

STRATEGIC FLOOD RISK ASSESSMENT

UNDERTAKEN AS PART OF THE PREPARATION OF

VARIATION No. 2 (B)
TO THE
GALWAY COUNTY DEVELOPMENT PLAN 2015-2021

GAELTACHT PLAN

**(INCLUDING SETTLEMENTS OF AN CHEATHRÚ RUA,
AN SPIDÉAL AND BAILE CHLÁIR)**

for: Galway County Council

Áras an Chontae
Prospect Hill
Galway



by: CAAS Ltd.

1st Floor
24-26 Ormond Quay Upper
Dublin 7
D07 DAV9



JUNE 2018

Table of Contents

Section 1	Introduction and Policy Background.....	1
1.1	Introduction and Terms of Reference	1
1.2	Summary of Conclusion and Recommendations.....	1
1.3	Flood Risk and its Relevance as an Issue to the Variation.....	1
1.4	Flood Risk Management Policy	2
1.5	Emerging Information and Disclaimer	5
1.6	Context for this SFRA: SFRA for the Galway County Development Plan 2015-2021	5
1.7	Content of the Variation	5
Section 2	Stage 1 SFRA - Flood Risk Identification	9
2.1	Introduction	9
2.2	Flood Relief Scheme (Baile Chláir)	9
2.3	Flood Risk Indicators.....	11
2.4	Conclusion of Stage 1 SFRA.....	13
Section 3	Stage 2 SFRA - Initial Flood Risk Assessment	18
3.1	Introduction	18
3.2	Site Walkovers and Groundtruthing	18
3.3	Findings and Delineation of Flood Zones	18
3.4	Sensitivity to Climate Change.....	22
Section 4	Measures for Flood Risk Management	26
Section 5	Conclusion	31

Appendix I: Summary of Related Provisions contained in the Flood Guidelines for Land Uses in Flood Zones A and B

Section 1 Introduction and Policy Background

1.1 Introduction and Terms of Reference

Galway County Council has prepared Variation No. 2 (b) to the Galway County Development Plan 2015-2021. The Variation provides for the integration of a Plan for the Gaeltacht into the County Development Plan. This Plan provides land use zoning for the settlements of An Cheathrú Rua, Baile Chláir and An Spidéal.

The preparation and adoption of the Variation has undergone an appropriate level of Strategic Flood Risk Assessment (SFRA) and this document presents the findings of the SFRA. The SFRA is an assessment of flood risk and includes mapped boundaries for Indicative Flood Risk Zones, taking into account factors including local knowledge, site walkovers and flood risk indicators.

The SFRA has been undertaken and prepared in accordance with *The Planning System and Flood Risk Management - Guidelines for Planning Authorities* (Department of the Environment, Heritage and Local Government and Office of Public Works, 2009) and Department of the Environment, Community and Local Government Circular PL 2/2014. The SFRA is being placed on public display alongside the Variation and will take account of any relevant information provided in submissions made on the Variation and associated documents.

1.2 Summary of Conclusion and Recommendations

The purpose of this document is to detail the findings of the SFRA that has been undertaken alongside the preparation of the Variation.

The SFRA has informed the Variation and associated SEA process (including SEA Screening of Proposed Material Alterations) and enabled compliance with the Flood Risk Management Guidelines. All SFRA recommendations – including those related to land use zoning and flood risk management provisions – have been integrated into the Variation.

The Galway County Development Plan, which the Variation becomes part of, has itself been subjected to an SFRA during the preparation of that Plan. This process facilitated the integration of various provisions into the County Development Plan that must be complied with by new development within the entire County Council area, including the Gaeltacht.

1.3 Flood Risk and its Relevance as an Issue to the Variation

Flooding is an environmental phenomenon and can pose a risk to human health as well as causing economic and social effects. Some of the effects of flooding are identified on Table 1.

Certain lands within the three settlements provided with land use zoning by the Variation have the potential to be vulnerable to flooding, such as that arising from tidal, fluvial and pluvial flooding sources, and this vulnerability could be exacerbated by changes in both sea level rise and the severity and frequency of extreme weather events. Local conditions such as low-lying lands and slow surface water drainage can increase the risk of flooding.

Table 1 Potential effects that may occur as a result of flooding

Tangible Effects	Intangible Human and Other Effects
Damage to buildings (houses)	Loss of life
Damage to contents of buildings	Physical injury
Damage to new infrastructure e.g. roads	Increased stress
Loss of income	Physical and psychological trauma
Disruption of flow of employees to work causing knock on effects	Increase in flood related suicide
Enhanced rate of property deterioration and decay	Increase in ill health
Long term rot and damp	Homelessness
	Loss of uninsured possessions

1.4 Flood Risk Management Policy

1.4.1 EU Floods Directive

European Directive 2007/60/EC on the assessment and management of flood risk aims to reduce and manage the risks that floods pose to human health, the environment, cultural heritage and economic activity. The Directive applies to inland waters as well as all coastal waters across the whole territory of the EU. The Directive requires Member States to:

- Carry out a preliminary assessment by December 2011 in order to identify the river basins and associated coastal areas where potential significant flood risk exists.
- Prepare flood hazard and risk maps for the identified areas (these maps have been finalised for inclusion in Flood Risk Management Plans – see below).
- Prepare flood risk management plans focused on prevention, protection and preparedness. These plans are to include measures to reduce the probability of flooding and its potential consequences. Draft Plans have been prepared and subjected to public consultation.

Implementation of the EU Floods Directive is required to be coordinated with the requirements of the EU Water Framework Directive and the current River Basin Management Plans.

1.4.2 National Flood Policy

Historically, flood risk management focused on land drainage for the benefit of agricultural improvement. With increasing urbanisation, the Arterial Drainage Act, 1945, was amended in 1995 to permit the OPW to implement localised flood relief schemes to provide flood protection for cities, towns and villages.

In line with changing national and international paradigms on how to manage flood risk most effectively and efficiently, a review of national flood policy was undertaken in 2003-2004. The review was undertaken by an Inter-Departmental Review Group, led by the Minister of State at the Department of Finance with special responsibility for the OPW. The Review Group prepared a report that was put to Government, and subsequently approved and published in September 2004 (Report of the Flood Policy Review Group, OPW, 2004).

The scope of the review included a review of the roles and responsibilities of the different bodies with responsibilities for managing flood risk, and to set a new policy for flood risk management in Ireland into the future. The adopted policy was accompanied by many specific recommendations, including:

- Focus on managing flood risk, rather than relying only flood protection measures aimed at reducing flooding;
- Taking a catchment-based approach to assess and manage risks within the whole-catchment context; and
- Being proactive in assessing and managing flood risks, including the preparation of flood maps and flood risk management plans.

1.4.3 National CFRAM Programme

The national Catchment Flood Risk Assessment and Management (CFRAM) programme commenced in Ireland in 2011. The CFRAM Programme is intended to deliver on core components of the National Flood Policy, adopted in 2004, and on the requirements of the EU Floods Directive. The Programme is being implemented through CFRAM studies that are being undertaken for each of the river basin districts in Ireland. The Gaeltacht area is located within the Western River Basin District.

The CFRAM Programme comprises three phases as follows:

- The Preliminary Flood Risk Assessment¹ (PFRA) mapping exercise in 2011;
- The CFRAM Studies and parallel activities, from 2011; and
- Implementation and Review (2018 onwards).

The Programme provides for three main consultative stages as follows:

- PFRAs in 2011;
- Flood Hazard Mapping (these maps have been finalised for inclusion in Flood Risk Management Plans – see below); and
- Flood Risk Management Plans that have been finalised in 2018.

The OPW is the lead agency for flood risk management in Ireland. The coordination and implementation of Government policy on the management of flood risk in Ireland is part of its responsibility. The European Communities (Assessment and Management of Flood Risks) Regulations 2010 (S.I. No. 122) identifies the Commissioners of Public Works as the 'competent authority' with overall responsibility for implementation of the Floods Directive 2007/60/EC. The Office of Public Works is the principal agency involved in the preparation of Flood Risk Assessment and Management studies (FRAMs).

1.4.4 Flood Risk Management Guidelines

1.4.4.1 Introduction

In 2009, the OPW and the then Department of the Environment and Local Government (DEHLG) published Guidelines on flood risk management for planning authorities entitled *The Planning System and Flood Risk Management - Guidelines for Planning Authorities*. The Guidelines introduce mechanisms for the incorporation of flood risk identification, assessment and management into the planning process. Implementation of the Guidelines is intended to be achieved through actions at the national, regional, local authority and site-specific levels. Planning authorities and An Bord Pleanála are required to have regard to the Guidelines in carrying out their functions under the Planning Acts.

The core objectives of the Guidelines are to:

- Avoid inappropriate development in areas at risk of flooding;
- Avoid new developments increasing flood risk elsewhere, including that which may arise from surface water run-off;
- 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 that the requirements of EU and national law in relation to the natural environment and nature conservation are complied with at all stages of flood risk management.

¹ The PFRAs identified areas at risk of significant flooding and includes maps showing areas deemed to be at risk. The areas deemed to be at significant risk, where the flood risk that is of particular concern nationally, are identified as Areas for Further Assessment (AFAs) and more detailed assessment on the extent and degree of flood risk is currently being undertaken in these areas with the objective of producing Flood Hazard Mapping. Baile Chláir is identified as an AFA, An Cheathrú Rua and An Spidéal are not.

1.4.4.2 Principles of Flood Risk Management

The key principles of flood risk management set out in the Flood Guidelines are to:

- Avoid development that will be at risk of flooding or that will increase the flooding risk elsewhere, where possible;
- Substitute less vulnerable uses, where avoidance is not possible; and
- Mitigate and manage the risk, where avoidance and substitution are not possible.

The Guidelines follow the principle that development should not be permitted in flood risk areas, particularly floodplains, except where there are no alternative and appropriate sites available in lower risk areas that are consistent with the objectives of proper planning and sustainable development.

Development in areas that have the highest flood risk should be avoided and/or only considered in exceptional circumstances (through a prescribed *Justification Test*) if adequate land or sites are not available in areas that have lower flood risk. Most types of development would be considered inappropriate in areas that have the highest flood risk. Only water-compatible development such as docks and marinas, dockside activities that require a waterside location, amenity open space, outdoor sports and recreation and essential transport infrastructure that cannot be located elsewhere would be considered appropriate in these areas.

1.4.4.3 Stages of SFRA

The Flood Risk Management Guidelines recommend a staged approach to flood risk assessment that covers both the likelihood of flooding and the potential consequences. The stages of appraisal and assessment are:

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 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.

1.4.4.4 Flood Zones

Flood risk is an expression of the combination of the flood probability or likelihood and the magnitude of the potential consequences of the flood event. It is normally expressed in terms of the following relationship:

$$\text{Flood risk} = \text{Likelihood of flooding} \times \text{Consequences of flooding}$$

Likelihood of flooding is normally defined as the percentage probability of a flood of a given magnitude or severity occurring or being exceeded in any given year. For example, a 1% Annual Exceedance Probability (AEP) indicates the severity of a flood that is expected to be exceeded on average once in 100 years, i.e. it has a 1 in 100 (1%) chance of occurring in any one year.

Consequences of flooding depend on the hazards associated with the flooding (e.g. depth of water, speed of flow, rate of onset, duration, wave-action effects, water quality), and the vulnerability of people,

property and the environment potentially affected by a flood (e.g. the age profile of the population, the type of development, presence and reliability of mitigation measures etc.).

Flood zones are geographical areas within which the likelihood of flooding is in a particular range and they are a key tool in flood risk management within the planning process as well as in flood warning and emergency planning.

There are three types or levels of flood zones defined for the purposes of the Flood Guidelines:

- **Flood Zone A** – where the probability of flooding from rivers and the sea is highest (greater than 1% or 1 in 100 for river flooding or 0.5% or 1 in 200 for coastal flooding);
- **Flood Zone B** – where the probability of flooding from rivers and the sea is moderate (between 0.1% or 1 in 1000 and 1% or 1 in 100 for river flooding and between 0.1% or 1 in 1000 year and 0.5% 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% or 1 in 1000 for both river and coastal flooding). Flood Zone C covers all other areas that are not in zones A or B.

1.5 Emerging Information and Disclaimer

It is important to note that compliance with the requirements of the Flood Risk Management Guidelines is currently based on emerging and incomplete data as well as estimates of the locations and likelihood of flooding.

Accordingly, all information in relation to flood risk may be altered in light of future data and analysis, or future flood events. As a result, all landowners and developers are advised that Galway County Council and their agents can accept no responsibility for losses or damages arising due to assessments of the vulnerability to flooding of lands, uses and developments. Owners, users and developers are advised to take all reasonable measures to assess the vulnerability to flooding of lands and buildings (including basements) in which they have an interest prior to making planning or development decisions.

The SFRA was placed on public display alongside the Proposed Variation. Submissions received during this consultation process, including those relating to the SFRA, were responded to in a Chief Executive's report on submissions.

Any future SFRAs for the area will integrate other new and emerging data.

1.6 Context for this SFRA: SFRA for the Galway County Development Plan 2015-2021

SFRA has already been undertaken on the Galway County Development Plan 2015-2021. That SFRA facilitated the integration of various provisions into the County Development Plan that provide for flood risk management within County Galway, including the Gaeltacht area. New developments within the three settlements that are provided land use zoning by the Gaeltacht Plan (An Cheathrú Rua, Baile Chláir and An Spidéal) will be required to comply with the flood risk management provisions from the County Plan.

1.7 Content of the Variation

The Variation consists of a written statement and accompanying maps. The relevant parts of the Variation for this SFRA relate to the land use zoning maps for An Cheathrú Rua, An Spidéal and Baile Chláir (see Figure 1, Figure 2 and Figure 3) and provisions relating to flood risk management (see Section 4).

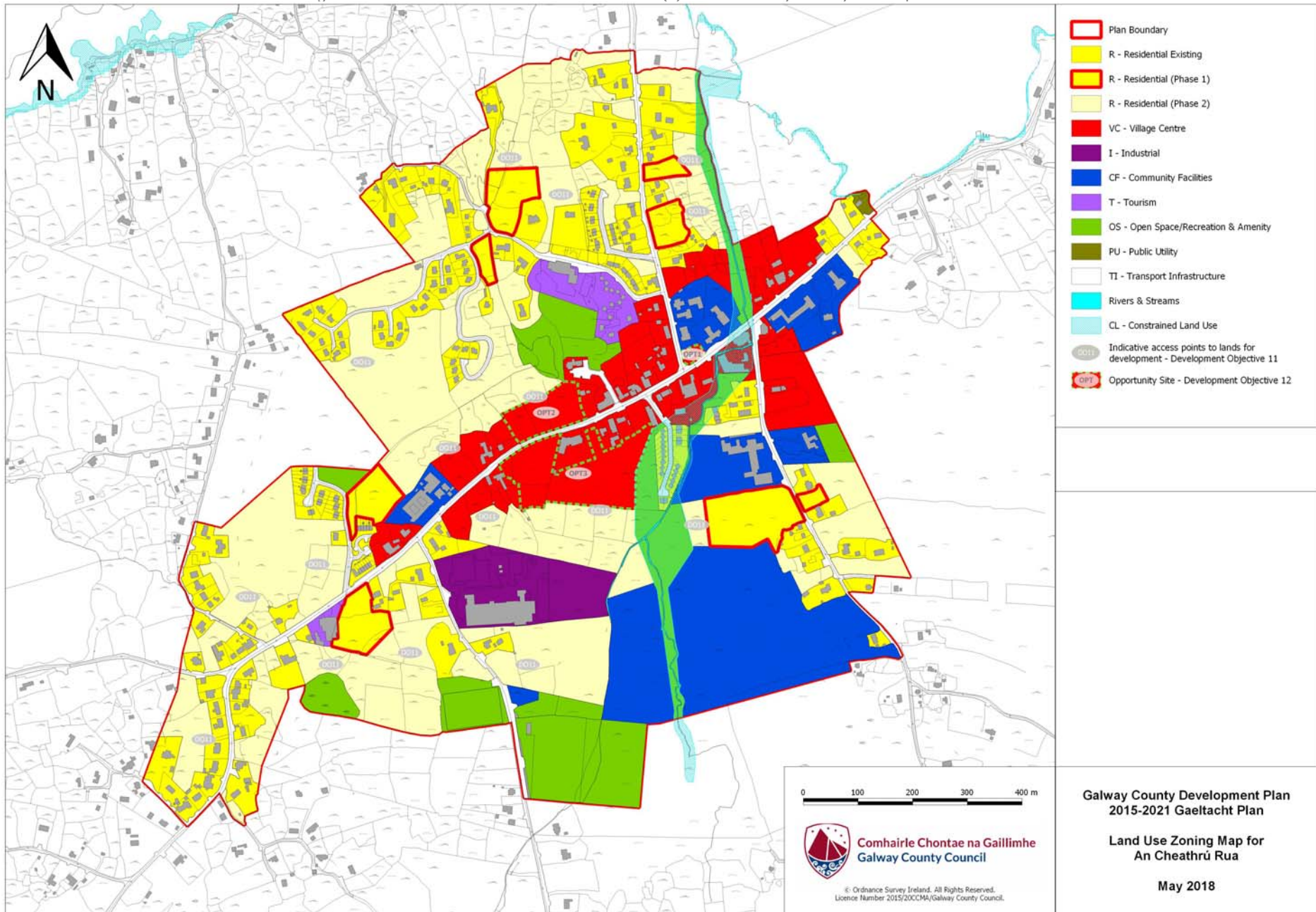


Figure 1 Land Use Zoning Map for An Cheathrú Rua

CAAS for Galway County Council

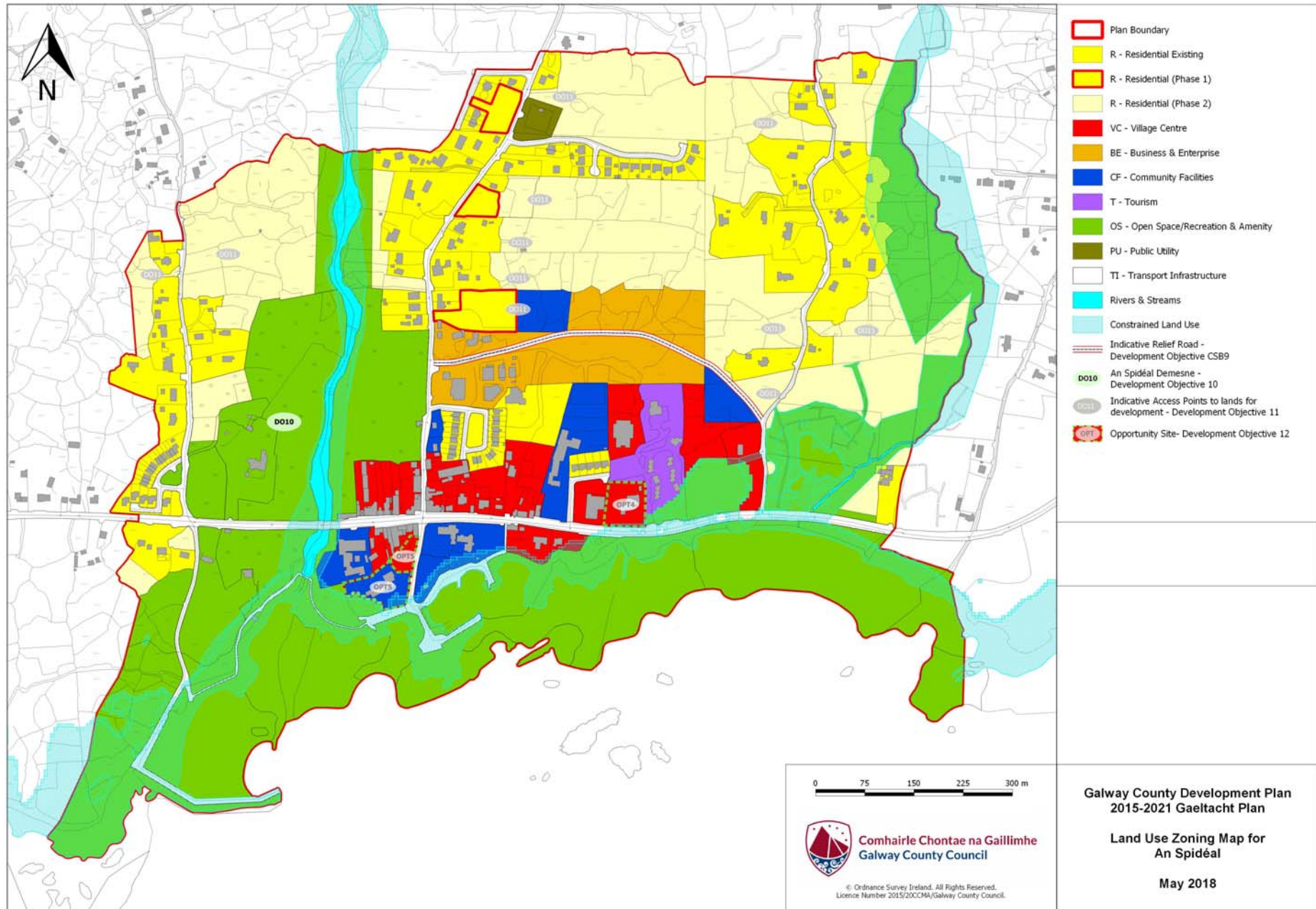


Figure 2 Land Use Zoning Map for An Spidéal

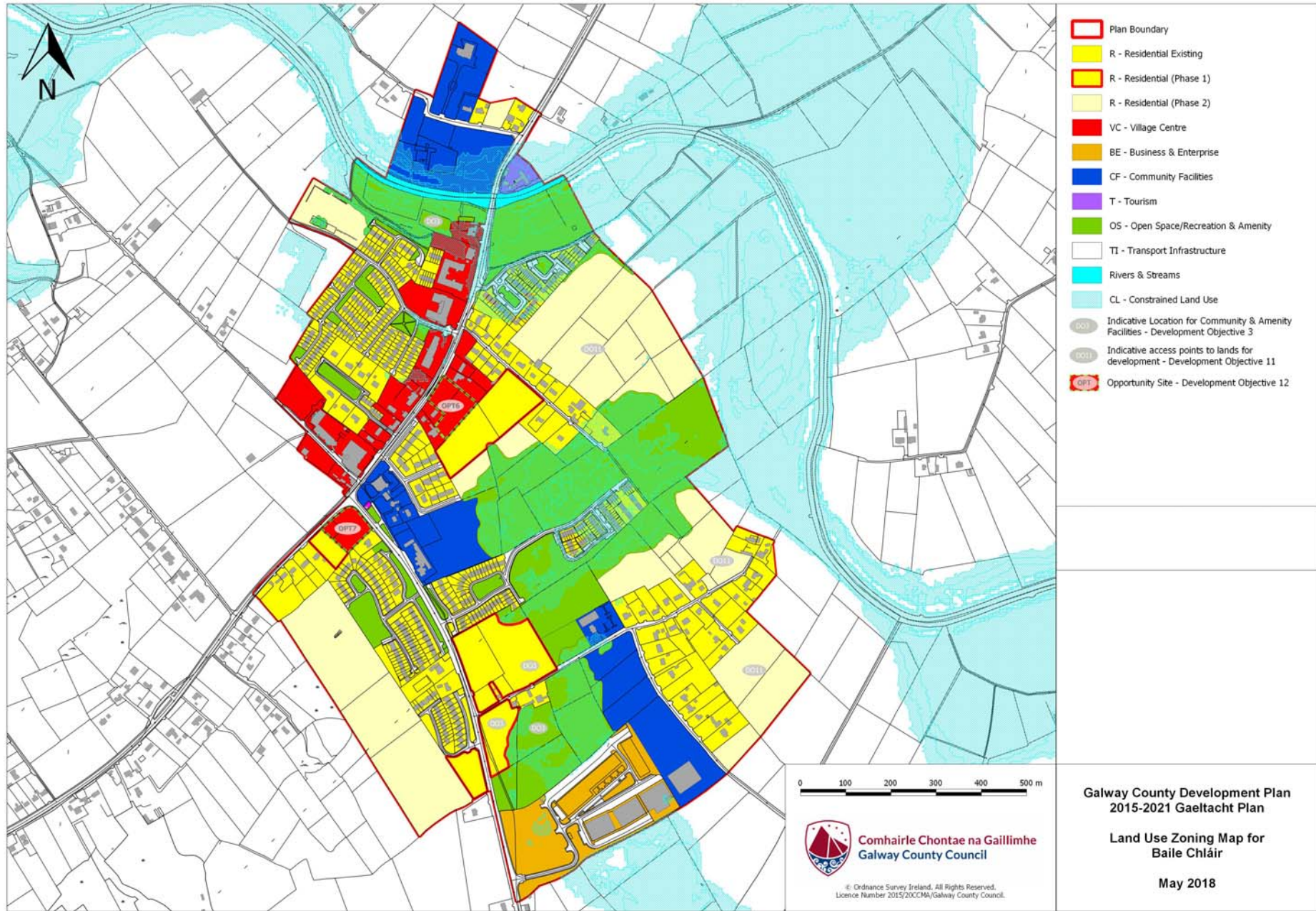


Figure 3 Land Use Zoning Map for Baile Chláir

Section 2 Stage 1 SFRA - Flood Risk Identification

2.1 Introduction

Stage 1 SFRA (flood risk identification) was undertaken in order to identify whether there may be any flooding or surface water management issues within or adjacent to the lands in An Cheathrú Rua, Baile Chláir and An Spidéal zoned by the Variation and consequently whether Stage 2 SFRA (initial flood risk assessment) should be proceeded to.

The Stage 1 SFRA was based on existing information on flood risk indicators based on historical evidence and computational models.

An Cheathrú Rua is located on the An Cheathrú Rua peninsula c. 35 km to the west of Galway City. Loughaunwillan is situated to the north-east of the village. A stream (identified by the EPA as the “Carrowroe South”) flows through the village into Loughaunwillan.

An Spidéal is located along the coast c. 16 km to the west of Galway City. It is drained by a number of waterbodies, the most significant of which is the Owenboliska River, which flows from the north through the demesne in the west of the town, and the An Spidéal River, which drains a comparatively smaller area to the north and north-east of the town. Both of these streams are culverted under the R336 before they enter into the sea.

Baile Chláir is located c. 8 km to the north-east of Galway City. It is located along the Clare River, which has a catchment that drains much of north-east Galway into Lough Corrib, c. 7 km downstream to the east of Claregalway.

2.2 Flood Relief Scheme (Baile Chláir)

A Flood Relief Scheme has been progressed for the Clare River at **Baile Chláir**.

Following extensive flooding in County Galway as a result of the November 2009 flooding event, a Joint Working Group, comprising of OPW and Galway County Council officials was set up to identify flood mitigation measures for the region. Ryan Hanley, Consulting Engineers, were commissioned to undertake a preliminary flood study of the Clare River. The Study recommended a major scheme of works on the Clare River in addition to some advance works including the construction of flood eyes at Crusheeney Bridge and one at Claregalway Bridge. The OPW is responsible for maintenance of the channel at Claregalway as it forms part of the Clare River Arterial Drainage Scheme.

In recognition of the significant flooding problems in the area it was agreed to proceed with interim measures to reduce flood risk and by 2012, the following remedial works were completed in advance of the main scheme works:

- Construction of flood eye at Claregalway Bridge
- Construction of new bridge at Crusheeney.

The Minister for the Department of Public Expenditure and Reform confirmed the Clare River (Baile Chláir) Scheme in 2015 subject to a number of further conditions (26) to provide mitigation measures additional to those already included in the EIS. The aim of these measures was to avoid/reduce and if possible offset any major adverse environmental effects (if any) of the proposed Scheme.

Works will be carried out over a 3-year period, with substantial completion expected to be achieved by the end of 2018. Works are currently being progressed by OPW's direct labour force, which has a lot of experience in undertaking such works in environmentally sensitive areas.

Works on the main scheme commenced in June 2016, with the construction of a flood alleviation pipeline in the Lakeview area and deepening of the channel bed upstream, under and downstream of the Claregalway Bridge and Flood Eye. Flood alleviation measures identified as part of the scheme are currently being progressed by OPW as part of an agreed schedule.

There are no flood relief schemes existing or planned at **An Cheathrú Rua** or **An Spidéal**.

2.3 Flood Risk Indicators

The Stage 1 SFRA was a desk-based exercise based on existing information on flood risk indicators and involved consulting with a range of sources as detailed on Table 2 below. A number of these sources are mapped on Figure 4 (Predictive, Modelled Flood Risk Indicators for An Cheathrú Rua), Figure 5 (Historical and Predictive, Modelled Flood Risk Indicators for An Spidéal), Figure 6 (Predictive, Modelled Flood Risk Indicators for Baile Chláir) and Figure 7 (Historical Flood Risk Indicators for Baile Chláir).

Table 2 Information Sources Consulted with for the Identification of Flood Risk

Information Source	Description	Indicator within or adjacent to settlement?		
		An Cheathrú Rua	An Spidéal	Baile Chláir
Predictive, Modelled Flood Risk Indicators				
Previous Strategic Flood Risk Assessments	Strategic Flood Risk Assessments required for land use plans, based on best available information.	Yes, previous Galway County Council Strategic Flood Risk Assessments (SFRAs) taken into account. Specifically - Stage 2 SFRA for Proposed Amendment to the Gaeltacht Local Area Plan 2008-2014 (March 2013) and - Stage 1 SFRA for the Galway County Development Plan 2015-2021 (February 2015) taken into account	Yes, previous Galway County Council Strategic Stage 1 SFRA for the Galway County Development Plan 2015-2021 February 2015) taken into account	Yes, previous Galway County Council Strategic Stage 1 SFRA for the Galway County Development Plan 2015-2021 February 2015) taken into account
CFRAMS Flood Extent Mapping (2017)	Since the PFRA was carried out in 2011, the OPW, through its engineering consultants and working with local authorities and other stakeholders, under the Catchment Flood Risk Assessment and Management Studies (CFRAMS), has conducted extensive engineering assessments to better understand and detail the actual risk from flooding for areas that were at highest levels of risk. This was the subject of earlier public consultation that is now completed. The outcome of that work includes Flood Extent maps that were finalised in 2017.	No.	No.	Yes.
The OPW Preliminary Flood Risk Assessment (PFRA) Fluvial, Coastal, Groundwater and Pluvial flood maps	<p>The Draft OPW Preliminary Flood Risk Assessment (PFRA) mapping dataset has been arrived at by:</p> <ul style="list-style-type: none"> • Reviewing records of floods that have happened in the past; • Undertaking analysis to determine which areas might flood in the future, and what the impacts might be; and • Extensive consultation with each local authorities and other Government departments and agencies. <p>This assessment has considered all types of flooding, including that which can occur from rivers, the sea and estuaries, heavy rain, groundwater, the failure of infrastructure, and so on. It has also considered the impacts flooding can have on people, property, businesses, the environment and cultural assets.</p> <p>The PFRA is only a preliminary assessment, based on available or readily derivable information. Analysis has been undertaken to identify areas prone to flooding, and the risks associated with such flooding, but this analysis is purely indicative and undertaken for the purpose of completing the draft PFRA. The mapping has been developed using simple and cost-effective methods and is based on broad-scale simple analysis and may not be accurate for a specific location/use. There are instances where lands are transected by the PFRA Fluvial mapping boundary and the boundary does not reflect local topographical and flood path conditions on the ground. This is due to the strategic nature of development of the PFRA Fluvial mapping and the inaccuracies contained within it.</p> <p>The prime source will ultimately be the flood zone maps produced by the OPW, but where these have not been prepared or are not on watercourses that will be covered by a CFRAM study then the planning body or developer will need to refer to alternative sources of information.</p>	Yes fluvial, coastal and pluvial areas present. No groundwater areas present.	Yes fluvial, coastal and pluvial areas present. No groundwater areas present.	Yes fluvial and pluvial areas present. No groundwater or coastal areas present.

Strategic Flood Risk Assessment for Variation No. 2 (b) to the Galway County Development Plan 2015-2021

Information Source	Description	Indicator within or adjacent to settlement?		
		An Cheathrú Rua	An Spidéal	Baile Chláir
	<p>For pluvial flooding, the process for developing the pluvial flood extent maps (Flood Risk Assessment and Management Programme: National Pluvial Screening Project for Ireland – Rep EX6335/2.0, HR Wallingford, November 2010) was based on ‘dropping’ various depths and intensities of rainfall over a range of durations, and modelling how that rainfall would flow over the land and, in particular, pond in low-lying areas. The rainfall events (depth, duration and intensity) were derived from the rainfall analysis undertaken by Met Eireann on behalf of the OPW for the Flood Studies Update research programme. The amount of rainfall that was absorbed by the ground or, in urban areas, drained by the urban storm-water drainage system, and hence deducted from the water that would flow overland and pond, was estimated. It must be noted however that process assumed a constant capacity of urban storm-water drainage systems and generally did not taken into account local drainage structures such as culverts through embankments or other local drainage that would not be resolved in the model used for the mapping at a national scale. In addition to the above limitations, there are further intrinsic uncertainties associated with pluvial flooding and it can be influenced by, for example, blocked drains. Taking this into account, it was recommended the Council deal with pluvial risk through written Plan provision(s).</p> <p>Further information on the purpose, development and limitations of the OPW PFRA Maps are available in the available report (see www.cfram.ie)</p>			
National Coastal Protection Strategy Study flood and coastal erosion risk maps	<p>The predicted flood extents which were produced under the Irish Coastal Protection Strategy Study (ICPSS) are based on analysis and modelling. The project included:</p> <ul style="list-style-type: none"> • Analysis of historic recorded sea levels • Numerical modelling and statistical analysis of combined tide levels and storm surges to estimate extreme water levels along the national coastline • for defined probabilities • Calculation of the extent of the predictive flooding, by comparing calculated extreme tide and surge waters levels along the coast with ground level based on a Digital Terrain Model (DTM). <p>These indicative national coastal flood maps are included in the Draft PFRA Maps, provided in a separate volume, for the purposes of consultation on the PFRA.</p>	Yes (Extents included as part of PFRA Coastal above)	Yes (Extents included as part of PFRA Coastal above)	No.
Western CFRAM Flood Risk Review	The Western CFRAM Flood Risk Review (JBA for OPW, May 2011) was undertaken to help validate the findings of the PFRA, informing decisions on which sites will be taken forward as Areas for Further Assessment for a more detailed assessment within the CFRAM Programme. It uses the PFRA mapping described above.	Yes ² .	Yes ³ .	Yes ⁴ .
Data from OPW: Benefitting lands	Benefitting lands mapping is a dataset identifying land that might benefit from the implementation of Arterial (Major) Drainage Schemes (under the Arterial Drainage Act 1945) and indicating areas of land estimated or reported to be subject to flooding or poor drainage. This source identifies large broad areas – providing a low resolution for flood risk management.	No.	No.	Yes.
Data from OPW: Drainage Districts	This drainage scheme mapping dataset was prepared on behalf of the Drainage Districts (Local Authorities with statutory responsibility for maintenance under the Arterial Drainage Act, 1925). These maps identify land that might benefit from the implementation of Arterial (Major) Drainage Schemes and indicate areas of land subject to flooding or poor drainage. This source identifies large broad areas – providing a low resolution for flood risk management.	No.	No.	No.
Data from OPW: Land Commission	This dataset indicates areas of land defended to some degree against flooding that were formerly the responsibility of the Land Commission. Coverage of this data source is limited in the County.	No.	No.	No.

² This assessment identified that the scale of the problem in An Cheathrú Rua does not justify further assessment in the CFRAM.

³ This assessment identified that due to the low number of properties at risk, this site should remain as a risk review location i.e. unless further supporting information is identified it will not be taken forward in the CFRAM.

⁴ This assessment identified that given the potential scale of flood risk: 200 properties or more, important highway infrastructure, recent flood history, isolated communities, multiple flood sources concerns, environmental considerations for the SAC etc., it would be prudent to subject this site to more detailed analysis.

Information Source	Description	Indicator within or adjacent to settlement?		
		An Cheathrú Rua	An Spidéal	Baile Chláir
Historical Flood Risk Indicators				
Alluvium Soils	Mineral alluvial soil mapping is an An Teagasc dataset indicative of recurrent or significant fluvial flooding at some point in the past. This dataset does not provide full coverage and is found to provide a reasonable indicator of high-medium probability fluvial flood hazard. Drainage may have changed significantly since the laying down of these soils.	No.	No.	Yes.
Data from OPW: Recorded Flood Events or Extents	A flood event is the occurrence of recorded flooding at a given location on a given date. The Flood event is derived from different types of information (reports, photographs etc.). A flood extent is an inundated area as recorded at a certain moment in time.	No.	Yes, recurring flood event.	Yes, multiple flood events and recurring flood events.
'Liable to flood' markings on the historic OSI '6 Inch' maps and CAAS extrapolation of same	The Ordnance Survey of Ireland (OSI) 6" mapping identifies broad areas as being <i>Liable to Floods</i> . There are several limitations to the use of this mapping, such as the following: <ul style="list-style-type: none"> The OSI maps simply show the text Liable to Floods without delineating the extent of these areas. For the purposes of these draft maps a GIS system has been used to indicate the likely potential extent of these areas. As these maps were based on survey work carried out from 1833-1844 with many updated in the 1930s and 40s, they do not show or take any account of recent changes including changes in surface drainage, such as development in floodplains, road realignments or drainage works for forestry or agriculture. So there is significant potential that flood risk in some areas may have increased or reduced since they were prepared. 	No.	No.	Yes ⁵ .
Estimated Flood Extent (OPW/Ryan Hanley 2009-10)	These flood extents were identified in the following reports: <ul style="list-style-type: none"> Clare Study to Identify Practical Measures to address Flooding at Carnmore/Cashla (OPW, August 2010) (Figure 2.1, Page 4 'Extents of flooding at Carnmore Cashla & Extent of flooding on River') Study to Identify Practical Measures to address Flooding on the Clare River (OPW, 2010) (Drawings 101-104) 	No.	No.	Yes.
Road Closures & Lengths November 2009	This datasets is from Galway County Council Roads Department and identifies the road closures and major roads closed during the November 2009 event. The road lengths (lines) which have been drawn are approximate and are compiled entirely of eye witness, anecdotal evidence mainly noted over the phone from area staff and members of the public i.e. no surveying was involved. There is potential errors in evidence and approximated closed roads lengths that are used in this source.	No.	No.	Yes.

2.4 Conclusion of Stage 1 SFRA

The information provided in this section identifies that there is potentially elevated levels of coastal and/or fluvial flood risk arising within **An Cheathrú Rua**, **An Spidéal** and **Baile Chláir** therefore Stage 2 SFRA must be undertaken.

⁵ CAAS Extrapolation of Areas Liable to Floods digitised from 6" OSI mapping: For the purpose of the SFRA, areas liable to floods were extrapolated by CAAS and digitised from the 6" OSI mapping. *Liable to floods* text was identified on the map sheets and then surrounding field boundaries were used in order to delineate the areas liable to flood. The extrapolated areas include (as identified by the 6" field boundaries):

a. Any field which is beneath '*Liable to Floods*' words;

b. All contiguous fields (whole fields are included) containing an Ozier/Reed/Marsh symbol (these are vegetation symbols included on the 6" maps which are indicative of wet/water logged soil).

Legend

Preliminary Flood Risk Assessment

- PFRA Fluvial 1% Annual Exceedance Probability
- PFRA Fluvial 0.1% Annual Exceedance Probability
- PFRA Pluvial 1% Annual Exceedance Probability
- PFRA Pluvial 0.1% Annual Exceedance Probability
- PFRA/ICPSS Coastal 0.5% Annual Exceedance Probability
- PFRA/ICPSS Coastal 0.1% Annual Exceedance Probability

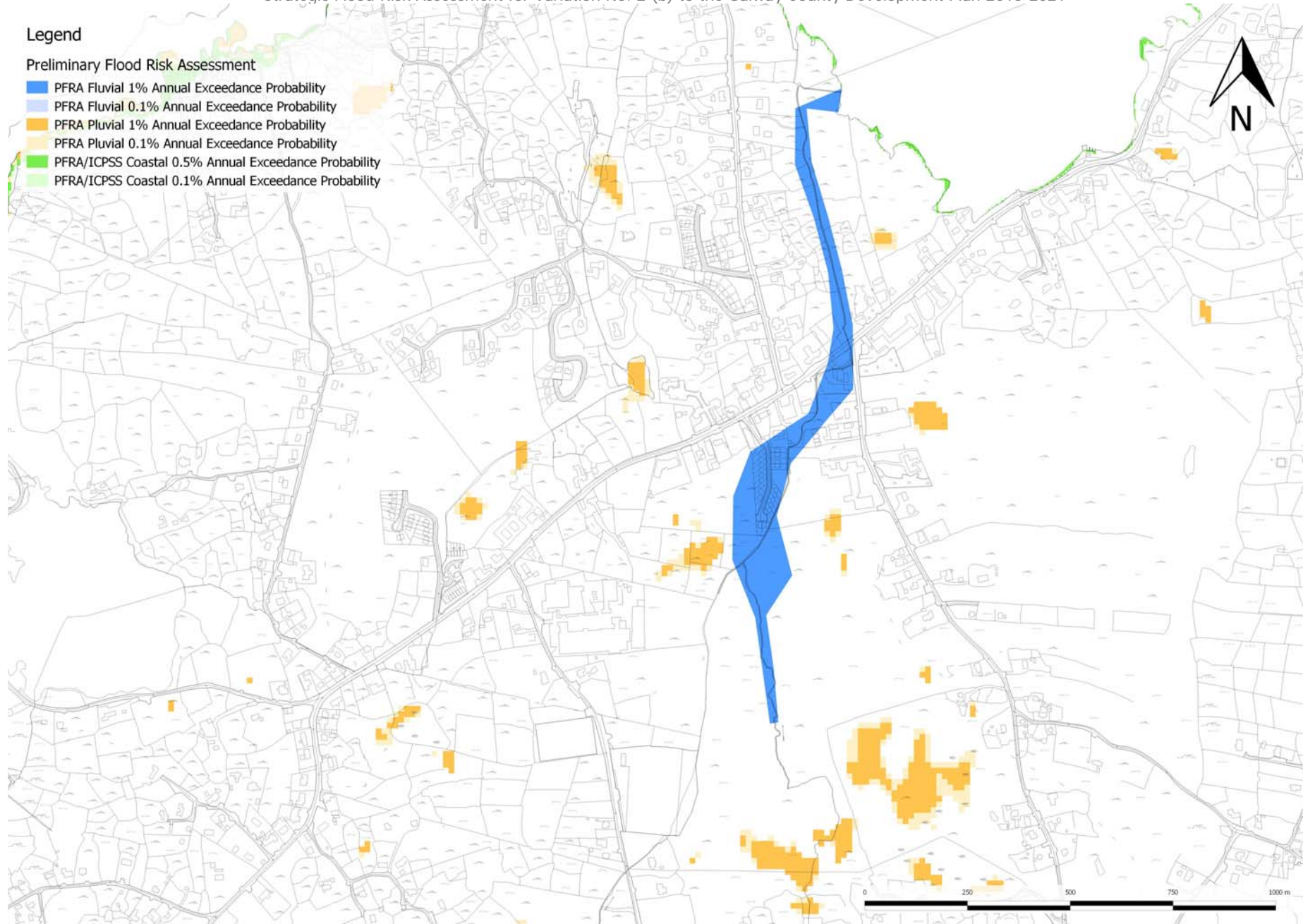


Figure 4 An Cheathrú Rua Predictive, Modelled Flood Risk Indicators

CAAS for Galway County Council

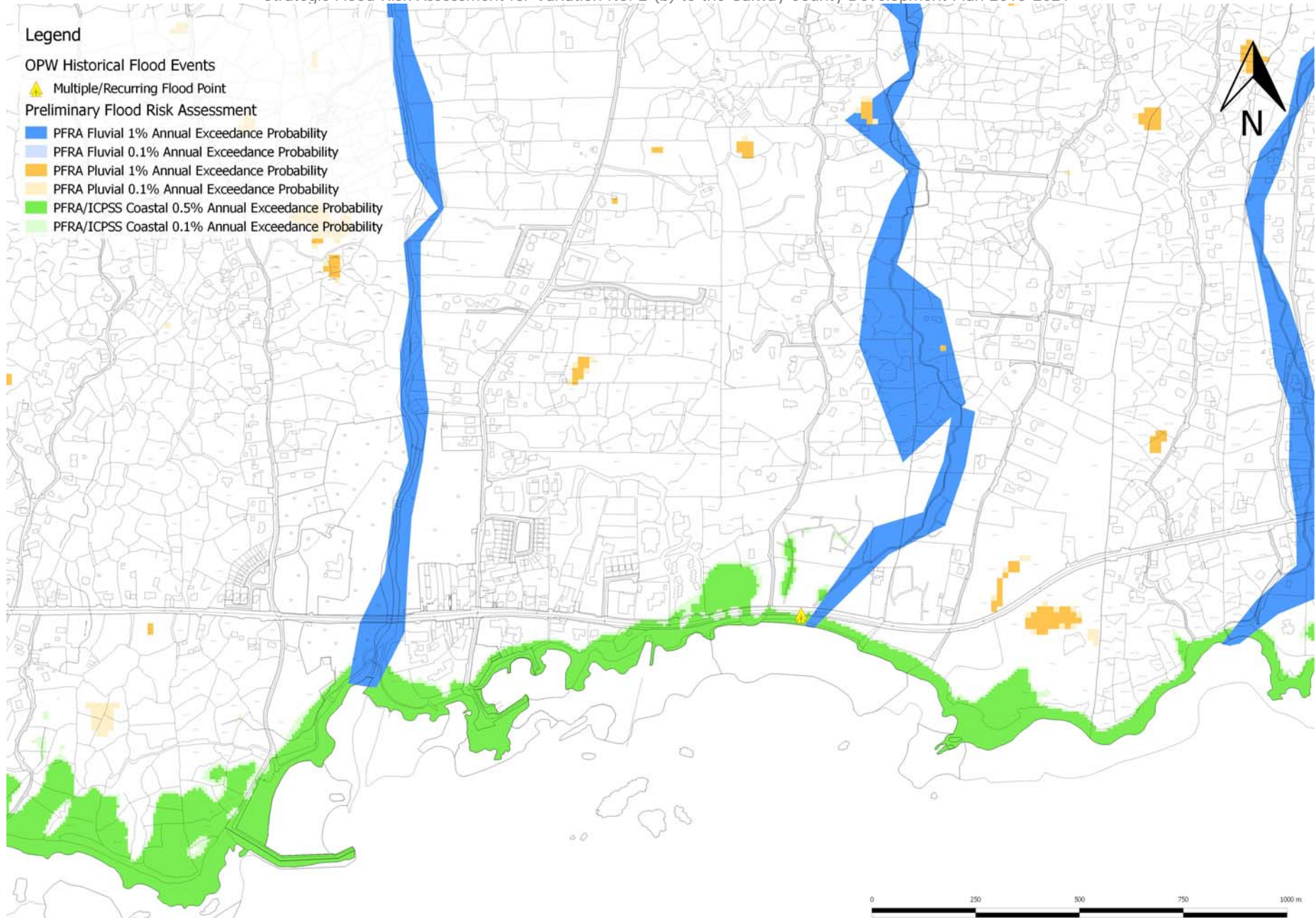


Figure 5 An Spidéal Historical and Predictive, Modelled Flood Risk Indicators

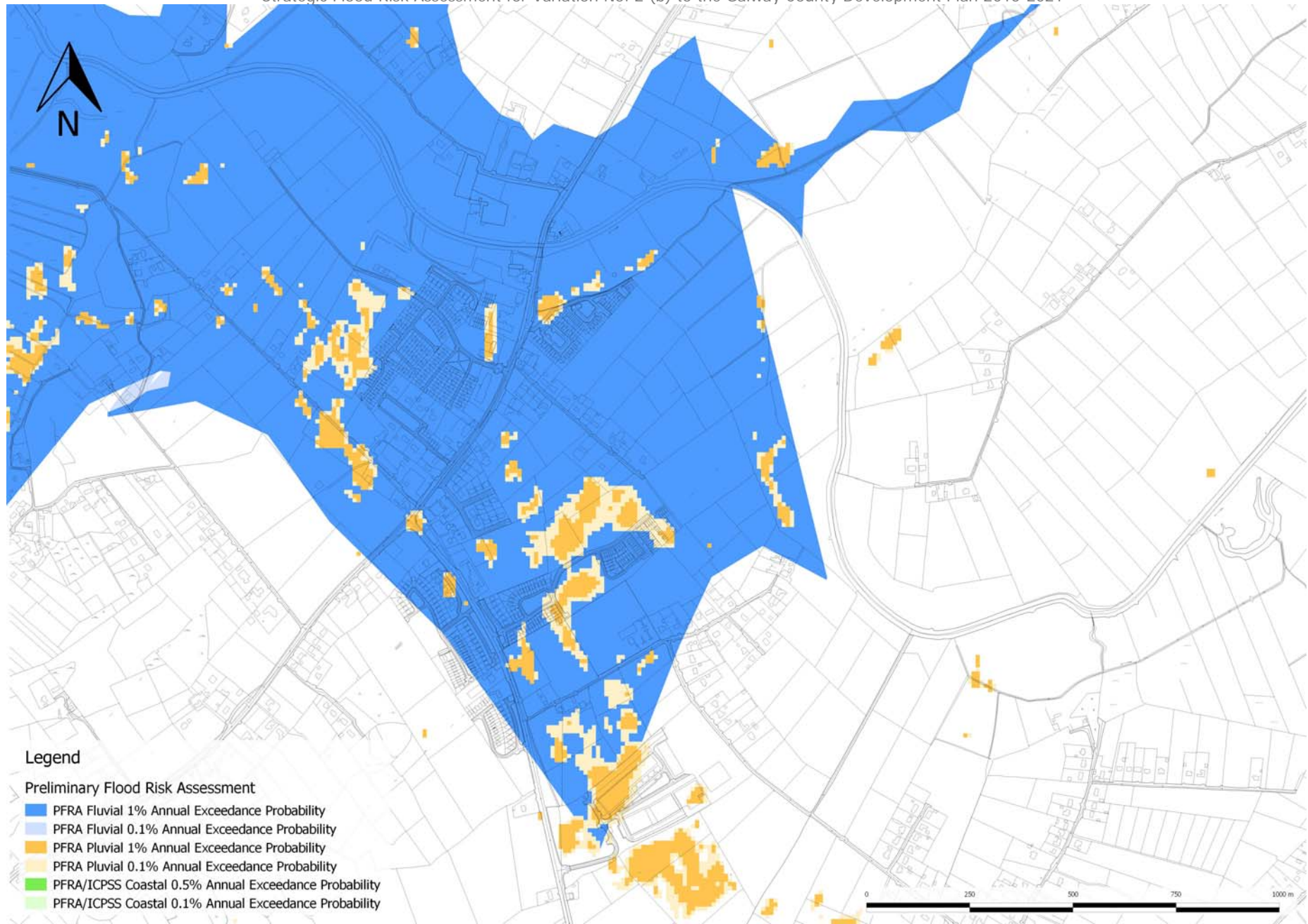


Figure 6 Baile Chláir Predictive, Modelled Flood Risk Indicators

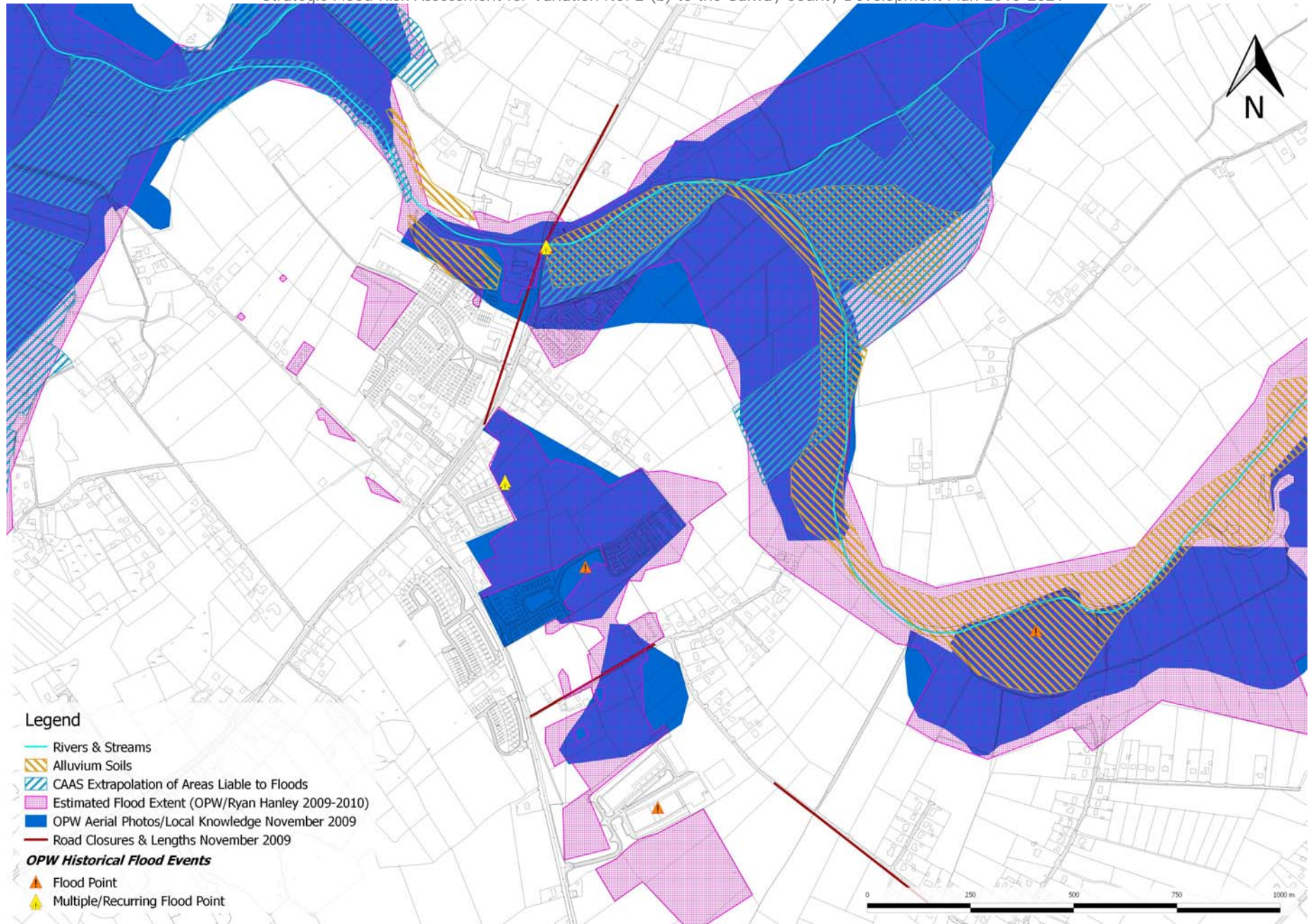


Figure 7 Baile Chláir Historical Flood Risk Indicators

CAAS for Galway County Council

Section 3 Stage 2 SFRA - Initial Flood Risk Assessment

3.1 Introduction

A Stage 2 SFRA (initial flood risk assessment) was undertaken at An Cheathrú Rua, An Spidéal and Baile Chláir to:

- Confirm the sources of flooding that may affect zoned and adjacent areas;
- Appraise the adequacy of existing information as identified by the Stage 1 SFRA; and
- Scope the extent of the risk of flooding through the preparation of flood zone maps.

3.2 Site Walkovers and Groundtruthing

In order to inform the Stage 2 assessment, the settlements were inspected on foot by experienced professionals (lands were visited on 14th September 2017) to examine, inter alia, the potential source and direction of flood paths from fluvial and coastal sources in each of the settlements, locations of topographic and built features that coincide with the flood indicator related boundaries and to identify vegetation associated with a high frequency of inundation. Local knowledge was provided Planners and a local engineer for An Cheathrú Rua.

Flood risk indicator information that was considered during the Stage 2 SFRA is detailed under Section 2. Further field examination may be undertaken on foot of any submissions received or Material Alterations proposed later in the Variation preparation process.

3.3 Findings and Delineation of Flood Zones

Table 3 summarises the findings of groundtruthing undertaken at An Cheathrú Rua, An Spidéal and Baile Chláir.

Indicative Flood Risk Zone maps were produced taking into account the findings of the Stage 1 and Stage 2 SFRA as detailed in Section 2 and Table 3.

Figure 8 (An Cheathrú Rua), Figure 9 (An Spidéal) and Figure 10 (Baile Chláir) identify Flood Zone A (darker blue) and Flood Zone B (lighter blue). All other areas fall within Flood Zone C. As per the Guidelines, the flood zones are a combination of fluvial and coastal risk areas as follows:

- Flood Zone A – where the probability of flooding from rivers and the sea is highest (greater than 1% or 1 in 100 for river flooding or 0.5% or 1 in 200 for coastal flooding);
- Flood Zone B – where the probability of flooding from rivers and the sea is moderate (between 0.1% or 1 in 1000 and 1% or 1 in 100 for river flooding and between 0.1% or 1 in 1000 year and 0.5% 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% or 1 in 1000 for both river and coastal flooding).

As identified by the Guidelines, in rivers with a well-defined floodplain or where the coastal plain is well defined at its rear, the limits of Zones A and B will virtually coincide. Zone B will only be significantly different in spatial extent from Zone A where there is extensive land with a gentle gradient away from the river or the sea.

Pluvial flood risk is identified in areas throughout each of the settlements. Pluvial flood risk is not taken into account in the delineation of flood zones, however; it has informed the development of flood risk management provisions detailed in Section 4.

Table 3 Summary of Groundtruthing Findings

Selected Location	Description	Findings	Conclusion on delineation of Indicative Flood Risk Zone ⁶
An Cheathrú Rua			
<p>Overall Findings</p> <p>The PFRA Fluvial mapping and the findings of the Stage 2 SFRA for Proposed Amendment to the Gaeltacht Local Area Plan 2008-2014 (March 2013) were found to generally reflect what was observed on the ground during groundtruthing.</p> <p>The Western CFRAM Flood Risk Review assessment identifies that the scale of the problem with regard to flooding in An Cheathrú Rua does not justify further assessment in the CFRAM. It confirms that properties are at risk where the watercourse passes through the centre of this village and identifies that properties have been built directly on the banks of the watercourse, constraining flow and putting properties at risk. The assessment identifies that channel has been straightened with severe angles, which may reduce the hydraulic capacity and increase flood risk.</p> <p>There appears to be an anomaly in the PFRA Fluvial mapping where the stream enters Loch An Mhuillin. The PFRA mapping does not reflect the course of the stream as it turns east and flows a distance of one field before it enters Loch An Mhuillin. Preparation of the indicative flood risk zone maps have taken into account this issue and ensured consolidation of the flood zone⁷.</p> <p>Informed by, inter alia, local topography and structures, flow path and direction, local knowledge, PFRA Fluvial areas and the previous Stage 2 SFRA for Proposed Amendment to the Gaeltacht Local Area Plan 2008-2014 (March 2013), flood Risk Zones were delineated.</p>			
Location 1 Figure 8	Culvert of "Carrowroe South" stream flowing into Loughaunwillan at intersection of Main Street and road going to Bothar an Chillin	<p>The stream is culverted under the road and possibly buildings. Blockages at the culvert could cause a flooding event upstream.</p> <p>The stream is aquifer fed, providing uncertainty in terms of response time.</p> <p>The PFRA fluvial mapping is consistent with topography observed at groundtruthing.</p>	These lands form part of Flood Zone A. Please refer to Section 4 for requirements.

⁶ Note that there are various uncertainties associated with the delineation of flood zones; Local Area Plan Objective FL 8 'New and Emerging Data' requires future amendments to the plan to consider new and/or emerging data, as appropriate.

⁷ This is because the river line that was used in the model is from the EPA River Line GIS dataset (which was deemed the best available dataset). The dataset is not always complete and correct and where rivers are culverted, river lines may not necessarily be up to date in the dataset. In addition, the generalised model that was used left out smaller tributaries of rivers if there was little to no risk and the potential flood depths were very low.

Selected Location	Description	Findings	Conclusion on delineation of Indicative Flood Risk Zone ⁶
An Spidéal			
<p>Overall Findings</p> <p>The PFRA Fluvial and the ICPSS/PFRA Coastal mapping and the findings of the Stage 2 SFRA for Proposed Amendment to the Gaeltacht Local Area Plan 2008-2014 (March 2013) were found to generally reflect what was observed on the ground during groundtruthing.</p> <p>Due to the size and steepness of the Owenboliska catchment, there is elevated risk of flash flooding in the west of the village. The risk arising from flash flooding is increased at culverts such as those along the R336. The worst outcome for a flood event in the east of the village would be a high tide combined with a storm surge with a south-westerly fetch interacting with fluvial flooding from the An Spidéal River.</p> <p>The Western CFRAM Flood Risk Review assessment identifies that due to the low number of properties at risk, this site should remain as a risk review location i.e. unless further supporting information is identified it will not be taken forward in the CFRAM. The Flood Risk Review assessment identifies that in a severe flood event, the Owenboliska could potentially flood the surrounding roads and a few properties and that the PFRA extents for this watercourse represent flood risk sufficiently. The assessment also identifies that the An Spidéal area floods from a combination of high tides and strong winds every year. The R336 is liable to flood (tidal) as is a basement of a pub (fluvial). The only area of concern highlighted during the site visit for the Flood Risk Review is the potential tidal and combined fluvial/tidal flood risk to two schools in An Spidéal.</p> <p>There appears to be an anomaly in the PFRA Fluvial mapping where it does not follow the course of water bodies at a number of locations. Preparation of the indicative flood risk zone maps have taken into account this issue and ensured consolidation of the flood zone⁸.</p> <p>Informed by, inter alia, local topography and structures, flow path and direction, PFRA Fluvial areas, vegetation indicative of flood risk and the previous Stage 2 SFRA for Proposed Amendment to the Gaeltacht Local Area Plan 2008-2014 (March 2013), flood Risk Zones were delineated.</p>			
Location 1 on Figure 9	Lands to east of craft centre, in east of town	This area is at risk from coastal, fluvial and pluvial flooding. Vegetation (reeds, rushes and flag iris) indicative of standing water and flooding were observed.	These lands form part of Flood Zones A and B. Please refer to Section 4 for requirements.
Location 2 on Figure 9	Lands to east of 1 above	This area is at risk from coastal, fluvial and pluvial flooding. The PFRA Fluvial mapping covers one of the streams on these lands. The An Spidéal River that affects this location drains a steep, sizable catchment and there is a significant risk of flash flooding from the uplands.	<p>Some of these lands form part of Flood Zones A and B. The flood zones at lands to the west of Baile Liam Road were informed by and are consistent with information on flood risk that was submitted by a landowner as part of the consultation on the Proposed Amendment to the Gaeltacht Local Area Plan 2008-2014. This information was reviewed again as part of this SFRA. Prospective applicants should ensure compliance with flood risk management provisions contained within the Plan as varied (see Section 4 of this report).</p> <p>It is noted that 'an island' of Flood Zone C remains. If local transport infrastructure (categorised as "less vulnerable development" in the Flood Risk Management Guidelines as amended by associated Circular PL 2/2014) is proposed as part of a land use zoning objective in Flood Risk Zone A it would have to be subject to a Justification Test which would be failed as such a development:</p> <ul style="list-style-type: none"> • Would not be essential to facilitate the regeneration and/or expansion of the centre of the urban settlement; • Does not comprise significant previously developed and/or under-utilised

⁸ This is because the river line that was used in the model is from the EPA River Line GIS dataset (which was deemed the best available dataset). The dataset is not always complete and correct and where rivers are culverted, river lines may not necessarily be up to date in the dataset. In addition, the generalised model that was used left out smaller tributaries of rivers if there was little to no risk and the potential flood depths were very low.

Selected Location	Description	Findings	Conclusion on delineation of Indicative Flood Risk Zone ⁶
			lands; <ul style="list-style-type: none"> • Is not within or adjoining the core of an established or designated urban settlement; and • Will not be essential in achieving compact and sustainable urban growth.
Baile Chláir			
<p>Overall Findings</p> <p>The OPW's detailed CFRAMS Flood Extent Mapping (2017) is available for Claregalway. This mapping was found to be consistent with: local, Council knowledge of the lands; the potential source and direction of flood paths from the Clare River and the topography of the lands.</p> <p>Various sources – historical and modelled – indicate that much of the flood zone is at elevated levels of fluvial flood risk (the OPW's detailed 2017 Flood Extent Mapping; the OPW's PFRA Fluvial Mapping; Ryan Hanley's detailed study of the Clare River Flood Extent 2009-2010). Much of the flood zone is also identified as being at risk of pluvial flooding (PFRA pluvial).</p> <p>Parts of the wider area is known for groundwater flooding and the Plan area is underlain by limestone geology.</p>			
1	N17 Bridge over the Clare River	<ul style="list-style-type: none"> • Relatively recent flood relief works were observed at this bridge (see Section 2.2 "Flood Relief Scheme (Baile Chláir)") 	These lands form part of Flood Zones A and B. Please refer to Section 4 for requirements.
2	Eastern part of Cúirt Na hAbhann and surrounding lands	<ul style="list-style-type: none"> • The eastern parts of Cúirt Na hAbhann have been developed in areas that are at elevated risk of flooding. 	These lands form part of Flood Zones A and B. Please refer to Section 4 for requirements.

3.4 Sensitivity to Climate Change

Certain lands within the three settlements provided with land use zoning by the Variation have the potential to be vulnerable to flooding, such as that arising from tidal, fluvial and pluvial flooding sources, and this vulnerability could be exacerbated by changes in both sea level rise and the severity and frequency of extreme weather events.

Coastal areas are highly sensitive to climate change impacts arising from increases in flooding due to both rising sea levels and more frequent and more severe storms.

'The Planning System and Flood Risk Management Guidelines for Planning Authorities and Technical Appendices, 2009' recommends that a precautionary approach to climate change is adopted due to the level of uncertainty involved in the potential effects. In this regard, the Guidelines recommends:

- Recognising that significant changes in the flood extent may result from an increase in rainfall or tide events and accordingly adopting a cautious approach to zoning land in these potential transitional areas;
- Ensuring that the levels of structures designed to protect against flooding such as flood defences, land raising or raised floor levels are sufficient to cope with the effects of climate change over the lifetime of the development they are designed to protect (normally 85-100 years); and
- Ensuring that structures to protect against flooding and the development protected are capable of adaptation to the effects of climate change when there is more certainty about the effects and still time for such adaptation to be effective.

Advice on the expected impacts of climate change and the allowances to be provided for future flood risk management in Ireland is given in the OPW Draft Guidance. Two climate change scenarios are considered. These are the Mid-Range Future Scenario (MRFS) and the High-End Future Scenario (HEFS). The MRFS is intended to represent a "likely" future scenario based on the wide range of future predictions available. The HEFS represents a more "extreme" future scenario at the upper boundaries of future projections. Based on these two scenarios, the OPW recommended allowances for climate change in relation to river flows and sea levels - these are given in Table 4 overleaf. These climate change allowances are particularly important at the development management stage of planning, and will ensure that proposed development is designed and constructed to take into account best current knowledge. Climate change allowances have been integrated into the recommendations provided at Section 4 of this report.

At this, the development planning stage, a detailed knowledge of the impact of climate change on flood levels is not required to inform the strategic allocation of land. Instead, and in the absence of detailed projections of climate change impacts, flood extents can be assessed by using the extent of the Flood Zone B outline to indicate where climate change may result in greater extents in the future.

Table 4 Allowances for Future Scenarios (100-Year Time Horizon)

Criteria	MRFS – to be considered for most development scenarios	HEFS – to be considered in relation to high value, high vulnerability development which cannot be relocated
Extreme Rainfall Depths	+20%	+30%
Flood Flows	+20%	+30%
Mean Sea Level Rise	+500mm	+1000mm

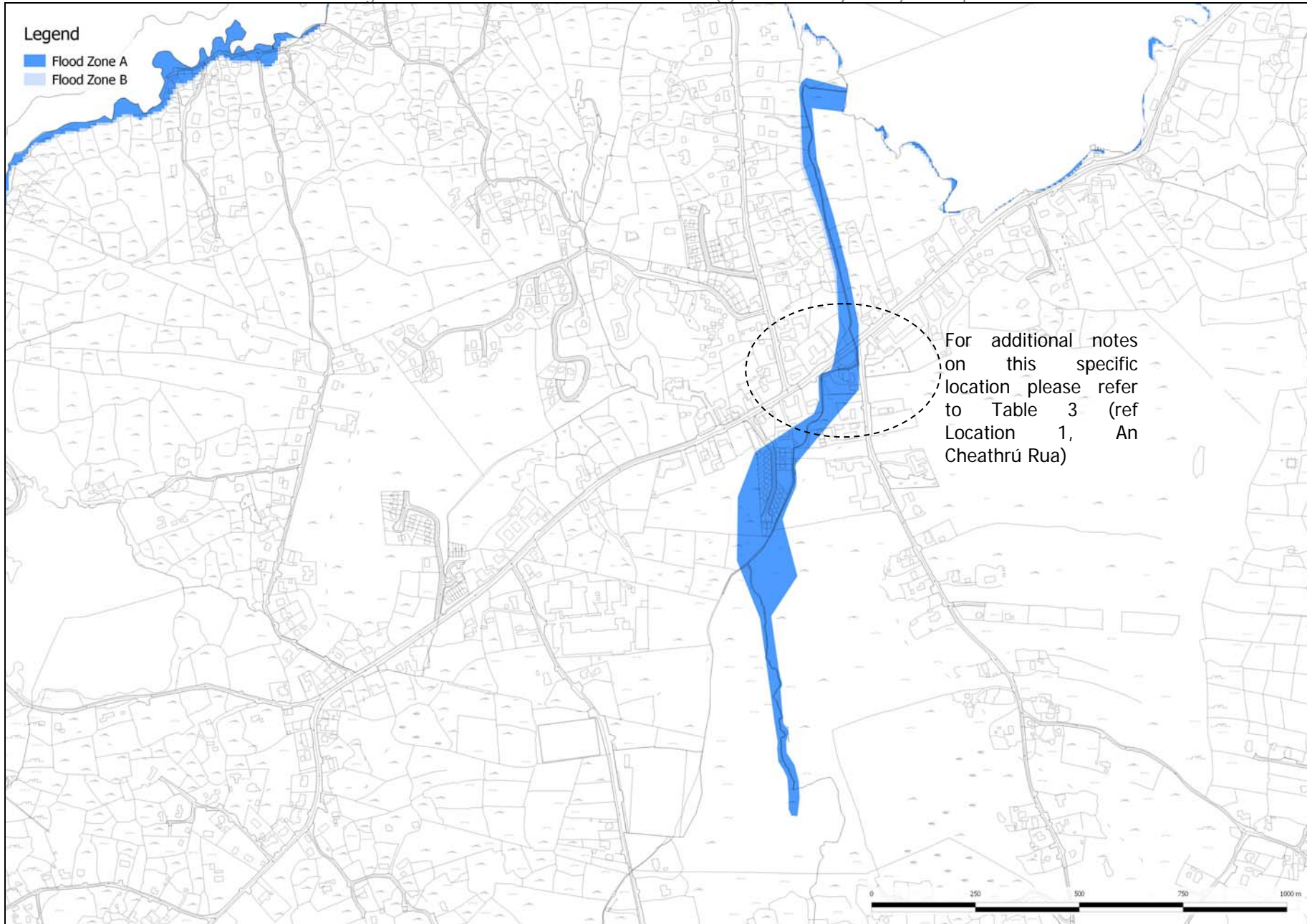


Figure 8 An Cheathrú Rua Indicative Flood Risk Zones

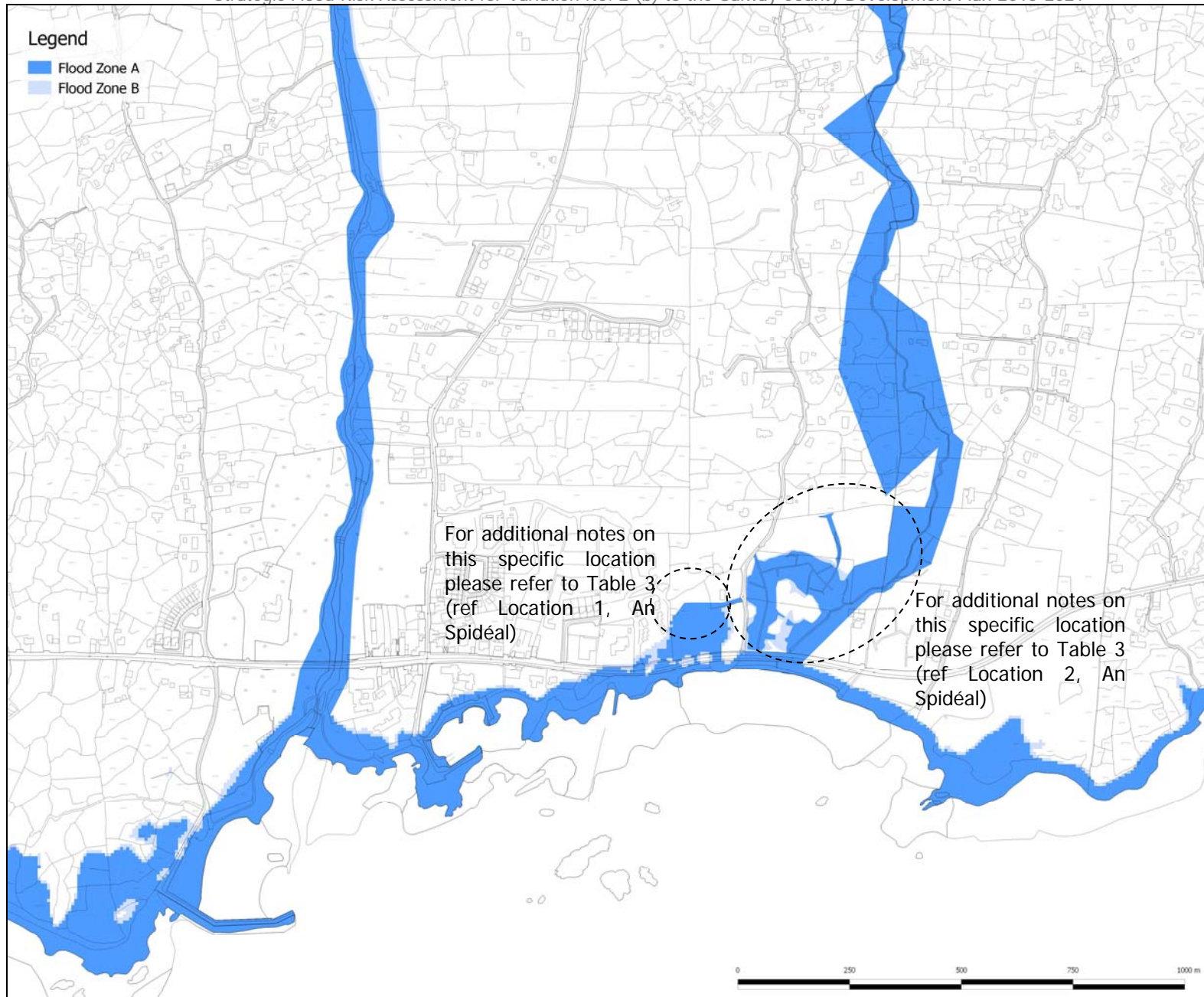


Figure 9 An Spidéal Indicative Flood Risk Zones

CAAS for Galway County Council

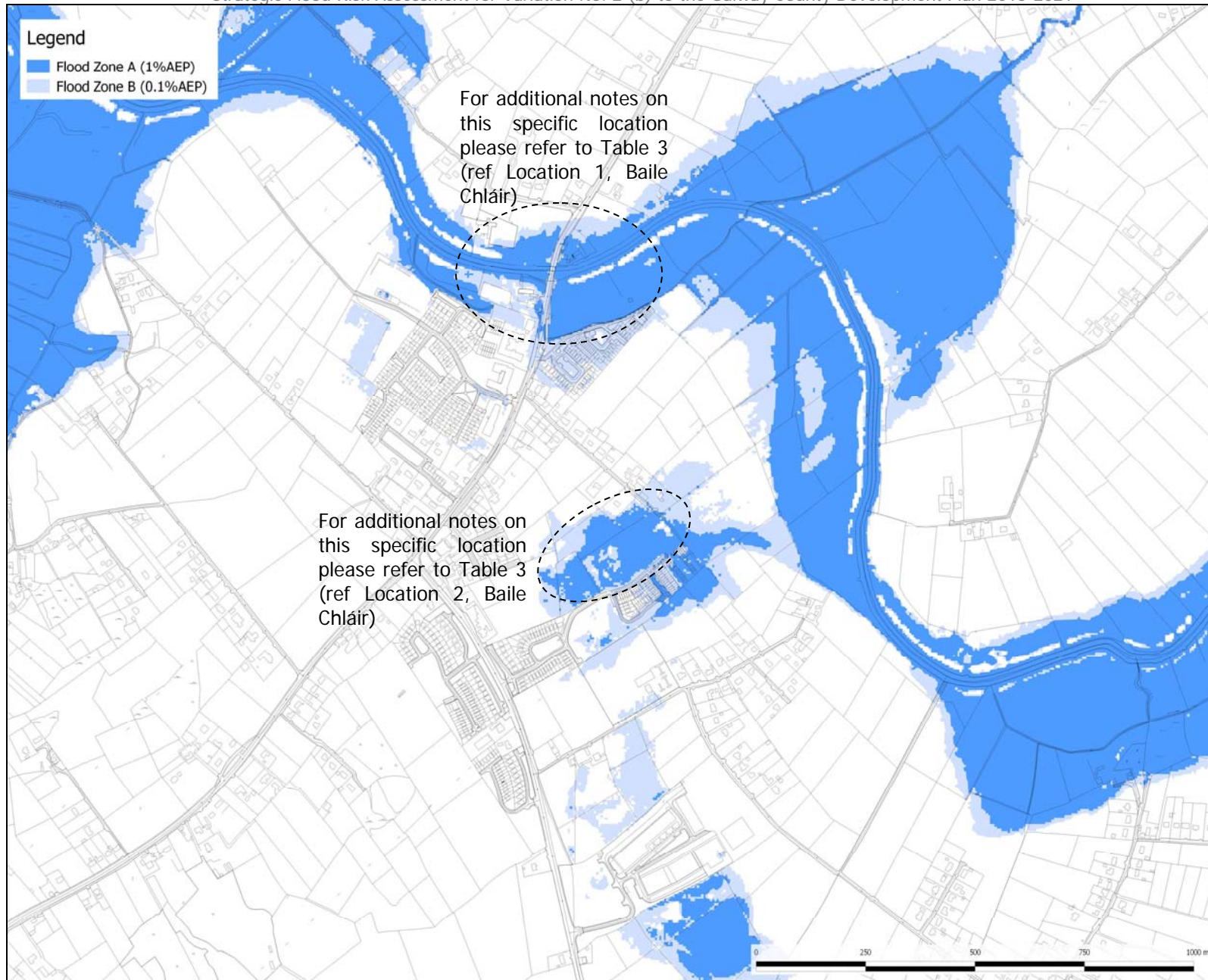


Figure 10 Baile Chláir Indicative Flood Risk Zones

Section 4 Measures for Flood Risk Management

The measures detailed on Table 5 will contribute towards flood risk management and compliance with *The Planning System and Flood Risk Management - Guidelines for Planning Authorities* (Department of the Environment, Heritage and Local Government and Office of Public Works, 2009).

Table 5 Measures for Flood Risk Management

From existing Plan or Variation?	Measure
From Variation	<p>Land Use Zoning Objectives for An Cheathrú Rua, An Spidéal and Baile Chláir Objective CSB10– Constrained Land Use Zone (CL) (Refer to Individual zoning maps for An Cheathrú Rua, An Spidéal and Baile Chláir).</p> <p>To facilitate the appropriate management and sustainable use of flood risk areas within An Cheathrú Rua, An Spidéal and Baile Chláir settlement plan areas.</p> <p>This zoning limits new development, while recognising that existing development uses within these zones may require small scale development, as outlined below, over the life of the Local Area Plan, which would contribute towards the compact and sustainable urban development of the town.</p> <p>The underlying zoning or the existing permitted uses are deemed to be acceptable in principle for minor developments to existing buildings (such as small extensions to houses, most changes of use of existing buildings), which are unlikely to raise significant flooding issues, provided they do not obstruct important flow paths, introduce a significant additional number of people into flood risk areas or entail the storage of hazardous substances.</p> <p>Since such applications concern existing buildings or developed areas, the sequential approach cannot be used to locate them in lower-risk areas and the Justification Test will not apply.</p> <p>Development proposals within this zone, shall be accompanied by a detailed Flood Risk Assessment, carried out in accordance with The Planning System and Flood Risk Assessment Guidelines and Circular PL 2/2014 (or as updated), which shall assess the risks of flooding associated with the proposed development. Proposals shall only be considered where it is demonstrated to the satisfaction of the Planning Authority that they would not have adverse impacts or impede access to a watercourse, floodplain or flood protection and management facilities, or increase the risk of flooding to other locations. The nature and design of structural and non-structural flood risk management measures required for development in such areas will also be required to be demonstrated, so as to ensure that flood hazard and risk will not be increased. Measures proposed shall follow best practice in the management of health and safety for users and residents of the development.</p> <p>Specifications for development in flood vulnerable areas set out in this plan shall be complied with as appropriate.</p> <p>Objective CSB 11 – Flood Risk Areas and Land Use Zones (Refer to Individual Flood maps for An Cheathrú Rua, An Spidéal and Baile Chláir) Ensure that any proposed development that may be compatible with the land use zoning objectives/matrix but which includes a use that is not appropriate to the Flood Zone (as indicated on Map – Flood Risk Management) and/or that may be vulnerable to flooding is subject to flood risk assessment, in accordance with The Planning System and Flood Risk Management Guidelines for Planning Authorities 2009 and the policies and objectives of this Plan.</p>
From Variation	<p>Development Objectives for An Cheathrú Rua, An Spidéal and Baile Chláir Objective DO 6 – Flood Risk Management and Assessment (Refer to Flood maps for An Cheathrú Rua, An Spidéal and Baile Chláir). Ensure the implementation of the DoEHLG/OPW publication <i>The Planning System and Flood Risk Management Guidelines for Planning Authorities 2009</i> (or any updated/superseding document) in relation to flood risk management within An Cheathrú Rua, An Spidéal and Baile Chláir plan areas. This will include the following:</p> <ol style="list-style-type: none"> 1. Avoid, reduce and/or mitigate, as appropriate in accordance with The Planning System and Flood Risk Management Guidelines for Planning Authorities 2009, the risk of flooding within the flood risk areas indicated on Maps– Flood Risk Management, including fluvial, coastal/tidal, pluvial and groundwater flooding, and any other flood risk areas that may be identified during the period of the Plan or in relation to a planning application. 2. Development proposals in areas where there is an identified or potential risk of flooding or that could give rise to a risk of flooding elsewhere will be required to carry out a Site-Specific Flood Risk Assessment, and Justification Test where appropriate, in accordance with the provisions of The Planning System and Flood Risk Management Guidelines for Planning Authorities 2009, (or any superseding document) and Circular PL2/2014 (as updated/superseded). Any flood risk assessment should include an assessment of the potential impacts of climate change, such as an increase in the extent or probability of flooding, and any associated measures necessary to address these impacts. 3. Where certain measures proposed to mitigate or manage the risk of flooding associated with new developments are likely to result in significant effects to the environment or European sites downstream,

From existing Plan or Variation?	Measure																
	<p>such measures will undergo environmental assessment and Appropriate Assessment, as appropriate.</p> <p>4. Galway County Council shall work with other bodies and organisations, as appropriate, to help protect critical infrastructure, including water and wastewater, within the County, from risk of flooding.</p> <p>Objective DO 7 – Flood Zones and Appropriate Land Uses (Refer to Flood maps for An Cheathrú Rua, An Spidéal and Baile Chláir).</p> <p>1. Protect Flood Zone A and Flood Zone B from inappropriate development and direct developments/land uses into the appropriate Flood Zone in accordance with The Planning System and Flood Risk Management Guidelines for Planning Authorities 2009 (or any superseding document) and the guidance contained in DM Guidance CSB 3- Flood Zones and Appropriate Land Uses. Where a development/land use is proposed that is inappropriate within the Flood Zone, then the development proposal will need to be accompanied by a Development Management Justification Test and Site-Specific Flood Risk Assessment in accordance with the criteria set out under with The Planning System and Flood Risk Management Guidelines for Planning Authorities 2009 and Circular PL2/2014 (as updated/superseded).</p> <p>2. Ensure that development proposals in areas identified in An Cheathrú Rua, An Spidéal and Baile Chláir plan areas within Flood Zone C that may be subject to potential flood risk from other sources (e.g. areas of indicative pluvial/groundwater flooding and identified alluvium soil areas) are required to be accompanied by a Site Specific Risk Assessment in accordance with the criteria set out under The Planning System and Flood Risk Management Guidelines for Planning Authorities (2009) and Circular PL02/2014 (as updated/superseded).</p> <p>For development proposals in all other areas of Flood Zone C, the developer should satisfy him or herself that the level of flood risk is appropriate to the development being proposed. Where, in the opinion of the Planning Authority, the development proposal is of such a scale that flood risk must be considered (e.g. creation of significant areas of new hard standing which could significantly increase run-off), the Planning Authority may request that a site-specific flood risk assessment be carried out in accordance with the criteria set out under The Planning System and Flood Risk Management Guidelines for Planning Authorities (2009) and Circular PL 2/2014 (as updated/superseded).</p> <p>Objective DO 8 – Specific Flood Risk Locations (Refer to Flood maps for An Cheathrú Rua, An Spidéal and Baile Chláir).</p> <p>Planning applications on lands in An Cheathrú Rua, An Spidéal and Baile Chláir, identified within pluvial PFRA areas outside of Indicative Flood Zone A on Flood Maps for An Cheathrú Rua, An Spidéal and Baile Chláir shall be accompanied by a Site Specific Flood Risk Assessment that corresponds with that outlined under Chapter 5 ‘Flooding and Development Management’ of The Planning System and Flood Risk Management Guidelines for Planning Authorities 2009). Such assessments shall be prepared by suitably qualified experts with hydrological experience and shall quantify the risks and effects of any necessary mitigation, together with the measures needed or proposed to manage residual risks.</p>																
From Variation	<p>2.11 DM Guidelines</p> <p>DM Guideline CSB 3– Flood Zones and Appropriate Land Uses</p> <p>The table below indicates the types of land uses that are appropriate in each of the Flood Zones identified within An Cheathrú Rua, An Spidéal and Baile Chláir in accordance with The Planning System and Flood Risk Management Guidelines for Planning Authorities (2009). Where developments/land uses are proposed that are considered inappropriate to the Flood Zone, then a Development Management Justification Test and Site-Specific Flood Risk Assessment will be required in accordance with The Planning System and Flood Risk Management Guidelines for Planning Authorities (2009).</p> <table border="1" data-bbox="480 1346 1353 1655"> <thead> <tr> <th>Land Uses</th> <th>Flood Zone A</th> <th>Flood Zone B</th> <th>Flood Zone C</th> </tr> </thead> <tbody> <tr> <td>HVD – Highly Vulnerable Development</td> <td>Inappropriate (if proposed then Justification Test & detailed FRA required)</td> <td>Inappropriate (if proposed then Justification Test & detailed FRA required)</td> <td>Appropriate (screen for flood risk)</td> </tr> <tr> <td>LVD – Less Vulnerable Development</td> <td>Inappropriate (if proposed then Justification Test & detailed FRA required)</td> <td>Inappropriate due to climate change (if proposed then Justification Test & detailed FRA required)</td> <td>Appropriate (screen for flood risk)</td> </tr> <tr> <td>WCD – Water-Compatible Development</td> <td>Appropriate (detailed FRA may be required)</td> <td>Appropriate (detailed FRA may be required)</td> <td>Appropriate (screen for flood risk)</td> </tr> </tbody> </table> <p>Notes (Refer to The Planning System and Flood Risk Management Guidelines for Planning Authorities (2009) for additional detail):</p> <ol style="list-style-type: none"> HVD – Houses, schools, hospitals, residential institutions, emergency services, essential infrastructure, etc. LVD – Economic uses (retail, leisure, warehousing, commercial, industrial, non-residential institutions, etc.), land and buildings used for agriculture or forestry, local transport infrastructure, etc. WCD – Docks, marinas, wharves, water-based recreation and tourism (excluding sleeping accommodation), amenity open space, sports and recreation, flood control infrastructure, etc. 	Land Uses	Flood Zone A	Flood Zone B	Flood Zone C	HVD – Highly Vulnerable Development	Inappropriate (if proposed then Justification Test & detailed FRA required)	Inappropriate (if proposed then Justification Test & detailed FRA required)	Appropriate (screen for flood risk)	LVD – Less Vulnerable Development	Inappropriate (if proposed then Justification Test & detailed FRA required)	Inappropriate due to climate change (if proposed then Justification Test & detailed FRA required)	Appropriate (screen for flood risk)	WCD – Water-Compatible Development	Appropriate (detailed FRA may be required)	Appropriate (detailed FRA may be required)	Appropriate (screen for flood risk)
Land Uses	Flood Zone A	Flood Zone B	Flood Zone C														
HVD – Highly Vulnerable Development	Inappropriate (if proposed then Justification Test & detailed FRA required)	Inappropriate (if proposed then Justification Test & detailed FRA required)	Appropriate (screen for flood risk)														
LVD – Less Vulnerable Development	Inappropriate (if proposed then Justification Test & detailed FRA required)	Inappropriate due to climate change (if proposed then Justification Test & detailed FRA required)	Appropriate (screen for flood risk)														
WCD – Water-Compatible Development	Appropriate (detailed FRA may be required)	Appropriate (detailed FRA may be required)	Appropriate (screen for flood risk)														

From existing Plan or Variation?	Measure
From existing County Development Plan	<p>Development Strategy Objectives</p> <p>Objective DS 7 - Flood Risk Management and Assessment Ensure that proposals for developments located within identified or potential flood risk areas, or which may exacerbate the risk of flooding elsewhere, are assessed in accordance with the provisions of the Flood Risk Management Guidelines 2009 (or any updated/superseding document) the relevant policies, objectives and guidelines within this plan and shall also take account of the National CFRAM Programme Flood Hazard Mapping and Flood Risk Management Plans when they become available.</p> <p>Objective DS 8 – Climate Change Galway County Council shall support the National Climate Change Strategy and follow on document National Climate Change Adaptation Framework Building Resilience to Climate Change 2012, on a ongoing basis through implementation of supporting objectives in this plan, particularly those supporting the use of alternative and renewable energy sources, sustainable transport, air quality, biodiversity, green infrastructure, coastal zone management, flooding and soil erosion.</p> <p>Objective DS 9 – Projects/Associated Improvement Works/Infrastructure and Appropriate Assessment Ensure that proposed projects and any associated improvement works or associated infrastructure relating to renewable energy projects; water supply and abstraction; wastewater and discharges; flood alleviation and prevention; roads, power lines and telecommunications; and amenity and recreation provision are subject to Appropriate Assessment where relevant.</p>
From existing County Development Plan	<p>Wastewater Policies and Objectives</p> <p>Objective WW 7 – Surface Water Drainage & Sustainable Drainage Systems (SuDS) Maintain and enhance, as appropriate, existing surface water drainage systems in the County, ensure that new developments are adequately serviced with surface water drainage infrastructure and promote the use of Sustainable Drainage Systems in all new developments.</p>
From existing County Development Plan	<p>Flood Risk Management Policies and Objectives</p> <p>Policy FL 1 - Flood Risk Management Guidelines It is the policy of Galway County Council to support, in co-operation with the OPW, the implementation of the EU Flood Risk Directive (2007/60/EC), the Flood Risk Regulations (SI No. 122 of 2010) and the DEHLG/OPW publication <i>The Planning System and Flood Risk Management Guidelines (2009)</i> (and any updated/superseding legislation or policy guidance). Galway County Council will also take account of the Shannon International and Western Catchment Flood Risk Assessment and Management Studies.</p> <p>Policy FL 2 – Catchment Planning The Council will actively work with the CFRAM Programme and catchment based Flood Planning Groups, especially in the east of the County where catchments go beyond the Council's administrative boundary, in the development and implementation of catchment-based strategies for the management of flood risk - including those relating to storage and conveyance.</p> <p>Policy FL 3 – Improvement and/or Restoration of Natural Flood Risk Management Functions Where resources are available and subject to compliance with the Habitats and Birds Directives, the Council will contribute towards the improvement and/or restoration of the natural flood risk management functions of flood plains.</p> <p>Policy FL 4 – Principles of the Flood Risk Management Guidelines The Council shall implement the key principles of flood risk management set out in the Flood Risk Management Guidelines as follow: 1) Avoid development that will be at risk of flooding or that will increase the flooding risk elsewhere, where possible; 2) Substitute less vulnerable uses, where avoidance is not possible; and 3) Mitigate and manage the risk, where avoidance and substitution are not possible. Development should only be permitted in areas at risk of flooding when there are no alternative, reasonable sites available in areas at lower risk that also meet the objectives of proper planning and sustainable development. Development in areas which have the highest flood risk should be avoided and/or only considered in exceptional circumstances (through a prescribed Justification Test) if adequate land or sites are not available in areas which have lower flood risk.</p> <p>Policy FL 5 – SFRA of Lower Tier Plans Lower tier plans shall undertake SFRA (Strategic Flood Risk Assessment) in compliance with the Flood Risk Management Guidelines and in consultation with the OPW.</p> <p>Flood Risk Management Objectives</p> <p>Objective FL 1 - Flood Risk Management and Assessment Comply with the requirements of the DoEHLG/OPW The Planning System and Flood Risk Management-Guidelines for Planning Authorities and its accompanying Technical Appendices document 2009 (including any updated/superseding documents). This will include the following: a) Avoid, reduce and/or mitigate, as appropriate in accordance with the Guidelines; b) Development proposals in areas where there is an identified or potential risk of flooding or that could give rise to a risk of flooding elsewhere will be required to carry out a Site-Specific Flood Risk Assessment, and justification test where appropriate, in accordance with the provisions of The Planning System and Flood Risk Management Guidelines 2009 (or any superseding document). c) Development that would be subject to an inappropriate risk of flooding or that would cause or exacerbate such a risk at other locations shall not normally be permitted; d) Galway County Council shall work with other bodies and organisations, as appropriate, to help protect critical infrastructure, including water and wastewater, within the County, from risk of flooding.</p> <p>Objective FL 2 – Surface Water Drainage and Sustainable Drainage Systems (SuDs) Maintain and enhance, as appropriate, the existing surface water drainage system in the County. Ensure that new developments are adequately serviced with surface water drainage infrastructure and</p>

From existing Plan or Variation?	Measure
	<p>promote the use of Sustainable Drainage Systems in all new developments. Surface water runoff from development sites will be limited to pre-development levels and planning applications for new developments will be required to provide details of surface water drainage and Sustainable Drainage Systems proposals.</p> <p>Objective FL 3 - Protection of Waterbodies and Watercourses Protect waterbodies and watercourses within the County from inappropriate development, including rivers, streams, associated undeveloped riparian strips, wetlands and natural floodplains. This will include protection buffers in riverine, wetland and coastal areas as appropriate.</p> <p>Objective FL 4 – Flood Risk Assessment for Planning Applications & CFRAMS Site-specific Flood Risk Assessment (FRA) is required for all planning applications in areas at risk of flooding, even for developments appropriate to the particular Flood Zone. The detail of these site-specific FRAs will depend on the level of risk and scale of development. A detailed site-specific FRA should quantify the risks, the effects of selected mitigation and the management of any residual risks. The Council shall have regard to the results of any CFRAM Studies in the assessment of planning applications.</p> <p>Objective FL 5 – SFRA/FRA & Climate Change SFRAs and site-specific FRAs shall provide information on the implications of climate change with regard to flood risk in relevant locations. The 2009 OPW Draft Guidance on ‘Assessment of Potential Future Scenarios for Flood Risk Management’ (or any superseding document) shall be consulted with to this effect.</p> <p>Objective FL 6 – FRA & Environmental Impact Assessment (EIA) Flood risk may constitute a significant environmental effect of a development proposal that in certain circumstances may trigger a sub-threshold EIS. FRA should therefore be an integral part of any EIA undertaken for projects within the County.</p>
From existing County Development Plan	<p>Natural Heritage and Biodiversity Policies</p> <p>Objective NHB 14 – Protection of Riparian Zones Protect the riparian zones of watercourse systems throughout the county, recognising the benefits they provide in relation to flood risk management and their protection of the ecological integrity of watercourse systems and ensure they are considered in the land use zoning in Local Area Plans.</p>
From existing County Development Plan	<p>Chapter 13: Development Management Standards</p> <p>DM Standard 27: Surface Water Drainage & Flooding Developments will be subject to the following requirements with regard to surface water drainage and flood prevention and management:</p> <p>a) Surface Water Drainage Drainage from paved surfaces may, after suitable treatment, be discharged to available watercourses or to adequate soakage areas on site. In any event, surface water shall not be permitted to flow on to the public road from any proposed development. Accesses and road frontage should be designed in such a manner as to deal with surface water and ensure that it does not impact on the public road. For rural houses, existing roadside drainage shall be maintained by the incorporation of a suitably sized drainage pipe. Each application shall be accompanied by design calculations or appropriate evidence to support the size of the pipe selected.</p> <p>b) Surface Water Run-Off Land uses shall not give rise to increases in the run-off characteristics above those that currently exist.</p> <p>c) Sustainable Drainage Systems The use of Sustainable Drainage Systems (SuDS) shall be encouraged in new developments to minimise the risk of flooding and contamination and to protect environmental and water resources. The Council will seek to ensure applicants incorporate sustainable drainage systems for significant developments in both urban and rural areas and will encourage them for other developments. SuDS is an approach that seeks to manage the water as close as possible to its origin by various engineering solutions that replicate natural drainage processes, before it enters the watercourse. The incorporation of SuDS techniques allows surface water to be either infiltrated or conveyed more slowly to water courses using porous surface treatments, ponds, swales, filter drains or other installations. SuDS should be designed to be cost-effective and require minimum maintenance.</p> <p>d) Flooding Development should not itself be subject to an inappropriate amount of flooding or exacerbate the risk of flooding at other locations. Development must so far as is reasonably practicable incorporate the maximum provision to reduce the rate and quantity of run-off. In particular, where appropriate:</p> <ul style="list-style-type: none"> • Hard surface areas (car parks. etc.) should be constructed in permeable or semi-permeable materials; • On site storm water ponds to store and/or attenuate additional run-off from the development, should be provided. <p>e) Flood Risk Assessment Where flood risk may be an issue for any proposed development, a flood risk assessment should be carried out that is appropriate to the scale and nature of the development and the risks arising. This shall be undertaken in accordance with the DoEHLG Flood Risk Assessment Guidelines 2009 (or any superseding document). Applicants are requested to refer to the OPW National Flood Hazard Mapping Website, to the County Stage 1 Strategic Flood Risk Assessment undertaken for the County Development Plan and Stage 2 Strategic Flood Risk Assessments undertaken for recently adopted and/or amended Local Area Plans where appropriate prior to submitting proposals for development.</p> <p>f) Floodplains Appropriately designed development that is not sensitive to the effects of flooding may be permissible in floodplains, provided it does not reduce the floodplain area or otherwise restrict flow across floodplains. Examples of such development might include park areas, sports pitches, certain types of industry warehousing, etc. designed to be flood resistant and/or sensitive. Such developments should only be permitted provided it incorporates adequate measures to cope with the over-existent flood risk, for example,</p>

From existing Plan or Variation?	Measure
	<p>adequate drainage systems, safety measures, emergency response facilities and/or warning and response systems, and where it is considered that flooding would not result in significant hardship/ financial loss or cost.</p> <p>g) Watercourses For developments adjacent to all watercourses of a significant conveyance capacity or where it is necessary to maintain the ecological or environmental quality of the watercourse, any structures (including hard landscaping) must be set back from the edge of the watercourse to allow access for channel clearing/ maintenance/vegetation. A minimum setback of 5-10m is required either side depending on the width of the watercourse. Development consisting of the construction of embankments, wide bridge piers or similar structures will not normally be permitted in or across floodplains or river channels, as these structures restrict/obstruct flow and increase the risk of flooding to property and land upstream. It is considered necessary in exceptional cases to permit such structures, however they should be designed to minimise and/or compensate for any potential negative effects.</p> <p>h) Flood Design Standards All new development must be designed and constructed to meet the following minimum flood design standards:</p> <ul style="list-style-type: none"> • For urban/built up areas or where developments (existing, proposed or anticipated) are involved – the 100 year flood; <ul style="list-style-type: none"> • For rural areas or where further developments (existing, proposed or anticipated) are not involved – the 25 year flood; • Along the coast and estuaries – the 200 year tide level; • Where streams, open drains or other watercourses are being culverted - the minimum permissible culvert diameter is 900mm (access should be provided for maintenance as appropriate). <p>DM Standard 42: Coastal Management and Protection The following requirements shall be considered and applied where appropriate with respect to coastal management and protection:</p> <p>a) Natural Processes Where possible, developments shall ensure that the landward migration of coastal features, such as dunes and marshes, shall be facilitated as these features form an integral part of the coastal system – both physically and ecologically - and provide protection against wave energy through dissipation.</p> <p>b) Sea Level Change and Flooding New developments shall generally comply with the following approach to coastal management for sea level change:</p> <ul style="list-style-type: none"> • No new building or new development within 100m of 'soft' shoreline; • No further reclamation of estuary land; • No removal of sand dunes, beach sand or gravel; • All coastal defence measures to be assessed for environmental impact. <p>c) Coastal Edge In addition to the above, a general minimum horizontal setback of 30m from the foreshore field boundary line, for new development, or along the 3m natural contour line, whichever is the greatest, is to be created. Any planning applications within this setback must demonstrate that any development would not be subject to potential rising sea levels as a result of climate change including global warming, and must address any issues with regard to rising sea levels, with regard to the siting of any development. New developments should not restrict opportunities for providing public access to the foreshore. The coastal edge and coastal habitats shall be protected from destruction and degradation to ensure their roles as ecological corridors, coastal flooding and storm surge buffers are retained and enhanced, and developers proposing developments in the vicinity of this area will be requested to carry out an ecological plan that incorporates the natural vegetation and topography of the area</p>

Section 5 Conclusion

A Stage 2 Strategic Flood Risk Assessment (SFRA) has been undertaken to inform the preparation of the Variation. The requirement for SFRA is provided under *The Planning System and Flood Risk Management - Guidelines for Planning Authorities* (Department of the Environment, Heritage and Local Government and Office of Public Works, 2009).

The SFRA has mapped boundaries for Flood Risk Zones, taking into account factors including: the potential source and direction of flood paths from the coast and from rivers and streams; locations of topographic/built features that coincide with the flood indicator related boundaries; and local knowledge.

The Variation does not conflict with the provisions of the Flood Risk Management Guidelines or associated Circular PL 2/2014 (or as updated).

Various measures have been integrated into the Variation (see Table 5) that will contribute towards flood risk management and compliance with the Guidelines.

Appendix I: Summary of Related Provisions contained in the Flood Guidelines for Land Uses in Flood Zones A and B

The provisions set out in the DEHLG's 2009 Flood Guidelines (including at Chapter 3 Principles and Key Mechanisms and Chapter 5 Flooding and Development Management) and Departmental Circular PL2/2014 and should be adhered to.

- The Sequential Approach, including the Justification test -

The key principles of the Guidelines' risk-based sequential approach (see Figure 11) are:

- Avoid development in areas at risk of flooding. If this is not possible, consider substituting a land use that is less vulnerable to flooding. Only when both avoidance and substitution cannot take place should consideration be given to mitigation and management of risks.
- Inappropriate types of development that would create unacceptable risks from flooding should not be planned for or permitted.
- Exceptions to the restriction of development due to potential flood risks are provided for through the use of a Justification Test, where the planning need and the sustainable management of flood risk to an acceptable level must be demonstrated.

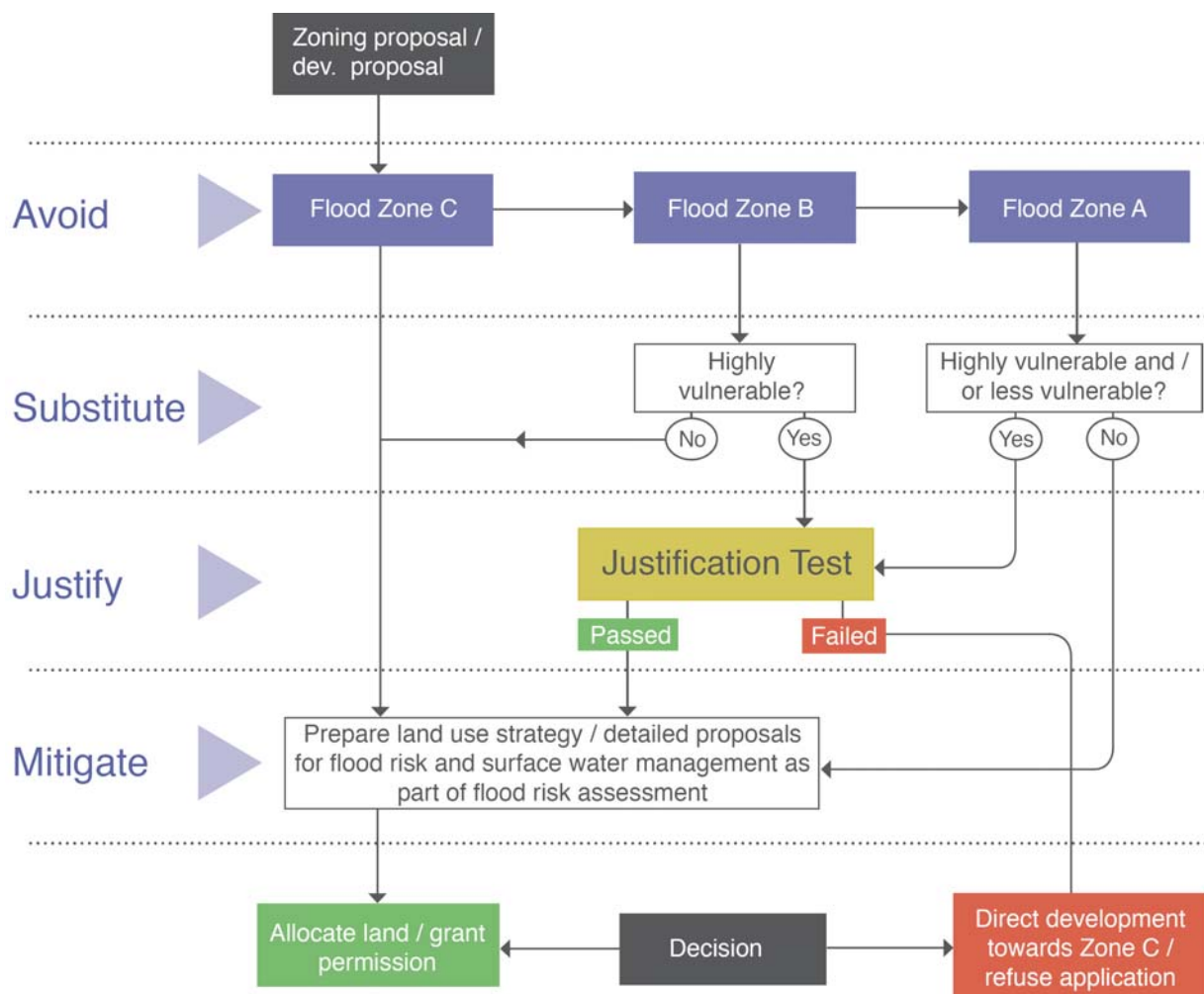


Figure 11 Sequential Approach Process⁹

In summary, the **planning implications** for each of the flood zones are:

Zone A - High probability of flooding. Most types of development would be considered inappropriate in this zone. Development in this zone should be avoided and/or only 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 Justification Test has been applied. Only water-compatible development, such as docks and marinas, dockside activities that require a waterside location, amenity open space, 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 and primary strategic transport and 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, sites used for short-let for caravans and camping and secondary strategic transport and utilities infrastructure, and water-compatible development 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 and from the development can or will adequately be managed.

Zone C - Low probability of flooding. Development in this zone is appropriate from a flood risk perspective (subject to assessment of flood hazard from sources other than rivers and the coast) but

⁹ Flood Zone C covers all areas outside of Zones A and B

would need to meet the normal range of other proper planning and sustainable development considerations.

Table 6 overleaf classifies the vulnerability of different types of development while Table 7 identifies the appropriateness of development belonging to each vulnerability class within each of the flood zones as well as identifying what instances in which the Justification Test should be undertaken. Inappropriate development that does not meet the criteria of the Justification Test should not be considered at the plan-making stage or approved within the development management process.

Vulnerability class	Land uses and types of development which include*:
Highly vulnerable development (including essential infrastructure)	<p>Garda, ambulance and fire stations and command centres required to be operational during flooding;</p> <p>Hospitals;</p> <p>Emergency access and egress points;</p> <p>Schools;</p> <p>Dwelling houses, student halls of residence and hostels;</p> <p>Residential institutions such as residential care homes, children's homes and social services homes;</p> <p>Caravans and mobile home parks;</p> <p>Dwelling houses designed, constructed or adapted for the elderly or, other people with impaired mobility; and</p> <p>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.</p>
Less vulnerable development	<p>Buildings used for: retail, leisure, warehousing, commercial, industrial and non-residential institutions;</p> <p>Land and buildings used for holiday or short-let caravans and camping, subject to specific warning and evacuation plans;</p> <p>Land and buildings used for agriculture and forestry;</p> <p>Waste treatment (except landfill and hazardous waste);</p> <p>Mineral working and processing; and</p> <p>Local transport infrastructure.</p>
Water-compatible development	<p>Flood control infrastructure;</p> <p>Docks, marinas and wharves;</p> <p>Navigation facilities;</p> <p>Ship building, repairing and dismantling, dockside fish processing and refrigeration and compatible activities requiring a waterside location;</p> <p>Water-based recreation and tourism (excluding sleeping accommodation);</p> <p>Lifeguard and coastguard stations;</p> <p>Amenity open space, outdoor sports and recreation and essential facilities such as changing rooms; and</p> <p>Essential ancillary sleeping or residential accommodation for staff required by uses in this category (subject to a specific warning and evacuation plan).</p>
*Uses not listed here should be considered on their own merits	

Table 6 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 7 Vulnerability Classes and Flood Zones

The **Justification Test** which is referred to as part of the Sequential Approach is an assessment of whether a development proposal within an area at risk of flooding meets specific criteria for proper planning and sustainable development and demonstrates that it will not be subject to unacceptable risk nor increase flood risk elsewhere. The Justification Test should be applied only where development is within flood risk areas that would be defined as inappropriate under the screening test of the sequential risk based approach outlined above. This Justification Test is shown below.

Where, as part of the preparation and adoption or variation and amendment of a development/local area plan¹, a planning authority is considering the future development of areas in an urban settlement that are at moderate or high risk of flooding, for uses or development vulnerable to flooding that would generally be inappropriate as set out in Table 3.2, all of the following criteria must be satisfied:

- 1 The urban settlement is targeted for growth under the National Spatial Strategy, regional planning guidelines, statutory plans as defined above or under the Planning Guidelines or Planning Directives provisions of the Planning and Development Act, 2000, as amended.
- 2 The zoning or designation of the lands for the particular use or development type is required to achieve the proper planning and sustainable development of the urban settlement and, in particular:
 - (i) Is essential to facilitate regeneration and/or expansion of the centre of the urban settlement²;
 - (ii) Comprises significant previously developed and/or under-utilised lands;
 - (iii) Is within or adjoining the core³ of an established or designated urban settlement;
 - (iv) Will be essential in achieving compact and sustainable urban growth; and
 - (v) There are no suitable alternative lands for the particular use or development type, in areas at lower risk of flooding within or adjoining the core of the urban settlement⁴
- 3 A flood risk assessment to an appropriate level of detail has been carried out as part of the Strategic Environmental Assessment as part of the development plan preparation process, which demonstrates that flood risk to the development can be adequately managed and the use or development of the lands will not cause unacceptable adverse impacts elsewhere.
 N.B. The acceptability or otherwise of levels of any residual risk should be made with consideration for the proposed development and the local context and should be described in the relevant flood risk assessment.

Figure 12 Justification Test ¹⁰

¹⁰ Footnotes: ¹ Including Strategic Development Zones and Section 25 Schemes in the area of the Dublin Docklands Development Authority ²In the case of Gateway planning authorities, where a number of strategic growth centres have been identified within the overall area of the authority, the Justification Test may be applied for vulnerable development within each centre. ³ See definition of the core of an urban settlement in Glossary of Terms. ⁴ This criterion may be set aside where section 4.27b applies.