Document Title

Site-Specific Flood Risk Assessment

Project

Proposed Residential Development at Anglesea Terrace, Old Station Road, Cork

Client

Land Development Agency on behalf of Cork City Council

H105-CSC-ZZ-XX-RP-C-0001

Job No. H105

8 October 2025

CS CONSULTING
Civil, Structural & Traffic Engineering

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SITE-SPECIFIC FLOOD RISK ASSESSMENT

PROPOSED RESIDENTIAL DEVELOPMENT AT ANGLESEA TERRACE, OLD STATION ROAD, CORK

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1.0 INTRODUCTION

Cronin & Sutton Consulting Engineers (CS Consulting) have been commissioned by Land Development Agency on behalf of Cork City Council to prepare a Site-Specific Flood Risk Assessment (SSFRA) for a proposed residential development at Anglesea Terrace, Old Station Road, Cork.

In preparing this report, CS Consulting has made reference to the following:

- Cork City Development Plan 2022–2028
  (including Strategic Flood Risk Assessment)
- The Planning System and Flood Risk Management: Guidelines for Planning Authorities 2009 (Flood Risk Management Guidelines)
- Office of Public Works Flood Maps
- Geological Survey of Ireland Maps

The SSFRA is to be read in conjunction with the engineering drawings and documents submitted by CS Consulting and with all other relevant documentation submitted by other members of the project design team.

1.1 Site Location

The proposed development site is located along Old Station Road to the North, the South link Road bounds the site to the east and Anglesea Terrace is located to the south. The site is located in the administrative jurisdiction of Cork City Council.

Figure 1 – Location of proposed development site
(sources: EPA, OSi, Osi, NTA, OSM Contributors, Google)

The location of the subject lands is shown in **Figure 1**. The extents and context of the development site are shown in more detail in **Figure 2**.

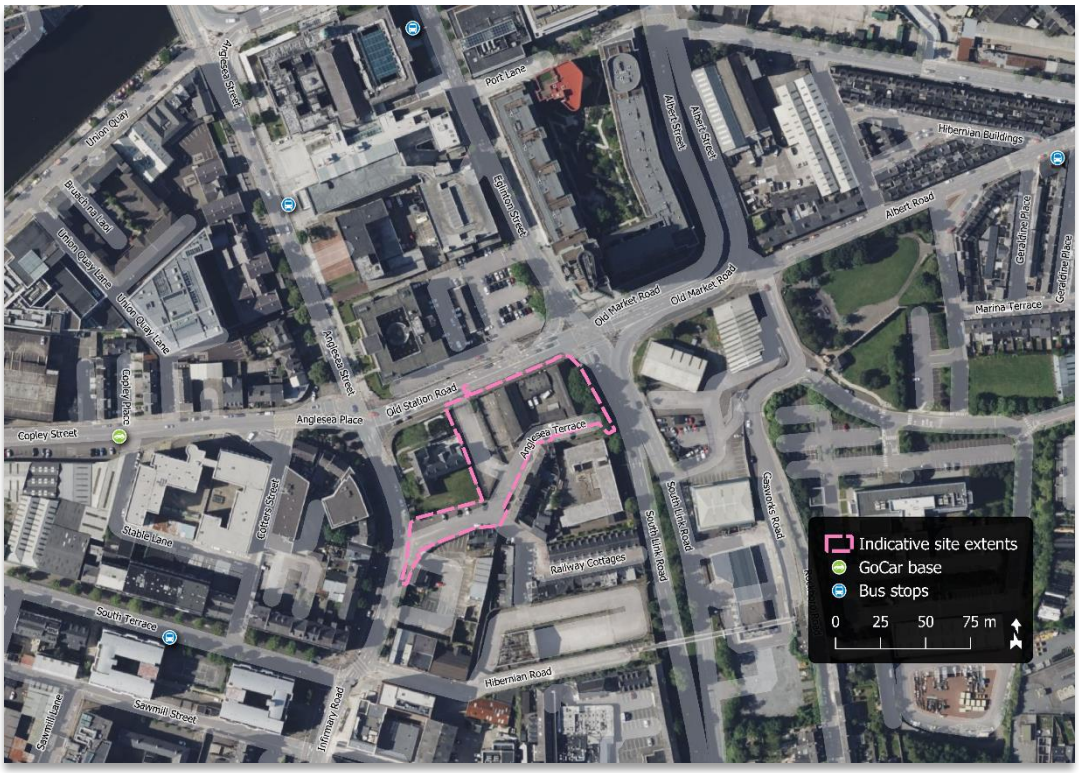

Figure 2 – Subject lands extents and environs
(sources: NTA, GoCar, OSM Contributors, Google)

The development site is bound to the east by South Link Road, to the north by Old Station Road, to the west by existing building and to the south by Anglesea Terrace.

1.2 Existing Site Condition

The proposed development site comprises of existing buildings and hard standing area. There are existing surface level car parking spaces within the development site.

1.3 Description of Proposed Development

The development proposes the demolition of existing structures and construction of 147 no. residential units and 3 mixed-use units located at Anglesea Terrace, Old Station Road, Cork. Please refer to the description of development in the Architects Design Statement for further details.

2.0 LEVEL OF SERVICE AND FLOOD RISK ZONING

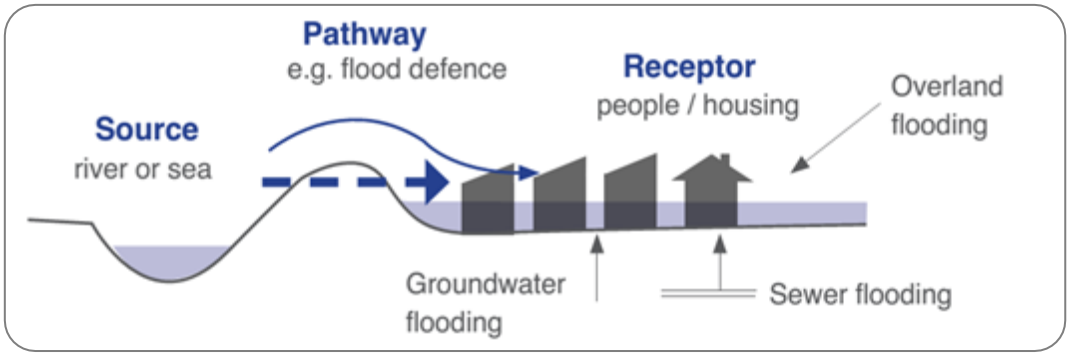

Figure 3 – Source-pathway-receptor model
(The Planning System and Flood Risk Management Guidelines)

There is an existing inherent risk of any flood event occurring during any given year. Typically, this likelihood of occurrence was traditionally expressed as a 1-in-100 chance of a 100-year storm event happening in any given year. A less ambiguous expression of probability is the Annual Exceedance Probability (AEP), which may be defined as the probability of a flood event being exceeded in any given year. Therefore a 1-in-100-year event has a 1% AEP; similarly, a 100% AEP can be expressed as a 1-in-1-year event.

The Planning System and Flood Risk Management, Guidelines for Planning Authorities (Flood Risk Management Guidelines), published in 2009, set out the best practice standards for flood risk assessment in Ireland. These are summarised in **Table 1** below (Table 8.1 from Flood Risk Management Guidelines document).

Development Category	**Flooding Source**		
	Drainage	River	Tidal/Coastal
Residential	1% AEP	0.1% AEP	0.1% AEP
Commercial	1% AEP	1% AEP	0.5% AEP
Water-compatible (docks, marinas)	-	>1% AEP	>0.5% AEP

Table 1 – Summary of Level of Service: Flooding Source

Under these guidelines, a proposed development site has first to be assessed to determine the flood zone category it falls under. The flooding guidelines define three distinct areas of combined flood risk: Zones A, B, and C. These are described below.

- **Zone A** – High Probability of Flooding. Where the average probability of flooding from rivers and sea is highest (greater than 1% AEP for fluvial flooding or 0.5% AEP for tidal flooding).

- **Zone B** – Moderate Probability of Flooding. Where the average probability of flooding from rivers and sea is moderate (between 0.1% AEP and 1% AEP for fluvial flooding, and between 0.1% AEP and 0.5% AEP for tidal flooding).
- **Zone C** – Low Probability of Flooding. All areas outside Zones A and B. Where the probability of flooding from rivers and sea is lowest (less than 0.1% AEP for both fluvial and coastal flooding).

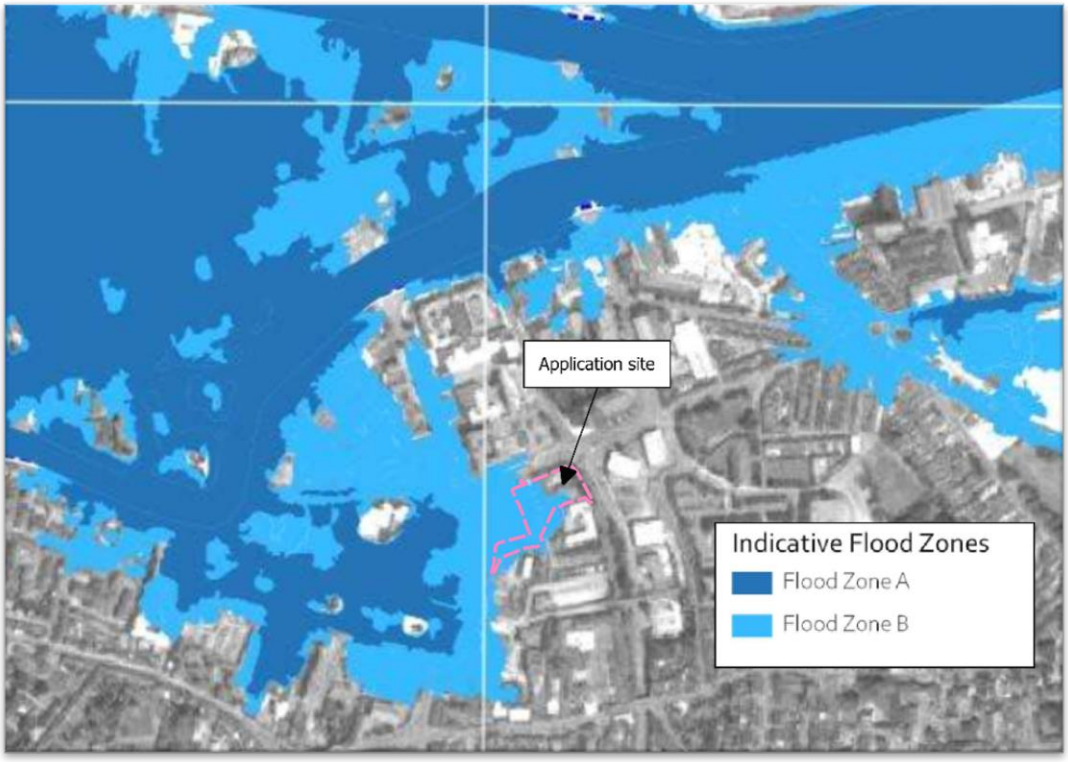

Figure 4 – Extract of CCC 2022-2028 SFRA composite flood risk mapping
(background imagery source: Cork City Council)

A review of flood risk mapping contained within the *Cork City Development Plan 2022–2028* Strategic Flood Risk Assessment, an extract of which is shown in **Figure 4**, shows a portion of the subject site to be located in **Flood Zone B**, with the remainder within **Flood Zone C**. The relevant flood risk map is provided in full within **Appendix A**.

It is a requirement of Cork City Council, and the Flood Risk Management Guidelines that the predicted effects of climate change be incorporated into any proposed design. **Table 2** below indicates the predicted climate change variations.

Design Category	Predicted Impact of Climate Change
Drainage	20% Increase in rainfall
Fluvial (river flows)	20% Increase in flood flow
Tidal / Coastal	+500mm increase in Tidal Flood Depth

Table 2 – Predicted climate change variations

The Flood Risk Management Guidelines provide an 'appropriateness' matrix for various developments and their potential risk factors. This matrix, reproduced in **Table 3** below, indicates whether a proposed development requires further analysis in the form of a justification test. The Flood Risk Management Guidelines classify residential developments as 'highly vulnerable development'.

Development Category	Flood Zone A	Flood Zone B	Flood Zone C
Highly Vulnerable Development	*Justification Test Required*	*Justification Test Required*	Appropriate
Highly Vulnerable Development	*Justification Test Required*	Appropriate	Appropriate
Water-compatible Development	Appropriate	Appropriate	Appropriate

Table 3 – Flood Zone vs. Justification Test Matrix

Section 9.13 of the CCC Development Plan 2022-2028 states that '*The Planning System and Flood Risk Management: Guidelines for Planning Authorities (2009), subsequently amended under Department of Environment, Community and Local Government Circular PL2/201415, outline how the aim of flood risk management is to minimise the level of flood risk to people, business, infrastructure and the environment through the identification and management of existing and potential future flood risks.*

The Guidelines recommend a sequential approach to spatial planning, promoting avoidance rather than justification and subsequent mitigation of risk. The guidelines define the Justification Test as an assessment of whether a development proposal within an area at risk of flooding meets specific criteria for proper planning and sustainable development and demonstrates that it will not be subject to unacceptable risk nor increase flood risk elsewhere.

The Justification Test should be applied only where development is within flood risk areas that would be defined as inappropriate under the screening test of the sequential risk-based approach. Cork City Council will adopt a precautionary approach, namely to avoid development in floodplains, wetlands and coastal areas prone to flooding and so preserve

these natural defences that hold excess water until it can be released slowly back into river systems, the sea or seep into the ground. Where flood risk is an issue, applicants will generally be required to carry out a site specific Flood Risk Assessment (apart from minor developments, where such an approach would not be justified). Policy in relation to the incorporation of measures such as Sustainable Urban Drainage Systems (SUDS) to reduce surface run-off is outlined above and should be incorporated in so far as possible to reduce risks.'

As previously noted, the subject site is located within **Flood Zones B and C**. As such, a justification test is required for highly vulnerable developments.

3.0 PAST FLOODING EVENTS

A review of the Office of Public Works flood maps database (at www.floodinfo.ie) does not indicate any recorded historical instances of flooding on or near the development site, from any source. See **Figure 5** below and the OPW Past Flood Event Local Area Summary Report included as **Appendix B**.

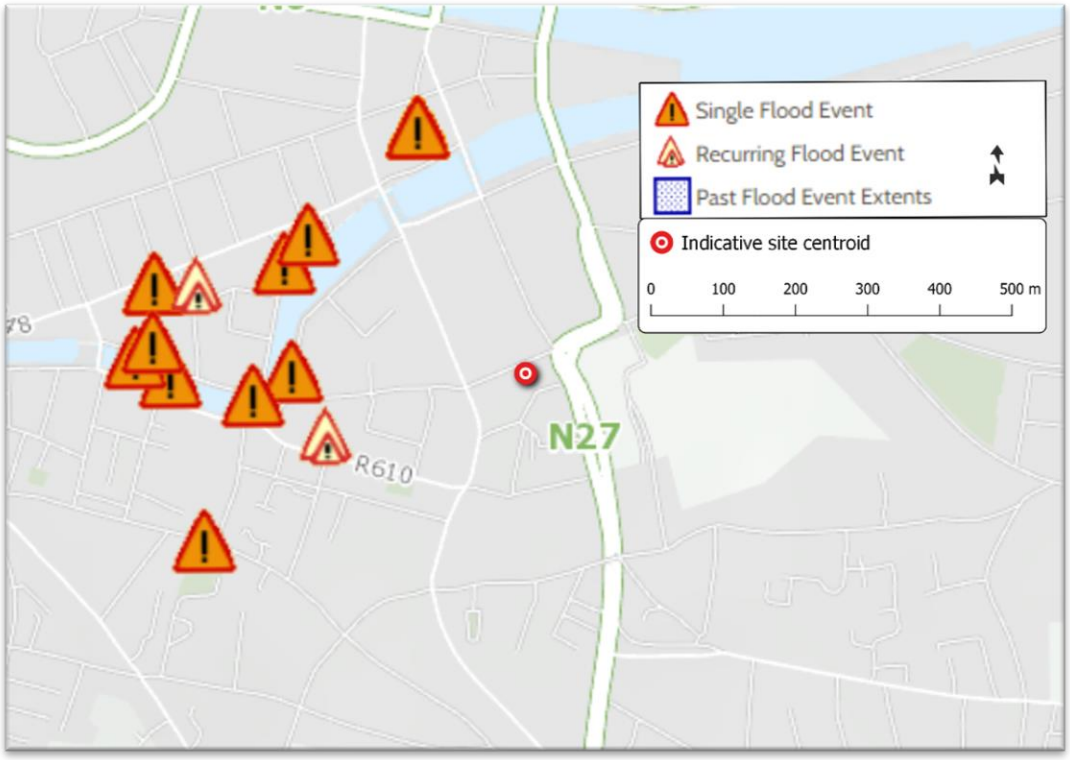

Figure 5 – OPW mapping of past flood events
(background imagery source: www.floodinfo.ie)

4.0 SPECIFIC FLOOD RISKS

4.1 Fluvial Flooding

Recent modelling of the surrounding area as part of the *Catchment Flood Risk Assessment and Management Study* (CFRAMS) project indicates that a portion along the western boundary of the proposed development to be located within a zone where the probability of flooding from rivers is 1% annually or 1 in 100 years that is Flood Zone B. The relevant CFRAMS fluvial flood extent map (as published at www.floodinfo.ie) is included within **Appendix C** to this report; an extract is shown in **Figure 6**.

As mentioned earlier, some portion of the development site is located in **Flood Zone B**, and therefore a justification test is **required**. Refer to section 6.0 for further details.

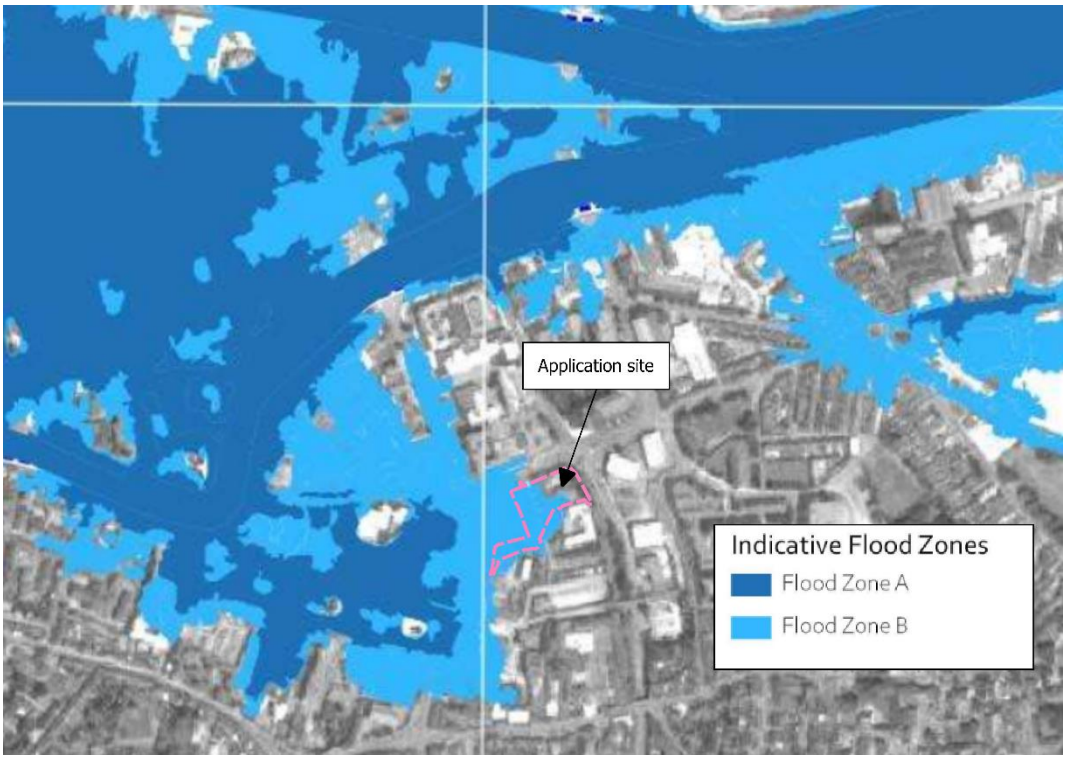

Figure 6 – CFRAMS mapping of fluvial flood risk extents
(background imagery source: Office of Public Works)

4.2 Tidal Flooding

Recent modelling of the surrounding area as part of the *Liffey Catchment Flood Risk Assessment and Management Study* (CFRAMS) project indicates that some portion of the development site is within the area at risk from a 0.5% AEP tidal flooding event (i.e. a 1-in-200-

year occurrence). The relevant CFRAMS tidal flood extent map (as published at www.floodinfo.ie) is included within **Appendix C** to this report; an extract is shown in **Figure 7**.

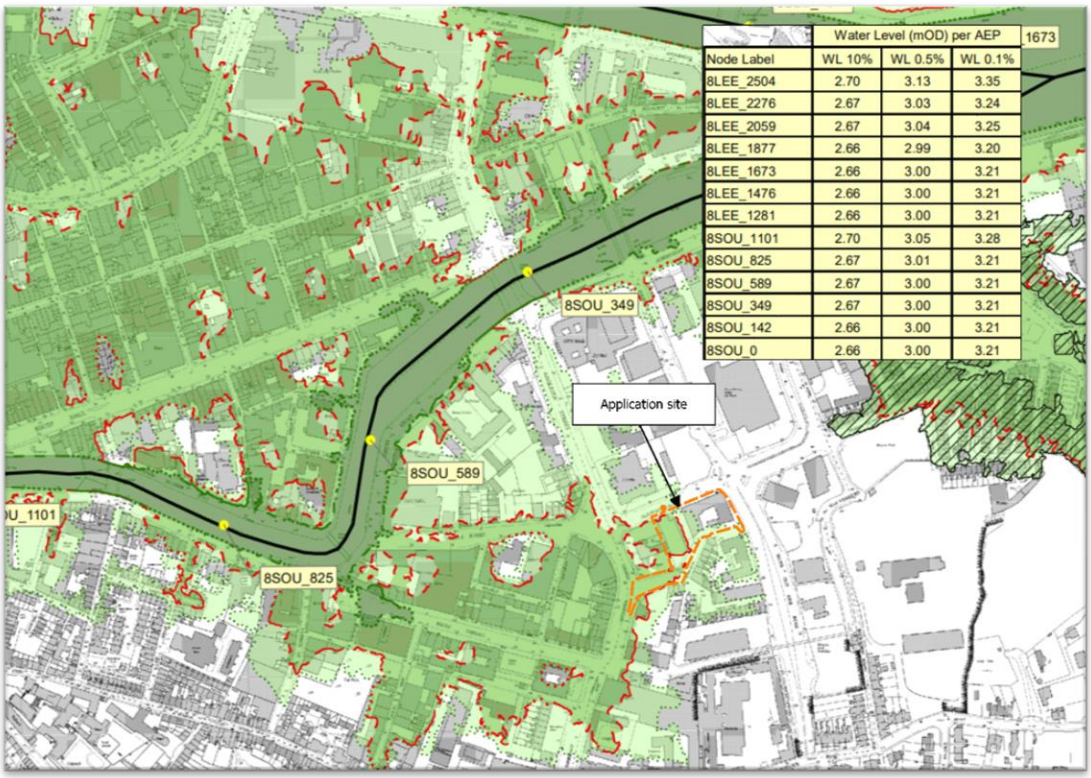

Figure 7 – CFRAMS mapping of coastal (tidal) flood risk extents
(background imagery source: Office of Public Works)

In relation to the tidal flooding, which is more onerous flooding scenario, the nearest node point to the development site 8SOU_349 indicates the flood level for the 0.5% AEP is 3.00m AOD.

Based on CCC Development Plan and OPW Planning System and Risk Management Guidelines the preferential Finished Floor Level (FFL) of the proposed development should be set at 3.80m AOD which would include a provision of minimum allowance of 500mm for the effects of climate change and an inclusion of 300mm freeboard all above the 0.5% AEP tidal flood level of 3.00m AOD (3.00m AOD +0.5m + 0.3m = 3.80m AOD).

All residential units located on the Ground Floor Level shall have an FFL of 3.80m AOD. However, bicycle storage area, mixed-use areas located along the northern and north-eastern boundary shall be lower to achieve access via Old Station Road and the bin storage area along the south-eastern boundary of the development shall also be at a lower level to achieve the access via Anglesea Terrace.

As mentioned above, the FFL of 3.80m AOD is not achievable for the bicycle storage area, mixed-use areas and bin storage area due to site constraints. However, while the FFL remains below the preferential level in these areas, we are implementing the mitigation measures outlined in the CCC Development Plan. These measures, along with additional proposed strategies for these specific areas, aim to mitigate potential flood risks. We have listed some of the key design requirements to address these challenges below,

(i) *Less vulnerable uses shall be located at the ground floor along with other measures for dealing with residual flood risk,*

(ii) *Internal layout shall be designed and specified to reduce the impact of flooding (e.g. living accommodation, essential services, storage space for provisions and equipment shall be designed to be located above the predicted flood level).*

(iii) *Designs and specifications shall ensure that, wherever reasonably practicable, the siting of living accommodation (particularly sleeping areas) shall be above flood level.*

(iv) *Specifications for safe access, refuge and evacuation shall be incorporated into the design of the development.*

(v) *Developments in flood vulnerable zones should specify the use of flood-resistant construction aimed at preventing water from entering buildings - to mitigate the damage floodwater caused to buildings.*

(vi) *Developments should specify the use of flood resistant construction prepared using specialist technical input to the design and specification of the external building envelope – with measures to resist hydrostatic pressure (commonly referred to as "tanking") specified for the outside of the building fabric. The design of the flood resistant construction shall specify the need to protect the main entry points for floodwater into buildings - including doors and windows (including gaps in sealant around frames), vents, air-bricks and gaps around conduits or pipes passing through external building fabric. The design of the flood resistant construction should also specify the need to protect against flood water entry through sanitary appliances as a result of backflow through the drainage system.*

(vii) *Developments in flood vulnerable zones that are at risk of occasional inundation should incorporate design and specification for flood resilient construction which accepts that floodwater will enter buildings and provides for this in the design and specification of internal building services and finishes. These measures limit damage caused by floodwater and allow relatively quick recovery. This can be achieved by specifying wall and floor materials such as ceramic tiling that can be cleaned and dried relatively easily, provided that the substrate materials (e.g. blockwork) are also resilient. Electrics,*

appliances and kitchen fittings should also be specified to be raised above floor level, and one-way valves shall be incorporated into drainage pipes.

In order to comply with Part M, access into the building shall be via a series of ramps for mobility impaired users along with stepped access.

It is also worth noting that the design of the main surface water attenuation tank includes a provision for a possibility of a tidal lock and an additional volume that caters for a tidal lock in duration of 6-hours has been provided within the attenuation tank.

4.3 Pluvial Flooding

Pluvial flooding is flooding which has originated from overland flow resulting from high intensity rain fall. Previous flood events in the area can be reviewed on the Office of Public Works web site (www.floodmaps.ie). The historical flood mapping does not indicate flood events in the area in recent years. See **Appendix B** for OPW Flood maps Report.

The development is required to retain stormwater volumes predicted to be experienced during extreme rainfall events. This is defined as the volume of storm water generated during a 1-in-100-year storm event, increased by 20% for the predicted effects of climate change. It is also worth noting that the design of the main surface water attenuation tank includes a provision for a possibility of a tidal lock and an additional volume that caters for a tidal lock in duration of 6-hours has been provided within the attenuation tank.

4.4 Groundwater Flooding

According to the Geological Survey of Ireland (GSI) interactive maps, the subject site is underlain with *Massive unbedded lime-mudstone (Waulsortian Limestones)*. The area is listed as overlaying "*Regionally Important Aquifer*". The groundwater vulnerability assessment of the site shows that the vulnerability of groundwater in the area is *high*. The proposed development will not increase the potential for groundwater flooding. See **Appendix D** for GSI mapping information of background groundwater and geology data for the area encompassing the subject development site.

4.5 Existing Off-Site Drainage

It is the understanding of CS Consulting that at present there are no issues with the local drainage arrangements. The subject lands will only discharge a restricted low flow into the public system thereby reducing the hydraulic pressure on the public network during extreme rainfall events.

5.0 POTENTIAL FOR DEVELOPMENT TO CONTRIBUTE TO OFF-SITE FLOODING

The proposed development will include an attenuation system. The attenuation tank has been sized for a 1-in-100-year extreme storm event, increased by 20% for the predicted effects of climate change. It is also worth noting that the design of the main surface water attenuation tank includes a provision for a possibility of a tidal lock and an additional volume that caters for a tidal lock in duration of 6-hours has been provided within the attenuation tank.

The existing site is currently largely occupied by hardstanding, with no attenuated stormwater drainage arrangements. By restricting stormwater outflow as described, the proposed development shall therefore reduce the loading on the public drainage system locally during high intensity rainfall events and shall also reduce the risk of neighbouring sites flooding due to stormwater runoff from the subject site.

For details of the surface water drainage system design, refer to the accompanying Engineering Services Report submitted under a separate cover under this planning application.

6.0 JUSTIFICATION TEST

6.1 The Development Management Justification Test

A development management justification test has been carried out below according to the *Section 5 Application of the Justification Test in development management* of *'The Planning System and Flood Risk Assessment (Guidelines for Planning Authorities)'*.

When considering proposals for development, which may be vulnerable to flooding, and that would generally be inappropriate as set out in Table 3.2, the following criteria must be satisfied:

1. *The subject lands have been zoned or otherwise designated for the particular use or form of development in an operative development plan, which has been adopted or varied taking account of these Guidelines.*

   Response

   The proposed development is located in lands zoned as City Centre Area in the Cork City Development Plan 2022-2028.

2. *The proposal has been subject to an appropriate flood risk assessment that demonstrates:*

i. The development proposed will not increase flood risk elsewhere and, if practicable, will reduce overall flood risk;

ii. The development proposal includes measures to minimise flood risk to people, property, the economy and the environment as far as reasonably possible;

iii. The development proposed includes measures to ensure that residual risks to the area and/or development can be managed to an acceptable level as regards the adequacy of existing flood protection measures or the design, implementation and funding of any future flood risk management measures and provisions for emergency services access; and

iv. The development proposed addresses the above in a manner that is also compatible with the achievement of wider planning objectives in relation to development of good urban design and vibrant and active streetscapes.

Response 2.i

Currently the subject lands have an unattenuated discharge into the combined sewer system. It is proposed as a part of the proposed development that the surface water drainage strategy shall restrict the discharge rate which in turn will reduce the hydraulic pressure on the existing combined sewer network during rainfall events this will in turn help reduce the overall flood risk in and around the development site. The proposed development will be provided with Sustainable Drainage System (SuDS) measures including Green Roofs, permeable paving and attenuation tanks. The design of the attenuation tank caters for the possibility of tidal lock in duration of 6-hours. As such, the proposed development will reduce risk of Pluvial flooding on the subject site and neighbouring lands.

Response 2.ii and 2.iii

It is proposed that the development shall be provided with attenuation tank, SuDS including green roof within the development. Based on CCC Development Plan and OPW Planning System and Risk Management Guidelines the preferential Finished Floor Level (FFL) of the proposed development should be set at 3.80m AOD which would include a provision of minimum allowance of 500mm for the effects of climate change and an inclusion of 300mm freeboard all above the 0.5% AEP tidal flood level of 3.00m AOD (3.00m AOD +0.5m + 0.3m = 3.80m AOD). In addition, the proposed development shall use flood resilient and flood resistant construction techniques where appropriate at the areas where the FFL's are below 3.80m AOD namely bicycle storage area, mixed-use areas located along the northern and north-eastern boundary and the bin storage area along the south-eastern boundary.

The development is required to retain stormwater volumes predicted to be experienced during extreme rainfall events. This is defined as the volume of storm water

generated during a 1-in-100-year storm event, increased by 20% for the predicted effects of climate change. It is also worth noting that the design of the main surface water attenuation tank includes a provision for a possibility of a tidal lock and an additional volume that caters for a tidal lock in duration of 6-hours has been provided within the attenuation tank.

To clarify, areas at or above 3.80m AOD will follow standard flood mitigation measures, while areas below 3.80m AOD will incorporate additional flood resilience and resistance strategies. These will include measures such as flood-resistant construction techniques, flood doors and windows, non-return valves on drains and pipes, and other site-specific mitigation efforts to minimize flood risk.

The above will ensure that the flood risk to people, property, the economy, and the environment shall be mitigated as far as reasonably possible.

In relation to the flood resistance and flood resilience, compliance with the following Ciria documents will be ensured through the detail design of the proposed development:

- Code of practice for property flood resilience 2nd edition (C790A)
- Guidance on the code of practice for property flood resilience (C790B)
- Making your property more flood resilient (C790C)

During the detail design the implementation of the below listed flood resilience and flood resistance measures will be reviewed and implemented within the design where suitable:

- Flood doors and windows,
- Non-return valves on the drains and pipes,
- Repointing cracks in brickwork and applying water resistant paints,
- Fitting automatic anti-flood airbricks,
- Demountable door and window barriers,
- Covers for airbricks, pet flaps and appliance vents,
- Raising electrics and sockets above the likely height of flood water,
- Sump and pump systems,
- Water resistant materials in kitchens and bathrooms,
- Avoid the use of fitted carpets and timber floors.

In relation to the Flood Warning and Evacuation Plan it is worth noting that the plan does not remove the risk of flooding of the development however it does provide means those living in the development shall be made aware of the flood hazard and it will identify any procedures that will enable the residents to avoid being directly exposed to the hazard in any future flood event that may affect the proposed development.

Flood Warning and Evacuation Plan will be prepared during the detail design stage of the proposed development, and the Plan will include the following elements:

- Raise awareness of the flood hazard at the location specified by the plan,
- Define the flood warnings and estimated lead-in time available,
- Detail how, when and by who the Plan is triggered,
- Define the responsibilities of those participating in the Plan,
- Outline the evacuation procedure and the safe evacuation route away from the development and in the event that evacuation is not an option, identify the place of safe refuge. Safe refuge area should be located above design flood event level and is to have access to clean water and medical equipment.
- Establish the procedure for implementing, monitoring and maintaining the Plan.

In relation to the evacuation, if required, this should be undertaken before a flood event occurs, not during the event. Evacuation during a flood event should only occur in exceptional circumstances where Flood Warning has not reached either the occupants or relevant management company responsible for triggering the Flood Warning and Evacuation Plan, and its deemed safe to do so by the Emergency Services.

Response 2.iv

In regard to the wider planning objectives that relate to urban design and streetscape elements the proposed development has been designed to respond to the established character of the city centre area in which it is situated and follows central government policy and Cork City Council Development Plan.

In conclusion, the proposed development is justified in accordance with *Cork City Development Plan 2022-2028* with the justification points above.

7.0 CONCLUSIONS

This Site Specific Flood Risk Assessment has been carried out in accordance with the requirements of the national flood guidelines and Cork City Council's Development Plan. Its conclusions are summarised as follows:

- The development site historically has no recorded flood events, as noted in the OPW's historical flood maps.
- Predicted flood hazard mapping for tidal and fluvial flood events show that the development site is at moderate risk of flooding from these sources. This risk can be mitigated to an acceptable degree by the implementation of appropriate active flood defence measures.
- The development will have a storm water attenuation system to address a 1-in-100-year extreme storm event, increased by 20% for predicted climate change effects. This will significantly reduce the volume of storm water leaving the site during extreme storms, which in turn will have the effect of reducing the loading on the existing public drainage system and reducing the risk of flooding on neighbouring sites due to runoff from the development site. It is also worth noting that the design of the main surface water attenuation tank includes a provision for a possibility of a tidal lock and an additional volume that caters for a tidal lock in duration of 6-hours has been provided within the attenuation tank.

The proposed development is deemed to be suitable for the site location, as historical and potential flood routes have been reviewed and the likelihood of the development being subject to flooding is low, given the implementation of the mitigation measures described.

APPENDIX A

CORK CITY COUNCIL FLOOD RISK MAPS

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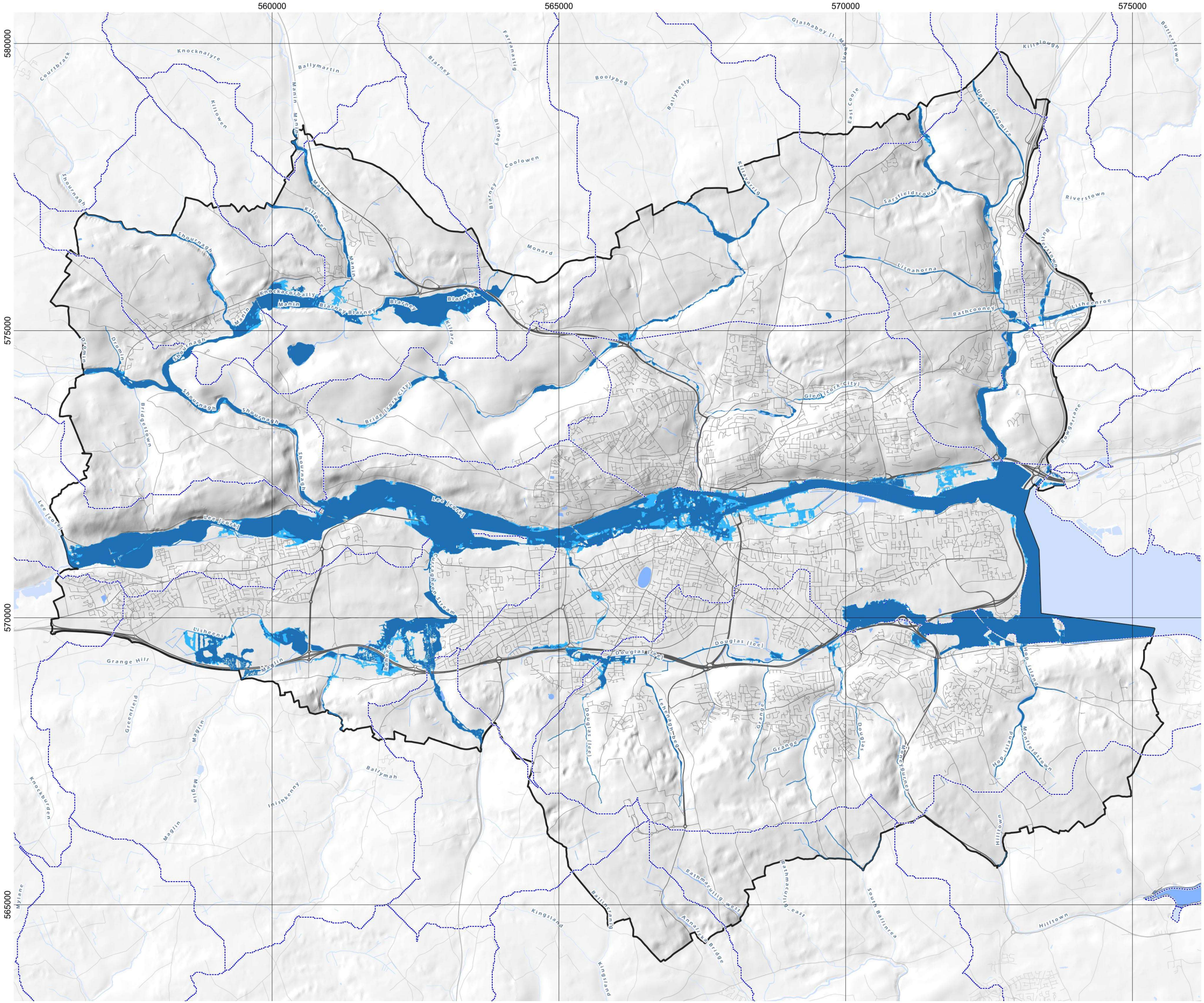
Cork City Development Plan 2022-2028

Indicative Flood Zones



- Cork City
- WFD River Sub-Basins
- Water
- River or Stream

Indicative Flood Zones

- Flood Zone A
- Flood Zone B

Coordinates in ITM

APPENDIX B

OPW PAST FLOOD EVENT LOCAL AREA SUMMARY REPORT

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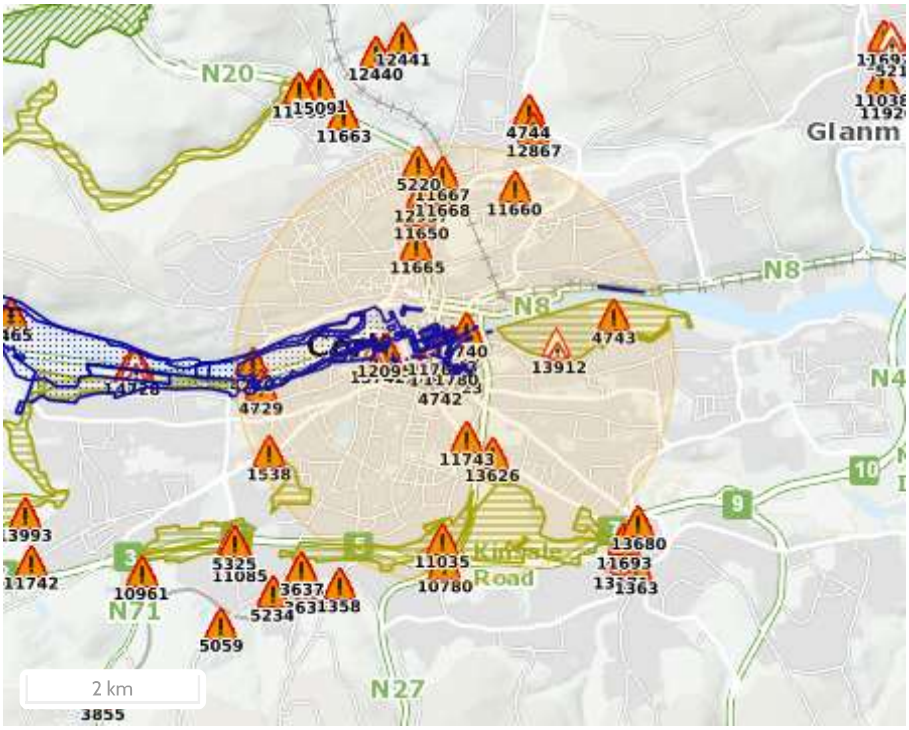


Map Legend

- 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

44 Results

	Name (Flood_ID)	Start Date	Event Location
1.	Cork city centre 1945 (ID-4740)	n/a	Approximate Point
	Additional Information: Reports (1) Press Archive (0)		
2.	Cork city centre 1955 (ID-4739)	n/a	Approximate Point
	Additional Information: Reports (1) Press Archive (1)		
3.	Lee Cork City August 1986 (ID-6)	05/08/1986	Area
	Additional Information: Reports (2) Press Archive (3)		
4.	Spring Lane, Cork. 28th June 2012 (ID-11668)	27/06/2012	Approximate Point
	Additional Information: Reports (1) Press Archive (0)		
5.	Lee Cork City January 1789 (ID-1472)	16/01/1789	Approximate Point
	Additional Information: Reports (1) Press Archive (0)		
6.	Lee Cork City November 1853 (ID-1473)	02/11/1853	Approximate Point
	Additional Information: Reports (1) Press Archive (0)		

	Additional Information: Reports (1) Press Archive (0)		
10.	Cork City centre Dec 1989 (ID-4735)	16/12/1989	Approximate Point
	Additional Information: Reports (1) Press Archive (0)		
11.	Cork City centre March 1962 (ID-4737)	07/03/1962	Approximate Point
	Additional Information: Reports (1) Press Archive (0)		
12.	Cork City centre Oct 1901 (ID-4738)	01/10/1901	Approximate Point
	Additional Information: Reports (1) Press Archive (0)		
13.	Douglas St Cork Jan 1988 (ID-4742)	12/01/1988	Approximate Point
	Additional Information: Reports (1) Press Archive (0)		
14.	Centre Park Road Cork Jan 1988 (ID-4743)	12/01/1988	Approximate Point
	Additional Information: Reports (1) Press Archive (0)		
15.	Cork City October 2004 (ID-4731)	26/10/2004	Area
	Additional Information: Reports (1) Press Archive (0)		
16.	Turner's Cross, Cork 28th June 2012 (ID-11743)	27/06/2012	Approximate Point
	Additional Information: Reports (1) Press Archive (0)		
17.	Cork City on 17th October 2012 (ID-11760)	16/10/2012	Approximate Point
	Additional Information: Reports (1) Press Archive (0)		
18.	Cork City 14th.December 2012 (ID-11780)	14/12/2012	Approximate Point
	Additional Information: Reports (1) Press Archive (0)		
19.	Lee Cork City Jan 1996 (ID-455)	06/01/1996	Area
	Additional Information: Reports (10) Press Archive (1)		
20.	Cork City 16th and 17th October 2012 (ID-11825)	15/10/2012	Approximate Point
	Additional Information: Reports (2) Press Archive (0)		
21.	Bride Blackpool Cork 2002 (ID-5220)	n/a	Approximate Point
	Additional Information: Reports (1) Press Archive (0)		
22.	Flooding in Cork City Centre, 3rd February 2014 (ID-12095)	03/02/2014	Approximate Point
	Additional Information: Reports (1) Press Archive (0)		
23.	Cork City 17th.December 2012 (ID-11831)	17/12/2012	Approximate Point
	Additional Information: Reports (1) Press Archive (0)		
24.	Lee Victoria Cross November 2000 (ID-1471)	28/11/2000	Approximate Point

	Additional Information: Reports (1) Press Archive (0)		
28.	Kinsale Rd Roundabout Cork 30/01/2009 (ID-10780)	30/01/2009	Exact Point
	Additional Information: Reports (1) Press Archive (0)		
29.	Flooding in Cork City Centre 2nd January 2014 (ID-12120)	02/01/2014	Approximate Point
	Additional Information: Reports (1) Press Archive (0)		
30.	Watercourse Road (South of O Connell Street) Cork. 28th.June 2012 (ID-11665)	27/06/2012	Approximate Point
	Additional Information: Reports (1) Press Archive (0)		
31.	Blackpool and other locations 28th June 2012 (ID-11650)	27/06/2012	Approximate Point
	Additional Information: Reports (3) Press Archive (0)		
32.	Ballyvolane, Co.Cork. 28th June 2012 (ID-11660)	27/06/2012	Approximate Point
	Additional Information: Reports (2) Press Archive (0)		
33.	Dublin Street, Cork. 28th June 2012 (ID-11667)	27/06/2012	Approximate Point
	Additional Information: Reports (1) Press Archive (0)		
34.	Cork City Flooding 19th.Nov. 2009 (ID-10820)	19/11/2009	Area
	Additional Information: Reports (4) Press Archive (0)		
35.	Flooding at Cork City on 16/04/2018 (ID-13626)	16/04/2018	Approximate Point
	Additional Information: Reports (0) Press Archive (0)		
36.	Flooding at Cork City - Recurring (ID-13912)	n/a	Approximate Point
	Additional Information: Reports (0) Press Archive (0)		
37.	Flooding at Cork City on 17/12/2012 (ID-12910)	17/12/2012	Approximate Point
	Additional Information: Reports (0) Press Archive (0)		
38.	Flooding at Cork City on 27/10/2015 (ID-13193)	27/10/2015	Approximate Point
	Additional Information: Reports (0) Press Archive (0)		
39.	Flooding at Cork City - Recurring (ID-13913)	n/a	Approximate Point
	Additional Information: Reports (0) Press Archive (0)		
40.	Flooding at Cork City on 26/11/2019 (ID-13683)	26/11/2019	Approximate Point
	Additional Information: Reports (0) Press Archive (0)		
41.	Flooding at Cork City on 19/10/2020 (ID-13742)	19/10/2020	Approximate Point
	Additional Information: Reports (0) Press Archive (0)		
42.	Flooding at Cork City on 03/04/2018 (ID-13624)	03/04/2018	Approximate Point

APPENDIX C

CFRAMS FLOOD RISK MAPPING

CS CONSULTING

Civil, Structural & Traffic Engineering

N

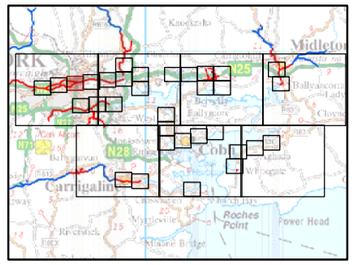
Fluvial flooding may also occur within the area shown on this map. Please refer to the fluvial flood extent map. Figure No. M8/UA/EXT/CURS/011

	Water Level (mOD) per AEP		
Node Label	WL 10%	WL 0.5%	WL 0.1%
8LEE_2504	2.70	3.13	3.35
8LEE_2276	2.67	3.03	3.24
8LEE_2059	2.67	3.04	3.25
8LEE_1877	2.66	2.99	3.20
8LEE_1673	2.66	3.00	3.21
8LEE_1476	2.66	3.00	3.21
8LEE_1281	2.66	3.00	3.21
8SOU_1101	2.70	3.05	3.28
8SOU_825	2.67	3.01	3.21
8SOU_589	2.67	3.00	3.21
8SOU_349	2.67	3.00	3.21
8SOU_142	2.66	3.00	3.21
8SOU_0	2.66	3.00	3.21

8LEE_2504
8LEE_2276
8LEE_2059
8LEE_1877
8LEE_1673
8LEE_1476
8LEE_1281
8SOU_0
8SOU_142
8SOU_349
8SOU_589
8SOU_825
8SOU_1101

0.1 0.05 0 0.1 0.2 0.3 0.4 Kilometres

Location Plan :



EXTENT MAP

Legend:

- 10 % AEP Flood Extent (1 in 10 chance in any given year)
- 0.5 % AEP Flood Extent (1 in 200 chance in any given year)
- 0.1 % AEP Flood Extent (1 in 1000 chance in any given year)
- Defended area
- High Confidence (<20m) (10% AEP)
- Medium Confidence (<40m) (10% AEP)
- Low Confidence (> 40m) (10% and 0.1% AEP)
- High Confidence (<20m) (0.5% AEP)
- Medium Confidence (<40m) (0.5% AEP)
- Low Confidence (>40m) (0.5% AEP)
- River Centreline
- Node Point
- 001 Node Label (refer to table)

USER NOTE :

USERS OF THESE MAPS SHOULD REFER TO THE DETAILED DESCRIPTION OF THEIR DERIVATION, LIMITATIONS IN ACCURACY AND GUIDANCE AND CONDITIONS OF USE PROVIDED AT THE FRONT OF THIS BOUND VOLUME. IF THIS MAP DOES NOT FORM PART OF A BOUND VOLUME, IT SHOULD NOT BE USED FOR ANY PURPOSE.

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OPW
Office of Public Works
17-19 Lower Hatch Street
Dublin 2
Ireland

Project :
LEE CATCHMENT FLOOD RISK ASSESSMENT AND MANAGEMENT STUDY

Map :
CORK CITY

Map Type :	FLOOD EXTENT
Source :	TIDAL FLOODING
Map area :	URBAN AREA
Scenario :	CURRENT
Figure By :	Valeria Medina Date : 10 March 2014
Checked By :	Ricardo Santaella Date : 10 March 2014
Approved By :	Clare Dewar Date : 10 March 2014
Figure No. :	M9/UA/EXT/CURS/004
Revision	2
Drawing Scale :	1:5,000
Plot Scale :	1:1 @ A3

N

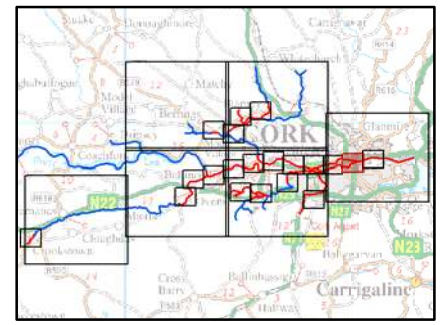
Node Label	Water Level (mOD) per AEP		
	WL 10%	WL 1%	WL 0.1%
8LEE_2705	2.11	3.10	3.49
8LEE_2504	2.05	2.96	3.33
8LEE_2276	1.95	2.80	3.13
8LEE_2059	1.97	2.81	3.15
8LEE_1877	1.93	2.74	3.07
8LEE_1673	1.94	2.75	3.07
8LEE_1476	1.94	2.75	3.07
8LEE_1281	1.94	2.75	3.07
8SOU_1101	2.05	2.87	3.22
8SOU_980	2.02	2.83	3.19
8SOU_825	1.96	2.77	3.10
8SOU_589	1.94	2.75	3.08
8SOU_349	1.94	2.75	3.08
8SOU_142	1.94	2.75	3.08
8SOU_0	1.94	2.75	3.07

8LEE_2705
8LEE_2504
8LEE_2276
8LEE_2059
8LEE_1877
8LEE_1673
8LEE_1476
8LEE_1281
8SOU_0
8SOU_142
8SOU_349
8SOU_589
8SOU_1101
8SOU_980
8SOU_825

Tidal flooding may also occur within the area shown on this map. Please refer to the tidal flood extent map. Figure No. M9/UA/EXT/CURS/004

0.1 0.05 0 0.1 0.2 0.3 0.4 Kilometres

Location Plan :



EXTENT MAP

Legend:

- 10 % AEP Flood Extent (1 in 10 chance in any given year)
- 1 % AEP Flood Extent (1 in 100 chance in any given year)
- 0.1 % AEP Flood Extent (1 in 1000 chance in any given year)
- Defended area
- High Confidence (<20m) (10% AEP)
- Medium Confidence (<40m) (10% AEP)
- Low Confidence (>40m) (10% and 0.1% AEP)
- High Confidence (<20m) (1% AEP)
- Medium Confidence (<40m) (1% AEP)
- Low Confidence (>40m) (1% AEP)
- River Centreline
- Node Point
- 8OWG_376 Node Label (refer to table)

USER NOTE :

USERS OF THESE MAPS SHOULD REFER TO THE DETAILED DESCRIPTION OF THEIR DERIVATION, LIMITATIONS IN ACCURACY AND GUIDANCE AND CONDITIONS OF USE PROVIDED AT THE FRONT OF THIS BOUND VOLUME. IF THIS MAP DOES NOT FORM PART OF A BOUND VOLUME, IT SHOULD NOT BE USED FOR ANY PURPOSE.

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OPW
Office of Public Works
17-19 Lower Hatch Street
Dublin 2
Ireland

Project :
LEE CATCHMENT FLOOD RISK ASSESSMENT AND MANAGEMENT STUDY

Map :
CORK CITY

Map Type :	FLOOD EXTENT		
Source :	FLUVIAL FLOODING		
Map area :	URBAN AREA		
Scenario :	CURRENT		
Figure By :	Valeria Medina	Date :	10 March 2014
Checked By :	Ricardo Santaella	Date :	10 March 2014
Approved By :	Clare Dewar	Date :	10 March 2014

Figure No. : M8/UA/EXT/CURS/011
Revision : 2

Drawing Scale : 1:5,000
Plot Scale : 1:1 @ A3

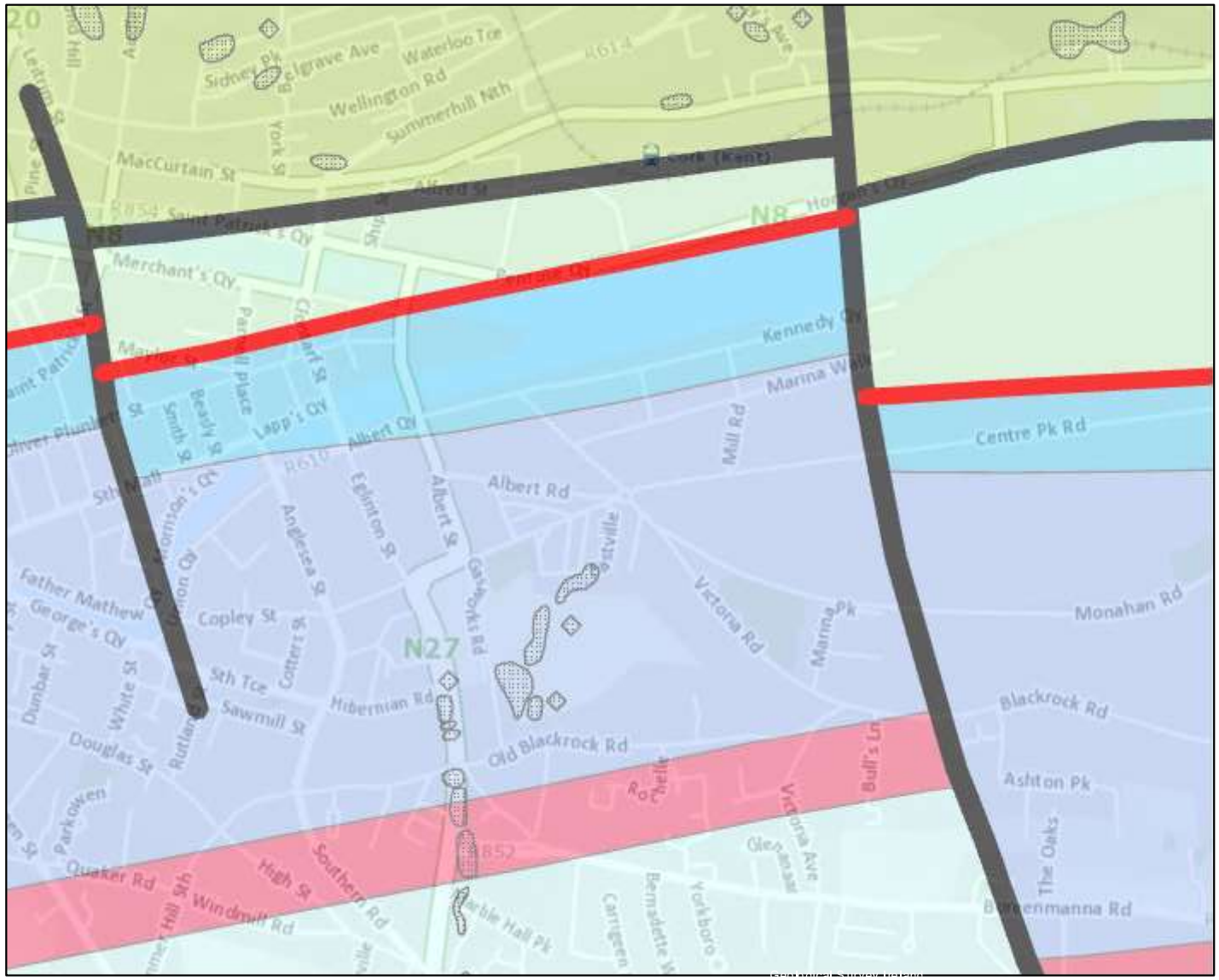
APPENDIX D

GSI GEOLOGY AND HYDROLOGY MAPPING

CS CONSULTING

Civil, Structural & Traffic Engineering

GSI Bedrock Geology



Scale: 1:10,000

Geological Survey Ireland

N W E S

0 0.05 0.1 0.2 mi

0 0.1 0.2 0.4 km

Map Centre Coordinates (ITM) 568,414 571,758

6/21/2024, 11:18:16 AM

Legend

IE_GSI_Structural_Sy...

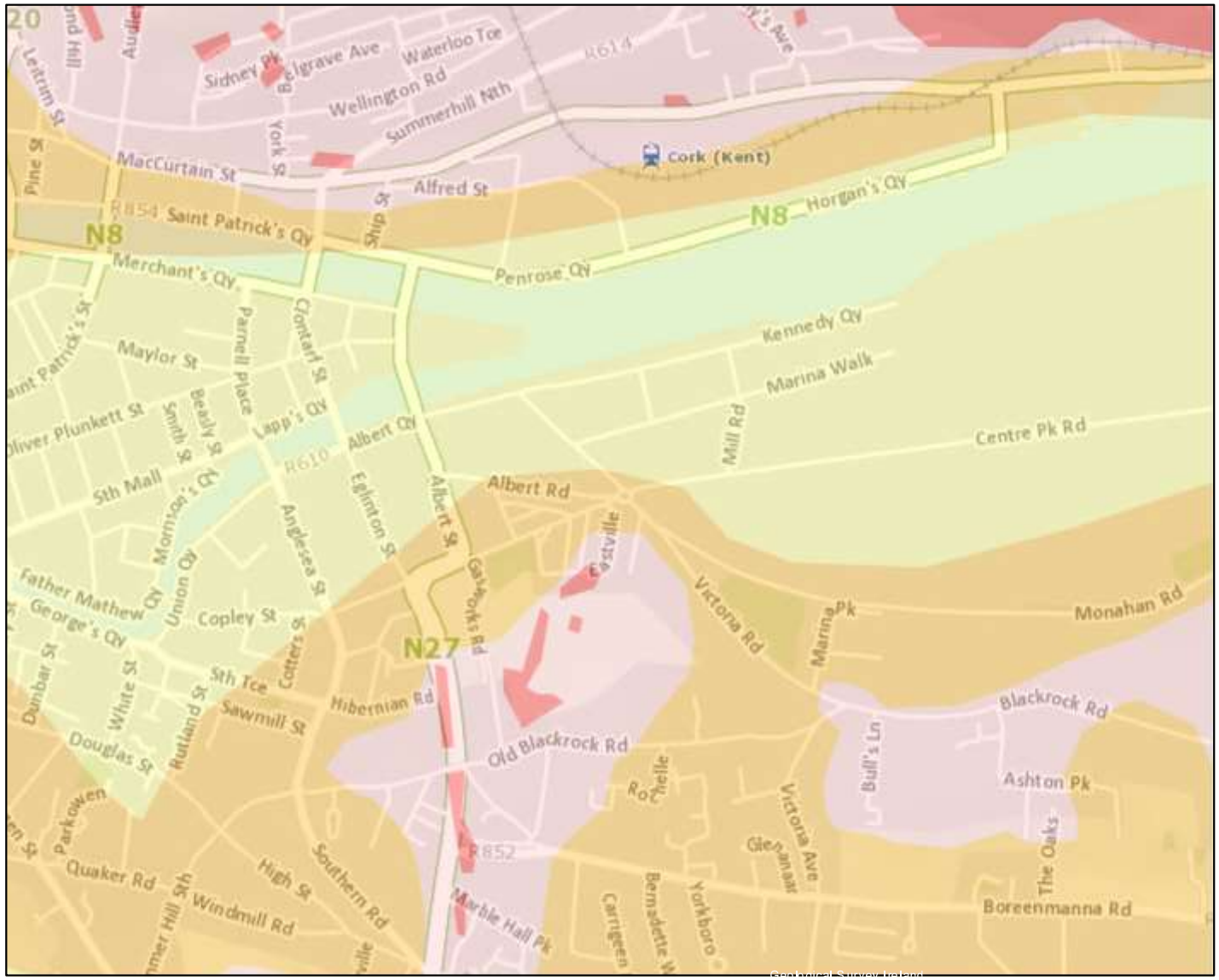
- Dip of bedding or main foliation, old GSI data
- First foliation parallel to bedding
- Foliation trend, Thorr and Rosses Granites
- Horizontal Bedding
- Strike and dip of bedding, right way up
- Strike and dip of bedding, way up unknown
- Strike and dip of first foliation
- Strike and dip of overturned bedding
- Strike and dip of second foliation
- Strike and dip of third foliation
- Strike and plunge of first generation fold axis
- Strike and plunge of second generation fold axis
- Strike and plunge of third generation fold axis
- Strike of vertical bedding/foliation
- Strike of vertical first foliation
- Bedrock Outcrops

IE_GSI_Geological_Li...

- Anticlinal Axis
- Antiformal axis
- Aquifer Boundary
- Area
- Coal seam
- Dyke
- Fault
- Ghost Line
- Goniatite marine band (R1-R4)
- Lithological boundary offshore
- Metadolerite sheet, mainly sills
- Paleogene/ Tertiary Dyke
- Synclinal Axis
- Synformal axis
- Tectonic Slide, barbs on hanging-wall
- Thin stratigraphical unit, diagrammatic
- Thrust, barbs on hanging-wall side
- Tuff band
- Unconformity, dots on younger side
- X-Section

Geological Survey
Suirbhéireacht Gheolaíochta
Ireland | Éireann

GSI Groundwater Vulnerability



Scale: 1:10,000

Geological Survey Ireland

N W E S

0 0.05 0.1 0.2 mi

0 0.1 0.2 0.4 km

Map Centre Coordinates (ITM) 568,414 571,758

6/21/2024, 11:17:12 AM

Legend

IE_GSI_Groundwater_...

- Rock at or near Surface or Karst
- Extreme
- High
- Moderate
- Low
- Water