

PROPOSED PART 8 RESIDENTIAL DEVELOPMENT LAMBS CROSS, DUBLIN 18.

DESKTOP FLOOD RISK ASSESSMENT

DUN LAOGHAIRE – RATHDOWN COUNTY COUNCIL
October 2024

Project No: 23006

Contents Amendment Record



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1 INTRODUCTION

1.1 Introduction

This report is prepared on behalf of the National Development Finance Agency (NDFA) in consultation with Dún Laoghaire-Rathdown County Council to accompany a Part 8 Proposal for a residential development on a site located in the townland of Balally, at Lamb's Cross, Dublin 18 situated at the junction of Sandyford Road and Hillcrest Road.

The purpose of this DFRA is to assess the potential flood risk to the proposed development site and to assess the impact that the development as proposed may or may not have on the hydrological regime of the area.

Quoted ground levels or estimated floor levels relate to Ordnance Datum (Malin) unless stated otherwise.

The flood risk assessment has been carried out in accordance with the Government's 2009 Planning System and Flood Risk Management Guidelines (hereafter referred to as the 2009 Planning Guidelines). These guidelines adopt a staged approach to the assessment of flood risk.

This report describes a Stage 2 Initial Flood Risk Assessment which is defined within the 2009 Planning Guidelines as follows:

"A qualitative or semi-quantitative study to confirm sources of flooding that may affect a plan area or proposed development site, to appraise the adequacy of existing information, to provide a qualitative appraisal of the risk of flooding to development, including the scope of possible mitigation measures, and the potential impact of development on flooding elsewhere, and to determine the need for further detailed assessment."

The study was principally focused on examining flooding risks to the proposed site from the Brewery Stream.

1.2 Proposed Development

A residential development on a site located in the townland of Balally, at Lamb's Cross, Dublin 18 situated at the junction of Sandyford Road and Hillcrest Road The proposed development includes:

- i. 37 no. apartment units in a 3 5 storey building over undercroft area, including 29 no. one bed units; and 8 no. two bed units;
- ii. 1 no. community facility at ground floor of 171sqm;
- iii. Energy Centre at first floor level and external plant area set back at third floor level;
- iv. Undercroft area at lower ground level comprising (a) 2 no. ESB substations (b) car, bicycle and motorcycle parking; (c) bin storage; (d) bulk storage area; and (e) supporting mechanical, electrical and water infrastructure.
- v. Landscaping works including provision of (a) communal open space; and (b) public realm area fronting onto Sandyford Road and Hillcrest Road
- vi. All associated site development works including (a) vehicular access off Hillcrest Road; (b) public lighting; (c) varied site boundary treatment comprising walls and fencing; and (e) temporary construction signage.

The site plan and lower-level layout is illustrated in Figure 1-1.



Figure 1-1- Proposed site layout (site plan and lower level)

1.3 Site Description

The location of the proposed development is illustrated in Figure 1-2. The site is situated in the residential area of Sandyford, approximately 9.4km from Dublin city centre. The lands to the north of the site border an existing housing development Lambs Brook. There are existing detached two storey houses opposite the development on the southern side of the site on the opposite side of Hillcrest Road. To the west of the site the new development faces onto the R117 Sandyford Road.



Figure 1-2 - Site Location showing the indicative Site Boundary and Adjacent Developments

1.4 Surrounding Watercourse

Along the western boundary of the site flows Brewery Stream, and open watercourse. The stream flows north-east along the site but after generally flows south-east until flowing into the River Shanganagh, which then empties into the Irish Sea.

It should be noted that there is some uncertainty about its course, due primarily to a lengthy culvert under the Sandyford Industrial Estate. On the EPA database of rivers and streams it is labelled the Carrickmines Stream, with a course that turns south-east under the Sandyford Business Park, passing through Leopardstown Racecourse, Carrickmines and Loughlinstown, and reaching the coast in Killiney Bay. However, in a submission from the Dept of Housing, Local Government and Heritage for a nearby planning application (planning reference D23A/0456) it was reported that the watercourse is the Glasnalower / Brewery / Maretimo Stream, with a course that leads north under Sandyford Business Park, passing through Stillorgan and Blackrock and reaching the coast in Dublin Bay. For the

purposes of this assessment, we will refer to it as the Brewery Stream and assume that it heads north and reaches the coast in Dublin Bay.

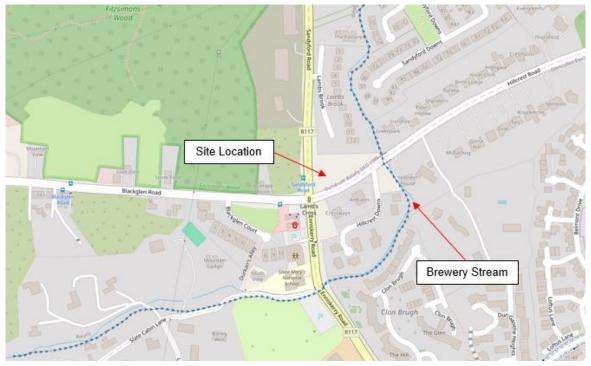


Figure 1-3 - Surrounding Watercourse (Extract from the EPA Maps)

1.5 Land Use Zone

Land use zone map is provided in the SFRA of the Dún Laoghaire-Rathdown County CDP 2022-2028. The different land zone is illustrated in Figure 1-4 and the full map is provided in Appendix A.

The proposed development is located within land zoned as "Objective NC: to protect, provide for and-or improve mixed use neighbourhood centre facilities" and "Objective A: to provide residential development and improve residential amenity while protecting the existing residential amenities."

The surrounding areas are zoned as "Objective A: Residential Development," "Objective NC: Mixed Use," and "Objective F: Open Space."

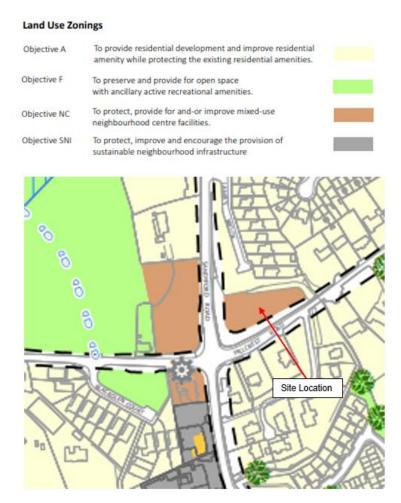


Figure 1-4 - Land Use Zoning Map (Extract from SFRA of the Dún Laoghaire-Rathdown County CDP 2022 – 2028)

1.6 Existing Topography Levels at Site

A topographical survey of the site shows that the site is generally level with a steep slope down to the stream on the eastern side of the site and running up along the northern boundary. The southwestern corner is approx. +125.40m down to +124.00m in the northwestern corner. The site level is +123.50m on the southeastern corner going towards the bank for the river. On the eastern side the bank top level is +122.96m falling down to the bottom bank level of +119.81m at the stream, the stream enters a culvert at the northeast corner of the site. On the northern side the bank top level is +124.32m falling down to the bottom bank level of +120.94m towards the housing at Lambs Brook.

2 FLUVIAL FLOOD RISK ASSESSMENT

The following sources of information were reviewed in order to identify any flood risk to the proposed development site as a result of fluvial flooding:

- The National Preliminary Flood Risk Assessment (PFRA) Overview Report & Indicative Flood Maps
- OPW Flood Records from <u>www.floodmaps.ie</u>
- Ordnance Survey Historic Mapping
- Strategic Flood Risk Assessment, Dún Laoghaire-Rathdown County Council Development Plan 2022 – 2028

2.1 The National Preliminary Flood Risk Assessment

The National Preliminary Flood Risk Assessment (PFRA), which was carried out by the OPW in March 2012, identified Areas of Further Assessment (AFA) where further, more detailed assessment was required to determine the degree of flood risk. Flood Risk Assessment Maps were prepared by the Catchment Flood Risk Assessment and Management (CFRAM) Study which indicate the extent of flooding caused by fluvial flood events with an annual exceedance probability (AEP) of 10% (10yr event), 1% (100yr event) and 0.1% (1000yr event) in these areas. The final versions of the maps were published in May 2017.

The CFRAM maps indicating the extent of flooding caused by a fluvial flood event with an annual exceedance probability (AEP) of 10% (10yr event), 1% (100yr event) and 0.1% (1000yr event) are included in Appendix B.

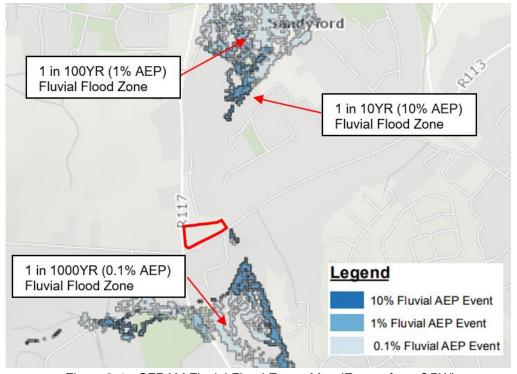


Figure 2-1 - CFRAM Fluvial Flood Extent Map (Extract from OPW)

The PFRA flood mapping indicates that the proposed development site does not fall within any current fluvial flood zones. While the site is located along the Brewery Stream, the stream does not flood within the boundary of the site. Additionally, the western and northern edges of the site will be lined with trees preventing any flooding near the site from entering the site.

The CFRAMS flood map also provides information on predicted water levels for the 10% AEP (1 in 10 year), 1% AEP (1 in 100 year) and 0.1% AEP (1 in 1000 year) fluvial flood events at various node points along the Brewery Stream. The node points are listed in Table 2 below. The location of the node points is indicated in Figure 5 and on the drawings in Appendix B. Predictive extreme flood levels at the node point closest to the site are applicable to utilise in the assessment of potential fluvial flood risk to the proposed development site.

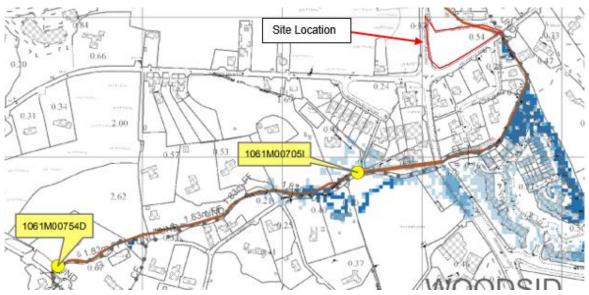


Figure 2-2 - Extract from PFRA Maps (Extract from OPW)

Table 2-1 - CFRAMS Predicted Water Levels

Node Label	Water Level 10% AEP	Water Level 1% AEP	Water Level 0.1% AEP
1061M00705I	127.73	128.09	128.36
1061M00754D	149.26	149.28	149.3

According to the SFRA of the Dún Laoghaire-Rathdown County Council Development Plan 2022 – 2028 the recommended minimum finished floor level is to be:

Table 2-2 - Recommended Minimum Finished Floor Levels (Extract from the Strategic Flood Risk Assessment of the Dún Laoghaire-Rathdown County Council Development Plan 2022-2028)

Scenario	Finished floor level to be based on
Fluvial, undefended	1% AEP flood + climate change (20% allowance for highly vulnerable
	development) + 300mm freeboard

Using the information obtained from the predicted flood level, in order to permit a sustainable development of this site and to mitigate against potential residual flood risk to the development it is recommended that the finished floor level = 128.09m with 20% + 0.3m = 128.39m.

2.2 OPW Flood Records

The OPW Flood Maps Website (www.floodinfo.ie) was consulted in relation to available historical or anecdotal information on any flooding incidences or occurrences in the vicinity of the proposed development site. These records, which are summarised in Appendix C of this report, indicate 16 recorded flood events within a 2.5km radius of the proposed site as indicated in Figure 2-3.

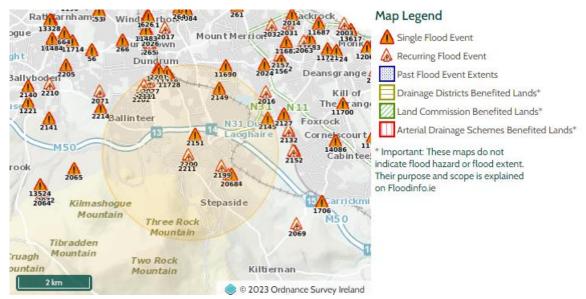


Figure 2-3 - OPW Flood Event Summary

As indicated, there were various historical flooding events within Dún Laoghaire-Rathdown County Council Area. Two flood events during the 1980s, ID 2211 and ID 2151, within the vicinity of the site occurred due to issues with sewers and drains in the area. These issues have since been resolved and the area has not flooded due to rainfall since. The reoccurring flood in the area, ID 2200 occurs as a result of the Brewery Stream. In 2001, a study of the flooding has been conducted and plans to reduce the likelihood of flooding have since been included in development plans. Since then, there is not a record of flooding in the immediate vicinity. Based on available and recorded information as outlined above, the development site is considered not to have been subject to flooding in recent history.

2.3 Ordnance Survey Historic Mapping

Historic Groundwater Flood Maps were produced by Geological Survey Ireland. The historic groundwater flood map is a national-scale flood map presenting the maximum historic observed extent of karst groundwater flooding. The map is primarily based on the winter 2015/2016 flood event, which in most areas represented the largest groundwater flood event on record. The map was produced based on the SAR imagery of the 2015/2016 event as well as any available supplementary evidence. The floods were classified by flood type differentiating between floods dominated by groundwater (GW) and floods with significant contribution of groundwater and surface water (GWSW).

The map that was viewed was the historical 6-inch map (pre-1900). Figure 2-4 illustrate the historic mapping for the area of the proposed development site. The historic 6-inch mapping does not indicate any historical or anecdotal instances of flooding within or

adjacent to the boundary of the proposed development site. The nearst historical flood zone is 9km away and should have no impact on the site.

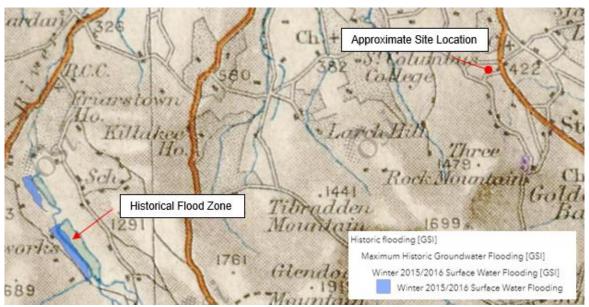


Figure 2-4 - Historic 6 Inch Mapping

2.4 Strategic Flood Risk Assessment Dún Laoghaire-Rathdown County Council Development Plan 2022 – 2028

A Strategic Flood Risk Assessment (SFRA), as required by 'The Planning System and Flood Risk Management Guidelines for Planning Authorities' (DEHLG and OPW, 2009), has been undertaken as part of the preparation of the Dún Laoghaire-Rathdown County Council Development Plan 2022 2028.

2.4.1 Composite Flood Zone Map

The SFRA contains a Composite Flood Zone Map, the map is included in Appendix D and an extract is shown in Figure 2-5.



Figure 2-5 - Composite Flood Map - Zoomed In

Figure 2-6 indicates that the proposed development falls within a predictive Flood Zone C. There is Zone A and B near the site where fluvial flooding occurs.

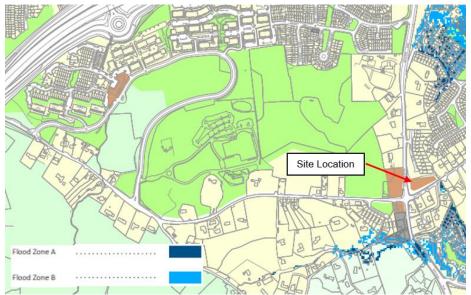


Figure 2-6 - Composite Flood Map (Extract from the SFRA of the Dún Laoghaire-Rathdown County Council Development Plan 2022 – 2028)

3 TIDAL FLOODING RISK ASSESSMENT

The proposed development site is located approximately 1.28km north-east of the nearest potential source of tidal flooding. A review of the OPW Tidal Flood Extents Mapping was carried out and indicates that the proposed development site does not fall within a the predicted extreme 0.1% (1 in 1000-year current scenario) tidal flood event.

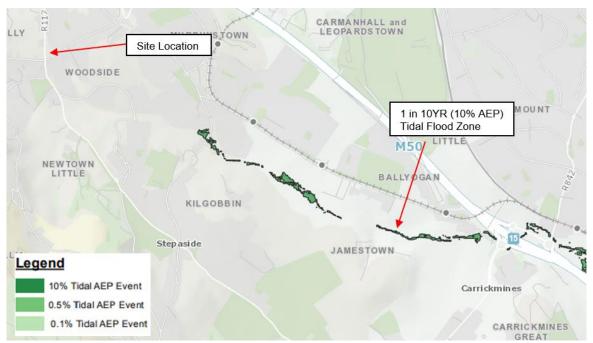


Figure 3-1 - CFRAM Tidal Flood Extent Map (Extract from OPW)

4 SEQUENTIAL APPROACH TO PLANNING

The document "Planning Systems and Flood Risk Management: Guidelines for Planning Authorities November 2009" requires the adoption of a sequential approach to flood risk management when assessing the location for new developments. This approach is a risk-based method to guide development away from areas that have been identified through flood risk assessment as being at risk from flooding. The philosophy used in this approach is outlined in Figure 4-1.



Figure 4-1 - Source: The Planning Systems and Flood Risk Management: Guidelines for Planning Authorities November 2009

The sequential approach uses mapped flood zones alongside considerations of the vulnerability of different types of development to give priority to development in zones of low flood probability.

4.1 Flood Zones

The flood zones are defined on the basis of flooding from rivers and the sea. The different flood zones recommended in the 2009 Planning Guidelines are:

- **Flood Zone A** Highest risk area where there is a 1% chance of flooding in any one year from rivers and a 0.5% chance of coastal flooding.
- **Flood Zone B** Moderate risk area where the chance of flooding in any one year is 0.1-1% for rivers and 0.1-0.5% for coastal flooding.
- **Flood Zone C** Low risk area with less than 0.1% chance of flooding from rivers or the sea in any given year.

As described in Section 3 and Section 4, the proposed development is outside of the area predicted to flood during a 0.1% AEP (1 in 1000year) fluvial flood event. The development is therefore located within Flood Zone C in accordance with the 2009 Planning Guidelines.

4.2 Vulnerability Class of Proposed Development

The vulnerability class of the development is dependent on the land use and type of development proposed.

Table 4-1 - Classification of Vulnerability to Flooding for Various Development Types (Source – Table 3.1 Planning System and Flood Risk Management – Guidelines for Planning Authorities DEHLG, OPW, November 2009)

Vulnerability class	Land uses and types of development which include*:
Highly vulnerable	Garda, ambulance and fire stations and command centres required to be operational during flooding;
development (including	Hospitals;
essential	Emergency access and egress points;
infrastructure)	Schools;
	Dwelling houses, student halls of residence and hostels;
	Residential institutions such as residential care homes, children's homes and social services homes;
	Caravans and mobile home parks;
	Dwelling houses designed, constructed or adapted for the elderly or, other people with impaired mobility; and
	Essential infrastructure, such as primary transport and utilities distribution, including electricity generating power stations and sub-stations, water and sewage treatment, and potential significant sources of pollution (SEVESO sites, IPPC sites, etc.) in the event of flooding.
Less vulnerable	Buildings used for: retail, leisure, warehousing, commercial, industrial and non-residential institutions;
development	Land and buildings used for holiday or short-let caravans and camping, subject to specific warning and evacuation plans;
	Land and buildings used for agriculture and forestry;
	Waste treatment (except landfill and hazardous waste);
	Mineral working and processing; and
	Local transport infrastructure.
Water-	Flood control infrastructure;
compatible development	Docks, marinas and wharves;
	Navigation facilities;
	Ship building, repairing and dismantling, dockside fish processing and refrigeration and compatible activities requiring a waterside location;
	Water-based recreation and tourism (excluding sleeping accommodation);
	Lifeguard and coastguard stations;
	Amenity open space, outdoor sports and recreation and essential facilities such as changing rooms; and
	Essential ancillary sleeping or residential accommodation for staff required by uses in this category (subject to a specific warning and evacuation plan).
*Uses not listed here s	should be considered on their own merits

The 2009 Planning Guidelines presents a matrix of vulnerability versus flood zone to illustrate appropriate development and the requirement of justification tests. That matrix can be seen in Table 5. Based on the land uses listed in Table 4, the proposed residential development is classified as a highly vulnerable development. However, the development will be located in Flood Zone C and is therefore considered to be appropriate and a Justification Test is not therefore required.

Table 4-2 - Matrix of Vulnerability vs. Flood Zone (Source – Table 3.1 Planning System and Flood Risk Management – Guidelines for Planning Authorities DEHLG, OPW, November 2009)

	Flood Zone A	Flood Zone B	Flood Zone C
Highly vulnerable development (including essential infrastructure)	Justification Test	Justification Test	Appropriate
Less vulnerable development	Justification Test	Appropriate	Appropriate
Water-compatible development	Appropriate	Appropriate	Appropriate

5 SUMMARY AND CONCLUSIONS

The analysis and flood zone delineation undertaken as part of this DFRA indicates that the proposed site is not expected to be impacted during the occurrence of a 0.1% AEP (1 in 1000 year) fluvial flood event.

The PFRA flood mapping indicates that the proposed development site does not fall within the predicted extreme 0.1% (1 in 1000 year) current scenario fluvial flood zone. The site is bordered by a stream but is not in any current or future predictions of flood zones. The boundary by the stream will be lined with trees as an additional measure of flood protection.

The node point closest to the northern boundary of the site is referenced as node point 1061M00705I. The 1% AEP (1 in 100 year) and 0.1% AEP (1 in 1000 year) flood levels at this point are predicted as 128.09 and 128.36m respectively.

According to the SFRA of the Dún Laoghaire-Rathdown County Council Development Plan 2022-2028, it is recommended that for a scenario of fluvial event-undefended, the minimum finished floor level is to be based on 1% AEP flood + climate change (20% allowance for highly vulnerable development) + 300mm freeboard i.e., 128.09m with 20% + 0.3m = 128.39m.

In consideration of the above assessment, analysis and recommendations, overall development of the site is not expected to result in an adverse impact to the existing hydrological regime of the area or to result in an increased flood risk elsewhere.



Mapping Notes

- .. The lines of the Road Proposals shown are diagrammatic only and may be
- subject to change.

 The provisional alignment of the S2S/National East Coast Trail Cycle Route is

diagrammatic only and may be subject to change.

- 3. The boundaries of any proposed Local Area Plans are indicative only and may be subject to change. Refer to adopted LAP document for definitive boundaries.
- The Core Bus Corridors may be subject to change.
 It should be noted that the core bus corridors incorporate the existing quality bus corridors on the N11 and Rock Road
- 5. The tree symbols may represent one tree or a group of trees which make a
- 6. The Proposed Luas Line Extension is a provisional alignment.
- 7. When printing this map, colours may vary depending on type of printer used. Please refer to dlr website for definitive colours.
- The route of a proposed indicative Luas Spur from Old Connaught Avenue to Fassaroe, Bray as shown on Map 14 shall be further considered and informed by and in the context of the next Transport Strategy for the Greater Dublin Area

COMHAIRLE CHONTAE DHÚN LAOGHAIRE-RÁTH AN DÚIN

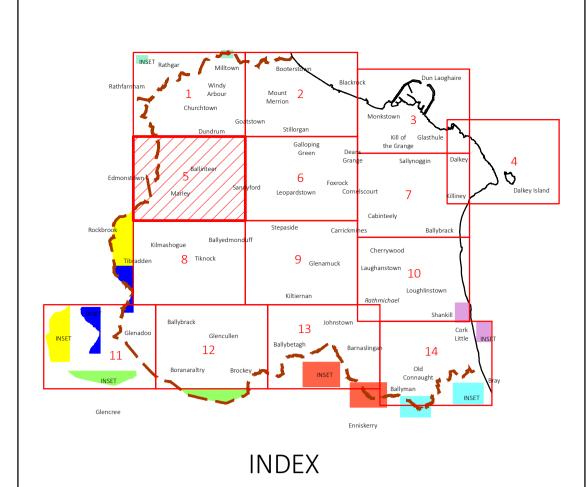
DÚN LAOGHAIRE-RATHDOWN COUNTY COUNCIL

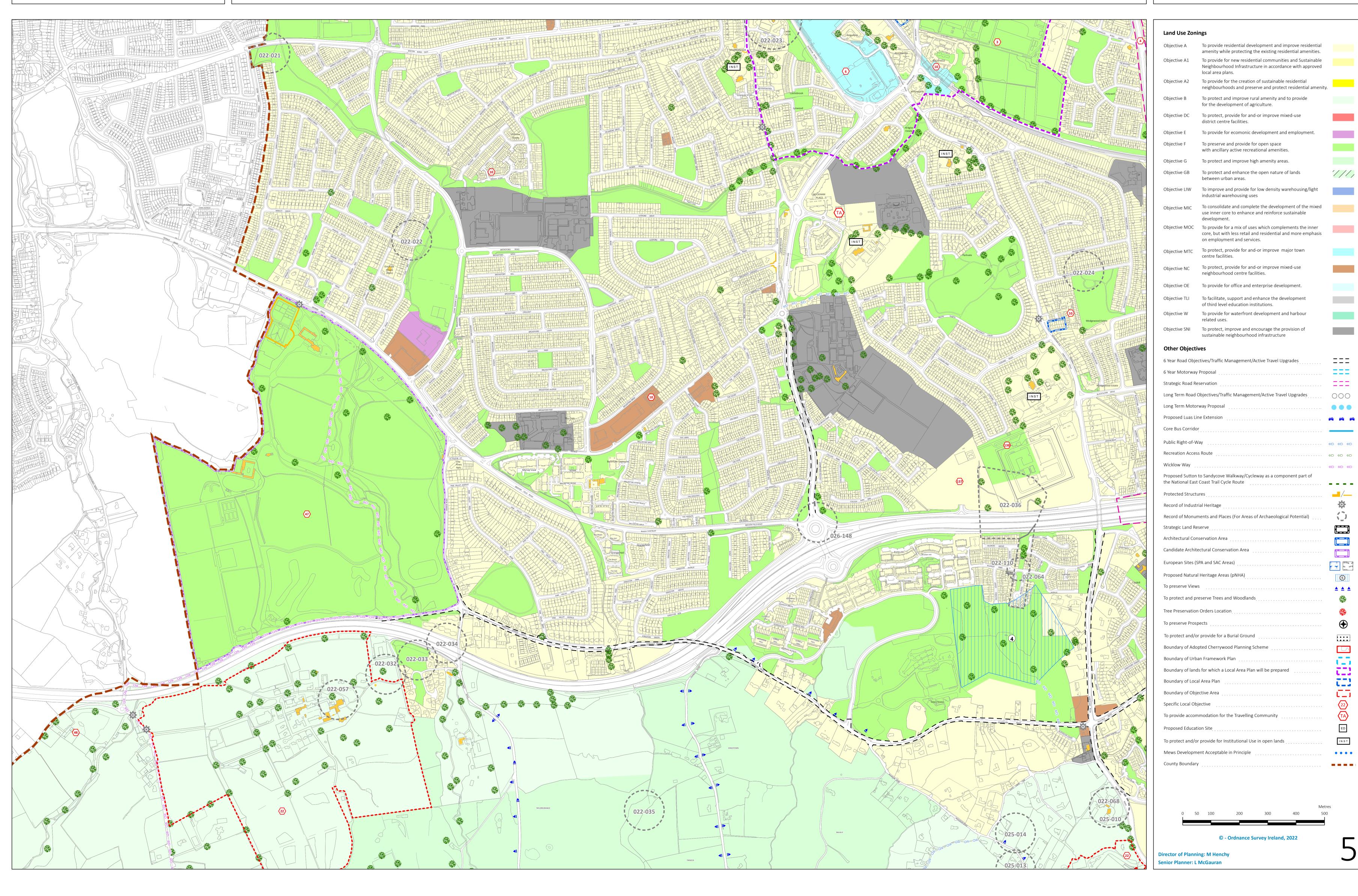
COUNTY DEVELOPMENT PLAN 2022-2028



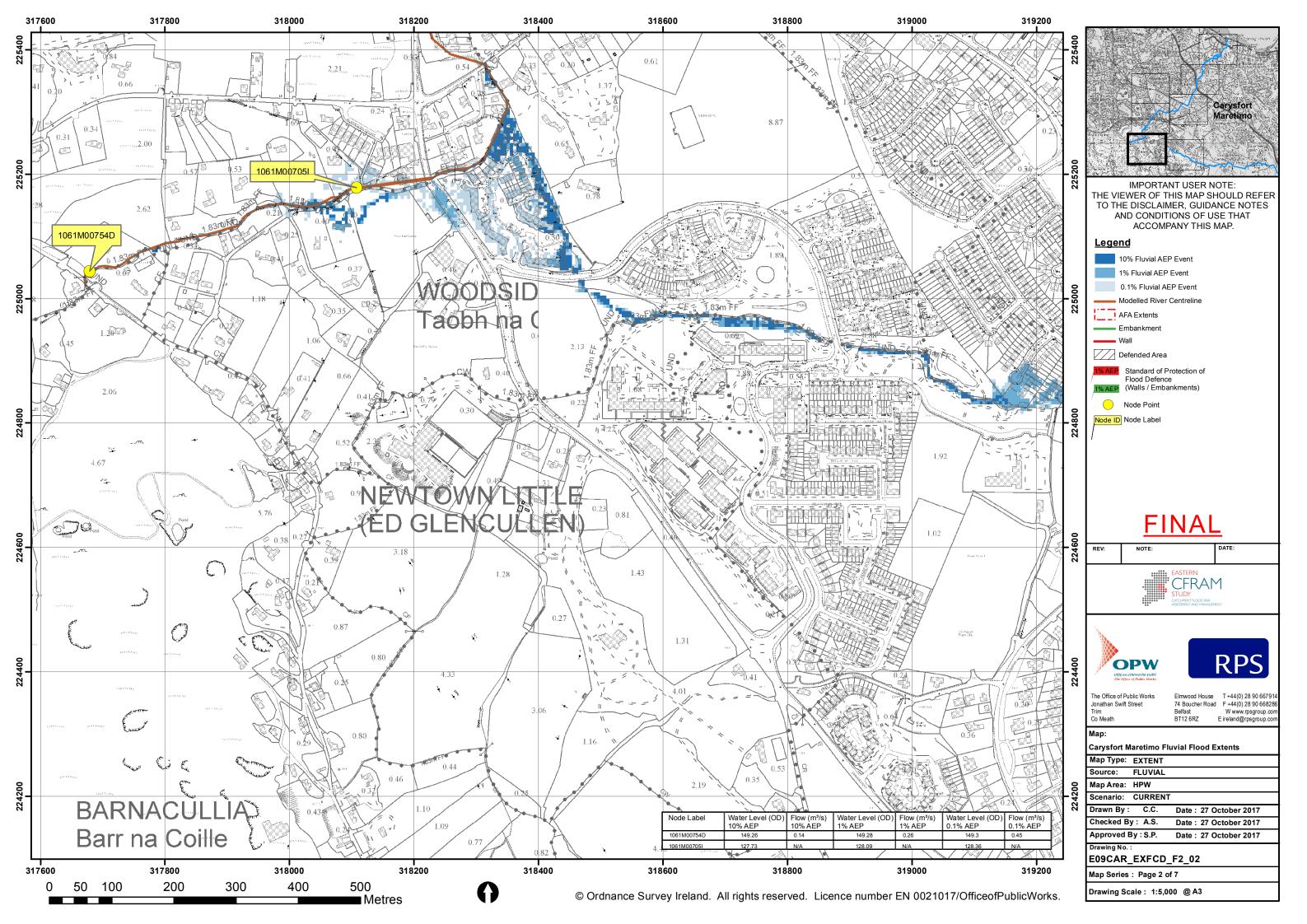
Adopted March 2022







APPENDIX B – CFRAM FLUVIAL	. FLOOD EXTENTS MAP	





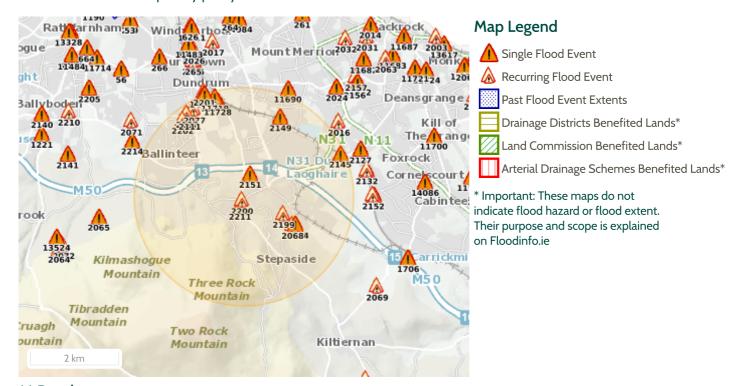
Past Flood Event Local Area Summary Report



Report Produced: 29/5/2023 12:36

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.

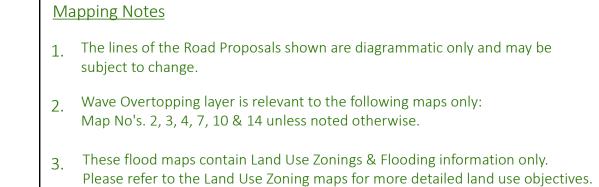


16 Results

Name (Flood_ID)	Start Date	Event Location
1. Ashlawn Ballinteer Road June 1993 (ID-2111)	10/06/1993	Approximate Point
Additional Information: Reports (1) Press Archive (0)		
2. 🛕 Leopardstown Road Dec 1979 (ID-2145)	14/12/1979	Exact Point
Additional Information: Reports (1) Press Archive (0)		
3. Lakelands Close Stillorgan Jan 1980 (ID-2149)	21/01/1980	Approximate Point
Additional Information: Reports (1) Press Archive (0)		
4. <u> </u>	21/01/1980	Exact Point
Additional Information: Reports (1) Press Archive (0)		
5. A School House Lane Sandyford Nov 1982 (ID-2211)	26/11/1982	Approximate Point
Additional Information: Reports (1) Press Archive (0)		
6. Flooding at Willow Bank Apartments, Sandyford Rd, Dublin 14 on 24th Oct 2011 (ID-11728)	23/10/2011	Exact Point
Additional Information: Reports (1) Press Archive (0)		

Name (Flood_ID)	Start Date	Event Location
7. Flooding at Riverdale, Dundrum, Dublin 14 on 24th Oct 2011 (ID-11719)	23/10/2011	Exact Point
Additional Information: Reports (1) Press Archive (0)		
8. 🛕 Pine Copse Road Ballinteer Nov 1982 (ID-2137)	05/11/1982	Exact Point
Additional Information: Reports (1) Press Archive (0)		
9. 🛦 Slang Old Ballinteer Road Recurring (ID-2077)	n/a	Exact Point
Additional Information: Reports (4) Press Archive (0)		
10. 🛦 Kilgobbin Road Recurring (ID-2068)	n/a	Exact Point
Additional Information: Reports (2) Press Archive (0)		
11. A Pine Copse Willow Road Recurring (ID-2075)	n/a	Exact Point
Additional Information: Reports (2) Press Archive (0)		
12. 🛦 Carrickmines River Sandyford Hall Recurring (ID-2199)	n/a	Exact Point
Additional Information: Reports (1) Press Archive (0)		
13. 🛦 Ballyogan Stream Lambs Cross Recurring (ID-2200)	n/a	Exact Point
Additional Information: Reports (1) Press Archive (0)		
14. 🛦 Ludford Area Ballinteer Recurring (ID-2202)	n/a	Approximate Point
Additional Information: Reports (1) Press Archive (0)		
15. A Flooding at Clonskeagh Road, Dublin 6 on 24th Oct 2011 (ID-11704)	23/10/2011	Exact Point
Additional Information: Reports (1) Press Archive (0)		
16. Flooding at Kilgobbin Road, Stepaside, Co. Dublin on 24th Oct 2011 (ID-11712)	23/10/2011	Exact Point
Additional Information: Reports (1) Press Archive (0)		





Flood Zone Map COMHAIRLE CHONTAE DHÚN LAOGHAIRE-RÁTH AN DÚIN

DÚN LAOGHAIRE-RATHDOWN COUNTY COUNCIL

COUNTY DEVELOPMENT PLAN 2022-2028



Adopted March 2022

