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GROUP

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Specific Flood Risk Assessment

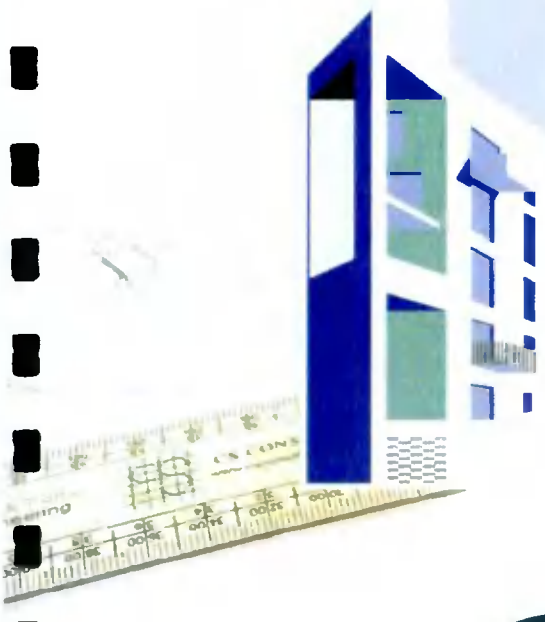
Adamstown District Centre – Block G

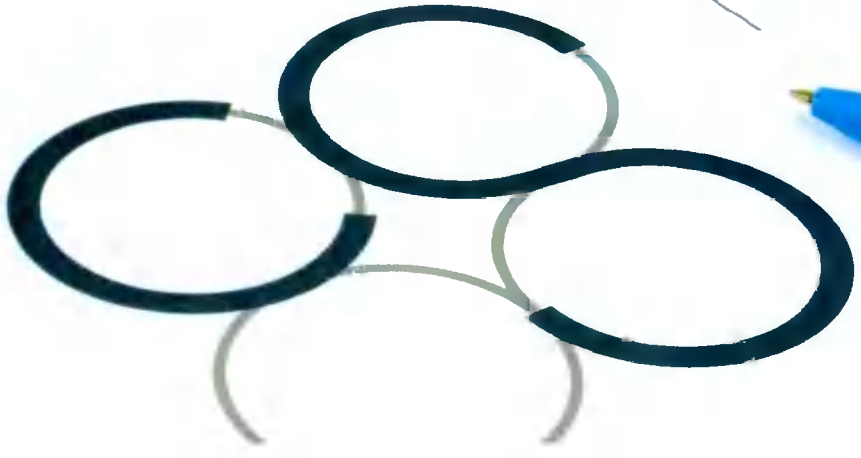
County Dublin

Client: Quintain Developments Ireland Ltd

Job No. D078

Date October 2021





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SPECIFIC FLOOD RISK ASSESSMENT

ADAMSTOWN DISTRICT CENTRE – BLOCK G, COUNTY DUBLIN

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File Location: j:\d_jobs\job-D100\b_documents\c_civil\a_cs reports\fra\D100 fra 2020.04.03.docx

BS 1192 FIELD	Document2

Job Ref.	Author	Reviewed By	Authorised By	Issue Date	Rev. No.
D078	RFM	RFM	MMcE	01.10.2021	*

1.0 INTRODUCTION

Cronin & Sutton Consulting Engineers (CS Consulting) have been commissioned by Quintain Developments Ireland Ltd to prepare a Site Specific Flood Risk Assessment to accompany a planning application for a proposed commercial and residential development at Adamstown District Centre – Block G, County Dublin.

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 Site Specific Flood Risk Assessment is to be read in conjunction with the engineering drawings and documents submitted by CS Consulting and with the various additional information submitted by the other members of the design team, as part of the Planning Submission.

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 The site is bounded to the north by Adamstown Avenue, to the east by Adamstown Park, to the south Adamstown Station Road and to the west by a greenfield.

2.0 SITE LOCATION AND PROPOSED DEVELOPMENT

2.1 Site Location

The proposed development site is located to the north of Adamstown Station, Co. Dublin, approximately 550m to the west of Adamstown Community College. The site is located in the administrative jurisdiction of South Dublin County Council and has a total area of approximately 1.05ha.

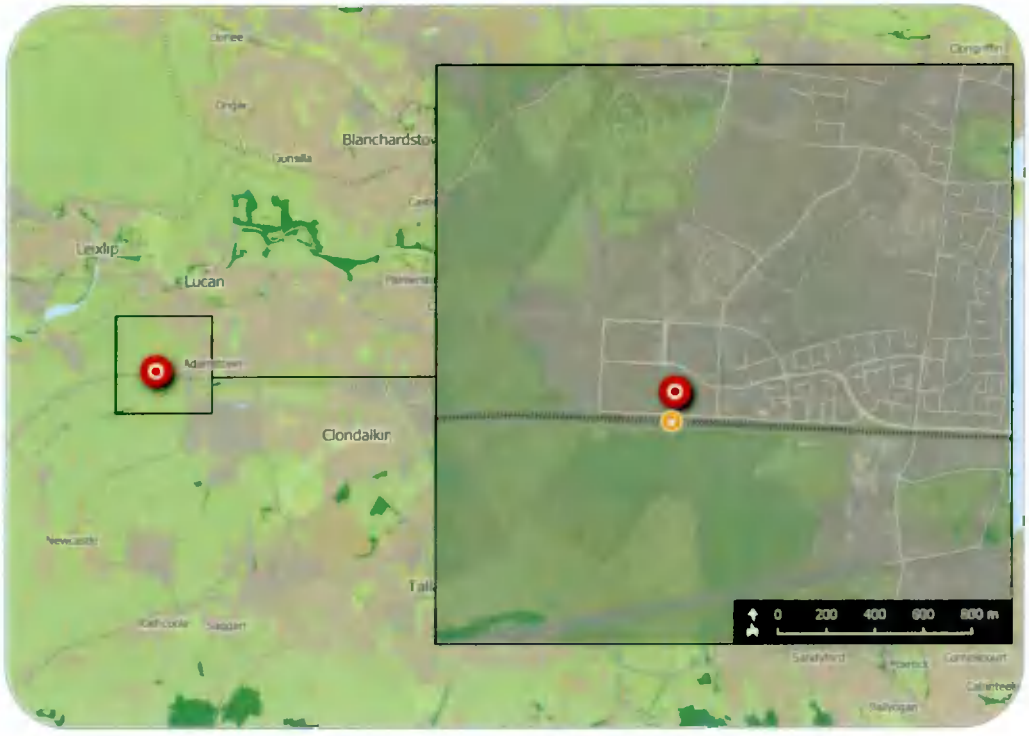


Figure 1 – Location of proposed development site
(map data & imagery: EPA, OSM Contributors, Google)

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**.

Figure 2 – Site extents and environs
(map data & imagery: Google)

The site is bounded to the north by Adamstown Avenue, to the east by Adamstown Park, to the south Adamstown Station Road and to the west by a greenfield.

2.2 Existing Land Use

The subject site is a greenfield in nature and with no previous development on the site. As part of the submission a topographical survey was undertaken to establish the levels on site. The survey indicated a fall cross the site from north to south, with levels in the range of 62.40mAOD to 61.50mAOD. no structures or water courses of note are located on the site.

Refer to CS Consulting's drawing **D100/200** for details of the existing topography of the site.

2.3 Proposed Development

The proposed development comprises the following:

- Repositioning of landscaped communal courtyard of Block G from first floor level to ground floor level due to removal of podium parking at level 0, and the consequential relocation of 83no. car parking spaces to within the Block F car park and to on-street locations immediately adjacent to Block G, including ancillary site development and landscape works.
- The introduction of 9no. ground floor units, facilitated by the removal of the podium from the core.
- A minor reduction to the overall provision of residential units from 185 to 184no. apartment units.
- The provision of an additional unit and changes to the unit mix on Level 1.
- Adjustments to the location of the bicycle, plant, and waste stores serving Block G.
- Adjustments to Block G2 consisting of a minor reduction to the footprint of the Block by 0.6m, the removal of setback to the North (level 5) and adjustments to the Southern gable.

This application seeks permission for these minor design changes to the development permitted under SDCC Reg Ref SDZ21A/0007.

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 (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 Council, 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 predicted climate change variations.

Design Category	Predicted Impact of Climate Change
Drainage	20% Increase in rainfall
Fluvial (River flows)	10% Increase in flood flow
Tidal / Coastal	Minimum Finished Floor Level 4.0 – 4.15m AOD

Table 2 - The predicted climate change variations.

3.3 The flooding guidelines categorize 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*, dwellings are classified as 'highly vulnerable developments' and buildings used for commercial and retail are classified as 'less vulnerable developments'.

3.4 Following a review of the *South Dublin County Council flood maps*, the subject site is located in **Flood Zone C**. See **Appendix A**.

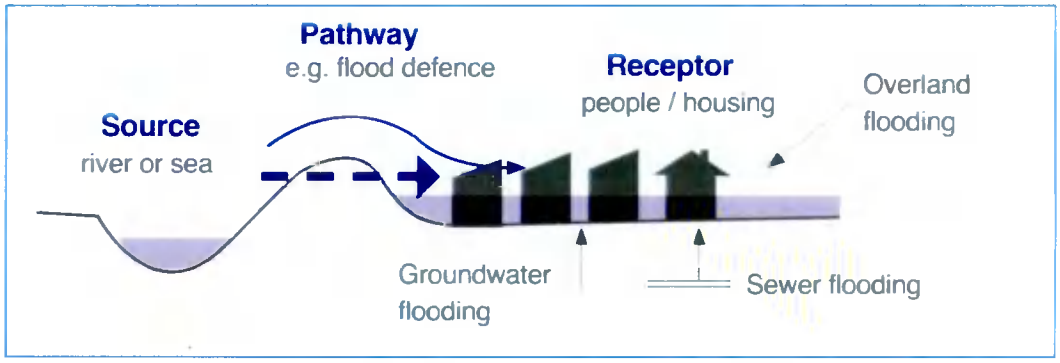


Figure 3 – Source-pathway-receptor model
(imagery: The Planning System and Flood Risk Management Guidelines)

3.5 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 subject site is located within **Flood Zone C**, as such a justification test is not required. See CS Consulting drawing **D100/209** for the site location superimposed on the CRFAM Mapping.

4.0 FLOOD RISKS & MIGRATION MEASURES

4.1 Fluvial Flooding

A review of the Office of Public Works flood maps database, www.floodmaps.ie, for the area does not indicate historical flooding at the site. See the OPW Map-report included in **Appendix B**. Recent modelling of the area as part of the local authorities Development Plan's Strategic Flood Risk Assessment does not indicate that the site is located near any fluvial sources of flooding. See **Appendix A** for South Dublin County Council Flood Risk Map.

In addition, the *Eastern Catchment Flood Risk Assessment Mapping, CFRAM* project, indicates that the subject site is deemed to be located outside of the 0.1% AEP fluvial floodplain, based on the currently available maps. See **Appendix C** for CFRAM Fluvial Flood Extent Map.

Therefore, the risk of fluvial flooding is not deemed to be significant.

4.2 Tidal Flooding

The sites elevated location indicates that the subject site will not be affected by tidal flooding. In addition, the councils flood risk map does not indicate that the site is located in a tidal flood zone.

4.3 Pluvial Flooding

Pluvial flooding is flooding which has originated from overland flow resulting from high intensity rain fall. A high level pluvial flood map has been produced but it is of for high level use than for a specific site. Previous flood events in the area can be reviewed on the Office of Public Works web site, www.floodmaps.ie.

4.4 Potential for Site to Contribute to Off-Site Flooding

The site is not currently developed but has an attenuation system in the surface water drainage sub-catchments areas (Tobermaclugg, North East Griffeen Tributary and South East Griffeen Tributary), provided as part of the *Adamstown SDZ Planning Scheme 2014*. As such the proposed redevelopment of the site shall not require attenuation to be provided on site, as it is to be provided off site. Therefore, the likelihood of the proposed development adversely affecting the public drainage system or contributing to downstream flooding is mitigated.

4.5 Existing Off Site Drainage

It is the understanding of CS Consulting that at present there are no issues with the local drainage arrangements, as the local infrastructure has bene design in accordance with the SDZ master plan to accommodate the proposed development.

4.6 Groundwater Flooding

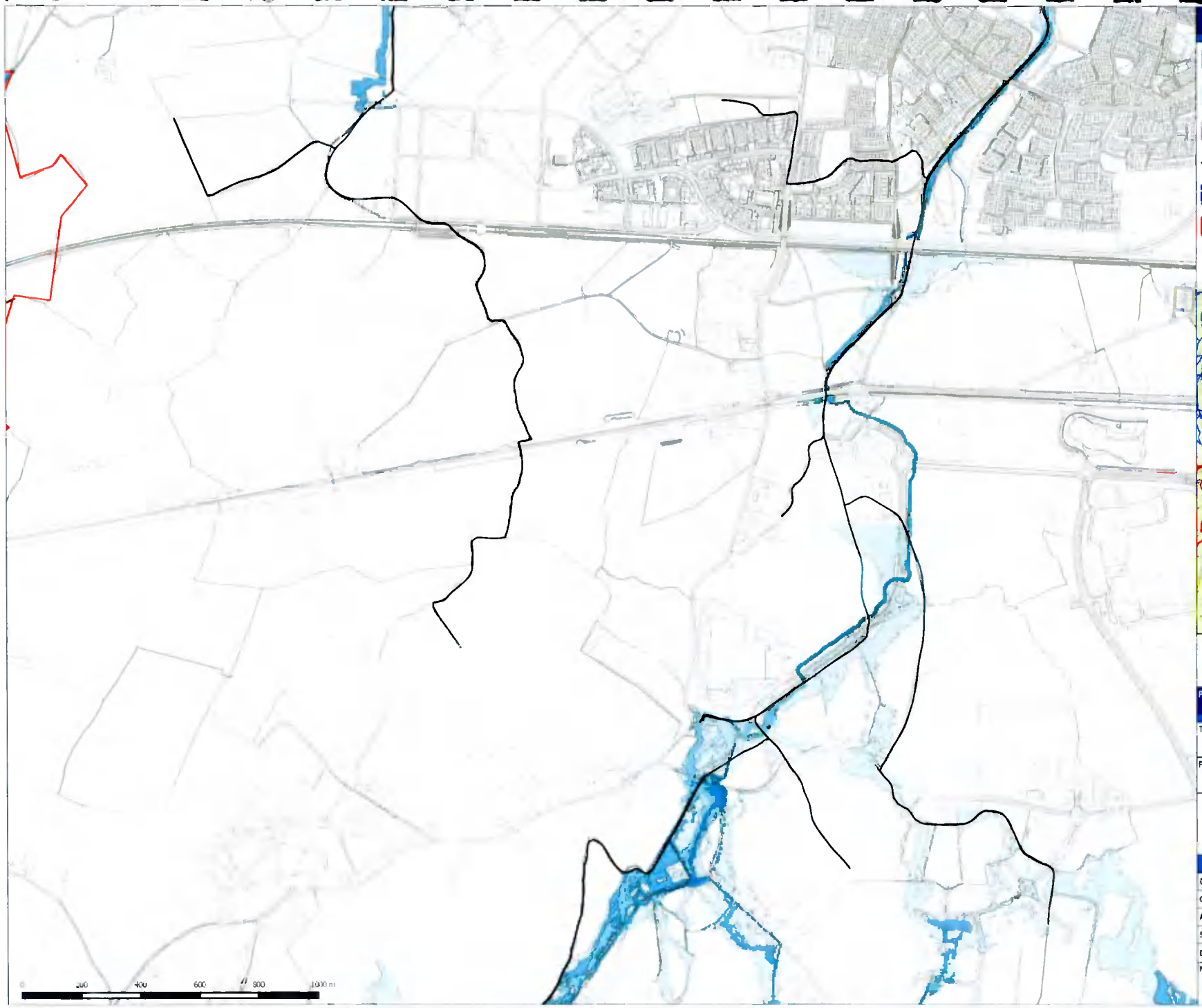
According to the Geological Survey of Ireland interactive maps, the subject site is underlain with *Dark limestone & shale*. The area is listed as overlaying a locally important aquifer which has bedrock which is *moderately productive only in local zones*. The groundwater vulnerability assessment of the site shows that the vulnerability of groundwater in the area is *extreme*.
A review of the GSI *Historical Groundwater Flood Map* for Ireland does not indicate previous flooding from groundwater sources. The proposed development and the general geology of the subject lands means that the potential risk from groundwater is deemed acceptable.

Refer to **Appendix D** for GSI mapping information & Historic Groundwater Flood Map.

5.0 CONCLUSION

- The site historically has no recorded flood events as noted in the OPW's historical flood maps for pluvial or fluvial events.
- Predicted flood mapping for pluvial / tidal & Fluvial flood events will not affect the subject lands.
- The site is deemed to be located in **Flood Zone 'C'**, outside the predicated 1-in-1000 year flood zone.
- The existing surface water drainage sub-catchments areas (Tobermaclugg, North East Griffeen Tributary and South East Griffeen Tributary), provided as part of the *Adamstown SDZ Planning Scheme 2014 shall* significantly reduce the volume of storm water leaving the SDZ lands during extreme storm events.
- In addition, The Tobermacclugg Stream and Griffeen River since the Planning Scheme was adopted which have significantly reduced flood risk in this area.
- The likelihood of onsite flooding from groundwater due to hydrogeological conditions are deemed to be minor and within acceptable levels

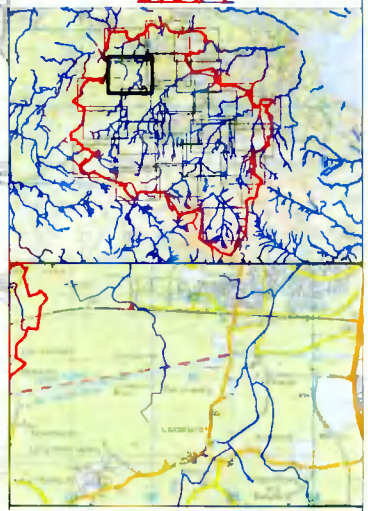
Appendix A: South Dublin County Council Flood Risk Map



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_0004

RPS Consulting Engineers
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Dun Laoghaire
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Tel: +353 1 488 2900
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Issue Details

Drawn:	BT	Project No.	MDW0657
Checked:	JH	File Ref	MDW0657(x60)10F01
Approved:	JH		
Scale:	1:6000 @ A1	Drawing No.	Projection
Date:	14/01/2016	4 of 26	IG

Notes
1. The viewer of this map should refer to the SFRA Report and Disclaimer
2. Ordnance Survey Ireland Licence No. EN 0005016
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Appendix B: Office of Public Works Historic Flood Report

OPW *National Flood Hazard Mapping*

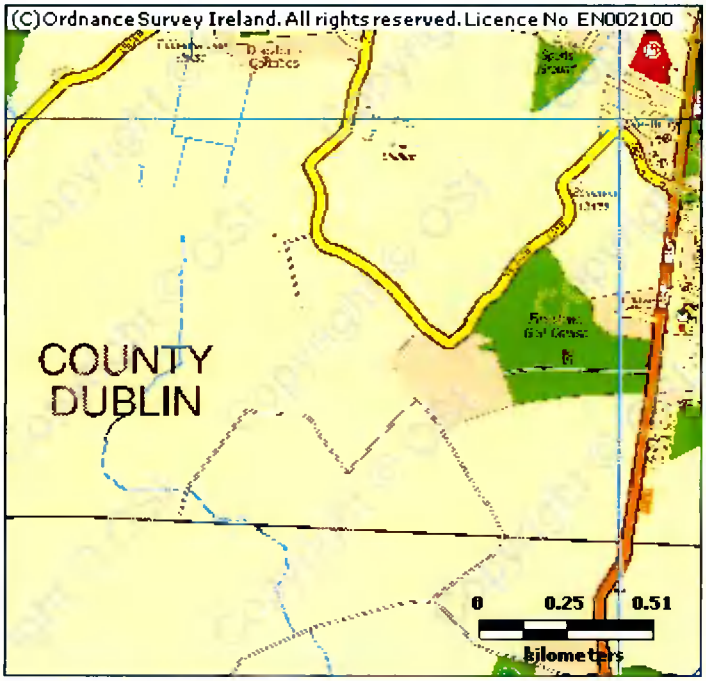
Summary Local Area Report

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

The map centre is in:

County: Dublin

NGR: O 022 333



Map Scale 1:21,045

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. Thier purpose and scope is explained in the Glossary.

8 Results

1. Liffey Lower - Dec 1954
Start Date: 08/Dec/1954
County: Kildare, Dublin
Flood Quality Code: 2
Additional Information: Reports (4) Press Archive (2) More Mapped Information

2. Griffeen River 24th Oct 2011 Lucan
Start Date: 24/Oct/2011
County: Dublin
Flood Quality Code: 2
Additional Information: Reports (1) More Mapped Information

3. Liffey Lucan June 1993
Start Date: 10/Jun/1993
County: Dublin
Flood Quality Code: 2
Additional Information: Photos (2) Reports (1) Press Archive (2) More Mapped Information

4. Griffeen November 2000
Start Date: 05/Nov/2000
County: Dublin
Flood Quality Code: 1
Additional Information: Photos (6) Reports (9) Press Archive (6) More Mapped Information

5. Griffeen June 1993
Start Date: 11/Jun/1993
County: Dublin
Flood Quality Code: 2

Report Produced: 29-Nov-2019 13:14

Additional Information: Photos (2) Reports (5) More Mapped Information

---

6. Griffeen Aug 1986

Start Date: 25/Aug/1986

County: Dublin

Flood Quality Code:4

Additional Information: Reports (3) More Mapped Information

---

7. Griffeen Nov 2002

Start Date: 15/Nov/2002

County: Dublin

Flood Quality Code:4

Additional Information: Reports (1) More Mapped Information

---

8. Peamount R134 R120 junction Nov 2000

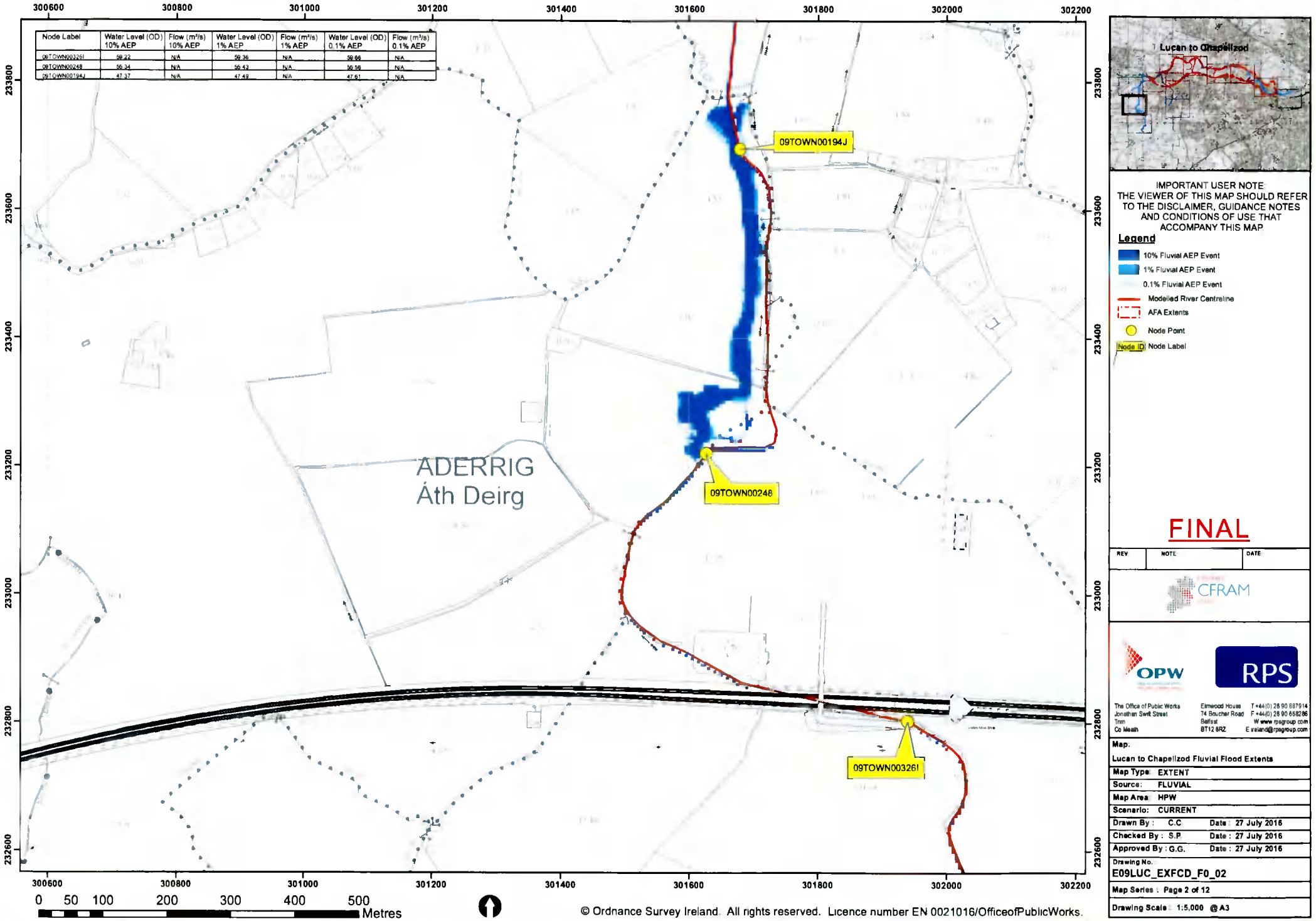
Start Date: 05/Nov/2000

County: Dublin

Flood Quality Code:3

Additional Information: Reports (1) Press Archive (1) More Mapped Information

Appendix C: Eastern Catchment Flood Risk Assessment and Management (CFRAM) Fluvial Map



Node Label	Water Level (OD) 10% AEP	Flow (m³/s) 10% AEP	Water Level (OD) 1% AEP	Flow (m³/s) 1% AEP	Water Level (OD) 0.1% AEP	Flow (m³/s) 0.1% AEP
09TOWN00326I	58.22	N/A	59.36	N/A	59.66	N/A
09TOWN00248	56.34	N/A	56.43	N/A	56.56	N/A
09TOWN00194J	47.37	N/A	47.49	N/A	47.61	N/A

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

Legend

- 10% Fluvial AEP Event
- 1% Fluvial AEP Event
- 0.1% Fluvial AEP Event
- Modelled River Centreline
- AFA Extents
- Node Point
- Node ID Node Label

FINAL

REV	NOTE	DATE

CFRAM

OPW

RPS

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Map:
Lucan to Chapellzod Fluvial Flood Extents

Map Type:	EXTENT
Source:	FLUVIAL
Map Area:	HPW
Scenario:	CURRENT
Drawn By: C.C	Date: 27 July 2016
Checked By: S.P	Date: 27 July 2016
Approved By: G.G.	Date: 27 July 2016
Drawing No.	E09LUC_EXFCD_F0_02
Map Series:	Page 2 of 12
Drawing Scale:	1:5,000 @ A3

Node Label	Water Level (OD) 10% AEP	Flow (m3/s) 10% AEP	Water Level (OD) 1% AEP	Flow (m3/s) 1% AEP	Water Level (OD) 0.1% AEP	Flow (m3/s) 0.1% AEP
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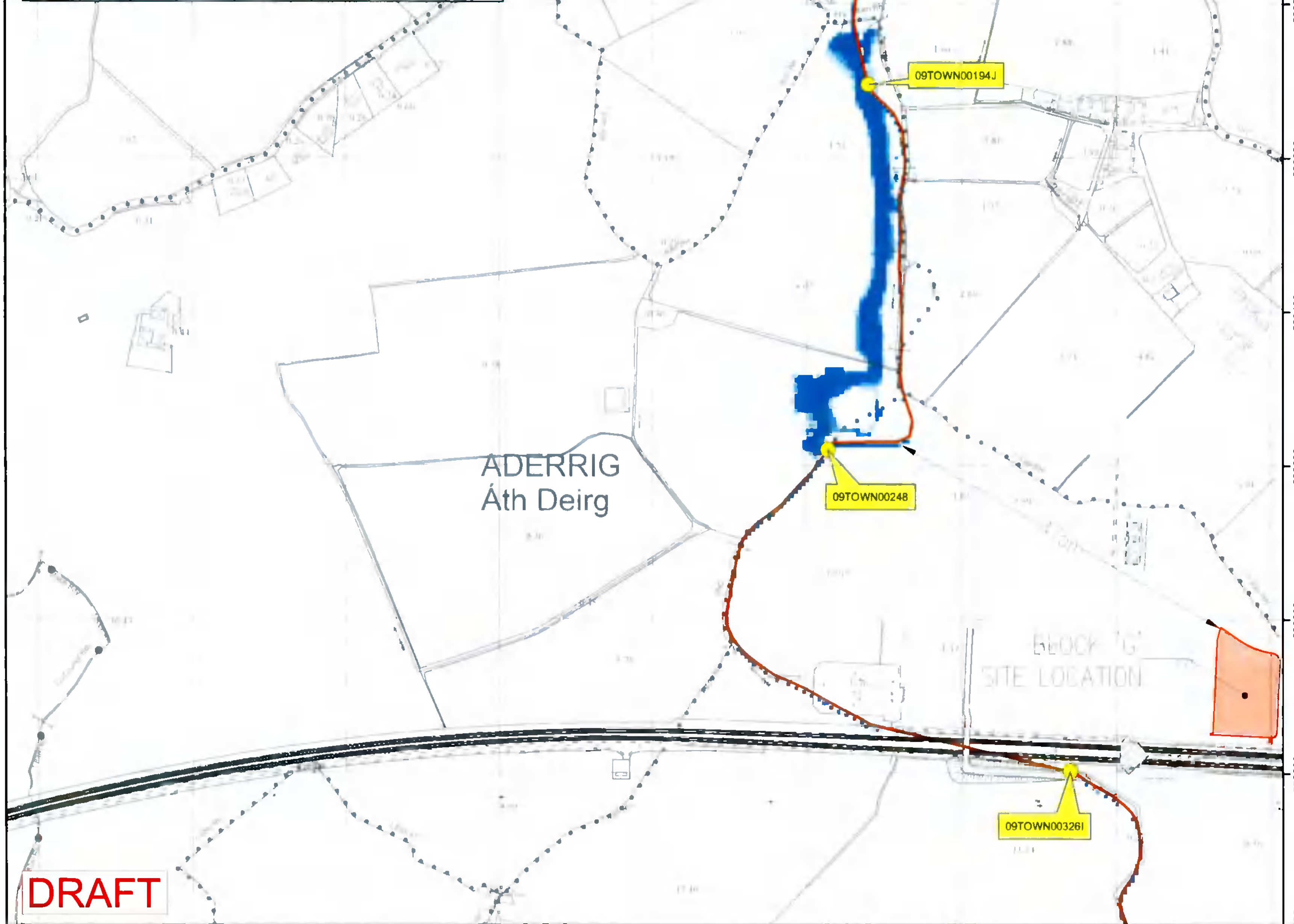

INFORMATION ONLY
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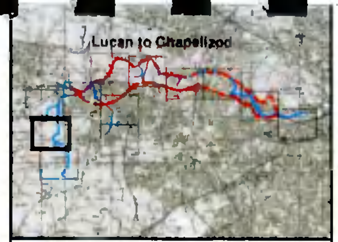

IMPORTANT USER NOTE
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Legend

- 10% Fluvial AEP Event
- 1% Fluvial AEP Event
- 0.1% Fluvial AEP Event
- Modelled River Centreline
- AFA Extents
- Node Point
- Node ID Node Label

FINAL

REV	NOTE	DATE

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W www.rpsgroup.com
E ireland@rpsgroup.com

Map:
Lucan to Chapelizod Fluvial Flood Extents

Map Type:	EXTENT		
Source:	FLUVIAL		
Map Area:	HPW		
Scenario:	CURRENT		
Drawn By:	C.C	Date:	27 July 2016
Checked By:	S.P	Date:	27 July 2016
Approved By:	G.G	Date:	27 July 2016

NOTES
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Rev. No.	Date	REVISION NOTE	Drn By	Chkd By

Client	Quintain Developments Ireland Ltd
Project	Adamstown - Block G
Title	Flood Zone Mapping

Drn by	Chkd by	Apprvd by	Dwg No	Revision
PJC	RFM	MMcE	D078/209	
Date: Nov2020	Scale: 1:2 @ A1			

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Appendix D: Geological Survey of Ireland Geology & Hydrogeological Mapping, and Historic Groundwater Flooding Mapping.

Geological Survey
Suirbhéireacht Gheolaíochta
Ireland | Éireann

Job no. D078 Geology

Legend

- Bedrock Outcrops 100 ITM 2018
- Fault
- Lucan Formation

Scale: 1:10,000

Geological Survey Ireland

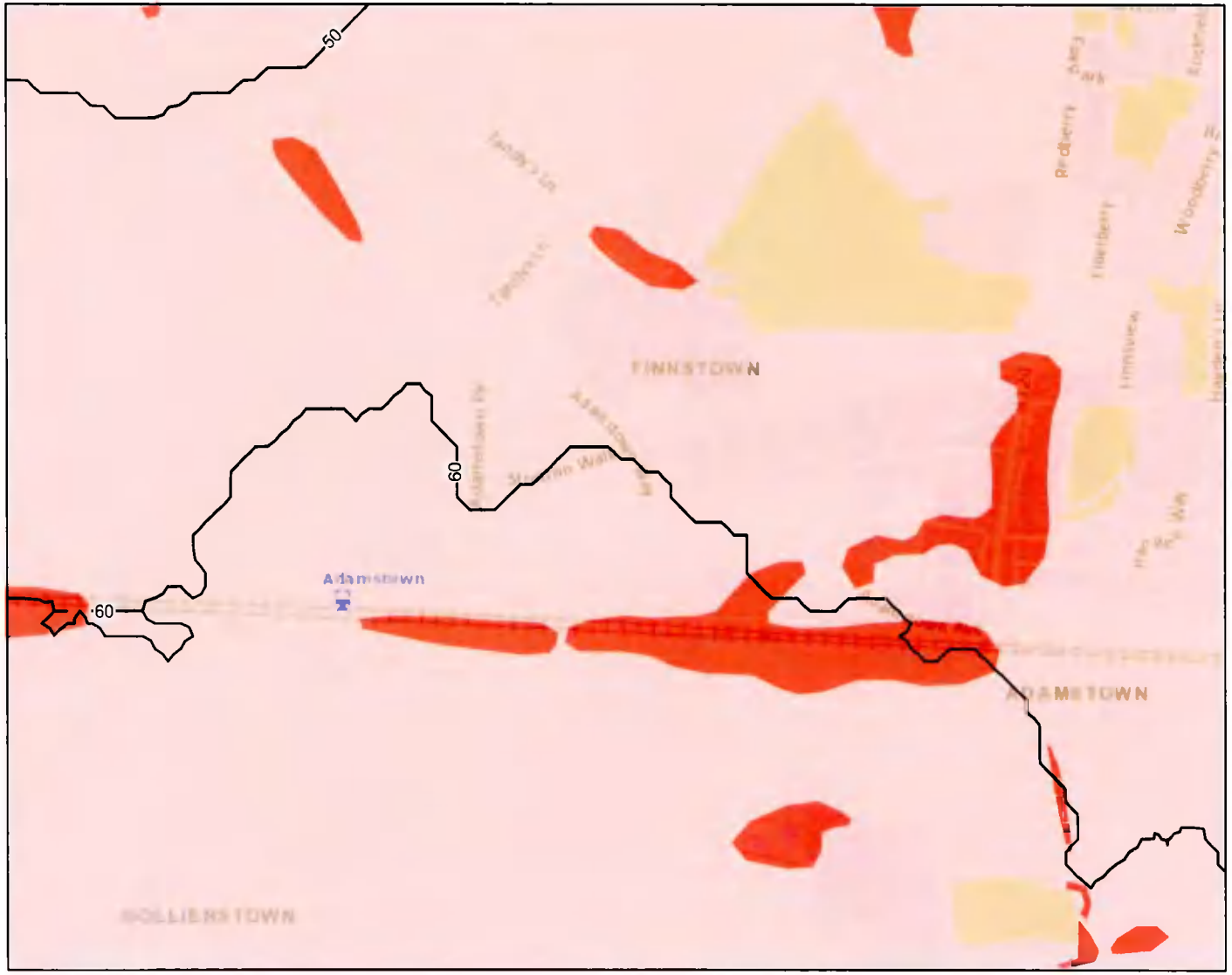
N W E S

0 0.05 0.1 0.2 mi

0 0.1 0.2 0.4 km

Map Centre Coordinates (ITM) 702,290 733,255
11/29/2019, 1:44:01 PM

Job No. D078 Hydrogeology



Legend

— EPA Contours

National Groundwater Vulnerability Ireland

VULNERABILITY

Rock at or near Surface or Karst

Extreme

Scale: 1:10,000

Geological Survey Ireland

N W E S

0 0.05 0.1 0.2 mi

0 0.1 0.2 0.4 km

Map Centre Coordinates (ITM) 702,367 733,053

11/29/2019, 1:50:23 PM