MALONE O'REGAN
CONSULTING ENGINEERS

SOCIAL HOUSING BUNDLE 4

DEVELOPMENT AT CHURCH OF THE ANNUNCIATION,

FINGLAS, DUBLIN.

DESKTOP FLOOD RISK ASSESSMENT

DUBLIN CITY COUNCIL

June 2024

Job: 23006

Contents Amendment Record

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Title: **Social Housing Bundle 4, Development at Church of Annunciation, Finglas, Dublin**
Desktop Flood Risk Assessment/ Dublin City Council

Job Number: **23006**

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Approved By: **Douglas Weir** **Signed:**

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0	14.07.23	Initial Issue	P1	AB	PB	PB
1	06.11.2023	Information	P1	KA	PB	PB
0	04.03.2024	Planning	P3	KA	PB	ND
1	13.03.2024	Planning	P3	FM		
2	06.11.2023	Planning	P3	KA	PB	PB
3	11.06.2024	Planning	P3	KA	ND	ND

CONTENTS

1 INTRODUCTION

This Desktop Flood Risk Assessment (DFRA) report is prepared on behalf of Dublin City Council to accompany a Part 8 proposal for the construction of 110 residential units for 'Older Persons' at a site c.0.77 ha at the site of the former Church of Annunciation on Cardiffsbridge Road, Finglas, Dublin 11, which will consist of the following:

- One apartment block ranging from 4 to 5-storeys, containing:
    - 110 residential units for 'Older Persons' comprising 106 no. 1-bed and 4 no. 2-bed; and
    - 434 sq.m. of community, arts and cultural facilities.
- 15 no. car parking spaces and 87 no. cycle spaces.
- 935 sq.m. of public open space and 609 sq.m. of communal open space.
- One vehicular and pedestrian access and one dedicated pedestrian access off Cardiffsbridge Road.
- Boundary treatments, public lighting, site drainage works, internal road surfacing and footpath, ESB meter rooms, plant rooms, stores, bin and bicycle storage, landscaping; and
- All ancillary site services and development works above and below ground.

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

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

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

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

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

The study was principally focused on examining flooding risks to the proposed site from the River Tolka and Bachelor's Stream.

2 PROPOSED SITE DESCRIPTION

2.1 Site Description

The location of the proposed development is illustrated in Figure 2.1 below. The site is situated in a residential area of Finglas, approximately 5.7km from Dublin city centre. The site is the location of the former Church of the Annunciation now demolished. The lands to the north of the site are currently in development proposals for the new church site. There are existing two storey houses opposite the development on the west of the site. To the east of the site the new development faces on to an existing school. The southern end of the site is facing a future health centre facility by the HSE. The proximity of the site to natural watercourses is outlined in Figure 1.2 below.

Figure 2.1 – Site Location showing the indicative Site Boundary and Adjacent Developments

2.2 Surrounding Watercourse

The website operated by the Environmental Protection Agency (EPA) provides information about water features such a river networks. Figure 2.2 displays the area surrounding the subject site. The Bachelors Stream, also known as Finglas River, is located approximately 800m from the eastern boundary of the site. This stream then flows from North to South and discharges into the principal River Tolka. The River Tolka is approximately 1.10km to the south of the site. The River Tolka Flows south-east towards Dublin Bay where its mouth exits in the Irish Sea.

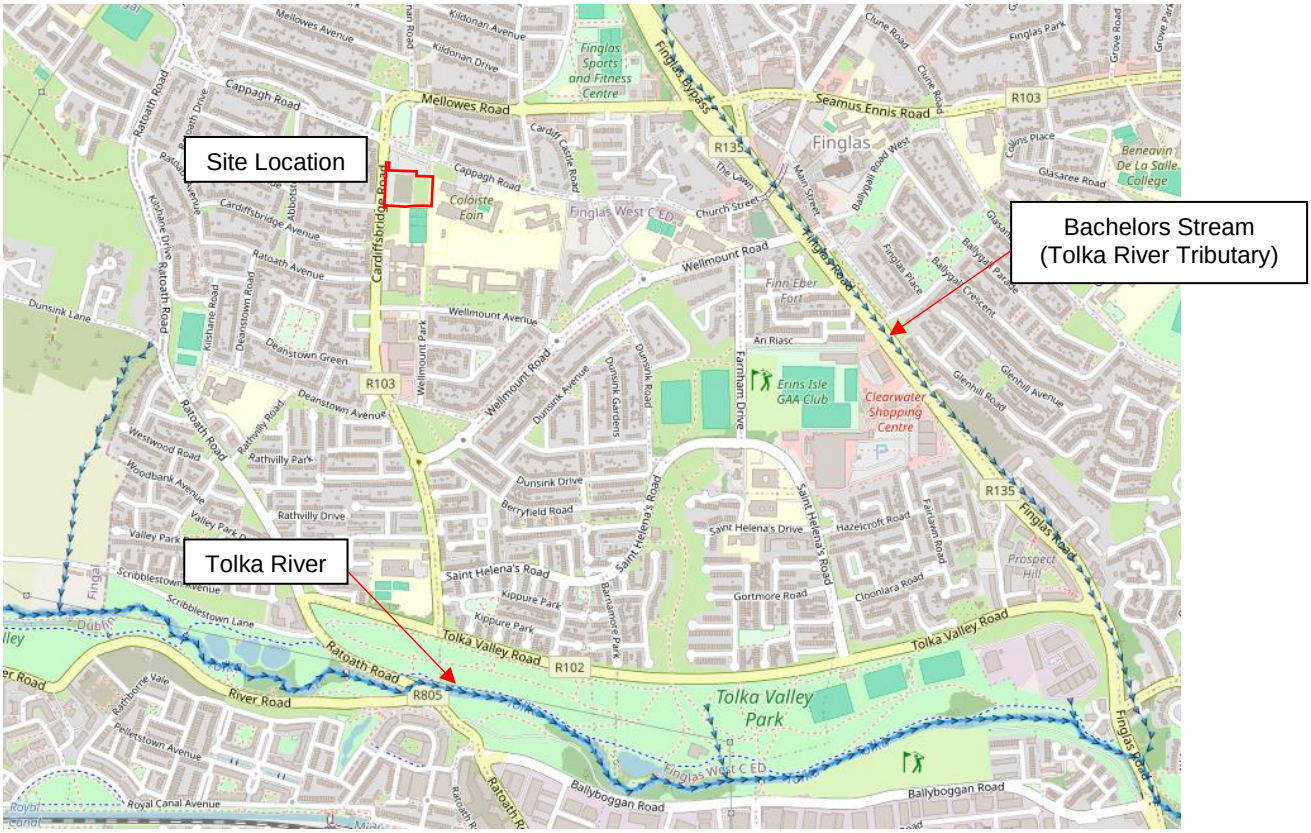


Figure 2.2 – Surrounding Watercourse
(Extract from the EPA Maps)

2.3 Land Use Zone

Land use zone map is provided in the SFRA of the Dublin CDP 2022-2028. The different land zone is illustrated in Figure 2.3 below and the full map is provided in Appendix A.

The proposed development is located within land zoned as *"Z1: Sustainable Residential Neighbourhoods – To protect, provide and improve residential amenities"*.

The lands to north and west are mostly within land zones as "*Z1: Sustainable Residential Neighbourhoods".* The lands to the south and east are within land zone *"Z14: Community and Social Infrastructure."* There is a small area to the north zoned as *"Z3: Neighbourhood Centres"*

Figure 2.3 – Land Use Zoning Map (Extract from SFRA of the Dublin CDP 2022 – 2028)

2.4 Existing Topography Levels at Site

A topographical survey has been undertaken on the site. The northwest corner has a level of +63.98m OD and the site falls diagonally towards the southeast corner to 62.60m OD. There is a gradual rise to the centre from the west and then falls towards the east. The highest point in the centre of the site is 64.87m OD. There are some mounds on the site from the demolition works which will be removed.

The intention is to maintain the existing ground levels as far as possible. Some minor re-grading of the existing ground levels within the site will be required in order to maintain acceptable gradients on internal roads and footpaths.

Finished floor levels for the development vary between 63.80m at the northern and western corner to 63.650m and 63.50m at the eastern corner to the lowest finished floor level of 63.35m at the southern corner.

Figure 2.4 – Proposed Finished Floor Levels

3 FLUVIAL FLOOD RISK ASSESSMENT

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

- OPW / EPA / Local Authority Hydrometric Data
- The National Preliminary Flood Risk Assessment (PFRA) – Overview Report & Indicative Flood Maps
- OPW Flood Records from www.floodmaps.ie
- Ordnance Survey Historic Mapping
- Strategic Flood Risk Assessment, Dublin City Development Plan 2022 – 2028

3.1 OPW / EPA / Local Authority Hydrometric Data

Existing sources of the OPW, EPA and Local Authority hydrometric data were investigated. As illustrated in Figure 3.1 below, this assessment has determined that there are two gauging stations on the River Tolka within the general vicinity of the proposed development site.

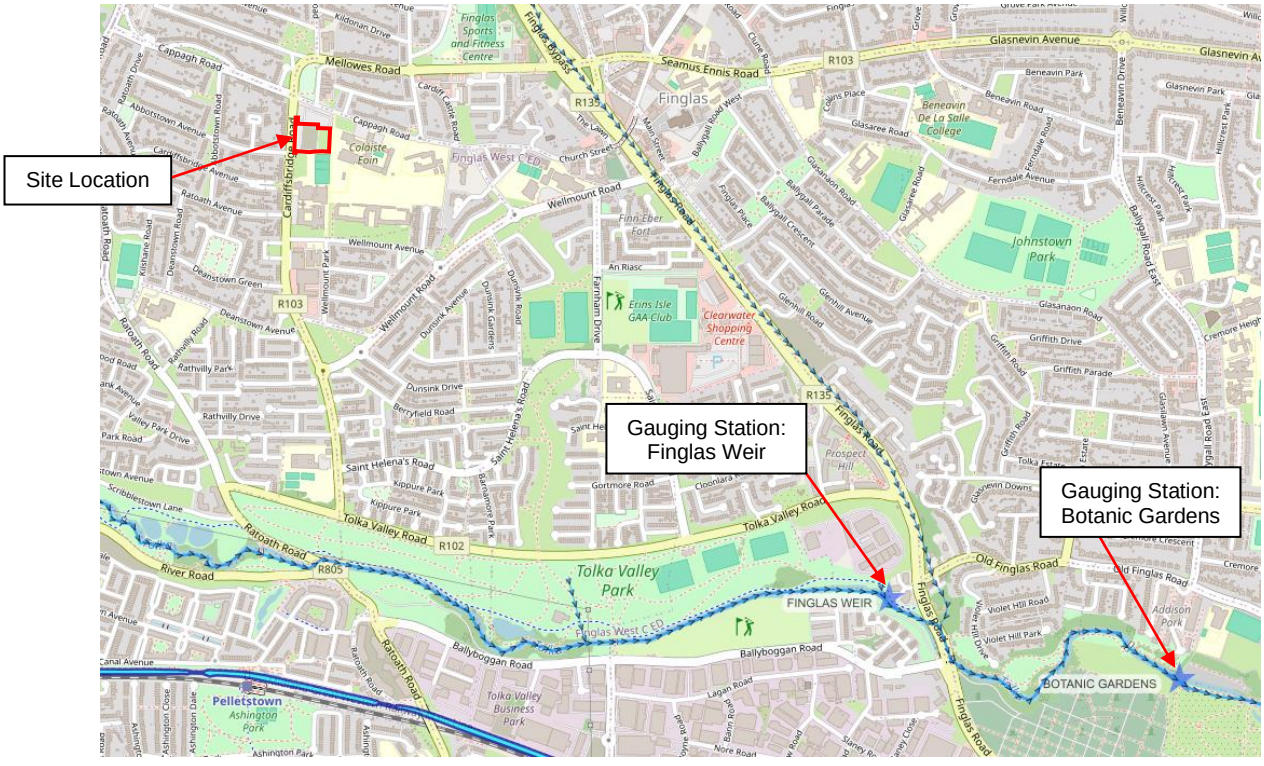


Figure 3.1 – Hydrometric Gauging and National Water Monitoring Stations

The Register of Hydrometric Stations in Ireland indicates that the Finglas Weir Gauging Station is a water level and flow recorder station and is currently inactive. The gauge datum recorded at this point is 17.502m. The Botanic Gardens Gauging Station is a water level and flow recorder station and is currently active. The gauge datum recorded at this point is 11.439m.

The minimum finished floor proposed is 63.350m. The finished floor level is significantly higher than the gauge data indicating that there is no realistic risk of flooding on the subject site as a result of fluvial flooding in the Tolka River

3.2 The National Preliminary Flood Risk Assessment

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

At the time of writing this report, the PFRA Maps for the River Tolka were under review and no information could be provided.

3.3 OPW Flood Records

The OPW Flood Maps Website (www.floodinfo.ie) was consulted in relation to available historical or anecdotal information on any flooding incidences or occurrences in the vicinity of the proposed development site. These records, which are summarised in Appendix B of this report, indicate 8 recorded flood events within a 2.5km radius of the proposed site.

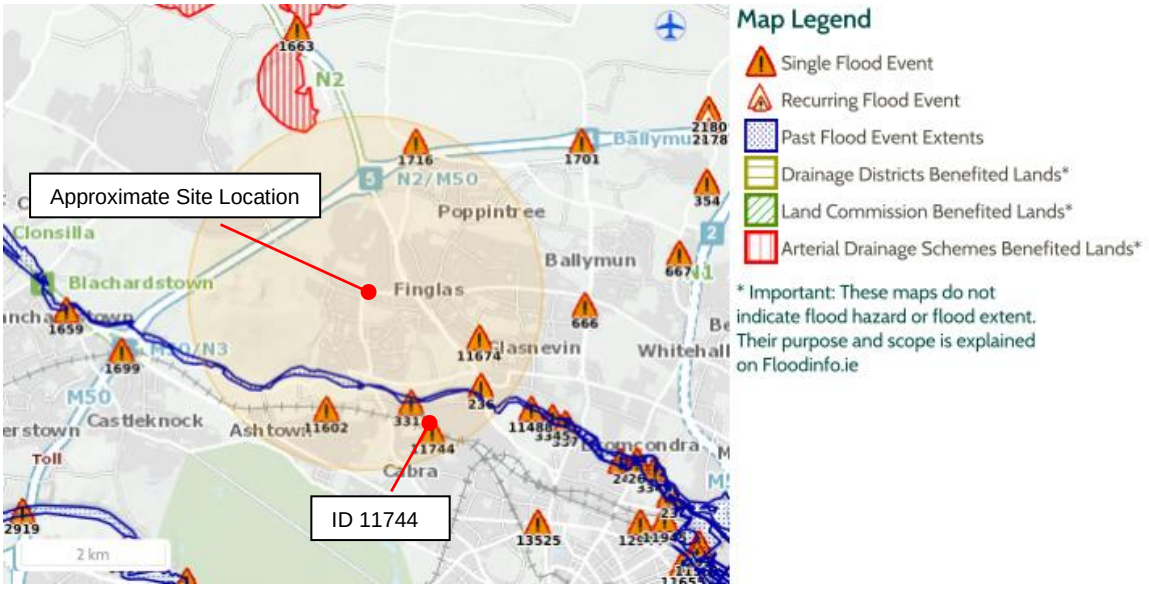


Figure 3.2 – OPW Flood Event Summary

Figure 5 indicates various historical flooding events within Dublin City Area, however there are no recorded recurring instances of flood events mapped within the immediate vicinity of the site. The flood events that did occur were from the Tolka River overflowing during extreme rain events. Since these floods, there have been defence assets put in place to reduce the likelihood of flooding. The only flood since the assets are in place is Flood ID 11744, which occurred at Broombridge Station in October 2011 – the canal overflowed which may have been due to a blockage at Glasnevin. The drainage on the road was blocked which caused the station to flood.

Based on available and recorded information as outlined above, the development site is considered not to have been subject to flooding in recent history.

3.4 Ordnance Survey Historic Mapping

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

The map that was viewed was the historical 6-inch map (pre-1900). Figure 3.3 below illustrate the historic mapping for the area of the proposed development site.

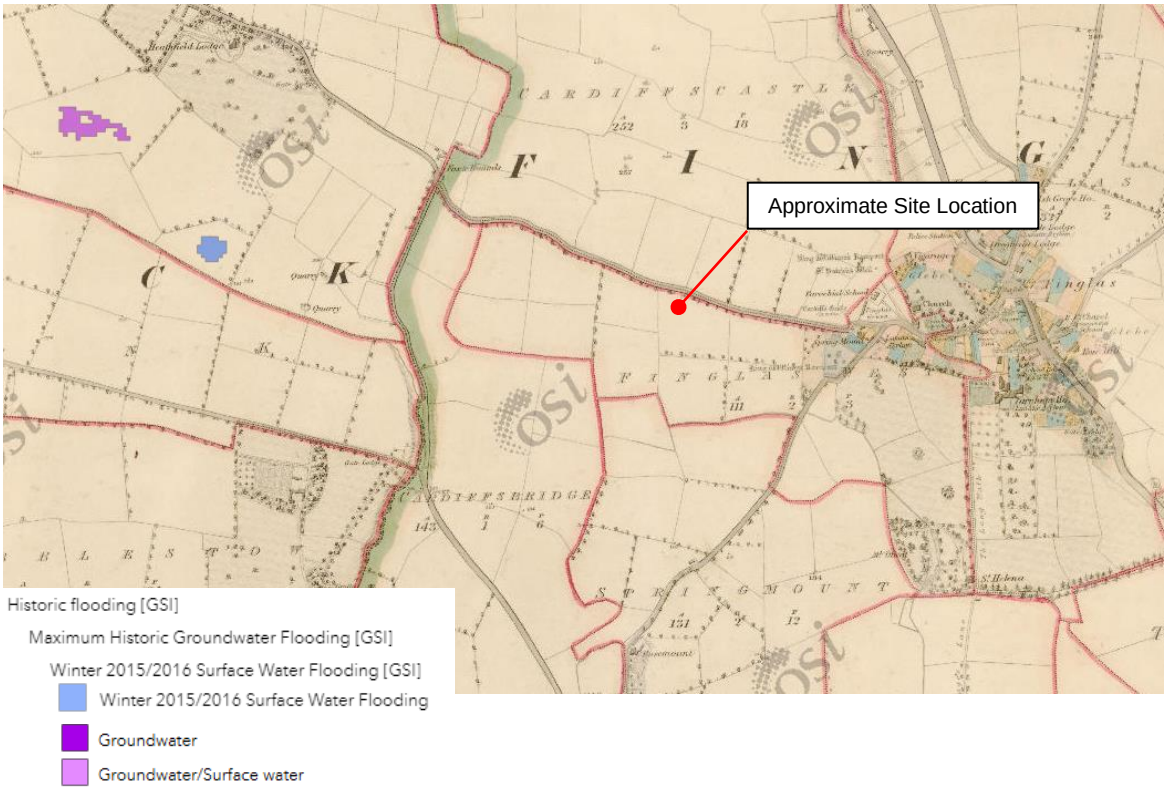


Figure 3.3 – Historic 6 Inch Mapping

Figure 3.3 illustrates that the historic 6-inch mapping does not indicate any historical or anecdotal instances of flooding within or adjacent to the boundary of the proposed development site. The nearest historical flood zone is 1km away and should have no impact on the site. The site of groundwater flooding is currently an open water storage area and is protected by stone walls.

3.5 Strategic Flood Risk Assessment, Dublin City Development Plan 2022 – 2028

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

3.5.1 Composite Flood Zone Map

The SFRA contains a Composite Flood Zone Map, the map is included in Appendix C and an extract is shown in Figure 3.4.

Figure 3.4 indicates that the proposed development falls within a predictive Flood Zone C. There is no Zone A nor Zone B within the vicinity of the site.

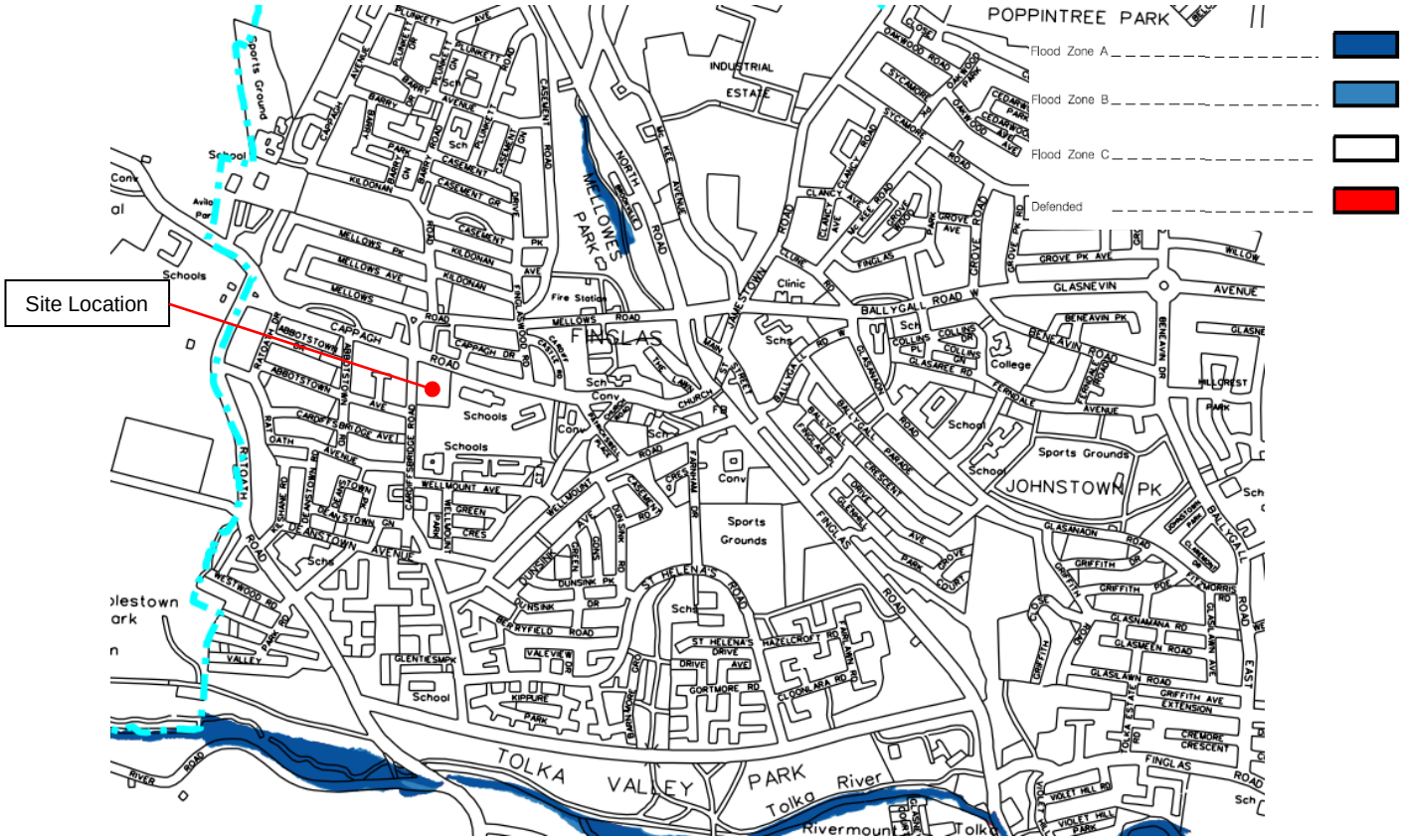


Figure 3.4 – Composite Flood Map
(Extract from the SFRA of the Dublin City Development Plan 2022 – 2028)

4 OTHER FLOOD SOURCES

4.1 Tidal Flooding

The proposed development site is located approximately 4.5km north of the nearest potential source of tidal flooding in the Dublin Bay. A review of the OPW Tidal Flood Extents Mapping was carried out and indicates that the proposed development site does not fall within a the predicted extreme 0.1% (1 in 1000-year current scenario) tidal flood event.

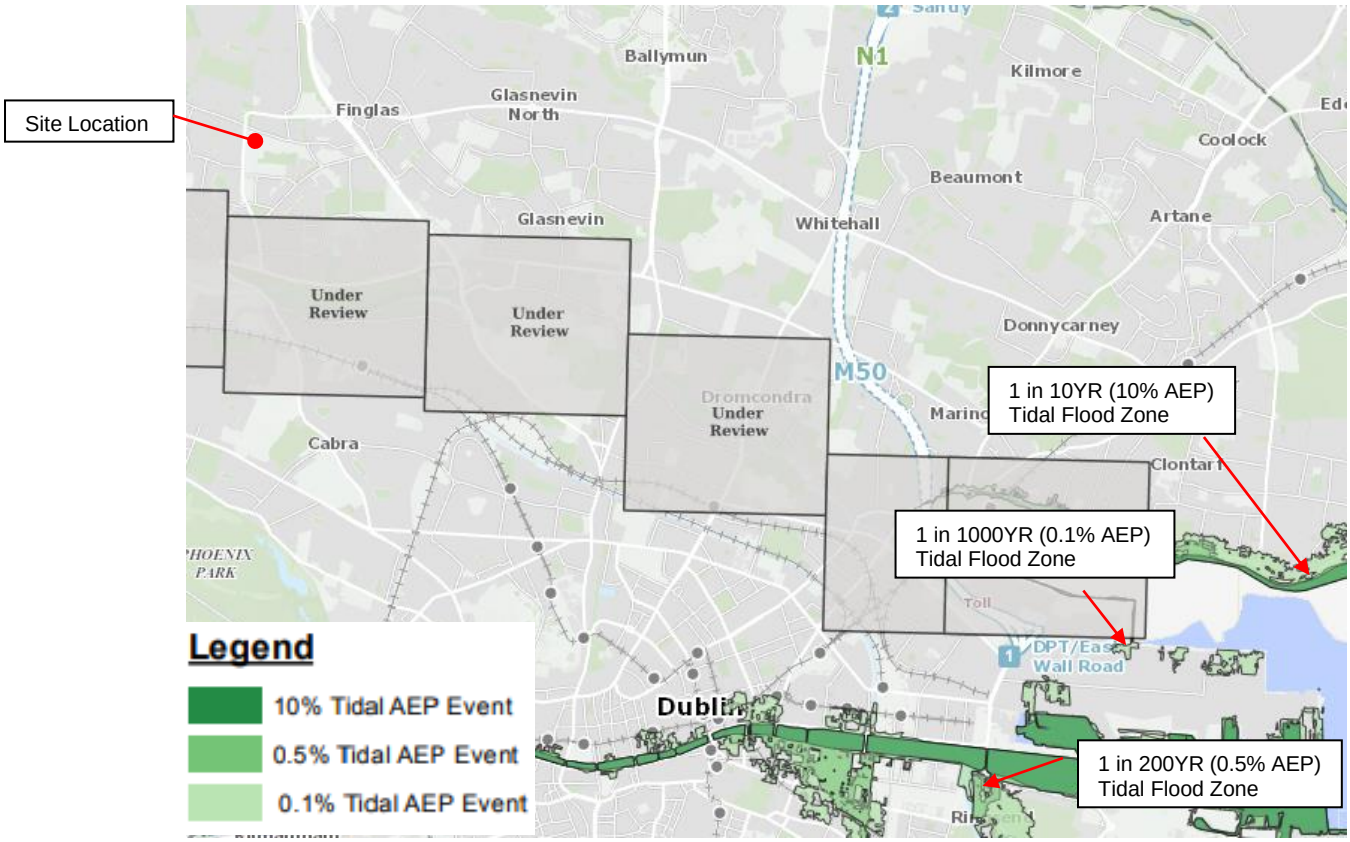


Figure 4.1 – CFRAM Tidal Flood Extent Map
(Extract from OPW)

4.2 Pluvial Flooding

Pluvial flooding occurs when the amount of rainfall exceeds the capacity of urban surface water drainage systems or the ground to absorb it. A review of the available literature including the DCC Flood Resilience City (FRC) project was carried out and indicates some pluvial flooding surrounding the site. Note, these maps are 'predictive' flood maps showing areas predicted to be inundated during a theoretical or 'design' flood event with an estimated probability of occurrence, rather than information for actual floods that have occurred in the past, which is presented on 'historical' flood maps.

The flood mapping shows some small areas along the western side of the site with moderate pluvial flooding risk. As additional green space with tree pits is added within the project on the western boundary and is at a lower level than the remainder of the site, the amount of pluvial flooding should decrease. The area of proposed buildings is not within the area of pluvial flooding risk.

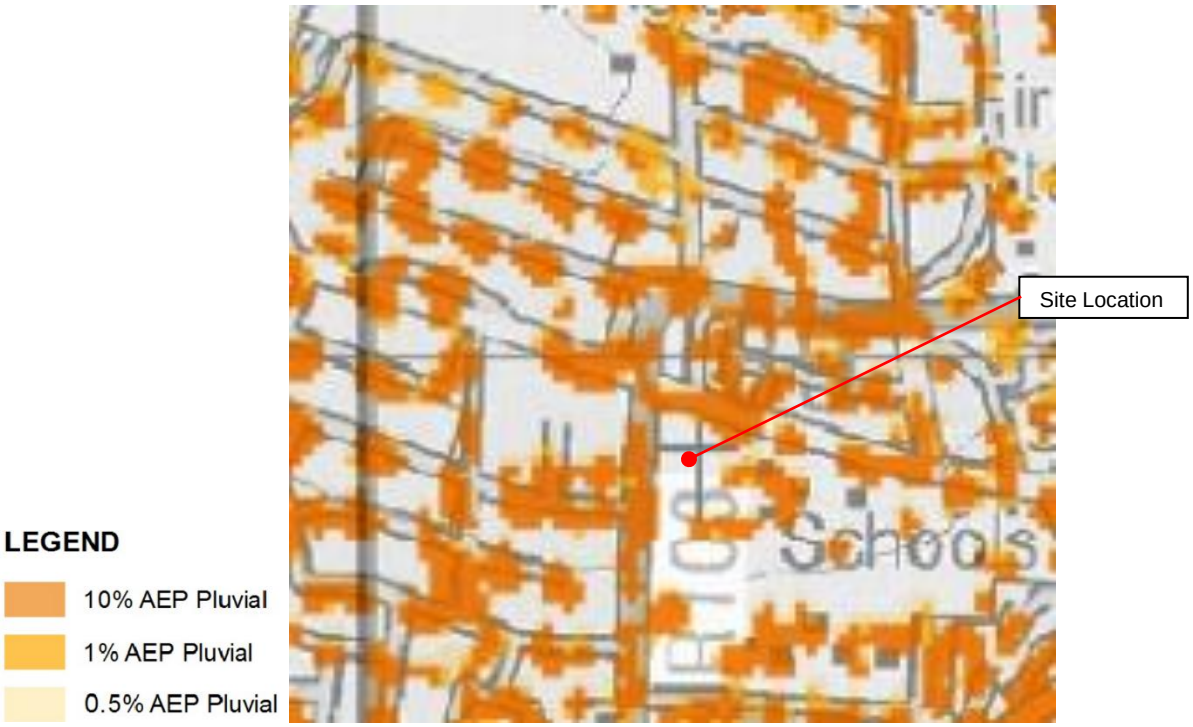


Figure 4.2 – Pluvial Flood Extent Map
(Extract from OPW)

5 SEQUENTIAL APPROACH TO PLANNING

The document "Planning Systems and Flood Risk Management: Guidelines for Planning Authorities November 2009" requires the adoption of a sequential approach to flood risk management when assessing the location for new developments. This approach is a risk-based method to guide development away from areas that have been identified through flood risk assessment as being at risk from flooding. The philosophy used in this approach is outlined in Figure 10 below.

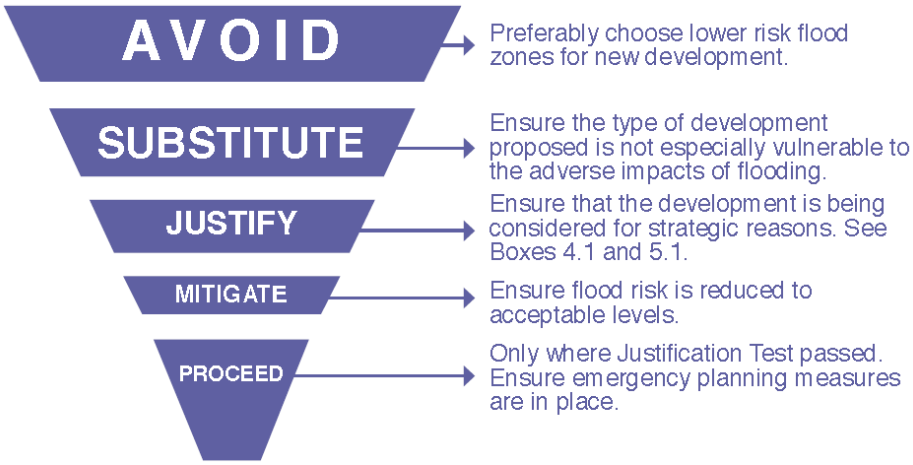


Figure 5.1 Source: The Planning Systems and Flood Risk Management: Guidelines for Planning Authorities November 2009

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

5.1 Flood Zones

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

Flood Zone A – Highest risk area where there is a 1% chance of flooding in any one year from rivers and a 0.5% chance of coastal flooding.

Flood Zone B – Moderate risk area where the chance of flooding in any one year is 0.1-1% for rivers and 0.1-0.5% for coastal flooding.

Flood Zone C – Low risk area with less than 0.1% chance of flooding from rivers or the sea in any given year.

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

5.2 Vulnerability Class of Proposed Development

The vulnerability class of the development is dependent on the land use and type of development proposed. See Table 5.1 for the vulnerability classes.

Table 5.1 - Classification of Vulnerability to Flooding for Various Development Types (Source – Table 3.1 Planning System and Flood Risk Management – Guidelines for Planning Authorities DEHLG, OPW, November 2009)

Vulnerability class	Land uses and types of development which include*:
Highly vulnerable development (including essential infrastructure)	Garda, ambulance and fire stations and command centres required to be operational during flooding; 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 development	Flood control infrastructure; Docks, marinas and wharves; Navigation facilities; Ship building, repairing and dismantling, dockside fish processing and refrigeration and compatible activities requiring a waterside location; Water-based recreation and tourism (excluding sleeping accommodation); Lifeguard and coastguard stations; Amenity open space, outdoor sports and recreation and essential facilities such as changing rooms; and Essential ancillary sleeping or residential accommodation for staff required by uses in this category (subject to a specific warning and evacuation plan).
*Uses not listed here should be considered on their own merits	

The 2009 Planning Guidelines presents a matrix of vulnerability versus flood zone to illustrate appropriate development and the requirement of justification tests. That matrix can be seen in Table 5.2. Based on the land uses listed in Table 5.1, the proposed residential development is classified as a highly vulnerable development. However, the development will be located in Flood Zone C and is therefore considered to be appropriate and a Justification Test is not therefore required.

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

6 SUMMARY AND CONCLUSIONS

In consideration of the findings of this Desktop Flood Risk Assessment (DFRA) and analysis the following conclusions and recommendations are made in respect of the proposed development site:

- A DFRA appropriate to the type and scale of development proposed, and in accordance with 'The Planning System and Flood Risk Management Guidelines – DoEHLG-2009' has been undertaken.

- The proposed development site has been scoped and assessed for flood risk in accordance with the above guidelines.

- The primary flood risk to the proposed development site can be attributed to a fluvial flood event in the River Tolka beyond the southern site boundary. The site is not at risk of pluvial or groundwater flooding.

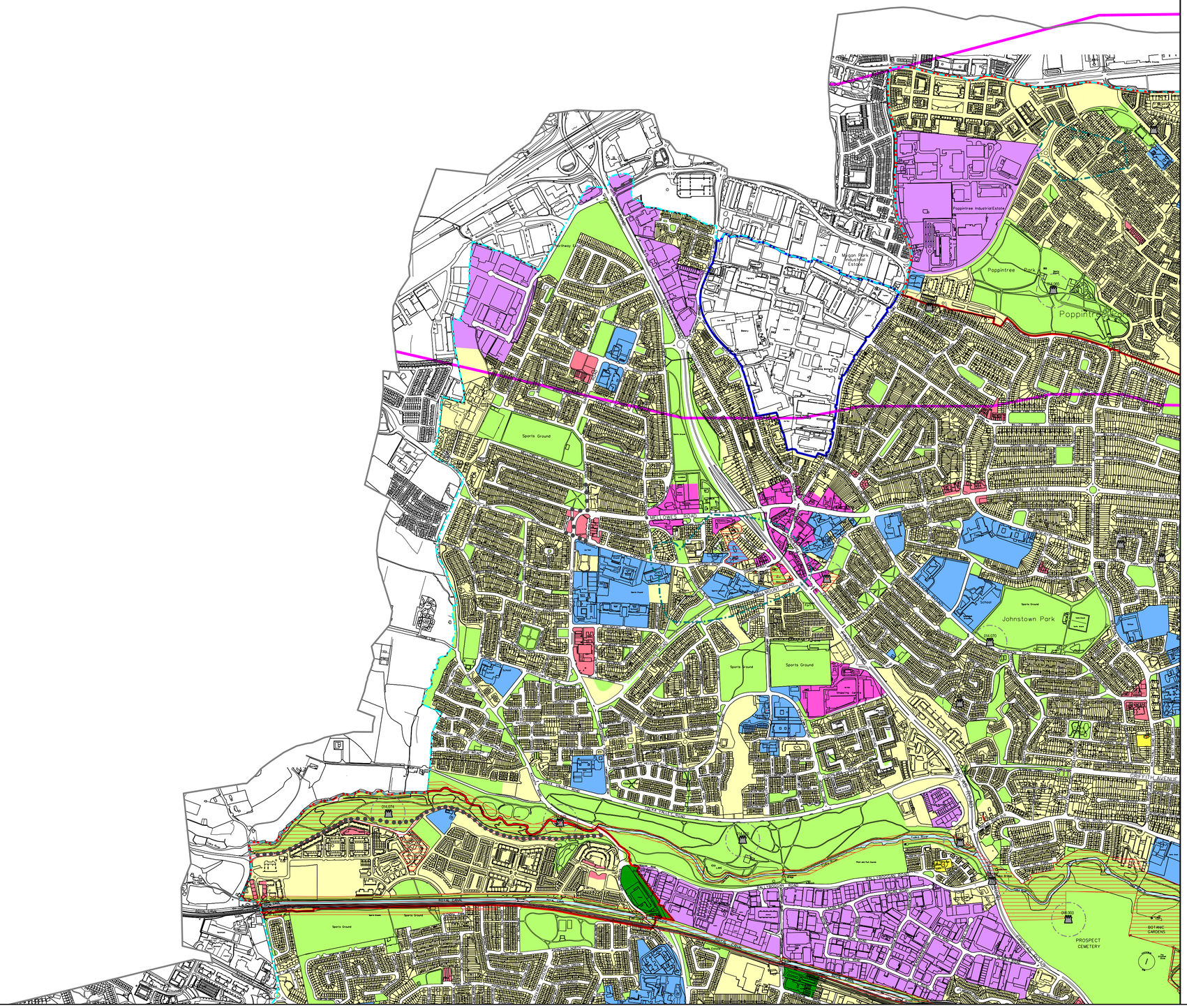
- The Register Of Hydrometric Stations in Ireland indicates that the Finglas Weir Gauging Station is a water level and flow recorder station and is currently inactive. The gauge datum recorded at this point is 17.502m. The Botanic Gardens Gauging Station is a water level and flow recorder station and is currently active. The gauge datum recorded at this point is 11.439m.

- The minimum finish floor proposed is 63.350m. The finish floor level is significantly higher than both of the gauge datum recorded. This indicates that the site is not at risk to possible flooding.

- The Strategic Flood Risk Assessment, Dublin City Development Plan contains a Composite Flood Zone Map. The map Indicates that the proposed development falls within a predictive Flood Zone C. There is no Zone A nor Zone B within the vicinity of the site. The nearest zone A or B is at the River Tolka 600m away.

- Overall, and in consideration of the findings and recommendations of this DFRA, it is considered that the development as proposed is not expected to result in an adverse impact to the hydrological regime of the area or to increase flood risk elsewhere and is therefore considered to be appropriate from a flood risk perspective.

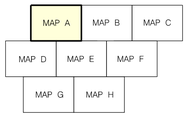
APPENDIX A – LAND USE ZONING MAP



Comhairle Cathrach Bhaile Átha Cliath
Dublin City Council

Dublin City Development Plan 2022-2028

Map A



PRIMARY LAND USE ZONING CATEGORIES[1]

- Zone Z1 Sustainable Residential Neighbourhoods
- Zone Z2 Residential Neighbourhoods (Conservation Areas)
- Zone Z3 Neighbourhood Centres
- Zone Z4 Key Urban Villages / Urban Villages
- Zone Z5 City Centre
- Zone Z6 Employment/Enterprise
- Zone Z7 Employment (Heavy)
- Zone Z8 Georgian Conservation Areas
- Zone Z9 Amenity /Open Space Lands /Green Network
- Zone Z10 Inner Suburban and Inner City Sustainable Mixed-Uses
- Zone Z11 Waterways Protection
- Zone Z12 Institutional Land (Future Development Potential)
- Zone Z14 Strategic Development and Regeneration Areas (SDRAs)
- Zone Z15 Community and Social Infrastructure

SPECIFIC OBJECTIVES

- Conservation Areas
- Architectural Conservation Areas
- Protected Structures, [RPS takes precedence] ***
- Record of Monuments and Places (RMP) as Established under Section 12 of the National Monuments (Amendment) Act 1994[3]
- Record of Monuments and Places (RMP) as Established under Section 12 of the National Monuments (Amendment) Act 1994
- National Monuments
- COMAH establishments (SEVESO establishments)
- LAP (Local Area Plan) & SDZ (Special Development Zone)
- Dublin Airport Outer Public Safety Zone
- Dublin Airport Noise Zones

ROADS
- Roads, Street and Bridge Schemes

1. Map to be read in conjunction with the written statement
2. Roads objectives are shown diagrammatically
3. *See Record of Monuments and Places (RMP) at https://www.archaeology.ie/publication-forms-guidelines/record-of-monuments-and-places.ie For updated information see the Historic Environment Viewer at https://maps.archaeology.ie/HistoricEnvironment/ The RMP does not include all known archaeological sites and monuments, given that further such sites and monuments are found on an ongoing basis. For that reason, it is very important in the context of considering proposed development to take account of all information available on the Historic Environment Viewer (HEV)
4. See written statement (Chapter 14) for full zoning text

City Boundary

Scale: 0 100 200 300 400 500 metres

John O'Hara
Dublin City Planner

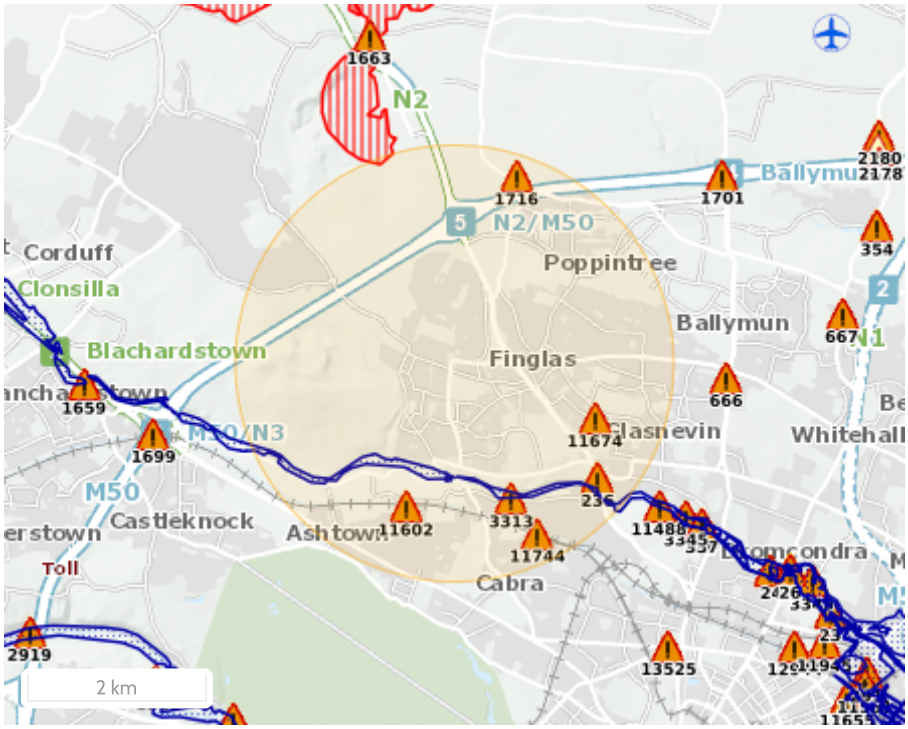
APPENDIX B – PAST FLOOD SUMMARY REPORT

Past Flood Event Local Area Summary Report

OPW Oifig na nOibreacha Poiblí Office of Public Works

Report Produced: **24/5/2023 17:09**

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



Map Legend

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

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

8 Results

	Name (Flood_ID)	Start Date	Event Location
1.	Dubber Cross Meakstown Swords Area Nov 2002 (ID-1716)	14/11/2002	Exact Point
	Additional Information: Reports (1) Press Archive (0)		
2.	Tolka Ballyboggan Road Nov 2000 (ID-3313)	05/11/2000	Approximate Point
	Additional Information: Reports (1) Press Archive (0)		
3.	Flooding at Broombridge Railway Station on 24th October 2011 (ID-11744)	23/10/2011	Exact Point
	Additional Information: Reports (1) Press Archive (0)		
4.	Tolka and Finglas Rivers August 1984 (ID-236)	25/08/1984	Exact Point
	Additional Information: Reports (2) Press Archive (0)		
5.	Finglas November 1965 (ID-675)	25/11/1965	Approximate Point
	Additional Information: Reports (1) Press Archive (2)		
6.	Tolka November 2002 (ID-5)	13/11/2002	Area
	Additional Information: Reports (143) Press Archive (13)		

	Name (Flood_ID)	Start Date	Event Location
7.	Flooding at Glendhu Park, Cabra, Dublin 7 on 24th Oct 2011 (ID-11602)	23/10/2011	Approximate Point
	Additional Information: Reports (1) Press Archive (0)		
8.	Flooding at Ballygall Crescent and Fairways Green, Finglas, Dublin 11 on 24th Oct 2011 (ID-11674)	23/10/2011	Exact Point
	Additional Information: Reports (1) Press Archive (0)		

APPENDIX C – DCC COMPOSITE FLOOD MAP

Comhairle Cathrach Bhaile Átha Cliath
Dublin City Council

Dublin City Development Plan 2022-2028

Composite Flood Map for Dublin City Council

Note: The Composite Flood Map, and all other map extracts, illustrate Flood Zone A, B and Defended Areas (in red), where defended areas indicates lands defended to the 1% AEP fluvial and /or the 0.5% AEP tidal flood events and should therefore be considered also to be Flood Zone A.

Flood Zone A

Flood Zone B

Flood Zone C

Defended

City Boundary

Refer To OPW Website – Floodinfo.ie

John O'Hara
Dublin City Planner