



**PROPOSED PART 8 RESIDENTIAL DEVELOPMENT
OLDTOWN MILL, CELBRIDGE.**

DESKTOP FLOOD RISK ASSESSMENT REPORT

**KILDARE COUNTY COUNCIL
December 2023**

Date: September 2023
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Contents Amendment Record



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1 INTRODUCTION

1.1 Introduction

This report is prepared in support of the planning application for National Development Finance Agency on behalf of Kildare County Council for a residential development on a site at Oldtown Mill Road, Celbridge, Co. Kildare

The proposed development includes:

- i. 60 no. residential units including 40 no. houses and 20 no. apartments comprising 20 no. one bed units; 15 no. two bed units; 21 no. three bed units; and 4 no. four bed units; with renewable energy design measures (which may be provided externally) for each housing unit.
- ii. Landscaping works including provision of (a) open space and kick about areas; (b) natural play features; and (c) new pedestrian and cycle connections.
- iii. Associated site and infrastructural works including provision for (a) 2 no. ESB substations and switchrooms; (b) car and bicycle parking; (d) public lighting; (e) temporary construction signage; (f) estate signage; and (g) varied site boundary treatment comprising walls and fencing.
- iv. All associated site development works, including removal of existing spoil from the site in advance of construction works.

The purpose of this Desktop Flood Risk Assessment (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 Liffey, Toolestown Stream and the Kilwoghan Stream.

2 PROPOSED SITE DESCRIPTION

2.1 Site Description

The proposed site is located west of Celbridge town centre, Co. Kildare. It is located approximately 4.3km northeast to Leixlip village, 5.8km east to Lucan village and 5.8km northwest to Maynooth village. The primary route of transportation is the Celbridge Interchange (Junction 6 of the M4) which connects the town to the motorway as well as the nearby town of Leixlip, Lucan and Maynooth.

The proposed site is boarded to the south and east by an existing residential development known as The Orchard and The Paddock, to the north by residential site currently under construction and to the west by agricultural land.

The total area of the proposed development site is approximately 1.71 hectares.

The location of the proposed site is illustrated on Figure 1 below.

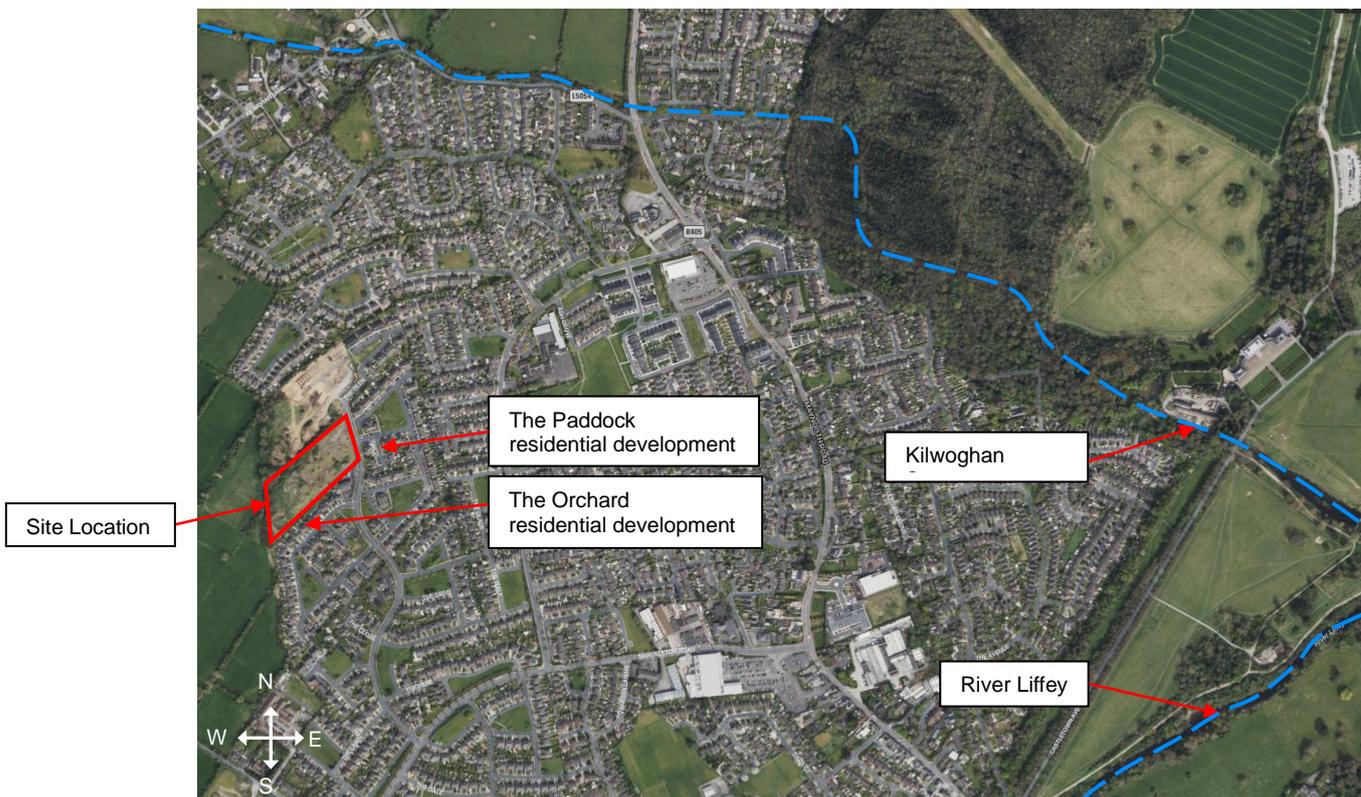


Figure 1 – Site Location showing the indicative Site Boundary

2.2 Surrounding Watercourse

The most significant hydrological feature in the vicinity of the site is the River Liffey, the Toolestown Stream and the Kilwoghan (Or Ballygoran) Stream.

The River Liffey is approximately 1.50km southeast of the site. At this location the River Liffey generally flows in a northeast direction. Figure 2 below shows the Toolestown Stream, approximately 0.69km south of the site, flowing in a easterly direction and connects with the River Liffey.

The Kilwoghan Stream is located approximately 0.73Km northeast of the site. At this location the Kilwoghan Stream generally flows in a south-easterly direction where it then enters the River Liffey.

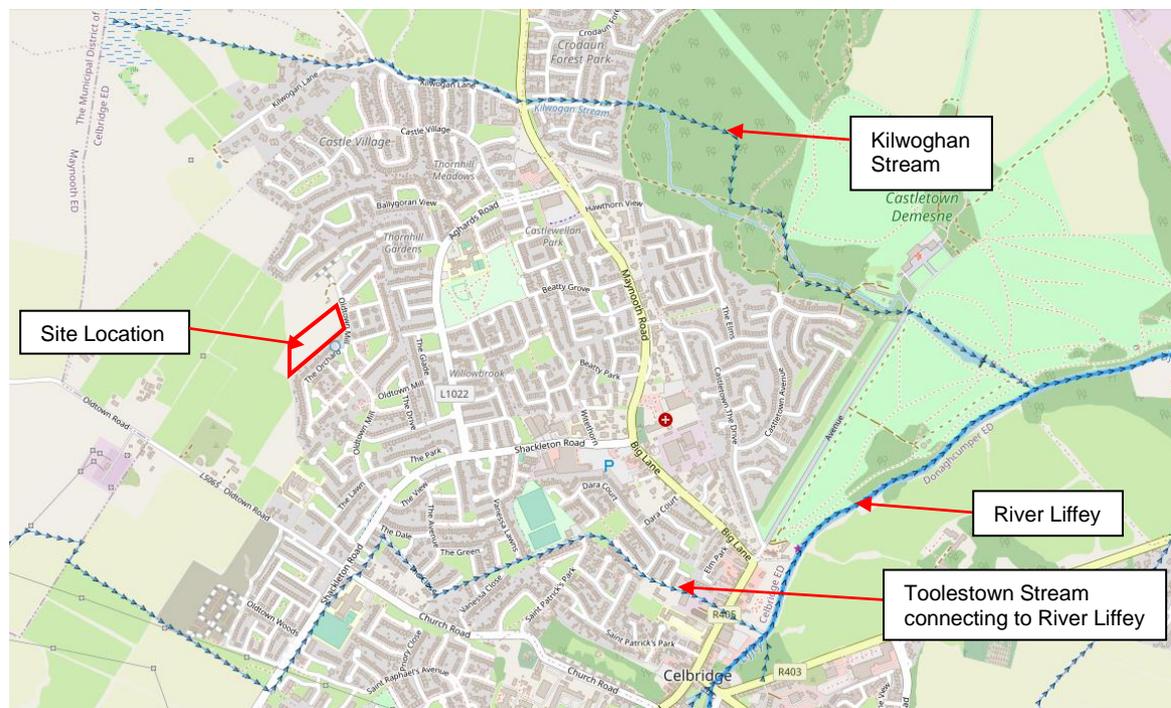


Figure 2 – Surrounding Watercourse
(Extract from the EPA Maps)

2.3 Land Use Zone

Land use zoning map is used in order to assess which types of developments, based on vulnerability to flood risk, are appropriate for each Flood Zone.

Where developments/land uses are proposed that are considered inappropriate to the Flood Zone that may be identified in the future at project level following adoption of the Plan, then a Development Management Justification Test and site-specific Flood Risk Assessment will be required in accordance with The Planning System and Flood Risk

Management Guidelines 2009 (and as updated). Refer to Table 1 below for land use / development types are categorised.

Vulnerability Class	Land Use 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;
Water compatible development Contd.	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).

*Table 1 - Matrix of Vulnerability vs. Flood Zone
 (Extract from the Strategic Flood Risk Assessment of the Kildare County Development Plan 2023-2029)*

Refer to Flood Risk Management Guidelines 2009 and 'Strategic Flood Risk Assessment for the Kildare County Development Plan (KCDP) 2023-2029' for additional detail:

- Highly vulnerable developments include houses, schools, hospitals, residential institutions, emergency services, essential infrastructure, etc.
- Less vulnerable developments include economic uses (retail, leisure, warehousing, commercial, industrial, non-residential institutions, etc.), land and buildings used for agriculture or forestry, local transport infrastructure, etc.

The development has taken a plan led approach to development having regard to the objectives in the KCDP 2023 – 2029, which seeks to promote compact development through the development of underutilised and brownfield sites. Zoned as Objective C New Residential in the Celbridge Local Area Plan 2017 – 2023 the objective is “to provide for New Residential Development”. Objective CS 09 in the KCDP seeks to “review and prepare on an ongoing basis a portfolio of Local Area Plans (LAPs) for the mandatory LAP settlements, including Celbridge”. The subject site is essentially an infill site within an established residential area and it is reasonable to anticipate that the subject land shall continue to be zoned in any forthcoming LAP”.

2.4 Existing Topography Levels at Site

A topographical survey has been carried out for the site. However, at the time of the survey there was a soil mound on the site from spoil off other developments in the area. There is a natural gentle slope across the site. The elevation at the southwest corner of the site is approximately +75.00m, this level is not the true level due to mounding on the site. It is proposed to reduce this mound to true levels approx. +69.50 to 71.50m. The land falls towards the southeastern corner of the site with a level of approximately +69.45m.

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
- Climate Change
- OPW Flood Records from www.floodmaps.ie
- Ordnance Survey Historic Mapping
- Strategic Flood Risk Assessment, Celbridge Local Area Plan 2017 – 2023

3.1 OPW/ EPA/ Local Authority Hydrometric Data

Existing sources of the OPQ, EPA and Local Authority hydrometric data were investigated. As illustrated in Figure 3 below, this assessment has determined that there is one hydrometric gauging stations on the River Liffey within the general vicinity of the development site.

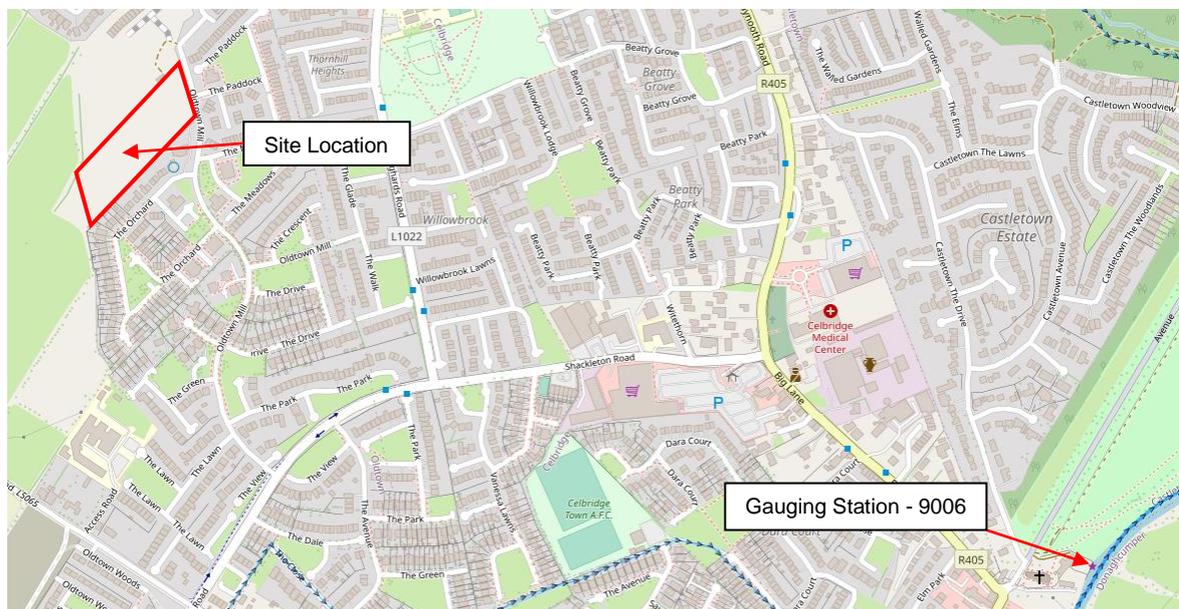


Figure 3 – Hydrometric Gauging Stations
(Extract from EPA Maps)

The Register of Hydrometric Stations in Ireland indicates that station 9006 is a water level and spot flow recorder and is currently active. The current gauge datum at this point is 48.079m. Using the information obtained from the hydrometric station, in order to permit a

sustainable development, it is recommended that the finished floor level of the site is higher than the current gauge datum of the site.

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, refer to Figure 4 below.

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

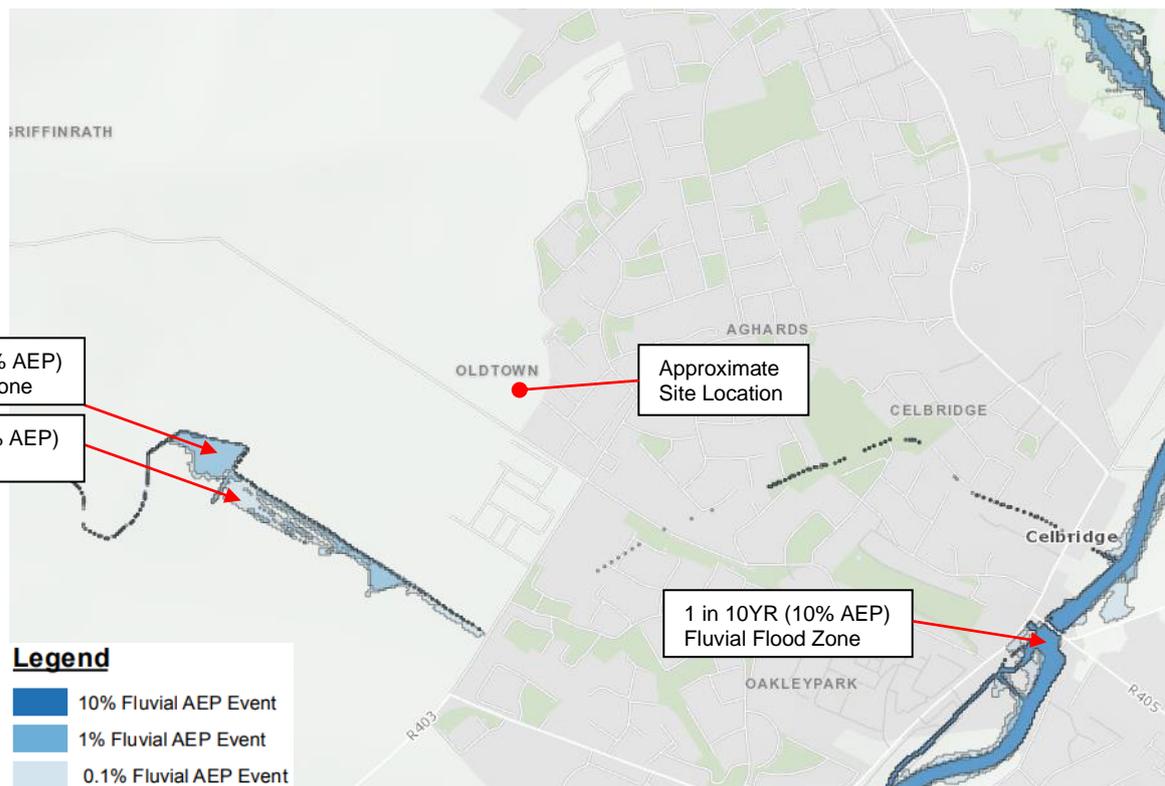


Figure 4 – CFRAM Fluvial Flood Extent Map
(Extract from OPW)

The PFRA flood mapping indicates that the proposed development site does not fall within the predicted extreme (AEP) of 10% (10yr event), 1% (100yr event) and 0.1% (1000yr event). Flooding is limited to the areas alongside the River Liffey and the connecting streams.

The CFRAMS flood map also provides information on predicted water levels for the 10% AEP (1 in 10 year), 1% AEP (1 in 100 year) and 0.1% AEP (1 in 1000 year) fluvial flood events at various node points along the River Liffey and connecting streams. One of the nearest CFRAM flood maps to the site does not extend to the site location. The node points are listed in Table 2 below. The location of the node points is indicated in Figure 5 and on the drawings in Appendix A. Predictive extreme flood levels at this node point are applicable to utilise in the assessment of potential fluvial flood risk to the proposed development site.

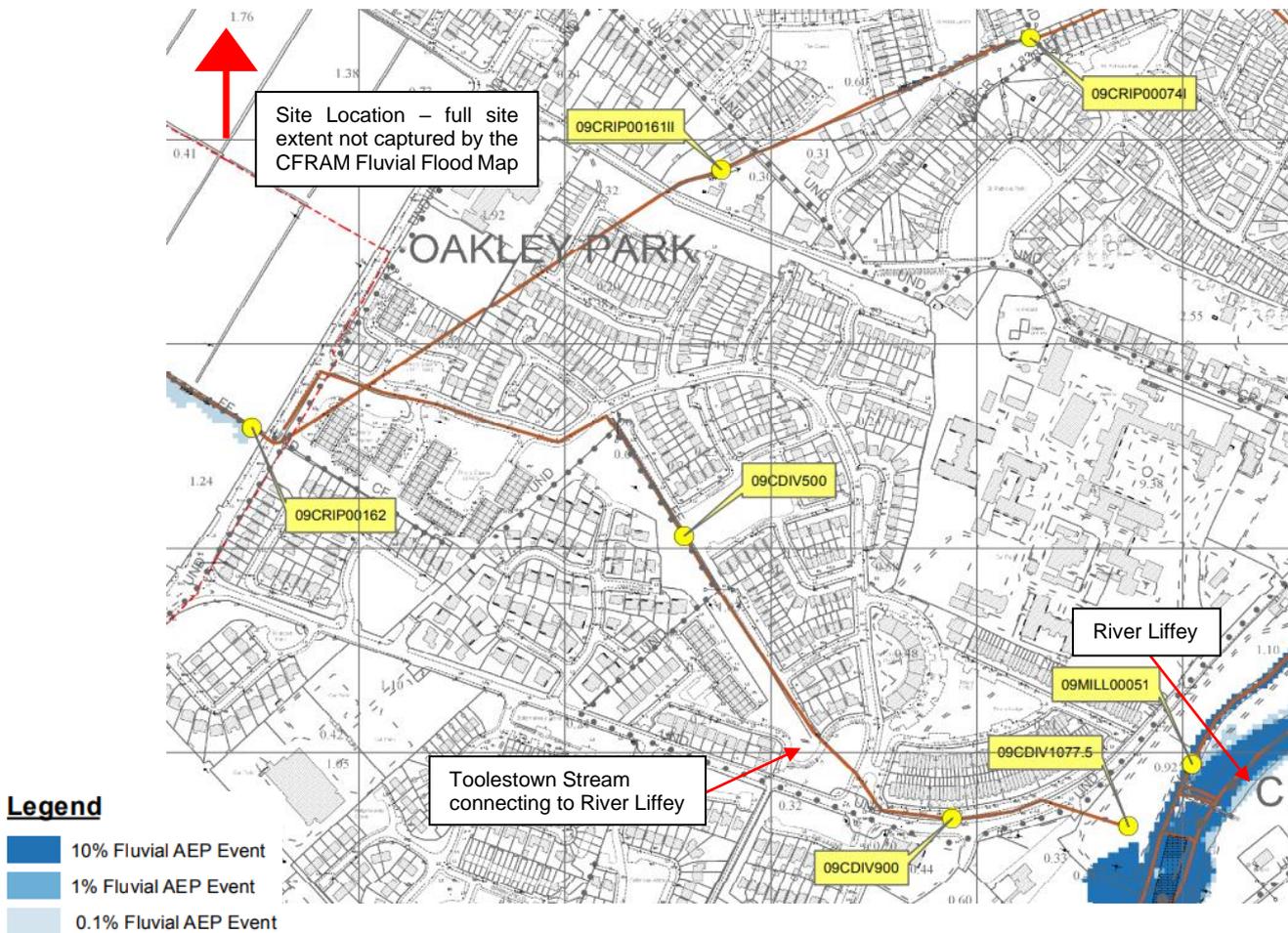


Figure 5 – Extract from PFRA Maps (Extract from OPW)

Node Label	Water Level (OD) 10% AEP	Flow (m ³ /s) 10% AEP	Water Level (OD) 1% AEP	Flow (m ³ /s) 1% AEP	Water Level (OD) 0.1% AEP	Flow (m ³ /s) 0.1% AEP
09CRIP00162	62.58	0.90	62.67	1.35	63.07	2.71
09CRIP00161II	60.44	N/A	60.60	N/A	61.12	N/A
09CRIP00074I	59.30	N/A	59.41	N/A	59.56	N/A
09CRIP00026	52.11	N/A	52.24	N/A	52.43	N/A
09CRIP00007	48.50	0.96	48.64	1.67	48.83	2.87
09MILL00051	49.16	N/A	49.30	N/A	49.48	N/A
09LIFF02761	50.04	100.22	50.24	130.53	50.53	182.63
09LIFF02730	49.42	100.23	49.49	130.53	49.61	180.77
09LIFF02701	48.44	N/A	48.75	N/A	49.14	N/A
09LIFF02658E	48.03	99.74	48.33	130.70	48.69	181.70
09LIFF02640	47.89	99.75	48.17	130.25	48.52	181.31
09LIFF02635	47.64	99.76	47.92	130.12	48.27	178.89
09LIFF02609	47.22	99.77	47.43	130.94	47.73	182.19
09CDIV500	58.24	N/A	58.32	N/A	58.62	N/A
09CDIV900	55.35	N/A	55.42	N/A	55.66	N/A
09CDIV1077.5	49.24	N/A	49.37	N/A	49.56	N/A

Table 2 – CFRAMS Predicted Water Levels

Another near CFRAM flood map to the site allows for the Kilwoghan Stream. The node points are listed in Table 3 below. The location of the node points is indicated in Figure 6 and on the drawings in Appendix A. Predictive extreme flood levels at these node points are applicable to utilise in the assessment of potential fluvial flood risk to the proposed development site.

Node Label	Water Level (OD) 10% AEP	Flow (m ³ /s) 10% AEP	Water Level (OD) 1% AEP	Flow (m ³ /s) 1% AEP	Water Level (OD) 0.1% AEP	Flow (m ³ /s) 0.1% AEP
09KILO00292	65.57	N/A	65.84	N/A	66.22	N/A
09KILO00272	65.56	0.45	65.83	0.78	66.19	1.44
09KILO00257	65.53	0.49	65.78	0.84	66.12	1.47
09KILO00209	64.32	N/A	64.54	N/A	64.99	N/A
09KILO00165	61.80	N/A	61.92	N/A	61.96	N/A

Table 3 – CFRAMS Predicted Water Levels

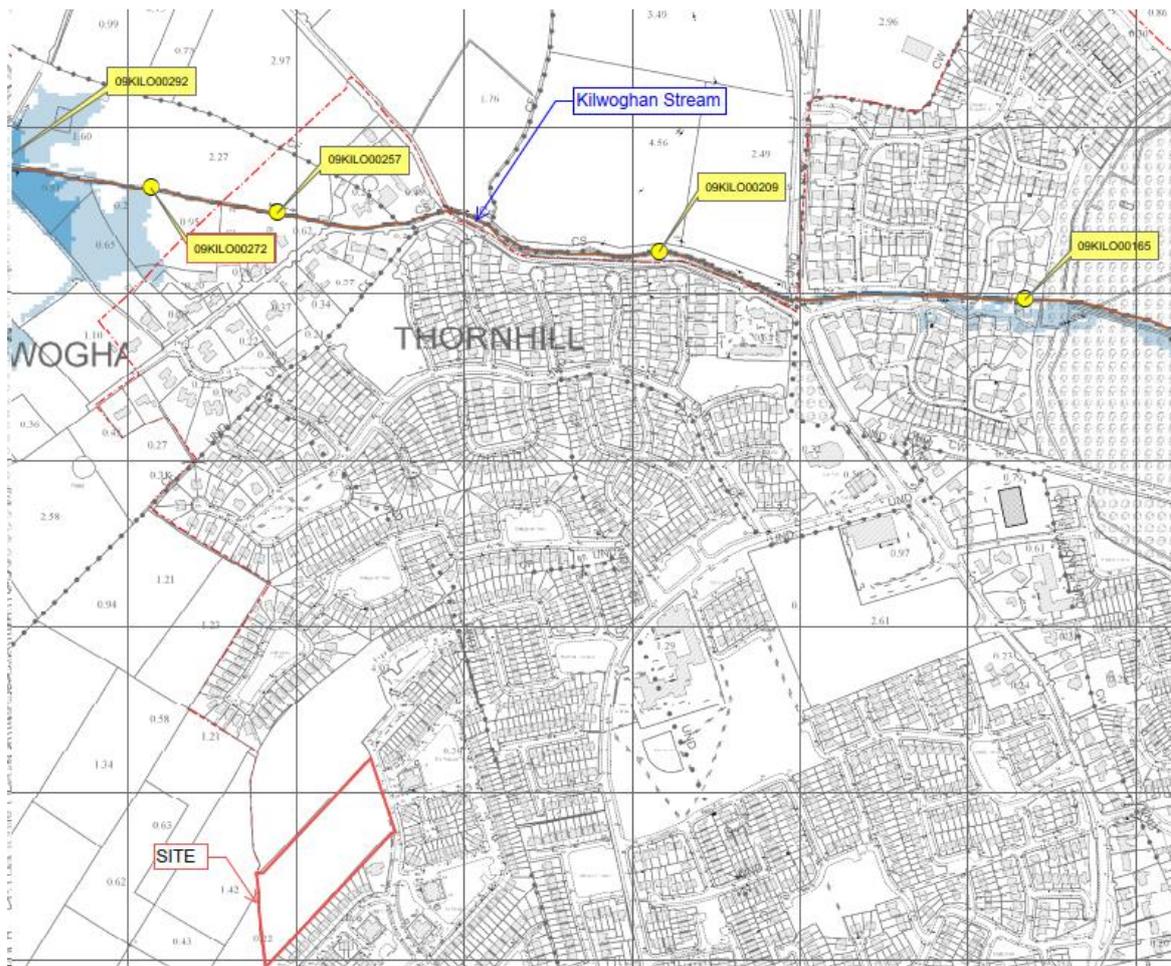


Figure 6 – Extract from PFRA Maps (Extract from OPW)

According to the SFRA of the Kildare County Development Plan 2023 – 2029 the recommended “*minimum finished floor level for a less vulnerable development should be above the Flood Zone A (1% AEP) level plus freeboard. The recommended level of freeboard is 500mm for fluvial flood levels*”.

The node point closest to the site near the Toolestown Stream is referenced as node point *09CRIP00162*. The 1% AEP (1 in 100 year) flood level at this point is predicted as 62.67m. The node point closest to the site near the Kilwoghan Stream is referenced as node point *09KIL000272*. The 1% AEP (1 in 100 year) flood level at this point is predicted as 65.83m. Thus, the Kilwoghan Stream records are more onerous and should be taken as the reference levels.

Using the information obtained from the predicted flood level, in order to permit a sustainable development of this site and to mitigate against potential residual flood risk to the development it is recommended that the finished floor level = 65.83m + 0.5m = 66.33m.

3.3 Climate Change

'The Planning System and Flood Risk Management Guidelines for Planning Authorities and Technical Appendices, 2009' recommends that a precautionary approach to climate change is adopted due to the level of uncertainty involved in the potential effects.

Advice on the expected impacts of climate change and the allowances to be provided for future flood risk management in Ireland is given in the OPW Draft Guidance on Assessment of Potential Future Scenarios for Flood Risk Management (2009).

Two climate change scenarios are considered. These are the mid-range future scenario (increase in rainfall of 20% and sea level rise of 500mm) and the high-end future scenario (increase in rainfall of 30% and sea level rise of 1000mm. The mid-range future scenario is intended to represent a "likely" future scenario based on the wide range of future predictions available. The high-end future scenario represents a more "extreme" future scenario at the upper boundaries of future projections.

Figure 7 below, illustrates that the site does not fall within a mid-range and high-end future scenario.

To mitigate against flood risk, when designing for extreme rainfall events the system will be designed for storms up to and including 1 in 100-year storm and 20% extra for climate change. Hence the development can be considered to climate change resilient.

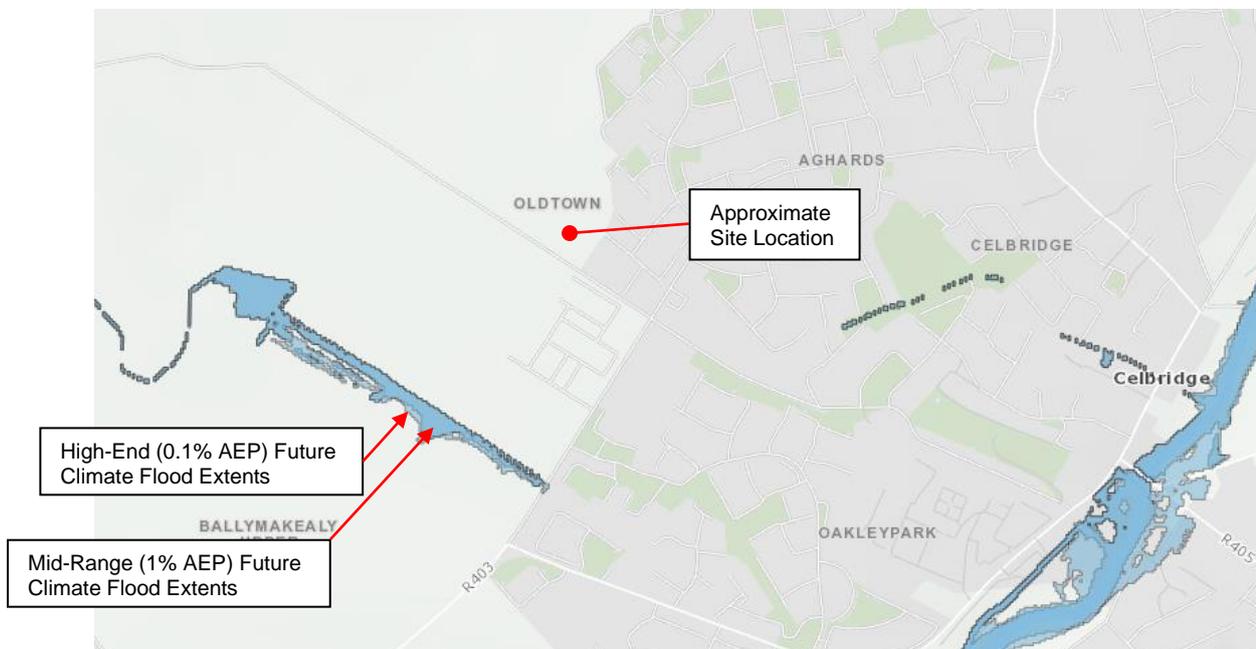


Figure 7 – Future Climate Change Scenario Flood Mapping
(Extract from OPW)

3.4 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 15 recorded flood events within a 2.5km radius of the proposed site.

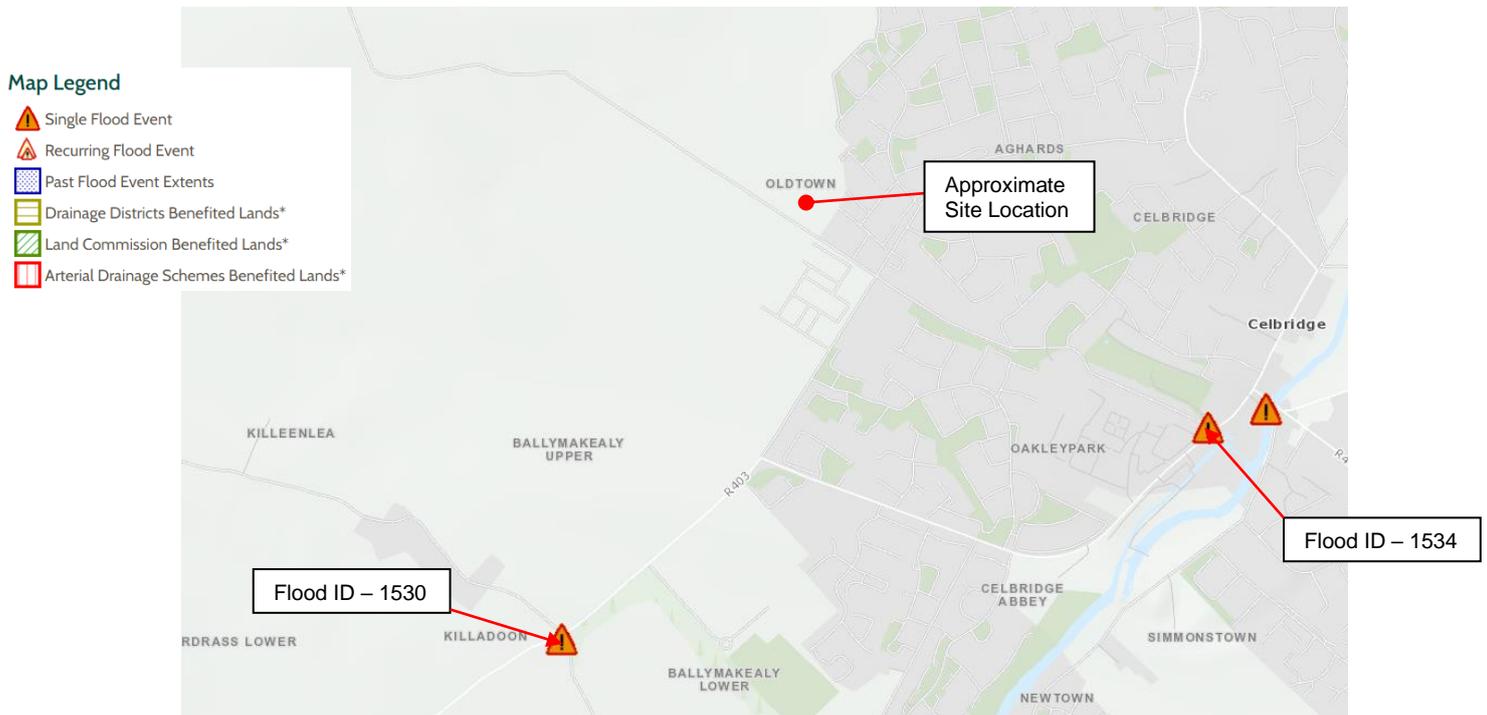


Figure 8 – OPW Flood Event Summary (Extract from OPW)

Figure 8 indicates various historical flooding events within Celbridge Village, however there are no recorded recurring instances of flood events mapped within the immediate vicinity of the site. Recorded flood events are limited to the areas alongside the River Liffey and the connecting stream.

A past flood event occurred on the 14th – 15th November 2002 (Flood ID – 1534) as a result of heavy rainfall. Flooding occurred on Oldtown Road Junction at the Mill. Two premises in the Mill flooded with water flowing down Oldtown Road and straight into the building.

(Flood ID – 1530) OPW report is provided of minutes of meeting held in April 2005 by the Kildare – Maynooth Area Engineer identifying areas subject to flooding. The area engineer and his supervisor outlines 22 areas that are or were prone to flooding.

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

3.5 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 9 below illustrates the historic mapping for the area of the proposed development site.

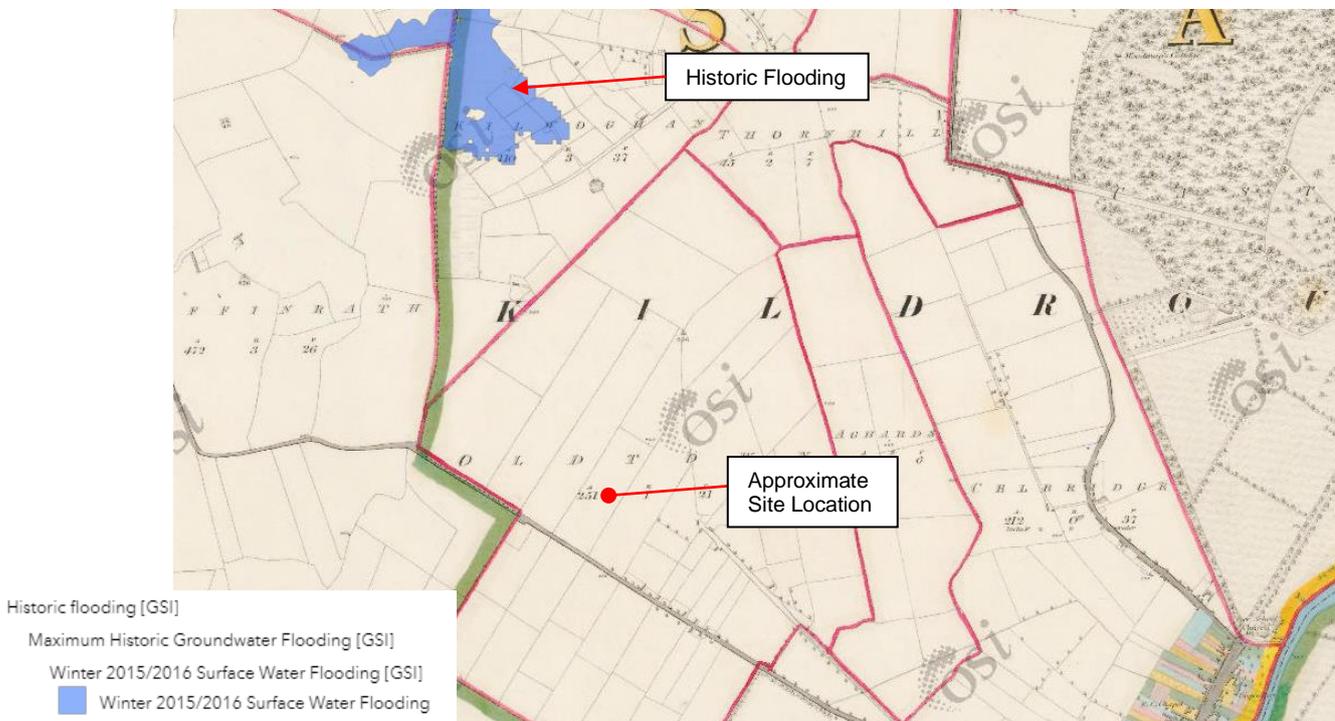


Figure 9 – Historic 6 Inch Mapping (Extract from GSI)

Figure 9 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.

3.6 Strategic Flood Risk Assessment Guidelines

3.6.1 Strategic Flood Risk Assessment Map

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 Kildare County Development Plan 2023 - 2029.

The SFRA contains an SFRA Map, the map is included in Appendix C and an extract is shown in Figure 10. This Figure 10 indicates that the proposed development site falls within a predictive Flood Zone C scenario.

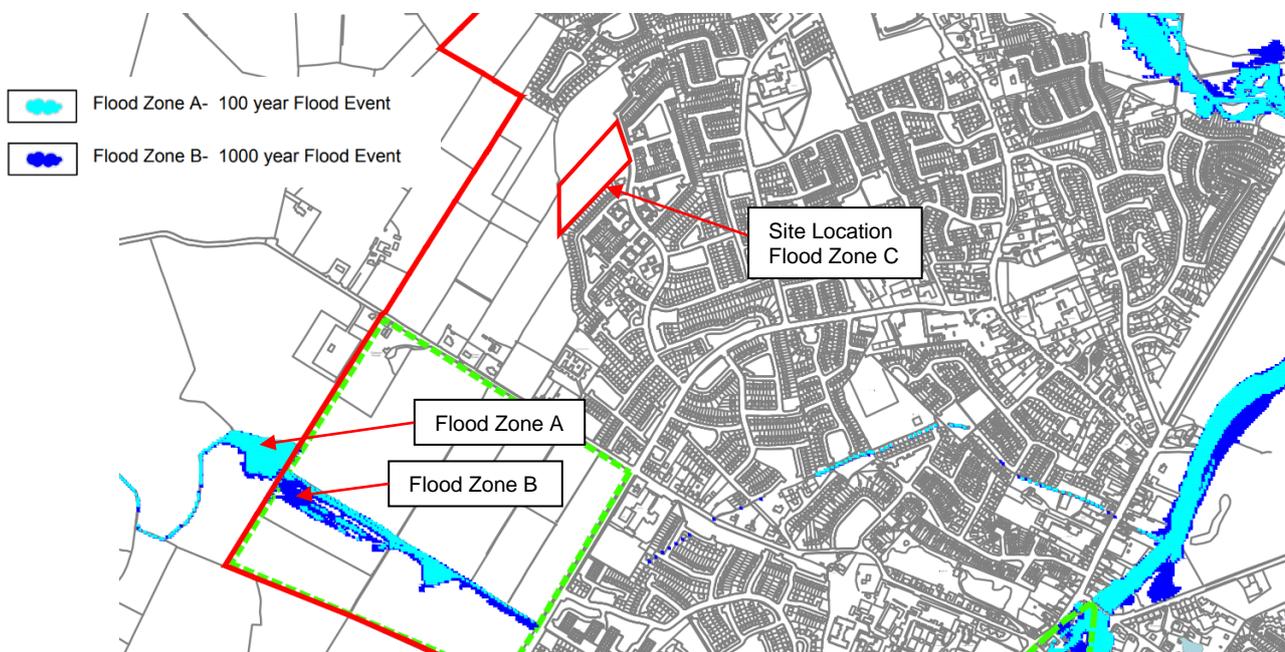


Figure 10 – Composite Flood Map
(Extract from the SFRA of the Celbridge Local Area Plan Guidelines)

3.6.1 Justification Test

The Guidelines direct new development primarily towards areas at low risk of flooding. The Guidelines recognise that flood risks should not be the only deciding factor in zoning for development; the Guidelines recognise that circumstances will exist where development of a site in 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 Guidelines provide a Justification Test, which establishes the criteria under which desirable development of a site in a floodplain may be warranted.

The outline for the justification test is given in the Kildare County Development Plan 2023-2029 table 3.4 shown below.

Justification Test for Development Plans

1. The Regional Spatial Economic Strategy for the Eastern Midlands Region 2019 - 2031 sets out the planned direction for growth within the Greater Dublin Area up to 2031 by giving regional effect to national planning policy under Project Ireland 2040; the National Planning Framework & its Implementation Roadmap.

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,
 - ii. Comprises significant previously developed and/or under-utilised lands,
 - iii. Is within or adjoining the core of an established or designated urban settlement,
 - iv. Will be essential in achieving compact and sustainable urban growth, and
 - 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.

3. A flood risk assessment to an appropriate level of detail has been carried out as part of the Strategic Environmental Assessment as part of the development plan preparation process, which demonstrates that flood risk to the development can be adequately managed and the use or development of the lands will not cause unacceptable adverse impacts elsewhere.

N.B. The acceptability or otherwise of levels of any residual risk should be made with consideration for the proposed development and the local context and should be described in the relevant flood risk assessment

In cases where existing zoned lands are discovered to be within flood zones, the Development Plan Justification Test has been applied, and it is demonstrated that it cannot meet the specified requirements it is recommend that planning authorities reconsider the zoning by implementing one of the following:

- Remove the existing zoning for all types of development on the basis of the unacceptable high level of flood risk;
- Reduce the zoned area and change or add zoning categories to reflect the flood risk; or
- Replace the existing zoning with a zoning or a specific objective for less vulnerable uses.

If the criteria of the Justification Test have been met, the design of structural or non-structural flood risk management measures can be applied as prerequisites to development in specific areas. These measures must ensure that flood hazard and risk to other locations will not be increased or, if practicable, be reduced. The mitigation measures are required prior to development taking place.

Table 3 – Justification Test for Development Plans (Extract from the SFRA of the Kildare County Development Plan 2023-2029 Table 3.4)

4 SEQUENTIAL APPROACH TO PLANNING

The document “Planning Systems and Flood Risk Management: Guidelines for Planning Authorities November 2009” requires the adoption of a sequential approach to flood risk management when assessing the location for new developments. This approach is a risk-based method to guide development away from areas that have been identified through flood risk assessment as being at risk from flooding. The philosophy used in this approach is outlined in Figure 11 below.

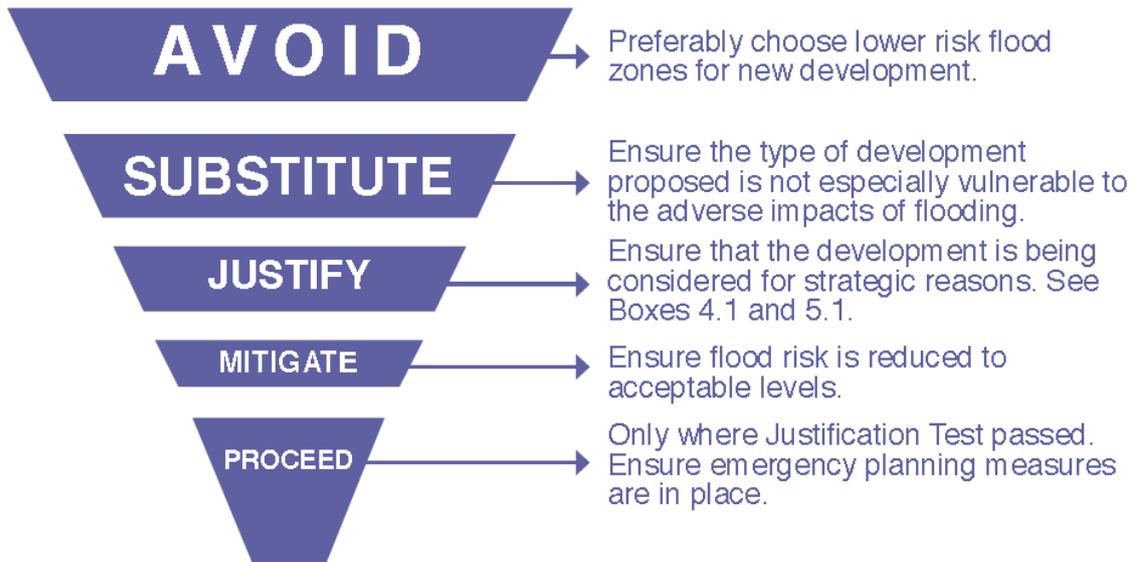


Figure 11 Source: *The Planning Systems and Flood Risk Management: Guidelines for Planning Authorities November 2009*

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

4.1 Flood Zones

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

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

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

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

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

4.2 Vulnerability Class of Proposed Development

The vulnerability class of the development is dependent on the land use and type of development proposed. See Table 4 for the vulnerability classes.

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

Table 4 - 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)

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

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

5 SUMMARY AND CONCLUSIONS

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

The site is not located near any major open watercourse. The most significant hydrological feature is the River Liffey which is located approximate 1.5km to the southeast of the site.

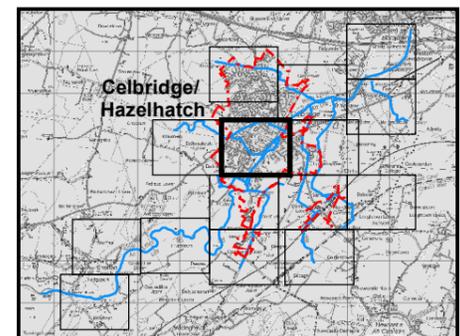
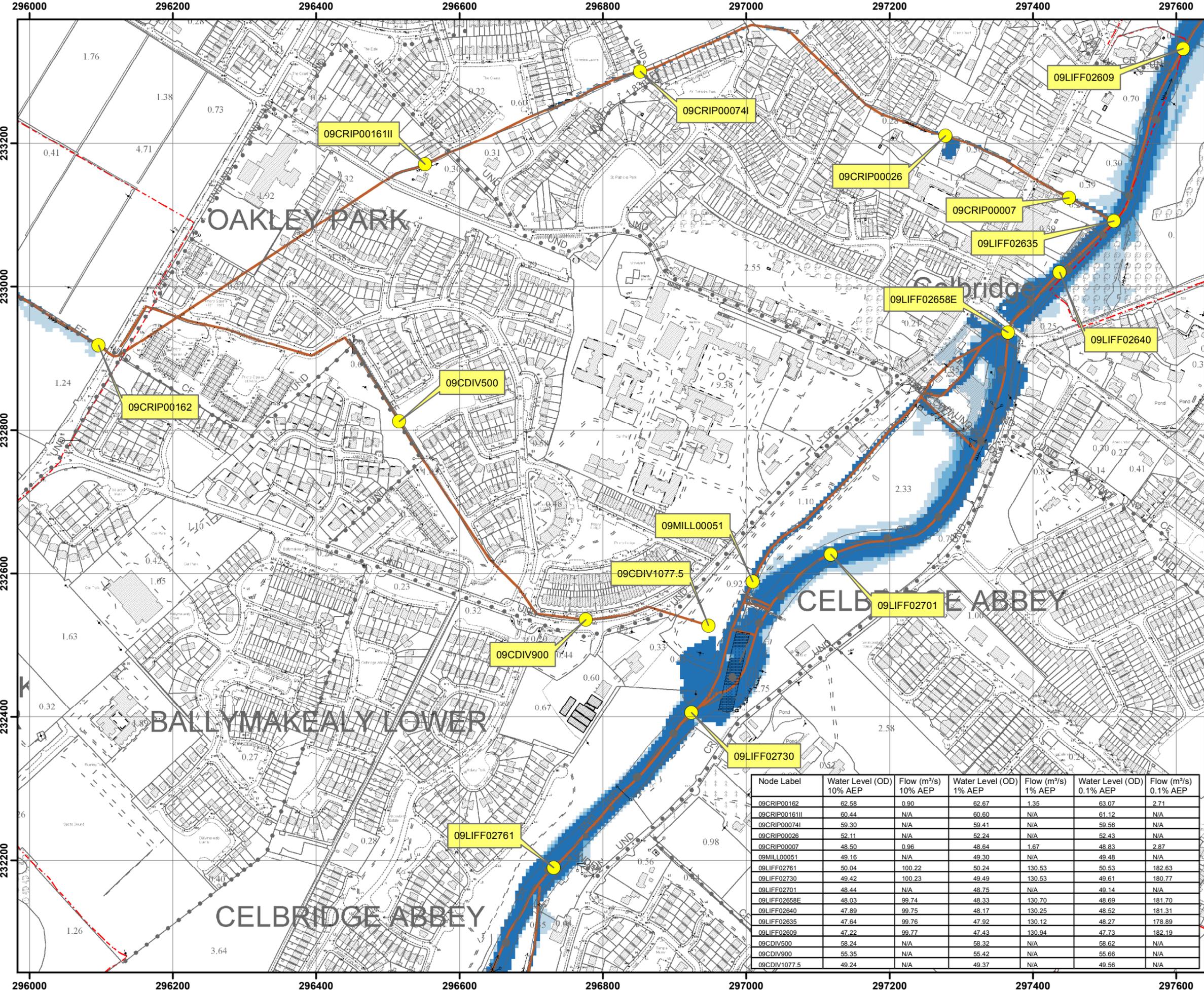
The PFRA flood mapping carried out by the OPW indicates that the proposed development site does not fall within the predicted extreme 0.1% (1 in 1000 year).

The node point closest to the site is referenced as node point 09CRIP00162. The 1% AEP (1 in 100 year) flood level at this point is predicted as 65.83m respectively.

According to the SFRA of the Kildare County Development Plan 2023 – 2029 the recommended *“minimum finished floor level for a less vulnerable development should be above the Flood Zone A (1% AEP) level plus freeboard. The recommended level of freeboard is 500mm for fluvial flood levels”* i.e., the recommend minimum finished floor level is = 65.83m + 0.5m = 66.33m. the lowest finished floor level for the development is 69.70m OD.

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

APPENDIX A – CFRAM FLUVIAL FLOOD EXTENTS MAP



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
- Node Point
- Node ID
- Node Label

FINAL

REV: 01	NOTE: Model update on Crippaun watercourse	DATE: 15/05/2017
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The Office of Public Works
 Jonathan Swift Street
 Trim
 Co Meath

Elmwood House
 74 Boucher Road
 Belfast
 BT12 6RZ
 E ireland@rpsgroup.com

Node Label	Water Level (OD) 10% AEP	Flow (m ³ /s) 10% AEP	Water Level (OD) 1% AEP	Flow (m ³ /s) 1% AEP	Water Level (OD) 0.1% AEP	Flow (m ³ /s) 0.1% AEP
09CRIP00162	62.58	0.90	62.67	1.35	63.07	2.71
09CRIP00161II	60.44	N/A	60.60	N/A	61.12	N/A
09CRIP00074I	59.30	N/A	59.41	N/A	59.56	N/A
09CRIP00026	52.11	N/A	52.24	N/A	52.43	N/A
09CRIP00007	48.50	0.96	48.64	1.67	48.83	2.87
09MILL00051	49.16	N/A	49.30	N/A	49.48	N/A
09LIFF02761	50.04	100.22	50.24	130.53	50.53	182.63
09LIFF02730	49.42	100.23	49.49	130.53	49.61	180.77
09LIFF02701	48.44	N/A	48.75	N/A	49.14	N/A
09LIFF02658E	48.03	99.74	48.33	130.70	48.69	181.70
09LIFF02640	47.89	99.75	48.17	130.25	48.52	181.31
09LIFF02635	47.64	99.76	47.92	130.12	48.27	178.89
09LIFF02609	47.22	99.77	47.43	130.94	47.73	182.19
09CDIV500	58.24	N/A	58.32	N/A	58.62	N/A
09CDIV900	55.35	N/A	55.42	N/A	55.66	N/A
09CDIV1077.5	49.24	N/A	49.37	N/A	49.56	N/A



Map:
 Celbridge Fluvial Flood Extents

Map Type: EXTENT

Source: FLUVIAL

Map Area: HPW

Scenario: CURRENT

Drawn By: F.M.C. **Date:** 19 May 2017

Checked By: S.P. **Date:** 19 May 2017

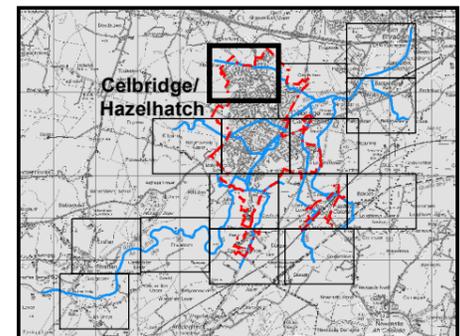
Approved By: G.G. **Date:** 19 May 2017

Drawing No.:
 E09CEL_EXFCD_F1_07

Map Series: Page 7 of 15

Drawing Scale: 1:5,000 @A3

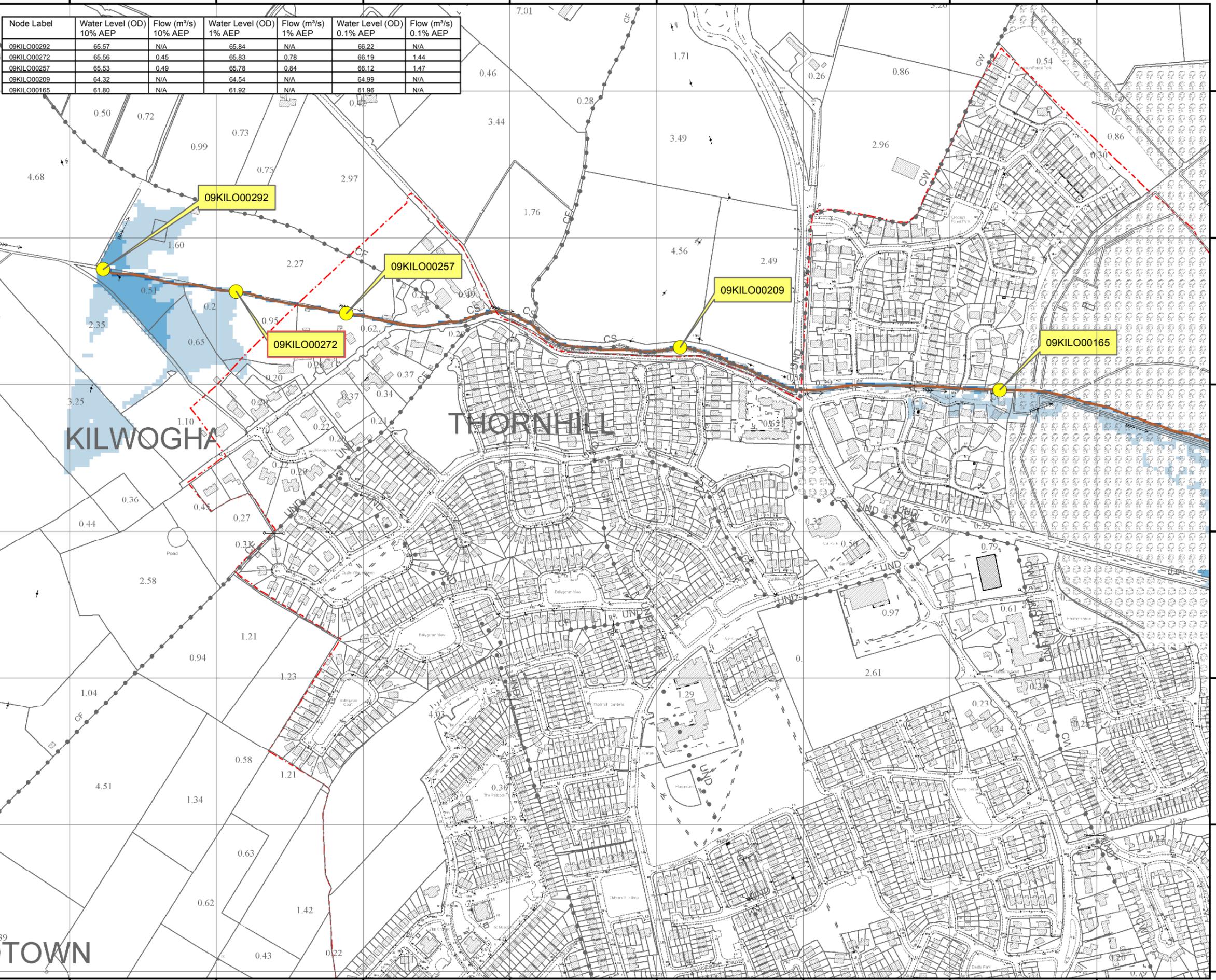
Node Label	Water Level (OD) 10% AEP	Flow (m³/s) 10% AEP	Water Level (OD) 1% AEP	Flow (m³/s) 1% AEP	Water Level (OD) 0.1% AEP	Flow (m³/s) 0.1% AEP
09KILO00292	65.57	N/A	65.84	N/A	66.22	N/A
09KILO00272	65.56	0.45	65.83	0.78	66.19	1.44
09KILO00257	65.53	0.49	65.78	0.84	66.12	1.47
09KILO00209	64.32	N/A	64.54	N/A	64.99	N/A
09KILO00165	61.80	N/A	61.92	N/A	61.96	N/A



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
- Node Point
- Node ID
- Node Label



FINAL

REV: 01	NOTE: Model update on Crippaun watercourse	DATE: 15/05/2017
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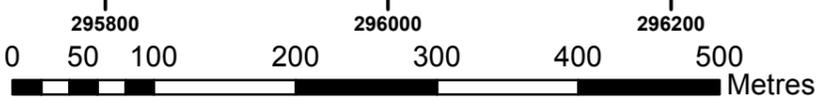


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Map: Celbridge Fluvial Flood Extents	
Map Type: EXTENT	
Source: FLUVIAL	
Map Area: HPW	
Scenario: CURRENT	
Drawn By: F.M.C.	Date: 19 May 2017
Checked By: S.P.	Date: 19 May 2017
Approved By: G.G.	Date: 19 May 2017
Drawing No.: E09CEL_EXFCD_F1_08	
Map Series: Page 8 of 15	
Drawing Scale: 1:5,000 @A3	



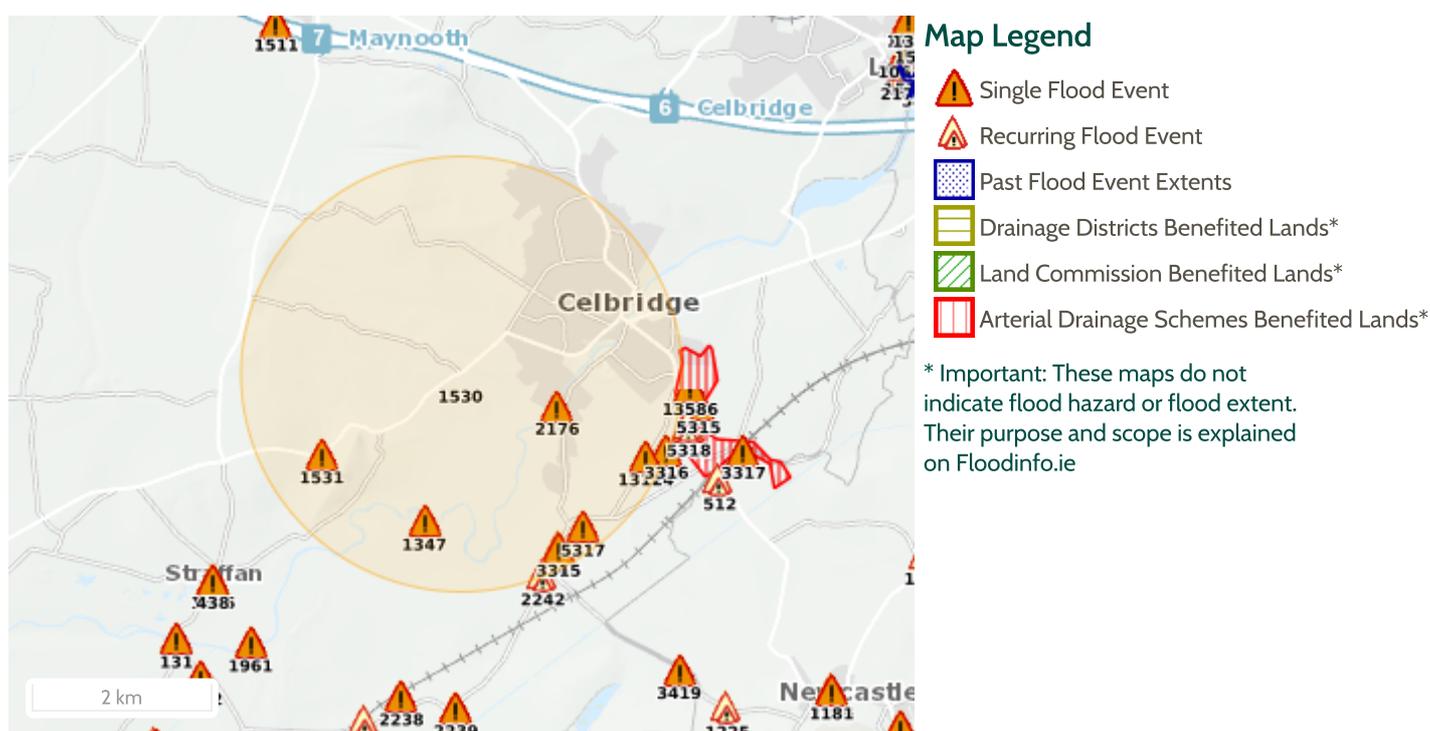
APPENDIX B – PAST FLOOD SUMMARY REPORT



Report Produced: 25/5/2023 12:45

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*

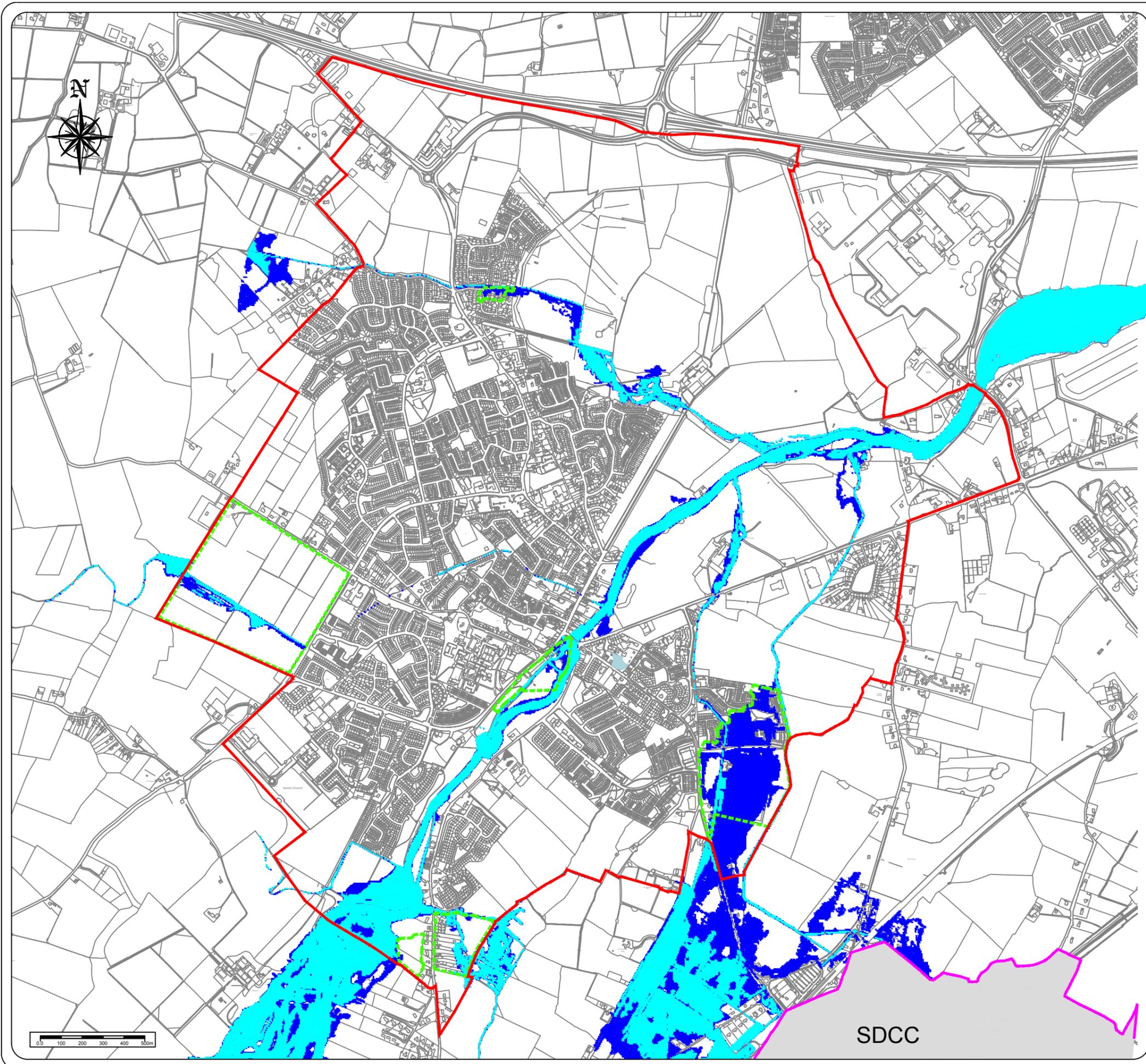
* Important: These maps do not indicate flood hazard or flood extent. Their purpose and scope is explained on Floodinfo.ie

15 Results

Name (Flood_ID)	Start Date	Event Location
1. Liffey Temple Mills Dec 1954 (ID-2176) Additional Information: Reports (4) Press Archive (3)	08/12/1954	Exact Point
2. Common Upper Nov 2000 (ID-3315) Additional Information: Reports (2) Press Archive (0)	05/11/2000	Approximate Point
3. Dangan Corner Nov 2000 (ID-5317) Additional Information: Reports (1) Press Archive (0)	05/11/2000	Approximate Point
4. Commons Upper Ardclough April 1998 (ID-3667) Additional Information: Reports (1) Press Archive (0)	09/04/1998	Approximate Point
5. Liffey Celbridge June 1993 (ID-9) Additional Information: Reports (6) Press Archive (7)	10/06/1993	Approximate Point
6. Liffey Celbridge Dec 1954 (ID-128) Additional Information: Reports (4) Press Archive (2)	08/12/1954	Approximate Point

Name (Flood_ID)	Start Date	Event Location
7.  Commons Upper Dangan Recurring (ID-1537) Additional Information: Reports (2) Press Archive (0)	n/a	Approximate Point
8.  Liffey Straffan to Celbridge June 1993 (ID-1347) Additional Information: Reports (3) Press Archive (1)	09/06/1993	Approximate Point
9.  Clane Road, Ballymakealy Celbridge Nov 2002 (ID-1530) Additional Information: Reports (2) Press Archive (0)	14/11/2002	Approximate Point
10.  Clane Road, Ardrass Celbridge Nov 2002 (ID-1531) Additional Information: Reports (2) Press Archive (0)	14/11/2002	Approximate Point
11.  Ardclough Road, Dangan Corner Nov 2002 (ID-1532) Additional Information: Reports (2) Press Archive (0)	14/11/2002	Approximate Point
12.  Oldtown Road Junction, Celbridge Nov 2002 (ID-1534) Additional Information: Reports (2) Press Archive (2)	14/11/2002	Approximate Point
13.  Ardclough Commons Upper recurring (ID-2242) Additional Information: Reports (2) Press Archive (0)	01/11/2000	Approximate Point
14.  Commons Lower Nov 2000 (ID-3316) Additional Information: Reports (1) Press Archive (0)	05/11/2000	Approximate Point
15.  Flooding at Hazelhatch on 08/11/2014 (ID-13124) Additional Information: Reports (0) Press Archive (0)	08/11/2014	Approximate Point

APPENDIX C – CELBRIDGE LAP SFRA MAP



Kildare County Council
 Planning Department
 Áras Chill Dara,
 Devoy Park, Naas,
 Co Kildare.

Celbridge Local Area Plan 2017-2023

- Legend :**
-  Local Area Plan Boundary
 -  Kildare County Boundary
 -  Rivers, Canal & Lakes
 -  Flood Zone A- 100 year Flood Event
 -  Flood Zone B- 1000 year Flood Event
 -  Development proposals for lands outlined thus are to be the subject of site-specific Flood Risk Assessment appropriate to the type and scale of the development being proposed

Strategic Flood Risk Assessment Map

Scale : N.T.S	Map Ref : 9.1		
Date: September 2017	Drawing No: 200/17/888		
© Ordnance Survey Ireland. All rights reserved. Licence No.: 2004/07CCMA (Kildare County Council)	<table border="1"> <tr> <td>Drawn by: N.H.</td> <td>Checked by: L.C.</td> </tr> </table>	Drawn by: N.H.	Checked by: L.C.
Drawn by: N.H.	Checked by: L.C.		

This drawing is to be read in conjunction with the written statement

SDCC