSUED FOR PLANNING	03/11/2025

Rev	Drn	Chkd	Amendments	Date

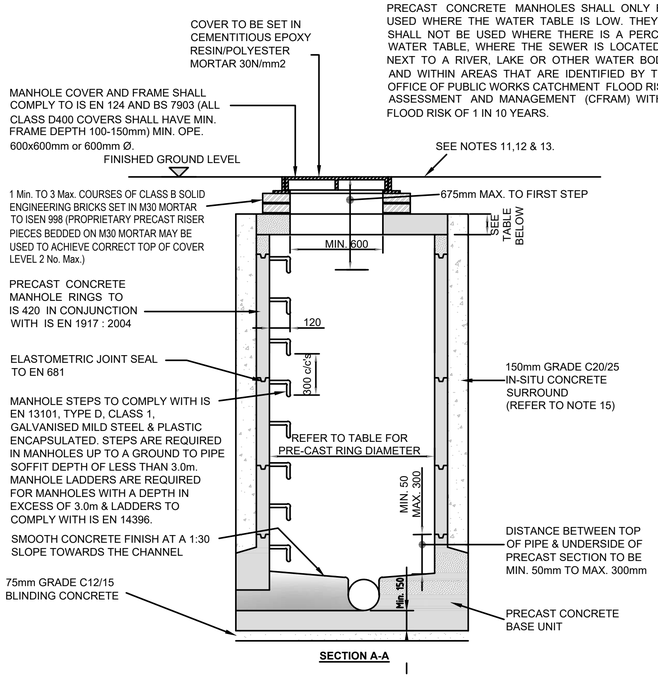
FOR PLANNING

Drawing Sheet Size A1

Architect	DONNELLY TURPIN ARCHITECTS
Project :	MIXED USE DEVELOPMENT BELGARD SQ. EAST, BELGARD RD, TALLAGHT
Title :	SITE DRAINAGE - EXTENSIVE GREEN/BLUE ROOF DETAILS
Drg No :	S058-TCE-B1-ZZ-DR-S-S-510
Revision :	P02
Scale :	AS SHOWN
Date :	03/11/2025
Status :	PLANNING
Drn By :	KdR
Chkd By :	JdP
Aprvd By :	KM

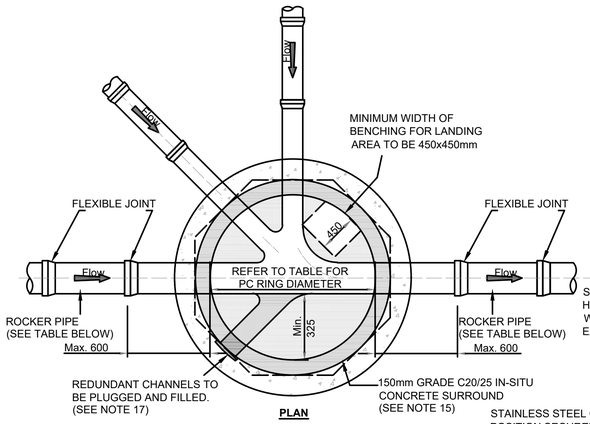
TORQUE CONSULTING ENGINEERS
CIVIL & STRUCTURAL
Unit K26,
Drinan Enterprise Centre,
Swords Enterprise Park,
Swords,
K67 E722
Ireland
T: +353 (0)1 4853933
E: contactus@tcel.ie
W: www.tcel.ie

NOTE:
PRECAST CONCRETE MANHOLES SHALL ONLY BE USED WHERE THE WATER TABLE IS LOW. THEY SHALL NOT BE USED WHERE THERE IS A PERCHED WATER TABLE, WHERE THE SEWER IS LOCATED NEXT TO A RIVER, LAKE OR OTHER WATER BODY AND WITHIN AREAS THAT ARE IDENTIFIED BY THE OFFICE OF PUBLIC WORKS CATCHMENT FLOOD RISK ASSESSMENT AND MANAGEMENT (CFRAM) WITH A FLOOD RISK OF 1 IN 10 YEARS.



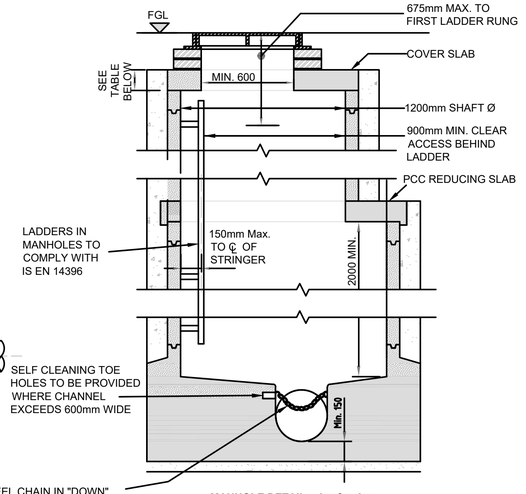
SECTION A-A

1. ALL DIMENSIONS ARE IN MILLIMETRES (mm) UNLESS NOTED OTHERWISE.
2. PRE-CAST MANHOLES UNITS: COMPLYING WITH REQUIREMENTS OF IS EN 1917 AND IS 420.
3. PRE-CAST CONCRETE BASE INCORPORATING CHANNELS, BENCHING ETC. SUBJECT TO IRISH WATER REVIEW ANDCOMPLYING WITH ISEN 1917 & IS 420.
4. IN SITUATIONS WHERE P.C.C. MANHOLE BASES HAVE REDUNDANT CHANNELS, THESE SHALL BE PLUGGED AND FILLED BY SCABBLING, AND INFILLED WITH GRADE C20/25 CONCRETE TO MATCH EXISTING BASE AND BENCHED TO SUIT FLOW WITHIN THE MANHOLE BASE..
5. MANHOLES GREATER THAN 3m IN DEPTH WILL REQUIRE A DETAILED STRUCTURAL DESIGN AND BE SUBJECT TO IRISH WATER REVIEW.
6. PRE-CAST CONCRETE ROOF SLABS TO BE USED SUBJECT TO IRISH WATER REVIEW AND COMPLIANCE WITH IS 420.
7. COVERS AND FRAMES SHALL BE SUITABLE FOR ROAD AND TRAFFIC CONDITIONS SUBJECT TO REVIEW BY IRISH WATER.
8. 200mm ALL AROUND x 100mm DEEP, C20/25 CONCRETE PLINTH COMPLETE WITH BULL NOSE FINISH AND TO BE PROVIDED COMPLETE WITH MILD STEEL REINFORCEMENT LINK AROUND COVERS IN GREEN AREAS..
9. ALL CHAMBERS TO BE CHECKED FOR UPLIFT BY THE DEVELOPER BASED ON GROUND CONDITIONS WITHIN THE SITE. SHOULD ANTI FLOATATION MEASURES BE REQUIRED THEY SHALL BE SUBJECT TO REVIEW BY IRISH WATER.
10. ALL CONCRETE TO BE IN ACCORDANCE WITH IS EN 206 : 2013.
11. ANY SPECIAL ROAD REINSTATEMENT AROUND COVER & FRAME SHALL BE TO ROAD AUTHORITY'S REQUIREMENTS.
12. NEW ROAD CONSTRUCTION & SURFACE FINISH TO BE TO ROAD AUTHORITY REQUIREMENTS.
13. EXISTING ROAD REINSTATEMENT TO COMPLY WITH CURRENT VERSION OF "GUIDELINES FOR MANAGING OPENINGS IN PUBLIC ROADS" BY THE DEPT. OF TRANSPORT, TOURISM & SPORT, OR TRANSPORT INFRASTRUCTURE IRELAND REQUIREMENTS.
14. IF DEPTH FROM GROUND TO PIPE SOFFIT IS GREATER THAN 6m DEEP, A SITE SPECIFIC ENGINEERED SOLUTION FOR ACCESS SHALL BE PROVIDED.
15. PROPRIETARY WATERTIGHT PCC MANHOLE RING SYSTEMS WITH A WALL THICKNESS > 125mm, & A WATER TIGHT JOINT SEALING SYSTEM, MAY BE USED WITHOUT CONCRETE SURROUND, SUBJECT TO THE GROUND WATER LEVEL AT THE MANHOLE BEING LOW, & SUBJECT TO REVIEW BY IRISH WATER.
16. THE INTERNAL MANHOLE DIAMETERS SHOWN IN THE TABLE BELOW ARE MINIMUM DIMENSIONS AND WILL INCREASE DEPENDING ON THE NUMBER AND DIAMETER OF ADDITIONAL INLETS AND FINISHED WITH A 1:3 SAND/CEMENT FINISH TO SUIT FLOW OF INLETS AND OUTLET.



PLAN

NOTE:
IF FLEXIBLE PIPES ARE BEING USED, ROCKER PIPES ARE NOT REQUIRED.



MANHOLE DETAIL > 3m & < 6m GROUND TO SOFFIT DEPTH

(NOTE: ON MANHOLES <1.5mØ, REDUCING SLAB NOT TO BE USED & PCC RINGS TO CONTINUE UP TO COVER SLAB)

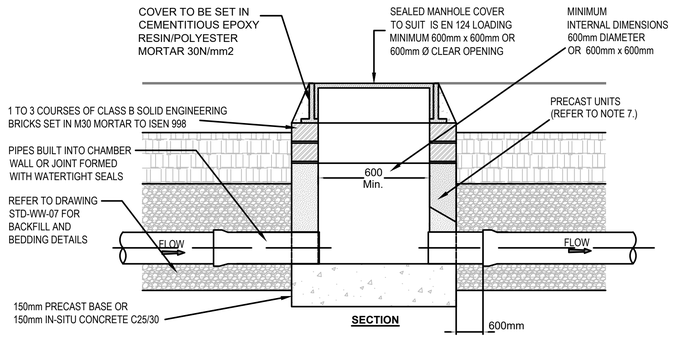
MINIMUM MANHOLE DIAMETERS			
DIAMETER OF LARGEST PIPE IN MANHOLE (mm)	INTERNAL DIAMETER OF MANHOLE (mm)	MIN. PRECAST ROOF SLAB EFFECTIVE THICKNESS (mm)	MIN. IN-SITU ROOF SLAB THICKNESS (mm)
LESS THAN 375	1200	160	225
375 TO 450	1350	160	225
500 TO 750	1500	170	225

ROCKER PIPE LENGTH	
PIPE DIAMETER (mm)	ROCKER PIPE LENGTH (mm)
150 TO 600	600
GREATER THAN 600 TO 750	1000
GREATER THAN 750	1250

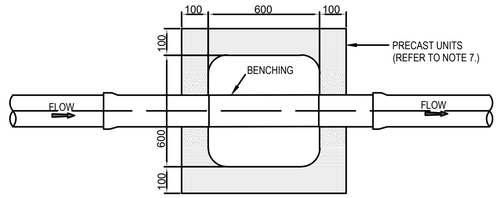
* SEWERS GREATER THAN 450mm Ø ARE OUTSIDE THE SCOPE OF THE STANDARD DETAILS. MANHOLE SIZE OF THESE CHAMBERS MAY BE REUIRED DUE TO MULTIPLE PIPES WITHIN MANHOLE.

PRE-CAST CONCRETE MANHOLE WITH PRECAST BASE.
NTS

1. ALL DIMENSIONS ARE IN MILLIMETRES (mm) UNLESS NOTED OTHERWISE.
2. AN INSPECTION CHAMBER SHOULD BE LOCATED AT OR WITHIN 1m OF THE PROPERTY BOUNDARY AT THE UPSTREAM END OF EACH SERVICE CONNECTION ON THE PRIVATE SIDE OF THE CURTILAGE, IF PRACTICABLE, CONSULT WITH IRISH WATER ON ALTERNATIVE LOCATIONS.
3. SERVICE CONNECTION FROM PUBLIC SEWER TO PROPERTY BOUNDARY IS A PUBLIC ASSET. PIPE UPSTREAM OF THE PROPERTY BOUNDARY IS A PRIVATE DRAIN AND SHOULD BE CONSTRUCTED IN ACCORDANCE WITH THE BUILDING.
4. ACCESS POINTS SHOULD BE LOCATED SO THAT THEY ARE ACCESSIBLE AND APPARENT TO THE MAINTAINER AT ALL TIMES FOR USE. THEY SHOULD AVOID REAR GARDENS OR ENCLOSED LOCATIONS AND SHOULD NEVER BE OVERLAIN WITH SURFACE DRESSING, TOPSOIL, ETC.
5. COVERS AND FRAMES SHALL BE SUITABLE FOR ROAD AND TRAFFIC CONDITIONS SUBJECT TO REVIEW BY IRISH WATER.
6. 200mm ALL AROUND, 100mm DEEP CONCRETE PLINTH AROUND COVERS IN GREEN AREAS.
7. PROPRIETARY PREFABRICATED CHAMBER UNITS MAY ALSO BE USED, SUBJECT TO REVIEW BY IRISH WATER - SEE DETAIL BELOW.
8. CHAMBERS SHALL BE SURROUNDED BY A MINIMUM OF 150mm COMPACTED CLAUSE 804 OR CLAUSE 808 MATERIAL AS PER STD-WW-07.
9 MAXIMUM DEPTH FROM COVER LEVEL TO INVERT OF PIPE = 1.2m. INTERNAL DIMENSIONS GREATER THAN 600 x 600mm OR 600mm Ø REQUIRED WHERE DEPTH EXCEEDS 1.2m - CONSULT WITH IRISH WATER.
10. SMALLER INSPECTION CHAMBERS WITH INTERNAL DIMENSIONS OF 450mm Ø OR 450 X 450mm MAY BE PERMITTED SUBJECT TO APPROVAL BY IRISH WATER WHERE CONFINED PHYSICAL CONDITIONS EXIST.
11. PREFABRICATED UNITS SHOULD HAVE WATER TIGHT JOINTS AND SHOULD BE INTERLOCKING TO PREVENT LATERAL MOVEMENT OF INDIVIDUAL SECTIONS OF THE UNIT

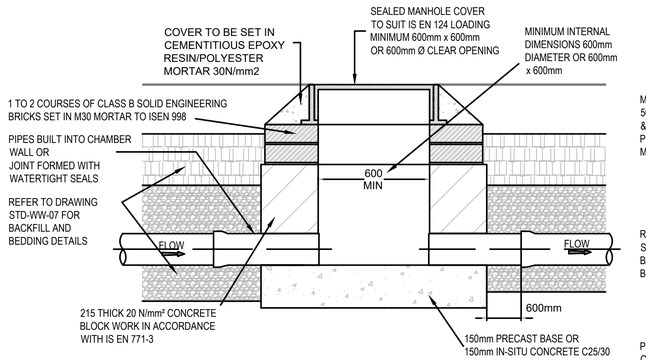


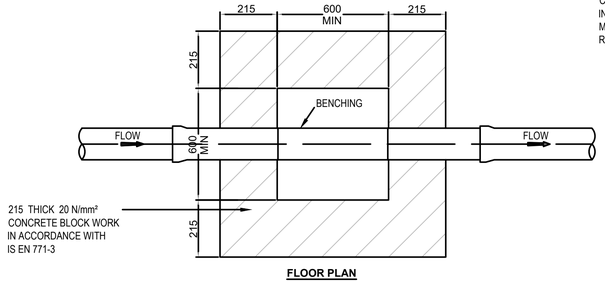
SECTION



FLOOR PLAN

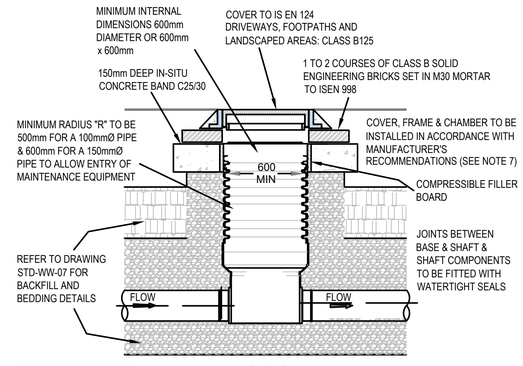
INSPECTION CHAMBER (PRECAST CONCRETE CONSTRUCTION)





FLOOR PLAN

INSPECTION CHAMBER (BLOCK WORK CONSTRUCTION)



SECTION

PROPRIETARY INSPECTION CHAMBER TO EN 13598-2
(FLEXIBLE MATERIAL, SUBJECT TO PRIOR IRISH WATER APPROVAL

(MAXIMUM DEPTH FROM COVER LEVEL TO SOFFIT OF PIPE: 1.2m)

PRIVATE SIDE INSPECTION CHAMBER
NTS

Rev	Drn	Chkd	Amendments	Date
P01	EK	JdP	ISSUED FOR INFORMATION	17/10/2025

Rev	Drn	Chkd	Amendments	Date

FOR PLANNING

Drawing Sheet Size A1

Architect	DONNELLY TURPIN ARCHITECTS		
Project :	MIXED USE DEVELOPMENT BELGARD SQ. EAST, BELGARD RD, TALLAGHT		
Title :	FOUL SEWER DETAILS EXISITNG SERVICES		
Drg No :	S058-TCE-B1-ZZ-DR-S-S-611		Revision : P01
Scale :	AS SHOWN	Date : 17/10/2025	Status : PLANNING
Drn By :	EK	Chkd By : JdP	Aprvd By : JdP

TORQUE CONSULTING ENGINEERS
CIVIL & STRUCTURAL
Unit K26,
Drinan Enterprise Centre,
Swords Enterprise Park,
Swords,
K67 E722
Ireland
T: +353 (0)1 4853933
E: contactus@tcel.ie
W: www.tcel.ie

1. SEPARATION DISTANCES BETWEEN WATERMAINS ASSOCIATED WITH THE WORKS FROM OTHER UTILITY PIPES AND ACCESSORIES SHALL BE IN ACCORDANCE WITH SECTION 3.6 OF THE CODE OF PRACTICE. SEPARATION DISTANCES FOR ALL NEW INSTALLATIONS FROM EXISTING IRISH WATER PIPES SHALL BE AS OUTLINED IN SECTION 3.27 OF THE CODE OF PRACTICE. THE SEPARATION DISTANCES SPECIFIED ARE MINIMUM DISTANCES.
2. SPECIFIC SEPARATION CLEARANCE DISTANCES IN EXCESS OF THESE MINIMA SHALL BE PROVIDED FOR SERVICES SUCH AS GAS, ELECTRICITY, FIBRE-OPTIC OR OIL FILLED CABLES AS THE CASE MAY BE. THE PARTICULAR UTILITY PROVIDERS SHALL BE CONSULTED TO DETERMINE THESE MINIMUM SEPARATION DISTANCES AND EVIDENCE OF THIS CONSULTATION, WITH THE SPECIFIED SEPARATION DISTANCES, SHALL BE PROVIDED TO IRISH WATER AT DESIGN STAGE.
3. WATERMAIN (PROPOSED) SEPARATION DISTANCES
   HORIZONTAL
   300mm TO DISTRIBUTION MAINS OF LESS THAN 300mm DIAMETER.
   500mm TO TRUNK MAINS BETWEEN 300mm AND 450mm DIAMETER.
   3m TO ARTERIAL WATER MAINS OF GREATER THAN 450mm DIAMETER.
   VERTICAL
   300mm TO DISTRIBUTION MAINS OF LESS THAN 300mm DIAMETER.
   500mm TO TRUNK/ARTERIAL MAINS OF DIAMETER GREATER THAN 300mm.

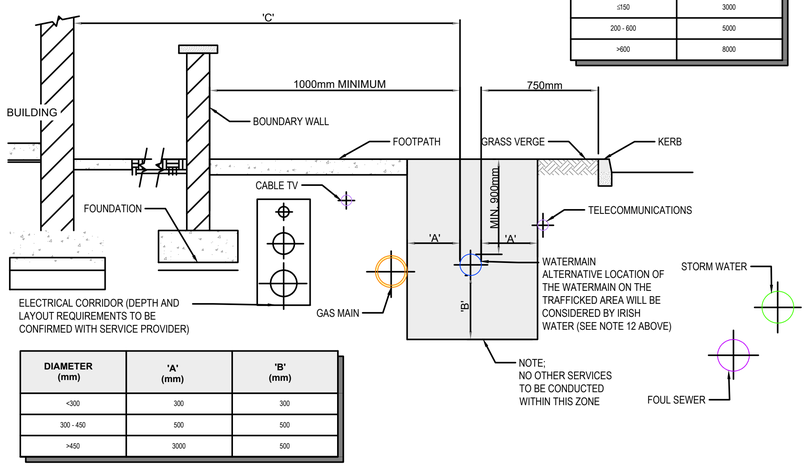
ANY PROPOSED PIPE CROSSING SHOULD BE LOCATED MID-WAY BETWEEN THE WATER JOINTS WITH MINIMUM CLEAR DISTANCE OF 300mm AND UP TO 500mm.
ALL CROSSINGS SHOULD BE AT LEAST 500mm AWAY FROM FITTINGS OR JOINTS

4. WATERMAIN (EXISTING) SEPARATION DISTANCES
   HORIZONTAL
   IN THE CASE OF INSTALLATIONS IN CLOSE PROXIMITY TO EXISTING WATER MAINS AND SEWERS, THE FOLLOWING MINIMUM HORIZONTAL
   DISTANCES SHALL BE MAINTAINED BETWEEN PIPES/DUCTS, CABINETS, POLES, MANHOLES, JUNCTION BOXES, CHAMBERS, ETC.
   WHERE THE DEPTH OF THE EXISTING INFRASTRUCTURE DOES NOT EXCEED 1.5m
   600mm AT EITHER SIDE OF MAINS UP TO AND INCLUDING 150mm DIAMETER;
   1m AT EITHER SIDE OF MAINS OF 200mm TO 250Mmm DIAMETER; 2m AT EITHER SIDE OF MAINS OF 300mm AND 375mm DIAMETER; 5m AT EITHER SIDE OF MAINS OF 400mm AND 450mm DIAMETER;
   SPECIFIC IRISH WATER ADVISED DISTANCES FOR MAINS IN EXCESS OF 450mm;
   600mm AT EITHER SIDE OF GRAVITY SEWER UP TO AND INCLUDING 225mm DIAMETER;
   1m AT EITHER SIDE OF GRAVITY SEWER OF 300mm AND UP TO 450mm DIAMETER;
   1.5m AT EITHER SIDE OF GRAVITY SEWERS OF 600mm DIAMETER AND GREATER ;
5. NOTIFICATION IN WRITING IS REQUIRED SHOULD WORKS BE WITHIN THE FOLLOWING DISTANCES FROM AN EXISTING WATER MAIN OR WASTEWATER RISING MAIN WHERE THE DEPTH OF THE EXISTING INFRASTRUCTURE DOES NOT EXCEED 1.5m:-
   HORIZONTAL
   1m AT EITHER SIDE OF EXISTING PIPES LESS THAN 200mm DIAMETER;
   2m AT EITHER SIDE OF EXISTING PIPES OF 200mm TO 350mm DIAMETER;
   5m AT EITHER SIDE OF EXISTING PIPES OF 350mm OR GREATER;

SPECIFIC WRITTEN APPROVAL WILL BE REQUIRED FROM IRISH WATER BEFORE PROCEEDING WITH THE WORK
NOTIFICATION IN WRITING IS REQUIRED SHOULD WORKS BE WITHIN 1.5m DISTANCE OF A WASTEWATER SEWER.
REQUIREMENTS SHALL ALSO APPLY TO TRIAL HOLES OR SLIT TRENCHES TO LOCATE THE MAIN OR GAIN GROUND INFO DATA.
LARGER DIAMETERS >300mm DISTRIBUTION AND TRUNK MAINS, IRISH WATER MUST BE NOTIFIED AT LEAST 1 MONTH IN ADVANCE.
DEVELOPERS SHALL ALSO COMPLY WITH ANY NOTIFICATION REQUIREMENTS OF OTHER UTILITY PROVIDERS (ESB, GAS MAIN, TELECOMMUNICATION ETC).

6. DETAILED PROPOSALS, INCLUDING WORK METHOD STATEMENTS, INSURANCE CONFIRMATION AND DETAILS OF WORK COMPLETED OF A SIMILAR NATURE MUST BE SUBMITTED TO IRISH WATER FOR ITS CONSIDERATION BEFORE AGREEMENT WILL ISSUE. ALL SUCH WORKS IN THE VICINITY OF ARTERIAL WATER MAINS AND SEWERS (MAINS GREATER THAN 400mm) SHALL BE SUBJECT TO WRITTEN AGREEMENT WITH IRISH WATER BEFORE CONSTRUCTION COMMENCES ON SITE. THIS AGREEMENT SHALL ALSO INCLUDE ANY NECESSARY PROTECTION FOR WATER MAINS.
7. ANY DAMAGE SHALL BE NOTIFIED IMMEDIATELY TO IRISH WATER. THE PERSON WHO CAUSES THE DAMAGE TO A WATER MAIN OR FITTING WILL BE DEEMED TO HAVE COMMITTED AN OFFENCE UNDER SECTION 45 OF THE WATER SERVICES ACT 2007.
8. WATERMAINS OF ANY SIZE SHALL NOT BE WITHIN 1m OF THE BOUNDARY TO A PREMISES.
9. UNDER NO CIRCUMSTANCES WILL IRISH WATER ACCEPT WATER MAIN INSTALLATIONS UNDER STRUCTURES, EXISTING OR PROPOSED, OR IN CLOSE PROXIMITY TO ANY EXISTING STRUCTURES OR FEATURES THAT WILL INHIBIT ACCESS FOR POST INSTALLATION MAINTENANCE AND ACCESS.
10. WHERE THE DESIGN DEVIATES FROM THIS STANDARD DETAIL, THE DESIGN SHALL BE SUBJECT TO THE REVIEW OF IRISH WATER.
11. SEPARATION DISTANCES BETWEEN UTILITIES MAY BE INCREASED TO PROVIDE FOR CHAMBER & THRUST BLOCKS AT BENDS.
12. WHERE A GRASS VERGE IS NOT AVAILABLE AND A FOOTPATH IS LESS THAN 1.5m WIDE, THE WATERMAIN IS PERMITTED ON THE ROADWAY.

DIAMETER (mm)	'C' (mm)
≤150	3000
200 - 600	5000
>600	8000



DIAMETER (mm)	'A' (mm)	'B' (mm)
<300	300	300
300 - 450	500	500
>450	3000	500

STD-W-11 TYPICAL SERVICE LAYOUT INDICATING SEPARATION DISTANCES
NTS

METHOD STATEMENTS:
ALL WORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH BS 5837 AND INFORMED BY NJUG VOLUME 4

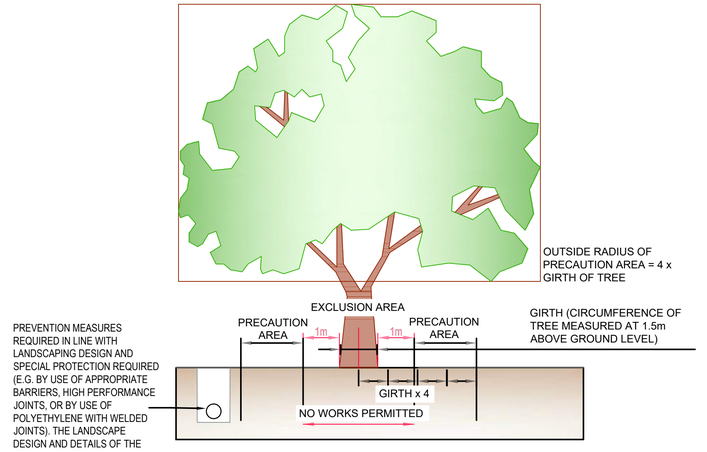
PRECAUTION AREA:
EXCAVATIONS FOR PIPEWORK SHOULD NOT BE UNDERTAKEN WITHIN THIS AREA, UNLESS AGREED WITH IRISH WATER.

WORKS WITHIN THE PRECAUTION ZONE MUST BE SUPERVISED BY A QUALIFIED ARBORIST. WORKS SHALL BE SUBJECT OF A CLEAR METHOD STATEMENT OUTLINING ALL WORKS ADJACENT TO THE TREES/SHRUBS WHICH IS TO BE PREPARED AND AGREED IN ADVANCE OF THE WORKS.

MATERIAL, PLANT AND SPOIL SHALL NOT BE STORED WITHIN THIS ZONE.

EXCLUSION AREA:
WORKS IN THIS AREA ARE TO BE AVOIDED, UNLESS ABSOLUTELY NECESSARY AND AGREED WITH IRISH WATER.

EXCAVATIONS FOR PIPEWORK SHOULD NOT BE UNDERTAKEN WITHIN THIS AREA, UNLESS NECESSARY AND NO OTHER OPTIONS AVAILABLE. WORKS WITHIN THE EXCLUSION ZONE MUST BE SUPERVISED BY A QUALIFIED ARBORIST AND AGREED WITH IRISH WATER. WORKS SHALL BE SUBJECT OF AN ARBORICULTURAL IMPACT ASSESSMENT AS PER BS 5837 AND A CLEAR METHOD STATEMENT OUTLINING ALL WORKS ADJACENT TO THE TREE/SHRUBS IS TO BE PREPARED AND AGREED IN ADVANCE OF THE WORKS. MATERIAL, PLANT AND SPOIL SHALL NOT BE STORED WITHIN THIS ZONE.



EXISTING PLANTING:

STD-W-12 RESTRICTIONS ON WATER INFRASTRUCTURE WORKS ADJACENT TO EXISTING TREES
NTS

Notes:
For setting out refer to Architect's drawings.
This drawing shall be read in conjunction with all other Architectural and Engineering drawings and all other relevant drawings and Specifications.
DO NOT SCALE FROM THIS DRAWING. Use figured dimensions only.
Verify dimensions on site and report any discrepancies to the author immediately.

Rev	Drn	Chkd	Amendments	Date
PO1	EK	JdP	ISSUED FOR INFORMATION	17/10/2025

Rev	Drn	Chkd	Amendments	Date

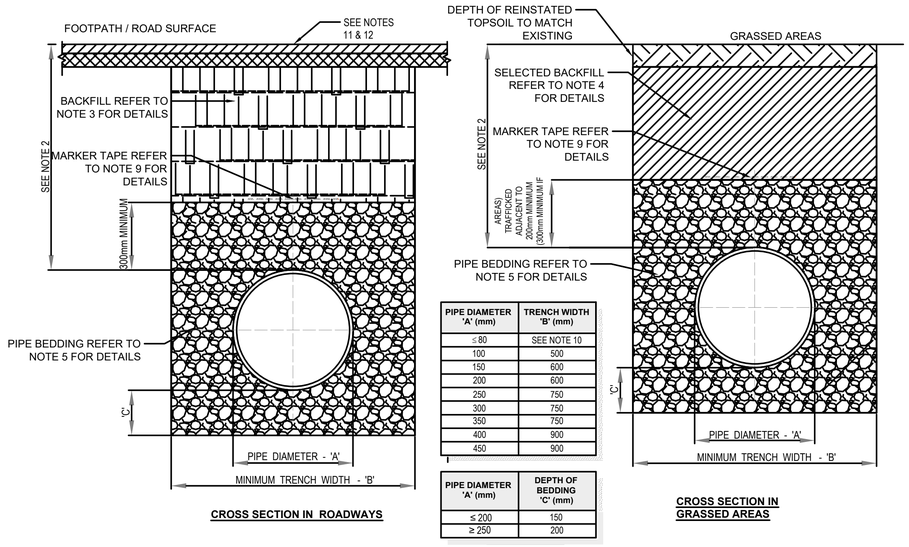
FOR PLANNING

Drawing Sheet Size A1

Architect	DONNELLY TURPIN ARCHITECTS		
Project :	MIXED USE DEVELOPMENT BELGARD SQ. EAST, BELGARD RD, TALLAGHT		
Title :	WATER MAIN DETAILS SHEET 01 OF 05		
Drg No :	S058-TCE-B1-ZZ-DR-S-S-621	Revision :	P01
Scale : NTS	Date : 17/10/2025	Status :	PLANNING
Drn By : EK	Chkd By : JdP	Aprvd By :	JdP

TORQUE CONSULTING ENGINEERS
CIVIL & STRUCTURAL
Unit K26,
Drinan Enterprise Centre,
Swords Enterprise Park,
Swords,
K67 E722
Ireland
T: +353 (0)1 4853933
E: contactus@tcel.ie
W: www.tcel.ie

1. ALL DIMENSIONS ARE IN MILLIMETRES (mm) UNLESS NOTED OTHERWISE.
2. THE MINIMUM DEPTH OF COVER FROM THE FINISHED GROUND LEVEL TO THE EXTERNAL CROWN OF THE PIPE SHALL BE 900mm WHERE THE PIPE IS TO BE LOCATED IN HOUSING ESTATE ROADS. GREATER DEPTHS OF COVER AND/OR PIPE STRENGTH AND/OR A HIGHER CLASS OF BEDDING MATERIAL MAY BE REQUIRED WHERE HIGH TRAFFIC LOADING IS ANTICIPATED. THE DESIRABLE COVER FOR A WATERMAIN SHOULD BE 1200mm, WHERE PRACTICABLE & SHOULD NOT EXCEED 3.0m.
3. CLAUSE 804 / 808 MATERIAL IN ACCORDANCE WITH THE NATIONAL ROADS AUTHORITY SPECIFICATION FOR ROAD WORKS IS TO BE USED AS BACKFILL MATERIAL WHERE THE WATER MAIN IS LOCATED IN ROADS, FOOTPATHS OR WHEN THE NEAREST PART OF THE TRENCH IS WITHIN 1m OF THE PAVED EDGE OF THE ROADWAY. CLAUSE 804 / 808 IS TO BE COMPACTED AS PER CLAUSE 802 OF THE NATIONAL ROADS AUTHORITY SPECIFICATION FOR ROAD WORKS. CLAUSE 808 IS TO BE USED WITHIN 500mm OF CEMENT BOUND MATERIALS, CONCRETE PAVEMENTS, CONCRETE STRUCTURES OR CONCRETE PRODUCTS. OTHERWISE CLAUSE 804 MAY BE USED. ALTERNATIVE BACKFILL MATERIAL TO THAT DESCRIBED ABOVE (CLAUSE 804 OR CLAUSE 808) OF THE PIPE TRENCH WILL ONLY BE ALLOWED BY IRISH WATER WHERE THE ROADS AUTHORITY IN WHOSE FUNCTIONAL AREA THE DEVELOPMENT IS LOCATED, PROVIDES WRITTEN APPROVAL TO THE DEVELOPER TO THE USE SUCH ALTERNATIVE MATERIAL.
4. SELECTED EXCAVATED MATERIAL MAY BE USED IN GREEN-FIELD AREAS ABOVE GRANULAR PIPE SURROUND MATERIAL SUBJECT TO REVIEW BY IRISH WATER.
5. PIPE BEDDING SHALL COMPLY WITH WIS 4-08-02 AND IGN 4-08-01 GRANULAR MATERIAL SHALL BE 14mm TO 5mm (d/D $\frac{2}{14}$). GRADED AGGREGATE OR 10mm (d/D $\frac{4}{10}$) SINGLE SIZED AGGREGATE TO IS EN 13242.
6. IN SOFT GROUND CONDITIONS (CBR < 5) THE MATERIAL SHOULD BE EXCAVATED OUT AND DISPOSED OF IN ACCORDANCE WITH THE WASTE MANAGEMENT ACT AND CLAUSE 804 / 808 MATERIAL IN 6. ACCORDANCE WITH THE NATIONAL ROADS AUTHORITY SPECIFICATION FOR ROAD WORKS SHALL REPLACE THE EXCAVATED MATERIAL, WRAPPED IN GEO-TEXTILE WRAPPING. ALTERNATIVELY, SPECIAL PIPE SUPPORT ARRANGEMENTS, INCLUDING PILING ETC. MAY BE REQUIRED WHERE THE DEPTH OF SOFT MATERIAL IS EXCESSIVE. SUCH ARRANGEMENTS SHALL BE SUBJECT TO ASSESSMENT BY IRISH WATER BEFORE ADVANCING WITH THE WORK.
7. PIPES SHALL NOT BE SUPPORTED ON STONES OR ROCKS, OR ANY HARD OBJECT AT ANY POINT ALONG THE TRENCH. ROCK SHALL BE EXCAVATED TO A DEPTH OF 150mm BELOW THE ACTUAL DEPTH OF THE TRENCH WITH THE VOID FILLED WITH CLAUSE 804 / 808 MATERIAL IN ACCORDANCE WITH THE NATIONAL ROADS AUTHORITY SPECIFICATION FOR ROAD WORKS. THE GRANULAR MATERIAL SHALL BE LAID ABOVE THIS VOID BACKFILL MATERIAL.
8. SHOULD MINIMUM COVER NOT BE ACHIEVABLE, CONCRETE GRADE C8/10 SHALL BE USED AS BACKFILL MATERIAL.
9. MARKER TAPE TO BE 400mm WIDE BLUE POLYETHYLENE MATERIAL IN ACCORDANCE WITH EN 12163, PLASTIC PIPES SHALL HAVE WARNING TAPE INCORPORATED A REINFORCED BAND BRACING WIRE. SERVICE PIPES SHALL HAVE 200mm WIDE MESH TAPE. MARKER TAPE TO BE LAID AT TOP OF PIPE BEDDING LAYER.
10. TRENCH WIDTHS FOR PIPE SIZES ≤80mm MAY BE <500mm, SUBJECT TO CONSIDERATION BEING GIVEN TO THE TRENCH DEPTH, HEALTH & SAFETY & CONSTRUCTION ACCESS REQUIREMENTS.
11. NEW ROAD CONSTRUCTION & SURFACE FINISH TO BE TO ROAD AUTHORITY REQUIREMENTS.
12. EXISTING ROAD REINSTATEMENT TO COMPLY WITH CURRENT VERSION OF "GUIDELINES FOR MANAGING OPENINGS IN PUBLIC ROADS" BY THE DEPT. OF TRANSPORT, TOURISM & SPORT, OR TRANSPORT INFRASTRUCTURE IRELAND REQUIREMENTS.

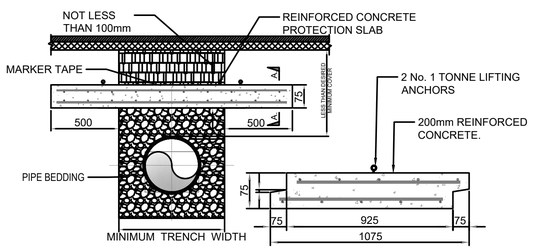


CROSS SECTION IN ROADWAYS

CROSS SECTION IN GRASSED AREAS

PIPE DIAMETER 'A' (mm)	TRENCH WIDTH 'B' (mm)
≤ 80	SEE NOTE 10
100	500
150	600
200	600
250	750
300	750
350	750
400	900
450	900

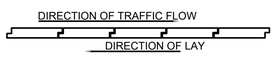
PIPE DIAMETER 'A' (mm)	DEPTH OF BEDDING 'C' (mm)
≤ 200	150
≥ 250	200



REDUCED COVER PROTECTION SLAB DETAIL

SECTION A-A

13. FOR ANY SLABBING WORKS TO BE CARRIED OUT WITHIN THE VICINITY OF THE PIPELINE, A METHOD STATEMENT IS TO BE SUBMITTED FOR APPROVAL BY IRISH WATER.
14. MARKER TAPE TO BE PLACED ABOVE THE PROTECTION SLAB ALONG THE DIRECTION OF THE PIPELINE
15. CONCRETE TO BE GRADE C30/35
16. MINIMUM COVER TO STEEL REINFORCEMENT =40mm
17. SLABS TO BE DESIGNED FOR USE UNDER A HB25 LOAD IN ACCORDANCE WITH BS5400-2. DESIGN TO BE SUBMITTED TO IRISH WATER FOR ASSESSMENT PRIOR TO INSTALLATION
18. THE SOIL ON WHICH THE SLAB RESTS MUST HAVE A CBR OF 4% OR GREATER.WHERE THE CBR IS LESS THAN 4% THE MATERIAL SHALL BE REMOVED AND REPLACED WITH IMPORTED GRANULAR MATERIAL AS APPROVED BY IRISH WATER.
19. IF DIRECTION OF PIPELINE AND DIRECTION OF TRAFFIC FLOW ARE PARALLEL, THE DIRECTION OF LAY OF THE SLAB IS TO BE AGAINST THE DIRECTION OF TRAFFIC FLOW.

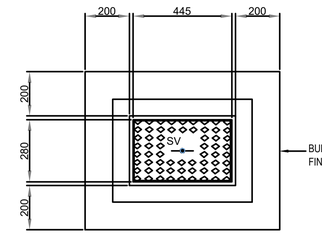


20. IF PIPELINE PROTECTION SLAB IS TO BE USED SOLELY FOR IMPACT PROTECTION & OVERALL DEPTH OF COVER IS GREATER THAN 1.2m, THE DISTANCE BETWEEN UNDERSIDE OF SLAB & TOP OF PIPE MAY BE INCREASED AFTER CONSULTATION WITH IRISH WATER.

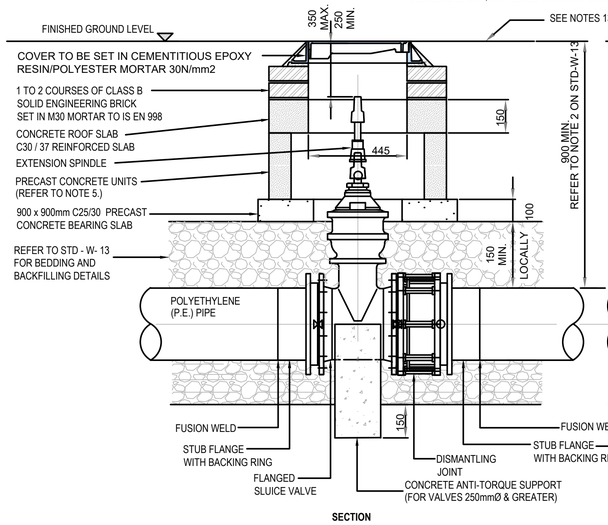
STD-W-13 TRENCH BACKFILL / BEDDING & REDUCED COVER PROTECTION SLAB DETAIL

NTS

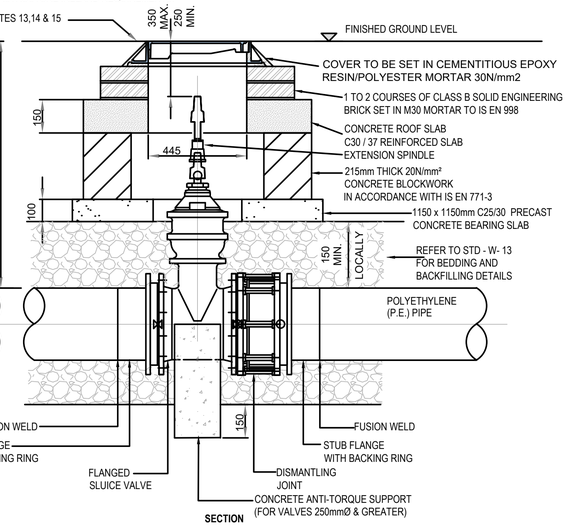
1. ALL DIMENSIONS IN MILLIMETRES (mm) UNLESS NOTED OTHERWISE.
2. SLUICE VALVE CHAMBERS SHALL BE COVERED WITH APPROVED HEAVY DUTY METAL COVERS TO IS 261 OR BS 5834. COVER AND FRAME SHALL BE SUITABLE FOR ROAD AND TRAFFIC CONDITIONS AND IS SUBJECT TO REVIEW BY IRISH WATER.
3. SLUICE VALVES SHALL BE RESILIENT SEATED AND SHALL COMPLY WITH BS 5163-1, BS 5163-2, IS EN 1074-1, IS EN 1074-2, OR EQUIVALENT E.U. SPECIFICATIONS.
4. ALL SLUICE VALVES SHALL BE ANTI-CLOCKWISE CLOSING.
5. VALVE CHAMBER TO BE CONSTRUCTED OF PRECAST CONCRETE UNITS OR HIGH DENSITY BLOCKWORK. ALTERNATIVELY PROPRIETARY PREFABRICATED CHAMBER UNITS MAY ALSO BE USED, SUBJECT TO REVIEW BY IRISH WATER. ROOF SLABS SHALL BE DESIGNED TO CARRY ALL LIVE LOADS & DEAD LOADS, & CONSIST OF A REINFORCED CONCRETE SLAB OF IN-SITU CONCRETE, GRADE C30/37, WITH A MINIMUM THICKNESS OF 150mm. ALTERNATIVELY, PRE-CAST CONCRETE ROOFS MAY BE USED, SUBJECT TO IRISH WATER REVIEW, & COMPLIANCE WITH IS EN 1917 & IS 420. PCC CHAMBER RISER UNITS SHOULD BE INTERLOCKING WHEN STACKED TO PREVENT LATERAL MOVEMENT OF INDIVIDUAL UNITS.
6. CONCRETE CHAMBERS SHALL BE SURROUNDED BY A MINIMUM OF 150mm COMPACTED CLAUSE 808 MATERIAL AS PER STD-W-13.
7. DUCTILE IRON PIPES AND FITTINGS TO BE IN ACCORDANCE WITH IS EN 545. PE PIPES AND FITTINGS TO BE IN ACCORDANCE WITH IS EN 12201:2011.
8. 200mm ALL AROUND, 100mm DEEP CONCRETE PLINTH AROUND COVERS IN GREEN AREAS.
9. THRUST BLOCKS (NOT SHOWN ON DRAWING), TO BE PROVIDED AS PER STANDARD DRAWING STD-W-28 AT ALL TEES, BENDS, TAPERS, DEAD ENDS AND PIPES AT STEEP SLOPES.
10. ANTI-CORROSION TAPE TO BE PROVIDED AROUND BURIED FLANGES.
11. ALL CONCRETE TO BE IN ACCORDANCE WITH IS EN 206.
12. 450 x 450mm INTERNAL DIMENSION CHAMBERS MAY BE PROVIDED SUBJECT TO REVIEW BY IW. SUCH CHAMBERS SHALL BE PROVIDED WITH GRADE "A" HEAVY DUTY COVER & FRAME & STAMPED "SV". BEARING SLABS TO BE 900 x 900mm IN ALL CASES.
13. ANY SPECIAL ROAD REINSTATEMENT AROUND COVER & FRAME SHALL BE TO ROAD AUTHORITY'S REQUIREMENTS.
14. NEW ROAD CONSTRUCTION & SURFACE FINISH TO BE TO ROAD AUTHORITY REQUIREMENTS.
15. EXISTING ROAD REINSTATEMENT TO COMPLY WITH CURRENT VERSION OF "GUIDELINES FOR MANAGING OPENINGS IN PUBLIC ROADS" BY THE DEPT. OF TRANSPORT, TOURISM & SPORT, OR TRANSPORT INFRASTRUCTURE IRELAND REQUIREMENTS.



PLINTH DETAIL IN GRASS AREA



SECTION



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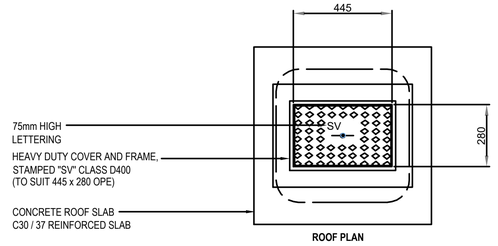
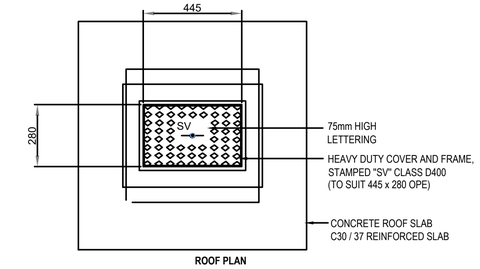
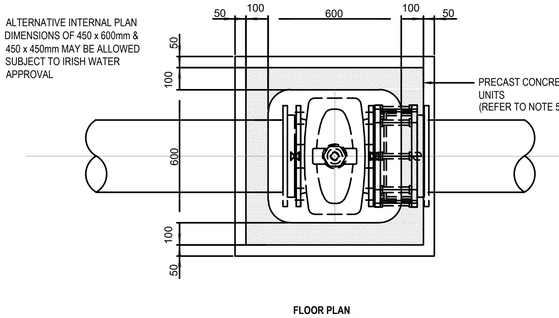


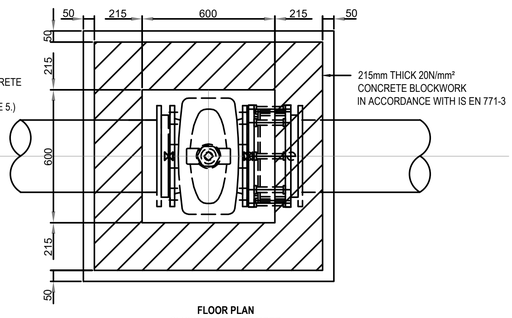
ROOF PLAN



ROOF PLAN



FLOOR PLAN
SLICE VALVE CHAMBER
(PRECAST CONCRETE CONSTRUCTION)



FLOOR PLAN
SLUICE VALVE CHAMBER
(BLOCKWORK CONSTRUCTION)

STD-W-15 SLUICE VALVE FOR POLYETHYLENE (P.E.) PIPE (< 350mm DIA.)

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Notes:
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Rev	Drn	Chkd	Amendments	Date
P01	EK	JdP	ISSUED FOR INFORMATION	17/10/2025

Rev	Drn	Chkd	Amendments	Date

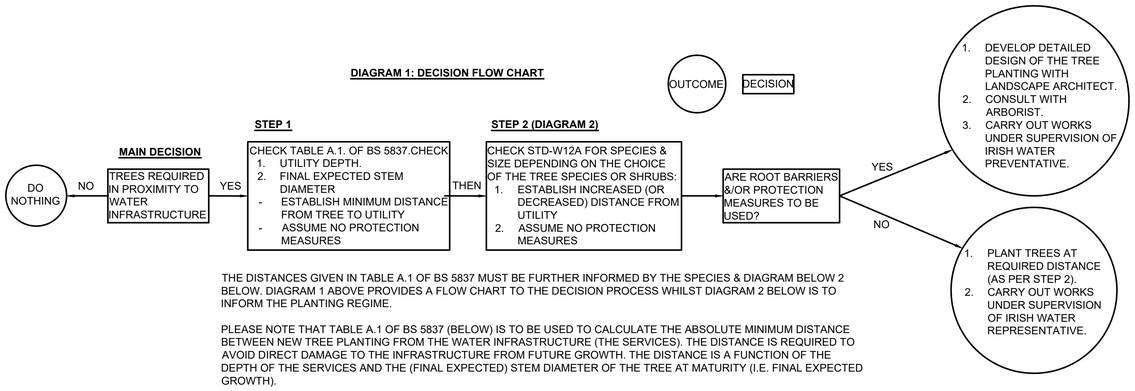
FOR PLANNING

Drawing Sheet Size A1

Architect	DONNELLY TURPIN ARCHITECTS		
Project :	MIXED USE DEVELOPMENT BELGARD SQ. EAST, BELGARD RD, TALLAGHT		
Title :	WATERMAIN DETAILS SHEET 02 OF 05		
Drg No :	S058-TCE-B1-ZZ-DR-S-S-622	Revision :	P01
Scale :	NTS	Date : 17/10/2025	Status : PLANNING
Drn By :	EK	Chkd By : JdP	Aprvd By : JdP

TORQUE CONSULTING ENGINEERS
CIVIL & STRUCTURAL
Unit K26,
Drinan Enterprise Centre,
Swords Enterprise Park,
Swords,
K67 E722
Ireland
T: +353 (0)1 4853933
E: contactus@tcel.ie
W: www.tcel.ie

DIAGRAM 1: DECISION FLOW CHART



THE DISTANCES GIVEN IN TABLE A.1 OF BS 5837 MUST BE FURTHER INFORMED BY THE SPECIES & DIAGRAM BELOW 2 BELOW. DIAGRAM 1 ABOVE PROVIDES A FLOW CHART TO THE DECISION PROCESS WHILST DIAGRAM 2 BELOW IS TO INFORM THE PLANTING REGIME.

PLEASE NOTE THAT TABLE A.1 OF BS 5837 (BELOW) IS TO BE USED TO CALCULATE THE ABSOLUTE MINIMUM DISTANCE BETWEEN NEW TREE PLANTING FROM THE WATER INFRASTRUCTURE (THE SERVICES). THE DISTANCE IS REQUIRED TO AVOID DIRECT DAMAGE TO THE INFRASTRUCTURE FROM FUTURE GROWTH. THE DISTANCE IS A FUNCTION OF THE DEPTH OF THE SERVICES AND THE (FINAL EXPECTED) STEM DIAMETER OF THE TREE AT MATURITY (I.E. FINAL EXPECTED GROWTH).

TABLE A.1 BS 5837	MINIMUM DISTANCE BETWEEN YOUNG TREES OR NEW PLANTING & STRUCTURES, IN METRES (m)		
	FINAL STEM DIA. < 300mm	FINAL STEM DIA. 300mm TO 600mm	FINAL STEM DIA. > 600mm
SERVICES			
< 1m DEEP	0.5	1.5	3.0
> 1m DEEP	--	1.0	2.0

THUS FOR EXAMPLE:
- FOR SERVICE LESS THAN 1 METRE DEEP, THE MINIMUM DISTANCE IS TO BE 1.5m FOR A TREE BETWEEN 300 AND 600mm STEM DIAMETER AT MATURITY.
- FOR A SERVICE GREATER THAN 1 METRE DEEP, THE MINIMUM DISTANCE IS TO BE 1.0m FOR A TREE BETWEEN 300 AND 600mm STEM DIAMETER AT MATURITY.

NOTE: RESTRICTIONS RELATE TO INFRASTRUCTURE WITHOUT ROOT INTRUSION PROTECTION.

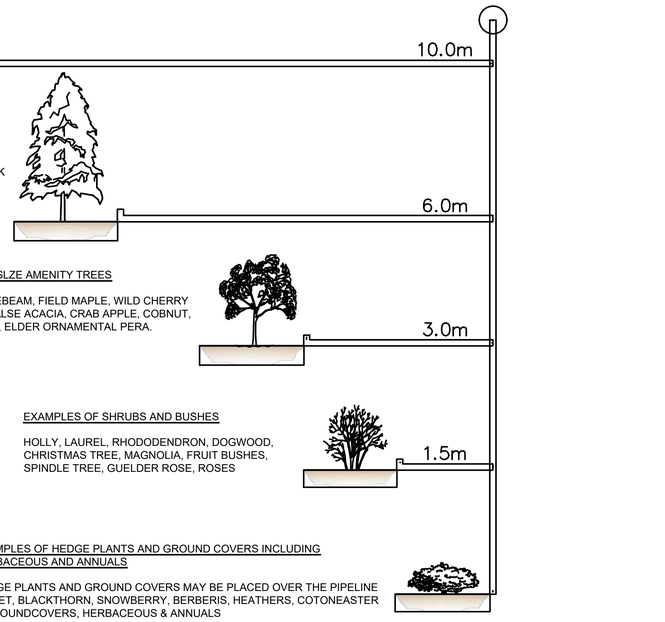
THE DESIGN OF LANDSCAPING SHALL BE UNDERTAKEN IN CONJUNCTION WITH THE DESIGN OF WATER INFRASTRUCTURE, ETC. THE TREE/BUSH/SHRUB SHALL NOT BE LOCATED CLOSER TO THE WATER INFRASTRUCTURE THAN INDICATED ABOVE, EXCEPT WHERE SPECIAL PROTECTION MEASURES ARE APPROVED. WHERE THERE IS A RISK OF TREE/ROOT INTRUSION, THE WATER INFRASTRUCTURE SHALL BE RESISTANT TO TREE ROOT INGRESS (E.G. BY USE OF APPROPRIATE BARRIERS, HIGH PERFORMANCE JOINTS, OR BY USE OF POLYETHYLENE WITH WELDED JOINTS). THE LANDSCAPING DESIGN AND DETAILS OF THE SPECIAL PROTECTION MEASURES MUST BE AGREED WITH IRISH WATER.
A TREE SHALL NOT BE PLANTED DIRECTLY OVER WATER INFRASTRUCTURE WHERE EXCAVATION OF THE INFRASTRUCTURE WOULD REQUIRE REMOVAL OF THE TREE UNLESS SUCH PLANTING IS AGREED WITH IRISH WATER AND IN GENERAL ONLY SHALLOW ROOTING SHRUBS SHALL BE PLATED CLOSE TO WATER INFRASTRUCTURE.
PLEASE ENSURE THAT THESE DISTANCES ARE ADHERED TO IN ORDER TO PROTECT THE TREES FROM ANY FUTURE MAINTENANCE. REFERENCE SHOULD ALSO BE MADE TO BS 5837, BS 8545 AND THE NJUG GUIDELINES VOLUME 4 FOR FURTHER INFORMATION.

DIAGRAM 2: PLANTING DISTANCES FOR DIFFERENT SPECIES WITHOUT BARRIER PROTECTION

EXAMPLES OF LARGE GROWING SPECIES

POPLAR,
WILLOW.

WATERMAINS
NOTE THAT VALUES REFER TO PLANTING DISTANCES WITHOUT ROOT BARRIERS OR PROTECTION ON MEASURES



EXAMPLES OF LARGE CONIFERS & DECIDUOUS TREES

SCOTS PINE, BLACK PINE, CEDAR, LARCH, LAWSON'S CYPRESS, ASH, BEECH, SYCAMORE, HORSE CHESTNUT, SWEET CHESTNUT, LONDON PLANE, LIME, ALDER, ELM, OAK

EXAMPLES OF SMALL SLZE AMENITY TREES

MOUNTAIN ASH, WHITEBEAM, FIELD MAPLE, WILD CHERRY COCKSPUR THORN, FALSE ACACIA, CRAB APPLE, COBNUT, BIRCH, HORNBEAM CV, ELDER ORNAMENTAL PERA.

EXAMPLES OF SHRUBS AND BUSHES

HOLLY, LAUREL, RHODODENDRON, DOGWOOD, CHRISTMAS TREE, MAGNOLIA, FRUIT BUSHES, SPINDLE TREE, GUELDER ROSE, ROSES

NOTE: OTHER SPECIES NOT NAMED TO BE PLANTED TO THE SAME SPACINGS DEPENDING ON ROOT FORMATION.

EXAMPLES OF HEDGE PLANTS AND GROUND COVERS INCLUDING HERBACEOUS AND ANNUALS

HEDGE PLANTS AND GROUND COVERS MAY BE PLACED OVER THE PIPELINE PRIVET, BLACKTHORN, SNOWBERRY, BERBERIS, HEATHERS, COTONEASTER & GROUNDCOVERS, HERBACEOUS & ANNUALS

STD-W-12A RESTRICTIONS ON NEW TREES / SHRUBS PLANTING ADJACENT TO WATER MAINS

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P01	EK	JdP	ISSUED FOR INFORMATION	17/10/2025

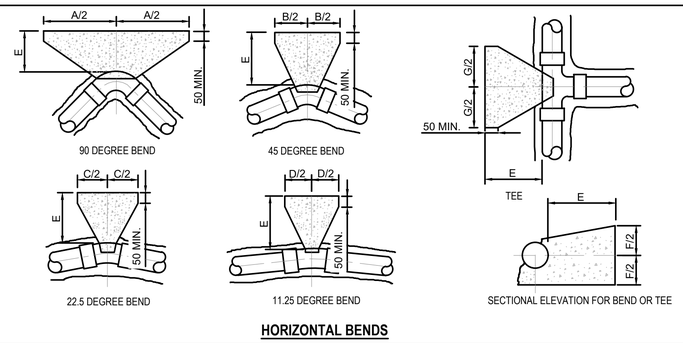
Rev	Drn	Chkd	Amendments	Date

FOR PLANNING

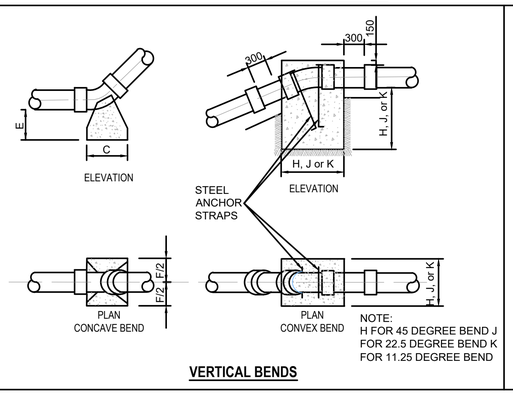
Drawing Sheet Size A1

Architect	DONNELLY TURPIN ARCHITECTS		
Project :	MIXED USE DEVELOPMENT BELGARD SQ. EAST, BELGARD RD, TALLAGHT		
Title :	WATERMAIN DETAILS SHEET 03 OF 05		
Drg No :	S058-TCE-B1-ZZ-DR-S-S-623		Revision : P01
Scale :	NTS	Date : 17/10/2025	Status : PLANNING
Drn By :	EK	Chkd By : JdP	Aprvd By : JdP

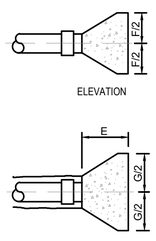
TORQUE CONSULTING ENGINEERS
CIVIL & STRUCTURAL
Unit K26,
Drinan Enterprise Centre,
Swords Enterprise Park,
Swords,
K67 E722
Ireland
T: +353 (0)1 4853933
E: contactus@tcel.ie
W: www.tcel.ie

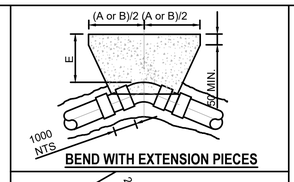


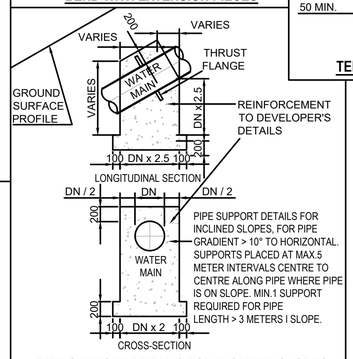
HORIZONTAL BENDS

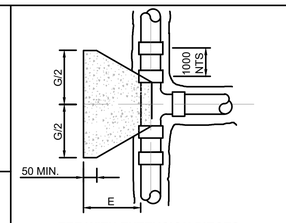


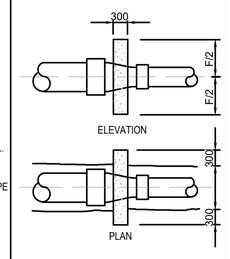
VERTICAL BENDS

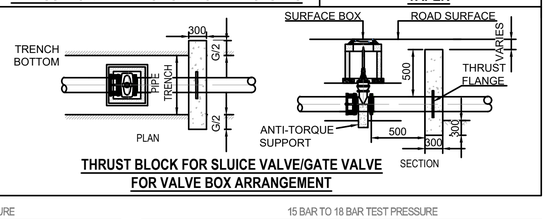


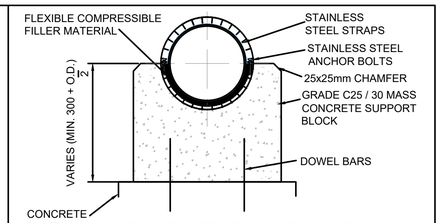


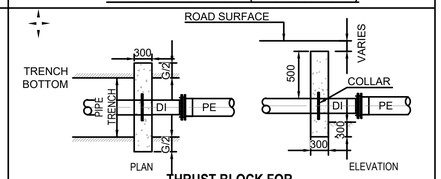












1. ALL DIMENSIONS IN MILLIMETRES (mm) UNLESS NOTED OTHERWISE.
2. CONCRETE THRUST BLOCKS (ANCHORAGE) SHALL BE POSITIONED SYMMETRICALLY WITH RESPECT TO THE CONNECTING PIPE & BENDS.
3. TRENCH DIMENSIONS : REFER TO DRAWING No's. STD-W-13.
4. THRUST BLOCKS SHALL BEAR ON UNDISTURBED SOIL. IF FOR ANY REASON THEY CANNOT THEN THE DEVELOPER SHALL NOTIFY IRISH WATER IMMEDIATELY WITH A PROPOSED SOLUTION.
5. THRUST BLOCK REINFORCEMENT REQUIRES SPECIFIC DESIGN.
6. FOR TEST PRESSURES GREATER THAN 18 BAR, THRUST BLOCK DESIGN IS TO BE SUBMITTED TO IRISH WATER FOR REVIEW.
7. THRUST BLOCKS ARE DESIGNED FOR AN AVERAGE BEARING PRESSURE OF 100 KN/m (TYPICAL FOR SOFT CLAY) FOR OTHER CONDITIONS. ACTUAL DIMENSIONS MAY BE ALTERED ON INSTRUCTIONS FROM IRISH WATER.
8. CONCRETE IN THRUST BLOCKS SHALL BE GRADE C20/25.
9. COMPRESSIBLE FILLER FOR CONCRETE PROTECTION TO BE IN ACCORDANCE WITH BS EN 622-1 AND BS EN 622-4. BITUMINOUS MATERIAL SHALL NOT BE PUT IN CONTACT WITH PLASTIC PIPES. THE THICKNESS OF COMPRESSIBLE FILLER FOR MAINS < 450mm IN DIAMETER IS TO BE 18mm.
10. CONCRETE THRUST BLOCKS FOR POLYETHYLENE PIPE TO COMPLY WITH THE MANUFACTURES REQUIREMENTS.
11. POLYETHYLENE PIPES SHALL BE WRAPPED IN PLASTIC SHEETING HAVING A COMPOSITION IN ACCORDANCE WITH BS 6076 BEFORE BEING CAST INTO CONCRETE.
12. ALL CONCRETE TO BE IN ACCORDANCE WITH IS EN 206.

< 12 BAR TEST PRESSURE

NOM. DIA. (mm)	DIMENSIONS									
	A	B	C	D	E	F	G	H	J	K
100	600	330	160	80	200	350	390	700	600	400
150	950	510	260	130	225	450	660	900	750	600
200	1150	600	310	160	300	650	790	1050	900	700
250	1350	750	380	200	300	800	970	1200	1000	750
300	1580	850	450	220	320	950	1110	1300	1100	850
350	2100	1150	570	290	450	1000	1450	1550	1200	900
400	2550	1400	700	350	500	1050	1800	1700	1250	1000
450	3000	1630	830	420	680	1100	2130	1800	1450	1150
500	3590	1950	990	500	800	1200	2540	1950	1600	1250
600	4100	2200	1120	570	850	1400	2880	2100	1700	1300

12 BAR TO 15 BAR TEST PRESSURE

NOM. DIA. (mm)	DIMENSIONS									
	A	B	C	D	E	F	G	H	J	K
100	700	380	190	100	200	350	510	750	600	400
150	1135	620	320	160	225	450	760	950	750	600
200	1400	750	380	190	300	650	980	1150	950	700
250	1730	940	480	240	320	800	1210	1350	1050	850
300	2090	1130	580	300	380	950	1480	1500	1200	950
350	2600	1410	720	360	500	1050	1840	1700	1350	1050
400	2980	1610	820	420	750	1200	2110	1850	1500	1150
450	3400	1840	940	470	900	1300	2330	2000	1600	1250
500	4090	2210	1130	570	1000	1400	2890	2200	1750	1350
600	5010*	2710*	1380	700	1000	1500	3550*	2350	1900	1500

15 BAR TO 18 BAR TEST PRESSURE

NOM. DIA. (mm)	DIMENSIONS									
	A	B	C	D	E	F	G	H	J	K
100	750	400	205	100	220	400	530	800	650	400
150	1250	700	350	180	250	500	890	1000	850	650
200	1650	890	450	230	320	700	1170	1250	1000	800
250	1960	1060	540	270	350	900	1370	1450	1150	900
300	2300	1200	640	320	500	1100	1630	1650	1300	1050
350	2930	1580	830	410	750	1200	2070	1850	1500	1150
400	3510	1900	970	190*	1000	1300	2490	2000	1600	1250
450	3810	2270	1160	580	1000	1350	2970	2150	1700	1350
500	4340*	2380	1210	610	1000	1400	3700	2250	1750	1400
600	6370*	3450*	1760	890	1000	1500	4500*	2400	2050	1650

TABLE OF DIMENSIONS FOR STEEPLY INCLINED PIPELINES

GRADIENT	SPACING
1 IN 2 & STEEPER	5.5m
BELOW 1 IN 2 TO 1 IN 4	11.0m
1 IN 4 TO 1 IN 5	16.6m
1 IN 5 TO 1 IN 6	22.0m

STD-W-28 WATER MAIN THRUST AND SUPPORT BLOCKS
NTS

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P01	EK	JdP	ISSUED FOR INFORMATION	17/10/2025

Rev	Drn	Chkd	Amendments	Date

FOR PLANNING

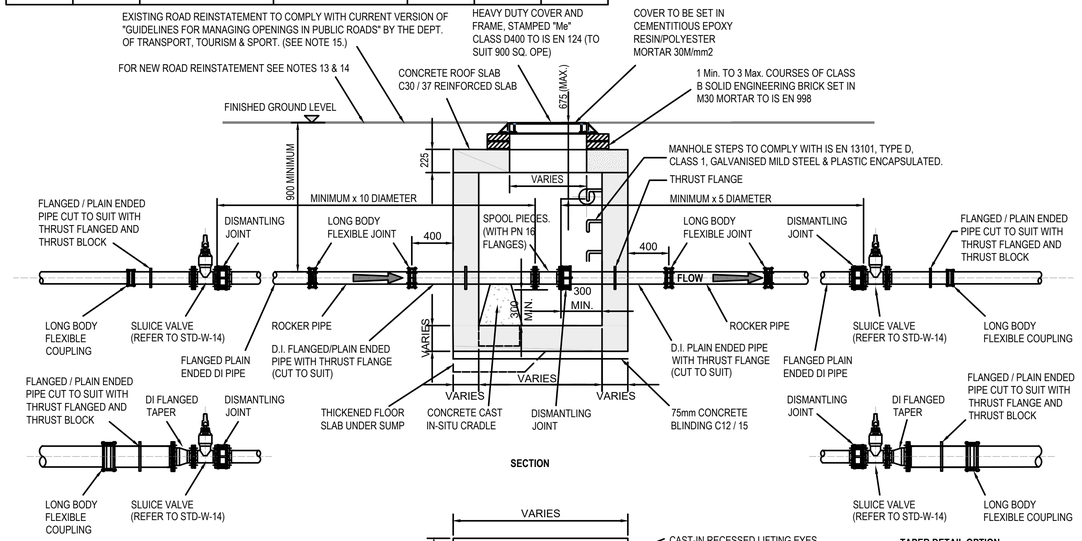
Drawing Sheet Size A1

Architect	DONNELLY TURPIN ARCHITECTS		
Project :	MIXED USE DEVELOPMENT BELGARD SQ. EAST, BELGARD RD, TALLAGHT		
Title :	WATERMAIN DETAILS SHEET 04 OF 05		
Drg No :	S058-TCE-B1-ZZ-DR-S-S-624		Revision : P01
Scale :	NTS	Date : 17/10/2025	Status : PLANNING
Drn By :	EK	Chkd By : JdP	Aprvd By : JdP

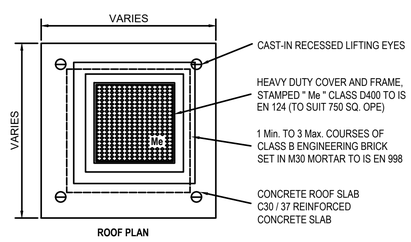
TORQUE CONSULTING ENGINEERS
CIVIL & STRUCTURAL
Unit K26,
Drinan Enterprise Centre,
Swords Enterprise Park,
Swords,
K67 E722
Ireland
T: +353 (0)1 4853933
E: contactus@tcel.ie
W: www.tcel.ie

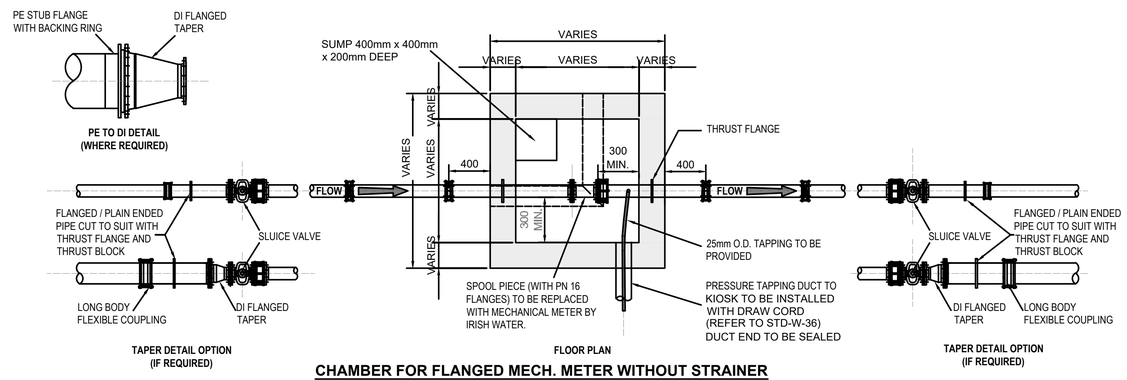
1. ALL DIMENSIONS ARE IN MILLIMETRES (mm) UNLESS NOTED OTHERWISE.
2. STRUCTURAL DESIGN AND REINFORCEMENT DETAIL TO BE PROVIDED BY THE DEVELOPER AND SUBMITTED TO IRISH WATER FOR REVIEW. ROOF SLABS SHALL BE DESIGNED TO CARRY ALL LIVE LOADS & DEAD LOADS, & CONSIST OF A REINFORCED CONCRETE SLAB OF IN-SITU CONCRETE, GRADE C30/37, WITH A MINIMUM THICKNESS OF 225mm. ALTERNATIVELY, PRE-CAST CONCRETE ROOFS MAY BE USED, SUBJECT TO IRISH WATER REVIEW, & COMPLIANCE WITH IS EN 1917 & IS 420, Part 4.
3. CONCRETE FOR CHAMBERS TO BE C30 / 37.
4. PRECAST UNITS COMPLETED WITH RUBBER SEALING GASKET BETWEEN UNITS, COMPLYING WITH THE REQUIREMENTS OF IS EN 1917 AND IS 420, COMPLETE WITH 150mm CONCRETE SURROUND MAY BE USED AS AN ACCEPTABLE ALTERNATIVE. CONCRETE SURROUND TO BE GRADE C20/25 IN ACCORDANCE WITH IS EN 206.
5. CHAMBERS SHALL BE COVERED WITH APPROVED HEAVY DUTY METAL COVERS TO IS EN 124 RATING D400. COVER AND FRAME SHALL BE SUITABLE FOR ROAD AND TRAFFIC CONDITIONS AND IS SUBJECT TO REVIEW BY IRISH WATER.
6. 200mm ALL ROUND, 100mm DEEP CONCRETE PLINTH AROUND COVER IN GRASS AREAS.
7. ANTI CORROSION TAPE TO BE PROVIDED AROUND BURIED FLANGES.
8. DUCTILE IRON PIPES AND FITTINGS TO BE IN ACCORDANCE WITH IS EN 545. PE PIPES AND FITTINGS TO BE IN ACCORDANCE WITH IS EN 12201:2011.
9. ALL CHAMBERS TO BE CHECKED FOR UPLIFT BY THE DEVELOPER BASED ON GROUND CONDITIONS WITHIN THE SITE. SHOULD ANTI FLOATATION MEASURES BE REQUIRED THEY SHALL BE SUBJECT TO REVIEW BY IRISH WATER.
10. PIPEWORK TO BE DOWNSIZED TO ACCOMMODATE THE REQUIRED RANGE OF THE FLOW METER. STRAIGHT PIPE LENGTHS UPSTREAM AND DOWNSTREAM OF THE METER TO BE PROVIDED. IF THE METER IS NOT CAPABLE OF ACCURATE NIGHT FLOW MEASUREMENTS, A BY-PASS FLOW METER SHALL BE PROVIDED WITH APPROPRIATE VALVES, FITTINGS AND PIPEWORK.
11. ALL CONCRETE TO BE IN ACCORDANCE WITH IS EN 206.
12. A SINGLE METER CHAMBER MAY BE USED, WHERE APPLICABLE, TO THE METER SUPPLIER'S REQUIREMENTS, TO LOCATE THE METER. IF A STRAINER IS REQUIRED DUE TO WATER QUALITY PARTICULATE RISK, THIS MAY BE LOCATED IN THE METER CHAMBER OR IN A SEPARATE STRAINER CHAMBER. (SEE STD-W-26B).
13. ANY SPECIAL ROAD REINSTATEMENT AROUND COVER & FRAME SHALL BE TO ROAD AUTHORITY'S REQUIREMENTS.
14. NEW ROAD CONSTRUCTION & SURFACE FINISH TO BE TO ROAD AUTHORITY REQUIREMENTS.
15. EXISTING ROAD REINSTATEMENT TO COMPLY WITH CURRENT VERSION OF "GUIDELINES FOR MANAGING OPENINGS IN PUBLIC ROADS" BY THE DEPT. OF TRANSPORT, TOURISM & SPORT, OR TRANSPORT INFRASTRUCTURE IRELAND REQUIREMENTS.
16. DEVELOPER TO PROVIDE SPOOL PIECE, IRISH WATER TO PROVIDE METER. (SEE TABLE BELOW (UNLESS NOTED OTHERWISE) FOR STANDARD SPOOL PIECE LENGTHS)
17. KIOSK AND DUCT NOT REQUIRED EXCEPT WHERE FLOW METER CHAMBER IS LOCATED IN A TRAFFICKED AREA OR AS OTHERWISE REQUIRED BY IRISH WATER
18. DETAILS SHOWN HERE ARE FOR HOUSING DEVELOPMENTS WITH 40-249 UNITS TYPICALLY

MECHANICAL WATER METER SPOOL PIECE LENGTHS								
Ø mm	DN40	DN50	DN80	DN100	DN125	DN150	DN200	DN250
LENGTH mm	150	200		250		300	350	450



METER DIAMETER 'A' (mm)	INTERNAL CHAMBER DIMENSIONS	COVER DIMENSIONS	FLOOR SLAB DEPTH	WALL THICKNESS
40 - 65	450 x 600 (up to 750mm deep) 1200 x 1200 (> 750mm deep)	280 x 445 750 x 750	100mm 200mm	100mm 200mm
80 - 100	1200 x 1200	750 x 750	200mm	200mm
125 - 250	1500 x 1500	900 x 900	250mm	250mm





CHAMBER FOR FLANGED MECH. METER WITHOUT STRAINER (DN40 - DN250mm DIA.)
NTS

Notes:
For setting out refer to Architect's drawings.
This drawing shall be read in conjunction with all other Architectural and Engineering drawings and all other relevant drawings and Specifications.
DO NOT SCALE FROM THIS DRAWING. Use figured dimensions only.
Verify dimensions on site and report any discrepancies to the author immediately.

Rev	Drn	Chkd	Amendments	Date
PO1	EK	JdP	ISSUED FOR INFORMATION	17/10/2025

Rev	Drn	Chkd	Amendments	Date

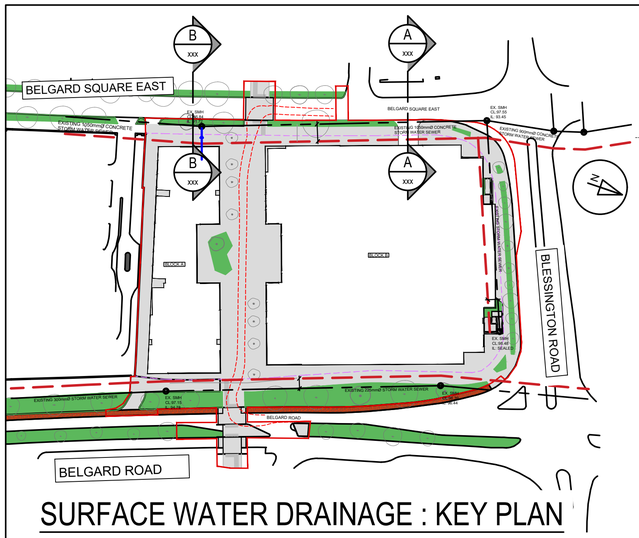
FOR PLANNING

Drawing Sheet Size A1

Architect	DONNELLY TURPIN ARCHITECTS
Project :	MIXED USE DEVELOPMENT BELGARD SQ. EAST, BELGARD RD, TALLAGHT
Title :	WATERMAIN DETAILS SHEET 05 OF 05

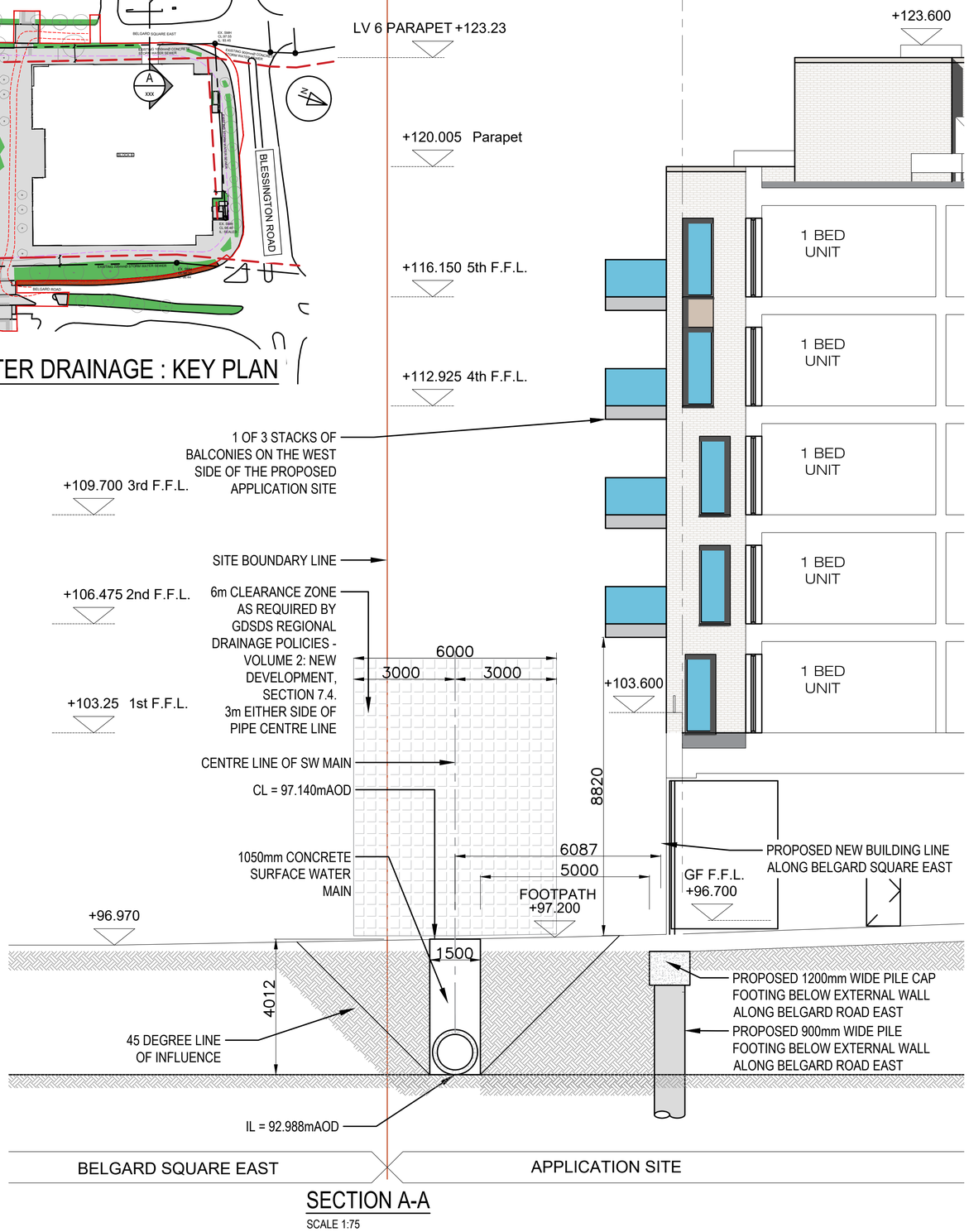
Drg No :	S058-TCE-B1-ZZ-DR-S-S-625		Revision : P01
Scale :	NTS	Date : 17/10/2025	Status : PLANNING
Drn By :	EK	Chkd By : JdP	Aprvd By : JdP

TORQUE CONSULTING ENGINEERS
CIVIL & STRUCTURAL
Unit K26,
Drinan Enterprise Centre,
Swords Enterprise Park,
Swords,
K67 E722
Ireland
T: +353 (0)1 4853933
E: contactus@tcel.ie
W: www.tcel.ie



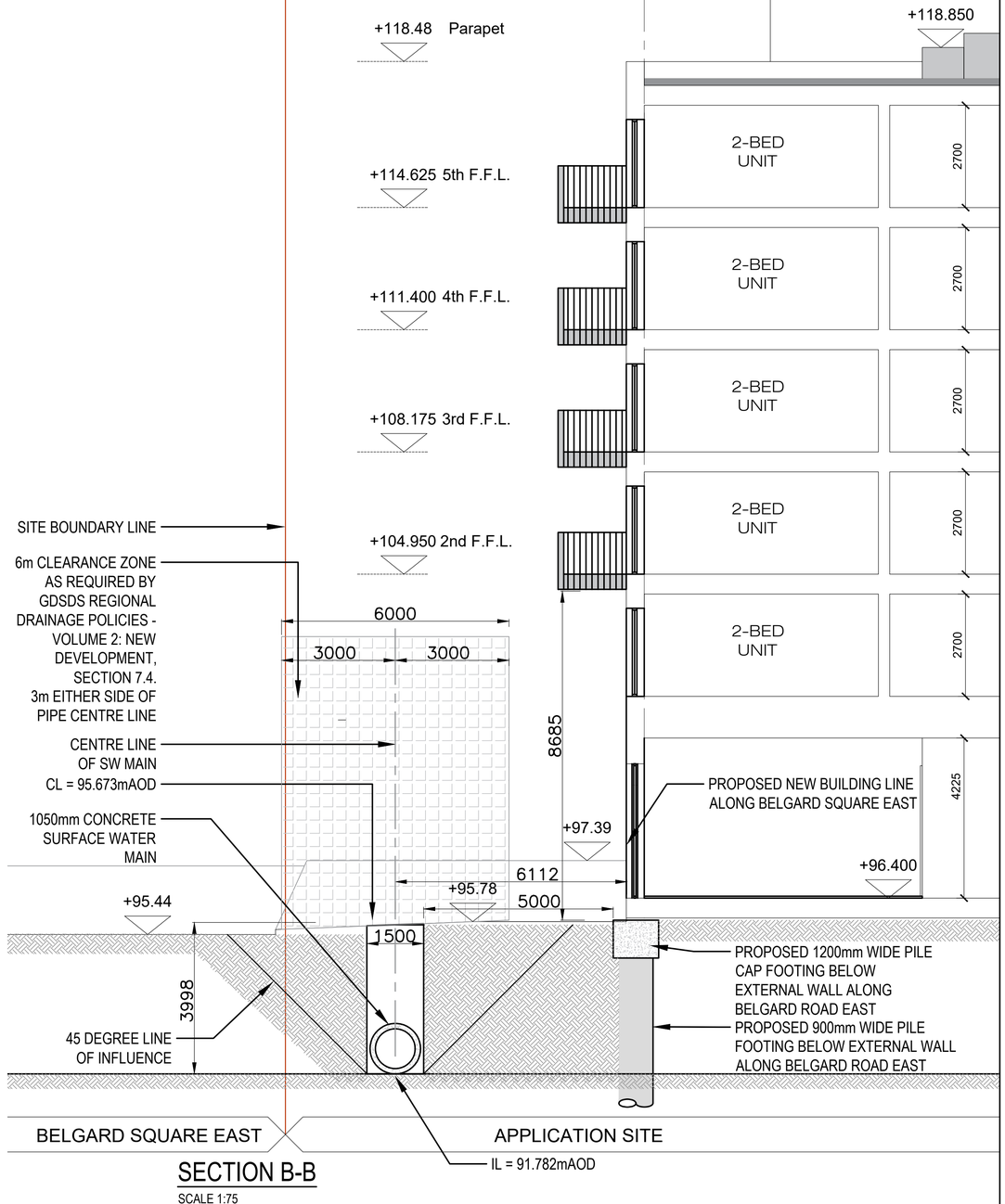
SURFACE WATER DRAINAGE : KEY PLAN

SCALE 1:1000



SECTION A-A

SCALE 1:75



SECTION B-B

SCALE 1:75

Notes:
For setting out refer to Architect's drawings.
This drawing to be read in conjunction with all other Architectural and Engineering drawings and all other relevant drawings and Specifications.
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Rev	Drn	Chkd	Amendments	Date
P04	SOB	KM	ISSUED FOR PLANNING	12.03.2025
P03	SOB	KM	ISSUE TO SDCC	06.12.2024
P02	EML	KM	FOR COMMENT	04.12.2024
P01	EML	KM	FOR COMMENT	26.11.2024

Rev	Drn	Chkd	Amendments	Date

ISSUED FOR PLANNING

Drawing Sheet Size: A1

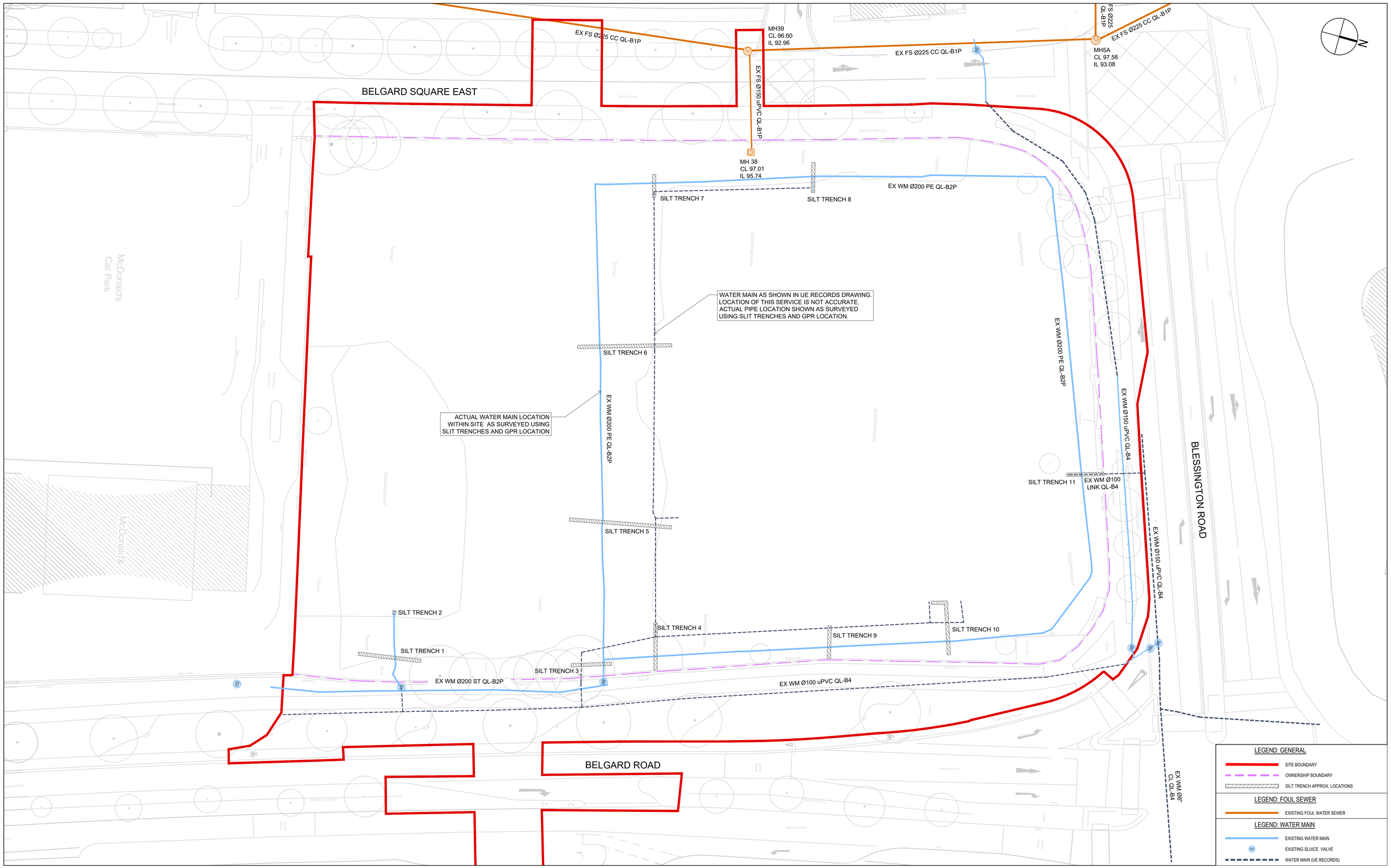
Architect:	DONNELLY TURPIN ARCHITECTS
Project :	MIXED USE DEVELOPMENT BELGARD SQ. EAST, BELGARD RD, TALLAGHT
Title :	SW DRAINAGE SECTIONS A-A & B-B

Drg No : S058-TCE-B1-ZZ-DR-C-520		Revision : P04
Scale : 1/500	Date : 26/11/2024	Status : PLANNING
Drn By : EML	Chkd By : SOB	Aprvd By : KM

TORQUE CONSULTING ENGINEERS
CIVIL & STRUCTURAL
Unit K26,
Drinan Enterprise Centre,
Swords Enterprise Park,
Swords,
K67 E722
Ireland
T: +353 (0)1 4853933
E: contactus@tcel.ie
W: www.tcel.ie

APPENDIX B

Watermain Diversion Drawings



Notes:
For setting out refer to Architect's drawings.
This drawing shall be read in conjunction with all other Architectural and Engineering drawings and all other relevant drawings and Specifications.
DO NOT SCALE FROM THIS DRAWING. Use figured dimensions only.
Verify dimensions on site and report any discrepancies to the author immediately.

Rev	Drn	Chkd	Amendments	Date
P01	KdR	JdP	ISSUED FOR INFORMATION	17/10/2025

Rev	Drn	Chkd	Amendments	Date

FOR PLANNING

Drawing Sheet Size A1

Architect	DONNELLY TURPIN ARCHITECTS		
Project :	MIXED USE DEVELOPMENT BELGARD SQ. EAST, BELGARD RD, TALLAGHT		
Title :	SITE DRAINAGE - EXISITNG SERVICES		
Drg No :	S058-TCE-B1-ZZ-DR-S-S-601	Revision :	P01
Scale :	1: 250	Date :	17/10/2025
Drn By :	KdR	Chkd By :	JdP
Aprvd By :	JdP	Status :	PLANNING

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CIVIL & STRUCTURAL
Unit K26,
Drinan Enterprise Centre,
Swords Enterprise Park,
Swords,
K67 E722
Ireland
T: +353 (0)1 4853933
E: contactus@tcel.ie
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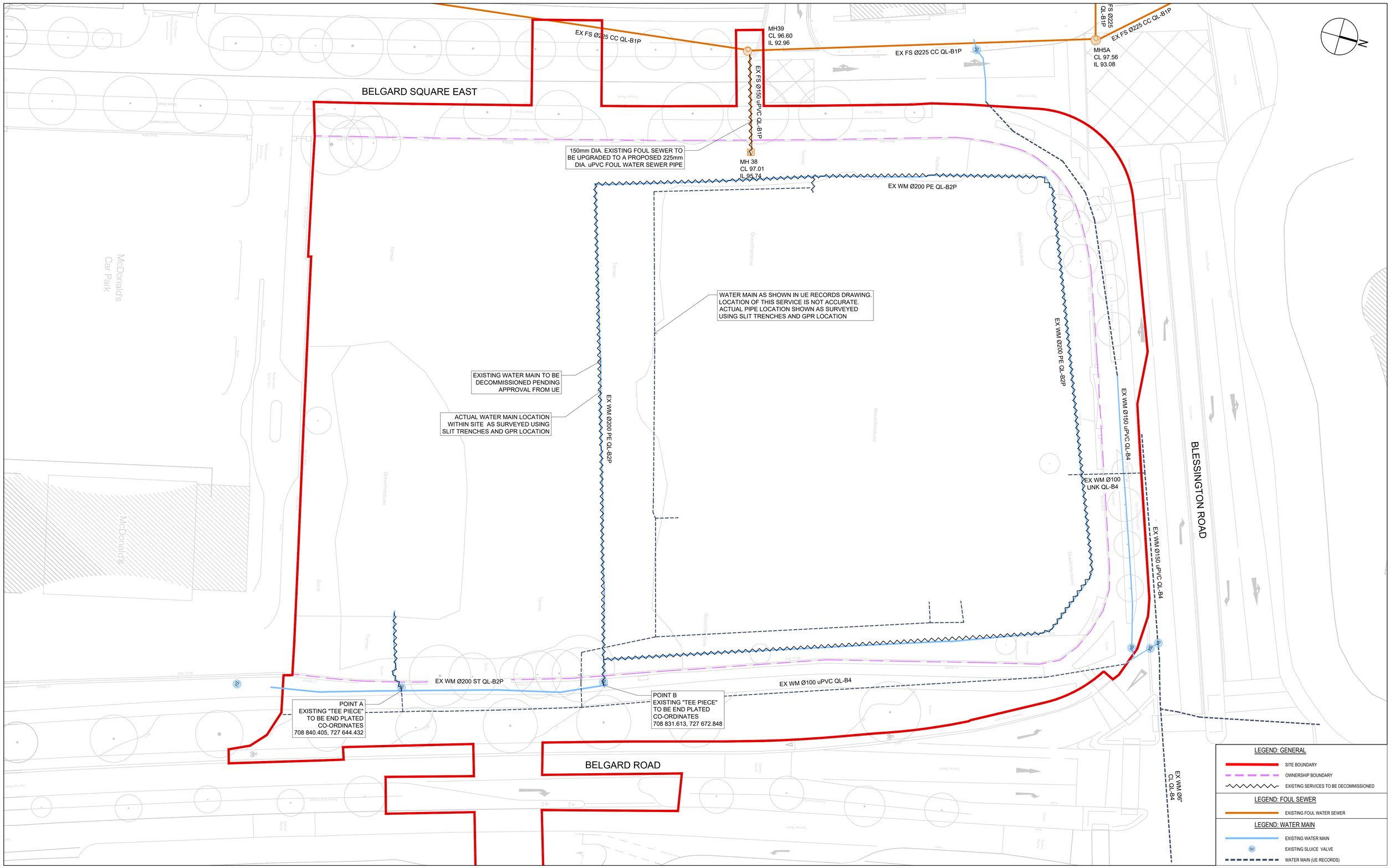


Notes:
For setting out refer to Architect's drawings.
This drawing shall be read in conjunction with all other Architectural and Engineering drawings and all other relevant drawings and Specifications.
DO NOT SCALE FROM THIS DRAWING. Use figured dimensions only.
Verify dimensions on site and report any discrepancies to the author immediately.

Rev	Drn	Chkd	Amendments	Date
P01	KdR	JdP	ISSUED FOR INFORMATION	17/10/2025

Rev	Drn	Chkd	Amendments	Date

FOR PLANNING

Drawing Sheet Size: A1

Architect	DONNELLY TURPIN ARCHITECTS
Project :	MIXED USE DEVELOPMENT BELGARD SQ. EAST, BELGARD RD, TALLAGHT
Title :	SITE DRAINAGE - DECOMMISSIONED EXISTING SERVICES

Drg No :	S058-TCE-B1-ZZ-DR-S-S-602			Revision :	P01
Scale :	1: 250	Date :	17/10/2025	Status :	PLANNING
Drn By :	KdR	Chkd By :	JdP	Aprvd By :	JdP

TORQUE CONSULTING ENGINEERS
CIVIL & STRUCTURAL
Unit K26,
Drinan Enterprise Centre,
Swords Enterprise Park,
Swords,
K67 E722
Ireland
T: +353 (0)1 4853933
E: contactus@tcel.ie
W: www.tcel.ie


BELGARD SQUARE EAST
BELGARD ROAD
BLESSINGTON ROAD
BLOCK A
BLOCK B
CONNECTION POINT 02
CO-ORDINATES
708 736.280, 727 708.171
THRUST BLOCK AS PER
UISCE ÉIREANN STANDARD
DETAIL STD-W-28
22.5° BEND
22.5° BEND
THRUST BLOCK AS PER
UISCE ÉIREANN STANDARD
DETAIL STD-W-28
NEW SLUICE VALVE
3m MINIMUM SEPARATION DISTANCE
FROM PROPOSED BUILDING TO PUBLIC
WATER MAIN
EX WM Ø200 PE QL-B2P
768mm
(DISTANCE TO KERB)
22.5° BEND
THRUST BLOCK AS PER
UISCE ÉIREANN STANDARD
DETAIL STD-W-28
956mm
(DISTANCE TO KERB)
11.25° BEND
1484mm
(DISTANCE TO TREE)
895mm
(DISTANCE TO KERB)
THRUST BLOCK AS PER
UISCE ÉIREANN STANDARD
DETAIL STD-W-28
PROPOSED 150mm DIA. PE100
WATER MAIN DIVERSION
1425mm
(DISTANCE TO TREE)
4793mm
(DISTANCE TO BUILDING)
WATER MAIN AS SHOWN IN UE RECORDS DRAWING.
LOCATION OF THIS SERVICE IS NOT ACCURATE.
ACTUAL PIPE LOCATION SHOWN AS SURVEYED
USING SLIT TRENCHES AND GPR LOCATION.
SEE DRG NO.S058-TCE-B1-ZZ-DR-S-S-602
FOR EXISTING SERVICES TO BE DECOMMISSIONED
22.5° BEND
THRUST BLOCK AS PER
UISCE ÉIREANN STANDARD
DETAIL STD-W-28
22.5° BEND
CONNECTION POINT 01
CO-ORDINATES
708 767.230, 727 733.380
THRUST BLOCK AS PER
UISCE ÉIREANN STANDARD
DETAIL STD-W-28
REFER TO DRG NO. S058-TCE-B1-ZZ-DR-S-S-502
FOR WATER MAIN CONNECTION POINT AND DETAILS
EX WM Ø200 PE QL-B2P
EX WM Ø150 uPVC QL-B4
EX WM Ø100
UNK QL-B4
EX WM Ø150 uPVC QL-B4
EX WM Ø200 PE QL-B2P
SEE DRG NO.S058-TCE-B1-ZZ-DR-S-S-602
FOR EXISTING SERVICES TO
BE DECOMMISSIONED
EX WM Ø200 ST QL-B2P
EX WM Ø100 uPVC QL-B4
EX WM Ø6"
CL QL-B4
7457mm
5194mm
9637mm
LEGEND: GENERAL
SITE BOUNDARY
OWNERSHIP BOUNDARY
EXISTING SERVICES TO BE DECOMMISSIONED
3m SEPARATION DISTANCE BOUNDARY
WAYLEAVE
LEGEND: WATER MAIN
EXISTING WATERMAIN
EXISTING SLUICE VALVE
WATER MAIN (UE RECORDS)
PROPOSED WATERMAIN RELOCATION
PROPOSED WATERMAIN

Notes:
For setting out refer to Architect's drawings.
This drawing shall be read in conjunction with all other Architectural and Engineering drawings and all other relevant drawings and Specifications.
DO NOT SCALE FROM THIS DRAWING. Use figured dimensions only.
Verify dimensions on site and report any discrepancies to the author immediately.

Rev	Drn	Chkd	Amendments	Date
P01	KdR	JdP	ISSUED FOR INFORMATION	17/10/2025

Rev	Drn	Chkd	Amendments	Date

FOR PLANNING

Drawing Sheet Size: A1

Architect	DONNELLY TURPIN ARCHITECTS
Project :	MIXED USE DEVELOPMENT BELGARD SQ. EAST, BELGARD RD, TALLAGHT
Title :	SITE DRAINAGE - WATER MAIN DIVERSION
Drg No :	S058-TCE-B1-ZZ-DR-S-S-603
Revision :	P01
Scale :	1: 250
Date :	17/10/2025
Status :	PLANNING
Drn By :	KdR
Chkd By :	JdP
Aprvd By :	JdP

TORQUE CONSULTING ENGINEERS
CIVIL & STRUCTURAL
Unit K26,
Drinan Enterprise Centre,
Swords Enterprise Park,
Swords,
K67 E722
Ireland
T: +353 (0)1 4853933
E: contactus@tcel.ie
W: www.tcel.ie

APPENDIX C

Foul Water Volume Calculations

	Liters/Person/Day	Usage Factor			
	150	2.7			
Apartment			199	199	
Volumes			80595	80595	L
			Inclunding 10% C.R	88654.5	L
			AFR	1.76	L/s
			DWF	10.55	L/s
	Allowance	**Liters/Person/Day**			
	1 person per 7m2	150			
Retail & non-residential spaces	2123			2123	
Volumes	45493			45492.857	L
			Inclunding 10% C.R	50042.143	L
			AFR	0.99	L/s
			Total Volume	126087.86	L/day
			Inclunding 10% C.R	138696.64	L/day
	Average Flow Over	14	hours	2.75	L/s
		6	X Average Flow	16.51	L/s

APPENDIX D

Storm Water Network Analysis

Belgard Square East Development: Stormwater Analyses Summary (24 February 2025)

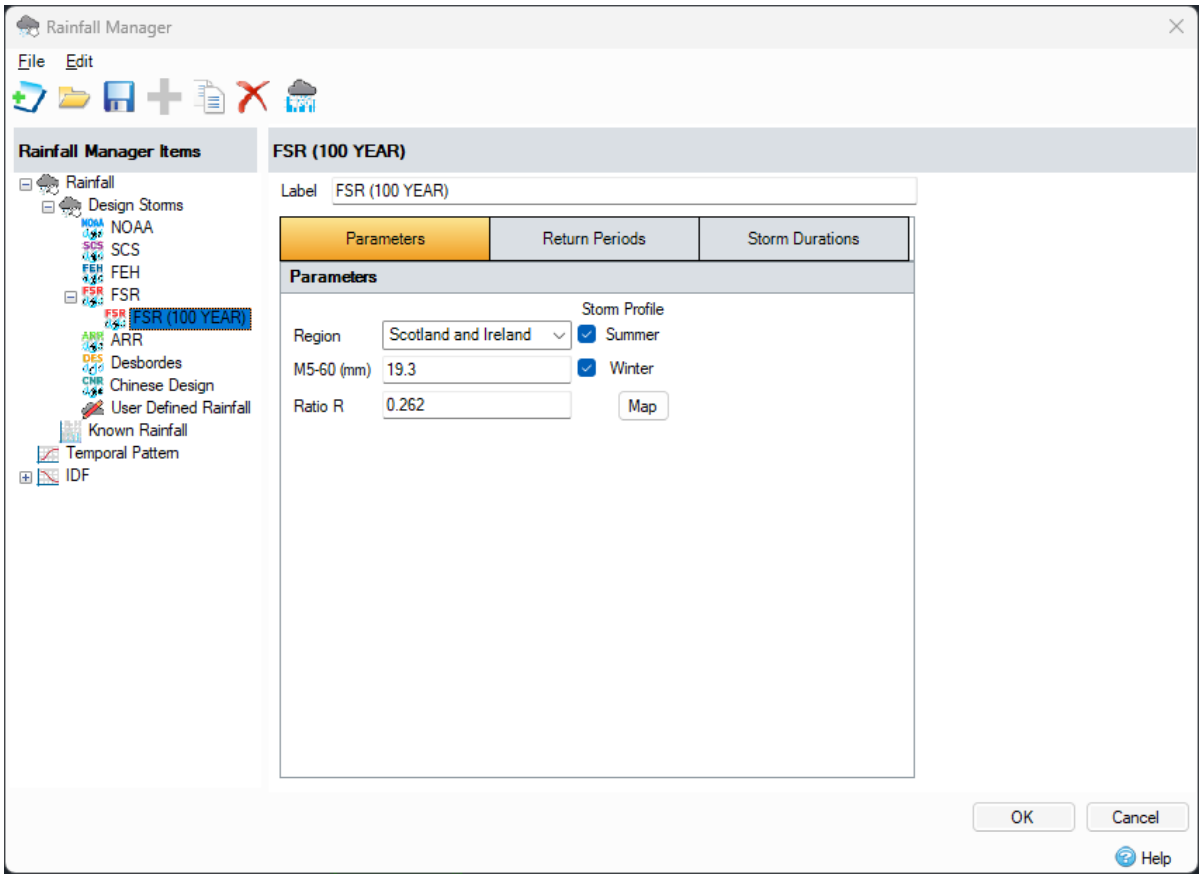
The drainage model was developed from the following parameters

Design Element	Specification
Flood Return Period	1:2 years for minor systems 1:100 years for attenuation 1:>5 Exceedance Flow
Average yearly rainfall (SAAR)	792 mm
Minimum Time of Concentration (T_c)	15 mins
Total Catchment Area	0.910 has
Blue Roof Area Gardens/Landscaping Permeable Paving Impermeable Areas	4938 m^2 482 m^2 2025 m^2 1627 m^2
Number of sub-catchments (Note: Each sub-catchment is individually characterised by various areas with relevant coverage conditions simulating the proposed runoff coefficients.)	42
Flow Restrictor Size (Qbar)	1.92 l/s
Weighted post-development run-off coefficient	0.74
Design Method	IH124 Method (through www.uksuds.com)
Minimum Pipe Diameter	100 mm
Minimum Pipe Slope	1:100 (1%)
Software used for analyses	AutoDesk InfoDrainage
Failure Criteria	Manhole Overflowing
Total Attenuation volume (Blue Roof)	774 m^3

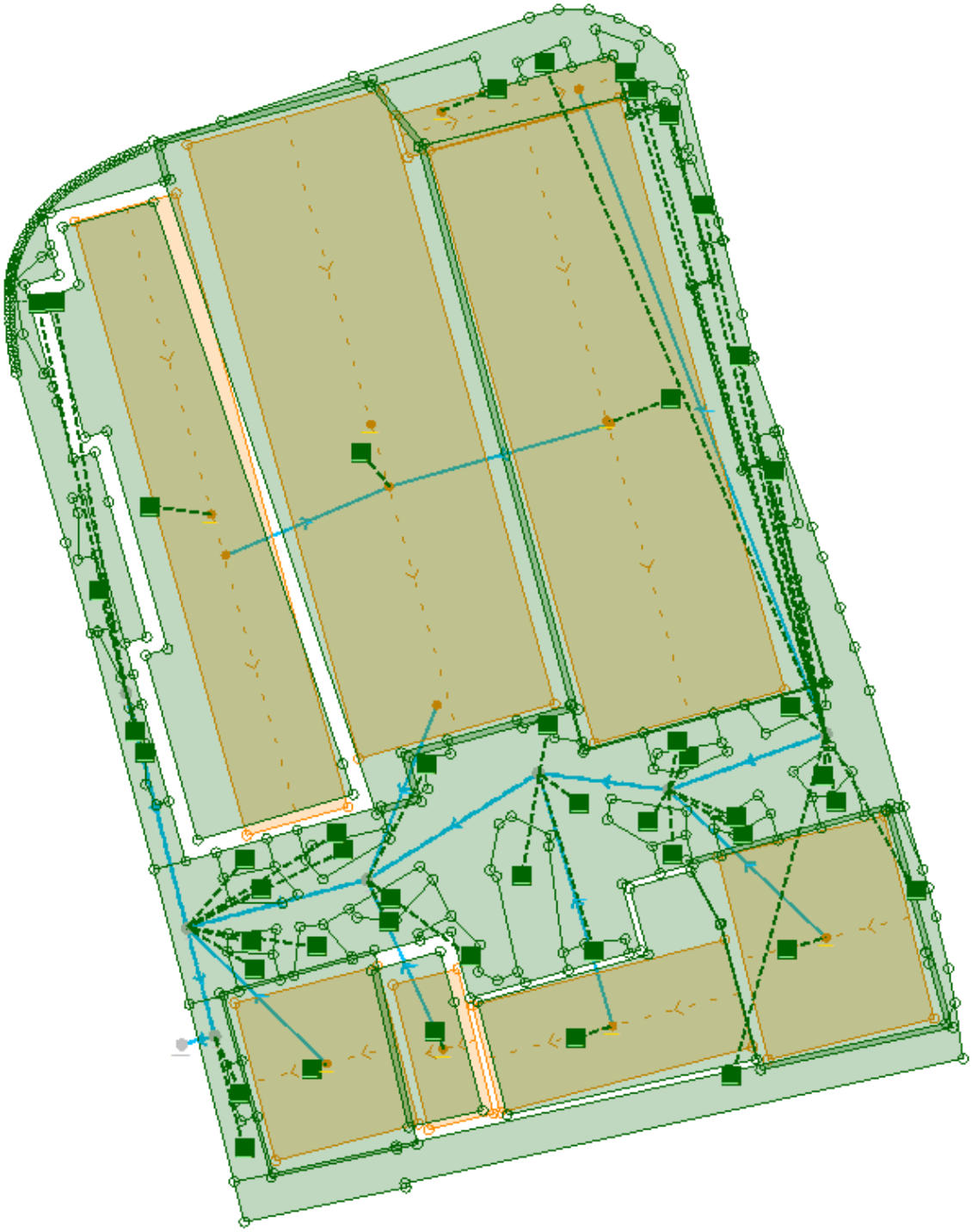
The table below shows the pipe slopes:

Name	Length (m)	Connection Type	Slope (1:x)	Manning's n	Diameter / Base Width (mm)	Upstream Cover Elevation (m)	Upstream Invert Elevation (m)	Downstream Cover Elevation (m)	Downstream Invert Elevation (m)
P1	17.985	Pipe	102.772	0.013	300	96.86	92.611	96.694	92.436
P5	26.163	Pipe	99.86	0.013	300	96.781	92.139	96.333	91.877
P2	14.159	Pipe	100.418	0.013	300	96.694	92.436	96.783	92.295
P3	21.71	Pipe	99.589	0.013	300	96.783	92.295	96.511	92.077
P4	20.081	Pipe	100.405	0.013	300	96.511	92.077	96.333	91.877
P6	11.995	Pipe	95.958	0.013	300	96.333	91.877	96.1	91.752
P7	3.673	Pipe	115.76	0.013	300	96.1	91.752	95.793	91.72

Rainfall data was composed from the InfoDrainage Software under the FSR Design storm:

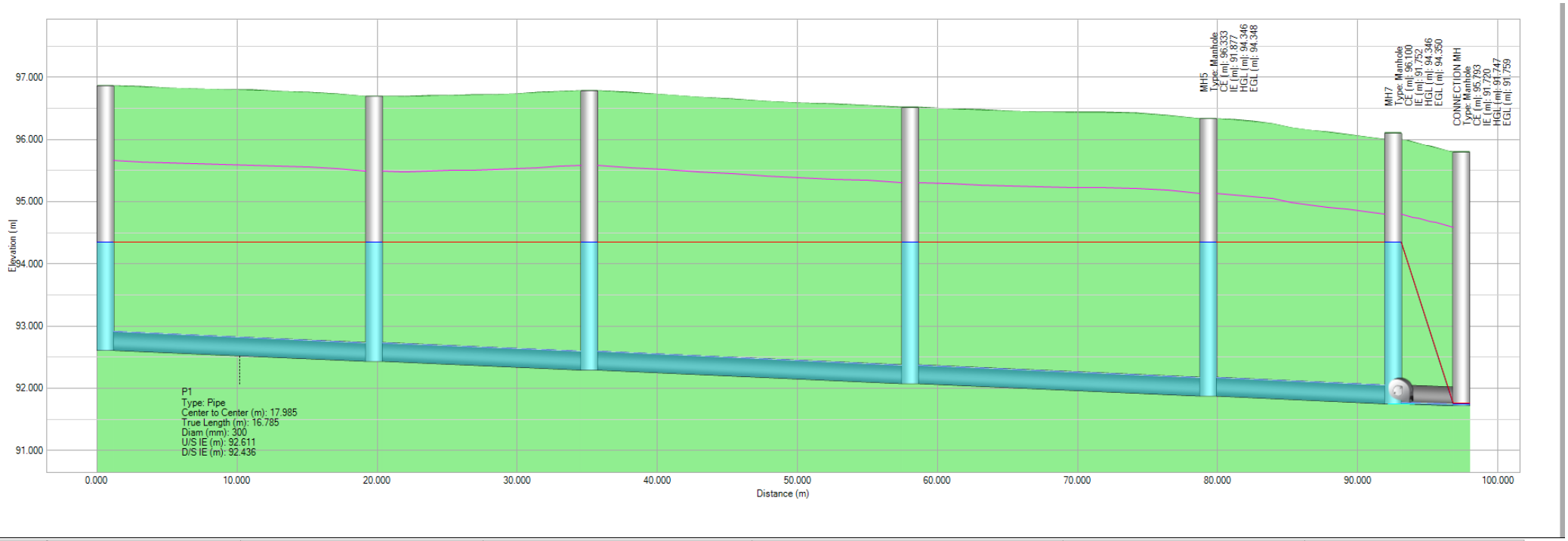


The model was then analysed for the two return periods of 1:2y to determine the capacity of the pipelines and 1:100y for the capacity of the attenuation pond. Using the CAD layout and the modelled invert levels the model was created as per the image below:



1:100y Results

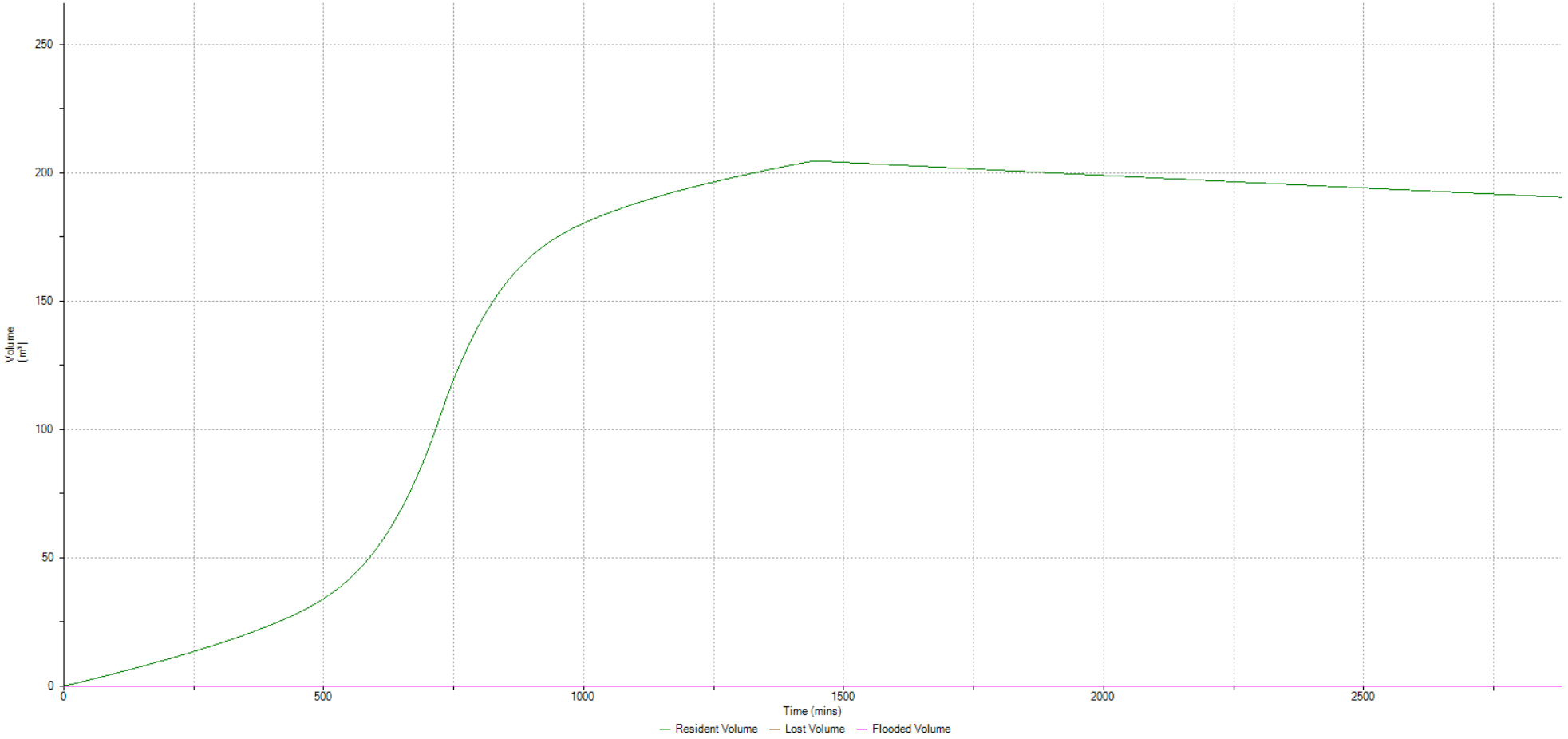
Profile View:



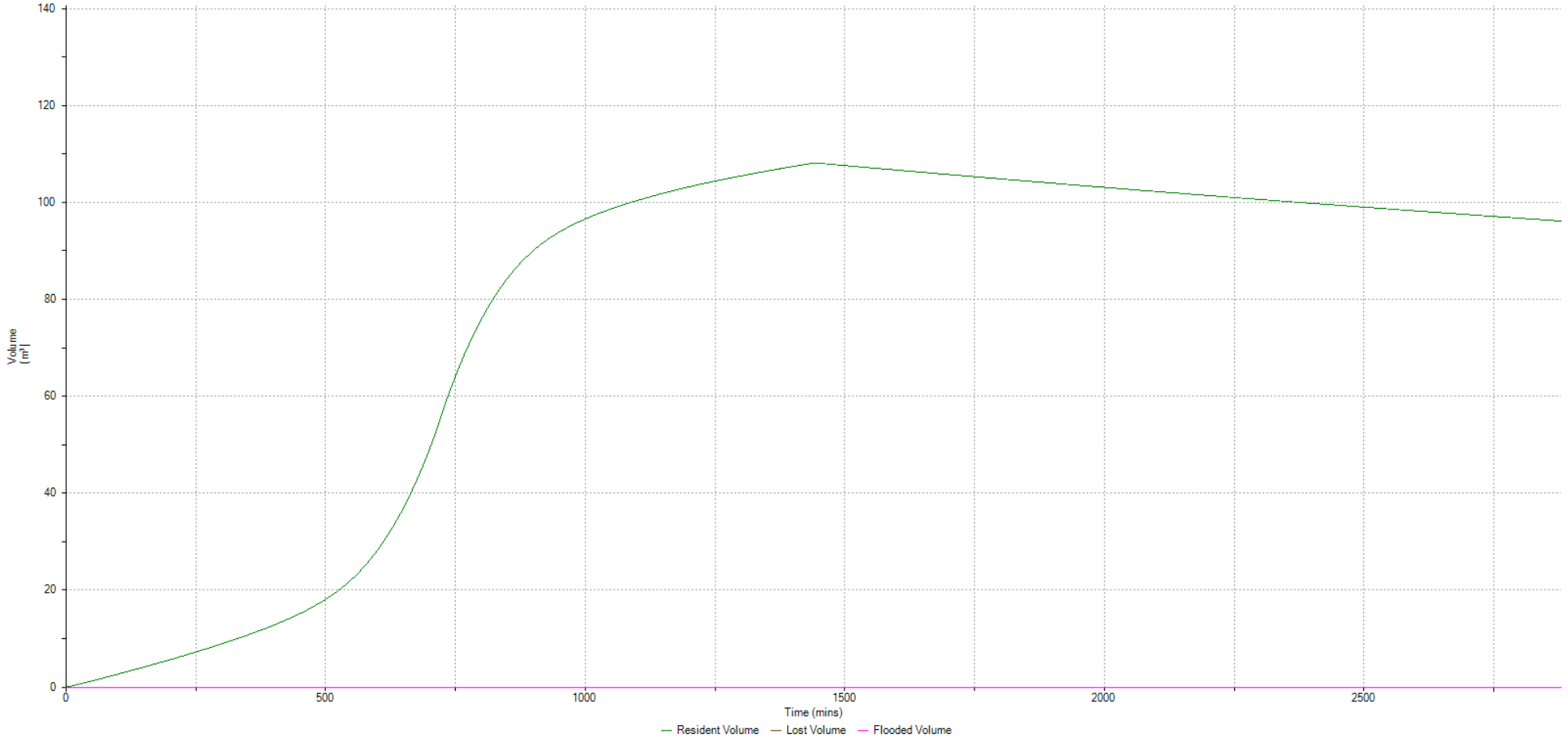
Junction	MH1	MH2	MH3	MH4	MH5	MH7	CONNECTION MH
Type	Manhole	Manhole	Manhole	Manhole	Manhole	Manhole	Manhole
CE (m)	96.860	96.694	96.783	96.511	96.333	96.100	95.793
IE (m)	92.611	92.436	92.295	92.077	91.877	91.752	91.720

Connection	P1	P2	P3	P4	P6	P7
Type	Pipe	Pipe	Pipe	Pipe	Pipe	Pipe
Curved	No	No	No	No	No	No
Length (m)	17.985	14.159	21.710	20.081	11.995	3.673
Diam (mm)	300	300	300	300	300	300
U/S IE (m)	92.611	92.436	92.295	92.077	91.877	91.752
D/S IE (m)	92.436	92.295	92.077	91.877	91.752	91.720
SWC						
Type						
EE (m)						
BE (m)						

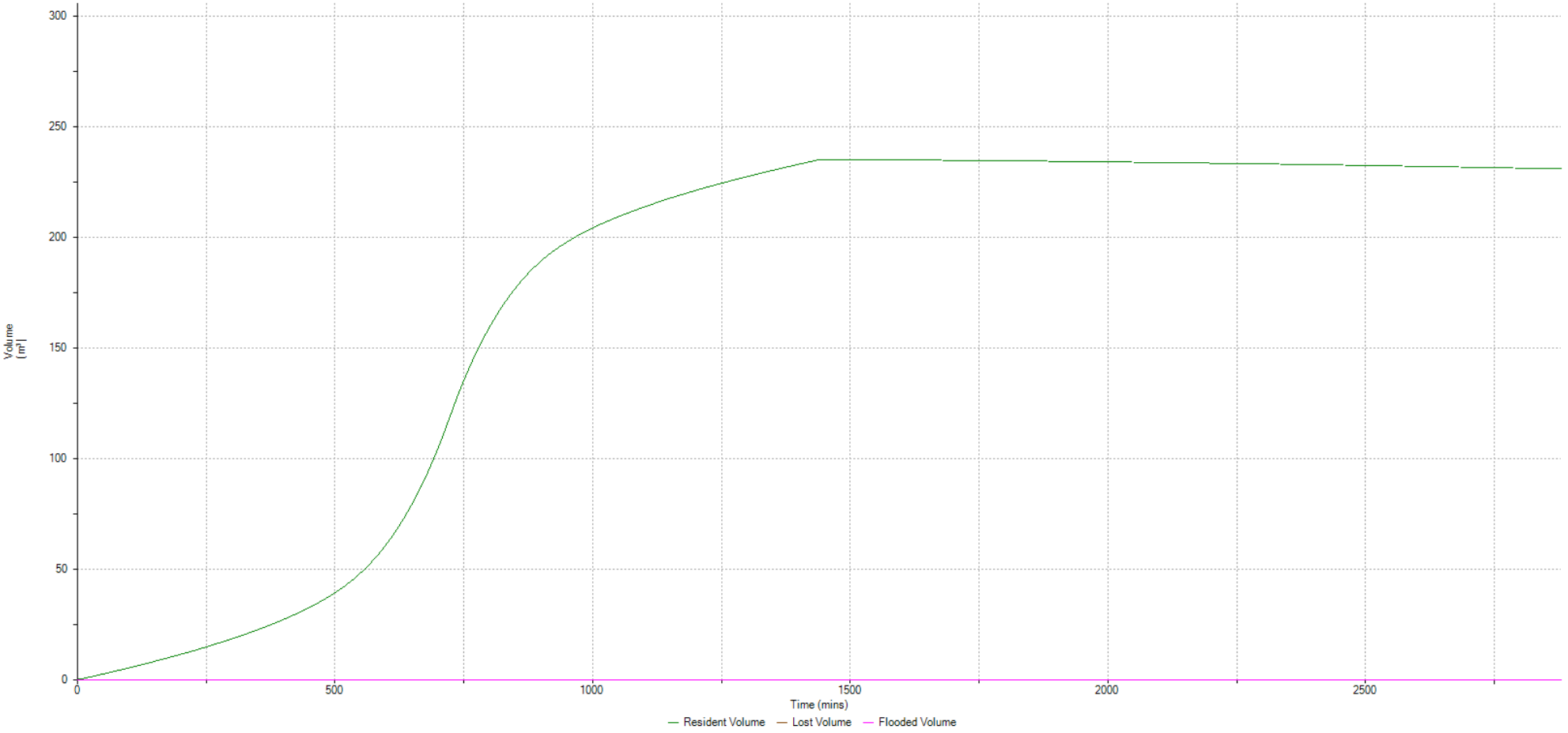
Blue Roof A Attenuation:



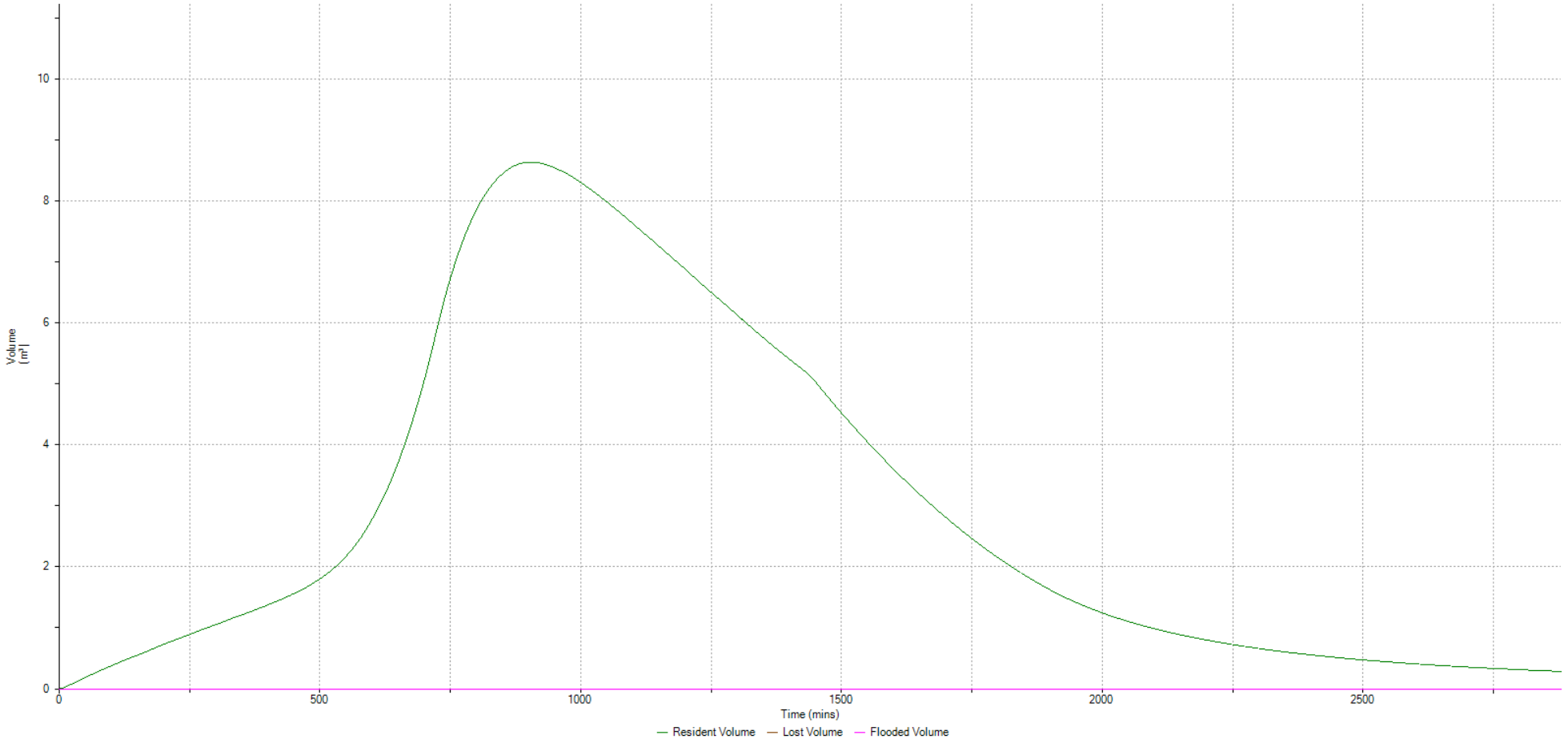
Blue Roof B Attenuation:



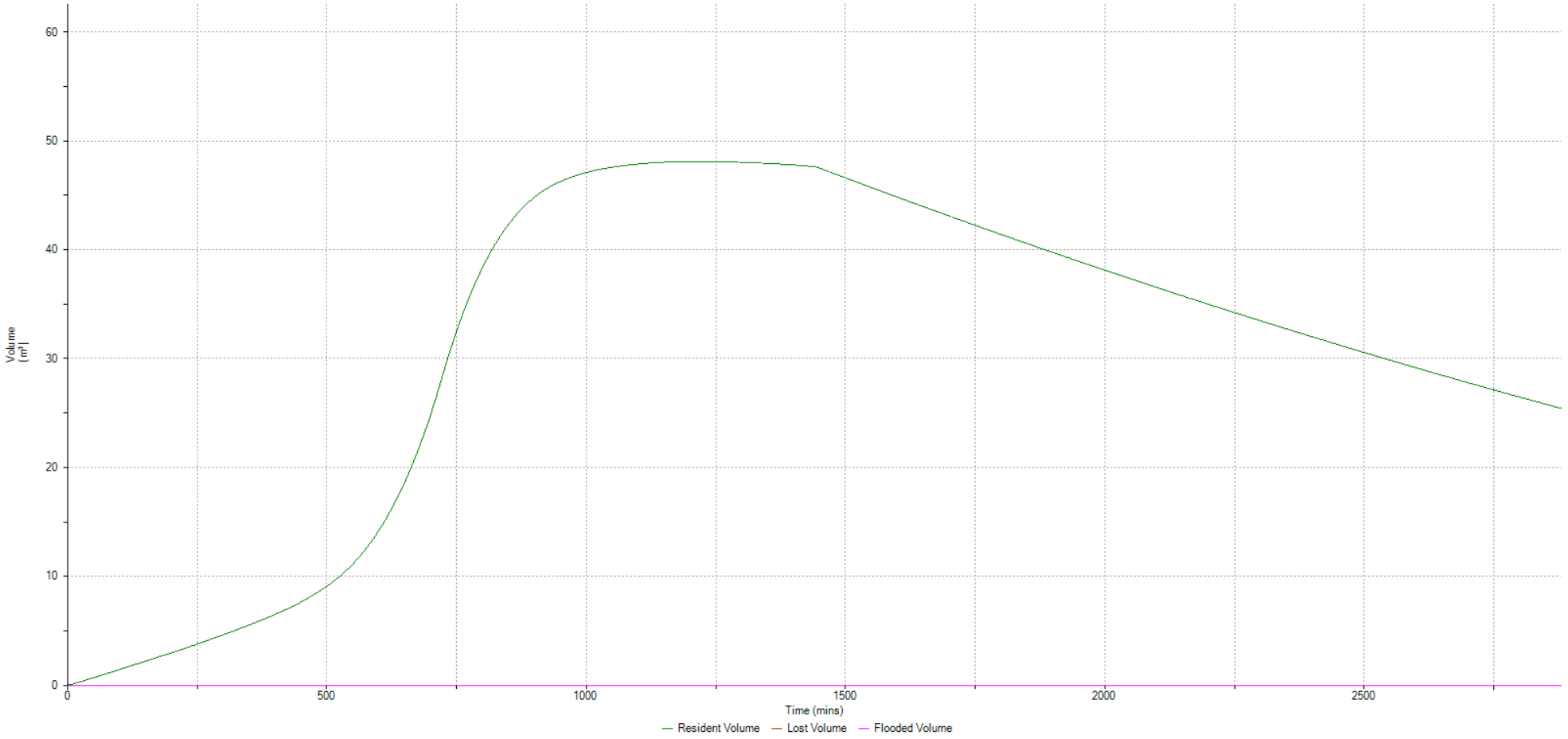
Podium Roof C Attenuation:



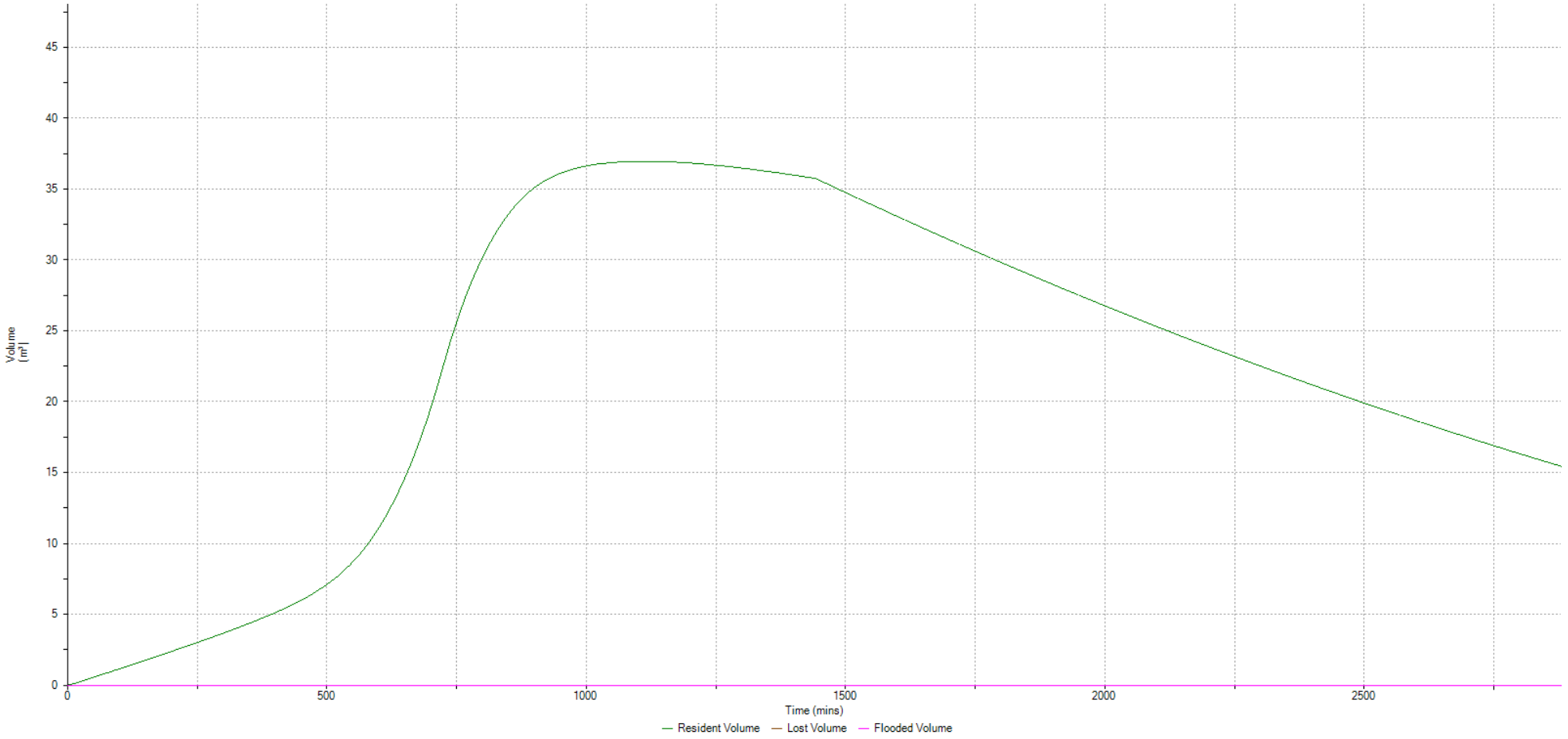
Blue Roof D Attenuation:



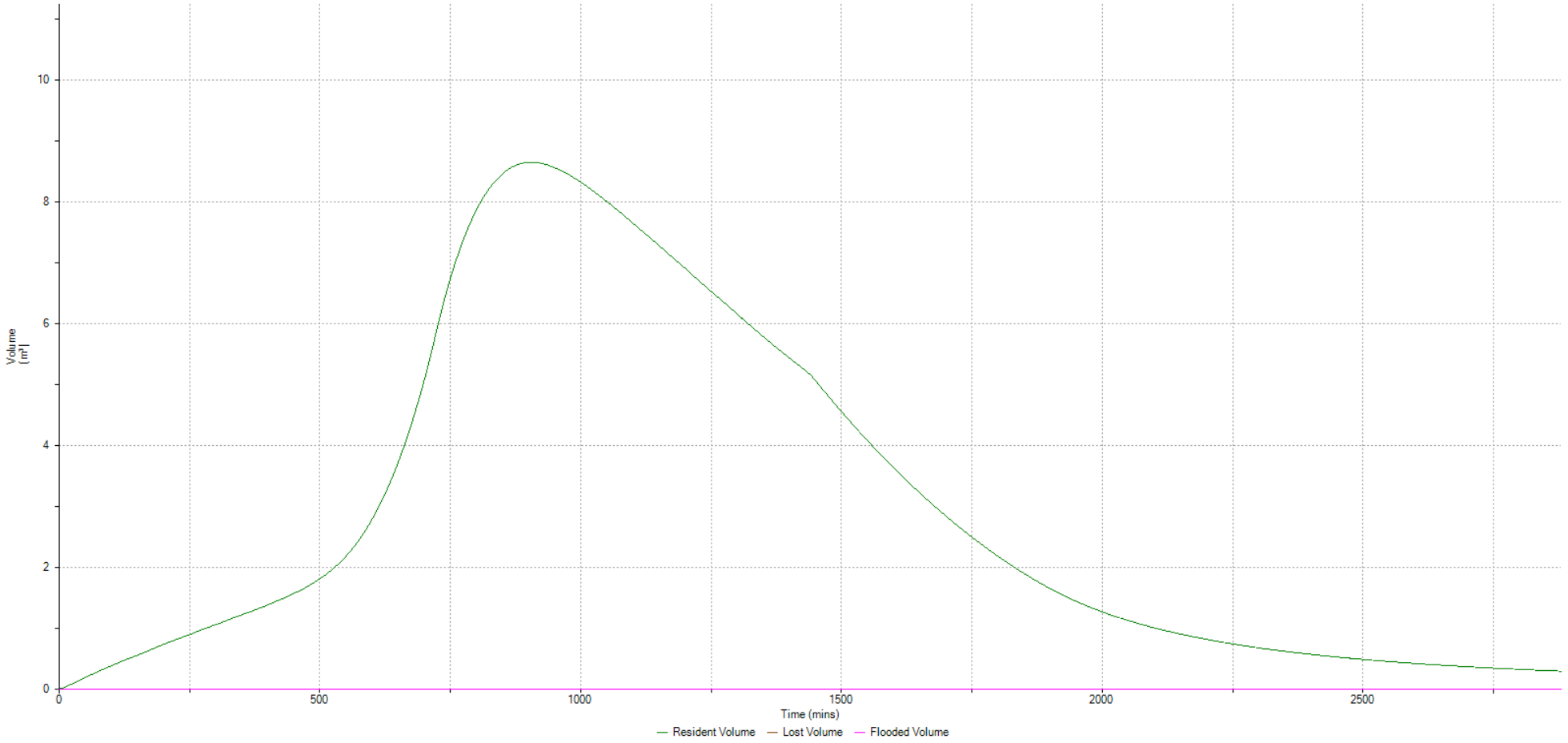
Blue Roof E Attenuation:



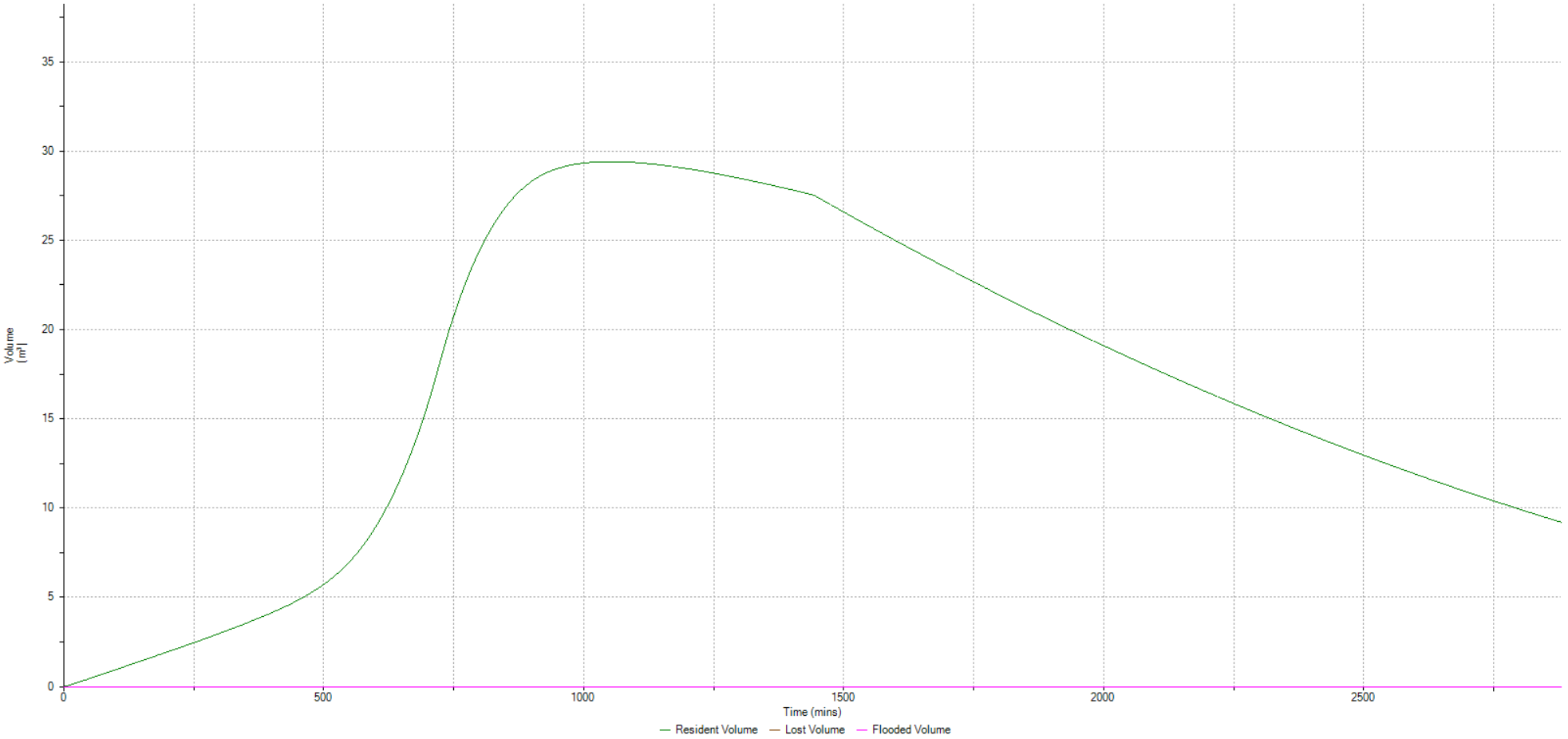
Blue Roof H Attenuation:



Blue Roof G Attenuation:



Blue Roof F Attenuation:



For more information on the blue roofs, please see the suppliers results and details for the blue roofs.

Link Flows

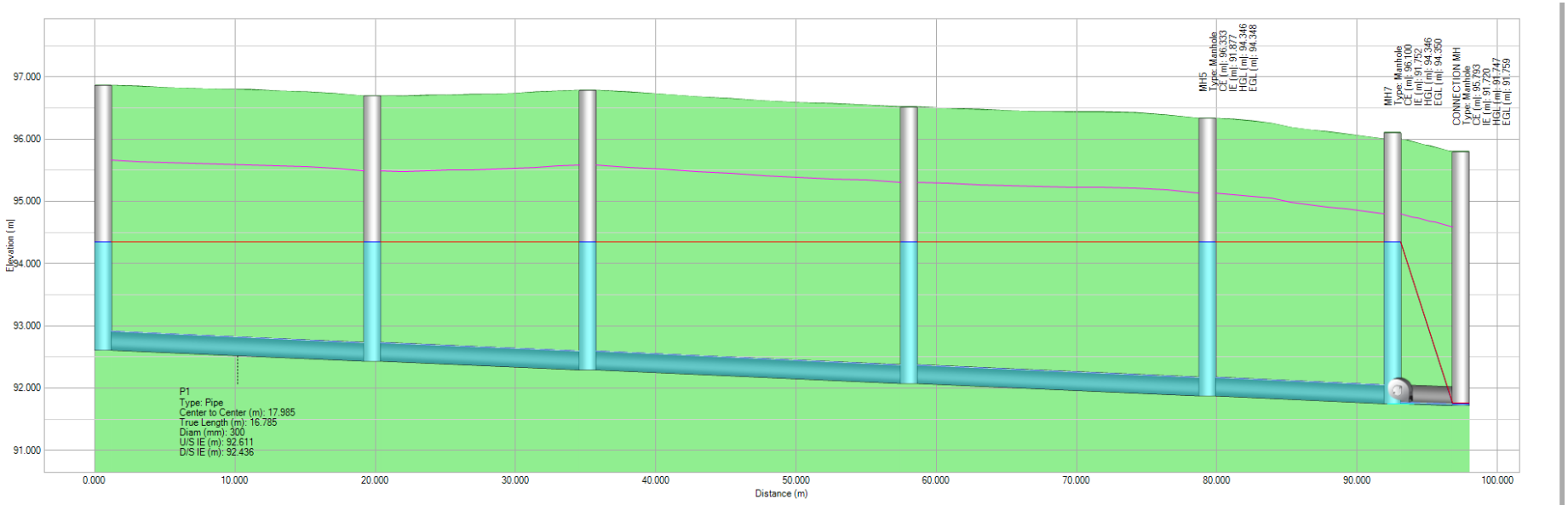
Connection	Connection Type	From	To	Upstream Cover Elevation (m)	Max. US Water Elevation (m)	Max. Flow Depth (m)	Discharge Volume (m³)	Max. Velocity (m/s)	Flow / Capacity	Max. Flow (L/s)
P1	Pipe	MH1	MH2	96.86	94.346	0.3	19.143	0.3	0	0.3
P5	Pipe	MH6	MH5	96.781	94.346	0.3	0.394	0	0	0
P2	Pipe	MH2	MH3	96.694	94.346	0.3	55.88	0.3	0.01	0.6
P3	Pipe	MH3	MH4	96.783	94.346	0.3	95.784	0.3	0.01	0.9
P4	Pipe	MH4	MH5	96.511	94.346	0.3	158.862	0.4	0.01	1.3
P6	Pipe	MH5	MH7	96.333	94.346	0.3	188.869	0.1	0.02	1.6
P7	Pipe	MH7	CONNECTION MH	96.1	94.346	0.028	187.35	0.5	0.02	1.5
P1	Pipe	MH1	MH2	96.86	94.346	0.3	19.143	0.3	0	0.3
P5	Pipe	MH6	MH5	96.781	94.346	0.3	0.394	0	0	0

Manhole Flows:

Junction	Cover Elevation (m)	Invert Elevation (m)	Max. Elevation (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)
MH1	96.86	92.611	94.346	1.735	0.3	1.962	0	0.3	19.143
MH2	96.694	92.436	94.346	1.91	0.6	2.16	0	0.6	55.882
MH6	96.781	92.139	94.346	2.207	0.2	2.496	0	0	2.145
MH5	96.333	91.877	94.346	2.469	1.6	2.792	0	1.6	191.113
MH3	96.783	92.295	94.346	2.051	1.1	2.319	0	0.9	95.786
MH4	96.511	92.077	94.346	2.269	1.3	2.566	0	1.3	158.862
MH7	96.1	91.752	94.346	2.594	1.6	2.933	0	1.5	187.377
CONNECTION MH	95.793	91.72	91.747	0.027	1.5	0	0	1.5	187.35

1:100y flood with 50% blockage:

A 50% blockage was modelled as a flow restriction on the pipes. A 50% flow restriction was placed on the most critical pipe, and as shown, it causes no effect on the attenuation volume that is stored.



Junction	MH1	MH2	MH3	MH4	MH5	MH7	CONNECTION MH
Type	Manhole	Manhole	Manhole	Manhole	Manhole	Manhole	Manhole
CE (m)	96.860	96.694	96.783	96.511	96.333	96.100	95.793
IE (m)	92.611	92.436	92.295	92.077	91.877	91.752	91.720

Connection	P1	P2	P3	P4	P6	P7
Type	Pipe	Pipe	Pipe	Pipe	Pipe	Pipe
Curved	No	No	No	No	No	No
Length (m)	17.985	14.159	21.710	20.081	11.995	3.673
Diam (mm)	300	300	300	300	300	300
U/S IE (m)	92.611	92.436	92.295	92.077	91.877	91.752
D/S IE (m)	92.436	92.295	92.077	91.877	91.752	91.720

SWC							
Type							
EE (m)							
BE (m)							

APPENDIX E

Potable Water Supply Calculations

	Liters/Person/Day	Usage Factor (Person/Apartment)			
	150	2.7			
Apartments				Totals	
No. of Apartment			199	199	
Volumes			80595	80595	L
			AFR	1.60	L/s
			Avg Day/Peak Week	100.74	m^3
			DWF	1.17	L/s
	Usage Factor	**Liters/Person/Day**			
	1 person per 7m2	150			
Retail & non-residential spaces	Retail			Totals	
Area	2123			2123	
Volumes	45493			45493	L
			AFR	0.90	L/s
			Avg Day/Peak Week	56.87	m^3
			DWF	0.66	L/s
			Total Volume	126087.86	L/day
	Average Flow Over	14	hours	2.50	L/s
	Average Day/Peak Week	1.25	X Daily Demand	157.6	m^3
	Peak Flow (5 DWF)	5	X Average Flow	12.51	L/s

APPENDIX F

MOY Extensive Blue Roof

Specification

Roof A Catchment

Type : Catchment Area

Area (ha)	0.176

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	1.000
Winter Volumetric Runoff	1.000
Time of Concentration (mins)	5
Percentage Impervious (%)	100

Roof B Catchment

Type : Catchment Area

Area (ha)	0.097

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	1.000
Winter Volumetric Runoff	1.000
Time of Concentration (mins)	5
Percentage Impervious (%)	100

Roof D Catchment

Type : Catchment Area

Area (ha)	0.014

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	1.000
Winter Volumetric Runoff	1.000
Time of Concentration (mins)	5
Percentage Impervious (%)	100

Roof E Catchment

Type : Catchment Area

Area (ha)	0.052

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	1.000
Winter Volumetric Runoff	1.000
Time of Concentration (mins)	5
Percentage Impervious (%)	100

Roof F Catchment

Type : Catchment Area

Area (ha)	0.035

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	1.000
Winter Volumetric Runoff	1.000
Time of Concentration (mins)	5
Percentage Impervious (%)	100

Roof G Catchment

Type : Catchment Area

Area (ha)	0.014

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	1.000
Winter Volumetric Runoff	1.000
Time of Concentration (mins)	5
Percentage Impervious (%)	100

Roof H Catchment

Type : Catchment Area

Area (ha)	0.042

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	1.000
Winter Volumetric Runoff	1.000
Time of Concentration (mins)	5
Percentage Impervious (%)	100

Podium C Catchment

Type : Catchment Area

Area (ha)	0.188

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	1.000
Winter Volumetric Runoff	1.000
Time of Concentration (mins)	5
Percentage Impervious (%)	100

Project:	Date:		
Belgard Road Dublin Blue Roof	06/02/2025		
	Designed by:	Checked by:	Approved By:
	KT	RG	
Report Details:	Company Address:		
Type: Stormwater Controls Storm Phase: Phase 2 outlets	Pluviam Environmental Ltd C/O French Ludlam & Co Ltd, 661 High Street, Kingswinford, West Midlands		

Blue Roof A

Type : Tank

Dimensions

Exceedance Level (m)	0.000
Depth (m)	0.200
Base Level (m)	-0.200
Freeboard (mm)	0
Initial Depth (m)	0.000
Porosity (%)	95
Average Slope (1:X)	0.00
Total Volume (m³)	267.520

Depth (m)	Area (m²)	Volume (m³)
0.000	1408.00	0.000
0.200	1408.00	267.520

Inlets

Inlet

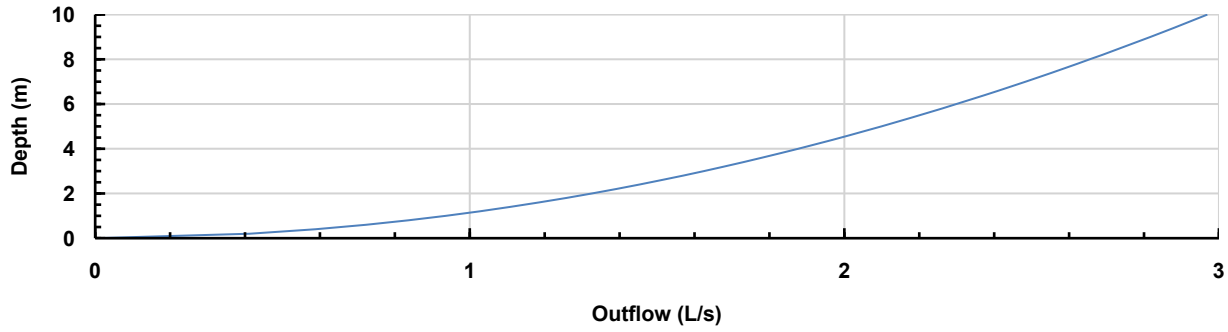
Inlet Type	Lateral Inflow
Incoming Item(s)	Roof A Catchment
Bypass Destination	(None)
Capacity Type	No Restriction

Outlets

Outlet

Outgoing Connection	No Delay (1)
Outlet Type	Multiple
Invert Level (m)	-0.200

Combined Outflow



Orifice

Diameter (m)	0.015
Coefficient of Discharge	0.600
Depth Above Invert (m)	0.000

Orifice

Diameter (m)	0.015
Coefficient of Discharge	0.600
Depth Above Invert (m)	0.000

Advanced

Perimeter	Circular
Length (m)	0.000

Blue Roof B

Type : Tank

Dimensions

Exceedance Level (m)	0.000
Depth (m)	0.200
Base Level (m)	-0.200
Freeboard (mm)	0
Initial Depth (m)	0.000
Porosity (%)	95
Average Slope (1:X)	0.00
Total Volume (m³)	147.440

Depth (m)	Area (m²)	Volume (m³)
0.000	776.00	0.000
0.200	776.00	147.440

Inlets

Inlet

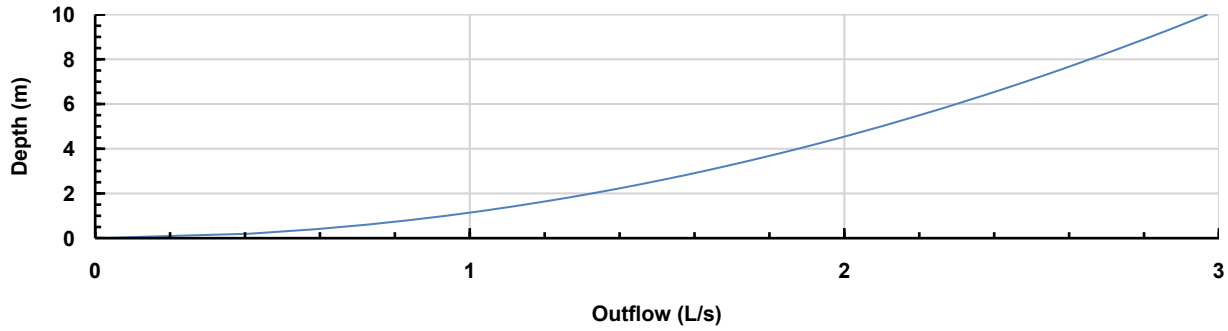
Inlet Type	Lateral Inflow
Incoming Item(s)	Roof B Catchment
Bypass Destination	(None)
Capacity Type	No Restriction

Outlets

Outlet

Outgoing Connection	No Delay
Outlet Type	Multiple
Invert Level (m)	-0.200

Combined Outflow



Orifice

Diameter (m)	0.015
Coefficient of Discharge	0.600
Depth Above Invert (m)	0.000

Orifice

Diameter (m)	0.015
Coefficient of Discharge	0.600
Depth Above Invert (m)	0.000

Advanced

Perimeter	Circular
Length (m)	0.000

Podium Roof C

Type : Tank

Dimensions

Exceedance Level (m)	-1.000
Depth (m)	0.200
Base Level (m)	-1.200
Freeboard (mm)	0
Initial Depth (m)	0.000
Porosity (%)	95
Average Slope (1:X)	0.00
Total Volume (m³)	285.000

Depth (m)	Area (m²)	Volume (m³)
0.000	1500.00	0.000
0.200	1500.00	285.000

Project:	Date:		
Belgard Road Dublin Blue Roof	06/02/2025		
	Designed by:	Checked by:	Approved By:
	KT	RG	
Report Details: Type: Stormwater Controls Storm Phase: Phase 2 outlets	Company Address: Pluviam Environmental Ltd C/O French Ludlam & Co Ltd, 661 High Street, Kingswinford, West Midlands		

Inlets

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	No Delay No Delay (1)
Bypass Destination	(None)
Capacity Type	No Restriction

Inlet (1)

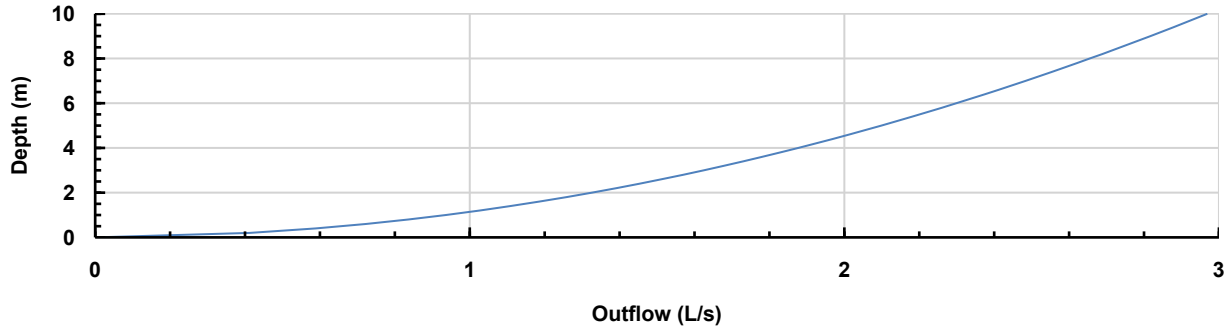
Inlet Type	Lateral Inflow
Incoming Item(s)	Podium C Catchment
Bypass Destination	(None)
Capacity Type	No Restriction

Outlets

Outlet

Outgoing Connection	(None)
Outlet Type	Multiple
Invert Level (m)	-1.200

Combined Outflow



Orifice

Diameter (m)	0.015
Coefficient of Discharge	0.600
Depth Above Invert (m)	0.000

Orifice

Diameter (m)	0.015
Coefficient of Discharge	0.600
Depth Above Invert (m)	0.000

Advanced

Perimeter	Circular
Length (m)	0.000

Blue Roof D

Type : Tank

Project:	Date:		
Belgard Road Dublin Blue Roof	06/02/2025		
	Designed by:	Checked by:	Approved By:
	KT	RG	
Report Details: Type: Stormwater Controls Storm Phase: Phase 2 outlets	Company Address: Pluviam Environmental Ltd C/O French Ludlam & Co Ltd, 661 High Street, Kingswinford, West Midlands		

Dimensions

Exceedance Level (m)	0.000
Depth (m)	0.200
Base Level (m)	-0.200
Freeboard (mm)	0
Initial Depth (m)	0.000
Porosity (%)	95
Average Slope (1:X)	0.00
Total Volume (m³)	21.736

Depth (m)	Area (m²)	Volume (m³)
0.000	114.40	0.000
0.200	114.40	21.736

Inlets

Inlet

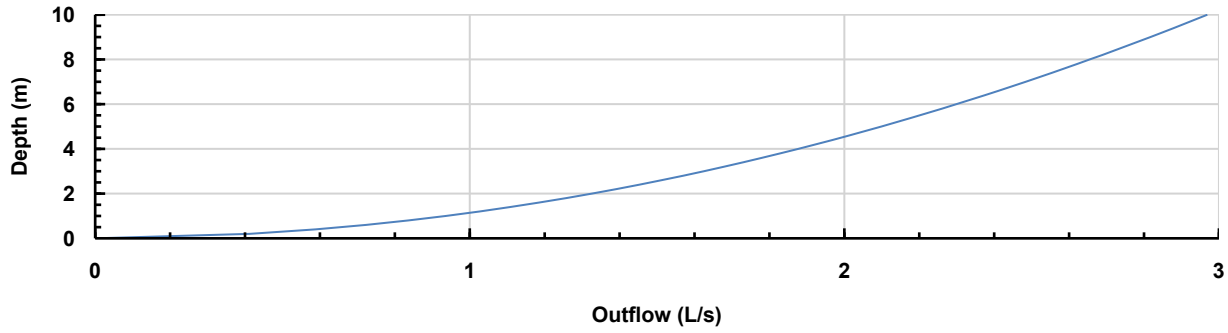
Inlet Type	Lateral Inflow
Incoming Item(s)	Roof D Catchment
Bypass Destination	(None)
Capacity Type	No Restriction

Outlets

Outlet

Outgoing Connection	(None)
Outlet Type	Multiple
Invert Level (m)	-0.200

Combined Outflow



Orifice

Diameter (m)	0.015
Coefficient of Discharge	0.600
Depth Above Invert (m)	0.000

Orifice

Diameter (m)	0.015
Coefficient of Discharge	0.600
Depth Above Invert (m)	0.000

Advanced

Perimeter	Circular
Length (m)	0.000

Project:	Date:		
Belgard Road Dublin Blue Roof	06/02/2025		
	Designed by:	Checked by:	Approved By:
	KT	RG	
Report Details: Type: Stormwater Controls Storm Phase: Phase 2 outlets	Company Address: Pluviam Environmental Ltd C/O French Ludlam & Co Ltd, 661 High Street, Kingswinford, West Midlands		

Blue Roof E

Type : Tank

Dimensions

Exceedance Level (m)	0.000
Depth (m)	0.200
Base Level (m)	-0.200
Freeboard (mm)	0
Initial Depth (m)	0.000
Porosity (%)	95
Average Slope (1:X)	0.00
Total Volume (m³)	78.432

Depth (m)	Area (m²)	Volume (m³)
0.000	412.80	0.000
0.200	412.80	78.432

Inlets

Inlet

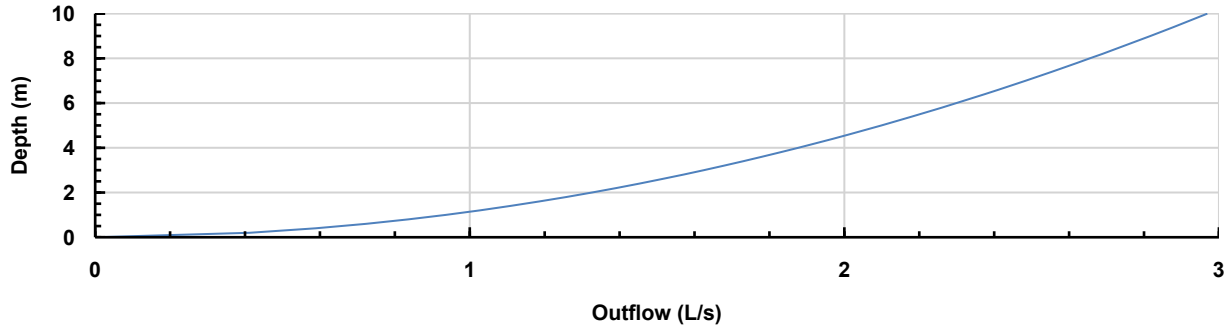
Inlet Type	Lateral Inflow
Incoming Item(s)	Roof E Catchment
Bypass Destination	(None)
Capacity Type	No Restriction

Outlets

Outlet

Outgoing Connection	(None)
Outlet Type	Multiple
Invert Level (m)	-0.200

Combined Outflow



Orifice

Diameter (m)	0.015
Coefficient of Discharge	0.600
Depth Above Invert (m)	0.000

Orifice

Diameter (m)	0.015
Coefficient of Discharge	0.600
Depth Above Invert (m)	0.000

Advanced

Perimeter	Circular
Length (m)	0.000

Blue Roof F

Type : Tank

Dimensions

Exceedance Level (m)	0.000
Depth (m)	0.200
Base Level (m)	-0.200
Freeboard (mm)	0
Initial Depth (m)	0.000
Porosity (%)	95
Average Slope (1:X)	0.00
Total Volume (m³)	52.896

Depth (m)	Area (m²)	Volume (m³)
0.000	278.40	0.000
0.200	278.40	52.896

Inlets

Inlet

Inlet Type	Lateral Inflow
Incoming Item(s)	Roof F Catchment
Bypass Destination	(None)
Capacity Type	No Restriction

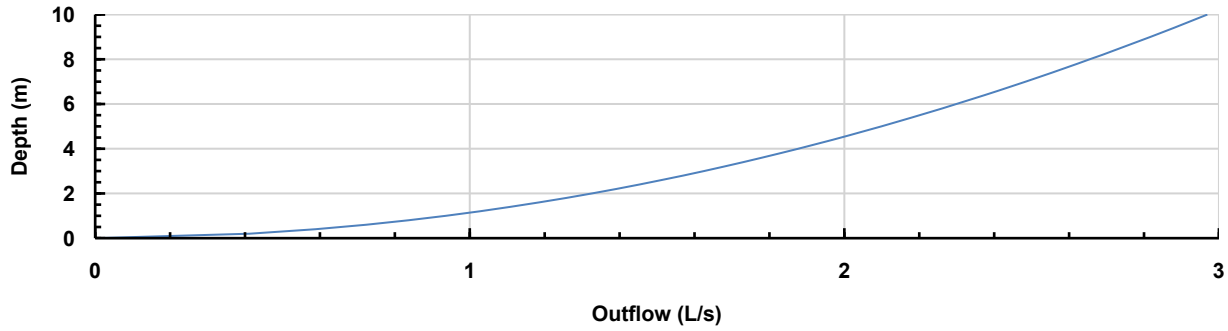
Project:	Date:		
Belgard Road Dublin Blue Roof	06/02/2025		
	Designed by:	Checked by:	Approved By:
	KT	RG	
Report Details: Type: Stormwater Controls Storm Phase: Phase 2 outlets	Company Address: Pluviam Environmental Ltd C/O French Ludlam & Co Ltd, 661 High Street, Kingswinford, West Midlands		

Outlets

Outlet

Outgoing Connection	(None)
Outlet Type	Multiple
Invert Level (m)	-0.200

Combined Outflow



Orifice

Diameter (m)	0.015
Coefficient of Discharge	0.600
Depth Above Invert (m)	0.000

Orifice

Diameter (m)	0.015
Coefficient of Discharge	0.600
Depth Above Invert (m)	0.000

Advanced

Perimeter	Circular
Length (m)	0.000

Blue Roof G

Type : Tank

Dimensions

Exceedance Level (m)	0.000
Depth (m)	0.200
Base Level (m)	-0.200
Freeboard (mm)	0
Initial Depth (m)	0.000
Porosity (%)	95
Average Slope (1:X)	0.00
Total Volume (m³)	21.888

Depth (m)	Area (m²)	Volume (m³)
0.000	115.20	0.000
0.200	115.20	21.888

Project:	Date:		
Belgard Road Dublin Blue Roof	06/02/2025		
	Designed by:	Checked by:	Approved By:
	KT	RG	
Report Details: Type: Stormwater Controls Storm Phase: Phase 2 outlets	Company Address: Pluviam Environmental Ltd C/O French Ludlam & Co Ltd, 661 High Street, Kingswinford, West Midlands		

Inlets

Inlet

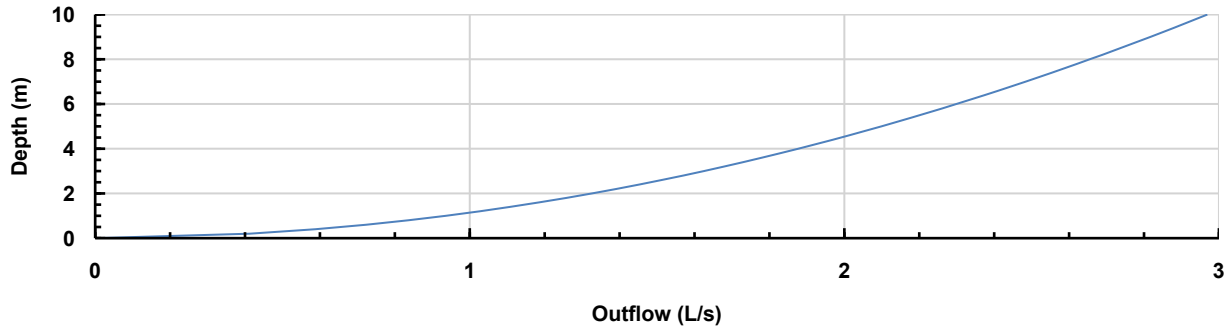
Inlet Type	Lateral Inflow
Incoming Item(s)	Roof G Catchment
Bypass Destination	(None)
Capacity Type	No Restriction

Outlets

Outlet

Outgoing Connection	(None)
Outlet Type	Multiple
Invert Level (m)	-0.200

Combined Outflow



Orifice

Diameter (m)	0.015
Coefficient of Discharge	0.600
Depth Above Invert (m)	0.000

Orifice

Diameter (m)	0.015
Coefficient of Discharge	0.600
Depth Above Invert (m)	0.000

Advanced

Perimeter	Circular
Length (m)	0.000

Blue Roof H

Type : Tank

Project:	Date:		
Belgard Road Dublin Blue Roof	06/02/2025		
	Designed by:	Checked by:	Approved By:
	KT	RG	
Report Details: Type: Stormwater Controls Storm Phase: Phase 2 outlets	Company Address: Pluviam Environmental Ltd C/O French Ludlam & Co Ltd, 661 High Street, Kingswinford, West Midlands		

Dimensions

Exceedance Level (m)	0.000
Depth (m)	0.200
Base Level (m)	-0.200
Freeboard (mm)	0
Initial Depth (m)	0.000
Porosity (%)	95
Average Slope (1:X)	0.00
Total Volume (m³)	63.384

Depth (m)	Area (m²)	Volume (m³)
0.000	333.60	0.000
0.200	333.60	63.384

Inlets

Inlet

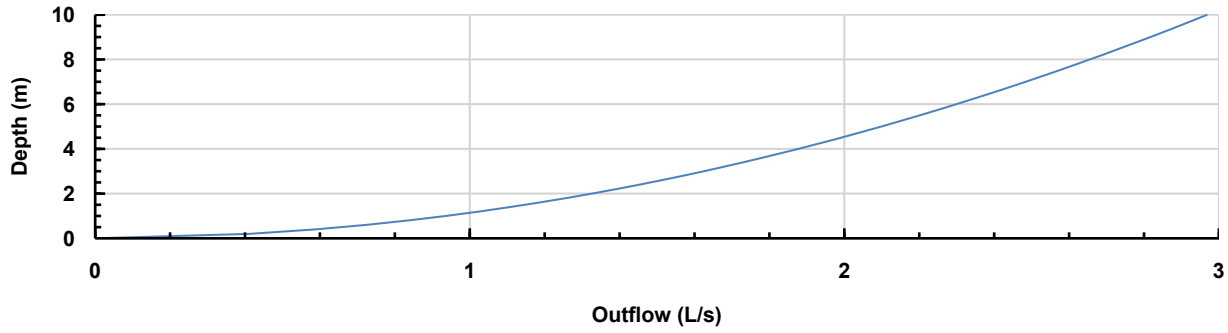
Inlet Type	Lateral Inflow
Incoming Item(s)	Roof H Catchment
Bypass Destination	(None)
Capacity Type	No Restriction

Outlets

Outlet

Outgoing Connection	(None)
Outlet Type	Multiple
Invert Level (m)	-0.200

Combined Outflow



Orifice

Diameter (m)	0.015
Coefficient of Discharge	0.600
Depth Above Invert (m)	0.000

Orifice

Diameter (m)	0.015
Coefficient of Discharge	0.600
Depth Above Invert (m)	0.000

Advanced

Perimeter	Circular
Length (m)	0.000

Project:	Date:		
Belgard Road Dublin Blue Roof	06/02/2025		
	Designed by:	Checked by:	Approved By:
	KT	RG	
Report Details:	Company Address:		
Type: Inflows Summary Storm Phase: Phase 2 outlets	Pluviam Environmental Ltd C/O French Ludlam & Co Ltd, 661 High Street, Kingswinford, West Midlands		

FSR: 100 years: Increase Rainfall (%): +20: Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m^3)
Roof A Catchment	FSR: 100 years: +20 %: 15 mins: Summer	0.18	85.9	38.702
Roof B Catchment	FSR: 100 years: +20 %: 15 mins: Summer	0.10	47.3	21.333
Roof D Catchment	FSR: 100 years: +20 %: 15 mins: Summer	0.01	6.8	3.082
Roof E Catchment	FSR: 100 years: +20 %: 15 mins: Summer	0.05	25.2	11.346
Roof F Catchment	FSR: 100 years: +20 %: 15 mins: Summer	0.04	17.1	7.694
Roof G Catchment	FSR: 100 years: +20 %: 15 mins: Summer	0.01	6.8	3.082
Roof H Catchment	FSR: 100 years: +20 %: 15 mins: Summer	0.04	20.5	9.237
Podium C Catchment	FSR: 100 years: +20 %: 15 mins: Summer	0.19	91.7	41.345

Project:	Date:		
Belgard Road Dublin Blue Roof	06/02/2025		
	Designed by:	Checked by:	Approved By:
	KT	RG	
Report Details:	Company Address:		
Type: Stormwater Controls Summary Storm Phase: Phase 2 outlets	Pluviam Environmental Ltd C/O French Ludlam & Co Ltd, 661 High Street, Kingswinford, West Midlands		

FSR: 100 years: Increase Rainfall (%): +20: Critical Storm Per Item: Rank By: Max. Outflow

Stormwater Control	Storm Event	Max. Avg. Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Outflow (L/s)	Percentage Available (%)
Blue Roof A	FSR: 100 years: +20 %: 1440 mins: Winter	-0.021	0.179	0.179	7.6	0.4	10.473
Blue Roof B	FSR: 100 years: +20 %: 1440 mins: Winter	-0.032	0.168	0.168	4.2	0.4	16.147
Podium Roof C	FSR: 100 years: +20 %: 1440 mins: Winter	-0.974	0.226	0.226	8.7	0.4	-12.766
Blue Roof D	FSR: 100 years: +20 %: 960 mins: Summer	-0.102	0.098	0.098	1.2	0.3	51.158
Blue Roof E	FSR: 100 years: +20 %: 1440 mins: Winter	-0.052	0.148	0.148	2.2	0.4	26.185
Blue Roof F	FSR: 100 years: +20 %: 1440 mins: Summer	-0.066	0.134	0.134	2.3	0.3	32.891
Blue Roof G	FSR: 100 years: +20 %: 960 mins: Summer	-0.103	0.097	0.097	1.2	0.3	51.419
Blue Roof H	FSR: 100 years: +20 %: 1440 mins: Summer	-0.059	0.141	0.141	2.8	0.3	29.609

Project:	Date:		
Belgard Road Dublin Blue Roof	06/02/2025		
	Designed by:	Checked by:	Approved By:
	KT	RG	
Report Details: Type: Inflows Storm Phase: Phase 3 outlets	Company Address: Pluviam Environmental Ltd C/O French Ludlam & Co Ltd, 661 High Street, Kingswinford, West Midlands		

Roof A Catchment

Type : Catchment Area

Area (ha)	0.176

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	1.000
Winter Volumetric Runoff	1.000
Time of Concentration (mins)	5
Percentage Impervious (%)	100

Roof B Catchment

Type : Catchment Area

Area (ha)	0.097

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	1.000
Winter Volumetric Runoff	1.000
Time of Concentration (mins)	5
Percentage Impervious (%)	100

Roof D Catchment

Type : Catchment Area

Area (ha)	0.014

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	1.000
Winter Volumetric Runoff	1.000
Time of Concentration (mins)	5
Percentage Impervious (%)	100

Roof E Catchment

Type : Catchment Area

Area (ha)	0.052

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	1.000
Winter Volumetric Runoff	1.000
Time of Concentration (mins)	5
Percentage Impervious (%)	100

Roof F Catchment

Type : Catchment Area

Area (ha)	0.035

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	1.000
Winter Volumetric Runoff	1.000
Time of Concentration (mins)	5
Percentage Impervious (%)	100

Roof G Catchment

Type : Catchment Area

Area (ha)	0.014

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	1.000
Winter Volumetric Runoff	1.000
Time of Concentration (mins)	5
Percentage Impervious (%)	100

Roof H Catchment

Type : Catchment Area

Area (ha)	0.042

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	1.000
Winter Volumetric Runoff	1.000
Time of Concentration (mins)	5
Percentage Impervious (%)	100

Podium C Catchment

Type : Catchment Area

Area (ha)	0.188

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	1.000
Winter Volumetric Runoff	1.000
Time of Concentration (mins)	5
Percentage Impervious (%)	100

Project:	Date:		
Belgard Road Dublin Blue Roof	06/02/2025		
	Designed by:	Checked by:	Approved By:
	KT	RG	
Report Details:	Company Address:		
Type: Stormwater Controls Storm Phase: Phase 3 outlets	Pluviam Environmental Ltd C/O French Ludlam & Co Ltd, 661 High Street, Kingswinford, West Midlands		

Blue Roof A

Type : Tank

Dimensions

Exceedance Level (m)	0.000
Depth (m)	0.200
Base Level (m)	-0.200
Freeboard (mm)	0
Initial Depth (m)	0.000
Porosity (%)	95
Average Slope (1:X)	0.00
Total Volume (m³)	267.520

Depth (m)	Area (m²)	Volume (m³)
0.000	1408.00	0.000
0.200	1408.00	267.520

Inlets

Inlet

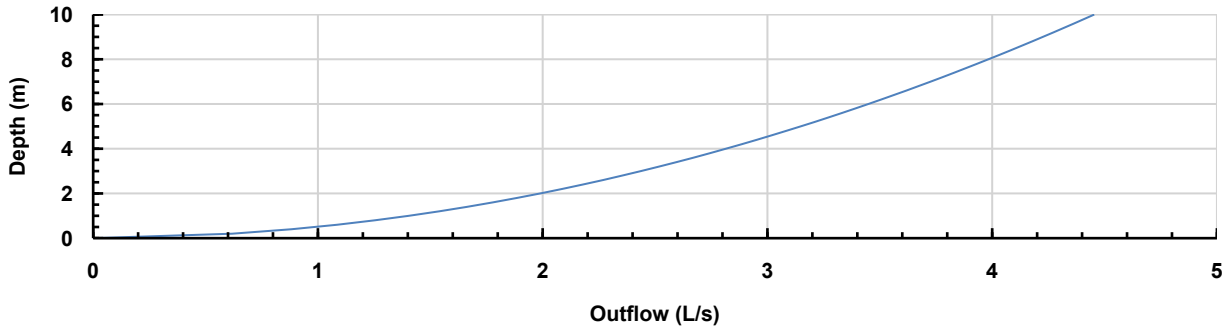
Inlet Type	Lateral Inflow
Incoming Item(s)	Roof A Catchment
Bypass Destination	(None)
Capacity Type	No Restriction

Outlets

Outlet

Outgoing Connection	No Delay (1)
Outlet Type	Multiple
Invert Level (m)	-0.200

Combined Outflow



Orifice

Diameter (m)	0.015
Coefficient of Discharge	0.600
Depth Above Invert (m)	0.000

Orifice

Diameter (m)	0.015
Coefficient of Discharge	0.600
Depth Above Invert (m)	0.000

Orifice

Diameter (m)	0.015
Coefficient of Discharge	0.600
Depth Above Invert (m)	0.000

Advanced

Perimeter	Circular
Length (m)	0.000

Blue Roof B

Type : Tank

Dimensions

Exceedance Level (m)	0.000
Depth (m)	0.200
Base Level (m)	-0.200
Freeboard (mm)	0
Initial Depth (m)	0.000
Porosity (%)	95
Average Slope (1:X)	0.00
Total Volume (m³)	147.440

Depth (m)	Area (m²)	Volume (m³)
0.000	776.00	0.000
0.200	776.00	147.440

Inlets

Inlet

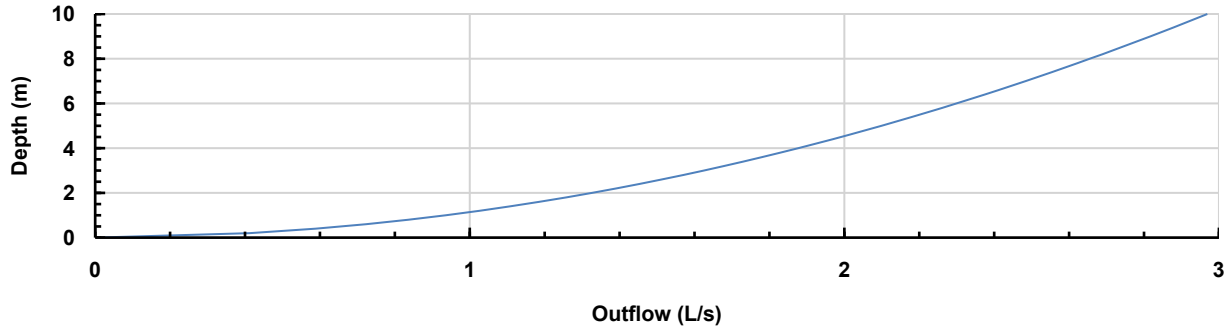
Inlet Type	Lateral Inflow
Incoming Item(s)	Roof B Catchment
Bypass Destination	(None)
Capacity Type	No Restriction

Outlets

Outlet

Outgoing Connection	No Delay
Outlet Type	Multiple
Invert Level (m)	-0.200

Combined Outflow



Orifice

Diameter (m)	0.015
Coefficient of Discharge	0.600
Depth Above Invert (m)	0.000

Orifice

Diameter (m)	0.015
Coefficient of Discharge	0.600
Depth Above Invert (m)	0.000

Advanced

Perimeter	Circular
Length (m)	0.000

Podium Roof C

Type : Tank

Dimensions

Exceedance Level (m)	-1.000
Depth (m)	0.200
Base Level (m)	-1.200
Freeboard (mm)	0
Initial Depth (m)	0.000
Porosity (%)	95
Average Slope (1:X)	0.00
Total Volume (m³)	285.000

Depth (m)	Area (m²)	Volume (m³)
0.000	1500.00	0.000
0.200	1500.00	285.000

Inlets

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	No Delay No Delay (1)
Bypass Destination	(None)
Capacity Type	No Restriction

Inlet (1)

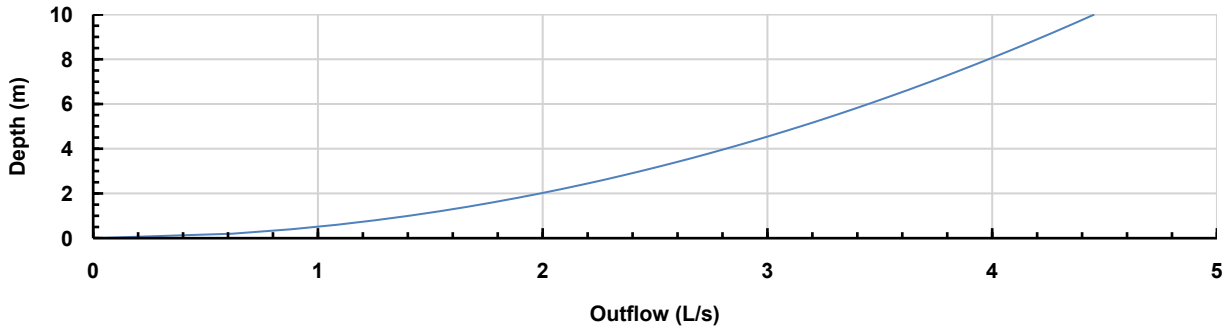
Inlet Type	Lateral Inflow
Incoming Item(s)	Podium C Catchment
Bypass Destination	(None)
Capacity Type	No Restriction

Outlets

Outlet

Outgoing Connection	(None)
Outlet Type	Multiple
Invert Level (m)	-1.200

Combined Outflow



Orifice

Diameter (m)	0.015
Coefficient of Discharge	0.600
Depth Above Invert (m)	0.000

Orifice

Diameter (m)	0.015
Coefficient of Discharge	0.600
Depth Above Invert (m)	0.000

Orifice

Diameter (m)	0.015
Coefficient of Discharge	0.600
Depth Above Invert (m)	0.000

Advanced

Perimeter	Circular
Length (m)	0.000

Blue Roof D

Type : Tank

Dimensions

Exceedance Level (m)	0.000
Depth (m)	0.200
Base Level (m)	-0.200
Freeboard (mm)	0
Initial Depth (m)	0.000
Porosity (%)	95
Average Slope (1:X)	0.00
Total Volume (m³)	21.736

Depth (m)	Area (m²)	Volume (m³)
0.000	114.40	0.000
0.200	114.40	21.736

Project:	Date:		
Belgard Road Dublin Blue Roof	06/02/2025		
	Designed by:	Checked by:	Approved By:
	KT	RG	
Report Details:	Company Address:		
Type: Stormwater Controls Storm Phase: Phase 3 outlets	Pluviam Environmental Ltd C/O French Ludlam & Co Ltd, 661 High Street, Kingswinford, West Midlands		

Inlets

Inlet

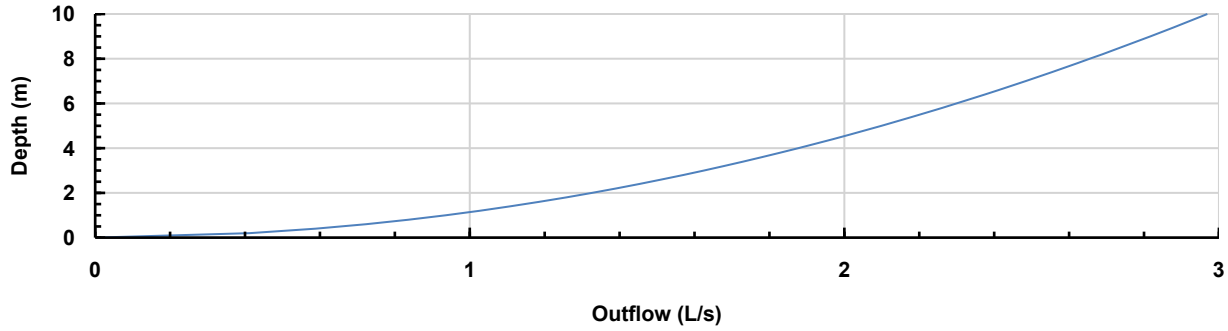
Inlet Type	Lateral Inflow
Incoming Item(s)	Roof D Catchment
Bypass Destination	(None)
Capacity Type	No Restriction

Outlets

Outlet

Outgoing Connection	(None)
Outlet Type	Multiple
Invert Level (m)	-0.200

Combined Outflow



Orifice

Diameter (m)	0.015
Coefficient of Discharge	0.600
Depth Above Invert (m)	0.000

Orifice

Diameter (m)	0.015
Coefficient of Discharge	0.600
Depth Above Invert (m)	0.000

Advanced

Perimeter	Circular
Length (m)	0.000

Blue Roof E Type : Tank

Project:	Date:		
Belgard Road Dublin Blue Roof	06/02/2025		
	Designed by:	Checked by:	Approved By:
	KT	RG	
Report Details: Type: Stormwater Controls Storm Phase: Phase 3 outlets	Company Address: Pluviam Environmental Ltd C/O French Ludlam & Co Ltd, 661 High Street, Kingswinford, West Midlands		

Dimensions

Exceedance Level (m)	0.000
Depth (m)	0.200
Base Level (m)	-0.200
Freeboard (mm)	0
Initial Depth (m)	0.000
Porosity (%)	95
Average Slope (1:X)	0.00
Total Volume (m³)	78.432

Depth (m)	Area (m²)	Volume (m³)
0.000	412.80	0.000
0.200	412.80	78.432

Inlets

Inlet

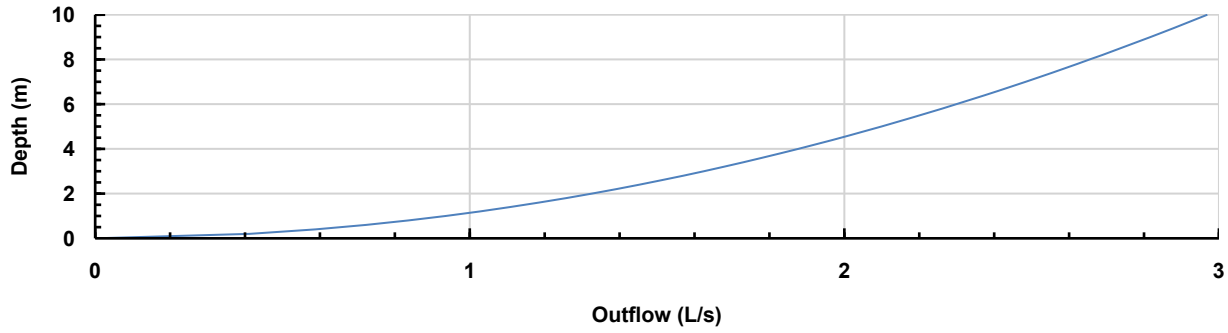
Inlet Type	Lateral Inflow
Incoming Item(s)	Roof E Catchment
Bypass Destination	(None)
Capacity Type	No Restriction

Outlets

Outlet

Outgoing Connection	(None)
Outlet Type	Multiple
Invert Level (m)	-0.200

Combined Outflow



Orifice

Diameter (m)	0.015
Coefficient of Discharge	0.600
Depth Above Invert (m)	0.000

Orifice

Diameter (m)	0.015
Coefficient of Discharge	0.600
Depth Above Invert (m)	0.000

Advanced

Perimeter	Circular
Length (m)	0.000

Project:	Date:		
Belgard Road Dublin Blue Roof	06/02/2025		
	Designed by:	Checked by:	Approved By:
	KT	RG	
Report Details: Type: Stormwater Controls Storm Phase: Phase 3 outlets	Company Address: Pluviam Environmental Ltd C/O French Ludlam & Co Ltd, 661 High Street, Kingswinford, West Midlands		

Blue Roof F

Type : Tank

Dimensions

Exceedance Level (m)	0.000
Depth (m)	0.200
Base Level (m)	-0.200
Freeboard (mm)	0
Initial Depth (m)	0.000
Porosity (%)	95
Average Slope (1:X)	0.00
Total Volume (m³)	52.896

Depth (m)	Area (m²)	Volume (m³)
0.000	278.40	0.000
0.200	278.40	52.896

Inlets

Inlet

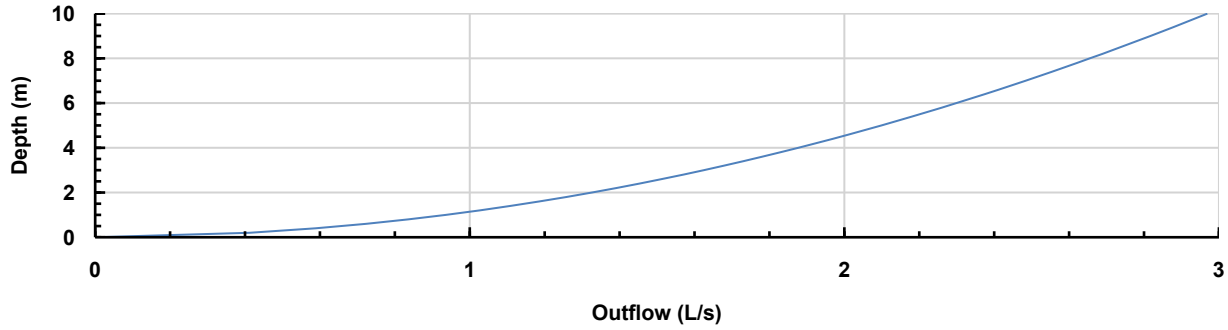
Inlet Type	Lateral Inflow
Incoming Item(s)	Roof F Catchment
Bypass Destination	(None)
Capacity Type	No Restriction

Outlets

Outlet

Outgoing Connection	(None)
Outlet Type	Multiple
Invert Level (m)	-0.200

Combined Outflow



Orifice

Diameter (m)	0.015
Coefficient of Discharge	0.600
Depth Above Invert (m)	0.000

Orifice

Diameter (m)	0.015
Coefficient of Discharge	0.600
Depth Above Invert (m)	0.000

Advanced

Perimeter	Circular
Length (m)	0.000

Blue Roof G

Type : Tank

Dimensions

Exceedance Level (m)	0.000
Depth (m)	0.200
Base Level (m)	-0.200
Freeboard (mm)	0
Initial Depth (m)	0.000
Porosity (%)	95
Average Slope (1:X)	0.00
Total Volume (m³)	21.888

Depth (m)	Area (m²)	Volume (m³)
0.000	115.20	0.000
0.200	115.20	21.888

Inlets

Inlet

Inlet Type	Lateral Inflow
Incoming Item(s)	Roof G Catchment
Bypass Destination	(None)
Capacity Type	No Restriction

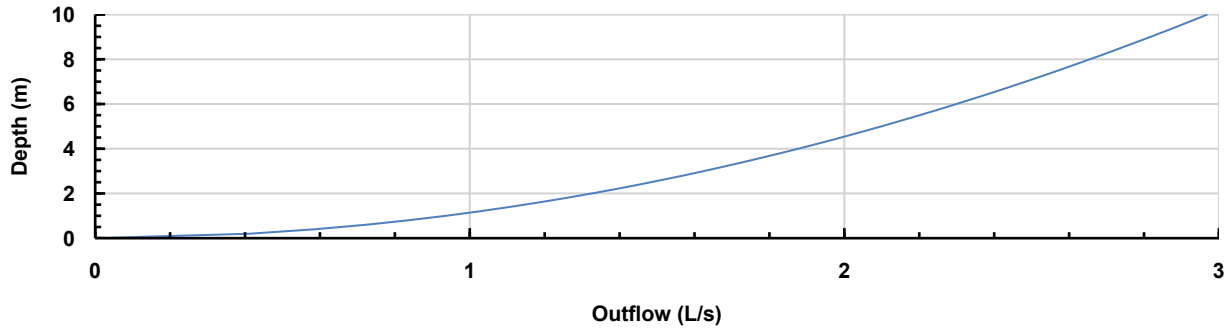
Project:	Date:		
Belgard Road Dublin Blue Roof	06/02/2025		
	Designed by:	Checked by:	Approved By:
	KT	RG	
Report Details: Type: Stormwater Controls Storm Phase: Phase 3 outlets	Company Address: Pluviam Environmental Ltd C/O French Ludlam & Co Ltd, 661 High Street, Kingswinford, West Midlands		

Outlets

Outlet

Outgoing Connection	(None)
Outlet Type	Multiple
Invert Level (m)	-0.200

Combined Outflow



Orifice

Diameter (m)	0.015
Coefficient of Discharge	0.600
Depth Above Invert (m)	0.000

Orifice

Diameter (m)	0.015
Coefficient of Discharge	0.600
Depth Above Invert (m)	0.000

Advanced

Perimeter	Circular
Length (m)	0.000

Blue Roof H

Type : Tank

Dimensions

Exceedance Level (m)	0.000
Depth (m)	0.200
Base Level (m)	-0.200
Freeboard (mm)	0
Initial Depth (m)	0.000
Porosity (%)	95
Average Slope (1:X)	0.00
Total Volume (m³)	63.384

Depth (m)	Area (m²)	Volume (m³)
0.000	333.60	0.000
0.200	333.60	63.384

Project:	Date:		
Belgard Road Dublin Blue Roof	06/02/2025		
	Designed by:	Checked by:	Approved By:
	KT	RG	
Report Details:	Company Address:		
Type: Stormwater Controls Storm Phase: Phase 3 outlets	Pluviam Environmental Ltd C/O French Ludlam & Co Ltd, 661 High Street, Kingswinford, West Midlands		

Inlets

Inlet

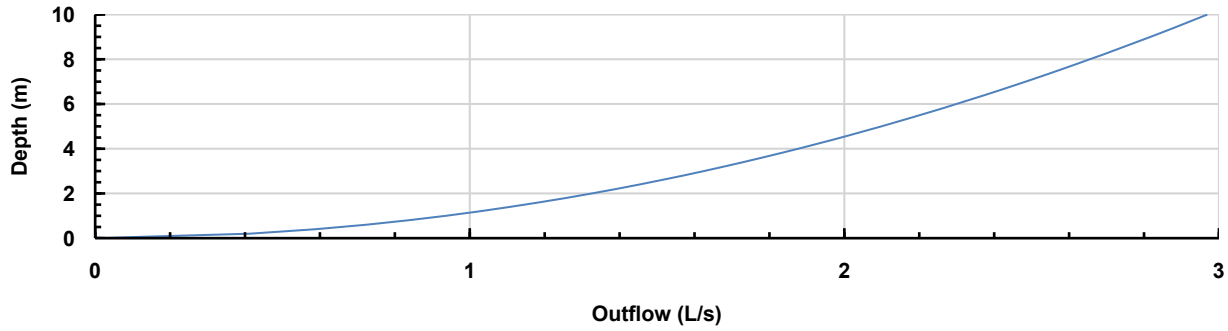
Inlet Type	Lateral Inflow
Incoming Item(s)	Roof H Catchment
Bypass Destination	(None)
Capacity Type	No Restriction

Outlets

Outlet

Outgoing Connection	(None)
Outlet Type	Multiple
Invert Level (m)	-0.200

Combined Outflow



Orifice

Diameter (m)	0.015
Coefficient of Discharge	0.600
Depth Above Invert (m)	0.000

Orifice

Diameter (m)	0.015
Coefficient of Discharge	0.600
Depth Above Invert (m)	0.000

Advanced

Perimeter	Circular
Length (m)	0.000

Project:	Date:		
Belgard Road Dublin Blue Roof	06/02/2025		
	Designed by:	Checked by:	Approved By:
	KT	RG	
Report Details:	Company Address:		
Type: Inflows Summary Storm Phase: Phase 3 outlets	Pluviam Environmental Ltd C/O French Ludlam & Co Ltd, 661 High Street, Kingswinford, West Midlands		

FSR: 100 years: Increase Rainfall (%): +20: Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m^3)
Roof A Catchment	FSR: 100 years: +20 %: 15 mins: Summer	0.18	85.9	38.702
Roof B Catchment	FSR: 100 years: +20 %: 15 mins: Summer	0.10	47.3	21.333
Roof D Catchment	FSR: 100 years: +20 %: 15 mins: Summer	0.01	6.8	3.082
Roof E Catchment	FSR: 100 years: +20 %: 15 mins: Summer	0.05	25.2	11.346
Roof F Catchment	FSR: 100 years: +20 %: 15 mins: Summer	0.04	17.1	7.694
Roof G Catchment	FSR: 100 years: +20 %: 15 mins: Summer	0.01	6.8	3.082
Roof H Catchment	FSR: 100 years: +20 %: 15 mins: Summer	0.04	20.5	9.237
Podium C Catchment	FSR: 100 years: +20 %: 15 mins: Summer	0.19	91.7	41.345

Project:	Date:		
Belgard Road Dublin Blue Roof	06/02/2025		
	Designed by:	Checked by:	Approved By:
	KT	RG	
Report Details:	Company Address:		
Type: Stormwater Controls Summary Storm Phase: Phase 3 outlets	Pluviam Environmental Ltd C/O French Ludlam & Co Ltd, 661 High Street, Kingswinford, West Midlands		

FSR: 100 years: Increase Rainfall (%): +20: Critical Storm Per Item: Rank By: Max. Outflow

Stormwater Control	Storm Event	Max. Avg. Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Outflow (L/s)	Percentage Available (%)
Blue Roof A	FSR: 100 years: +20 %: 1440 mins: Winter	-0.028	0.172	0.172	7.6	0.6	14.001
Blue Roof B	FSR: 100 years: +20 %: 1440 mins: Winter	-0.032	0.168	0.168	4.2	0.4	16.147
Podium Roof C	FSR: 100 years: +20 %: 1440 mins: Winter	-0.978	0.222	0.222	8.8	0.7	-10.983
Blue Roof D	FSR: 100 years: +20 %: 960 mins: Summer	-0.102	0.098	0.098	1.2	0.3	51.158
Blue Roof E	FSR: 100 years: +20 %: 1440 mins: Winter	-0.052	0.148	0.148	2.2	0.4	26.185
Blue Roof F	FSR: 100 years: +20 %: 1440 mins: Summer	-0.066	0.134	0.134	2.3	0.3	32.891
Blue Roof G	FSR: 100 years: +20 %: 960 mins: Summer	-0.103	0.097	0.097	1.2	0.3	51.419
Blue Roof H	FSR: 100 years: +20 %: 1440 mins: Summer	-0.059	0.141	0.141	2.8	0.3	29.609

Belgard Road, Dublin Calculations

Blue roof cascade calculations

Location	Level	Area m^2	Allowance	Blue Roof Area m^2	Void depth mm	Calculated Depth (mm) Hmax	No. of outlets	Flow rate l/s	Orifice size mm	Total Flow Rate l/s	
Roof A	6	1760.00	0.8	1408.00	200	179	2	0.20	15	**0.40**	Flow to C
Roof B	5	970.00	0.8	776.00	200	168	2	0.20	15	**0.40**	Flow to C
Podium Roof C	1	1875.00	0.8	1500.00	250	226	2	0.20	15	**0.40**	Flow to drain
Roof D	1	143.00	0.8	114.40	100	98	2	0.15	15	**0.30**	Flow to drain
Roof E	6	516.00	0.8	412.80	150	148	2	0.20	15	**0.40**	Flow to drain
Roof F	6	348.00	0.8	278.40	150	134	2	0.15	15	**0.30**	Flow to drain
Roof G	2	144.00	0.8	115.20	100	97	2	0.15	15	**0.30**	Flow to drain
Roof H	1	417.00	0.8	333.60	150	141	2	0.15	15	**0.30**	Flow to drain
										2.00	

Areas based on Donnely Turpin dwg 242/P03_09

Assumes tank porosity of 95%

Location	Level	Area m2	Allowance	Blue Roof Area m2	Void depth mm	Calculated Depth (mm) Hmax	No. of outlets	Flow rate l/s	Orifice size mm	Total Flow Rate l/s	
Roof A	6	1760.00	0.8	1408.00	200		3	0.20	15	**0.60**	Flow to C
Roof B	5	970.00	0.8	776.00	200		2	0.20	15	**0.40**	Flow to C
Podium Roof C	1	1875.00	0.8	1500.00	250		3	0.23	15	**0.70**	Flow to drain
Roof D	1	143.00	0.8	114.40	100		2	0.15	15	**0.30**	Flow to drain
Roof E	6	516.00	0.8	412.80	150		2	0.20	15	**0.40**	Flow to drain
Roof F	6	348.00	0.8	278.40	150		2	0.15	15	**0.30**	Flow to drain
Roof G	2	144.00	0.8	115.20	100		2	0.15	15	**0.30**	Flow to drain
Roof H	1	417.00	0.8	333.60	150		2	0.15	15	**0.30**	Flow to drain
										2.30	

Areas based on Donnely Turpin dwg 242/P03_09

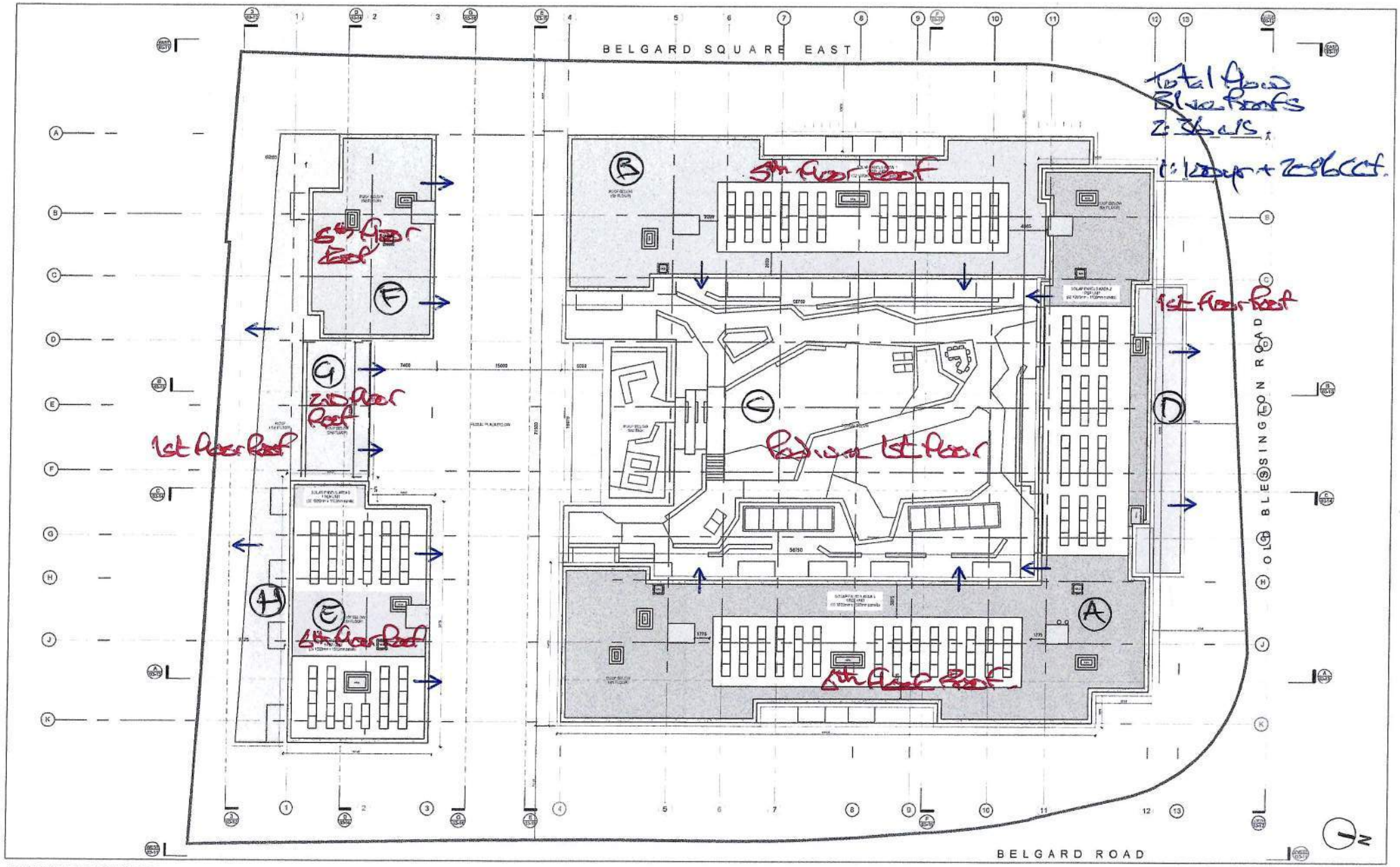
Assumes tank porosity of 95%

Overflow calculation based on BS EN 12056-3:2000 Category 1

Location	Level	Area m^2	Run off Co-eff	Rainfall Intensity l/s/m^2	No. of outlets	Flow rate per outlet l/s	Total Flow rate l/s
Roof A	6	1760.00	0.9	0.062	9	10.82	97.38
Roof B	5	970.00	0.9	0.062	5	10.74	53.70
Podium Roof C	1	1875.00	0.9	0.062	10	10.38	103.80
Roof D	1	143.00	0.9	0.062	1	7.92	7.92
Roof E	6	516.00	0.9	0.062	3	9.52	28.56
Roof F	6	348.00	0.9	0.062	2	9.63	19.26
Roof G	2	144.00	0.9	0.062	1	7.97	7.97
Roof H	1	417.00	0.9	0.062	3	7.69	23.07

Areas based on Donnely Turpin dwg 242/P03_09

Flows based on 100mm overflow outlets



PROPOSED ROOF PLAN 1:200

GENERAL NOTES

1. THIS DRAWING IS FOR PLANNING APPLICATION PURPOSES ONLY.
2. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH ALL ACCOMPANYING OR RELATED REPORTS SUBMITTED WITH THE PLANNING APPLICATION.
3. ANY DISCREPANCIES TO BE NOTIFIED TO DONNELLY TURPIN ARCHITECTS.
4. ALL DIMENSIONS INDICATED ARE SUBJECT TO SITE SURVEY
5. COPYRIGHT RETAINED BY DONNELLY TURPIN ARCHITECTS.

BOUNDARY LINE - SITE SUBJECT TO APPLICATION

SITE IN OWNERSHIP OF APPLICANT - NOT SUBJECT TO APPLICATION

SITE BOUNDED BY BELGARD SQUARE EAST, BLESSINGTON ROAD AND BELGARD ROAD, TALLAGHT, DUBLIN 24.
MIX USE DEVELOPMENT.

DONNELLY TURPIN ARCHITECTS
54 LOWER CAMDEN STREET DUBLIN 2 TEL (+353) 1478 1000 EMAIL

PLANNING	1:200 @ A1	PROPOSED ROOF PLAN	
2424	P03_09		JAN 2025

APPENDIX G

Uisce Éireann COF

CONFIRMATION OF FEASIBILITY

Ken Moriarty

Torque Consulting Eng.
Unit K26
Drinan Enterprise Centre
Swords Enterprise Park
Dublin
K67E722

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

09 June 2025

Our Ref: CDS24011089 Pre-Connection Enquiry
Belgard Road, Belgard Square East, Tallaght, 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 223 unit(s) at Belgard Road, Belgard Square East, Tallaght, Dublin, (the **Development)**.

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

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

- **Wastewater Connection** - Feasible Subject to upgrades

- In order to accommodate the proposed Development, upgrade of the 225mm gravity sewer along Belgard Sq. East by approximately 400m is required. These upgrade works are not currently on Uisce Éireann investment plan therefore, the Applicant will be required to fund these local network upgrades. At a connection application stage, the network upgrade requirement will be reviewed, new sewer diameter will be confirmed, and you will be provided with a quote for these works.

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

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

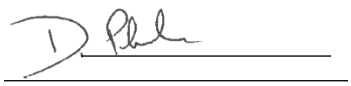
Where can you find more information?

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

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

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

Yours sincerely,



Dermot Phelan
Connections Delivery Manager

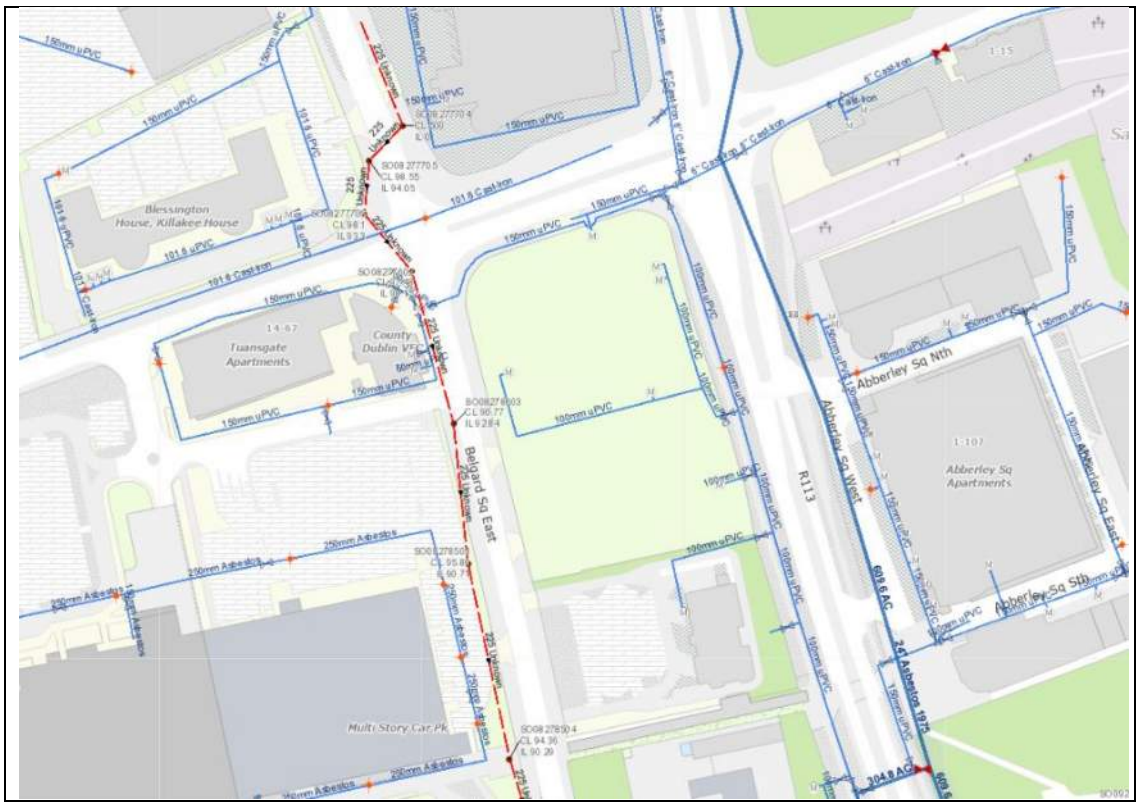
Section A - What is important to know?

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

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

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

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



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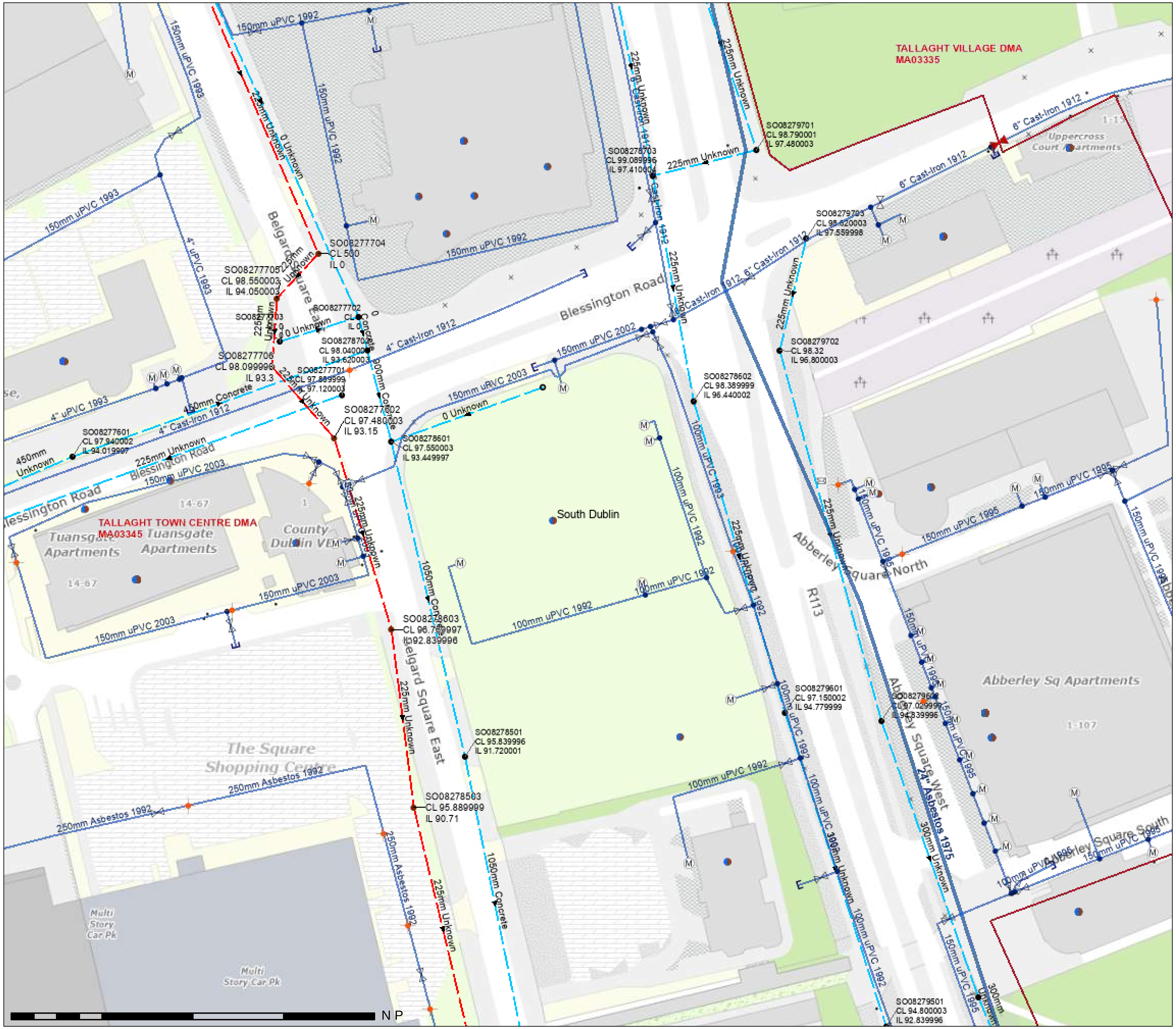
Note: The information provided on the included maps as to the position of Uisce Éireann's underground network(s) is provided as a general guide only. The information is based on the best available information provided by each Local Authority in Ireland to Uisce Éireann.

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 H

Uisce Éireann Records Drawing

8LVFH eLUHDQQ 9LHZHU :HE 0DS



Uisce Éireann Irish Water

3ULQW 'DWH

3ULQWHG E\ 8LVFH eLUHDQQ

7i WRLUPHDVF DU DRQ FKXLG GHQ OtQtRFKW VHR D DWKWKDLUJHD
FKXLG GHQ OtQtRFKW D VWyUiLO DU DRQ FKyUDV DLVJKDEKiOD G¶DR
FKyLSFKLUW GH FKXLG 8LVFH eLUHDQQ VHDFKDV PDU D DRQWyIDU D
Gi Q HLVtRGK DQ GRLFLPpDG FKXLJH DU GW~V

&p JR QGHDUQDGK JDFK XLOH LDUUDFKW F~UDP D GKpDQDPK LQD
L QGiLO OH OiWKDLU D OtRQUD IDRL WKDODPK PDU WKUHRLU JKLQH
IKDLVQpLV EXQDLWKH DU DQ HRODV LV IHDUU FXUWKD DU IiLO G¶8L
LQ eLULQQ 6pDQDQQ 8LVFH eLUHDQQ IUHDJUDFKW DV FUXLQQHDV F
WXJDGK DJXV Qt WKDEKDUIDLGK 8LVFH eLUHDQQ DRQ UiWKDtRFKWD
EKIDLVQHLV DJXV VpDQDQQ 8LVFH eLUHDQQ JDFK DRQ GOLWHDQDV
DRQ IKDLOOt DU ELWK 1tRU FKHDUW EUDLWK DU DQ EKIDLVQpLV VHR
VL~O L JFyQJDU DQ OtRQUD IDRL WKDODPK GH FKXLG 8LVFH eLUHDQQ
Qy DRQ RLEUHDFKD HLOH DWi Vp GHLPKLQ D GKpDQDPK GH JR VDLQ
WKDODPK GH FKXLG 8LVFH eLUHDQQ VXOD GWDEKDUIDU IDRL WK~V D
OpLUtWHDU QDLVF VKHLUEKtVH GH JKQiWK DFK Et DU DQ DLUGHDOO

‹ &yLSFKHDUW 8LVFH eLUHDQQ

0DFDVDPKiLO GpDQWD y 6KXLUEKpDUDFKW 2UGDQiLV QD KeLUHDQQ
8LPK DQ &KHDG~QDLV &<$/
1R SDUW RI WKLV GUDZLQJ PD\ EH UHSURGXFHG RU WUDQVPLWWH
DQ\ QDWXUH ZLWKRXW WKH ZULWWHQ SHUPLVVLRQ RI 8LVFH eLUHDQ
WKH SURMHFW IRU ZKLFK WKH GRFXPHQW ZDV RULJLQDOO\ LVVXHG

:KLOVW HYHU\ FDUH KDV EHHQ WDNHQ LQ LWV FRPSLODWLRQ 8LV
SRVLWLRQ RI LWV XQGHUJURXQG QHWZRUN DV D JHQHUDO JXLGH RQ
EDVHG RQ WKH EHVW DYDLODEOH LQIRUPDWLRQ SURYLGHG E\ HDFK
8LVFH eLUHDQQ FDQ DVVXPH QR UHVSRQVLELOLW\ IRU DQG JLYH QR
WKH DFFXUDF\ FRPSOHWHQHVV RU XS WR GDWH QDWXUH RI WKH LQ
OLDELOLW\ ZKDWVRHYHU DULVLQJ IURP DQ\ HUURUV RU RPLVVLRQV
WKH HYHQW RI H[FDYDWLRQV RU DQ\ RWKHU ZRUNV EHLQJ FDUULHG
XQGHUJURXQG QHWZRUN 7KH RQXV LV RQ WKH SDUWLHV FDUU\LQJ
H[DFW ORFDWLRQ RI WKH 8LVFH eLUHDQQ XQGHUJURXQG QHWZRUN L
EHLQJ FDUULHG RXW 6HUYLFH FRQQHFWLRQ SLSHV DUH QRW JHQHU

‹ &RS\ULJKW 8LVFH eLUHDQQ

5HSURGXFHG IURP WKH 2UGQDQFH 6XUYH\ RI ,UHODQG E\ 3HUPLVVLR

TORQUE CONSULTING ENGINEERS LTD

Unit K26, Drinan Enterprise Centre
Swords Enterprise Park
Swords, K67 E722, Ireland

T. + 353 (0)1 4853933
E. contactus@tcel.ie
www.tcel.ie