CS CONSULTING

GROUP

DUBLIN LONDON LIMERICK

Flood Risk Assessment

Nursing Home Development

St. Mary's Priory, Old Greenhills Road, Tallaght, Dublin 24

Client: St. Mary's Medical (Tallaght) Ltd

Job No. D092

February 2022

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FLOOD RISK ASSESSMENT

NURSING HOME DEVELOPMENT, ST. MARY'S PRIORY, OLD GREENHILLS ROAD, TALLAGHT, DUBLIN 24

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BS 1192 FIELD	**D092-CSC-ZZ-XX-RP-C-0002-P3**

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D092	LJ	GF	GF	03.02.2022	P3
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1.0 INTRODUCTION

Cronin & Sutton Consulting Engineers (CS Consulting) have been commissioned by St Mary's Medical (Tallaght) Ltd to prepare a Flood Risk Assessment to accompany a planning application for a proposed nursing home development within the grounds of St. Mary's Priory, Tallaght, Dublin 24.

In preparing this report, CS Consulting has made reference to the following:

- South Dublin County Council Development Plan 2016–2022, (including Strategic Flood Risk Assessment)
- Greater Dublin Regional Code of Practice for Works,
- Office of Public Works Flood Maps,
- Department of the Environment Flooding Guidelines,
- Geological Survey of Ireland Maps,
- Local Authority Drainage Records.

The Flood Risk Assessment is to be read in conjunction with the engineering drawings submitted by CS Consulting and with the various additional information submitted by the other members of the design team.

2.0 SITE LOCATION

The proposed development site is located within the grounds of St. Mary's Priory, on the western side of the Old Greenhills Road in Tallaght, Dublin 24. The site is located in the administrative jurisdiction of South Dublin County Council and has a total area of 0.99ha.

Figure 1 – Location of proposed development site
(map data & imagery: EPA, NTA, OSM Contributors, Google)

The location of the proposed development site is shown in Figure 1 above; the indicative extents of the development site, as well as relevant elements of the surrounding road network, are shown in more detail in Figure 2.

The site is bounded to the north by the TU Dublin Tallaght campus, to the east by Old Greenhills Road and Greenhills Road, and on other sides by the

remaining grounds of St. Mary's Priory. The site has street frontage of approx. 95m on Old Greenhills Road and approx. 50m on Greenhills Road.

Figure 2 – Site extents and environs
(map data & imagery: NTA, OSM Contributors, Google)

2.1 EXISTING LAND USE

The subject site is greenfield, forming part of the grounds of St. Mary's Priory.

2.2 PROJECT DESCRIPTION

The proposed development consists of:

(a) construction of a 4 storey nursing home building consisting of (i) 106 no. bedrooms (with ensuite); (ii) associated resident's welfare facilities; (iii) administration areas and staff facilities; (iv) with multi-function space; and pharmacy proposed at ground floor level;

(b) construction of 60 no. one bed independent living units in 3 no blocks as follows: (1) Block A, a 4 story building comprising 11 no. one-bed units; (2) Block B, a part 4/part 5 storey building comprising 35 no. one-bed units; and (3) Block C, a 5 storey building comprising 14 no. one-bed units. Each unit will be provided with private open space in the form of a balcony/terrace (6sq.m).

(c) The development will include communal open space and landscaping (including new tree planting and tree retention), 30 no. car parking spaces (including 3 no. limited mobility parking spaces; 3 no. EV parking spaces and 1 no. car sharing spaces); and 37 no. bicycle parking spaces.

(d) The development will be served by a new pedestrian and vehicular access from Old Greenhills Road through existing boundary wall. Material from the removed wall will be repurposed within the landscape areas; and

The development includes landscaping, boundary treatments (including walls and railings to southern and western boundaries), an ESB Substation, SuDS drainage; road infrastructure and all ancillary site works necessary to facilitate the development.

3.0 LEVEL OF SERVICE

There is an existing inherent risk of any flood event occurring during any given year. Typically, this likelihood of occurrence was traditionally expressed as a 1-in-100 chance of a 100 year storm event happening in any given year.

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. Therefore a 1-in-100-year event has a return period of 1% AEP flood event, similarly a 100% AEP can be expressed as a 1-in-1-year event.

3.1 The *Planning System and Flood Risk Management, Guidelines for Planning Authorities* set out the best practice standards for flood risk assessment in Ireland. These are summarised in Table 1 below (Table 8.1 from Guidelines document).

Flooding Source	Drainage	River	Tidal/Coastal
Residential	1% AEP	0.1% AEP	0.1% AEP
Commercial	1% AEP	1% AEP	0.5% AEP
Water-compatible (docks, marinas)	-	>1% AEP	>0.5% AEP

Table 1 – Summary of Level of Service – Flooding Source.

Under these guidelines a proposed development site has first to be assessed to determine the flood zone category it falls under.

3.2 It is a requirement of both South Dublin County Councils, *Greater Dublin Strategic Drainage Study*, (DCC 2005) & the Department of the Environment, community & Local Government flooding guidelines, The *Planning System and Flood Risk Management, Guidelines for Planning Authorities,* that the predicted

effects of climate change are incorporated into any proposed design. Table 2 below indicates the predicated climate change variations.

Design Category	Predicated Impact of Climate Change
Drainage	20% Increase in rainfall
Fluvial (River flows)	20% Increase in flood flow
Tidal / Coastal	Minimum Finished Floor Level 4.0 – 4.15m AOD

Table 2 – The predicated climate change variations.

3.3 The flooding guidelines categorise the risks associated with flooding into three areas, Zone A, B & C. This categorisation is indicated below.

- **Zone A** – High Probability of Flooding. Where the average probability of flooding from rivers and sea is highest (greater than 1% annually or 1 in 100 for river flooding or 0.5% annually or 1 in 200 for coastal flooding).
- **Zone B** – Moderate Probability of Flooding. Where the average probability of flooding from rivers and sea is moderate (risk between 0.1% annually or 1 in 1000 years and 1% annually or 1 in 100 years for river flooding, and between 0.1% or 1 in 1000 years and 0.5% annually or 1 in 200 for coastal flooding).
- **Zone C** – Low Probability of Flooding. Where the probability of flooding from rivers and sea is moderate (risk is less than 0.1% annually or 1 in 1000 years for both rivers and coastal flooding).

In accordance with the *Planning Systems and Flood Risk Management Guidelines for Planning Authorities*, residential care home is classified as 'highly vulnerable developments'.

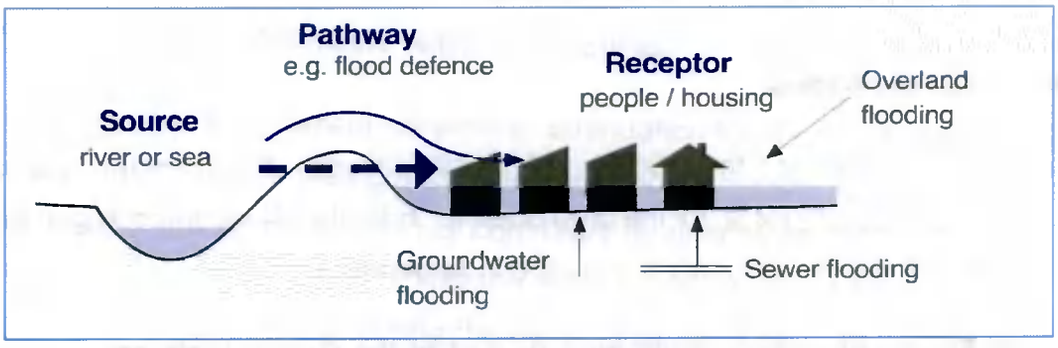


Figure 2 – Source-pathway-receptor model Site location
(Flood Risk Management Guidelines)

3.4 The flooding guidelines have developed an 'appropriateness' matrix for various developments and their potential risk factor. The table indicates if further analysis is required in the form of a justification test. Table 3 below outlines the conditions that require a justification test.

	Flood Zone A	Flood Zone B	Flood Zone C
Highly Vulnerable Development	***Justification Test***	***Justification Test***	Appropriate
Less Vulnerable Development	***Justification Test***	Appropriate	Appropriate
Water-compatible Development	Appropriate	Appropriate	Appropriate

Table 3 – Flood Zone Vs Justification Test Matrix

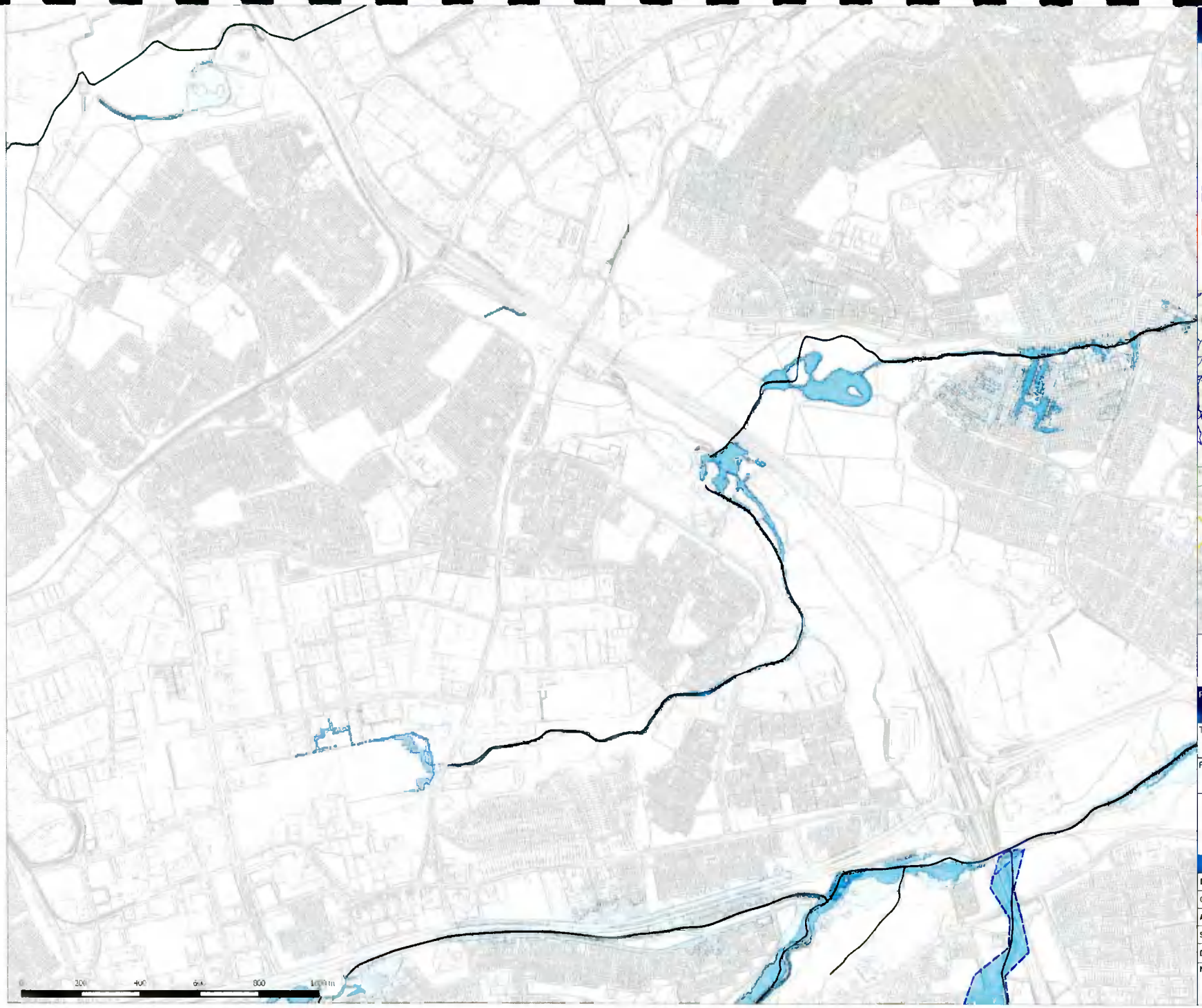
As noted above the site is located within **Flood Zone C**, as such a justification test is not required. See **Appendix A.**

5.0 CONCLUSION

- Historically, the site has not flooded from past events as noted by the OPW's historical flood maps. Modelling of the River Carmac has indicated that the subject lands are located outside of the 0.1% zone Fluvial AEP Zone.
- Pluvial flooding has been assessed and the use of an attenuation tank to limit the storm water discharge rate from the site to 2.8l/s will aid in increasing the capacity of the public surface water sewer adjacent to the site. The increased capacity will allow the public drainage system to deal with pluvial flows during extreme storm events.
- The risk of the site contributing to offsite flooding or the sites vulnerability to flooding from the public drainage network is mitigated by the installation of an attenuation tank to retain the storm volumes experienced on site during high intensity storm events.

Appendix A

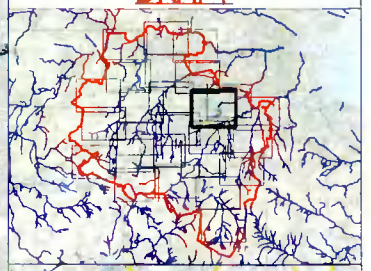
SDCC Flood Maps

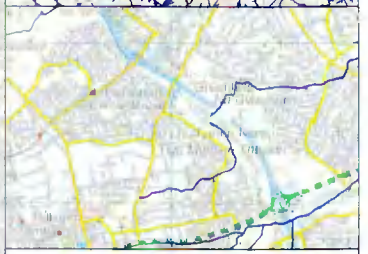


Legend

- Flood Zone A - 1% AEP Flood Extent (1 in 100 chance in any given year)
- Flood Zone B - 1% AEP Flood Extent (1 in 1000 chance in any given year)
- Defended Area
- Watercourse Centreline
- Indicative Flood Extents
- County Boundary

DRAFT





South Dublin County Council

Project: Strategic Flood Risk Assessment

Title: Fluvial Flood Zone Mapping

Figure: MDW657_0010

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Issue Details

Drawn:	BT	Project No.	MDW0657
Checked:	JH	File Ref	MDW0657QG0010P02
Approved:	JH		
Scale:	1:6000 @ A1	Drawing No.	Projection
Date:	14/01/2016	10 of 26	IG

Notes: 1. The viewer of this map should refer to the SFRA Report and Disclaimer

Appendix B

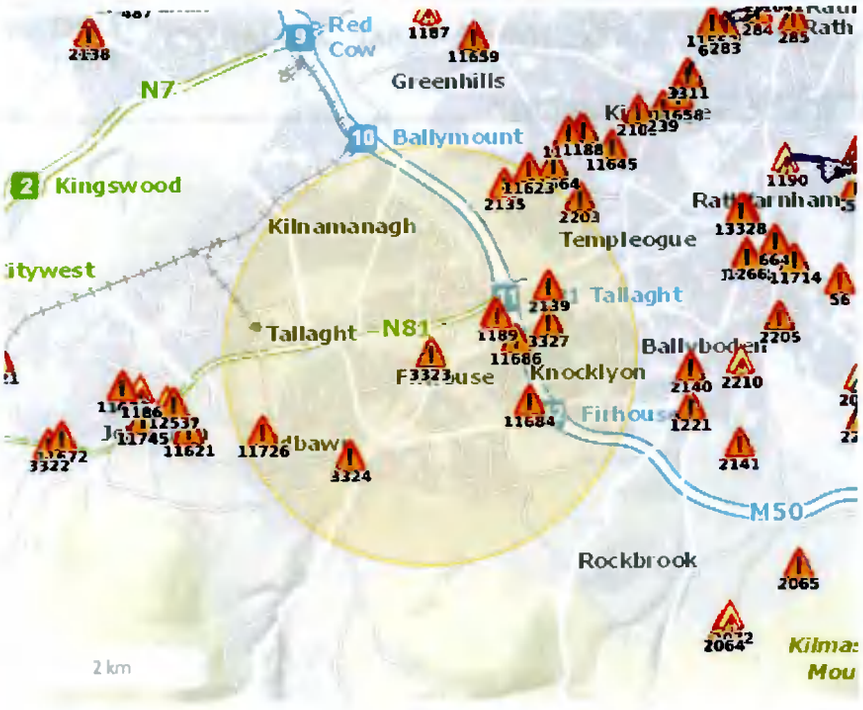
OPW Historic Flood Maps

Past Flood Event Local Area Summary Report

Report Produced: **19/5/2021 14:26**

This Past Flood Event Summary Report summarises all past flood events within 2.5 kilometres of the map centre.

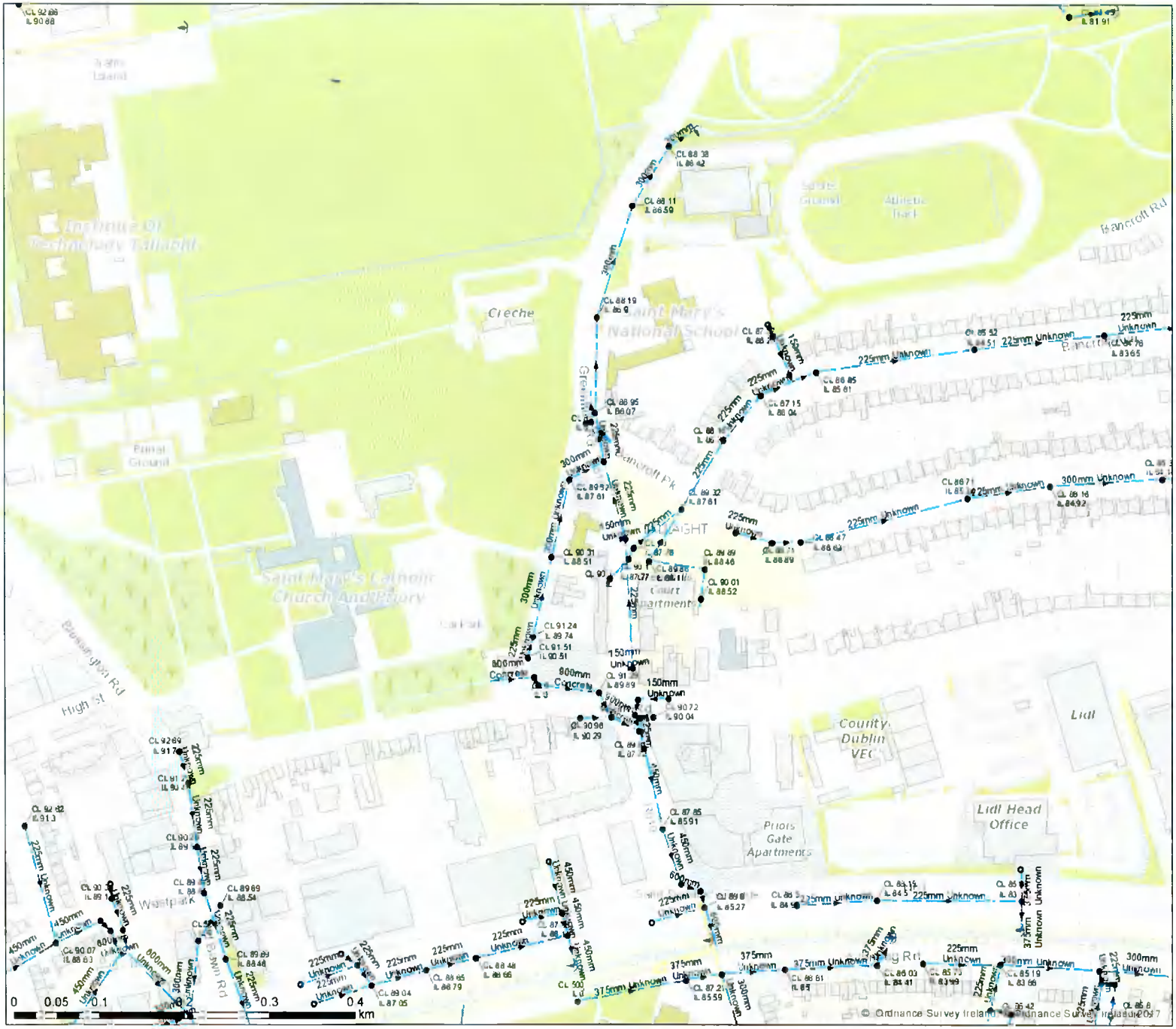
This report has been downloaded from www.floodinfo.ie (the "Website"). The users should take account of the restrictions and limitations relating to the content and use of the Website that are explained in the Terms and Conditions. It is a condition of use of the Website that you agree to be bound by the disclaimer and other terms and conditions set out on the Website and to the privacy policy on the Website.



10 Results

	Name (Flood_ID)	Start Date	Event Location
1.	Dodder Mount Carmel Park recurring (ID-1189)	n/a	Approximate Point
	Additional Information: Reports (2) Press Archive (1)		
2.	Old City water Course Spawell House Feb 1994 (ID-2139)	03/02/1994	Exact Point
	Additional Information: Reports (1) Press Archive (0)		
3.	Dodder Avonmore Park Nov 2000 (ID-3323)	05/11/2000	Approximate Point
	Additional Information: Reports (1) Press Archive (0)		
4.	Dodder Kiltipper Road Nov 2000 (ID-3324)	05/11/2000	Approximate Point
	Additional Information: Reports (1) Press Archive (0)		
5.	Knocklyon Ave Nov 2000 (ID-3327)	05/11/2000	Approximate Point
	Additional Information: Reports (1) Press Archive (0)		
6.	Mount Carmel Park Firhouse Nov 2000 (ID-3333)	05/11/2000	Approximate Point
	Additional Information: Reports (1) Press Archive (1)		

Irish Water Web Map



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Print Date: 24/12/2021

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Water Distribution Network
- Water Treatment Plant
- Water Pump Station
- Storage Cell/Tower
- Dosing Point
- Meter Station
- Abstraction Point
- Telemetry Kiosk

Reservoir
- Potable
- Raw Water

Water Distribution Mains
- Irish Water
- Private

Trunk Water Mains
- Irish Water
- Private

Water Lateral Lines
- 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
- PSV
- 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

Water Fittings
- Cap
- Reducer
- Tap
- Other Fittings

Sewer Foul/Combined Network
- Waste Water Treatment Plant
- Waste Water Pump Station

Sewer Mains Irish Water
- Gravity - Combined
- Gravity - Foul
- Gravity - Unknown
- Pumping - Combined
- Pumping - Foul
- Pumping - Unknown
- Syphon - Combined
- Syphon - Foul
- Overflow

Sewer Mains Private
- Gravity - Combined
- Gravity - Foul
- Gravity - Unknown
- Pumping - Combined
- Pumping - Foul
- Pumping - Unknown
- Syphon - Combined
- Syphon - Foul
- Overflow

- Sewer Lateral Lines
- Sewer Casings

Sewer Manholes
- Standard
- Backdrop
- Cascade
- Catchpit
- Bifurcation
- Hatchbox
- Lamphole
- Hydrobrake
- Other Unknown

Discharge Type
- Outfall
- Overflow
- Soakaway
- Other Unknown

Cleanout Type
- Rodding Eye
- Flushing Structure
- Other Unknown

Sewer Inlets
- Catchpit
- Gully
- Standard
- Other Unknown

Sewer Fittings
- Vent/Col
- Other Unknown

Storm Water Network

Surface Water Mains
- Surface Gravity Mains
- Surface Gravity Mains Private
- Surface Water Pressurised Mains
- Surface Water Pressurised Mains Private

Inlet Type
- Gully
- Standard
- Other Unknown

Storm Manholes
- Standard
- Backdrop
- Cascade
- Catchpit
- Bifurcation
- Hatchbox
- Lamphole
- Hydrobrake
- Other Unknown

- Storm Culverts
- Storm Clean Outs
- Stormwater Chambers

Discharge Type
- Outfall
- Overflow
- Soakaway
- Other Unknown

Gas Networks Ireland
- Transmission High Pressure Gasline
- Distribution Medium Pressure Gasline
- Distribution Low Pressure Gasline

ESB Networks

ESB MV Lines
- MV Underground
- MV Overhead
- MV Abandoned

ESB MV/LV Lines
- MV Overhead Three Phase
- MV Overhead Single Phase
- LV Overhead Three Phase
- LV Overhead Single Phase
- MV/LV Underground
- Abandoned

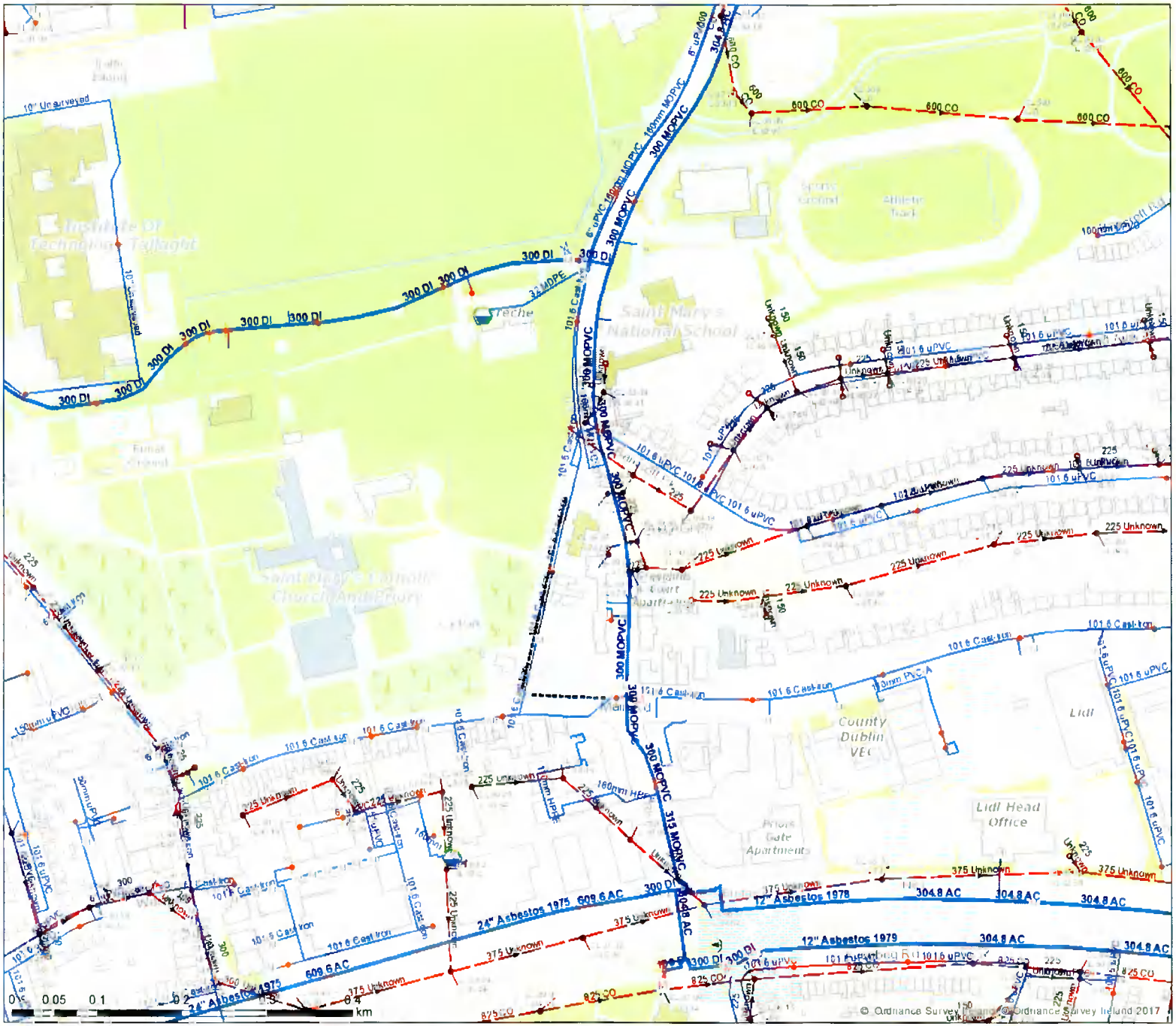
New Service Categories
- Proposed
- Under Construction
- Out of Service
- Decommissioned

Water Non Service Assets
- Water Point Feature
- Water Pipe
- Water Structure

Waste Non Service Assets
- Waste Point Feature
- Sewer

Waste Structure

Irish Water Web Map



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Appendix E

GSI Hydrogeology & Geological Maps

D092 Greenhills Nursing Home GSI Ground Map

Legend

Structural Symbols 100K ITM 2018

- <all other values>
- Dip of bedding or main foliation, old GSI data
- First foliation parallel to bedding
- Foliation trend, Thorr and Rosses Granites
- Horizontal Bedding
- Strike and dip of bedding, right way up
- Strike and dip of bedding, way up unknown
- Strike and dip of first foliation
- Strike and dip of overturned bedding
- Strike and dip of second foliation
- Strike and dip of third foliation
- Strike and plunge of first generation fold axis
- Strike and plunge of second generation fold axis
- Strike and plunge of third generation fold axis
- Strike of vertical bedding/foliation
- Strike of vertical first foliation

Bedrock Outcrops 100 ITM 2018

Bedrock Linework 100k ITM 2018

- Anticlinal Axis
- Antiformal axis
- Aquifer Boundary
- Area
- Coal seam
- Dyke
- Fault
- Ghost Line
- Goniatite marine band (R1-R4)
- Lithological boundary offshore
- Metadolerite sheet, mainly sills
- Paleogene/ Tertiary Dyke
- Synclinal Axis
- Synformal axis
- Tectonic Slide, barbs on hanging-wall
- Thin stratigraphical unit, diagrammatic
- Thrust, barbs on hanging-wall side
- Tuff band
- Unconformity, dots on younger side
- X-Section

Scale: 1:2,500

Geological Survey Ireland

PSI Licence

0 0.0175 0.035 0.07 mi

0 0.0275 0.055 0.11 km

Map Centre Coordinates (ITM) 709,562 727,818

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