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Fitzsimons Doyle & Associates

FDA CONSULTING

Flood Risk Assessment

For

Change of Use of

Unit 41 Robinhood Industrial Estate

from Cold Store to Light Industrial

Client:

Parma Motors Ltd

Ref: 21/5102

December 2021

Fitzsimons Doyle & Associates (Consulting Engineers) Limited. Registered in Ireland Reg. No. 131392

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Table of Contents

1 Introduction

It is proposed to carry out a change of use from a cold store to a light industrial use at the existing premises of Unit 41 Robinhood Industrial Estate Ballymount Road Dublin 12.

This Flood Risk Assessment forms part of the planning permission submission and considers the following:

- The Department of Environment, Heritage and Local Government guideline document to Planning Authorities in relation to Flood Risk Management.
- The South Dublin County Development Plan (2022– 2028).
- Review of data on recorded historic floods.
- Risk of flooding to the proposed site from flood flow from neighbouring watercourses.
- Risk of flooding due to direct rainfall.
- Risk of flooding from groundwater.
- Impact of presence of the development on the existing flood risk regime at its proposed site.

2 Planning Guidelines

The Department of Environment, Heritage and Local Government document "The Planning System and Flood Risk Management, Guidelines for Planning Authorities", published in 2009 aims to provide a framework for the integration of flood risk assessment into the planning process and as a result to:

- Avoid inappropriate development in areas at risk of flooding;
- Avoid new developments increasing flood risk elsewhere,
- Ensure effective management of residual risks for development permitted in floodplains.

The Guideline document sets out a staged approach for the consideration of flood risk in relation to developments as reproduced below.

Stage 1 Flood risk identification – to identify whether there may be any flooding or surface water management issues related to either the area of regional planning guidelines, development plans and LAP's or a proposed development site that may warrant further investigation at the appropriate lower level plan or planning application levels;

Stage 2 Initial flood risk assessment – to confirm sources of flooding that may affect a plan area or proposed development site, to appraise the adequacy of existing information and to scope the extent of the risk of flooding which may involve preparing indicative flood zone maps. Where hydraulic models exist the potential impact of a development on flooding elsewhere and of the scope of possible mitigation measures can be assessed. In addition, the requirements of the detailed assessment should be scoped; and

Stage 3 Detailed flood risk assessment – to assess flood risk issues in sufficient detail and to provide a quantitative appraisal of potential flood risk to a proposed or existing development or land to be zoned, of its potential impact on flood risk elsewhere and of the effectiveness of any proposed mitigation measures.

The Guidelines classify developments into three vulnerability classes based on the effects of flooding

- Highly vulnerable development,
- Less vulnerable development and
- Water Compatible development.

In accordance with the Planning Systems and Flood Risk Management Guidelines for Planning Authorities, industrial property development is classed as less vulnerable development.

The Guidelines classify Land areas within three flood zones based on the probability of flooding. Flood zones are defined as follows in the Guidelines:

Zone A is at highest risk. In any one year, Zone A has a 1 in 100-year (1%) chance of flooding from rivers and a 1 in 200-year (1%) chance of flooding from the sea.

Zone B is at moderate risk. The outer limit of Zone B is defined by the 1 in 1,000-year (or 0.1%) flood from rivers and the sea.

Zone C is at low risk. In any one year, Zone C has less than 1 in 1,000-year (<0.1%) chance of flooding from rivers, estuaries or the sea.

In the identification of flood zones, no account should be taken of any flood relief walls or embankments.

	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

Table 1: Matrix of Vulnerability versus flood zone to illustrate appropriate development and that required to meet the Justification Test (reproduced from Table 3.2The Planning System and Flood Risk Management Guidelines)

Table 1, which is reproduced from the guideline document to Planning Authorities in relation to Flood Risk Management states that less vulnerable development is appropriate within Flood Zones B &C

In August 2014 the Department of Environment, Community and Local Government (*ref. Circular PL 2/2014*) issued Clarifications of advice in the Guidelines for Planning Authorities - The Planning System and Flood Risk Management Guidelines (November 2009). This included

(iv) Revised section 5.28 – page 52 of the Guidelines

Assessment of minor proposals in areas of flood risk

'Applications for minor development and change of use, such as small scale infill, small extensions to houses or the rebuilding of houses, and most changes of use of existing buildings and or extensions and additions to existing commercial and industrial enterprises, are unlikely to raise significant flooding issues, unless they obstruct important flow paths, introduce a significant additional number of people into flood risk areas or entail the storage of hazardous substances. Since such applications concern existing buildings or developed areas, the sequential approach cannot be used to locate them in lower-risk areas and the Justification Test will not apply. However, a commensurate assessment of the risks of flooding should accompany such applications to demonstrate that they would not have adverse impacts or impede access to a watercourse, floodplain or flood protection and management facilities. These proposals should follow best practice in the management of health and safety for users and residents of the proposal.

Section 4.4 of the South Dublin County Development Plan, Strategic Flood Risk Assessment (SFRA) also refers to Applications for Minor Developments in Areas at Risk of Flooding stating: -

In an extension to Section 5.28 of the Planning Guidelines on Flood Risk Management, two classes of Minor developments have been defined through this SFRA. These are:

- *Class 1 - Works directly associated with existing developments, such as extensions, renovations and rebuilding within the footprint of the existing development, and changes of use.*
- *Class 2 - Works in relation to infill development, which may include development of previously unused (greenfield) land, or building within the curtilage of an existing development, but outside the footprint of the building.*

In the case of class 1, the "Sequential Approach" and "Justification Test" will apply as they relate to existing buildings. An assessment of the risks of flooding should accompany such applications to demonstrate that they would not have adverse impacts or impede access to a watercourse, floodplain or flood protection and management facilities. Where possible, the design of built elements in these applications should demonstrate principles of flood resilient design (See Section 4 - Designing for Residual Flood Risk of the Technical Appendices to the DoECLG Flooding Guidelines). Emergency access must be considered as in many cases flood resilience will not be easily achieved in the existing built environment.

For Class 2 development, construction of new buildings on what would otherwise be greenfield, or undeveloped land, has generally been found to generate an un-justifiable level of risk, either through introducing additional people into the floodplain, blocking surface water and overland flow paths or requiring works which are likely to have a negative impact on flood risk elsewhere. For this reason, new, standalone development is not permitted within Flood Zone A or B for highly vulnerable uses or in Flood Zone A for less vulnerable uses.

It is a requirement of South Dublin County Council, Greater Dublin Strategic Drainage Study, (DCC 2005) and The Planning System and Flood Risk Management, Guidelines for Planning Authorities, that the predicted effects of climate change are incorporated into any proposed design.

The relevant predicted climate change variations are

- Drainage 20% Increase in rainfall
- Fluvial (River flows) 20% Increase in flood flow.

3 Site Description

The site is located on the Southern End of the Robinhood Industrial Estate. It is located on the northern side of Ballymount Road Lower. The proposed change of use relates to the end premises of a series of warehouse/light industrial premises built in and around 1989.

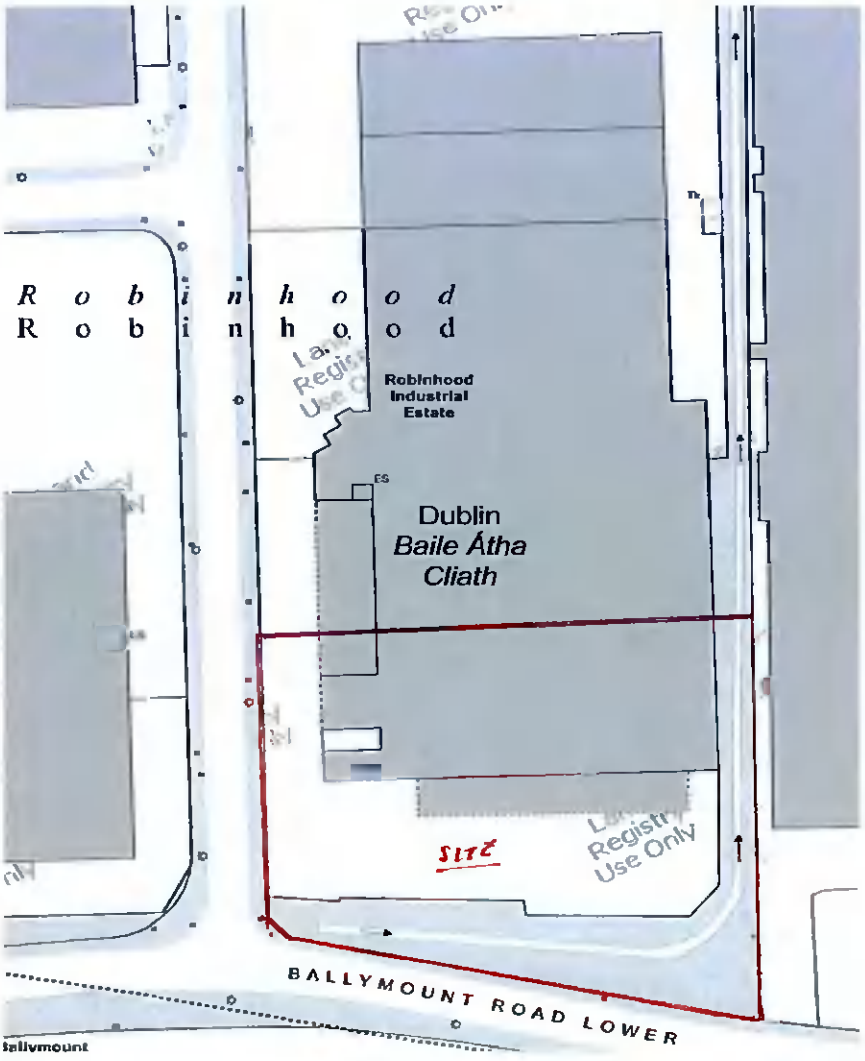


Figure 1 - Site Location Plan

The building is a steel portal frame building with a pitched roof composed of built up insulated metal sheeting. The perimeter walls are constructed from concrete block and lined internally with double insulated aluminium panels.

Access to the premises is directly from Ballymount Road Lower.

The site lies below the level of Ballymount Road and is level with the surrounding light industrial estate of Robinhood Industrial Estate.

The site has an area of 6120m^2

A surface water outfall from the industrial estate to the south and west of the site enters an open channel which runs across the front of the site parallel to Ballymount road Lower and then turns and runs parallel to the eastern Boundary of the site flowing northwards where it joins the Camac River having passed under the Long Mile Road.

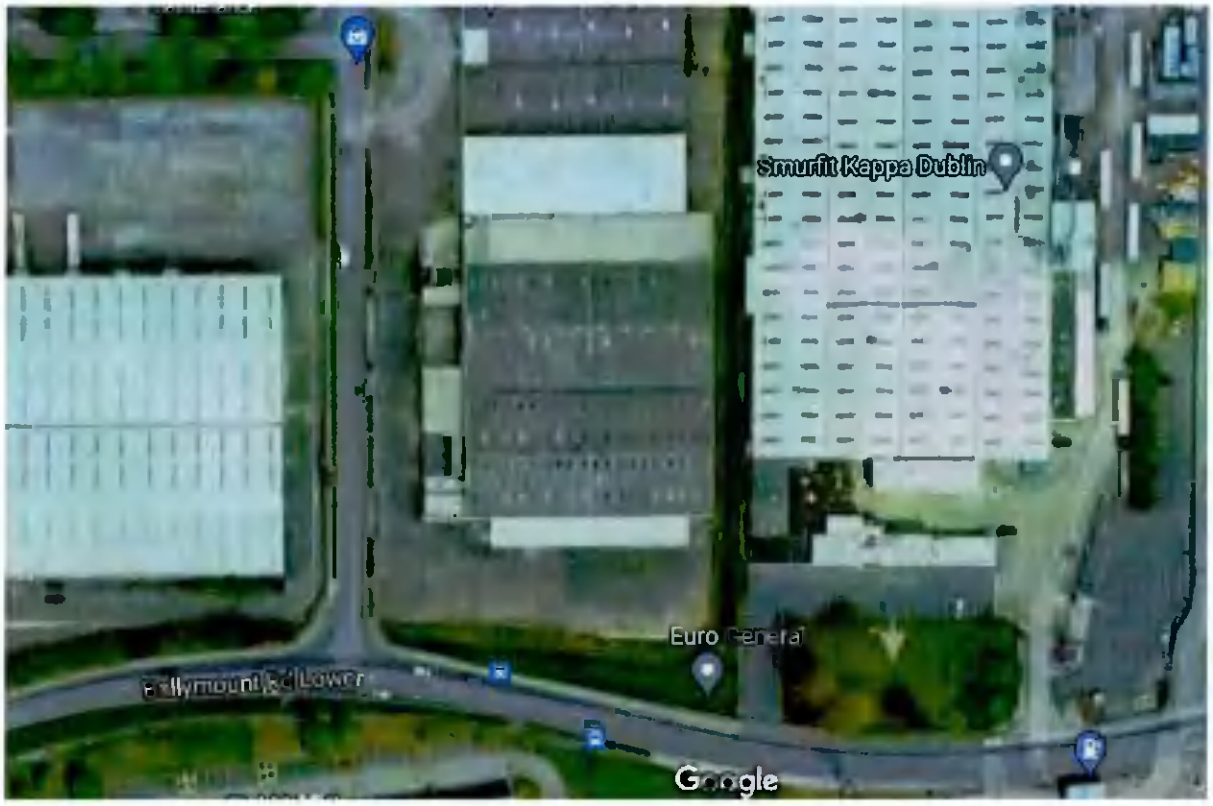


Figure 2 – Aerial view of site with open channel marked in Blue

4 Description of Proposed Development

The proposed development is for a change of use from a cold storage unit to a light industrial unit.

The area of the existing cold storage unit is 1750 sqm with 8 sqm of ancillary offices

The existing storage unit is located in a steel portal frame structure with double skin roof, concrete block walls, all lined internally in double skin insulated aluminium panels.

The unit is at the southern end of a series of light industrial buildings built circa 1989.

The unit is accessed directly from Ballymount Road Lower and it has a large parking area to the south elevation with overhead canopy and roller shutter access doors. It also has roller shutter access on the western elevation.

The ancillary offices that serve the warehouse are located in a separate building attached to the western boundary and are located at first floor level.

5 Flooding Risk

This report is prepared to demonstrate the suitability of the proposed development in accordance with the Planning System and Flood Risk Management, Guidelines for Planning Authorities 2009 and subsequent clarifications of advice in the Guidelines for Planning Authorities (ref. Circular PL 2/2014). In accordance with Circular PL 2/2014 an assessment of the risks of flooding is carried out to demonstrate that the development would not have adverse impacts or impede access to a watercourse, floodplain or flood protection and management facilities. Best practice is followed in the management of health and safety for users and residents of the proposal.

The assessment will consider the risk of flooding of the development based on the information currently available and the planning zoning of the site as envisaged under the Current County Development Plan.

The report makes reference to the following:

1. OPW National flood hazard mapping
2. CFRAM Study
3. The Planning System & Flood Risk Management: Guidelines for Planning Authorities & Technical Appendices November 2009 and subsequent clarifications (Circular PL/2014)
4. South Dublin County Development Plan 2022 – 2028
5. Geological Survey of Ireland.

5.1 Review of Historic Flood Data for Lands Adjacent to the Site

A review of historic flooding was undertaken using the Office of Public Works (OPW) digital database. The Website www.floodmaps.ie forms a record of all available flood records held by the OPW, all local authorities and other relevant state organisations such as the EPA and the Department of Environment Heritage and Local Government.

The summary report from this site is included in Appendix A.

The closest point of flooding recorded is Flood ID 1187 which is a recurring event on the Robinhood Stream some 600m to the North of our site. This occurs where the Robinhood stream is culverted under the Robinhood Road. The last reported event was in November 2000.

Figure 3 – Location of recurring Flood Event at Culvert Robinhood Road

Subject site marked ★

5.2 Risk of Pluvial flooding

Pluvial flooding is flooding which has originated from overland flow resulting from high intensity rain fall. A preliminary screening of surface water hot-spots has been carried out as part of the South Dublin County Council SFRA, drawing on historical flood records and the OPW"s PFRA mapping amongst other sources. Indicative Pluvial flooding is shown at the entrance to the subject site. Pluvial flooding can generally be managed through site design, layout and drainage.

Fig 4 Indicative Pluvial flood mapping sheet 1 of 4 SDCC SFRA

There is an open surface water channel located on the southern and eastern boundaries of the site. . This enters the site on the south west corner flows in a west to east direction to the south west corner and then turns north where it joins the Robinhood Stream and ultimately the River Camac.

The proposed development will incorporates sustainable urban drainage systems and discharges will be to the existing drainage network.

Pluvial flooding is not considered a risk for the development.

5.3 Risk of flooding from Groundwater

According to the Geological Survey of Ireland, GSI, interactive maps, ground water flooding is not considered a significant risk in the Robinhood Industrial Estate with a probability of less than 0.1%.

5.4 Risk of Fluvial Flooding

The Eastern Catchment and Flood Risk Assessment and Mangement Study indicates there is a risk of fluvial flooding for events with an annual exceedance probability of 1:1000.(low probability)

For medium and high probability events (1:100 and 1:10) there is no flooding indicated on the site.

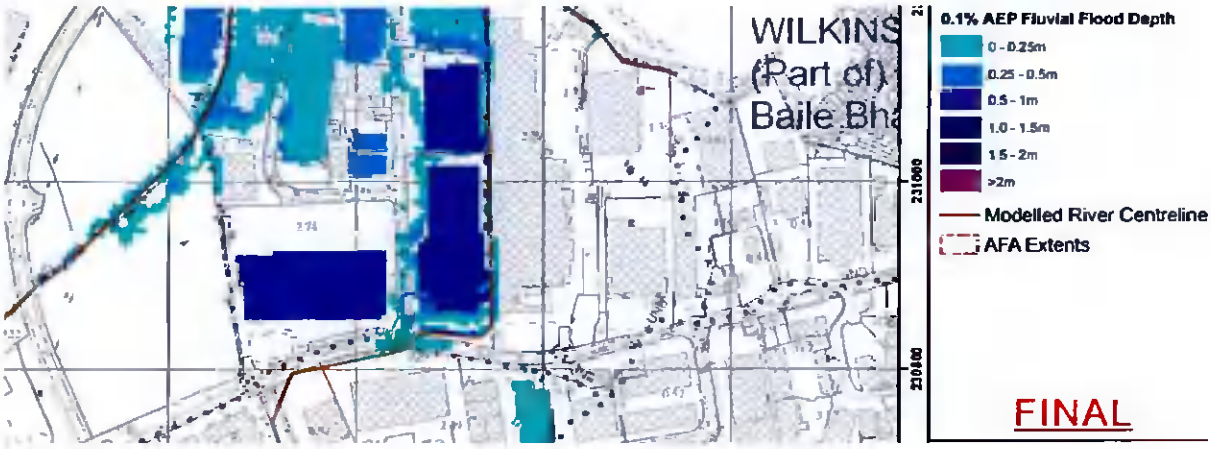


Figure 5 – Extract From E09CAM_DPFCD001_F1_21

The predicted flood depth for the 0.1% event is between 0.5 and 1m

The flood maps for high, medium and low probability events are shown at Appendix B

5.5 Risk of Tidal Flooding

The site location is such that it is not affected by tidal water bodies and as such tidal flooding is not considered significant.

5.7 Loss of Flood Plain

The proposal does not reduce or adversely affect the flood plain as currently exists. The proposed change of use will not involve any increase in impermeable area.

There are no new buildings proposed or changes to the existing levels on site proposed.

5.8 Impact of the development on the Flood Risk Regime

The proposed change of use will not increase the risk of flooding to adjoining properties.

No new construction or change in level is proposed.

6 Residual Risks

Pluvial flooding resulting from failure of the existing drainage system

Overtopping of the existing open channel on the southern and eastern boundaries

6.1 Mitigation Measures

Proposed mitigation measures are as follows:

The existing office use within the building is at first floor level.
Essential building services are set 1.2m above floor level

The existing building fabric (typically steel and blockwork)below this line will be modified where required to be flood resilient in accordance with the Dublin City Council's Code of Practice for Flood Resilience and Adaptation Measures to minimise damage.

The first 1.5m of structural walls and columns will be treated for immersion in water.

As much as possible, the location of the main electrical circuitry and other utilities will be located 1.2m above floor level.

Any proposed changes to internal finishes will be selected and designed for durability and ease of maintenance and be considered flood resilient.

Advanced warning systems such as alarms or notifications will be implemented where possible for workers/staff to be alerted of any imminent flood warnings.

Depending on the level of warning, advice on appropriate action will be given to facilities management to install demountable defences at ground level.

The proposed drainage system to be maintained on a regular basis to reduce the risk of a blockage and or malfunction

The open channel on the eastern and southern boundary of the site will be regularly maintained

The flood risk mitigation measures outlined above are deemed to provide a satisfactory level of protection for the proposed development.

7 Conclusion

The subject site is located in an area with a predicted low probability of flooding

The proposed use is light industrial. The previous use was cold storage

The proposed use is classed as "Less Vulnerable"

The site is classified as being in Zone B and is at moderate risk. The outer limit of Zone B is defined by the 1 in 1,000-year (or 0.1%) flood from rivers and the sea.

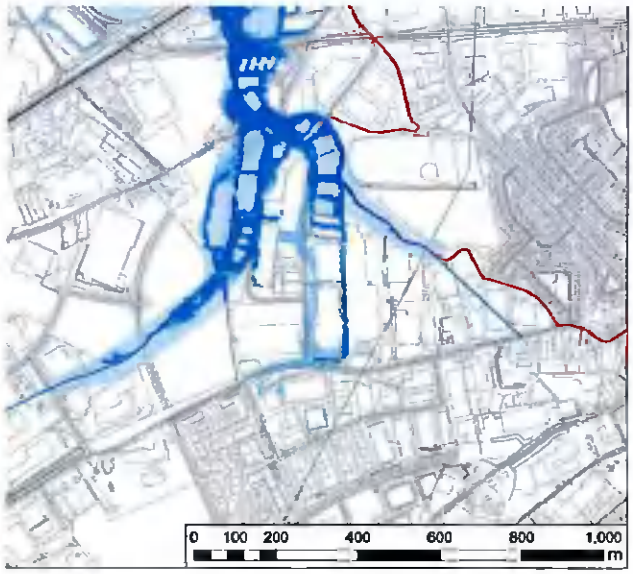


Fig 6 Extract from Sheet 6 of SDCC Strategic Flood Risk Assessment

South Dublin County Councils Strategic Flood Risk assessment identifies the sites access roads as being in Zone B.

In accordance with Table 3.2 of the Planning system and Flood Risk management, guidelines for Planning authorities Published by the OPW development is considered Appropriate

Mitigation measures to reduce the flood risk to users of the building include the presence of primary building services and life safety systems located above the maximum predicted flood level plus 500mm.

The proposed development will not increase run-off rate when compared with the existing site and satisfies the requirement of the SFRA to reduce flooding and improve water quality.

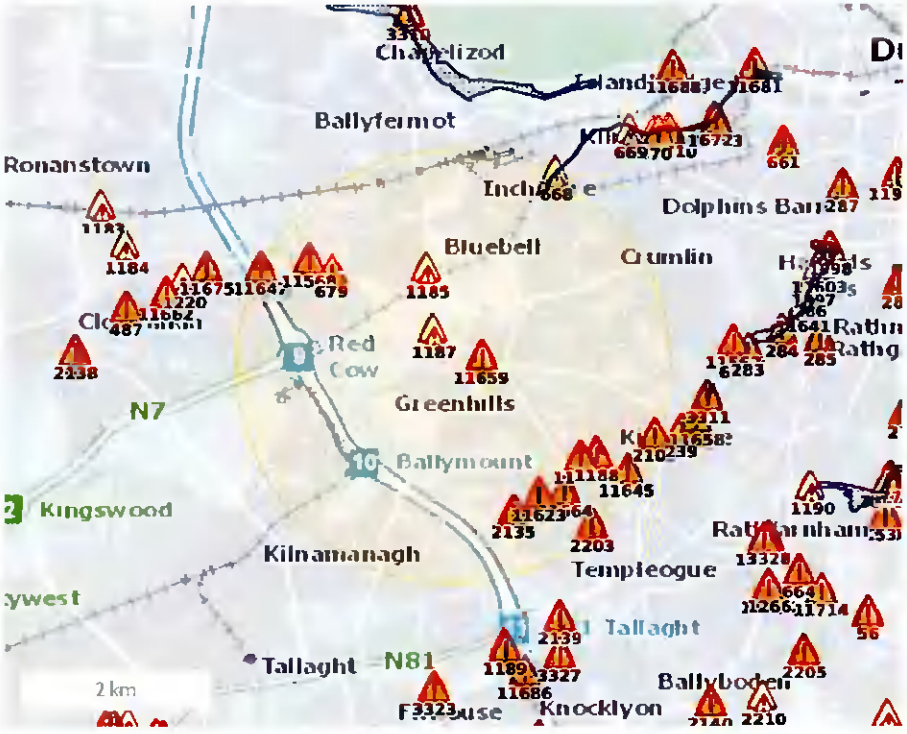
Appendix A

Past Flood Event Local Area Summary Report

Report Produced: 20/12/2021 14:10

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.



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.	Camac November 2000 (ID-679)	05/11/2000	Approximate Point
	Additional Information: Reports (1) Press Archive (0)		
2.	Camac Culvert Old Naas Road recurring (ID-1185)	n/a	Approximate Point
	Additional Information: Reports (2) Press Archive (0)		
3.	Robinhood Stream Walkinstown Recurring (ID-1187)	n/a	Approximate Point
	Additional Information: Reports (3) Press Archive (0)		
4.	Whitehall Road Kimmage Recurring (ID-1188)	n/a	Approximate Point
	Additional Information: Reports (2) Press Archive (0)		
5.	Poddle River Whitehall Gardens June 1993 (ID-2109)	11/06/1993	Exact Point
	Additional Information: Reports (1) Press Archive (1)		
6.	Poddle River Whitehall Road June 1993 (ID-2112)	11/06/1993	Approximate Point
	Additional Information: Reports (1) Press Archive (0)		

	Name (Flood_ID)	Start Date	Event Location
7.	Poddle Glendown Crescent Feb 1994 (ID-2203) Additional Information: Reports (1) Press Archive (0)	03/02/1994	Exact Point
8.	Camac August 1986 (ID-125) Additional Information: Reports (3) Press Archive (0)	25/08/1986	Area
9.	Osprey Estate Nov 1982 (ID-2135) Additional Information: Reports (1) Press Archive (0)	05/11/1982	Exact Point
10.	Flooding at Diageo, Nangor Road, Dublin 12 on 24th Oct 2011 (ID-11568) Additional Information: Reports (1) Press Archive (0)	24/10/2011	Approximate Point
11.	Flooding at Limekiln Road, Ballyboden Rd, Co. Dublin on 24th Oct 2011 (ID-11623) Additional Information: Reports (1) Press Archive (0)	24/10/2011	Approximate Point
12.	Flooding at Riverside Apartments, Milltown Road, Dublin 6 on 24th Oct 2011 (ID-11645) Additional Information: Reports (1) Press Archive (0)	24/10/2011	Exact Point
13.	Flooding at Riverview Business Centre, New Nangor Road, Dublin 12 on 24th Oct 2011 (ID-11647) Additional Information: Reports (1) Press Archive (0)	24/10/2011	Exact Point
14.	Flooding at Robinhood Industrial Estate, Clondalkin, Dublin 12 on 24th Oct 2011 (ID-11654) Additional Information: Reports (1) Press Archive (0)	24/10/2011	Exact Point
15.	Flooding at Walkinstown Crescent, Walkinstown, Dublin 12 on 24th Oct 2011 (ID-11659) Additional Information: Reports (1) Press Archive (0)	24/10/2011	Exact Point
16.	Flooding at Wellington Lane, Dublin 24 on 24th Oct 2011 (ID-11664) Additional Information: Reports (1) Press Archive (0)	24/10/2011	Exact Point
17.	Flooding at Whitehall Road, Templeogue, Dublin 6W on 24th Oct 2011 (ID-11666) Additional Information: Reports (1) Press Archive (0)	24/10/2011	Exact Point

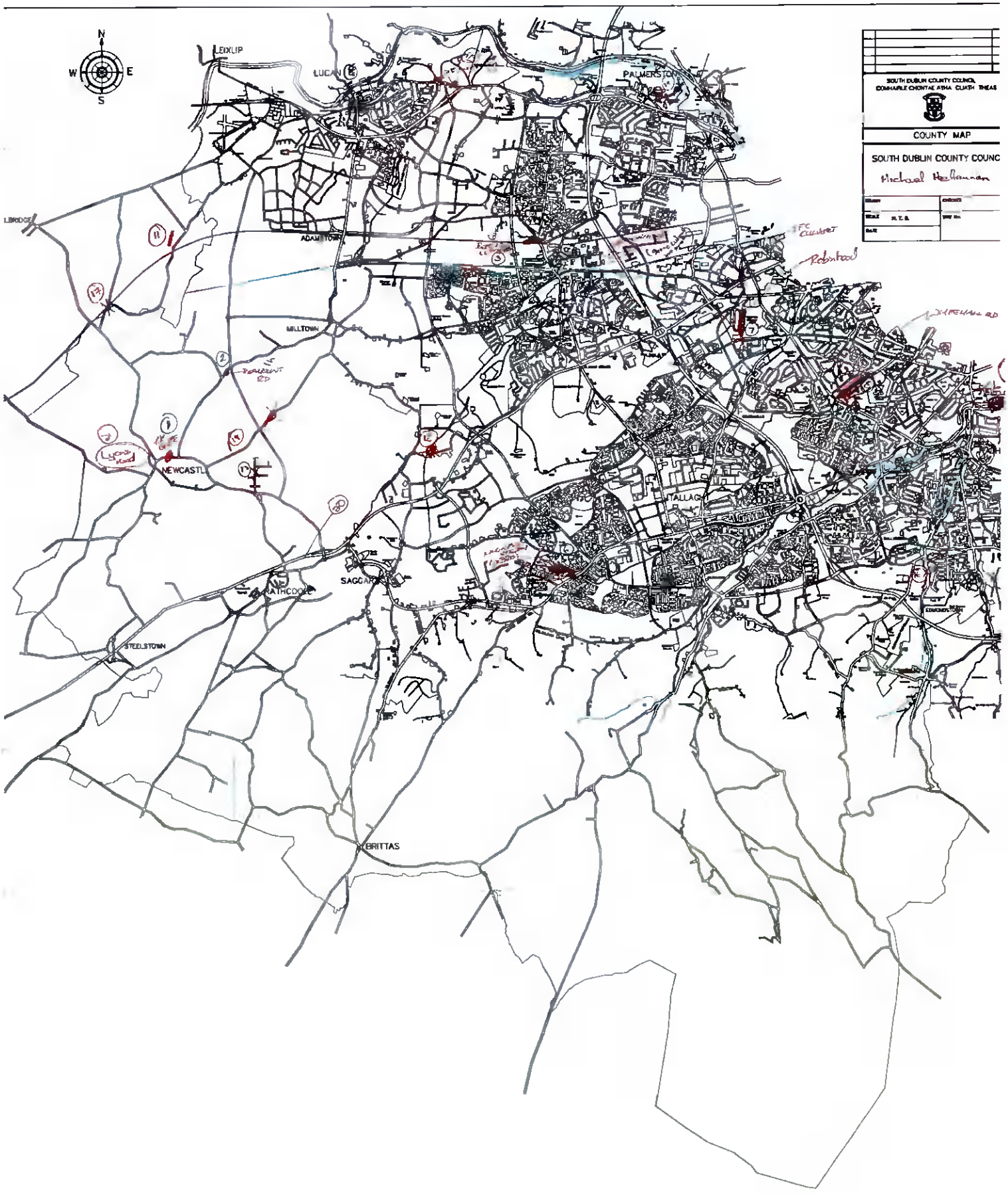
ESB International

MINUTES OF MEETING

Document No. / File Reference:	P4D403A – F310 – 030 – 004	
Project No.:	PD403A	
Project Title:	OPW Flood Hazard Mapping – Phase 1	
Purpose of Meeting:	South Dublin County Council – Areas of flooding – Drainage Division and Roads(North County)	
Participating:	Senior Executive Engineer Drainage Senior Engineer Env Serv (part-time) Roads Engineer Search Manage)	South Dublin County Council (SDCC) South Dublin County Council South Dublin County Council ESBI
Venue:	South Dublin County Council Offices, Tallaght	
Date(s) of Meeting:	25/04/05	
Copies to:	SDCC	
Status:	**Final**	
Compiled by:	Search Manager	
Approved for ESBI:	Search Manager	
Approved for South Dublin County Council	SEE Environmental Services Drainage	
Date:		

ITEM NO.	MINUTE	ACTION BY
1	**Documents Issued**	
1.1	The following were issued by SDCC to ESBI: A. A map of South Dublin County illustrating areas vulnerable to flooding derived from discussions within the Drainage Section of SDCC. B. A list of locations vulnerable to flooding generated by the SDCC Roads Section (North) was presented. C. A CD issued by JB Barry to SDCC containing ▪ Report of Flood Event 5/6 November 2000, ▪ Hydro Environmental Report on Lucan Village, ▪ Flood Extent mapping (Adobe pdf) ▪ Flood photos and ▪ As-built Flood Defence Asset drawings (AutoCAD).	
1.2	At the meeting, the locations vulnerable to flooding indicated on Map A (see heading 1.1) were reviewed by SDCC. The locations were assigned numbers and described. The locations and descriptions are listed below under Heading 2. The flooding information provided by the Roads Section (Document B heading 1.1) was added to Map A, then numbered and is described below under Heading 3.	
2	**Flood Locations (Drainage Section)**	
2.1	1. Newcastle Village – Glebe – Recurring. Basement of house. Flood ID 1181. 2. Peamount Road Recurring. Flood ID 1182. 3. Beech Row Cottages Ronanstown Recurring. 6 houses affected. Flood ID 1183. 4. Cappaghmore Culvert Recurring – 9th Lock Road. Flood ID 1184. 5. Camac Culvert recurring – Irish Farm Centre, Old Naas Road. Problems with structural integrity of culvert. Flood ID 1185. 6. Killinarden Stream Jobstown recurring. Blocked regularly with debris. Flood ID 1186. 7. Robinhood Stream Walkinstown Recurring. Flood ID 1187. 8. Whitehall Road Kimmage Recurring. Drainage Related. Flood ID 1188. 9. Dodder Mount Carmel Park recurring. Parkland. Flood ID 1189. 10. Dodder – Lower Dodder Road Recurring. Flood ID 1190. 11. Tobermaclog Backweston Stream Recurring. Refer to OPW and Kildare County Council. Flood ID 1211 12. Baldonnell Barney's Lane Recurring. Flood ID 1214 13. Newcastle Greenoge Recurring. Flood ID 1215 14. Palmerston – Mill Lane. Regular flooding near Liffey. Flood ID 1216 15. Camac Watery Lane Clondalkin Recurring. Flood ID 1220 16. Owendoher Stream Edmonstown Road. Nov 2000. Possible link to M50 works. Flood ID 1221 17. Hazelhatch Flooding Shinkeen recurring. Refer to OPW information	
3	**Flood Locations (Engineer - Roads Section – North by telephone)**	
3.1	18. Lucan St Edmonsbury. Flooding of Road. Flood ID 1222 19. Aylmer Road Newcastle. Location to be confirmed. Flood ID 1223 20. Rathcoole Bridge. Affects slip road Dublin bound traffic to Rathcoole. Flood ID	

ITEM NO.	MINUTE	ACTION BY
	1224 21. Lyons Road Newcastle. Recurring. Flood ID 1225	
4.	**Processing of Data**	
4.1	The locations listed under Headings 2 and 3 above will be incorporated into the project database as Flood Events. They will then be mapped in the project GIS as points in accordance with the locations indicated on Map B.	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BRITTAS
SOUTH DUBLIN COUNTY COUNCIL
COMHAIRLE CHONTAE ÁTHA CLIATH THEAS
COUNTY MAP
SOUTH DUBLIN COUNTY COUNC
Michael Hellaman

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Dublin 24

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South Dublin County Report on Flooding 5th & 6th November, 2000

Rainfall

- Rainfall varied across the County from the 76mm recorded at Baldonnell to 137mm recorded at Boharnabreena for the period 9.00a.m. Sunday to 9.00a.m. Monday.

Geography of South Dublin

- South Dublin County Council Administrative Area is divided into 3 main catchment areas, drained respectively by the Griffeen, Camac and Dodder Rivers.

- The most serious flooding events occurred in the Griffeen Catchment area. Drainage works carried out post '93, Camac Phase 1, effectively served to protect the Camac Catchment from serious flooding and thus protected urban areas downstream of Corkagh Park, in particular Clondalkin.

  Some flooding occurred in the Dodder Catchment at Dodder Park Road and Lower Dodder Road, also the Tallagh Stream, a tributary of the Dodder.

  To the west of the Griffeen Catchment some flooding occurred in areas that ultimately drain to the Liffey via a series of watercourses and small streams flowing northwards through Kildare in the Newcastle/Hazelhatch area.

Details of flooding

- Serious flooding occurred in the Griffeen Catchment particularly in 2 areas.

  To the north at its confluence with the Liffey, the Griffeen river caused considerable flooding in the old village of Lucan.

  The second area affected by serious flooding was in the Griffeen Valley just to the north of the Dublin Cork Railway line in the new housing areas of Old Forge and Grange Manor estates.

Chronology & Response

- South Dublin County Council received its first emergency call at 12.30p.m. on 5.11.00.

  Consequent on this call and following inspections by Supervisory personnel, Drainage Department work crews were mobilised at 2.00p.m. on the 5.11.00. Work crews from the Council's Roads, Cleansing and Housing sections subsequently joined in the emergency works. These squads remained on duty from 2.00p.m. 5.11.00 to 3.00a.m. on 6.11.00 and from 8.00a.m. on 6.11.00 to 1.00a.m. on 7.11.00 to deal with the various problems arising.

  On Sunday evening and Sunday night, squads were engaged in the cleaning or river and culvert screens to facilitate flows, filling, distribution of sandbags to protect vulnerable areas and freeing blockages throughout the system caused by debris.

During this period excavations were carried out to lower the bank of the Camac at Corkagh Park to allow the pitches to serve as attenuation ponds.

- Early on Monday morning (6.11.00) at approximately 4.00a.m., the Griffeen broke its banks at the northern extremity of Griffeen Valley Park (north of the N4) and flooded Lucan Village.

  Between 4.00a.m. and 7.00a.m. on Monday the Griffeen also flooded the estates of Old Forge and Grange Manor in the South Lucan Area.
  This flooding persisted throughout Monday and the Griffeen was only returned to its channel at approximately 8.00p.m. on Monday night.

Emergency Plan

- The extent of the storm and the flooding caused local emergency plans to be put into operation. There were considered adequate to deal with the situation which developed. It was not considered necessary to declare a major emergency in South Dublin due to the very specific and confined areas affected.

Road Closures
The only national route closed was the national secondary road N81 at Jobstown (11.00p.m. 5.11.00 – 4.00p.m. 6.11.00).

Regional and Local Roads closed included:

Adamstown Road at Lucan Village (4.00a.m. 6.11.2000 – 9.11.2000)
Lucan Ballowen Road (9.00a.m. – 4.00p.m. 6.11.2000)
New Link Road at Grange Manor (8.00a.m. – 8.00p.m. 6.11.2000)
Adamstown Road Flooded but passable.
Alymer Road (4.00a.m. – 8.00p.m. 6.11.2000)
Lucan Peamount (Polly Hops) (4.00a.m. – 8.00p.m. 6.11.2000)
College Lane (8.00a.m. – 8.00p.m. 6.11.00 – passable)
Hatch road flooded – passable
Belgard Road flooded – passable
Fortunestown Lane (8.00a.m. – 8.00p.m.)
Barnhill Road (Weirview Cottages) 4.00a.m. 6.11.2000 – 9.11.2000

Properties Flooded

Residential
12 houses at Avonmore Park (Nos. 7 – 18)
4 No. houses, Kiltipper Road, Tallaght (individually named)
25 No. houses, Old Forge Estate, Lucan
18 No. houses, Grange Manor Park/Drive, Lucan
House beside 'Griffeen Valley Nursing Home', Arthur Griffith Park, Lucan
House to rear of 'Courtneys Pub', Lucan Village
2 No. Bungalows Newcastle Village
2 No. Bungalows beside Newcastle Treatment Works
2 No. Houses, Knocklyon Avenue, Firhouse
3 No. Houses, Edmonstown Road (individually named)
15 No. Houses, Woodview Cottages, Rathfarnham
1 house beside Chemserve on Edmonstown Road

'Homeville' opposite Mount Carmel Park, Firhouse3 Houses at Hazelhatch

Total number of residential properties known to be flooded: 90.

Commercial
'Virtus Ltd' Haydens Lane, Lucan

All the following in Lucan Village:
Centra Supermarket
Village Oriental Food Stores
Spice Inn Chinese Fast
Creative Flowers
Irish Permanent
O'Neills Pub
Kennys Pub
Courtneys Pub
Bank of Ireland
Pat Toolan Bookmaker
Carrolls Butchers

Also:
Jobstown Inn, Jobstown, Tallaght
'Johns Takeaway' Walkinstown Roundabout
'Motorworld' Robinhood Industrial Estate and adjoining premises
Chemserve on Edmondstown Road
'Eurometals' Mill Road, Saggart

Total number of commercial known to be flooded: 17.

The above are the premises which have come to the attention of this South Dublin County Council to date.

Evacuations

- No large-scale evacuations were required. However in a number of limited cases South Dublin County Council personnel helped to evacuate houses, a particular example being an expectant mother in the Old Forge estate.
- These evacuations were from Private Residential houses.
- No alternative accommodation was either requested or provided.
- We do not consider that anyone is still evacuated due to the flooding.

General

- No water treatment works were affected due to the flooding.
- Certain sewerage systems were affected by the flooding:

  (a) The treatment Plant at Newcastle was submerged, preventing its operations for 24 hours.

  (b) The Lucan Low Level Pumping Station on the Adamstown Road was flooded. As a result the pump motors were burnt out and need to be replaced. Alternative pumping arrangements will be in place by 10.11.00.

Appendix B

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
[illegible]	35.4	[illegible]	35.72	[illegible]	35.94	3.11
09KING00063	44.52	N/A	44.97	N/A	45.15	N/A
09WALK00038	35.33	2.10	35.73	4.02	35.91	6.70
09KILN00051J	51.2	N/A	51.48	N/A	51.74	N/A
09KING00092	47.17	N/A	47.41	N/A	47.52	N/A
SO09303604	59.11	N/A	59.2	N/A	59.43	N/A
SO10302403	55.47	N/A	55.63	N/A	55.9	N/A

09KING00063
09WALK00038
09WALK00068
09KING00092
09KILN00051J
SO09303604
SO10302403

ROBINHOOD
Robinhood
FOX-and-GEESE
An Sionnach agus na Gearrna
BALLYM
Baile an
(Part of)
Baile Bha

309200 309400 309600 309800 310000 310200 310400 310600

231400 231200 231000 230800 230600 230400

0 50 100 200 300 400 500 Metres

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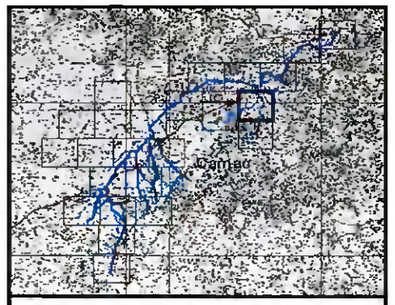

IMPORTANT USER NOTE:
THE VIEWER OF THIS MAP SHOULD REFER TO THE DISCLAIMER, GUIDANCE NOTES AND CONDITIONS OF USE THAT ACCOMPANY THIS MAP.

Legend

- 10% Fluvial AEP Event
- 1% Fluvial AEP Event
- 0.1% Fluvial AEP Event
- Modelled River Centreline
- AFA Extents
- Embankment
- Wall
- Defended Area
- Standard of Protection of Flood Defence (Walls / Embankments)
- Node Point
- Node ID: Node Label

FINAL

REV	NOTE	DATE
01	SOP label updated (Pg 21) Removal of Def. Area (Pg 21)	13/11/2017

EASTERN CFRAM STUDY

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Map:	Carnac Fluvial Flood Extents
Map Type:	EXTENT
Source:	FLUVIAL
Map Area:	HPW
Scenario:	CURRENT
Drawn By :	C.McG. Date : 13 November 2017
Checked By :	A.S. Date : 13 November 2017
Approved By :	S.P. Date : 13 November 2017
Drawing No.	E09CAM_EXFCD_F1_21
Map Series :	Page 21 of 24
Drawing Scale :	1:5,000 @A3

309200 309400 309600 309800 310000 310200 310400 310600

231400 231200 231000 230800 230600 230400

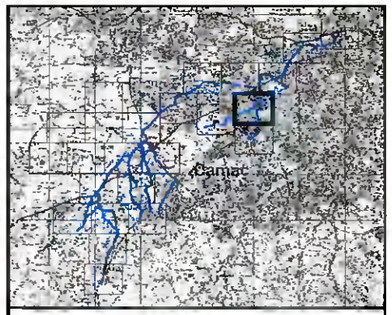
ROBINHOOD
Robinhood

FOX-and-GEESE
An Sionnach agus na Geanna

WILKINS
(Part of)
Baile Bh

BALLYM
Baile ar

0 50 100 200 300 400 500 Metres



IMPORTANT USER NOTE:
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Legend

1% AEP Fluvial Flood Depth

- 0 - 0.25m
- 0.25 - 0.5m
- 0.5 - 1m
- 1.0 - 1.5m
- 1.5 - 2m
- >2m

Modelled River Centreline

AFA Extents

FINAL

REV.	NOTE:	DATE:

EASTERN CFRAM STUDY

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E ireland@rpsgroup.com

Map:	Camac Fluvial Flood Depths
Map Type:	DEPTH
Source:	FLUVIAL
Map Area:	HPW
Scenario:	CURRENT
Drawn By : C.C.	Date : 27 October 2017
Checked By : A.S.	Date : 27 October 2017
Approved By : S.P.	Date : 27 October 2017
Drawing No. :	E09CAM_DPFCD010_F1_21
Map Series :	Page 21 of 24
Drawing Scale :	1:5,000 @A3

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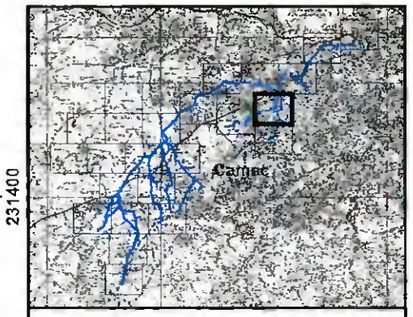
309200 309400 309600 309800 310000 310200 310400 310600

231400 231200 231000 230800 230600 230400

ROBINHOOD
Robinhood
FOX-and-GEESE
An Sionnachlaogas na Géanna
WILKINS
(Part of)
Baile Bh
BALLYM
Baile ar

0 50 100 200 300 400 500 Metres



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Legend

10% AEP Fluvial Flood Depth

- 0 - 0.25m
- 0.25 - 0.5m
- 0.5 - 1m
- 1.0 - 1.5m
- 1.5 - 2m
- >2m

Modelled River Centreline

AFA Extents

FINAL

REV.	NOTE.	DATE.

EASTERN CFRAM STUDY

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Map:	Carnac Fluvial Flood Depths
Map Type:	DEPTH
Source:	FLUVIAL
Map Area:	HPW
Scenario:	CURRENT
Drawn By : C.C.	Date : 27 October 2017
Checked By : A.S.	Date : 27 October 2017
Approved By : S.P.	Date : 27 October 2017
Drawing No. :	E09CAM_DPFCD100_F1_21
Map Series :	Page 21 of 24
Drawing Scale : 1:5,000 @A3	

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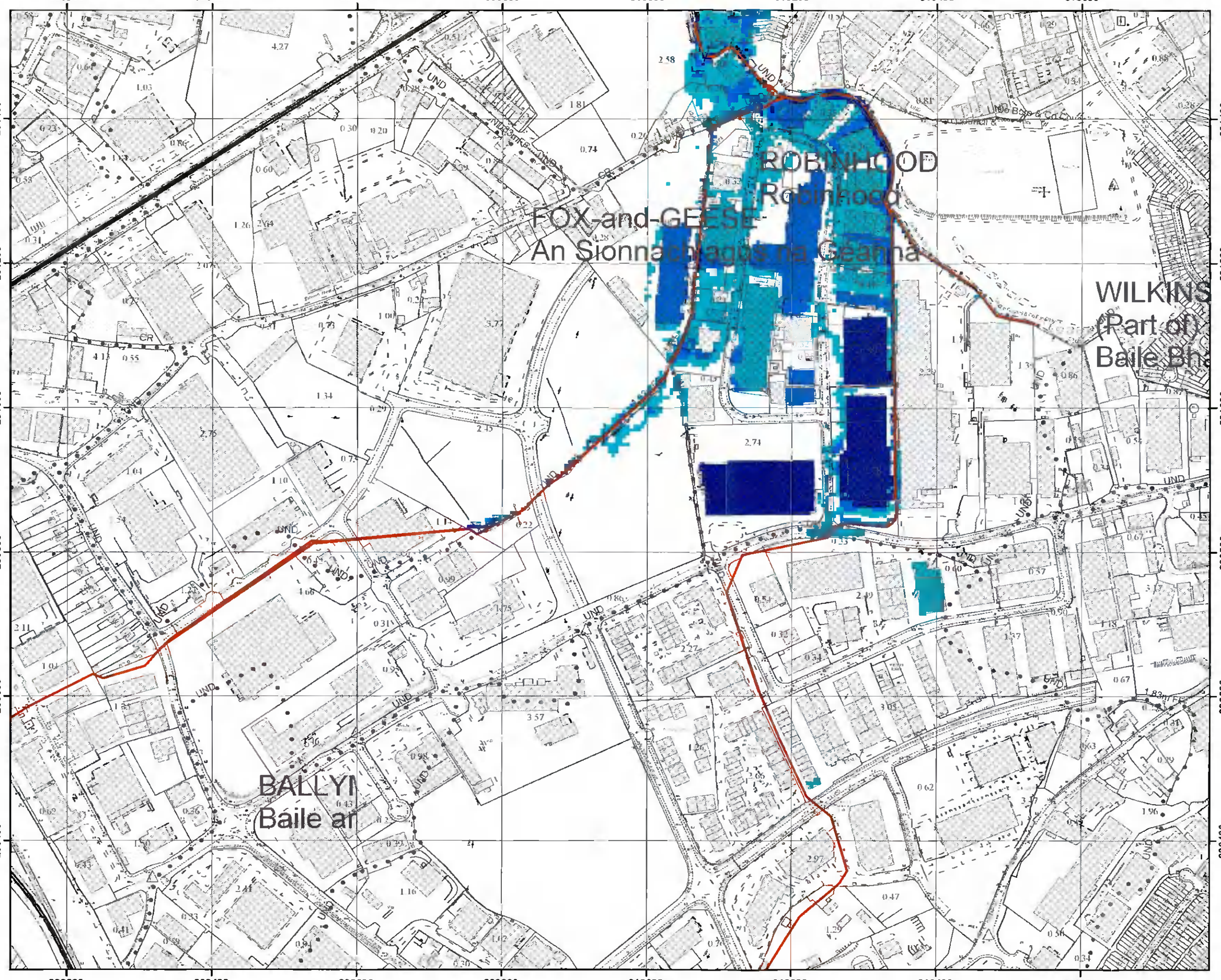

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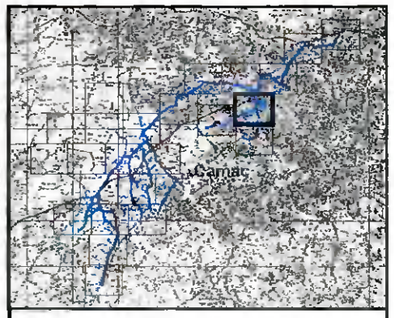

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Legend

0.1% AEP Fluvial Flood Depth

- 0 - 0.25m
- 0.25 - 0.5m
- 0.5 - 1m
- 1.0 - 1.5m
- 1.5 - 2m
- >2m

Modelled River Centreline

AFA Extents

FINAL

REV.	NOTE.	DATE:

CFRAM

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Ireland ps

Map:	Carnac Fluvial Flood Depths
Map Type:	DEPTH
Source:	FLUVIAL
Map Area:	HPW
Scenario:	CURRENT
Drawn By :	C.C. Date : 27 October 2017
Checked By :	A.S. Date : 27 October 2017
Approved By :	S.P. Date : 27 October 2017
Drawing No	E09CAM_DPFCD001_F1_21
Map Series :	Page 21 of 24
Drawing Scale :	1:5,000 @A3