HYDROCARE
ENVIRONMENTAL LTD

Environmental Consultants
Cooperhill Rd., Beamore,
Drogheda, Co. Meath

Tel: 0419842378 Mob: 0877905155 / 0872208633 Email: info@hydrocareenvironmental.ie

HCE Job Ref: 23-004

27th April 2023

Planning/Environmental Dept,
South Dublin County Council,
County Hall,
Tallaght,
Dublin

Re: Flood Risk Assessment for Conditions to Grant for the Planning Ref. No. SD21A/0246

Applicant: Beckett Developments Ltd.
Site Address: Palmyra, Whitechurch Road, Rathfarnham, Dublin 16

To whom it concerns,

Hydrocare Environmental Ltd. has been retained by the applicant to issue a response to Item 8(a) of the conditions to grant planning permission for the proposed development, ref. no. SD21A/0246. The proposed development will consist of the construction of 8 houses, all associated on and off development works, landscaping, boundary treatments, removal of existing street boundary screen wall and the provision of vehicular and pedestrian access to an infill site of ca. 0.226Ha. at Grangebrook Avenue, Palmyra, Whitechurch Road, Rathfarnham, Dublin 16.

Introduction

The proposed development will consist of the construction of 8 houses, all associated on and off development works, landscaping, boundary treatments, removal of existing street boundary screen wall and the provision of vehicular and pedestrian access to an infill site of ca. 0.226Ha.

Item 8(a) of the Notification to Grant Permission for this planning application states:

"Finished floor levels shall be above the closest known 1 in 100-year river flood level data point with appropriate freeboard."

Hydrocare Environmental Ltd. has carried out a screening flood risk assessment for the proposed development in accordance with *The OPW Planning System and Flood Risk Management Guidelines for Planning Authorities 2009* and *The Strategic Flood Risk Assessment for the South Dublin County Development Plan 2022 – 2028.* The proposed site layout drawing can be seen below in Figure 1. A scaled copy of the layout drawing has been appended herewith.

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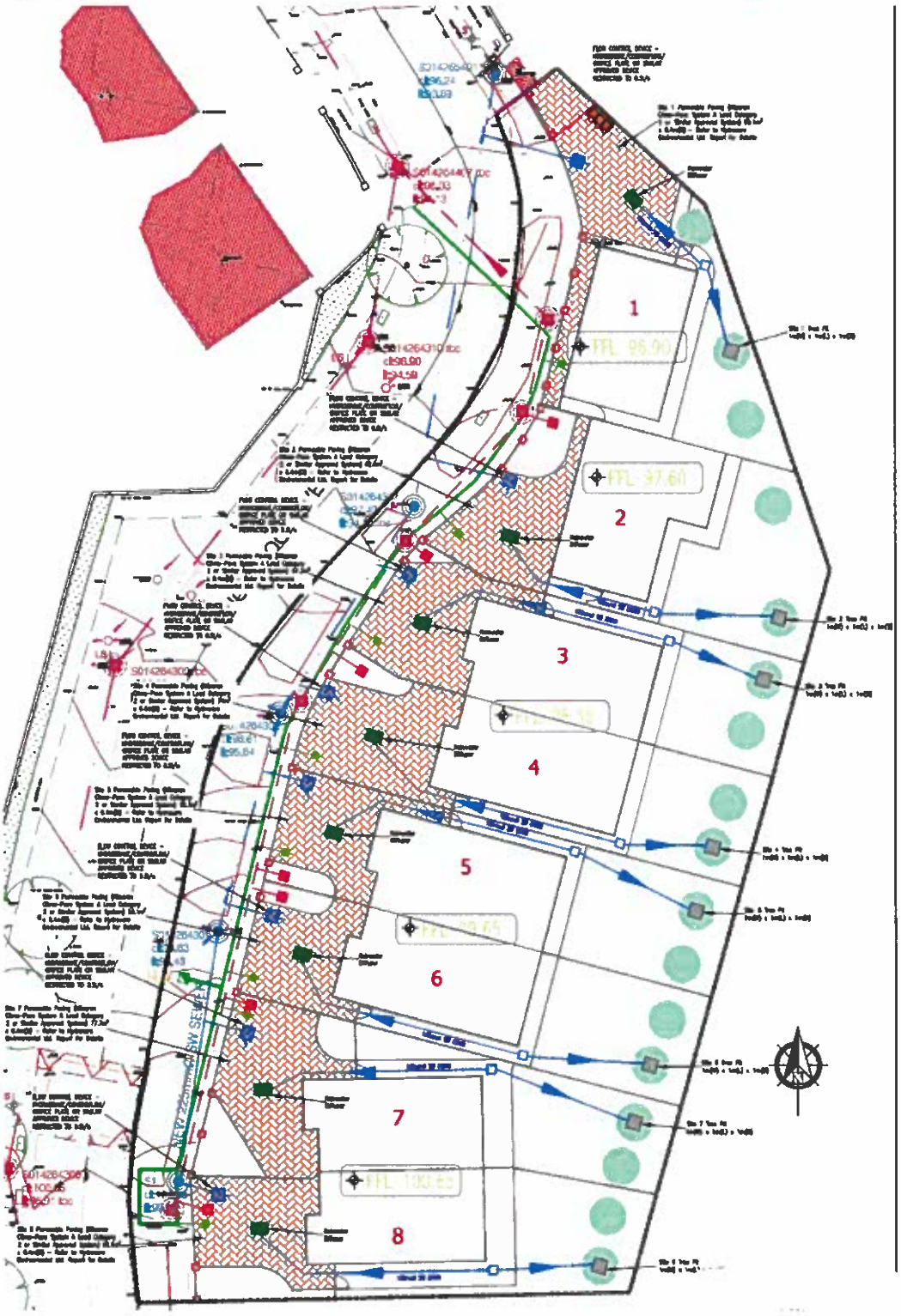

Figure 1 - Proposed Site Layout Drawing

Tel / Fax: (041) 9842378
Mobile : (087) 7905155/0872208633
Vat. No. 3349164IH

E-Mail: info@hydrocareenvironmental.ie
Website: www.hydrocareenvironmental.ie

Source – Pathway – Receptor – Risk

The flood risk assessment requires an awareness of the Source-Pathway-Receptor Model. The Source is where the water comes from. In Ireland, the main sources of flooding are due to extensive rainfall or higher than average sea levels. The Pathway is how and where flood waters flow, which can include rivers, drains, sewers, overland flow and river or coastal floodplains and their associated defences. Lastly, the Receptors are the vulnerable people, their buildings and property and the environment which may be affected by flooding. All three elements must be examined as part of the flood risk assessment including the vulnerability and exposure of receptors to determine its potential consequences.

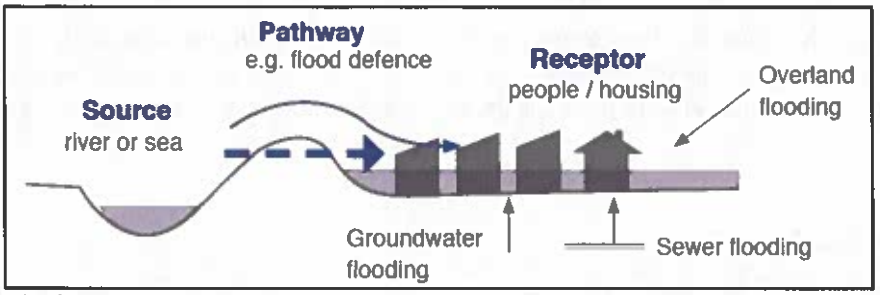

Figure 2 - Source-Pathway-Receptor Model OPW Flood Risk Management Guidelines 2009

A series of available flood maps were consulted to assess the potential flood risk to the proposed development site. The potential flood sources are analysed for the potential risk to the subject site should a flood event occur. See Table 1 below.

Possible Source	Possible Pathway	Possible Receptor	Likelihood (assumes no Flood Defence Measures in place)	Consequence	Magnitude of Risk to Subject Site
Fluvial	Overtopping	Site (Structures & People)	Not Possible	High	Low
Fluvial	Sewers via backflow/ surcharge	Site (Structures & People)	Not Possible	Medium	Low
Coastal	Overland Sheet Flow	Site (Structures & People)	Not Possible	High	Low
Coastal	Sewers via backflow/ surcharge	Site (Structures & People	Not Possible	Medium	Low
Pluvial	Accumulations from Runoff	Site (Structures & People)	Not Likely	Medium	Low
Pluvial	Sewers via backflow/ surcharge	Site (Structures & People)	Not Likely	Low	Low

Table 1 - Source, Pathway, Receptor & Risk Factors

Coastal Flood Risk

The proposed development site is not deemed to be at risk of tidal flooding. The proposed development site is located ca. 7km from the east coast of Ireland and the Irish Sea and it has an average ground elevation of ca. 97.00mAOD. The proposed site is considered to be located in Flood Zone C in regard to tidal flooding.

Fluvial Flood Risk

The EPA mapping identifies that there is only one watercourse local to the proposed development site. This is the Whitechurch Stream which is located ca. 100m east of the proposed site location. The Whitechurch Stream is a significant river with an upstream catchment area of 6.339km^2 based on the OPW FSU web portal node 09_1368_7. This watercourse is considered to pose the greatest risk of flooding to the proposed development site.

CFRAM Flood Mapping

The Whitechurch Stream was modelled under the Dodder Catchment Flood Risk Assessment and Management (CFRAM) Study. The CFRAM Map OSWS/EXT/UA/CURS/103 shows the fluvial flood extents of the Whitechurch Stream during the 1% AEP (1 in 100-year) and 0.1% AEP (1 in 1000-year) fluvial flood events. The proposed development site is not indicated to be at risk in either of these flood events. The CFRAM flood mapping also provides a number of nodes along the course of the stream which provide the predicted fluvial flood water levels in the 1% AEP and 0.1% AEP flood events.

The map shown below in Figure 3 is an extract from the CFRAM Map OSWS/EXT/UA/CURS/103 where the site location is indicated. It can be seen that the upstream nodes WS_1014 and WS_1010 are the nearest to the proposed development site. For the purposes of determining the FFL of the proposed new dwellings the water level at these nodes are considered conservative as they are upstream and will likely overestimate the flood water level downstream closer to the proposed development site.

The predicted fluvial flood water levels at nodes WS_1014 and WS_1010 can be seen below in Table 2.

Node Label	10% AEP WL (mAOD)	1% AEP WL (mAOD)	0.1% AEP WL (mAOD)	Lowest Proposed FFL (mAOD)
WS_1010	88.91	89.29	89.64	96.90
WS_1014	88.84	89.22	89.56	96.90

Table 2 - CFRAM Flood Water Levels

The proposed FFL for the 8 no. dwellings for this development range from 96.90mAOD at the lowest point to 100.65mAOD at the highest point. Therefore, there will be a minimum freeboard of 7.26m between the lowest FFL and the highest WL which occurs during the 0.1% AEP flood event at node WS_1010.

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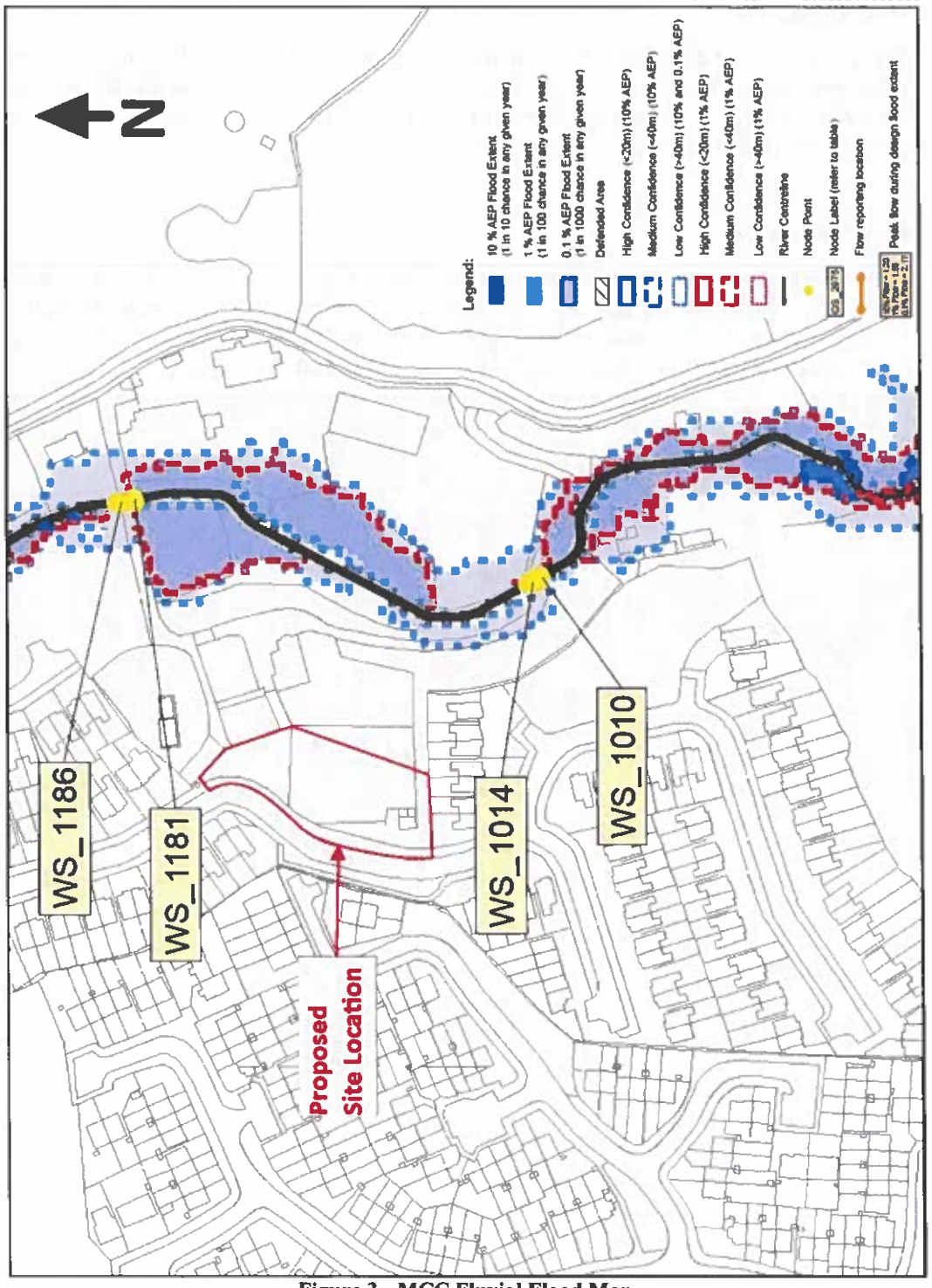

Figure 3 - MCC Fluvial Flood Map

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Pluvial Flood Risk

There is no risk of pluvial flooding on this development site due to the steep elevation difference across the site from the south to the north. Each proposed new dwelling will have a separate surface water drainage network which outfalls at a controlled flow rate to the public storm drain network.

Past Flood Events

The OPW Flood Hazard Mapping indicates that there is a history of flooding in Dun-Laoghaire Rathdown. There is no record of past flood events at the proposed development site location. Please see appended herewith the Past Flood Event Local Area Summary which details all the past flood events within a 2.5km radius of the proposed development site.

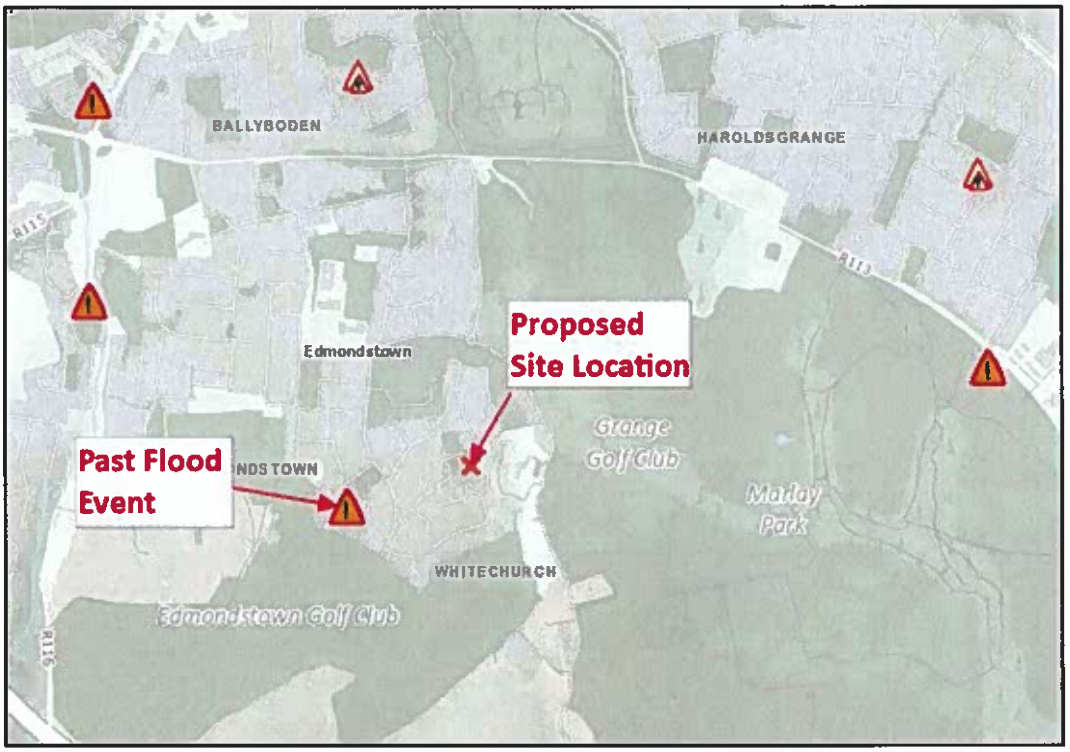

Figure 4 - Past Flood Events

Findings of Screening Assessment

Per *The OPW Planning System and Flood Risk Management Guidelines for Planning Authorities 2009,* the proposed development is classified as a highly vulnerable development which is identified to be located in Flood Zone C per CFRAM flood mapping. Based on the CFRAM flood mapping and the flood water levels provided, there will be a minimum freeboard of 7.26m between the FFL of the lowest house and the highest flood water level of the Whitechurch Stream at upstream Node WS_1010. This indicates that the proposed development is not required to progress to a Stage 2 Initial Flood Risk Assessment.

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Conclusion

This proposed development is classified as a highly vulnerable that is entirely located in Flood Zone C. The proposed development has satisfied the Screening Assessment and it is determined not to be at risk of fluvial, coastal or pluvial flooding in any flood event. This indicates that the proposed development is not required to progress to a Stage 2 Initial Flood Risk Assessment.

The proposed FFL for the 8 no. dwellings for this development range from 96.90mAOD at the lowest point to 100.65mAOD at the highest point. Therefore, there will be a minimum freeboard of 7.26m between the lowest FFL and the highest WL which occurs during the 0.1% AEP flood event at node WS_1010.

Taking all into consideration, this SSFRA deems this existing development site to be appropriate and to comply with the "The Strategic Flood Risk Assessment for the South Dublin County Development Plan 2022 – 2028" and the "Planning System and Flood Risk Management – Guidelines for Planning Authorities" (DoEHLG/OPW, 2009).

Yours sincerely,

Daniel Nolan

Daniel Nolan, MIEI, BA BAI, Msc Environmental Engineering

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Mobile : (087) 7905155/0872208633
Vat. No. 3349164IH

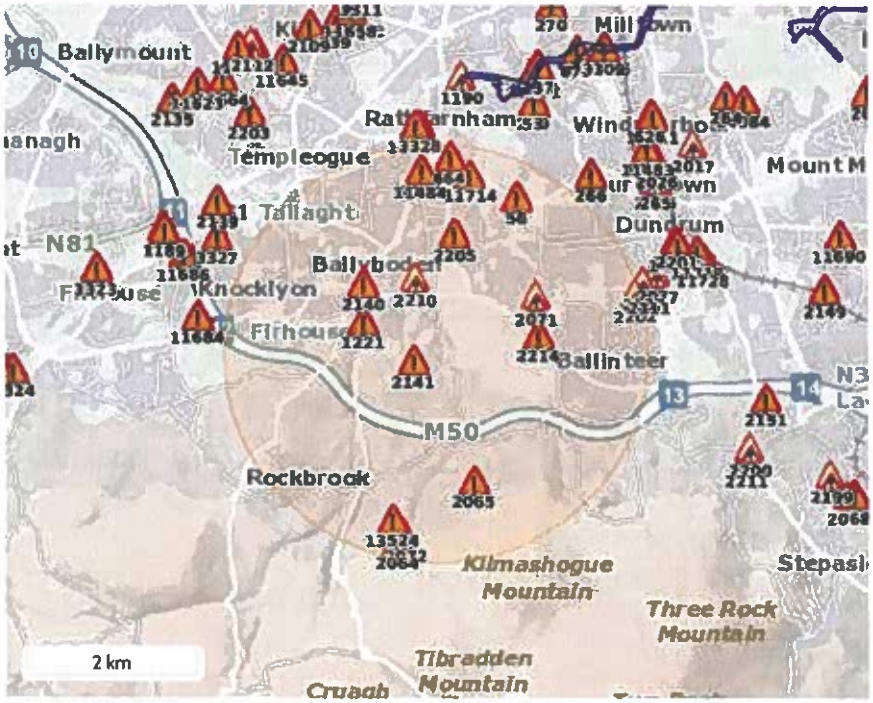
E-Mail: info@hydrocareenvironmental.ie
Website: www.hydrocareenvironmental.ie

Past Flood Event Local Area Summary Report

OPW Oifig na nOibreacha Poiblí Office of Public Works

Report Produced: 28/3/2023 14:01

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



Map Legend

- Single Flood Event
- Recurring Flood Event
- Past Flood Event Extents
- Drainage Districts Benefited Lands*
- Land Commission Benefited Lands*
- Arterial Drainage Schemes Benefited Lands*

* Important: These maps do not indicate flood hazard or flood extent. Their purpose and scope is explained on Floodinfo.ie

17 Results

	Name (Flood_ID)	Start Date	Event Location
1.	Grange River Tibradden Lane June 2003 (ID-2064)	30/06/2003	Exact Point
	Additional Information: Reports (2) Press Archive (0)		
2.	Grange River Kilmashogue Lane June 2003 (ID-2065)	30/06/2003	Exact Point
	Additional Information: Reports (2) Press Archive (0)		
3.	Boden Villas Feb 1994 (ID-2140)	03/02/1994	Exact Point
	Additional Information: Reports (1) Press Archive (0)		
4.	Whitechurch Court Feb 1994 (ID-2141)	03/02/1994	Exact Point
	Additional Information: Reports (1) Press Archive (0)		
5.	Barton Drive Ballyboden Feb 1994 (ID-2205)	03/02/1994	Exact Point
	Additional Information: Reports (1) Press Archive (0)		
6.	Little Dargle Grange Road Nov 1982 (ID-2214)	07/11/1982	Approximate Point
	Additional Information: Reports (1) Press Archive (0)		

	Name (Flood_ID)	Start Date	Event Location
7.	Owendoher River 24th Oct 2011 Willbrook Road (ID-11484) **Additional Information:** Reports (1) Press Archive (0)	23/10/2011	Approximate Point
8.	Little Dargle Sept 1957 (ID-56) **Additional Information:** Reports (3) Press Archive (0)	23/09/1957	Approximate Point
9.	Willbrook Rathfarnham Dec 1958 (ID-664) **Additional Information:** Reports (1) Press Archive (0)	16/12/1958	Approximate Point
10.	Manor Rise Recurring (ID-2071) **Additional Information:** Reports (2) Press Archive (0)	n/a	Exact Point
11.	Grange Stream Tibradden Lane Mutton Lane Recurring (ID-2072) **Additional Information:** Reports (2) Press Archive (0)	n/a	Exact Point
12.	Ludford Area Ballinteer Recurring (ID-2202) **Additional Information:** Reports (1) Press Archive (0)	n/a	Approximate Point
13.	Ballyboden Road Whitecliff Recurring (ID-2210) **Additional Information:** Reports (1) Press Archive (0)	n/a	Approximate Point
14.	Owenadoher Edmondstown Road. Nov 2000 (ID-1221) **Additional Information:** Reports (3) Press Archive (0)	05/11/2000	Approximate Point
15.	Flooding at Nutgrove Avenue, Rathfarnham, Dublin 14on 24th Oct 2011 (ID-11714) **Additional Information:** Reports (1) Press Archive (0)	23/10/2011	Exact Point
16.	Owendoher Willbrook Road August 1986 (ID-1266) **Additional Information:** Reports (2) Press Archive (1)	24/08/1986	Approximate Point
17.	Flooding at Dublin City on 14/06/2016 (ID-13524) **Additional Information:** Reports (0) Press Archive (0)	14/06/2016	Approximate Point