

# SITE SPECIFIC FLOOD RISK ASSESSMENT

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Pirn Mill, Sligo

Issue P01

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# 1 Introduction

## 1.1 Background

CORA Consulting Engineers were commissioned by Sligo County Council to prepare a Site Specific Flood Risk Assessment (SSFRA) for the proposed residential development at Pirn Mill, Sligo. This SSFRA was prepared to comply with current planning legislation and forms part of proposed planning application for the subject site.

## 1.2 Objectives

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 report will provide the following;

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

## 1.3 Flood Risk Assessment Scope

This SSFRA relates only to the proposed development site in the vicinity of the Pirn Mill Road, Sligo and its immediate surroundings. This report uses information obtained from various sources, together with an assessment of flood risk for the existing land and proposed development. The report follows the requirements of ‘*The Planning System & Flood Risk Management - Guidelines for Planning Authorities*’, (referred to as the *Guidelines* for the remainder of this report) and the Sligo County Council Development Plan 2024-2030 Strategic Flood Risk Assessment (SFRA).

## 1.4 Existing Site

The proposed site is located between Pirn Mill Road and the N4 roadway. The subject site is located approximately 100m south of the Garavogue River. The site covers an area of approximately 2850m<sup>2</sup> on plan and is currently vacant with a concrete slab throughout the site.

The site is bounded by an existing commercial building to the north and residential properties to the south. Pirn Mill Road forms the boundary to the west and the N4 carriageway forms the boundary to the east.

A pedestrian path extends the full length of the site boundary to the east and separates the site from the N4.

Generally, the site has a slight fall from south to north with a finished ground level of 3.60m to the south and 3.50m to the north of the site.

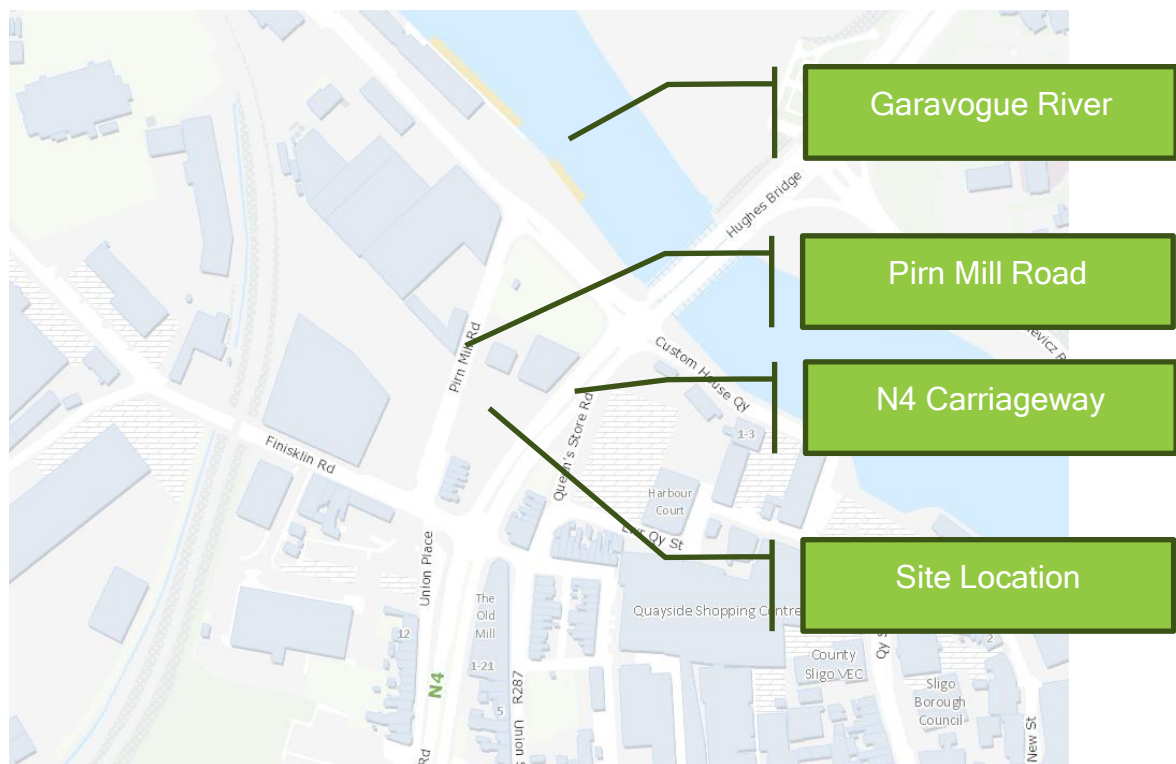


Figure 1 Site Location (OSI)

As per the Sligo Town Zoning Map, as part of the Sligo County Council Development Plan 2024-2030 the site has been zoned TC2, 'Commercial and Mixed Uses'

The objective of this zoning is to “promote the development of a dynamic mix of uses able to create and sustain viable town and village centres. Commercial (including retail), residential, leisure, community, office and suitable enterprise uses are supported in mixed-use zones, as well as high-amenity open space.”

## Proposed Development

The development will consist of the construction of 20 No. residential units arranged in 3 separate blocks. The 2 most southern blocks will be two stories in height with the northern block extending to 4 stories in height.

A new entrance from Pirn Mill Road is proposed, leading to a surface car parking located on the western boundary of the site.

A review of the online planning file for the site confirms that there are no current planning permissions active on the subject site.

## 2 Planning Guidelines and Flood Risk Assessment

### 2.1 The Planning System and Flood Risk Management, Guidelines for Planning Authorities

The FRM Guidelines provide “mechanisms for the incorporation of flood risk identification, assessment and management into the planning process...” They ensure a consistent approach throughout the country requiring identification of flood risk and flood risk assessment to be key considerations when preparing development plans, local area plans and planned development.

“The core objectives of the FRM Guidelines are 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 floodplains.
- Avoid unnecessary restriction of national, regional or local economic and social growth.
- Improve the understanding of flood risk among relevant stakeholders; and
- Ensure the requirements of EU and national law in relation to the natural environment and nature conservation are complied with for flood risk management.”

The key principles of The FRM Guidelines are to apply the Sequential Approach to the planning process i.e.;

- “Avoid the risk, where possible,

- Substitute less vulnerable uses, where avoidance is not possible, and
- Mitigate and manage the risk, where avoidance and substitution are not possible.”

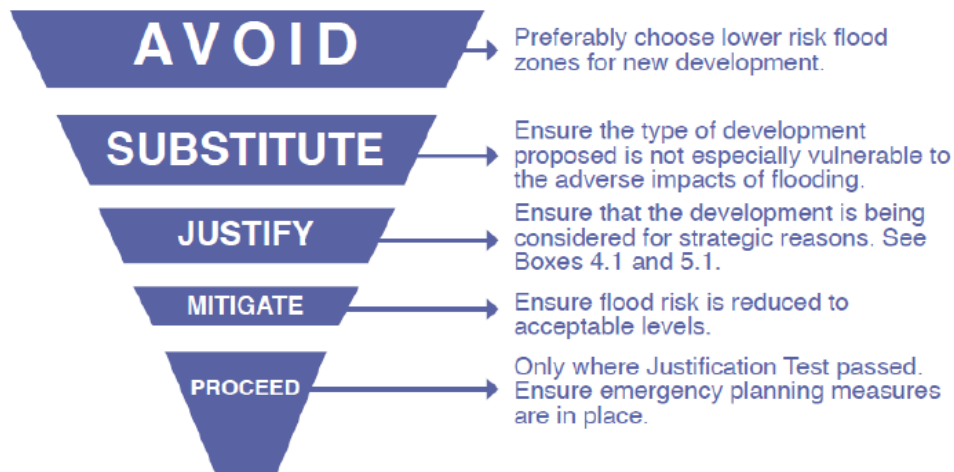


Figure 2 Sequential approach principles in flood risk management

Where the *Sequential Test's* **avoid** and **substitute** principals are not appropriate then the FRM Guidelines propose that a *Justification Test* be applied to assess the appropriateness, or otherwise, of particular developments that are being considered in areas of moderate or high flood risk.

### 2.1.1 Flood Risk Assessment

The assessment of flood risk requires an understanding of where water comes from (the source), how and where it flows (the pathways) and the people and assets affected by it (the receptors).

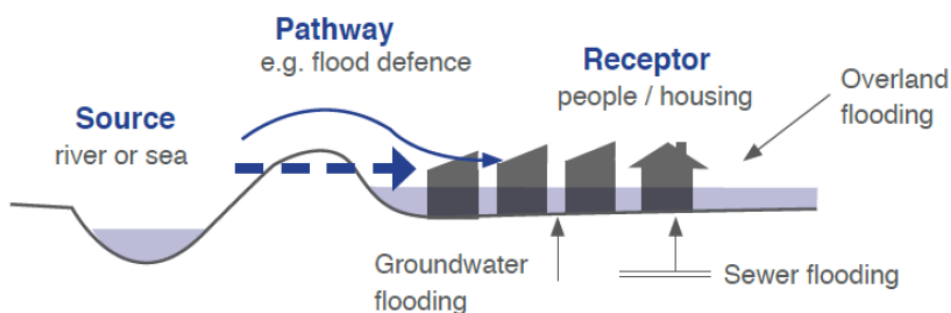


Figure 3 Source-Pathway-Receptor Model



The principal sources are rainfall or higher than normal sea levels. The principal pathways are rivers, drains, sewers, overland flow and river and coastal floodplains and their defence assets. The receptors can include people, their property and the environment. All three elements are examined as part of the flood risk assessment including the vulnerability and exposure of receptors to determine potential consequences. Mitigation measures typically used in development management can reduce the impact of flooding on people and communities e.g. by blocking or impeding pathways. The planning process is primarily concerned with the location of receptors and potential sources and pathways that might put those receptors at risk.

Risks to people, property and the environment should be assessed over the full range of probabilities, including extreme events. Flood risk assessment should cover all sources of flooding, including effects of run-off from a development locally and beyond the development site.

## 2.2 Flood Risk Assessment Stages

The FRM Guidelines outline that a staged approach should be adopted when carrying out a flood risk appraisal or assessment. “These stages are:

- *Stage 1 Flood risk identification*
- *Stage 2 Initial flood risk assessment*
- *Stage 3 Detailed flood risk assessment*

The FRM Guidelines require a SSFRA be undertaken to assess flood risk for individual planning applications. This SSFRA comprises Stages 1, 2 and 3 involving both identification and more detailed assessment of flood risks and surface water management related to the planned development site.

## 2.3 Flood Zones

The FRM Guidelines use flood zones to determine the likelihood of flooding and for flood risk management within the planning process. The three flood zone levels are:

- 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);
- 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 or between 0.1% AEP or 1 in 1000 and 0.5% AEP or 1 in 200 for coastal flooding); and
- 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 Zone C covers all areas outside zones A and B.

The FRM Guidelines categorises all types of development as either;

- Highly Vulnerable e.g. dwellings, hospitals, fire stations, essential infrastructure,
- Less Vulnerable e.g. retail, commercial or industrial buildings, local transport infrastructure.
- Water Compatible e.g. flood infrastructure, docks, amenity open space.

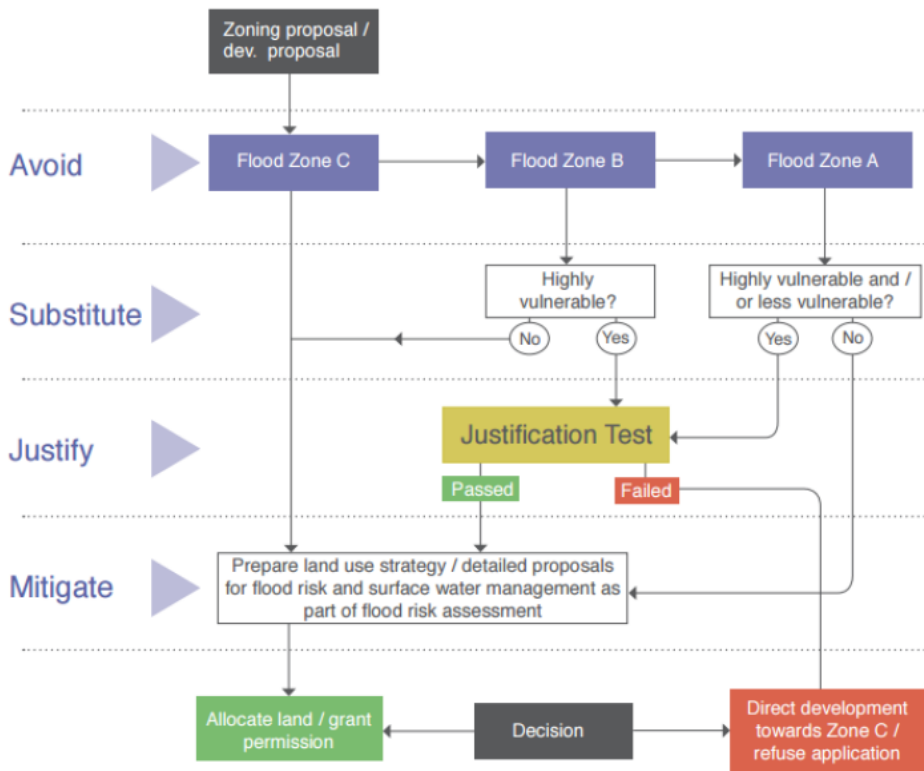


Figure 4 Sequential approach mechanism in the planning process

The Sequential Approach restricts development types to occur within the flood zone appropriate to their vulnerability class, see figure 2.4.

	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

Figure 5 table 3.2 from the FRM guidelines - matrix of vulnerability versus flood Zone to illustrate appropriate development and that required to meet the justification test

## 2.4 Proposed Development's Vulnerability

The proposed type of development for this site is to be wholly residential in nature. Residential developments are categorised as **highly vulnerable** developments and appropriate to be located just within Flood Zone C without the requirement for a justification test. Highly vulnerable developments within Flood Zone A and B would be subject to a justification test.

## 2.5 Site Specific Flood Risk Assessment for development.

The FRM Guidelines require a SSFRA to “gather relevant information sufficient to identify and assess all sources of flood risk and the impact of drainage from the proposal”. It should “quantify the risks and the effects of any necessary mitigation, together with the measures needed or proposed to manage residual risks”. It considers the nature of flood hazard, taking account of the presence of any flood risk management measures such as flood protection schemes and how development will reduce the flood risk to acceptable levels. A detailed assessment for a development application should conclude that the core flood risk elements of the Justification Test are passed and that residual risks can be successfully managed with no unacceptable impacts on adjacent lands.

## 2.6 SSFRA Key Outputs

Key outputs of an SSFRA are:

- Plans showing the site and development proposals including its relationship with watercourses and structures which may influence local hydraulics;
- Surveys of site levels and comparison of development levels relative to sources of flooding and likely flood water levels;
- Assessments of;
  - Potential sources of flood risk;
  - Existing flood alleviation measures;

- Potential impact of flooding on the site.
- How the layout and form of the development can reduce those impacts, including arrangements for safe access and egress.
- Proposals for surface water management and sustainable drainage.
- The effectiveness and impact of any mitigation measures.
- The residual risks to the site after the construction of any necessary measures and the means of managing those risks; and
- How flood risks are managed for occupants / employees of the site and its infrastructure.

## 3 Stage 1 Flood Risk Identification

### 3.1 Available Flood Risk Information

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 lands in question that may warrant further investigation.

To initially identify potential flood risks for the existing site and surrounding area a number of available data sources were consulted, these are listed in Table 3.1 below.

	Information Source	Coverage	Quality	Confidence	Identified Flood Risks	Flood Risk
Primary Data Source and Modelled Data	OPW WCFRAM - Fluvial <a href="https://www.floodinfo.ie/map/floodmaps/">https://www.floodinfo.ie/map/floodmaps/</a>	Regional	High	High	Flood maps are noted as "Under Review" and cannot be relied upon	N/A
	OPW WCFRAM - Coastal <a href="https://www.floodinfo.ie/map/floodmaps/">https://www.floodinfo.ie/map/floodmaps/</a>	Regional	High	High	Flood maps are noted as "Under Review" and cannot be relied upon	N/A
	OPW WCFRAM - Pluvial <a href="https://www.floodinfo.ie/map/floodmaps/">https://www.floodinfo.ie/map/floodmaps/</a>	Regional	low	High	No records of pluvial flooding available	N
	Sligo County Council Development Plan SFRA	Local	Moderate to High	Moderate to High	Development is located within Flood Zone B.	N
	CFRAM River Flood Extents - Mid Range Future Study	Regional	High	High	Flooding extends into the site during the 0.1% AEP event.	Y
	National Coastal Flood Hazard Mapping 2021 - Present Day	National	High	High	Flooding extends into the site during the 0.5% AEP and 0.1% AEP event.	Y

	Walkover Survey	Local	Varies	Varies	Level site with concrete surface finish. All drainage underground.	N
Secondary Data Source	OPW Historic Flood Records	Nationwide	Varies	Varies	No records of site flooding.	N
	Historic OSI Maps	Nationwide	Moderate	Low	Site noted as “Queens Stores” as part of the 25” historic map.	N
	EPA Ex. Rivers	Nationwide	Moderate	Moderate	Garavogue River to the West of the site.	Y
	Drainage Records	Nationwide	Moderate	Moderate	No evidence of existing site drainage based on GPR survey.	N
	Geotechnical Site Investigation	County	Moderate	Low	Made ground overlying soft to firm alluvial soils.	N
	Topographic Surveys	Local	High	High	Site level varies from 3.50m to 3.60m	N

*Table 1 Flood risk sources*

## 3.2 Identified Flood Risks/ Flood Sources

### 3.2.1 OPW Predictive, Historic & Benefitting Land Maps and Flood Risk Information

From consultation of flood information from the OPW's floodmaps.ie website the site has not suffered from flooding in the past. Information from this source on previous flood events has been included in Appendix A which shows some flooding incidents in other areas of the locality. However, there are no records of the site itself having been flooded.

#### Development Plan SFRA

A Strategic Flood Risk Assessment has been prepared on behalf of Sligo County Council by CAAS Ltd (Dated October 2023). As part of the flood risk assessment, Sligo Town has been identified as a flood risk area, with the relevant flood zones indicated on "Sligo Town (Town) Indicative Flood Zones. An extract of the map is shown in Figure 6 below:



*Figure 7 - SFRA Flood Zones*

The strategic flood risk assessment identifies the site as within **Flood Zone B**

#### Fluvial Flood Risk

The OPW's Western CFRAM mapping is currently "under review" following an objection, submission and/or further information received. The flood map review programme states updated final flood maps will be published as soon as they become available. Until such point as this mapping becomes available, no comments can be made in relation to Fluvial Flood Risk.



### Tidal Flood Risk

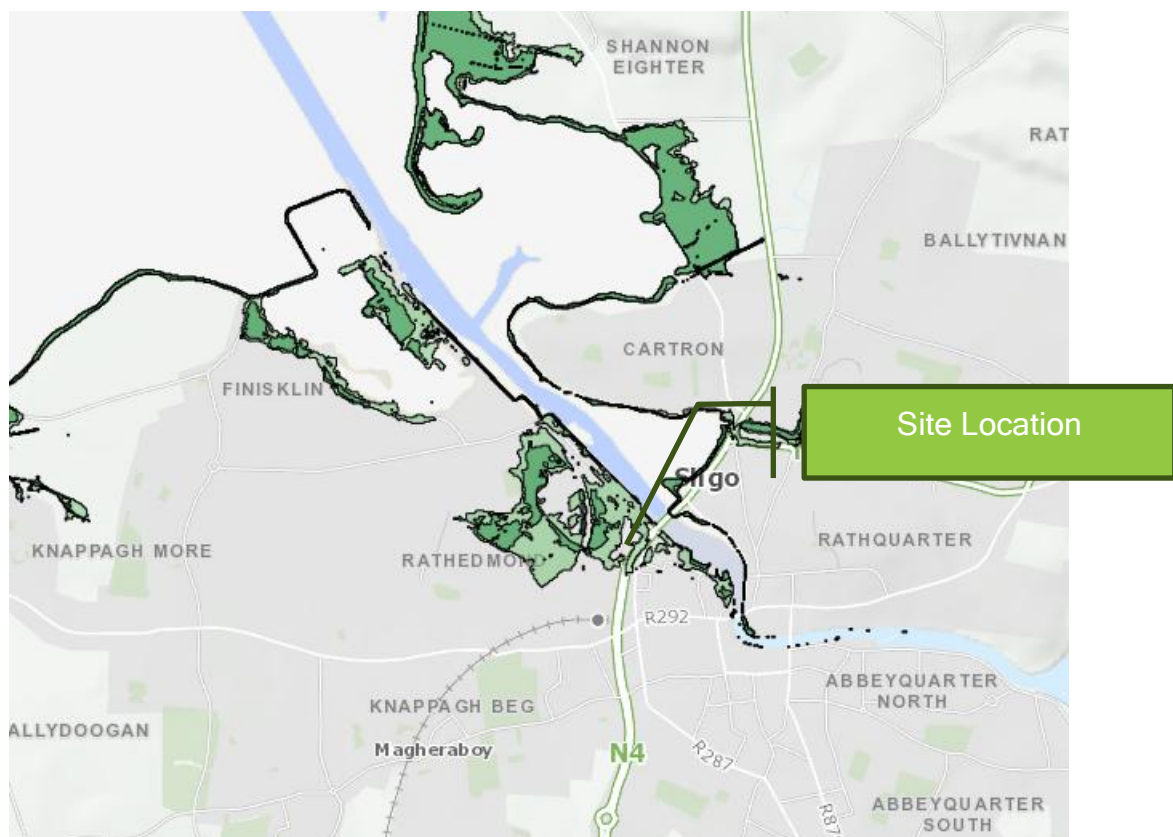
Given the site is located approximately 100m from the Garavogue River which is tidal and flows to the Atlantic Sea, coastal flooding is likely to be a source of potential flooding on the site.

The OPW WCFRAM coastal flood risk analysis for 10%, 0.5% and 0.1% AEP return periods show the site is outside the extents of the 10% and 0.5% AEP present day flood events. The site is subject to flooding during the 0.1% AEP present day flood event.

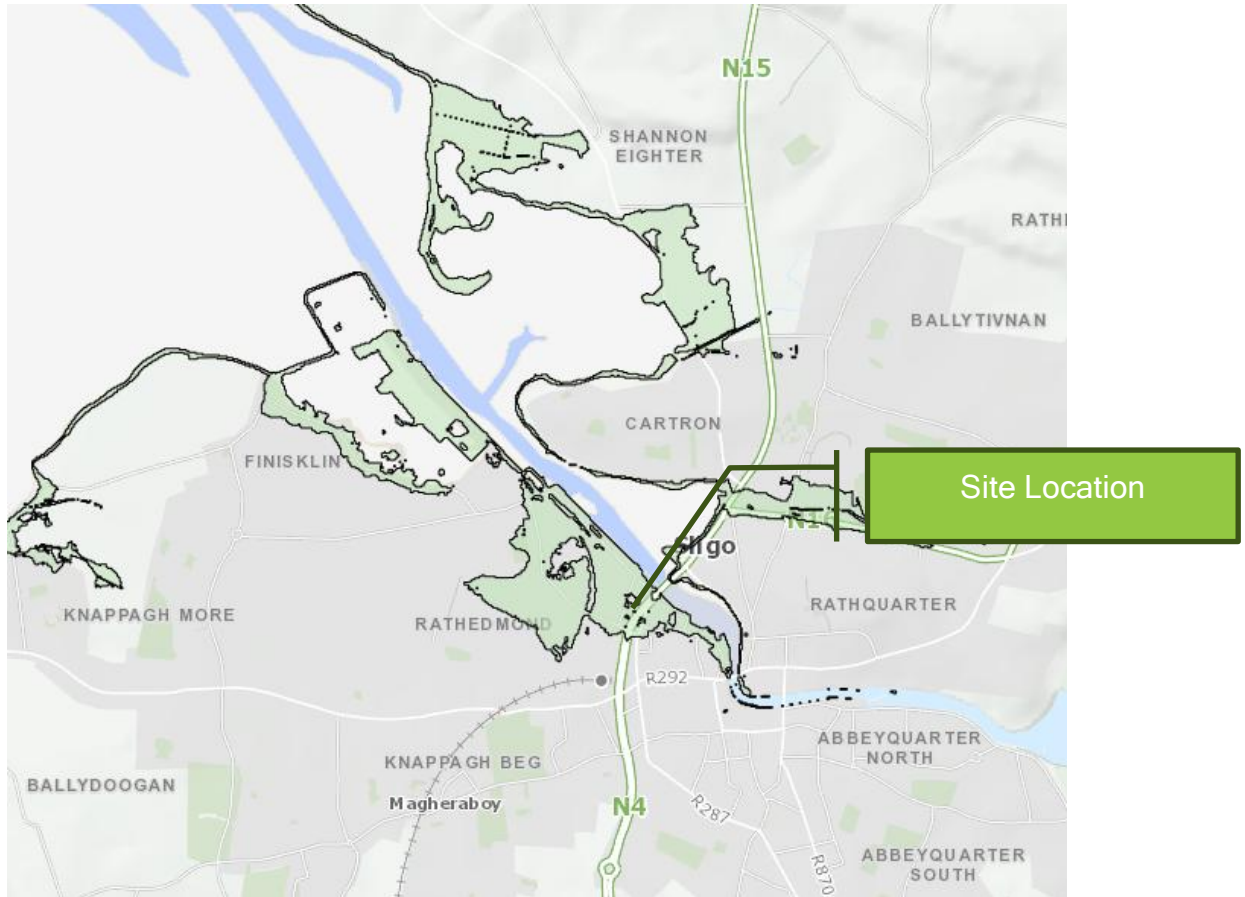
Flood mapping for the 10% and 0.5% AEP events is shown in Figure 8 below.

Flood mapping for the 10% and 0.5% AEP events is shown in Figure 9 below.

Based on the National Coastal Flood Hazard Mapping 2021 - Present Day, the site would be suitable for highly vulnerable development usage without the need for a justification test.



*Figure 10 - NCFHM 2021 - Present Day - 10% and 0.5% AEP*



*Figure 11 - NCFHM 2021 - Present Day - 0.1% AEP*

A further review of the National Coastal Flood Hazard Mapping 2021 - Mid-Range Future Mapping was undertaken.

The mapping reveals that the site is unaffected by the 10% AEP flood event

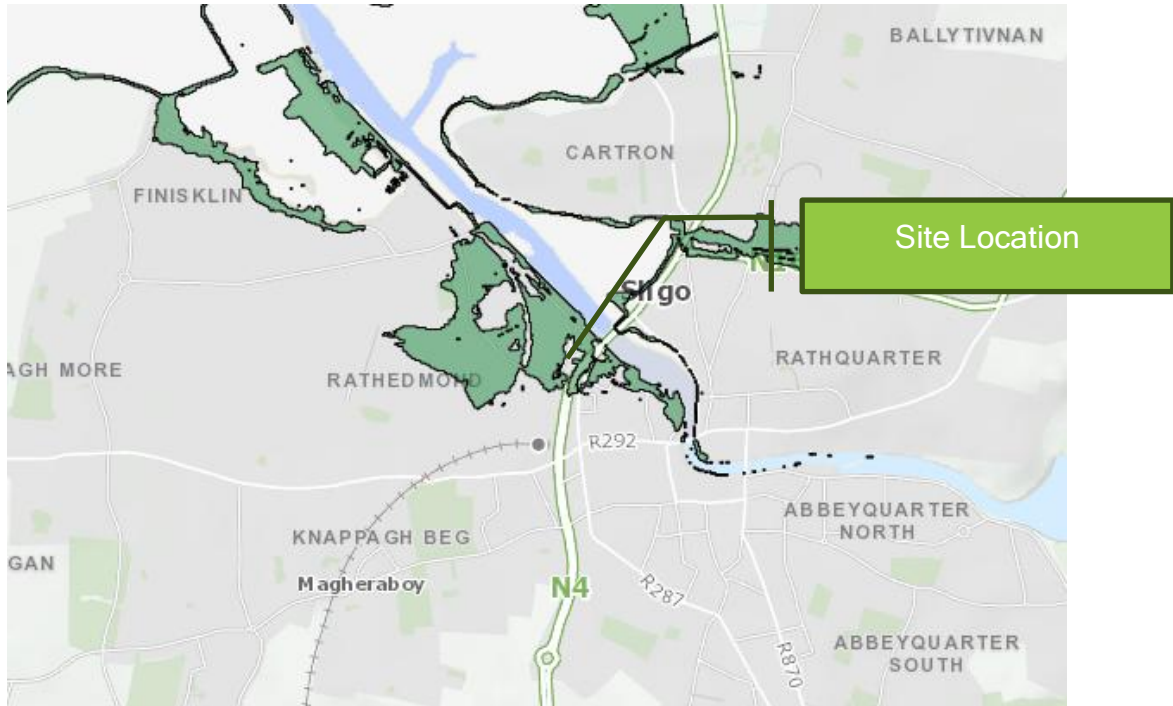


Figure 12 - NCFHM 2021 - Mid-Range Future - 10% AEP

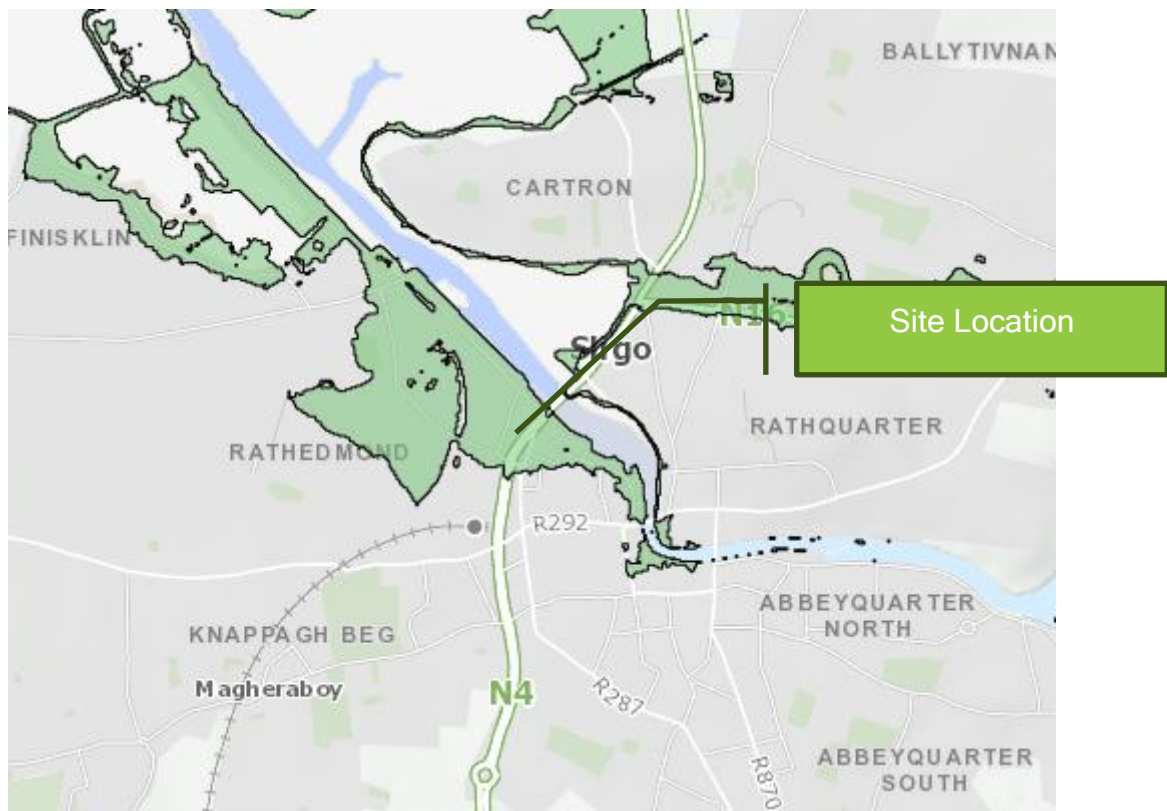


Figure 13 NCFHM 2021 - Mid-Range Future - 0.5% AEP

The CFRAM Coastal Flood Extents - Mid Range Future Scenario reveals that the site is impacted by predicted coastal flooding when climate effects are taken into account. These effects include a 20% increase in rainfall intensity along with a 500mm increase in sea levels.

Given that flooding is predicted for the mid-range future 0.5% AEP flood event, development on the site that is considered highly vulnerable is subject to a Justification Test.

#### Pluvial Flood Risk

No records for pluvial flooding are available for the subject site.

#### *3.2.2 Irish Coastal Protection Strategy Study (ICPSS)*

No records for the ICPSS mapping are available for Sligo Town.

#### *3.2.3 Sligo Development Plan 2024-2030*

The Sligo County Council Development Plan 2024-2030 contains a Strategic Flood Risk Assessment, providing guidance on justification tests for otherwise inappropriate land use zoning within Flood Zone A or B. The site is located Pirn Mill/Harbour area of Sligo Town. The mapping contained within the SFRA mapping confirms the preceding sections that the site is not subject to flooding associated with present day flooding levels (Figure 14) but is subject to flooding associated with the mid-range future and high end-future scenarios (Figure 15)

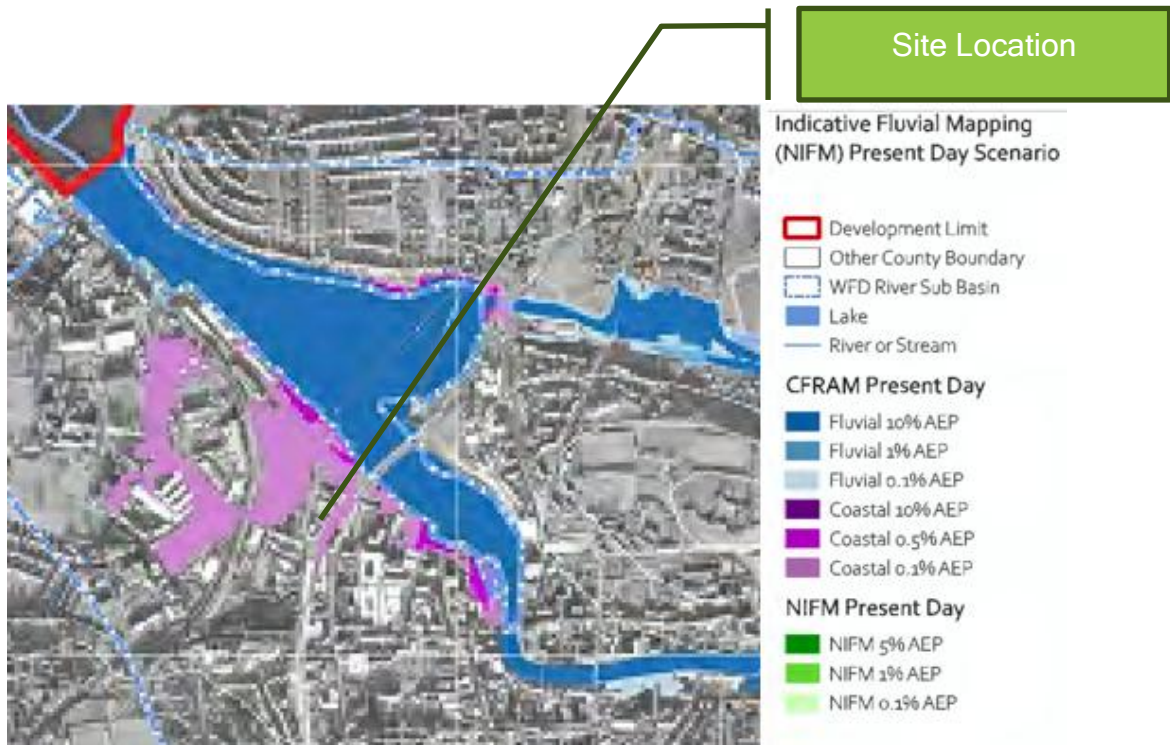


Figure 16 - Present Day Flooding

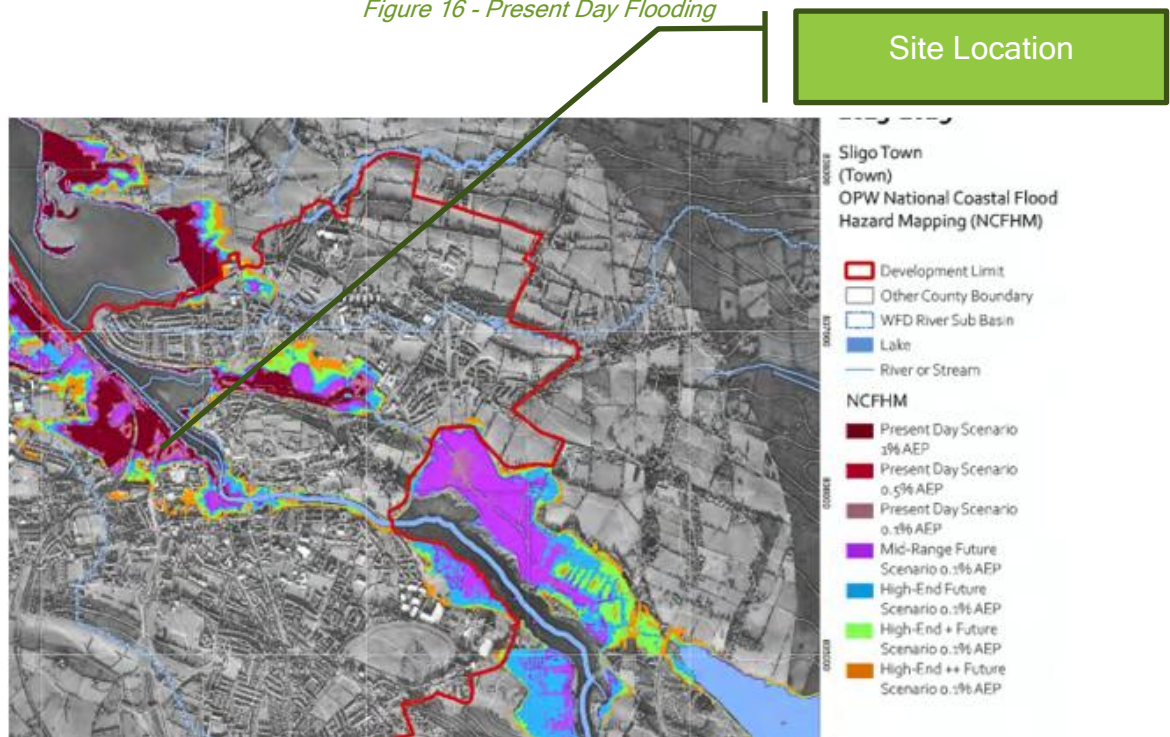


Figure 17 - OPW Mid Range Future and High-End Future Mapping

### 1.1.1 Topographical Survey

After reviewing the Topographical survey, the subject has a gradual fall from south to north. The survey indicates that the existing ground level is approximately +3.60m AOD.

### 1.1.2 Walkover Survey

From a walkover of the site it is clear that the subject site has a slight gradient with no evidence of flooding or flow paths are present on site. The walkover survey confirmed the proposed development site is as expected and ties in with the topographical survey.

### 1.1.3 Other Sources

Other information sources were consulted to determine if there was any additional flood risk to the subject site, these included;

- Soil data from a geotechnical site investigation completed for the subject site by IGSL confirms the site consists of made ground overlying alluvium over gravel. The depths of the made ground and alluvium vary across the site.
- Groundwater information from the site investigations suggests ground water levels at 2.9-3.20m below ground level, however given the nature of the soil and the proximity to the River Garavogue, this is likely to be tidal and subject to fluctuations.
- Existing Local Authority Drainage Records - The surrounding area is served by an existing below ground combined network. A 375mm diameter concrete sewer is present to the east of Pirn Mill Road.

## 1.2 Source-Pathway-Receptor Model

A Source-Pathway-Receptor model was produced to summarise the possible sources of floodwater, the people and assets (receptors) that could be affected by potential flooding (with specific reference to the proposals), see Table 3.2. It provides the probability and magnitude of the sources, the performance and response of pathways and the consequences to the receptors in the context of the mixed-use development proposal. These sources, pathways and receptors will be assessed further in the initial flood risk assessment stage.

Source	Pathway	Receptor	Likelihood	Impact	Risk
Tidal	Subject Site is inside the 0.5% AEP MRFS	Ground Floor	Medium	High	Medium
Fluvial	Mapping for the subject site is currently "Under Review"				
Surface Water Drainage	Flooding from surcharging of the developments drainage system	Ground Floor	Low	Medium	Low
Groundwater Flooding (Pluvial)	Rising ground water on the site	Ground Floor	Unlikely	Low	Low
Infrastructural - Human or Mechanical Error	Blockage of new drainage network	Ground Floor	Low	Low	Low

*Table 3-2 - Source-Pathway-Receptor Analysis*

The following section provides a summary of the results of this Source-Pathway-Receptor flooding model for the subject site.

## 1.3 Source-Pathway-Receptor Model Results

As it can be seen in the previous flooding analysis, the proposed development site is at possible risk of coastal flooding as a result of the 0.5% AEP flood event associated with the MRFS. Coastal flooding would raise the level of the Garavogue River with flood water entering the site.

Consequently, an initial flood risk assessment will follow to provide further detail on the causes, effects and possible mitigation measures for the sources of flood risk identified above.



## 2 Stage 2- Initial Flood Risk Assessment Stage

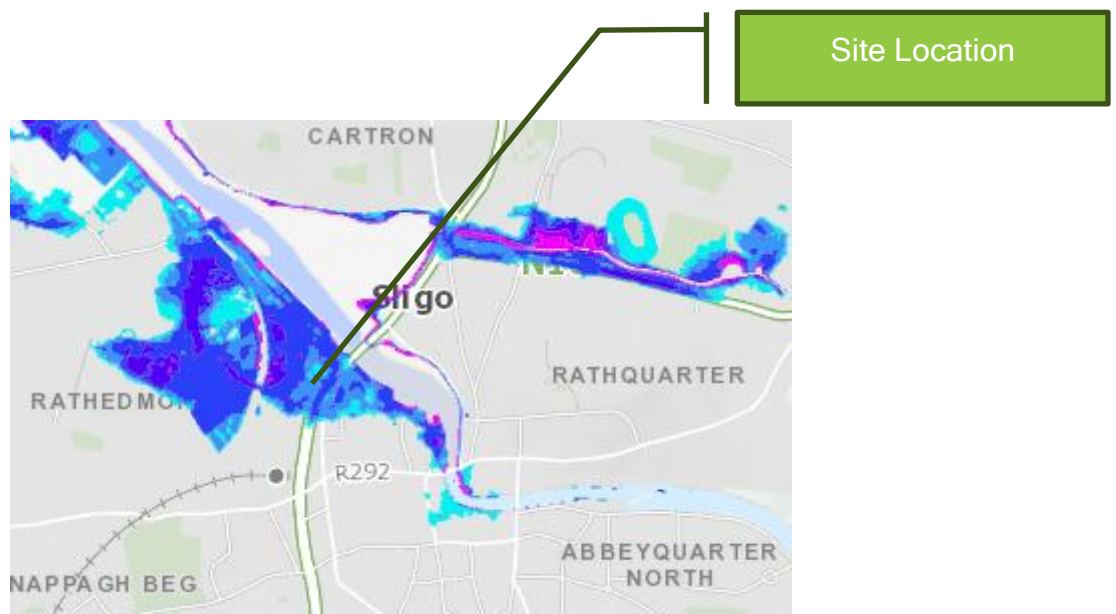
The main sources of flood risk identified from Stage 1 are;

- A medium risk of coastal flooding associated with the overtopping of the Garavogue River

### 2.1 Initial Fluvial Flood Risk Assessment

As stated above, the 1 in 200-year (0.5% AEP) coastal mid-range future scenario (MRFS) flood extent map estimated as part of the National Coastal Flood Hazard Mapping shows flooding to 100% of the site.

Flood depths predicted during the 0.5% AEP event are predicted within the 0.25-0.50m range.



*Figure 18 - 0.5% AEP MRFS Flood Depths*

Adopting a maximum site level of 3.60m AOD, this would equate to a predicted flood level of up to 4.10m AOD during the 0.5%AEP mid-range future storm event.

## 2.2 Flood Zone Category

Following the assessment of the flood risk to the site and the available information it is considered that the proposed development site is located within Flood Zone B given the presence of Coastal Flooding.

## 2.3 Minimum Floor Levels

As stated in section 1.5, the proposed development includes the construction of highly vulnerable residential dwellings.

The initial flood risk assessment determined the risk associated with the 1 in 200-year coastal flood event as the principle source of the flooding on the site.

The predicted flood mapping indicates that the 200-year design fluvial water level in the vicinity of the subject site as +4.100m AOD.

0.5% AEP Flood Level (Fluvial)	Climate Change Allowance	Freeboard	Minimum FFL of 'Highly Vulnerable' Development
4.100m AOD	Included in MRFS	+300mm	4.40m AOD

Table 2-1 - Minimum FFL for Less Vulnerable Development (Flood defence includes for climate change)

## 2.4 Residual Risks

Remaining residual flood risks, following the justification test for flood risk assessment include the following;

- Overground flood exceedance or flooding where local drainage infrastructure is surcharged during coastal flooding.

## 2.5 Mitigation Measures

Proposed mitigation measures to address residual flood risk are summarised below;

Floor level is to be set minimum of 70mm above external ground level. The access to the building will be via a localised ramp which will be integrated with the external landscaping of the plaza.

Surface water flow paths from east to west are maintained to either side of the building.

### *2.5.1 Effectiveness of Mitigation Measures*

It is considered that the flood risk mitigation measures once fully implemented are sufficient to provide a suitable level of protection to the proposed development.

The proposed development will not increase the run-off rates when compared with the existing site and satisfies the requirement of the SFRA to reduce flooding and improve water quality.

### *2.5.2 Flood Warning and Excavation*

To facilitate an emergency warning and evacuation plan which will allow site users to leave the premises of the property in the event of a flood, the flood warning and evacuation plan should be prepared in liaison with the Local Authority and the Emergency Services.

The development's facility management can communicate with the Local Authority and the building users with regard to Flood Warning and any evacuation procedures that may be necessary.

### *2.5.3 Development Management Process*

In order to justify the development of the site for residential usage, we have followed the Development Management Process, which has been adopted as part of the Strategic Flood Risk Assessment for Dublin City Development Plan 2024-2030. Whilst this does not form part of the Sligo County Council development plan, it is a useful process to evaluate a site.

As such we have completed the process in the subsequent sections:

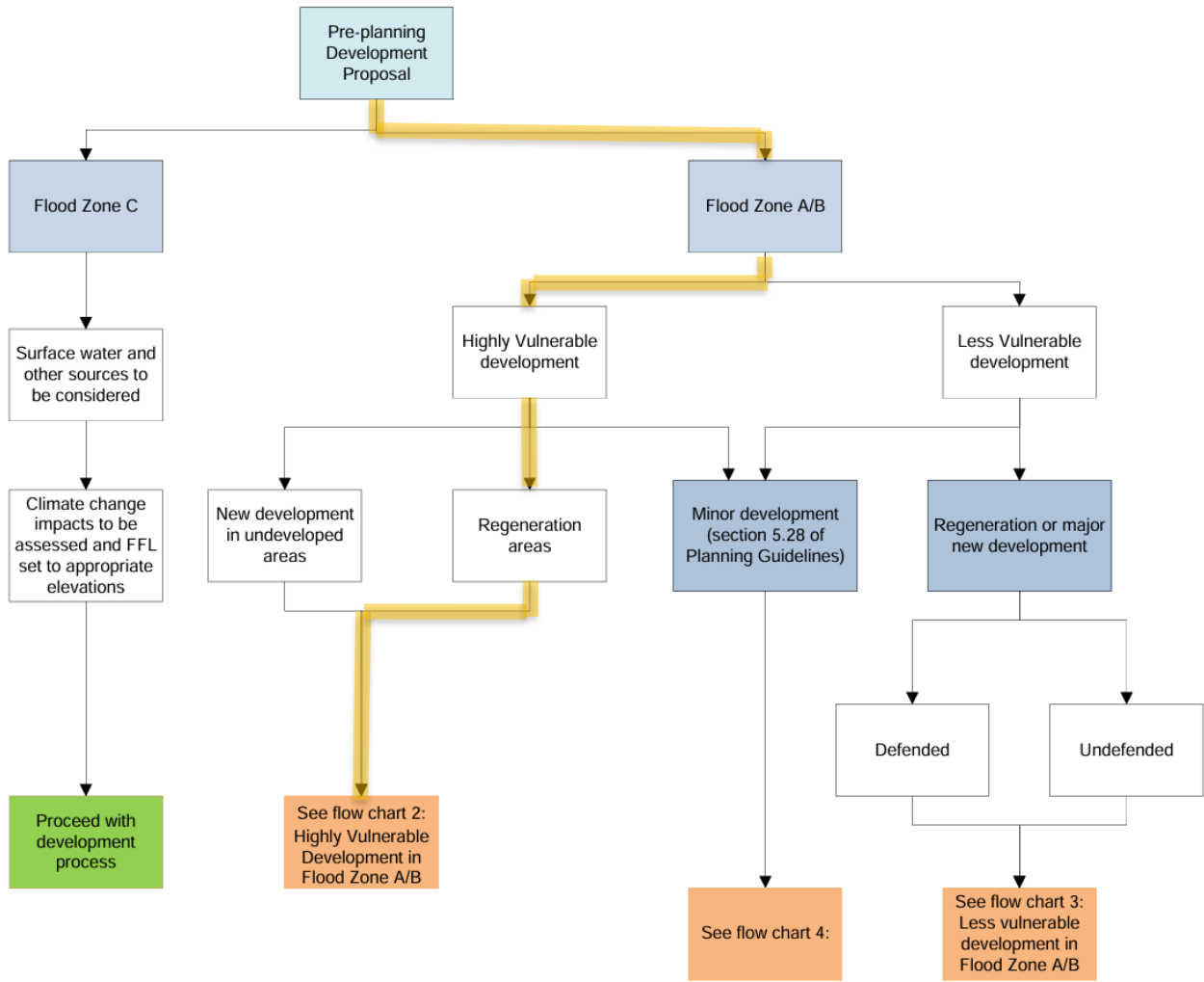


Figure 19 - Flow Chart 1 - Development Management Process

Flow Chart 2: Highly Vulnerable Development in Flood Zone A/B

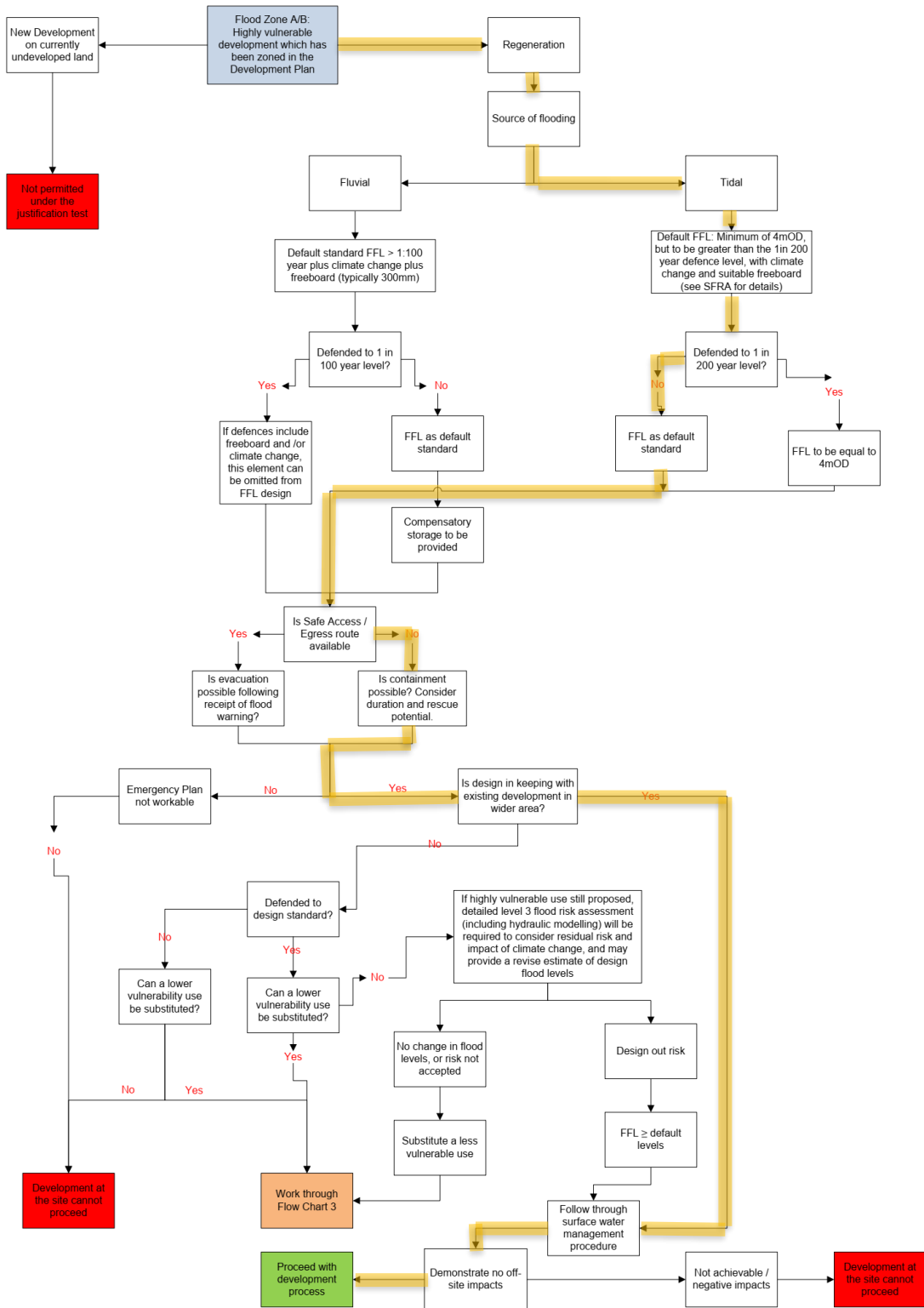


Figure 20 - Flow Chart 2 - Highly Vulnerable Development in Flood Zone A/B

### 3 Justification Test

The development consists of construction of highly vulnerable development within an area identified as being within Flood Zone B. In accordance with section Table 3.2 of “The Planning System and Flood Risk Management Guidelines for Planning Authorities”, the site is subject to a justification test.

The format of the justification test is outlined in section 5.15 and is replicated in Figure 21 below.

Each of the relevant sections will be addressed in the subsequent sections.

### Box 5.1 Justification Test for development management (to be submitted by the applicant)

When considering proposals for development, which may be vulnerable to flooding, and that would generally be inappropriate as set out in Table 3.2, the following criteria must be satisfied:

1. The subject lands have been zoned or otherwise designated for the particular use or form of development in an operative development plan, which has been adopted or varied taking account of these Guidelines.
2. The proposal has been subject to an appropriate flood risk assessment that demonstrates:
  - (i) The development proposed will not increase flood risk elsewhere and, if practicable, will reduce overall flood risk;
  - (ii) The development proposal includes measures to minimise flood risk to people, property, the economy and the environment as far as reasonably possible;
  - (iii) The development proposed includes measures to ensure that residual risks to the area and/or development can be managed to an acceptable level as regards the adequacy of existing flood protection measures or the design, implementation and funding of any future flood risk management measures and provisions for emergency services access; and
  - (iv) The development proposed addresses the above in a manner that is also compatible with the achievement of wider planning objectives in relation to development of good urban design and vibrant and active streetscapes.

The acceptability or otherwise of levels of residual risk should be made with consideration of the type and foreseen use of the development and the local development context.

Note: See section 5.27 in relation to major development on zoned lands where sequential approach has not been applied in the operative development plan.

Refer to section 5.28 in relation to minor and infill developments.

*Figure 22 - Justification Test Requirements*



1. *The subject lands have been zoned or otherwise designated for the particular use or form of development in an operative development plan, which has been adopted or varied taking account of these Guidelines.*

As per the Sligo Town Zoning Map, as part of the Sligo County Council Development Plan 2024-2030 the site has been zoned TC2, *'Commercial and Mixed Uses'*

The objective of this zoning is to “promote the development of a dynamic mix of uses able to create and sustain viable town and village centres. Commercial (including retail), residential, leisure, community, office and suitable enterprise uses are supported in mixed-use zones, as well as high-amenity open space.”

Given the land zoning, the development of residential units is considered appropriate on the subject site with regard to zoning.

2. *The proposal has been subject to an appropriate flood risk assessment that demonstrates:*

*(i) The development proposed will not increase flood risk elsewhere and, if practicable, will reduce overall flood risk*

The site is currently vacant with an impermeable concrete slab present to the full extent of the site. The impermeable nature of the site in its current format will result in the majority of rainfall falling on the site entering the public drainage network.

By way of an example, the M5\_60 value for the site as obtained from Met Eireann is 18.9mm of rainfall. Adopting an impermeability factor of 0.85 for the site would result in a surface water discharge of 44.745m<sup>3</sup> or 12.43 litres per second.

As part of the proposed development works, attenuation of surface water discharge would throttle the discharge rate to a maximum of 2.68 litres per second. This represents 21% of the current outfall rate.

The development will also incorporate permeable surfaces such as landscaping and permeable pavement build-ups which will serve to reduce the overall volume of surface water discharged from the site.

Accounting for the overall reduction in surface water discharge volume, coupled with the restricted outflow rate, we are satisfied that the proposed development will reduce the overall flood risk.

*(ii) The development proposal includes measures to minimise flood risk to people, property, the economy and the environment as far as reasonably possible;*

The development will incorporate the following measures to minimise the flood risk to people, property, the economy and the environment:

- Surface water attenuated to the QBAR rated.
- Permeable surfaces maximised throughout the development.
- Increased in finished floor levels will ensure development is above the 0.5% AEP mid-range future flood event along with a 300mm free board.

*(iii) The development proposed includes measures to ensure that residual risks to the area and/or development can be managed to an acceptable level as regards the adequacy of existing flood protection measures or the design, implementation and funding of any future flood risk management measures and provisions for emergency services access; and*

(iv) The development proposed addresses the above in a manner that is also compatible with the achievement of wider planning objectives in relation to development of good urban design and vibrant and active streetscapes.

*The acceptability or otherwise of levels of residual risk should be made with consideration of the type and foreseen use of the development and the local development context.*

*Note:*

*See section 5.27 in relation to major development on zoned lands where sequential approach has not been applied in the operative development plan.*

*Refer to section 5.28 in relation to minor and infill developments.*

## 4 Conclusion

This SSFRA concludes the following;

- This Site Specific Flood Risk Assessment for the proposed demolition of an existing single storey commercial unit and the construction of a residential development was undertaken in accordance with the requirements of the “Planning System and Flood Risk Management Guidelines for Planning Authorities”, November 2009 and the Sligo County Council Development Plan 2024-2030 Strategic Flood Risk Assessment.
- The proposed type of development for this site is to be commercial. Enterprise and commercial are categorised by the Guidelines as *Highly Vulnerable Development* and appropriate to be located within Flood Zone B.
- The development requires a justification test.
- The proposed development site is within Flood Zone B for coastal flooding.
- As part of the development proposals, a Flood Warning and Evacuation Plan can be implemented to ensure the site users are aware of the potential risks of flooding.
- A possible source of flood risk from the surcharging or blockage of the development’s drainage system has been identified. This risk is mitigated by suitable design of the drainage network, suitable site gradients to maintain existing flow paths, regular maintenance and inspection of the network and establishment of exceedance overland flow routes.
- The development’s drainage design includes for a 20% climate change allowance along with a 500mm increase in sea level in accordance with the “Mid-Range Future Scenario”.
- The proposed development will not increase the surface water run-off rate when compared with the existing site and satisfies the requirement of the SFRA to reduce flooding and improve water quality.

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# Appendix A

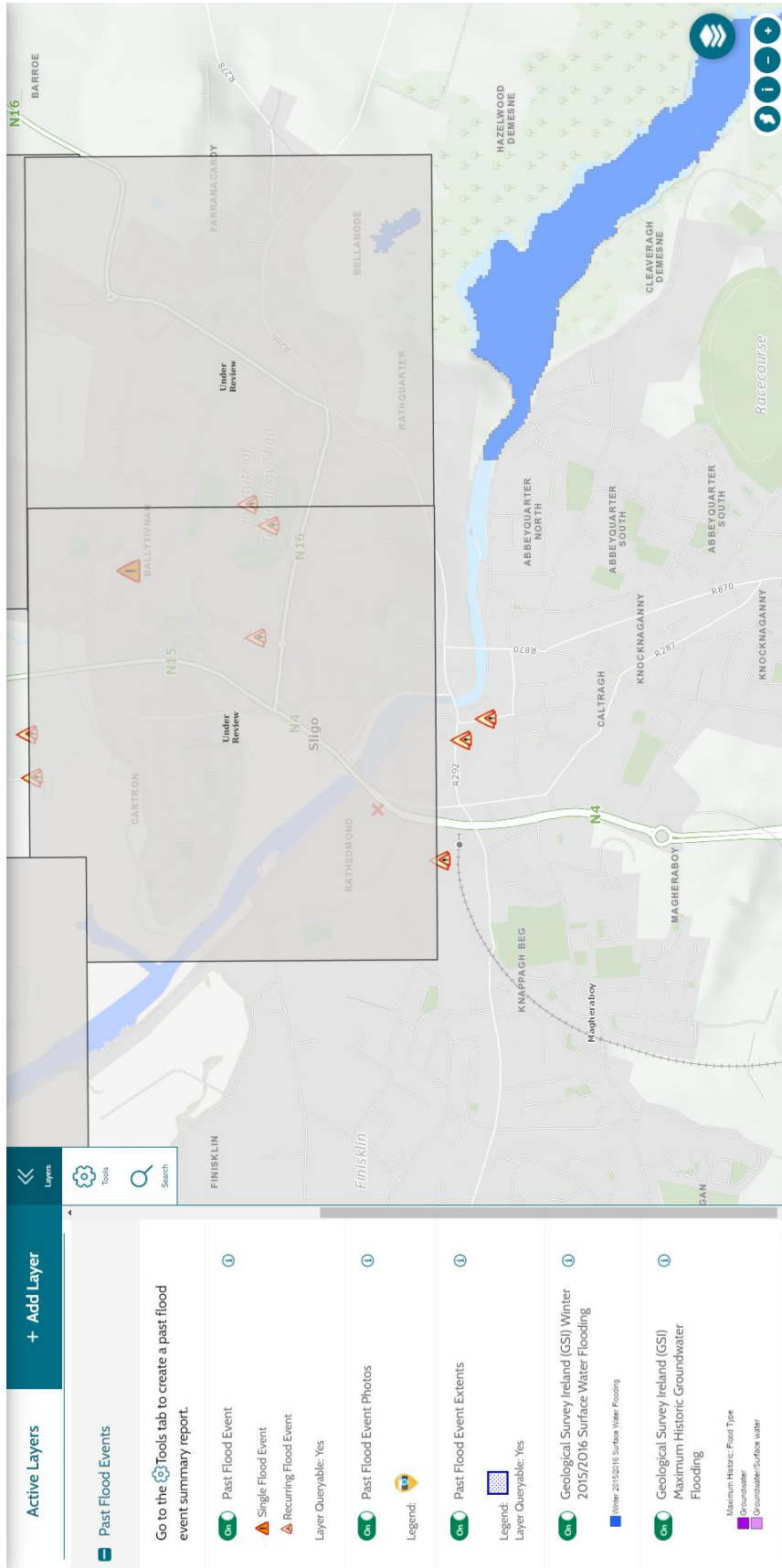


Figure 23 - Historic Flood Events

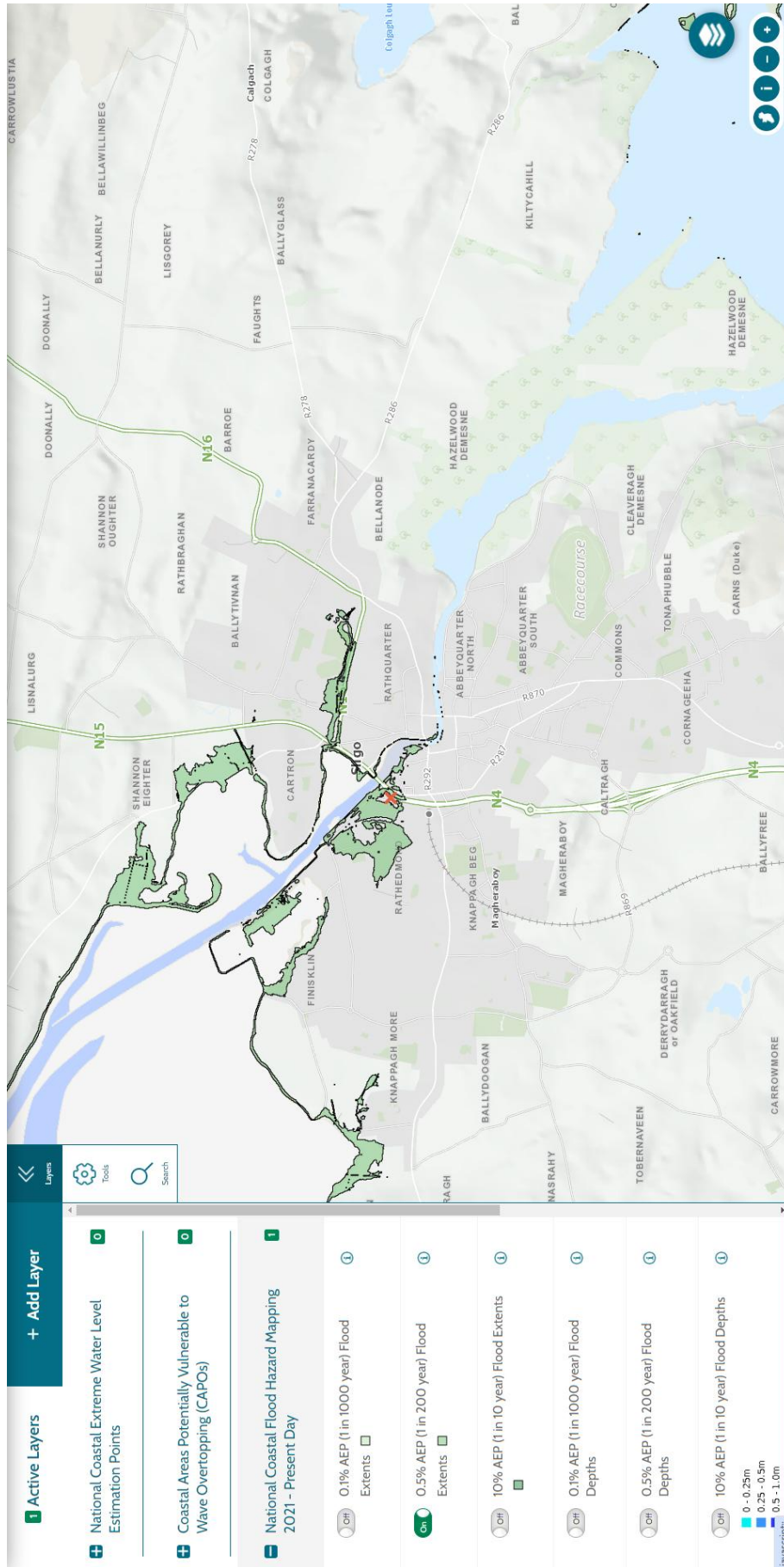


Figure 24 - CFRAM Coastal Flood Extents - Present Day - 0.5% AEP

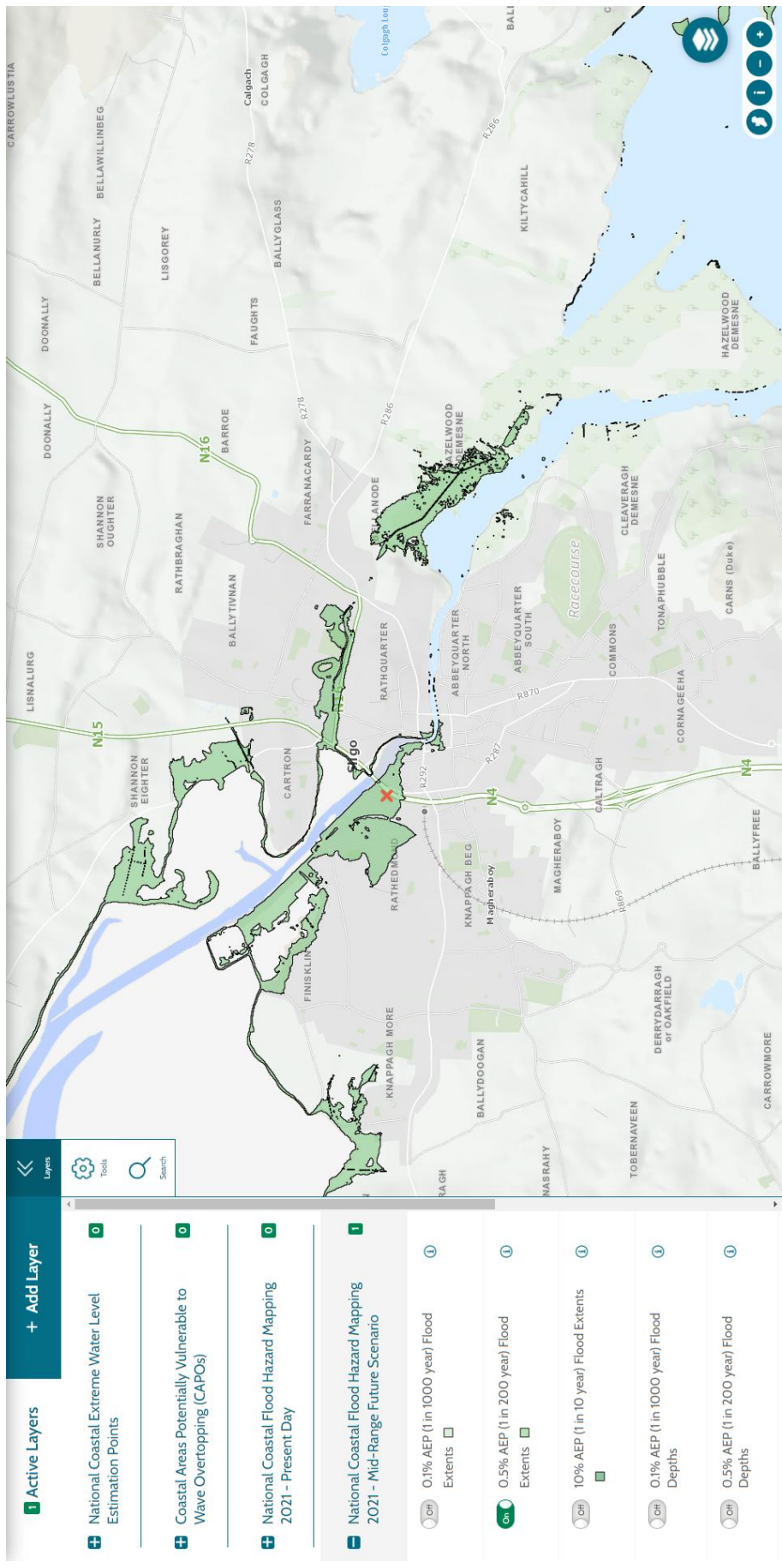


Figure 25 - National Coastal Flood Hazard Mapping 2021 - MRFS - 0.5% AEP



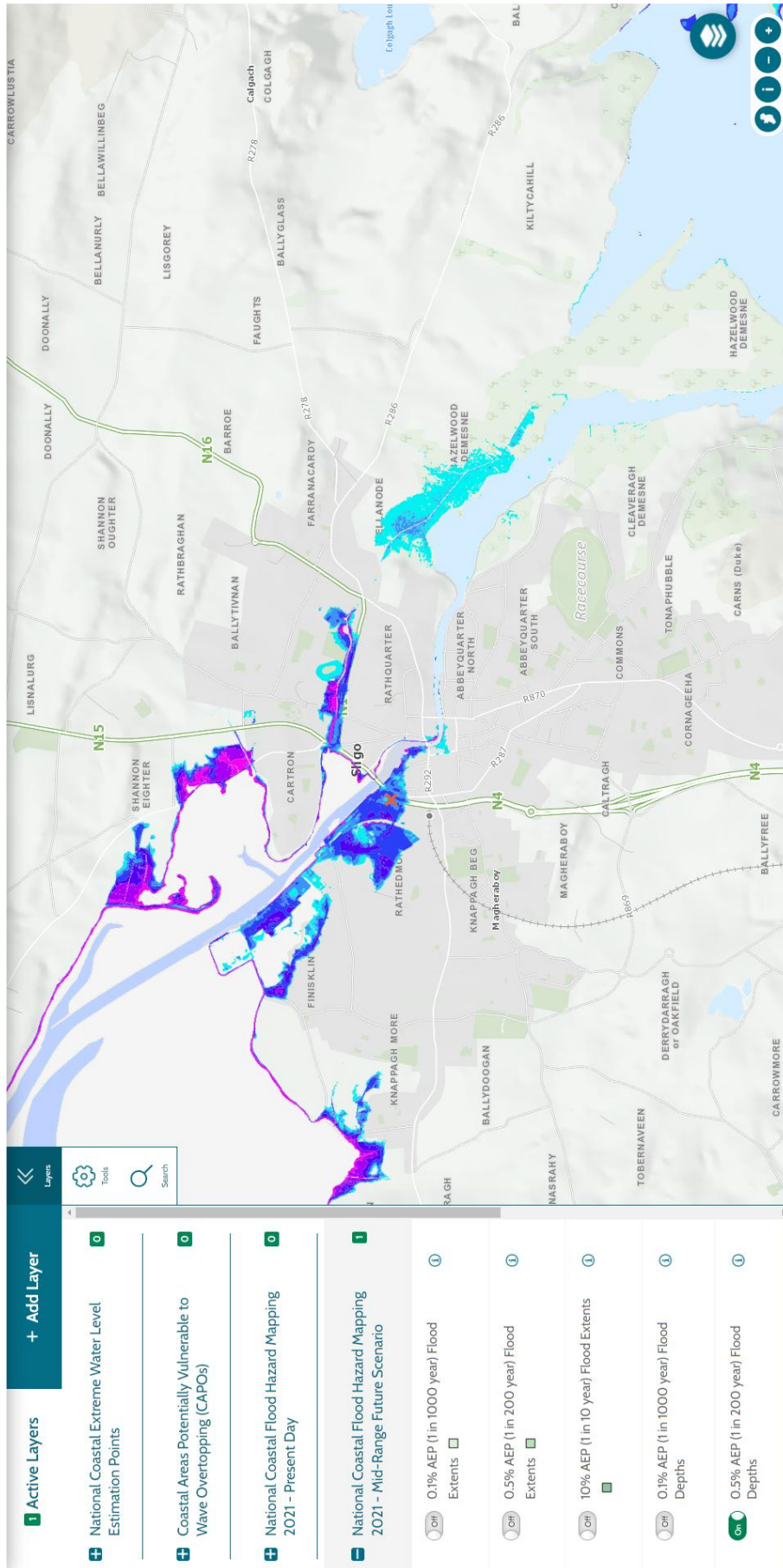


Figure 26 - National Coastal Flood Hazard Mapping 2021 - MRFS - 0.5% AEP - Flood Depth