

# **SOCIAL HOUSING DEVELOPMENT COLLINS AVENUE, WHITEHALL, DUBLIN**

## **Stage 1 Flood Risk Assessment**



SHB3-WHL-CS-RPS-RP-006  
Flood Risk Assessment (Stage I)  
P01  
21<sup>st</sup> April 2022

**FLOOD RISK ASSESSMENT (STAGE I)**


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**Approval for issue**

DK 21/04/2022

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**Dublin City Council**

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# 1 INTRODUCTION

RPS are the appointed Civil and Structural Engineering advisors to the National Development Finance Agency (NDFA) for the proposed residential development at Collins Avenue, Whitehall, Dublin City.

This project will deliver 83 apartments to Dublin City Council Planning Authority. The land area of the site is 1.07ha. Figure 3.1 & 3.2 illustrates the location of this proposed development site in Whitehall.

As part of this development RPS has carried out a stage 1 flood risk assessment of the proposed site. This assessment is required in order to obtain a planning permission for the proposed housing development project as set out in the Government's 2009 Planning System and Flood Risk Management Regulations (hereafter referred to as the 2009 Planning Regulations). The assessment involved a desk top study. The study examines any flooding risks to the proposed site and also assesses any impacts of the proposed development on the existing flooding/hydrological regimes of the adjacent watercourses and lands.

## 2 STAGE 1 FLOOD RISK ASSESSMENT FOR ATHY SOCIAL HOUSING DEVELOPMENT

### 2.1 Existing site condition and proposed development

#### 2.1.1 Site location & proposed development

The development site is brownfield with an area and red line boundary of 1.07 ha. The site sits directly on the South east corner of the prominent junction of Collins Avenue and Swords Road. (ITM Grid Reference: E 716835; N 738259). Refer to **Figure 3-1** in **Appendix A** for Site Location map.

The site at Whitehall is located c. 3.6 km north Dublin City Centre at the junction of Collins Avenue (R103) and the Swords Road, an important artery linking Dublin City to Dublin Airport via the M50 making the site a potential landmark site and gateway into the city. A neighbourhood centre is located c. 120m east of the site. A range of community and public facilities are located within 1km, including the Holy Child Church, the Holy Child Boys National School and the Holy Child Girls National School, the Whitehall GAA pitches and the Rosmini Gaels GAA Club; the Highfield Hospital, Plunket College and the Homefarm Football Club. There are two Dublin bus stop immediately adjacent to the site, one on Collins Avenue and one on the Swords Road.

The Dublin Port Tunnel runs directly underneath the subject site and the 56m diameter concrete launch shaft diaphragm wall, which was constructed on the northern half of the site, is still in situ. Refer to **Figure 3-2** in **Appendix A** for Proposed Development map.

#### 2.1.2 Existing site topography & surface water drainage systems

The site, which is currently in use as a compound for Dublin City Council, is relatively flat. Levels at the site vary from 43.99mOD at the north-west corner of the site to 41.75mOD to the southern corner of the site. See **Figure 3-3** in **Appendix A** for existing topography of the site.

The surrounding lands are residential in nature and the natural topography of the ground falls from northwest to southeast. There were no drains captured at the site during the topographical survey.

There are also no drains illustrated in the OSI 6" Cassini historical maps. See **Figure 3.4** in **Appendix A**. The historical mapping shows that the site lays over one large field boundary. These fields have since been split, with the subject site used as the launch pit for the Dublin port tunnel and the neighbouring site currently used as a GAA field. The historical maps show no other features of note.

There are no existing flow paths into the site from surrounding lands. In general, lands within the site boundary fall to the southeast and surface water will be collected by the site stormwater network which has been designed to accommodate the critical 100-year storm event inclusive of 20% climate change. Surface water will be released to the DCC storm water network on Collins Avenue at a rate of 2l/s as agreed with DCC. The northern boundary of the site will remain unchanged with existing footpath infrastructure in place being upgraded to suit the proposed development entrance. Lands at the south-eastern boundaries are at similar levels to the existing levels so no flow path directly into the site is anticipated. Site drainage proposals will not direct surface water flows towards any neighbouring

developments through the use of SuDS measures implemented on site. Site boundary walls will also provide an obstruction to any unforeseen surface water flows exiting the site and causing flooding elsewhere. The proposals for this development include the adequate storm drainage design, release of attenuated storm water to DCC's storm water network via a flow control at a rate of 2l/s as agreed with DCC.

## 2.2 Sources of information

Consulted in terms of flooding as recommended in the OPW Guidelines on "The Planning System and Flood Risk Management Guidance and Planning (2009)"

### 2.2.1 Historical Six Inch Mapping (osi.ie)

The historical 6" maps were consulted on the Ordnance Survey Ireland website. There was no indication of historic flooding at the proposed site. The historical mapping did not illustrate any historical drainage systems at the site. Refer to **Figure 3.** in **Appendix A.**

### 2.2.2 Historical Flood Maps (Floodmaps.ie and floodinfo.ie)

There are no instances of flooding at the proposed site. Refer to **Figure 3.** in **Appendix A.** Flooding events have occurred in the Donnycarney area approximately 1.5km East of the subject site. Geohive mapping indicates a level of approximately 30mOD in the Donnycarney area, approx. 20m below the level of the site.

### 2.2.3 Arterial Drainage Schemes / Drainage Districts & Benefitting Land Maps

According to [www.floodinfo.ie](http://www.floodinfo.ie), no drainage schemes are identified in the area. Drainage Districts were carried out by the Commissioners of Public Works under a number of drainage and navigation acts from 1842 to the 1930s to improve land for agriculture and to mitigate flooding. Channels and lakes were deepened and widened, weirs removed, embankments constructed, bridges replaced or modified, and various other work was carried out.

The purpose of the schemes was to improve land for agriculture, by lowering water levels during the growing season to reduce waterlogging on the land beside watercourses known as callows.

The proposed site is not identified as an area of land benefiting from the Drainage District works.

### 2.2.4 Topographical Maps

The site, which is currently a brownfield site, is relatively flat falling from northwest to southeast. See **Figure 3-3** in **Appendix A** for existing topography of the site.

The surrounding land falls naturally towards Dublin Bay.

### 2.2.5 OPW National Indicative Fluvial Mapping (NIFM)

OPW NIFM maps were consulted and show no flooding at the proposed site. Refer to **Error! Reference source not found.** in **Appendix A.**

## 2.2.6 Predictive Flood Maps produced under the CFRAM Studies

Floodinfo.ie was consulted and there are two watercourses in the vicinity of the proposed site. The Santry River was modelled under the CFRAM programme, approx. 2.5km north of the subject site. The Tolka River, approx. 2km south of the site is currently under review. The Tolka river level (mOD) is considerably lower than the proposed development site.

The flood maps show that the site is located above the 10%, 1%, 0.1% AEP predicted flood levels at the Santry River. Predicted water levels at nodes adjacent to the Santry River are summarized below. The lowest topographical level at the site is approx. 41.75mOD. Refer to in **Appendix A** for CFRAM flood extents and node locations. It is important to note that these maps and levels are for the Current Scenario, i.e., without climate change included. Noting that the Santry River is approx. 2.5km from the subject site.

Watercourse	Node Label	Water level (mOD) 10%AEP	Water level (mOD) 0.1%AEP	Water level (mOD) 0.1%AEP
Santry River	09SANT00559	40.63	40.91	41.18

The CFRAM flood extents for the Santry River have also been mapped for the Mid-Range Future Scenario (MRFS) i.e., inclusion of 20% climate change. The extents are illustrated in **Figure 3-**. The flood maps show that the site is located above and 2.5km from the 10%, 1%, 0.1% AEP predicted flood levels.

## 2.2.7 Dublin Pluvial Study

Floodinfo.ie was consulted and pluvial information is available through the CFRAM Rainfall (Pluvial) PDF maps. Map number E09DCC\_EXPCD\_F0\_02 shows (see Figure 3.9 in **Appendix A**) that the south west corner of the site is at high risk of pluvial flooding (10% AEP). The site stormwater network has been designed to accommodate the critical 100-year storm event inclusive of 20% climate change. Surface water will be attenuated and released via flow control to the DCC storm water network on Collins Avenue.

## 2.2.8 National Coastal Protection Strategy Study and Coastal Erosion Risk Maps

Not applicable.

## 2.2.9 Groundwater flooding (GSI Flood Maps, Historical Six Inch Mapping, Ground Investigations)

No evidence of groundwater flooding at the site according to GSI flood maps. Ground Investigations carried out at the site revealed that some water seepage occurred in trial holes but no groundwater table was established below existing ground level following completion trial holes. Stand pipes were installed in rotary cores and groundwater was evident at 2.7m below ground level (bgl) and 7.7m bgl.

## 2.2.10 Previous Flood Risk Assessments:

### 2.2.10.1 At site or Strategic Flood Risk Assessments (SFRA)

Within the Dublin City Development Plan 2016-2022, Strategic Flood Risk Assessment (SFRA) Volume 7, Flood Zones are used to indicate the likelihood of a flood occurring. This document predominantly refers to the CFRAM programme and the proposed measures outlined in the FRMP.

**FLOOD RISK ASSESSMENT (STAGE I)**

Based on the definitions in 'The Planning System and Flood Risk Management Guidelines for Planning Authorities and Technical Appendices, 2009', Flood Zone A indicates a high probability of flooding, Flood Zone B a moderate probability and Flood Zone C a low probability of flooding from fluvial or tidal sources. The Strategic Flood Risk Assessment (SFRA) Composite Flood Map within the SFRA document shows that the proposed site is in Flood Zone C. As the site is located within Flood Zone C it was not identified as at risk to flooding under the CFRAM study nor the SFRA. There are no flood measures proposed in the SFRA that will impact upon flood risk at the site.

Following guidance within the SFRA document and Flow charts with Appendix 4, the proposed development, within Flood Zone C, shall have regard to surface water management policies contained in the Greater Dublin Strategic Drainage Study, and Chapter 9 of the Development Plan, this includes impacts due to climate change. The section of the figure below (highlighted in red) shows an extract from Appendix 4 (**Figure 2.1 below**) of the SFRA outlining the development management process for flood zone C.

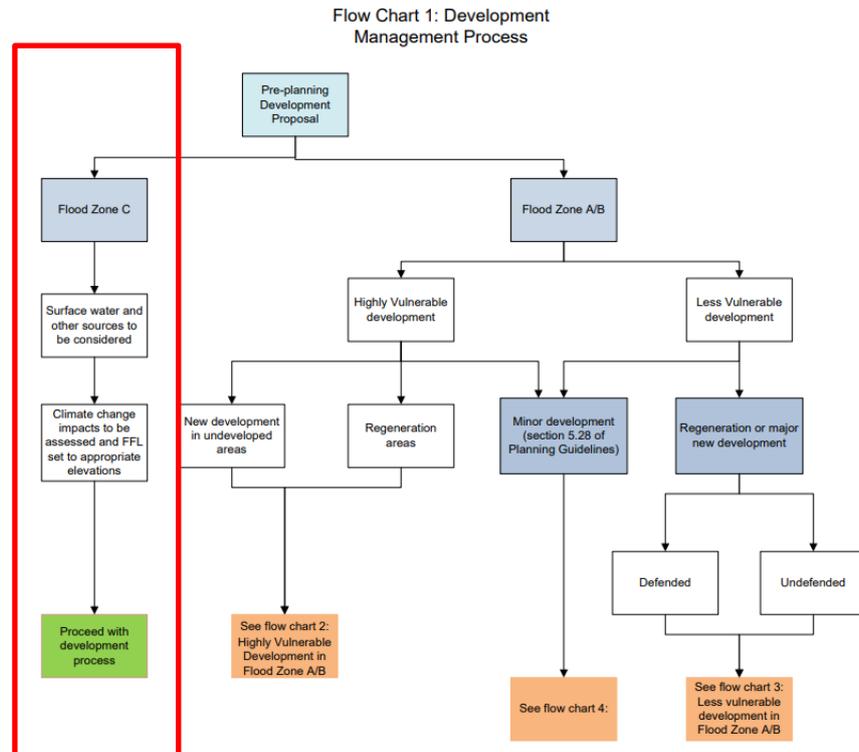


Figure 2-1 Flow Chart - Development Management Process

**2.2.11 Information of Flood Defence Condition and Performance**

Not applicable.

**2.2.12 Alluvial Deposit Maps**

Not applicable.

### **2.2.13 Consultation with the OPW**

Not applicable.

### **2.2.14 Consultation with the Local Authorities**

DCC were consulted under the Part 8 planning process.

### **3 STAGE 1: FLOOD RISK ASSESSMENT SUMMARY**

There is no evidence to show that the proposed site is liable to flooding. The site is located outside the fluvial areas as modelled under the PFRA and CFRAM programmes. There are no identifiable flow paths directly into the site from adjoining lands that would detrimentally affect flood risk to the proposed development. The site proposals will not cause flow paths to exit the site and cause flooding elsewhere. There is also no historical or predictive evidence of groundwater flooding at the site. Ground Investigations carried out at the site revealed that groundwater was struck within standpipes at a depth of 2.7 and 7.7m below existing ground level.

The Drainage and Watermain Design Report submitted with the planning application documents shows that the proposed stormwater drainage network has capacity for the critical 100-year rainfall event inclusive of 20% climate change in line with MRFS. The stormwater network simulations show that the water levels in the system do not exceed cover levels at any location and will not impose any flood risk to the site or elsewhere.

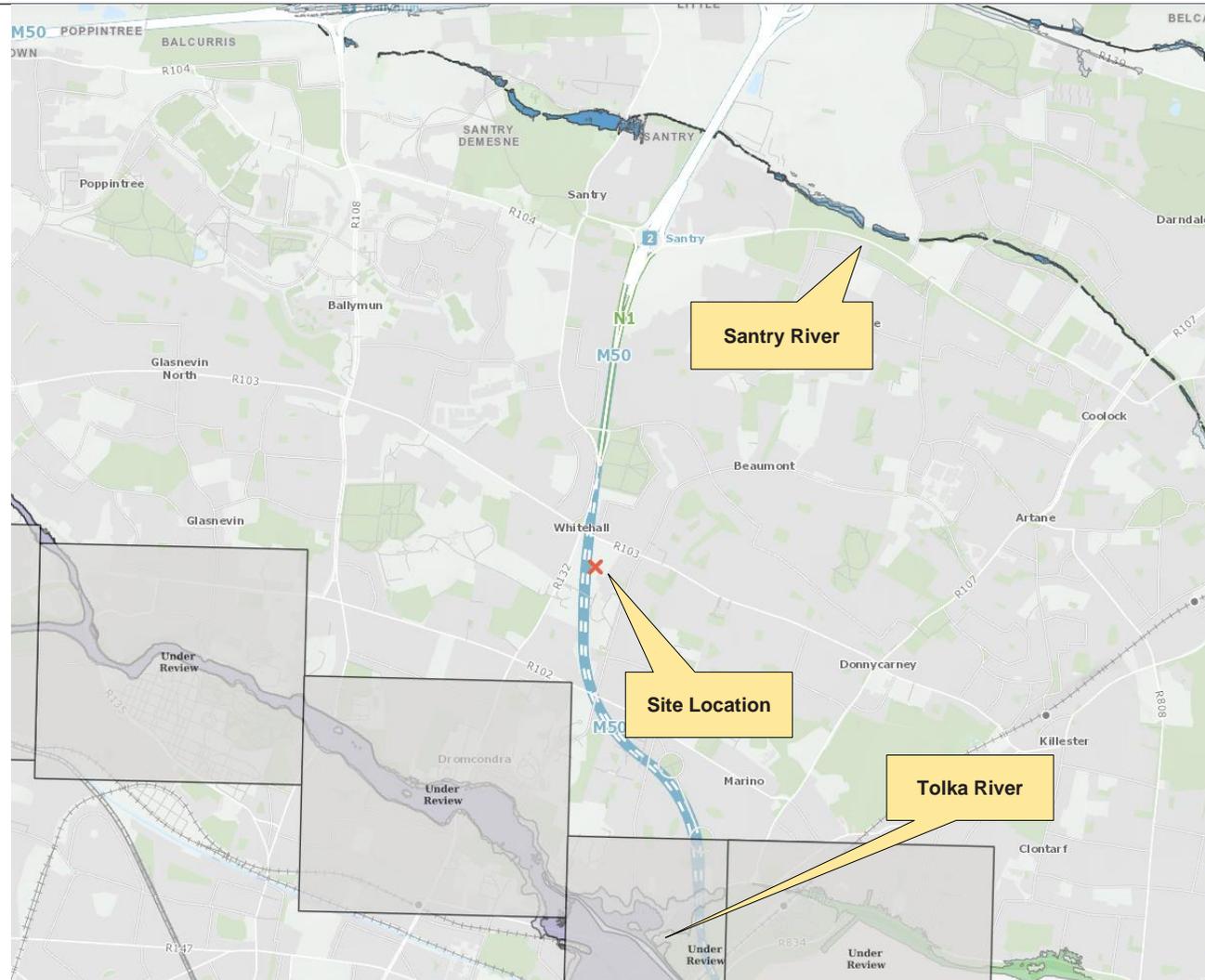
#### **3.1 Flood/Drainage Impacts & Proposed Measures**

Surface water generated will be attenuated on site in order to ensure the risk of flooding in the vicinity of the development is not increased. Any proposed drainage as part of the development is expected to be adequately designed to prevent any increase in flood risk to the site.

## Appendix A

### Figures

**WHITEHALL – FLOOD RISK ASSESSMENT**



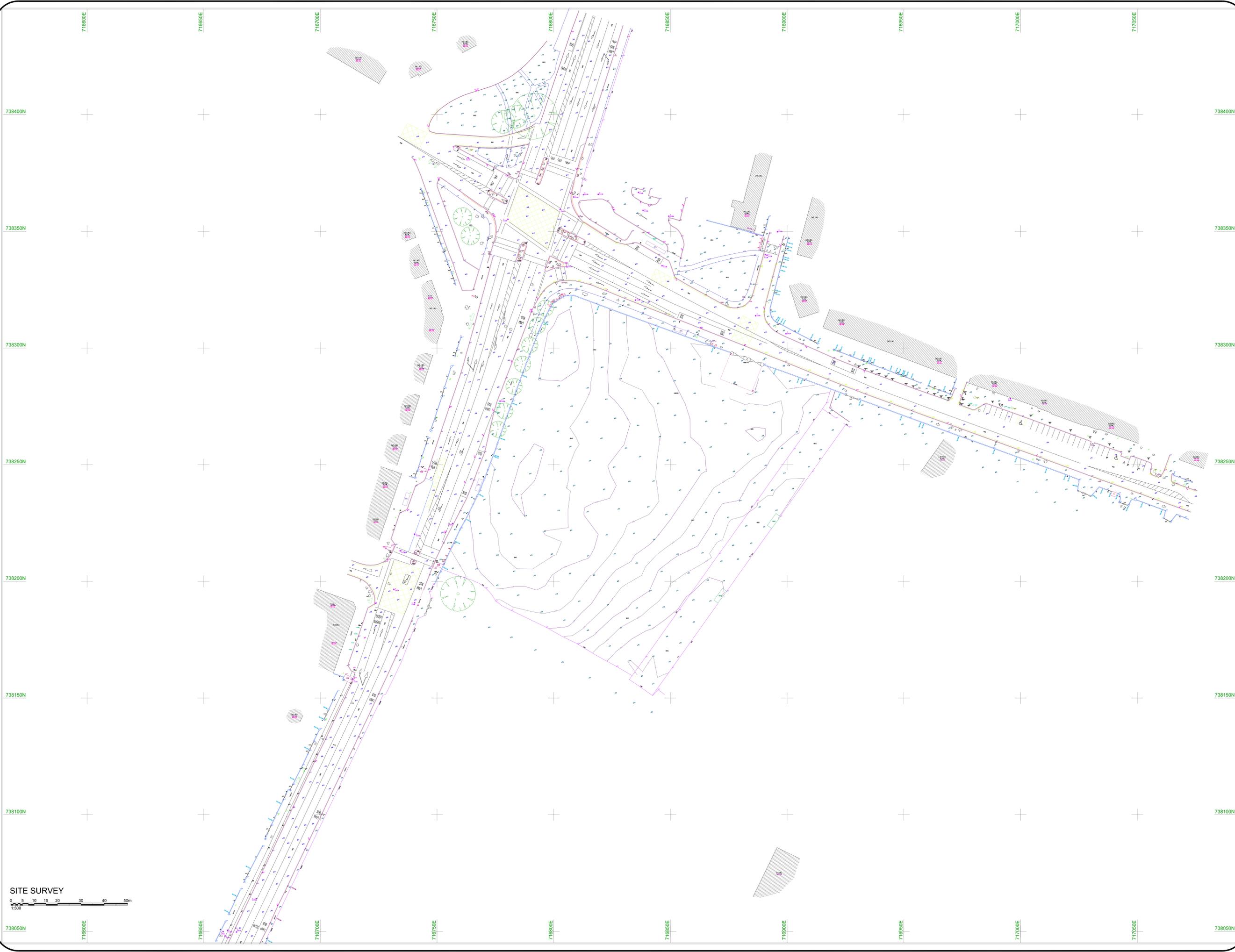
**Figure 3-1 Site Location (Marked with an X)**

# WHITEHALL – FLOOD RISK ASSESSMENT



Figure 3-2 Proposed development & Red Line Boundary

Figure 3-3 Existing topography of the site (from NCW Surveys topographical survey, May 2021)



LEGEND

- KEY:
- AV AIR VALVE
  - AL ARMSTRONG LUNCTION
  - ESB ESB MIN FILLAR
  - EP ESB POLE
  - EL ELECTRICITY LINE OVER
  - EL TELECOM LINE OVER
  - FR FIRE HYDRANT
  - WM WATER METER
  - GV GAS VALVE
  - GATE GATE
  - RS ROAD SALLY
  - IC INSPECTION CHAMBER
  - LP LAMP POST
  - MP MANHOLE
  - SP SIGN POST
  - SV SEWER VALVE
  - ST STOPCOCK
  - SS SURVEY STATION
  - TC TELECOM CHAMBER
  - TP TELECOM POLE
  - TL TRAFFIC LIGHT
  - LB LIGHT BOLLARD
  - TREES TREES
  - CS COMBINED SEWER
  - FS FOUL SEWER
  - SS STORM SEWER



NOTE:  
 If there is a discrepancy between the existing site plan and the survey data, the survey data shall prevail. The survey data is based on a 2D survey and does not include any 3D information. The survey data is based on a 2D survey and does not include any 3D information. The survey data is based on a 2D survey and does not include any 3D information.

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Client : Coady Architects  
 Scale: A0 @ 1:500  
 Project : Whitehall, Dublin 9  
 Site crew : Pp Date : May 2021  
 Drawn by : Bm Date : May 2021  
 Description : Site survey - WHITEHALL  
 Drawing number : 20-346-004 Rev: .....



716500E 716550E 716600E 716650E 716700E 716750E 716800E 716850E 716900E 716950E 717000E 717050E

738050N 738100N 738150N 738200N 738250N 738300N 738350N 738400N

WHITEHALL – FLOOD RISK ASSESSMENT

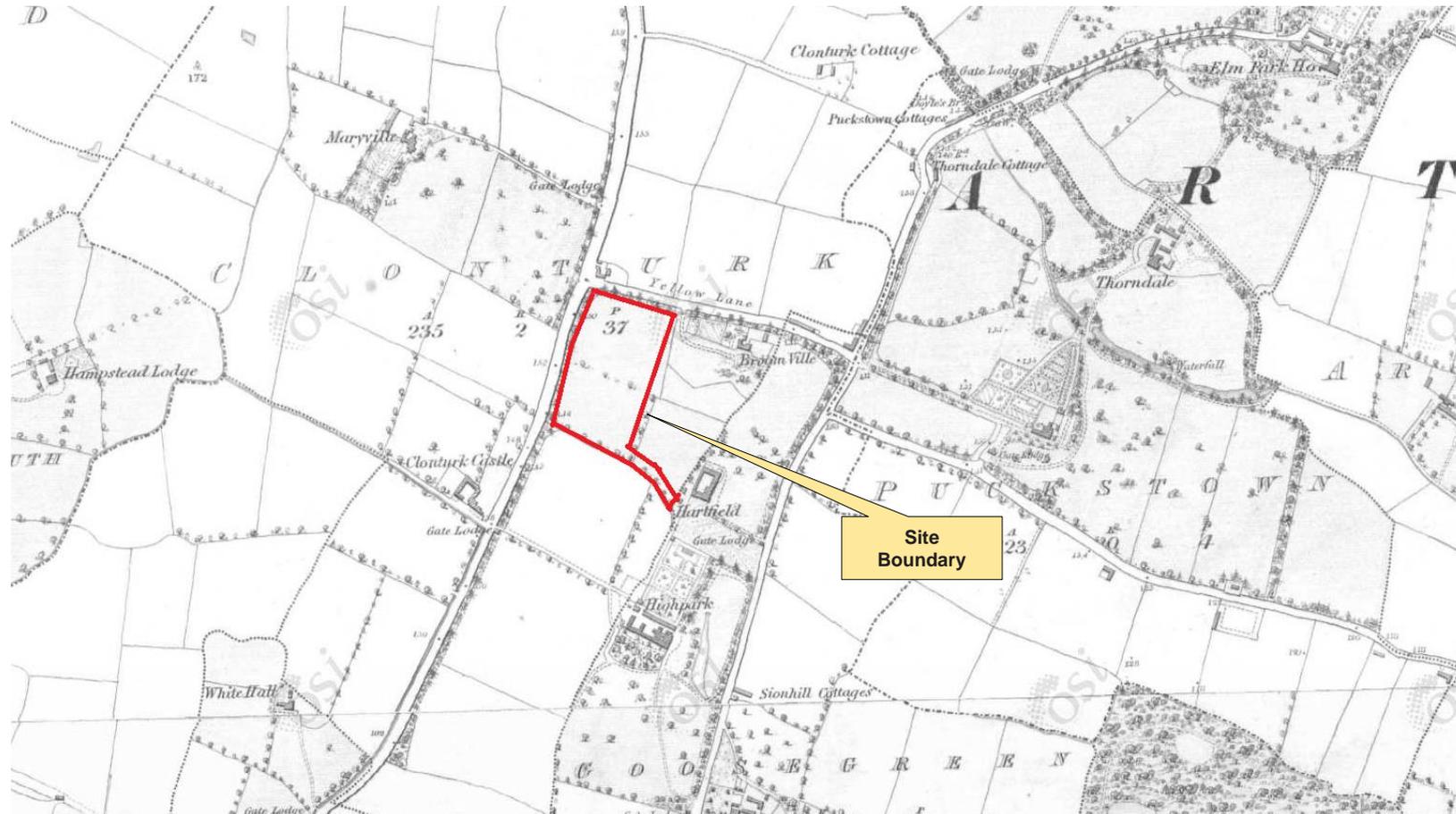


Figure 3.4 OSI 6" Cassini Mapping with site boundary in red outline

## WHITEHALL – FLOOD RISK ASSESSMENT

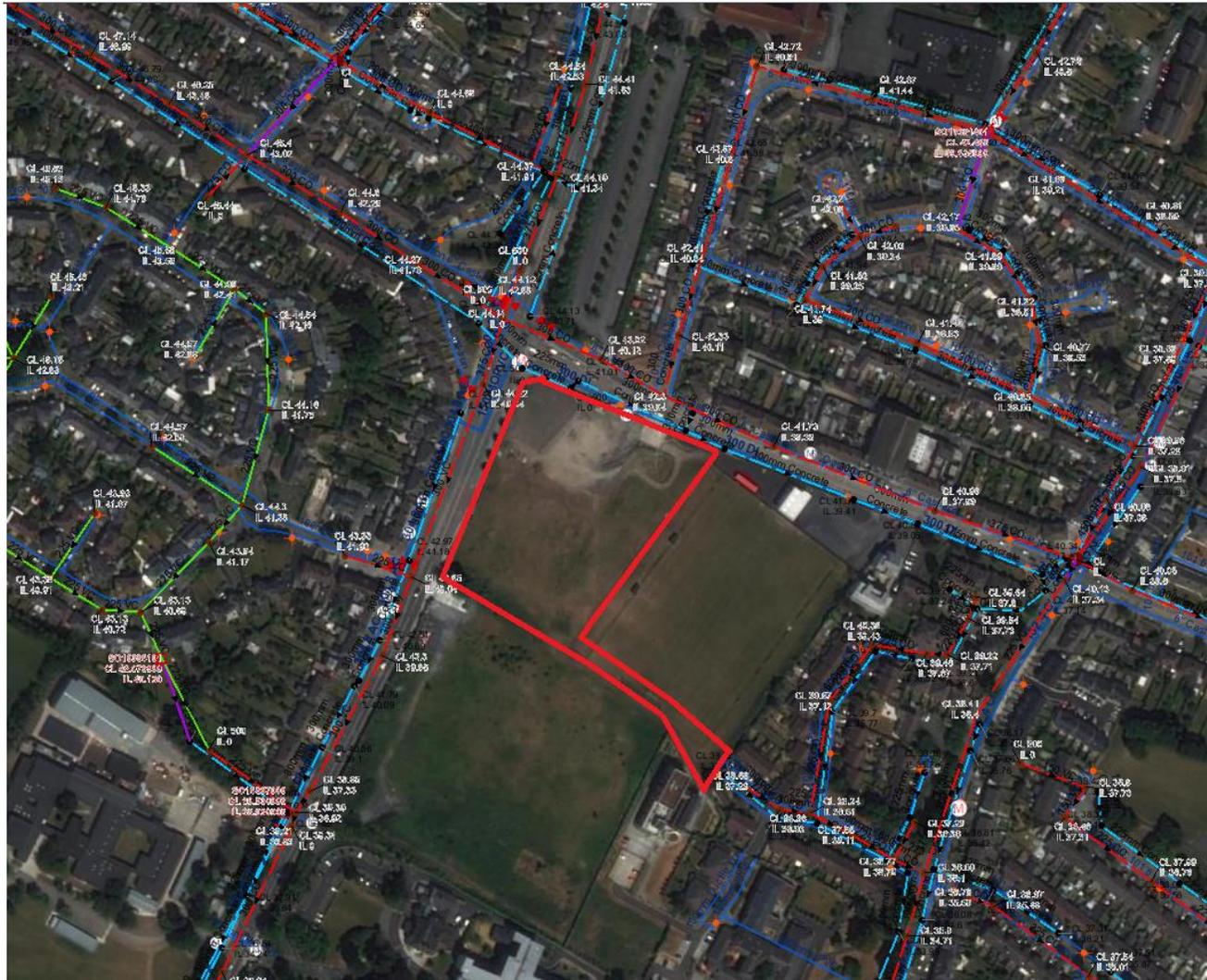


Figure 3.5 Existing Watermain, Foul & Surface Water Network

## WHITEHALL – FLOOD RISK ASSESSMENT

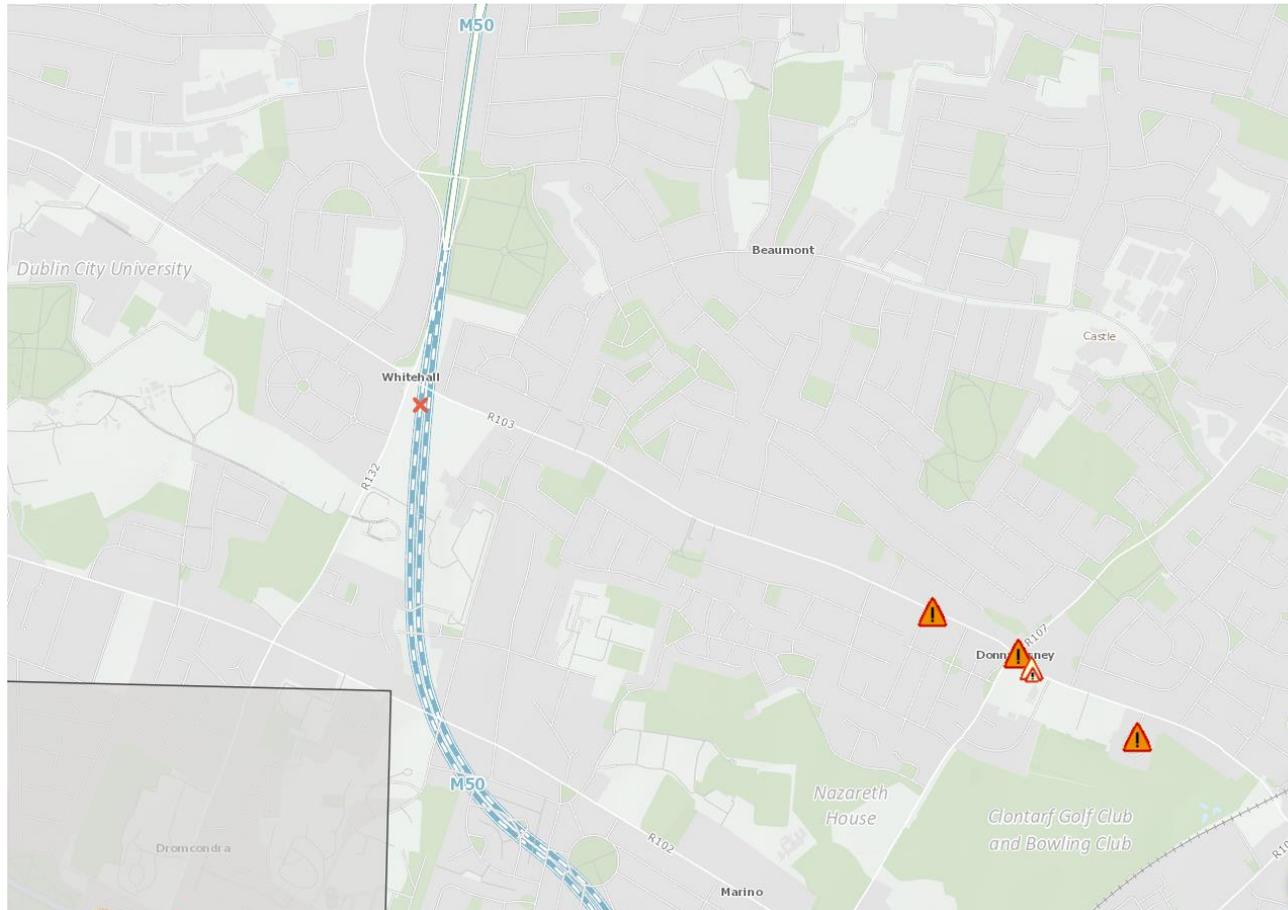
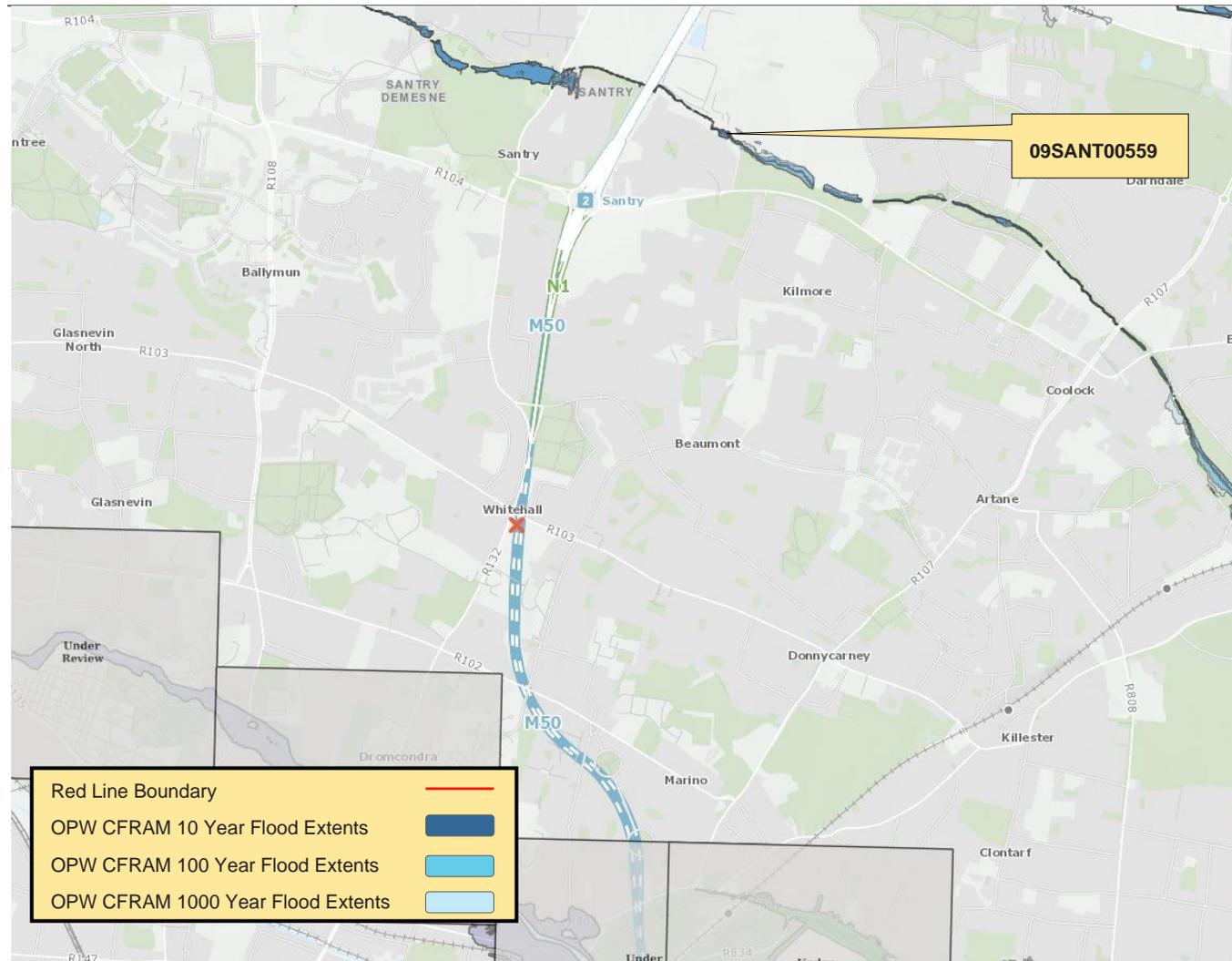


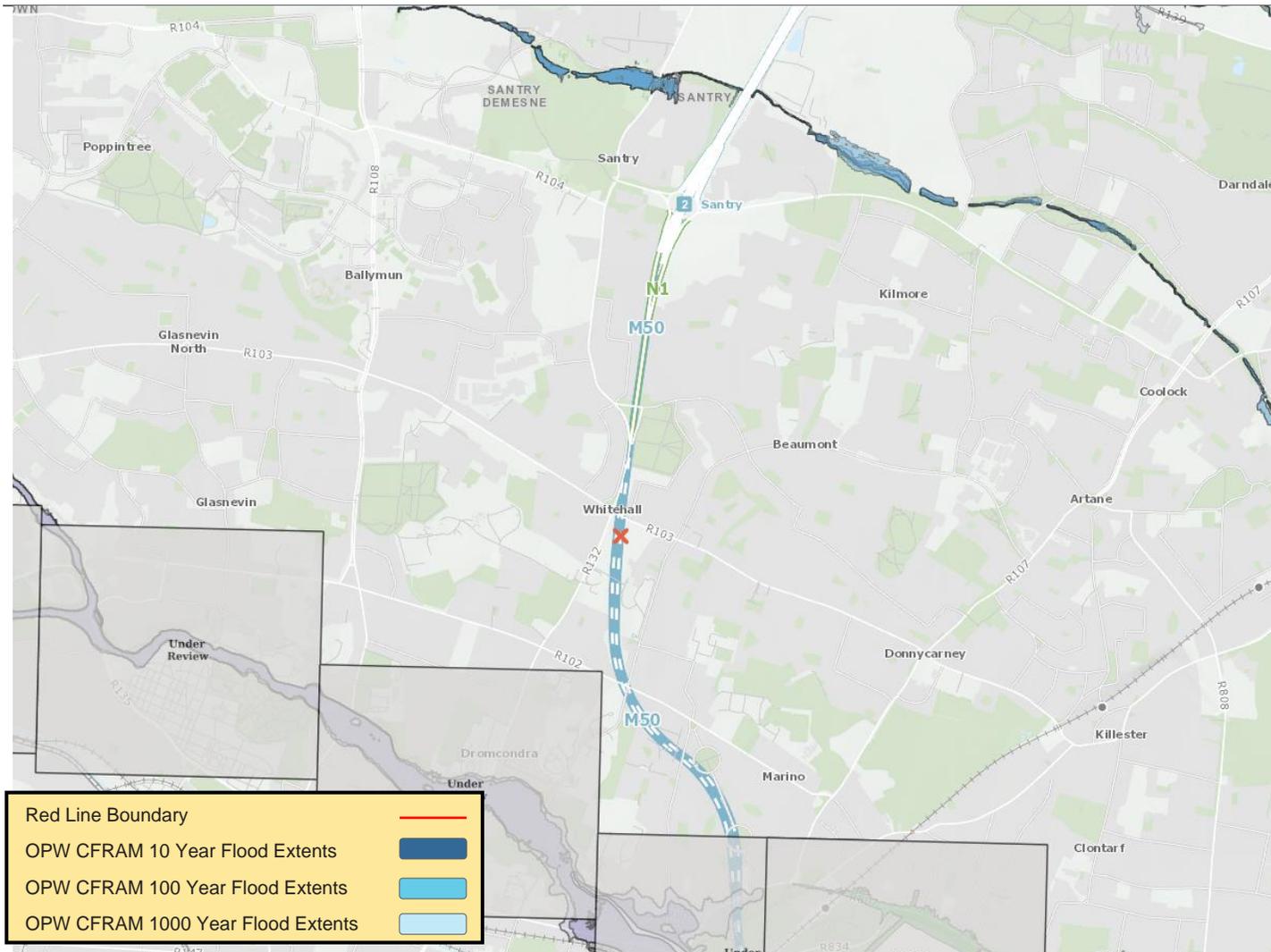
Figure 3.6 OPW Historical Flood Events (Site Marked with an X)

**WHITEHALL – FLOOD RISK ASSESSMENT**



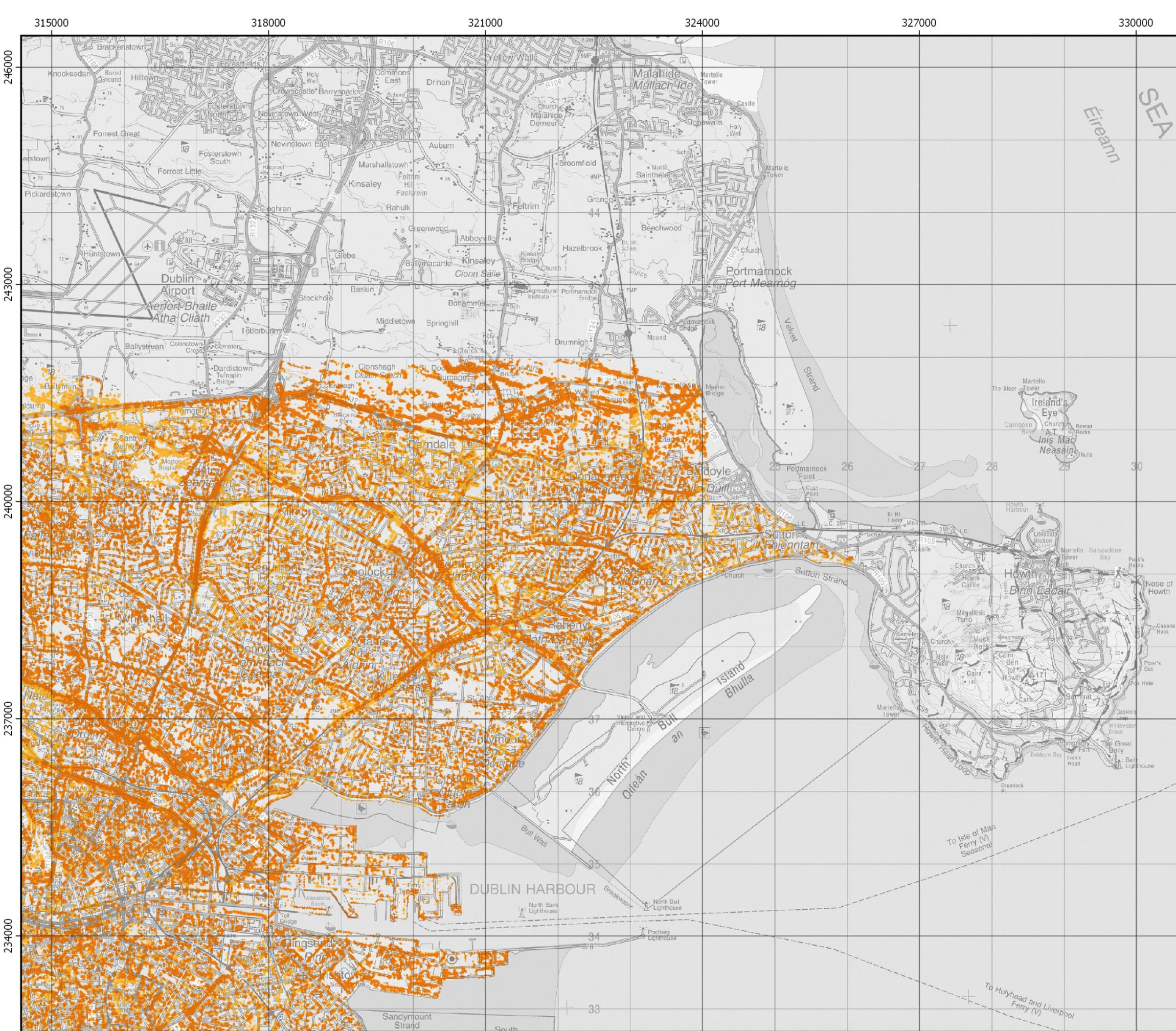
**Figure 3-7 OPW NIFM & CFRAM Flood Extents (Current Scenario)**

**WHITEHALL – FLOOD RISK ASSESSMENT**



**Figure 3-8 OPW CFRAM Flood Extents (MRFS)**

Figure 3-9 OPW Dublin City Pluvial Flood Extent Map



- LEGEND**
- 10% AEP Pluvial
  - 1% AEP Pluvial
  - 0.5% AEP Pluvial

**IMPORTANT USER NOTE:**  
 THE VIEWER OF THIS MAP SHOULD REFER TO THE  
 DISCLAIMER, GUIDANCE NOTES AND CONDITIONS  
 OF USE THAT ACCOMPANY THIS MAP.



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 Office of Public Works  
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 Baile Atha Cliath  
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 Jonathan Swift Street  
 Trim  
 Co. Meath

Dublin City Council  
 Civic Offices  
 Wood Quay  
 Dublin 8

Project:	
<b>DUBLIN PLUVIAL STUDY (FloodResilientCity)</b>	
Map:	<b>DUBLIN CITY - PLUVIAL FLOOD EXTENT MAP</b>
Map Type:	EXTENT - 180min Rainfall
Source:	PLUVIAL
Map Area:	URBAN
Scenario:	CURRENT
Drawn by:	IH
Checked by:	MC
Approved by:	JM
Date:	Aug - 2016
Map No.:	<b>E09DCC_EXPDCD_F0_02</b>
Revision:	F0
Map Scale:	1:50,000
Plot Scale:	1:1 @ A3