

Laois County Council

Site Specific Flood Risk Assessment

Moanbaun, Mountrath, Co Laois



August 2023



Site Specific Flood Risk Assessment

Client: Laois County Council

Location: Moanbaun, Mountrath, Co Laois

Date: 29th August 2023

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1. Introduction

IE Consulting was requested by Laois County Council to undertake a Site Specific Flood Risk Assessment (SSFRA) in support of a planning application for a proposed development at Moanbaun, Mountrath, Co. Laois.

The development as proposed comprises the construction of 14 No. residential dwellings units, new site entrance, access road, landscaping and associated site infrastructure works.

The purpose of this SSFRA is to assess the potential flood risk to the proposed development site and to assess the impact that the development as proposed may or may not have on the hydrological regime of the area.

Quoted ground levels or estimated flood levels relate to Ordnance Datum (Malin) unless stated otherwise.

This flood risk assessment study has been undertaken in consideration of the following guidance document:-

'The Planning System and Flood Risk Management – Guidelines for Planning Authorities' DOEHLG 2009.'

2. Proposed Site Description

2.1. General

The site of the proposed development is located at Moanbaun, Mountrath, Co. Laois. The site is bounded to the north by a local access road, to the east by agricultural lands and to the south and west by the Moanbaun Close residential development. The total area of the site is approximately 0.77 hectares.

The location of the site of the proposed development is illustrated on *Figure 1* below and shown on *Drawing Number IE2773-001-A, Appendix A*.

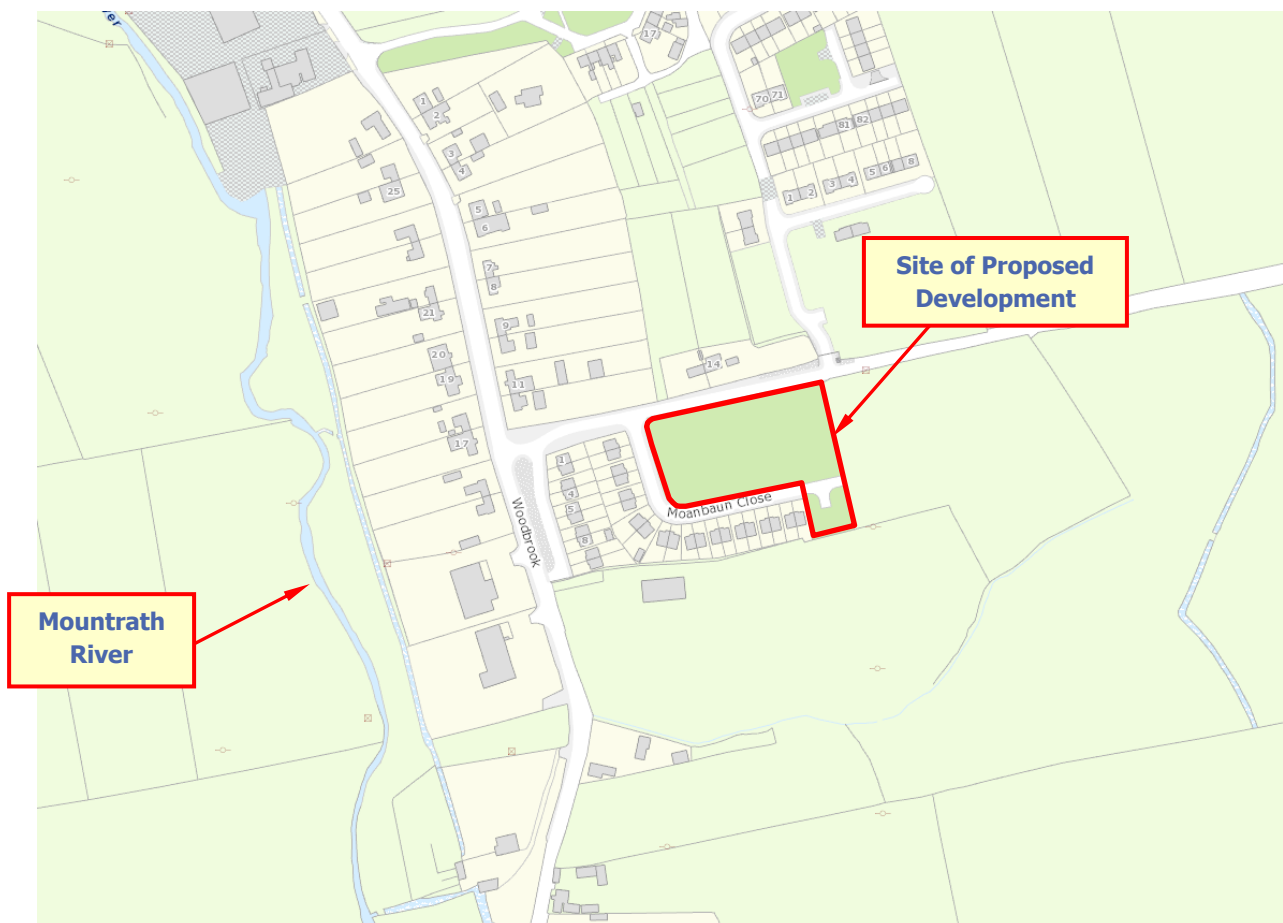


Figure 1 – Site Location

2.2. Existing Topography Levels at Site

The site of the proposed development site is generally flat to slightly sloping from north-west to south-east. Existing ground elevations from 102.63m (OD) at the north-western corner of the site to 102.03m (OD) at the south-eastern corner of the site.

2.3. Local Hydrology, Landuse & Existing Drainage

The most significant hydrological feature in the vicinity of the site of proposed development site is the Mounthra River, which is located approximately 198m beyond the western boundary of the site as illustrated in *Figure 1* above. At this location of the site the Mounthra River generally flows in a north to south direction.

Utilising the OPW Flood Studies Update (FSU) Portal software, the catchment area of the Mounthra River was delineated and found to be approximately 49.57km² to a point within the vicinity of the site. An assessment of the upstream catchment area indicates a predominantly rural catchment, with the urban fraction accounting for approximately 0.0212% of the total catchment area.

There are no mapped or recorded surface hydrological features within or immediately adjacent to the boundary of the site.

3. Initial Flood Risk Assessment

The flood risk assessment for the site of proposed development is undertaken in three principal stages, these being 'Step 1 – Screening', 'Step 2 – Scoping' and 'Step 3 – Assessing'.

3.1. Possible Flooding Mechanisms

Table 1 below summarises the possible flooding mechanisms in consideration of the site:

Source/Pathway	Significant?	Comment/Reason
Tidal/Coastal	No	The site is not located within a coastal or tidally influenced region.
Fluvial	Yes	The Mountrath River is located approximately 198m beyond the western site boundary.
Pluvial (urban drainage)	No	There is no significant or major urban drainage or water supply infrastructure located at or in the vicinity of the site.
Pluvial (overland flow)	No	The site is not surrounded by significantly elevated lands and does not provide an important surface water discharge point to adjacent lands.
Blockage	No	There are no significant or restrictive hydraulic structures located at or in the immediate vicinity of the site.
Groundwater	No	There are no significant springs or groundwater discharges mapped or recorded in the immediate vicinity of the site.

Table 1: Flooding Mechanisms

The primary potential flood risk to the site of the proposed development can be attributed to an extreme fluvial flood event in the Mountrath River, located approximately 198m beyond the western site boundary.

In accordance with 'The Planning System and Flood Risk Management – Guidelines for Planning Authorities - DOEHLG 2009' the potential flood risk to the site of the proposed development is analysed in the subsequent 'Screening Assessment' and 'Scoping Assessment' section of this study report.

4. Screening Assessment

The purpose of the screening assessment is to establish the level of flooding risk that may or may not exist for a particular site and to collate and assess existing current or historical information and data which may indicate the level or extent of any flood risk.

If there is a potential flood risk issue then the flood risk assessment procedure should move to 'Step 2 – Scoping Assessment' or if no potential flood risk is identified from the screening stage then the overall flood risk assessment can end at 'Step 1'.

The following information and data was collated as part of the flood risk screening assessment for the site of proposed development.

4.1. OPW/EPA/Local Authority Hydrometric Data

Existing sources of OPW, EPA and local authority hydrometric data were investigated. As illustrated in *Figure 2* below, this assessment has determined that there is one hydrometric gauging station located on the Mountrath River within the general vicinity of the proposed development site.

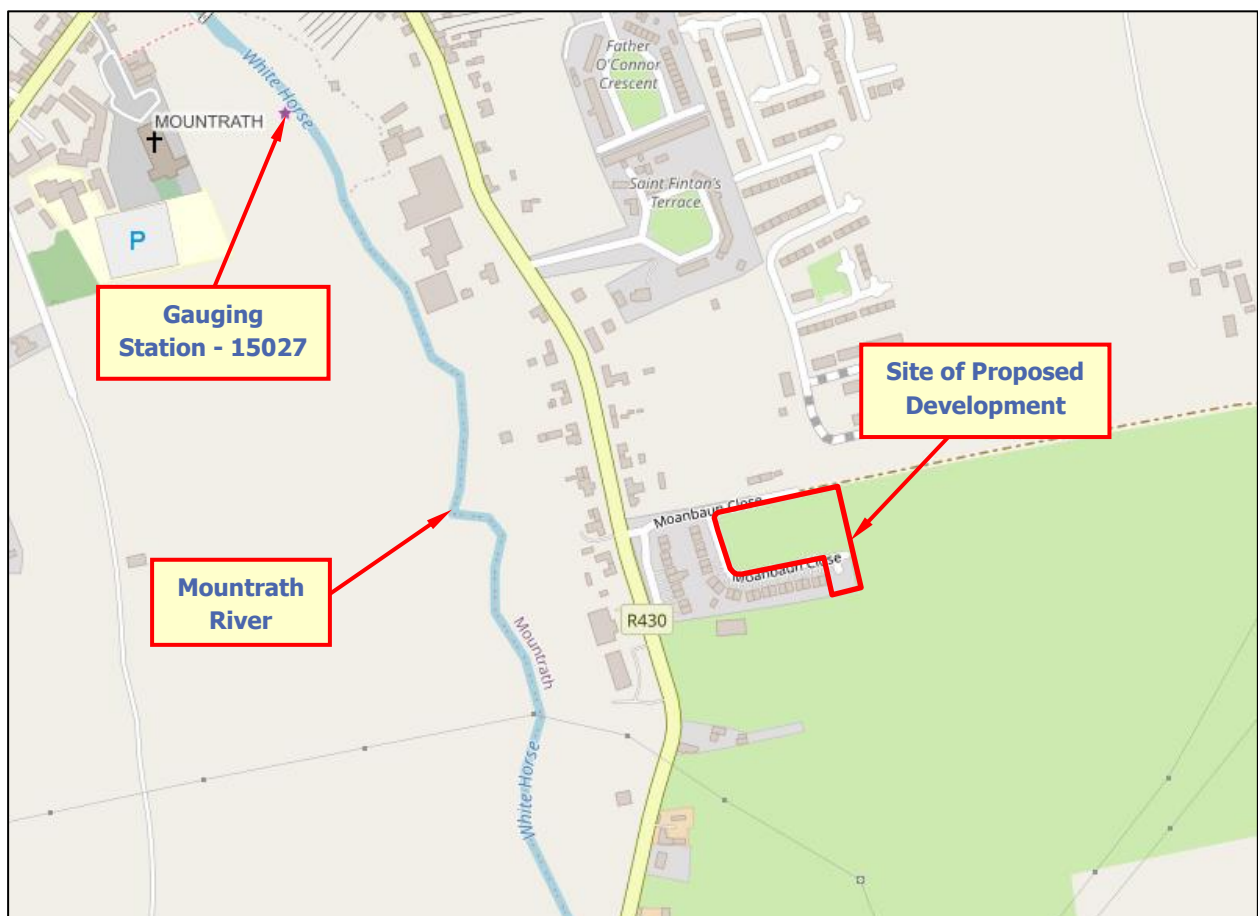


Figure 2 - Hydrometric Gauging Stations

Gauging Station 15027 is entered in the register of hydrometric gauging stations as an active recorder station. There are 13 years of water level & flow measurement data available for this station for hydrometric years 2010-Present.

The hydrometric data from this gauging station was examined to assess the suitability of the data to assist in the prediction of extreme fluvial flood flows and levels in the Mountrath River at the location of the proposed development site. The register indicates that station 15027 is an autographic recorder station and is currently active, therefore, if required, hydrometric data from this station may be suitable to assist in the prediction of extreme flood volumes and flood levels at the location of the site of the development.

4.2. OPW PFRA Indicative Flood Mapping

Preliminary Flood Risk Assessment (PFRA) Mapping for Ireland was produced by the OPW in 2011. OPW PFRA flood map number 2019/MAP/182/A illustrates indicative flood zones within this area of County Laois. *Figure 3* below illustrates an extract from the above indicative flood map in the vicinity of the site of the proposed development.

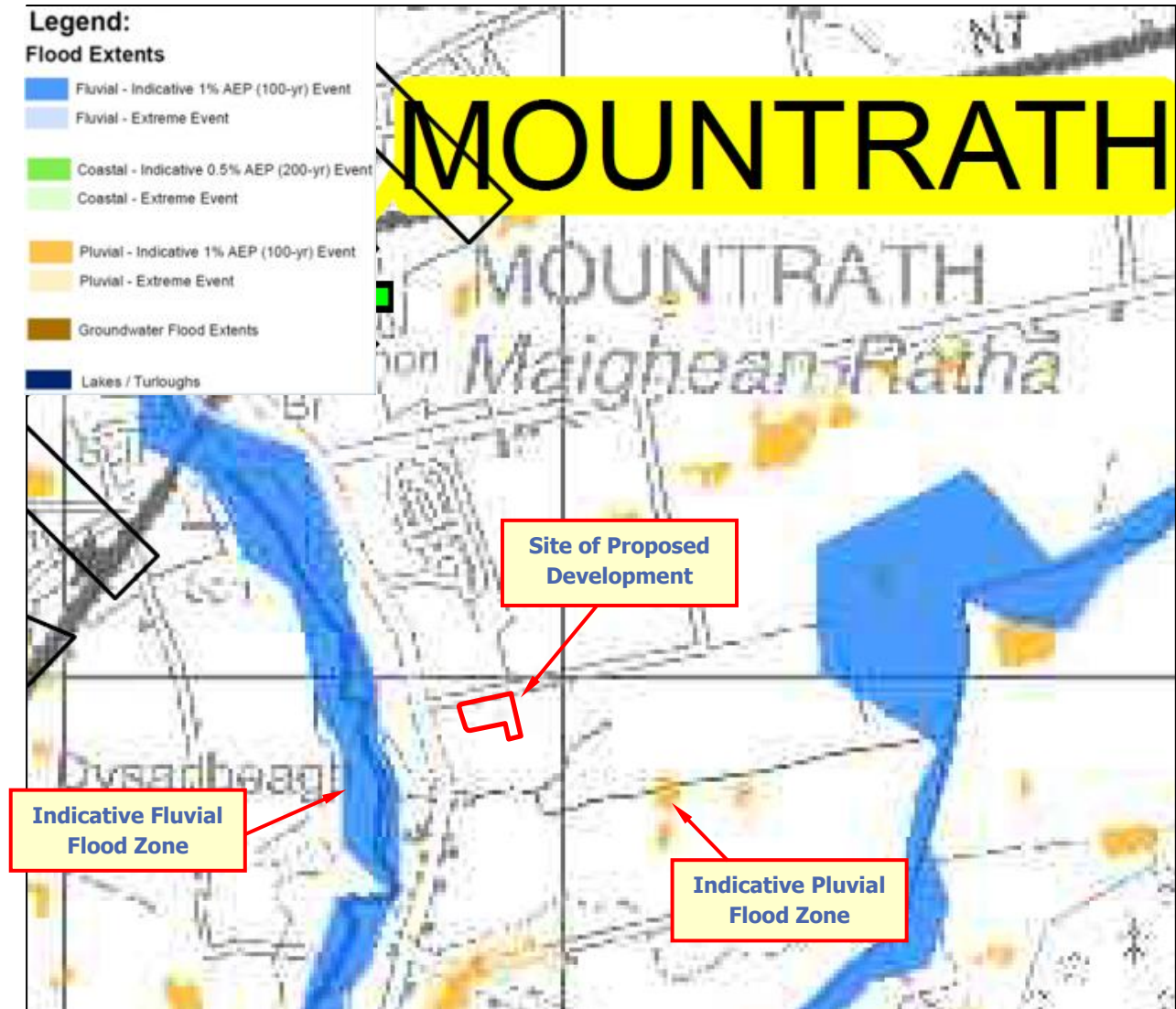


Figure 3 - OPW PFRA Mapping

The PFRA flood mapping indicates that the site of the proposed development does not fall within an indicative fluvial, pluvial or groundwater flood zone.

It should also be noted that the indicated extent of flooding illustrated on these maps was developed using a low resolution digital terrain model (DTM) and illustrated flood extents are intended to be indicative only. The flood extents mapped on the PFRA maps are not intended to be used on a site specific basis.

4.3. OPW Flood Maps Website

The OPW Flood Maps Website (www.floodinfo.ie) was consulted in relation to available historical or anecdotal information on any flooding incidences or occurrences in the vicinity of the site of the proposed development. *Figure 4* below illustrates mapping from the Flood Maps website in the vicinity of the site.

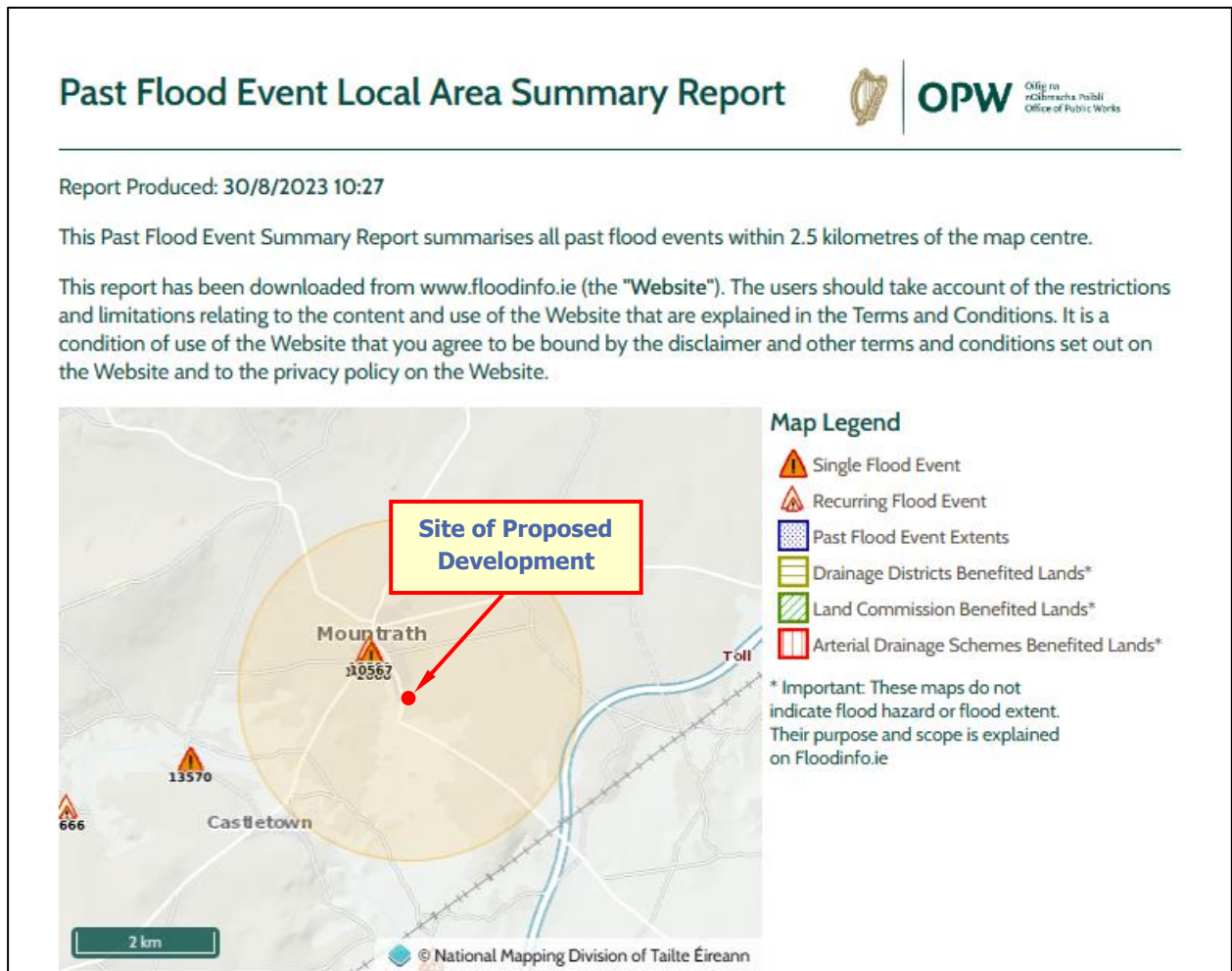


Figure 4 - OPW Flood Maps

Figure 4 above indicates that there are recorded recurring flood events located within Mountrath town centre.

There is no information or data to suggest or indicate that any of the above flood events have directly impacted the site of the proposed development.

4.4. Ordnance Survey Historic Mapping

Available historic mapping for the area was consulted, as this can provide evidence of historical flooding incidences or occurrences. The maps that were consulted were the historical 6-inch maps (pre-1900), and the historic 25-inch map series. *Figure 5* and *Figure 6* below show the historic mapping for the area of the site of the proposed development.

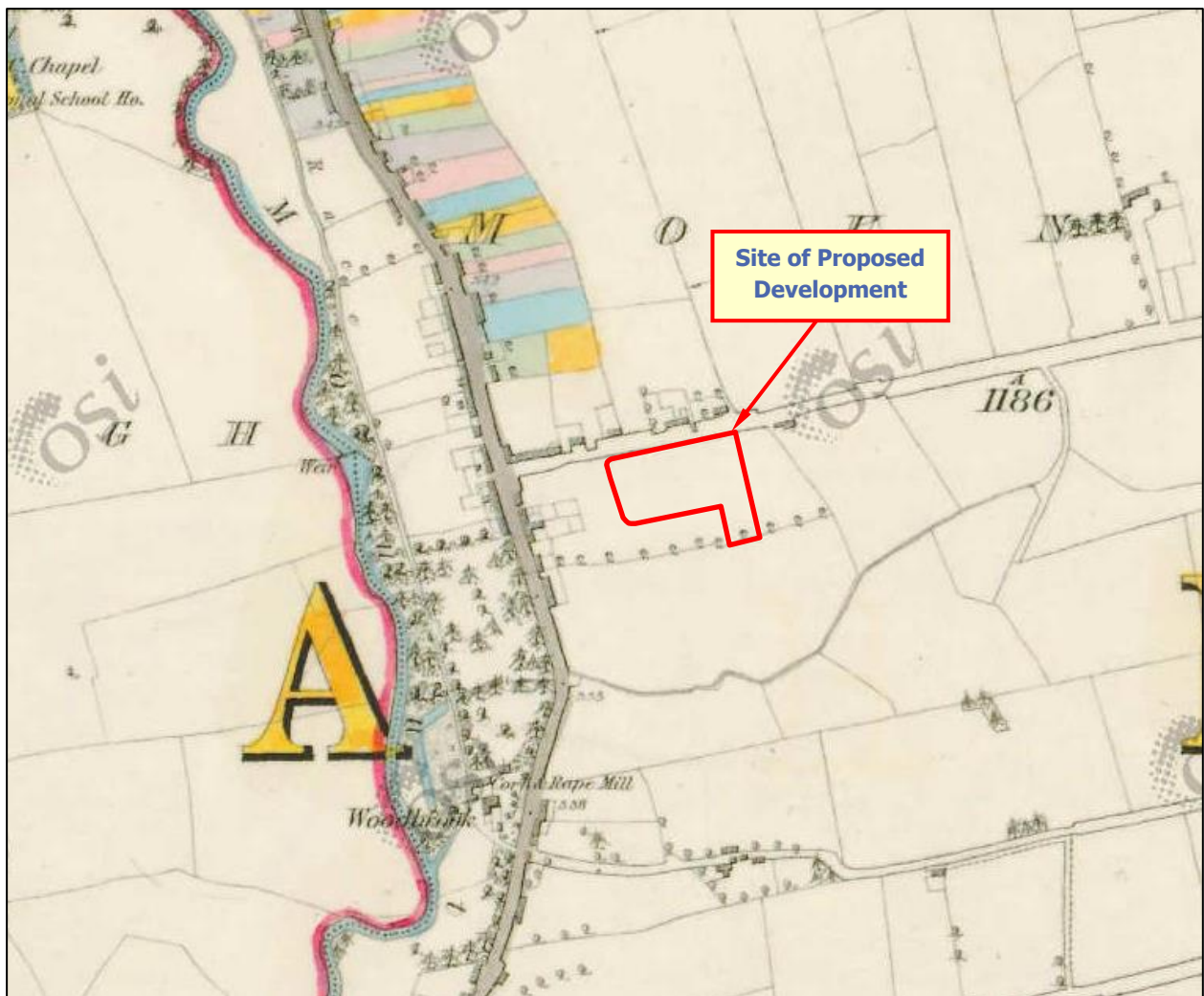


Figure 5 - Historic 6 Inch Mapping

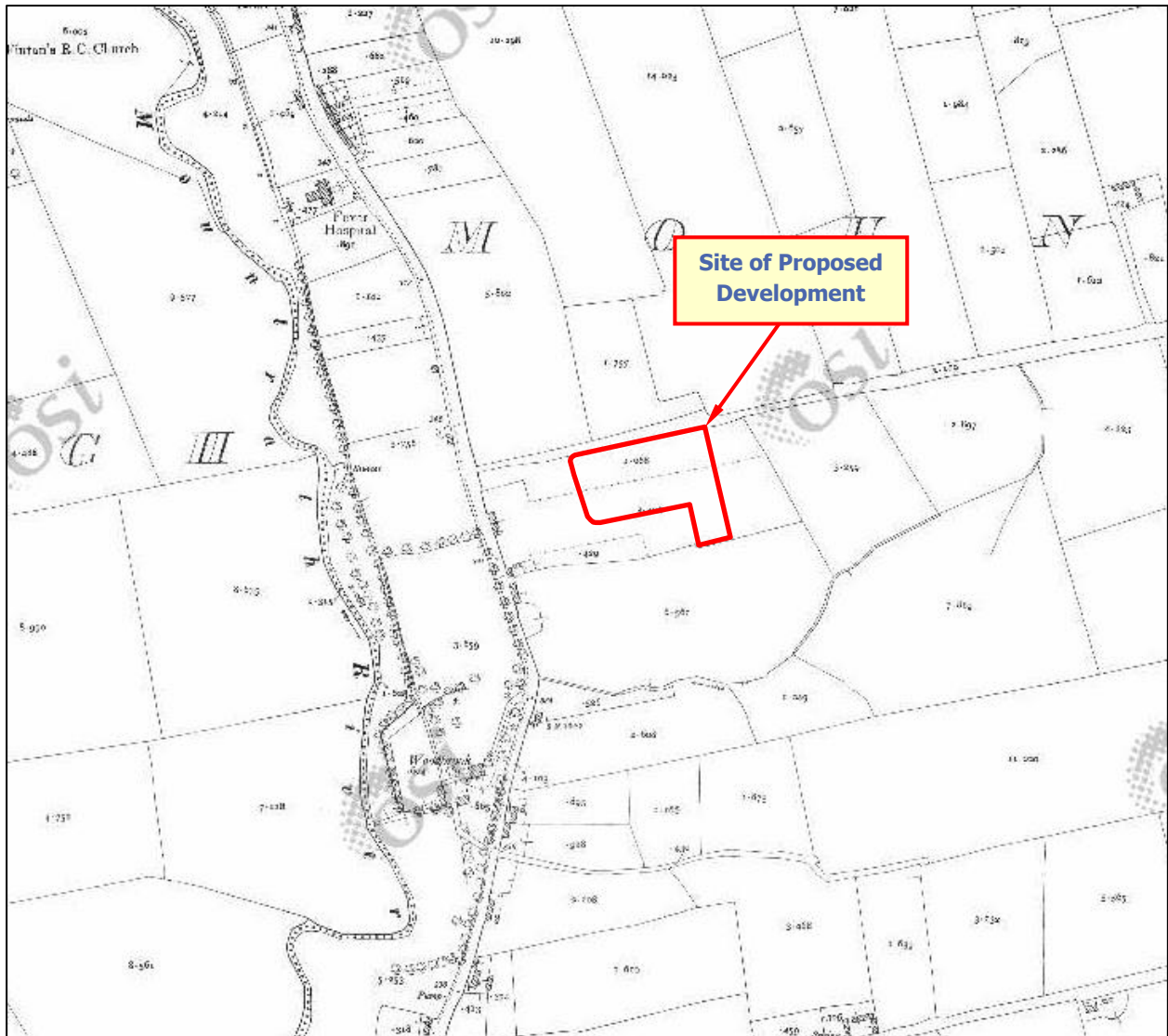


Figure 6 - Historic 25 Inch Mapping

The historic 6 inch and 25 inch mapping does not indicate any historical or anecdotal instances of flooding within or adjacent to the boundary of the site of the proposed development.

4.5. Geological Survey of Ireland Mapping

The alluvial deposit maps of the Geological Survey of Ireland (GSI) were consulted to assess the extent of any alluvial deposits in the vicinity of the site of the proposed development site. Alluvial deposits can be an indicator of areas that have been subject to flooding in the recent geological past.

Figure 7 below illustrates the sub-soils mapping for the general area of the site.

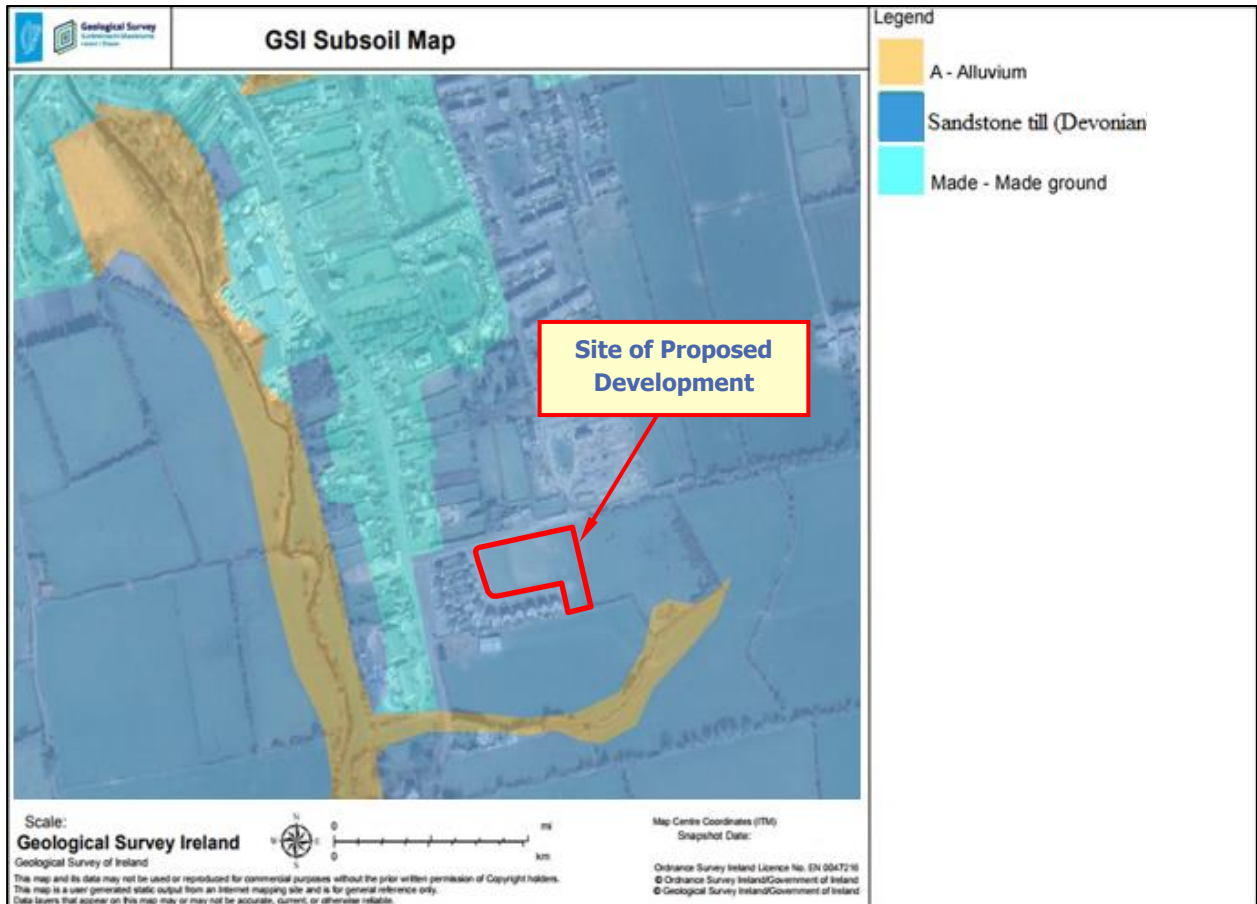


Figure 7 - GSI Subsoil Mapping

Figure 7 above indicates that the site of the proposed development is entirely underlain by Devonian Sandstone Till. Alluvium deposits are not mapped within or immediately adjacent to the boundary of the site.

4.6. South Eastern CFRAM Study

The South Eastern Catchment Flood Risk & Management Study (CFRAMS) has been undertaken by the OPW and the final version of the flood maps were issued in July 2016. Flood risk extent and depth maps for further assessment areas within Mountrath have also been produced.

Figure 8 below (extracted from CFRAMS flood maps *O15MOT_EXFCD_F0_02* & *O15MOT_EXFCD_F0_03*) illustrates the predictive extreme present day scenario 10% AEP (1 in 10 year), 1% AEP (1 in 100 year) or 0.1% AEP (1 in 1000 year) flood extents in the vicinity of the site boundary.

A full copy of OPW CFRAMS flood extent maps *O15MOT_EXFCD_F0_02* & *O15MOT_EXFCD_F0_03* are included in *Appendix B*.

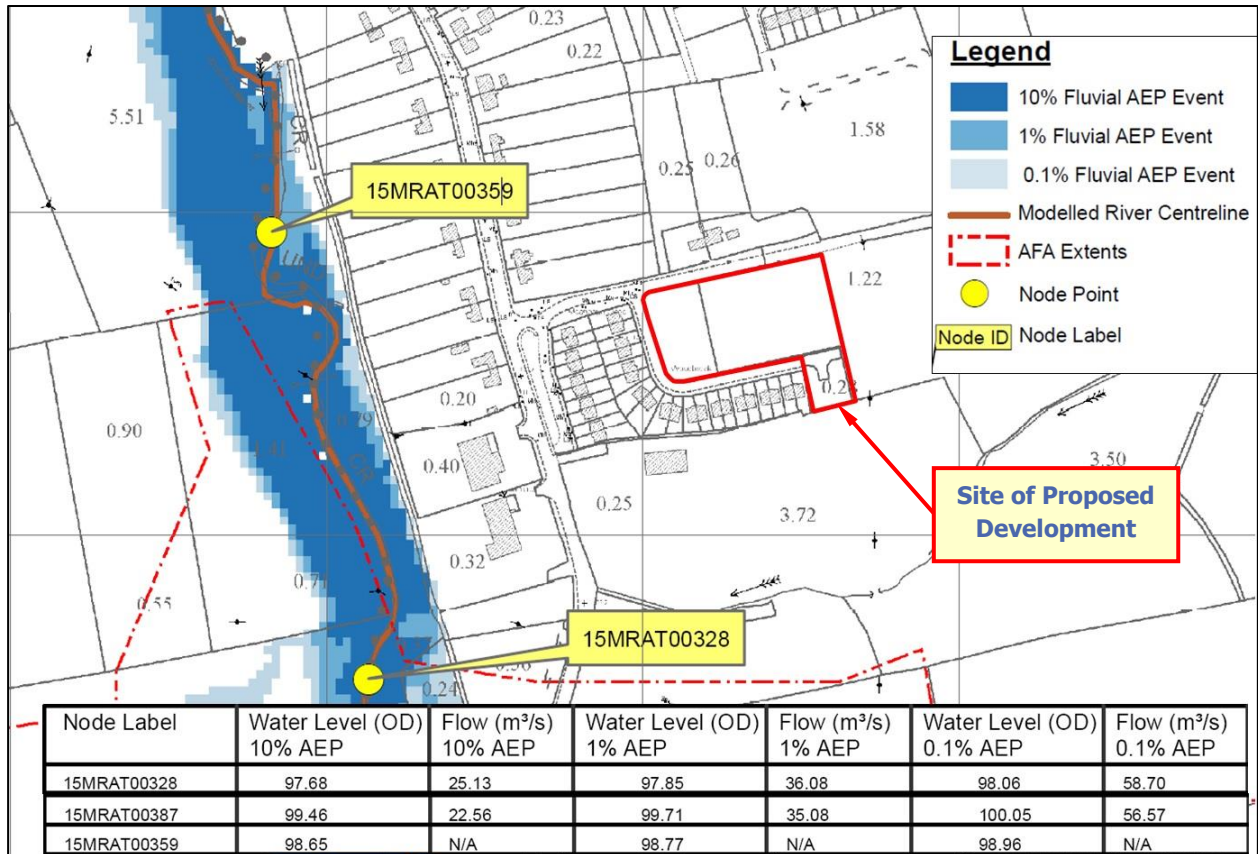


Figure 8 – OPW CFRAMS 1% AEP & 0.1% AEP Fluvial Flood Extents

The OPW CFRAMS flood map also provide information on predictive water levels for the 10% AEP (1 in 10 year), 1% AEP (1 in 100 year) and 0.1% AEP (1 in 1000 year) fluvial flood events at various node points on the Mountrath River. The node points on the Mountrath River closest to the site of the proposed development are referenced as node point *15MRAT00359* located upstream of the site and node point *15MRAT00328* located downstream of the site as illustrated in *Figure 8* above.

Details of the predictive fluvial flood levels for these node points are listed in *Table 2* below, which has been extracted from CFRAMS flood map reference *O15MOT_EXFCD_F0_02* & *O15MOT_EXFCD_F0_03*.

Node Label	Water Level (mOD) 10% AEP	Water Level (mOD) 1% AEP	Water Level (mOD) 0.1% AEP
15MRAT00359	98.65	98.77	98.96
15MRAT00328	97.68	97.85	98.06

Table 2: OPW CFRAMS Predictive Fluvial Flood Levels

4.7. Climate Change

It is generally acknowledged that future climate change will cumulate in decreases in summer rainfall amounts and increases in winter rainfall amounts. The levels or percentages of increase or decrease are still subjective and dependant on future studies and analysis.

The recently published Greater Dublin Strategic Drainage Study (GSDSDS) suggests that by the year 2100 summer rainfall depths will have decreased by 35-45%, with a corresponding increase in winter rainfall depths by 20%. The suggested increase in winter rainfall depth will inevitably result in higher catchment run-off and therefore greater flood peaks. It is therefore prudent to assess the potential impact climate change may have on the fluvial flood extents within the Mountrath River.

Figure 9 below, acquired from the OPW WMS resource, illustrates the predictive mid-range future climate change scenario 1% AEP + CC (1 in 100 year + climate change) and 0.1% AEP + CC (1 in 1000 year + climate change) fluvial flood extents associated with the Mountrath River in the vicinity of the site of the proposed development.

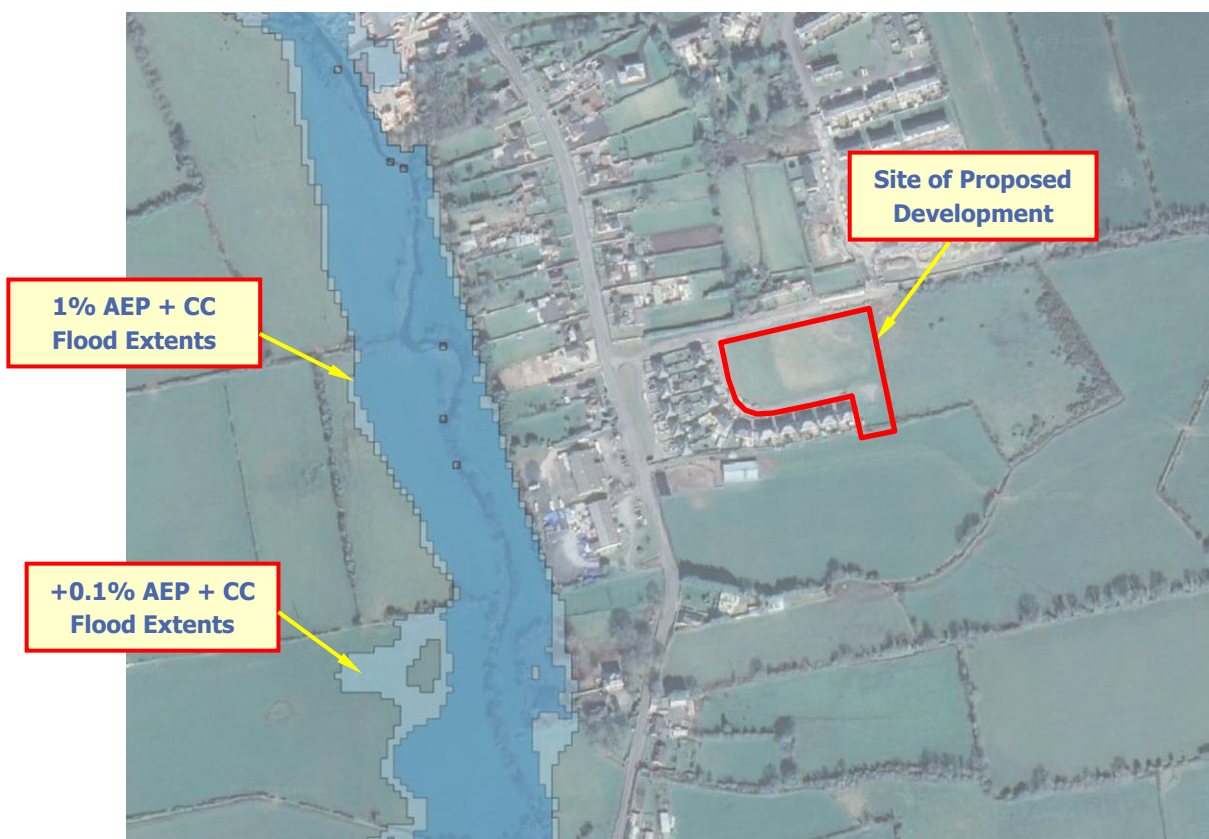


Figure 9 – OPW CFRAMS 1% AEP+CC & 0.1% AEP+CC Fluvial Flood Extents

Figure 9 above indicates that the site of the proposed development does not fall within a predictive mid-range future climate change scenario 1% AEP + CC (1 in 100 year + climate change) or a 0.1% AEP + CC (1 in 1000 year + climate change) fluvial flood zone.

4.8. Laois County Council- Strategic Flood Risk Assessment (SFRA)

Figure 10 below, extracted from the 'Laois County Development Plan Strategic Flood Risk Assessment (2021-2027)', illustrates the extents of Strategic Flood Zone 'A' and Flood Zone 'B' in the general vicinity of the site of the proposed development.

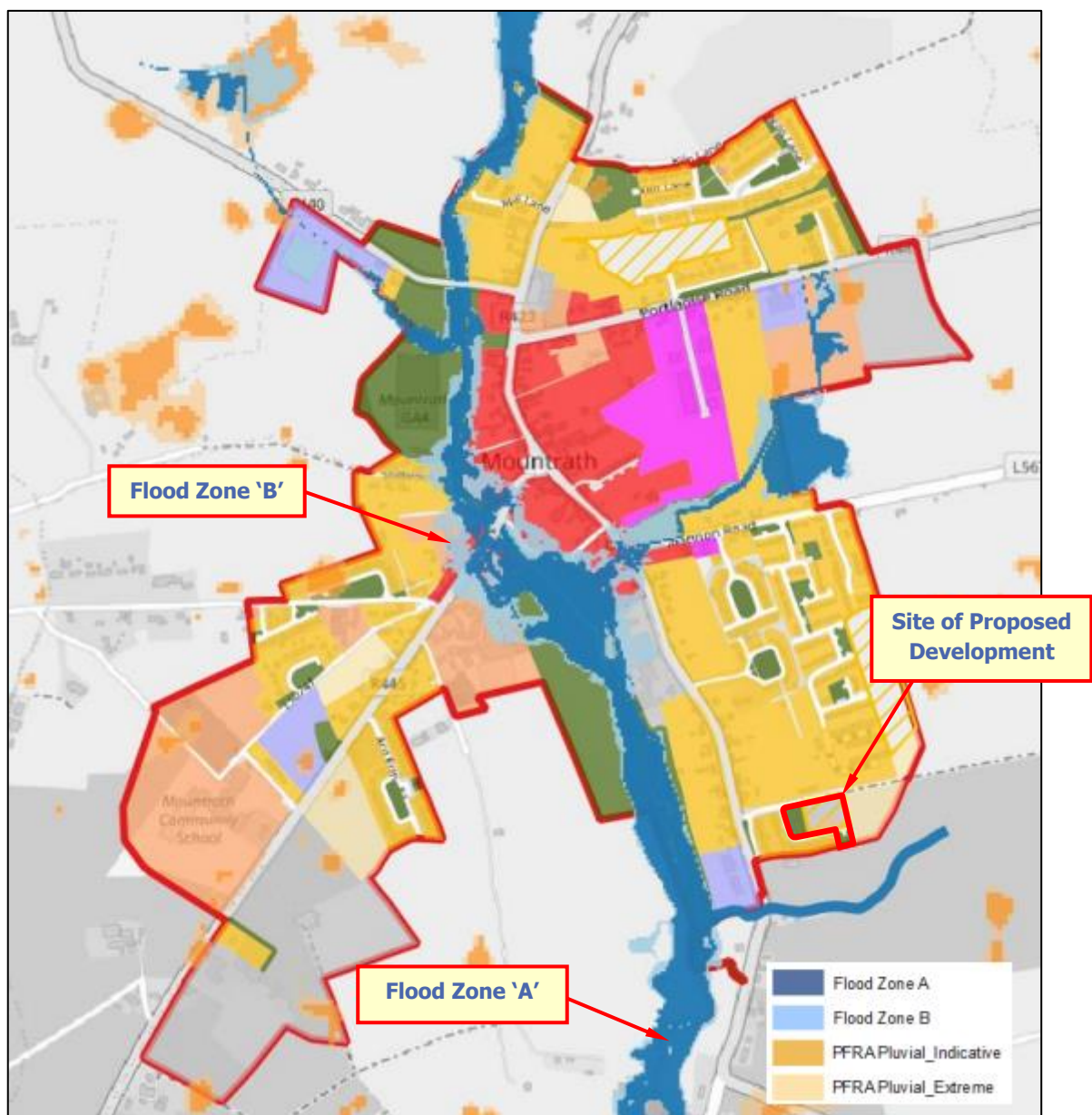


Figure 10 - Mountrath SFRA

Figure 10 above indicates that the site of the proposed development does not fall within a Strategic Fluvial Flood Zone 'A' or Flood Zone 'B'.

4.9. Geological Survey of Ireland Groundwater Flood Mapping

Historic and Predictive Groundwater Mapping for Ireland was prepared by the GSI Department of Communication, Climate Action, and Environment in collaboration with Trinity College Dublin and the Institute of Technology Carlow.

Figure 11 below illustrates an extract from the above groundwater flood mapping in the vicinity of the site of the proposed development.

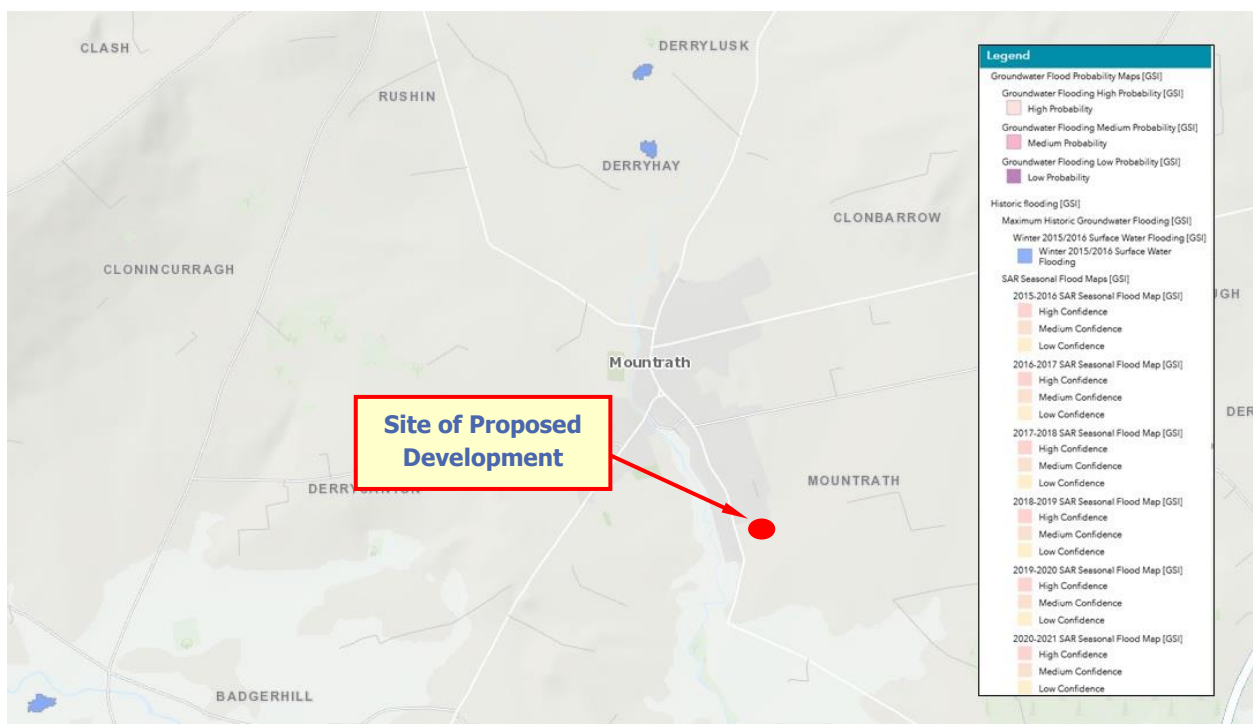


Figure 11 - GSI Groundwater Flood Mapping

The above GSi Groundwater Mapping indicates no areas of seasonal groundwater flooding or historic surface water flooding within or in the immediate vicinity of the site of the proposed development.

5. Scoping Assessment

The purpose of the scoping stage is to identify possible flood risks and to implement the necessary level of detail and assessment to assess these possible risks, and to ensure these can be adequately addressed in the flood risk assessment. The scoping exercise should also identify that sufficient quantitative information is already available to complete a flood risk assessment appropriate to the scale and nature of the development proposed.

The above screening assessment indicates that the area of the site of the proposed development is not at risk from fluvial, pluvial or groundwater flooding.

In consideration of the information collated as part of the screening exercise, and the availability of other information and data specific to the area of the site of the proposed development, it is considered that sufficient quantitative information to complete an appropriate flood risk assessment for the development as proposed can be derived from the information collated as part of the screening exercise.

In particular the flood extent maps for the area produced as part of the OPW CFRAMS fluvial dataset are based on the results of detailed hydraulic and modelling undertaken along the River Barrow and therefore provide a reasonably accurate delineation of flood zones in the general area of the site of the proposed development.

6. Assessing Flood Risk

The output of the screening assessment undertaken as part of this Site Specific Flood Risk Assessment indicates that the site of the proposed development does not fall within a predictive, indicative, strategic, anecdotal or historic fluvial, pluvial or groundwater flood zone. On this basis the potential primary and direct flood risk to the site of the proposed development is considered to be LOW.

In order to ensure that the development as proposed does not result in an adverse impact to the existing hydrological regime of the area and does not increase fluvial or pluvial flood risk elsewhere, it is recommended that the development as proposed incorporates an appropriate storm-water management system which limits post development storm-water runoff from the site to pre-development greenfield runoff rates.

7. Development in the Context of the Guidelines

In the context of the 'Planning System and Flood Risk Management Guidelines, DOEHLG, 2009' three flood zones are designated in consideration of flood risk to a particular development site.

Flood Zone 'A' – where the probability of flooding from rivers and watercourses is the highest (greater than 1% or 1 in 100 year for river and watercourse flooding and 0.5% or 1 on 200 for coastal or tidal flooding).

Flood Zone 'B' – where the probability of flooding from rivers and watercourses is moderate (between 0.1% or 1 in 1000 year for river and watercourse flooding and 0.5% or 1 on 200 for coastal or tidal flooding).

Flood Zone 'C' – where the probability of flooding from rivers and watercourses is low or negligible (less than 0.1% or 1 in 1000 year for both river and watercourse and coastal flooding). Flood Zone 'C' covers all areas that are not in Zones 'A' or 'B'.

The 'Planning System and Flood Risk Management Guidelines' list the planning implications for each flood zone, as summarised below:-

Zone A – High Probability of Flooding. Most types of development would not be considered in this zone. Development in this zone should be only be considered in exceptional circumstances, such as in city and town centres, or in the case of essential infrastructure that cannot be located elsewhere, and where the 'Planning System and Flood Risk Management Guidelines' justification test has been applied. Only water-compatible development, such as docks and marinas, dockside activities that require a waterside location, amenity open space and outdoor sports and recreation would be considered appropriate in this zone.

Zone B – Moderate Probability of Flooding. Highly vulnerable development such as hospitals, residential care homes, Garda, fire and ambulance stations, dwelling houses, strategic transport and essential utilities infrastructure would generally be considered inappropriate in this zone, unless the requirements of the justification test can be met. Less vulnerable development such as retail, commercial and industrial uses and recreational facilities might be considered appropriate in this zone. In general however, less vulnerable development should only be considered in this zone if adequate lands or sites are not available in Zone 'C' and subject to a flood risk assessment to the appropriate level of detail to demonstrate that flood risk to the development can be adequately managed and that development in this zone will not adversely affect adjacent lands and properties.

Zone C – Low to Negligible Probability of Flooding. Development in this zone is appropriate from a flood risk perspective. Developments in this zone are generally not considered at risk of fluvial flooding and would not adversely affect adjacent lands and properties from a flood risk perspective.

In the context of the '*Planning System and Flood Risk Management Guidelines, DOEHLG, 2009*' the assessment and analysis undertaken as part of this Site Specific Flood Risk Assessment indicates that the site of proposed development does not fall within a predictive, indicative or strategic fluvial flood zone. The site of the proposed development therefore falls within **Flood Zone 'C'**.

In accordance with the '*Planning System & Flood Risk Management Guidelines, DOEGLG, 2009*' the development as proposed is not subject to the requirements of the Justification Test.

8. Summary Conclusions & Recommendations

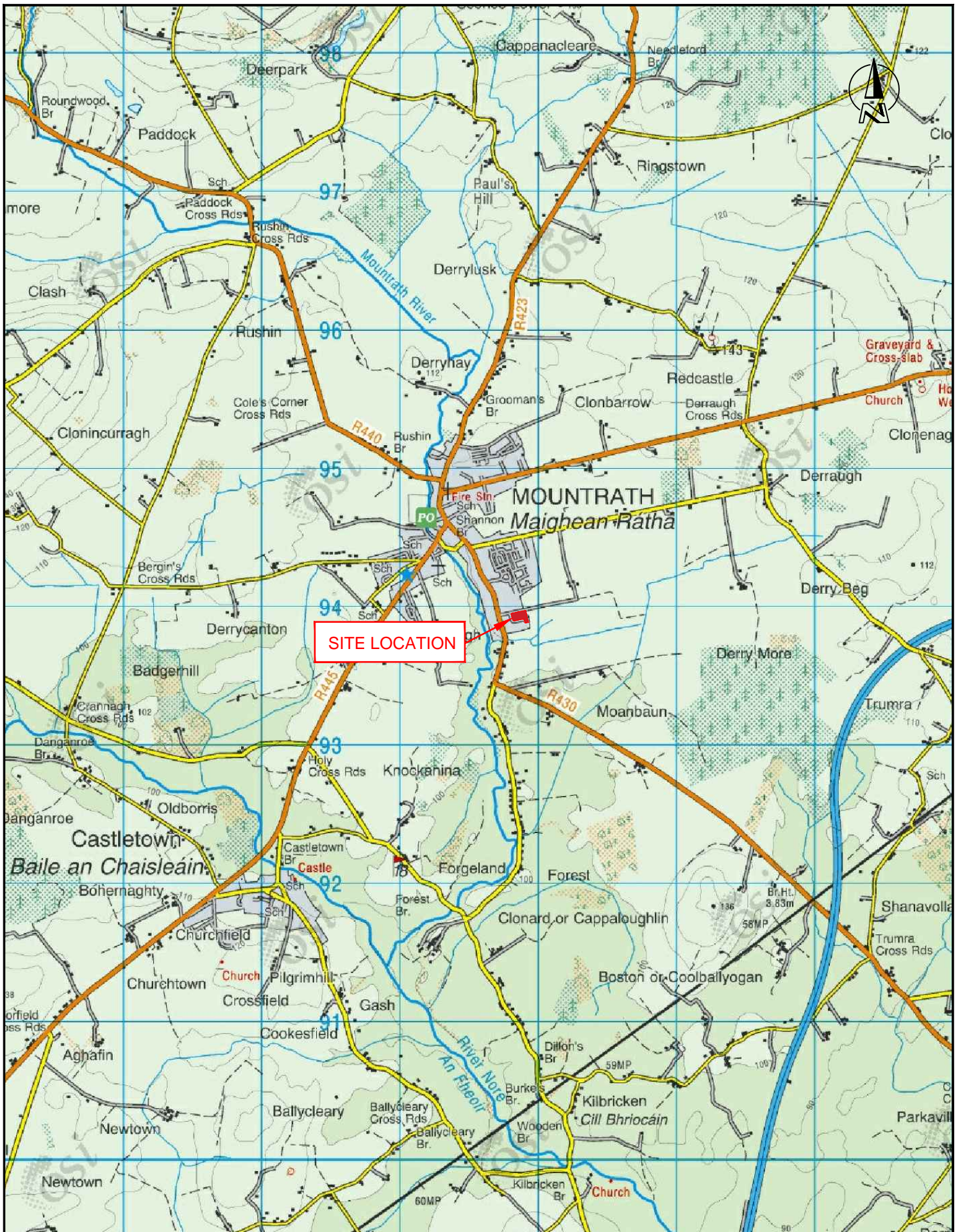
In consideration of the findings of this Site Specific Flood Risk Assessment and analysis the following conclusions and recommendations are made in respect of the site of the proposed development:

- *A Site Specific Flood Risk (SSFRA) assessment, appropriate to the type and scale of development proposed, and in accordance with 'The Planning System and Flood Risk Management Guidelines – DoEHLG-2009' has been undertaken.*
- *The site of the proposed development has been screened, scoped and assessed for flood risk in accordance with the above guidelines.*
- *The assessment and analysis undertaken as part of this Site Specific Flood Risk Assessment indicates that the site of proposed development is not susceptible to predictive, indicative, historic or anecdotal fluvial, pluvial or groundwater flooding.*
- *In consideration of the findings of this Site Specific Flood Risk Assessment, in the context of 'The Planning System & Flood Risk Management Guidelines – 2009', the area of the proposed development site falls within Flood Zone 'C'.*
- *It is recommended that the development as proposed incorporates an appropriate storm-water management system which limits post development storm-water runoff from the site to pre-development greenfield runoff rates.*
- *The proposed development is not expected to result in an adverse impact to the existing hydrological regime of the area, will not impact or impede access to a watercourse, flood plain or flood protection and management facilities and would not increase the risk of flooding to adjacent lands or properties.*
- *In consideration of the findings of this Site Specific Flood Risk Assessment and the incorporation of the recommendations made in this report, it is considered that the development as proposed is appropriate from a flood risk perspective*

Appendices

Appendix A. Drawings

Drawing Number IE2773-001-A Site Location Map



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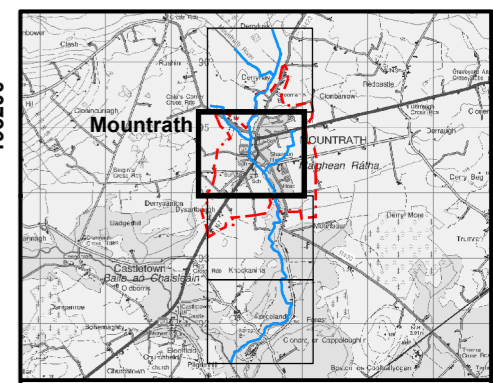
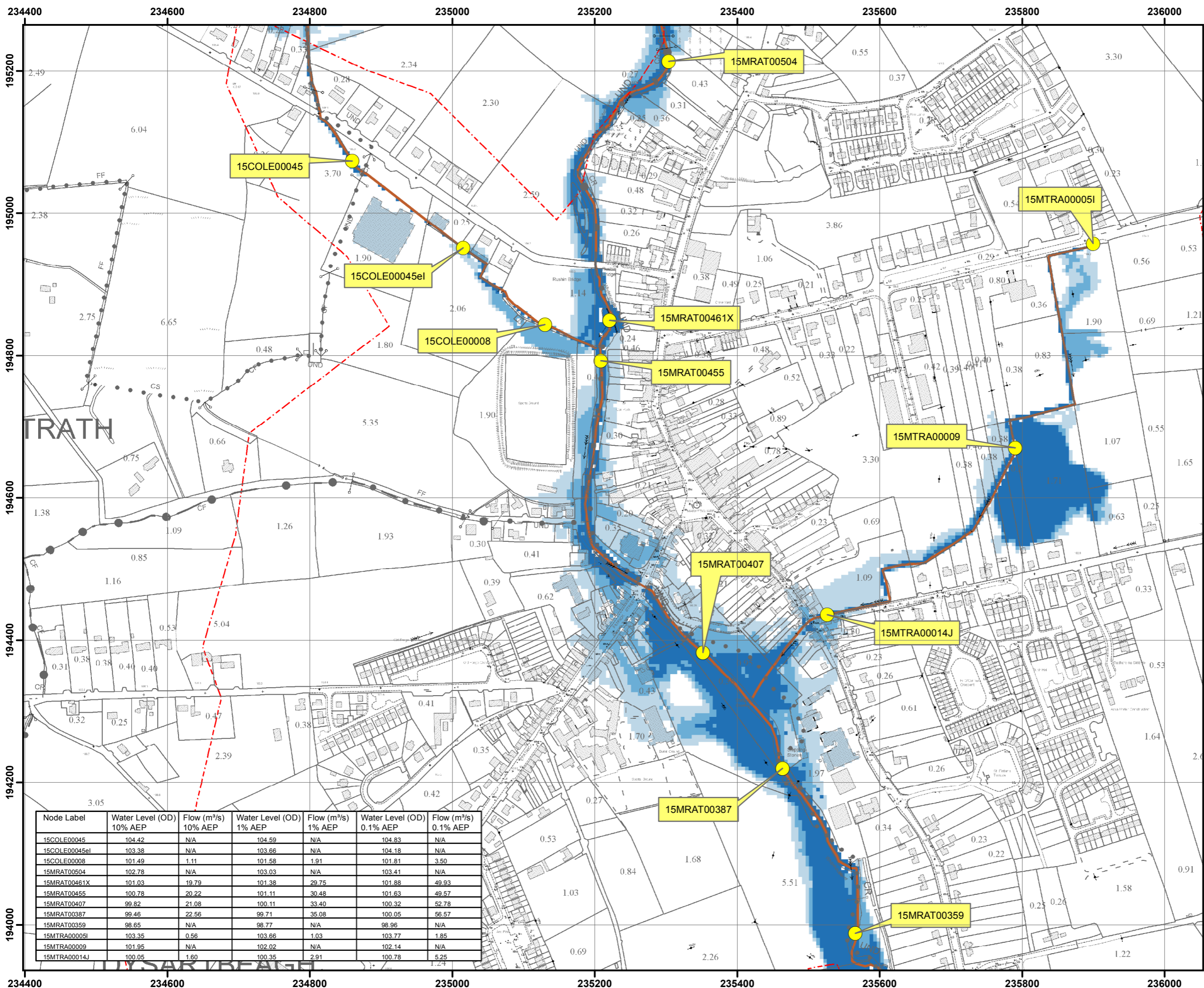


Project Title:		FLOOD RISK ASSESSMENT			
Project Address:		MOANBAUN, MOUNTRATH, CO LAOIS			
Client:		LAOIS COUNTY COUNCIL			
Drg. Title:		SITE LOCATION MAP			
Dwg. Scale:	Date:	Dwg. No.:	Job No.:	Revision:	Dwg. By:
1:50,000	04.09.2023	IE2773-001	IE2773	A	JMC

Appendix B.

OPW CFRAMS Flood Extent Map *015_MOT_EXFCD_FO_02*

OPW CFRAMS Flood Extent Map *015_MOT_EXFCD_FO_03*



IMPORTANT USER NOTE:
THE VIEWER OF THIS MAP SHOULD REFER TO THE DISCLAIMER, GUIDANCE NOTES AND CONDITIONS OF USE THAT ACCOMPANY THIS MAP.

- Legend**
- 10% Fluvial AEP Event
 - 1% Fluvial AEP Event
 - 0.1% Fluvial AEP Event
 - Modelled River Centreline
 - AFA Extents
 - Node Point
 - Node ID Node Label

FINAL

REV:	NOTE:	DATE:
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Node Label	Water Level (OD)		Flow (m ³ /s)		Water Level (OD)		Flow (m ³ /s)	
	10% AEP	10% AEP	10% AEP	10% AEP	1% AEP	1% AEP	0.1% AEP	0.1% AEP
15COLE00045	104.42	N/A	104.59	N/A	104.83	N/A	N/A	N/A
15COLE00045el	103.38	N/A	103.66	N/A	104.18	N/A	N/A	N/A
15COLE00008	101.49	1.11	101.58	1.91	101.81	3.50	N/A	N/A
15MRAT00504	102.78	N/A	103.03	N/A	103.41	N/A	N/A	N/A
15MRAT00461X	101.03	19.79	101.38	29.75	101.88	49.93	N/A	N/A
15MRAT00455	100.78	20.22	101.11	30.48	101.63	49.57	N/A	N/A
15MRAT00407	99.82	21.08	100.11	33.40	100.32	52.78	N/A	N/A
15MRAT00387	99.46	22.56	99.71	35.08	100.05	56.57	N/A	N/A
15MRAT00359	98.65	N/A	98.77	N/A	98.96	N/A	N/A	N/A
15MTRA00005I	103.35	0.56	103.66	1.03	103.77	1.85	N/A	N/A
15MTRA00009	101.95	N/A	102.02	N/A	102.14	N/A	N/A	N/A
15MTRA00014J	100.05	1.60	100.35	2.91	100.78	5.25	N/A	N/A



Map:
Mounrath Fluvial Flood Extents

Map Type: EXTENT

Source: FLUVIAL

Map Area: HPW

Scenario: CURRENT

Drawn By: C.C. **Date:** 21 July 2016

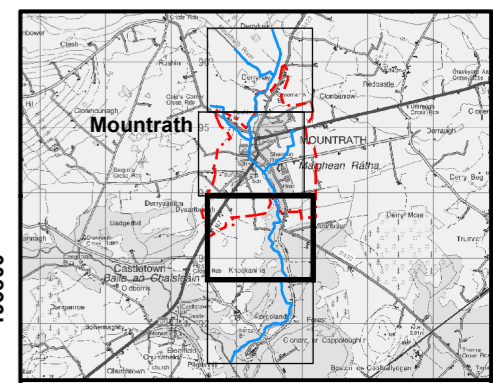
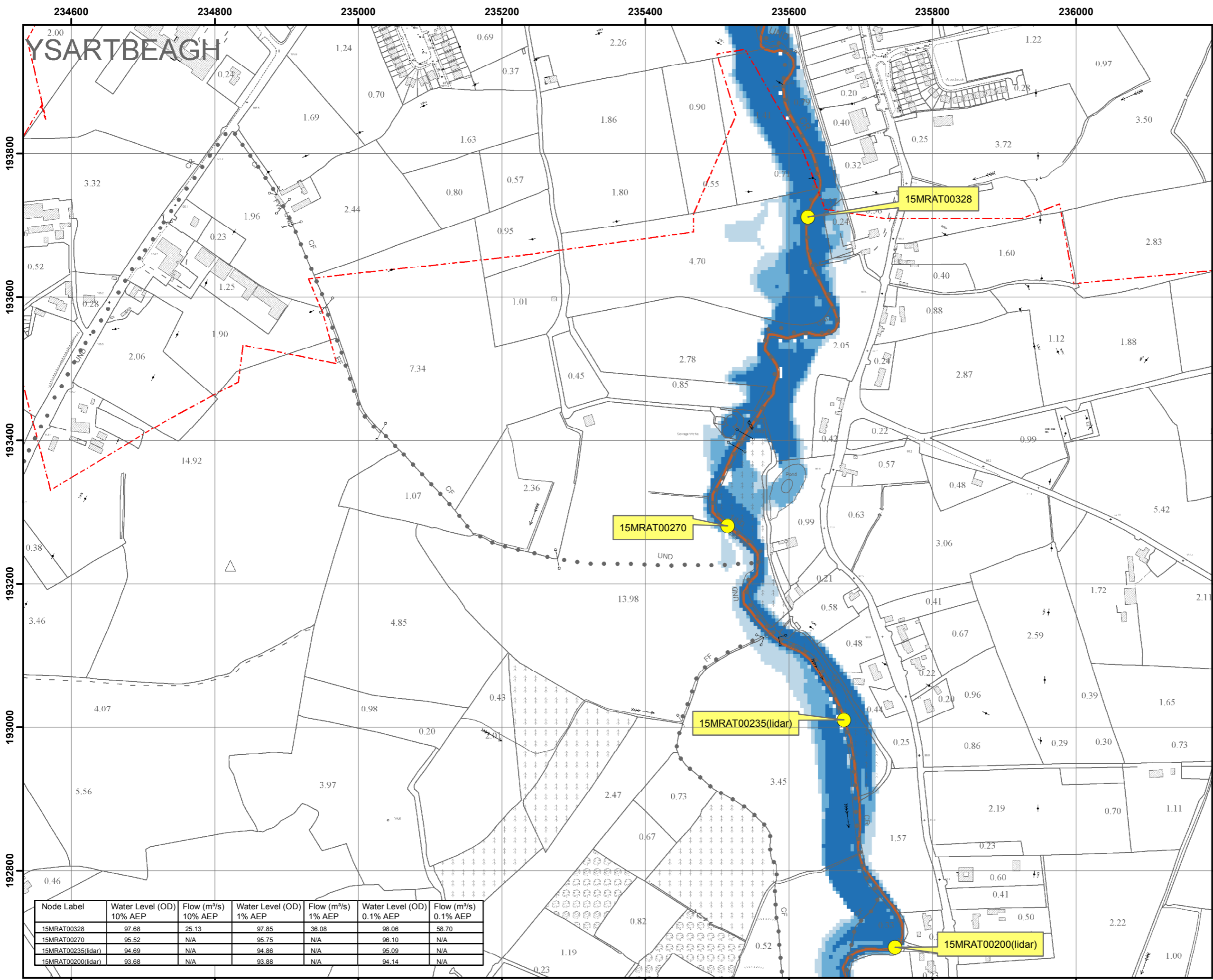
Checked By: J.M. **Date:** 21 July 2016

Approved By: G.G. **Date:** 21 July 2016

Drawing No.:
O15MOT_EXFCD_F0_02

Map Series: Page 2 of 4

Drawing Scale: 1:5,000 @ A3



IMPORTANT USER NOTE:
 THE VIEWER OF THIS MAP SHOULD REFER TO THE DISCLAIMER, GUIDANCE NOTES AND CONDITIONS OF USE THAT ACCOMPANY THIS MAP.

- Legend**
- 10% Fluvial AEP Event
 - 1% Fluvial AEP Event
 - 0.1% Fluvial AEP Event
 - Modelled River Centreline
 - AFA Extents
 - Node Point
 - Node ID Node Label

FINAL

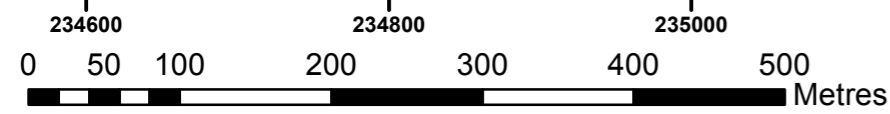
REV:	NOTE:	DATE:
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Node Label	Water Level (OD)		Flow (m³/s)		Water Level (OD)		Flow (m³/s)	
	10% AEP	10% AEP	1% AEP	1% AEP	0.1% AEP	0.1% AEP	0.1% AEP	0.1% AEP
15MRAT00328	97.68	25.13	97.85	36.08	98.06	58.70		
15MRAT00270	95.52	N/A	95.75	N/A	96.10	N/A		
15MRAT00235(lidar)	94.69	N/A	94.86	N/A	95.09	N/A		
15MRAT00200(lidar)	93.68	N/A	93.88	N/A	94.14	N/A		



Map:	
Mountrath Fluvial Flood Extents	
Map Type: EXTENT	
Source: FLUVIAL	
Map Area: HPW	
Scenario: CURRENT	
Drawn By : C.C.	Date : 21 July 2016
Checked By : J.M.	Date : 21 July 2016
Approved By : G.G.	Date : 21 July 2016
Drawing No. :	
O15MOT_EXFCD_F0_03	
Map Series : Page 3 of 4	
Drawing Scale : 1:5,000 @ A3	