

SITE-SPECIFIC FLOOD RISK ASSESSMENT

for

A PROPOSED STRATEGIC HOUSING DEVELOPMENT

at

ST MICHAELS HOSPITAL CAR PARK, DÚN LAOGHAIRE

for

FITZWILLIAM DL LTD.

Muir Associates Limited,
Consulting Engineers,
Project Managers,
Marketing Network House,
Argyle Square,
Morehampton Road,
Dublin 4, D04 K0Y1

Tel: +353-1-6762788

Email: info@muir.ie
www.muir.ie



DOCUMENT HISTORY

Job Ref: D1855

Date	Revision	Prepared	Approved	Issue
21.08.20	A	SS/SOR	SOR	Draft Issue
25.09.20	B	SS/SOR	SOR	Revised and issued as Final Draft
16.10.20	C	SS/SOR	SOR	Final Draft
22.10.20	D	SS/SOR	SOR	Issued for Planning
21.11.20	E	SS/SOR	SOR	Revised and Reissued for Planning
10.12.20	F	SS/SOR	SOR	Revised and Issued for Planning

Copyright Muir Associates Limited. All rights reserved.

This report has been prepared on behalf of Fitzwilliam DL Ltd in accordance with the terms and conditions of the related appointment.

Opinions and information provided in this report are on the basis of Muir Associates Limited using due skill, care and diligence and no warranty is provided as to their accuracy.

No part of this report may be copied or reproduced by any means without prior written permission from Muir Associates Limited.

It is expressly stated that no independent verification of any of the documents or information supplied to Muir Associates Limited has been made.

CONTENTS

1.0 INTRODUCTION 3

2.0 PROPOSED DEVELOPMENT 4

3.0 SITE CONTEXT 5

4.0 REFERENCE MATERIAL 5

5.0 FLOOD RISK ASSESSMENT 6

6.0 CONCLUSIONS 9

APPENDIX A – Information from the OPW Flood Maps Website <http://www.floodmaps.ie>

APPENDIX B – Irish Water Records

1.0 INTRODUCTION

This Site-Specific Flood Risk Assessment has been prepared by Muir Associates Limited (MAL) to accompany a planning application for a proposed Strategic Housing Development located at St Michaels Hospital Car Park, Dún Laoghaire.

The location of the site of the proposed development is illustrated on Figure 1.1 presented below.

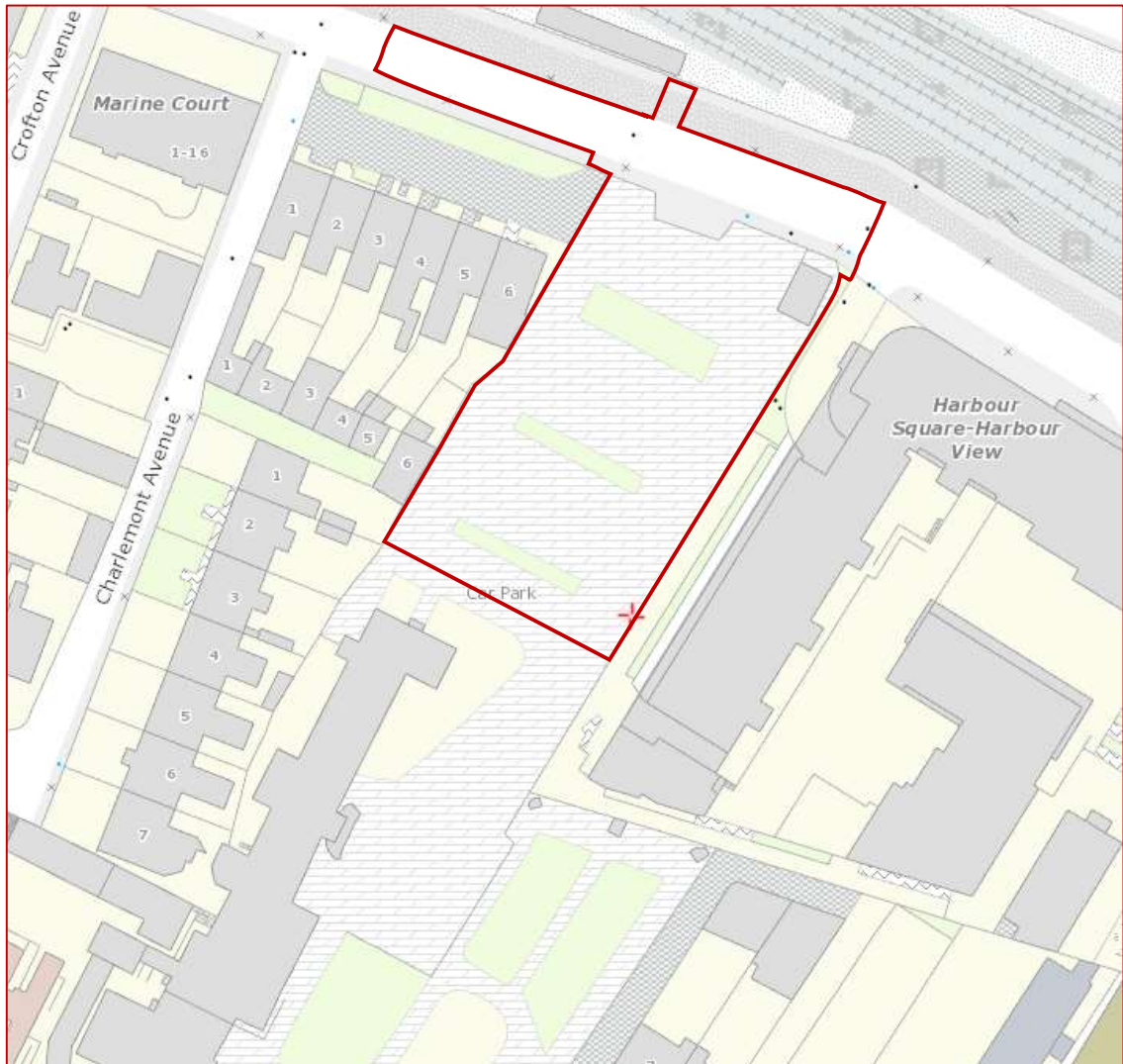


Figure 1.1: Site Location;

The Flood Risk Assessment was undertaken in accordance with the guidance contained in the following documents:

- *The Planning System and Flood Risk Management Guidelines for Planning Authorities* (Department of Environment, Heritage and Local Government and the Office of Public Works);

- *C624 Development and Flood Risk* (Construction Industry Research and Information Association, CIRIA) and;
- Dún Laoghaire–Rathdown County Development Plan 2016-2022; Appendix 13 Strategic Flood Risk Assessment;

The Flood Risk Assessment also takes cognisance of the following information:

- Architectural drawings for the proposed development;
- Engineering drawings for the proposed development;
- OPW National Preliminary Flood Risk Assessment;
- OPW Eastern CFRAM Study;
- OPW Floodmaps.ie;
- ICPSS – Irish Coastal Protection Strategy Study;
- Irish Water Drainage Records;
- Topographical survey information;
- Geological Survey of Ireland (GSI) Maps;

2.0 PROPOSED DEVELOPMENT

The proposed development will consist of the demolition of an existing 2 No storey house on the site and the construction of 102 No build-to-rent residential apartments (80 No 1-bed and 22 No 2-bed units) across 2 No buildings (Building 01 and Building 02), along with ancillary residential amenities and a publicly accessible café on a c. 0.42ha site. Building 01 to the north extends to part 5, part 6, part 8 and part 13 No storeys in height. Building 02 to the south extends to part 8, part 9 No storeys in height, with a setback 9th storey.

Residential amenity space in the form of a reception, coworking/study space, gym, games area, lounge/kitchen area, and multi-purpose recreational space is provided at ground floor level of Building 01, alongside a reception and postal storage area. External roof terraces are included at storeys 6 and 9 at Building 01, with an enclosed glazed amenity space at 13th storey level, with external terrace. An external roof terrace is provided at 9th storey level at Building 02.

The development includes a vehicle right of way providing access to St. Michael's Hospital along the western perimeter of the site, accessed from Crofton Road. This provides access to 3 No car parking spaces (including 1 No disabled space) located between the two buildings. A secondary right of way is provided via a landscaped pedestrian route along the eastern perimeter of the site providing access to St. Michael's Hospital. A total of 150 No bicycle parking spaces are provided at the ground floor level of Building 02 (alongside a bicycle repair area), 26 No within the central courtyard and 8 No adjacent to the café at the northern perimeter. The development also includes an ESB substation, bin store, services and drainage infrastructure, boundary treatments, access provision at Crofton and all ancillary development works necessary to facilitate the development.

A full development description is provided in the planning report which accompanies the submission.

3.0 SITE CONTEXT

The site of the proposed development is located within the existing surface car park of St Michaels Hospital off Crofton Road. The existing site levels fall from south to north with the levels varying from approximately 12.5mAOD to 9.0mAOD.

4.0 REFERENCE MATERIAL

The source material examined to gain an understanding of the historical flooding on or close to the proposed development site is listed in the Introduction to this document. In addition, the Office of Public Works (OPW) collates available reports on flooding from all sources (e.g. fluvial, pluvial, coastal, infrastructure) on a nationwide basis. The OPW website (<http://www.floodmaps.ie>) contains flood hazard map information in relation to locations that may be at risk from flooding. The information obtained from the OPW website is presented in Appendix A of this report.

Thus, prior to considering the specifics of the proposed development, records of historical and predicted flooding in the area were researched. As noted earlier the primary source of such information is the OPW and the following is a summary of the findings:

- **OPW National Flood Hazard Mapping**, Summary Local Area Report. – This source does not indicate any record of flooding within the development site or within proximity of the site – refer to Appendix A for Historical Flooding Map Report.
- **Map 3 of the Dún Laoghaire–Rathdown County Council Flood Zone Maps**, this map does not indicate any flooding within the development site or within proximity of the site for the 0.1% and 1% AEP.

An extract from Map 3 of the Dún Laoghaire–Rathdown County Council Flood Zone Maps is presented in Figure 4.1 below.

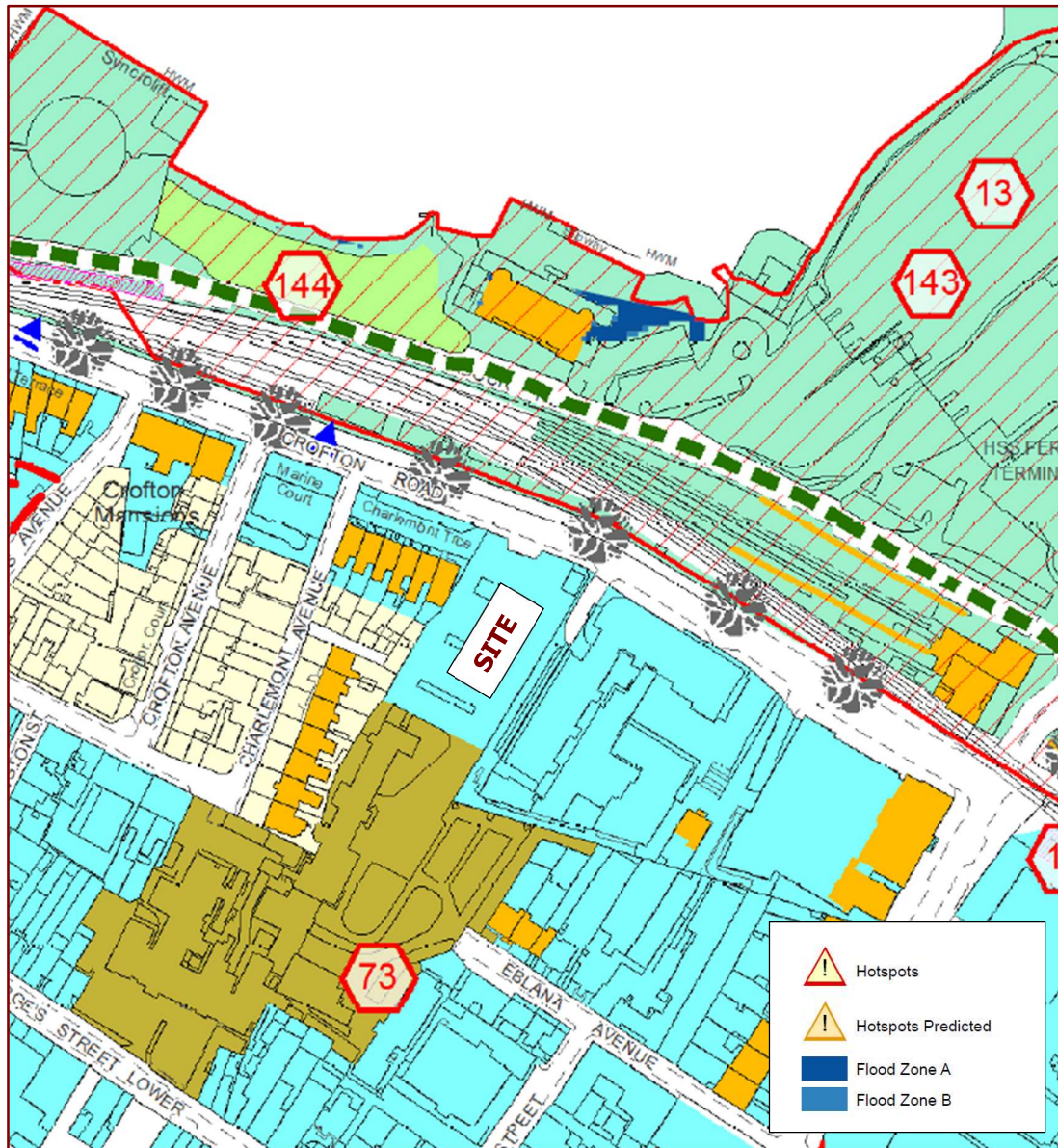


Figure 4.1: Extract from Map 3 of the Dún Laoghaire–Rathdown County Council Flood Zone Maps

5.0 FLOOD RISK ASSESSMENT

The current relevant Flood Risk Assessment guidance appropriate for the assessment of flood risk is to be found in the “**Guidelines for Planning Authorities**” titled “**The Planning System and Flood Risk Management**” published in November 2009 by the Office of Public Works (OPW) and the Department of Environment, Heritage and Local Government (DOEHLG).

The objectives of this report, given the location, nature and scale of the proposed development are to assess the flood risks to and arising from the proposed development. In order to achieve this objective, the Planning System and Flood Risk Management Guidelines for Planning Authorities requires that *the risks be mitigated and managed through location, layout, and*

*design of the development to **reduce flood risk to an acceptable level** and that **no unacceptable residual flood risk** to the development, its occupants or users and adjoining property remains.*

The sources of flooding considered for this site are Tidal, Fluvial, Pluvial, Groundwater, Human or Mechanical and Construction. Each of these potential flooding sources is considered in more detail, in turn, below:

5.1 Tidal

The development is situated adjacent to the coast with a lowest proposed finished level of order 9.0m AOD and therefore it is reasonable to conclude that the related risk from tidal flooding is deemed to be sufficiently low to be acceptable.

5.2 Fluvial

The nearest fluvial source to the development is the Monsktown Stream which is located approximately 450m to the west of the proposed development. Given the location of this stream it is reasonable to conclude that the related risk from fluvial flooding is deemed to be sufficiently low to be acceptable

5.3 Pluvial

None of the available sources of information indicate any pluvial flooding on or within proximity to the development site. The sources of pluvial flood risk and related Stormwater impacts are assessed immediately below:

5.3.1 Off-Site Sources

As noted earlier no evidence has been obtained of any surface water flooding off site that would be likely to have an impact on the development site.

5.3.2 On-Site Sources

The flood risk from on-site sources to both the proposed development and to off-site receptors has been assessed as part of the design of the surface water system. The design of the surface water system is described in Engineering Planning Report which accompanies this application and the design been reviewed by an independent auditor through the Storm Water Audit procedure.

Overland flow routes within and outside the proposed development that would be caused by exceedance events have been reviewed based on the development drawings, road details and available topographical information and are presented in Figure 5.1 below. Based on the above information it is expected that the overland flow routing would be channelled through the proposed road at the western side

of the development and through the pedestrian link on the eastern side of the proposed development site which would in turn protect the development from the exceedance event flows. It is also worth noting that the exceedance flow from the proposed development would be channelled toward Crofton Road in a similar way when compared with the existing site conditions.

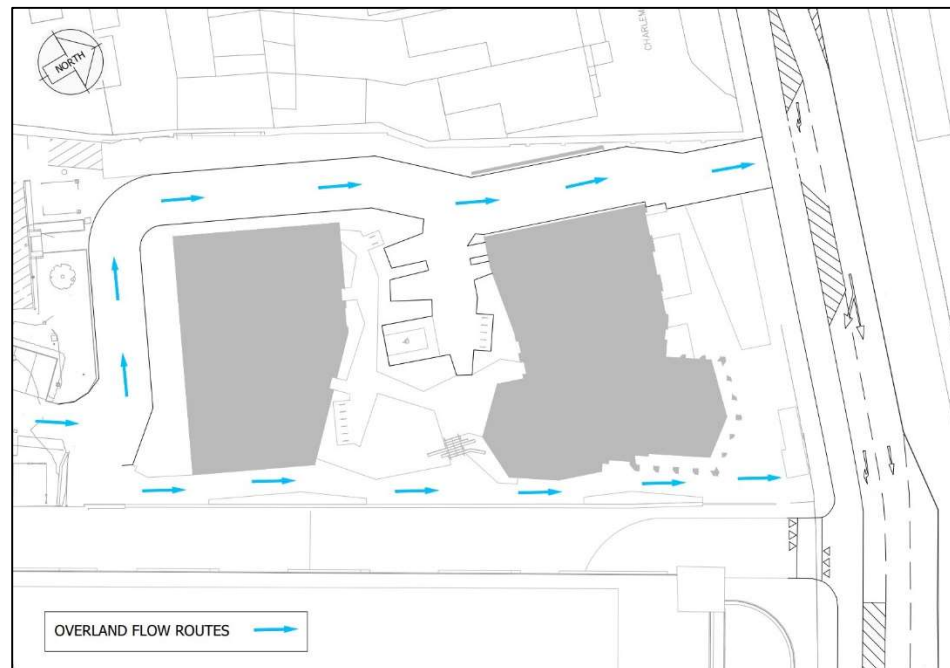


Figure 5.1: Overland Flow Route

Given that no record has been obtained of previous or predicted pluvial flooding in the area and that an appropriate surface water management system is to be incorporated as part of the proposed development the risk of flooding from onsite sources is deemed to be sufficiently low to be acceptable.

5.4 Groundwater

There is no record of groundwater flooding on the site or in proximity of the site in any of the available information sources thus the risk from groundwater flooding is deemed to be sufficiently low to be acceptable.

5.5 Human/Mechanical

There does not appear to be any Human or Mechanical factors external to the site in the area that would give rise to any unacceptable flood risk.

Consideration of the risk of flooding caused by a failure of the onsite piped network system to convey surface water (such as an obstruction in the pipe) has influenced the finished floor levels such that they will be set at the maximum reasonable practicable

level taking account of all other design considerations. It is also worth noting that the site layout tends to protect the proposed development from any build-up of surface water. Therefore, the risk of flooding due to human or mechanical factors is deemed to be sufficiently low to be acceptable.

6.0 CONCLUSIONS

Based on all the foregoing it has been concluded that the proposed development is appropriate in terms of meeting the flood risk and storm water impact policies and objectives of the Dún Laoghaire–Rathdown County Development Plan 2016-2022 and that the proposed development is:

- Considered to have the required level of flood protection;
- Does not increase the flood risk to other third parties or lands;
- Meets the various requirements of the OPW Guidelines in relation to flood risk;

In summary the following points are noted:

- The proposed development is residential and therefore falls into the category of a Highly Vulnerable development use, in accordance with *The Planning System and Flood Risk Management Guidelines for Planning Authorities*;
- The available data indicates that the proposed development is within Zone C for fluvial and tidal flooding;
- The proposed drainage system has been designed in accordance with the relevant standards and regulations. The flood risk arising from the proposed drainage infrastructure is negligible and no further mitigation measures are required;
- The flood risk represented by groundwater is negligible; thus, no further mitigation is required;

Accordingly, the site has been evaluated as appropriate for development when assessed in accordance with the requirements of ***The Planning System and Flood Risk Management Guidelines for Planning Authorities (Department of Environment, Heritage and Local Government and the Office of Public Works)***.

APPENDIX A – OPW Map Report – Historical Flooding
www.floodmaps.ie

Summary Local Area Report

This Flood Report summarises all flood events within 2.5 kilometres of the map centre.

The map centre is in:

County: Dublin

NGR: O 240 286

This Flood Report has been downloaded from the Web site www.floodmaps.ie. The users should take account of the restrictions and limitations relating to the content and use of this Web site that are explained in the Disclaimer box when entering the site. It is a condition of use of the Web site that you accept the User Declaration and the Disclaimer.



Map Scale 1:13,773

Map Legend	
	Flood Points
	Multiple / Recurring Flood Points
	Areas Flooded
	Hydrometric Stations
	Rivers
	Lakes
	River Catchment Areas
	Land Commission *
	Drainage Districts *
	Benefiting Lands *

* Important: These maps do not indicate flood hazard or flood extent. Their purpose and scope is explained in the Glossary.

18 Results

	1. Monkstown Stream Monkstown Co Dublin Aug 2008 County: Dublin Additional Information: Reports (1) More Mapped Information	Start Date: Flood Quality Code:3
	2. Pluvial Glasthule 16th Aug 2008 and 2nd July 2009 County: Dublin Additional Information: Reports (1) More Mapped Information	Start Date: Flood Quality Code:3
	3. Flooding at Carysfort Avenue, Blackrock, Co. Dublin on 24th Oct 2011 County: Dublin Additional Information: Reports (1) More Mapped Information	Start Date: 24/Oct/2011 Flood Quality Code:2
	4. Flooding at Newtownpark Avenue, Blackrock, Co. Dublin on 24th Oct 2011 County: Dublin Additional Information: Reports (1) More Mapped Information	Start Date: 24/Oct/2011 Flood Quality Code:2
	5. Flooding at O'Rourke Park, Sallynoggin, Co. Dublin. on 24th Oct 2011 County: Dublin Additional Information: Reports (1) More Mapped Information	Start Date: 24/Oct/2011 Flood Quality Code:2

Additional Information: Reports (1) More Mapped Information



6. Flooding at Barclay Road and Temple Road, Blackrock, Co. Dublin, on 24th Oct 2011
County: Dublin

Start Date: 24/Oct/2011

Flood Quality Code:2

Additional Information: Reports (1) More Mapped Information



7. Flooding at Pakenham Road, Monkstown, Co. Dublin on 24th Oct 2011
County: Dublin

Start Date: 24/Oct/2011

Flood Quality Code:2

Additional Information: Reports (1) More Mapped Information



8. Flooding at Alma Place, Carrickbrennan Road, Monkstown, Co. Dublin on 24th Oct 2011
County: Dublin

Start Date: 24/Oct/2011

Flood Quality Code:2

Additional Information: Reports (1) More Mapped Information



9. Flooding at Stradbroke Gardens, Blackrock, Co. Dublin on 24th Oct 2011
County: Dublin

Start Date: 24/Oct/2011

Flood Quality Code:2

Additional Information: Reports (1) More Mapped Information



10. Flooding at Deansgrange Village, Deansgrange, Co. Dublin on 24th Oct 2011
County: Dublin

Start Date: 24/Oct/2011

Flood Quality Code:3

Additional Information: Reports (1) More Mapped Information



11. Crofton Road Oct 2002
County: Dublin

Start Date: 21/Oct/2002

Flood Quality Code:4

Additional Information: Reports (1) More Mapped Information



12. O Rourke Park Sallynoggin Oct 2002
County: Dublin

Start Date: 21/Oct/2002

Flood Quality Code:4

Additional Information: Reports (1) More Mapped Information



13. Carrickbrennan Road May 1993
County: Dublin

Start Date: 26/May/1993

Flood Quality Code:2

Additional Information: Photos (3) More Mapped Information



14. Carrickbrennan Road Recurring
County: Dublin

Start Date:

Flood Quality Code:2

Additional Information: Photos (3) Reports (2) More Mapped Information



15. Brighton Vale Recurring
County: Dublin

Start Date:

Flood Quality Code:4

Additional Information: Reports (4) More Mapped Information



16. Glasthule Recurring
County: Dublin

Start Date:

Flood Quality Code:4

Additional Information: Reports (3) More Mapped Information



17. Clearwater Cove Recurring
County:

Start Date:

Flood Quality Code:4

Additional Information: Reports (5) More Mapped Information



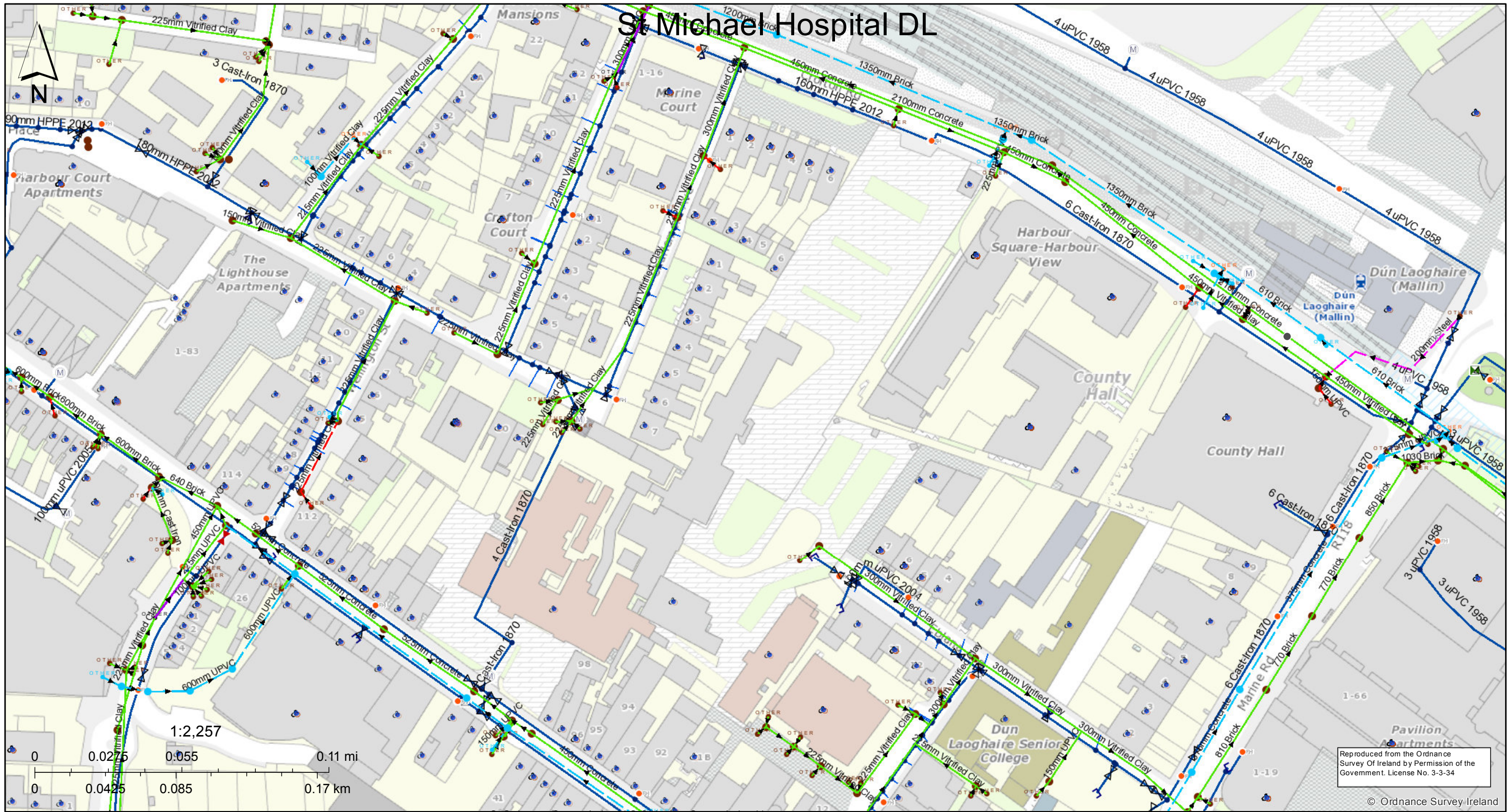
18. Dunedin Monkstown Recurring
County: Dublin

Start Date:

Flood Quality Code:4

Additional Information: Reports (4) More Mapped Information

APPENDIX B – Irish Water Records



6/12/2018 12:12:46 PM

Legend					
Stormwater Gravity Mains (Irish Water Owned)		Lamphole	Storm Fittings	Storm Culverts	Sewer Gravity Mains (Non-Irish Water owned)
Surface	Standard	Vent/Col	Storm Clean Outs	Combined	Foul
Stormwater Gravity Mains (Non-Irish Water Owned)		Other; Unknown	Other; Unknown		Overflow
Surface	Other; Unknown				Unknown
Storm Manholes		Storm Inlets	Storm Discharge Points	Sewer Gravity Mains (Irish Water owned)	
Cascade	Gully	Outfall	Outfall	Combined	
Catchpit	Standard	Overflow	Overflow	Foul	
Hatchbox	Other; Unknown	Soakaway	Soakaway	Overflow	
		Other; Unknown	Other; Unknown	Unknown	

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



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