


REPORT

Flood Risk Assessment for Whitebox Student Campus at Groody Road, Newcastle, Castletroy, Limerick

January 2025

GARLAND
Concepts Realised

CONTENTS

Description of change	Originator	Rev	Approval	Date
Initial Release	PC	1st	BL	17/09/24
Planning Application	PC	A	BL	08/10/24
Updated Section 3	PC	B	BL	16/10/24
Updated Project Details	PC	C	BL	23/01/25
Images Updated	PC	D	BL	30/01/25

1. INTRODUCTION

GARLAND have prepared this Site Specific Flood Risk Assessment (FRA) for planning permission for the development of student accommodation at Groody Road, Newcastle, Co. Limerick in accordance with the requirements of "The Planning System & Flood Management Guidelines" published by the Department of Environment, Heritage and Local Government in November 2009.

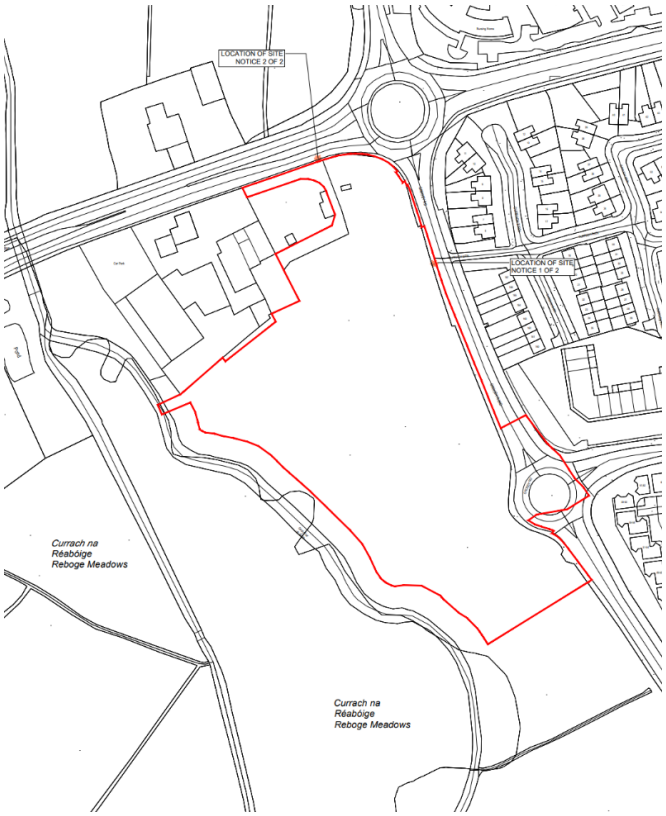


Figure 1 – Site Location Map

1.1. Flood Risk Management Guidelines

"The Planning System and Flood Risk Management Guidelines" (hereafter referred to as FRM Guidelines) was published in November 2009. The core principle of the guidelines is to adopt a risk based sequential approach to managing flood risk and to avoid development in areas that are at risk.

1.2. Flood Risk Zoning

The guidelines set out the following description of flood risk zones;

1.2.1. Flood Zone A

- Lands with a high probability of flooding;
- Subject to flooding in the 1 in 100 year return period storm event – rivers;
- Subject to flooding in the 1 in 200 for year return period event – coastal/ tidal areas.

1.2.2. Flood Zone B

- Lands with a moderate probability of flooding;
- Subject to flooding in the 1 in 1000 year return period storm event – rivers;
- Subject to flooding in the 1 in 1000 for year return period event – coastal/ tidal areas.

1.2.3. Flood Zone C

- Lands with a low probability of flooding;
- Subject to flooding only for events storm greater than the 1 in 1000 year return period.

In accordance with the Limerick City and County Council Development Plan 2022-2028 – Volume 4 Strategic Flood Risk Assessment, the site is not located within Flood Zone A and B and the site is zoned new residential use in brown and Groody Valley Green Wedge in the green and white hatch.

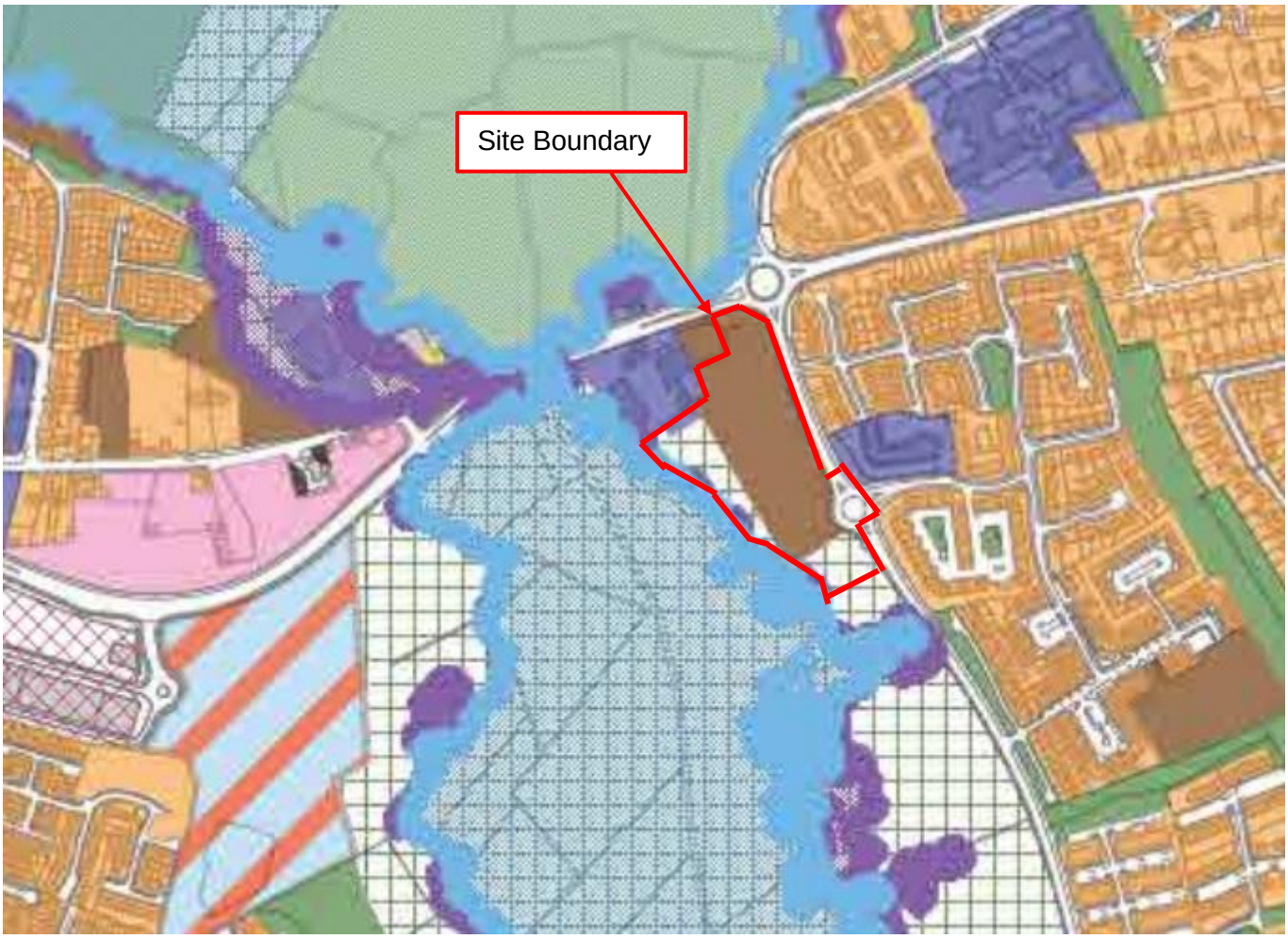


Figure 2 - Extract from LCCC 2022-2028 Development Plan – Volume 4 Strategic Flood Risk Assessment Caherdavin/Moyross

2. SITE TOPOGRAPHY

The site is relatively flat with a small fall from Groody Road along the Eastern Boundary of the site to the River Groody located along the Western Boundary of the site. There is approximately a 1-2m fall in level from east to west across the site. The level of the site adjacent to the existing Groody Road varies from 9.50m OD to 7.50m OD while the levels vary from 9.50m to 6.50m along the northern boundary. The existing site levels are indicated within **Figure 3**.

Figure 3 – Existing Landholding Topography

3. PROPOSED DEVELOPMENT

This development comprises of a new purpose-built student accommodation consisting of 196 no. bed clusters, is distributed across 5 no. separate blocks, ranging in height from 5 to 8 storeys, with a total of 1,400 no. student bedspaces. Permission is also sought for vehicular/pedestrian entrance from Groody Rd and all associated site works including a storm connection to the existing Groody River west of the development.

Figure 4 – Proposed Development

4. REVIEW OF POSSIBLE SOURCES OF FLOODING

All potential flood risks and sources of flood water at the site have been considered, as follows;

Fluvial Flood Risk

Fluvial Flooding is the result of a watercourse (river, stream etc.) exceeding its capacity and excess water spilling out onto the adjacent floodplain. A fluvial flood risk in the vicinity of the proposed development exists due to the close proximity of the River Groody. This river may overspill its banks during extreme events and therefore fluvial flood risk will be considered further in this report.

Pluvial Flood Risk

Pluvial flooding is the result of rainfall-generated overland flows which arise before run-off enters a watercourse or sewer. It is usually associated with high intensity rainfall. Pluvial flood risk at this site is being addressed by the provision of a storm water collection network on the site.

Coastal/ Tidal Flood Risk

Coastal/Tidal Flooding is the result of a high tide combined with a storm surge which result in inundation of the floodplain at coastal locations or on the tidal reaches of rivers. A coastal flood risk in the vicinity of the proposed development exists due to fact this site is located on the tidal reach of the River Shannon Estuary. Therefore coastal/ tidal flood risk will be considered further in this report.

Groundwater Flood Risk

Groundwater flooding occurs as a result of water rising up from the underlying rocks or from groundwater flowing from abnormal springs. This type of flooding tends to occur after very long periods of sustained high rainfall and typically manifests itself as winter lakes or turloughs. In addition to a review of geological mapping and local records, the Office of Public Works (OPW) Preliminary Ground Water Flood Hazard Map for Ireland (2010) was also examined to determine if groundwater flood risk should be considered at this site. Our review has determined that groundwater flooding is not a key risk at this site and it has therefore not been considered further in this report.

5. PAST FLOOD EVENTS

There are 19 past events recorded within a 2.5 km radius of the site.

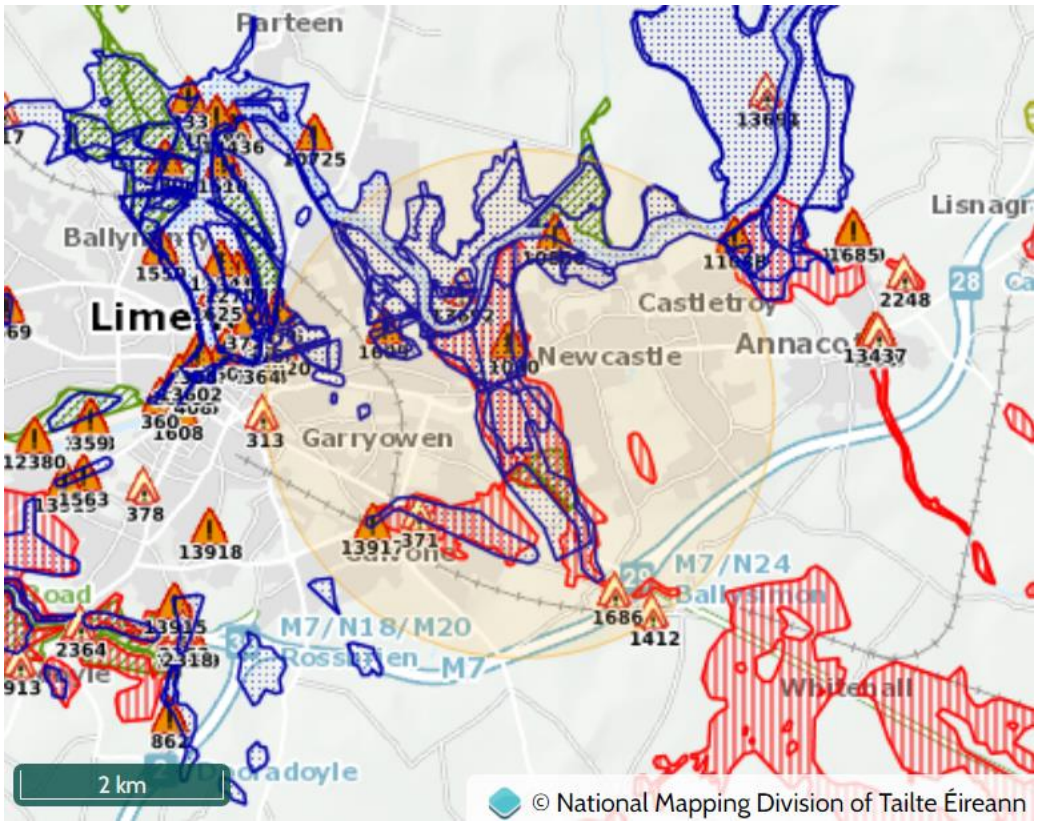


Figure 5 - Past Flood Events

There are three flood events recorded on this site described as follows:

- **Shannon Lower Feb 1990 (Flood ID – 127)**
  - This area was flooded in February 1990. A report was undertaken to model the flood inundation from Parteen Weir to Limerick City that was published in 1956.

- **Shannon December 1954 (Flood ID – 3)**
  - This area was flooded in December 1954. A report was undertaken and published in 1956 by US Army Corps of Engineers following multiple floods on the River Shannon in 1954.

- **Groody December 1999 (Flood ID – 319)**
  - A section of the open space was flooded in December 1999.

The extents of the flood events outlined above, particularly the 1990 and 1954 events pre date topography increases to the site which decrease the impact and extents of future flooding.

6. FLOOD RISK ASSESSMENT

6.1. Fluvial Flooding From Groody River and River Shannon

The National Catchment Flood Risk Assessment and Management (CFRAM) Programme was developed to meet the requirements of the EU Floods Directive (2007/60/EC) and is led by the OPW, the lead agency for flood risk management in Ireland.

As part of the CFRAMS programme, detailed hydraulic models for both fluvial and coastal events were constructed for Limerick City and surrounds and the flood extents maps and levels for these lands have been determined.

The Groody River runs along the western boundary of the site with the River Shannon approximately 0.79km north of the development. The CFRAMS programme modelled that these rivers flood with an Annual Exceedance Probability (AEP) of 10% (1 in 10 chance), 1% (1 in 100 chance) and 0.1% (1 in 1000 chance) as shown in Figure 6 below.

We note the area where the site is located is currently under review by CFRAMS. The flood levels for the Groody River are recorded 1m below that of the River Shannon flood levels. As a result, and conservatively, we have chosen the River Shannon for the fluvial flood levels for the development, see the table below.

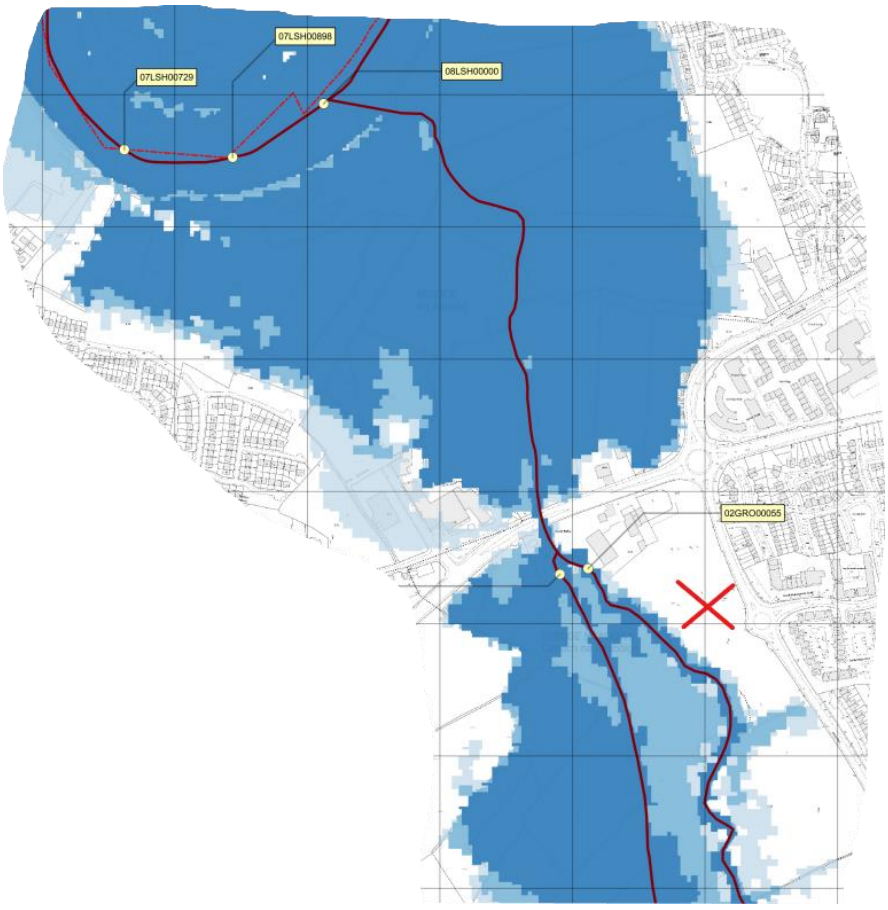


Figure 6 - Fluvial Flooding

Fluvial Flooding Levels	
10% AEP	5.60m AOD
1% AEP	6.21m AOD
0.1% AEP	6.78m AOD

The CFRAMS fluvial study and LCCC Development Plan maps confirm that a small portion of the site is located in Flood Zone A and Flood Zone B.

As a result of the position and level of the proposed development when compared to the surrounding areas, the fluvial flood risk to the proposed development site is considered to be LOW subject to mitigation measures being employed.

Furthermore, the buildings within the development are being constructed on the higher areas of the existing site in proximity to the proposed road at the eastern boundary. The minimum building finished floor levels are proposed at 7.80m OD approximately 1m above the 0.1% AEP flood level to allow for freeboard and climate change.

6.2. Coastal Flooding From The River Shannon

The CFRAMS coastal hydraulic model results in the vicinity of the development indicates that tidally influenced flooding of the River Shannon does not extend to this section of the river and that the fluvial flood maps are to be used, refer to Figure 7 below. Therefore, coastal flooding is not considered a risk for the development.

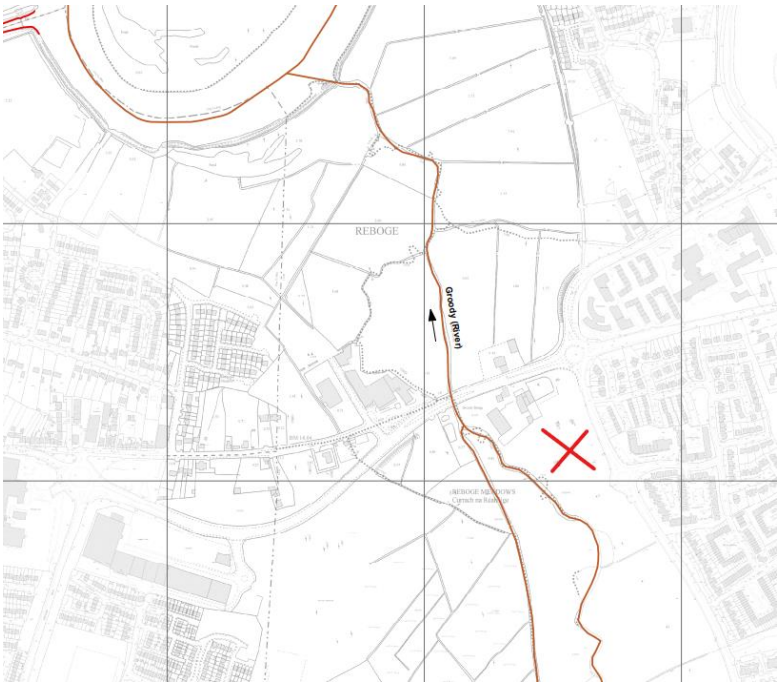


Figure 7 – CFRAMS Coastal Flooding Map

6.3. Pluvial Flooding

The design of a new storm drainage network for the development on the lands will address any pluvial flooding issues on the site. The new surface water connection is being made to the existing Groody River and a non-return valve is to be installed at the outfall headwall to ensure no flood waters enter the storm water network.

7. MITIGATION MEASURES

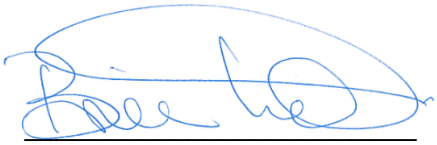
As a result of the flood risk assessment, the following mitigation measures have been used during the design of the mixed-use development:

- The topography of the Flood Zone A & B lands at the western and southern boundaries of the site will remain and no development is proposed for this area of the site.
- The topography of the Flood Zone C lands adjoining the Flood Zone A& B extents have been retained at very similar levels to existing site levels.
- All buildings are located within Flood Zone C and have a minimum finished ground floor level of 7.8m OD. This level is approximately 1m above the 0.1% AEP flood level to allow for freeboard and climate change.
- The Electrical Substation if required will be built outside of the Flood Zone A& B areas and at a level of 7.8m OD.
- In the event of emergency, all buildings can be accessed from roads above the 0.1% AEP flood level.
- The surface water discharge from the site is limited to the existing greenfield run-off to prevent downstream flooding.
- The surface water outfall from the site will contain a non-return valve.
- We note no basement construction is proposed for the development.

8. CONCLUSION

All available existing information has been reviewed regarding flood risk in the location of the proposed development. This development meets the requirements for sustainable development under the Flood Risk Management Guidelines. A series of mitigation measures against flooding have been adopted in the design of the development, namely constructing the development within the zoned lands outside the flood zone, maintaining a green open space for the flooding to occur, raising building levels well in excess of predicted flood levels and maintaining access above the flood level from the adjoining existing road in case of emergency.

All development within the site is being undertaken within Flood Zone C and the Flood Zone A & B areas are being maintained. Therefore, a justification test is not required for the development.

Signed: 

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Date: 30 January 2025

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