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# CALTRAGH LRD NEWTOWNHOLMES ROAD, CALTRAGH AND CORNAGEEHA, CO SLIGO

Flood Risk Assessment

MAY 2024

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### 1. INTRODUCTION

#### 1.1 General

This Flood Risk Assessment Report has been prepared by Jennings O'Donovan & Partners Limited on the instruction of Rhatigan Architects to assess the flood risk associated with the site located at Newtownholmes Road, Caltragh & Cornageeha, Sligo. The proposed development has a total area of 3.796 hectares, and will consist of a residential development with 118 new residential units and a new Creche.

The site is located in Caltragh & Cornageeha, as outlined in red in Figure 1.1 below.



Figure 1.1: Site Location

Details of the site are outlined in Table 1.

Component	Proposed Works	
Site Area	Approx. 3.796 ha	
Description of works	The site will consist of a residential development with 118 new residential units and a new Creche	

#### Table 1 Proposed Development Works

This Flood Risk Assessment covers the site in Caltragh & Cornageeha, Co. Sligo. It was prepared in accordance with the report '*The Planning System and Flood Risk Management - Guidelines for Planning Authorities*' issued by the Department of Environment, Heritage and Local Government in November 2009. Flood risk from fluvial, surface water and ground water sources has been assessed based on existing available information.

The assessment methodology involved researching and collating flood related information from the following data sources:

- Base maps Ordnance Survey of Ireland;
- Flood Hazard Maps and flooding information for Ireland, (www.floodmaps.ie);
- Office of Public Works (OPW);
- Geological Survey of Ireland (GSI) maps on superficial deposits;
- EPA hydrology maps;
- CFRAMS (Catchment Flood Risk Assessment & Management Study);
- Sligo County Development Plan 2017 2023 EXTENDED to July 2024

#### 1.2 Scope

This Flood Risk Assessment is based on the following:

- Department of Environment, Heritage and Local Government guidelines for Planning Authorities covering Flood Risk Management (*The Planning System and Flood Risk Management: Guidelines for Planning Authorities 2009'*)
- Risk of flooding to the Proposed Development Site from flood flow from neighbouring watercourses.
- Risk of flooding resulting from direct rainfall.
- Risk of flooding from groundwater.

In addition to the above, the study also examined any possible impact the proposed works may have on the existing drainage regime locally adjacent to the Proposed Development Site. The impacts addressed under this heading comprise:

- The impact of surface water runoff on the flow regimes in neighbouring watercourses.
- Loss of floodplain.
- Review of historical flood records.

### 2. PLANNING GUIDELINES

In November 2009, the Department of Environment, Heritage and Local Government issued a guidance document to planning authorities in relation to flood risk management, titled '*The Planning System and Flood Risk Management*'. These guidelines set out the policy on development and flood risk in Ireland and provide a framework for the integration of flood risk assessment into the planning process. The objective is to ensure that flood risk is considered at all stages in the planning process and, as a result, to:

- Avoid inappropriate development in areas at risk of flooding,
- Avoid new developments increasing flood risk elsewhere,
- Ensure effective management of residual risks for development permitted in flood plains.

The guidelines set out a staged approach for the consideration of flood risk in relation to developments as follows:

- Stage 1: Flood risk identification to identify whether there may be any flooding or surface water management issues related to either the area of regional planning guidelines, development plans and Local Area Plans (LAP's) or a proposed development site that may warrant further investigation at the appropriate lower level plan or planning application levels;
- Stage 2: Initial flood risk assessment to confirm sources of flooding that may affect a plan area or proposed development site, to appraise the adequacy of existing information and to scope the extent of the risk of flooding which may involve preparing indicative flood zone maps. Where hydraulic models exist, the potential impact of a development on flooding elsewhere and of the scope of possible mitigation measures can be assessed. In addition, the requirements of the detailed assessment should be scoped; and
- Stage 3: Detailed flood risk assessment to assess flood risk issues in sufficient detail and to provide a quantitative appraisal of potential flood risk to a proposed or existing development or land to be zoned, of its potential impact on flood risk elsewhere and of the effectiveness of any proposed mitigation measures.

The guidelines classify developments into three vulnerability classes based on the effects of flooding:

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- Highly vulnerable development,
- Less vulnerable development,
- Water compatible development.

Residential housing is classed as being highly vulnerable.

flooding. Flood zones are defined as follows in the guidelines:

- Zone A is at highest risk. In any one year, Zone A has a 1 in 100 year (1%) chance of flooding from rivers and a 1 in 200 year (0.5%) chance of flooding from the sea.
- Zone B is at moderate risk. The outer limit of Zone B is defined by the 1 in 1,000 year (or 0.1%) flood from rivers and the sea.
- Zone C is at low risk. In any one year, Zone C has less than 1 in 1,000 year (<0.1%) chance of flooding from rivers, estuaries or the sea.

It is stated in the guidelines that during the identification of flood zones, no account should be taken of any flood relief walls or embankments.

# Table 2.1: Matrix of Vulnerability versus flood zone to illustrate appropriate development and that required to meet the Justification Test (reproduced from Table 3.2 of Planning Guidelines)

	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 2.1, which is reproduced from the guideline document to Planning Authorities in relation to Flood Risk Management states that dwelling houses should be located within Flood Zone C. Section 5 of this Flood Risk Assessment document will consider the Flood Zone assignment for the proposed site.

Table 2.1 refers to the use of a Justification Test under certain circumstances. In cases where there are insufficient sites available to locate a development in the appropriate low flood risk zone, the guideline documents allow for consideration of sites within flood risk zones. A Justification Test is then required to assess such proposals in light of proper planning and sustainable development objectives.

This report considers the Flood Risk of the proposed development site in relation to Stages 1 and 2 of the staged approach outlined above.

#### 3. PROPOSED DEVELOPMENT SITE

#### 3.1 Site Description

The proposed development site is located within Caltragh & Cornageeha, Co. Sligo. It is positioned to the east of the N4 Road.

A topographical map of the proposed site and surrounding areas levels are shown in Figure 3.1 below.



Figure 3.1: Topographical map of the proposed development site.

The proposed development falls generally from East to West. There is a natural 'valley' formed in the middle of the site that is notably lower than the adjoining road and is currently characterised by mature trees and hedgerows.

The highest spot (49.80m A.O.D) on site is in the Southeast corner at the termination of the existing road. The lowest spot (34.60m A.O.D) on site is along the western boundary near the centre of the site in the 'valley' area. In the central 'valley' area of the site the ground level is notably lower than the adjoining road.

### 4. FLOOD RISK REVIEW

#### 4.1 Approach

The risk of flooding to the proposed development site shall be assessed in relation to the following criteria:

- Fluvial Risk: Inundation from flow from neighbouring watercourses
- Pluvial Risk: Flooding due to direct rainfall.
- Groundwater Risk: Flooding due to a high-water table.
- History of Flooding
- Available Predictive Flood Risk Mapping
- Impact of presence of the proposed development on the existing flood risk regime at the proposed development site.

#### 4.2 OPW Catchment Flood Risk Assessment and Management (CFRAM)

The OPW are continuously developing Catchment Flood Risk Assessment Management (CFRAM) maps to predict theoretical or "design" flood events with an estimated probability of occurrence, rather than information for actual floods that have occurred in the past – these are presented (where available) in a separate section of "past flood events".

For the proposed site, there are no available CFRAM maps.

#### 4.2.1 Tidal Flood Risk.

There is no risk of tidal flooding at the proposed development site as it is not near the coast.

#### 4.2.2 Fluvial Flood Risk.

The OPW have not identified any significant river or watercourse in the vicinity of the proposed development site, therefore there is no apparent risk of fluvial flooding to the proposed development site.

#### 4.2.3 Historical Flood Risk.

The OPW's online Floodmaps portal provides information on reported floods, in the form of reports, photos, and newspaper articles.

The database does not provide any record of flood events occurring at the proposed development site. (Figure 4.1). 1 No flood event occurred in the vicinity of the development site. The R287 flooded approximately 600m from the site boundary in November 2009. The cause of the flooding is not noted, however, remedial works in the form of the construction of new soakaways and the extension of existing drains appear to have been carried out. No flood event has been reported in the area since.



Figure 4.1: Site Historical Flood Events (Source: Floodinfo.ie)

#### 4.3 Pluvial Flood Risk

As mentioned in Section 3 above, the proposed development site is generally sloping downward from east to west. The proposed development and associated works will increase the impermeable area of the existing site and therefore, surface water runoff from the site will be increased. As a result, pluvial flooding on site and downstream may be affected by the development, however the design of appropriate drainage and use of SUDs techniques are recommended to prevent localised flooding on site and help mitigate any flood risks in the surrounding areas.

The average annual rainfall for this region is 1203.6mm, (https://www.met.ie/climate/availabledata/monthly-data, Claremorris, up to Oct-2023). The mean Potential Evapotransporation (PE) for Claremorris is 669.7mm. The effective rainfall represents the water available for runoff and groundwater recharge and equals the annual rainfall less the actual evaporation or 1203.6 – 669.7 = 533.9 mm.

The use of gravel surfacing and grassed areas in the amenity spaces, where appropriate, will allow rainwater to percolate to ground. The site surface water drainage system from roof and hard surfaces will be designed to best practice to provide protection from pluvial flooding. The use of SUDs techniques such as rainwater harvesting tanks and soakaways are considered to offer potential solutions. The drainage design should be such as to cater for short, intense rainstorms.

#### 4.4 Groundwater Flood Risk

The Geological Survey of Ireland mapping website indicates that the Proposed Development Site is underlain by Dartry Limestone that comprises of Dark fine-grained cherty limestone. The bedrock indicated is a regionally important aquifer (Rkc). The groundwater vulnerability was determined to be high. Appendix A includes the downloaded GSI mapping for the above.



Figure 4.2: Caltragh Ground Water flooding maps (Site identified by red crosshair)

The OPW Floodmaps portal includes mapping of the GSI Groundwater Flooding Study for Sligo. The mapping was examined to determine if there was an existing risk from groundwater flooding at the site. The mapping indicates that the site is located far away for the lowest probability groundwater flooding event. Therefore, there is little or no risk from groundwater flooding at the proposed development site.

Furthermore, groundwater flooding typically only occurs in karst limestone areas in the vicinity of turloughs. Given that the bedrock at the development site is not karst limestone and there are no known Turloughs in the area, the risk of groundwater flooding is further negated.

#### 4.5 Impact of Development on current Flood Regime

All surface water runoff from proposed impermeable surfaces within the proposed development site will be collected in a dedicated drainage network. Sustainable Drainage Systems ("SuDS") will be implemented where possible to provide elements of source control of surface water, attenuation of runoff and water quality improvements. The site surface water drainage system will be designed to best practice to provide protection from surface runoff due to direct rainfall. The proposed development site is not located in a floodplain, ensuring that the Development will not result in any loss of floodplain.

#### 4.6 Summary of Flood Risk

Table 4.2 below provides a summary of the flood risk at the Proposed Development Site.

#### Table 4.2: Flood Risk Summary Table

Source	Pathway	Receptor	Comment
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Source	Pathway	Receptor	Comment
Tidal	-	-	There is no risk of Tidal flooding at the proposed development site.
Fluvial	Overbank	Proposed Development	There is no identified risk of fluvial flooding at the proposed development site.
Pluvial	Ponding of Rainwater on site	Proposed Development	There is no identified risk of pluvial flooding at the proposed development site. It is recommended that the proposed storm drainage is designed with SuD's principles, where possible, to ensure best practices are upheld and the increase in flows from the development site are catered for.
Groundwater	Rising Groundwater Levels	Proposed Development	Based on the GSI mapping and OPW mapping, there is no apparent risk from groundwater flooding at the proposed development site.

### 5. CONCLUSION

There is no apparent risk of fluvial or tidal flooding at the proposed development site. It is reasonable to conclude that the site lies within Flood Zone C as defined by the guidance document 'The Planning System and Flood Risk Management'. There is no apparent risk of pluvial flooding near the proposed houses in the development site. Therefore, the provision of a stormwater run-off collection system incorporating SUDs features is recommended. There is no apparent risk of groundwater flooding at the proposed development site.

This research has concluded that there is no record of flooding previously occurring on the proposed development site. The proposed development site is not located in a floodplain; therefore, the proposed works will not result in a loss of floodplain. The proposed works are unlikely to increase the current flood risk in this catchment.

The conclusion of this FRA is that the proposed development site is not at risk of flooding (fluvial, tidal, pluvial or groundwater) and the proposed works will not result in any significant change in risk or flooding regime. Additionally, the Development is deemed to be appropriate (as set out in Table 3.2 of the guidelines for Flood Risk Management (DoEHLG/OPW, 2009). As such, no further stages of flood risk assessment are therefore required.

## APPENDIX A GSI Mapping



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