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DOCUMENT TITLE

FLOOD RISK ASSESSMENT  
FOR  
PROPOSED HOUSING  
DEVELOPMENT  
AT  
KILTIPPER ROAD,  
DUBLIN 24

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CLIENT  
PETER MCVERRY TRUST

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PROJECT NO. 5565

REVISION	DATE
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REAR 6B ARBOURFIELD  
TERRACE, DUNDRUM  
BUSINESS PARK,  
DUBLIN 14  
D14 F5C6

TEL. 01 2962596

INFO@MCEENG.IE  
WWW.MCEENG.IE



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## 1. INTRODUCTION

McCrae Consulting Engineers (MCE) has prepared this site-specific Flood Risk Assessment (FRA) to assess our client's proposal (the Peter McVerry Trust, hereafter 'PMVT') to develop ten housing units on the site of The Priory, Kiltipper Road, Dublin D24 X983, with respect to the requirements of **The Planning System and Flood Risk Management (PSFRM)** guidelines published by the Department of Environment, Heritage and Local Government in November 2009.

The report has been prepared for our Client, the Peter McVerry Trust (hereafter PMVT), and must not be relied upon by other parties.

### 1.1 Overview of the Proposed Development

The proposed development will be located on the site of The Priory, Kiltipper Road, Dublin D24 X983. The development will consist of ten single storey accommodation units set out in three blocks with access from Kiltipper Rd.



Fig1.1: Site boundary denoted in RED with Kiltipper road to bottom. Image courtesy Google maps

The proposed site is located within the curtilage of the dwelling known as the Servite Priory.

The proposed development will consist of ten 1-bed self-contained units with associated car parking spaces. Fig 1.2 below shows site layout plan.



Fig 1.2 showing proposed site layout with curtilage denoted in red.



## 2. FLOOD RISK MANAGEMENT GUIDELINES

The Planning System and Flood Risk Management Guidelines (hereafter referred to as FRM Guidelines) was published in November 2009. The objective of the guidelines is to implement a risk-based sequential approach to managing flood risk and to avoid new development in areas that are at risk. The sequential approach is based on the identification of flood zones for river and coastal flooding as follows:

### Flood Zone A

- Lands with a high probability of flooding;
- Subject to flooding in the 1 in 100 year return period storm event - rivers,
- subject to flooding in the 1 in 200 year return period event - coastal/ tidal areas.

### Flood Zone B

- Lands with a moderate probability of flooding;
- Subject to flooding in the 1 in 100 year return period storm event - rivers,
- subject to flooding in the 1 in 1000 year return period event– coastal/ tidal areas.

### Flood Zone C

- Lands with a low probability of flooding;
- Subject to flooding in the 1 in 100 year return period storm event - rivers,
- subject to flooding events greater than the 1 in 1000 year return period.

The guidelines set out the different types of new development appropriate to each zone as shown in tables 3.1 (vulnerability classes of structures) and 3.2 (matrix of vulnerability) overleaf from the FRM guidelines. Of specific relevance to the proposed development is the classification of residential units as **highly vulnerable development**.

Vulnerability class	Land uses and types of development which include*:
<b>Highly vulnerable development (including essential infrastructure)</b>	<p>Garda, ambulance and fire stations and command centres required to be operational during flooding;</p> <p>Hospitals;</p> <p>Emergency access and egress points;</p> <p>Schools;</p> <p>Dwelling houses, student halls of residence and hostels;</p> <p>Residential institutions such as residential care homes, children's homes and social services homes;</p> <p>Caravans and mobile home parks;</p> <p>Dwelling houses designed, constructed or adapted for the elderly or, other people with impaired mobility, and</p> <p>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.</p>
<b>Less vulnerable development</b>	<p>Buildings used for retail, leisure, warehousing, commercial, industrial and non-residential institutions;</p> <p>Land and buildings used for holiday or short-let caravans and camping, subject to specific warning and evacuation plans;</p> <p>Land and buildings used for agriculture and forestry;</p> <p>Waste treatment (except landfill and hazardous waste);</p> <p>Mineral working and processing; and</p> <p>Local transport infrastructure.</p>
<b>Water-compatible development</b>	<p>Flood control infrastructure;</p> <p>Docks, marinas and wharves;</p> <p>Navigation facilities;</p> <p>Ship building, repairing and dismantling, dockside fish processing and refrigeration and compatible activities requiring a waterside location;</p> <p>Water-based recreation and tourism (excluding sleeping accommodation);</p> <p>Lifeguard and coastguard stations;</p> <p>Amenity open space, outdoor sports and recreation and essential facilities such as changing rooms; and</p> <p>Essential ancillary sleeping or residential accommodation for staff required by uses in this category (subject to a specific warning and evacuation plan).</p>

\*Uses not listed here should be considered on their own merits

Table 3.1 Classification of vulnerability of different types of development

	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 3.2: Matrix of vulnerability versus flood zone to illustrate appropriate development and that required to meet the Justification Test.

Exceptions to the restriction of development are provided for using the Justification Test, where the planning need and the sustainable management of flood risk to an acceptable level must be demonstrated. This test recognises the need for development in existing towns that lie within flood risk zones and that a blanket ban on any future development within those areas is impractical.

The guidelines recommend a three-stage approach to undertaking an FRA as per the following:

- **Flood Risk Identification (Stage 1)** - Identification of any potential flooding or surface water issues which may impact the proposed development site.
- **Initial Flood Risk Assessment (Stage 2)** - Establishment of the sources of flooding, the extent of the flood risk, potential impacts and identification of possible mitigation measures.
- **Detailed Flood Risk Assessment (Stage 3)** - Assess flood risk issues in sufficient detail to provide quantitative appraisal of potential flood risk of the development, impacts elsewhere of the flooding and the effectiveness of any proposed mitigation measures.



### 3. FLOOD RISK IDENTIFICATION (Stage 1)

#### 3.1 PFRA Preliminary Flood Risk Assessment

The Preliminary Flood Risk Assessment (PFRA), a national screening exercise conducted by the OPW (Office of Public Works) to identify areas which may be at significant risk of flooding, was completed in December 2011. It used as its data sources any existing available or readily derivable information including public consultation. It subsequently identified over 300 locations nationwide as Areas for Further Assessment (AFAs) and the model maps resulting from this review indicate areas at risk and the extent of flooding predicted for these areas. The proposed site lies just on the southern edge of the Dublin region areas of interest as indicated in fig 3.1.

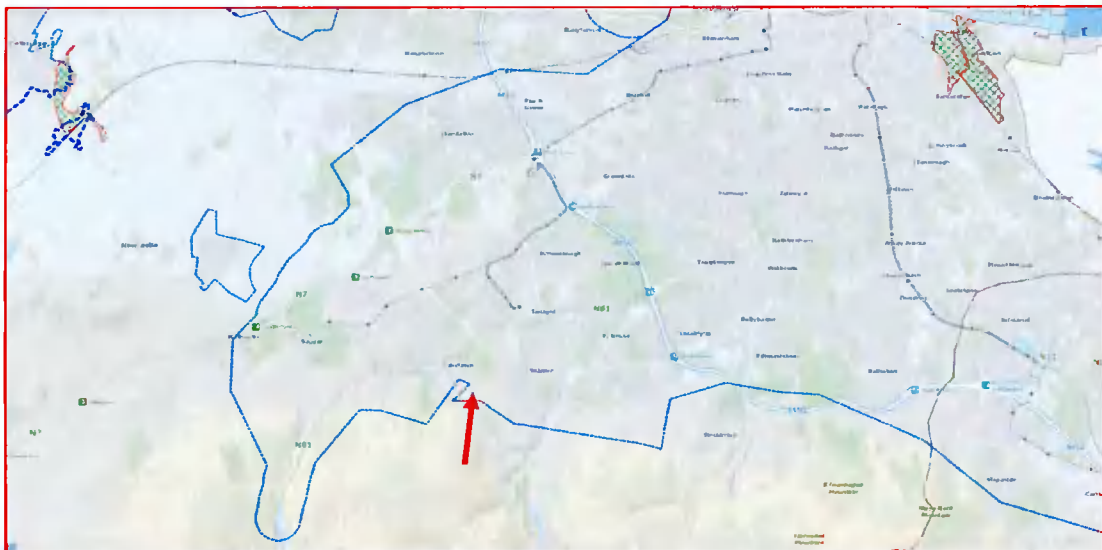


Fig 3.1: Site location (red arrow) located on the edge of Dublin area AFA

### 3.2 CFRAM Flood Risk Mapping

The National Catchment Flood Risk Assessment and Management Program (CFRAM) was developed to meet the requirements of the EU Floods Directive (2007/60/EC) and falls under the auspices of the OPW, the lead agency for flood risk management in Ireland. As part of the CFRAMS program, detailed hydraulic models have been constructed over the past decade for those areas identified as AFAs. This resulted in the production of a series of maps indicating areas of possible flooding under a set of specified scenarios. These three models correspond to 0.1% (1:1000 year return period), 1% (1:100 year return period) and 10% (1:10 year return period) fluvial extent event probabilities respectively.

No flood map has been developed which specifically includes the area of the proposed site. Figure 3.2 below indicates the location of the proposed site with respect to neighbouring areas where modelling maps have been developed. The adjacent model map (i.e. to right hand side of the red arrow below) was referenced as part of this assessment and a copy is included in the appendices. This model map, which is part of the nearby river Dodder catchment area study, does not anticipate much increase in area flooding in any of the three return periods considered, and none in the area of the proposed site. We can conclude that there is no discernable risk of fluvial flooding associated with the proposed site.

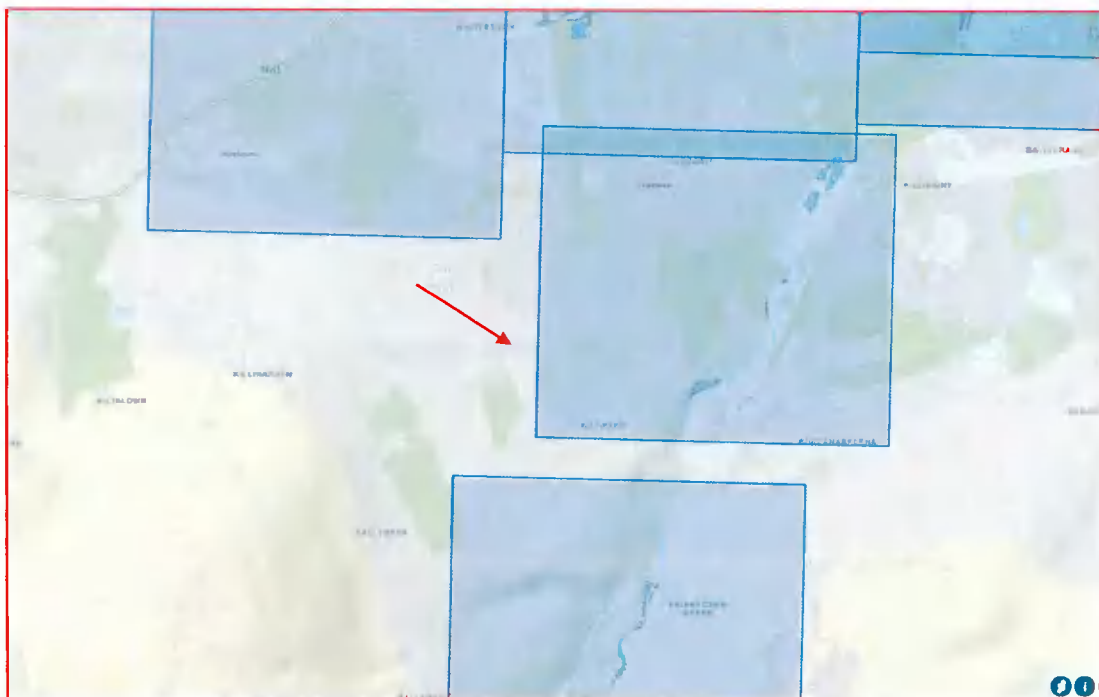


Fig 3.2 Extract of FLOODINFO website (site highlighted in red) with published neighbouring CFRAM maps.



### 3.3 Stage Conclusions

The outcome of the flood risk identification stage is that there is no recorded evidence that flooding has occurred at the proposed site or its immediate hinterland in the past and there is a very low probability of flooding occurring in the future. The site is therefore classifiable as **Flood Zone C** in the Matrix of Vulnerability.

## 4. INITIAL FLOOD RISK ASSESSMENT (Stage 2)

### 4.1 Potential Flood Sources

All potential flood risks and flood water sources (except snow melt) pertaining to the site area outlined are as follows:

#### Fluvial Flood Risk

Fluvial flooding arises from a watercourse exceeding its capacity and spilling over adjacent flood plain. The river Dodder lies some 800m east of the proposed site but a review of the OPW CFRAMS maps for 10%, 1% and 0.1% AEP predicted flood events does not envisage flooding at or near the site. A copy of this map, with all fluvial risks indicated, is included in the appendices.

#### Pluvial Flood Risk

Pluvial flooding is the result of rainfall-generated overland flows which arise before runoff can enter a watercourse or storm sewer. There is no history of pluvial flooding in the neighbourhood of the proposed development. A colour coded map of the local topography is shown in fig 4.1.

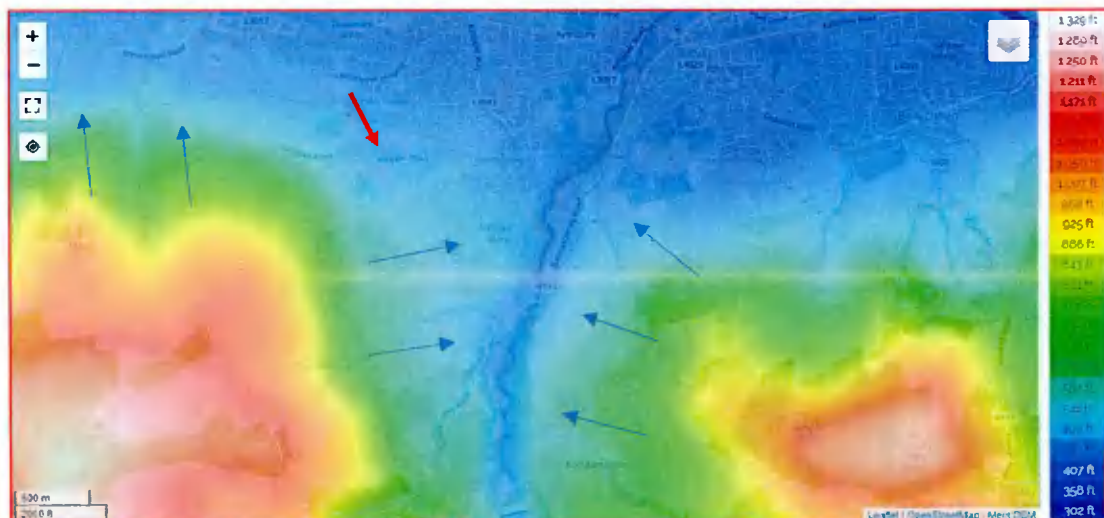


Fig 4.1 Local area topography. Site indicated by RED arrow, runoff flow directions in BLUE arrows.

The area around the proposed site is largely level and the river Dodder is the primary conduit for natural drainage in the area. We therefore conclude that pluvial flooding will not pose a risk to the development.

### Groundwater Flood Risk

Groundwater flooding occurs as a result of water rising up from the underlying rocks or from groundwater flowing from abnormal springs. This type of flooding is usually associated with extended periods of heavy rainfall and is associated with the formation or re-occurrence of turloughs/winter lakes mostly in the karstic limestone areas as found primarily in the West of Ireland.

A review of the Geological Survey of Ireland's Groundwater Vulnerability viewer indicated that the site was potentially exposed to groundwater flooding (see fig 4.1 below) but classified the vulnerability as moderate.

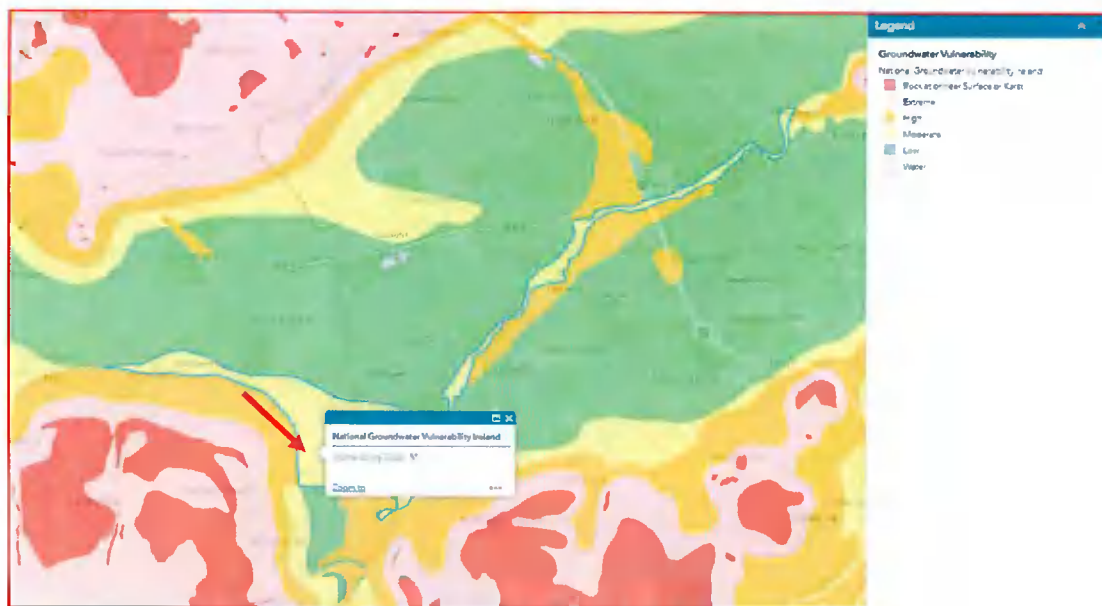


Fig 4.1 Screenshot of GSI groundwater vulnerability map with site indicated by RED arrow.

Given that the classification is not high and there is no anecdotal evidence of current or historic flooding issues locally associated with groundwater flooding we conclude that groundwater flooding will not pose a risk to the development.

### Coastal/Tidal Flood Risk

Coastal/Tidal flooding results from a high tide combined with a storm surge resulting in the inundation of the flood plain at coastal locations or on the tidal reaches of rivers. The proposed site lies approximately 12km southwest of Dublin Bay at approx. 135m a.m.s.l. We conclude that no risk is associated with coastal/tidal flooding.

### Surcharge of Existing Drainage Systems

No records of any surcharging of the existing drainage systems on the site are recorded on the OPW flood maps.

### 4.2 Historical Records

A review of available historical sources has not indicated any history of flooding associated with the site. The old Ordinance Survey maps do not contain any indication of the area either being prone to flooding or being recorded as marsh land.

[Floodmaps.ie](http://Floodmaps.ie) indicates a number of historical flooding events within a 2.5km radius of the proposed site but none within 0.5km of the site as indicated in figure 4.2 below. The two nearest were at distances of 900m and 1.2km from the proposed location. These events are related to separate high rainfall incidents that occurred in 2000 and 2011. A copy of the area incident map and extracts from these two events are included in the appendices.

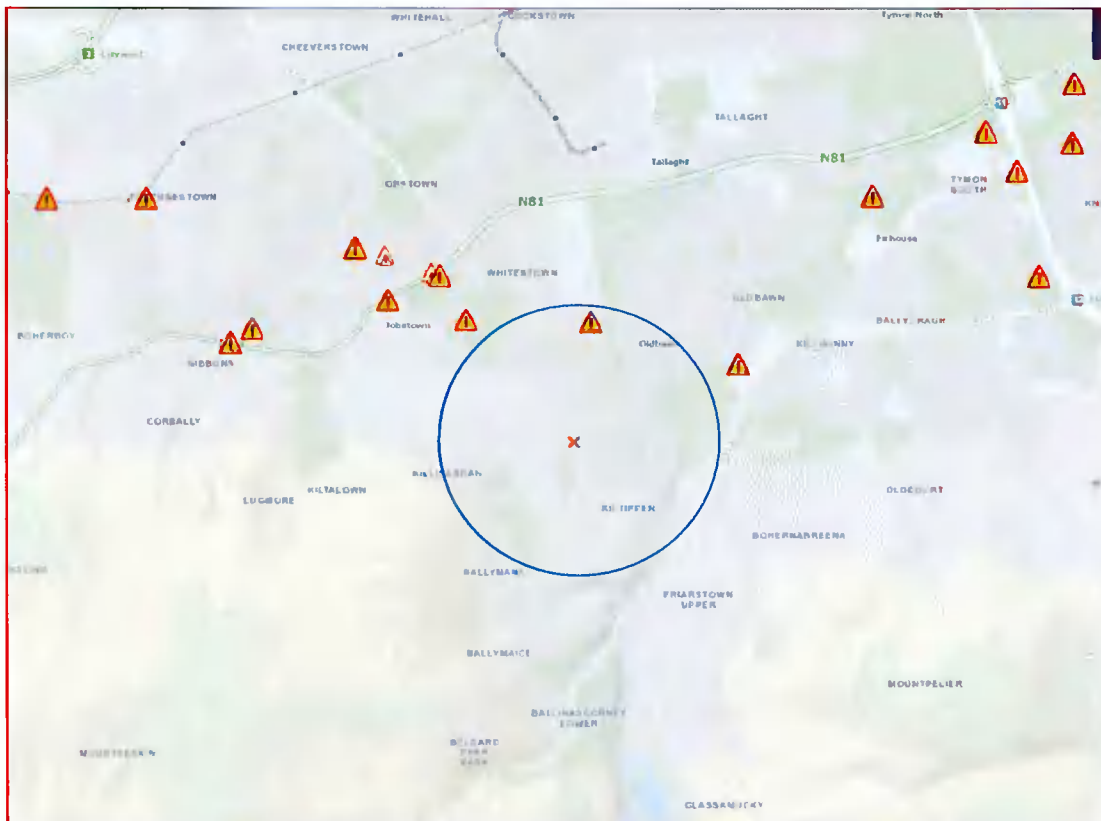


Fig 4.2 Extract from floodmaps.ie indicating neighbouring recorded flood events. The blue circle indicates 1km radius.



### 4.3. Existing Flood Risk Management Measures

There is no OPW Flood Risk Management Plan applicable to the site or the neighbouring hinterland. The plan governing the river Dodder has involved upgrading the flood wall protection at the lower reaches of the river. These works have no bearing or impact on the neighbourhood surrounding the proposed site.

### 4.4 Local Knowledge

We did not establish any local anecdotal evidence of past flooding events which would contradict or otherwise impact on the conclusions arrived at from review of the publicly available primary sources of information.

### 4.5 Stage Conclusions

The outcome of the **Initial Flood Risk Assessment** is that the risk of flooding occurring at the site is low and the classification of the site as **Flood Zone C** in the Matrix of Vulnerability remains appropriate.

## 5. CONCLUSION

All existing available information has been reviewed in preparation of this flood risk assessment. The CFRAMS flood zoning maps published by the Office of Public Works (OPW) indicate that the development will not be affected by a 1-in-1000-year flood event.

There is no extant information publicly available that indicates that the proposed site is or will become at risk of flooding events exceeding the lowest probabilities defined in the guidelines. The site is therefore classifiable as **Flood Zone C** in the OPW Guidelines Matrix of Vulnerability meaning that residential development is appropriate for the site and there is no requirement to proceed to stage 3 (detailed flood risk assessment).

We are therefore fully satisfied that the proposals to develop this site properly achieve full compliance with the requirements of **The Planning System and Flood Management Guidelines** as published by the Department of Environment, Heritage and Local Government in November 2009.

Nial O'Brien BE, MIEI  
27/09/2021



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## **TABLE OF APPENDICES**

### **APPENDIX 1: OPW Past Flooding Event Records**

Summary Sheet

Extracts from files on two nearest events

### **APPENDIX 2: OPW CFRAMS Maps**

CFRAMs all risks fluvial flooding model map

## APPENDIX 1: OPW Past Flooding Event Records

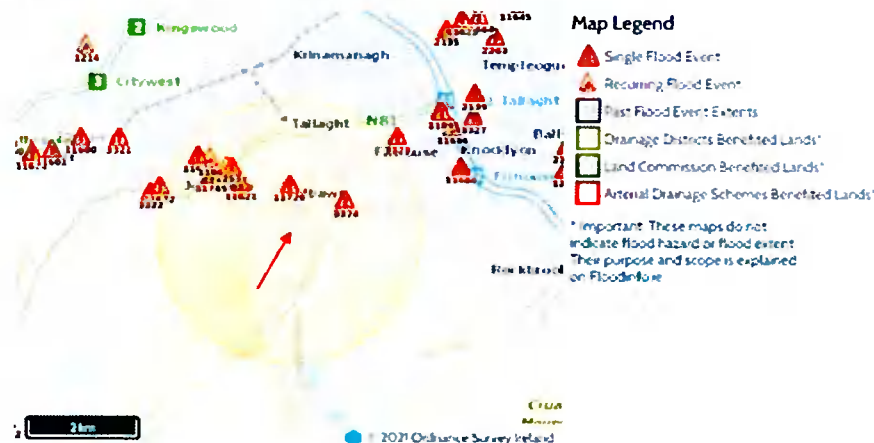
### Past Flood Event Local Area Summary Report



Report Produced: 22/9/2021 10:40

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.



8 Results

Name (Flood_ID)	Start Date	Event Location
1  Killinarden Stream Jobstown recurring (ID-1186) Additional Information: <a href="#">Reports (2)</a> <a href="#">Press Archive (1)</a>	n/a	Approximate Point
2  Killinarden Stream N81 Jobstown Recurring (ID-1253) Additional Information: <a href="#">Reports (1)</a> <a href="#">Press Archive (1)</a>	n/a	Approximate Point
3  Dodder Kiltipper Road Nov 2000 (ID-3324) Additional Information: <a href="#">Reports (1)</a> <a href="#">Press Archive (0)</a>	05/11/2000	Approximate Point
4  Flooding at Whitestown Way, Tallaght, Dublin 24 on 24th Oct 2011 (ID-11726) Additional Information: <a href="#">Reports (1)</a> <a href="#">Press Archive (0)</a>	24/10/2011	Exact Point
5  Flooding at Blessington Road, Tallaght, Dublin 24 on 1st May 2012 (ID-11745) Additional Information: <a href="#">Reports (1)</a> <a href="#">Press Archive (0)</a>	05/01/2012	Exact Point
6  Flooding at Knockmore, Tallaght, Co. Dublin on 24th Oct 2011 (ID-11621) Additional Information: <a href="#">Reports (1)</a> <a href="#">Press Archive (0)</a>	24/10/2011	Approximate Point
7  Flooding at Tallaght Pass, N81, Dublin 24 on 24th Oct 2011 (ID-11657) Additional Information: <a href="#">Reports (1)</a> <a href="#">Press Archive (0)</a>	24/10/2011	Exact Point
8  Flooding at Bawnlea Crescent and Avenue, Tallaght, Co. Dublin on 24th Oct 2011 (ID-11673) Additional Information: <a href="#">Reports (1)</a> <a href="#">Press Archive (0)</a>	24/10/2011	Exact Point





### 3. Dodder Kiltipper Rd event- 1.3km NE of site

#### South Dublin County Report on Flooding 5<sup>th</sup> & 6<sup>th</sup> 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.

##### 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

### 4. Flooding at Whitestown way event- 0.9km N of site

#### Flooding at Whitestown Way, Tallaght, Dublin 24 24<sup>th</sup> October 2011

The information contained in this report has been extracted from a Flood Data Collection Form submitted to The Office Of Public Works (OPW) by Consultants working on the Eastern River Basin District (RBD) Catchment Flood Risk Assessment and Management (CFRAM) Project

##### 1 Location and date of flood event:

Location: A & L Castors Ltd., Unit A1 – A2 South City Business Centre, Whitestown Way Tallaght, Dublin 24.  
Irish Grid Co-ordinates: 308,448 226,316

This flooding event started at 4.30pm on 24<sup>th</sup> October 2011 and ended at 8am on 25<sup>th</sup> October 2011, the peak flood occurred at 8pm on 24<sup>th</sup> October 2011.

##### 2 Source and cause:

Flooding was caused by the inundation of surface water drainage. Residents stated that water flowed up from the gullies and combined with the heavy rainfall caused water to pool in the backyard of this property. The water level then rose and flooded the property.

## APPENDIX 2: OPW CFRAMS Maps

