

ENGINEERING SERVICES REPORT

Munster Avenue, Galway

Issue P03

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Executive Summary

- Development includes conversion of existing 2 storey residence to a single unit, demolition of the existing extension and construction of an extension to provide 3No. single bedroomed apartments.
- Overall population equivalent of 9 persons.
- Foul waste discharging toward a 225mm diameter public sewer at the north western boundary of the site.
- Surface water discharge to an on-site attenuation tank with a flow control device restricting the flow to 2.0L/sec discharging to the public surface water network
- All hardstanding and pavements are to be permeable.
- 50mm diameter water supply proposed to serve the residential apartment buildings with a second 25mm supply to the two storey dwelling.
- Confirmation of Feasibility for the development has been received from Uisce Eireann.

Introduction

CORA Consulting Engineers have been commissioned by Galway City Council to carry out the planning application design of the foul, surface water and water supply networks to serve the site along with the completion of a Site Specific Flood Risk Assessment (SSFRA) for the proposed clearance of the subject site, demolition of the existing single storey extension, conversion of the retained two storey residence along with the construction of a 3 storey extension to provide accommodation for 3No. one bedroomed residential apartments.

This report was prepared to comply with current planning legislation and forms part of the proposed planning application for the subject site.

Refer to separate flood risk assessment for additional information in relation to flood risk.

Project Description

The project site is 1 Munster Avenue, Galway. The site, which is approximately 375m² and is currently occupied by a two storey semi-detached residential unit with a single storey extension to the northern gable.

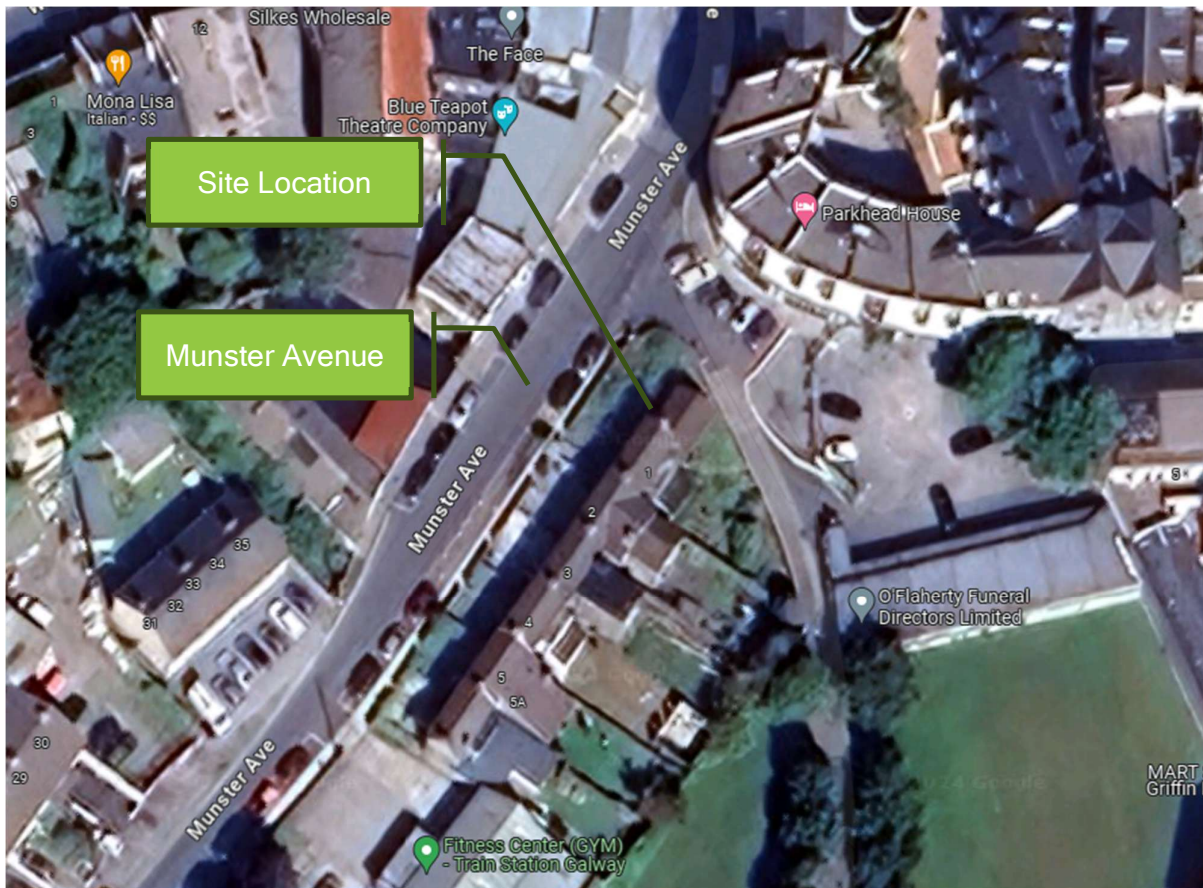


Figure 1 - Site Location Plan (Image from Google Maps)

It is proposed to extend the existing residential unit to provide 3No. apartments. Each apartment shall be accessed by a common external staircase.

Existing Site Condition

There is currently a 150mm diameter private combined sewer routing to the rear and north of the property which discharges to the existing public combined sewer located on the western side of Munster Avenue.

There is also a 3" cast iron watermain located on the site, but we have been advised that this main will be made redundant as part of the proposed works.

The existing public services adjacent to the site are shown in Appendix A of this report.

The site is bounded by Munster Avenue to the western boundary. A continuation of the residential terraced properties lies to the south of the site. Fr. Burke Park lies to the west along with a small commercial unit and associated carpark.

A pedestrian path extends the full length of the site boundary to the west along the length of Munster Avenue.

Generally, the site has a slight fall from east to west with a finished ground level of 3.75m to the east and 3.16m to the west of the site.

The existing finished floor level of the residential property is 3.800m AOD.

The existing roof area of the property extends to circa 82m² on plan.

Proposed Site Works

The proposed development calls for the construction of new residential apartments over 3 floors in place of the existing single storey extension to the original two storey residence. The works will entail:

- Demolition of the existing single storey extension, circa 32m² on plan.
- Retention of the two storey residence, circa 50m² on plan.
- Construction of a new 3 storey extension circa 87m²
- Installation of new foul and surface water drainage networks.
- Installation of new mains water connections.
- Removing the existing 3" cast iron watermain within the site extents.

The existing boundary wall to the north west of the property will be demolished to allow for open garden and bike storage spaces with any hardstanding areas within the site boundary constructed using permeable paving build-ups.

Existing Public Service

Records obtained from Irish Water indicate that the site is bounded by the following drainage services:

- 225mm diameter surface water sewer running south to north along Munster Avenue to the front of the site.
- 150mm diameter private combined sewer to the rear of the site serving the site as well as adjoining properties on Munster Avenue. This discharges to the public 225mm diameter public sewer.

The records also show the following public water services are available:

- A 3" cast iron water main to the north and east of the site.
- A 125mm diameter public upvc watermain to the west under Munster Avenue.

The location of the available services are shown in Figure 3 below:

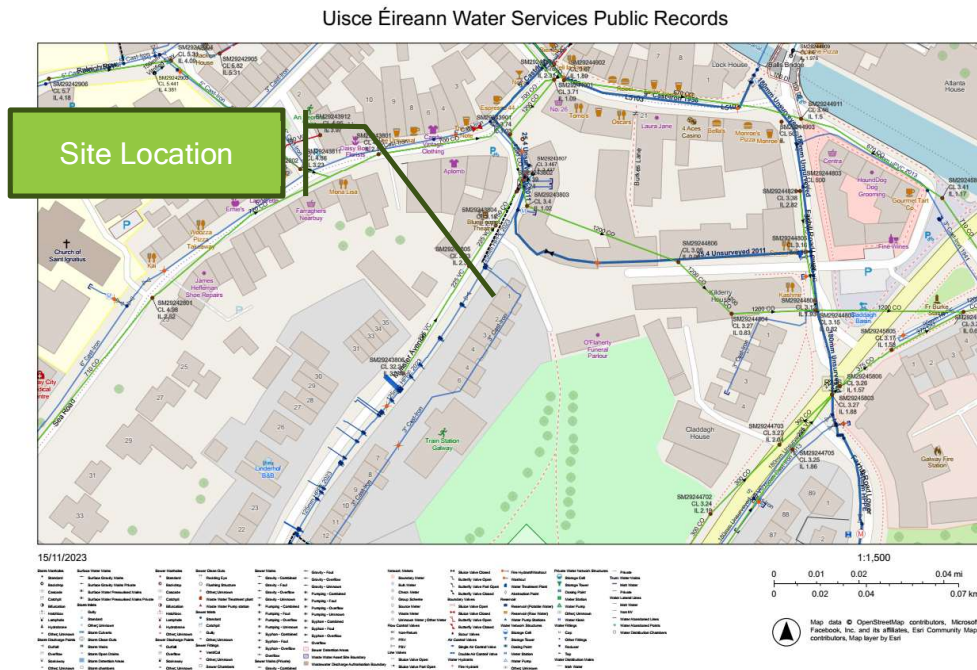


Figure 1 - Existing Public Services

Reference Publications

The following documents were used in the preparation of the engineering services report:

- Code of Practice - Wastewater Treatment and Disposal Systems Serving Single Houses (p.e. ≤ 10)
- Greater Dublin Strategic Drainage Study - Volumes 1 to 6
- Greater Dublin Regional Code of Practice for Drainage Works - Version 6.0
- Technical Guidance Documents - Part H
- Recommendations for Site Development Works for Housing Areas
- BRE Digest 365 - Soakaway Design (2016)
- Irish Water Codes of practice for Water and Wastewater Services.
- Galway City Council Development Plan 2023-2029.

Existing Foul Network

[illegible]

The layout of the existing services are shown on CORA drawing 22596-CORA-C001 which is included with this report.

Proposed Foul Network

The proposed foul drainage arrangement is detailed on CORA drawing 22596-CORA-C002 which is included with this report.

The breakdown of the proposed apartment numbers is shown below:

Proposal for 3No. apartment unit development consisting of:

- 3No. 1 bedroom units

Population Equivalent:

- Residential
 - 3No. 2 bedroom unit: 6 PE

Daily Water Demand:	150L / person / day (residential)
Total Daily Discharge:	$(6 \times 150) = 900 \text{ L/day}$
Assume Flow occurs over	12 hours (average)
Average Discharge Rate:	$[900 / 12] = 75 \text{ L / hour}$
Average Discharge Rate:	$[75 / 3600] = 0.02 \text{ L / sec (1DWF)}$
Design Discharge = 6DWF:	$[6 \times 0.02] = 0.12 \text{ L / sec}$

The capacity of a 150mm diameter pipe with a gradient of 1:100 would be approximately 16.5 litres per second which exceeds the potential outflow.

For the single residential unit, the following calculations have been completed:

- 1No. 2 bedroom units

Population Equivalent:

- Residential
 - 1No. 2 bedroom unit: 4 PE

Daily Water Demand:	150L / person / day (residential)
Total Daily Discharge:	$(4 \times 150) = 600 \text{ L/day}$
Assume Flow occurs over	12 hours (average)
Average Discharge Rate:	$[600 / 12] = 50 \text{ L / hour}$
Average Discharge Rate:	$[50 / 3600] = 0.014 \text{ L / sec (1DWF)}$
Design Discharge = 6DWF:	$[6 \times 0.014] = 0.084 \text{ L / sec}$

It is proposed to serve the single residence using a new 100mm diameter connection to the public sewer which will have a capacity of approximately 6.2 litres per second which exceeds the potential outflow.

Details of the proposed foul drainage are shown on CORA Drawing 22596- CORA-C002.

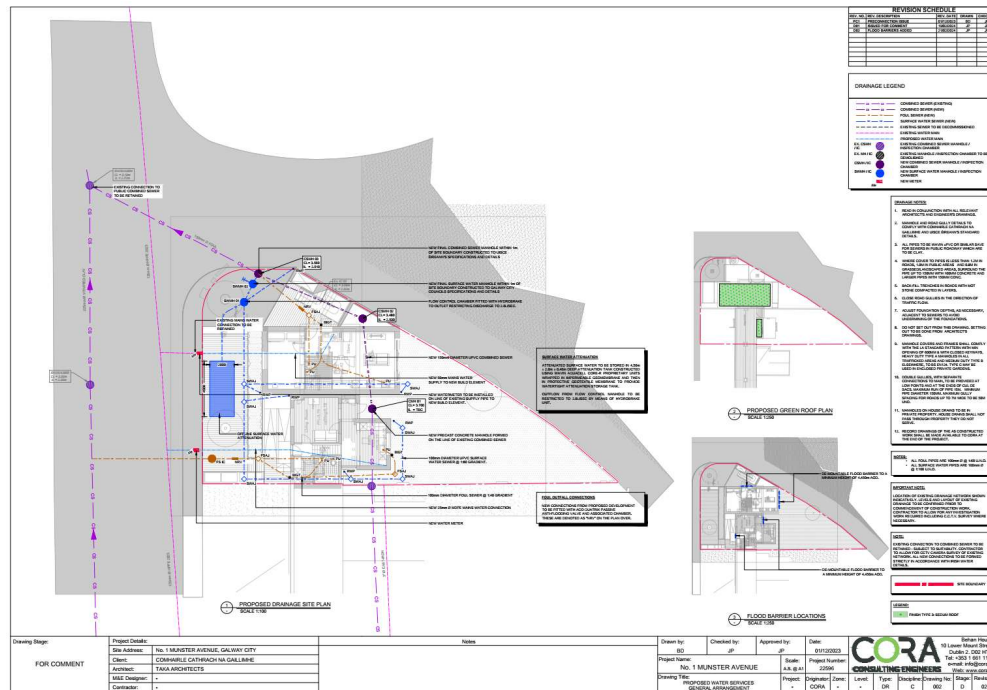


Figure 3 - Proposed Drainage Network

Surface Water Drainage

The existing site is predominantly finished with hard surfaces such as concrete and slate roof areas.

The proposed development will consist of 50m² of existing roof area along with an additional 87m² of roof to the extension area. Surface water generated within the site will be collected via a new, separate, surface water drainage network which will flow by gravity in a direction mainly from south to north at the front of the site. This surface water shall discharge to a large attenuation tank, lined with a non-permeable geomembrane with welded joints, which has been designed to suit the surface finishes on site. It is proposed to provide a hydrobrake flow control device to control the rate of discharge of surface water to 2.0L/s to the existing public surface water connection.

It is proposed to carry out a site specific soil permeability test to determine the actual soil infiltration rate. Should the soil be deemed suitable for infiltration, it may be possible to provide a geotextile membrane which will allow the water to permeate to the ground below and therefore reduce the volume of water discharging to the public sewer.

The hardstanding areas shall be constructed with permeable paving and porous tarmacadam finishes to allow the surface water to infiltrate to the ground below within the site boundaries.

As indicated on CORA drawing 22596-CORA-C002 it is possible to increase the size of the surface water attenuation tank on site should the soil infiltration rate deem necessary.

The size of the attenuation tank has been calculated based on site specific rainfall data obtained from Met Eireann with an attenuation volume of 3.20m³ required. This volume allows for:

- Site specific rainfall data.
- 1 in 100 year storm event.
- 20% increase in rainfall to account for climate change.
- 25% increase to account for the simplification in the head/discharge rate.
- 95% voids ratio for attenuation system.

Calculations justifying the use of a 4.50m x 2.0m x 0.4m deep surface water attenuation tank are below:

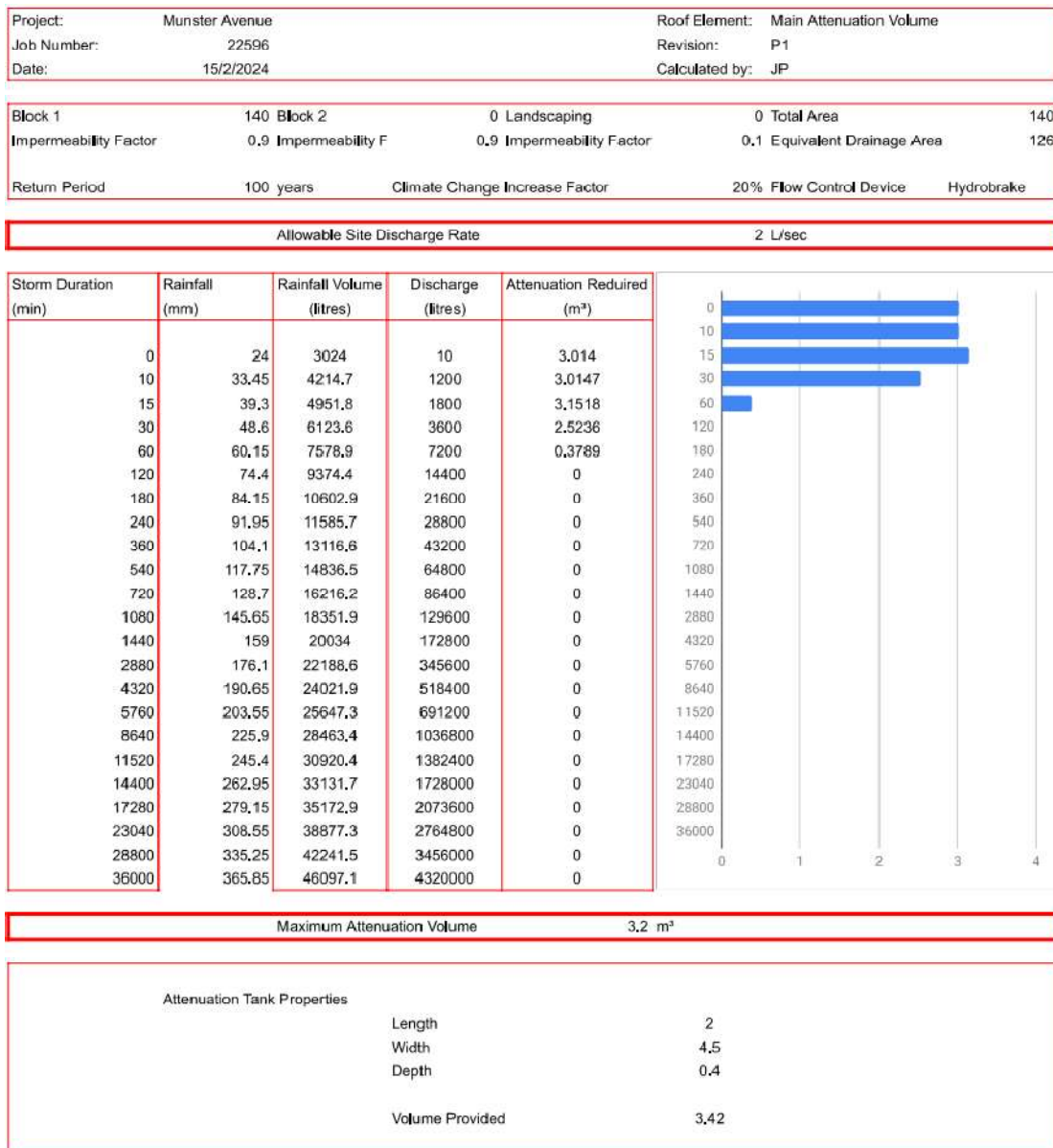


Figure 4 - Surface Water Attenuation Calculations

Surface Water Flow Paths:

Roof Drainage

The water collected on the new roof areas shall flow to roof outlets which will be connected to a rainwater pipe discharging to a gully trap at ground level. A network of surface water drainage pipes shall collect the water from each gully trap. This new surface water network will flow toward the newly constructed surface water attenuation tank. This tank has been designed to suit the local area rainfall data and also allows for a twenty percent increase due to climate change.

The provision of the attenuation tank with a flow control device, in conjunction with the provision permeable paving, will ensure that the volume of surface water discharging to the public network is greatly reduced with the flow rate suitably controlled. Details of the proposed attenuation tank are shown on drawing no. 22596- CORA-C002.

Pavements and Hardstanding:

It is proposed that all hardstanding and pavements will be constructed as permeable with surface water discharging to ground and will not contribute to the surface water discharge figures from the site.

Details of the proposed hardstanding finishes etc. are shown on the architect's plans.

Water Supply

Existing Water Supply Network

The existing site is currently connected to the public water mains. It is proposed to retain this connection to supply water to serve the 3 storey apartment building, with a separate 25mm mains water supply brought from the public network to the existing 2 storey residence.

Confirmation of Feasibility

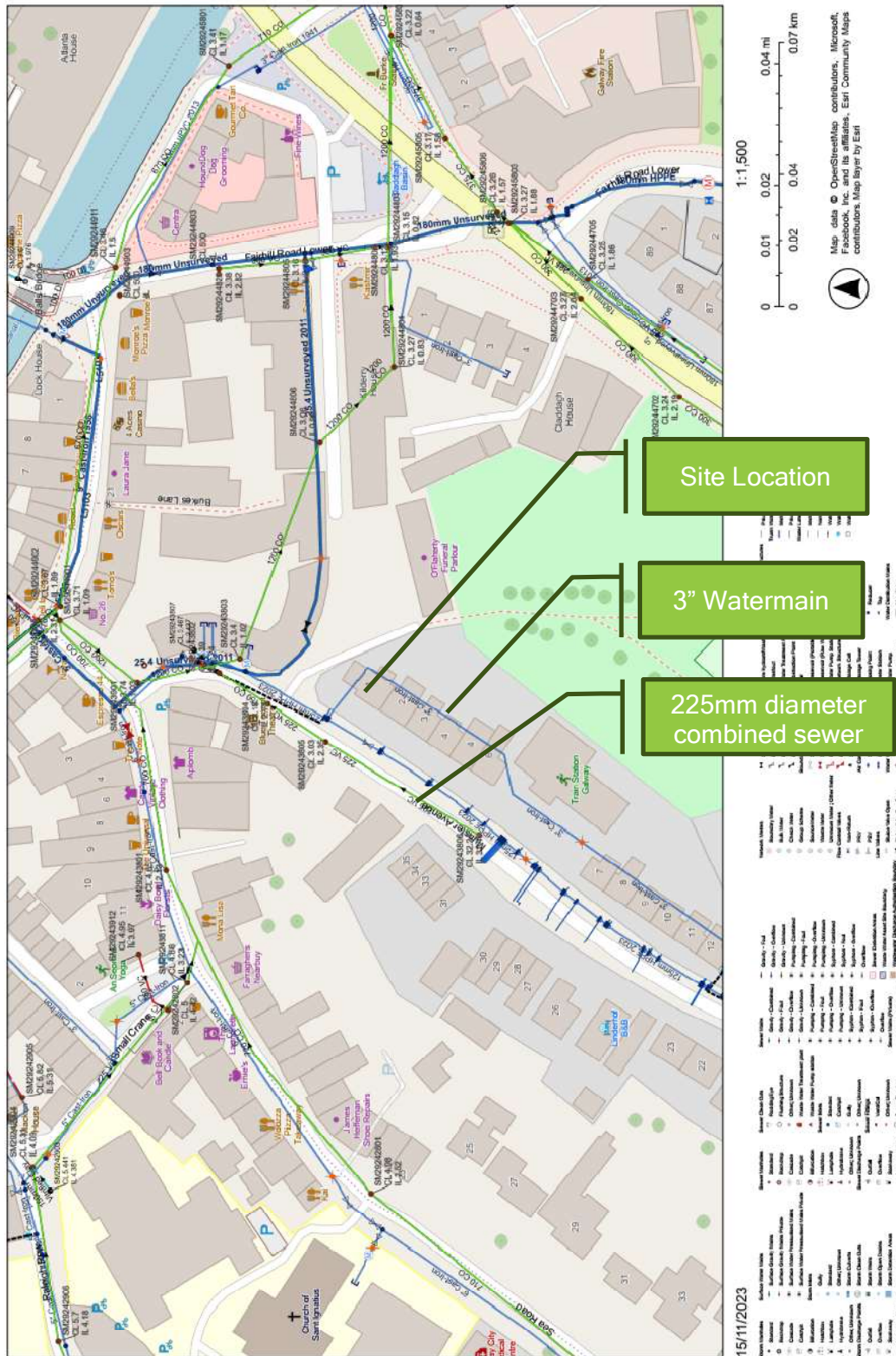
A pre-connection enquiry was submitted to Uisce Eireann in relation to the proposed development. They have confirmed that sufficient capacity exists within the public network to cater for the proposed development.

It also notes the presence of the 3" cast iron watermain adjacent to the site.

Works are ongoing with Galway City Council and Uisce Eitireann to ensure that this watermain is removed to facilitate the proposed development.

A copy of the confirmation of feasibility is included in Appendix B.

Uisce Éireann Water Services Public Records



Appendix B



CONFIRMATION OF FEASIBILITY

John Pigott
Cora Consulting Engineers
Behan House
10 Lower Mount Street
Dublin
D02 HT71

8 January 2024

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

Uisce Éireann
PO Box 448
South City
Delivery Office
Cork City

www.water.ie

**Our Ref: CDS23009007 Pre-Connection Enquiry
Site at, 1 Munster Avenue, Galway, Galway**

Dear Applicant/Agent,

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

Uisce Éireann has reviewed the pre-connection enquiry in relation to a Water & Wastewater connection for a Housing Development of 3 unit(s) at Site at, 1 Munster Avenue, Galway, Galway, (the **Development**).

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

- **Water Connection**
 - Feasible without infrastructure upgrade by Irish Water
 - There is sufficient capacity for the proposed development.
A water main fronts the proposed development.
Please note that according to our records there is an existing water main running through this site (see drawing below).
Any structures or works over or in close proximity to Irish Water infrastructure that will inhibit access for maintenance or endanger structural or functional integrity of the infrastructure are not allowed.
The layout of the development must ensure that this pipe is protected and adequate separation distances are provided between Irish Water infrastructure and any structures on site. Alternatively you may enter into a

Bliorhóirí / Directors: Tony Keohane (Cathaoiríoch / Chairman), Niall Gleeson (POF / CEO), Christopher Banks, Fred Barry, Gerard Britzfeld, Liz Joyce, Patricia King, Eileen Maher, Cathy Mannion, Michael Walsh.
Oifig Chláraithe / Registered Office: Teach Colmáil, 24-26 Stráid Tháibí, Baile Átha Cliath 1, D01 NP86 / Colmáil House, 24-26 Talbot Street, Dublin, Ireland D01NP86
Is cuideachta ghlomhalaíochta ainmnithe atá faoi theorainn scáireanna é Uisce Éireann / Uisce Éireann is a design activity company, limited by shares. Cláráilte in Éirinn Uimh.: 530363 / Registered In Ireland No.: 530363.

UE / LH / OP448 / 0323

diversion agreement with Irish Water and divert the pipe to accommodate your development. If you wish to proceed with this option please contact Irish Water at Diversions@water.ie and submit detailed design drawings before submitting your planning application. It will be necessary to provide a wayleave over this pipe to the benefit of Irish Water and ensure that it is accessible for maintenance. For more information, please see go to the link below:
<https://www.water.ie/connections/developer-services/diversions/>

- **Wastewater Connection**
 - Feasible without infrastructure upgrade by Irish Water
 - There is sufficient capacity for the proposed development.
A Foul sewer fronts the proposed development.

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

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

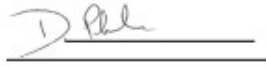
Where can you find more information?

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

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

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

Yours sincerely,

A handwritten signature in black ink, appearing to read 'D Phelan', is positioned above a solid black horizontal line.

Dermot Phelan
Connections Delivery Manager

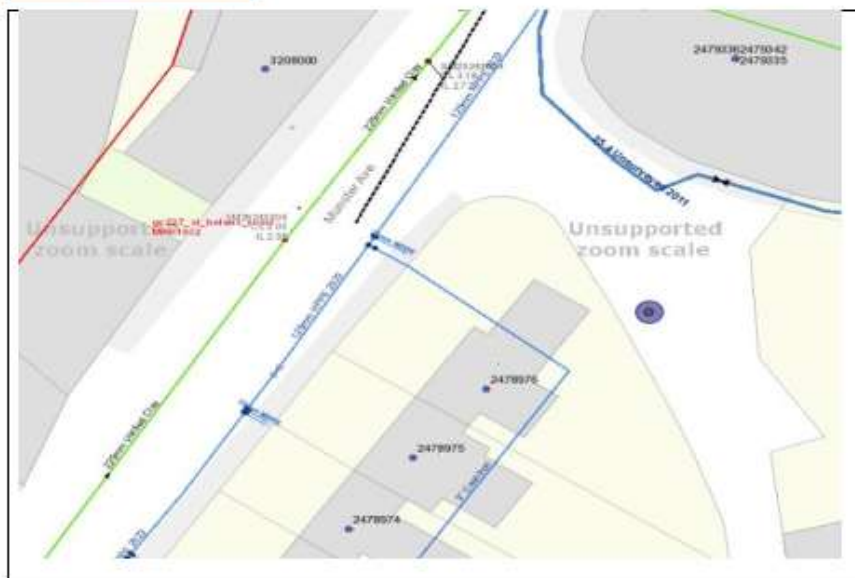
Section A - What is important to know?

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

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

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

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



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

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