DOCUMENT TITLE

FLOOD RISK ASSESSMENT FOR PROPOSED HOUSING DEVELOPMENT AT RATHMOLYON, TRIM, CO. MEATH

CLIENT

MEATH COUNTY COUNCIL

PROJECT NO. 5514

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1. INTRODUCTION

McCrae Consulting Engineers (MCE) has prepared this site-specific Flood Risk Assessment (FRA) to assess the proposal to develop 22 houses at a vacant site at Church View, Rathmolyon, Co Meath with respect to the requirements of **The Planning System and Flood Risk Management** (PSFRM) guidelines published by the Department of Environment, Heritage and Local Government in November 2009.

1.1 Overview of the Proposed Development

The site is located at the corner of Church View and the R159, south of Rathmolyon village crossroads, in an established residential area. Rathmoylon lies approx 7.5km south of Trim. The site lies about 84m above mean sea level. A site location map is shown in figure 1.1. The proposed development will consist of 24 new homes incorporating terraced, detached/semi-d and duplex units along with 33 car parking spaces. Fig 1.2 overleaf shows the site plan.

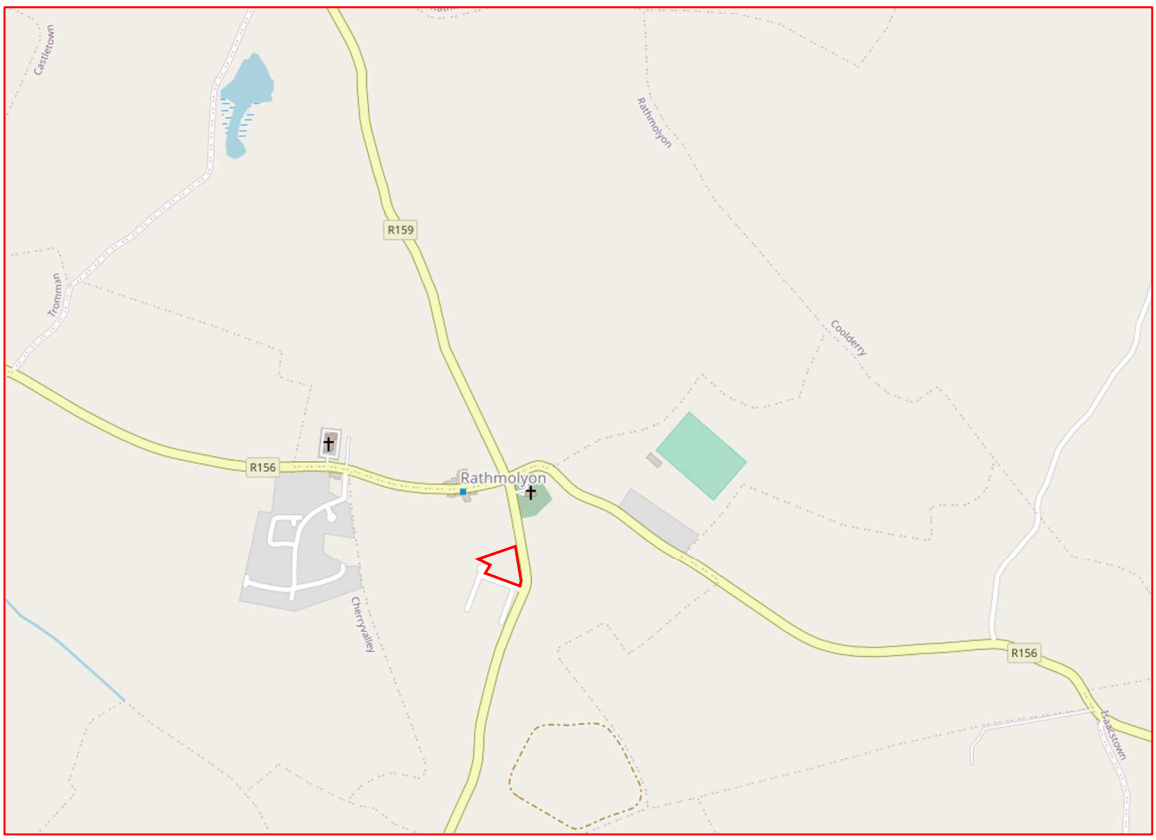

Fig 1.1 showing site location with curtilage denoted in red (image courtesy OpenStreetMap)

Fig 1.2: site plan with curtilage in RED.

2. FLOOD RISK MANAGEMENT GUIDELINES

The Planning System and Flood Risk Management Guidelines (hereafter referred to as FRM Guidelines) was published in November 2009. The objective of the guidelines is to implement a risk-based sequential approach to managing flood risk and to avoid new development in areas that are at risk. The sequential approach is based on the identification of flood zones for river and coastal flooding as follows:

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 year return period event - coastal/ tidal areas.

Flood Zone B

- Lands with a moderate probability of flooding;
- Subject to flooding in the 1 in 100 year return period storm event - rivers,
- subject to flooding in the 1 in 1000 year return period event– coastal/ tidal areas.

Flood Zone C

- Lands with a low probability of flooding;

- Subject to flooding in the 1 in 100 year return period storm event - rivers,
- subject to flooding events greater than the 1 in 1000 year return period.

The guidelines set out the different types of new development appropriate to each zone as shown in tables 3.1 (vulnerability classes of structures) and 3.2 (matrix of vulnerability) overleaf from the FRM guidelines. Of specific relevance to the proposed development is the classification of residential units as **highly vulnerable development**.

Vulnerability class	Land uses and types of development which include*:
Highly vulnerable development (including essential infrastructure)	Garda, ambulance and fire stations and command centres required to be operational during flooding; Hospitals; Emergency access and egress points; Schools; Dwelling houses, student halls of residence and hostels; Residential institutions such as residential care homes, children's homes and social services homes; Caravans and mobile home parks; Dwelling houses designed, constructed or adapted for the elderly or, other people with impaired mobility; and Essential infrastructure, such as primary transport and utilities distribution, including electricity generating power stations and sub-stations, water and sewage treatment, and potential significant sources of pollution (SEVESO sites, IPPC sites, etc.) in the event of flooding.
Less vulnerable development	Buildings used for: retail, leisure, warehousing, commercial, industrial and non-residential institutions; Land and buildings used for holiday or short-let caravans and camping, subject to specific warning and evacuation plans; Land and buildings used for agriculture and forestry; Waste treatment (except landfill and hazardous waste); Mineral working and processing; and Local transport infrastructure.
Water-compatible development	Flood control infrastructure; Docks, marinas and wharves; Navigation facilities; Ship building, repairing and dismantling, dockside fish processing and refrigeration and compatible activities requiring a waterside location; Water-based recreation and tourism (excluding sleeping accommodation); Lifeguard and coastguard stations; Amenity open space, outdoor sports and recreation and essential facilities such as changing rooms; and Essential ancillary sleeping or residential accommodation for staff required by uses in this category (subject to a specific warning and evacuation plan).

*Uses not listed here should be considered on their own merits

Table 3.1 Classification of vulnerability of different types of development

	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 3.2: Matrix of vulnerability versus flood zone to illustrate appropriate development and that required to meet the Justification Test.

Exceptions to the restriction of development are provided for using the Justification Test, where the planning need and the sustainable management of flood risk to an acceptable level must be demonstrated. This test recognises the need for development in existing towns that lie within flood risk zones and that a blanket ban on any future development within those areas is impractical.

The guidelines recommend a three-stage approach to undertaking an FRA as per the following:

- Flood Risk Identification (Stage 1) - Identification of any potential flooding or surface water issues which may impact the proposed development site.
- Initial Flood Risk Assessment (Stage 2) - Establishment of the sources of flooding, the extent of the flood risk, potential impacts and identification of possible mitigation measures.
- Detailed Flood Risk Assessment (Stage 3) - Assess flood risk issues in sufficient detail to provide quantitative appraisal of potential flood risk of the development, impacts elsewhere of the flooding and the effectiveness of any proposed mitigation measures.

3. FLOOD RISK IDENTIFICATION (Stage 1)

3.1 PFRA Preliminary Flood Risk Assessment

The Preliminary Flood Risk Assessment (PFRA), a national screening exercise conducted by the OPW to identify areas which may be at significant risk of flooding, was completed in December 2011. It used as its data sources any existing available or readily derivable information including public consultation. It subsequently identified over 300 locations nationwide as Areas for Further Assessment (AFAs). Rathmolyon is not included as an area for further assessment.

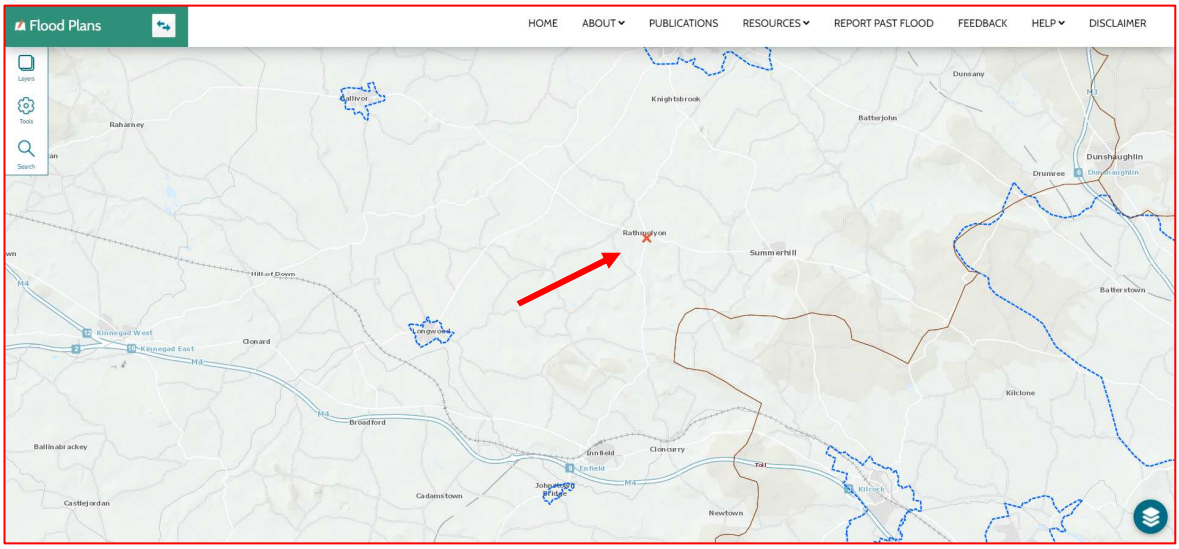

Fig 3.1: Site location (marked X) does not lie within an AFA (denoted by blue dotted lines).

3.2 CFRAM Flood Risk Mapping

The National Catchment Flood Risk Assessment and Management Program (CFRAM) was developed to meet the requirements of the EU Floods Directive (2007/60/EC) and falls under the auspices of the OPW, the lead agency for flood risk management in Ireland. As part of the CFRAMS programme, detailed hydraulic models were constructed for the Nanny-Delvin River Catchment Area which includes Rathmolyon and its hinterland. This resulted in the production of a series of maps indicating areas of possible flooding under a set of specified scenarios. These three models correspond to 0.1% (1:1000 year return period), 1% (1:100 year return period) and 10% (1:10 year return period) fluvial extent event probabilities respectively.

As previously mentioned Rathmolyon was not considered to be necessary of inclusion in the AFA list and no CFRAMS mapping of the area was conducted.

3.3 Stage Conclusions

The outcome of the flood risk identification stage is that there is no recorded evidence that flooding has occurred at the site or its immediate hinterland in the past and there is a very low probability of flooding occurring in the future. The site is therefore classifiable as **Flood Zone C** in the Matrix of Vulnerability.

4. INITIAL FLOOD RISK ASSESSMENT (Stage 2)

4.1 Potential Flood Sources

All potential flood risks and flood water sources (except snow melt) pertaining to the site area outlined are as follows:

Fluvial Flood Risk

Fluvial flooding arises from a watercourse exceeding its capacity and spilling over adjacent flood plain. There is no watercourse in the proximity of the proposed development.

Pluvial Flood Risk

Pluvial flooding is the result of rainfall-generated overland flows which arise before runoff can enter a watercourse or storm sewer.

Rathmolyon lies on a largely level plain and there are no neighbouring hills or elevated geological structures which would facilitate the occurrence of fluvial flooding.

We therefore conclude that pluvial flooding will not pose a risk to the development.

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 is usually associated with extended periods of heavy rainfall and is associated with the formation or re-occurrence of turloughs/winter lakes mostly in the karstic limestone areas as found primarily in the West of Ireland.

A review of the Geological Survey of Ireland's Groundwater viewer did not indicate that the site was potentially exposed to groundwater flooding (see fig 4.1 below) with the only recorded site being some 2 km southeast of the proposed development.

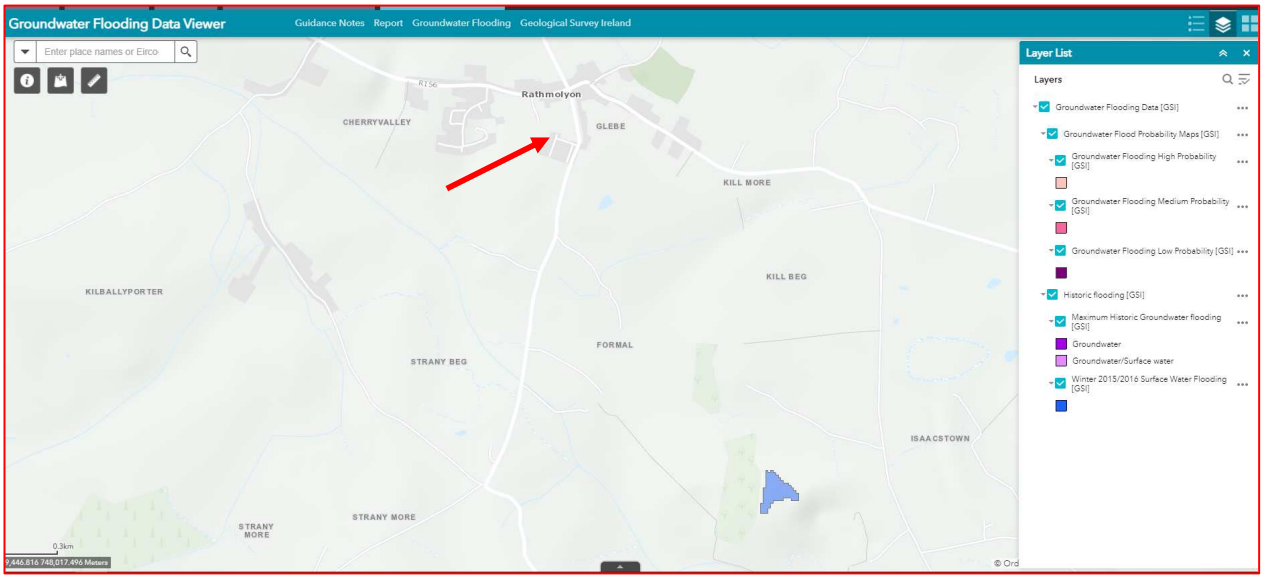

Fig 4.1 Screenshot of GSI groundwater flooding map. Site location indicated by arrow.

We therefore conclude that groundwater flooding will not pose a risk to the development.

Coastal/Tidal Flood Risk

Coastal/Tidal flooding results from a high tide combined with a storm surge resulting in the inundation of the flood plain at coastal locations or on the tidal reaches of rivers. As Rathmolyon is located some 45 km from the coast (at Malahide) and the site is some 84m above sea level we conclude that no risk is associated with coastal/tidal flooding.

Surcharge of Existing Drainage Systems

No records of any surcharging of the existing drainage systems on the site are recorded on the OPW flood maps.

4.2 Historical Records

A review of available historical sources has not indicated any history of flooding associated with the site. The old Ordinance Survey maps do not contain any indication of the area either being prone to flooding or being recorded as marsh land.

Floodmaps.ie indicates a single recurring flooding event occurring within 2.5km of the proposed development. This refers to a record of the Trim Area Engineer referring in April 2005 to repeated flooding of the Rathmolyon to Cherryvalley road flooding after heavy rain events. The indicated point is approx. 1.5km from the proposed site. A copy of the full historical flooding map is included in the appendices.

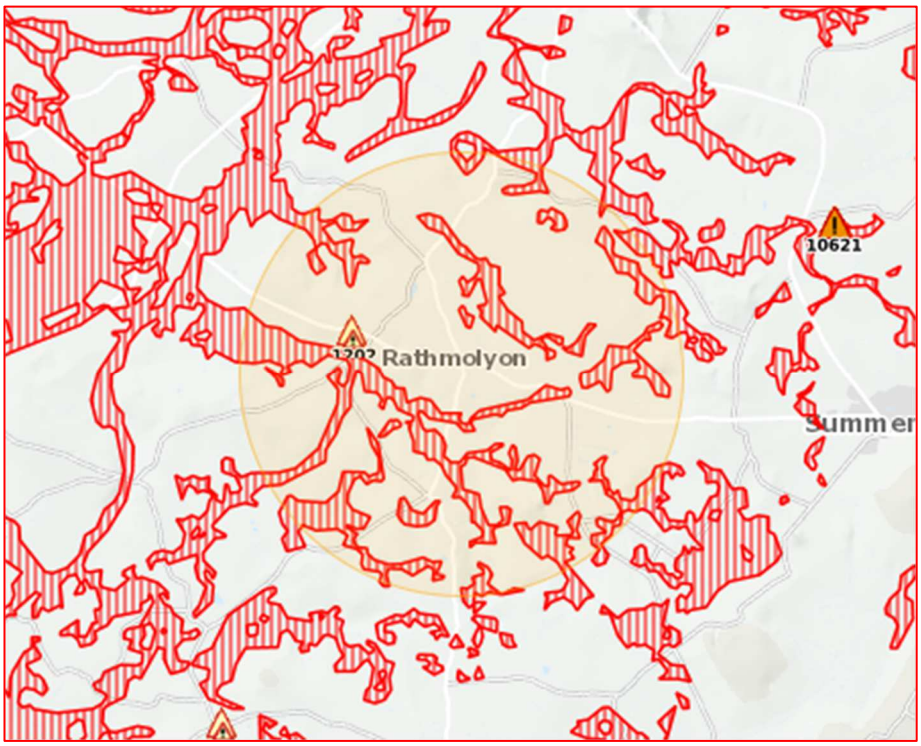

Fig 4.2 Extract from floodmaps.ie indicating all events within a 2.5km radius

4.3. Existing Flood Risk Management Measures

There are no specific FRM measures currently in operation in the Rathmoylon area. Fig 3.4 illustrates the District Drainage Schemes (DDS) in operation in the vicinity with the green hatched areas indicating the benefitting lands. The proposed site is situated on a local elevated spot positioned 10-15m above the drainage benefitting lands.

Fig 4.3 screenshot of Rathmolyon area drainage map with site marked as red arrow

4.4 Local Knowledge

We did not establish any local anecdotal evidence of past flooding events which would contradict or otherwise impact on the conclusions arrived at from review of the publicly available primary sources of information.

4.5 Stage Conclusions

The outcome of the **initial flood risk assessment** is that the risk of flooding occurring at the site is low.

5. CONCLUSION

All existing available information has been reviewed in preparation of this flood risk assessment. The area has not been designated an AFA by the Office of Public Works (OPW) and consequently no CFRAMS flood zoning maps have been developed

The site is therefore classifiable as **Flood Zone C** in the OPW Guidelines Matrix of Vulnerability meaning that residential development is appropriate for the site and there is no requirement to proceed to stage 3 (detailed flood risk assessment).

We are therefore fully satisfied that the proposals to develop this site properly achieve full compliance with the requirements of **The Planning System and Flood Management Guidelines** as published by the Department of Environment, Heritage and Local Government in November 2009.

Nial O Brien BE, MIEI
24/02/2021

APPENDIX 1
AREA FLOOD HISTORY MAP FROM FLOODMAPS.IE

Past Flood Event Local Area Summary Report

OPW Oifig na nOibreacha Poiblí Office of Public Works

Report Produced: **23/2/2021 16:26**

This Past Flood Event Summary Report summarises all past flood events within 2.5 kilometres of the map centre.

This report has been downloaded from www.floodinfo.ie (the "**Website**"). The users should take account of the restrictions and limitations relating to the content and use of the Website that are explained in the Terms and Conditions. It is a condition of use of the Website that you agree to be bound by the disclaimer and other terms and conditions set out on the Website and to the privacy policy on the Website.

Map Legend

- Single Flood Event
- Recurring Flood Event
- Past Flood Event Extents
- Drainage Districts Benefited Lands*
- Land Commission Benefited Lands*
- Arterial Drainage Schemes Benefited Lands*

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

1 Results

	Name (Flood_ID)	Start Date	Event Location
1.	Rathmoylan to Cherryvalley R156 Recurring (ID-1202)	n/a	Approximate Point

Additional Information: Reports (2) Press Archive (0)