### SITE-SPECIFIC FLOOD RISK ASSESSMENT



Multidisciplinary Consulting Engineers White Heather, South Circular Road For U and I (White Heather) LTD

> PROJECT NO. U067 16 March 2022

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for

# White Heather, South Circular Road



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#### SITE-SPECIFIC FLOOD RISK ASSESSMENT

#### **TABLE OF CONTENTS**

ABLE	OF CONTENTS PAGE
1 IN7	RODUCTION1
1.1	Appointment1
1.2	Administrative Jurisdiction1
1.3	Site Location1
1.4	Information Consulted2
2 SI1	TE CONTEXT 3
2.1	Existing Site Overview
2.2	Site Access
2.3	Site Zoning3
2.4	Proposed Development Context3
3 RE	LEVANT GUIDANCE
3.1	The Planning System and Flood Risk Management Guidelines6
3.2	Dublin City Development Plan & Strategic Flood Risk Assessment7
3.3	Climate Change8
4 FLC	OOD RISK IDENTIFICATION9
4.1	Existing Hydrological Environment9
4.2	Existing Surface Water Drainage9
4.3	Existing Flood Defences
4.4	Topographical Survey10
4.5	Historical Maps10
4.6	Historical Flooding10
4.7	Groundwater Flooding11
4.8	Dublin Pluvial Study
4.9	Preliminary Flood Risk Assessment13
4.10	Catchment Flood Assessment and Management14
4.11	Dublin City Development Plan Strategic Flood Risk Assessment
4.12	Estimate of Flood Zone and Levels16

5 FLC	FLOOD RISK ASSESSMENT							
5.1	Sources of Flooding							
5.2	Development Vulnerability18							
5.3	Flood Mitigation Measures20							
5.3.1	Emergency Access & Egress20							
5.3.2	Under-Croft Car Park							
5.3.3	Infrastructure							
5.4	Flood Risk Management							
6 COI	NCLUSIONS AND RECOMMENDATIONS							
6.1	Recommendations							

#### **APPENDICES**

	ASSESSMENT
APPENDIX F.	DUBLIN CITY DEVELOPMENT PLAN STRATEGIC FLOOD RISK
APPENDIX E.	OPW CFRAMS MAPS
APPENDIX D.	DUBLIN PLUVIAL STUDY MAP
APPENDIX C.	OPW FLOOD HISTORY
APPENDIX B.	TOPGRAPHICAL SURVEY
APPENDIX A.	PROPOSED SITE LAYOUT

### **1 INTRODUCTION**

#### 1.1 Appointment

O'Connor Sutton Cronin & Associates (OCSC) have been appointed by *U* and *I* (*White Heather*) *LTD* to carry out a Site-Specific Flood Risk Assessment (SSFRA) for the proposed mixed-use development at White Heather, South Circular Road, Dolphin's Barn, Dublin City.

### 1.2 Administrative Jurisdiction

The proposed development is located in the jurisdiction of Dublin City Council (DCC), and therefore this SSFRA was carried out with reference to the following:

- Dublin City Council Development Plan 2016-2022;
- Greater Dublin Strategic Drainage Study (GDSDS);
- The Planning System and Flood Risk Management Guidelines for Planning Authorities (Department of Environment, Heritage and Local Government and the Office of Public Works).

### 1.3 Site Location

The subject site is located at the White Heather, South Circular Road, Dolphins Barn, Dublin 8 and No. 307 South Circular Road, Dublin 8 and an industrial building at 12a St James Terrace and is adjacent to the Grand Canal as shown in Figure 1-1, and is immediately bound by:

- Grand Canal to the south;
- Our Lady of Dolour's Church and residential dwellings on the South Circular Road to the north;
- Priestfield Cottages to the east; and
- St James's Terrace to the west.







Figure 1-1: Site Location

#### **1.4 Information Consulted**

This flood risk assessment has been prepared on the information available from the following sources:

- OPW website <u>www.floodinfo.ie</u>;
- DECLG website <u>www.myplan.ie;</u>
- OPW website <u>www.floodmaps.ie;</u>
- DCC and Irish Water records;
- Geological Survey of Ireland Maps (GSI);
- Architectural drawings;
- Topographical survey of the proposed site.





### **2 SITE CONTEXT**

#### 2.1 Existing Site Overview

The overall site area is approximately 1.443 hectares.

The site is currently a mixed-use development and has 5 no. buildings in use onsite currently. Finished floor levels of the existing buildings range from 22.47 to 22.78 mAOD.

The existing ground levels across the overall site are typically quiet flat, with typical high points in the order of 22.7 mAOD adjacent to the canal and a low point of 22.0 mAOD at the northern boundary adjacent at the South Circular Road.

#### 2.2 Site Access

Access to the site is via an entrance onto the South Circular Road (R811). A second entrance to the site is available on Saint James's Terrace.

#### 2.3 Site Zoning

The overall site area is approximately 1.443 hectares and is predominantly located within the lands zoned as "*Z6: Employment/Enterprise Zones*" Dublin City Council with the lands adjacent to the Grand Canal zoned "*Z9: Amenity/Open Space Lands/Green Network*".

#### 2.4 Proposed Development Context

The proposed Strategic Housing Development is located at the White Heather Industrial Estate, South Circular Road, Dolphins Barn, Dublin 8 and No. 307/307a South Circular Road, Dublin 8 and an industrial building at 12a St James Terrace. The 1.535ha site is bounded by the Grand Canal to the south; Our Lady of Dolour's Church and residential dwellings on the South Circular Road to the north; Priestfield Cottages to the east; and residential dwellings at St James's Terrace to the west.

Across 7 no. blocks, the residential mix of the proposed 335 no. units includes a combination of studio units, 1-bedroom apartments, 2-bedroom apartments,







units and a terrace of 3-bedroom townhouse units. A change of use of an existing residential building at 307/307a South Circular Road to be used as a workspace. The proposed Part V social housing requirement is provided at 10% in 2 no. blocks within the proposed scheme. This Build to Rent scheme will also include 2 no. cafés and a 2-storey creche, while the residents will also have access to residential amenity areas at ground floor level and fifth floor level with access to a roof terrace area overlooking the canal. A landscaped square will be accessible to the public, with private open space and amenity areas for the residents also provided including children's play areas. Building heights range from 2 no. to 10 no. storeys, with finger blocks arranged in a north-south direction and height tapering down from the centre of the site to the boundary.

The entrance to the scheme will be from the existing junction at the South Circular Road, which will be reconfigured and upgraded. The existing access road at St James's Terrace will provide pedestrian access only to the development. Car parking is proposed at undercroft and at surface levels, with a number of dedicated car sharing spaces in convenient locations. Covered and secure bicycle storage facilities are located also at undercroft and surface level, adjacent to individual block entrances.

A new street will run east-west across the north of the site and the creation of a new public space at the heart of the proposed scheme will connect to a publicly accessible linear park along the canal to the south.







Figure 2-1: Proposed Site Layout

As part of the development, a new surface water network is proposed which will manage all run-off from the site. Please see Engineering Services Report (U067-OCSC-XX-XX-RP-C-0002) prepared by O'Connor Sutton Cronin for details.





### **3 RELEVANT GUIDANCE**

#### 3.1 The Planning System and Flood Risk Management Guidelines

In September 2008, "The Planning System and Flood Risk Management" (PSFRM) Guidelines were published by the Department of the Environment, Heritage and Local Government in Draft Format. In November 2009, the adopted version of the document was published.

The Flood Risk Management Guidelines give guidance on flood risk and development. The guidelines recommend a precautionary approach when considering flood risk management in the planning system.

The core principle of the guidelines is to adopt a flood risk sequential approach to managing flood risk and to avoid development in areas that are at risk. The sequential approach is based on the identification of flood zones for river and coastal flooding. The guidelines include definitions of Flood Zones A, B and C. It should be noted that these do not consider the presence of flood defences, as there remain risks of overtopping and breach of the defences.

Zone A	High Probability of Flooding								
	Where the annual probability of flooding is:								
	greater than 1% for fluvial flooding or								
	greater than 0.5% for coastal flooding								
Zone B	B Moderate Probability of Flooding								
	Where the annual probability of flooding is:								
	between 0.1% and 1% for fluvial flooding or								
	between 0.1% and 0.5% for coastal flooding								
Zone C	Low Probability of Flooding								
	Where the annual probability of flooding is:								
	less than 0.1% for fluvial flooding and								
	less than 0.1% for coastal flooding								

Table 3-1: Flood Risk Zones

The guidelines set out the different types of development appropriate to each zone. Exceptions to the restriction of development due to potential flood risks





are provided for with the Justification Test, where the planning need and the sustainable management of flood risk to an acceptable level must be demonstrated. This recognises that there will be a need for future development in existing towns and urban centres that lie within flood risk zones, and that the avoidance of all future development in these areas would be unsustainable.

A three staged approach to undertaking an FRA is recommended:

- Stage 1: Flood Risk Identification Identification of any issues relating to the site that will require further investigation through a Flood Risk Assessment;
- Stage 2: Initial Flood Risk Assessment Involves establishment of the sources of flooding, the extent of the flood risk, potential impacts of the development and possible mitigation measure;
- Stage 3: Detailed Flood Risk Assessment Assess flood risk issues in sufficient detail to provide quantitative appraisal of potential flood risk of the development, impacts of the flooding elsewhere and the effectiveness of any proposed mitigation measures.

The Site-Specific Flood Risk Assessment (SSFRA) addresses the requirements for Stage 2.

### 3.2 Dublin City Development Plan & Strategic Flood Risk Assessment

The Dublin City Development Plan 2016-2022 identifies a number of policies relating to flooding, some are outlined below:

*"SI12: To implement and comply fully with the recommendations of the Strategic Flood Risk Assessment prepared as part of the Dublin City Development Plan.* 

*SI13:* That development of basements or any above-ground buildings for residential use below the estimated flood levels for Zone A or Zone B will not be permitted.





*SI15:* To minimise the risk of pluvial (intense rainfall) flooding in the city as far as is reasonably practicable and not to allow any development which would increase this risk."

A Strategic Flood Risk Assessment (SFRA) was prepared in conjunction with the Dublin City County Development Plan. The SFRA includes flood maps and justification tests for the City. The SFRA that "areas in Flood Zone A & B and areas of Flood Zone C where storm (surface) water or ground water flooding potential is identified, a "Stage 2 – Initial FRA" will be required and depending on the scale and nature of the risk a "Stage 3 - Detailed FRA" may be required."

#### 3.3 Climate Change

Both the Greater Dublin Strategic Drainage Study (GDSDS) and PSFRM Guidelines require that account be taken of the effects of climate change over the design life of a development, typically 100 years. Design parameters to take account of climate change were established in the *GDSDS* and revised following later studies and Climate Change Sectorial Adaptation Plan Flood Risk Management (2015-2019) Development published by the OPW. These parameters are set out in Table 3-2, below.

Design Category	Impact of Climate Change
Drainage	20% increase in rainfall
Fluvial (River)	20% increase in flood flow
Tidal/Coastal	Sea level rise of 500 mm <sup>1</sup>

 Table 3-2: Climate Change - Impact on Design Parameters
 Impact on Design Parameters

 $<sup>^{\</sup>rm 1}$  Taken from Climate Change Sectorial Adaptation Plan Flood Risk Management (2015-2019) Development



#### 4 FLOOD RISK IDENTIFICATION

#### 4.1 Existing Hydrological Environment

The site of the proposed development lies adjacent to the Grand Canal, see Figure 4-1. The canal is operated and managed by Waterways Ireland.

There are no OPW arterial drains located within or adjacent to the site.



Figure 4-1: Grand Canal adjacent to the site

#### 4.2 Existing Surface Water Drainage

The existing suite is made up of hardstanding. There is an existing surface water network on the site, which flows unattenuated to the Irish Water combined sewer on the South Circular Road.

As part of the proposed development, a new surface water network will be constructed to manage all surface water onsite. Please refer to OCSC Engineering Services Report for details.



#### 4.3 Existing Flood Defences

The Strategic Flood Risk Assessment identifies the that the "walls, bridges, locks, weirs and embankments on the Royal and Grand canals, including the Grand Canal Dock are significant flood protection structures".

The proposed development will not impact on the existing defences in the area and will not impact the operation of the canal.

#### 4.4 Topographical Survey

The existing ground levels across the overall site are typically quiet flat, with typical high points in the order of 22.5 mAOD in the centre of the site and a low point of 22.21 at the northern boundary adjacent to the South Circular Road. Please refer to Appendix B for a copy of the Topographical Survey

#### 4.5 Historical Maps

The historical 6" (1837 – 1842) and the 25" (1888 – 1913) mapping have been examined. Historical mapping is often a very useful source of information for assessing the flood history of an area. The historical maps examined do not indicate flooding in the area proposed for this development.

The historic 6-inch maps show a Canal Dock located at the site, but this was filled in before the publication of the 25-inch maps (1888-1913).

#### 4.6 Historical Flooding

The Office of Public Works (OPW) gathers and collates data from reported flood events throughout the country. From a review of the OPW's National Flood Hazard Mapping database (<u>www.floodmaps.ie</u>), there are no reported incidents of flooding in the vicinity of the site.

Figure 4-2 shows the historical reported flood events in area surrounding the site. There are no reports of flooding occurring within the proposed site or in the vicinity of the proposed site.







Figure 4-2: National Flood Hazard Mapping (excerpt from <u>www.floodmaps.ie</u>)

Pease see a copy of the OPW flood history report in Appendix C.

#### 4.7 Groundwater Flooding

The OPW's Preliminary Flood Risk Assessment (PFRA) does not include an assessment of the flood risk posed by ground water. This information is currently generated by Geological Survey Ireland (GSI) and will be openly available information when published. There are no reported incidents of ground water flooding in the vicinity of the site, see Figure 4-3.







Figure 4-3: Extract from the GSI Groundwater Flooding Data Viewer

According to the Geological Survey Ireland (GSI), the proposed site is located in an area where the ground is predominantly made ground.

The proposed site is located in the vicinity of a locally important aquifer with bedrock that is moderately productive in local zones. The bedrock in this area is noted as being a combination of red coarse sandstone and argillaceous bioclastic limestone. The groundwater vulnerability is moderate.

As there is an under-croft car park proposed as part of this development, ground water flooding may pose a risk to the proposed site and mitigation measures are required.

#### 4.8 Dublin Pluvial Study

The Dublin Pluvial Study include predictive flood maps showing areas predicted to be inundated during a theoretical or 'design' flood event with an estimated probability of occurrence. The site of the proposed development has been included in the Dublin Pluvial Study.

Figure 4-4 below is an extract from the pluvial flood map for the area surrounding the proposed development site. The full Dublin Pluvial Study map for the area is included in Appendix D of this report. The flood map indicate that a portion of the site lies within the 10% AEP pluvial flood extent.







*Figure 4-4: Extract from Dublin Pluvial Study extent map (excerpt from www.floodinfo.ie)* 

The pluvial flood risk to the site will be mitigated as the proposed development includes a new surface water network which will manage the surface water onsite, and therefore mitigating the risk of pluvial flooding onsite.

#### 4.9 Preliminary Flood Risk Assessment

The Catchment Flood Risk Assessment and Management Study (CFRAMS) is a national programme which to date has produced both a series of Preliminary Flood Risk Assessments (PFRA) which cover the entire country, as well as more detailed flood maps in certain catchments across the country.

Prior to the publication of the detailed CFRAMS flood mapping, a series of Preliminary Flood Risk Assessment (PFRA) maps were published. These maps indicated preliminary tidal and fluvial flood extents along with pluvial and groundwater risks.

These maps have been superseded by the more detailed CFRAMS maps in the area surrounding the site.





#### 4.10 Catchment Flood Assessment and Management

The OPW in conjunction with Dublin City Council have developed the Flood Risk and Hazard maps as part of the CFRAMS programme. The site of the proposed development has been included in the CFRAMS model.

Figure 4-5 below is an extract from the CFRAM fluvial flood map for the area surrounding the proposed development site. Full CFRAMS maps for the area are included in Appendix E of this report. The flood map indicate that the site lies outside the 1 in 100 and 1 in 1000-year fluvial flood extents.



Figure 4-5: Extract from CFRAMS fluvial extent map (excerpt from www.floodinfo.ie)

The site is not identified as being within a defended area.



Project: U067 Issued: 16-Mar-22



### 4.11 Dublin City Development Plan Strategic Flood Risk Assessment

A Strategic Flood Risk Assessment was prepared as part of the Dublin City Development Plan. As part of this report, a review of flooding in Dublin City was undertaken. The flood risk assessment identified Grand Canal as a source of fluvial flooding in the area, see Justification Test included in Appendix F. The site is not identified in Flood Zone A or B and is therefore considered to be in Flood Zone C, see Figure 4-6.



Figure 4-6: DCC SFRA Flood Risk Mapping



Project: U067 Issued: 16-Mar-22

#### 4.12 Estimate of Flood Zone and Levels

From the available information, it can be concluded that the site is located in Flood Zone C for fluvial flooding based on the SFRA and outside the 1 in 100 and 1 in 1000-year fluvial flood extents estimated in the CFRAMS.

A portion of the site is identified at being at risk of a 10% AEP pluvial event, however, the new surface water network proposed as part of this development will mitigate the pluvial risk to the development, while also not increasing the flood risk elsewhere.





#### **5 FLOOD RISK ASSESSMENT**

#### 5.1 Sources of Flooding

#### Fluvial Flooding

Fluvial flooding is the result of a river exceeding its capacity and excess water spilling out onto the adjacent floodplain. The proposed site is located close to the Grand Canal. The SFRA maps indicate that a part of the site is located in Flood Zone C.

#### **Pluvial Flooding**

Pluvial flooding is the result of rainfall-generated overland flows which arise before run-off can enter any watercourse or sewer. It is usually associated with high-intensity rainfall.

The Dublin Pluvial Study identify a portion of the site as being at risk pluvial flooding. The proposed development includes the construction of a new surface water network which will manage surface water runoff onsite and mitigate the risk of pluvial flooding onsite.

#### **Coastal Flooding**

Coastal flooding is the result of sea levels which are higher than normal and result in sea water overflowing onto the land during high tides or storm surges. Given the elevation and location of the site of the proposed development, we consider that tidal flooding does not pose a flood risk in the area.

#### Groundwater Flooding

Groundwater flooding occurs when the level of the water stored in the ground rises as a result of prolonged rainfall. From a review of the available information, there is no risk of groundwater flooding at the site. There is an under-croft car park as part of the proposed development and therefore, the risk of groundwater must be considered.



Project: U067 Issued: 16-Mar-22



#### 5.2 Development Vulnerability

The *PSFRM Guidelines* classify potential development in terms of its vulnerability to flooding. The types of development falling within each vulnerability class are described in *Table 3.1* of the *PSFRM Guidelines*, which is reproduced in Table 5-1.

Table 5	5-1: Deve	lopment V	ulnerability	Class

Vulnerability Class	Land uses and types of development which include:						
Highly vulnerable development (including	Garda, ambulance and fire stations and command centres required to be operational during flooding;						
essential infrastructure)	Hospitals;						
	Emergency access and egress points;						
	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 development	Buildings used for: retail, leisure, warehousing, commercial, industrial and non-residential institutions;						
	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-compatible	Flood control infrastructure;						
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).

The proposed development comprises of residential units and therefore, is considered to be *Highly Vulnerable Development*.

The *PSFRM Guidelines* define the zones in which each class of development is appropriate – this is summarised in Table 5-2. The *PSFRM Guidelines* recognises that flood risks should not be the only deciding factor in zoning for development. They also recognise that circumstances will exist where development of a site within a floodplain is desirable; in order to achieve compact and sustainable development of the core of urban settlements. In order to allow consideration of such development, the *PSFRM Guidelines* provide a **Justification Test**, which establishes the criteria under which desirable development of a site in a floodplain may be warranted.

	Flood Zone A	Flood Zone B	Flood Zone C
Highly Vulnerable Development	Justification Test	Justification Test	Appropriate
Less Vulnerable Development	Justification Test	Appropriate	Appropriate
Water- compatible Development	Appropriate	Appropriate	Appropriate

Table 5-2:	"Appropriateness"	Matrix
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The site is located in Flood Zone C, the development is considered appropriate.





#### 5.3 Flood Mitigation Measures

With reference to the above, a review of flood maps produced as part of the CFRAMS and SFRA indicate that the site of the proposed development falls within the Flood Zone C. The critical flooding mechanism for this site will be fluvial flooding.

As noted previously, a portion of the site is at risk of pluvial flooding. The proposed development will include a new surface water network which will manage the surface water onsite.

#### 5.3.1 Emergency Access & Egress

It is necessary to ensure that access and egress will remain possible to the development in the event of an emergency during an extreme flood event. It is proposed to provide access to the development through the existing entrance onto the South Circular Road.

The access route and surrounding road network is located in Flood Zone C, and access will be maintained in the event of an emergency.

#### 5.3.2 Under-Croft Car Park

There is an under-croft car park proposed as part of this development. The under-croft will be used for car-parking and also includes bicycle parking and plant rooms.

To ensure no groundwater ingress, the under-croft will be fully sealed.

Car park drainage will gather any run-off from vehicles and will discharge to the wastewater network, via a class 1 fuel separator. No surface water run-off from the ground level will enter the under-croft car park.

#### 5.3.3 Infrastructure

The proposed development includes the construction of a surface water network which consists of SuDS measures which will minimize the impact to the receiving environment and manage the pluvial flood risk at the site. Please refer to OCSC Engineering Services Report for details.





The proposed surface water network has been designed with an allowance for climate change as per the GDSDS.

#### 5.4 Flood Risk Management

Flood risk management under the EU Floods Directive aims to minimise the risks arising from flooding to people, property and the environment. Minimising risk can be achieved through structural measures that block or restrict the pathways of floodwaters, such as river defences or non-structural measures that are often aimed at reducing the vulnerability of people and communities such as flood warning, effective emergency response, or resilience measures for communities or individual properties.

As noted above, all emergency access can be maintained to and from the site from the main entrance. The proposed buildings are located outside the flood extents.





#### **6 CONCLUSIONS AND RECOMMENDATIONS**

The assessment is carried out in full compliance with the requirements of "The Planning System & Flood Risk Management Guidelines" published by the Department of the Environment, Heritage and Local Government in November 2009.

As detailed with in the previous sections of this report, the proposed buildings for this development are located within Flood Zone C.

Pluvial and groundwater flooding will be managed through the implementation of the mitigation measures outlined in Section 5.3. Therefore, in accordance with the Planning System and Flood Risk Management Guidelines for Planning Authorities, there is no significant risk for flooding in the proposed development and it is appropriate for use.

#### 6.1 Recommendations

It has been demonstrated in the earlier sections that the site is not at risk of flooding from external sources, or as result of the proposed development.

In order to minimise the risk of flooding within the development, it is recommended that all drainage infrastructure is designed and installed in accordance with the relevant standards.

As the proposed units are located outside the 1 in 100 and 1 in 1000-year fluvial flood extents, there is no apparent risk of fluvial flooding. The Dublin Pluvial Study identified a portion of the site as being at risk of pluvial flooding. The proposed development includes a new surface water network which will mitigate the pluvial risk to the site.







#### APPENDIX A. PROPOSED SITE LAYOUT

# **Appendix A**

Proposed Site Layout



Studio

1 Bed

Revision Description	Date	Rev. No.	Issued by		bon	vniko		Project Code	: 20016	Scale
Stage 2 submission to ABP	06.07.2021	C01	MH			y pike		Project Lead	• МН	Date
Issued for Information	24.11.2021	P01	MH	-		_				Dute.
Issued for Coordination	17.11.2021	P02	MH	architecture   urban design		Dublin	<b>Cork</b> One South Mall Cork City Co. Cork	Drawn By:	KN/JW	Revis
Issued for Information	06.01.2022	P03	MH	email: info@oma tol: +252 1 202 7	email: info@omahonypike.com				20016	Statu
DRAFT Stage 3 submission to ABP	17.11.2021	P04	MH	fax: +353 1 283 0822		Milltown, Dublin 6		JUD NO	20010	Statu
DRAFT Stage 3 submission to ABP	25.01.2022	P05	MH	www.omahonyp	ike.com	D06 XN52 Ireland	T12 CCN3 Ireland	Purpose:	PLANNING	
DRAFT Stage 3 submission to ABP	09.02.2022	P06	MH	-						
				Project:	White F	leather BIR				
				Location:	White H	leather Indu	strial Estate	, South Cir	cular Road, D	Jublin 8
				Client	,			,		
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09.02.2022

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#### **APPENDIX B. TOPGRAPHICAL SURVEY**

# **Appendix B**

**Topographical Survey** 

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![](_page_32_Picture_0.jpeg)

#### APPENDIX C. OPW FLOOD HISTORY

**Appendix C** 

**OPW Flood History** 

![](_page_33_Picture_1.jpeg)

#### Report Produced: 26/4/2021 15:04

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.

![](_page_33_Picture_5.jpeg)

#### 34 Results

	Name (Flood_ID)	Start Date	Event Location
1.	A Flooding at Trinity College, Dublin 2, 26th July 2013 (ID-11960)	26/07/2013	Approximate Point
	Additional Information: <u>Reports (1)</u> Press Archive (0)		
2	. 🛕 Flooding on Wexford St, Dublin 2 on 26th July 2013 (ID-11961)	26/07/2013	Approximate Point
	Additional Information: <u>Reports (1)</u> Press Archive (0)		
3	. 💹 Poddle August 1986 (ID-32)	25/08/1986	Area
	Additional Information: <u>Reports (9)</u> Press Archive (1)		
4	. 💹 Dublin City Tidal Feb 2002 (ID-456)	01/02/2002	Area
	Additional Information: <u>Reports (45)</u> Press Archive (27)		
5	. 🛕 Rathmines Lower June 1963 (ID-282)	11/06/1963	Exact Point
	Additional Information: <u>Reports (4)</u> Press Archive (2)		
6	. <u> (</u> Kimmage June 1963 (ID-283)	11/06/1963	Exact Point
	Additional Information: <u>Reports (4)</u> Press Archive (2)		

	Name (Flood_ID)	Start Date	Event Location
7.	🚹 Kimmage Mount Argus June 1963 (ID-284)	11/06/1963	Exact Point
	Additional Information: <u>Reports (4)</u> Press Archive (2)		
8.	🚹 Harold's Cross June 1963 (ID-285)	11/06/1963	Exact Point
	Additional Information: <u>Reports (4)</u> <u>Press Archive (2)</u>		
9.	🚹 Mount Jerome Harold's Cross June 1963 (ID-286)	11/06/1963	Exact Point
	Additional Information: <u>Reports (4)</u> <u>Press Archive (2)</u>		
10	. 🚹 Clanbrassil Street June 1963 (ID-287)	11/06/1963	Exact Point
	Additional Information: <u>Reports (4)</u> <u>Press Archive (2)</u>		
11.	🚹 Grafton Street June 1963 (ID-288)	11/06/1963	Exact Point
	Additional Information: <u>Reports (4)</u> <u>Press Archive (2)</u>		
12.	\land Camac Turvey Ave Recurring (ID-669)	n/a	Exact Point
	Additional Information: <u>Reports (1)</u> <u>Press Archive (0)</u>		
13.	A Poddle Tributary Marrowbone Lane Jan 1941 (ID-661)	21/01/1941	Approximate Point
	Additional Information: <u>Reports (1)</u> Press Archive (0)		
14.	Poddle Harold's Cross undated 1940's (ID-662)	n/a	Exact Point
	Additional Information: <u>Reports (1)</u> Press Archive (0)		
15.	A Poddle Larkfield Mills Undated 1940s (ID-663)	n/a	Approximate Point
	Additional Information: <u>Reports (1)</u> Press Archive (0)		
16.	🔬 Camac Goldenbridge Recurring (ID-668)	n/a	Approximate Point
	Additional Information: <u>Reports (1)</u> Press Archive (0)		
17.	🛦 Camac Carrickfoyle Terrace Recurring (ID-670)	n/a	Exact Point
	Additional Information: <u>Reports (1)</u> Press Archive (0)		
18.	. 🝌 Camac Kearns Place Recurring (ID-671)	n/a	Exact Point
	Additional Information: <u>Reports (1)</u> <u>Press Archive (0)</u>		
19.	🛦 Camac Bow Bridge Recurring (ID-672)	n/a	Approximate
	Additional Information: <u>Reports (1)</u> Press Archive (0)		Point
20	). 🕂 Poddle St Claires Ave Sept 1931 (ID-1997)	03/09/1931	Approximate
	Additional Information: <u>Reports (1) Press Archive (0)</u>		Point
21.	Poddle Limekiln Lane Aug 1905 (ID-1998)	24/08/1905	Approximate
	Additional Information: Reports (1) Press Archive (0)		Point
22	Poddle Limekiln Lane Sept 1931 (ID-3267)	03/09/1931	Approximate
	Additional Information: Poports (1) Pross Archive (0)	00,07,1701	Point
			Approximate
23	. 🚹 Poddle Park Nov 2000 (ID-3311)	05/11/2000	Point
	Additional Information: <u>Reports (1)</u> <u>Press Archive (0)</u>		
24	Littey Lower - Dec 1954 (ID-241)	08/12/1954	Area
	Aggitional Information: Reports (5) Press Archive (2)		

	Name (Flood_ID)	Start Date	Event Location
25.	Camac August 1986 (ID-125)	25/08/1986	Area
	Additional Information: <u>Reports (3)</u> Press Archive (0)		
26.	A Flooding at Blarney Park, Crumlin, Dublin 12 on 24th Oct 2011 (ID-11562)	24/10/2011	Approximate Point
	Additional Information: <u>Reports (1)</u> <u>Press Archive (0)</u>		
27.	Flooding at Bow Lane, Kilmainham, Dublin 8 on 24th Oct 2011 (ID- 11563)	24/10/2011	Approximate Point
	Additional Information: <u>Reports (1)</u> <u>Press Archive (0)</u>		
28.	A Flooding at Harold's Cross, Dublin City on 24th Oct 2011 (ID-11603)	24/10/2011	Approximate Point
	Additional Information: <u>Reports (1)</u> <u>Press Archive (0)</u>		
29.	Flooding at Kearns Place, Kilmainham, Dublin 8 on 24th Oct 2011 (ID- 11620)	24/10/2011	Approximate Point
	Additional Information: <u>Reports (1)</u> <u>Press Archive (0)</u>		
30.	Flooding at Lady's Lane, Kilmainham, Co. Dublin on 24th Oct 2011 (ID- 11622)	24/10/2011	Approximate Point
	Additional Information: <u>Reports (1)</u> <u>Press Archive (0)</u>		
31.	Flooding at Mount Argus Road and Kimmage Road Lower on 24th Oct 2011 (ID-11641)	24/10/2011	Exact Point
	Additional Information: <u>Reports (1)</u> <u>Press Archive (0)</u>		
32.	Flooding at Junction of Terenure Road and Kimmage Road, Dublin 6W on 24th Oct 2011 (ID-11658)	24/10/2011	Exact Point
	Additional Information: <u>Reports (1)</u> <u>Press Archive (0)</u>		
33.	Flooding at Ashling Hotel, Parkgate Street, Dublin 8 on 24th Oct 2011 (ID-11681)	24/10/2011	Exact Point
	Additional Information: <u>Reports (1)</u> <u>Press Archive (0)</u>		
34.	Flooding at Bridgewater Quay Apartments, Islandbridge, Dublin 8. on 24th Oct 2011 (ID-11688)	24/10/2011	Exact Point
	Additional Information: <u>Reports (1)</u> Press Archive (0)		

![](_page_36_Picture_0.jpeg)

#### APPENDIX D. DUBLIN PLUVIAL STUDY MAP

# **Appendix D**

Dublin Pluvial Study Map

![](_page_37_Figure_0.jpeg)

![](_page_38_Picture_0.jpeg)

#### APPENDIX E. OPW CFRAMS MAPS

# Appendix E

**OPW CFRAMS Maps** 

![](_page_39_Figure_0.jpeg)

![](_page_40_Picture_0.jpeg)

### APPENDIX F. DUBLIN CITY DEVELOPMENT PLAN STRATEGIC FLOOD RISK ASSESSMENT

# **Appendix F**

Dublin City Development Plan Strategic Flood Risk

Assessment

![](_page_41_Figure_1.jpeg)

![](_page_42_Figure_1.jpeg)

#### Site: 14. Poddle: Culverts outside Canal

Dublin City Council Development Plan 2016-2022 (zoning map key at back of tables)

Site Description	This area on the Poddle River Flood Zone goes from Sundrive Road to Clogher Road, to Lower Crumlin Road, to Rutland Avenue. It has fluvial with pluvial rainfall influences. Development in this area is a mixture of high density Residential and Commercial with infill development of both.
Benefitting from Defences (flood relief scheme works)	No existing defences are present.
Sensitivity to Climate Change	An increase of 20% flow on top of the estimated 100-year culvert flow will cause more flooding in this area. A 30% increase in river flow on top of the estimated 100-year culvert flows will cause significant flooding.

Site: 14. Poddle: Culverts outside Canal					
Residual Risk	There are no defences, but residual risks arising from blockage of the culverts is possible and should be assessed to determine how flow paths and water depths may be changed.				
Historical Flooding	The flood maps attached are consistent with previous flooding of this section of the River Poddle.				
Storm (surface) water	All storm (surface) water in this area needs to be carefully managed and provision made for significant rainfall events during high river flows. Should development be permitted, best practice with regard to storm (surface) water management should be implemented across the development area, to limit storm (surface) water runoff to current values. Separation of storm (surface) water and foul sewage flows should be carried out where possible. All Developments shall have regard to the Pluvial Flood Maps in their Site Specific Flood Risk Assessment, see Flood ResilienCity Project, Volume 2 City Wide Pluvial Flood Risk Assessment at http://www.dublincity.ie/main-menu-services-water-waste-and-environment-drains-sewers-and-waste-water/flood-prevention-plans				

#### **Commentary on Flood Risk:**

The flood extents indicate flow paths generally coming directly out of the river culvert through manholes and gully grids as well as some overland flows from the river itself upstream of its crossing on Sundrive Road. These can be compounded with local pluvial flooding if heavy rainfall coincides with high river culvert flows.

The flood maps were produced based on the OPW CFRAM Study and they have been checked against historic flooding in the area.

#### **Development Options:**

The main flood cells in this area are located on roadways and in small residential, commercial and industrial developments. No new development should be allowed in these areas unless they are defended except for extensions and small infill provided the number of people at flood risk is not increased.

Residential development (mainly infill) with a small amount of commercial and industrial would be a natural extension of existing development in this area. However, any development could reasonably be accommodated within the extents of Flood Zone C and should not need to extend into Flood Zone A or B unless defended. Some development may require to await future flood works on the Poddle River.

#### **Justification Test for Development Plans**

- 1. Section 1 is covered elsewhere in this SFRA justifying all of Dublin City
- 2. The zoning or designation of the lands for the particular use or development type is required to achieve the proper planning and sustainable development of the urban settlement and, in particular:
- (i) Is essential to facilitate regeneration and/or expansion of the centre of the urban settlement Answer: Yes: This area is an established residential suburb of Dublin City. In this stretch the Poddle River goes from Sundrive Road, to Clogher Road, to Lower Crumlin Road, to Rutland Avenue. Development in this area is a mixture of high to medium density Residential and Commercial with infill development of both. This area is essential for the future expansion of the City.

#### (ii) Comprises significant previously developed and/or under-utilised lands Answer: Sites would predominately be brownfield sites. Development in this area is likely to be a mixture of mainly Residential and some Commercial.

#### Site: 14. Poddle: Culverts outside Canal

- (iii) Is within or adjoining the core of an established or designated urban settlement Answer: Yes: The lands form part of an established suburb of the City.
- (iv) Will be essential in achieving compact and sustainable urban growth Answer: Yes (see response to (iii) above)
- (v) There are no suitable alternative lands for the particular use or development type, in areas at lower risk of flooding within or adjoining the core of the urban settlement Answer: There are no suitable alternative lands for the particular uses or development type in areas at lower risk of flooding, within or adjoining the urban settlement.
- 3. Strategic Flood Risk Assessment for Flood Zones A and B (for defended Flood Zones A and B see section 4.8)
  - Modelling shows that risks are primarily linked to the development of overland flow paths which progress along roads. FRAs for developments should specifically address this risk, both to ensure flow paths do not become obstructed and to ensure an appropriate standard of flood resilient construction, which could include (where possible) raising finished floor levels.
  - Particular attention to the design of any proposed basements should be carried out with full recognition of Dublin City Council Policies and Objectives, and the detail in the SFRA, in this regard.