

The logo for OCSC, consisting of the letters 'OCSC' in a bold, green, sans-serif font.

O'CONNOR · SUTTON · CRONIN  
MULTIDISCIPLINARY CONSULTING ENGINEERS

M1381: COUNTY HERITAGE CENTRE, TALLAGHT

# ENGINEERING SERVICES REPORT

For  
SOUTH DUBLIN COUNTY COUNCIL

4 August 2023

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## DOCUMENT CONTROL & HISTORY

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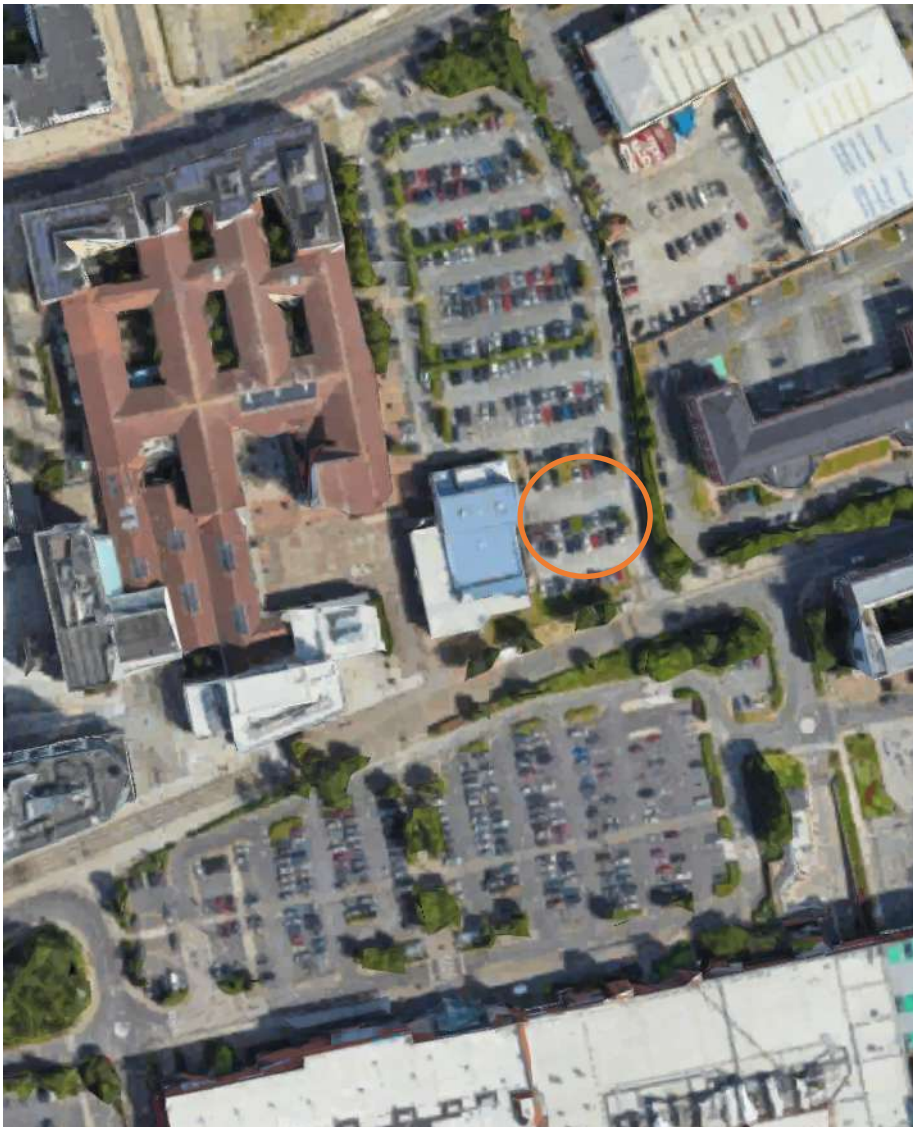
# 1 INTRODUCTION

## APPOINTMENT

O'Connor Sutton Cronin have been appointed as Civil & Structural Engineers as part of the Architect led design team for the proposed redevelopment of Tallaght Heritage Centre, Tallaght, Dublin 24 for South Dublin County Council.

## SITE LOCATION

The site of the proposed development is located to the east of County Hall in Tallaght. The site is indicated in Figure 1-1 below.



*Figure 1-1 Site Location*

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## SITE OVERVIEW

The site is located on the carpark premises of County Hall in Tallaght. It is adjacent to the Civic Theatre and is bounded to the northwest by County Hall, to the north an existing carpark to be retained and to the south the site is bounded by a local access road to the carpark. The site is bound by third party offices to the east. The areas of the proposed development are in the ownership of South Dublin County.

Information taken from the Local Authority Topographical survey drawings as included in Appendix A of this report informs that existing ground of the site falls gradually from North to south with levels of c.98.50-97.12m OD across the site.

## PROPOSED DEVELOPMENT

A new Heritage Centre for Tallaght with a gross floor area of c.870m<sup>2</sup>. The development comprises of:

- Construction of a new two-storey structure which will accommodate gallery and exhibition spaces, multi-purpose room, reception, external terrace, and all of the required supporting spaces including storage, welfare facilities, services and bin storage;
- Removal of existing boundary fence, removal existing bottle-bank and bike lockers, removal of 39 no. existing surface car-parking spaces to facilitate development;
- All associated site works to include hard and soft landscaping including courtyard garden, planting, 20 no of bicycle parking spaces, lighting, signage and all associated site and development works.

The building is proposed to be a 2-storey structure providing gallery spaces over 2 levels with ancillary and support services. Please refer to Figure 1-2 for the proposed ground floor layout together with Figure 1-3 showing a 3-D visualisation.

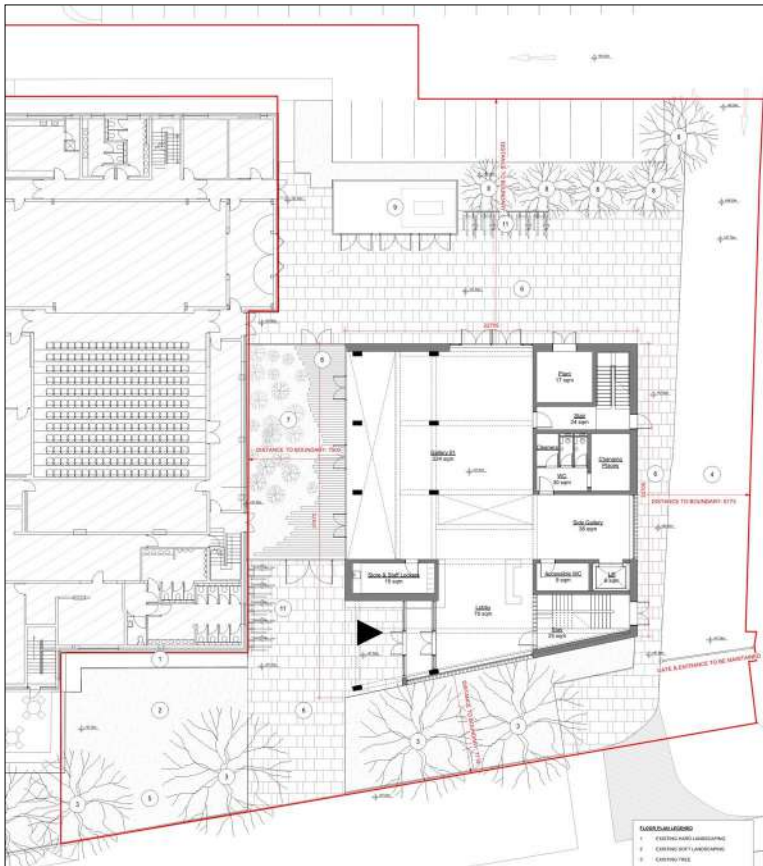


Figure 1-2 Proposed Development



Figure 1-3 Visualisation of Proposed Development

## 2 SCOPE OF REPORT

This report has been prepared to describe the proposed civil engineering aspects of the development and will form part of the planning application documentation. This report has been prepared by reviewing available data from Local Authority records and national bodies, i.e., South Dublin County Council (SDCC), Irish Water as well as the wider design team and client body. The report addresses:

- Storm drainage proposals;
- Foul drainage proposals;
- Potable water supply;
- Traffic & Transportation.

All design and calculations will be in accordance with;

- Local Authority Requirements;
- BS EN 752 – Drainage Outside Buildings;
- The Building Regulations – Technical Guidance Document Part ‘H’;
- The Building Regulations – Technical Guidance Document Part ‘M’;
- Recommendations for Site Development works for housing Areas, Dept. of Environment, 1998;
- Design Manual for Urban Roads and Streets (DMURS);
- Traffic Signs Manual;
- DETR Guidance on the use of Tactile Paving Surfaces;
- Greater Dublin Strategic Drainage Study (GDSDS);
- BS EN 12056-2:2000 Gravity drainage systems inside buildings;
- The SuDS Manual (CIRIA C753);
- Irish Water Code of Practice for Water Infrastructure;
- Irish Water Code of Practice for Wastewater Infrastructure;

Other aspects of the site development strategy relating to architectural design, landscaping, mechanical & electrical engineering services, visual quality and planning compliance are covered by other members of the design team.

This report should be read in conjunction with:

- Drawing M1381-OCSC-XX-XX-DR-S-0500 Proposed Storm Drainage Layout
- Drawing M1381-OCSC-XX-XX-DR-S-0501 Proposed Foul Drainage Layout
- Drawing M1381-OCSC-XX-XX-DR-S-0550 Proposed Watermain Layout



### 3 EXISTING SITE SERVICES

#### OVERVIEW

The proposed site is served by both existing drainage and watermain infrastructure.

A review of local authority records included as Appendix B together with previous utility survey information included in Appendix C has identified separate foul and storm drainage lines to north of the site through the car park and to the south of the site along the interface with the local access road.

The existing services are currently identified to be running across the carpark and therefore would need to be diverted. Further investigative works are to be undertaken during the detailed design phase of the project to determine the precise alignment of the existing sewers and full detail of the proposed diversions. Please refer to Figure 3-1 below for overlay of proposed building and Utility Survey.



*Figure 3-1 Extract of Local Authority Utility Records with Proposed GA overlay*

The existing watermain infrastructure in the area includes a 150mm diameter main to the north and the west of the Civic Theatre. This provides a 50mm diameter metered supply to the Civic Theatre at the northeast corner.

## 4 STORM DRAINAGE

### DESIGN GUIDELINES OVERVIEW

Any planning permission sought on the subject lands are required to adhere to the Local Authority requirements *i.e.*, the South Dublin County Council Development Plan and the Greater Dublin Strategic Drainage Study (Dublin City Council, 2005). New development must ensure that a comprehensive Sustainable Drainage System (SuDS), is incorporated into the development. SuDS requires that post development run-off rates be maintained at equivalent, or lower, levels than pre-development levels. Thus, the development must be able to retain, within its boundaries, surface water volumes from extreme rainfall events up to a 1 in 100-year rainfall event, more commonly expressed as a 1.0% AEP (Annual Exceedance Probability), *while also allowing for an additional climate change factor of 20% increase in rainfall intensity* in accordance with the South Dublin County Council Development Plan.

Any new development must also have the physical capacity to retain surface water volumes as directed under the Greater Dublin Strategic Drainage Strategy (GSDSDS) and, if necessary, release these attenuated surface water volumes to an outfall at a controlled flow rate, not greater than the greenfield runoff equivalent. A further component of the SuDS protocol is to increase the overall water quality of surface water runoff before it enters a natural watercourse or a public sewer, which ultimately discharges to a water body. This is to ensure the highest possible standard of surface water quality. The surface water strategy for the proposed development is to include a number of Sustainable Drainage Systems, prior to discharging an attenuated flow to the existing storm sewer to be diverted to the eastern boundary of the development site. Development discharge rates are to be restricted to the greenfield runoff equivalent.

SuDS are designed in accordance with best practice and the CIRIA C753, 2015 (The SuDS Manual) guidance material, and SDCC's SuDS Design and Evaluation Guide, 2022. It is proposed to separate the surface water and wastewater drainage networks, which will serve the proposed development, and provide separate connections to the local storm and foul drainage networks.

### SURFACE WATER DESIGN STRATEGY OVERVIEW

The proposed development is to be served by a gravity surface water drainage network with attenuated surface water runoff, generated within the new development site boundary, ultimately discharging to the existing 375mm-diameter storm sewer to be diverted to the east of the development.

Sustainable Drainage Systems are to be provided, wherever practicable, and these are discussed in more detail in the following sections with discharge rates from site being restricted to the greenfield equivalent runoff rate, for design rainfall events up to, and including, the 1% AEP, in accordance with the current South Dublin County Council Development Plan and the GSDSDS.

It is also proposed to reduce the overall rainfall runoff volume discharging from site by implementing a series of Sustainable Drainage Systems that will intercept the initial rainfall runoff and allow for infiltration to ground, and / or the re-use of captured rainwater for other purposes, where practicable.

## EXISTING SITE DRAINAGE

The existing drainage on site consists of the following:

- 375mm diameter surface water sewer which traverses the site travelling in a north-west to south-east direction-this is required to be diverted;
- 450mm diameter sewer to the southern boundary of the site travelling in a west to east direction.

Please refer to utility survey included in Appendix B for more detail of same.

## CLIMATE CHANGE ALLOWANCE

The proposed surface water network has been designed to allow for an additional 20% increase in rainfall intensity, to allow for Climate Change projections, in accordance with both the SDCC Development Plan and the GDSDS.

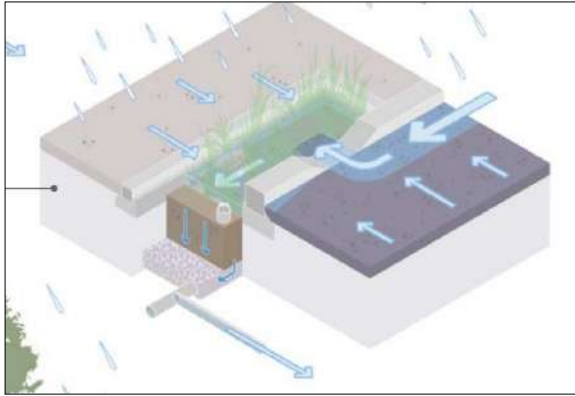
***All discussion within this report, with regards to surface water network design calculation and results, include for the allowance of an increase of 20% in rainfall intensity, as required.***

## PROPOSED SURFACE WATER MANAGEMENT PLAN

The new development's surface water drainage network will comprise a sustainable drainage system that is heavily integrated with the landscape features, wherever practicable. The sustainable drainage systems reduce the runoff volume discharging from site, as well as improving the water quality.

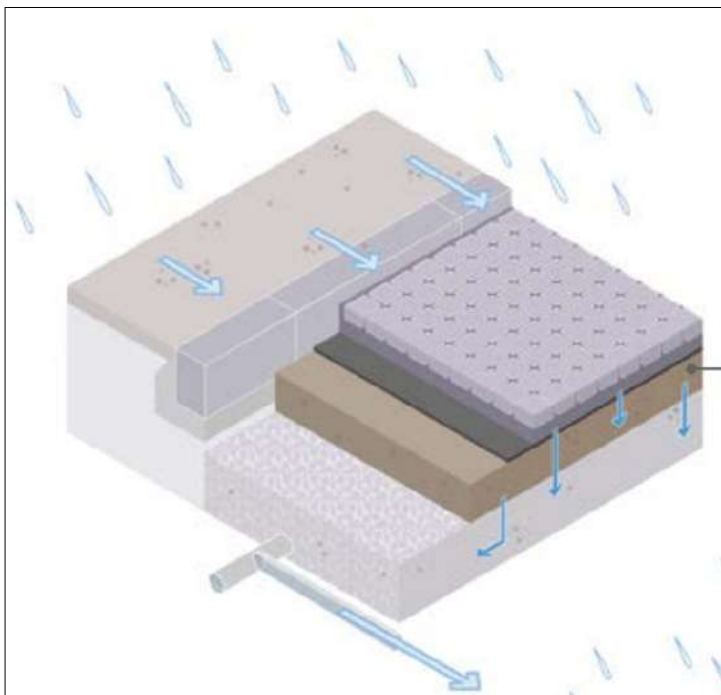
The proposed drainage system will consist of

- **BIORETENTION SYSTEMS/RAIN GARDENS** are shallow landscaped depressions that can reduce rates and volumes and treat pollution through the use of engineered soils and vegetation. They are particularly effective in delivering interception and attenuation and can also provide attractive landscape features that are self-irrigating and fertilising; habitat and biodiversity; and cooling of the local microclimate due to evapotranspiration. The landscaped space between the Civic Theatre and the proposed development is proposed as a rain garden.



*Figure 4-1 Bioretention rain garden-SDCC Sustainable Drainage Explanatory Design & Evaluation guide*

- **PERVIOUS PAVING** and surfaces allow for rainfall runoff to be captured directly by a SuDS structure for interception, treatment, infiltration (where possible) and attenuation. There are several pervious surfaces available but all work by similar practice, with the surface allowing rainfall to pass through, with an open-graded base layer providing both structural strength to the surface, while also allowing for storage within the void content. Filter drains can be provided under the structural layer of the pervious paving, at its low-point, in order to convey excess rainfall volumes and this is proposed for the Heritage Centre site. Attenuation and storage properties of pervious paving structures can be further optimised by providing flow controls, to hold back rainfall runoff and maximise the available storage within the structure.



*Figure 4-2 Pervious Paving -SDCC Sustainable Drainage Explanatory Design & Evaluation guide*

- **Suds TREE PITS** are shallow landscaped depressions that can reduce rates and volumes and treat pollution through the use of engineered soils and vegetation. They are particularly effective in

delivering interception and attenuation and can also provide attractive landscape features that are self-irrigating and fertilising; habitat and biodiversity; and cooling of the local microclimate due to evapotranspiration. Tree pits are proposed for the landscaped areas to the north and south of the development.

A number of further SuDS measures were reviewed and evaluated for inclusion in the scheme but not brought forward as discussed below:

- **Green roofs** are roofs or podium decks onto which vegetation is grown, or habitats for wildlife are established. There are various types of green roof including extensive and intensive roofs, semi-intensive, roof gardens, biodiverse roofs and brown roofs. It is noted that saw tooth nature of the proposed roof profile would preclude the use of a green roof system within the development;
- **blue roofs** hold rainwater runoff on roofs and podium decks and release rainfall slowly through a flow control. Green blue roofs are simply green roofs with this addition. It is noted that saw tooth nature of the proposed roof profile would preclude the use of a blue roof system within the development.

## PROPOSED SURFACE WATER ATTENUATION STORAGE

The proposed development is to attenuate its own rainfall runoff, prior to discharging to the 375mm diameter sewer diverted to the east of the site. The primary function of the attenuation systems will be to temporarily store excessive rainfall runoff, during significant rainfall events, due to the restricted discharge rates (to greenfield equivalent runoff rates) from the development outfalls.

Attenuation and temporary storage has been strategically distributed across the development site and largely provided as part of the proposed SuDS structures-as discussed above, which comprise:

- Bio-retention / rain garden;
- Pervious paving with filter drain;
- Filter drain;
- SuDS Tree Pits;
- Hydrobrake manhole at head of storage before discharge to main sewer.

An assessment on the total run-off and thus the required attenuation volume has been undertaken. This has been based on the entire site (c.2,410m<sup>2</sup>) with the contributing areas as listed in indicated in Table 4-1 and indicated in Figure 4-3 over.

**Table 4-1 Contributing Areas**

	Area (m <sup>2</sup> )	Contributing Area (m <sup>2</sup> )	Note
Roof	550	550	Pitched/profiled roof
Existing Road and Parking	665	0	Drainage not being altered-current arrangements being maintained in place
Permeable Paving	570	570	Permeable paving taken as hardstanding for attenuation purposes as a worst-case scenario but used as storage volume
Bin Store	40	40	Taken as fully impermeable
SuDS Treepits	130	0	Taken as not contributing to run-off and being adopted as a storage medium
Rain Garden	125	0	Taken as not contributing to run-off and being adopted as a storage medium
Soft landscaped	330	0	Taken as not contributing to the run-off but also not aiding in attenuation volume
<b>Total</b>	<b>2410</b>	<b>1160</b>	



**Figure 4-3 Image of Contributing Areas**

The required attenuation, based on the above contributing areas and an allowable discharge of 2l/s, has been assessed as 35m<sup>3</sup>-please refer to Appendix D for calculation details.

The potential storage volume available within the development has been assessed. This has been based on an equivalent area of the drainage layer within the permeable paving build-up with 30% voids assumed within a general 300mm stone layer. Thus, this equates to 0.09m<sup>3</sup> storage volume for each m<sup>2</sup> of permeable paving. The same estimated storage rate has been applied to the rain garden and tree pits-however, the available storage in these areas is likely to be well in excess of this value in practice. It is noted that only elements to the north are included in this estimation as this is the direction in which the roof drainage is being gathered-the permeable paving and soft landscaped areas to the south have not been included within the necessary storage.

Element	Area (m <sup>2</sup> )	Storage volume provided (m <sup>3</sup> )
Permeable Paving	430	38.7
Rain garden	125	11.25
Tree-pits	130	11.7
<b>Total</b>		<b>61.65</b>

Thus, the available storage volume through the SuDS measures is significantly in excess of that required to limit run-off to green field rates.

It is noted that the proposed situation is an improvement on the current as the development replaces an existing hard surface carpark with run-off currently unattenuated.

An indicative layout of the storm drainage layout is shown in Figure 4-4 over with a larger scale included as Appendix E. This layout will be developed through detailed design post planning.

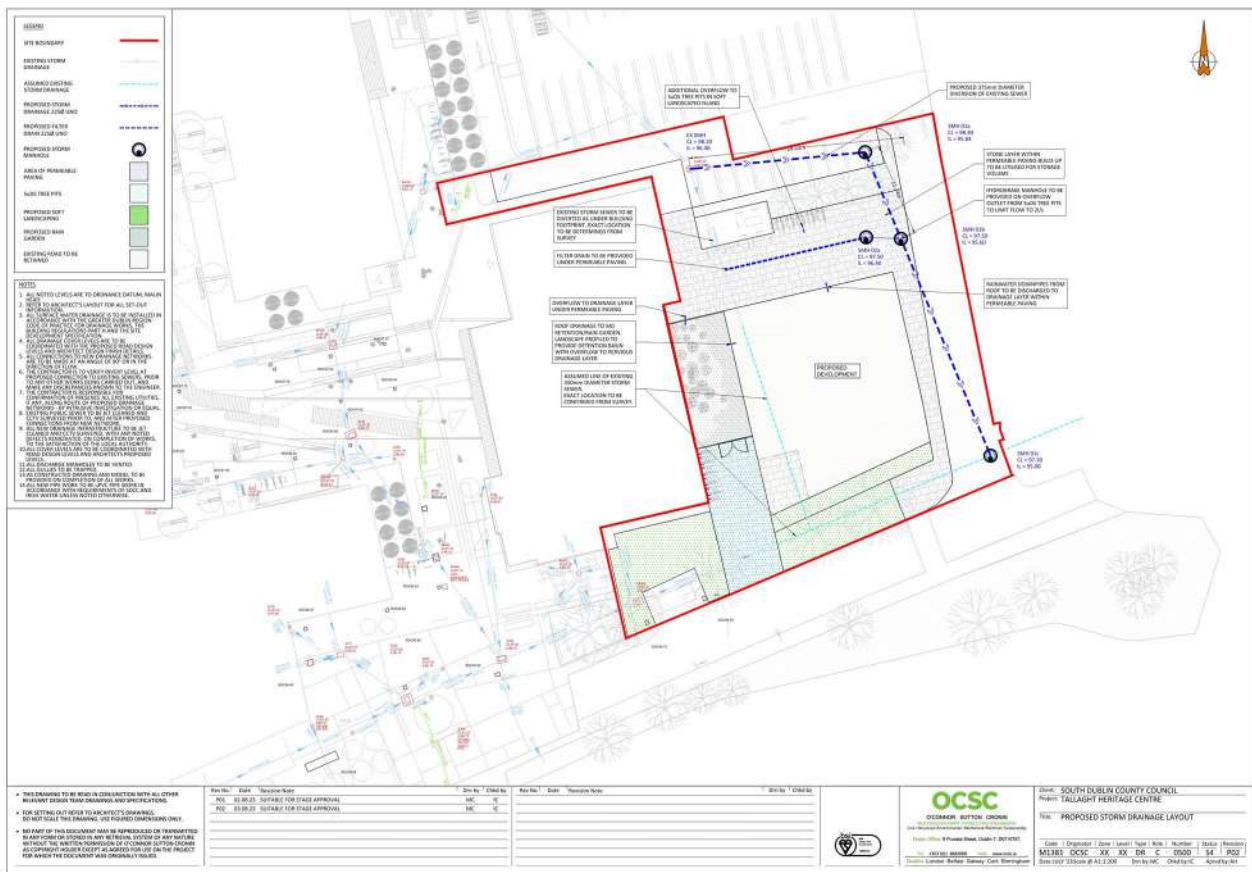


Figure 4-4 Storm Drainage Proposals

## SURFACE WATER IMPACT ASSESSMENT

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

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

### CRITERION 1-RIVER WATER QUALITY PROTECTION

It is proposed that the overall drainage system serving this development will contain a range of surface water treatment methods which will improve the quality of surface water being discharged from the proposed development such as:

- Bioretention system to the western edge of the development;



- Intensive landscaping to tree pit areas;
- Interception storage within SuDS measures.

## CRITERION 2-RIVER REGIME PROTECTION

Surface water discharge from the overall development will be restricted to an equivalent runoff rate of 2l/s as per GDSD and SDCC Development Plan. This will be achieved with the provision of a flow control device upstream of the outfall manhole.

## CRITERION 3-LEVEL OF SERVICE (FLOODING) SITE

There are 4 sub-criteria for level of service, as set out in the GDSDS-RDP Volume 2, Section 6.3.4 (Table 6.3):

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

Please refer a site-specific flood risk assessment in the following section.

### Sub Criterion 3.1

The proposed drainage system has been designed to safely convey the run-off for a 30-year return period storm event.

### Sub Criterion 3.2

The proposed drainage system has been designed to safely convey the run-off for a 100-year return period storm event.

### Sub Criterion 3.3

Reference to the flood hazard mapping has identified that the site of the proposed development is not within the predicted 100-year river event of any local water course.

### Sub Criterion 3.4

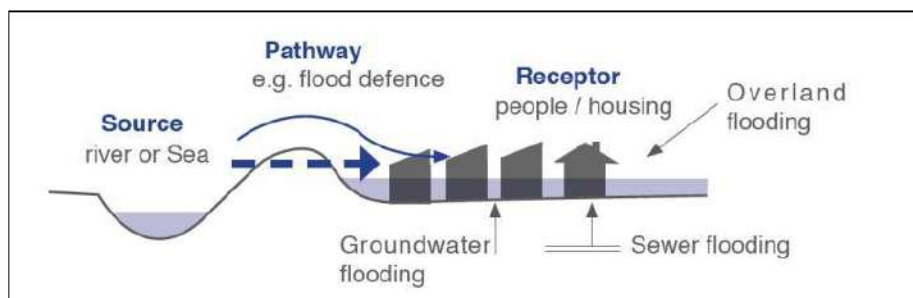
The drainage system has been designed to meet the requirements of the 100-year return period storm event. Sufficient storage will be provided to prevent flooding in the 100-year return period storm event. The surface water strategy will not provide for off-site overland flow in the 100-year return period storm event.

## CRITERION 4-RIVER FLOOD PROTECTION

In accordance with sub-criterion 4.3, runoff from the site will be limited to the green-field runoff level. By limiting the runoff to this flow rate, the GSDSDS-RDP Volume 2, Appendix E Section E2.4 states that this ensures “that sufficient stormwater runoff retention is achieved to protect the river during extreme events”. Attenuation storage is provided for the 100-year return period storm event for the SuDS measures adopted. Control of runoff rates will be achieved through the use of a vortex-controlled discharge from the site.

## FLOOD RISK ASSESSMENT

A Flood Risk Assessment is the identification, quantification and communication of flood risk using the source-pathway-receptor model. It examines the source of flooding and the pathways by which floodwaters might reach receptors, such as people, property and environment to determine the likelihood of them being affected by flooding. It also examines the flood hazards that are likely to arise and the vulnerability of receptors to such hazards. The principles of the source pathway receptor model are outlined in Figure 4-5 below.



*Figure 4-5 Source Pathway Receptor Model*

## LEVEL OF SERVICE

The risk of a flood event is a function of the probability of occurrence in any given year. Traditionally, this has been expressed as a return period (e.g., 1-in 100-year return period). However, this has led to misconceptions about the likelihood of repeat occurrences. A less ambiguous expression of probability is the Annual exceedance Probability (AEP), which may be defined as the probability of a flood event being exceeded in any given year. A 1-in-100-year return period flood event is therefore expressed as a 1% AEP flood event. Likewise, a 1-in-100 return year period flood event is expressed as a 100% AEP flood event.

The Greater Dublin Strategic Drainage Study (published by the Local Authorities in the greater Dublin Region) and The Planning System and Flood Risk Management, Guidelines for Planning Authorities set out the best practice standards for flood risk in Ireland. These are summarised in Table 4-2 over.

**Table 4-2 Summary of Level of Service-Flooding Source**

Use	Flood Source		
	Drainage	River	Tidal/Coastal
Residential	1% AEP	0.1% AEP	0.1% AEP
Commercial	1% AEP	1% AEP	0.5% AEP
Water-compatible	-	>1% AEP	>0.5%AEP

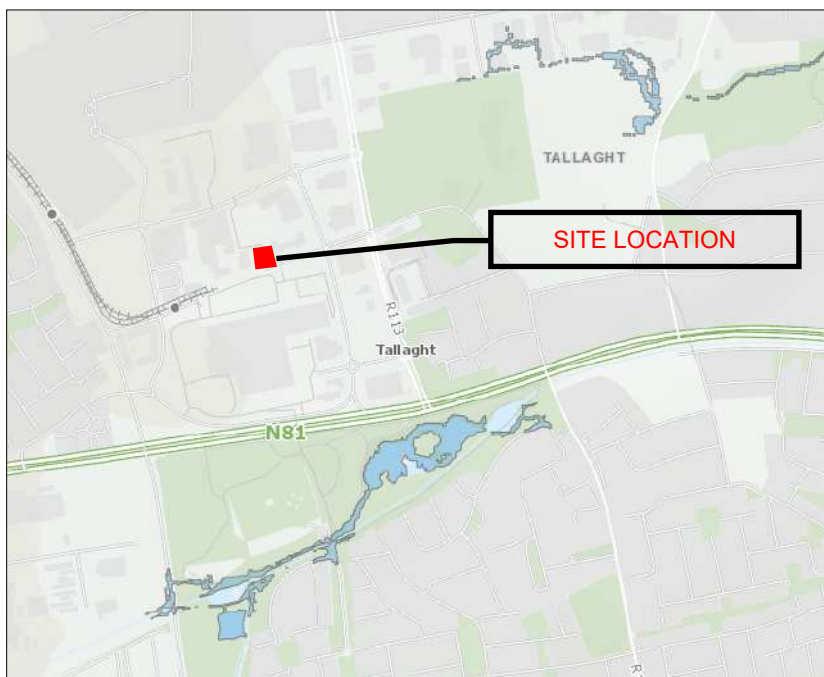
Both the Greater Dublin Strategic Drainage Study and The Planning System and Flood Risk Management, Guidelines for Planning Authorities require that account be taken of the effects of climate change over the design life of a development, normally 100 years. Flood risk will therefore change over the lifetime of a development. The Flood Risk Assessment therefore considers “present day” flood risk and “future” flood risk.

The proposed development would be classed as Commercial Development and thus requires the level of service to be 1% AEP for drainage, 1% AEP for river flooding and 0.5% AEP for tidal/coastal flooding.

**FLOOD RISK & MITIGATION MEASURES**

**Fluvial Flooding**

A review of the OPW portals Floodinfo.ie and Floodmaps.ie have been undertaken in reviewing the risk of fluvial flooding at the site of the proposed development. There is no record of flooding at the site and a review of mapping shows the site of the proposed development to be outside of the 1% AEP for fluvial flooding. Please refer to Figure 4-6 below. Thus, it is considered that the risk of fluvial flooding is low.



**Figure 4-6 Extract from Floodinfo.ie**

### Tidal/Coastal Flooding

The site is located approximately 12km from the sea. Thus, it is considered that the risk of tidal/coastal flooding is low.

### Pluvial Flooding

A review of the OPW website Floodinfo.ie and Floodmaps.ie does not show any records of flood events in the vicinity of the site. Thus, it is considered that the risk of pluvial flooding is low.

### Groundwater Flooding

There is no basement structure proposed as part of the development. The proposed ground floor level is generally at or above the existing at grade level on the site. The hard landscaping to the northern section of the development will be required to be profiled so as to discourage run-off from the adjacent traversing the area. Thus, it is considered that the risk of groundwater flooding is low.

## CONSULTATION

There have been preliminary discussions on storm drainage and SuDS proposals to review same at high level. It is envisaged that additional engagement will continue through the planning process and subsequent stages of design development.

## 5 FOUL DRAINAGE

### OVERVIEW

It is proposed to separate the wastewater and surface water drainage networks, which will serve the proposed development, and provide separate connections to the local storm and foul drainage networks.

### EXISTING FOUL DRAINAGE

The existing foul drainage infrastructure in the vicinity of the site is discussed in Section 3 of this report. Of primary importance for the proposed development are the two existing sewers crossing the site:

- 150mm diameter foul sewer which traverses the site travelling in a north-west to south-east direction;
- 225mm diameter foul sewer to the southern boundary of the site travelling in a west to east direction.

Both of the existing foul sewers travel under the footprint of the proposed development and thus are required to be diverted to accommodate the development.

### PROPOSED FOUL DRAINAGE LAYOUT

All proposed wastewater sewer design is to be carried out in accordance with Irish Water's Code of Practice for Wastewater Infrastructure. The wastewater discharge from the proposed building is to connect, via a private outfall chamber, to the public system with location to be agreed with Irish Water.

An initial Pre-Connection Enquiry Form will be submitted to Irish Water for review of planning, to ensure that connection to the public system for the develop is feasible.

An indicative layout of the foul drainage layout is shown in Figure 5-1 below with a larger scale included as Appendix F. This layout will be developed through stage 2 once the information from additional survey works have been collated.

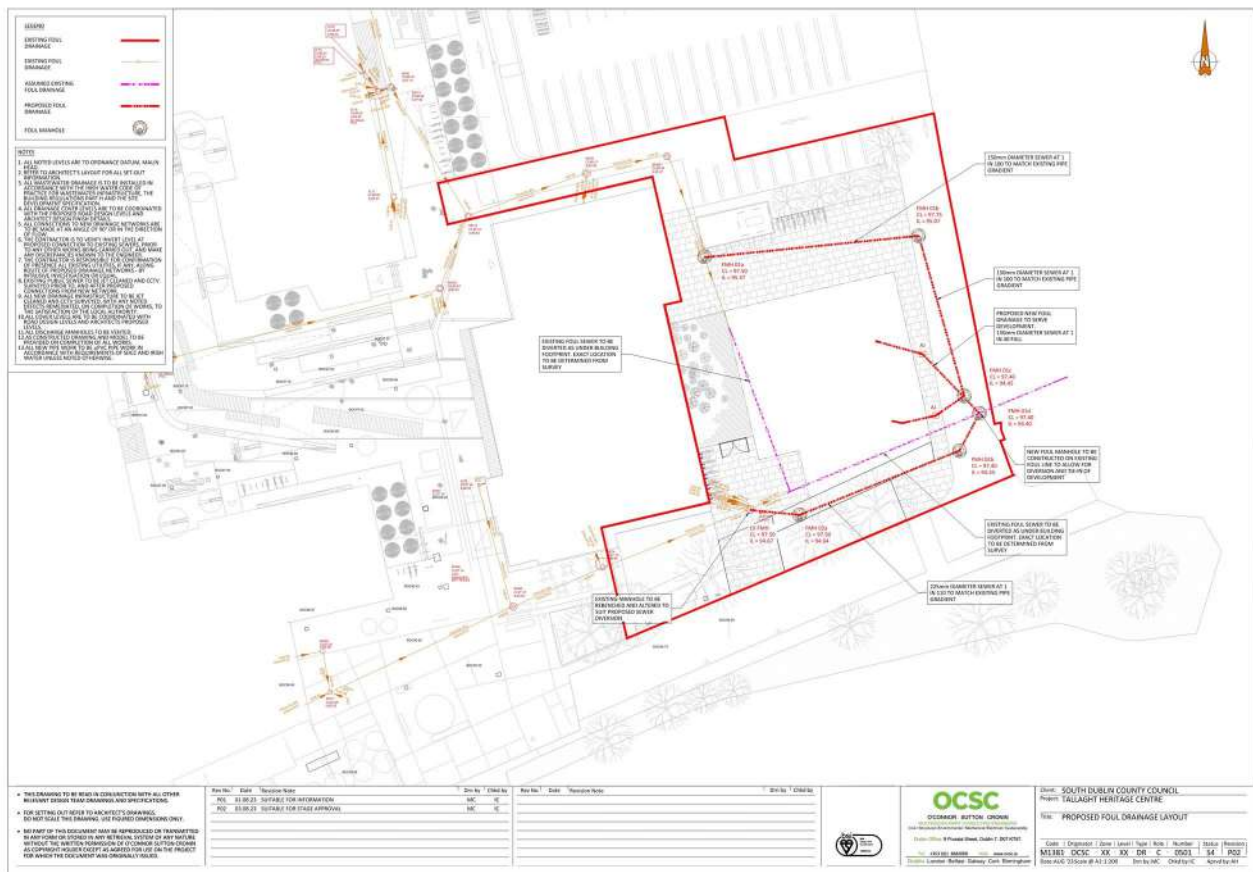


Figure 5-1 Foul Drainage Proposals

### FOUL FLOW CALCULATIONS

An assessment on the proposed foul flow generated by the development on the local network has been undertaken. It is noted that the foul flow rates have been based on the rates as reference in Irish Water Code of Practice for Wastewater Infrastructure (Appendix C) to match foul flow daily rates for Office staff to cater for workers in the development and for Toilet Block use to cater for visitors. The estimated foul flow to be generated is indicated in Table 5-1 below.

Table 5-1 Foul Flow Calculations

	Occupancy	Rate (l/day/person)	Total (l/day)	1DWF (l/s)	6DWF (l/s)
Staff	3	50	150	0.002	0.012
Visitors	220	10	2200	0.025	0.150
<b>Total</b>	<b>N/A</b>	<b>N/A</b>	<b>2350</b>	<b>0.027</b>	<b>0.162</b>

## CONSULTATION

An initial Pre-Connection Enquiry Form will be submitted to Irish Water for review of planning, to ensure that connection to the public system for the develop is feasible. A copy of same is included as Appendix G of this report.

# 6 WATER SUPPLY

## WATERMAIN PROPOSALS

It is proposed that the potable water supply to the building be provided from the 150mm diameter main to the northwest of the site. A 50mm diameter metred supply is proposed as indicated in Figure 6-1 Proposed Watermain Layout below with larger scale version included as Appendix H of this report.

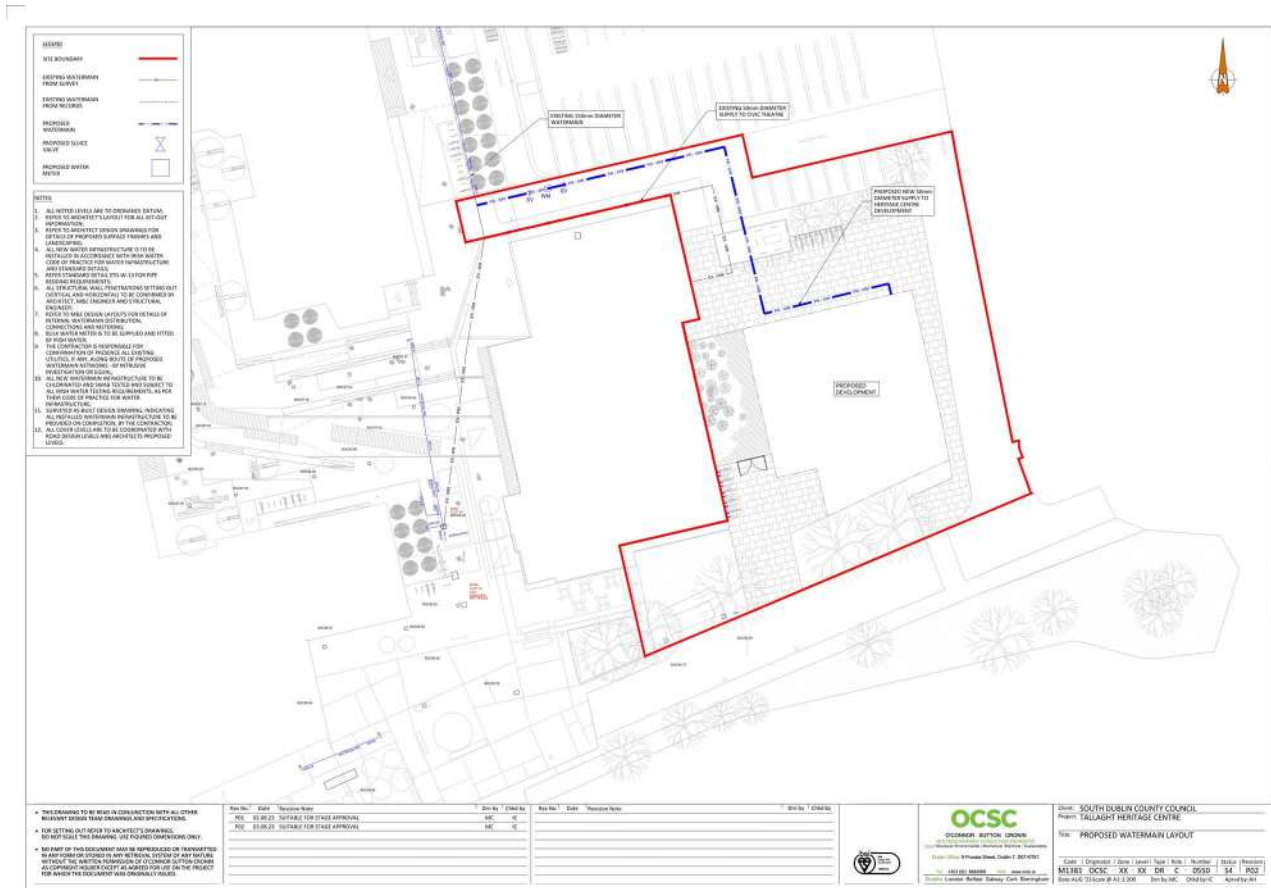


Figure 6-1 Proposed Watermain Layout

All proposed potable water design is to be carried out in accordance with Irish Water’s Code of Practice for Water Infrastructure, IW-CDS-5020-03. A review of all existing watermain infrastructure is to be carried out and consultation with both Irish Water and Dublin City Council will be required to determine the best location for connection to the public system. It is envisaged that a new standalone connection/connections to existing public watermain will be provided for the proposed development, at a location to be agreed with Irish Water.

A bulk water meter and associated telemetry system is to be provided at the new connection to the public watermain, at the development entrance. All metering is to be provided in accordance with Irish Water’s requirements.



## WATER DEMAND

An assessment on the proposed water demand of the development on the local network has been undertaken. It is noted that the water demand rates have been based on the rates as reference in Irish Water Code of Practice for Wastewater Infrastructure (Appendix C) to match foul flow daily rates.

*Table 6-1 Water Demand*

	Occupancy	Rate (l/day/person)	Total (l/day)	Average (l/s)	Peak (l/s)
Staff	3	50	150	0.002	0.013
Visitors	220	10	2200	0.025	0.156
<b>Total</b>	<b>N/A</b>	<b>N/A</b>	<b>2350</b>	<b>0.027</b>	<b>0.169</b>

## WATER SAVING DEVICES

In accordance with best practice, new water saving devices (low water usage appliances and aerated taps etc.) will be fitted into the proposed new buildings on site.

## CONSULTATION

An initial Pre-Connection Enquiry Form will be submitted to Irish Water for review of planning, to ensure that connection to the public system for the develop is feasible. A copy of same is included as Appendix H of this report.

# 7 TRAFFIC & TRANSPORTATION

## EXISTING PUBLIC TRANSPORT, CYCLE & PEDESTRIAN FACILITIES

There are a wide variety of existing public transport, cycle and pedestrian facilities in the vicinity of the proposed development.

### RAIL

The Luas Red Line terminus at Tallaght is located approximately 200m (2 minutes) walk from the development site. The Luas is a semi-segregated light rail tram service which operates at street level but generally receives priority over normal traffic at junctions.

The Red Line provides a regular service between The Point/Connolly Station and Tallaght/Saggart with intermediate stops at key locations including Busáras, Heuston Station, the Red Cow and Citywest. Normal operating hours are from 05:30 – 12:00.

The recently extended Green Line now provides a good degree of connectivity with the Red Line with their respective stops at O'Connell Street and Abbey Street located within very close proximity of one another. The Green Line provides a service between Sandyford and Broombridge with intermediate stops at St. Stephens Green, Westmoreland, Cabra, Phibsborough and Broadstone DIT. Normal operating hours are from 05:30 – 12:00. The complete Luas network including the Luas Cross City can be seen in Figure 7-1 below.

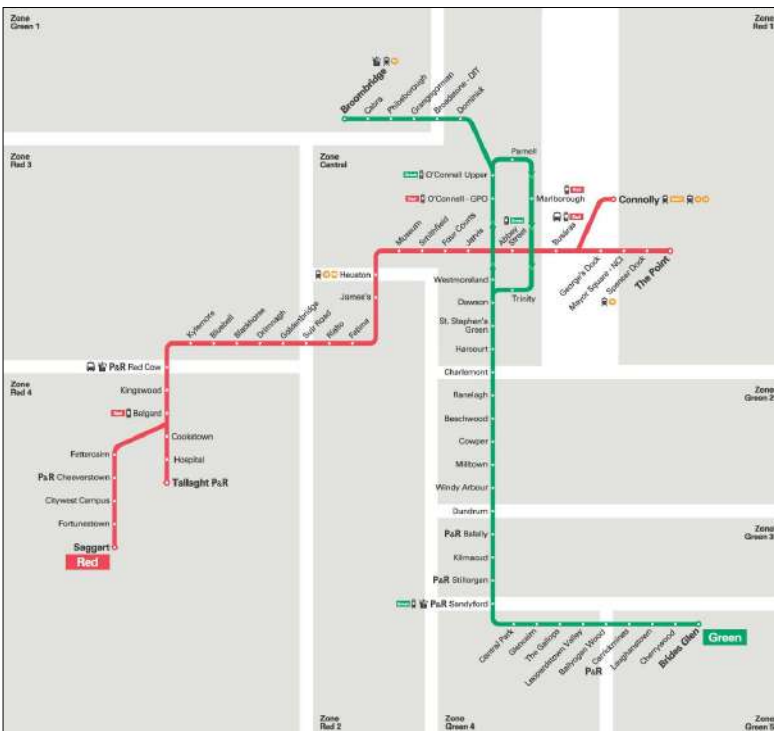


Figure 7-1 LUAS Cross City

The Luas does not run on a fixed timetable however, it operates based on a frequency of service which changes depending on the time of day to adequately cater for demand. The service frequencies for the Luas are detailed following in Figure 7-2 below.

Monday - Friday				Saturday				Sunday & Bank Holidays			
	Min	Avg	Max		Min	Avg	Max		Min	Avg	Max
05:30-07:00	10	14	20	06:30-10:00	12	15	20	07:00-12:00	10	13	20
07:00-10:00	3	8	10	10:00-16:00	12	12	13	12:00-19:00	10	10	11
10:00-16:00	9	9	10	16:00-19:00	10	11	13	19:00-23:00	10	11	12
16:00-19:00	9	9	10	19:00-00:00	3	11	15				
19:00-00:00	6	10	15								

**Figure 7-2 LUAS Timetable**

The Luas also provides good connectivity with other rail services including both Intercity, commuter and DART services operating out of Heuston Station and Connolly Station, both of which are directly served by the red line.

**BUS**

There are a number of Dublin Bus/Go Ahead stops operating in the local area with the closest stops relative to the development site located on Belgard Square North and Belgard Road. The routes serving within a 10 minute walking distance are detailed in Table 7-1 below.

**Table 7-1 Local Dublin Bus/Go Ahead Bus Services**

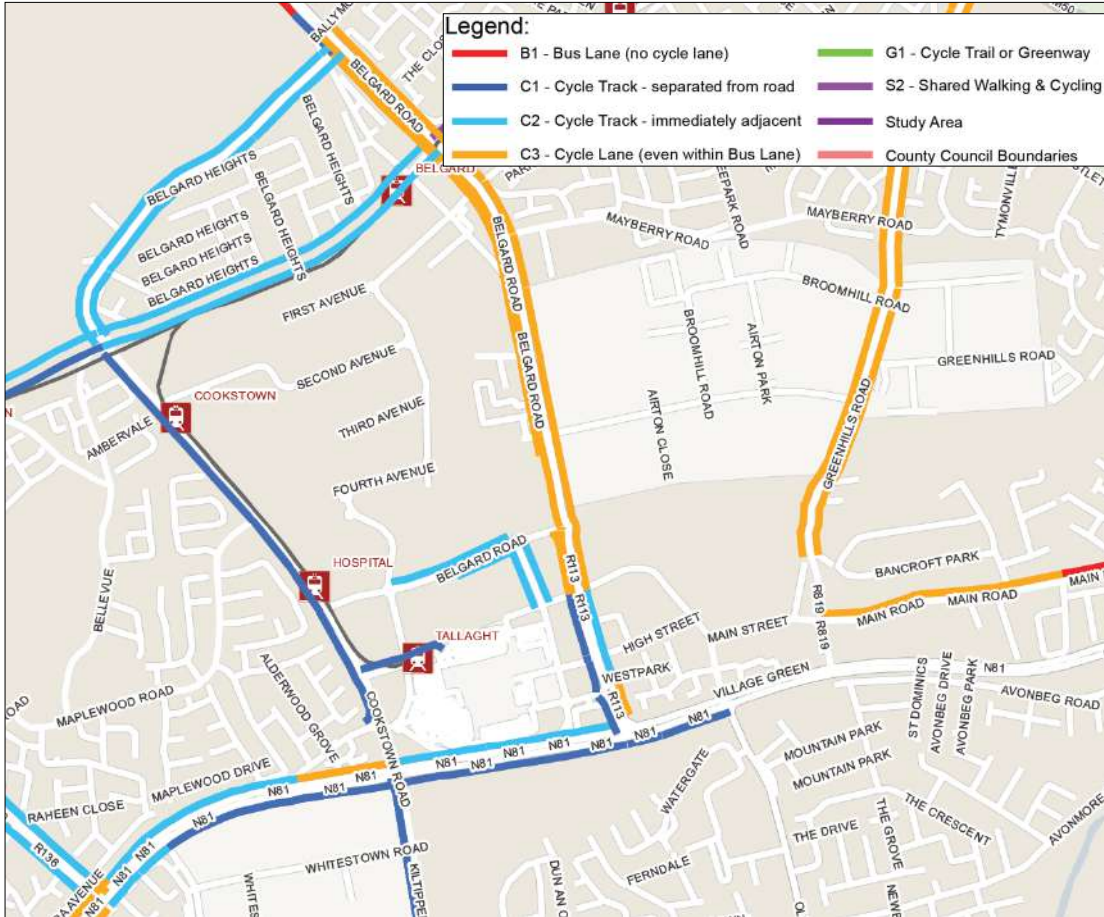
Route	Description
27	Clare Hall – Jobstown
49	Pearse Street – Tallaght (The Square)
54a	Pearse St. – Ellensborough / Kiltipper Way
56a	Ringsend Rd. – Tallaght (The Square)
65	Poolbeg St. – Blessington / Ballymore
75	The Square Tallaght – Dun Laoghaire
76	Chapelizod – Tallaght (The Square)
76a	Blanchardstown Centre – Tallaght (The Square)
W4	The Square-Blanchardstown Shopping Centre

Full details of all Dublin Bus services can be found on [www.dublinbus.ie](http://www.dublinbus.ie).

Bus Éireann also has a stop on Belgard Square which is served by Route No. 132, operating between Dublin Connolly Station and Buncloody. Busáras is also accessible via the Luas Red Line and provides access to a variety of commuter and intercity services to and from numerous locations across Ireland, as well as a number of locations in Britain. More detailed information on all services is available at [www.buseireann.ie](http://www.buseireann.ie).

**CYCLE**

The National Transport Authority (NTA) has surveyed the cycle facilities for the Greater Dublin Area (GDA) as part of the *Greater Dublin Area Cycle Network Plan*. An extract from this plan showing the existing facilities in the vicinity of the proposed development is shown in Figure 7-3 below.



**Figure 7-3 Local Cycle Infrastructure**

As can be seen there are dedicated facilities on Belgard Road, the N821 and sections of Belgard Square North.

Also of note is the recent dockless bike initiatives that have begun operation. In particular, BleeperBikes has been operating in South Dublin County Council since 2017. Similar to the hugely popular Dublinbikes scheme, the dockless bikes initiative provides an accessible, short term, bike rental scheme across the area which would encourage and facilitate a positive modal shift.

Users of these schemes have access to rental bikes stored on public cycle parking stands and can return them to other approved public locations for a small fee. Such a facility has an additional benefit over the Dublinbikes scheme given the flexibility of not requiring docking stations to be constructed and preventing associated

queues often experienced at pickup when waiting for a bike to become available or when dropping off when waiting for a dock to become available.

There are a number of locations permitted to drop off and collect dockless bikes in Tallaght, including many around Belgard Square within a short walking distance of the development site.

### PEDESTRIAN

With regard to pedestrians, there are well lit, good quality footpaths along all links locally with dedicated pedestrian crossing facilities at all major junctions nearby.

### SUMMARY

Overall, the development site is seen to be well served by a variety of transport options which should facilitate the objective to encourage and promote more sustainable means of transport.

## FUTURE PUBLIC TRANSPORT, CYCLE & PEDESTRIAN FACILITIES

There are a number of future improvements to the public transport system and cycle/pedestrian infrastructure which will provide further improvements to the facilities outlined in the previous section. These include proposals set out in the following:

- Greater Dublin Area (GDA) Transport Strategy 2016 – 2035;
- National Development Plan 2018 – 2027;
- Greater Dublin Area Cycle Network Plan;
- South Dublin County Council Development Plan 2022 – 2028.

The key proposals relative to the development site are discussed in more detail in the following paragraphs.

### RAIL

While there are no direct rail infrastructure projects planned for the immediate area, it is noted that the connectivity to other rail service provided by the nearby Luas Red Line, as identified in Figure 7-4 over means the following will be of relevance:

- Metro Link – A new, fully segregated light rail service operating between Swords and Dublin City where it will utilise an upgraded section of the current Luas Green Line to continue services to Sandyford. This will link with the Luas Red Line at O'Connell Street;
- Luas Green Line Extension – An extension of the existing Green Line to Finglas and Bray;
- Luas Red Line Extension – An extension of the existing Red Line from its terminus at The Point to Poolbeg;
- Luas Lucan Line;
- DART Expansion Programme – Including the DART Underground project consisting of an underground link through the city centre expanding DART services to Kildare as well as electrification on parts of the Northern, Kildare and Sligo/Maynooth lines to provide increased services.



*Figure 7-4 NTA Proposed Future Rail Network*

These projects, through their connections with the local rail and bus services, will help create a wider, integrated transportation network with increased connectivity and serviceability.

**BUS**

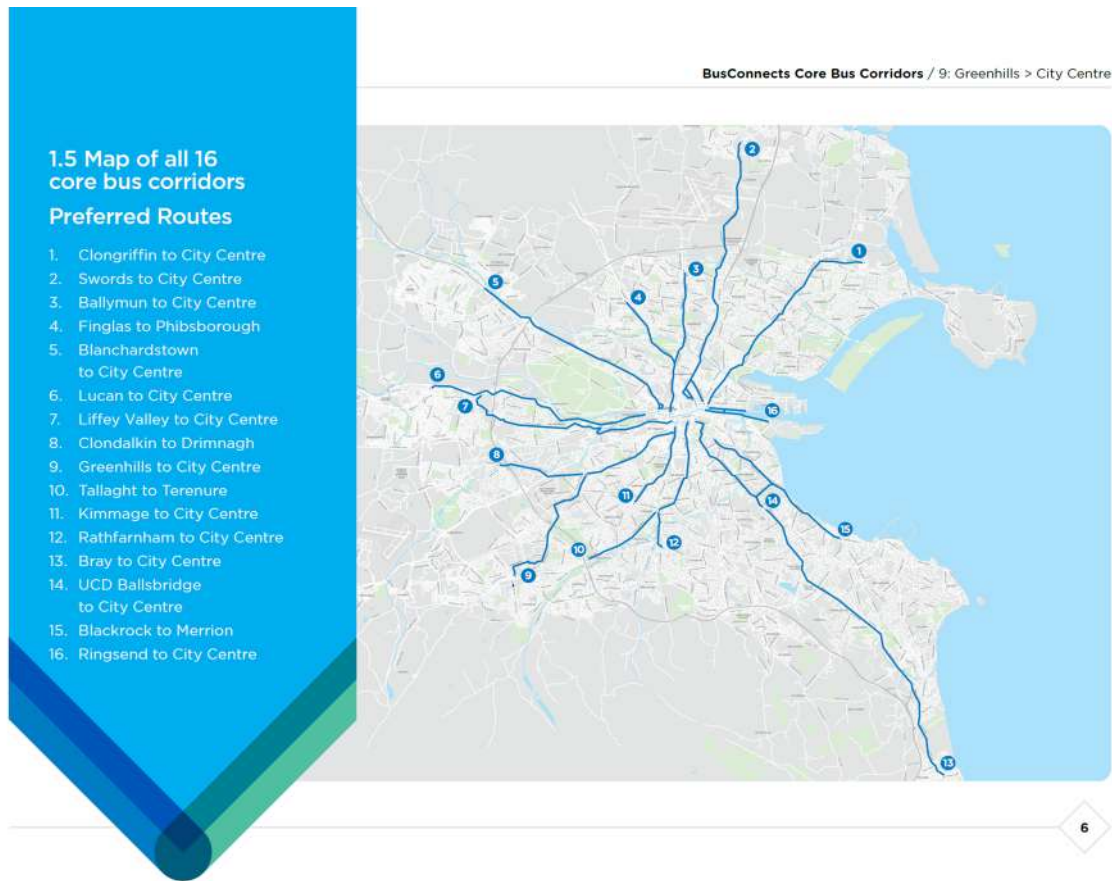
BusConnects Dublin is a major investment programme to improve public transport within the Greater Dublin Area. It aims to overhaul the current bus system in Dublin through a 10 year programme of integrated actions to deliver a more efficient, reliable and better bus system for more people. This programme includes:

Building a network of new bus corridors to make journey’s faster and more reliable;

Re-design of the Dublin area bus network to provide a more efficient network with high frequency spines, new orbital routes and increased bus services.

Full details of the BusConnects programme are available on [busconnects.ie](http://busconnects.ie).

The BusConnects core bus corridors are indicated in Figure 7-5 over.



**Figure 7-5 BusConnects Core Bus Corridors**

Of primary relevance to the proposed Innovation Centre is the proposed Greenhills Core Bus Corridor. This corridor commences on Belgard Square West at the junction with Cookstown Way. From here, the CBC is routed along Belgard Square West and Belgard Square North where it travels close to the southern boundary of the Innovation Centre development before continuing its journey to the city centre. The overall corridor route is approximately 11.6kms with the current journey time of up to 80 minutes estimated to be reduced to 30-40 minutes.

The location of the corridor relative to the proposed development is shown in Figure 7-6 over.

MAP 3: Preferred Route

BusConnects Core Bus Corridors / 9: Greenhills > City Centre

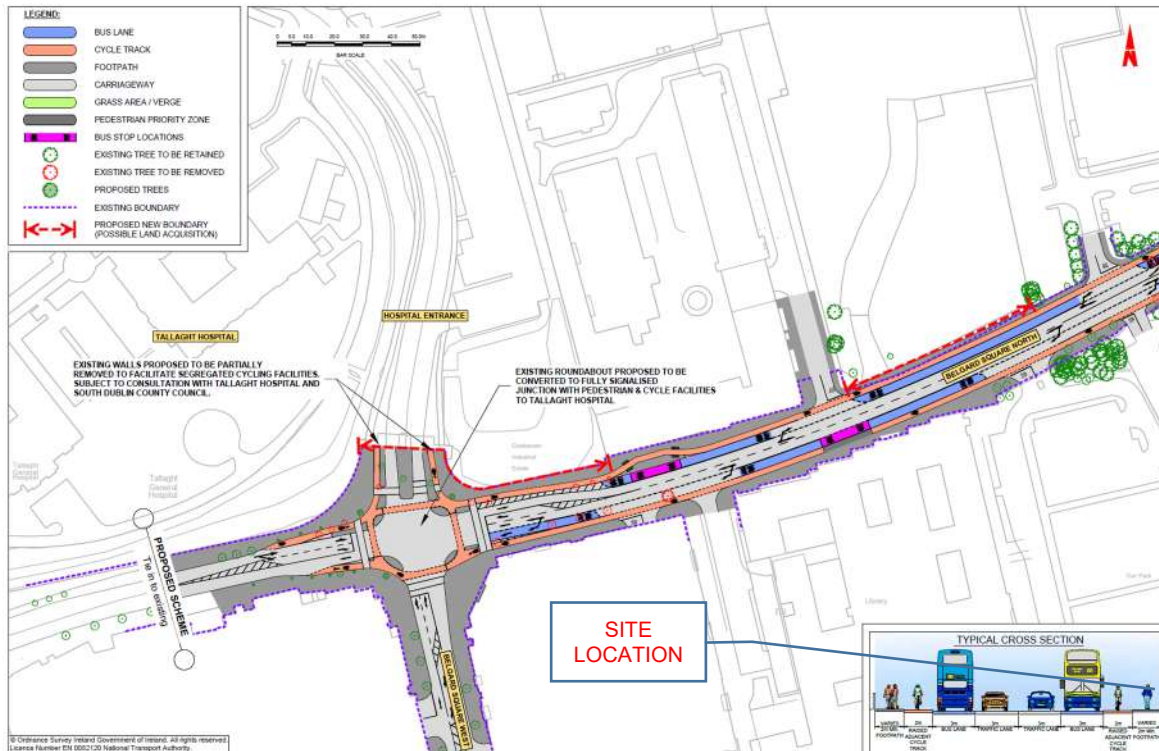


Figure 7-6 BusConnects Infrastructure adjacent to site

**CYCLE**

The GDA Cycle Network Plan sets out proposals for improvements to the existing cycle network infrastructure locally, as indicated in Figure 7-7 over.

As can be seen it is proposed to have a number of primary, secondary and feeder routes bordering the development site directly and creating a high quality network of cycle routes throughout the local area which will in turn connect to a comprehensive plan for the GDA.

In addition, it is proposed to upgrade the existing cycle track along the site boundary with Belgard Square North to provide a higher quality, segregated cycle facility along this section. This will be further complimented by a toucan crossing to be provided on the northern arm of the Belgard Road/IT Tallaght/Belgard Square North roundabout as well as toucan crossings on each arm of the upgraded Belgard Square North/Belgard Square East junction.





*Figure 7-7 Proposed Future Local Cycle Infrastructure*

These facilities will also be of significant benefit to pedestrians, providing more priority when crossing key routes in the area.

**PEDESTRIAN**

The site is well serviced by local good quality path network. In addition, a Public Realm scheme is currently nearing completion for the public space to the north of the site. This scheme will provide a further linkage for pedestrians to the civic centre of Tallaght and its associated bus and rail infrastructure.

**SERVICING OF PROPOSED DEVELOPMENT**

Given the location of the proposed development and its proximity to a wide range of transport infrastructure, the provision of carparking already present in the vicinity, there is no parking proposed as part of the development. In addition, it is noted that the proposed development decommissions c.39no. existing parking spaces currently serving the County Hall staff. This will assist in encouraging the use of the variety of alternative sustainable modes of transport serving the area.

Local access for servicing and deliveries to the north of the development is proposed via the existing car park circulation route to allow for deliveries to the proposed development.

## MOBILITY MANAGEMENT PLAN/TRAVEL PLAN

### OBJECTIVES OF TRAVEL PLAN

The primary goal of Mobility Management/Travel Plan is to facilitate and encourage a positive modal shift at the development towards sustainable modes of transport. Taking this above into account, the design proposals for County Heritage Centre-Tallaght seek:

- To reduce the dependence on the private car as a means of travel;
- To discourage the use of the private car in those circumstances where car use does occur;
- To increase and facilitate the number of people choosing to walk, cycle or travel by public transport to/from the development;
- To work closely with the Local Authority, the National Transport Authority, Irish Rail, Dublin Bus, Transport Infrastructure Ireland, Bus Éireann and all other relevant stakeholders in a partnership model to promote an increased uptake in public transport.

In order to achieve the foregoing objectives, the targets set out hereunder are proposed in specific key areas. These targets are based on current information pertaining to existing and proposed infrastructural investment locally. The targets are intended to be preliminary only and will be refined in the light of ongoing experience gained from the implementation of this plan.

#### PARKING PROVISION

A key aspect of facilitating travel by car is through the provision of car parking. As a result, it is an objective of this plan to persist in limiting the level of parking available on-site wherever possible. This will also continue to take into consideration the necessary demand so as to prevent overspill parking in nearby areas. It is noted that there are a number of alternative parking options for users or visitors to the Heritage Centre including public car parking facilities.

It is an objective to ensure that sufficient cycle parking is provided to meet demand at the site to ensure cycling is considered a viable option where possible.

#### CAR TRAVEL & OCCUPANCY

It is an objective of this plan to minimise the numbers using private cars and in cases where it does occur, to increase the number people travelling as passengers.

#### BUS

There are currently numerous bus services which serve stops within a 10 minute walk of the development site. It is an objective of this plan to increase awareness of these services and encourage their use as a viable and convenient alternative to private car travel where possible.

It is also an objective to inform of any changes to these services and any new services that come on line.

**RAIL**

The nearby Luas service provides direct access to a number of areas across Dublin as well as linking with a variety of other rail services. It is an objective of this plan to increase awareness of existing and future services and encourage their use as a viable, convenient alternative to travel by private car wherever possible. It is also an objective to inform of any changes to these services and any new services that come on line.

**CYCLING/WALKING**

The proposed development site is well served by good quality cycle and pedestrian infrastructure, with significant improvements also planned for the future. It is an objective of this plan to promote cycling/walking as viable means of transport and to facilitate their use wherever possible.

**Modal Split**

Existing modal split data for the Tallaght area has been obtained from the Census 2022 results. This has been combined with the proposals in relation to car parking, cycle parking, the measures set out in this plan to facilitate positive modal shift and the proposed infrastructural improvements for the local area to develop a series of overall modal split targets for the proposed development, as set out in Table 7-2 following.

*Table 7-2 Preliminary Target Modal Split*

<u>Mode</u>	<u>Modal Share</u>
On Foot	35%
Bicycle	10%
Public Transport	45%
Car Driver	2%
Car Passenger	8%

It is noted that once the development is occupied, it is proposed to carry out detailed travel surveys after 6 months in order to establish a more detailed picture of travel patterns at the site. This information will then be used to update the above targets accordingly.

**SPECIFIC MEASURES**

It is noted that the proposed development will generate trips primarily by visitors with only a very small staff base-estimated to be 3no. total. Thus, the measures proposed will primarily focus on the visitors to the centre.

Measures to be adopted will include:

- Carparking  
There is no carparking proposed as part of the development with the specific goal of encouraging the use of more sustainable modes of transport.

- Cycle Parking

It is noted that bicycle parking is provided as part of the proposed development to encourage the use of same as a means of accessing the site.

- Use of Technology

Technology is to be utilised to inform potential visitors to the Heritage Centre on the wide means of sustainable transport available for accessing the site. This will be through the use of travel information on the website for the Heritage Centre together with links to NTA Journey Planner, Public Transport providers and real time travel information.

## MONITORING

A critical part of any MMP is ongoing monitoring. It is proposed that an initial evaluation of the operation of the plan will take place 6 months into its operation. The plan will be appropriately adjusted at that stage based on the results.

The MMP will be monitored and regularly reviewed on a minimum yearly basis with regular travel surveys being carried out. In particular the demand for cycle parking at the site will be closely monitored with a view to increasing the amount as required. In general, the overall plan will be refined based on experience and consultations with the respective stakeholders.

## 8 VERIFICATION

This report was compiled and verified by:



*Ian Crehan BE, CEng, MIEI, MStructE, RConsEI*

*Associate*

*O'Connor Sutton Cronin & Associates*



O'CONNOR · SUTTON · CRONIN  
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## Appendix A **TOPO SURVEY INFORMATION**



**LEGEND**  
Street furniture & Services

Over Head Wires (LUAS) - Nylon ESB	Street Sign	Phone Box
Flowerbed	Ballot	Beach Seat
Pipe	Beacon	Kiosk
Light	Coalhole Cover	USG Car Park
Barrier	Bore Hole	Waste Bin
Pump	Electricity Pole	Hydrant
Trail Pit	Bus/Tram Shelter	Telegraph pole
Postbox	OCS Pole	ESB Box
Water - General	CCTV Camera Pole	ESB Inspection Cover
Water Valve	Lamp Post	Trails Control Box
Gas Valve	Food Mankole	LUAS Technical Cabinet
Sluice Valve	Surface Water MH	Ticket Vending Machine
Air Valve	Manholes	Water Meter Cover
Stop Cock	Air Conditioning Vents	Telecom Inspection Cover
C/P Post	Services Inspection Cover	Monument / Toilets
Marker Post	Traffic Inspection Cover	Mark Storage
Traffic Light	Cable TV Inspection Cover	Basement MH Cover & Pipe
Parking Meter	ESAT Inspection Cover	Street Light
Flora Area Mark	NL Inspection Cover	Stay for pole
Smart Card Validator	Excem Inspection Cover	Stay for pole
Unknown Valve	Unknown Valve	Washout

**Natural Features**

Surface Change	Water Level	Golf
Land Drain	Clown Level	Fair Way
Bottom of Slope	Invert level	Green
Top of Slope	Bed Level	Tea Box
Ditch	Spotheight	Other
Water Edge / Lake / Pond	Survey Station	Photo point
Hedge / Trees Drop Line / Vegetation	Tree Deciduous	Top of Tree

**Built Features**  
Roads & Road Markings

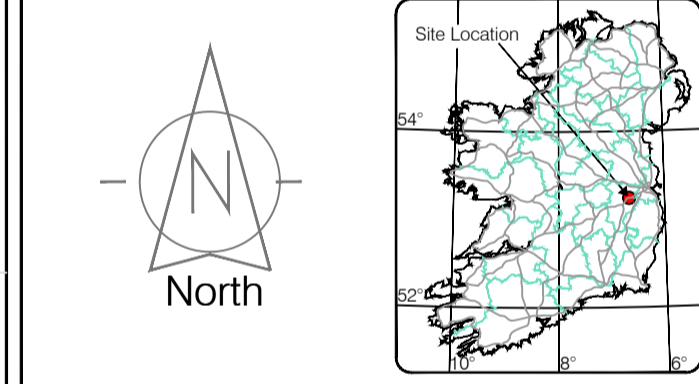
Building	Fence	Floor Level
Edge of Road	Gate	Apex Height
Kerb Bottom	Road Centreline	Eaves Height
Kerb Top	Top of Wall	Parapet Height
Bridge Abutment	Hoarding	Soft Elevation
Bridge Deck	Property Line	Step Level
Bridge Parapet	Road Bar	Concrete Pad
Building Facade	Top of Fence	Track
Footpath / Platform / Tram	Wall / Retaining Wall	
Damp Proof Course / Vege	Railway / Tram Rail / Gating / Ramp	
Bridge Pier / Wall & Gate Pillar / LUAS Trackbed	Building Canopy / Roof / Overhang	
Cycleway / Private Landing Area		

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Map Sheet Layout

Map Sheet 0000

Drawn by: CC	Date: May 2020	Datum: Main Head
Checked by: PK	Date: May 2020	Grid System: Irish National Grid
Revisions		
No.	Date	Description
1	05.06.2020	Final Drawing


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**Client:** Punch Consulting Engineers Dublin

**Project:** 192232 - Belgard Square, Tallaght

**Date:** 05.06.2020 **Scale:** 1:250@A1

**Description:** Topographical Survey

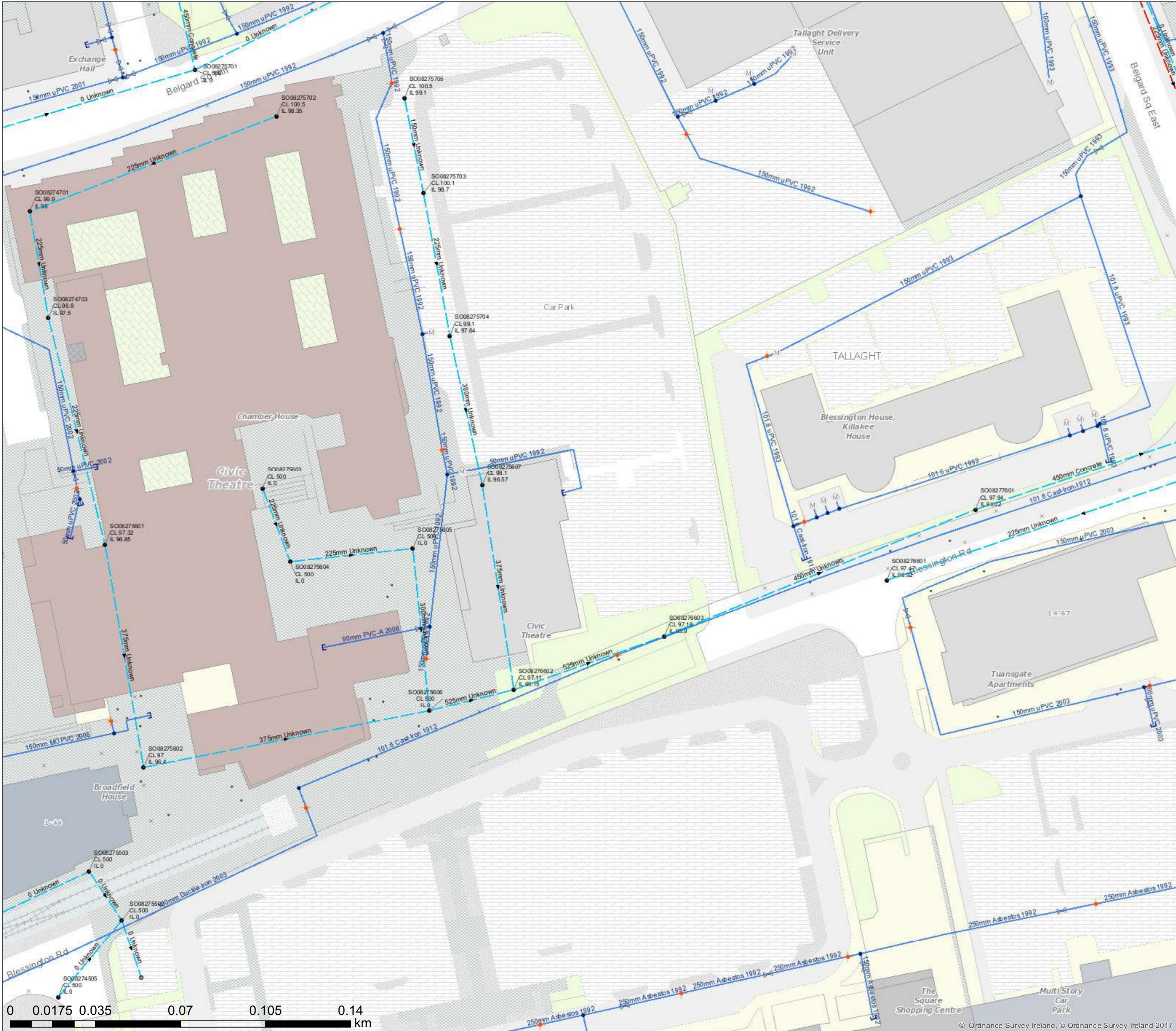
**Drawing Number:** MSL35709\_T\_ITM Rev0


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## Appendix B **LOCAL AUTHORITY RECORDS**



# Irish Water Web Map





Print Date: 07/06/2023

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Printed by: Irish Water

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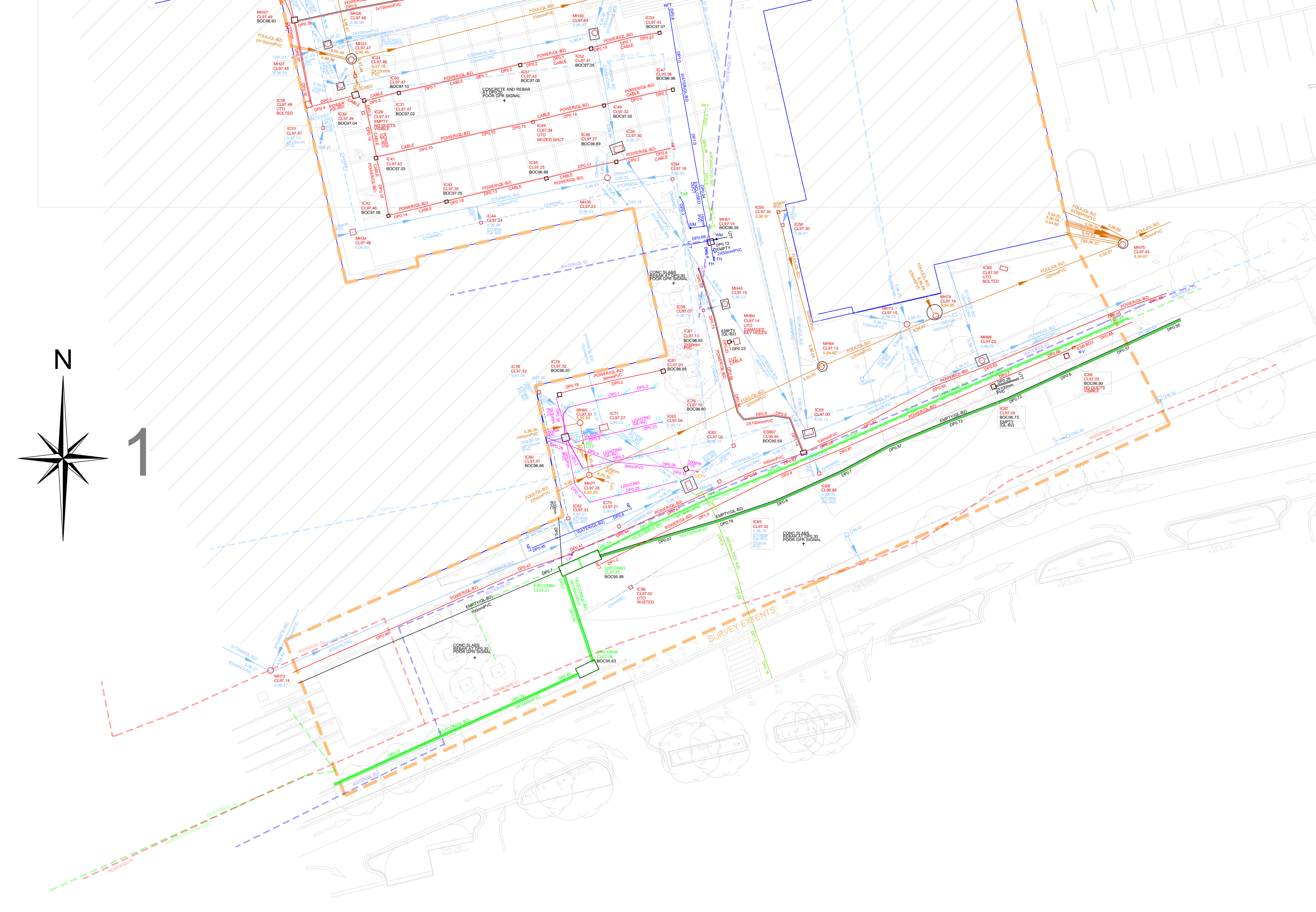
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\*Gas Networks Ireland (GNI), their affiliates and assigns, accept no responsibility for any information contained in this document concerning location and technical designation of the gas distribution and transmission network ("the Information"). Any representations and warranties express or implied, are excluded to the fullest extent permitted by law. No liability shall be accepted for any loss or damage including, without limitation, direct, indirect, special, incidental, punitive or consequential loss including loss of profits, arising out of or in connection with the use of the information (including maps or mapping data).  
 NOTE: DIAL BEFORE YOU DIG Phone: 1850 427 747 or e-mail dig@gasnetworks.ie - The actual position of the gas/electricity distribution and transmission network must be verified on site before any mechanical excavating takes place. If any mechanical excavation is proposed, hard copy maps must be requested from GNI re gas. All work in the vicinity of gas distribution and transmission network must be completed in accordance with the current edition of the Health & Safety Authority publication, 'Code of Practice For Avoiding Danger From Underground Services' which is available from the Health and Safety Authority (1890 28 93 89) or can be downloaded free of charge at [www.hsa.ie](http://www.hsa.ie)."

<b>Water Distribution Network</b> Water Treatment Plant Water Pump Station Storage Cell/Tower Dosing Point Meter Station Abstraction Point Telemetry Kiosk <b>Reservoir</b> Potable Raw Water <b>Water Distribution Mains</b> Irish Water Private <b>Trunk Water Mains</b> Irish Water Private <b>Water Lateral Lines</b> Irish Water Non IW Water Casings Water Abandoned Lines Boundary Meter Bulk/Check Meter Group Scheme Source Meter Waste Meter Unknown Meter ; Other Meter Non-Return PRV Sluice Line Valve Open/Closed Butterfly Line Valve Open/Closed Sluice Boundary Valve Open/Closed Butterfly Boundary Valve Open/Closed Scour Valves Single Air Control Valve Double Air Control Valve Water Stop Valves Water Service Connections Water Distribution Chambers Water Network Junctions Pressure Monitoring Point Fire Hydrant Fire Hydrant/Washout <b>Water Fittings</b> Cap Reducer Tap Other Fittings	<b>Sewer Foul Combined Network</b> Waste Water Treatment Plant Waste Water Pump station <b>Sewer Mains Irish Water</b> Gravity - Combined Gravity - Foul Gravity - Unknown Pumping - Combined Pumping - Foul Pumping - Unknown Syphon - Combined Syphon - Foul Overflow <b>Sewer Mains Private</b> Gravity - Combined Gravity - Foul Gravity - Unknown Pumping - Combined Pumping - Foul Pumping - Unknown Syphon - Combined Syphon - Foul Overflow Sewer Lateral Lines Sewer Casings <b>Sewer Manholes</b> Standard Backdrop Cascade Catchpit Bifurcation Hatchbox Lamphole Hydrobrake Other, Unknown <b>Discharge Type</b> Outfall Overflow Soakaway Other, Unknown	<b>Storm Water Networks</b> <b>Surface Water Mains</b> Surface Gravity Mains Surface Gravity Mains Private Surface Water Pressurised Mains Surface Water Pressurised Mains Private <b>Inlet Type</b> Gully Standard Other, Unknown <b>Storm Manholes</b> Standard Backdrop Cascade Catchpit Bifurcation Hatchbox Lamphole Hydrobrake Other, Unknown Storm Culverts Storm Clean Outs Stormwater Chambers <b>Discharge Type</b> Outfall Overflow Soakaway Other, Unknown <b>Gas Networks Ireland</b> Transmission High Pressure Gasline Distribution Medium Pressure Gasline Distribution Low Pressure Gasline <b>ESB Networks</b> <b>ESB HV Lines</b> HV Underground HV Overhead HV Abandoned <b>ESB MVLV Lines</b> MV Overhead Three Phase MV Overhead Single Phase LV Overhead Three Phase LV Overhead Single Phase MVLV Underground Abandoned <b>Non Service Categories</b> Proposed Under Construction Out of Service Decommissioned <b>Water Non Service Assets</b> Water Point Feature Water Pipe Water Structure <b>Waste Non Service Assets</b> Waste Point Feature Sewer Waste Structure
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## Appendix C **UTILITY SURVEY INFORMATION**



**PAS 128: 2014 (Quality of Survey Level Outputs):**

DESKTOP UTILITY RECORDS SEARCH QL-D	Drafted from utility records
SITE RECONNAISSANCE QL-C	Location Demonstrated by visual reference to street furniture or evidence of previous streetworks, i.e. - reinstatement scars
DETECTION QL-B4	A segment of utility suspected to exist but has not been detected by a geophysical technique
QL-B3	Horizontal location only of the utility detected by one of the geophysical techniques used
QL-B2	Horizontal and vertical location of the utility detected by one of the geophysical techniques used
QL-B1	Horizontal and vertical location of the utility detected by multiple geophysical techniques
VERIFICATION QL-A	Horizontal and vertical location of the top and/or bottom of the utility

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**The following is a non-exhaustive list of the limitations of utility surveys:**

- The Survey aims to map existing utilities subsurface utilities and provide information with respect to pipe size, material type and drainage connectivity. However utility surveying is limited by the following guidelines and it may not be possible to accurately survey, define and locate all services and sub-surface features.
- Depth of Utility: The depth and size of a utility affect the signal response and the degree with which a utility can be located.
- Due to attenuation of the radar signal with depth, resolution is restricted, hence making identification of utilities more difficult with increasing depth.
- Size of Utility: The smaller the diameter of a utility the more difficult it is to locate. This difficulty increases with depth.
- Ground Conditions: The depth penetration and quality of the data depends on the ground conditions of the site. GPR Surveying works best within high resistivity material. Clay overburden can impair GPR Surveying. Poor data may be a result of areas with high conductivity.
- Utility Congestion: Where different utilities converge together into a service corridor or cross paths it becomes difficult to isolate a specific utility and to map its route. The reflected signal will display a single response to multiple utilities. Therefore multiple utilities may appear to be a single utility. Where similar services run on close proximity, separation may be impossible.
- Signal Jumping: Signal from surrounding services may 'jump' to a highly conductive line masking its true identity.
- Shadowing: (of deeper utilities by shallower objects) Shallow utilities will mask the existence of deeper utilities where they are in close proximity. Also, high reflective materials close to the surface i.e. rebar may hide deeper anomalies.
- Surface Obstructions: The GPR system relies on a relatively flat and even surface on which to perform radar passes. If ground obstructions such as vehicles, organic material (long grass, scrub) or undulating ground surface are present then the acquired data will be of lower resolution and in some cases not viable.
- Loss of signal: It is not always possible to trace the entire length of each underground service.
- Connections between manholes: Connections between manhole chambers are assumed to be straight.
- Non-metallic objects: Non-metallic objects are amongst the most difficult to trace therefore successful tracing of non-metallic pipes/ utilities may be limited.
- Fiber Optic Cables: Fiber optic cables may not be possible to locate except where laid with a built in tracer wire or similar conductor system.
- Defective / flooded manholes or pipework: It may not be possible to establish connections between flooded or defective manholes or pipework.
- Acute bends in pipework: It may not be possible to trace a pipe past an acute bend.
- Accuracy estimates:
  - Locational accuracy is determined by referring to the manufacturers guidelines for the detector used.
  - In ideal conditions the spatial accuracies for the underground utilities may be +/ - 5% for Radiodetection and +/ - 10% of depth for the GPR to 2.5m deep. However variations within the subsurface, depth below the ground, close proximity of other services and local magnetic, atmospheric or ground conditions, bends, lateral service connections and any of the other limitations listed in this disclaimer may alter this estimated accuracy.
  - Plan accuracies of + or - 150mm may be achieved but this figure will depend on the depth of services below ground level. However variations within the subsurface, depth below the ground, close proximity of other services and local magnetic, atmospheric or ground conditions, bends, lateral service connections and any of the other limitations listed in this disclaimer may alter this estimated accuracy.
- DP represents distance from the surface level to the top of the service/ target
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**Record Drawing Information**

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All works carried out by Apex Surveys conforms to the guidelines set out by The Survey Association (TSA) and PAS:128 Standard for utility mapping

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00353 1 691 0156

**STREET FURNITURE :**

BOLLARDS	BD+	CRAH BARRIER	CB	ELECTRICITY POLE	EP+	TELEPHONE POLE	TP+	EARTHING ROD	ER+	LAMP POST	LP+	MARKER POST	MKR+	SIGN POST	SIGN	TRAFFIC LIGHT	TL+	TELEPHONE BOX	TB	POST	POST	POST BOX	RS-RS	BORE HOLE	BH+	TRIAL PIT	TPIT+
BOTTOM OF CHAMBER	BOC	CAST-IRON	CI	CONCRETE	CONC	DIAMETER	DIA																				

**SERVICES :**

AIR VALVE	AV	ARMSTRONG JUNCTION	AJ	CABLE TV IC	CA TV	COVER LEVEL	CL	EIRCOM COVER	EIRCOM	EIRCOM JUNCTION BOX	EIRCOM BOX	ELECTRICAL CABLE PIT	ESAT	ESAT COVER	ESB	ESB COVER	ESB JUNCTION BOX	ESB BOX	FIRE HYDRANT	FH	GAS VALVE	GV	INSPECTION COVER	IC	MANHOLE	MH	SEPTIC TANK	SEPTIC	SLUICE VALVE	SV
AIR VALVE	AV	ARMSTRONG JUNCTION	AJ	CABLE TV IC	CA TV	COVER LEVEL	CL	EIRCOM COVER	EIRCOM	EIRCOM JUNCTION BOX	EIRCOM BOX	ELECTRICAL CABLE PIT	ESAT	ESAT COVER	ESB	ESB COVER	ESB JUNCTION BOX	ESB BOX	FIRE HYDRANT	FH	GAS VALVE	GV	INSPECTION COVER	IC	MANHOLE	MH	SEPTIC TANK	SEPTIC	SLUICE VALVE	SV

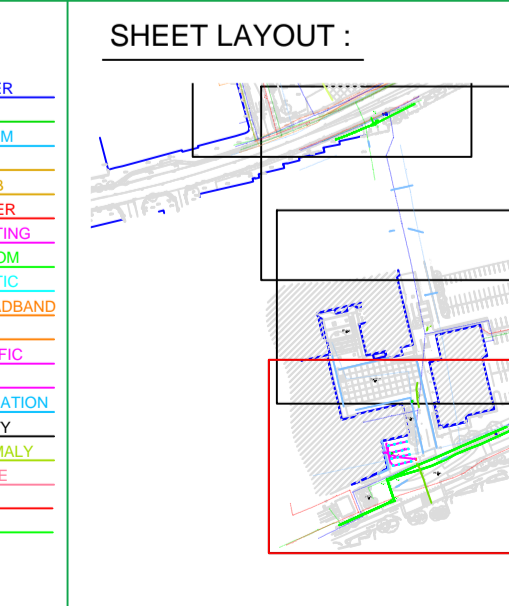
**STOPCOCK**  
SERVICE BOX (UNKNOWN)  
TRAFFIC COVER  
VENT  
WATER METER

**LEVELS :**

BED LEVEL	+BED101.50	FLOOR LEVEL	+FL101.50
INVERT LEVEL	+I101.50	ROAD LEVEL	+101.50
SOFFIT LEVEL	+SL101.50	SPOT LEVEL	+101.50
TOP OF WALL LEVEL	+TOW101.50	WATER LEVEL	+WL101.50
SURVEY CONTROL STATION	SOR	UNABLE TO OPEN	UTO
UNABLE TO TRACE	UNT		

**UNDERGROUND LEGEND :**

WATER MAIN	WATER	GAS MAIN	STORM	STORM DRAIN	COMB	COMBINED SEWER	ELECTRIC CABLE	ELECTRIC LIGHTING	EIRCOM	FIBRE OPTIC CABLE	BROADBAND	CABLE TV	TRAFFIC AND SIGNAL CABLE	CCTV	IRRIGATION PIPE	EMPTY DUCT	GPR ANOMALY	UNKNOWN CABLE	OHEAD ELECTRICITY	OHEAD TELECOM
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PLAN PRODUCED BY:

**APEX SURVEYS**

CONTACT INFORMATION:

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Dunboyne, Co. Meath, Ireland  
www.apexsurveys.ie  
info@apexsurveys.ie  
00353 1 691 0156

**CLIENT:**

Punch Consulting

**PROJECT:**

Utility Survey, Belgard Square North, Tallaght

**GRID SYSTEM:** Irish Transverse Mercator  
**DATUM:** Main Head (OSGM15)  
**NOTES:** Drawing Contains Scale Factor

**REVISIONS:**

No.	Date	Description
001	N/A	Original Drawing
002	14/05/21	Additional Area Added

**SCALE :** 1/200 A1

**DATE :** 25/06/2020

**DRG No:** 4342

**SHEET:** 1 of 7

**DESCRIPTION :** 2D Utilities

**SURVEYED BY :** I.P. & A.W.

**PROCESSED BY :** C.B. & A.B.

**CHECKED BY :** Alan Brady

**PAS 128: 2014 (Quality of Survey Level Outputs):**

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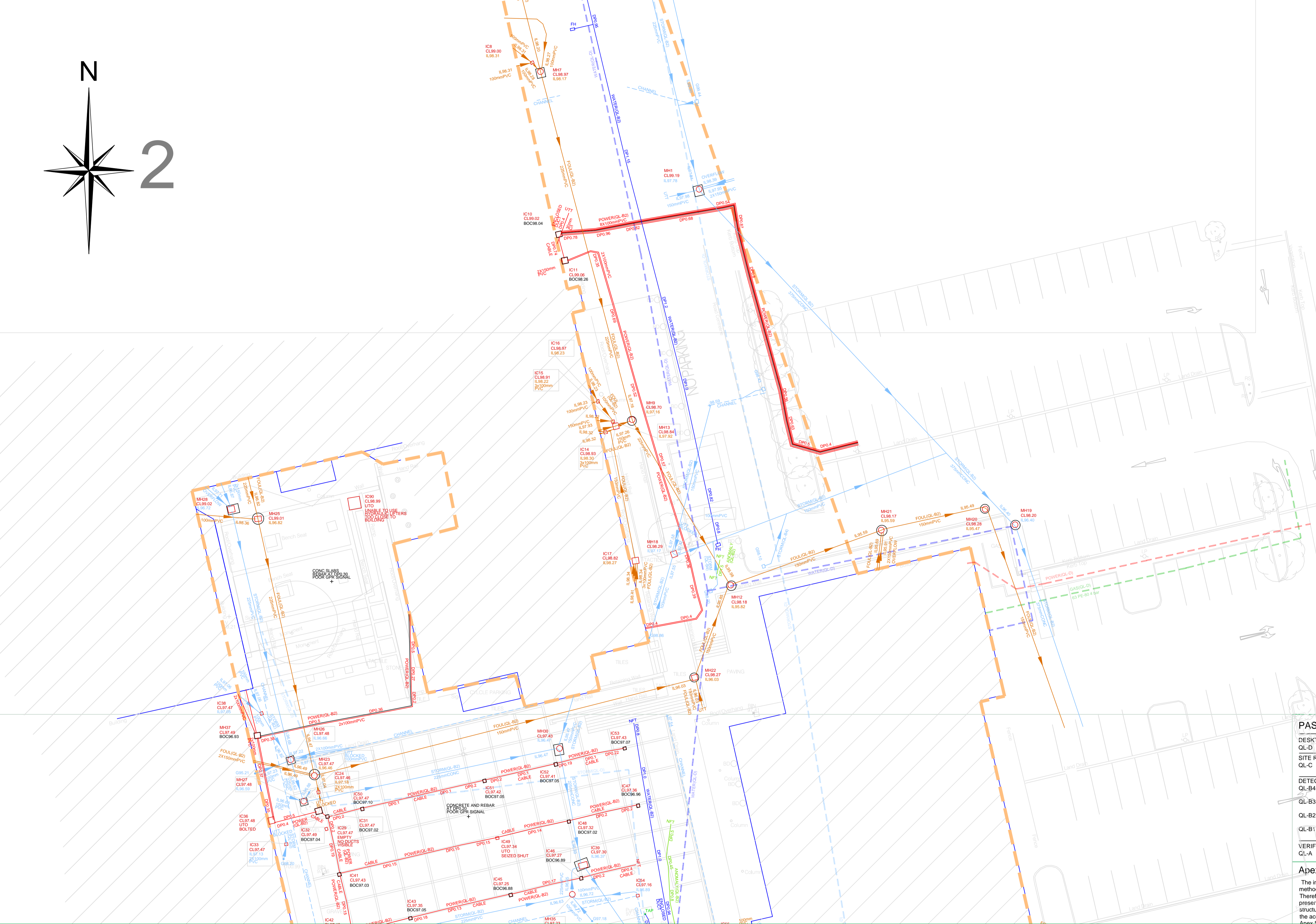
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**STREET FURNITURE :**

BOLLARDS	BD+	BUS STOP	BS+	CRASH BARRIER	CB	ELECTRICITY POLE	EP+	TELEPHONE POLE	TP+	EARTHING ROD	ER+	LAMP POST	LP+	MARKER POST	MP+	SIGN POST	SP+	TRAFFIC LIGHT	TL	TELEPHONE BOX	TB	POST BOX	POST BOX	TRAFFIC SIGN	TS	BORE HOLE	BH+	TRIAL PIT	TPIT+
BOTTOM OF CHAMBER	BOC	CAST-IRON	CI	CONCRETE	CONC	DIAMETER	DIA																						

**SERVICES :**

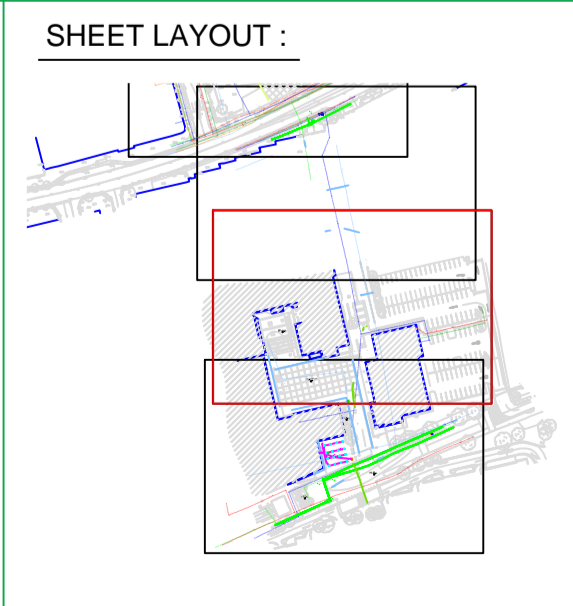
AIR VALVE	AV	ARMSTRONGS JUNCTION	AJ	CABLE TV IC	CTV IC	COVER LEVEL	CL	EIRCOM COVER	EIRCOM	EIRCOM JUNCTION BOX	EIRCOM JB	ELECTRICAL CABLE PIT	ECP	ESAT COVER	ESAT	ESB COVER	ESB	ESB JUNCTION BOX	ESB JB	FIRE HYDRANT	FH	GAS VALVE	GV	GULLY	G	INSPECTION COVER	IC	MANHOLE	MH	SEPTIC TANK	SV	SLUICE VALVE	SLV
DOWNPPIPE	DP	EARTHENWARE	EW	UNABLE TO OPEN	UNO	NO FURTHER TRACE	NFT	OFFSITE	O/S																								

**UNDERGROUND LEGEND :**

STOPCOCK	ST	SERVICE BOX (UNKNOWN)	SB	TRAFFIC COVER	TC	VENT	V	WATER METER	WM+								
BED LEVEL	+BED101.50	FLOOR LEVEL	+FL101.50	INVERT LEVEL	+I101.50	ROAD LEVEL	+R101.50	SOFFIT LEVEL	+SL101.50	SPOT LEVEL	+S101.50	TOP OF WALL LEVEL	+TOW101.50	WATER LEVEL	+WL101.50	SURVEY CONTROL STATION	SCS
START OF RUN	SOR	UNABLE TO OPEN	UNO	UNABLE TO TRACE	UNT												

**UNDERGROUND LEGEND :**

WATER MAIN	WATER	GAS MAIN	GAS	STORM DRAIN	STORM	FOUL SEWER	FOUL	COMBINED SEWER	COMB	ELECTRIC CABLE	ELECTRIC	ELECTRIC LIGHTING	ELECTRIC LIGHTING	EIRCOM	FIBRE OPTIC CABLE	FIBRE OPTIC	BROADBAND	BROADBAND	CABLE TV	CABLE TV	TRAFFIC AND SIGNAL CABLE	TRAFFIC AND SIGNAL	CCTV	IRRIGATION PIPE	IRRIGATION	EMPTY DUCT	EMPTY	GPR ANOMALY	ANOMALY	UNKNOWN CABLE	UNKNOWN	O'HEAD ELECTRICITY	O'HEAD	TELECOM	TELECOM
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PLAN PRODUCED BY:

**APEX SURVEYS**

CONTACT INFORMATION:

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Unit 78 Dunboyne Business Park  
Dunboyne, Co. Meath, Ireland  
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00353 1 691 0156

CLIENT:

**Punch Consulting**

GRID SYSTEM: Irish Transverse Mercator  
DATUM: Main Head (OSGM15)  
NOTES: Drawing Contains Scale Factor

REVISIONS:

No.	Date	Description
001	N/A	Original Drawing
002	14/05/21	Additional Area Added

PROJECT:

**Utility Survey, Belgard Square North, Tallaght**

SCALE : 1/200 A1

DATE : 25/06/2020

DRG No: 4342

DESCRIPTION : 2D Utilities

SURVEYED BY : I.P. & A.W.

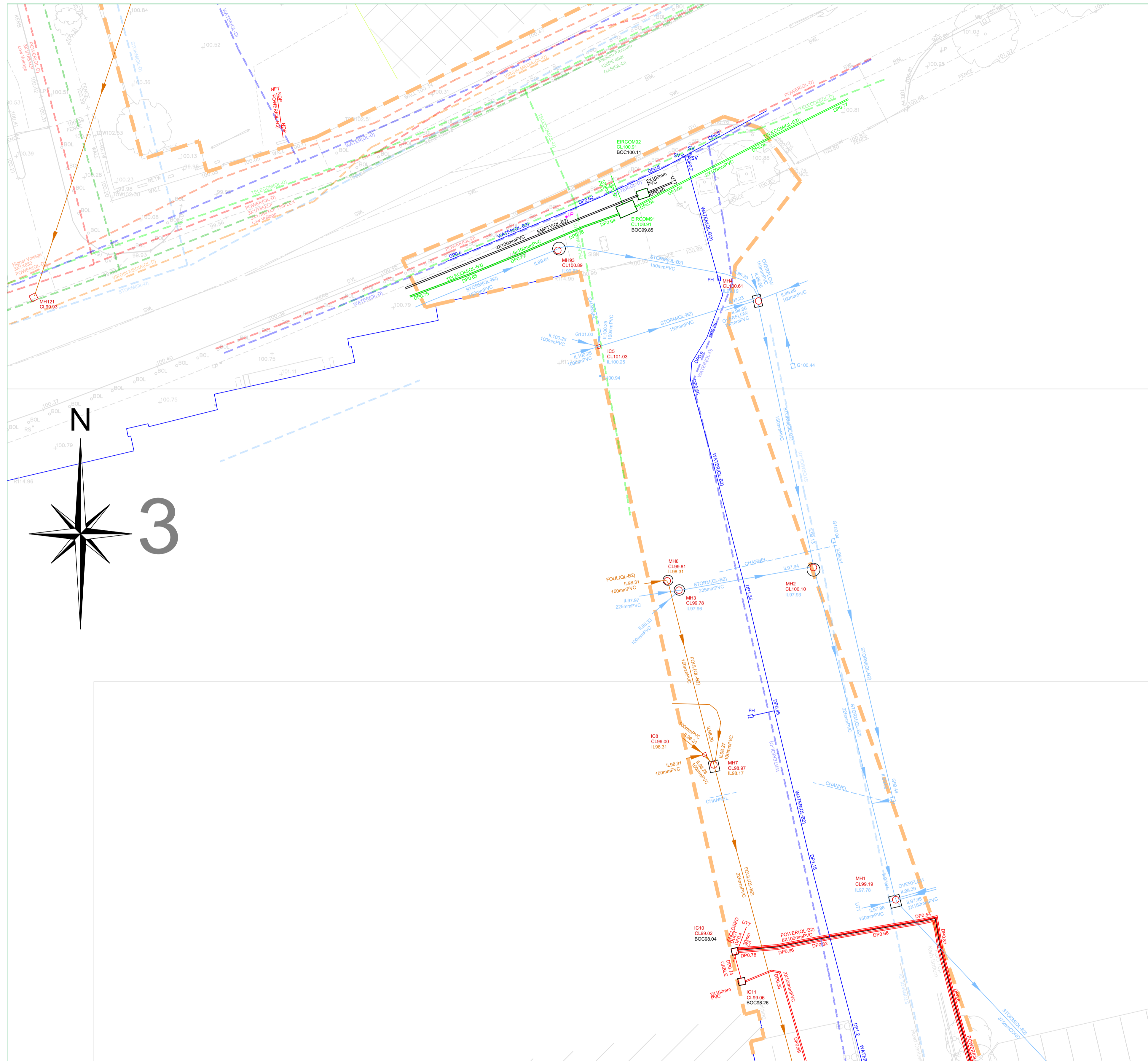
PROCESSED BY : C.B. & A.B.

SHEET: 2 of 7

CHECKED BY : Alan Brady

**APEX SURVEYS**

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  - Depth of Utility: The depth and size of a utility affect the signal response and the degree with which a utility can be located. Due to attenuation of the radar signal with depth, resolution is restricted, hence making identification of utilities more difficult with increasing depth.
  - Size of Utility: The smaller the diameter of a utility the more difficult it is to locate. This difficulty increases with depth.
  - Ground Conditions: The depth penetration and quality of the data depends on the ground conditions of the site. GPR Surveying works best within high resistivity material. Clay overburden can impair GPR Surveying. Poor data may be a result of areas with high conductivity.
  - Utility Congestion: Where different utilities converge together into a service corridor or cross paths it becomes difficult to isolate a specific utility and to map its route. The reflected signal will display a single response to multiple utilities. Therefore multiple utilities may appear to be a single utility. Where similar services run on close proximity, separation may be impossible.
  - Signal Jumping: Signal from surrounding services may 'jump' to a highly conductive line masking its true identity.
  - Shadowing: (of deeper utilities by shallower objects) Shallow utilities will mask the existence of deeper utilities when they are in close proximity. Also, high reflective materials close to the surface i.e rebar may hide deeper anomalies.
  - Surface Obstructions: The GPR system relies on a relatively flat and even surface on which to perform radar passes. If ground obstructions such as vehicles, organic material (long grass, scrub) or undulating ground surface are present then the acquired data will be of lower resolution and in some cases not viable.
  - Loss of signal: It is not always possible to trace the entire length of each underground service.
  - Connections between manholes: Connections between manhole chambers are assumed to be straight.
  - Non-metallic objects: Nonmetallic objects are amongst the most difficult to trace therefore successful tracing of non-metallic pipes/ utilities may be limited.
  - Fiber Optic Cables: Fiber optic cables may not be possible to locate except where laid with a built in tracer wire or similar conductor system.
  - Defective / flooded manholes or pipework: It may not be possible to establish connections between flooded or defective manholes or pipework.
  - Acute bends in pipework: It may not be possible to trace a pipe past an acute bend.

**Accuracy estimates:**

- Locational accuracy is determined by referring to the manufacturers guidelines for the detector used.
- In ideal conditions the spatial accuracies for the underground utilities may be +/ - 5% for Radiodetection and +/ - 10% of depth for the GPR to 2.5m deep. However variations within the subsurface, depth below the ground, close proximity of other services and local magnetic, atmospheric or ground conditions, bends, lateral service connections and any of the other limitations listed in this disclaimer may alter this estimated accuracy.
- Plan accuracies of + or - 150mm may be achieved but this figure will depend on the depth of service below ground level. However variations within the subsurface, depth below the ground, close proximity of other services and local magnetic, atmospheric or ground conditions, bends, lateral service connections and any of the other limitations listed in this disclaimer may alter this estimated accuracy.
- DP represents distance from the surface level to the top of the service/ target
- Where technically possible, depth indications will be given. These along with plan positions should be used for guidance only and wherever critical accuracy is required these should be confirmed by the client by undertaking trial excavations or similar.

**Record Drawing Information**

- Services which have been untraceable are shown from records where possible or available. These lines are annotated as "Taken From Records" or "From Records".
- Existing record information showing underground services is often incomplete and with unknown accuracies therefore it should be regarded as indicative only.
- Where Apex Surveys issue a utility drawing, this should be read in conjunction with all available public or private utility records.
- Apex Surveys endeavor to add relevant Public Utility record information onto the final drawing. However, we would recommend that direct contact is made with the asset owner or statutory undertaker.
- We shall not be held responsible for the accuracy, or otherwise, of the location of a service, as issued by the utility provider and therefore shown as "Taken From Records" on the drawing.

The following have been excluded from the survey:

- Location of individual service feeds to properties or buildings as access would be required into each property to apply direct connections to inlet points and this would significantly increase the scope of works, survey cost and also cause possible disruption to occupants.
- Pot ended or disconnected cables or terminated short lengths of pipe.
- Internal building services.
- Small diameter cables less than 20mm diameter or pipes less than 40mm diameter.
- Above ground services unless specifically requested.
- Lifting manholes which require longer than 10 minutes effort using standard heavy duty apparatus.

www.apexsurveys.ie  
info@apexsurveys.ie  
00353 1 691 0156

STREET FURNITURE :		SERVICES :		LEVELS :	
BOLLARDS	BD+	AIR VALVE	AV	BED LEVEL	+BED101.50
BUS STOP	BS+	ARMSTRONG JUNCTION	AJ	FLOOR LEVEL	+FL101.50
CRASH BARRIER	CB	CABLE TV IC	CA	INVERT LEVEL	+I101.50
GATE	GP	COVER LEVEL	CL	ROAD LEVEL	+R101.50
ELECTRICITY POLE	EP+	EIRCOM COVER	EIR	SOFFIT LEVEL	+SL101.50
TELEPHONE POLE	TP+	EIRCOM JUNCTION BOX	EIRCOM JB	SPTD LEVEL	+S101.50
EARTHING ROD	ER+	ELECTRICAL CABLE PIT	ECP	TOP OF WALL LEVEL	+TW101.50
LAMP POST	LP+	ESAT COVER	ESAT	WATER LEVEL	+WL101.50
MARKER POST	MKR+	ESB COVER	ESB	SURVEY CONTROL STATION	SCS
SIGN POST	SP+	ESB JUNCTION BOX	ESB JB		
TRAFFIC LIGHT	TL+	FIRE HYDRANT	FH		
TELEPHONE BOX	TB	GAS VALVE	GV		
POST	POST	INSPECTION COVER	IC		
POST BOX	POST BOX	MANHOLE	MH		
ROADSIGN	RS-RS	SEPTIC TANK	ST		
BORE HOLE	BH+	SLUICE VALVE	SV		
TRIAL PIT	TPIT+				
BOTTOM OF CHAMBER	BOC	DOWNPIPE	DP	START OF RUN	SOR
CAST-IRON	CI	EARTHENWARE	EW	UNABLE TO OPEN	UTO
CONCRETE	CONC	NO FURTHER TRACE	NFT	UNABLE TO TRACE	UTT
DIAMETER	DIA	OFFSITE	O/S		

UNDERGROUND LEGEND :		SHEET LAYOUT :	
WATER MAIN	WATER	WATER MAIN	WATER
GAS MAIN	GAS	GAS MAIN	GAS
STORM DRAIN	STORM	STORM DRAIN	STORM
COLL SEWER	COLL	COLL SEWER	COLL
COMBINED SEWER	COMB	COMBINED SEWER	COMB
ELECTRIC LIGHTING	ELECTRIC	ELECTRIC LIGHTING	ELECTRIC
EIRCOM	EIRCOM	EIRCOM	EIRCOM
FIBRE OPTIC CABLE	F.OPTIC	FIBRE OPTIC CABLE	F.OPTIC
BROADBAND	BROADBAND	BROADBAND	BROADBAND
CABLE TV	CABLE TV	CABLE TV	CABLE TV
TRAFFIC AND SIGNAL CABLE	TRAFFIC	TRAFFIC AND SIGNAL CABLE	TRAFFIC
CCTV	CCTV	CCTV	CCTV
IRRIGATION PIPE	IRRIGATION	IRRIGATION PIPE	IRRIGATION
EMERGENCY DUCT	EMERGENCY	EMERGENCY DUCT	EMERGENCY
GPR ANOMALY	ANOMALY	GPR ANOMALY	ANOMALY
UNKNOWN CABLE	UNKNOWN	UNKNOWN CABLE	UNKNOWN
OHEAD ELECTRICITY	OHEAD	OHEAD ELECTRICITY	OHEAD
OHEAD TELECOM	OHEAD	OHEAD TELECOM	OHEAD

PLAN PRODUCED BY:

CONTACT INFORMATION:

Apex Surveys  
Unit 78 Dunboyne Business Park  
Dunboyne, Co. Meath, Ireland  
www.apexsurveys.ie  
info@apexsurveys.ie  
00353 1 691 0156

CLIENT:

**Punch Consulting**

GRID SYSTEM: Irish Transverse Mercator  
DATUM: Main Head (OSGM15)  
NOTES: Drawing Contains Scale Factor

REVISIONS:

No.	Date	Description
001	N/A	Original Drawing
002	14/05/21	Additional Area Added

PROJECT:

**Utility Survey, Belgard Square North, Tallaght**

SCALE : 1/200 A1

DATE : 25/06/2020

DRG No: 4342

SHEET: 3 of 7

DESCRIPTION : 2D Utilities

SURVEYED BY : I.P. & A.W.

PROCESSED BY : C.B. & A.B.

CHECKED BY : Alan Brady

## Appendix D **ATTENUATION CALCULATIONS**

**Project:** South Dublin Heritage Centre Tallaght  
**Project No.:** M1381  
**Calculation:** Attenuation 100-year  
**Calcs By:** IC  
**Checked By:** IC  
**Date:** 24/07/2023



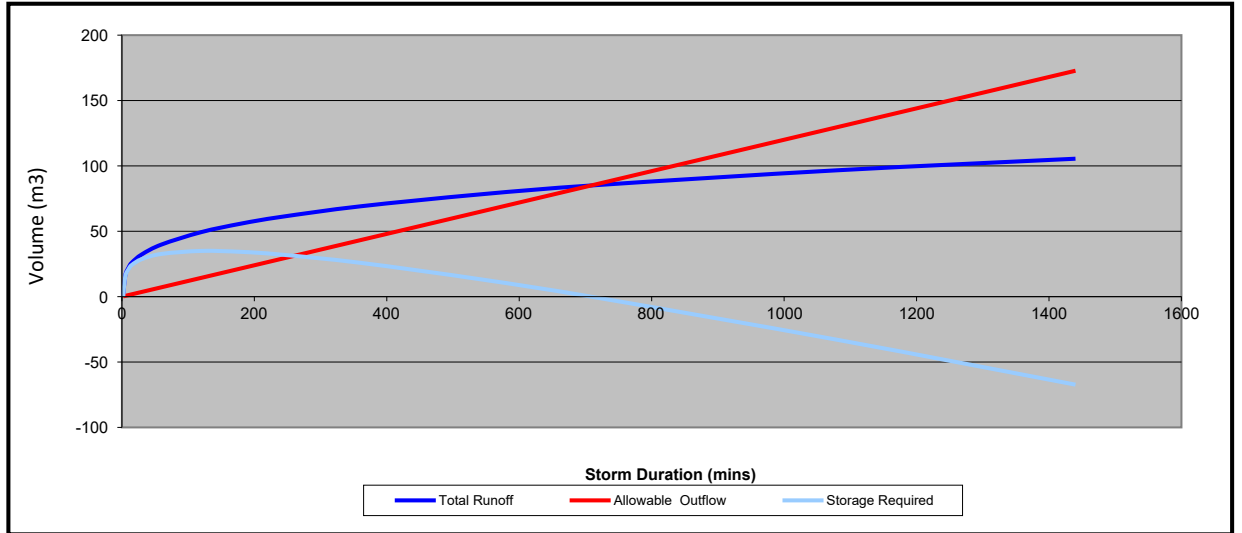
Site Location:	Tallaght	
Design Storm Return Period:	100 years	
Climate Change Factor:	10 %	
Soil Type:	2	
Total Site Area:	0.18 ha	Excludes existing road
Roof Area:	0.06 ha	.....@ 100% Impervious
External Hardstand Area:	0.06 ha	.....@ 100% Impervious
Softstand Area:	0.06 ha	.....@ 0% Impervious
Effective Impermeable Area:	0.12 ha	

Allowable Outflow	Calculate
IH124: $QBAR = 0.00108 \times AREA^{0.89} \times SAAR^{1.17} \times SOIL^{2.17}$	
AREA:	0.00 km <sup>2</sup>
SAAR:	825 mm
SOIL:	0.3
QBAR/ha	2.21 l/s/ha Give 0.4l/s for site but lowest limit possible is 2l/s
<b>Allowable Outflow</b>	<b>2.0 l/s</b>

<b>Storage required =</b>	<b>35 m<sup>3</sup></b>
---------------------------	-------------------------

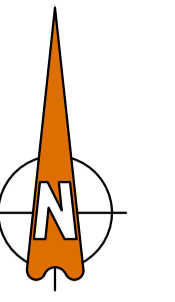
Duration (min)	Rainfall 100-Year (mm)	Rainfall 100-Year with CCF (mm)	Intensity (mm/hr)	Discharge (Q = 2.71iA) (l/s)	Proposed Runoff (m <sup>3</sup> )	Contiguous Land Runoff (m <sup>3</sup> )	Total Runoff (m <sup>3</sup> )	Allowable Outflow (m <sup>3</sup> )	Storage Required (m <sup>3</sup> )
2	0.0	0.0	0.0	0	0	0	0	0	0
5	12.8	14.1	169.0	53	16	0	16	1	15
10	17.8	19.6	117.5	37	22	0	22	1	21
15	20.9	23.0	92.0	29	26	0	26	2	24
30	25.9	28.5	57.0	18	32	0	32	4	29
60	32.0	35.2	35.2	11	40	0	40	7	33
120	39.6	43.6	21.8	7	49	0	49	14	35
180	44.8	49.3	16.4	5	56	0	56	22	34
240	48.9	53.8	13.4	4	61	0	61	29	32
360	55.4	60.9	10.2	3	69	0	69	43	26
540	62.7	69.0	7.7	2	78	0	78	65	13
720	68.5	75.4	6.3	2	85	0	85	86	-1
1080	77.5	85.3	4.7	1	97	0	97	130	-33
1440	84.6	93.1	3.9	1	105	0	105	173	-67
2880	96.1	105.7	2.2	1	120	0	120	346	-226
4320	106.5	117.2	1.6	1	133	0	133	518	-386
5760	116.2	127.8	1.3	0	145	0	145	691	-546
8640	133.7	147.1	1.0	0	167	0	167	1037	-870
11520	149.7	164.7	0.9	0	187	0	187	1382	-1196
14400	164.6	181.1	0.8	0	205	0	205	1728	-1523
17280	178.7	196.6	0.7	0	223	0	223	2074	-1851
23040	205.4	225.9	0.6	0	256	0	256	2765	-2509
28800	230.6	253.7	0.5	0	288	0	288	3456	-3168
36000	260.5	286.6	0.5	0	325	0	325	4320	-3995

**Project:** South Dublin Heritage Centre Tallaght  
**Project No.:** M1381  
**Calculation:** Attenuation 100-year  
**Calcs By:** IC  
**Checked By:** IC  
**Date:** 24/07/2023





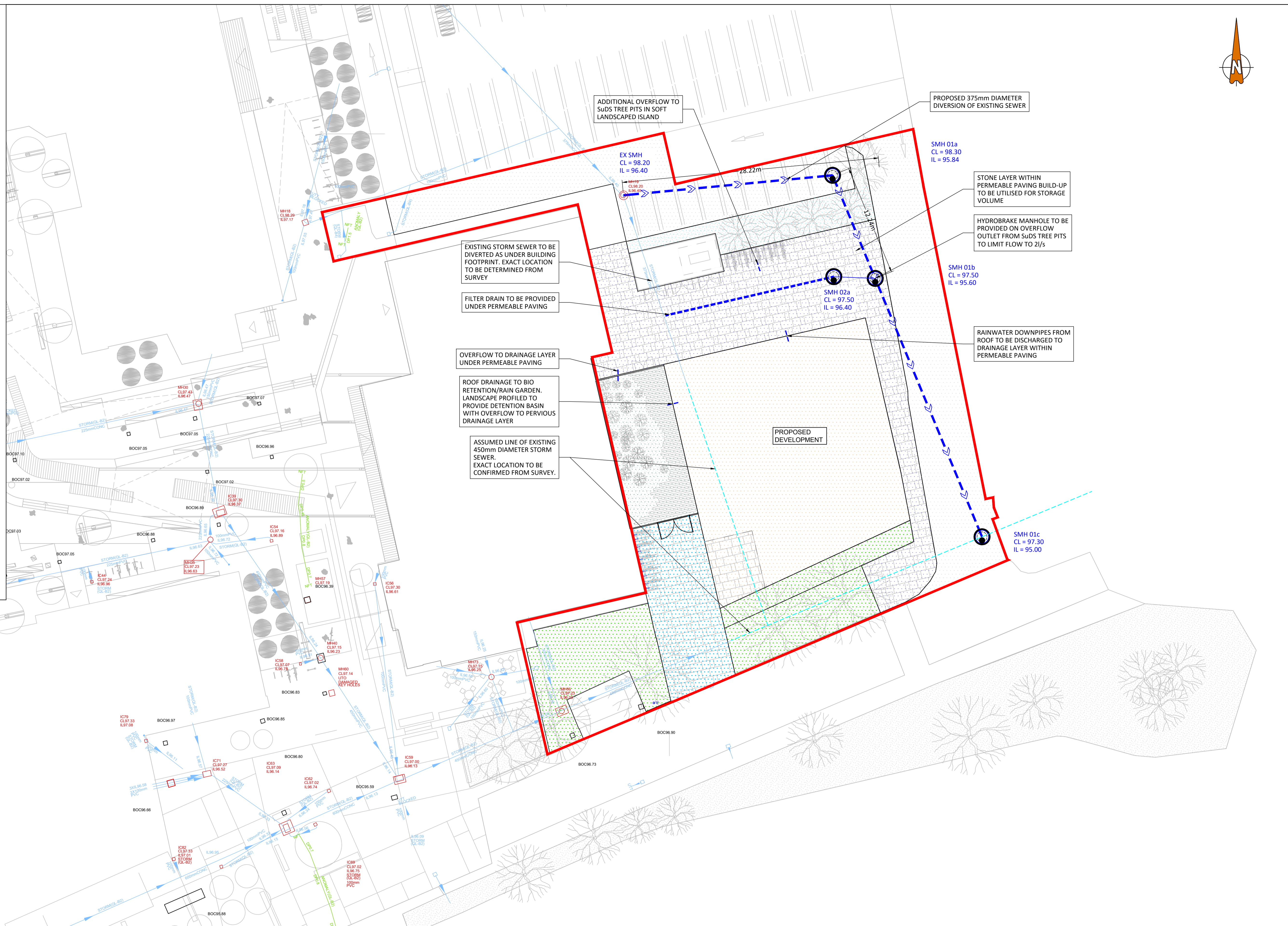
## Appendix E **STORM DRAINAGE PROPOSAL**



**LEGEND**

SITE BOUNDARY	
EXISTING STORM DRAINAGE	
ASSUMED EXISTING STORM DRAINAGE	
PROPOSED STORM DRAINAGE 225Ø UNO	
PROPOSED FILTER DRAIN 225Ø UNO	
PROPOSED STORM MANHOLE	
AREA OF PERMEABLE PAVING	
SUDS TREE PITS	
PROPOSED SOFT LANDSCAPING	
PROPOSED RAIN GARDEN	
EXISTING ROAD TO BE RETAINED	

- NOTES**
1. ALL NOTED LEVELS ARE TO ORDNANCE DATUM, MALIN HEAD.
  2. REFER TO ARCHITECT'S LAYOUT FOR ALL SET-OUT INFORMATION.
  3. ALL SURFACE WATER DRAINAGE IS TO BE INSTALLED IN ACCORDANCE WITH THE GREATER DUBLIN REGION CODE OF PRACTICE FOR DRAINAGE WORKS, THE BUILDING REGULATIONS PART H AND THE SITE DEVELOPMENT SPECIFICATION.
  4. ALL DRAINAGE COVER LEVELS ARE TO BE COORDINATED WITH THE PROPOSED ROAD DESIGN LEVELS AND ARCHITECT DESIGN FINISH DETAILS.
  5. ALL CONNECTIONS TO NEW DRAINAGE NETWORKS ARE TO BE MADE AT AN ANGLE OF 90° OR IN THE DIRECTION OF FLOW.
  6. THE CONTRACTOR IS TO VERIFY INVERT LEVEL AT PROPOSED CONNECTION TO EXISTING SEWERS, PRIOR TO ANY OTHER WORKS BEING CARRIED OUT, AND MAKE ANY DISCREPANCIES KNOWN TO THE ENGINEER.
  7. THE CONTRACTOR IS RESPONSIBLE FOR CONFIRMATION OF PRESENCE ALL EXISTING UTILITIES, IF ANY, ALONG ROUTE OF PROPOSED DRAINAGE NETWORKS - BY INTRUSIVE INVESTIGATION OR EQUAL.
  8. EXISTING PUBLIC SEWER TO BE JET CLEANED AND CCTV SURVEYED PRIOR TO, AND AFTER PROPOSED CONNECTIONS FROM NEW NETWORK.
  9. ALL NEW DRAINAGE INFRASTRUCTURE TO BE JET CLEANED AND CCTV SURVEYED, WITH ANY NOTED DEFECTS REMEDIATED, ON COMPLETION OF WORKS, TO THE SATISFACTION OF THE LOCAL AUTHORITY.
  10. ALL COVER LEVELS ARE TO BE COORDINATED WITH ROAD DESIGN LEVELS AND ARCHITECT'S PROPOSED LEVELS.
  11. ALL DISCHARGE MANHOLES TO BE VENTED.
  12. ALL GULLIES TO BE TRAPPED.
  13. AS CONSTRUCTED DRAWING AND MODEL TO BE PROVIDED ON COMPLETION OF ALL WORKS.
  14. ALL NEW PIPE WORK TO BE UPVC PIPE WORK IN ACCORDANCE WITH REQUIREMENTS OF SDCC AND IRISH WATER UNLESS NOTED OTHERWISE.



- THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DESIGN TEAM DRAWINGS AND SPECIFICATIONS.
- FOR SETTING OUT REFER TO ARCHITECT'S DRAWINGS. DO NOT SCALE THIS DRAWING. USE FIGURED DIMENSIONS ONLY.
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Rev No.	Date	Revision Note	Drn by	Chkd by
P01	02.08.23	SUITABLE FOR STAGE APPROVAL	MC	IC
P02	03.08.23	SUITABLE FOR STAGE APPROVAL	MC	IC

Rev No.	Date	Revision Note	Drn by	Chkd by



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

Client: SOUTH DUBLIN COUNTY COUNCIL								
Project: TALLAGHT HERITAGE CENTRE								
Title: PROPOSED STORM DRAINAGE LAYOUT								
Code	Originator	Zone	Level	Type	Role	Number	Status	Revision
M1381	OCSC	XX	XX	DR	C	0500	S4	P02
Date: JULY '23 Scale @ A1: 1:200		Drn by: MC		Chkd by: IC		Aprvd by: AH		

## Appendix F **PROPOSED FOUL DRAINAGE LAYOUT**

**LEGEND**

EXISTING FOUL DRAINAGE ———

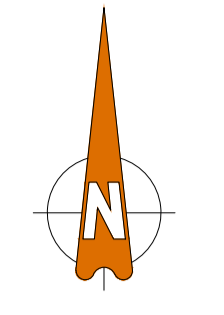
EXISTING FOUL DRAINAGE ———>

ASSUMED EXISTING FOUL DRAINAGE - - - - -

PROPOSED FOUL DRAINAGE ———

FOUL MANHOLE

- NOTES**
1. ALL NOTED LEVELS ARE TO ORDNANCE DATUM, MALIN HEAD.
  2. REFER TO ARCHITECT'S LAYOUT FOR ALL SET-OUT INFORMATION.
  3. ALL WASTEWATER DRAINAGE IS TO BE INSTALLED IN ACCORDANCE WITH THE IRISH WATER CODE OF PRACTICE FOR WASTEWATER INFRASTRUCTURE, THE BUILDING REGULATIONS PART H AND THE SITE DEVELOPMENT SPECIFICATION.
  4. ALL DRAINAGE COVER LEVELS ARE TO BE COORDINATED WITH THE PROPOSED ROAD DESIGN LEVELS AND ARCHITECT DESIGN FINISH DETAILS.
  5. ALL CONNECTIONS TO NEW DRAINAGE NETWORKS ARE TO BE MADE AT AN ANGLE OF 90° OR IN THE DIRECTION OF FLOW.
  6. THE CONTRACTOR IS TO VERIFY INVERT LEVEL AT PROPOSED CONNECTION TO EXISTING SEWERS, PRIOR TO ANY OTHER WORKS BEING CARRIED OUT, AND MAKE ANY DISCREPANCIES KNOWN TO THE ENGINEER.
  7. THE CONTRACTOR IS RESPONSIBLE FOR CONFIRMATION OF PRESENCE ALL EXISTING UTILITIES, IF ANY, ALONG ROUTE OF PROPOSED DRAINAGE NETWORKS - BY INTRUSIVE INVESTIGATION OR EQUAL.
  8. EXISTING PUBLIC SEWER TO BE JET CLEANED AND CCTV SURVEYED PRIOR TO, AND AFTER PROPOSED CONNECTIONS FROM NEW NETWORK.
  9. ALL NEW DRAINAGE INFRASTRUCTURE TO BE JET CLEANED AND CCTV SURVEYED, WITH ANY NOTED DEFECTS REMEDIATED, ON COMPLETION OF WORKS, TO THE SATISFACTION OF THE LOCAL AUTHORITY.
  10. ALL COVER LEVELS ARE TO BE COORDINATED WITH ROAD DESIGN LEVELS AND ARCHITECTS PROPOSED LEVELS.
  11. ALL DISCHARGE MANHOLES TO BE VENTED.
  12. AS CONSTRUCTED DRAWING AND MODEL TO BE PROVIDED ON COMPLETION OF ALL WORKS.
  13. ALL NEW PIPE WORK TO BE uPVC PIPE WORK IN ACCORDANCE WITH REQUIREMENTS OF SDCC AND IRISH WATER UNLESS NOTED OTHERWISE.



EXISTING FOUL SEWER TO BE DIVERTED AS UNDER BUILDING FOOTPRINT. EXACT LOCATION TO BE DETERMINED FROM SURVEY

150mm DIAMETER SEWER AT 1 IN 100 TO MATCH EXISTING PIPE GRADIENT

150mm DIAMETER SEWER AT 1 IN 100 TO MATCH EXISTING PIPE GRADIENT

PROPOSED NEW FOUL DRAINAGE TO SERVE DEVELOPMENT. 150mm DIAMETER SEWER AT 1 IN 40 FALL

FMH 01c  
CL = 97.40  
IL = 94.45

FMH 01d  
CL = 97.40  
IL = 94.40

NEW FOUL MANHOLE TO BE CONSTRUCTED ON EXISTING FOUL LINE TO ALLOW FOR DIVERSION AND TIE-IN OF DEVELOPMENT

EXISTING FOUL SEWER TO BE DIVERTED AS UNDER BUILDING FOOTPRINT. EXACT LOCATION TO BE DETERMINED FROM SURVEY

225mm DIAMETER SEWER AT 1 IN 110 TO MATCH EXISTING PIPE GRADIENT

EXISTING MANHOLE TO BE REBENCHED AND ALTERED TO SUIT PROPOSED SEWER DIVERSION

- THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DESIGN TEAM DRAWINGS AND SPECIFICATIONS.
- FOR SETTING OUT REFER TO ARCHITECT'S DRAWINGS. DO NOT SCALE THIS DRAWING. USE FIGURED DIMENSIONS ONLY.
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Rev No.	Date	Revision Note	Drn by	Chkd by
P01	01.08.23	SUITABLE FOR INFORMATION	MC	IC
P02	03.08.23	SUITABLE FOR STAGE APPROVAL	MC	IC

Rev No.	Date	Revision Note	Drn by	Chkd by



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Dublin London Belfast Galway Cork Birmingham

Client: SOUTH DUBLIN COUNTY COUNCIL  
Project: TALLAGHT HERITAGE CENTRE  
Title: PROPOSED FOUL DRAINAGE LAYOUT

Code	Originator	Zone	Level	Type	Role	Number	Status	Revision
M1381	OCSC	XX	XX	DR	C	0501	S4	P02

Date: AUG '23 Scale @ A1:1:200 Drn by: MC Chkd by: IC Aprvd by: AH

## Appendix G **IRISH WATER PRE-CONNECTION ENQUIRY**

# Pre-connection enquiry form

## Business developments, mixed use developments, housing developments



This form is to be filled out by applicants enquiring about the feasibility of a water and/or wastewater connection to Irish Water infrastructure. If completing this form by hand, please use BLOCK CAPITALS and black ink. Please note that this is a digital PDF form and can be filled in electronically

Please refer to the **Guide to completing the pre-connection enquiry form** on page 14 of this document when completing the form.

**\* Denotes mandatory/ required field. Please note, if mandatory fields are not completed the application will be returned.**

### Section A | Applicant details

#### 1 \*Applicant details:

Registered company name (if applicable):

Trading name (if applicable):

Company registration number (if applicable):

Parent company registered company name (if applicable):

Parent company registration number (if applicable):

If you are not a registered company/business, please provide the applicant's name:

\*Contact name:

\*Postal address:

\*Eircode:

Please provide either a landline or a mobile number

Landline:

\*Mobile:

\*Email:

**2 Agent details (if applicable):**

The fields marked with \* in this section are mandatory if using an agent

\*Contact name:

Company name (if applicable):

\*Postal address:

\*Eircode:

Please provide either a landline or a mobile number

Landline:

\*Mobile

\*Email:

**3 \*Please indicate whether it is the applicant or agent who should receive future correspondence in relation to the enquiry:**

Applicant

Agent

**Section B | Site details**

**4 \*Site address 1 (include Site name/Building name/Building number):**

\*Address 2

\*Address 3

\*City/Town

\*County  Eircode

**5 \*Irish Grid co-ordinates (proposed connection point):**

Eastings (X)  Northings (Y)

Note: Values for Eastings must be between 015,900 and 340,000. Northings, between 029,000 and 362,000  
Eg. co-ordinates of GPO, O'Connell St., Dublin: E(X) 315,878 N(Y) 234,619

**6 \*Local Authority where proposed development is located:**

**7 \*Has full planning permission been granted?**

Yes  No

If 'Yes', please provide the current or previous planning reference number:







## Section D | Water connection and demand details

- 13 **\*Is there an existing connection to public water mains at the site?** Yes  No
- 13.1 If yes, is this enquiry for an additional connection to one already installed? Yes  No
- 13.2 If yes, is this enquiry to increase the size of an existing connection? Yes  No

14 **Approximate date water connection is required:** / /

15 **\*What diameter of water connection is required to service the development?**  mm

16 **\*Is more than one connection required to the public infrastructure to service this development?** Yes  No   
 If 'Yes', how many?

17 **Please indicate the business water demand (shops, offices, schools, hotels, restaurants, etc.):**

Post-development peak hour water demand		I/s
Post-development average hour water demand		I/s

Please include calculations on the attached sheet provided. Where there will be a daily/weekly/seasonal variation in the water demand profile, please provide all such details.

18 **Please indicate the industrial water demand (industry-specific water requirements):**

Post-development peak hour water demand		I/s
Post-development average hour water demand		I/s

Please include calculations on the attached sheet provided. Where there will be a daily/weekly/seasonal variation in the water demand profile, please provide all such details.

19 **What is the existing ground level at the property boundary at connection point (if known) above Malin Head Ordnance Datum?**  m

20 **What is the highest finished floor level of the proposed development above Malin Head Ordnance Datum?**  m

21 **Is on-site water storage being provided?** Yes  No

Please include calculations on the attached sheet provided.







Please note that if you are sending us your application form and any associated documentation by email, the maximum file size that we can receive in any one email is 35MB.

**Please note, if mandatory fields are not completed the application will be returned.**

Irish Water is subject to the provisions of the Freedom of Information Act 2014 (“FOIA”) and the codes of practice issued under FOIA as may be amended, updated or replaced from time to time. The FOIA enables members of the public to obtain access to records held by public bodies subject to certain exemptions such as where the requested records may not be released, for example to protect another individual’s privacy rights or to protect commercially sensitive information. Please clearly label any document or part thereof which contains commercially sensitive information. Irish Water accepts no responsibility for any loss or damage arising as a result of its processing of freedom of information requests.

## Calculations

Water demand

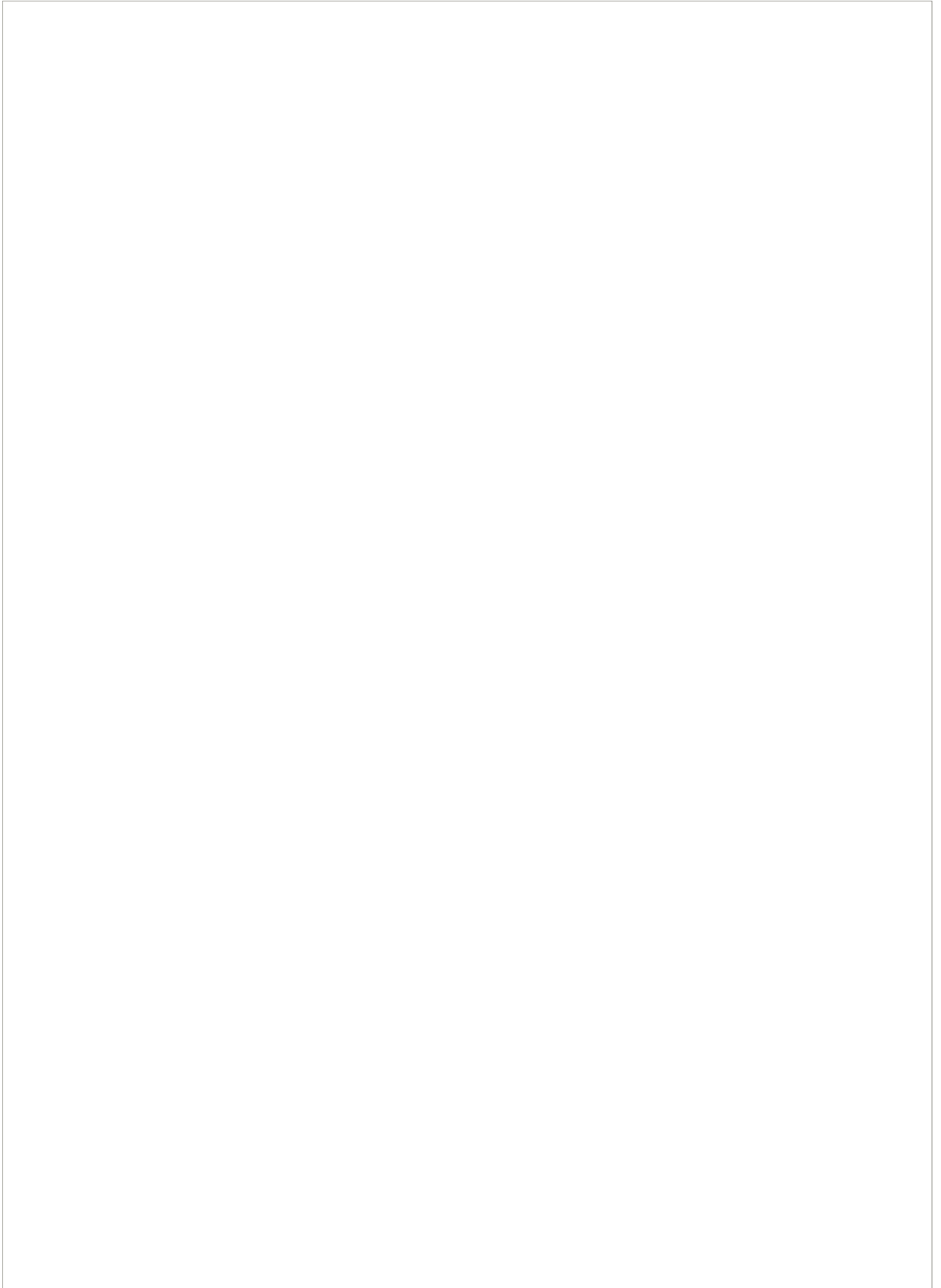
## On-site storage



## Fire flow requirements









## Guide to completing the pre-connection enquiry form

This form should be completed by applicants enquiring about the feasibility of a water and/or wastewater connection to Irish Water infrastructure.

The Irish Water Codes of Practice are available at [www.water.ie](http://www.water.ie) for reference.

### Section A | Applicant Details

- Question 1:** This question requires the applicant or company enquiring about the feasibility of a connection to identify themselves, their postal address, and to provide their contact details.
- Question 2:** If the applicant has employed a consulting engineer or an agent to manage the enquiry on their behalf, the agent's address and contact details should be recorded here.
- Question 3:** Please indicate whether it is the applicant or the agent who should receive future correspondence in relation to the enquiry.

### Section B | Site details

- Question 4:** This is the address of the site requiring the water/wastewater service connection and for which this enquiry is being made.
- Question 5:** Please provide the Irish Grid co-ordinates of the proposed site. Irish grid positions on maps are expressed in two dimensions as Eastings (E or X) and Northings (N or Y) relative to an origin. You will find these coordinates on your Ordnance Survey map which is required to be submitted with an application.
- Question 6:** Please identify the Local Authority that is or will be dealing with your planning application, for example Cork City Council.
- Question 7:** Please indicate if planning permission has been granted for this application, and if so, please provide the planning permission reference number.
- Question 8:** Please indicate if this development is affiliated with a government body/agency, and if so, specify

### Section C | Development details

- Question 9:** Please specify the number of different property/premises types by filling in the tables provided.
- Question 9.1:** Please provide additional details if your proposed business use are in the Food Processing, Industrial unit/ Manufacturing, Sports Facility or Other Categories.
- Question 9.2:** Please indicate the maximum expected occupancy in numbers of people according to the proposed development you selected.
- Question 10:** Please indicate the approximate commencement date of works on the development.
- Question 11:** Please indicate if a phased building approach is to be adopted when developing the site. If so, please provide details of the phase master-plan and the proposed variation in water demand/wastewater discharge as a result of the phasing of the development.
- Question 12:** Please indicate the type of connection required by ticking the appropriate box and proceed to complete the appropriate section or sections.

### Section D | Water connection and demand details

- Question 13:** Please indicate if a water connection already exists for this site.
- Question 13.1:** Please indicate if this enquiry concerns an additional connection to one already installed on the site.
- Question 13.2:** Please indicate if you are proposing to upgrade the water connection to facilitate an increase in water demand. Irish Water will determine what impact this will have on our infrastructure.
- Question 14:** Please indicate the approximate date that the proposed connection to the water infrastructure will be required.
- Question 15:** Please indicate what diameter of water connection is required to service this development.

- Question 16:** Please indicate if more than one connection is required to service this development. Please note that the connection size provided may be used to determine the connection charge.
- Question 17:** If this connection enquiry concerns a business premises, please provide calculations for the water demand and include your calculations on the calculation sheet provided. Business premises include shops, offices, hotels, schools, etc. Demand rates (peak and average) are site specific. Average demand is the total daily volume divided by a 24-hour time period and expressed in litres per second (l/s). For design purposes, please refer to the Irish Water Codes of Practice for Water Infrastructure.
- Question 18:** If this connection enquiry is for an industrial premises, please calculate the water demand and include your calculations on the calculation sheet provided. Demand rates (peak and average) are site specific. Average demand is the total daily volume divided by a 24-hour time period and expressed in litres per second (l/s). The peak demand for sizing of the pipe network will be as per the specific business production requirements. For design purposes, please refer to the Irish Water Codes of Practice for Water Infrastructure.
- Question 19:** Please specify the ground level at the location where connection to the public water mains will be made. This is required in order to determine if there is sufficient pressure in the existing water infrastructure to serve your proposed development. Levels should be quoted in metres relative to Malin Head Ordnance Datum.
- Question 20:** Please specify the highest finished floor level on site. This is required in order to determine if there is sufficient pressure in the existing water infrastructure to serve your proposed development. Levels should be quoted in metres relative to Malin Head Ordnance Datum.
- Question 21:** If storage is required, water storage capacity of 24-hour water demand must usually be provided at the proposed site. In some cases, 24-hour storage capacity may not be required, for example 24-hour storage for a domestic house would be provided in an attic storage tank. Please calculate the 24-hour water storage requirements and include your calculations on the attached sheet provided. Please also confirm that on-site storage is being provided by ticking the appropriate box.
- Question 22:** The water supply system shall be designed and constructed to reliably convey the water flows that are required of the development including fire flow requirements by the Fire Authority. The Fire Authority will provide the requirement for fire flow rates that the water supply system will have to carry. Please note that while flows in excess of your required demand may be achieved in the Irish Water network and could be utilised in the event of a fire, Irish Water cannot guarantee a flow rate to meet your fire flow requirement. To guarantee a flow to meet the Fire Authority requirements, you should provide adequate fire storage capacity within your development. Please include your calculations on the attached sheet provided, and further provide confirmation of the Fire Authority requirements.
- Question 23:** Please identify proposed additional water supply sources, that is, do you intend to connect to the public water mains or the public mains and supplement from other sources? If supplementing public water supply with a supply from another source, please provide details as to how the potable water supply is to be protected from cross contamination at the premises.

## **Section E | Wastewater connection and discharge details**

- Question 24:** Please indicate if a wastewater connection to a public sewer already exists for this site.
- Question 24.1:** Please indicate if this enquiry relates to an additional wastewater connection to one already installed.
- Question 24.2:** Please indicate if you are proposing to upgrade the wastewater connection to facilitate an increased discharge. Irish Water will determine what impact this will have on our infrastructure.
- Question 25:** Please specify the approximate date that the proposed connection to the wastewater infrastructure will be required.
- Question 26:** Please indicate what diameter of wastewater connection is required to service this development.
- Question 27:** Please indicate if more than one connection is required to service this development. Please indicate number required.
- Question 28:** If this enquiry relates to a business premises, please provide calculations for the wastewater discharge and include your calculations on the attached sheet provided. Business premises include shops, offices, hotels, schools, etc. Discharge rates (peak and average) are site specific. Average discharge is the total daily volume divided by a 24-hour time period and expressed in litres per second (l/s). For design purposes, please refer to the Irish Water Codes of Practice for Wastewater Infrastructure.

- Question 29:** If this enquiry relates to an industrial premises, please provide calculations for the wastewater discharge and include your calculations on the calculation sheet provided. Discharge rates (peak and average) are site specific. Average discharge is the total daily volume divided by a 24-hour time period and expressed in litres per second (l/s). The peak discharge for sizing of the pipe network will be as per the specific business production requirements. For design purposes, please refer to the Irish Water Codes of Practice for Wastewater Infrastructure.
- Question 30:** Please specify the maximum and average concentrations and the maximum daily load of each of the wastewater characteristics listed in the wastewater organic load table (if not domestic effluent), and also specify if any other significant concentrations are expected in the effluent. Please complete the table and provide additional supporting documentation if relevant. Note that the concentration shall be in mg/l and the load shall be in kg/day. Note that for business premises (shops, offices, schools, hotels, etc.) for which only domestic effluent will be discharged (excluding discharge from canteens/restaurants which would require a Trade Effluent Discharge licence), there is no need to complete this question.
- Question 31:** In exceptional circumstances, such as brownfield sites, where the only practical outlet for storm/surface water is to a combined sewer, Irish Water will consider permitting a restricted attenuated flow to the combined sewer. Storm/surface water will only be accepted from brownfield sites that already have a storm/surface water connection to a combined sewer and the applicant must demonstrate how the storm/surface water flow from the proposed site is minimised using sustainable urban drainage system (SUDS). This type of connection will only be considered on a case by case basis. Please advise if the proposed development intends discharging surface water to the combined wastewater collection system.
- Question 32:** Please specify if the development needs to pump its wastewater discharge to gain access to Irish Water infrastructure.
- Question 33:** Please specify the ground level at the location where connection to the public sewer will be made. This is required to determine if the development can be connected to the public sewer via gravity discharge. Levels should be quoted in metres relative to Malin Head Ordnance Datum.
- Question 34:** Please specify the lowest floor level of the proposed development. This is required in order to determine if the development can be connected to the public sewer via gravity discharge. Levels should be quoted in metres relative to Malin Head Ordnance Datum.
- Question 35:** Please specify the proposed invert level of the pipe exiting the property to the public road.

## **Section F | Supporting documentation**

Please provide additional information as listed.

## **Section G | Declaration**

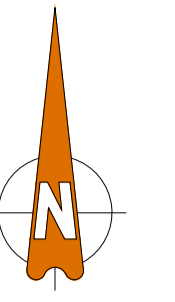
Please review the declaration, sign, and return the completed application form to Irish Water by email or by post using the contact details provided in Section G.

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## Appendix H **PROPOSED WATERMAIN LAYOUT**





**LEGEND**

SITE BOUNDARY	
EXISTING WATERMAIN FROM SURVEY	
EXISTING WATERMAIN FROM RECORDS	
PROPOSED WATERMAIN	
PROPOSED SLUICE VALVE	
PROPOSED WATER METER	

- NOTES:**
1. ALL NOTED LEVELS ARE TO ORDNANCE DATUM;
  2. REFER TO ARCHITECT'S LAYOUT FOR ALL SET-OUT INFORMATION;
  3. REFER TO ARCHITECT DESIGN DRAWINGS FOR DETAILS OF PROPOSED SURFACE FINISHES AND LANDSCAPING;
  4. ALL NEW WATER INFRASTRUCTURE IS TO BE INSTALLED IN ACCORDANCE WITH IRISH WATER CODE OF PRACTICE FOR WATER INFRASTRUCTURE AND STANDARD DETAILS;
  5. REFER STANDARD DETAIL STD-W-13 FOR PIPE BEDDING REQUIREMENTS;
  6. ALL STRUCTURAL WALL PENETRATIONS SETTING OUT (VERTICAL AND HORIZONTAL) TO BE CONFIRMED BY ARCHITECT, M&E ENGINEER AND STRUCTURAL ENGINEER;
  7. REFER TO M&E DESIGN LAYOUTS FOR DETAILS OF INTERNAL WATERMAIN DISTRIBUTION, CONNECTIONS AND METERING;
  8. BULK WATER METER IS TO BE SUPPLIED AND FITTED BY IRISH WATER;
  9. THE CONTRACTOR IS RESPONSIBLE FOR CONFIRMATION OF PRESENCE ALL EXISTING UTILITIES, IF ANY, ALONG ROUTE OF PROPOSED WATERMAIN NETWORKS - BY INTRUSIVE INVESTIGATION OR EQUAL;
  10. ALL NEW WATERMAIN INFRASTRUCTURE TO BE CHLORINATED AND SWAB TESTED AND SUBJECT TO ALL IRISH WATER TESTING REQUIREMENTS, AS PER THEIR CODE OF PRACTICE FOR WATER INFRASTRUCTURE;
  11. SURVEYED AS-BUILT DESIGN DRAWING, INDICATING ALL INSTALLED WATERMAIN INFRASTRUCTURE TO BE PROVIDED ON COMPLETION, BY THE CONTRACTOR;
  12. ALL COVER LEVELS ARE TO BE COORDINATED WITH ROAD DESIGN LEVELS AND ARCHITECTS PROPOSED LEVELS.



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

Rev No.	Date	Revision Note	Drn by	Chkd by
P01	02.08.23	SUITABLE FOR STAGE APPROVAL	MC	IC
P02	03.08.23	SUITABLE FOR STAGE APPROVAL	MC	IC

Rev No.	Date	Revision Note	Drn by	Chkd by



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Client: SOUTH DUBLIN COUNTY COUNCIL								
Project: TALLAGHT HERITAGE CENTRE								
Title: PROPOSED WATERMAIN LAYOUT								
Code	Originator	Zone	Level	Type	Role	Number	Status	Revision
M1381	OCSC	XX	XX	DR	C	0550	S4	P02
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