

Project

Rosemount House

Report Title

Infrastructure Design Report

Client

Walls Construction Ltd

INFRASTRUCTURE



DBFL CONSULTING ENGINEERS

August 2022

Job Title: Rosemount House

Job Number: 210100

Report Title: Infrastructure Design Report

Report Reference: 210100-DBFL-CS-SP-RP-C-001

Author: Seán Byrne

Approved by: Brendan Keogh

Date: August 2022

DBFL Consulting Engineers

Dublin Office

Ormond House
Ormond Quay
Dublin 7

Tel 01 4004000
Email info@dbfl.ie
Web www.dbfl.ie

Waterford Office

Suite 8b, The Atrium,
Maritana Gate, Canada
Street,
Waterford. X91W028

Tel 051 309500
Email info@dbfl.ie
Web www.dbfl.ie

Cork Office

14 South Mall
Cork, T12CT91

Tel 021 202 4538
Email info@dbfl.ie
Web www.dbfl.ie

Revision	Issue Date	Description	Prepared	Reviewed	Approved
Draft	22.10.2021	SHD Stage 2 Planning	ASM	BCM	BCM
P01	17/12/2021	SHD Stage 2 Planning	JLB	BCM	BCM
P02	08/08/2022	SHD Application	SB	BK	

TABLE OF CONTENTS

1.0 INTRODUCTION	1
1.1 Background	1
1.2 Objectives.....	1
1.3 Development Proposals	2
1.4 Site Characteristics	2
1.5 Ground Conditions	2
2.0 SITE ACCESS	3
2.1 Vehicle, Pedestrian and Cycle Access.....	3
2.2 Traffic & Transportation.....	4
3.0 SURFACE WATER DRAINAGE	5
3.1 Existing Surface Water Drainage Infrastructure.....	5
3.2 Basis of Design	6
3.3 Climate Change.....	13
3.4 Flood Risk	13
4.0 FOUL DRAINAGE	14
5.0 WATER SUPPLY	17

APPENDICES

- Appendix A . Irish Water Network Plan**
- Appendix B . Correspondence with Irish Water**
- Appendix C . Attenuation Calculations**
- Appendix D . Letter Regarding Access to Services**

1.0 INTRODUCTION

1.1 Background

DBFL were commissioned to undertake an Infrastructure Design Report (IDR), to accompany an SHD planning application for a proposed mixed-use development of 176 apartments with associated residential amenities, office space and café at Rosemount House, Northern Cross, Malahide Road, Dublin 17 (site area approx. 0.6462 ha).

The subject site located within the Clongriffin – Belmayne Local Area Plan and is approx. 9km northeast of Dublin City Centre.



Figure 1-1: Site Location (Site Boundary Indicative Only)

1.2 Objectives

This report provides information regarding the existing site and addresses the infrastructural demands of the proposed development including the following:

- Site Access
- Stormwater Management Strategy
- Foul Drainage Strategy
- Water Supply

1.3 Development Proposals

The proposed development consists of the demolition of the existing 3-storey office block on site and the construction of a mixed-use block of up to 9 storeys over basement in a 4-sided building around a central courtyard area, consisting of 176 no. apartments with associated residential amenities, office (1,050.8m²), and café use (143.7 m²).

The proposed development also includes provision of surface water drainage, foul drainage and water supply infrastructure.

1.4 Site Characteristics

The proposed development site is situated in Northern Cross, Dublin 17 (approx. 9km northeast of Dublin City Centre and approx. 4.5km southeast of Dublin Airport) and is currently occupied by a three-storey office building and associated ancillary facilities.

The site is bound by Mayne River Avenue to the west and south, a site to the north ("*Mylan Carpark*") in use as a building compound for the construction of the permitted development to the east (ABP Ref.: 307887-20).

Generally, the site falls from west to the east. The existing topography levels range from 27.9m AOD in the south-west corner of the site to circa 26.2m AOD in the north-east corner of the site.

The topographical survey has been included as a background in the DBFL Roads and Site Services drawings.

1.5 Ground Conditions

Ground Investigations Ireland carried out site investigations dated July 2022 (Report No. 11468-02-22 are included in Appendix B of SSFRA). Although the majority of the sites is paved, the topsoil layer in the verge around the periphery of the site went to a maximum depth of 0.4m BLG. Made ground which was described as described generally as brown sandy slightly gravelly CLAY with frequent cobbles and boulders extended 1.8m BGL. Below the made ground Cohesive deposits of brown sandy gravelly CLAY with occasional cobbles and boulders overlying a stiff or very stiff grey sandy gravelly CLAY with occasional cobbles and boulders where encountered.

The strength of the cohesive deposits typically increased with depth and was firm to stiff or stiff below 1.0m BGL in the majority of the exploratory holes. These deposits had some, occasional or frequent cobble and boulder content where noted on the exploratory hole logs.

1.6 Basement Impact Assessment

A Basement Impact Assessment has been completed by Byrne Looby dated July 2022 (Report No. B1935-BLP-RP-GEO-001) to determine the impact of the basement and will be included as part of this planning pack.

2.0 SITE ACCESS

2.1 Vehicle, Pedestrian and Cycle Access

Vehicle Access – Mayne River Avenue

The access point to the basement for motorised vehicles is off Mayne River Avenue (adjacent to the north-west corner of the site). The proposed basement access layout is shown on DBFL Drawings 210100-DBFL-RD-SP-DR-C-1011 (Roads Layout) and 210100-DBFL-RD-SP-DR-C-1012 (Basement Layout).

The site layout also provides for 2 No. Go-Car spaces and a set down area on Mayne River Avenue (adjacent to the site's southern boundary).

The proposed basement access achieves a visibility splay of 2.4m x 23m onto Mayne River Avenue for a 30km/h speed zone.

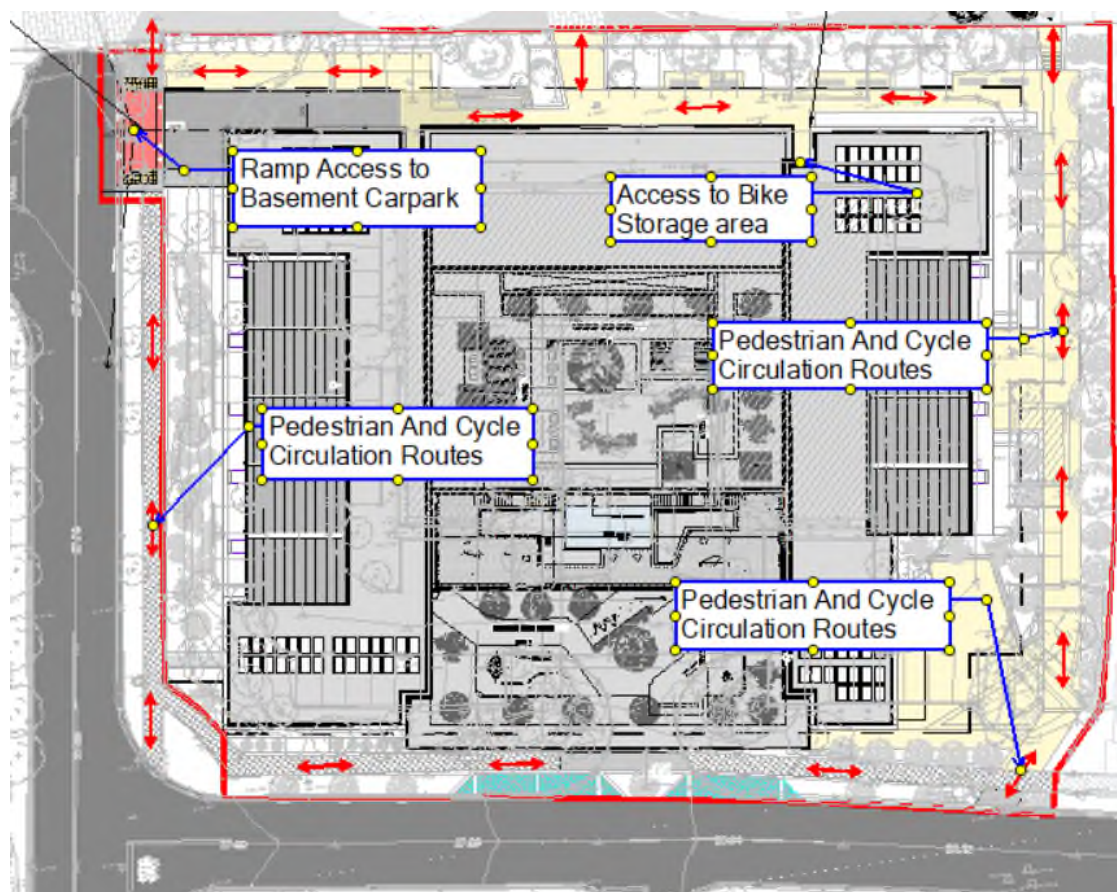


Figure 2-1 Access routes around the building

Pedestrian and Cycle Access

The proposed site layout maximises pedestrian and cycle connectivity to Mayne River Avenue (along the site's western and southern boundaries) as well as allowing for future permeability for pedestrians and cyclist to lands north and east of the site. Refer to DBFL Drawing 210100-DBFL-RD-SP-DR-C-1011.

Design Manual for Urban Roads and Streets (DMURS)

A separate DMURS Design Statement has been prepared by DBFL Consulting Engineers as part of this planning application (refer to Technical Note 210100/001)

2.2 Traffic & Transportation

A separate Traffic & Transport Assessment (TTA) has been prepared by DBFL Consulting Engineers as part of this planning application (refer to Report No. 210100-DBFL-CS-SP-RP-C-004).

3.0 SURFACE WATER DRAINAGE

3.1 Existing Surface Water Drainage Infrastructure

Surface water drainage flows from the existing 3-storey office block on the site discharge to an existing 300mm diameter surface water drain located along Mayne River Avenue (to the west of the site). This 300mm diameter surface water drain ultimately discharges to the Mayne River. Refer to Figure 3-1 and the Irish Water Network Plan included in Appendix A of this report.

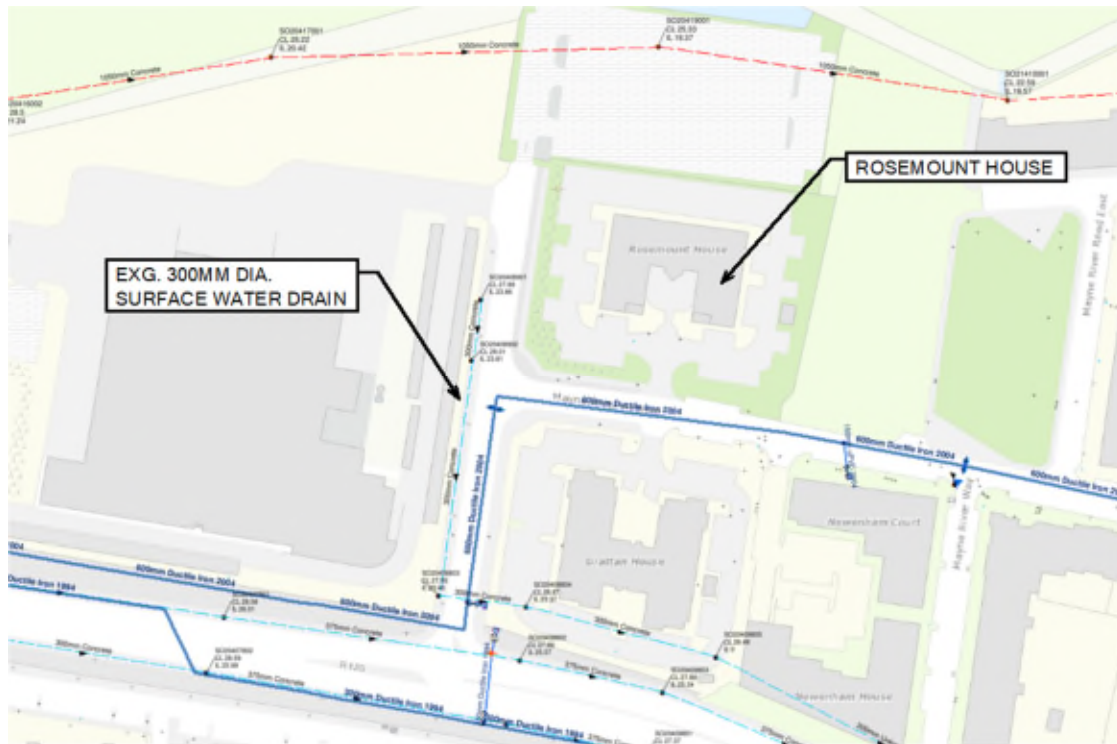


Figure 3-1: Irish Water Network Plan – Existing Surface Water Drainage Infrastructure

3.2 Basis of Design

3.2.1 General Description of Surface Water Design and SUDS Strategy

The 300mm diameter surface water drain located along Mayne River Avenue, which serves the existing development on site, will provide a suitable surface water discharge point for the proposed development.

The proposed surface water drainage network for the site is shown on Drawing 210100-DBFL-CS-SP-DR-C-1011 (Site Services Layout).

Surface water discharge rates from the proposed development will be controlled by a flow control devices and attenuation systems (underground storage and blue roofs).

The surface water strategy for the proposed development will incorporate SUDS features to reduce run-off and provide biodiversity benefits.

The first part of the SUDS treatment train for managing surface water on site allows for the roof top terraces at first, fourth and seventh floor levels to be drained via a blue roof systems. Surface water runoff from apartment roofs will be captured by the blue roof system prior to being routed to the piped surface water drainage network. Surface water runoff will be captured by the blue roof system (drainage reservoir / drainage board) prior to being routed to the piped surface water drainage network.

The proposed extent of green roof / blue roof is shown on Drawing 210100-DBFL-RD-SP-DR-C-1013.

Where feasible surface water runoff from the **site's internal street / footpath network** will be directed to the proposed pipe network via a combination of **permeable surfaces**. These SUDS measures at ground level will provide an additional element of source control, attenuation, and infiltration where possible.

Some soft **landscaped / grassed areas** are also proposed within the development which also slows surface water runoff at source.

Any incidental surface water runoff generated from the basement carpark would drain through a separate system beneath the ground slab (out falling to the proposed foul drainage network via a petrol interceptor).

As noted previously, 'Stormtech' attenuation systems are incorporated within the surface water drainage strategy and provide an additional treatment and a SUDS feature which allows infiltration to ground (although this had been assumed as zero infiltration in the attenuation calculations to simulate the worst-case scenario when soil is completely saturated). The 'Stormtech' units also allow the required attenuation volume to be

provided for the site in the 100-year design event + 20% allowance for climate change. This is in addition to the attenuated volume provided by the areas of blue roof system.

3.2.2 Compliance with Surface Water Policy

The site's surface water management infrastructure has been designed in accordance with the Greater Dublin Strategic Drainage Study (GDSDS).

The GDSDS (Vol. 2, Chapter 6.3.4) requires that the following design criteria are applied to all sites:

- *Criterion 1: River Water Quality Protection*

Satisfied by providing interception storage and treatment of run-off within SuDS features. This is satisfied using green roofs, permeable paving, tree pits, petrol interceptor and on-line storage attenuation systems.

- *Criterion 2: River Regime Protection*

Satisfied by attenuating surface water run-off in association with flow control devices prior to discharge off site at greenfield runoff rate. Site critical duration storm used to assess attenuation volume.

- *Criterion 3: Level of Service (Flooding) for the Site*

Satisfied that the site is within flood zone "C" as defined by the OPW Guidelines. Pluvial flood risk is addressed by the development being designed to accommodate surface water runoff from a 1% AEP (Annual Exceedance Probability) plus climate change (20%) as per the recommendations of the GDSDS. Planned flood routing for storms greater than 100-year return period level considered in design and development run-off contained within site. Also refer to DBFL Report No. 210100-DBFL-CS-SP-RP-C-002 SSFRA (Site Specific Flood Risk Assessment).

- *Criterion 4: River Flood Protection*

River Flood Protection – Satisfied by attenuating surface water discharge to greenfield runoff rates, addressing pluvial flood risk associated with the 1 in 100 year storm and avoiding development in flood plains.

3.2.3 Allowable Runoff Rate

Ground Conditions

Currently the Site is almost completely impermeable, in the form of the existing unattenuated surface carparking and the existing 3 story office building discharging directly onto the surface water network. As such no infiltration has been assumed for the existing site to allow for a high degree of runoff a Soil Type of 5 was chosen when calculating the allowable site discharge rate.

Allowable Runoff Rate

Qbar has been assessed based on GDSDS requirements

i.e. $Qbar(m^3/s) = 0.00108 \times (Area) 0.89(SAAR) 1.17(SOIL) 2.17$

Area – Approx. 0.646 Ha (for purposes of total surface water catchment area)

SAAR – 739mm (based on local information from Met Eireann)

SOIL – Soil Type 5(Soil Value = 0.50)

Qbar = 3.80 l/sec (equivalent to 5.88 l/sec/Ha)

3.2.4 Surface Water Drainage Design Standards

Proposed surface water drains have been designed in accordance with the Greater Dublin Strategic Drainage Study (GDSDS), the Department of the Environment's Building Regulations "Technical Guidance Document Part H Drainage and Waste Water Disposal" and BS EN 752: 2008 Drain and Sewer Systems Outside Buildings.

Design Criteria:

• Return period for pipe work design	5 years
• Return period for attenuation design	100 years
• Soil Type	5
• Allowable Outflow	3.8 l/sec
• Time of entry	4 minutes
• M5 – 60 (based on site specific rainfall data)	15.60 mm
• M5 – 2 Day (based on site specific rainfall data)	56.50 mm
• Ratio "r" (based on site specific rainfall data)	0.276
• SAAR	739 mm
• Pipe Friction (Ks)	0.6 mm
• Minimum Velocity (based on pipe flowing full)	1.0 m/s
• Rainfall Depth Factored for Climate Change	20%

Refer to Appendix C for Attenuation Design Calculations which have been carried out using Microdrainage WinDes analysis software.

3.2.5 SUDS at Level

Outlined below is a description of the SUDS methodologies proposed at roof level. The extent of SUDS methodologies at roof level have been maximised comprising a majority of the rooftop terrace area, with only areas being utilised for PV panels, lift over-runs and other roof plant not being considered for Blue roof systems. All proposed SUDS measures are in line with DCCs development plan.

The particular of blue roof systems over rooftop terrace areas to be considered are as follows:

Soft landscaped podium areas will have typical soil depths of up to 300mm to facilitate grassed areas, plants, shrubs and trees i.e. similar to a deep intensive green roof build up.

Paved areas over podium will have a free draining material within the build-up and will reduce the flow rate from these areas. A reduction in velocity will also occur as the aggregate used will slow the run-off at source.

3.2.6 SUDS at Ground Level

Noted below are the proposed reduction factors for SUDS features at ground level.

- Footpaths and access ways around the building will Draining via SUDS – 20% Reduction Factor. Traditionally paved areas will discharge via road gullies and ACO channels to the onsite suds network.
- Permeable Paving will also be provided for certain access ways and all parking offering a 50% reduction Factor
Reduction of velocity as the aggregate/filter material used in the SuDS feature (permeable paving) slows the run-off at source ultimately reduce the peak inflow for attenuation calculations.
- Soft Landscaped/Grassed Areas – 85% Reduction Factor
Grassed/ landscaped areas slows the run-off at source ultimately reducing the peak inflow for attenuation calculation.

A breakdown of the impermeable areas contributing to the surface water drainage network is included in Table 3-2 below;

3.2.7 Attenuation Calculation

Given that this is a high-density development in an existing urban environment, there is limited space for underground attenuation of surface water.

Therefore, a combination of underground attenuation was used along with additional attenuation being provided at roof level by Blue Roof Systems on the rooftop terraces.

Underground attenuation will be controlled using vortex type flow control devices (Hydrobrake or equivalent), while Blue roofs will be controlled at roof level by individual control devices.

Attenuation volumes have been calculated based on an allowable outflow runoff rate of 3.8 l/sec (refer to Section 3.2.3 above). Run-off from the proposed development will be controlled/attenuated using vortex type flow control devices (Hydrobrake or equivalent).

The large volume of the site is attenuated at roof level via the blue roofs systems which attenuates at roof level and discharges at a reduced rate to the below ground surface water network and flow control and attenuation systems, before discharging to the surface water network.

There are 3 sections of rooftop terrace which utilise a blue roof system, Table 3.1 below gives a breakdown of the volume of attenuated and the discharge rate of each:

	Roof type	Total Area (m ²)	Area Blue/Green (m ²)	Volume provided (m ³)	Discharge (L/Sec)
1st Floor Communal open space	Blue Roof (E108 System)	724	651.6	128.50	0.60
4th Floor Communal open space	Blue Roof (E108 System)	412	370.8	73.12	0.40
7th Floor Communal open space	Blue Roof (E108 System)	421	378.9	74.72	0.40
Total Volume Provided				276.34	

Table 3-1 Blue Roof Breakdown

Run-off from areas which are not attenuated via a blue roof system will be controlled using the vortex type flow control devices (Hydrobrake or equivalent) and below ground attenuated within the development that the roof areas discharge to.

Factored impermeable surfaces are indicated in in Table 3-2 below.

	Runoff Coefficients	Gross Areas (m2)	Factored Areas (m2)
Roof (Non-SUDS)	1.00	2,192	2,192
Podium (Non-SUDS)	0.80	1,105	884
Paved Areas- Draining to SUDS (Permeable paving)	0.50	304	152
Soft Landscaping	0.53	1,458	773
		5,059	4,001

Table 3-2 Factored Impermeable Surfaces

The factored impermeable area and the discharge from the blue roof was assessed in Microdrainage Source Control (Ref. Appendix C), to determine the volume of below ground storage required, this was determined to be 208m³. Table 3-3 below gives a full breakdown of all attenuation provided on site, including that provided by the Blue roof system.

Catchment Attenuation Area	Blue Roof System		Below ground attenuation and flow control			
	Discharge (L/Sec)	Storage Volume	Storage System	Maximum Allowable Outflow (L/Sec)	Storage Volume Required m³ (100 Yr.)	Storage Volume Provided m³ (100 Yr.)
1st Floor Communal open space	0.6	128.5	-	-	-	-
4th Floor Communal open space	0.4	73.12	-	-	-	-
7th Floor Communal open space	0.4	47.72	-	-	-	-
Below ground Storage	-	-	Stormtech SC740	3.8	208	211
	Total Storage at Roof level	249.34	Total below groung storage			211
	Total Storage provide on site m³					460.34

The location of the proposed surface water attenuation systems is shown on DBFL Drawings 210100-DBFL-CS-SP-DR-C-1311, 210100-DBFL-CS-SP-DR-C-1321 & 210100-DBFL-SW-SP-DR-C-3005.

Refer to Appendix C for Attenuation Design Calculations (attenuation volumes have been calculated using Microdrainage WinDes analysis software).

3.2.8 Interception and Treatment Storage

The GDSDS (Vol. 2, Table 6.3) requires interception storage to be incorporated into surface water drainage design in order to limit discharge of sediment and pollutants into the downstream surface water drainage network and receiving water courses.

This interception storage is designed to capture surface water run-off from rainfall depths of 5mm (and up to 10mm if possible).

The SuDS features included in the development (refer to Section 3.2.5 and 3.2.6) will provide the necessary interception volume required by the GDSDS (i.e. blue roofs, permeable paving, tree pits, landscaped areas, stone backfill associated with attenuation tank).

3.3 Climate Change

Surface water calculations for the development made use of rainfall values for Northern Cross, provided by Met Eireann. Rainfall intensities were increased by a factor of 20% to take account of climate change, as required by the GDSDS for surface water drainage design included surface water storage design.

3.4 Flood Risk

A separate Site-Specific Flood Risk Assessment has been prepared as part of this planning application (refer to DBFL Report No. 210100-DBFL-CS-SP-RP-C-002 SSFRA).

This flood risk assessment has been undertaken by reviewing information from the Office of Public Works (OPW) National Flood Hazard Mapping (www.floodmaps.ie) and the Eastern CFRAM Study and has been carried out in accordance with the OPW's Guidelines for Planning Authorities – The Planning System and Flood Risk Management (November 2009).

4.0 FOUL DRAINAGE

4.1 Existing Foul Drainage Infrastructure

Foul drainage flows from the existing 3-storey office block on the site discharge to the north via an existing 225mm diameter foul sewer, which in turn outfalls to existing Irish Water foul drainage infrastructure located to the north of the site. Refer to Figure 4-1 and DBFL Drawing 210100-DBFL-CS-SP-DR-C-1011.

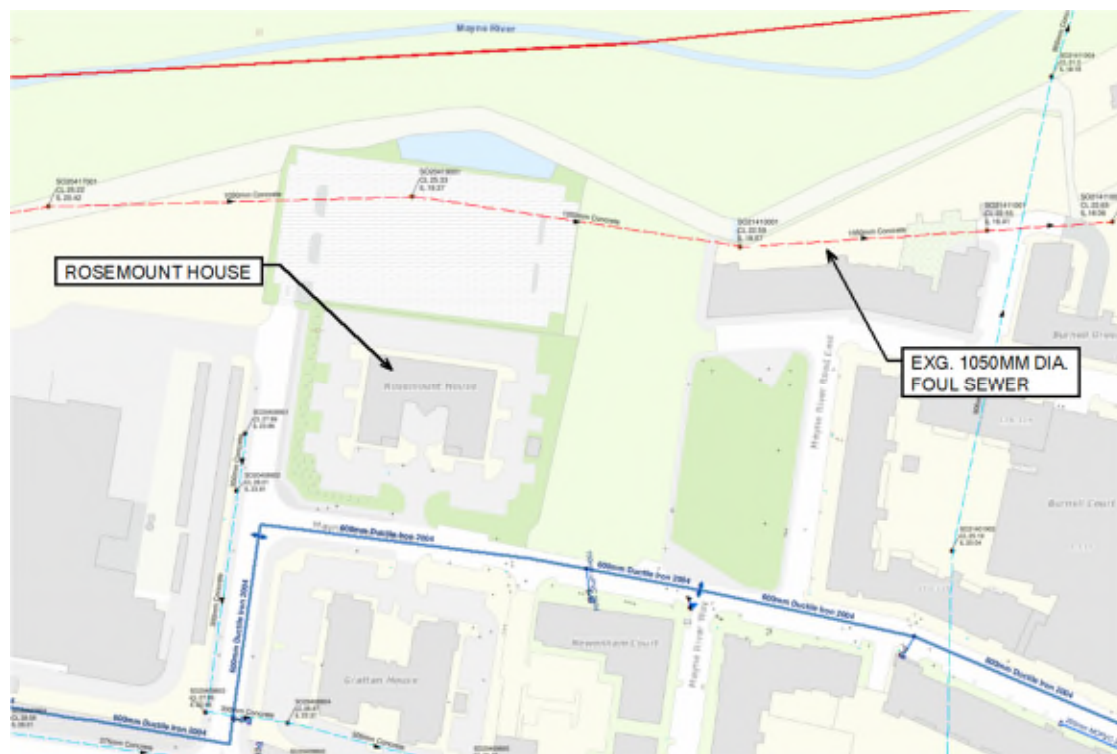


Figure 4-1 Extract from Irish Water Network Plan – Existing Foul Drainage Infrastructure

4.2 Foul Drainage Design Strategy

As noted in Section 4.1, an existing 225mm diameter foul sewer is located adjacent to the site's northern boundary, which outfalls to existing Irish Water foul drainage infrastructure located to the north of the site. Proposed foul drainage infrastructure serving the development will discharge to the existing foul drainage infrastructure noted above.

The proposed foul drainage network is shown on DBFL Drawings 210100-DBFL-CS-SP-DR-C-1011 (Site Services Layout), 210100-DBFL-CS-SP-DR-C-1012 (Slung Drainage Layout) and 210100-DBFL-CS-SP-DR-C-1013 Site Services Layout (Basement Site Services Layout).

The foul drainage network for the proposed development has been designed in accordance with the following guidelines:

- Irish Water Code of Practice for Wastewater Infrastructure
- Department of the Environment's Building Regulations "Technical Guidance Document Part H Drainage and Waste Water Disposal
- BS EN 752: 2008 Drain and Sewer Systems Outside Buildings
- IS EN 12056: Part 2 (2000) Gravity Drainage Systems Inside Buildings

4.3 **Pre-Connection Feedback from Irish Water**

Pre-connection enquiry feedback has been received from Irish Water which confirms that provision of a Wastewater Connection is "*Feasible without infrastructure upgrade by Irish Water*". Refer to Irish Water Letters dated 11th August 2021 and 6th January 2022 as included in Appendix B of this report).

Irish Water have also issued a Statement of Design Acceptance for the development, See Appendix B.

In their letter dated 6th January 2022, Irish Water advised that the proposed foul drainage connection, as shown on DBFL Drawing 210100-DBFL-CS-SP-DR-C-1011, to the existing 225mm diameter foul drainage infrastructure north of the site is "*via private land/s*"

The applicant, Walls Construction Ltd., have confirmed that they are entitled to connect to the 225mm diameter foul drainage infrastructure north of the site (as described in Section 4.1 above). Also refer to Eversheds Sutherland letter dated 22nd April which confirm this entitlement (refer to Appendix D of this report).

4.4 Foul Drainage – Environmental Impact

Wastewater discharge rates have been calculated in accordance with the guidelines outlined in Irish Water's Code of Practice for Wastewater Infrastructure.

Residential

Dry Weather Flow	446 l/dwelling /day
No. of Dwellings	176
Domestic Daily Discharge (l/day)	78,496
Post Development Average Discharge (DWF)	0.9 L/sec
Post Development Peak Discharge (6 x DWF)	5.4 L/sec

Residential Amenity, Office Space & Cafe

Assumed Occupancy (persons)	50
Flow Rate / Person / Day (litres)	50
(Based on IW Code of Practice for Wastewater Infrastructure – Appendix D, Flow Rates for Design)	
Domestic Daily Discharge (l/day)	2,500
Post Development Average Discharge	0.1 l/sec
(based on 8 hour occupancy)	
Post Development Peak Discharge	0.6 l/sec
(6 X DWF)	

5.0 WATER SUPPLY

5.1 Existing water supply

Existing water supply infrastructure (600mm diameter ductile iron watermain) is located adjacent to the site's southern boundary on Mayne River Avenue, refer to Figure 5-1 and the Irish Water Network Plan included in Appendix A of this report.

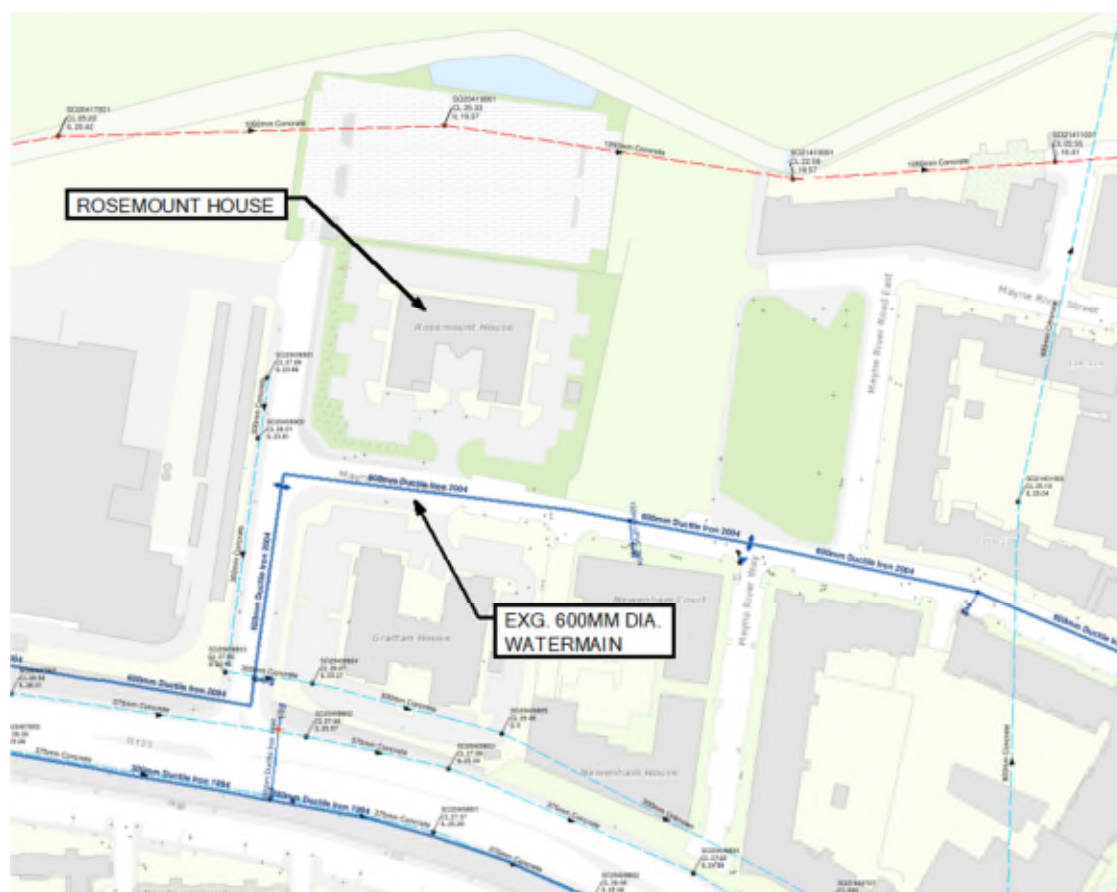


Figure 5-1 Extract from Irish Water Network Plan – Existing Watermains

5.2 Pre-Connection Feedback from Irish Water

Pre-connection enquiry feedback has been received from Irish Water which confirms that provision of a Water Connection is "*Feasible without infrastructure upgrade by Irish Water*". Refer to Irish Water Letters dated 11th August 2021 and 6th January 2022 as included in Appendix B of this report).

Irish Water have also issued a Statement of Design Acceptance for the development, See Appendix B.

In their letter dated 6th January 2022, Irish Water advised that the proposed water connection, as shown on DBFL Drawing 210100-DBFL-CS-SP-DR-C-1011, to the existing 600mm diameter watermain on Mayne River Avenue, is "*via infrastructure not taken in charge by Irish Water (Third Party Infrastructure)*"

The applicant, Walls Construction Ltd., have confirmed that they are entitled to connect to the 600mm diameter watermain on Mayne River Avenue (as described in Section 5.1 above). Also refer to Eversheds Sutherland letter dated 22nd April which confirm this entitlement (refer to Appendix D of this report).

5.3 Proposed Water Main Layout

As noted previously, an existing 600mm diameter watermain is located adjacent to the site's southern boundary on Mayne River Avenue. This watermain will provide a suitable connection for the proposed development.

Refer to DBFL Drawing 210100-DBFL-CS-SP-DR-C-1011 for the location of the proposed water connection. It is proposed to take a 180mm diameter (OD) connection off the existing 600mm diameter watermain noted above.

The proposed water main layout, connection to existing watermains and provision of a bulk flow meter have been designed in accordance with Irish Water's 'Code of Practice for Water Infrastructure' and 'Water Infrastructure Standard Details'.

Proposed watermains are to be HDPE 100 SDR17.

Hydrants on the existing infrastructure in the vicinity of the site will serve the proposed development in that the building is less than 46.0m from a hydrant in accordance with the Department of the Environment's Building Regulations "Technical Guidance Document Part B Fire Safety". Hydrants shall comply with the requirements of BS 750:2012 and shall be installed in accordance with Irish Water's Code of Practice and Standard Details.

5.4 Water Demand

Water demand has been calculated in accordance with the guidelines outlined in Irish Water's Code of Practice for Water Infrastructure.

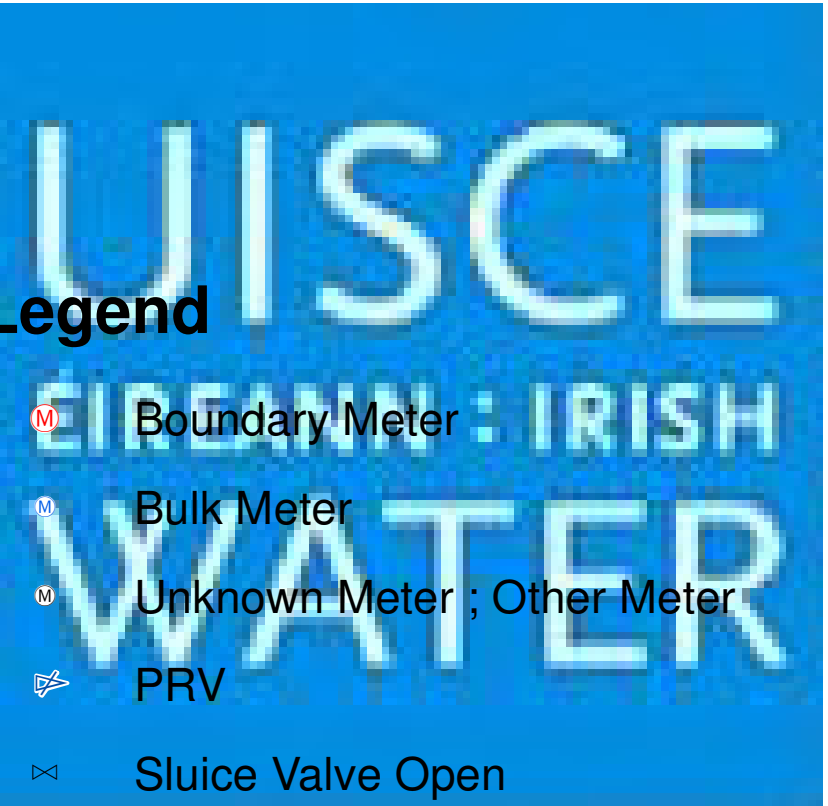
Residential

No. of Dwellings	176
Average Occupancy (Persons Per Dwelling)	2.7
Per-Capita Consumption (l/person/day)	150
Domestic Daily Demand (l/day)	71,280
Average Domestic Daily Demand (l/sec)	0.83
Post Development Average Hour Water Demand (l/sec)	1.04
(1.25 x Average Domestic Daily Demand)	
Post Development Peak Hour Water Demand (l/sec)	5.2
(5.0 x Post Development Average Hour Water Demand)	

Residential Amenity, Office Space & Cafe

Assumed Occupancy	50
Per-Capita Consumption (l/person/day)	50
(Based on IW Code of Practice for Wastewater Infrastructure – Appendix D, Flow Rates for Design)	
Domestic Daily Demand (l/day)	2,500
Average Domestic Daily Demand, based on 8 hour occupancy (l/sec)	0.10
Post Development Average Hour Water Demand (l/sec)	0.13
(1.25 x Average Domestic Daily Demand)	
Post Development Peak Hour Water Demand (l/sec)	0.65
(5.0 x Post Development Average Hour Water Demand)	

Appendix A – Irish Water Network Plans



Legend

- Boundary Meter
- Bulk Meter
- Unknown Meter ; Other Meter
- PRV
- Sluice Valve Open
- Sluice Valve Closed
- Butterfly Valve Open
- Butterfly Valve Closed
- Sluice Valve Open
- Sluice Valve Closed
- Single Air Control Valve
- Double Air Control Valve

Water Hydrants

Hydrant Function

- Fire Hydrant
- Water Kiosk
- Boundary Box
- Cap
- Other Fittings
- Tap

Water Distribution Mains

Owned By

- Irish Water
- Irish Water
- Irish Water

Sewer Manholes

Manhole Type

- Standard
- Backdrop

Sewer Inlets

Inlet Type

- Standard
- Gravity - Foul
- Surface Gravity Mains

Storm Manholes

Manhole Type

- Standard

Surface Fittings

Fitting Type

- Other; Unknown

Storm Discharge Points

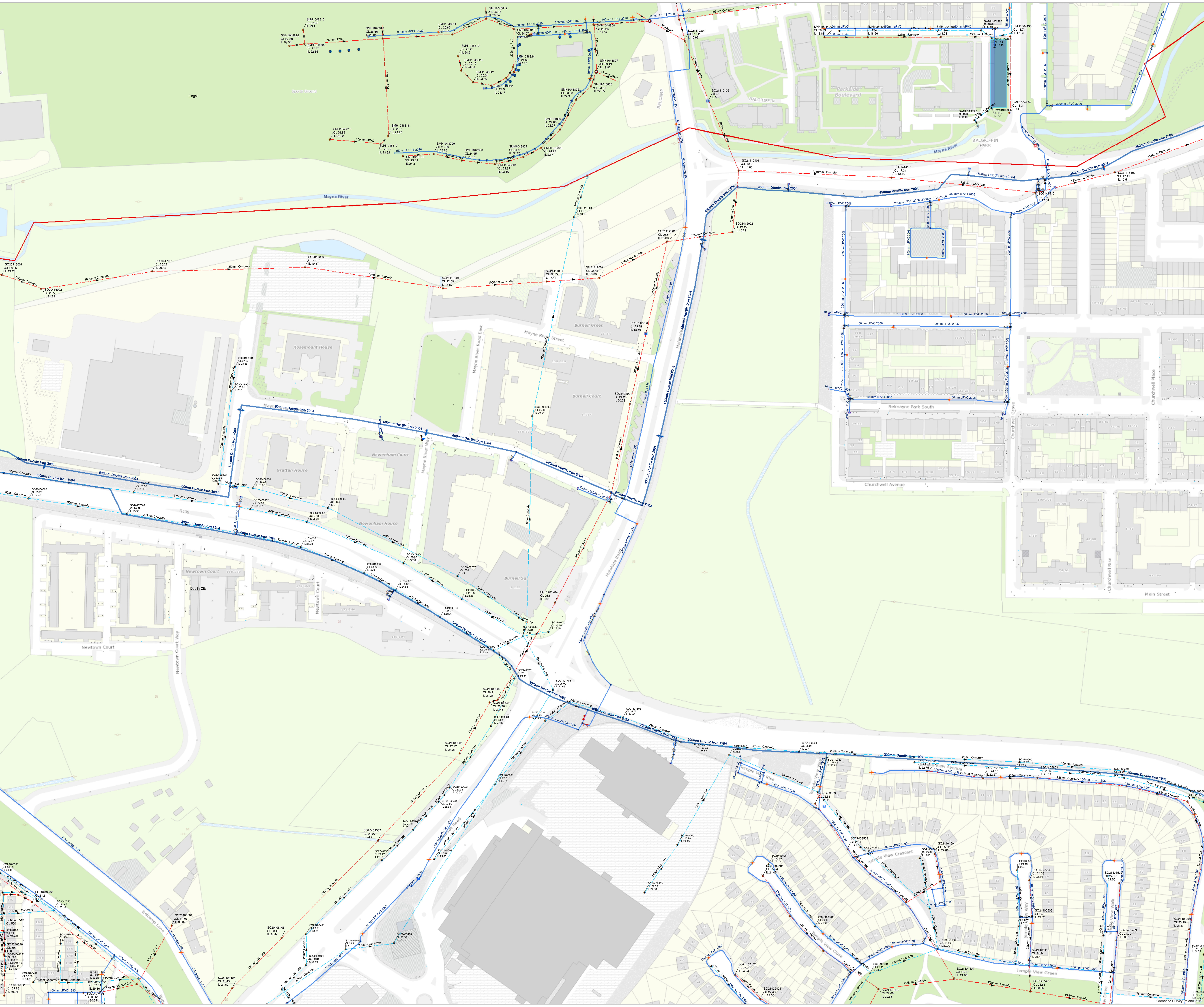
Discharge Type

- Outfall

Storm Inlets

Inlet Type

- Gully
- Storm Detention Areas



1. No part of this drawing may be reproduced or transmitted in any form or stored in any retrieval system of any nature without the written permission of Irish Water as copyright holder except as agreed for use on the project for which the document was originally issued.

2. Whilst every care has been taken in its compilation, Irish Water gives this information as to the position of its underground network as a general guide only on the strict understanding that it is based on the best available information provided by each Local Authority in Ireland to Irish Water. Irish Water can assume no responsibility for and give no guarantees, undertakings or warranties concerning the accuracy, completeness or up to date nature of the information provided and does not accept any liability whatsoever arising from any errors or omissions.

This information should not be relied upon in the event of excavations or any other works being carried out in the vicinity of the Irish Water underground network. The onus is on the parties carrying out excavations or any other works to ensure the exact location of the Irish Water underground network is identified prior to excavations or any other works being carried out. Service connection pipes are not generally shown but their presence should be anticipated.

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

1:1,000

Print Date: 11/06/2021

Appendix B – Correspondence with Irish Water

Brendan Keogh - DBFL Consulting Engineers

Ormond House,
Upper Ormond Quay,
Dublin 7
D07 W704

11 August 2021

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

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

www.water.ie

Re: CDS21003892 pre-connection enquiry - Subject to contract | Contract denied

Connection for Housing Development of 200 units at Rosemount House, City Junction Business Park, Dublin

Dear Sir/Madam,

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

SERVICE	OUTCOME OF PRE-CONNECTION ENQUIRY <u>THIS IS NOT A CONNECTION OFFER. YOU MUST APPLY FOR A CONNECTION(S) TO THE IRISH WATER NETWORK(S) IF YOU WISH TO PROCEED.</u>
Water Connection	Feasible without infrastructure upgrade by Irish Water
Wastewater Connection	Feasible without infrastructure upgrade by Irish Water
SITE SPECIFIC COMMENTS	
Water Connection	Connection via private infrastructure or network extension (for approximately 200m to connect to Irish Water 200mm MO PVC in Mayne River Avenue) is required.
Wastewater Connection	Connection via private infrastructure or network extension (for approximately 220m to connect to Irish Water 900 CO sewer in Malahide Road) is required.
<p>If you propose to connect to the Irish Water network via infrastructure that has not been taken in charge by Irish Water (Third Party Infrastructure). Please be advised that at connection application stage and prior to the commencement of any Self-Lay Works, you have to:</p> <ul style="list-style-type: none"> • identify and procure transfer to Irish Water of the arterial (water and wastewater) Infrastructure within the Third-Party Infrastructure 	

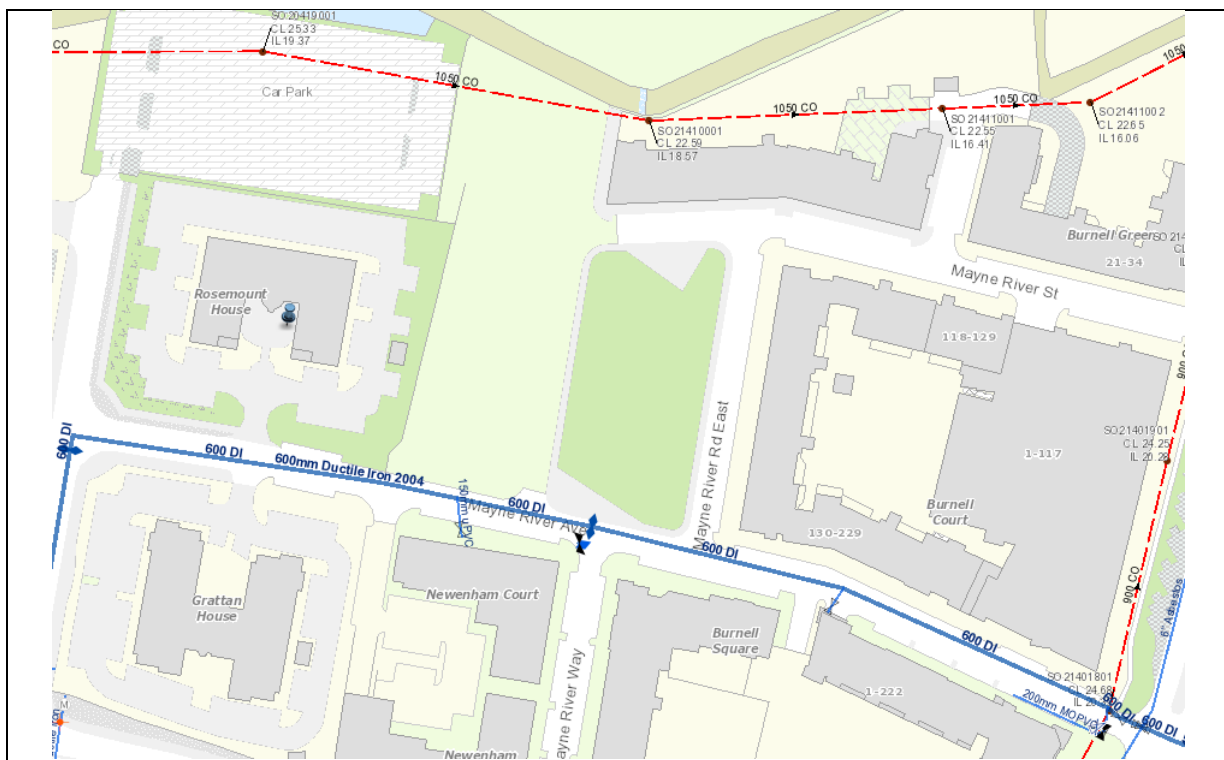
- demonstrate that the arterial infrastructure is in compliance with requirements of Irish Water Code of Practice and Standard Details and in adequate condition and capacity to cater for the additional load from the Development.

All costs associated with any upgrades required to vest the private infrastructure to Irish Water will be borne by the customer.

Alternatively, if you propose to connect directly to Irish Water infrastructure, you have to fund the extension works and it will be calculated in a connection offer fee.

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

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



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

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

General Notes:

- 1) The initial assessment referred to above is carried out taking into account water demand and wastewater discharge volumes and infrastructure details on the date of the assessment. **The availability of capacity may change at any date after this assessment.**
- 2) This feedback does not constitute a contract in whole or in part to provide a connection to any Irish Water infrastructure. All feasibility assessments are subject to the constraints of the Irish Water Capital Investment Plan.
- 3) The feedback provided is subject to a Connection Agreement/contract being signed at a later date.
- 4) A Connection Agreement will be required to commencing the connection works associated with the enquiry this can be applied for at <https://www.water.ie/connections/get-connected/>
- 5) A Connection Agreement cannot be issued until all statutory approvals are successfully in place.
- 6) Irish Water Connection Policy/ Charges can be found at <https://www.water.ie/connections/information/connection-charges/>
- 7) Please note the Confirmation of Feasibility does not extend to your fire flow requirements.
- 8) Irish Water is not responsible for the management or disposal of storm water or ground waters. You are advised to contact the relevant Local Authority to discuss the management or disposal of proposed storm water or ground water discharges
- 9) To access Irish Water Maps email datarequests@water.ie
- 10) All works to the Irish Water infrastructure, including works in the Public Space, shall have to be carried out by Irish Water.

If you have any further questions, please contact Marina Byrne from the design team via email mzbyrne@water.ie For further information, visit **www.water.ie/connections**.

Yours sincerely,



Yvonne Harris

Head of Customer Operations

Your Ref: ABP-312108-21
Our Ref: CDS21002200

An Bord Pleanála,
64 Marlborough Street,
Dublin

Uisce Éireann
Bosca OP 6000
Baile Átha Cliath 1
Éire

Irish Water
PO Box 6000
Dublin 1
Ireland

T: +353 1 89 25000
F: +353 1 89 25001
www.water.ie

06th January 2022

Dear Sir/ Madam,

Re: Consultation Response Under Section 5 of the Planning and Development Act, regarding a potential forthcoming Strategic Housing Development for the provision of 156 no. apartments and associated site works at Site 10, Mayne River Avenue, Northern Cross, Malahide Road, Dublin 17.

Irish Water has received notification for a request to enter into consultations under Section 5 of the Planning and Development (Housing) and Residential Tenancies Act 2016 in respect of the above-mentioned proposed development.

Irish Water has reviewed the plans and particulars submitted for this Strategic Housing Development and confirms that a Confirmation of Feasibility (Ref. CDS21002200) was issued on 22nd June 2021, advising that connection(s) are feasible.

In respect of Water:

A water connection to service the development can be facilitated without infrastructure upgrades.

As noted in IW's Confirmation of Feasibility, the proposed connection to Irish Water main is via infrastructure that has not been taken in charge by Irish Water (Third Party Infrastructure). Please be advised that at connection application stage and prior to the commencement of works, including site preparation works, the applicant must;

- Identify and procure transfer to Irish Water of the Infrastructure within Third-Party infrastructure.
- Demonstrate that the arterial infrastructure within the Third-Party infrastructure is in compliance with requirements of Irish Water Code of Practice and Standard

Details and in adequate condition and capacity to cater for the additional demand.

In respect of Wastewater:

A wastewater connection to service the development can be facilitated without infrastructure upgrades.

As noted in IW's Confirmation of Feasibility, the proposed development indicates that an important Irish Water asset is present on the site. The Developer has to demonstrate that proposed structures and works will not inhibit access for maintenance or endanger structural or functional integrity of the infrastructure during and after the works. A wayleave in favour of Irish Water will be required over the infrastructure that is not located within the Public Space.

The proposed connection to Irish Water sewer is via private land/s. Please be advised that at connection application stage you have to provide evidence of consent of the Third Party Landowner/s. A wayleave in favour of Irish Water will be required to be provided by the Customer in order for the works to be carried out in the Third Party Land/s.

Storm water from the Site cannot be discharged to the Network. Proposed basement car park should be designed such that surface water from the Site and/or surrounding areas cannot flow down to the car park. Wastewater from the car park (contaminated water generated from run off from cars/tyres) must be pumped to ground level to discharge by gravity to the Irish Water Network via a petrol interceptor.

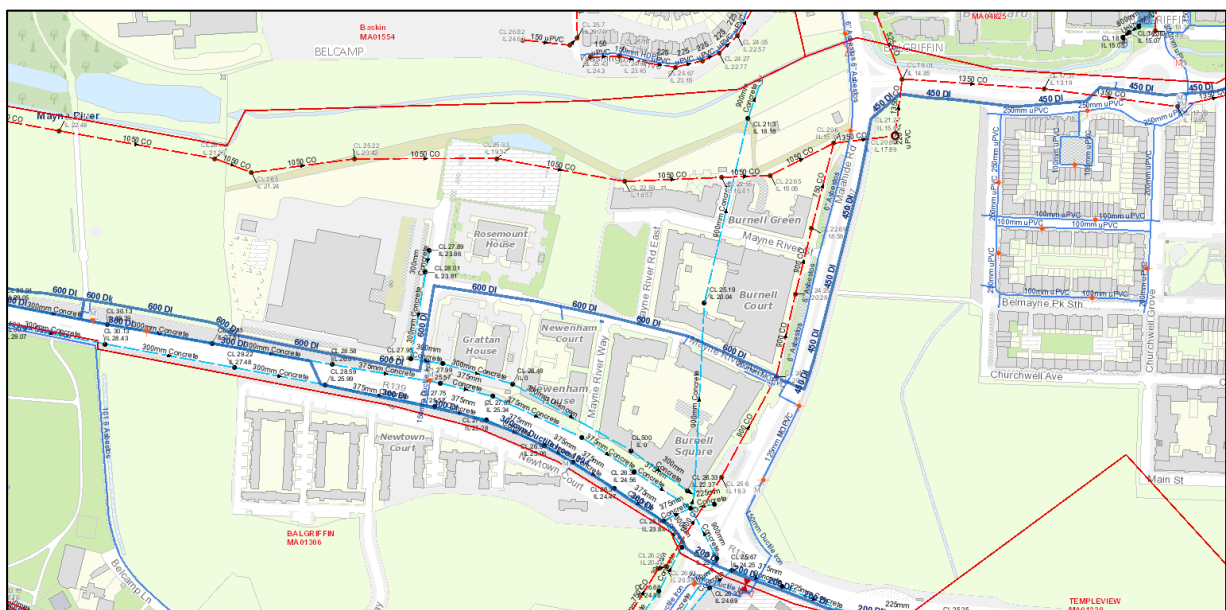


Figure 1: Irish Water Infrastructure (please note locations shown are approximate only)

Planning Observations;

In addition to the above, the following should be noted for any forthcoming SHD application.

- Connection(s) to the public network are subject to a Connection Agreement with Irish Water.
- All development is to be carried out in compliance with Irish Waters Standards Codes and Practices and that design layouts for the development proposal, within the redline boundary have been submitted to Irish Water and that a Statement of Design Acceptance has been issued to the applicant by Irish Water ahead of any SHD Application.
- Irish Water does not permit build over of its assets and the separation distances as per Irish Waters Standards Codes and Practices which must be achieved. In order to ensure appropriate and access to existing infrastructure(s) the applicants are required to engage with Irish Water Diversions to agree to assess feasibility of any potential build over/diversion(s) which may be required, separation distances, appropriate wayleaves and or access ahead of any SHD application.

Queries relating to the observations above should be sent to planning@water.ie

PP. Ali Robinson

Yvonne Harris

Connections and Developer Services

Seán Byrne - DBFL Consulting Engineers
Ormond House
Upper Ormond Quay
Dublin 7
Dublin

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

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

www.water.ie

3 August 2022

**Re: Design Submission for Rosemount House, City Junction Business Park, Dublin (the “Development”)
(the “Design Submission”) / Connection Reference No: CDS21003892**

Dear Seán Byrne,

Many thanks for your recent Design Submission.

We have reviewed your proposal for the connection(s) at the Development. Based on the information provided, which included the documents outlined in Appendix A to this letter, Irish Water has no objection to your proposals.

This letter does not constitute an offer, in whole or in part, to provide a connection to any Irish Water infrastructure. Before you can connect to our network you must sign a connection agreement with Irish Water. This can be applied for by completing the connection application form at www.water.ie/connections. Irish Water's current charges for water and wastewater connections are set out in the Water Charges Plan as approved by the Commission for Regulation of Utilities (CRU) (https://www.cru.ie/document_group/irish-waters-water-charges-plan-2018/).

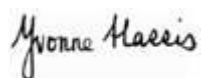
You the Customer (including any designers/contractors or other related parties appointed by you) is entirely responsible for the design and construction of all water and/or wastewater infrastructure within the Development which is necessary to facilitate connection(s) from the boundary of the Development to Irish Water's network(s) (the “**Self-Lay Works**”), as reflected in your Design Submission. Acceptance of the Design Submission by Irish Water does not, in any way, render Irish Water liable for any elements of the design and/or construction of the Self-Lay Works.

If you have any further questions, please contact your Irish Water representative:

Name: Antonio Garzón

Email: antonio.garzon@water.ie

Yours sincerely,



Yvonne Harris
Head of Customer Operations

Appendix A

Document Title & Revision

- 210100-DBFL-CS-SP-DR-C-1011 Site Services Layout
- 20100-DBFL-FW-SP-DR-3011 Foul Longitudinal Section - Sheet 1

Additional Comments

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

While Irish Water notes that the water and wastewater services infrastructure will remain private and not be vested, we have the following comments: It is recommended that the foul sewer should have 3 m clearance from the proposed building.

Irish Water cannot guarantee that its Network in any location will have the capacity to deliver a particular flow rate and associated residual pressure to meet the requirements of the relevant Fire Authority.

For further information, visit www.water.ie/connections

Notwithstanding any matters listed above, the Customer (including any appointed designers/contractors, etc.) is entirely responsible for the design and construction of the Self-Lay Works. Acceptance of the Design Submission by Irish Water will not, in any way, render Irish Water liable for any elements of the design and/or construction of the Self-Lay Works.

Appendix C – Attenuation Calculations


DBFL Consulting Engineers

Ormond House
Upper Ormond Quay
Dublin 7

Date 29/06/2022 15:15
File Cascade.CASX

Innovyze

Page 3



Designed by ByrneSe
Checked by


Source Control 2020.1

Cascade Summary of Results for 210100.SRCX

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
10080 min Winter	24.678	0.133	0.0	2.9	2.9	18.1	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
10080 min Winter	1.021	0.0	845.0	5256

©1982-2020 Innovyze

DBFL Consulting Engineers		Page 5
Ormond House Upper Ormond Quay Dublin 7		
Date 29/06/2022 15:15 File Cascade.CASX	Designed by ByrneSe Checked by	
Innovyze Source Control 2020.1		

Cascade Model Details for 210100.SRCX

Storage is Online Cover Level (m) 27.000

Cellular Storage Structure

Invert Level (m) 24.545 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.70
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	193.5	0.0	1.675	0.0	0.0
1.674	193.5	0.0			

Hydro-Brake® Optimum Outflow Control

Unit Reference MD-SHE-0083-3800-1675-3800
Design Head (m) 1.675
Design Flow (l/s) 3.8
Flush-Flo™ Calculated
Objective Minimise upstream storage
Application Surface
Sump Available Yes
Diameter (mm) 83
Invert Level (m) 24.520
Minimum Outlet Pipe Diameter (mm) 100
Suggested Manhole Diameter (mm) 1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.675	3.8
Flush-Flo™	0.362	3.3
Kick-Flo®	0.740	2.6
Mean Flow over Head Range	-	3.0

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

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	2.4	1.200	3.3	3.000	5.0	7.000	7.4
0.200	3.1	1.400	3.5	3.500	5.3	7.500	7.7
0.300	3.2	1.600	3.7	4.000	5.7	8.000	7.9
0.400	3.2	1.800	3.9	4.500	6.0	8.500	8.1
0.500	3.2	2.000	4.1	5.000	6.3	9.000	8.4
0.600	3.1	2.200	4.3	5.500	6.6	9.500	8.6
0.800	2.7	2.400	4.5	6.000	6.9		
1.000	3.0	2.600	4.7	6.500	7.2		

©1982-2020 Innovyze

Appendix D – Letter Regarding Access to Services

To Whom It May Concern

Re: Planning application for housing development of 200 units at Rosemount House, City Junction Business Park, Dublin

Dear Sir / Madam

We act for Walls Construction Limited (**Walls**) who are in the process of submitting a planning application for the land and premises located Rosemount House, Northern Cross, Malahide Road, Dublin (the "**Property**").

In order to assist with the above planning application, we are instructed by Walls to provide some background on the title status for the Property.

Title overview

Title to the Property comprises a 500 year lease registered on Folio DN143140L and Walls are the registered owner of the leasehold folio DN143140L. Spectrum Developments Limited were the original developer of the estate and remain the freeholder on title.

Request from Irish Water (IW)

IW have made a request to Walls to obtain the consent of all adjoining landowners in order to allow IW to connect into the water network as part of the proposed development. In our view, Walls do not require any formal consent from the adjoining landowner in order to allow IW carry out works and connect into the water network. The "estate" is set up in such a way that all site owners have an identical long leasehold title. Relevant rights in respect of access to services are reserved from everyone's title by Spectrum in the long leases and conversely all site owners are granted reciprocal rights of access to services etc.

In order to close out this query, our office contacted Aoife Hearne, Legal Counsel for IW on 24 February 2022 to advise her of the position and we shared with her a copy of Wall's leasehold title for good order. There has been no response from IW to date.

If you have any queries, please contact Terry O'Malley of this office.

Yours faithfully

Eversheds Sutherland

© Eversheds Sutherland 2022

David O'Beirne Joseph Stanley Dermot McEvoy Peter Fahy Tony McGovern Norman Fitzgerald Joanne Hyde Sean Greene
Mark Varian Pamela O'Neill Margaret Gorman Peter Curran Steven Rodgers Seán Ryan Aisling Gannon Piaras Power Gerard Ryan
Alan Connell Enda Newton Gavin O'Flaherty Neil O'Mahony Lee Murphy Stephen Barry Cian MacGinley Darragh Blake Marie O'Riordan
Deborah Hutton Lorcan Keenan Marie McGinley Terry O'Malley Peter O'Neill Enda Cullivan Eoin Mac Aodha Julie Galbraith

Consultants: Ciaran Walker Tim Kiely

7491586.1