

CS CONSULTING
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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





EXCLUSIVO

FLOOD RISK ASSESSMENT

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

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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.

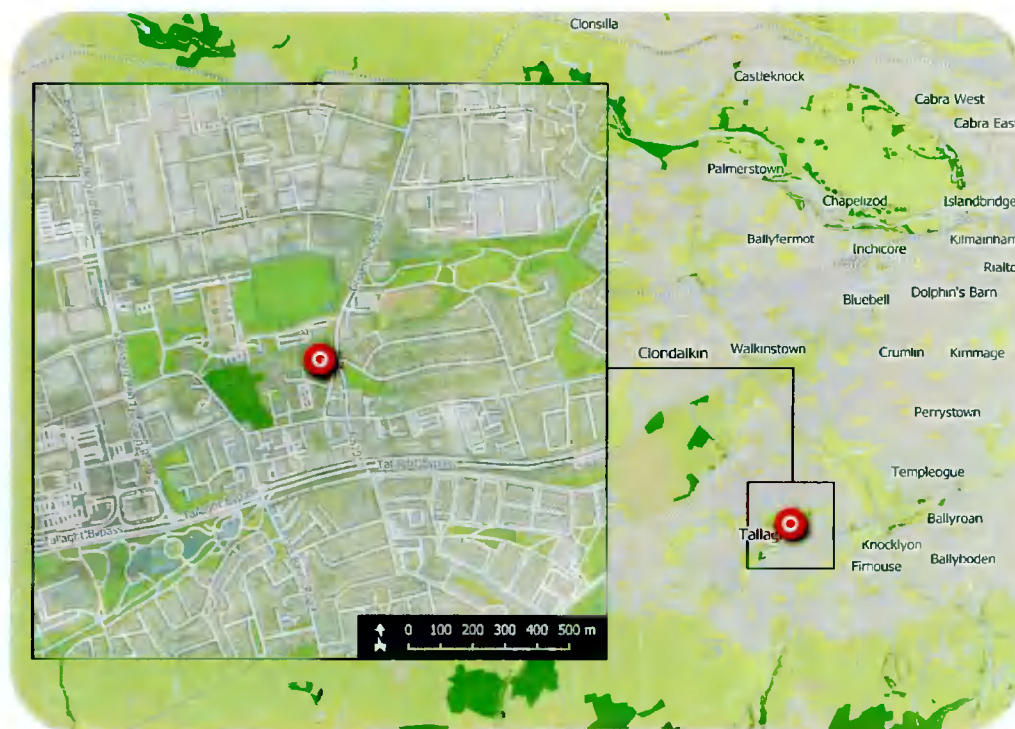


Figure 1 – Location of proposed development site
(map data & imagery: EPA, NTA, OSM Contributors, Google)

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)

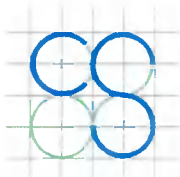
2.1 EXISTING LAND USE

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'.

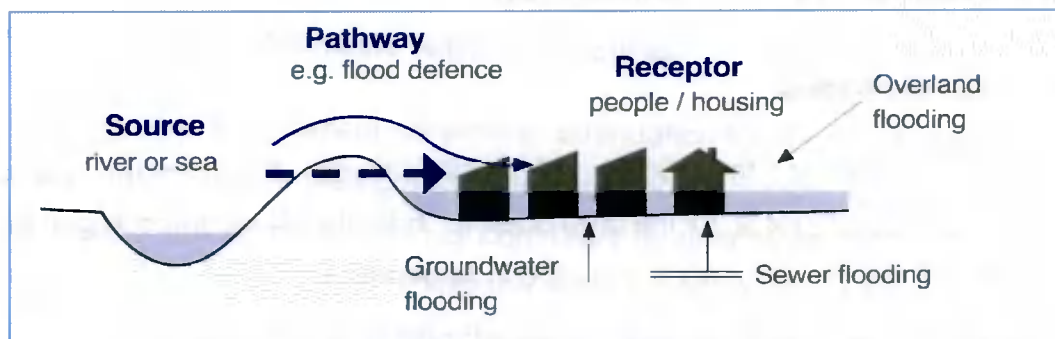


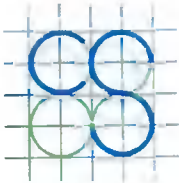
Figure 2 – Source-pathway-receptor model Site location
(Flood Risk Management Guidelines)

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.



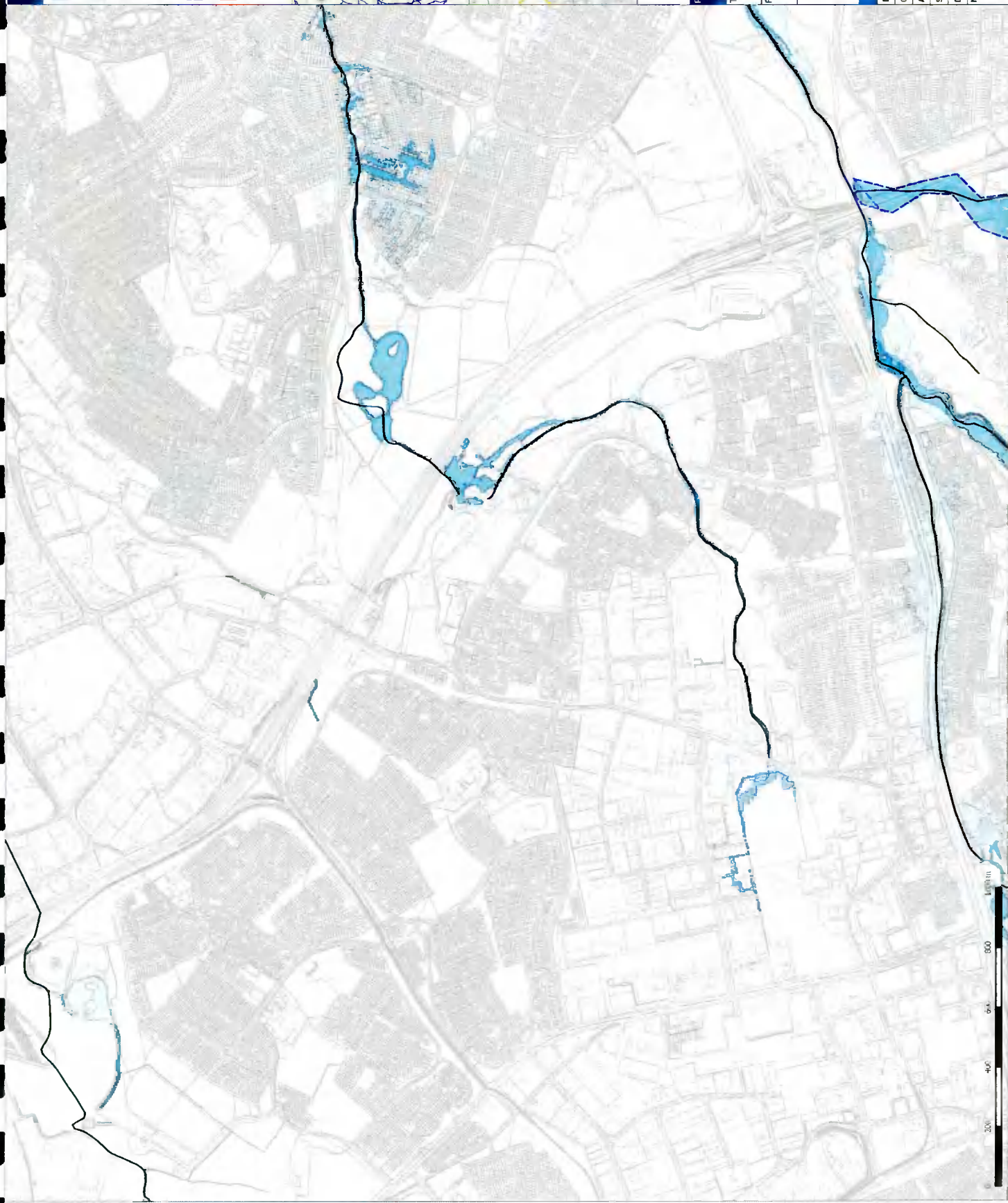
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Appendix A
SDCC Flood Maps



GEORGE J. FINE

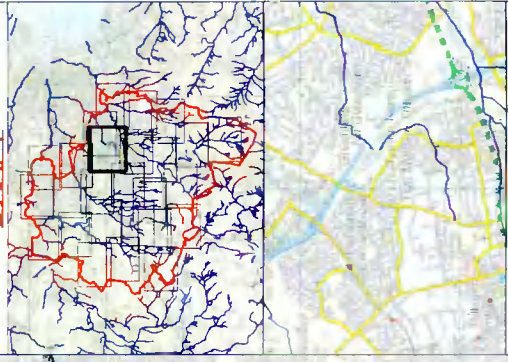
1988



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



Project Strategic Flood Risk Assessment

Title Fluvial Flood Zone Mapping

Figure MDW657_0010

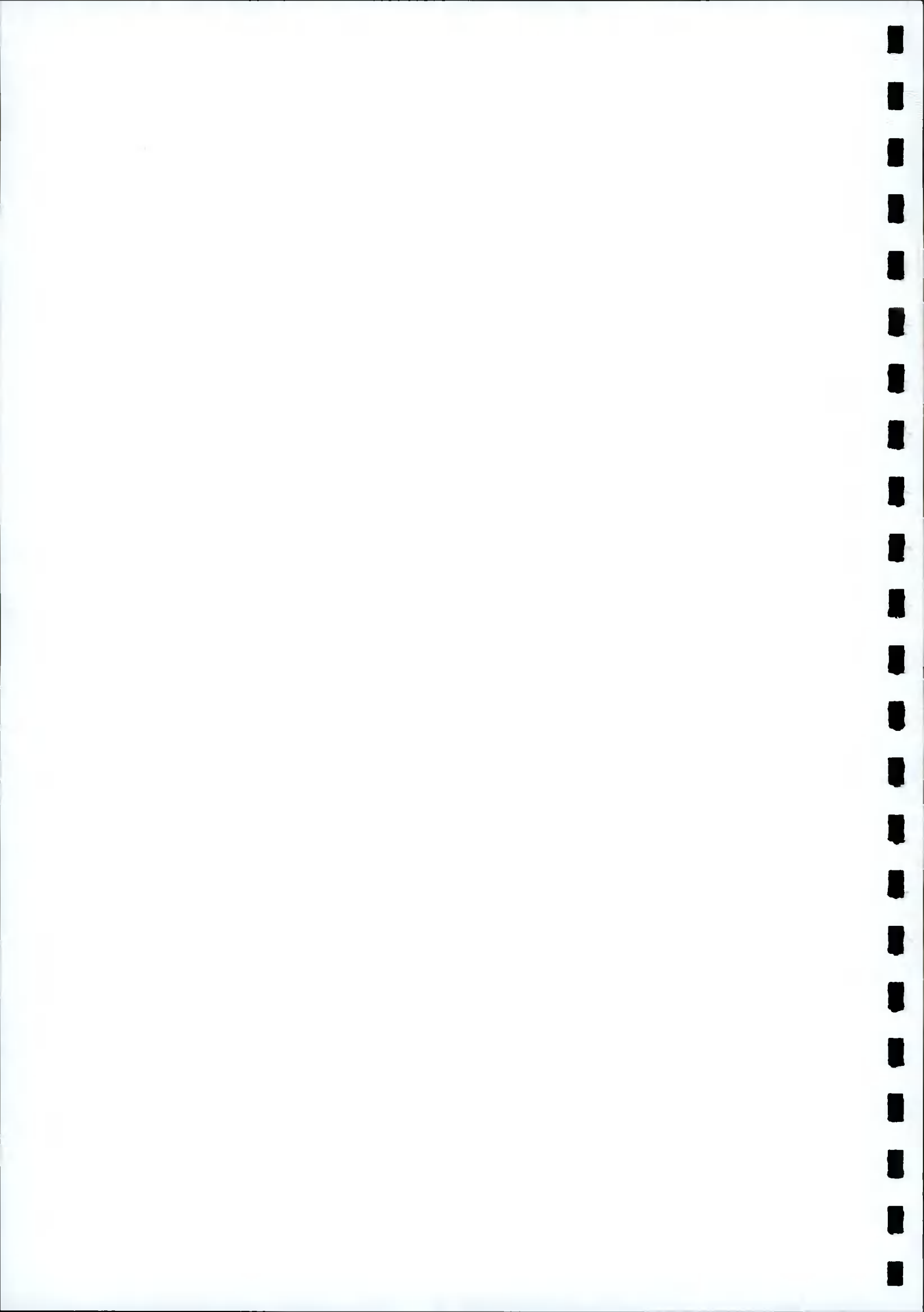


RPS Consulting Engineers
West Pier Business Campus
Via Loughmore
Cork, Ireland
Tel: +353 1 488 2900
Fax: +353 1 462 0814

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Checked:	JH	File Ref:	MDW65700010F02
Approved:	JH	Drawing No.:	10 of 26
Scale:	1:500 @ A1	Projection:	IG
Date:	14/01/2016		

Notes 1. The viewer of this map should refer to the SRP, Report and Checklist
2. Defended Areas Indicated (Source: No. 49/05/2014
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Appendix B

OPW Historic Flood Maps



EXCERPT



Past Flood Event Local Area Summary Report

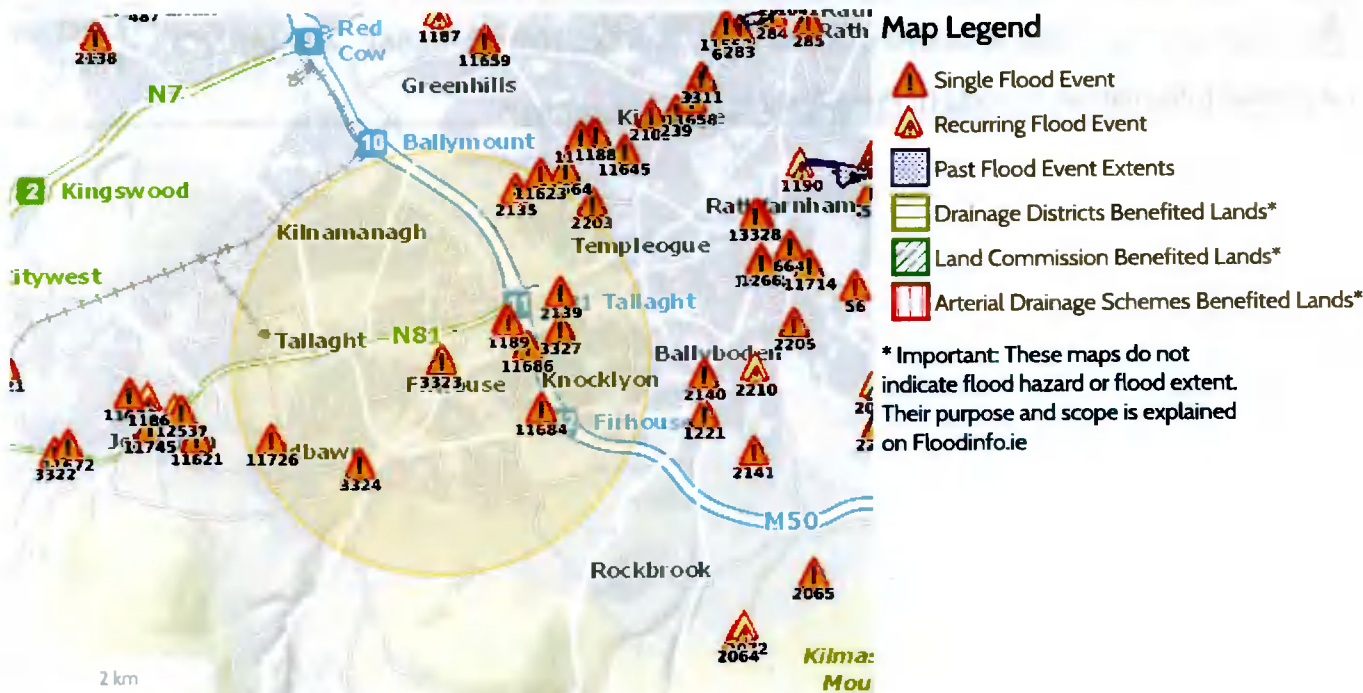


OPW
 Oifig na nOibracha Poiblí
 Office of Public Works

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

100

100



100

Irish Water Web Map



Print Date: 24/12/2021

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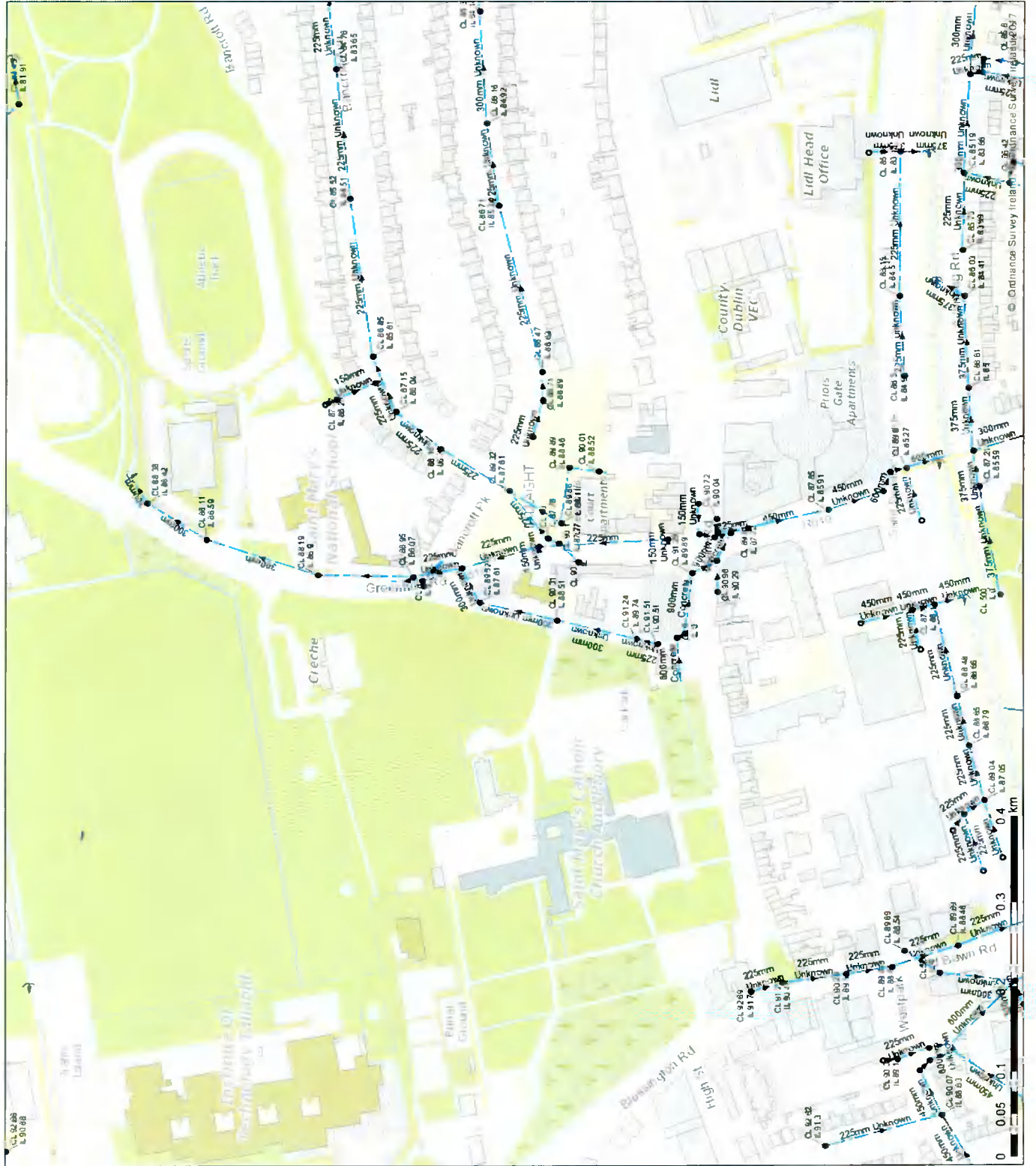
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Water Distribution Network	Water Treatment Plant	Water Pump Station	Water Storage Tank	Water Main	Water Lateral Line	Water Service Line	Water Meter	Water Meter Pit	Water Meter Chamber	Water Meter Box	Water Meter Valve	Water Meter Stopcock	Water Meter Isolation Valve	Water Meter Isolation Valve Box	Water Meter Isolation Valve Chamber	Water Meter Isolation Valve Pit	Water Meter Isolation Valve Chamber Pit	Water Meter Isolation Valve Chamber Pit Chamber	Water Meter Isolation Valve Chamber Pit Chamber Pit	Water Meter Isolation Valve Chamber Pit Chamber Pit Chamber Pit
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Irish Water Web Map



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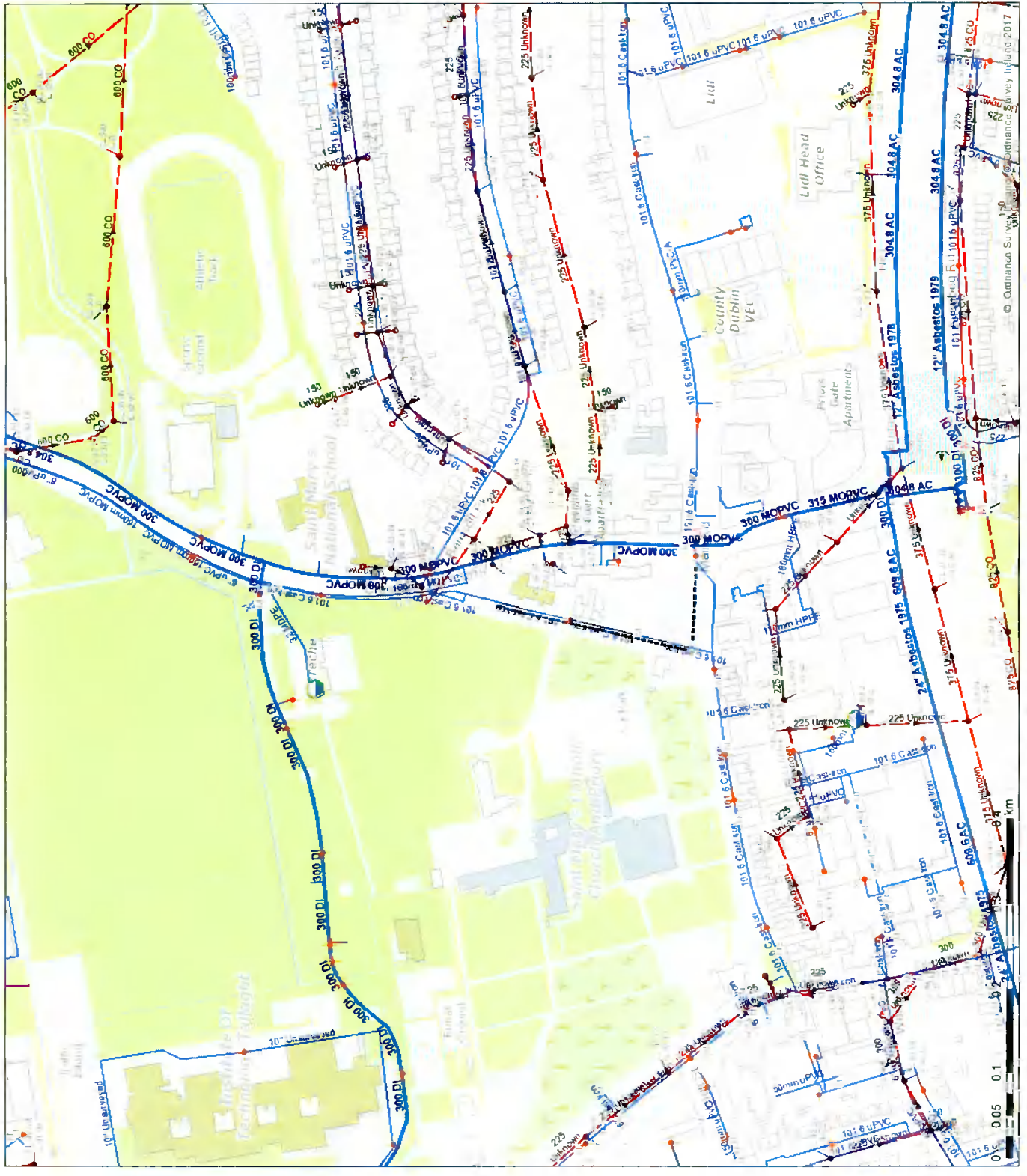
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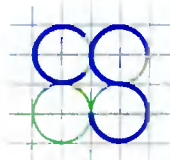
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Water Mains	Sanitary Sewer	Storm Water	Other
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29400mm Storm Water - 29700mm Storm Water - 30000mm 	<ul style="list-style-type: none"> Other Other - 150mm Other - 225mm Other - 300mm Other - 450mm Other - 600mm Other - 900mm Other - 1200mm Other - 1500mm Other - 1800mm Other - 2100mm Other - 2400mm Other - 2700mm Other - 3000mm Other - 3300mm Other - 3600mm Other - 3900mm Other - 4200mm Other - 4500mm Other - 4800mm Other - 5100mm Other - 5400mm Other - 5700mm Other - 6000mm Other - 6300mm Other - 6600mm Other - 6900mm Other - 7200mm Other - 7500mm Other - 7800mm Other - 8100mm Other - 8400mm Other - 8700mm Other - 9000mm Other - 9300mm Other - 9600mm Other - 9900mm Other - 10200mm Other - 10500mm Other - 10800mm Other - 11100mm Other - 11400mm Other - 11700mm Other - 12000mm Other - 12300mm Other - 12600mm Other - 12900mm Other - 13200mm Other - 13500mm Other - 13800mm Other - 14100mm Other - 14400mm Other - 14700mm Other - 15000mm Other - 15300mm Other - 15600mm Other - 15900mm Other - 16200mm Other - 16500mm Other - 16800mm Other - 17100mm Other - 17400mm Other - 17700mm Other - 18000mm Other - 18300mm Other - 18600mm Other - 18900mm Other - 19200mm Other - 19500mm Other - 19800mm Other - 20100mm Other - 20400mm Other - 20700mm Other - 21000mm Other - 21300mm Other - 21600mm Other - 21900mm Other - 22200mm Other - 22500mm Other - 22800mm Other - 23100mm Other - 23400mm Other - 23700mm Other - 24000mm Other - 24300mm Other - 24600mm Other - 24900mm Other - 25200mm Other - 25500mm Other - 25800mm Other - 26100mm Other - 26400mm Other - 26700mm Other - 27000mm Other - 27300mm Other - 27600mm Other - 27900mm Other - 28200mm Other - 28500mm Other - 28800mm Other - 29100mm Other - 29400mm Other - 29700mm Other - 30000mm





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GROUP

Appendix E

GSI Hydrogeology & Geological Maps



TSUBOTA L&L



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
- Strike and plunge of second generation fold
- 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

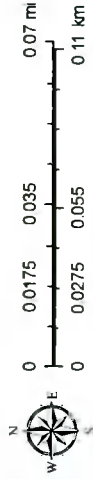


Scale: 1:2,500

Geological Survey Ireland

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Map Centre Coordinates (ITM): 7 09 562 7 27 818
5/19/2021, 2:58:12 PM



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