



LOHAN & DONNELLY
Consulting Engineers

13 Gardiner Place, Mountjoy Square, Dublin 1. T: 01 8787770
W: www.lohan-donnelly.com E: info@lohan-donnelly.com

Project Title: Cabra PBSA

Report Title: Flood Risk Assessment

Report Ref: 24227-LDE-ZZ-ZZ-RP-0001_FRA

Project Ref: 24227

Client: R&D Developments Ltd (In Receivership)
Grant Thornton

Revision:	Author:	Date:	Approved By:	Date:
Planning Stage 2	Shane Horace	21/08/2025	Gordon Poyntz	21/08/2025
Planning Stage 4	Shane Horace	22/12/2025	Gordon Poyntz	22/12/2025

Contents:

1.0	Introduction:.....	1
1.1	Site Location:	1
1.2	Proposed Redevelopment:.....	2
2.0	Methodology for Site Specific Flood Risk Assessment:	3
2.1	Flood Risk Assessment:	3
2.2	Flood Zones:.....	3
2.3	Sequential Approach and Justification Test:	4
2.4	Vulnerability Class:.....	5
2.5	Justification Test:	6
2.6	Proposed Developments Vulnerability Class	7
3.0	Stage 1 – Flood Risk Assessment:	8
3.1	Previous Flooding Occurrences:	8
3.2	Likelihood of Flooding.....	9
3.2.1	Coastal Flooding.....	9
3.2.2	Fluvial Flooding	9
3.2.3	Pluvial Flooding	10
3.2.4	Groundwater Flooding	11
3.3	Source Pathway Receptor Model:	12
3.3.2	Source-Pathway-Receptor Model Results.....	12
4	Stage 2 – Initial Flood Risk Assessment:	13
4.1	Initial Coastal, Fluvial, Pluvial, & Groundwater Flood Risk Assessment:	13
4.2	Flood Zone Category:.....	13
4.3	Proposed Alleviation Measures:.....	14
4.3.1	Permeable Paving.....	14
4.3.2	Blue-Green Roof	14
4.3.6	Hydro Brake	15
5	Stage 3 – Detailed Flood Risk Assessment:	16
5.1	Pluvial Flooding.....	16
5.2	Proposed Development and Impact on Flood Risk	16
5.2.1	Flow Route during exceedance event.....	16
5.3	Justification Test:	18
6.0	Conclusions:.....	19

1.0 Introduction:

Lohan & Donnelly have been commissioned to prepare a Site-Specific Flood Risk Assessment (SSFRA) to support a planning application for a student accommodation along Faussagh Avenue, Cabra West, Dublin 7.

The objectives of this report are to inform the planning authority regarding flood risk for the potential development of the lands. The report will assess the site and development proposals in accordance with the requirements of “The Planning System and Flood Risk Management Guidelines for Planning Authorities”, the “Strategic Flood Risk Assessment for the Dublin City Development Plan 2022-2028” and the “Dublin City Development Plan 2022-2028”. This report will provide the following:

- The flood zone category for the site.
- Information to allow an informed decision of the planning application in the context of flood risk.
- Appropriate flood risk mitigation and management for any residual flood risk.

1.1 Site Location:

The subject site is located along Faussagh Avenue opposite St. Finbars GAA club and next to the Dart railway line, as shown in Figure 1.1 below.



Figure 1.1: Site Location

1.2 Proposed Redevelopment:

The proposed development provides for a Large-Scale Residential Development, which in summary, shall consist of:

- a) Demolition of the former 'Matts of Cabra' public house and associated structures (approx. 376.55 sqm).
- b) Construction of a purpose-built student accommodation scheme consisting of 249 no. student bedspaces arranged in 32 no. clusters of 4, 7, 8, 9 and 10-bedroom units (including 13 no. accessible units and 10 no. studio units) each with associated shared kitchen/living/dining areas in 2 no. blocks ranging in height from 4-6 storeys;
- c) Internal amenity spaces (approx. 347.1 sqm) including a student lounge area, laundry room, postal room and a reception / office / kitchen / tearoom across the ground floor and first floor levels;
- d) External amenity areas (approx. 2,971.4 sqm) including 1 no. outdoor terrace at fourth floor level of Block A (193.1 sqm);
- e) Approx. 405.5 sqm of public open space in the form of a public plaza fronting Fassaugh Avenue;
- f) Switch room, ESB substation, sprinkler room and bin storage all in a single storey services building along the eastern site boundary;
- g) A total of 308 no. bicycle parking spaces at surface level (258 no. long term, covered bicycle parking spaces including 12 no. cargo bicycle parking spaces and 50 no. visitor bicycle parking spaces);
- h) Vehicular access to be provided from Fassaugh Avenue;
- i) 1 no. accessible car parking space proposed within the site;
- j) It is proposed that the development will be used for short term tourist or visitor accommodation outside of academic term times, in accordance with the definition of student accommodation.

The development will also provide for all associated service connections, public lighting, cold water storage and thermal store room, hard and soft landscaping, planting, formal activity equipment, removable bollards, tactile paving, boundary treatments, nature-based SuDS features, green and blue roofs, and all associated site clearance, excavation and development works above and below ground.

2.0 Methodology for Site Specific Flood Risk Assessment:

The method which will be implemented for this Site-Specific Flood Risk Assessment (SSFRA), assessing the risk of flooding for the proposed development will be based on and in accordance with “The Planning System and Flood Risk Management Guidelines for Planning Authorities 2009”, the “Strategic Flood Risk Assessment of the Dublin City Development Plan 2022-2028” and the “Dublin City Development Plan 2022-2028”.

2.1 Flood Risk Assessment:

This Site-Specific Flood Risk Assessment (SSFRA), in accordance with Flood Risk Management (FRM) guidelines will adopt a staged approach to evaluate the potential flood risk that the development may be exposed to. The three stages of appraisal and assessment are as follows:

- Stage 1: Flood Risk Identification
- Stage 2: Initial Flood Risk Assessment
- Stage 3: Detailed Flood Risk Assessment

2.2 Flood Zones:

The FRM guidelines categorize flood zones into three different categories. The categories are based on the probability and source of flooding. This FRA will adopt one of these zones, appropriate to the proposed development for flood risk management within the planning process. The three flood zones are as follows:

- Flood Zone A – where the probability of flooding from rivers and the sea is highest (greater than 1% AEP (Annual Exceedance Probability) or 1 in 100 for river flooding or 0.5% or 1 in 200 for coastal flooding)
- Flood Zone B – where the probability of flooding from rivers and the sea is moderate (between 0.1% AEP or 1 in 1000 and 1% AEP or 1 in 100 for river flooding and between 0.1% AEP or 1 in 1000 year and 0.5% AEP or 1 in 200 for coastal flooding)
- Flood Zone C – where the probability of flooding from rivers and the sea is low (less than 0.1% AEP or 1 in 1000 for both river and coastal flooding). Flood one C covers all areas of the plan which are not in zones A or B.

2.3 Sequential Approach and Justification Test:

The core concept of flood risk management set out within FRM guidance document is to adopt a risk-based sequential approach with the primary focus is to ensure that development, particularly new development is first and foremost directed towards land that is at low risk of flooding. Figure 2.3 below captures all the steps contained within the sequential approach.

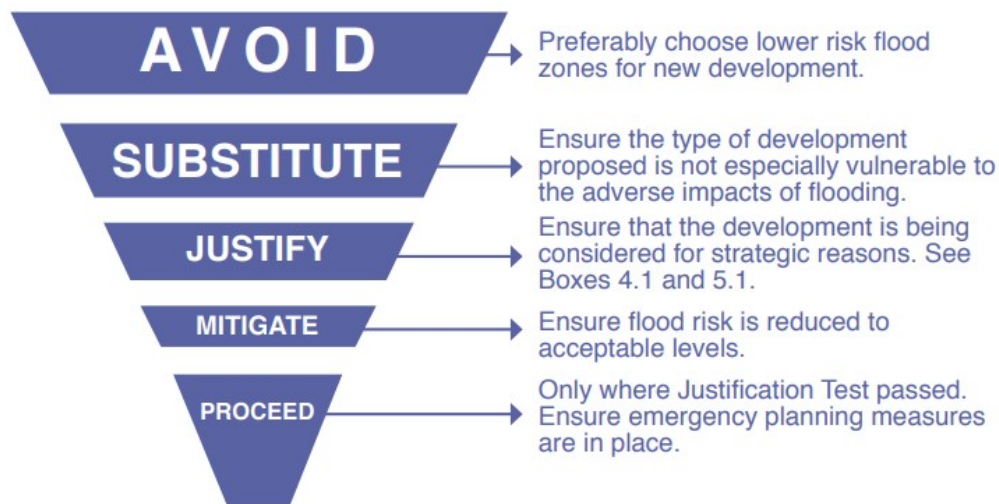


Figure 2.3: Sequential Approach Principles in Flood Risk Management.

Source: "The Planning System and Flood Risk Management Guidelines for Planning Authorities, 2009".

If the proposed development is predicted to flood and avoidance or substitution of land use cannot be achieved, exceptions can be made to allow development to proceed alongside the occurrence of potential predicted flooding. This can be achieved using a justification test, in which appropriate measures of managing the flood risk to an acceptable level are demonstrated.

Refer to Figure 2.3.1 below in which the approach mechanism for a sequential approach is clearly illustrated. Following this approach successfully will ensure that developments are either situated in a flood risk free zone or appropriate measures are implemented to mitigate the risk of flooding.

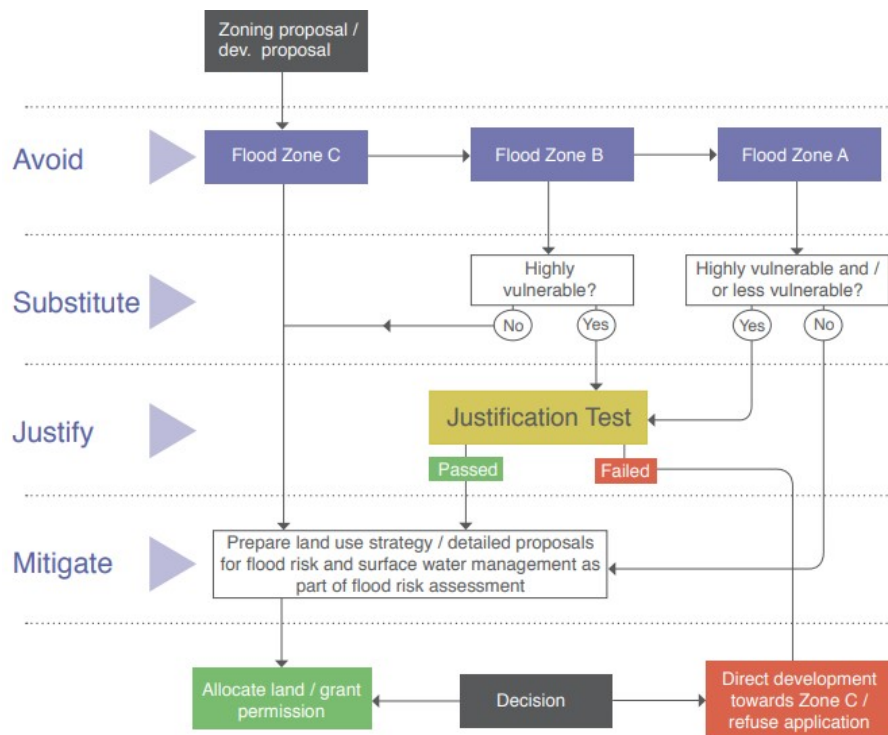


Figure 2.3.1: Sequential Approach Mechanism in the Planning Process
Source: “The Planning System and Flood Risk Management Guidelines for Planning Authorities, 2009”.

2.4 Vulnerability Class:

The sequential approach restricts development types to occur within the flood zone appropriate to their vulnerability class, see Figure 2.4 below 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; Water 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

Figure 2.4: Classification of Vulnerability

Source: "Strategic Flood Risk Assessment for the Dublin City Development Plan 2022-2028".

2.5 Justification Test:

The Justification Test is used to assess the appropriateness of developments in flood risk areas. As shown in figure 2.6 below a justification test is required for highly vulnerable developments within Flood Zone A and Flood Zone B. The test is comprised of two processes. The first is the Development Plan Justification Test and is used at the plan preparation and adoption stage where it is intended to zone or otherwise designate land which is at moderate or high risk of flooding. The second is the Development Management Justification Test and is used at the planning application stage where it is intended to develop land at moderate or high risk of flooding for uses or development vulnerable to flooding that would generally be inappropriate for that land.

	FLOOD ZONE A	FLOOD ZONE B	FLOOD ZONE C
Highly vulnerable development	JUSTIFICATION TEST	JUSTIFICATION TEST	APPROPRIATE
Less vulnerable development	JUSTIFICATION TEST	APPROPRIATE	APPROPRIATE
Water-compatible development	APPROPRIATE	APPROPRIATE	APPROPRIATE

Figure 2.5: Vulnerability & Flood Zone Matrix for justification Test.

Source: "Strategic Flood Risk Assessment for the Dublin City Development Plan 2022-2028".

2.6 Proposed Developments Vulnerability Class

The proposed type of development for this site is to be student accommodation. Student accommodations are categorised as highly vulnerable and are deemed appropriate to be located only within Flood Zone C. A justification test must be completed to allow highly vulnerable and less vulnerable types of developments to be within Flood Zone A.

3.0 Stage 1 – Flood Risk Assessment:

The initial flood risk identification stage uses existing information to identify and confirm whether there may be flooding or surface water management issues for the site in question that may need further investigation.

3.1 Previous Flooding Occurrences:

The OPW website www.floodinfo.ie provides comprehensive up to date background information to flooding in Ireland where the results of national flood studies have been consolidated. Inspection of the OPW Past Flood Events records indicates that there have been no recorded flood events within 1 kilometres from the site.

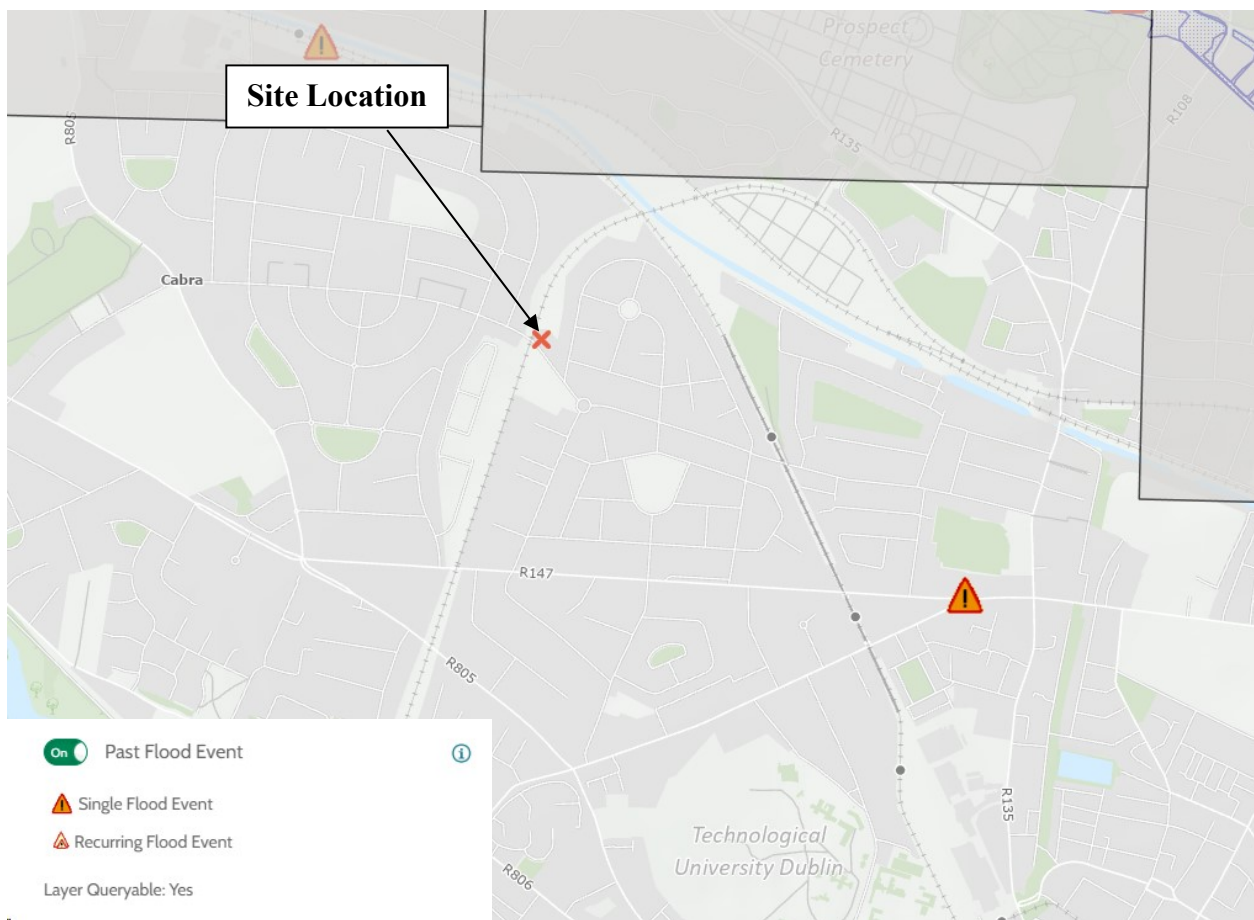


*Figure 3.1: Past Flood Events
Source: Floodinfo.ie*

3.2 Likelihood of Flooding

3.2.1 Coastal Flooding

Inspection of the Coastal flooding probability maps contained on and accessible through floodinfo.ie proves that the proposed site is not vulnerable to coastal flooding in any scenario (i.e., 10%, 0.5% or 0.1% AEP).

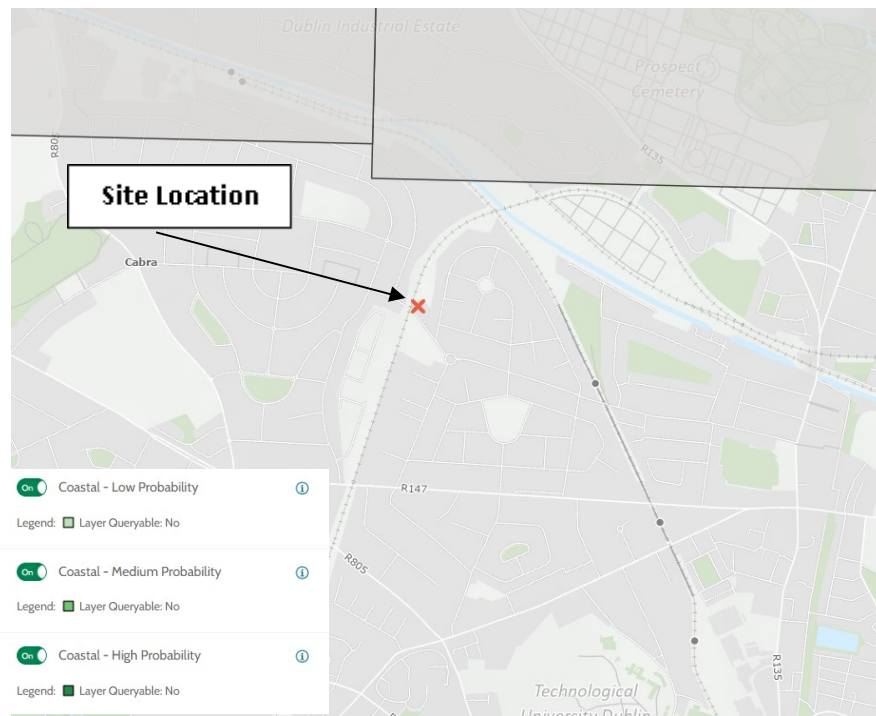


Figure 3.2.1: Coastal Flooding Maps
Source: Floodinfo.ie

3.2.2 Fluvial Flooding

Inspection of the Fluvial Flooding probability maps contained on and accessible through floodinfo.ie show the proposed site is not vulnerable to fluvial flooding in any scenario (i.e., 10%, 0.5% or 0.1% AEP).

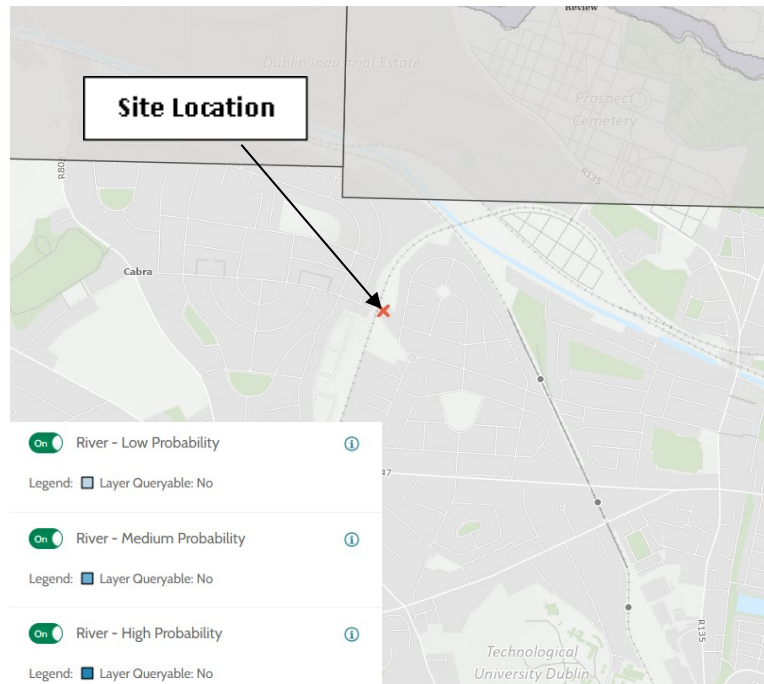


Figure 3.2.2: Fluvial Flood Maps
Source: Floodinfo.ie

3.2.3 Pluvial Flooding

Inspection of the Pluvial flooding probability maps contained on and accessible through floodinfo.ie appears to show that the proposed site is vulnerable to flooding during an extreme rainfall event. Maps contained on floodinfo.ie, show that during a 1:100-year flood event, part of the site would experience a flood up to a depth of 2m. However, this 2m flood depth only applies to the adjacent railway line that is 5.5m deeper than the proposed site, the only reason it shows that the proposed site is susceptible to flooding is just because of the quality of the map as it becomes very pixelated. This thinking can also be backed up by the fact that the maps show that none of the surrounding dwellings experience a flood depth of 2m despite being at the same level of the proposed site. Therefore, a max flood depth of 0.25m can be taken instead.

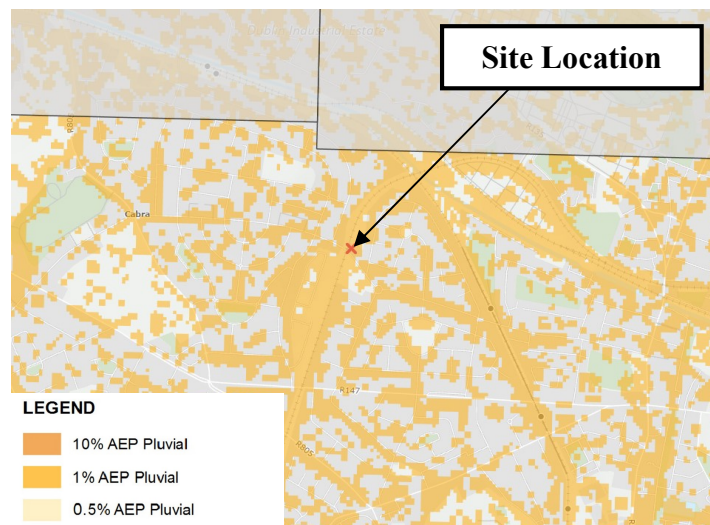


Figure 3.2.3.1: Pluvial Flooding Maps
Source: Floodinfo.ie

3.3 Source Pathway Receptor Model:

To summarize the sources, pathways and the consequential receptors of all floodings described in Stage 1 of this FRA, a Source-Pathway-Receptor model has been created. The model has been created in accordance with and based on Figure 3.3 below extracted from the FRM guidelines. These sources, pathways and receptors will be assessed further in the initial flood risk assessment stage.

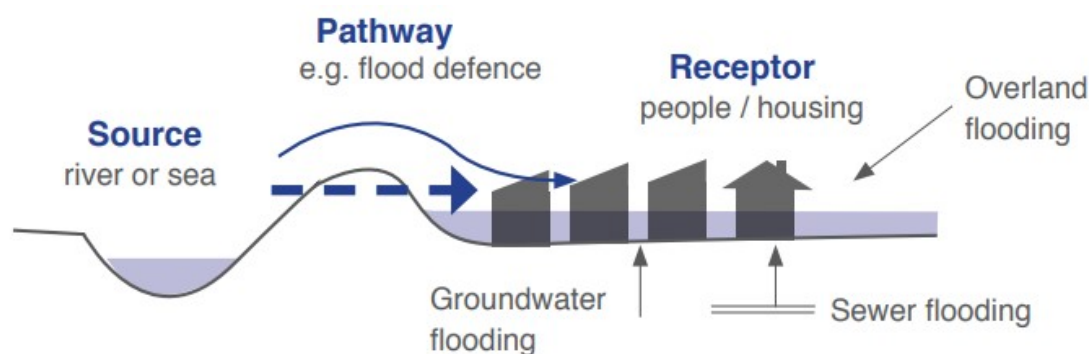


Figure 3.3: Source-Pathway-Receptor Model
Source: "Dublin City Development Plan 2022-2028".

The table below assesses the likelihood of the different types of flooding the subject site is deemed subject to:

Source	Pathway	Receptor	Likelihood	Impact	Risk
Coastal	N/A.* Proposed development is not within coastal flood zone.	Proposed Development	Very unlikely	N/A*	N/A*
Fluvial	N/A.* Proposed development is not within a fluvial flood zone.	Proposed Development	Very Unlikely	N/A*	N/A*
Pluvial	Proposed development is within a pluvial flood zone.	Proposed Development	Very unlikely	N/A*	N/A*
Groundwater	N/A* Proposed development is within a low vulnerability zone.	Proposed Development	Very unlikely	N/A*	N/A*

* N/A – Not Applicable

Table 3.3: Source-Pathway-Receptor Model

3.3.2 Source-Pathway-Receptor Model Results

It can be seen in Table 3.3 above that the subject site will not be affected by coastal, fluvial, pluvial, or groundwater flooding.

4 Stage 2 – Initial Flood Risk Assessment:

The initial flood risk assessment will look at the identified flood risks from Stage 1 in more detail, determining the origin of the flood, the means of justifying it and if necessary, the mitigation measures which need to be implemented. The main sources of flood risk identified from Stage 1 are:

- No coastal flood risk associated with the proposed development.
- No fluvial flood risk associated with the proposed development.
- Low pluvial flood risk associated with the proposed development.
- Low ground water flood risk.

4.1 Initial Coastal, Fluvial, Pluvial, & Groundwater Flood Risk Assessment:

The Source-Pathway-Receptor model identifies that there is no risk of potential coastal, and fluvial flooding within the site with a low risk of pluvial and groundwater flooding. Even with this low risk of flooding, mitigation measures will still be in place within the proposed site by means of incorporating SuDS measures throughout the site. This is done as the current flood maps were based off the existing site which is currently a majority greenfield site with no SuDS features in place. The redevelopment of the site will generate a lot of hardstanding area which could increase the risk of flooding on site. Therefore, the introduction of SuDS features will help mimic the existing greenfield features and help mitigate any risk of these potential floods spreading onto the neighbouring dwellings.

4.2 Flood Zone Category:

Inspection of the flood zone maps obtained from Dublin City Council show that the subject site is in a Flood Zone C.

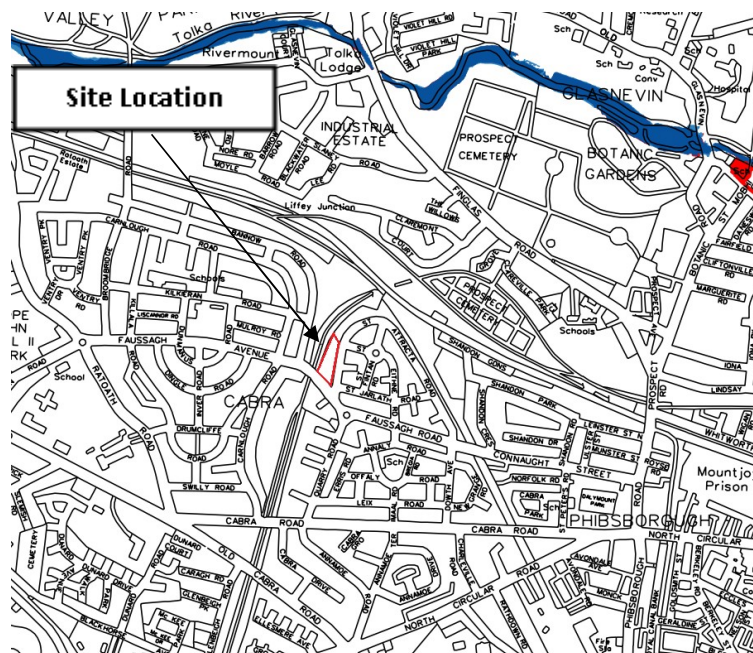


Figure 4.2: Flood Zone Maps
Source: "Dublin City Development Plan 2022-2028"

4.3 Proposed Alleviation Measures:

The surface water strategy for the development proposes a combination of SuDS measures to be incorporated into the design. The SuDS measures proposed for this development include soft landscaping and permeable surfacing throughout the site, green-blue roofs, and a flow restrictor. These measures will significantly reduce the run-off from the site to the public system to negligible amounts and shall have the impact of improving water quality and reducing the already low flood risk for the site.

Proper operation and maintenance of the drainage system should also be implemented in accordance with the CIRIA 753, The SuDS Manual, to reduce the risk of human or mechanical error causing fluvial flood risk from blockages, etc.

4.3.1 Permeable Paving

Permeable paving is a pervious surfacing that can treat rainwater at source and allow infiltration through to an underlying porous subbase. Water can be stored within voids of the subbase layer before being released slowly to the drainage collection system through natural flow. As well as reducing the amount of runoff from the surface, permeable paving will slow down the rate of runoff from the pavement in extreme rainfall events contributing to attenuation flows. In addition, permeable paving will increase the quality of water which is intercepted by the system through filtration, biodegradation, pollutant adsorption and settlement and retention of solids, also the reduction in peak flows to the outfall will enhance settlement and biodegradation of pollutants. It is proposed to use permeable paving throughout the site in order to reduce the total hardstanding areas.

4.3.2 Blue-Green Roof

A blue roof incorporates a sustainable drainage system SuDS, which retains water following a downpour and manages how the water is dispersed to prevent the damaging run off. The blue roof will act as a roof level attenuation tank which removes the need for an in-ground attenuation tank with the green roof typically installed above the blue roof. Rainwater on the green-blue roof will be absorbed by the vegetation layer (green roof). For heavier storm events, when the vegetation layer is no longer capable of retaining any more water, it will then be deposited into a 100mm deep “Bauder attenuation cell 100” (blue roof) and used by the vegetation layer once it has recovered. In heavy 1 in a 100-year storm event, when the water can no longer be held within the vegetation layer or attenuation cells it will discharge into the surface water sewer located at ground level at a controlled rate via flow restrictors.

4.3.3 Raingardens

It is proposed to provide 4 No raingardens within the site. The key function of rain gardens in this instance is to treat the excess surface water run-off the surrounding paved areas. The initial run-off will be taken up by the plant and shrubs, after which the water will migrate through the rain garden construction, be temporarily stored and infiltrated into the sub-soil thereafter. For a heavy rainfall event, to mitigate any potential over flooding for any specific rain garden, a 150mm diameter perforated pipe will be provided, connecting the raingarden to the proposed surface water sewer.



4.3.6 Hydro Brake

The maximum run-off for the site has been calculated to be 2 l/s. To ensure that the existing surface water sewer is not over capacitated, the flow of surface water leaving the last manhole on site (as per Greater Dublin Regional Code of Practice for Drainage Works, Rev 6) will be limited to 2 l/s via a hydro-brake, a flow control device capable of managing the flow rate of water.

5 **Stage 3 – Detailed Flood Risk Assessment:**

It is noted from stages 1 and 2 that the proposed development is subject to a small flood risk. The detailed flood risk assessment will go into a detailed explanation of how the development is proposed to mitigate the flood risks from the identified sources.

5.1 **Pluvial Flooding**

The strategy for managing surface water and mitigating the risk of pluvial flooding for the development is through the use of appropriate SuDS measures. The measures include permeable paving, blue-green roof, and a flow control device, all of which are described in detail in clause 4.3 of this FRA. These proposed SuDS measures along with proper implementation of operation and maintenance of the drainage system in accordance with CIRIA 753 and The SuDS Manual will significantly reduce the risk of pluvial flooding as a result of human, mechanical failure or a heavy rainfall event. By designing the surface water drainage infrastructure to withstand a 1 in 100-year storm event the risk of pluvial flooding is deemed to be within acceptable limits.

5.2 **Proposed Development and Impact on Flood Risk**

The existing site is currently a greenfield site with no existing flood alleviation measures in place. SFRA states that, “Pluvial Flooding results when heavy, often sudden rainfall, causes flooding before it can infiltrate the ground, or enter a natural or man-made drainage system or a watercourse or a conveyance system (e.g. canal) because the system is already full to capacity.”

The inclusion of a flow control device, blue-green roofs, and permeable paving are intended to reduce the risk of pluvial flooding on the development. By storing storm water on site and then releasing it into the public sewer slowly, will reduce the outflow rate from the development and make it less likely to contribute an overflow of the public system. Refer to Appendix E of the Engineering Services Report which compares the run-off from the existing site and the proposed site. It shows that the run-off from the existing site is around 16 l/s while the run-off from the proposed site is only 2 l/s.

The proposed SuDS measures are sized to cater for a 1:100 year storm event including an allowance of 20% for climate change.

5.2.1 Flow Route during exceedance event

As mentioned in this report previously, the proposed development has a low risk to pluvial flooding, but this risk has been reduced even further due to the introduction of the various SuDS features, there remains a possibility of exceedance in the event of blockages or a storm event greater than 1 in 100 years. This section will outline the expected overland flow routes and identifies where water would travel should such an event occur.

If regular maintenance isn't carried out on the various SuDs features, blockages within the features may occur, therefore reducing the overall effectiveness of the features. Should such an exceedance event occur it is critical that the proposed development doesn't direct the overland water flow towards neighbouring dwellings or the adjacent railway line.

In the existing condition, due to the topography of the site, majority of the surface water would flow towards the front of the site and onto Faussagh Avenue, with the remainder of the surface water being directed towards the neighbouring developments and the adjacent railway line. Refer to figure 5.2.1 below.



Figure 5.2.3: Existing Flow Routes

In the proposed condition, the site no longer slopes down towards the East and West boundaries, therefore not directing surface water towards the neighbouring dwellings and railway line during an exceedance event. This is done by making the levels across the site mainly flat and by installing a retaining wall along the eastern boundary. The site however, still slopes towards Faussagh Avenue. During an exceedance event, the proposed raingardens can still be used to store rainwater, as the raingarden will be designed at a lower level compared to the surrounding areas it will become a local designated low spot for the rainwater. Their reduced levels allow water to flow naturally into them, providing controlled temporary ponding and reducing the uncontrolled overland flow. The remainder of the surface water will be directed towards Faussagh Avenue and down to the roundabout at the end of Faussagh Avenue. Due to various SuDS features being proposed within the development it is unlikely that all of them would experience a blockage at the same time, therefore even during an exceedance event the proposed SuDS features would help to provide some storage and reduce the amount of overland water

flowing down Faussagh Avenue. Refer to Figure 5.2.2 below for the overland flow route of the proposed development.



Figure 5.2.2: Proposed Development Overland Flow Route

5.3 Justification Test:

As per clause 2.3 of this FRA, the development is considered as a “highly vulnerable” development as can be seen in figure 2.3. However, as the site is not subjected to incur either tidal or fluvial flooding or the combination of both, at any capacity, the development is deemed to be located in a Flood Zone C category, which justifies the Dublin City flood zone maps, figure 4.2 above. In accordance with figure 2.4, the development is considered appropriate and does not require a justification test.



6.0 Conclusions:

This Site-Specific Flood Risk Assessment concludes the following:

- This SSFRA for the proposed development along Faussagh Avenue, Cabra, Co. Dublin was undertaken in accordance with the requirements of the “Planning System and Flood Risk Management Guidelines for Planning Authorities”, November 2009; and the “Dublin City Development Plan 2022-2028”.
- Historically, with reference to OPW’s past flooding’s, the site has never experienced flooding of any kind.
- The proposed development is to be a student accommodation, which is categorised by the Guidelines as a “highly vulnerable”. The subject site is located within Flood Zone C and is therefore deemed appropriate in accordance with “*The Planning System and Flood Risk Management Guidelines for Planning Authorities, 2009*”.
- There is little to no risk of Tidal, coastal, and groundwater flooding. The development’s drainage design includes for a 20% climate change allowance. The proposed development will not increase run-off rate when compared with the existing site and satisfies the requirement of the SFRA to reduce flooding and improve water quality.
- With reference to the above, it is our opinion that the risk of flooding for the development is minimal and within the acceptable limits.


Shane Horace B.Eng.,

Engineer,
For Lohan & Donnelly Civil & Structural Consulting Engineers

Date: 22nd December 2025