Chief Executive's Report on the Submissions and Observations Received on the Draft Wexford County Development Plan 2021-2027

April 2021

BOOK 4

- Section 1 - Volume 8 Retail Strategy
- Section 2 - Volume 9 Housing Strategy
- Section 3 – Volume 11 Strategic Flood Risk Assessment

Comhairle Contae Loch Garman
Wexford County Council

Section 3 Volume 11 Strategic Flood Risk Assessment

Relevant Submissions

- WXF-C3-72 Office of Public Works
- WXF-C3-82 Department of Tourism, Arts, Culture, the Gaeltacht, Sports and Media (Dept. TACGSM)
- WXF-C3-30 Rosslare Development Association
- WXF-C3-149 Callery

Note: The summaries and Chief Executive's Response are by submission.

Summary of the Main Issues and Chief Executive's Response

WXF-C3-72 Office of Public Works

The OPW welcomes the acknowledgement of the Guidelines on the Planning System and Flood Risk Management (DECLG/OPW, 2009), and the proposed measures set out in the Flood Risk Management Plans based on the work undertaken for the CFRAM Programme, and the preparation of the Strategic Flood Risk Assessment.

In particular, the OPW welcomes:

- The commitment to address surface water flooding issues and the need for SuDS (Objective FRM 14, SWM04 and SWM05);
- The recognition of the potential impacts of climate change on flood risk and the need to address these impacts (Objective FRM04);
- The commitments to manage flood risk in line with the Guidelines and the measures set out in the Flood Risk Management Plans (Objectives FRM01-19).

Chief Executive's Response

The OPW's positive comments relating to the SFRA and flood risk and surface water management approach welcomed.

Indicative Mapping and Flood Zones

The OPW notes that PFRA and JFLOW indicative mapping have been used as a screening tool for flood risk assessment. These are the only data sources listed for a number of settlements.

The PRFA indicative flood maps are not necessarily locally accurate and are not recommended for use as the sole basis for defining Flood Zones or for making planning policy and development management decisions. Where more accurate predictive flood mapping is not available, they may indicate where flooding may be an issue.

Indicative Mapping and Flood Zones - Chief Executive's Response

Noted and this is acknowledged within the SFRA. A variety of data sources are used and the SFRA relies on best available datasets. Hydraulic modelling was undertaken in Rosslare Harbour and Kilrane to avoid this scenario. As noted on page 23 of the SFRA – 'the review of the best available Flood Zone data has been developed as a spatial planning tool to guide the Council in making land-use zoning and development management decisions. It should be noted that PFRA and JFLOW mapping is not used to make any zoning decisions, it only acts as a screening tool for risk and indicates where further detailed assessment is required'. No amendment proposed.

While not arising from a submission, it is recommended that Section 9.5.11 Flood Mapping also be updated to include the National Indicating Flood Mapping. The OPW released this mapping on the 1st February 2021. While it is too late to incorporate this dataset into the plan preparation process and SFRA, the Council will have regard to this mapping when screening for flood risk during the preparation of local area plans and when assessing development proposals.

Data Sets and Analysis

The OPW recommend that the SFRA details all datasets and analysis used to define the Flood Zones for each respective settlement.

The OPW notes that where Irish Coastal Protection Strategy Study (ICPSS) mapping has been examined for settlements at risk of coastal flooding, it has been merged with the PFRA outlines. While the PFRA are indicative mapping, the ICPSS are strategic, predictive hazard mapping. For these settlements, it is recommended that the ICPSS mapping should be included separately in the list of flood zone data.

Data Sets and Analysis - Chief Executive's Response

Sections 3.1, 3.2 and Table 3-4 describe the datasets used within the SFRA and which datasets are available in each settlement. It is recommended that the flood zone data be amended for the relevant settlements in Table 3.4 and Section 5 to clearly identify where ICPSS data is available and used (22 settlements).

Arterial Drainage Scheme

The OPW notes that no commentary has been provided on the Owenavorragh Arterial Drainage Scheme. Consideration should be given in zoning land for development to ensure that access requirements are preserved for the maintenance of Arterial Drainage Schemes and Drainage Districts. Applications for development on land identified as benefitting land may be prone to flooding, and as such site-specific flood risk assessments may be required in these areas.

Arterial Drainage Scheme - Chief Executive's Response

The comments are noted. Objective FRM13 and FRM 18 require that the OPW are consulted with for any development adjacent to an OPW channel and that at least a 10m development free buffer zone is retained adjacent to all watercourses. It is recommended that a new sub-section be inserted in the SFRA relating to the Owenavorragh Arterial Drainage Scheme.

Sustainable Drainage Systems (SuDS)

The OPW outlines that the Guidelines recommend that the SFRA provide guidance on the likely applicability of different SuDS techniques for managing surface water run-off at key development sites. It is also noted that the Guidelines recommends that the SFRA identifies where integrated and area-based provision of SuDS and green infrastructure are appropriate in order to avoid reliance on individual site by site solutions.

Sustainable Drainage Systems (SuDS) - Chief Executive's Response

There are 83 settlements reviewed in SFRA and specific guidance on key development sites is considered beyond the scope of the assessment. It is considered that the general policy on surface water management ensures the implementation of SuDS. This issue will also be considered in more detail during the preparation of the local area plans. It is recommended that Section 9.11 in Volume 1 Written Statement and Section 4.2 in the SFRA be amended to include references to the area-based approach and nature based solutions.

Specific Settlements

Ballymoney

The SFRA states that the 'PFRA mapping appears to incorrectly place the watercourse flowing under the Sea Road'. Despite identifying this error, the PFRA extents have been used to define the Flood Zones. As noted above, the PRFA indicative flood zone maps are not necessarily locally accurate and are not recommended for use as the sole basis for defining Flood Zones.

Ballymoney - Chief Executive's Response

Noted. The SFRA acknowledges the level of accuracy of the PFRA outlines, and in this case, there is no influence on land use zoning objectives. A site specific flood risk assessment at Development Management stage would be required to investigate risk further. No amendment proposed.

Castlebridge

The OPW recommends the inclusion of flood risk management objectives in the specific objectives for the settlement.

Castlebridge - Chief Executive's Response

Noted. While all settlements are subject to the flood risk management objectives contained in Section 9.11 of Volume 1 Written Statement, it is recommended that an objective be included as recommended by the OPW. This will also be given further consideration during the preparation of the Castlebridge Settlement Plan (see response to WXF-C3-164 OPW) and the associated SFRA.

Rosslare

The settlement has been identified as being sensitive to increases in sea level. Consideration might be given as to whether objectives relating to climate adaptation should be included in the specific objectives for Rosslare.

Rosslare - Chief Executive's Response

The OPW comments are noted. The SFRA (Volume 11) notes that Flood Zone A/B should be avoided for any highly or less vulnerable development and the FRM objectives ensure that climate change is incorporated into FFL consideration at Development Management stage. The Flood Zones themselves utilise a conservative undefended still water projection method which promotes a precautionary approach in this settlement. The area to the north of the settlement core is lower lying and is more susceptible to climate change. There is no formal land use zoning designation in this area and the Justification Test will preclude most highly/less vulnerable new development within Flood Zone A/B. It will also be necessary to consider climate change as part of any site specific FRA and particular attention should be given to access routes.

The Council welcomes the survey work undertaken by the GSI in Rosslare Strand, and it is recommended that the text be amended as requested.

Objective CZM31 in Chapter 12 Coastal Zone Management and Marine Spatial Planning in Volume 1 Written Statement relates to the preparation of coastal erosion management plans. One of the referenced plans is the Rosslare Coastal Erosion and Flood Risk Management Plan. The objective of the scheme, which is currently being prepared, is to implement measures to reduce the impact of erosion and flooding risk at Rosslare Strand. It will also take the effects of climate change into account. The area to the north of the settlement referred to above is covered by the scheme. The scheme has received funding from the OPW and is moving to detailed design stage. The scheme comprises two elements:

1. Erosion: hold the line option to include rock revetment, rock groynes and beach nourishment.
2. Flood: construction of a flood barrier, 1,076m long along the west side of Rosslare spit.

While all settlements are subject to the flood risk management objectives contained in Section 9.11 of Volume 1 Written Statement, it is recommended to include a flood risk management objective as a specific objective for Rosslare. This, together with the coastal erosion objectives for the settlement, will ensure that climate change is considered in the settlement area. Climate change will also be given further consideration during the preparation of the Rosslare Strand Settlement Plan and associated SFRA (see response to WXF-C3-164 OPR).

Rosslare Harbour and Kilrane

Consideration should be given to including the buffer zones, as described in Objective FRM 18, in the zoning maps and the specific objectives for Rosslare Harbour and Kilrane.
The OPW also note that a justification test has been provided for the proposed Rosslare Europort Access Road.

Rosslare Harbour and Kilrane - Chief Executive's Response

Noted. While buffer zone can be implemented at the Development Management stage, inclusion on the land use zoning for the settlement will provide clarity. It is recommended that Map 3 Land Use Zoning in the Rosslare Harbour and Kilrane Settlement Plan be amended accordingly, along with the inclusion of a supporting objective in the Settlement Plan.

In line with the response to WXF-C3-164 (OPR), it is recommended that the settlements of Carne, Carrowreagh, Courtnacuddy and Killinick are incorporated into and assessed in the SFRA.

WXF-C3-30 Rosslare Development Association (RDA) and WXF-C3-149 Callery

These submission outlines concerns regarding the implications of the flood map produced in Figure R.S.1 for Rosslare Strand. This map has been prepared by JBA Consultants and it shows much of the north-western area of the village, including the areas of Lake Big and Woodtown, affected by anticipated flooding. This has serious implications for future development of this area of the village, resale of existing houses and insurance. The submissions refer to the flooding mapping carried out by the OPW as part of the national

CFRAM flooding project. This area of Rosslare was examined in detail by OPW in 2018 as part of the Area for Further Assessment and a detailed map was prepared. This map is much less restrictive than the JBA map and it takes account of future flooding events including the effects of predicted sea level rise. The submissions request that this map be used for future flooding assessment in Rosslare Strand and that reference to the JBA map be deleted from the Draft Plan.

WXF-C3-30 Rosslare Development Association (RDA) and WXF-C3-149 Callery - Chief Executive's Response

The concerns expressed in WXF-C3-30 (RDA) and WXF-C3-149 (Callery) about the flood zone mapping included in the SFRA are noted**.** The OPW CFRAM assessment only considers tidal flooding (using a 2D only model with no detailed ground based survey of flood defence embankments or structures) and does not specifically take into account the fluvially influenced local back-drains or residual risk whereby the flood defence embankments of South Slobs and the local environs are ignored. These maps are therefore not a suitable comparison to the Flood Zones used in the Draft County Development Plan. Flood Zones are required to reflect an undefended condition as outlined in Section 3.4 of the Planning System and Flood Risk Management Guidelines for Planning Authorities (DEHLG and OPW, 2009). The basis is therefore conservative and is representative of the OPW ICPSS flood mapping whereby extreme still water sea levels are interpolated inland. They represent a precautionary approach to reflect uncertainties in flooding datasets and risk assessment techniques and the ability to predict the future climate and performance of existing flood defences.

Furthermore, the purpose of these flood zone maps is to identify potential flood risk that may require further consideration. Any future developments in Rosslare will be screened for flood risk and will be subject to appropriately detailed site-specific flood risk assessments in accordance with the Guidelines to determine the level of flood risk. Flood risk will also be considered as part of the proposed Settlement Plan for Rosslare and associated SFRA (see response to WXF-C3-164 OPR). It will be necessary to carry out detailed hydraulic modelling at that juncture to determine the flood zones that will be used to inform land use zoning decisions within the Settlement Plan area. No amendment proposed.

The Council will continue to use all available sources of information when screening for flood risk during the preparation of local area plans, settlement plans and when assessing development proposals. These sources include:

- The CFRAM flood zone mapping.
- The OPW National Indicative Flood Mapping.
- Fluvial flood maps prepared by JBA for the county.

WXF-C3-82 Dept. TACGSM

On page 19 of the SFRA the North and South Slobs are listed as having been Areas for Further Assessment under the South East CFRAM. It is noted that the assessment was carried out and that no further significance was added as a result. The North Slob and South Slob are internationally important for biodiversity and are artificial landscapes, dependant on artificial flood embankments/sea walls and (in the case of the North Slob) on the integrity of sand dunes at Ballinesker. The North Slob is also significant in tourism terms. The North and South Slobs should be subject to assessment including any required maintenance of the relevant sea wall infrastructure and dune natural defences.

WXF-C3-82 Dept. TACGSM - Chief Executive's Recommendation

Noted. This is considered outside the remit of the of the SFRA or County Development Plan. It is a matter for the OPW and the Dept. TACGSM. The Council will continue to ensure the protection of the North Slobs and Slob Slobs in line with the policies and objectives in the Draft Plan, including those relating to flood risk management and coastal erosion. No amendment proposed.

Chief Executive's Recommendations

It is recommended that the following proposed amendments are made:

CE SFRA. X

To include the following flood risk management objective for Castlebridge in Volume 3 Settlement Plans and Specific Objectives on page 149:

To ensure that all future developments in the settlement area are screened for flood risk and comply fully with the requirements of the Planning System and Flood Risk Management - Guidelines for Planning Authorities (DEHLG and OPW, 2009) and Circular PL2/2014 and any future update of these guidelines, the County Strategic Flood Risk Assessment (Volume 11) and Chapter 9 Infrastructure in Volume 1 Written Statement.

CE SFRA.X

To include the following flood risk management objective for Rosslare Strand in Volume 3 Settlement Plans and Specific Objectives on page 179:

To ensure that all future developments in the settlement area are screened for flood risk and comply fully with the requirements of the Planning System and Flood Risk Management - Guidelines for Planning Authorities (DEHLG and OPW, 2009) and Circular PL2/2014 and any future update of these guidelines, the County Strategic Flood Risk Assessment (Volume 11) and Chapter 9 Infrastructure in Volume 1 Written Statement.

CE SFRA.X

Include a new objective in Section 2.4.11 Flood Risk Management for Rosslare Harbour and Kilrane Settlement Plan in Volume 3 Settlement Plans and Specific Objectives) on page 103 as follows:

<u>To ensure riparian buffer zones are provided on the lands zoned Open Space and Amenity along watercourses in the plan area, and to require, where deemed necessary, that additional lands be set aside for riparian buffer zones. The width of the required riparian zones will be dependent on the width and characteristics of the watercourse and the nature of the site and will be determined having regard to the requirements of the 'Planning for</u>

Watercourses in the Urban Environment (Inlands Fisheries Ireland) and any updated version of these guidelines.

CE RHK.X

Amend Map 3 Land Use Zoning in the Rosslare Harbour and Kilrane Settlement Plan in Volume 3 Settlement Plans and Specific Objectives as follows:

Change the zoning of a portion of the New Residential (Plot C) lands, Light Industrial land and Industrial Lands to Open Space and Amenity (to protect the riparian zone).

CE SFRA.X

To amend Volume 11 Strategic Flood Risk Assessment to take account of foregoing recommendations and other matters arising from changes to Volume 1 Written Statement and Volume 3 Settlement Plans and Specific Objectives. See revised Strategic Flood Risk Assessment attached with all associated changes tracked for clarity.

Strategic Flood Risk Assessment for the Draft Wexford County Development Plan 2021-2027

Volume 11

SFRA Report

April 2021

Wexford County Council

JBA Project Manager

Ross Bryant

Revision History

Revision Ref / Date Issued	Amendments	Issued to
v1.0 June 2018	Initial issue	Wexford County Council
v2.0 June 2020	Amended text and additional settlements – draft for review	Wexford County Council
v3.0 July 2020	Amended text	Wexford County Council
v4.0 September 2020	Amended text	Wexford County Council
v5.0 April 2021	Amended text/zonings	Wexford County Council
v6.0 April 2021	Settlements added	Wexford County Council

Contract

This report describes work commissioned by Wexford County Council, by a signed contract dated November 2017. Wexford County Council's representative for the contract was Pauline Doyle of Wexford County Council. Ross Bryant, Orla Hannon, and Holly O'Keeffe of JBA Consulting carried out this work.

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Purpose

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Contents

Contents

Contents

Contents

Contents

Contents

Contents

Contents

Contents

List of Figures

List of Tables

Abbreviations

1D	One Dimensional (modelling)
2D	Two Dimensional (modelling)
AEP	Annual Exceedance Probability
AFA	Area for Further Assessment
BCR	Benefit-Cost Ratio
CDP	County Development Plan
CFRAM	Catchment Flood Risk Assessment and Management
CSO	Central Statistics Office
DTM	Digital Terrain Model
EPA	Environmental Protection Agency
FEH	Flood Estimation Handbook
FFL	Finished Floor Level
FRA	Flood Risk Assessment
FRMP	Flood Risk Management Plan
FRR	Flood Risk Review
FSU	Flood Studies Update
GIS	Geographical Information System
HEFS	High End Future Scenario
HPW	High Priority Watercourse
ICPSS	Irish Coastal Protection Strategy Study
IFI	Inland Fisheries Ireland
JFLOW	2-D hydraulic modelling package developed by JBA
LA	Local Authority

LAP	Local Area Plan
LiDAR	Light Detecting And Ranging
MPW	Medium Priority Watercourse
MRFS	Medium Range Future Scenario
NPWS	National Parks and Wildlife Services
OPW	Office of Public Works
OSi	Ordnance Survey Ireland
PFRA	Preliminary Flood Risk Assessment
RSES	Regional Spatial and Economic Strategy
SEA	Strategic Environmental Assessment
SFRA	Strategic Flood Risk Assessment
SoP	Standard of Protection
SPR	Standard percentage runoff
SuDS	Sustainable Drainage Systems
Tp	Time to Peak
WCC	Wexford County Council

1 Introduction

JBA Consulting was commissioned by Wexford County Council (WCC) to provide assistance in the preparation of the Strategic Flood Risk Assessment (SFRA) to incorporate the provisions of the Wexford County Development Plan 2021-2027 (CDP).

The SFRA is a live document that is designed to be updated as further flood risk information becomes available.

1.1 Scope of the SFRA

Under the "Planning System and Flood Risk Management" guidelines, the purpose for a Strategic Flood Risk Assessment (SFRA) is detailed as being "to provide a broad (wide area) assessment of all types of flood risk to inform strategic land-use planning decisions. SFRAs enable the Local Authority to undertake the sequential approach, including the Justification Test, allocate appropriate sites for development and identify how flood risk can be reduced as part of the development plan process".

The SFRA will ensure that flood risk management is integrated into the each of the settlements. More specifically the SFRA will complete the following tasks;

1. Undertake a Stage 1/2 flood risk assessment for all CSO settlements and other settlements included in Levels 1 to 5 in the Core Strategy Settlement Hierarchy. This amounts to 76 settlements,
2. Undertake a Stage 3 Detailed FRA for Rosslare Harbour & Kilrane,
3. Review and update Flood Zone mapping to include the Finalised CFRAM mapping, PFRA and JBA Consulting Flood Zone mapping for the entire county,
4. Assist WCC in the review of land use zoning objectives and the application of the sequential approach and justification test in Bunclody & Rosslare Harbour;
5. Prepare flood risk management policies, objectives and recommendations.

Table 1-1 Level 1-5 Settlements contained within the WCDP 2021-27[1]

Adamstown	Caim	Davidstown	Marshalstown
Arthurstown	Camolin	Duncannon	Monaseed
Ballinaboola	Campile	Duncormick	Murntown
Ballindaggan	Carne	Enniscorthy	New Ross
Ballycanew	Castlebridge	Ferns	Newbawn
Ballycullane	Carrowreagh	Fethard	Oilgate
Ballyedmond	Castledockrell	Foulkesmills	Oulart
Ballygarrett	Castletown	Glenbrien	Piercetown
Ballyhack	Cleriestown	Glynn	Ramsgrange
Ballyhogue	Clohamon	Gorey	Rathdangan
Ballymitty	Clonegal	Grahormac	Rathnure
Ballymurn	Clongeen	Gusserane	Rosslare
Ballymoney	Clonroche	Hollyfort	Rosslare Harbour & Kilrane
Ballysimon	Coolgreany	Killinierin	Saltmills
Ballywilliam	Courtnacuddy	Killinick	Screen
Barntown	Courtown & Riverchapel	Kilmore	Taghmon
Blackwater	Craanford	Kilmore Quay	The Ballagh
Boolavogue	Crossabeg	Kilmuckridge or Ford	Tomhaggard
Bree	Curracloe	Kilmyshall	Wellington Bridge
Bridgetown	Cushinstown	Kiltealy	Wexford
Bunclody	Danescastle	Lady's Island	

[1] Note with the exception of Castletown, Clonegal, Cushinstown and Saltmills Level 6 Rural Nodes do not have specific assessments in the SFRA.

1.2 Report Structure.

Section 2 of this report, provides an introduction to the Planning System and Flood Risk Management.

Section 3 provides a review of data collection, flood history and predicted flood extent (including climate change impacts) in each of the settlements,

Section 4 provides guidance and recommended approaches to managing flood risk and development; the contents of this section will inform the objectives within the Wexford County Development Plan.

Section 5 discusses land use zoning and the Justification Test.

2 The Planning System and Flood Risk Management

2.1 Introduction

Prior to discussing the management of flood risk, it is helpful to understand what is meant by the term. It is also important to define the components of flood risk in order to apply the principles of the Planning System and Flood Risk Management in a consistent manner.

The Planning System and Flood Risk Management: Guidelines for Planning Authorities, published in November 2009, describe flooding as a natural process that can occur at any time and in a wide variety of locations. Flooding can often be beneficial, and many habitats rely on periodic inundation. However, when flooding interacts with human development, it can threaten people, their property and the environment.

This section will firstly outline the definitions of flood risk and the Flood Zones used as a planning tool; a discussion of the principles of the planning guidelines and the management of flood risk in the planning system will follow.

2.2 Definition of a Flood Risk

Flood risk is generally accepted to be a combination of the likelihood (or probability) of flooding and the potential consequences arising. Flood risk can be expressed in terms of the following relationship:

Flood Risk = Probability of Flooding x Consequences of Flooding

The assessment of flood risk requires an understanding of the sources, the flow path of floodwater and the people and property that can be affected. The *source - pathway - receptor model,* shown below in Figure 2-1~~Figure 2-1~~~~Figure 2-1~~, illustrates this and is a widely used environmental model to assess and inform the management of risk.

Figure 2-1 Source Pathway Receptor Model

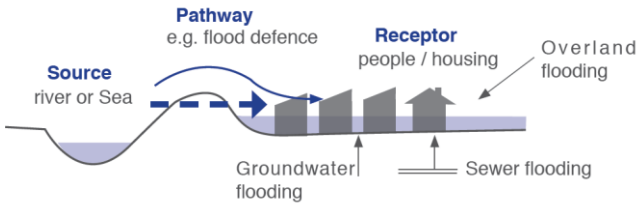


Fig. A1: Sources, pathways and receptors of flooding

Source: Figure A1 The Planning System and Flood Risk Management Guidelines Technical Appendices

Principal sources of flooding are rainfall or higher than normal sea levels while the most common pathways are rivers, drains, sewers, overland flow and river and coastal floodplains and their defence assets. Receptors can include people, their property and the environment. All three elements must be present for flood risk to arise. Mitigation measures, such as defences or flood resilient construction, have little or no effect on sources of flooding but they can block or impede pathways or remove receptors.

The planning process is primarily concerned with the location of receptors, taking appropriate account of potential sources and pathways that might put those receptors at risk.

2.3 Likelihood of Flooding

Likelihood or probability of flooding of a particular flood event is classified by its annual exceedance probability (AEP) or return period (in years). A 1% AEP flood indicates the flood event that will occur or be exceeded on average once every 100 years and has a 1 in 100 chance of occurring in any given year.

Return period is often misunderstood to be the period between large flood events rather than an average recurrence interval. Annual exceedance probability is the inverse of return period as shown in Table 2-1~~Table 2-1~~~~Table 2-1~~.

Table 2-1 Probability of Flooding

Return Period (Years)	Annual Exceedance Probability (%)
2	50
100	1
200	0.5
1000	0.1

Considered over the lifetime of development, an apparently low-frequency or rare flood has a significant probability of occurring. For example:

- A 1% flood has a 22% (1 in 5) chance of occurring at least once in a 25-year period - the period of a typical residential mortgage;
- And a 53% (1 in 2) chance of occurring in a 75-year period - a typical human lifetime.

2.3.1 Consequences of Flooding

Consequences of flooding depend on the hazards caused by flooding (depth of water, speed of flow, rate of onset, duration, wave-action effects, water quality) and the vulnerability of receptors (type of development, nature, e.g. age-structure, of the population, presence and reliability of mitigation measures etc).

The Planning System and Flood Risk Management guidelines provide three vulnerability categories, based on the type of development, which are detailed in Table 3.1 of the Guidelines, and are summarised as:

- **Highly vulnerable**, including residential properties, essential infrastructure and emergency service facilities;

- **Less vulnerable**, such as retail and commercial and local transport infrastructure;
- **Water compatible**, including open space, outdoor recreation and associated essential infrastructure, such as changing rooms.

2.4 Definition of Flood Zones

In the Planning System and Flood Risk Management guidelines, Flood Zones are used to indicate the likelihood of a flood occurring. These Zones indicate a high, moderate or low probability of flooding from fluvial or tidal sources and are defined below in Table 2-2~~Table 2-2~~~~Table 2-2~~.

> It is important to note that the definition of the Flood Zones is based on an undefended scenario and does not take into account the presence of flood protection structures such as flood walls or embankments. This is to allow for the fact that there is a residual risk of flooding behind the defences due to overtopping or breach and that there may be no guarantee that the defences will be maintained in perpetuity.

It is also important to note that the Flood Zones indicate flooding from fluvial and tidal sources and do not take other sources, such as groundwater or pluvial, into account, so an assessment of risk arising from such sources should also be made.

Table 2-2 Definition of Flood Zones

Zone	Description
Zone A High probability of flooding.	This zone defines areas with the highest risk of flooding from rivers (i.e. more than 1% probability or more than 1 in 100) and the coast (i.e. more than 0.5% probability or more than 1 in 200).
Zone B Moderate probability of flooding.	This zone defines areas with a moderate risk of flooding from rivers (i.e. 0.1% to 1% probability or between 1 in 100 and 1 in 1000) and the coast (i.e. 0.1% to 0.5% probability or between 1 in 200 and 1 in 1000).
Zone C Low probability of flooding.	This zone defines areas with a low risk of flooding from rivers and the coast (i.e. less than 0.1% probability or less than 1 in 1000).

2.5 Objectives and Principles of the Planning Guidelines

The Planning System and Flood Risk Management Guidelines describe good flood risk practice in planning and development management. Planning authorities are directed to have regard to the guidelines in the preparation of Development Plans and Local Area Plans, and for development control purposes.

The objective of the Planning System and Flood Risk Management Guidelines is to integrate flood risk management into the planning process, thereby assisting in the delivery of sustainable development. For this to be achieved, flood risk must be assessed as early as possible in the planning process. Paragraph 1.6 of the Guidelines states that the core objectives 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 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".*

The guidelines aim to facilitate '*the transparent consideration of flood risk at all levels of the planning process, ensuring a consistency of approach throughout the country.*' SFRAs therefore become a key evidence base in meeting these objectives.

The 'Planning System and Flood Risk Management' works on a number of key principles, including:

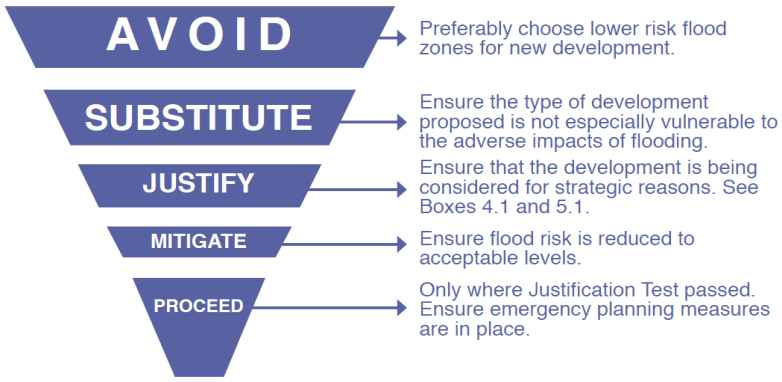
- Adopting a staged and hierarchical approach to the assessment of flood risk;
- Adopting a sequential approach to the management of flood risk, based on the frequency of flooding (identified through Flood Zones) and the vulnerability of the proposed land use.

2.6 The Sequential Approach and Justification Test

Each stage of the FRA process aims to adopt a sequential approach to management of flood risk in the planning process.

Where possible, development in areas identified as being at flood risk should be avoided; this may necessitate de-zoning lands within the development plan. If de-zoning is not possible, then rezoning from a higher vulnerability land use, such as residential, to a less vulnerable use, such as open space may be required.

Figure 2-2 Sequential Approach Principles in Flood Risk Management



Source: The Planning System and Flood Risk Management (Figure 3.1)

Where rezoning is not possible, exceptions to the development restrictions are provided for through the application of the Justification Test. Many towns and cities have central areas that are affected by flood risk and have been targeted for growth. To allow the sustainable and compact development of these urban centres, development in areas of flood risk may be considered necessary. For development in such areas to be allowed, the Justification Test must be passed.

The Justification Test has been designed to rigorously asses the appropriateness, or otherwise, of such developments. The test is comprised of two processes; the Plan-making Justification Test, and the Development Management Justification Test. The latter is used at the planning application stage where it is intended to develop land that is at moderate or high risk of flooding for uses or development vulnerable to flooding that would generally be considered inappropriate for that land.

Table 2-3~~Table 2-3~~~~Table 2-3~~ shows which types of development, based on vulnerability to flood risk, are appropriate land uses for each of the Flood Zones. The aim of the SFRA is to guide development zonings to those which are 'appropriate' and thereby avoid the need to apply the Justification Test.

Table 2-3 Matrix of Vulnerability versus Flood Zone

	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

Source: Table 3.2 of The Planning System and Flood Risk Management

The application of the Justification Test in the context of specific settlements is discussed in Section 5.

2.7 Scales and Stages of a Flood Risk Assessment

Within the hierarchy of regional, strategic and site-specific flood-risk assessments, a tiered approach ensures that the level of information is appropriate to the scale and nature of the flood-risk issues and the location and type of development proposed, avoiding expensive flood modelling and development of mitigation measures where it is not necessary. The stages and scales of flood risk assessment comprise of:

- **Regional Spatial and Economic Strategy (RSES)** – The Regional Spatial & Economic Strategy (RSES) for the Southern Regional Assembly included a Regional Flood Risk Appraisal Report, undertaken at a high level, but with a view to informing policy decisions within lower tier development plans. The RSES found that an integrated approach to river catchment management is essential to manage and avoid increasing flood risk. The RSES sets out how Development Plans should include Strategic Flood Risk Assessments and all future zoning of land for development in areas at risk of flooding should follow the sequential approach set out in the 2009 Guidelines on Planning and Flood Risk Management (DoEHLG).

The inclusion of policies and actions to support Sustainable Urban Drainage Systems is recommended in future developments as a major component of flood management and prevention.

The settlement hierarchy selected by the RSES takes account of the fact that while some settlements are vulnerable to fluvial flooding, wider, effective management of flood risk coupled with wider environmental, sustainability and economic considerations mean that it is possible to facilitate the continued consolidation of the development of the existing urban structure of the region. In line with the sequential and justification criteria set out in the Department's Guidelines on the Planning System and Flood Risk Management it is considered that these locations should be encouraged to continue to consolidate and to grow in order to bring about a more compact and sustainable urban development form while at the same time managing flood risk appropriately. These guidelines outline measures through which both the flood risk and the continued development of key towns can be reconciled.

The RSES included a number of development plan implications:

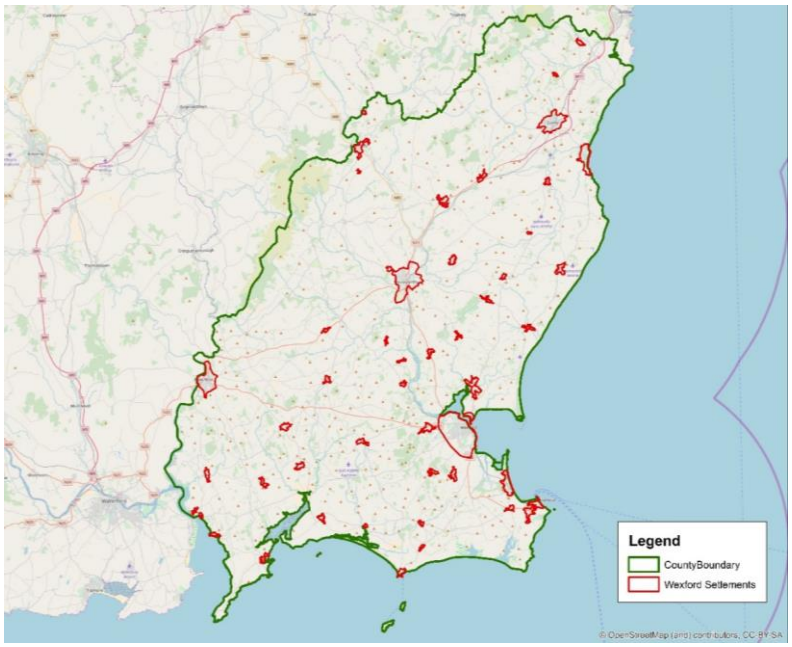
- An integrated approach to river catchment management is essential to manage and avoid increasing flood risk. Local authorities should fully support the completion of CFRAM studies and jointly implement any actions identified.
- Development Plans shall include Strategic Flood Risk Assessments and all future zoning of land for development in areas at risk of flooding should follow the sequential approach set out in the 2009 Department Guidelines on Planning and Flood Risk Management.
- Development Plans should include policies on the requirement for Sustainable Drainage Systems (SuDS) in future developments as a major component of flood management and prevention.

- **Strategic Flood Risk Assessment (SFRA)** – an assessment of all types of flood risk informing land use planning decisions. This will enable the Planning Authority to allocate appropriate sites for development, whilst identifying opportunities for reducing flood risk. This SFRA will revisit and develop the flood risk identification undertaken in the RSES and give consideration to a range of potential sources of flooding. An initial flood risk assessment, based on the identification of Flood Zones, will also be carried out for those areas zoned for development. Where the initial flood risk assessment highlights the potential for a significant level of flood risk, or there is conflict with the proposed vulnerability of development, then a site-specific FRA will be recommended, which will necessitate a detailed flood risk assessment.
- **Site Specific Flood Risk Assessment (FRA)** – Site or project specific flood risk assessment to consider all types of flood risk associated with the site and propose appropriate site management and mitigation measures to reduce flood risk to and from the site to an acceptable level. If the previous tiers of study have been undertaken to appropriate levels of detail, it is highly likely that the site-specific FRA will require detailed channel and site survey, and hydraulic modelling.

3 Settlements and Flooding

This section reviews the data collection and flood history for the 58 census settlements and ~~18~~ 25 additional settlements (up to Level 5 in the settlement hierarchy), so that any additional information on flooding can be included within this SFRA. It will confirm the extent of extreme flooding (through the Flood Zone mapping), key sources of flood risk and discuss any potential impacts of climate change.

Figure 3-1 Census Settlements



3.1 Data Collection Review

There are a number of valuable sources of flood data for County Wexford, including major projects such as the CFRAM and broadscale flood mapping such as JBA's National Flood Map, as used in the Wexford County Development Plan 2013-2019, and the national PFRA study.

Table 3-1~~Table 3-1~~~~Table 3-1~~ and Table 3-2~~Table 3-2~~~~Table 3-2~~ list the datasets used to compile the flood mapping for the settlements and give an assessment of the data quality and the confidence in its accuracy.

Table 3-1 Model Data Available

Description	Coverage	Quality	Confidence
JBA 1D/2D hydraulic model using Tuflow-Estry software, OPW CFRAM channel survey, OPW LiDAR and revised FSU flow estimates	Rosslare Harbour & Kilrane	High	High
CFRAM Flood Mapping	Countrywide - specific settlements	High	High
Enniscorthy Flood Relief Feasibility Study	River Slaney - Scarawalsh	High	High
National PFRA Study Flood Outlines	Countywide	Moderate	Low
Irish Coastal Protection Strategy Study	Countywide - coastal	Moderate	Moderate
JFLOW® Flood Mapping	Countywide	Moderate	Moderate

Table 3-2 Other Data Available

Description	Coverage	Quality	Confidence
Alluvial Soil Maps	Full Study Area	Moderate	Low
Groundwater vulnerability maps	Broadscale, County wide	Moderate	Low
Historic Flood Records including photos, aerial photos and reports.	Broad, spot coverage	Various	Various
Historic Flood Outlines	River Slaney, Wexford Harbour	Moderate	Moderate
Benefiting Land Maps and Drainage Districts	Whole county	Low	Low
Walkover Survey	Selected locations	Moderate	Low

A description of the main modelling datasets is given in the following sections. This data has been reviewed and combined in order to form Flood Zone Mapping for the settlements in Wexford County. More information on how the Flood Zone mapping is compiled is given in Section 2.4.

3.1.1 JBA Detailed Hydraulic Modelling - Rosslare Harbour & Kilrane

The Rosslare Harbour and Kilrane settlement was not included within the South Eastern CFRAM Study and so the only flood mapping available for the settlement is the PFRA/JFlow flood mapping.

Given the moderate/low confidence in these flood maps, the decision was taken for JBA to model the settlement using a 1D/2D model of the river catchments utilising the hydraulic modelling program TUFLOW/ESTRY. Four watercourses were included in the hydraulic model for the Rosslare Harbour and Kilrane settlement, refer to Figure 3-2~~Figure 3-2~~~~Figure 3-2~~.

The first watercourse flows in a northern direction from Churchtown before changing direction and flowing west through Hayesland. The second and third

watercourses flow west through the village of Rosslare Harbour until they join the first watercourse in Hayesland. The fourth watercourse flows west to east from Kilrane.

A Digital Terrain Model (DTM) of the settlement area and surrounding land was used as the basis of the 2D model. This DTM was created from a Light Detection And Ranging (LiDAR) survey which was procured for the area. This was augmented with river channel survey data collected on site by a qualified surveyor. Flows were estimated using the IH124 method plus the 95% confidence interval which was deemed the most appropriate based on the catchment areas.

The coastal flood risk to the settlement was assessed using the Irish Coastal Protection Strategy Study (ICPSS) tide flood levels. Local ground levels are well in excess of tide flood levels so the coastal flood risk to the settlement was screened out. ICPSS Points 37 and 38 adjacent to the settlement indicate tide flood levels of 1.74m and 2.09m, respectively, for the 0.1% AEP tide levels. Local ground levels (c. 8 – 15m) are well in excess of these levels.

The resulting analysis provided Flood Zone outlines and flood levels for the 1 in 100-year and 1 in 1000-year return period flow events (Flood Zone A and B) plus climate change scenarios. The analysis represents an increase in the confidence of the Flood Zones compared to OPW PFRA or JFlow outlines, which do not represent in channel flow dynamics or structures such as culverts and bridges.

Figure 3-2 Modelled Watercourses

3.1.2 CFRAM Flood Outlines

Following on from the PFRA study, the OPW commenced appointment of consultants to carry out a more detailed flood risk assessment for key flood risk areas. This work is being undertaken under the national CFRAM programme across seven river basin districts in Ireland. The CFRAM programme commenced with three pilot studies covering the River Lee, Fingal East Meath area and the River Dodder. A further seven studies are currently underway in the Shannon, East, South-East, South-West, West, North-West and Neagh-Bann regions.

Wexford County falls within the South Eastern CFRAM Study (SE CFRAM) area. During the initial Flood Risk Review (FRR) stage of the SE CFRAM 10 areas in Wexford County were selected as an Area for Further Assessment (AFA), refer to

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Table 3-3

~~Table 3-3~~

~~Table 3-3~~. This was based on the historical flood record and PFRA flood outlines for the area.

Table 3-3: Wexford County CFRAM AFAs

New Ross & Environs	Blackwater
Kilmore	Gorey
South Slobs	Enniscorthy
Wexford	Bunclody
North Slobs	Courtown

Following the designation of AFAs, these areas were subject to the full analysis under the SE CFRAM. This included a detailed 1D-2D hydraulic model, the model represents the AFAs and encompasses the River Slaney and the River Barrow, plus associated tributaries and coastlines. The CFRAM mapping represents a significant improvement compared to the accuracy provided by the PFRA mapping.

Following completion of the CFRAM flood mapping the OPW have released the Preliminary Options Reports and the Final Flood Risk Management Plans covering these AFAs. These reports set out the available flood protection measures most suitable for the each of the AFAs. Detailed cost benefit analysis was undertaken to identify viable solutions. The proposed measures aim to provide protection against fluvial flooding to the 1% AEP design event and to 0.5% AEP design event for tidal flooding. Existing flood defence walls and embankments, including the maintenance of, will be incorporated into the flood risk management plan. A summary of the AFAs and measures is provided in Section 0. The only SE CFRAM AFA to receive official confirmation that a viable

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flood relief scheme will be progressed to detailed design and construction is Wexford Town

3.1.3 .Enniscorthy Flood Defence Scheme (ongoing)

Following a review of the risk of flooding in Enniscorthy, the OPW in conjunction with Wexford County Council compiled a preliminary design for the Enniscorthy Flood Defence Scheme. In 2009 a public consultation and a later public exhibition were held; the scheme was later revised following feedback from the public and was displayed again in 2012. The Flood Defence Scheme proposed several measures of protection which include bridge relocation, river deepening and widening the channel, and the construction of a glass panelled flood wall through the town along both banks.

The detailed design stage of the scheme has now begun, any comments and/or suggestions will be considered at this time. The developed scheme was put on public display in June 2018 and was subsequently updated and placed back on display in May 2019. The scheme documents required for ministerial consent were submitted to the Department of Public Expenditure and Reform in March 2020. Main construction work can commence when the scheme has been confirmed by the Minister, it is anticipated that the scheme should take 3 years to construct. For up to date information see www.enniscorthyfds.ie.

3.1.4 New Ross Flood Defence Scheme

Due to the extensive flood history in the town, flood defence schemes have been carried out in the last 15 years to help reduce damage to properties and roads. An interim flood defence scheme was completed in 2009 and has now been incorporated into a much larger defence scheme which is not yet completed (as of July 2020).

The new defence extends 2.2km, runs along both banks of the River Barrow and includes demountable barriers, concrete walls and embankments. It is noted that the flood defence scheme has been undertaken post the CFRAM study and therefore, are not represented in the final flood extent mapping.

3.1.5 National PFRA Study Flood Outlines

The Preliminary Flood Risk Assessment (PFRA) is a national screening exercise that was undertaken to identify areas at potential flood risk. The PFRA is a requirement of the EU Floods Directive and the publication of this work has led to, and has informed, more detailed assessment, which is being undertaken as part of the Catchment Flood Risk Assessment and Management (CFRAM) studies. The PFRA study considered flooding from a number of sources, including fluvial, tidal, pluvial and groundwater, and resulted in a suite of broadscale flood maps.

For the preparation of the PFRA fluvial flood maps, flood flow estimates were calculated at nodes every 500m intervals along the entire river network. (The river network is the EPA 'blue-line' network, which, for the most part, matches the rivers mapped at the 1:50,000 scale Discovery Series OS mapping). This flow estimation was based on the OPW Flood Studies Update research programme. An assumption was made that the in-channel flow equates to the mean annual flood and so the out of bank flow for a particular AEP event was determined by deducting the mean annual flood from the flood flow estimate for that probability event.

Using the OPW's 5m national digital terrain model (DTM) a cross section was determined at 100m spacings. The Manning's equation, a hydraulic equation for normal flow was used to calculate a flood level which was then extrapolated across the DTM to determine the flood extent. This exercise was completed for all river catchments greater than 1km^2.

This methodology does not take into account defences, channel structures or channel works. Potential sources of error in the mapping include local errors in the DTM or changes to the watercourse flow route due to an error in mapping or new development. Throughout Wexford the PFRA mapping covers the River

Slaney and the River Barrow (although they have been superseded by the CFRAM data) and all main tributaries in the area.

Within the PFRA the coastal flooding source is represented by the Irish Coastal Protection Strategy Study which uses projection mapping to delineate flood extents around the coastal fringe of the country.

3.1.6 JFLOW® Flood Mapping

JBA developed software, known as JFLOW®[2] to undertake multi-scale two dimensional hydraulic fluvial and tidal flood modelling. As with the PFRA method, the fluvial flood mapping process involved two stages; hydrology and hydraulic modelling. JBA developed in-house software tools to interpolate catchment descriptors from a number of environmental datasets and produced an automated method for calculating design flows. The method used to calculate flows was based on the Flood Estimate Handbook (FEH)[3] Statistical Method and is in line with the methods of the Flood Studies Update (FSU). Index flows were generated at 300m intervals along the entire river network. Annual Maximum flow data from the OPW Hydrodata[4] website were used to adjust the index flows by allocating 'donor' gauges, whereby local gauges are used to compare and adjust index flows for a given catchment. Pooled data was used to generate growth curves and determine flood flows for different return periods.

JFLOW®, a two-dimensional hydraulic modelling software, was used to simulate overland flooding. Cross sections were generated at each inflow point to define the extent of the area over which to route the flow. Flow was routed over a digital terrain model based on the OSi national 10m height model, with updated height data in over 30 urban areas. This process was undertaken for all river catchments greater than 10km^2 and in some urban areas greater than 3km^2.

2 JFLOW® is a registered UK trademark in the name of Jeremy Benn Associates Limited

3 Flood Estimation Handbook, Institute of Hydrology, 1999

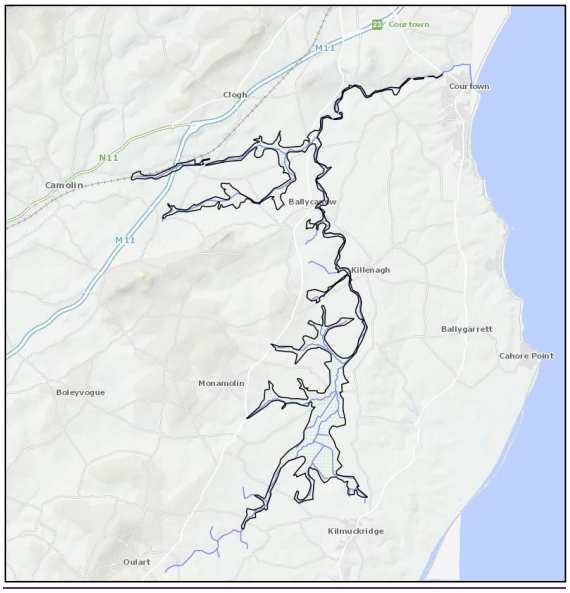
4 www.opw.ie/hydro

JFLOW® results were subject to several iterations of manual checking and model re-runs. However, the accuracy of the flood mapping is directly correlated to the DTM and individual flow structures such as bridges, culverts, weirs and sluices are not explicitly modelled.

3.1.7 Owenavorragh Arterial Drainage Scheme

An arterial drainage scheme was completed on the Owenavorragh River by the OPW between 1968 and 1979, the extent of the scheme and the benefitting lands are displayed in the figure below. The main purpose of the Scheme was to improve land drainage and reduce the frequency and extent of overland flooding. ADSs can involve embankment construction, river straightening, lake storage development, and, most commonly, the deepening and widening of river channels, the latter is what has been applied under the Owenavorragh Scheme. Through the Owenavorragh Scheme the hydraulic conveyance efficiency of the catchment is increased, thereby leading to a reduction in overland flood storage. Although it has been found that ADS generally achieve their main objectives, this increase in discharge-carrying capacity leads to an acceleration of the response to rainfall with flood peaks of increased intensity and more rapid recessions.

Figure 3-3 OPW Owenavorragh Arterial Drainage Scheme



(source: https://www.floodinfo.ie/map/drainage_map/)

3.1.8 OPW National Indicative Fluvial Mapping (NIFM)

These maps are new 'predictive' flood maps prepared by the OPW that are intended to replace the fluvial mapping delivered as part of the PFRA in 2011. The maps show indicative areas predicted to be inundated during a theoretical fluvial flood event with an estimated probability of occurrence.

Indicative flood maps have been produced for all watercourses that are identified by the EPA watercourse layers and have a catchment area greater than 5km^2, and for which flood maps were not produced under the National CFRAM Programme.

The maps were not available during the preparation of the Wexford County Development Plan, further comment on how the NIFM will be used during the life time of the plan is provided below in Section 3.2.

3.2 Flood Zone Mapping

As set out in the RSES, and under the Planning Guidelines, the Flood Zone mapping for the County (Map 1a and Map 1b) is principally derived from the

CFRAM where possible. The various sources of data discussed in the previous section were used to update the countywide flood map originally presented to WCC in 2010. The updated mapping includes a choice of flood map type in each area which is made on the basis of the best available dataset. The table over page provides a summary of flood mapping information in each settlement, Flood Zone mapping is provided for all identified watercourses with a catchment area greater than 1km^2.

Due to recent guidance from OPW regarding the use of the first generation PFRA mapping and the indicative nature of the flood extents, the approach used under the Wexford SFRA has been precautionary. All sources of available flood mapping were reviewed in cases where proposed undeveloped lands are zoned for highly or less vulnerable use (where CFRAM was not available).

~~When the~~ The ~~second generation PFRA~~National Indicative Fluvial ~~mapping~~ Mapping (NIFM) ~~is issued to Local Authorities the~~ data will be used in conjunction with the other available datasets and site visits to provide a countywide Flood Zone dataset. Wexford County Council will have regard to the mapping and any other new mapping that may be available when screening for flood risk.

The review of the best available Flood Zone data has been developed as a spatial planning tool to guide WCC in making land-use zoning and development management decisions **it should be noted that PFRA and JFLOW mapping is not used to make any zoning decisions, it only acts as a screening tool for risk and indicates where further more detailed assessment is required.** Land use zoning decisions are based on verified CFRAM or equivalent JBA Stage 3 modelling studies.

Table 3-4 Model Data used in the Preparation of SFRA Flood Zone Maps

LOCATION	JBA Stage 3	CFRAM	PFRA	ICPSS	JFLOW	BEST AVAILABLE SFRA FLOOD ZONE MAPPING	COMMENT ON FLOOD HISTORY	SUMMARY OF MAIN FLOOD SOURCE(S)
Adamstown			Yes			PFRA	No historic records of flooding were found.	No flooding inside settlement boundary.
Arthurstown			Yes	Yes		PFRA & ICPSS	02/02/2002- Reports of flooding which caused severe disruption to traffic. Several areas flooded in October 2004 levels of up to 225mm were recorded.	Fluvial
Ballinaboola			Yes		Yes	PFRA & JFLOW	No historic records of flooding were found.	Fluvial
Ballindaggan			Yes			PFRA	No historic records of flooding were found.	Fluvial

LOCATION	JBA Stage 3	CFRAM	PFRA	ICPSS	JFLOW	BEST AVAILABLE SFRA FLOOD ZONE MAPPING	COMMENT ON FLOOD HISTORY	SUMMARY OF MAIN FLOOD SOURCE(S)
Ballycanew					Yes	PFRA & JFLOW	Recurring flooding has been recorded for Owenavorragh, Coolook, Ballycanew. A historic flood event was also recorded on the 29 of August 1986. There are reports that in November 2000 Killenagh and Essex bridge flooded.	Fluvial
Ballycullane							No historic records of flooding were found.	No flooding inside settlement boundary.
Ballyedmond			Yes			PFRA	No historic records of flooding were	No flooding inside settlement

LOCATION	JBA Stage 3	CFRAM	PFRA	ICPSS	JFLOW	BEST AVAILABLE SFRA FLOOD ZONE MAPPING	COMMENT ON FLOOD HISTORY	SUMMARY OF MAIN FLOOD SOURCE(S)
							found.	boundary.
Ballygarrett			Yes			PFRA	No historic records of flooding were found.	Fluvial
Ballyhack		Yes	Yes	Yes		~~PFRA~~ CFRAMS & ICPSS	21/12/1989- extensive damage to coastal protection, roads, car parks and inland flooding	Fluvial & Coastal
Ballyhogue					Yes	JFLOW	No historic records of flooding were found.	No flooding inside settlement boundary.
Ballymitty			Yes			PFRA	No historic records of flooding were found.	Fluvial
Ballymoney			Yes	Yes		PFRA & ICPSS	No historic records of flooding were found.	Fluvial & Coastal

LOCATION	JBA Stage 3	CFRAM	PFRA	ICPSS	JFLOW	BEST AVAILABLE SFRA FLOOD ZONE MAPPING	COMMENT ON FLOOD HISTORY	SUMMARY OF MAIN FLOOD SOURCE(S)
Ballymurn							No historic records of flooding were found.	No flooding inside settlement boundary.
Ballysimon			Yes			PFRA	Flooding to east and west of settlement, not within CSO boundary.	Fluvial, outside settlement boundary.
Ballywilliam			Yes		Yes	PFRA & JFLOW	No historic records of flooding were found.	Fluvial
Barntown			Yes			PFRA	03/12/01- Severe flood event caused damage to three houses, the parish church, and the graveyard boundary walls (this affected the N25 which runs parallel	Fluvial

LOCATION	JBA Stage 3	CFRAM	PFRA	ICPSS	JFLOW	BEST AVAILABLE SFRA FLOOD ZONE MAPPING	COMMENT ON FLOOD HISTORY	SUMMARY OF MAIN FLOOD SOURCE(S)
							to this wall).	
Blackwater		Yes				CFRAM	The Blackwater burst its banks at Blackwater Village in August 1997 due to heavy rainfall, this caused a blockage to the centre of the village and damaged property.	Fluvial
Boolavogue							No historic records of flooding were found.	No flooding in the local area.
Bree			Yes			PFRA	No historic records of flooding were found.	No flooding inside settlement boundary.
Bridgetown			Yes	Yes		PFRA & ICPSS	Recurring flooding cause by high tides	Fluvial

LOCATION	JBA Stage 3	CFRAM	PFRA	ICPSS	JFLOW	BEST AVAILABLE SFRA FLOOD ZONE MAPPING	COMMENT ON FLOOD HISTORY	SUMMARY OF MAIN FLOOD SOURCE(S)
							in the Bridgetown area. It has been noted that south of Bridgetown Lake is susceptible to flooding due to flooding of the Bridgewater and its tributaries. Flooding on the 5th and 6th of November 2000 caused damage to roads and a house in Bridgetown.	
Bunclody		Yes	Yes			CFRAM	November 2000 one house affected adjacent to	Fluvial

LOCATION	JBA Stage 3	CFRAM	PFRA	ICPSS	JFLOW	BEST AVAILABLE SFRA FLOOD ZONE MAPPING	COMMENT ON FLOOD HISTORY	SUMMARY OF MAIN FLOOD SOURCE(S)
							bridge. Ryland Road regularly floods the last recorded flood was in 2015/ early 2016; the Road, sewage pump station and a single property were damaged. Flooding occurs periodically every 3-4 years at Slaney Bridge and Ryland Road. The latter results in flooding and closure of the N80.	
Caim							No historic records of flooding were	No flooding identified

LOCATION	JBA Stage 3	CFRAM	PFRA	ICPSS	JFLOW	BEST AVAILABLE SFRA FLOOD ZONE MAPPING	COMMENT ON FLOOD HISTORY	SUMMARY OF MAIN FLOOD SOURCE(S)
							found.	
Camolin			Yes		Yes	PFRA & JFLOW	No historic records of flooding were found.	Fluvial
Campile			Yes		Yes	JFLOW	No historic records of flooding were found.	Fluvial
Carne				Yes		ICPSS	Nearby recurring road flooding.	Tidal
Carrowreagh			Yes		Yes	PFRA	No historic records of flooding were found.	Fluvial
Castlebridge		Yes	Yes	Yes		PFRA, ICPSS & CFRAM	Castlebridge village was flooded in October 2004 and several residential properties and businesses were affected. The Oldbridge	Fluvial & Tidal

LOCATION	JBA Stage 3	CFRAM	PFRA	ICPSS	JFLOW	BEST AVAILABLE SFRA FLOOD ZONE MAPPING	COMMENT ON FLOOD HISTORY	SUMMARY OF MAIN FLOOD SOURCE(S)
							Rd experiences recurring flooding causing the roads to become impassable; this is due to the interaction between high tides and local drainage. The R741 also experiences recurring flood events however remedial works had been undertaken in 2004. On the 5th of August 1997 severe floods damaged properties.	

LOCATION	JBA Stage 3	CFRAM	PFRA	ICPSS	JFLOW	BEST AVAILABLE SFRA FLOOD ZONE MAPPING	COMMENT ON FLOOD HISTORY	SUMMARY OF MAIN FLOOD SOURCE(S)
							More recent flood events have also occurred.	
Castle-dockrell			Yes		Yes	PFRA, ICPSS & JFLOW	No historic records of flooding were found.	Fluvial
Castletown			Yes	Yes	Yes	PFRA, ICPSS & JFLOW	Recurring flooding – inundation of Kilgorman River floodplain.	Fluvial & Tidal
Cleriestown			Yes			PFRA	No historic records of flooding were found.	Fluvial
Clohamon		Yes				CFRAM	Nov 2000, Meat factory – adjacent to the Slaney.	
Clonegal			Yes		Yes	JFLOW	Recurring flood events surrounding the Bridge in	Fluvial

LOCATION	JBA Stage 3	CFRAM	PFRA	ICPSS	JFLOW	BEST AVAILABLE SFRA FLOOD ZONE MAPPING	COMMENT ON FLOOD HISTORY	SUMMARY OF MAIN FLOOD SOURCE(S)
							Clonegal which has inflicting devastating damage to local landowners. 05/11/00- Flood event water level was higher than anticipated, 6 people were evacuated from their homes.	
Clongeen			Yes			PFRA	No historic records of flooding were found.	Fluvial
Clonroche							No historic records of flooding were found.	No flooding inside settlement boundary.
Coolgreany			Yes			PFRA	No historic records of	No flooding inside

LOCATION	JBA Stage 3	CFRAM	PFRA	ICPSS	JFLOW	BEST AVAILABLE SFRA FLOOD ZONE MAPPING	COMMENT ON FLOOD HISTORY	SUMMARY OF MAIN FLOOD SOURCE(S)
							flooding were found.	settlement boundary.
Courtnacuddy							No historic records of flooding were found.	No flooding inside settlement boundary.
Courtown & Riverchapel		Yes	Yes	Yes	Yes	CFRAM & ICPSS	Recurring flooding at Riverchapel bridge due to the Aughboy flooding and heavy rainfall.	Fluvial & Tidal
Craanford			Yes		Yes	PFRA & JFLOW	No historic records of flooding were found.	Fluvial
Crossabeg			Yes			PFRA	No historic records of flooding were found.	Fluvial
Curracloe			Yes	Yes		PFRA & ICPSS	No historic records of flooding were found.	Fluvial & Tidal

LOCATION	JBA Stage 3	CFRAM	PFRA	ICPSS	JFLOW	BEST AVAILABLE SFRA FLOOD ZONE MAPPING	COMMENT ON FLOOD HISTORY	SUMMARY OF MAIN FLOOD SOURCE(S)
Cushinstown			Yes			PFRA	No historic records of flooding were found.	Fluvial
Danescastle			Yes			PFRA	No historic records of flooding were found.	No flooding inside settlement boundary.
Davidstown			Yes				No historic records of flooding were found.	Fluvial, to north of settlement.
Duncannon			Yes	Yes		PFRA & ICPSS	No historic records of flooding were found.	Fluvial & Tidal
Duncormick			Yes	Yes	Yes	JFLOW & ICPSS	The area to the west of Ducormick River is flat and low lying and is, therefore, susceptible to flooding.	Fluvial & Tidal

LOCATION	JBA Stage 3	CFRAM	PFRA	ICPSS	JFLOW	BEST AVAILABLE SFRA FLOOD ZONE MAPPING	COMMENT ON FLOOD HISTORY	SUMMARY OF MAIN FLOOD SOURCE(S)
Enniscorthy		Yes	Yes		Yes	CFRAM & OPW Enniscorthy FRS mapping	In October 2004 rainfall and tidal effects caused businesses to flood and the both quays along the Slaney river to be blocked. The still pond in Fairfield flooded in late 2015/ early 2016 and as far back as 1924. The Enniscorthy Island Road flooded in November 2014 and prior to that 1986 and in 1965. The River Boro flooded its banks in	Fluvial

LOCATION	JBA Stage 3	CFRAM	PFRA	ICPSS	JFLOW	BEST AVAILABLE SFRA FLOOD ZONE MAPPING	COMMENT ON FLOOD HISTORY	SUMMARY OF MAIN FLOOD SOURCE(S)
							Kilcarby in 2015/ early 2016. The promenade floods regularly and one of the more significant recent events was late 2015/early 2016. There were four significant floods throughout the 20th century these occurred in 1924, 1947, 1965, and 2000. The most significant being 1965 and 2000.	

LOCATION	JBA Stage 3	CFRAM	PFRA	ICPSS	JFLOW	BEST AVAILABLE SFRA FLOOD ZONE MAPPING	COMMENT ON FLOOD HISTORY	SUMMARY OF MAIN FLOOD SOURCE(S)
							In 1965 extensive flooding occurred within Enniscorthy Town causing damage to properties in Island Road, Shannon Quay and along the promenade. 19th- 20th of November 2009, two commercial properties flooded- minor flood event. 5th – 6th November 2000 flooding cause a newly built bring to become inundated by	

LOCATION	JBA Stage 3	CFRAM	PFRA	ICPSS	JFLOW	BEST AVAILABLE SFRA FLOOD ZONE MAPPING	COMMENT ON FLOOD HISTORY	SUMMARY OF MAIN FLOOD SOURCE(S)
							up to .6m, Island Road was under 1.2m of water: The damage to the relatively new properties which had been built along the promenade was very little due to the finished floor level being raised higher than the floods of 1965.	
Ferns					Yes	PFRA & JFLOW	No historic records of flooding were found.	Fluvial
Fethard			Yes	Yes		PFRA & ICPSS	No historic records of flooding were	Fluvial

LOCATION	JBA Stage 3	CFRAM	PFRA	ICPSS	JFLOW	BEST AVAILABLE SFRA FLOOD ZONE MAPPING	COMMENT ON FLOOD HISTORY	SUMMARY OF MAIN FLOOD SOURCE(S)
							found.	
Foulkesmills					Yes	JFLOW	No historic records of flooding were found.	Fluvial
Glenbrien			Yes			PFRA	No historic records of flooding were found.	Fluvial
Glynn			Yes		Yes	PFRA & JFLOW	No historic records of flooding were found.	Fluvial
Gorey		Yes	Yes			CFRAM	Esmonde Street flooded in August 1986, civil works have been carried out in 2009 and there has been no issue of flooding since. Flooding in Garden City	Fluvial

LOCATION	JBA Stage 3	CFRAM	PFRA	ICPSS	JFLOW	BEST AVAILABLE SFRA FLOOD ZONE MAPPING	COMMENT ON FLOOD HISTORY	SUMMARY OF MAIN FLOOD SOURCE(S)
							caused by restriction/grate to culverts section of river. Local management prevents flooding last major flood event 2016. Arklow road suffers from recurring flooding. The Arklow Road railway bridge was impacted; a plan was set in place by Iarnród Éireann to clean out this railway embankment ditch every five years which helps to prevent	

LOCATION	JBA Stage 3	CFRAM	PFRA	ICPSS	JFLOW	BEST AVAILABLE SFRA FLOOD ZONE MAPPING	COMMENT ON FLOOD HISTORY	SUMMARY OF MAIN FLOOD SOURCE(S)
							flooding from recurring. Every year a significant amount of land upstream of the Banoge, Carriganeagh area floods the land and the river at weir pinch point.	
Grahormac (Tagoat)			Yes			PFRA	No historic records of flooding were found.	Fluvial
Gusserane			Yes			PFRA	No historic records of flooding were found.	Fluvial
Hollyfort			Yes		Yes	JFLOW	No historic records of flooding were found.	Fluvial

LOCATION	JBA Stage 3	CFRAM	PFRA	ICPSS	JFLOW	BEST AVAILABLE SFRA FLOOD ZONE MAPPING	COMMENT ON FLOOD HISTORY	SUMMARY OF MAIN FLOOD SOURCE(S)
Killinick		Yes	Yes		Yes	CFRAM	No historic records of flooding were found.	Fluvial
Killinierin			Yes			PFRA	No historic records of flooding were found.	No flooding inside settlement boundary.
Killurin							No historic records of flooding were found.	No flooding inside settlement boundary.
Kilmore							No historic records of flooding were found.	No flooding inside settlement boundary.
Kilmore Quay			Yes	Yes		PFRA & ICPSS	No historic records of flooding were found.	Fluvial & Tidal
Kilmuckridge or Ford			Yes			PFRA	Recurring flooding was reported in Kilmuckridge which has resulted in	Fluvial

LOCATION	JBA Stage 3	CFRAM	PFRA	ICPSS	JFLOW	BEST AVAILABLE SFRA FLOOD ZONE MAPPING	COMMENT ON FLOOD HISTORY	SUMMARY OF MAIN FLOOD SOURCE(S)
							buildings being flooded and a road being blocked.	
Kilmyshall							No historic records of flooding were found.	No flooding inside settlement boundary.
Kiltealy		Yes			Yes	CFRAM & JFLOW	No historic records of flooding were found.	Fluvial
Lady's Island			Yes	Yes		PFRA & ICPSS	No historic records of flooding were found.	Fluvial
Marshalstown			Yes			PFRA	No historic records of flooding were found.	Fluvial
Monaseed			Yes			PFRA	No historic records of flooding were found.	Fluvial
Murntown			Yes			PFRA	No historic	No flooding

LOCATION	JBA Stage 3	CFRAM	PFRA	ICPSS	JFLOW	BEST AVAILABLE SFRA FLOOD ZONE MAPPING	COMMENT ON FLOOD HISTORY	SUMMARY OF MAIN FLOOD SOURCE(S)
							records of flooding were found.	inside settlement boundary.
New Ross		Yes	Yes			CFRAM	During times of heavy rainfall, the west is subject to regular tidal flooding. On the 18th of November 1997 the Lower Rosbercon Area up to and including the Thomastown Road suffered flooding as a result of the River Barrow spilling over its banks. In October 2004 several locations	Fluvial

LOCATION	JBA Stage 3	CFRAM	PFRA	ICPSS	JFLOW	BEST AVAILABLE SFRA FLOOD ZONE MAPPING	COMMENT ON FLOOD HISTORY	SUMMARY OF MAIN FLOOD SOURCE(S)
							around New Ross flooded; the quays, Bridge Street, Rosbercon, Annefield, Mountelliot, Marshmeadows. This flood event was caused by high tides, strong winds, and rainfall. Several roads were blocked, properties and lands were flooded as a result.	
Newbawn							No historic records of flooding were found.	No flooding inside settlement boundary.
Oilgate			Yes			PFRA	No historic records of flooding were	No flooding inside settlement

LOCATION	JBA Stage 3	CFRAM	PFRA	ICPSS	JFLOW	BEST AVAILABLE SFRA FLOOD ZONE MAPPING	COMMENT ON FLOOD HISTORY	SUMMARY OF MAIN FLOOD SOURCE(S)
							found.	boundary.
Oulart			Yes			PFRA	No historic records of flooding were found.	Fluvial
Piercetown			Yes			PFRA	No historic records of flooding were found.	Fluvial
Ramsgrange			Yes			PFRA	No historic records of flooding were found.	Fluvial
Rathdangan			Yes	Yes	Yes	PFRA, ICPSS & JFLOW	No historic records of flooding were found.	Fluvial & Coastal
Rathnure			Yes			PFRA	No historic records of flooding were found.	Fluvial
Rosslare		Yes	Yes	Yes	Yes	CFRAM, ~~&~~ PFRA & ICPSS	Recurring flooding has been reported in strand	Fluvial & Tidal

LOCATION	JBA Stage 3	CFRAM	PFRA	ICPSS	JFLOW	BEST AVAILABLE SFRA FLOOD ZONE MAPPING	COMMENT ON FLOOD HISTORY	SUMMARY OF MAIN FLOOD SOURCE(S)
							village due to the backing up of surface water drains during high tides. A road was blocked, houses and businesses were flooded. Strand Burrow road becomes inundated from the sea during high tides: Road becomes blocked and house flooded. Mauritiustown and grange roundabout also flood during high tides; road become periodically	

LOCATION	JBA Stage 3	CFRAM	PFRA	ICPSS	JFLOW	BEST AVAILABLE SFRA FLOOD ZONE MAPPING	COMMENT ON FLOOD HISTORY	SUMMARY OF MAIN FLOOD SOURCE(S)
							impassable.	
Rosslare Harbour & Kilrane	Yes		Yes	Yes		~~JFLOW~~JBA Stage 3 & ICPSS	Recurring flooding has been reported in Rosslare Harbour. A house was flooded, and the road was periodically impassable. Remedial works are in progress.	Fluvial
Taghmon							No historic records of flooding were found.	No flooding inside settlement boundary.
The Ballagh			Yes			PFRA	No historic records of flooding were found.	Fluvial
Tomhaggard			Yes	Yes		PFRA & ICPSS	No historic records of flooding were	Fluvial & Coastal

LOCATION	JBA Stage 3	CFRAM	PFRA	ICPSS	JFLOW	BEST AVAILABLE SFRA FLOOD ZONE MAPPING	COMMENT ON FLOOD HISTORY	SUMMARY OF MAIN FLOOD SOURCE(S)
							found.	
Saltmills			Yes	Yes	Yes	PFRA, ICPSS & JFLOW	Saltmills - recurring flood. Flood ID 3012. Road blocked periodically. Caused by high tides, strong winds.	Tidal
Screen						n/a	No historic records of flooding were found.	No flooding identified
Wellington Bridge			Yes	Yes	Yes	PFRA, ICPSS & JFLOW	Flooding occurred at Wellington Bridge on 3rd of February 2014. The source of the flood waters was the Owenduff River which was overtopped	Coastal

LOCATION	JBA Stage 3	CFRAM	PFRA	ICPSS	JFLOW	BEST AVAILABLE SFRA FLOOD ZONE MAPPING	COMMENT ON FLOOD HISTORY	SUMMARY OF MAIN FLOOD SOURCE(S)
							during a period of high tides and strong winds. The flooded area is adjacent to the bank of the Owenduff River. Recurring flooding is also recorded at Corock Wellington Bridge as a result of high tides and heavy rain resulting in the road blocking periodically.	
Wexford		Yes	Yes	Yes		CFRAM & PFRA	Severe flooding occurred in Wexford Town on the 27th of October 2004:	Fluvial/ Tidal & Coastal Flooding

LOCATION	JBA Stage 3	CFRAM	PFRA	ICPSS	JFLOW	BEST AVAILABLE SFRA FLOOD ZONE MAPPING	COMMENT ON FLOOD HISTORY	SUMMARY OF MAIN FLOOD SOURCE(S)
							There was significant damage to properties on the main street and connecting streets, and of Redmond Road and Square. Ferrycarrig Bog Road is affected by recurring flooding.	

3.3 Sources of Flooding

Table 3-4~~Table 3-4~~~~Table 3-4~~ on the previous pages ~~has~~ identified the main sources of flood risk to ~~the~~ for ~~76~~ 83 settlements contained within the WCDP. The following sub sections provide an overview of the flood source.

3.3.1 Fluvial

Fluvial flooding is associated with the exceedance of river channel capacity during higher flows. The process of flooding on watercourses depends on a number of characteristics associated with the catchment including; geographical location and variation in rainfall, steepness of the channel and surrounding floodplain and infiltration and runoff rates associated with urban and rural catchments. Additional flood risk may present itself at bridges and culverts where blockage can lead to a local increase in water levels and exacerbate the impacts of flooding. CFRAM output is provided for 10 settlements within Wexford and detailed flood mapping is also available in Enniscorthy (FDS mapping) and Rosslare Harbour and Kilrane.

3.3.2 Tidal and Coastal Flooding

Tidal and coastal flooding is caused by higher sea levels than normal, predominantly related to storm surges and results in the sea or tidally influenced rivers overflowing onto the land. This type of flooding is influenced by high tides, storm surges caused by low atmospheric pressure exacerbated by high winds and wave action. With a significant length of coastline, many settlements are also sensitive to the impacts of tidal flooding, many in combination with fluvial flooding. Coastal communities will also be particularly vulnerable to sea level rise and increased coastal erosion. Tidal flooding is represented by the CFRAM as well as the ICPSS data that was incorporated into the PFRA outlines.

3.3.3 Surface Water/Pluvial

Flooding of land from surface water runoff is usually caused by intense rainfall that may only last a few hours. The resulting water follows natural valley lines, creating flow paths along roads and through and around developments and ponding in low spots, which often coincide with fluvial floodplains. Any areas at risk from fluvial flooding will almost certainly be at risk from surface water flooding. Surface water flooding must be a key consideration in all settlements.

3.3.4 Formal Flood Defences in Wexford

The following table presents a list of OPW defences that are featured within the CFRAM study.

Table 3-5 Defended Areas (CFRAM)

Settlement/ Area	Defence ID	AFA
New Ross	A14NRS_011	New Ross
New Ross	A14NRS_007	
New Ross	A14NRS_008	
Riverstown/ Blackstone/ Cull	A13KME_009	Kilmore
Inish and Ballyteige Slob	A13KME_008	
NW Slob/ NE Slob	A12NSL_001	North Slobs
New Ross	A14NRS_002/A14NRS_006	
Duncormick	A13KME_001	

3.3.5 Informal Effective Defences

In addition to the formal defences discussed previously, there will also be a number of walls and other structures which, whilst not designed to act as flood defences, provide a level of protection against flood water.

Existing development clearly benefits from the construction of defences, and new defences will be considered as one means of facilitating the redevelopment of the settlements. However, it is against sustainability objectives, and the general approach of the OPW, to construct defences with the intension of releasing greenfield land for development. It is also not appropriate to consider

the benefits of schemes which have not been constructed or which may only be at pre-feasibility or design stage.

3.3.6 Residual Risk

Residual risk is the risk that remains after measures to control flood risk have been carried out. Residual risk can arise from overtopping of flood defences and / or from the breach from structural failure of the defences.

The concept of residual risk is explained in 'The Planning System and Flood Risk Management Guidelines for Planning Authorities and Technical Appendices, 2009' as follows:

"Although flood defences may reduce the risk of flooding, they cannot eliminate it. A flood defence may be overtopped by a flood that is higher than that for which it was designed, or be breached and allow flood water to rapidly inundate the area behind the defence. In addition, no guarantee can be given that flood defence will be maintained in perpetuity. As well as the actual risk, which may be reduced as a result of the flood defence, there will remain a residual risk that must be considered in determining the appropriateness of particular land uses and development. For these reasons, flooding will still remain a consideration behind flood defences and the flood zones deliberately ignore the presence of flood defences."

3.3.6.1 Overtopping

Overtopping of flood defences will occur during flood events greater than the design level of the defences. Overtopping is likely to cause lower levels of inundation of the floodplain than if defences had not been built, but the impact will depend on the duration, severity and volume of floodwater. However, and more critically, overtopping can destabilise a flood defence, cause erosion and make it more susceptible to breach or fail. Recovery time and drainage of overtopping quantities should also be considered. Overtopping may become more likely in future years due to the impacts of climate change and it is

important that any assessment of defences includes an appraisal of climate change risks.

3.3.6.2 Breach/Failure

Breach or structural failure of flood defences is hard to predict and is largely related to the structural condition and type of flood defence. 'Hard' flood defences such as solid concrete walls are less likely to breach than 'soft' defence such as earth embankments. Breach will usually result in sudden flooding with little or no warning and presents a significant hazard and danger to life. There is likely to be deeper flooding in the event of a breach than due to overtopping.

3.3.6.3 Summary

Whilst it is important that residual risks are recognised and appropriate management measures put in place, it is also important to acknowledge the benefits that a flood relief scheme provides to those living and working behind it. In this regard, although 'The Planning System and Flood Risk Management Guidelines for Planning Authorities and Technical Appendices, 2009' requires flood zones to be undefended, consideration should be given to the benefit provided by flood defences, but only once the Justification Test has been applied and passed.

3.3.7 Climate Change

The Planning System and Flood Risk Management guidelines recommends that a precautionary approach to climate change is adopted due to the level of uncertainty involved in the potential effects.

Specific 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[5]. Two climate change scenarios are considered. These are the

5 OPW Assessment of Potential Future Scenarios, Flood Risk Management Draft Guidance, 2009

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 are given in Table 3-5~~Table 3-5~~~~Table 3-5~~ below.

Table 3-5 Allowances for Future Scenarios (100 Year Time Horizon)

Criteria	MRFS	HEFS
Extreme Rainfall Depths	+20%	+30%
Flood Flows	+20%	+30%
Mean Sea Level Rise	+500mm	+1000mm
Land Movement	-0.5mm / year*	-0.5mm / year*
Urbanisation	No General Allowance - Review on Case by Case Basis	No General Allowance - Review on Case by Case Basis
Forestation	-1/6 Tp**	-1/3 Tp** +10% SPR***
Notes: * Applicable to the southern part of the country only (Dublin - Galway and south of this) ** Reduce the time to peak (Tp) by a third; this allows for potential accelerated runoff that may arise as a result of drainage of afforested land *** Add 10% to the Standard Percentage Runoff (SPR) rate; this allows for increased runoff rates that may arise following felling of forestry		

4 Flood Risk Management

The Planning System and Flood Risk Management-Guidelines for Planning Authorities (here on referred to as the Planning Guidelines) recommend a sequential approach to spatial planning, promoting avoidance rather than justification and subsequent mitigation of risk. The implementation of the Planning Guidelines on a settlement basis is achieved through the application of objectives contained within Chapter 9 and Volume 11 of the WCDP 2021-2027

4.1 Flood Risk Management Objectives

Objective FRM01	To carry out flood risk assessment for the purposes of regulating, restricting and controlling development in areas at risk of flooding, and to minimise the level of risk to people, business, infrastructure and the environment through the identification and management of existing and potential future flood risk.
Objective FRM02	To implement and comply fully with the recommendations of the Strategic Flood Risk Assessment prepared as part of the Wexford County Development Plan 2021-2027.
Objective FRM03	To ensure that flood risk management is incorporated into the preparation of future statutory local area plans through the preparation of Strategic Flood Risk Assessments for the respective plan areas in accordance with the requirements of the Planning System and Flood Risk Management-Guidelines for Planning Authorities (DEHLG and OPW, 2009) and Circular PL2/2014, and any future update of these guidelines.
Objective FRM04	To ensure that climate change is fully embedded in future flood risk management in land use planning and flood risk management activities in the county, providing for effective climate change adaptation as set out in the County Wexford Climate Action Plan 2019-2025 and the OPW Climate Change Adaptation Plan Flood Risk Management applicable at the time and in accordance with the County Strategic Flood Risk Assessment in Volume 11.
Objective FRM05	To have regard to the flood risk assessments carried out for the listed settlements in Section 1.1 of the County Strategic Flood Risk Assessment and to have regard to the advice set out therein when preparing local area plans and assessing planning applications in those settlements.

Objective FRM06	To consider applications for minor developments such as change of use, extensions and infill development in accordance with requirements of the Planning System and Flood Risk Management-Guidelines for Planning Authorities (DEHLG and OPW, 2009) and Circular PL2/2014, and any future update of these guidelines and the County Strategic Flood Risk Assessment in Volume 11.
Objective FRM07	To ensure that all future development proposals comply with the requirements of the Planning System and Flood Risk Management-Guidelines for Planning Authorities (DEHLG and OPW, 2009) and Circular PL2/2014, in particular through the application of the sequential approach and the Development Management Justification Test. In this regard, the Planning Authority will apply the precautionary principle and will screen all proposals for flood risk and will pay particular attention to lands within, along the edge or adjacent to Flood Zone A or B.
Objective FRM08	To ensure that all future development proposals comply with the requirements of the Planning System and Flood Risk Management – Guidelines for Planning Authorities (DEHLG and OPW, 2009) and Circular PL2/2014, in particular through the application of the sequential approach and the Development Management Justification Test. In this regard, the Planning Authority will apply the precautionary principle and require all development proposals in Flood Zone A, B and C to include an appropriately detailed site-specific flood risk assessment. This includes proposals within, along the edge or adjacent to Flood Zone A or B. The assessment, which shall be carried out by a suitably qualified and indemnified professional, shall be appropriate to the scale and nature of the risk to the proposed development, and shall consider all sources of potential flood risk including, where relevant, fluvial, coastal, surface water/pluvial and groundwater sources. The assessment shall be fully in accordance with the requirements of the Planning System and Flood Risk Management Guidelines For Planning Authorities (DEHLG, OPW 2009), and the Strategic Flood Risk Assessment in Volume 11 of the County Development Plan and the requirements set out therein, and shall address climate change, residual flood risks, avoidance of contamination of water sources and any proposed

	site specific flood management measures.
Objective FRM09	To ensure that compensatory storage is provided to balance floodplain loss as a result of raising ground levels within Flood Zone A or B. The storage should be provided within the flood cell and on a level for level basis up to the 1% level.
Objective FRM10	To continue to assist the Office of Public Works in developing catchment-based flood risk management for rivers, coastlines and estuaries in County Wexford as part of the South-Eastern Catchment Flood Risk Assessment and Management Study (CFRAMS), and to have regard to any future flood risk maps and flood risk management plans for areas within the county prepared as part of the South-East CFRAMS.
Objective FRM11	To facilitate the provision of new, or the reinforcement of existing flood defences and protection measures where necessary, and in particular to support the implementation of proposed flood schemes being progressed through the planning process during the lifetime of the Wexford County Development Plan 2021-2027 subject to compliance with the requirements of the EU Habitats Directive and the protection natural and built heritage and visual amenities.
Objective FRM12	To protect the integrity of any formal (OPW or Wexford County Council) flood risk management infrastructure thereby ensuring that any development does not negatively impact any existing defence infrastructure or compromise any proposed new infrastructure.
Objective FRM13	To consult with the Office of Public Works in relation to proposed developments in the vicinity of drainage channels and rivers for which the OPW are responsible.
Objective FRM14	To require the use of sustainable drainage systems (SuDS) and nature-based solutions to minimise and limit the extent of hard surfacing and paving and require the use of sustainable drainage and nature-based techniques where appropriate, for new development or for extensions to

	existing developments, in order to reduce the potential impact of existing and predicted flooding risk, to improve water quality, enhance biodiversity and green infrastructure and contribute to climate mitigation and adaptation.s.
Objective FRM15	To ensure that where flood risk management works take place that the natural and cultural heritage and rivers, streams and watercourses are protected, and improved where possible.
Objective FRM16	To protect and enhance and restore the county's floodplains, wetlands and coastal areas as 'green infrastructure' which provides space for storage and conveyance of floodwater, enabling flood risk to be more effectively managed and reducing the need to provide flood defences in the future, subject to normal planning and environmental criteria and the development management standards contained in Volume 2.
Objective FRM17	To adoption a presumption in favour of leaving floodplains, wetlands and other natural flood management measures unaltered except in central locations.
Objective FRM18	To ensure riparian buffer zones, a minimum of 10 metres in width (in some cases buffer zones of up to 50 metres may be appropriate), are created between all watercourses and any future development. In considering the appropriate width, the Council will have regard to 'Planning for Watercourses in the Urban Area' Environment' (Shannon RegionalInland Fisheries Ireland Board).
Objective FRM19	To only consider proposals for the culverting/piping of streams and watercourses where these works are absolutely necessary and appropriate. Inland Fisheries Ireland (IFI), National Parks and Wildlife (NPWS) and the Office of Public Works (OPW) will be consulted, where appropriate.

4.2 Storm Water Management Objectives

The management of surface and storm water is important ~~so as~~ to avoid increased flood or pollution risk in the storm water network, rivers and streams in the county's towns, villages and rural areas. The Council will require compliance with best practice guidance for the collection, reuse, treatment and disposal of surface waters for all future development proposals.

Traditionally, rain falling on impervious surfaces was directed into a receiving watercourse through surface water drainage systems. While such drainage systems are effective at transferring surface water quickly, they provide only limited attenuation causing the volume of water in the receiving watercourse to increase more rapidly, thereby increasing flood risk.

Sustainable Drainage Systems, commonly known as SuDS is an approach that seeks to manage ~~the~~ surface water as close as possible to its origin by various nature-based or engineering solutions that replicate natural drainage processes, before it enters the watercourse. Nature based solutions can be equally or more effective, better for biodiversity, the environment and in terms of visual amenity. ~~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 provide an integrated approach which addresses water quantity, water quality, amenity and habitat. The Council will require the application of SuDS in development proposals, for example through reducing the extent of hard surfacing, and using permeable pavements. The management of surface water is important so as to avoid increased flood or pollution risk in the storm water network, rivers and streams in the county's towns, villages and rural areas. In this regard, the Council will require compliance with best practice guidance for the collection, reuse, treatment and disposal of surface water for all future development proposals.~~

~~Traditionally, rain falling on impervious surfaces was directed into a receiving watercourse through surface water drainage systems. While such drainage~~

~~systems are effective at transferring surface water quickly, they provide only limited attenuation causing the volume of water in the receiving watercourse to increase more rapidly, thereby increasing flood risk.~~

~~Sustainable Drainage Systems, commonly known as 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 and nature-based solutions provide an integrated approach which ~~addresses and~~ provides ~~four main~~many benefits including:

- Water quantity by controlling the quantity of run-off to support the management of flood risk, and maintain and protect the natural water cycle;
- Improv~~ed~~ing ~~Water~~ water quality by managing the quality of the runoff to prevent pollution;
- Amenity by creating and sustaining better places for people; ~~and~~
- Biodiversity by creating and sustaining better places for nature, and .
- Climate adaptation and mitigation such as building resilience, micro-cooling and carbon sequestration.

The application of SuDS techniques and nature-based solutions allows surface water to be either infiltrated or conveyed more slowly to water courses using porous surface treatments such as bioretention areas, ponds, swales, basins, rain gardens, wetlands, filter drain, green roofs or other installations. This approach is often less expensive to construct and easier to maintain than

underground solutions, whilst providing the multiple additional benefits previously outlined.

The Council will require the application of SuDS and nature-based solutions in new development proposals and proposals to extend an existing development~~, for example through reducing the extent of hard surfacing, and using permeable pavements~~.

~~All developments will be required to incorporate SuDS.~~ While traditionally ~~The~~ the application of SuDS techniques ~~will be~~is site-specific and ~~will~~ depends on the site's characteristics, the Council will work with designers and developers to deliver an integrated and area-based approach where possible so that the approach works like a mini-catchment. ~~and will be required to demonstrate that climate change considerations have been incorporated into the design.~~

Applicants and will also be required to demonstrate that climate change considerations have been incorporated into the design and the role of green infrastructure in providing nature-based solutions must also be demonstrated. All applications should include a commensurate drainage assessment which outlines the drainage design considerations/strategy in line with the flood risk, surface water management and climate change requirements and objectives in the CDP.

Objective SWM01	To require the application of SuDS in accordance with the CIRIA SuDS Manual 2015 and any future update of this guidance, or other best practice guidance as may be specified or required by the Council. The application of SuDS should prioritise the use of appropriate nature-based solutions where possible. All proposals should include a commensurate drainage assessment used to design the surface water management system for the site, and this assessment should outline the drainage design considerations/strategy in line with the flood risk, surface water

	management and climate change requirements and objectives of the County Development Plan and the County Strategic Flood Risk Assessment in Volume 11.
Objective SWM02	To require new developments to provide for the separation of foul and surface water drainage networks within the application site boundaries.
Objective SWM03	To work alongside Irish Water so ensure the separation of foul and surface water drainage networks where feasible and undertake drainage network upgrades to help remove surface water misconnection and infiltration.
Objective SWM04	To promote and support the retrofitting of Sustainable Urban Drainage Systems (SuDS) in established urban areas.
Objective SWM05	To identify existing surface water drainage systems vulnerable to flooding and develop proposals to alleviate flooding in the areas served by these systems in conjunction with Office of Public Work subject to compliance with the Habitats Directive and the proper planning and sustainable development of the area.
Objective SWM06	To encourage the use of Green Roofs particularly on apartment, commercial, leisure and educational buildings.
Objective SWM07	To discourage the use of hard non-porous surfacing and pavements within the boundaries of rural housing sites.
Objective SWM08	To incorporate an integrated approach to SuDS and nature-based solutions and green infrastructure in the preparation of future local area plans.

4.3 CFRAM Management Plan Recommendations

The specific recommendations from the CFRAM management plans (UOM11; UOM12; UOM13) are as follows:

Table 4-1: Wexford AFAs and a summary of the CFRAM recommendations.

Catchment	AFA	Summary of Flood Risk Management Plan	BCR
Owenavorragh	Blackwater	Hard defences are one of the recommendations made for Blackwater AFA which can provide the full Standard of Protection (SoP) to all properties during the 1% AEP flood event, even when there is blockage at the R742 crossings (Option 1). Trash screens can also be installed to reduce the length and height of the Hard Defences. (Option 2) Improvement of Channel Capacity is another recommendation which can provide the full SoP to all properties during the 1% AEP flood event., provided there is no blockage at the Blackwater Bridge. The full SoP can be provided, even during blockage, with the installation of a trash screen.	Option1: 0.782 Option2: 0.990 Option3: 3.013
Owenavorragh	Courtown	No risk was identified in the Courtown AFA and therefore the existing regime should continue in order to maintain the current SoP. The existing and future flood extents should be considered for any proposed planning and development.	
Owenavorragh	Gorey	A combination of improvements to channel conveyance and hard defences are recommended to protect Gorey to the 1% AEP flood event. It is recommended to widen the channel of the Gorey Tributary and construct hard defences with an average height of 0.3m and a total length of 50m on the Bangoe River.	Option1: 0.632
Slaney & Wexford Harbour	Enniscorthy	No risk was identified in Enniscorthy AFA (Fairfield and Cherryorchard) and so no options were developed, therefore the existing regime should continue in order to maintain the current SoP. The existing and future flood extents should be considered for any proposed planning and development.	
Owenavorragh/ Slaney & Wexford Harbour	North Slobs	There are no properties at risk in the 0.5% AEP coastal event. An existing flood defence embankment along the south of the AFA has a SOP of 0.1% AEP. The existing method is recommended to	

		remain as a viable option: Landowners are responsible for ensuring the North Slob embankment remains intact and to a sufficient height to prevent coastal flooding. Existing maintenance is technically and economically feasible as there is no direct flooding to any properties, the nature reserve and SPA, and associated costs are with the landowners. Due to the risk of the deterioration of the embankments, which may allow rapid and significant tidal inundation to occur, there is a potential significant environmental impact.	
Slaney & Wexford Harbour	South Slobs	A non-residential property and few local roads are at risk during a 0.5% AEP coastal event. Embankments are in place which is considered as having a 10 % AEP SoP, which benefits a number of properties. Existing maintenance by landowners is currently ensuring the South Slob embankment remains intact and to a sufficient height to prevent coastal flooding. No feasible FRM methods were identified for the one property affected in the 0.5% AEP event and therefore the existing regime is recommended to be maintained. Due to the risk of the deterioration of the embankments, which may allow rapid and significant tidal inundation to occur, there is a potential significant environmental impact.	
Slaney & Wexford Harbour	Wexford	Hard defences & improvement of channel conveyance is one of the recommendations made for Wexford AFA. A series of flood embankments and walls, along with improvement of channel conveyance close to the downstream end of the Carricklawn River would provide protection up to the 1% AEP fluvial event and the 0.5% AEP coastal event. Flood walls and embankments are recommended to have an average height of 1.4m and a total length of 1.3km (Option 1). Hard defences alone are the second option of the area. Embankments and flood walls would provide protection up to the 1% AEP fluvial event and the 0.5% AEP coastal event. Defences would have an average height of 1.2m and a total length of 2.0km (Option 2). It should be noted that as of May 3rd 2018, Wexford has been included in a list of 50 new Flood Relief Schemes to be advanced to the initial phase of design.	Option1: 2.566 Option2: 2.137

Ballyteigue-Bannow Catchment Measures	Kilmore	The existing regime does provide a 0.5% AEP SoP during coastal flood events and it is therefore recommended that it is maintained. Due to the risk of the deterioration of the embankments, which may allow rapid and significant tidal inundation to occur, there is a potential significant environmental impact.	
Nore / Barrow	New Ross	The section of the River Barrow which flows through New Ross is maintained by Wexford County Council. Inspections and maintenance works in these areas are carried as and when necessitated. There is also an OPW approved flood protection scheme currently progressing in New Ross. These works have been designed to manage the flood risk in New Ross therefore this maintenance regime provides the preferred SoP.	

The launch of a ten-year programme was announced on May 3rd, 2018 which will see €1 billion invested in flood relief measures over the coming decade. During the launch, 50 new flood relief schemes were announced which will be advanced to the initial phase; to detailed design and construction.

The Wexford AFA listed above in Table 4-1~~Table 4-1~~~~Table 4-1~~, has been chosen as one of the 50 new flood relief schemes which will be advanced to the initial design stage.

The remaining 8 AFAs listed in Table 4-1~~Table 4-1~~~~Table 4-1~~ have not been included and therefore will not benefit from the €257 million designated to 50 new flood relief schemes. The Minor Works Scheme will continue to identify and resolve flooding is local areas.

4.4 Development Management and Flood Risk

In order to guide both applicants and relevant council staff through the process of planning for and mitigating flood risk, the key features of a range of development scenarios have been identified (relating the flood zone, development vulnerability and presence or absence of defences). For each

scenario, a number of considerations relating to the suitability of the development are summarised below.

It should be noted that this section of the SFRA begins from the point that all land zoned for development has passed the Justification Test for Development Plans, and therefore passes Part 1 of the Justification Test for Development Management. In addition to the general recommendations in the following sections, Section 5 should be reviewed for specific recommendations for individual settlements, including details of the application of the Justification Test. In areas where there are no formal land use zoning objectives, the Justification Test cannot pass for any sites within Flood Zone A/B. It would be down to a site-specific FRA to confirm (in appropriate detail) the extent of Flood Zone A/B. Development that does not require the application of the Justification Test, i.e. less vulnerable development in Flood Zone B and water compatible development in Flood Zones A and B can be considered.

In order to determine the appropriate design standards for a development it may be necessary to undertake a site-specific flood risk assessment. This may be a qualitative appraisal of risks, including drainage design. Alternatively, the findings of the CFRAM, or other detailed studies, may be drawn upon to inform finished floor levels. In other circumstances a detailed modelling study and flood risk assessment may need to be undertaken. Further details of each of these scenarios, including considerations for the flood risk assessment are provided in the following sections.

4.5 Requirements for a Flood Risk Assessment

It is recommended that an assessment of flood risk is required in support of any planning application where flood risk may be an issue and this may include sites in Flood Zone C where a small watercourse or field drain exists nearby. The level of detail will vary depending on the risks identified and the proposed land use. As a minimum, all proposed development, including that in Flood Zone C, must consider the impact of surface water flood risks on drainage design. In addition, flood risk from sources other than fluvial and tidal should be reviewed.

For sites within Flood Zone A or B, a site specific "Stage 2 - Initial FRA" will be required and may need to be developed into a "Stage 3 - Detailed FRA". The extents of Flood Zone A and B are delineated through this SFRA. However, future studies may refine the extents (either to reduce or enlarge them) so a comprehensive review of available data should be undertaken once a FRA has been triggered.

Within the FRA the impacts of climate change and residual risk (including culvert/structure blockage) should be considered and remodelled where necessary, using an appropriate level of detail, in the design of finished floor levels. Further information on the required content of the FRA is provided in the Planning System and Flood Risk Management Guidelines.

Any proposal that is considered acceptable in principle shall demonstrate the use of the sequential approach in terms of the site layout and design and, in satisfying the Justification Test (where required), the proposal will demonstrate that appropriate mitigation and management measures are put in place.

4.6 Development Proposals in Flood Zone C

Where a site is within Flood Zone C, but adjoining or in close proximity to Flood Zone A or B there could be a risk of flooding associated with factors such as future scenarios (climate change) or in the event of failure of a defence, blocking of a bridge or culvert. Risk from sources other than fluvial and coastal must also be addressed for all development in Flood Zone C. As a minimum in such a scenario, a flood risk assessment should be undertaken which will screen out possible indirect sources of flood risk and where they cannot be screened out it should present mitigation measures. This should also include a screening for any local watercourses that do not have flood mapping. The WCC mapping dataset typically includes all formally identified watercourses with a catchment area greater than 1km^2 – this should only leave very small watercourses unmapped. Regarding the FRA, the most likely mitigation measure will involve setting finished floor levels to a height that is above the 1 in 100 year fluvial or 1 in 200 year tidal flood level, with an allowance for climate change and freeboard,

or to ensure a step up from road level to prevent surface water ingress. Design elements such as channel maintenance or trash screens may also be required. Evacuation routes in the event of inundation of surrounding land should also be detailed.

The impacts of climate change should be considered for all proposed developments. A development which is currently in Flood Zone C may be shown to be at risk when 0.5m is added to the extreme (1 in 200 year) tide. Details of the approach to incorporating climate change impacts into the assessment and design are provided in Section 4.11.

4.7 Applications for Developments in Flood Zone A or B

4.7.1 Minor Developments

Section 5.28 of the Planning Guidelines on Flood Risk Management identifies certain types of development as being 'minor works' and therefore exempt from the Justification Test. Such development relates to works associated with existing developments, such as extensions, renovations and rebuilding of the existing development, small scale infill and changes of use.

Despite the ‘Sequential Approach’ and ‘Justification Test’ not applying, as they relate to existing buildings, an assessment of the risks of flooding should still accompany such applications, that is, a site-specific flood risk assessment. This assessment must demonstrate that the development would not increase flood risks, by introducing significant numbers of additional people into the floodplain and/or putting additional pressure on emergency services or existing flood management infrastructure. The development must not have adverse impacts or impede access to a watercourse, floodplain or flood protection and management facilities. Where possible, the design of built elements in these applications should demonstrate principles of flood resilient design (See ‘The Planning System and Flood Risk Management Guidelines for Planning Authorities Technical Appendices, 2009', Section 4 - Designing for Residual Flood Risk).

Generally, the approach to deal with flood protection would involve raising the ground floor levels above the level of extreme river levels. If this leads to floor levels being much higher than adjacent streets it could create a hostile streetscape for pedestrians. This would cause problems for infill development sites if floor levels were required to be significantly higher than those of neighbouring properties. In this regard, it has been recognised that some flexibility could be allowed, in limited circumstances, on a site by site basis, for commercial and business developments. In these cases, the detailed design of the development should reflect the vulnerability of the site in terms of internal layout, materials, fixtures and fittings and internal layout. For high risk areas, less vulnerable uses are encouraged at ground floor levels. A site-specific FRA will inform appropriate uses and detailed design and layout.

It should be noted that for residential buildings within Flood Zone A or B, bedroom accommodation is more appropriate at upper floor levels.

For commercial operations, business continuity must be considered, and steps taken to ensure operability during and recovery after a flood event for both residential and commercial developments. Emergency access must be considered as in many cases flood resilience will not be easily achieved in the existing built environment.

The requirement for providing compensatory storage for minor developments has been reviewed and can generally be relaxed, even where finished floor levels have been raised. This is because the development concerns land which has previously been developed and would already have limited capacity to mitigate flooding. However, a commentary to this effect must be substantiated in the site-specific FRA.

4.7.2 Highly Vulnerable Development in Flood Zone A or B

Development which is highly vulnerable to flooding, as defined in The Planning System and Flood Risk Management, includes (but is not limited to) dwelling houses, hospitals, emergency services and caravan parks.

4.7.2.1 New Development

It is not appropriate for new, highly vulnerable development to be located on greenfield land in Flood Zones A or B, particularly outside the core of a settlement and where there are no flood defences. Such proposals do not pass the Justification Test. Instead, a less vulnerable use should be considered.

4.7.2.2 Existing Developed Areas

The Planning Circular (PL02/2014) states that "*notwithstanding the need for future development to avoid areas at risk of flooding, it is recognised that the existing urban structure of the country contains many well established cities and urban centres which will continue to be at risk of flooding. In addition, development plans have identified various strategically important urban centres … whose continued consolidation, growth, development or generation, including for residential use, is being encouraged to bring about compact and sustainable growth*."

Minor/small scale infill housing, extensions or changes of use is discussed in Section 4.7.1 and, subject to site specific flood risk assessment, can generally be considered appropriate.

In cases where development has been justified, the outline requirements for a flood risk assessment and flood management measures have been detailed in this SFRA in both the following sections and the settlement review in Section 5. Of prime importance is the requirement to manage risk to the development site and not to increase flood risk elsewhere. This should give due consideration to safe evacuation routes and access for emergency services during a flood event.

4.7.3 Less Vulnerable Development in Flood Zone A or B

Less vulnerable development includes retail, leisure, warehousing, technology, enterprise and buildings used for agriculture and forestry a comprehensive categorisation of land uses and vulnerability is provided in Table 5-1~~Table 5-1~~~~Table 5-1~~ on Page 86~~86~~~~86~~~~81~~.

The design and assessment of less vulnerable development should generally begin with 1% AEP fluvial or 0.5% tidal events as standard, with climate change and a suitable freeboard included in the setting of finished floor levels. The site-specific FRA should ensure that the risks are defined, understood, and accepted. Operability and emergency response should also be clearly defined. In a limited number of cases this may allow construction as low as the 1% AEP level to be adopted, provided the risks of climate change are included in the development through adaptable designs or resilience measures.

4.8 Key Points for FRAs for all Types of Development

- Finished floor levels to be set above the 1% AEP fluvial (0.5% AEP tide) level, with an allowance for climate change plus a freeboard of at least 300mm. The freeboard allowance should be assessed, and the choice justified.
- Flow paths through the site and areas of surface water storage should be managed to maintain their function and without causing increased flood risk elsewhere
- Compensatory storage is to be provided to balance floodplain loss as a result of raising ground levels within Flood Zone A or B. The storage should be provided within the flood cell and on a level for level basis up to the 1% level.
- In a defended site, compensatory storage is not required, but the impact of removing the net reduction in floodplain storage should be assessed, and any impacts to existing development mitigated for the 0.1% event or a breach of these defences.
- A site is considered to be defended if the standard of protection is 1% AEP, within which a freeboard of at least 300mm is included. The FFL of the proposed development needs to take into account the impacts of climate change and other residual risks, including the 0.1% event, unless this has also been incorporated into the defence design. This may be

assessed through breach analysis, overtopping analysis or projection of levels from the channel inland.

- For less vulnerable development, it may be that a finished floor level as low as the 1% AEP level could be adopted, provided the risks of climate change are included in the development through adaptable designs or resilience measures. This approach should reflect emergency planning and business continuity to be provided within the development. It may reflect the design life of the development, the proposed use, the vulnerability of items to be kept in the premises, the occupants and users, emergency plan and inclusion of flood resilience and recovery measures.

4.9 Drainage Impact Assessment

It is recommended that all proposed development, whether in Flood Zone A, B or C, must consider the impact of surface water flood risks on drainage design. Under Objective FRM07 new development must not increase flood risk elsewhere, including that which may arise from surface water run-off. The use of Sustainable Urban Drainage Systems (SuDS) is also required to minimise the extent of hard surfacing and paving (Objectives FRM14 & SWM01-~~07~~08). The surface water/fluvial risk should be in the form of a section within the flood risk assessment (for sites in Flood Zone A or B or C) or part of a surface water management plan.

Particular attention should be given to development in low-lying areas which may act as natural ponds for collection of runoff.

The drainage design should ensure no increase in flood risk to the site, or the downstream catchment. Where possible, and particularly in areas of new development, floor levels a minimum be 300mm above adjacent roads and hard standing areas to reduce the consequences of any localised flooding. Where this is not possible, an alternative design appropriate to the location may be prepared.

In addition, for larger sites (i.e. multiple dwellings or commercial units) master planning should ensure that existing flow routes are maintained, through the use of green infrastructure.

4.10 Incorporating Climate Change into Development Design

The Flood Zones are determined based on readily available information and their purpose is to be used as a tool to avoid inappropriate development in areas of flood risk. Where development is proposed within an area of potential flood risk (Flood Zone A or B), a flood risk assessment of appropriate scale will be required, and this assessment must take into account climate change and associated impacts.

Consideration of climate change is particularly important where flood alleviation measures are proposed as the design standard of the proposal may reduce significantly in future years due to increased rainfall, river flows and sea levels. As recommended by the planning guidelines, a precautionary approach should be adopted.

Climate change may result in increased flood extents and therefore caution should be taken when zoning lands in transitional areas. In general, Flood Zone B, which represents the 0.1% AEP extent, can be taken as an indication of the extent of the 1% AEP flood event with climate change. In steep valleys an increase in water level will relate to a very small increase in extent, however in flatter low-lying basins a small increase in water level can result in a significant increase in flood extent.

For most development, including residential, nursing homes, shops and offices, the medium-range future scenario (20% increase in flows and / or 0.5m increase in sea level) is an appropriate consideration. This should be applied in all areas that are at risk of flooding (i.e. within Flood Zone A and B) and should be considered for sites which are in Flood Zone C but are adjacent to Flood Zone A or B. This is because land which is currently not at risk may become vulnerable to flooding when climate change is taken into account.

Where the risk associated with inundation of a development is low and the design life of the development is short (typically less than 30 years) the allowance provided for climate change may be less than the 20% / 0.5m level. However, the reasoning and impacts of such an approach should be provided in the site-specific FRA.

Conversely, there may be development which requires a higher level response to climate change. This could include major facilities which are extremely difficult to relocate, such as hospitals, Seveso sites or power stations, and those which represent a high-economic and long term investment within the scale of development of the specific settlement. In such situations it would be reasonable to expect the high-end future scenario (30% increase in flow or 1m in sea level) to be used as the design standard. In the case of coastal locations, and as climate projections are further developed, it may be prudent to demonstrate adaptability to even higher sea levels.

Further consideration to the potential future impacts of climate change will be given for each settlement within Section 5.

4.11 Flood Mitigation Measures at Site Design

For any development proposal in an area at moderate or high risk of flooding that is considered acceptable in principle, it must be demonstrated that appropriate mitigation measures can be put in place and that residual risks can be managed to acceptable levels. It is anticipated that this will impact very few developments and should be predominantly limited to areas of existing development.

To ensure that adequate measures are put in place to deal with residual risks, proposals should demonstrate the use of flood-resistant construction measures that are aimed at preventing water from entering a building and that mitigate the damage floodwater causes to buildings. Alternatively, designs for flood resilient construction may be adopted where it can be demonstrated that entry of

floodwater into buildings is preferable to limit damage caused by floodwater and allow relatively quick recovery.

Various mitigation measures are outlined below and further detail on flood resilience and flood resistance are included in the Technical Appendices of the Planning Guidelines, The Planning System and Flood Risk Management[6].

It should be emphasised that measures such as those highlighted below should only be considered once it has been deemed 'appropriate' to allow development in a given location and it will predominantly be relevant to existing developed areas as all other undeveloped sites in Flood Zone A have been re-zoned to a less vulnerable land use. The Planning Guidelines do not advocate an approach of engineering solutions in order to justify the development which would otherwise be inappropriate.

4.11.1 Site Layout and Design

To address flood risk in the design of new development, a risk based approach should be adopted to locate more vulnerable land use to higher ground while water compatible development i.e. car parking, recreational space can be located in higher flood risk areas.

The site layout should identify and protect land required for current and future flood risk management. Waterside areas or areas along known flow routes can be used for recreation, amenity and environmental purposes to allow preservation of flow routes and flood storage, while at the same time providing valuable social and environmental benefits.

6 The Planning System and Flood Risk Management Guidelines for Planning Authorities, Technical Appendices, November 2009

4.11.2 Ground Levels, Floor Levels and Building Use

Modifying ground levels to raise land above the design flood level is a very effective way of reducing flood risk to the particular site in question. However, in most areas of fluvial flood risk, conveyance or flood storage would be reduced locally and could have an adverse effect on flood risk off site. There are a number of criteria which must all be met before this is considered a valid approach:

- Development at the site must have been justified through this SFRA based on the existing (unmodified) ground levels.
- The FRA should establish the function provided by the floodplain. Where conveyance is a prime function then a hydraulic model will be required to show the impact of its alteration.
- Compensatory storage should be provided on a level for level basis to balance the total area that will be lost through infilling where the floodplain provides static storage.
- The provision of the compensatory storage should be in close proximity to the area that storage is being lost from (i.e. within the same flood cell).
- The land proposed to provide the compensatory storage area must be within the ownership / control of the developer.
- The land being given over to storage must be land which does not flood in the 1% AEP event (i.e. Flood Zone B or C).
- The compensatory storage area should be constructed before land is raised to facilitate development.

In some sites it is possible that ground levels can be re-landscaped to provide a sufficiently large development footprint. However, it is likely that in other potential development locations there is insufficient land available to fully compensate for the loss of floodplain. In such cases it will be necessary to reconsider the layout or reduce the scale of development or propose an alternative and less vulnerable type of development. In other cases, it is

possible that the lack of availability of suitable areas of compensatory storage mean the target site cannot be developed and should remain open space.

Raising finished floor levels within a development is an effective way of avoiding damage to the interior of buildings (i.e. furniture and fittings) in times of flood.

Alternatively, assigning a water compatible use (i.e. garage / car parking) or less vulnerable use to the ground floor level, along with suitable flood resilient construction, is an effective way of raising vulnerable living space above design flood levels. It can however have an impact on the streetscape. Safe access and egress is a critical consideration in allocating ground floor uses.

Depending on the scale of residual risk, resilient and resistance measures may be an appropriate response, but this will mostly apply to less vulnerable development.

4.11.3 Raised Defences

Construction of raised defences (i.e. flood walls and embankments) traditionally has been the response to flood risk. However, this is not a preferred option on an ad-hoc basis where the defences to protect the development are not part of a strategically led flood relief scheme. Where a defence scheme is proposed as the means of providing flood defence, the impact of the scheme on flood risk up and downstream must be assessed and appropriate compensatory storage must be provided.

5 Settlement Review

The purpose of land use zoning objectives is to indicate to property owners and members of the public the types of development the Planning Authority considers most appropriate in each land use category. Zoning is designed to reduce conflicting uses within areas, to protect resources and, in association with phasing, to ensure that land suitable for development is used to the best advantage of the community as a whole.

This section of the SFRA will:

- Consider the general land use zoning objectives utilised within County Wexford as a whole and assess their potential vulnerability to flooding.
- Based on the associated vulnerability of the particular use, a clarification on the requirement of the application of the Justification Test is provided.
- The consideration of the specific land use zoning objectives and flood risk will be presented for each individual settlement. Comment will be provided on the use of the sequential approach and justification test. Conclusions will be drawn on how flood risk is proposed to be managed in the settlement.

5.1 Land Use Zoning Objectives

The zoning objectives can be related to the vulnerability classifications in the 'Planning System and Flood Risk Management'; highly vulnerable, less vulnerable and water compatible. As discussed in Section 2, the preference for the allocation of zoning objectives within areas at potential risk of flooding is that of avoidance (the sequential approach). Where avoidance or substitution of land use is not possible the specific vulnerability of the land use, coupled with the Flood Zone in which it lies, guides the need for application of the Justification Test. This is set out in detail within Table 5-1~~Table 5-1~~~~Table 5-1~~ below.

It is important to note that Table 5-1~~Table 5-1~~Table 5-1 is provided as a general guide and the specific development types within the zoning objective must be considered individually, and with reference to Table 3-1 of the 'Planning System and Flood Risk Management'

Whilst the Sequential Approach has been applied to land use zoning objectives in determining their applicability (within Rosslare Harbour & Kilrane and Bunclody), there is some degree of variance in the vulnerability of the land uses under certain objectives in Table 5-1~~Table 5-1~~Table 5-1. For example, the Town Centre/Village Centre/Neighbourhood Centre and Mixed Use zonings can include for high or less vulnerable development. This results in a varying requirement for the application of the Justification Test and potential suitability of the development. Where such conditions exist the zoning objectives include a clarification of the suitability of land use vulnerability within individual land zonings.

Table 5-1 Land Zoning Objectives and Vulnerabilities

General **Land Use Objective**	**General Guidance on the Vulnerability of Use.** *In all instances the relevant land use zoning matrix for the settlement must be consulted to determine the vulnerability of uses permitted or open for consideration within that land use zoning objective*	**Justification Test** [7]
Residential	Highly vulnerable, less vulnerable	For highly vulnerable development in Flood Zone A or B. For less vulnerable development in Flood Zone A.
Town Centre/Village Centre/ Neighbourhood Centre	Highly vulnerable, less vulnerable	For highly vulnerable development in Flood Zone A or B. For less vulnerable development in Flood Zone A.
Mixed Use	Highly vulnerable, less vulnerable	For highly vulnerable development in Flood Zone A or B. For less vulnerable development in Flood Zone A.
Commercial/ General Business Use	Highly vulnerable, less vulnerable	For highly vulnerable development in Flood Zone A or B. For less vulnerable development in Flood Zone A.
Community and	Highly vulnerable, less vulnerable	For highly vulnerable development in

[7] Note in table 5-1 in all cases the requirement for the Justification Test is based on the types of uses which are generally permissible in that zone. For example Highly Vulnerable development is not cited under Port Related Land Use as this Use in not permitted in this zoning. In all cases the specific use determines the need for the Justification Test and not the Land use zoning and this must be assessed on a case by case basis.

Education		Flood Zone A or B. For less vulnerable development in Flood Zone A.
Open Space and Amenity/ Leisure and Amenity	Less vulnerable, water compatible	For less vulnerable development in Flood Zone A. Water compatible is appropriate in Flood Zone and B.
Industry	Highly vulnerable, less vulnerable.	For highly vulnerable development in Flood Zone A or B. For less vulnerable development in Flood Zone A.
Light Industry/ Light Industry and Office	Highly vulnerable, less vulnerable	For highly vulnerable development in Flood Zone A or B. For less vulnerable development in Flood Zone A.
Business and Technology	Highly vulnerable, less vulnerable	For highly vulnerable development in Flood Zone A or B. For less vulnerable development in Flood Zone A.
Port-Related	Less vulnerable, water compatible.	For less vulnerable development in Flood Zone A. Water compatible appropriate in Flood Zone A and B.

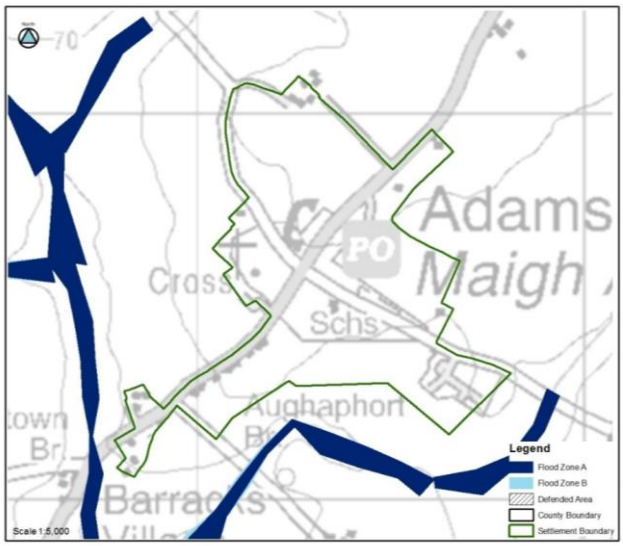
Transport and Utilities *(This zoning relates to transport and logistics developments and not critical transport infrastructure)*	Less vulnerable	For less vulnerable development in Flood Zone A.
Tourism	Highly vulnerable, less vulnerable	For highly vulnerable development in Flood Zone A or B. For less vulnerable development in Flood Zone A.
Agriculture	Highly Vulnerable, Less Vulnerable	For highly vulnerable development in Flood Zone A or B. For less vulnerable development in Flood Zone A.

Of the settlements contained within the WCDP 2021-2027 there are only two settlements where the land use zonings can be directly influenced and the Justification Test applied; that is, Bunclody Town and Rosslare Harbour & Kilrane. The new LAPs for Wexford Town, Enniscorthy Town, New Ross Town are separate to the CDP and their zoning is not included in this Plan and they cannot be amended by/under the CDP. The same will apply for any other future local area plan and settlement plans that contain land use zoning. ~~applies for Courtown and Riverchapel, Clonroche and Taghmon.~~

All other settlements are either unzoned or the zoning is not subject for review within the CDP. Comment is provided regarding flood risk in all settlements; this is contained in the following sections.

5.2 Adamstown

Hierarchy	Large Village
Area for Further Assessment under CFRAM programme?	No



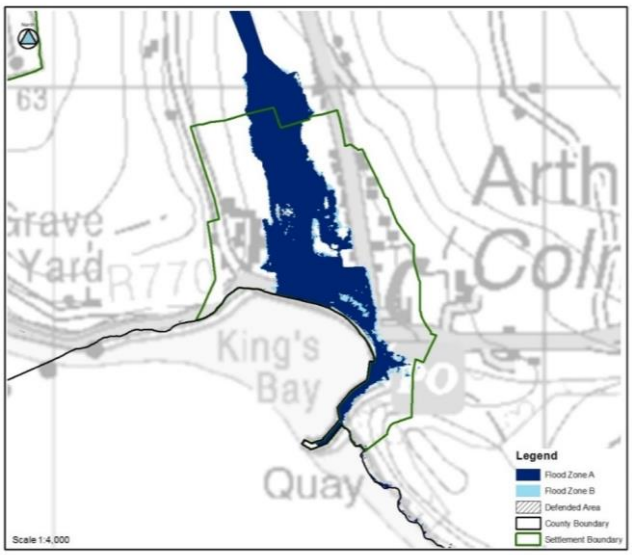
The boundaries used to identify this settlement for the purposes of this flood risk assessment are those used and published by CSO. These boundaries are not intended nor to be interpreted as the Planning Authority's intended settlement boundaries and are just the study areas for the FRA .In all cases, a prospective applicant should seek confirmation from the Planning Authority on whether their development site is considered to fall within or outside of the settlement for the purpose of the implementation of planning policies in the County Development Plan.

The Flood Zone mapping has been produced in accordance with the Planning Guidelines and therefore ignores the impact of flood protection structures. Areas protected by flood defences still carry a residual risk of flooding due to overtopping or breach, there may also be no guarantee of maintenance in perpetuity. Areas that benefit from defences are annotated separately. Flood Zone A – Fluvial: 1 in 100 year or 1% AEP, Tidal: 1 in 200 year or 0.5% AEP. Flood Zone B – 1 in 1000 year or 0.1% AEP.

Flood Zone Data	OPW PFRA
Historic Flooding	None recorded
Comment	No significant fluvial flood risk identified.
Climate Change	No fluvial impacts, potential increase in runoff.
Conclusion	Manage flood risk and development in line with approved objectives and general practice as explained in Section 4 of this document. It is noted that the Flood Zone mapping is indicative and further detailed modelling under a Stage 3 FRA would improve the quality and reliability of the assessment.

5.3 Arthurstown

Hierarchy	Small Village
Area for Further Assessment under CFRAM programme?	No



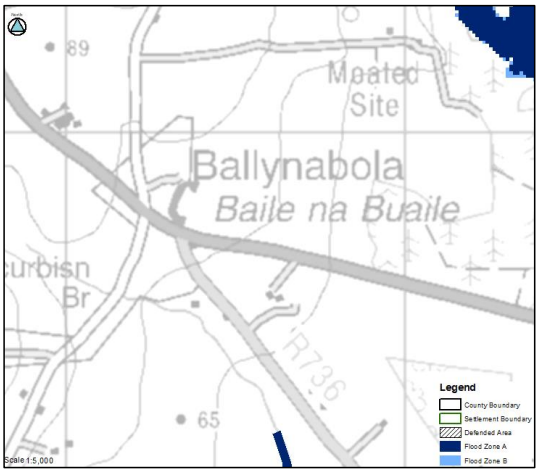
The boundaries used to identify this settlement for the purposes of this flood risk assessment are those used and published by CSO. These boundaries are not intended nor to be interpreted as the Planning Authority's intended settlement boundaries and are just the study areas for the FRA .In all cases, a prospective applicant should seek confirmation from the Planning Authority on whether their development site is considered to fall within or outside of the settlement for the purpose of the implementation of planning policies in the County Development Plan.

The Flood Zone mapping has been produced in accordance with the Planning Guidelines and therefore ignores the impact of flood protection structures. Areas protected by flood defences still carry a residual risk of flooding due to overtopping or breach, there may also be no guarantee of maintenance in perpetuity. Areas that benefit from defences are annotated separately. Flood Zone A – Fluvial: 1 in 100 year or 1% AEP, Tidal: 1 in 200 year or 0.5% AEP. Flood Zone B – 1 in 1000 year or 0.1% AEP.

Flood Zone Data	OPW PFRA & ICPSS
Historic Flooding	Several areas flooded in October 2004, with levels of up to 225mm recorded. In February 2002 flooding occurred which causes severe disruption to traffic.
Comment	A small stream runs through the northeast of Arthurstown before passing through the urban core in a southerly direction, outfalling under the main road and into the Suir Estuary. The stream is therefore influenced by both fluvial and tidal sources and the flood mapping indicates that significant existing property and also undeveloped land is at high risk of flooding.
Climate Change	The lower part of the settlement that is impacted by tidal flooding would be highly sensitive to the impacts of climate change.
Conclusion	The analysis suggests that much of the low-lying existing development close to the estuary/King's Bay and a significant adjacent area is at high risk of flooding and is highly sensitive to climate change impacts due to sea level rise. No further inappropriate development should be considered within Flood Zone A/B and any re-development of existing property should consider the advice given in Section 4.7.1. Further development adjacent to the boundary of Flood Zones A/B should be submitted with an appropriately detailed FRA as set out in Section 4.5, and must consider climate change impacts. It is noted that the Flood Zone mapping is indicative and further detailed modelling under a Stage 3 FRA would improve the quality and reliability of the assessment.

5.4 Ballinaboola

Hierarchy	Small Village
Area for Further Assessment under CFRAM programme?	No

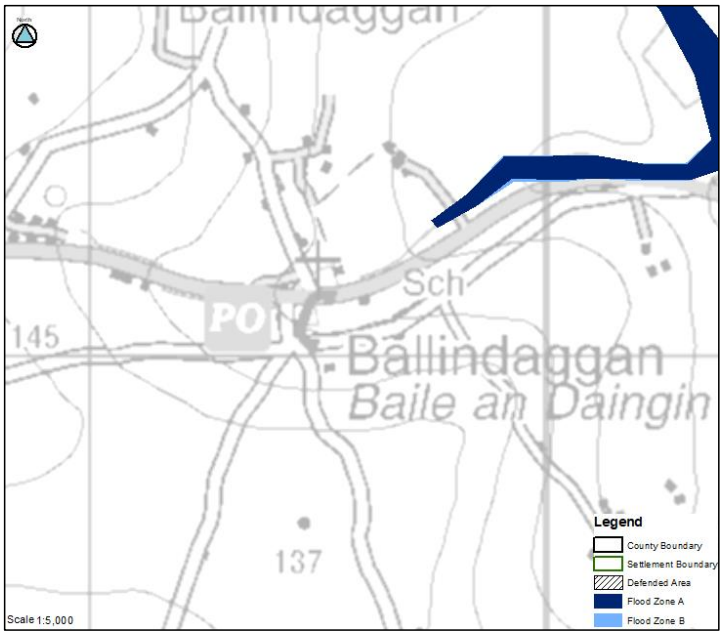


The Flood Zone mapping has been produced in accordance with the Planning Guidelines and therefore ignores the impact of flood protection structures. Areas protected by flood defences still carry a residual risk of flooding due to overtopping or breach, there may also be no guarantee of maintenance in perpetuity. Areas that benefit from defences are annotated separately. Flood Zone A – Fluvial: 1 in 100 year or 1% AEP, Tidal: 1 in 200 year or 0.5% AEP. Flood Zone B – 1 in 1000 year or 0.1% AEP.

Flood Zone Data	PFRA & JBA
Historic Flooding	None recorded
Comment	Some predicted flooding, remote from the settlement.
Climate Change	No fluvial impacts, potential increase in runoff.
Conclusion	Manage flood risk and development in line with approved objectives and general practice as explained in Section 4 of this document. It is noted that the Flood Zone mapping is indicative and further detailed modelling under a Stage 3 FRA would improve the quality and reliability of the assessment.

5.5 Ballindaggan

Hierarchy	Large Village
Area for Further Assessment under CFRAM programme?	No



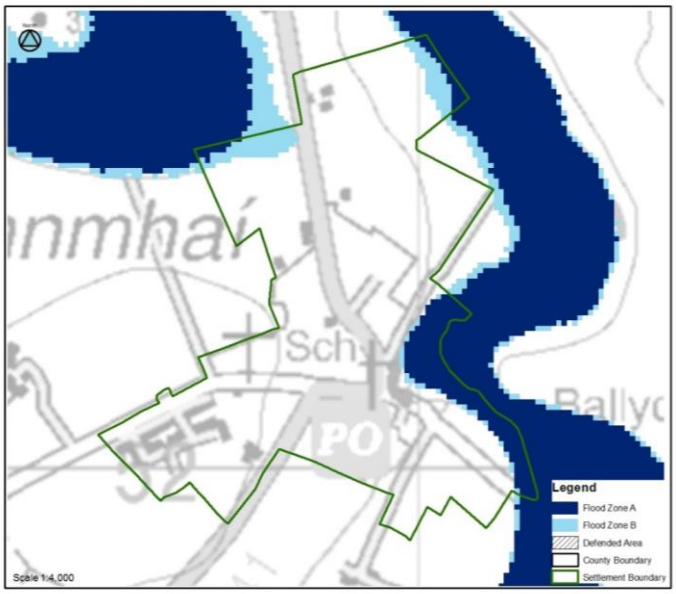
The Flood Zone mapping has been produced in accordance with the Planning Guidelines and therefore ignores the impact of flood protection structures. Areas protected by flood defences still carry a residual risk of flooding due to overtopping or breach, there may also be no guarantee of maintenance in perpetuity. Areas that benefit from defences are annotated separately. Flood Zone A – Fluvial: 1 in 100 year or 1% AEP, Tidal: 1 in 200 year or 0.5% AEP. Flood Zone B – 1 in 1000 year or 0.1% AEP.

Flood Zone Data	PFRA
Historic Flooding	None recorded
Comment	To the east of the settlement there is some predicted flooding, it does not impact any dwellings.

Climate Change	No fluvial impacts, potential increase in runoff.
Conclusion	Any new development should follow the guidance provided in Section 4.4 to 4.11. In general, the sequential approach should be followed, and Flood Zone A/B should be avoided for any highly or less vulnerable development. It is noted that the Flood Zone mapping is indicative and further detailed modelling under a Stage 3 FRA would improve the quality and reliability of the assessment.

5.6 Ballycanew

Hierarchy	Large Village
Area for Further Assessment under CFRAM programme?	No



The boundaries used to identify this settlement for the purposes of this flood risk assessment are those used and published by CSO. These boundaries are not intended nor to be interpreted as the Planning Authority's intended settlement boundaries and are just the study areas for the FRA .In all cases, a prospective applicant should seek confirmation from the Planning Authority on whether their development site is considered to fall within or outside of the settlement for the purpose of the implementation of planning policies in the County Development Plan.

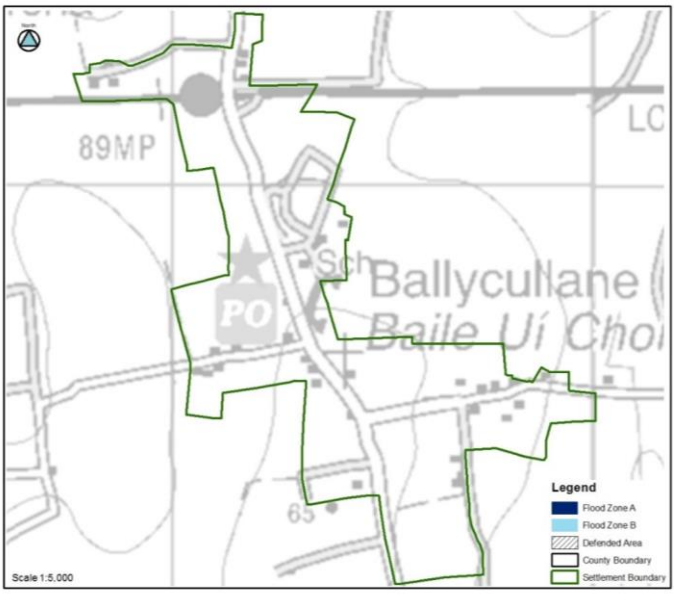
The Flood Zone mapping has been produced in accordance with the Planning Guidelines and therefore ignores the impact of flood protection structures. Areas protected by flood defences still carry a residual risk of flooding due to overtopping or breach, there may also be no guarantee of maintenance in perpetuity. Areas that benefit from defences are annotated separately. Flood Zone A – Fluvial: 1 in 100 year or 1% AEP, Tidal: 1 in 200 year or 0.5% AEP. Flood Zone B – 1 in 1000 year or 0.1% AEP.

Flood Zone Data	JFLOW.

Historic Flooding	Recurring flooding has been reported for Ballycanew. A flood event was recorded on the 29th of August 1986.
Comment	The Owenavorragh River approaches Ballycanew from the northeast. Within the settlement boundary the principle risk is to the south east of the settlement – the short term let holiday park. Some undeveloped land within the floodplain of the Owenavorragh River is also at risk.
Climate Change	A review of PFRA Flood Zone A and B outlines shows an increase in fluvial flood extents which suggests this settlement is sensitive to the impact of climate change.
Conclusion	Undeveloped lands within Flood Zone A/B should be considered for open space use only. In areas adjacent to Flood Zone A and B future planning applications should consider an appropriate FRA at the development stage. The holiday park is at potential risk and whilst this is less vulnerable short term let accommodation it is recommended that any future development is subject to an appropriately detailed FRA. It is noted that the Flood Zone mapping is indicative and further detailed modelling under a Stage 3 FRA would improve the quality and reliability of the assessment. Section 4 of the SFRA provides further guidance on development scenarios.

5.7 Ballycullane

Hierarchy	Large Village
Area for Further Assessment under CFRAM programme?	No



The boundaries used to identify this settlement for the purposes of this flood risk assessment are those used and published by CSO. These boundaries are not intended nor to be interpreted as the Planning Authority's intended settlement boundaries and are just the study areas for the FRA . In all cases, a prospective applicant should seek confirmation from the Planning Authority on whether their development site is considered to fall within or outside of the settlement for the purpose of the implementation of planning policies in the County Development Plan.

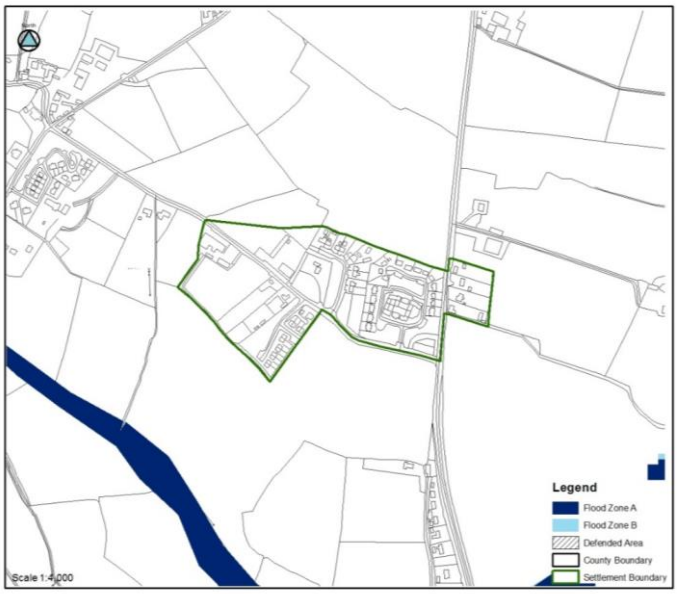
The Flood Zone mapping has been produced in accordance with the Planning Guidelines and therefore ignores the impact of flood protection structures. Areas protected by flood defences still carry a residual risk of flooding due to overtopping or breach, there may also be no guarantee of maintenance in perpetuity. Areas that benefit from defences are annotated separately. Flood Zone A – Fluvial: 1 in 100 year or 1% AEP, Tidal: 1 in 200 year or 0.5% AEP. Flood Zone B – 1 in 1000 year or 0.1% AEP.

Flood Zone Data	n/a

Historic Flooding	None recorded
Comment:	No fluvial flood risk identified and no flood history
Climate Change	No fluvial impacts, potential increase in runoff.
Conclusion	Manage flood risk and development in line with approved objectives and general practice as explained in Section 4 of this document.

5.8 Ballyedmond (Monamolin)

Hierarchy	Small Village
Area for Further Assessment under CFRAM programme?	No



The boundaries used to identify this settlement for the purposes of this flood risk assessment are those used and published by CSO. These boundaries are not intended nor to be interpreted as the Planning Authority's intended settlement boundaries and are just the study areas for the FRA .In all cases, a prospective applicant should seek confirmation from the Planning Authority on whether their development site is considered to fall within or outside of the settlement for the purpose of the implementation of planning policies in the County Development Plan.

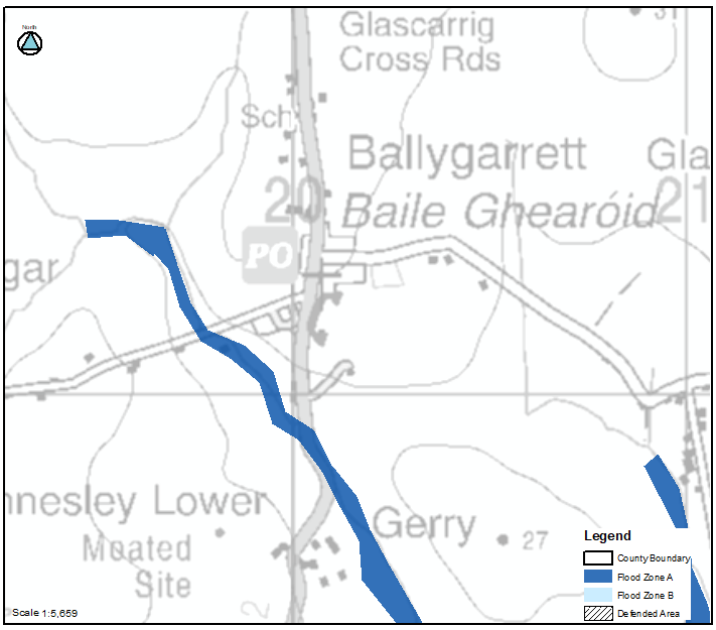
The Flood Zone mapping has been produced in accordance with the Planning Guidelines and therefore ignores the impact of flood protection structures. Areas protected by flood defences still carry a residual risk of flooding due to overtopping or breach, there may also be no guarantee of maintenance in perpetuity. Areas that benefit from defences are annotated separately. Flood Zone A – Fluvial: 1 in 100 year or 1% AEP, Tidal: 1 in 200 year or 0.5% AEP. Flood Zone B – 1 in 1000 year or 0.1% AEP.

Flood Zone Data	PFRA

Historic Flooding	None recorded.
Comment	No fluvial flood risk identified and no flood history
Climate Change	No fluvial impacts, potential increase in runoff.
Conclusion	Manage flood risk and development in line with approved objectives and general practice as explained in Section 4 of this document. It is noted that the Flood Zone mapping is indicative and further detailed modelling under a Stage 3 FRA would improve the quality and reliability of the assessment.

5.9 Ballygarrett

Hierarchy	Small Village
Area for Further Assessment under CFRAM programme?	No



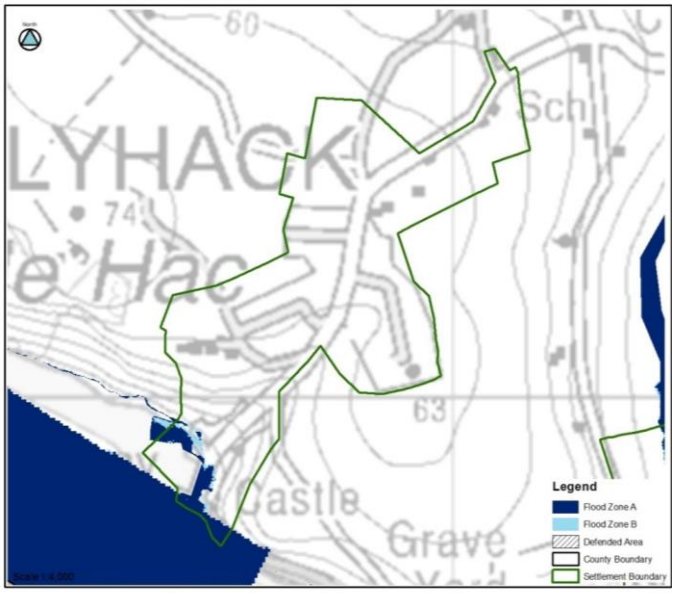
The Flood Zone mapping has been produced in accordance with the Planning Guidelines and therefore ignores the impact of flood protection structures. Areas protected by flood defences still carry a residual risk of flooding due to overtopping or breach, there may also be no guarantee of maintenance in perpetuity. Areas that benefit from defences are annotated separately. Flood Zone A – Fluvial: 1 in 100 year or 1% AEP, Tidal: 1 in 200 year or 0.5% AEP. Flood Zone B – 1 in 1000 year or 0.1% AEP.

Flood Zone Data	OPW PFRA
Historic Flooding	None recorded
Comment	A small stream passes to the south of the settlement under the R742. Flood risk is low to the core settlement.

Climate Change	Low to moderate sensitivity to an increase in flow.
Conclusion	Manage flood risk and development in line with approved objectives and general practice as explained in Section 4 of this document. It is noted that the Flood Zone mapping is indicative and further detailed modelling under a Stage 3 FRA would improve the quality and reliability of the assessment.

5.10 Ballyhack

Hierarchy	Small Village
Area for Further Assessment under CFRAM programme?	No



The boundaries used to identify this settlement for the purposes of this flood risk assessment are those used and published by CSO. These boundaries are not intended nor to be interpreted as the Planning Authority's intended settlement boundaries and are just the study areas for the FRA . In all cases, a prospective applicant should seek confirmation from the Planning Authority on whether their development site is considered to fall within or outside of the settlement for the purpose of the implementation of planning policies in the County Development Plan.

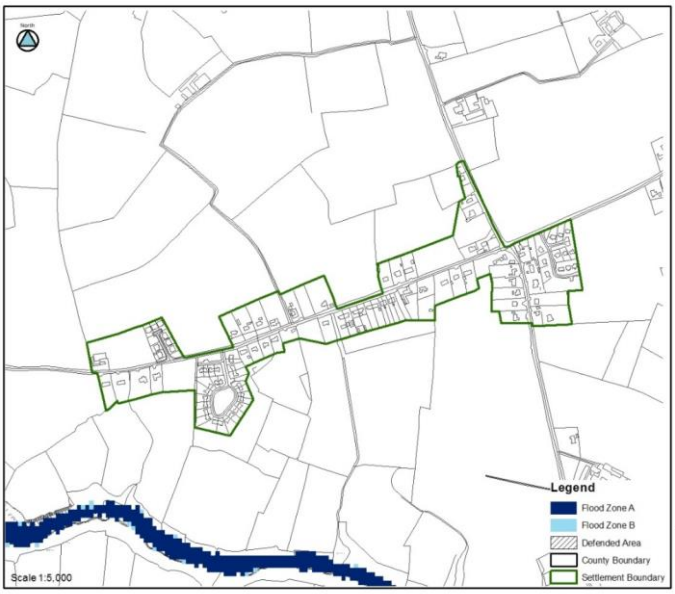
The Flood Zone mapping has been produced in accordance with the Planning Guidelines and therefore ignores the impact of flood protection structures. Areas protected by flood defences still carry a residual risk of flooding due to overtopping or breach, there may also be no guarantee of maintenance in perpetuity. Areas that benefit from defences are annotated separately. Flood Zone A – Fluvial: 1 in 100 year or 1% AEP, Tidal: 1 in 200 year or 0.5% AEP. Flood Zone B – 1 in 1000 year or 0.1% AEP.

Flood Zone Data	OPW ~~PFRA.~~CFRAM & ICPSS

Historic Flooding	A flood event on the 21 of December 1989 caused extensive damage to coastal protection, roads, car parks.
Comment	Ballyhack is influenced by a tidal influence from the Suir Estuary to the south. The PFRA flood mapping suggests existing developments along the waterfront/quay are at risk of flooding.
Climate Change	The low-lying area of the settlement which is influenced by tidal flooding would be highly sensitive to the impacts of climate change.
Conclusion	The flood outline indicates a risk of flooding to the road leading down to the harbour/quay, adjacent residential properties and a boatyard. The settlement is highly sensitive to the impacts of climate change as a result of sea level rise. Re-development of existing development within Flood Zone A and B should consider the advice given in Section 4.7.1. Section 4 of the SFRA provides further guidance on other development scenarios. It is noted that the Flood Zone mapping is indicative and further detailed modelling under a Stage 3 FRA would improve the quality and reliability of the assessment.

5.11 Ballyhogue

Hierarchy	Large Village
Area for Further Assessment under CFRAM programme?	No



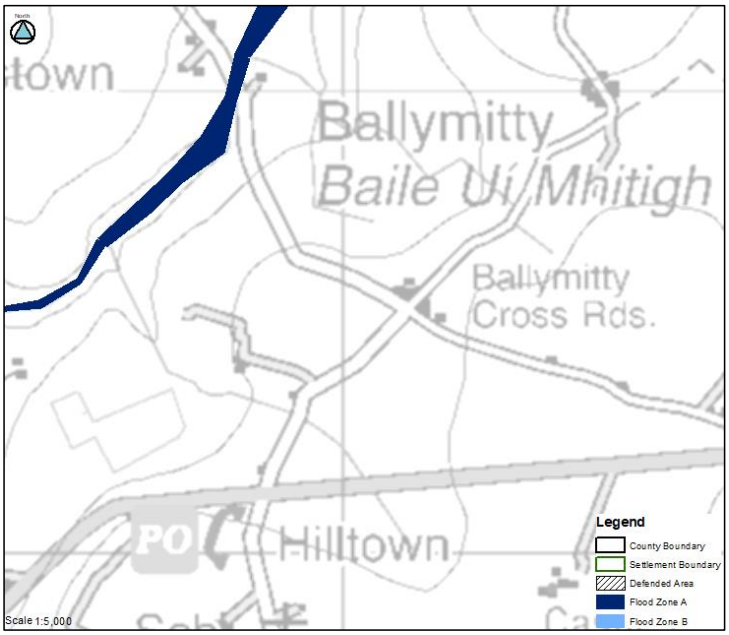
The boundaries used to identify this settlement for the purposes of this flood risk assessment are those used and published by CSO. These boundaries are not intended nor to be interpreted as the Planning Authority's intended settlement boundaries and are just the study areas for the FRA .In all cases, a prospective applicant should seek confirmation from the Planning Authority on whether their development site is considered to fall within or outside of the settlement for the purpose of the implementation of planning policies in the County Development Plan.

The Flood Zone mapping has been produced in accordance with the Planning Guidelines and therefore ignores the impact of flood protection structures. Areas protected by flood defences still carry a residual risk of flooding due to overtopping or breach, there may also be no guarantee of maintenance in perpetuity. Areas that benefit from defences are annotated separately. Flood Zone A – Fluvial: 1 in 100 year or 1% AEP, Tidal: 1 in 200 year or 0.5% AEP. Flood Zone B – 1 in 1000 year or 0.1% AEP.

Flood Zone Data	JFLOW
Historic Flooding	None recorded
Comment	No fluvial flood risk identified and no flood history within the CSO boundary.
Climate Change	No fluvial impacts, potential increase in runoff.
Conclusion	Manage flood risk and development in line with approved objectives and general practice as explained in Section 4 of this document. It is noted that the Flood Zone mapping is indicative and further detailed modelling under a Stage 3 FRA would improve the quality and reliability of the assessment.

5.12 Ballymitty

Hierarchy	Small Village
Area for Further Assessment under CFRAM programme?	No



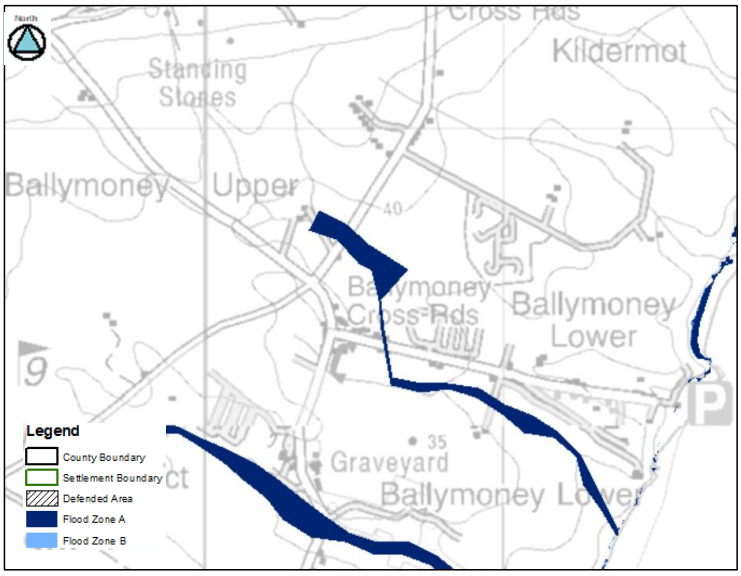
The Flood Zone mapping has been produced in accordance with the Planning Guidelines and therefore ignores the impact of flood protection structures. Areas protected by flood defences still carry a residual risk of flooding due to overtopping or breach, there may also be no guarantee of maintenance in perpetuity. Areas that benefit from defences are annotated separately. Flood Zone A – Fluvial: 1 in 100 year or 1% AEP, Tidal: 1 in 200 year or 0.5% AEP. Flood Zone B – 1 in 1000 year or 0.1% AEP.

Flood Zone Data	OPW PFRA
Historic Flooding	None recorded
Comment	Some predicted flooding to the north west of the settlement.

Climate Change	No fluvial impacts, potential increase in runoff.
Conclusion	Risk to the core of the development is low. Manage flood risk and development in line with approved objectives and general practice as explained in Section 4 of the SFRA. It is noted that the Flood Zone mapping is indicative and further detailed modelling under a Stage 3 FRA would improve the quality and reliability of the assessment.

5.13 Ballymoney

Hierarchy	Small Village
Area for Further Assessment under CFRAM programme?	No



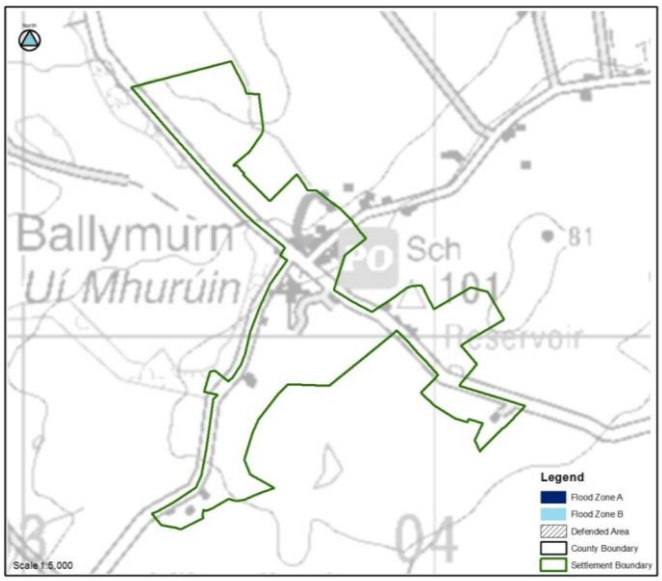
The Flood Zone mapping has been produced in accordance with the Planning Guidelines and therefore ignores the impact of flood protection structures. Areas protected by flood defences still carry a residual risk of flooding due to overtopping or breach, there may also be no guarantee of maintenance in perpetuity. Areas that benefit from defences are annotated separately. Flood Zone A – Fluvial: 1 in 100 year or 1% AEP, Tidal: 1 in 200 year or 0.5% AEP. Flood Zone B – 1 in 1000 year or 0.1% AEP.

Flood Zone Data	OPW PFRA & ICPSS
Historic Flooding	None recorded
Comment	The PFRA mapping appears to incorrectly place the watercourse flowing under the Sea Road. The watercourses flow parallel to the Sea Road, to the north and south, discharging into the Irish Sea. Coastal flooding is limited, given the steep increase in elevation extending in land.

Climate Change	No fluvial impacts, potential increase in runoff.
Conclusion	Re-development of any existing property within Flood Zone A/B should be assessed in line with Section 4.7. Any new development should follow the guidance provided in Section 4.4 to 4.11. In general the sequential approach should be followed and Flood Zone A/B should be avoided for any highly or less vulnerable development. Any redevelopment or new development should undertake a Stage 3 detailed FRA to adequately assess the risk, Any redevelopment or new development adjacent to the coast should conduct an appropriately detailed FRA to include coastal flooding and consider potential sea level rise. It is noted that the Flood Zone mapping is indicative and as stated above, further detailed modelling under a Stage 3 FRA would improve the quality and reliability of the assessment and must be undertaken in some circumstances.

5.14 Ballymurn

Hierarchy	Large Village
Area for Further Assessment under CFRAM programme?	No



The boundaries used to identify this settlement for the purposes of this flood risk assessment are those used and published by CSO. These boundaries are not intended nor to be interpreted as the Planning Authority's intended settlement boundaries and are just the study areas for the FRA . In all cases, a prospective applicant should seek confirmation from the Planning Authority on whether their development site is considered to fall within or outside of the settlement for the purpose of the implementation of planning policies in the County Development Plan.

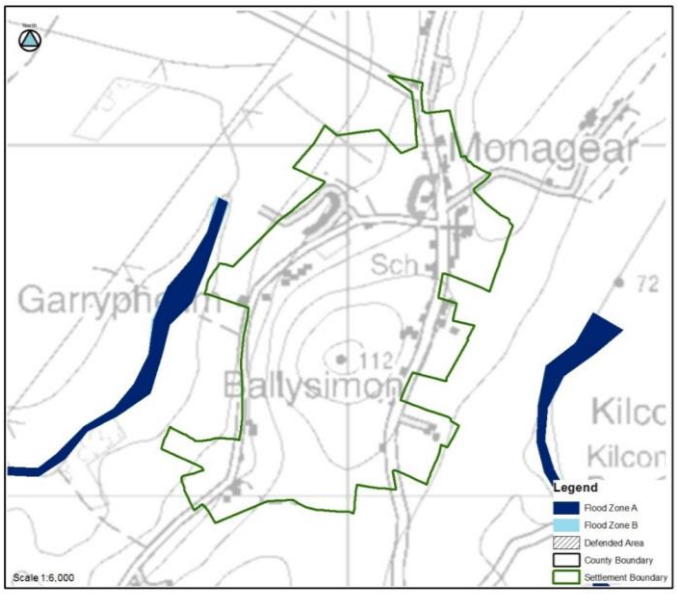
The Flood Zone mapping has been produced in accordance with the Planning Guidelines and therefore ignores the impact of flood protection structures. Areas protected by flood defences still carry a residual risk of flooding due to overtopping or breach, there may also be no guarantee of maintenance in perpetuity. Areas that benefit from defences are annotated separately. Flood Zone A – Fluvial: 1 in 100 year or 1% AEP, Tidal: 1 in 200 year or 0.5% AEP. Flood Zone B – 1 in 1000 year or 0.1% AEP.

Flood Zone Data	n/a

Historic Flooding	None recorded
Comment	No fluvial flood risk identified and no flood history
Climate Change	No fluvial impacts, potential increase in runoff.
Conclusion	Manage flood risk and development in line with approved objectives and general practice as explained in Section 4 of this document.

5.15 Ballysimon (Monagear)

Hierarchy	Small Village
Area for Further Assessment under CFRAM programme?	No



The boundaries used to identify this settlement for the purposes of this flood risk assessment are those used and published by CSO. These boundaries are not intended nor to be interpreted as the Planning Authority's intended settlement boundaries and are just the study areas for the FRA. In all cases, a prospective applicant should seek confirmation from the Planning Authority on whether their development site is considered to fall within or outside of the settlement for the purpose of the implementation of planning policies in the County Development Plan.

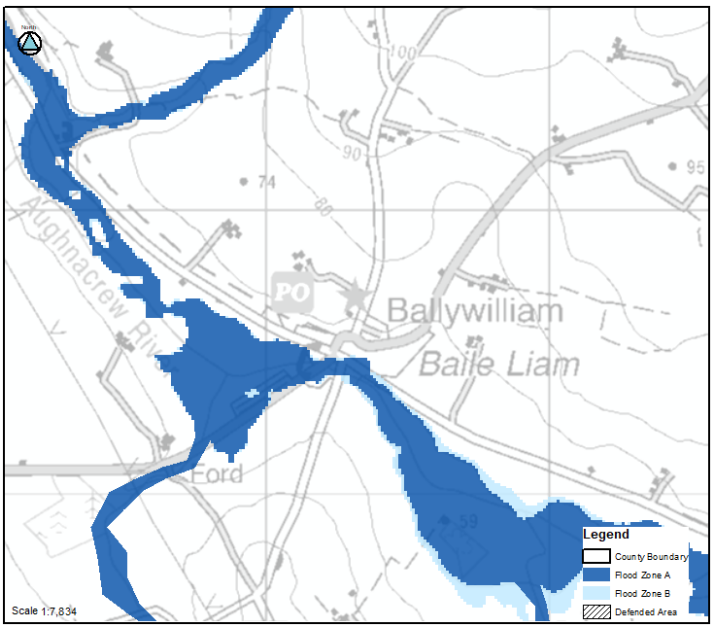
The Flood Zone mapping has been produced in accordance with the Planning Guidelines and therefore ignores the impact of flood protection structures. Areas protected by flood defences still carry a residual risk of flooding due to overtopping or breach, there may also be no guarantee of maintenance in perpetuity. Areas that benefit from defences are annotated separately. Flood Zone A – Fluvial: 1 in 100 year or 1% AEP, Tidal: 1 in 200 year or 0.5% AEP. Flood Zone B – 1 in 1000 year or 0.1% AEP.

Flood Zone Data	n/a

Historic Flooding	None recorded
Comment	No fluvial flood risk identified and no flood history
Climate Change	No fluvial impacts, potential increase in runoff.
Conclusion	Manage flood risk and development in line with approved objectives and general practice as explained in Section 4 of this document. It is noted that the Flood Zone mapping is indicative and further detailed modelling under a Stage 3 FRA would improve the quality and reliability of the assessment.

5.16 Ballywilliam

Hierarchy	Large Village
Area for Further Assessment under CFRAM programme?	No



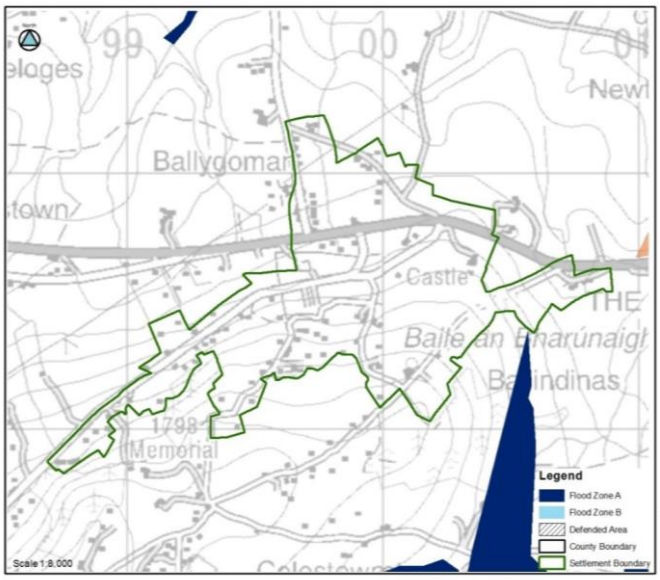
The Flood Zone mapping has been produced in accordance with the Planning Guidelines and therefore ignores the impact of flood protection structures. Areas protected by flood defences still carry a residual risk of flooding due to overtopping or breach, there may also be no guarantee of maintenance in perpetuity. Areas that benefit from defences are annotated separately. Flood Zone A – Fluvial: 1 in 100 year or 1% AEP, Tidal: 1 in 200 year or 0.5% AEP. Flood Zone B – 1 in 1000 year or 0.1% AEP.

Flood Zone Data	OPW PFRA & JBA
Historic Flooding	Recurring flooding is noted, village impassable.
Comment	Significant predicted flood extent is noted from the River Aughnacrew which flows in a north westerly direction through the village. It is likely that a bottleneck is provided by the two road bridges in the village. Low-lying land adjacent to the river is impacted and

	this is predicted to include existing commercial and residential property.
Climate Change	Moderate increase in fluvial risk.
Conclusion	Any new development should generally follow the guidance provided in Section 4.4 to 4.11. The sequential approach should be applied, and Flood Zone A/B avoided for any highly or less vulnerable development. It is noted that the Flood Zone mapping is indicative and further detailed modelling under a Stage 3 FRA would improve the quality and reliability of the assessment.

5.17 Barntown

Hierarchy	Large Village
Area for Further Assessment under CFRAM programme?	No



The boundaries used to identify this settlement for the purposes of this flood risk assessment are those used and published by CSO. These boundaries are not intended nor to be interpreted as the Planning Authority's intended settlement boundaries and are just the study areas for the FRA. In all cases, a prospective applicant should seek confirmation from the Planning Authority on whether their development site is considered to fall within or outside of the settlement for the purpose of the implementation of planning policies in the County Development Plan.

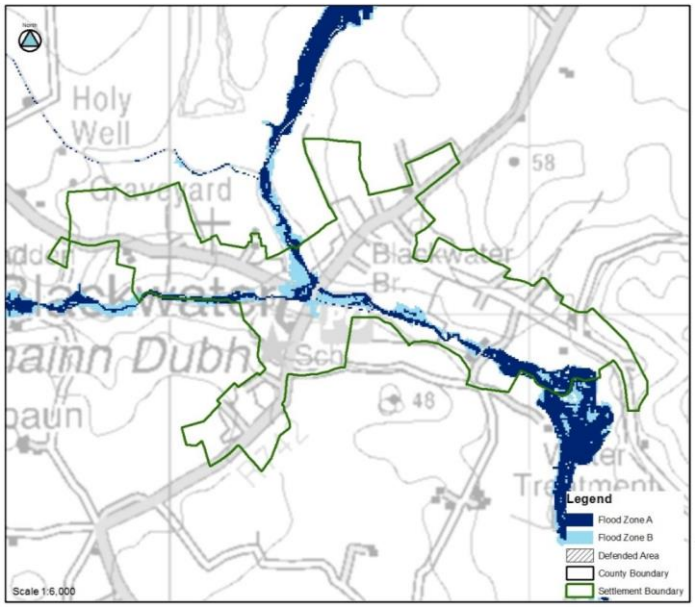
The Flood Zone mapping has been produced in accordance with the Planning Guidelines and therefore ignores the impact of flood protection structures. Areas protected by flood defences still carry a residual risk of flooding due to overtopping or breach, there may also be no guarantee of maintenance in perpetuity. Areas that benefit from defences are annotated separately. Flood Zone A – Fluvial: 1 in 100 year or 1% AEP, Tidal: 1 in 200 year or 0.5% AEP. Flood Zone B – 1 in 1000 year or 0.1% AEP.

Flood Zone Data	PFRA

Historic Flooding	None recorded
Comment	No fluvial flood risk identified and no flood history within the CSO boundary.
Climate Change	No fluvial impacts, potential increase in runoff.
Conclusion	Manage flood risk and development in line with approved objectives and general practice as explained in Section 4 of this document. It is noted that the Flood Zone mapping is indicative and further detailed modelling under a Stage 3 FRA would improve the quality and reliability of the assessment.

5.18 Blackwater

Hierarchy	Large Village
Area for Further Assessment under CFRAM programme?	Yes



The boundaries used to identify this settlement for the purposes of this flood risk assessment are those used and published by CSO. These boundaries are not intended nor to be interpreted as the Planning Authority's intended settlement boundaries and are just the study areas for the FRA .In all cases, a prospective applicant should seek confirmation from the Planning Authority on whether their development site is considered to fall within or outside of the settlement for the purpose of the implementation of planning policies in the County Development Plan.

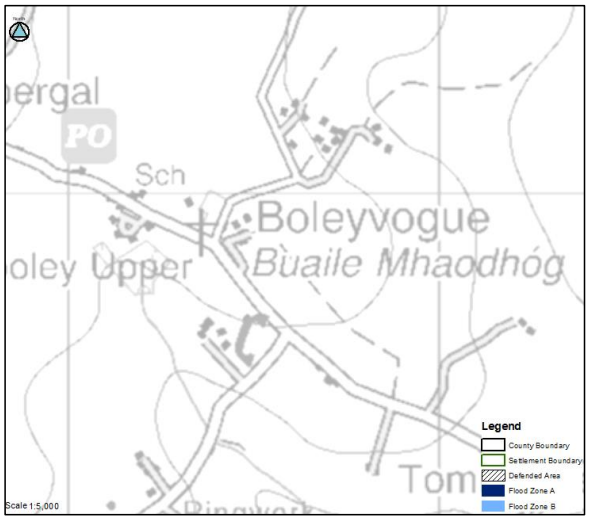
The Flood Zone mapping has been produced in accordance with the Planning Guidelines and therefore ignores the impact of flood protection structures. Areas protected by flood defences still carry a residual risk of flooding due to overtopping or breach, there may also be no guarantee of maintenance in perpetuity. Areas that benefit from defences are annotated separately. Flood Zone A – Fluvial: 1 in 100 year or 1% AEP, Tidal: 1 in 200 year or 0.5% AEP. Flood Zone B – 1 in 1000 year or 0.1% AEP.

Flood Zone Data	CFRAM

Historic Flooding	The River Blackwater burst its banks at Blackwater Village in August 1997 due to heavy rainfall, this caused a blockage to the centre of the village and damaged property. The Blackwater village is affected by recurring flooding. In 2005 roads, residential and commercial properties flooded: one residential property was flooded downstream of the village.
Comment	The Blackwater rivers flows through the village from the west before it converges with the River Aughanall downstream of the urban core. The prominent risk within the settlement boundary is surrounding the T-junction in the centre of the settlement.
Climate Change	Overall, the settlement has a low sensitivity to climate change. Structure blockage is the most significant residual risk in Blackwater.
Conclusion	The potential for structural blockage of a bridge in the village centre, and the associated residual risk from increased flood levels should be managed appropriately by a maintenance and emergency plan that focuses on reducing/managing bank vegetation and allowing for operations teams to safely clear blockage during a flood event. This is referred to by the CFRAM options included in Section 0 of this document. The scheme was not included within the current tranche of OPW funding. Adjacent to the mobile home park, at the point of confluence undeveloped land is at risk of inundation. Undeveloped land should therefore continue to be utilised for water compatible use. In the case of redevelopment of existing properties within Flood Zone A and B, consideration should be given to the advice outlined in Section 4.7.1.

5.19 Boolavogue

Hierarchy	Small Village
Area for Further Assessment under CFRAM programme?	No

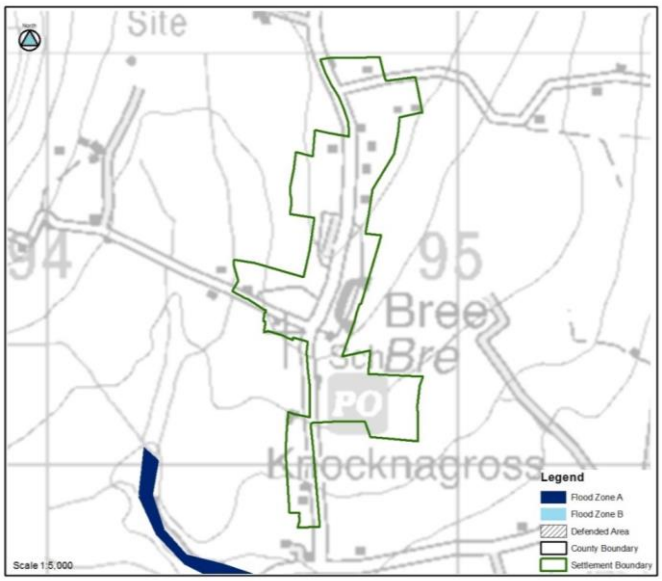


The Flood Zone mapping has been produced in accordance with the Planning Guidelines and therefore ignores the impact of flood protection structures. Areas protected by flood defences still carry a residual risk of flooding due to overtopping or breach, there may also be no guarantee of maintenance in perpetuity. Areas that benefit from defences are annotated separately. Flood Zone A – Fluvial: 1 in 100 year or 1% AEP, Tidal: 1 in 200 year or 0.5% AEP. Flood Zone B – 1 in 1000 year or 0.1% AEP.

Flood Zone Data	n/a
Historic Flooding	None recorded
Comment	No fluvial flood risk identified and no flood history.
Climate Change	Potential runoff increase.
Conclusion	Manage flood risk and development in line with approved objectives and general practice as explained in Section 4 of this document.

5.20 Bree

Hierarchy	Large Village
Area for Further Assessment under CFRAM programme?	No



The boundaries used to identify this settlement for the purposes of this flood risk assessment are those used and published by CSO. These boundaries are not intended nor to be interpreted as the Planning Authority's intended settlement boundaries and are just the study areas for the FRA. In all cases, a prospective applicant should seek confirmation from the Planning Authority on whether their development site is considered to fall within or outside of the settlement for the purpose of the implementation of planning policies in the County Development Plan.

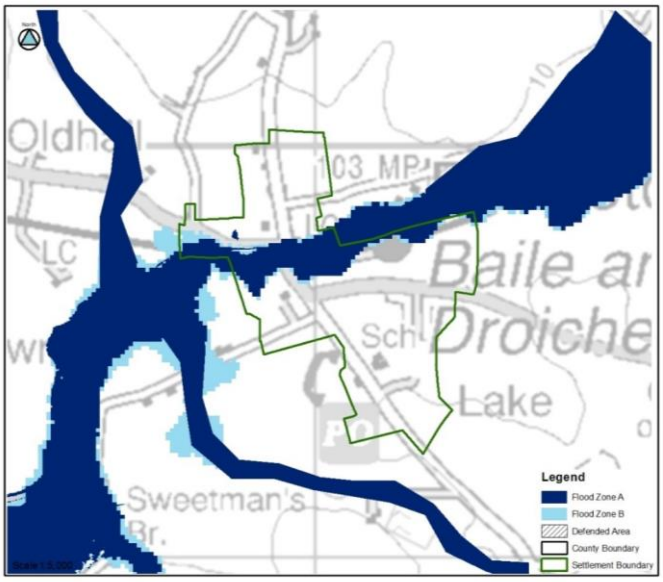
The Flood Zone mapping has been produced in accordance with the Planning Guidelines and therefore ignores the impact of flood protection structures. Areas protected by flood defences still carry a residual risk of flooding due to overtopping or breach, there may also be no guarantee of maintenance in perpetuity. Areas that benefit from defences are annotated separately. Flood Zone A – Fluvial: 1 in 100 year or 1% AEP, Tidal: 1 in 200 year or 0.5% AEP. Flood Zone B – 1 in 1000 year or 0.1% AEP.

Flood Zone Data	PFRA

Historic Flooding	None recorded
Comment	No fluvial flood risk identified and no flood history within CSO boundary
Climate Change	No fluvial impacts, potential increase in runoff.
Conclusion	Manage flood risk and development in line with approved objectives and general practice as explained in Section 4 of this document. It is noted that the Flood Zone mapping is indicative and further detailed modelling under a Stage 3 FRA would improve the quality and reliability of the assessment.

5.21 Bridgetown

Hierarchy	~~Service~~ Strategic Settlement
Area for Further Assessment under CFRAM programme?	No



The boundaries used to identify this settlement for the purposes of this flood risk assessment are those used and published by CSO. These boundaries are not intended nor to be interpreted as the Planning Authority's intended settlement boundaries and are just the study areas for the FRA. In all cases, a prospective applicant should seek confirmation from the Planning Authority on whether their development site is considered to fall within or outside of the settlement for the purpose of the implementation of planning policies in the County Development Plan.

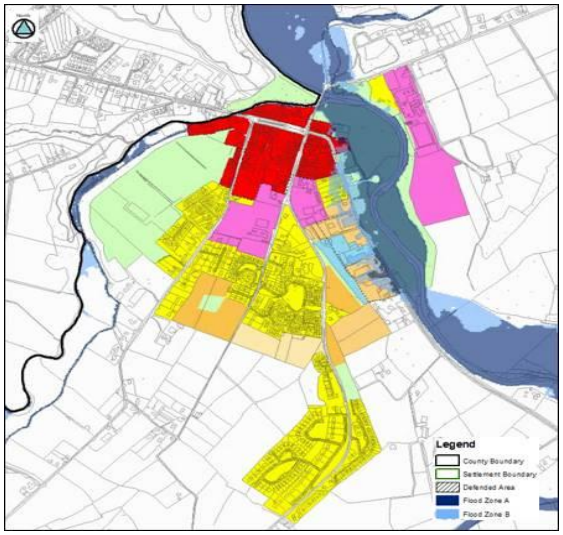
The Flood Zone mapping has been produced in accordance with the Planning Guidelines and therefore ignores the impact of flood protection structures. Areas protected by flood defences still carry a residual risk of flooding due to overtopping or breach, there may also be no guarantee of maintenance in perpetuity. Areas that benefit from defences are annotated separately. Flood Zone A – Fluvial: 1 in 100 year or 1% AEP, Tidal: 1 in 200 year or 0.5% AEP. Flood Zone B – 1 in 1000 year or 0.1% AEP.

Flood Zone Data	JFLOW and OPW PFRA & ICPSS (outside of CSO boundary).

Historic Flooding	Recurring flooding caused by high tides in the Bridgetown area; which was recorded by the ESB. It has been noted that south of Bridgetown Lake is susceptible to flooding due to flooding of the Bridgetown River and its tributaries. Flooding on the 5th and 6th of November 2000 caused damage to roads and a house in Bridgetown.
Comment	Bridgetown River flows through the centre of Bridgetown from the west. The PFRA flood mapping suggests a risk to existing residential properties, the railway line and undeveloped land.
Climate Change	A marginal increase in flood extents to the west of the settlement implies low sensitivity to climate change
Conclusion	The indicative flood mapping suggests two residential estates along the southern stretch of the river are partly at risk of flooding. The railway line which runs parallel to the northern stretch of the river is expected to become heavily inundated. Any new development should follow the guidance provided in Section 4.4 to 4.11 and should be subject to an appropriately detailed FRA. In general, the sequential approach should be followed, and Flood Zone A/B should be avoided for any highly or less vulnerable development. It is noted that the Flood Zone mapping is indicative and further detailed modelling under a Stage 3 FRA would improve the quality and reliability of the assessment.

5.22 Bunclody

Hierarchy	Service Settlement
Area for Further Assessment under CFRAM programme?	Yes



The Flood Zone mapping has been produced in accordance with the Planning Guidelines and therefore ignores the impact of flood protection structures. Areas protected by flood defences still carry a residual risk of flooding due to overtopping or breach, there may also be no guarantee of maintenance in perpetuity. Areas that benefit from defences are annotated separately. Flood Zone A – Fluvial: 1 in 100 year or 1% AEP, Tidal: 1 in 200 year or 0.5% AEP. Flood Zone B – 1 in 1000 year or 0.1% AEP.

Flood Zone Data	CFRAM
Historic Flooding	In November 2000 one house adjacent to bridge was damaged due to flooding. Ryland Road regularly floods; the last recorded flood was in 2015 / early 2016 the road, sewage pump station and a single property were damaged. Flooding occurs periodically every 3-4 years at Slaney Bridge and Ryland Road resulting in flooding and closure of the N80.

Comment	The River Slaney flows through Bunclody from the northwest. A small river runs from the southwest before its confluence with the River Slaney upstream of the bridge on Carnew Road. There are two small streams which join both watercourses within a few hundred metres of the confluence. The most significant flood impacts are felt on the N80 on the southern approach to the town where Flood Zone A overlaps with the road and a small amount of existing development. The risk was not significant enough to prompt consideration of any structural measures under the CFRAM. Flood Zone B overlaps with significant areas of existing commercial and industrial development along this fringe of the town, the area is designated as 'regeneration lands'. Some existing residential is also located within Flood Zone B adjacent to the N80.
Climate Change	The CFRAM mapping deliverables suggest that development adjacent to the N80 on the southern approach to the town are highly sensitive to increases in flow and therefore climate change.
Conclusion	There is minimal existing development within Flood Zone A, however the flood extents increase significantly for Flood Zone B which suggests that climate change impacts will be severe. Small extensions/refurbishment of existing buildings within Flood Zone A and B should consider the advice given in Section 4.7.1. For the commercial and industrial lands adjacent to the N80 that are within Flood Zone B and are within the regeneration area then use should be restricted to less vulnerable or water compatible and should consider the advice given in Section 4.4 to 4.11. For the small areas of existing commercial development impacted by Flood Zone A then the Development Management Justification Test may need to be applied depending on the intended use. In general, all proposed development bordering the flood outlines should be subject to an appropriately detailed FRA at development management stage and must specifically consider future climate change impacts.

5.23 Caim

Hierarchy	Small Village
Area for Further Assessment under CFRAM programme?	No

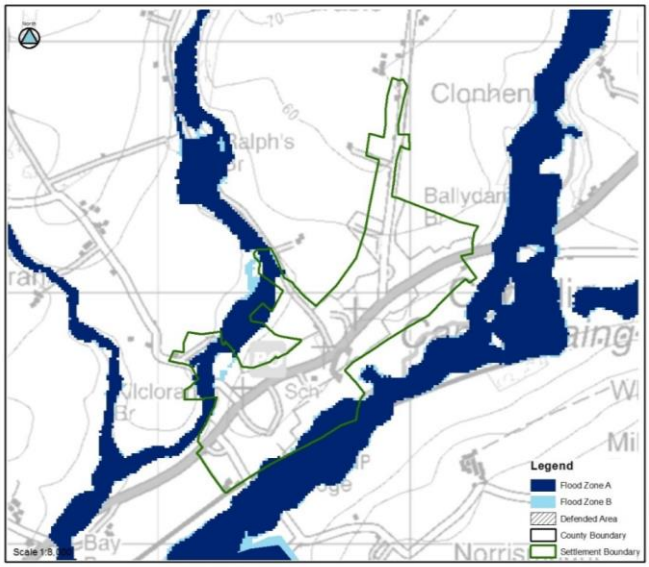
The Flood Zone mapping has been produced in accordance with the Planning Guidelines and therefore ignores the impact of flood protection structures. Areas protected by flood defences still carry a residual risk of flooding due to overtopping or breach, there may also be no guarantee of maintenance in perpetuity. Areas that benefit from defences are annotated separately. Flood Zone A – Fluvial: 1 in 100 year or 1% AEP, Tidal: 1 in 200 year or 0.5% AEP. Flood Zone B – 1 in 1000 year or 0.1% AEP.

Flood Zone Data	PFRA
Historic Flooding	None recorded
Comment	Flood risk is low.
Climate Change	No fluvial impacts, potential increase in runoff.

Conclusion	Risk to the core of the development is low. Manage flood risk and development in line with approved objectives and general practice as explained in Section 4 of the SFRA. It is noted that the Flood Zone mapping is indicative and further detailed modelling under a Stage 3 FRA would improve the quality and reliability of the assessment.

5.24 Camolin

Hierarchy	Large Village
Area for Further Assessment under CFRAM programme?	No



The boundaries used to identify this settlement for the purposes of this flood risk assessment are those used and published by CSO. These boundaries are not intended nor to be interpreted as the Planning Authority's intended settlement boundaries and are just the study areas for the FRA. In all cases, a prospective applicant should seek confirmation from the Planning Authority on whether their development site is considered to fall within or outside of the settlement for the purpose of the implementation of planning policies in the County Development Plan.

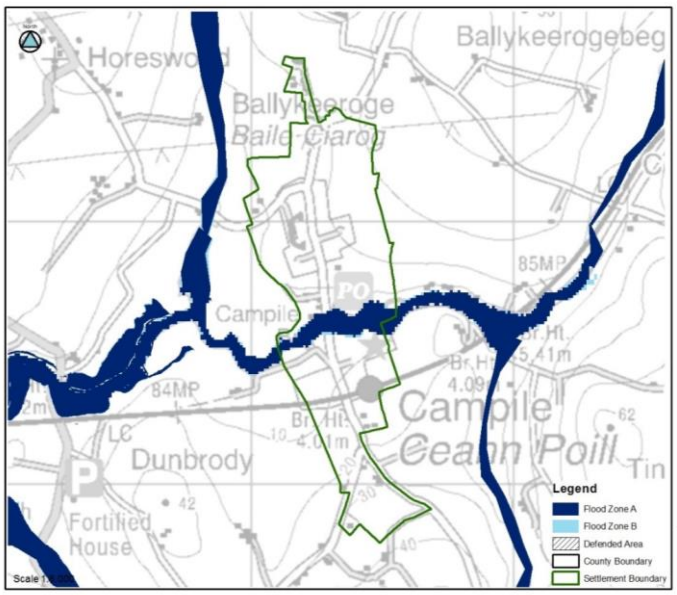
The Flood Zone mapping has been produced in accordance with the Planning Guidelines and therefore ignores the impact of flood protection structures. Areas protected by flood defences still carry a residual risk of flooding due to overtopping or breach, there may also be no guarantee of maintenance in perpetuity. Areas that benefit from defences are annotated separately. Flood Zone A – Fluvial: 1 in 100 year or 1% AEP, Tidal: 1 in 200 year or 0.5% AEP. Flood Zone B – 1 in 1000 year or 0.1% AEP.

Flood Zone Data	JFLOW.

Historic Flooding	No significant fluvial flood risk identified.
Comment	The River Bann flows adjacent to the southeast settlement boundary. A small stream flows from the north and then along the western boundary. The JFLOW flood map outlines suggest risk of flooding to a couple of developed sites along the western boundary and to undeveloped agricultural lands along the southeast boundary.
Climate Change	JFLOW flood map outlines indicate a marginal increase in fluvial flood extents for an increase in severity, which suggests some sensitivity to climate change.
Conclusion	The prominent risk would be along the western boundary where three existing residential properties are within Flood Zone A. If these properties were considering re-development, the advice given in Section 4.7.1 should be applied. Any new development should follow the guidance provided in Section 4.4 to 4.11 and should be subject to an appropriately detailed FRA. In general the sequential approach should be followed and Flood Zone A/B should be avoided for any highly or less vulnerable development. It is noted that the Flood Zone mapping is indicative and further detailed modelling under a Stage 3 FRA would improve the quality and reliability of the assessment.

5.25 Campile

Hierarchy	~~Service~~ Strategic Settlement
Area for Further Assessment under CFRAM programme?	No



The boundaries used to identify this settlement for the purposes of this flood risk assessment are those used and published by CSO. These boundaries are not intended nor to be interpreted as the Planning Authority's intended settlement boundaries and are just the study areas for the FRA. In all cases, a prospective applicant should seek confirmation from the Planning Authority on whether their development site is considered to fall within or outside of the settlement for the purpose of the implementation of planning policies in the County Development Plan.

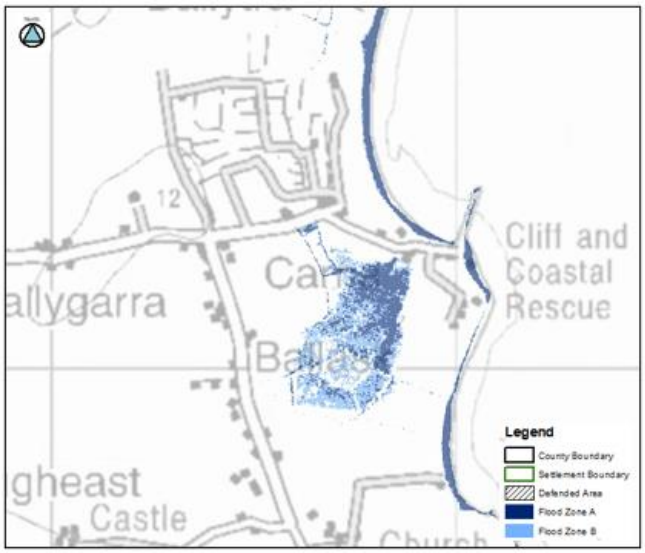
The Flood Zone mapping has been produced in accordance with the Planning Guidelines and therefore ignores the impact of flood protection structures. Areas protected by flood defences still carry a residual risk of flooding due to overtopping or breach, there may also be no guarantee of maintenance in perpetuity. Areas that benefit from defences are annotated separately. Flood Zone A – Fluvial: 1 in 100 year or 1% AEP, Tidal: 1 in 200 year or 0.5% AEP. Flood Zone B – 1 in 1000 year or 0.1% AEP.

Flood Zone Data	JFLOW

Historic Flooding	No significant fluvial flood risk identified.
Comment	The River Suir runs through the centre of Campile in a westerly direction passing through the bridge under Main Street. The main risk to the settlement is to properties to the south of the river. There is undeveloped land within the floodplain of the River Suir which is also at risk.
Climate Change	A review of the JFLOW flood mapping indicates marginal sensitivity to increases in flow and therefore climate change.
Conclusion	For existing development within Flood Zone A/B the advice given in Section 4.7.1 should be applied. Any new development should follow the guidance provided in Section 4.4 to 4.11 and should be subject to an appropriately detailed FRA. It is noted that the Flood Zone mapping is indicative and further detailed modelling under a Stage 3 FRA would improve the quality and reliability of the assessment. In general, the sequential approach should be followed and Flood Zone A/B should be avoided for any highly or less vulnerable development.

5.26 Carne

Hierarchy	Small Village
Area for Further Assessment under CFRAM programme?	No



The boundaries used to identify this settlement for the purposes of this flood risk assessment are those used and published by CSO. These boundaries are not intended nor to be interpreted as the Planning Authority's intended settlement boundaries and are just the study areas for the FRA. In all cases, a prospective applicant should seek confirmation from the Planning Authority on whether their development site is considered to fall within or outside of the settlement for the purpose of the implementation of planning policies in the County Development Plan.

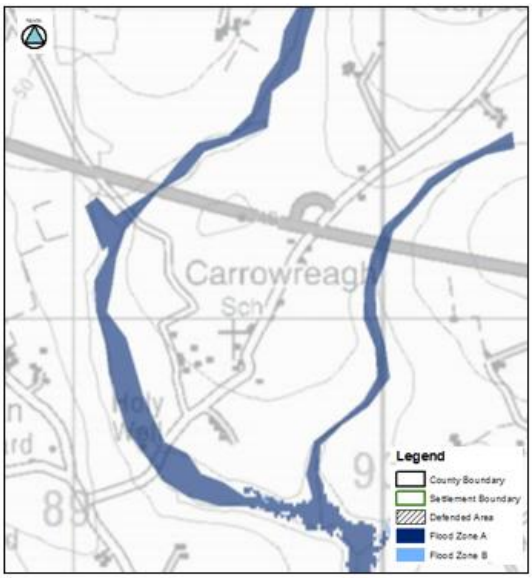
The Flood Zone mapping has been produced in accordance with the Planning Guidelines and therefore ignores the impact of flood protection structures. Areas protected by flood defences still carry a residual risk of flooding due to overtopping or breach, there may also be no guarantee of maintenance in perpetuity. Areas that benefit from defences are annotated separately. Flood Zone A – Fluvial: 1 in 100 year or 1% AEP, Tidal: 1 in 200 year or 0.5% AEP. Flood Zone B – 1 in 1000 year or 0.1% AEP.

Flood Zone Data	ICPSS

Historic Flooding	Road nearby in Ballask affected by tidal backwaters on a recurring basis.
Comment	Carne is a coastal community located close to the Irish Sea. There is a small fringe of tidal flood risk along the coastal margin. Low lying lands to the south of the Carne Beach Caravan Park is at potential risk as well, most likely related to tidal backwaters.
Climate Change	A review of the ICPSS flood mapping indicates high sensitivity to increases in climate change.
Conclusion	Any new development should follow the guidance provided in Section 4.4 to 4.11 and should be subject to an appropriately detailed FRA. In general, the sequential approach should be followed, and Flood Zone A/B should be avoided for any highly or less vulnerable development. Climate change is an important factor to consider in any assessment.

5.27 Carrowreagh

Hierarchy	Small Village
Area for Further Assessment under CFRAM programme?	No



The boundaries used to identify this settlement for the purposes of this flood risk assessment are those used and published by CSO. These boundaries are not intended nor to be interpreted as the Planning Authority's intended settlement boundaries and are just the study areas for the FRA. In all cases, a prospective applicant should seek confirmation from the Planning Authority on whether their development site is considered to fall within or outside of the settlement for the purpose of the implementation of planning policies in the County Development Plan.

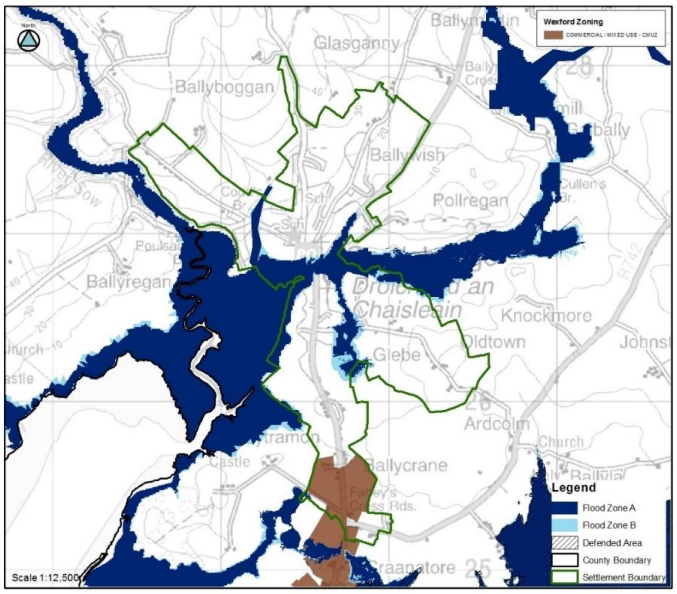
The Flood Zone mapping has been produced in accordance with the Planning Guidelines and therefore ignores the impact of flood protection structures. Areas protected by flood defences still carry a residual risk of flooding due to overtopping or breach, there may also be no guarantee of maintenance in perpetuity. Areas that benefit from defences are annotated separately. Flood Zone A – Fluvial: 1 in 100 year or 1% AEP, Tidal: 1 in 200 year or 0.5% AEP. Flood Zone B – 1 in 1000 year or 0.1% AEP.

Flood Zone Data	PFRA & JFLOW

Historic Flooding	None recorded
Comment	Carrowreagh is a small village located on high ground with watercourses flowing to the east and west of the settlement in a northerly direction. Both watercourses have associated PFRA mapping.
Climate Change	A review of the available flood mapping indicates moderate/low sensitivity to increases in climate change.
Conclusion	Any new development should follow the guidance provided in Section 4.4 to 4.11 and should be subject to an appropriately detailed FRA. In general, the sequential approach should be followed, and Flood Zone A/B should be avoided for any highly or less vulnerable development.

5.28 Castlebridge

Hierarchy	Service Settlement
Area for Further Assessment under CFRAM programme?	No



The boundaries used to identify this settlement for the purposes of this flood risk assessment are those used and published by CSO. These boundaries are not intended nor to be interpreted as the Planning Authority's intended settlement boundaries and are just the study areas for the FRA. In all cases, a prospective applicant should seek confirmation from the Planning Authority on whether their development site is considered to fall within or outside of the settlement for the purpose of the implementation of planning policies in the County Development Plan.

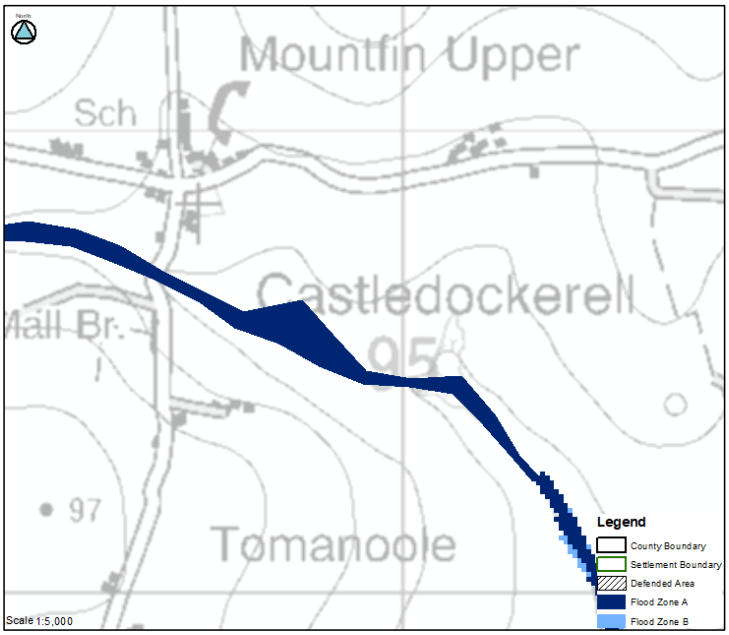
The Flood Zone mapping has been produced in accordance with the Planning Guidelines and therefore ignores the impact of flood protection structures. Areas protected by flood defences still carry a residual risk of flooding due to overtopping or breach, there may also be no guarantee of maintenance in perpetuity. Areas that benefit from defences are annotated separately. Flood Zone A – Fluvial: 1 in 100 year or 1% AEP, Tidal: 1 in 200 year or 0.5% AEP. Flood Zone B – 1 in 1000 year or 0.1% AEP.

Flood Zone Data	CFRAM, OPW PFRA, ICPSS, and JFLOW.

Historic Flooding	Castlebridge village was flooded in October 2004 and several residential properties and businesses were affected; a similar event occurred on the 5th of August 1997. The Oldbridge Rd experiences recurring flooding causing the roads to become impassable; this is due to the interaction between high tides and local drainage. The R741 also experiences recurring flood events however remedial works had been undertaken in 2004.
Comment	Several streams flow through Castlebridge from the northeast and northwest before the outfall into the Slaney Estuary. Both fluvial and tidal sources pose risk to Castlebridge. The principal risk in this settlement is to the residential properties along Rectory walk, the Oldtown Road, and to the rear of Cloisters park which are partly at risk of flooding. There are a few residential properties surrounding the extensive floodplain which are also at risk of flooding. At the junction with the R741 in the centre of the settlement there is also risk to commercial/industrial sites. Undeveloped floodplain is also at risk.
Climate Change	The CFRAM flood extents suggest this settlement is at high risk of flooding from tidal and fluvial sources. This is exacerbated by the anticipated rise in sea level.
Conclusion	There is significant flood risk in Castlebridge, which is related to tidal, fluvial and surface water drainage. The settlement was not included as part of the CFRAM and it is recommended that Wexford County Council investigate potential relief works as part of OPW Minor Works funding. Re-development of any existing property within Flood Zone A/B should be assessed in line with Section 4.7. Any new development should follow the guidance provided in Section 4.4 to 4.11. In general the sequential approach should be followed and Flood Zone A/B should be avoided for any highly or less vulnerable development.

5.29 Castledockrell

Hierarchy	Small Village
Area for Further Assessment under CFRAM programme?	No



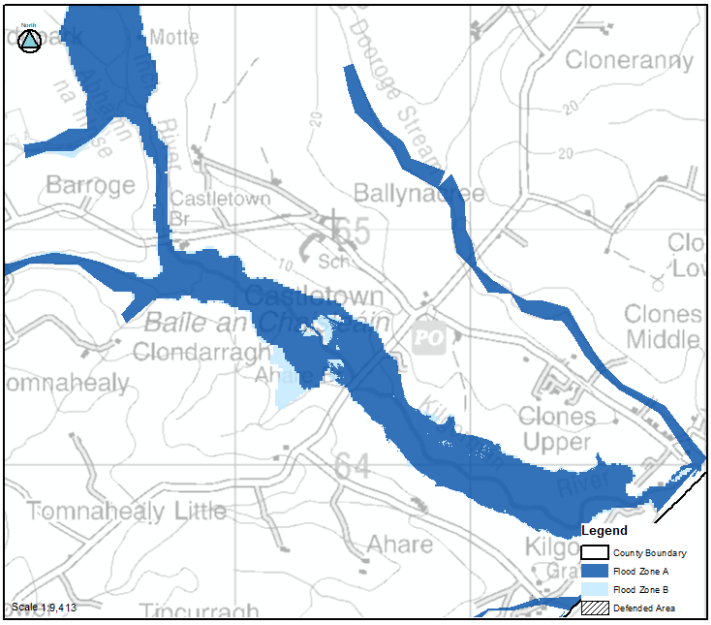
The Flood Zone mapping has been produced in accordance with the Planning Guidelines and therefore ignores the impact of flood protection structures. Areas protected by flood defences still carry a residual risk of flooding due to overtopping or breach, there may also be no guarantee of maintenance in perpetuity. Areas that benefit from defences are annotated separately. Flood Zone A – Fluvial: 1 in 100 year or 1% AEP, Tidal: 1 in 200 year or 0.5% AEP. Flood Zone B – 1 in 1000 year or 0.1% AEP.

Flood Zone Data	PFRA
Historic Flooding	None recorded
Comment	A watercourse flows in an easterly direction, south of the settlement, it does not interact with any existing development.

Climate Change	No fluvial impacts, potential increase in runoff.
Conclusion	Any new development should follow the guidance provided in Section 4.4 to 4.11. In general the sequential approach should be followed and Flood Zone A/B should be avoided for any highly or less vulnerable development. It is noted that the Flood Zone mapping is indicative and further detailed modelling under a Stage 3 FRA would improve the quality and reliability of the assessment.

5.30 Castletown

Hierarchy	Rural Node
Area for Further Assessment under CFRAM programme?	No



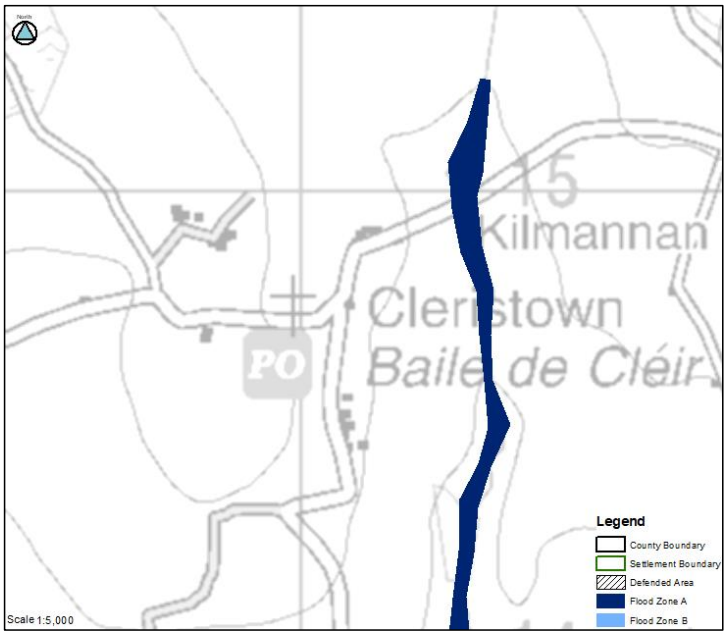
The Flood Zone mapping has been produced in accordance with the Planning Guidelines and therefore ignores the impact of flood protection structures. Areas protected by flood defences still carry a residual risk of flooding due to overtopping or breach, there may also be no guarantee of maintenance in perpetuity. Areas that benefit from defences are annotated separately. Flood Zone A – Fluvial: 1 in 100 year or 1% AEP, Tidal: 1 in 200 year or 0.5% AEP. Flood Zone B – 1 in 1000 year or 0.1% AEP.

Flood Zone Data	OPW PFRA, ICPSS & JBA
Historic Flooding	Recurring flooding – inundation of Kilgorman River floodplain.
Comment	Whilst there is significant historic and predicted risk from the Kilgorman River the floodplain is free from any significant development and the village itself is at low risk.

Climate Change	Highly sensitive to climate change impacts.
Conclusion	The village core is at low risk of flooding and risk should be managed in line with approved objectives and general practice as explained in Section 4 of this document. It is noted that the Flood Zone mapping is indicative and further detailed modelling under a Stage 3 FRA would improve the quality and reliability of the assessment.

5.31 Cleriestown

Hierarchy	Small Village
Area for Further Assessment under CFRAM programme?	No



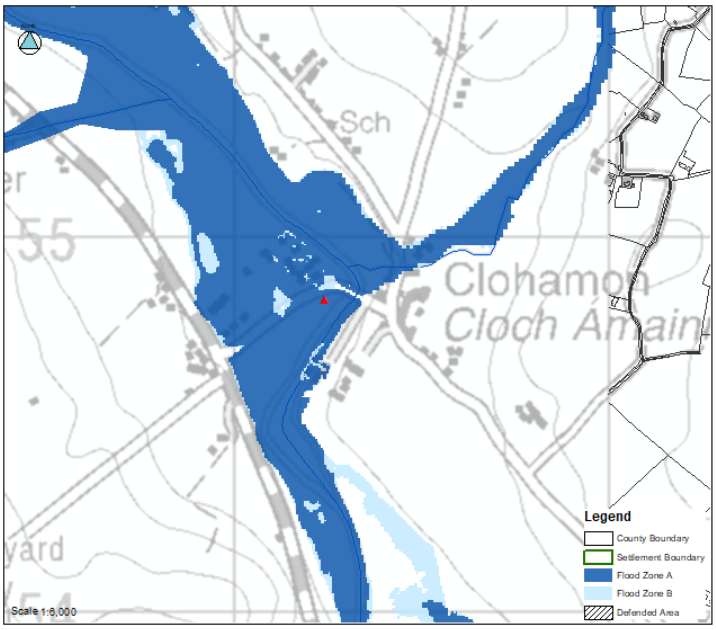
The Flood Zone mapping has been produced in accordance with the Planning Guidelines and therefore ignores the impact of flood protection structures. Areas protected by flood defences still carry a residual risk of flooding due to overtopping or breach, there may also be no guarantee of maintenance in perpetuity. Areas that benefit from defences are annotated separately. Flood Zone A – Fluvial: 1 in 100 year or 1% AEP, Tidal: 1 in 200 year or 0.5% AEP. Flood Zone B – 1 in 1000 year or 0.1% AEP.

Flood Zone Data	PFRA
Historic Flooding	No historic risk identified.
Comment	A small field drain flows in a southerly direction to the east of the village. There is no flood history.

Climate Change	Limited or no fluvial impacts, potential increase in runoff could increase flooding.
Conclusion	Risk is likely to be low, but any extensions or new development should conduct an appropriately detailed FRA and assess the risk from the local drain following the guidance provided in Section 4.4 to 4.11. In general the sequential approach should be followed and Flood Zone A/B should be avoided for any highly or less vulnerable development. It is noted that the Flood Zone mapping is indicative and further detailed modelling under a Stage 3 FRA would improve the quality and reliability of the assessment.

5.32 Clohamon

Hierarchy	Small Village
Area for Further Assessment under CFRAM programme?	No



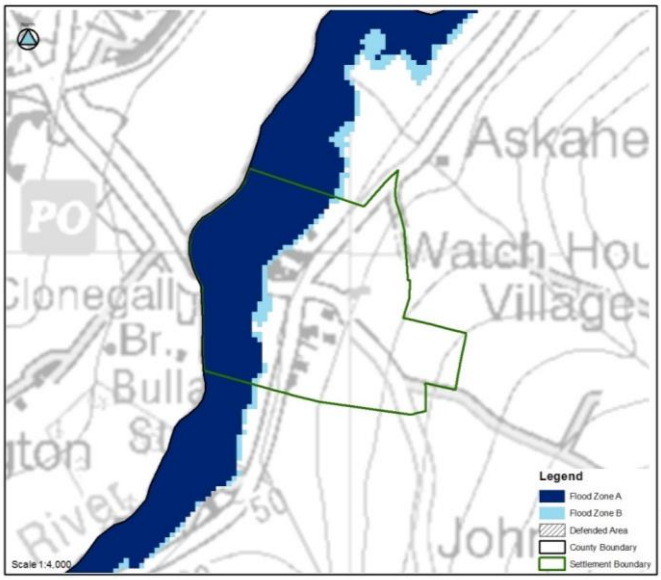
The Flood Zone mapping has been produced in accordance with the Planning Guidelines and therefore ignores the impact of flood protection structures. Areas protected by flood defences still carry a residual risk of flooding due to overtopping or breach, there may also be no guarantee of maintenance in perpetuity. Areas that benefit from defences are annotated separately. Flood Zone A – Fluvial: 1 in 100 year or 1% AEP, Tidal: 1 in 200 year or 0.5% AEP. Flood Zone B – 1 in 1000 year or 0.1% AEP.

Flood Zone Data	CFRAM
Historic Flooding	Nov 2000, Meat factory – adjacent to the Slaney.
Comment	The principle risk is from the River Slaney and historically this has impacted the meat factory – which is built in the floodplain. Development levels within the village core are higher than the surrounding floodplain and risk is generally low. A tributary of the Slaney flows in from the west and is a source of fluvial risk to some existing residential development on the north eastern fringe of the village.

Climate Change	Highly sensitive to climate change.
Conclusion	The village core is at low risk of flooding and risk should be managed in accordance with approved objectives and general practice as explained in Section 4 of this document.. Re-development of any existing property within Flood Zone A/B should be assessed in line with Section 4.7. Any new development should follow the guidance provided in Section 4.4 to 4.11. In general the sequential approach should be followed and Flood Zone A/B should be avoided for any highly or less vulnerable development.

5.33 Clonegal (Watch House Village)

Hierarchy	Rural Node
Area for Further Assessment under CFRAM programme?	No



The boundaries used to identify this settlement for the purposes of this flood risk assessment are those used and published by CSO. These boundaries are not intended nor to be interpreted as the Planning Authority's intended settlement boundaries and are just the study areas for the FRA. In all cases, a prospective applicant should seek confirmation from the Planning Authority on whether their development site is considered to fall within or outside of the settlement for the purpose of the implementation of planning policies in the County Development Plan.

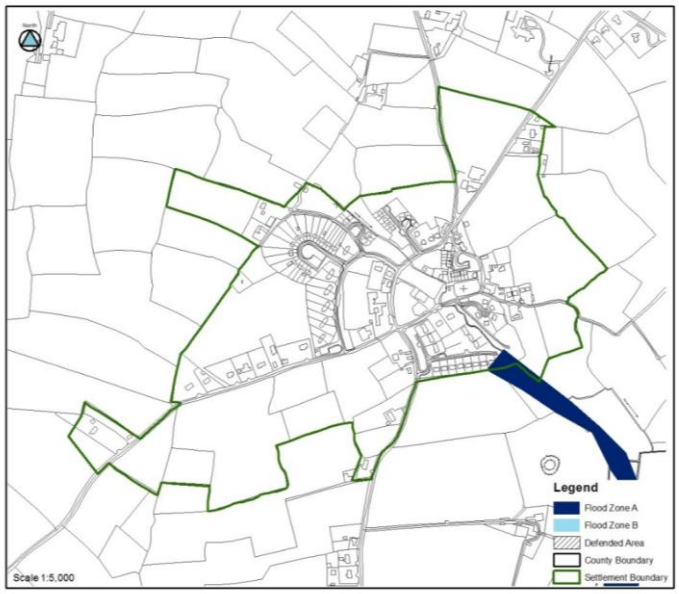
The Flood Zone mapping has been produced in accordance with the Planning Guidelines and therefore ignores the impact of flood protection structures. Areas protected by flood defences still carry a residual risk of flooding due to overtopping or breach, there may also be no guarantee of maintenance in perpetuity. Areas that benefit from defences are annotated separately. Flood Zone A – Fluvial: 1 in 100 year or 1% AEP, Tidal: 1 in 200 year or 0.5% AEP. Flood Zone B – 1 in 1000 year or 0.1% AEP.

Flood Zone Data	JFLOW

Historic Flooding	Recurring flood events surrounding the Bridge in Clonegal which has caused impacts to local properties. A flood event was recorded in 2000 where the water level was higher than anticipated, 6 people were evacuated from their homes.
Comment	The River Derry runs adjacent to the west of the Clonegal settlement in a southerly direction. Agricultural lands act as the natural floodplain for the River Derry. Four residential properties along the R724 road are at high risk of flooding.
Climate Change	A review of the JFLOW flood mapping indicates a limited increase in flood extents and therefore suggests a marginal sensitivity to climate change.
Conclusion	Any new development should follow the guidance provided in Section 4.4 to 4.11. In general the sequential approach should be followed and Flood Zone A/B should be avoided for any highly or less vulnerable development. It is noted that the Flood Zone mapping is indicative and further detailed modelling under a Stage 3 FRA would improve the quality and reliability of the assessment.

5.34 Clongeen

Hierarchy	Large Village
Area for Further Assessment under CFRAM programme?	No



The boundaries used to identify this settlement for the purposes of this flood risk assessment are those used and published by CSO. These boundaries are not intended nor to be interpreted as the Planning Authority's intended settlement boundaries and are just the study areas for the FRA. In all cases, a prospective applicant should seek confirmation from the Planning Authority on whether their development site is considered to fall within or outside of the settlement for the purpose of the implementation of planning policies in the County Development Plan.

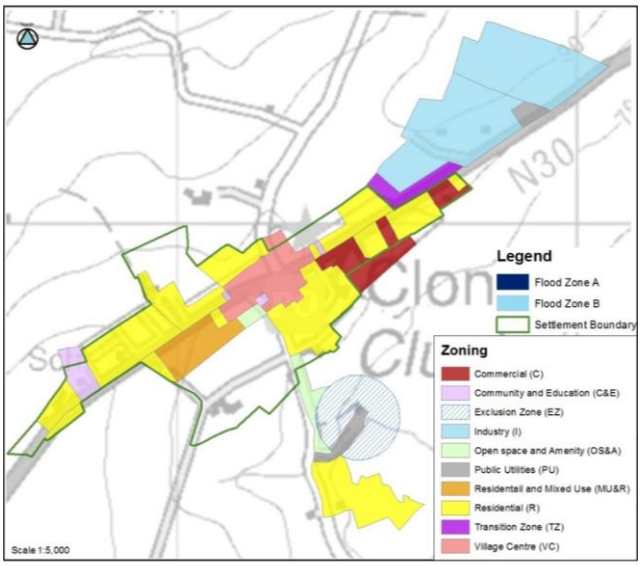
The Flood Zone mapping has been produced in accordance with the Planning Guidelines and therefore ignores the impact of flood protection structures. Areas protected by flood defences still carry a residual risk of flooding due to overtopping or breach, there may also be no guarantee of maintenance in perpetuity. Areas that benefit from defences are annotated separately. Flood Zone A – Fluvial: 1 in 100 year or 1% AEP, Tidal: 1 in 200 year or 0.5% AEP. Flood Zone B – 1 in 1000 year or 0.1% AEP.

Flood Zone Data	PFRA

Historic Flooding	No historic risk identified.
Comment	A small field drain flows through the centre of the village in a southerly direction. There is no flood history and risk is likely to be low.
Climate Change	Limited or no fluvial impacts, potential increase in runoff could increase flooding.
Conclusion	Risk is likely to be low, but any extensions or new development should conduct an appropriately detailed FRA and assess the risk from the local drain. Any new development should follow the guidance provided in Section 4.4 to 4.11. In general the sequential approach should be followed and Flood Zone A/B should be avoided for any highly or less vulnerable development.

5.35 Clonroche

Hierarchy	~~Service~~ Strategic Settlement
Area for Further Assessment under CFRAM programme?	No



The boundaries used to identify this settlement for the purposes of this flood risk assessment are those used and published by CSO. These boundaries are not intended nor to be interpreted as the Planning Authority's intended settlement boundaries and are just the study areas for the FRA. In all cases, a prospective applicant should seek confirmation from the Planning Authority on whether their development site is considered to fall within or outside of the settlement for the purpose of the implementation of planning policies in the County Development Plan.

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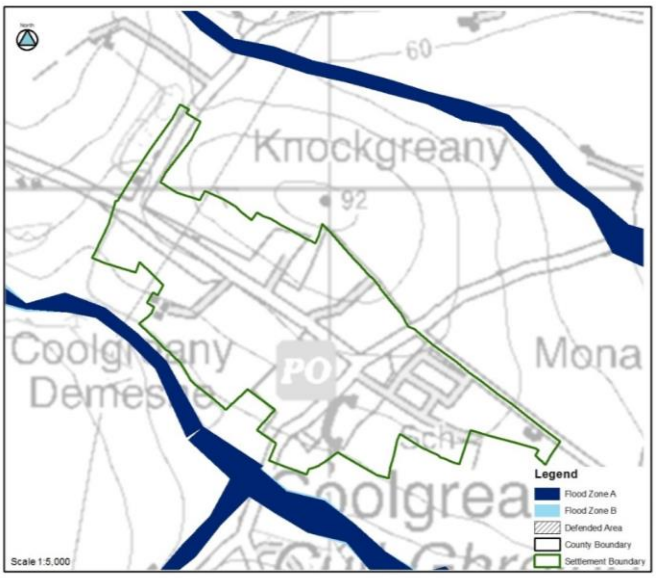
Flood Zone Data	n/a

Historic Flooding	None recorded
Comment	No fluvial flood risk identified and no flood history
Climate Change	No fluvial impacts, potential increase in runoff.
Conclusion	Manage flood risk and development in line with approved objectives and general practice as explained in Section 4 of this document.

5.36 Coolgreany

Hierarchy	~~Service~~ Strategic Settlement
Area for Further Assessment under CFRAM programme?	No



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Flood Zone Data	PFRA

Historic Flooding	None recorded
Comment	No fluvial flood risk identified and no flood history, a watercourse is located to the south of the CSO boundary.
Climate Change	No fluvial impacts, potential increase in runoff.
Conclusion	Any new development should follow the guidance provided in Section 4.4 to 4.11. In general the sequential approach should be followed and Flood Zone A/B should be avoided for any highly or less vulnerable development. It is noted that the Flood Zone mapping is indicative and further detailed modelling under a Stage 3 FRA would improve the quality and reliability of the assessment.

5.37 Courtnacuddy

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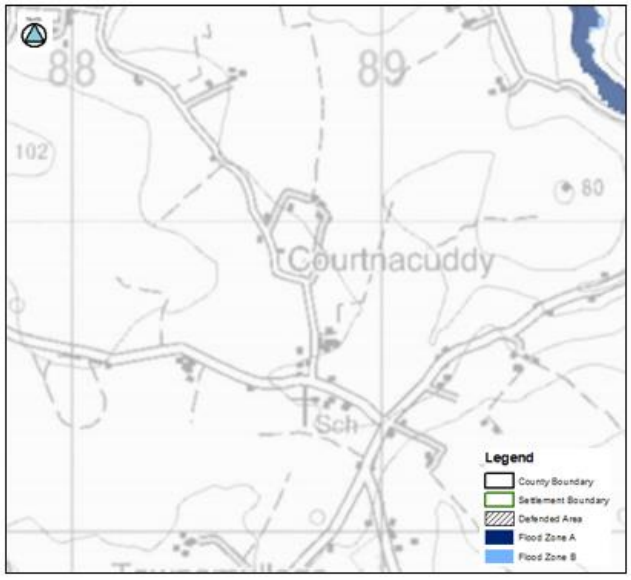
Hierarchy	Small Village
Area for Further Assessment under CFRAM programme?	No



The boundaries used to identify this settlement for the purposes of this flood risk assessment are those used and published by CSO. These boundaries are not intended nor to be interpreted as the Planning Authority's intended settlement boundaries and are just the study areas for the FRA. In all cases, a prospective applicant should seek confirmation from the Planning Authority on whether their development site is considered to fall within or outside of the settlement for the purpose of the implementation of planning policies in the County Development Plan.

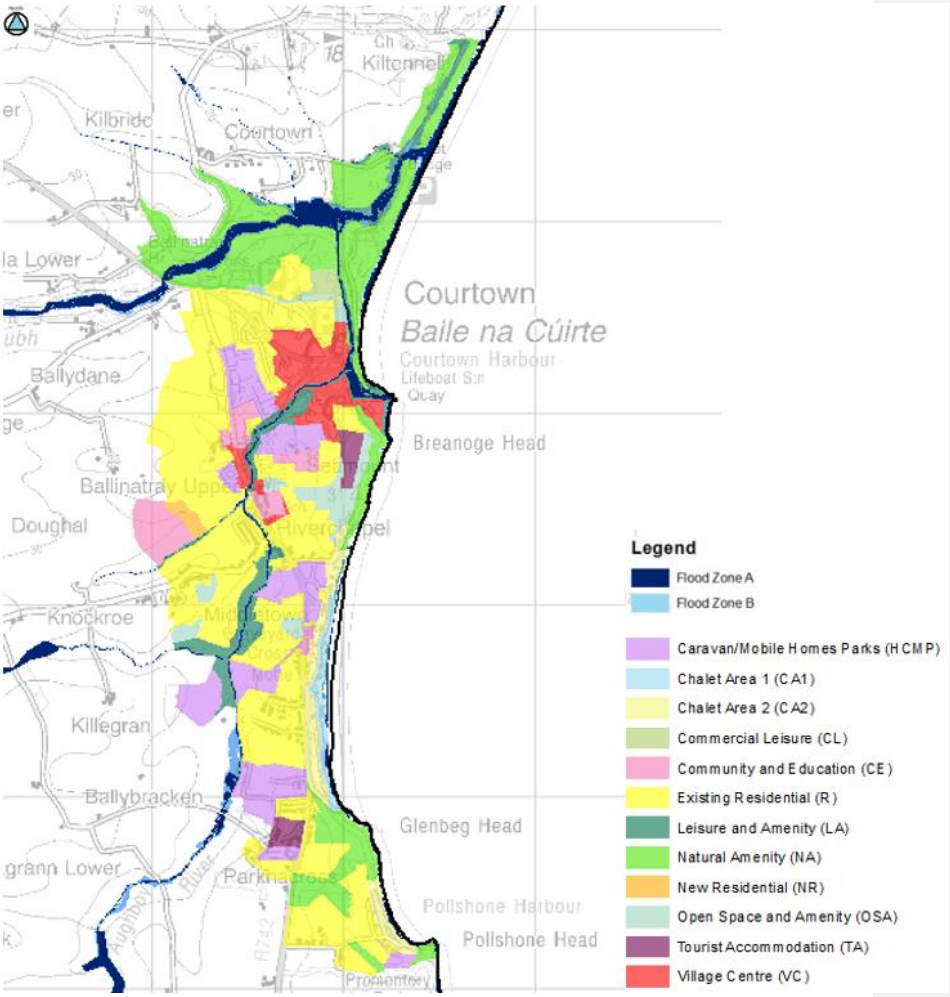
The Flood Zone mapping has been produced in accordance with the Planning Guidelines and therefore ignores the impact of flood protection structures. Areas protected by flood defences still carry a residual risk of flooding due to overtopping or breach, there may also be no guarantee of maintenance in perpetuity. Areas that benefit from defences are annotated separately. Flood Zone A – Fluvial: 1 in 100 year or 1% AEP, Tidal: 1 in 200 year or 0.5% AEP. Flood Zone B – 1 in 1000 year or 0.1% AEP.

Flood Zone Data	JFLOW

Historic Flooding	None recorded
Comment	Courtnacuddy is a small village with no watercourses nearby. Risk to the settlement is low.
Climate Change	No fluvial impacts, potential increase in runoff.
Conclusion	Manage flood risk and development in line with approved objectives and general practice as explained in Section 4 of this document.

~~5.37~~5.38 Courtown and Riverchapel

Hierarchy	Service Settlement
Area for Further Assessment under CFRAM programme?	Yes

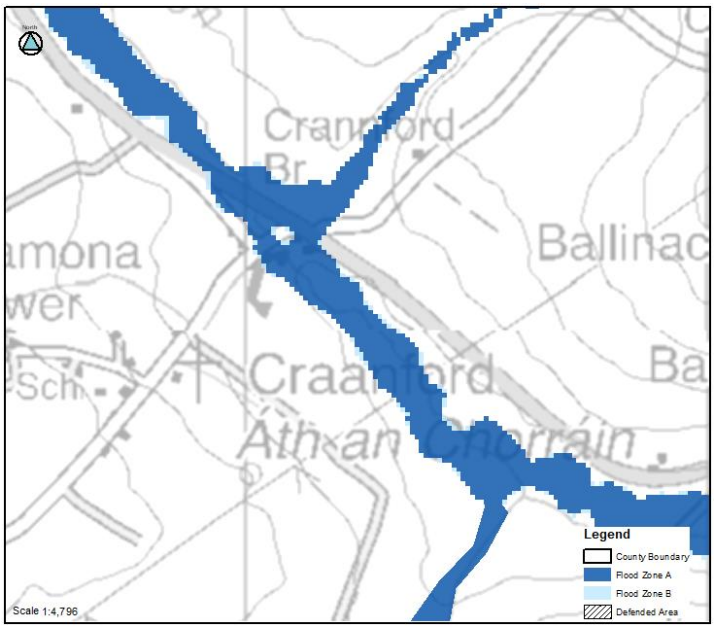


The boundaries used to identify this settlement for the purposes of this flood risk assessment are those used and published by CSO. These boundaries are not intended nor to be interpreted as the Planning Authority's intended settlement boundaries and are just the study areas for the FRA. In all cases, a

prospective applicant should seek confirmation from the Planning Authority on whether their development site is considered to fall within or outside of the settlement for the purpose of the implementation of planning policies in the County Development Plan. © Ordnance Survey Ireland. All rights reserved. Licence number 2020/34/CCMA/WexfordCountyCouncil The Flood Zone mapping has been produced in accordance with the Planning Guidelines and therefore ignores the impact of flood protection structures. Areas protected by flood defences still carry a residual risk of flooding due to overtopping or breach, there may also be no guarantee of maintenance in perpetuity. Areas that benefit from defences are annotated separately. Flood Zone A – Fluvial: 1 in 100 year or 1% AEP, Tidal: 1 in 200 year or 0.5% AEP. Flood Zone B – 1 in 1000 year or 0.1% AEP.	
Flood Zone Data	CFRAM ~~and~~ PFRA and ICPSS
Historic Flooding	Recurring flooding at Riverchapel bridge due to the Aughboy flooding and heavy rainfall.
Comment	The River Aughboy runs adjacent to the R742 road between Courtown and Riverchapel, and along the southwest boundary. Fluvial and tidal sources influence Courtown Harbour and Riverchapel. There are some areas which are partly at risk of flooding adjacent to Aughboy River; the rear of Flanagan's Wharf. The risk of flooding due to tidal sources is the primary risk. Under Courtown & Riverchapel LAP the settlement was subject to a separate SFRA which applied the sequential approach and Justification Test, as required.
Climate Change	Tidal areas are at increased risk of climate change however there is a significant elevation gain moving in land, so the impacts may not be severe.
Conclusion	The fluvial risk is low/moderate, and it is advised to manage flood risk and development in line with the LAP document and the SFRA within. Whilst there is some flooding adjacent to the harbour area there is no significant risk to property. The principal residual risk is one of structure blockage upstream on the Aughboy River. Any new development should apply the sequential approach and any re-development of existing property should consider the advice given in Section 4.7.1.

~~5.38~~5.39 Craanford

Hierarchy	Large Village
Area for Further Assessment under CFRAM programme?	No



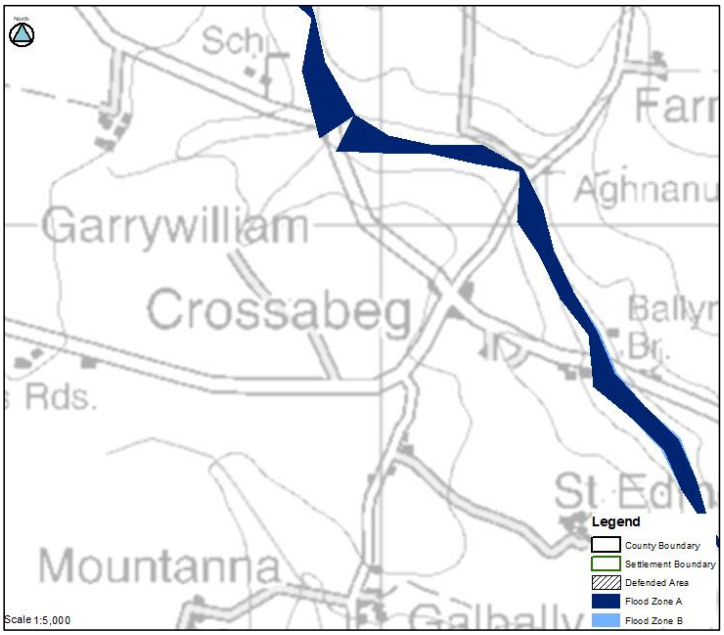
The Flood Zone mapping has been produced in accordance with the Planning Guidelines and therefore ignores the impact of flood protection structures. Areas protected by flood defences still carry a residual risk of flooding due to overtopping or breach, there may also be no guarantee of maintenance in perpetuity. Areas that benefit from defences are annotated separately. Flood Zone A – Fluvial: 1 in 100 year or 1% AEP, Tidal: 1 in 200 year or 0.5% AEP. Flood Zone B – 1 in 1000 year or 0.1% AEP.

Flood Zone Data	JFLOW
Historic Flooding	None recorded
Comment	The River Lack flows in a south easterly direction through the village. There is no recorded flood history, however the predictive mapping suggests that the village core is at potential risk.
Climate Change	Moderate sensitivity to climate change.

Conclusion	Any new development within the settlement should apply the sequential approach and avoid Flood Zone A/B, however further detailed hydraulic modelling may present a less conservative extent than currently provided and could be undertaken at development management stage. The residual risk of bridge blockage and the impacts of climate change should be considered under a potential FRA, as per Section 4 of the SFRA.

~~5.39~~5.40 Crossabeg

Hierarchy	Small Village
Area for Further Assessment under CFRAM programme?	No



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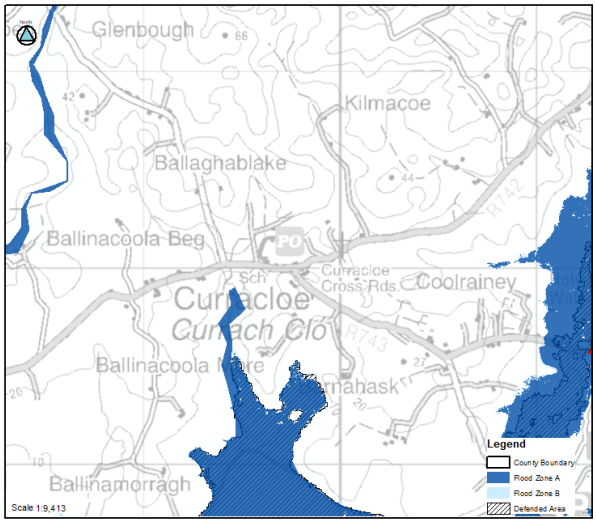
Flood Zone Data	PFRA
Historic Flooding	No historic risk identified.
Comment	A watercourse flows through the local area, around the northern and eastern fringe of the settlement.

Climate Change	Limited or no fluvial impacts, potential increase in runoff could increase flooding.
Conclusion	Any new development should follow the guidance provided in Section 4.4 to 4.11. In general the sequential approach should be followed and Flood Zone A/B should be avoided for any highly or less vulnerable development. It is noted that the Flood Zone mapping is indicative and further detailed modelling under a Stage 3 FRA would improve the quality and reliability of the assessment.

~~5.40~~5.41 Curracloe

Hierarchy	Small Village
Area for Further Assessment under CFRAM programme?	No



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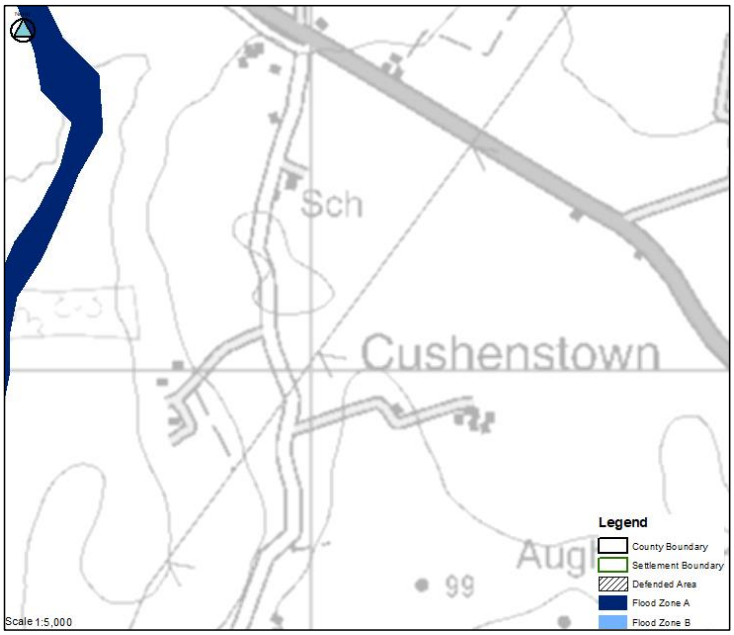
Flood Zone Data	OPW PFRA & ICPSS
Historic Flooding	None recorded
Comment	There are no mapped watercourses within the settlement, no historic records of flooding and risk is low.
Climate Change	Low sensitivity
Conclusion	Risk to the settlement is low. Manage flood risk and development in line with approved objectives and general practice as explained in Section 4 of this document. It is noted that the Flood Zone mapping is indicative and further detailed modelling under a Stage 3 FRA would improve the quality and reliability of the assessment.

~~5.41~~5.42 Cushinstown

Hierarchy	Rural Node
Area for Further Assessment under CFRAM programme?	No



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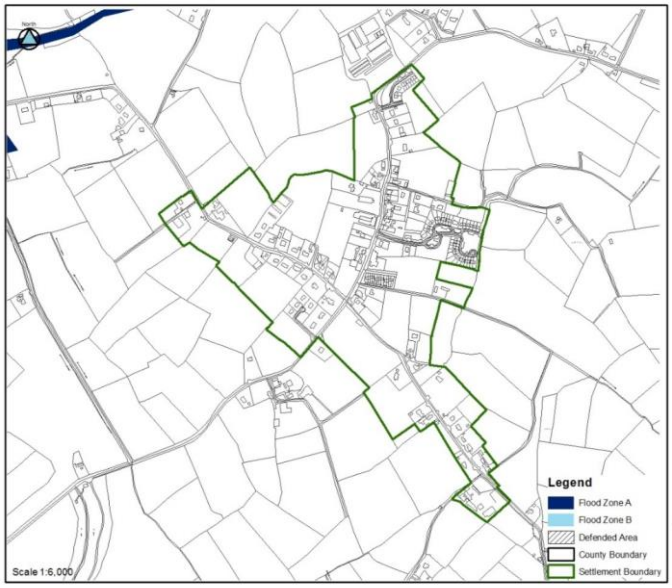
Flood Zone Data	PFRA
Historic Flooding	No historic risk identified.
Comment	There is a mapped watercourse to the west of the settlement, risk is generally low and there is no historic evidence of flooding.

Climate Change	Limited or no fluvial impacts, potential increase in runoff could increase flooding.
Conclusion	Manage flood risk and development in line with approved objectives and general practice as explained in Section 4 of this document. It is noted that the Flood Zone mapping is indicative and further detailed modelling under a Stage 3 FRA would improve the quality and reliability of the assessment.

~~5.42~~5.43 Danescastle (Carrig-on-Bannow)

Hierarchy	Large Village
Area for Further Assessment under CFRAM programme?	No



The boundaries used to identify this settlement for the purposes of this flood risk assessment are those used and published by CSO. These boundaries are not intended nor to be interpreted as the Planning Authority's intended settlement boundaries and are just the study areas for the FRA. In all cases, a prospective applicant should seek confirmation from the Planning Authority on whether their development site is considered to fall within or outside of the settlement for the purpose of the implementation of planning policies in the County Development Plan.

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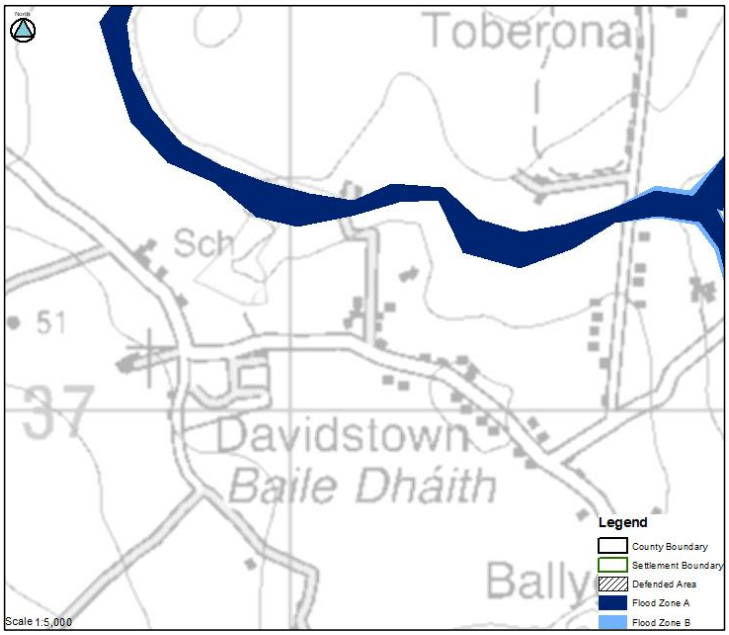
Flood Zone Data	PFRA

Historic Flooding	None recorded
Comment	No fluvial flood risk identified and no flood history
Climate Change	No fluvial impacts, potential increase in runoff.
Conclusion	Manage flood risk and development in line with approved objectives and general practice as explained in Section 4 of this document.

~~5.43~~5.44 Davidstown

Hierarchy	Small Village
Area for Further Assessment under CFRAM programme?	No



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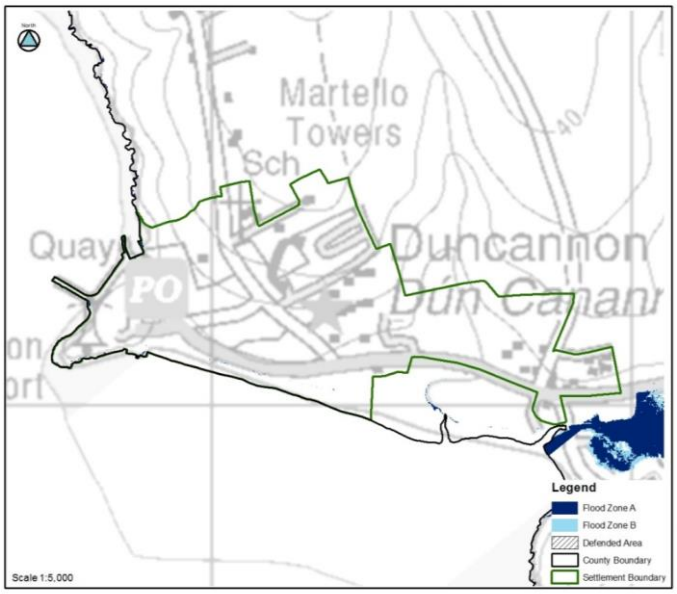
Flood Zone Data	PFRA
Historic Flooding	No historic risk identified.
Comment	A watercourse is located to the north of the settlement.

Climate Change	Limited or no fluvial impacts, potential increase in runoff could increase flooding.
Conclusion	Any new development should follow the guidance provided in Section 4.4 to 4.11. In general the sequential approach should be followed and Flood Zone A/B should be avoided for any highly or less vulnerable development. It is noted that the Flood Zone mapping is indicative and further detailed modelling under a Stage 3 FRA would improve the quality and reliability of the assessment.

~~5.44~~5.45 Duncannon

Hierarchy	Large Village
Area for Further Assessment under CFRAM programme?	No



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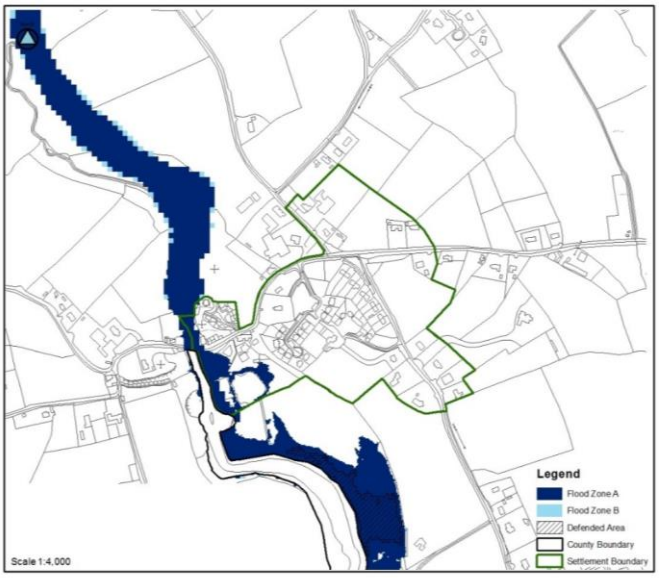
Flood Zone Data	OPW PFRA, ICPSS & JFLOW
Historic Flooding	No significant fluvial flood risk identified.
Comment	An unmapped stream runs through the west of the settlement before outfalling under a road into the Suir Estuary. The fluvial risk to the settlement is considered low. The principle risk at Duncannon is the impact of sea level rise and the sensitivity to climate change.
Climate Change	Duncannon is sensitive to the sea-level rise.
Conclusion	The settlement is not impacted by the current scenario flood mapping however it is likely to be sensitive to climate change impacts due to sea level rise. New development should undertake an appropriately detailed FRA as set out in Section 4.5 and must consider climate change impacts. Modelling of the stream flowing through Duncannon would be recommended as part of an FRA for any new development, In general the sequential approach should be followed and Flood Zone A/B should be avoided for any highly or less vulnerable development.

~~5.45~~5.46 Duncormick

Hierarchy	Small Village
Area for Further Assessment under CFRAM programme?	No



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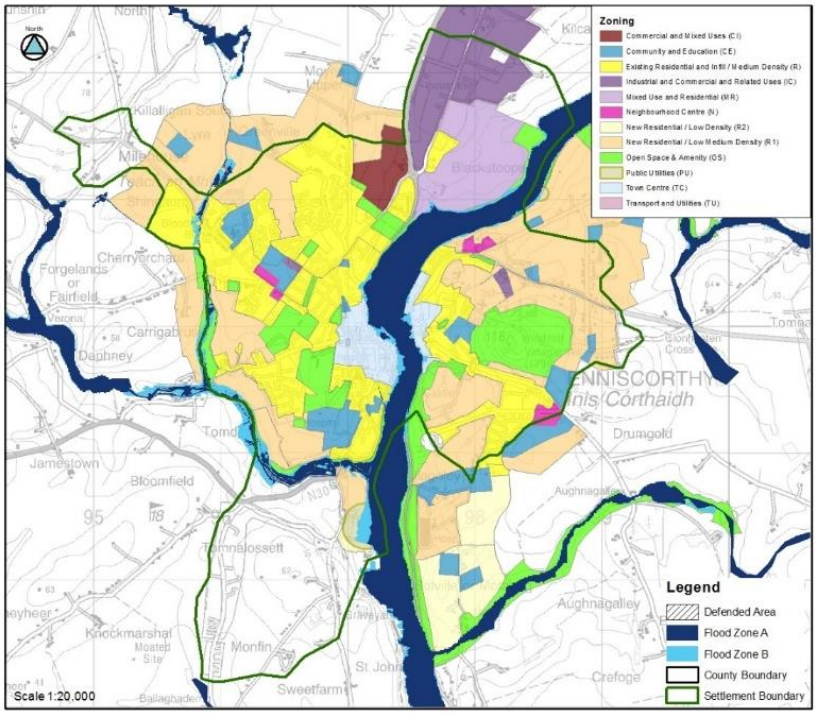
Flood Zone Data	OPW PFRA, ICPSS and JFLOW

Historic Flooding	Reports of recurring flooding of the low-lying area surrounding Duncormick River.
Comment	The Duncormick River runs through the western boundary of the settlement. Existing properties and businesses adjacent to the river are at risk of flooding.
Climate Change	The PFRA and JFLOW flood mapping suggest sensitivity to an increase in flow/sea level. The residual risk from structural blockage is also a concern.
Conclusion	The potential for structural blockage of the bridge at the western boundary, and the associated residual risk from increased flood levels should be assessed as part of any FRA for new development or extension/change of use applications that are in proximity to Flood Zone A/B. The guidance provided in Section 4.4 to 4.11 should be followed. It is noted that the Flood Zone mapping is indicative and further detailed modelling under a Stage 3 FRA would improve the quality and reliability of the assessment.

~~5.46~~5.47 Enniscorthy

Hierarchy	~~Key~~ Large Town
Area for Further Assessment under CFRAM programme?	Yes



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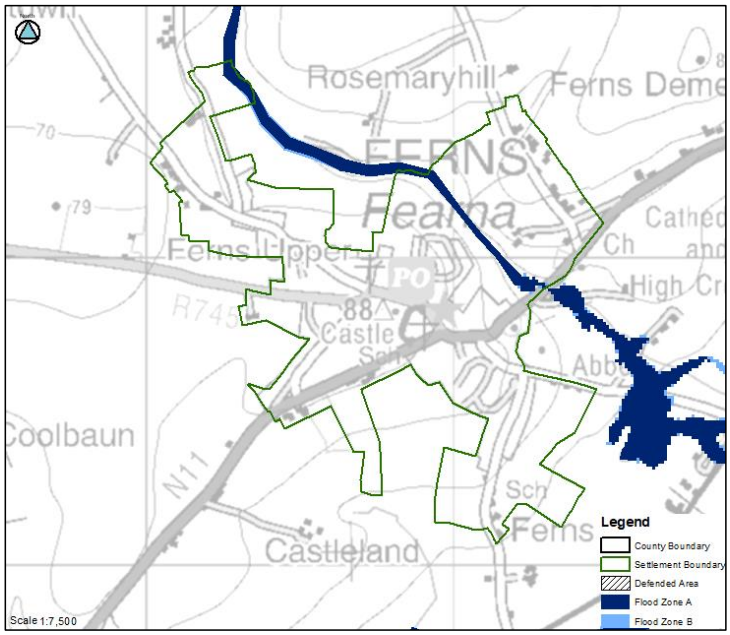
Flood Zone Data	CFRAM and Enniscorthy Flood Relief Scheme

Historic Flooding	There were four significant floods throughout the 20th century these occurred in 1924, 1947, 1965, and 2000. The most significant being 1965 and 2000. In 1965 extensive flooding occurred within Enniscorthy Town causing damage to properties in Island Road, Shannon Quay and along the promenade (which floods regularly). On the 5th & 6th November 2000 flooding caused new residential properties to become inundated by up to .6m. Island Road was under 1.2m of water: The damage to the relatively new properties which had been built along the promenade was very little due to the finished floor level being raised higher than the floods of 1965 In October 2004 rainfall and tidal effects caused businesses to flood and both quays along the Slaney river to be blocked. The still pond in Fairfield flooded in late 2015 early 2016 and as far back as 1924. The Enniscorthy Island Road flooded in November 2014 and prior to that 1986 and in 1965.
Comment	Note that this land use zoning map relates to the 2008-2014 Development Plan (as extended). The River Slaney runs through the northeast settlement boundary and flows in a southerly direction through Enniscorthy town centre. The River Urrin and a further tributary are also present in the west of the settlement and discharge into the River Slaney. The fluvial flood risk to Enniscorthy is high and the Enniscorthy Flood Relief Scheme is currently at design stage. A new LAP will be prepared for Enniscorthy Town.
Climate Change	The increase in flood extents suggest the town of Enniscorthy is highly sensitive to climate change.
Conclusion	There is significant fluvial flood risk in Enniscorthy which has resulted in the Enniscorthy Flood Defence Scheme. Re-development of any existing property within Flood Zone A/B should be assessed in line with Section 4.7. New development should avoid Flood Zone A/B and the impacts of climate change should be robustly incorporated into any potential development FRA. When the new LAP is being prepared it is important that the zonings are considered in line with the sequential approach and Justification Test.

~~5.47~~5.48 Ferns

Hierarchy	Service Settlement
Area for Further Assessment under CFRAM programme?	No



The boundaries used to identify this settlement for the purposes of this flood risk assessment are those used and published by CSO. These boundaries are not intended nor to be interpreted as the Planning Authority's intended settlement boundaries and are just the study areas for the FRA. In all cases, a prospective applicant should seek confirmation from the Planning Authority on whether their development site is considered to fall within or outside of the settlement for the purpose of the implementation of planning policies in the County Development Plan.

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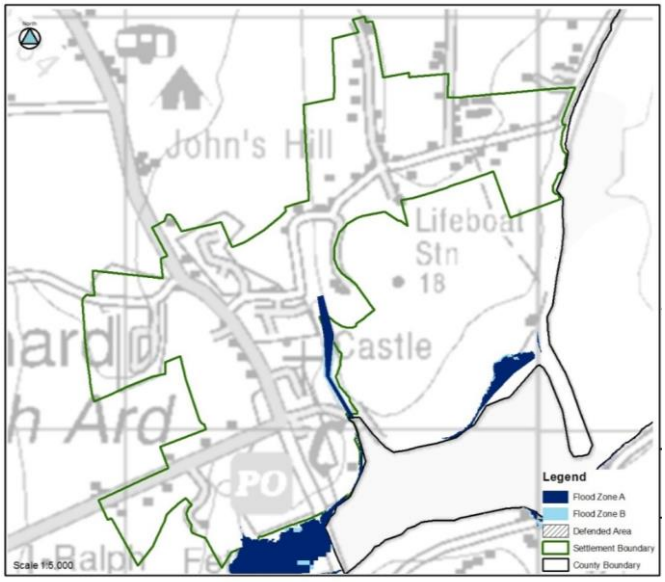
Flood Zone Data	OPW PFRA and JFLOW.

Historic Flooding	No historical flood event identified.
Comment	A stream flows in a south-easterly direction through the northern settlement boundary. The floodplain is for the most part undeveloped. There is one existing residential property completely within Flood Zone A and B and a commercial site on the eastern boundary.
Climate Change	Overall, the settlement has a low sensitivity to climate change.
Conclusion	The Ferns LAP has expired and there is no longer an LAP in place. Re-development of any existing property within Flood Zone A/B should be assessed in line with Section 4.7. Any new development should avoid Flood Zone A/B. Manage flood risk and development in line with approved objectives and general practice as explained in Section 4 of this document.

~~5.48~~5.49 Fethard

Hierarchy	Large Village
Area for Further Assessment under CFRAM programme?	No



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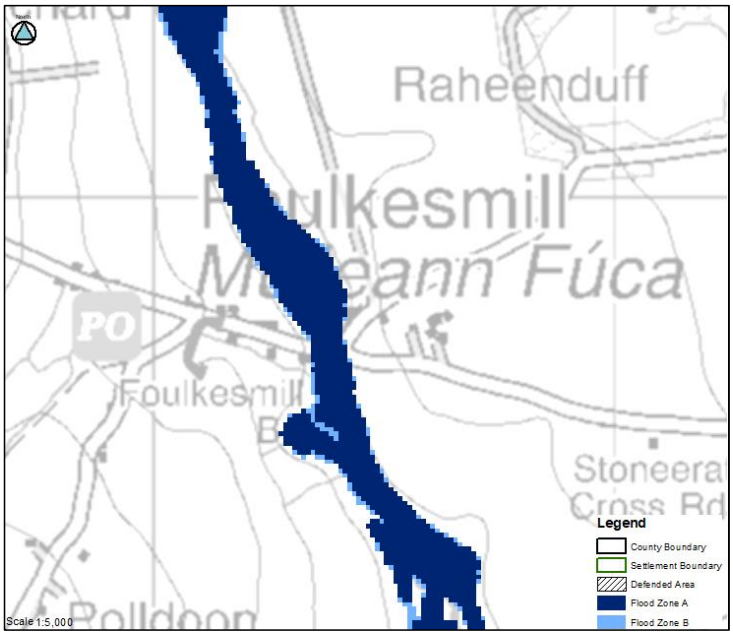
Flood Zone Data	OPW PFRA, ICPSS & JFLOW

Historic Flooding	No historic flood event recorded.
Comment	A stream flows from the north through the centre of the Fethard settlement. The flood extents are limited and tends to conform to the natural floodplain, which is undeveloped land. Downstream is tidally influenced and a significant tidal inlet extends in a westerly direction to the south of the village.
Climate Change	The sensitivity to climate change is low and there is a rapid rise in topography adjacent to the tidally influenced areas.
Conclusion	Any new development should follow the guidance provided in Section 4.4 to 4.11. In general the sequential approach should be followed and Flood Zone A/B should be avoided for any highly or less vulnerable development. It is noted that the Flood Zone mapping is indicative and further detailed modelling under a Stage 3 FRA would improve the quality and reliability of the assessment.

~~5.49~~5.50 Foulkesmills

Hierarchy	Small Village
Area for Further Assessment under CFRAM programme?	No



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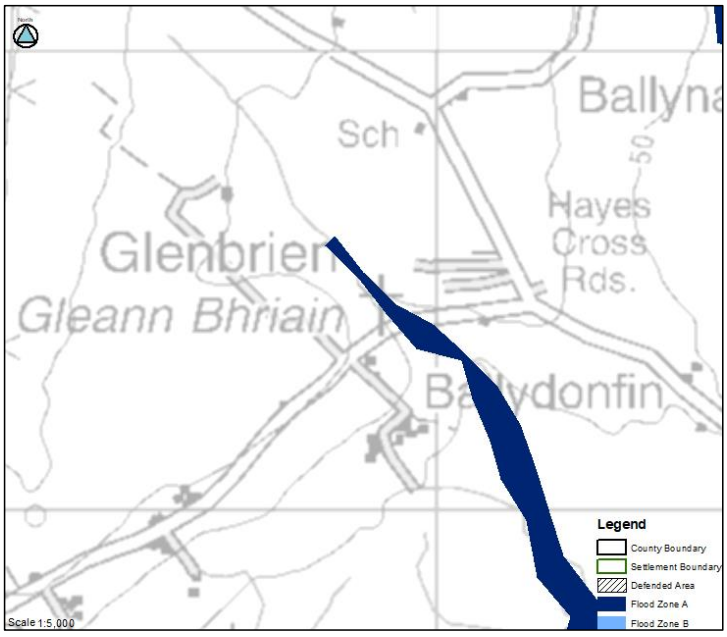
Flood Zone Data	JFLOW
Historic Flooding	No historic risk identified.
Comment	The River Corock flows in a southerly direction through the village. Historic development typically avoids the floodplain, the majority of the village is at a higher elevation.

Climate Change	Limited fluvial impact, potential increase in runoff/surface water.
Conclusion	Any new development should follow the guidance provided in Section 4.4 to 4.11. In general the sequential approach should be followed and Flood Zone A/B should be avoided for any highly or less vulnerable development. It is noted that the Flood Zone mapping is indicative and further detailed modelling under a Stage 3 FRA would improve the quality and reliability of the assessment.

~~5.50~~5.51 Glenbrien

Hierarchy	Small Village
Area for Further Assessment under CFRAM programme?	No



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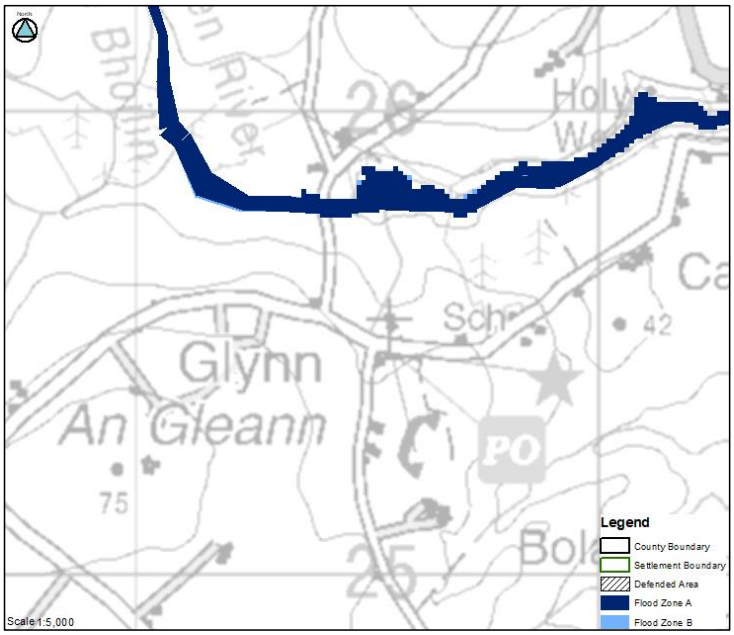
Flood Zone Data	PFRA
Historic Flooding	No historic risk identified.
Comment	Some predicted flood extents from a watercourse flowing in a southerly direction. There is no flood history and risk is likely to be low.

Climate Change	Limited or no fluvial impacts, potential increase in runoff/surface water.
Conclusion	Any new development should follow the guidance provided in Section 4.4 to 4.11. In general the sequential approach should be followed and Flood Zone A/B should be avoided for any highly or less vulnerable development. It is noted that the Flood Zone mapping is indicative and further detailed modelling under a Stage 3 FRA would improve the quality and reliability of the assessment.

~~5.51~~5.52 Glynn

Hierarchy	Small Village
Area for Further Assessment under CFRAM programme?	No



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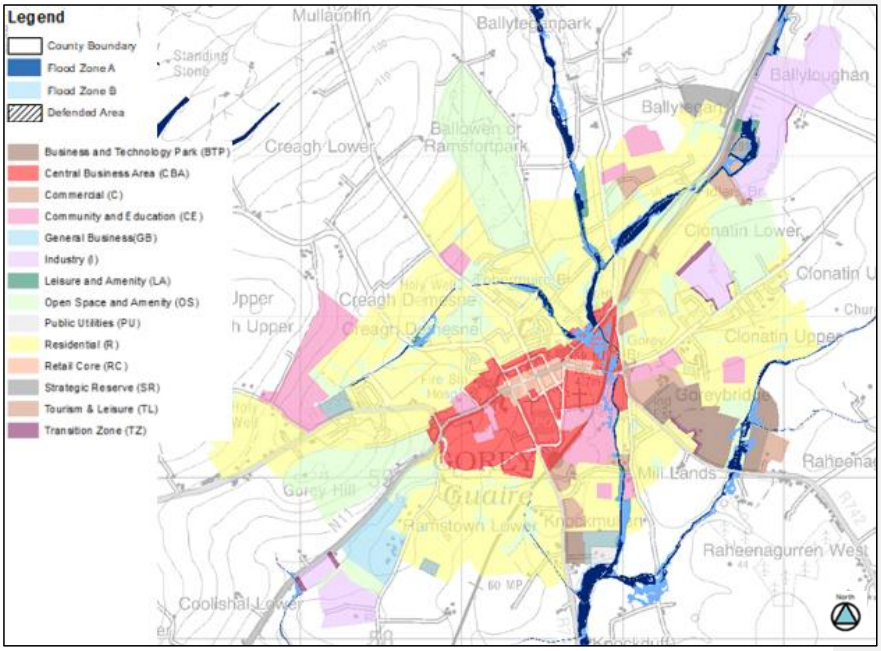
Flood Zone Data	PFRA & JFLOW
Historic Flooding	No historic risk identified.
Comment	A watercourse flows in an easterly direction through a valley to the north of the settlement. There appears to be minimal risk to existing property.

Climate Change	Limited or no fluvial impacts.
Conclusion	It would seem unlikely that further development would occur within the floodplain, but development should follow the guidance provided in Section 4.4 to 4.11. In general the sequential approach should be followed and Flood Zone A/B should be avoided for any highly or less vulnerable development. It is noted that the Flood Zone mapping is indicative and further detailed modelling under a Stage 3 FRA would improve the quality and reliability of the assessment.

~~5.52~~5.53 Gorey

Hierarchy	Key Town
Area for Further Assessment under CFRAM programme?	Yes



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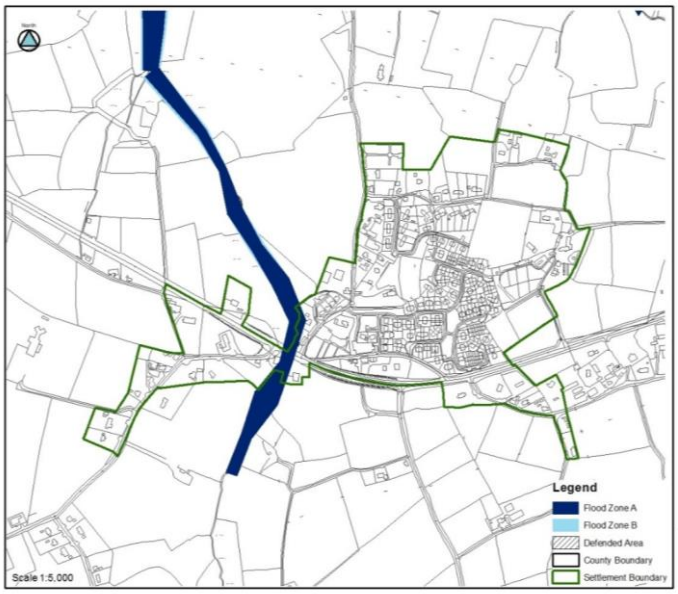
Flood Zone Data	CFRAM
Historic Flooding	Esmonde Street flooded in August 1986, civil works have been carried out in 2009 and there has been no issue of flooding since.

	Flooding in Garden City caused by restriction/grate to culverted section of river. Local management prevents flooding, last major flood event 2016. Arklow road suffers from recurring flooding. The Arklow Road railway bridge was impacted; a plan was set in place to clean out this railway embankment ditch every five years which helps to prevent flooding from recurring. Every year a significant amount of land upstream of the Banoge, Carriganeagh area floods the land and the river at weir pinch point.
Comment	The River Banoge runs through the northern boundary and flows in a southerly direction. There are two streams within the settlement which join the River Banoge. The risk of flooding from un-blocked conditions is relatively low. Under the CFRAM a combination of improvements to channel conveyance and hard defences were recommended to protect Gorey to the 1% AEP flood event. It is also recommended to widen the channel of the Gorey Tributary and construct hard defences with an average height of 0.3m and a total length of 50m on the Bangoe River. However, due to the low Benefit Cost Ratio the scheme was not promoted for Government funding. There are a series of culverts through the centre of the settlement that have led to previous flooding as a result of blockage problems, but work seems to have been undertaken to manage and monitor the risk. Flood mapping suggests that most culverts can convey the 1% AEP flow but at 0.1% the culverts are surcharging, and flooding potentially impacts parts of the town centre.
Climate Change	The increase in flood extents suggest this settlement is highly sensitive to both climate change.
Conclusion	Gorey is highly vulnerable to the residual risk of structure blockage. It is also sensitive to the impacts of climate change. Outside of the town centre the zoning has, as far as possible, been amended within the Gorey LAP in line with the sequential approach. Re-development of any existing property within Flood Zone A/B should be assessed in line with Section 4.7 and the residual risk of culvert blockage must be assessed. Any new development should follow the guidance provided in Section 4.4 to 4.11. In general the sequential approach should be followed and Flood Zone A/B should be avoided for any highly or less vulnerable development.

~~5.53~~5.54 Grahormac (Tagoat)

Hierarchy	Large Village
Area for Further Assessment under CFRAM programme?	No



The boundaries used to identify this settlement for the purposes of this flood risk assessment are those used and published by CSO. These boundaries are not intended nor to be interpreted as the Planning Authority's intended settlement boundaries and are just the study areas for the FRA. In all cases, a prospective applicant should seek confirmation from the Planning Authority on whether their development site is considered to fall within or outside of the settlement for the purpose of the implementation of planning policies in the County Development Plan.

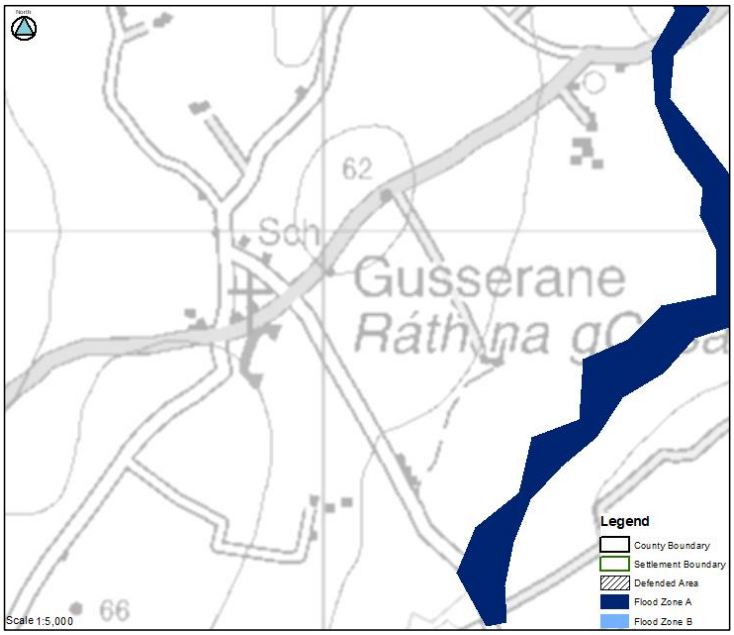
The Flood Zone mapping has been produced in accordance with the Planning Guidelines and therefore ignores the impact of flood protection structures. Areas protected by flood defences still carry a residual risk of flooding due to overtopping or breach, there may also be no guarantee of maintenance in perpetuity. Areas that benefit from defences are annotated separately. Flood Zone A – Fluvial: 1 in 100 year or 1% AEP, Tidal: 1 in 200 year or 0.5% AEP. Flood Zone B – 1 in 1000 year or 0.1% AEP.

Flood Zone Data	OPW PFRA

Historic Flooding	No historic flood event recorded.
Comment	A stream flows through the settlement to the north. The flood extents within the settlement are limited and overlay/ partly overlay three sites and a section of the N25 road; commercial and residential properties.
Climate Change	The settlement has low sensitivity to climate change.
Conclusion	The overall sensitivity of the settlement to climate change and the risk of flooding is limited. For the existing developments within or close to Flood Zone A/B which plan to re-develop should consider the advice provided in Section 4.7.1. Any new development should follow the guidance provided in Section 4.4 to 4.11. In general the sequential approach should be followed and Flood Zone A/B should be avoided for any highly or less vulnerable development. It is noted that the Flood Zone mapping is indicative and further detailed modelling under a Stage 3 FRA would improve the quality and reliability of the assessment.

~~5.54~~5.55 Gusserane

Hierarchy	Small Village
Area for Further Assessment under CFRAM programme?	No



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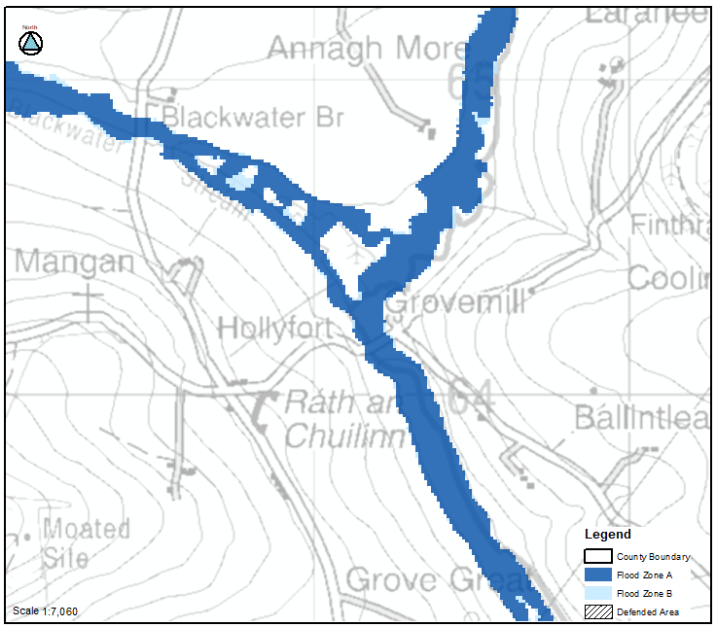
Flood Zone Data	PFRA
Historic Flooding	No historic risk identified.
Comment	A watercourse flows in a northerly direction to the east of the settlement, it is far enough away not to present any risk

Climate Change	Limited or no fluvial impacts.
Conclusion	Manage flood risk and development in line with approved objectives and general practice as explained in Section 4 of this document. It is noted that the Flood Zone mapping is indicative and further detailed modelling under a Stage 3 FRA would improve the quality and reliability of the assessment.

~~5.55~~5.56 Hollyfort

Hierarchy	Small Village
Area for Further Assessment under CFRAM programme?	No



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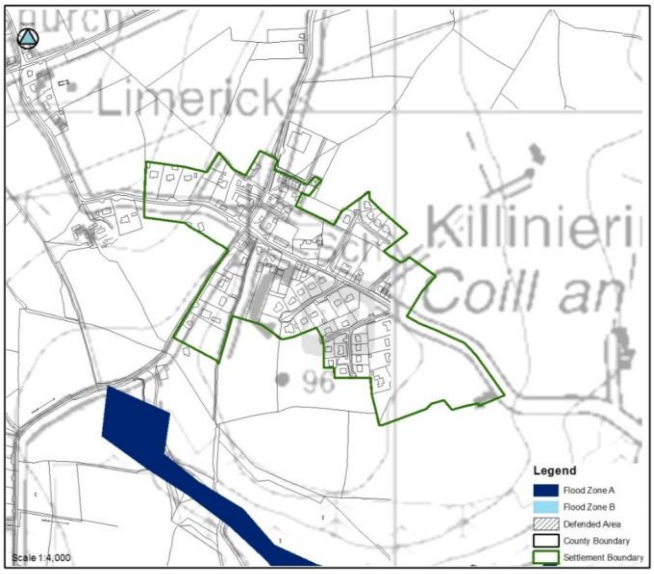
Flood Zone Data	JBA
Historic Flooding	None recorded
Comment	The Blackwater Stream flows in a southerly direction to the east of the settlement. All existing development is located within Flood Zone C and is at low risk of flooding.

Climate Change	Moderate sensitivity to climate change.
Conclusion	Any new development should follow the guidance provided in Section 4.4 to 4.11. In general the sequential approach should be followed and Flood Zone A/B should be avoided for any highly or less vulnerable development. It is noted that the Flood Zone mapping is indicative and further detailed modelling under a Stage 3 FRA would improve the quality and reliability of the assessment.

~~5.56~~5.57 Killinerin

Hierarchy	Large Village
Area for Further Assessment under CFRAM programme?	No



The boundaries used to identify this settlement for the purposes of this flood risk assessment are those used and published by CSO. These boundaries are not intended nor to be interpreted as the Planning Authority's intended settlement boundaries and are just the study areas for the FRA. In all cases, a prospective applicant should seek confirmation from the Planning Authority on whether their development site is considered to fall within or outside of the settlement for the purpose of the implementation of planning policies in the County Development Plan.

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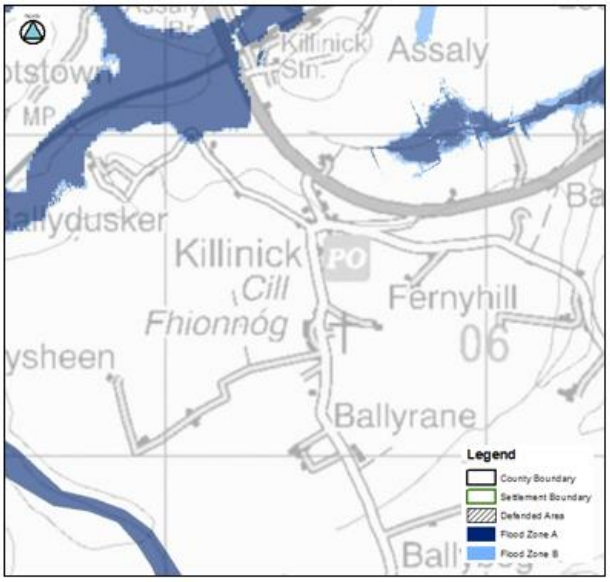
Flood Zone Data	PFRA

Historic Flooding	None recorded
Comment	No fluvial flood risk identified within the CSO boundary and no flood history
Climate Change	No fluvial impacts, potential increase in runoff.
Conclusion	Manage flood risk and development in line with approved objectives and general practice as explained in Section 4 of this document. It is noted that the Flood Zone mapping is indicative and further detailed modelling under a Stage 3 FRA would improve the quality and reliability of the assessment.

~~5.57~~5.58 Killinick

Hierarchy	Small Village
Area for Further Assessment under CFRAM programme?	No



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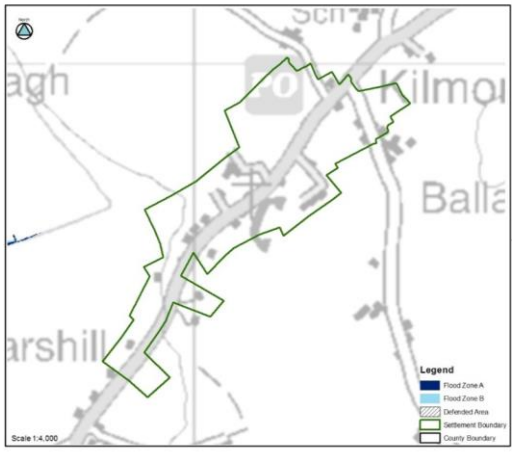
Flood Zone Data	PFRA, JFLOW & CFRAM

Historic Flooding	None recorded
Comment	Killinick is a small village located on high ground to the south of the N25. The settlement is close to South Slobs and tidal flooding, but its elevation means it is at low risk. Watercourses to the west are remote from the settlement and do not pose a risk to it.
Climate Change	A review of the available flood mapping indicates moderate/low sensitivity to increases in climate change due to the raised elevation of the settlement, however there is a potential increase in runoff.
Conclusion	Any new development should follow the guidance provided in Section 4.4 to 4.11 and should be subject to an appropriately detailed FRA. In general, the sequential approach should be followed, and Flood Zone A/B should be avoided for any highly or less vulnerable development.

~~5.58~~5.59 Kilmore

Hierarchy	Small Village
Area for Further Assessment under CFRAM programme?	No



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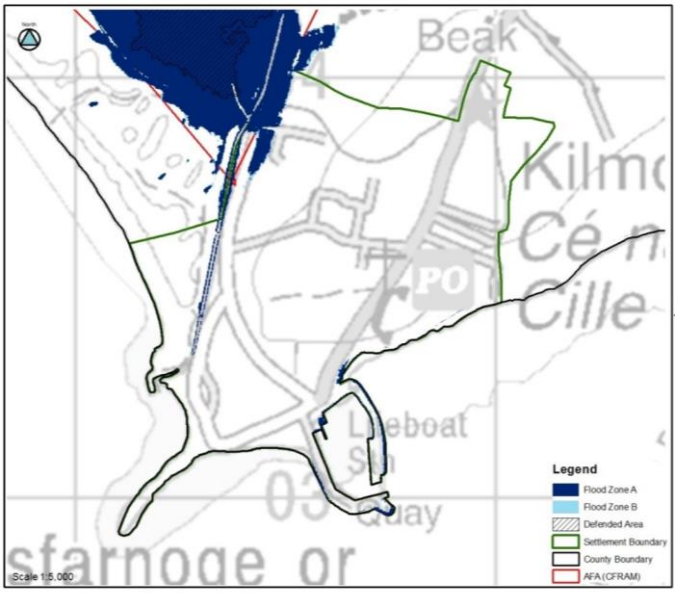
Flood Zone Data	n/a
Historic Flooding	None recorded
Comment	No fluvial flood risk identified and no flood history
Climate Change	No fluvial impacts, potential increase in runoff.
Conclusion	Manage flood risk and development in line with approved policies and objectives.

~~5.59~~5.60 Kilmore Quay

Hierarchy	~~Service~~ Strategic Settlement
Area for Further Assessment under CFRAM programme?	No



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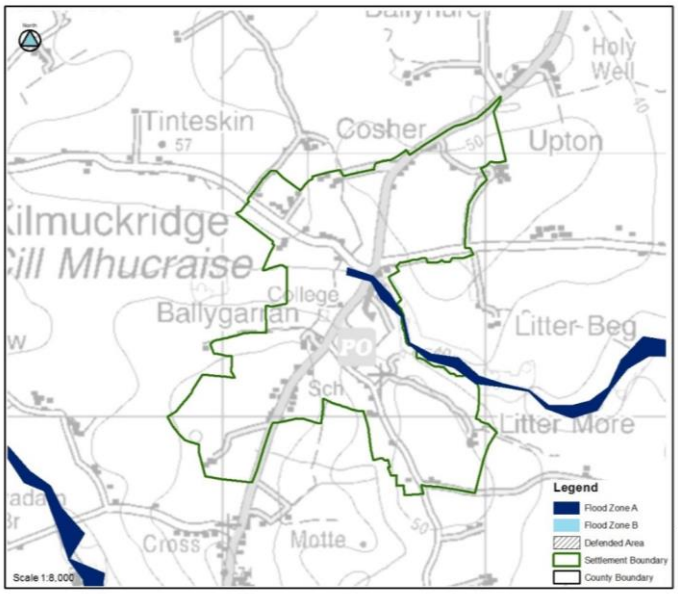
Flood Zone Data	PFRA & ICPSS

Historic Flooding	No historic flood event identified.
Comment	No mapped river flows through Kilmore Quay, however, parallel to Crossfarnogue road a drainage channel runs from the north of the settlement before its outfall into coastal waters. Both fluvial and tidal sources impact the north west fringe of the CSO boundary. The principal risk to this settlement is sea level rise and is expected to impact all low-lying areas adjacent to the settlement.
Climate Change	The main settlement is not sensitive to sea level rise as inland levels are typically above 5mOD Malin.
Conclusion	Despite the coastal location the significant rise inland rise in levels means that with the exception of the north west fringe, the settlement is at low risk of flooding. Development should be managed in line with Section 4 of the SFRA.

~~5.60~~5.61 Kilmuckridge or Ford

Hierarchy	~~Service~~ Strategic Settlement
Area for Further Assessment under CFRAM programme?	No



The boundaries used to identify this settlement for the purposes of this flood risk assessment are those used and published by CSO. These boundaries are not intended nor to be interpreted as the Planning Authority's intended settlement boundaries and are just the study areas for the FRA. In all cases, a prospective applicant should seek confirmation from the Planning Authority on whether their development site is considered to fall within or outside of the settlement for the purpose of the implementation of planning policies in the County Development Plan.

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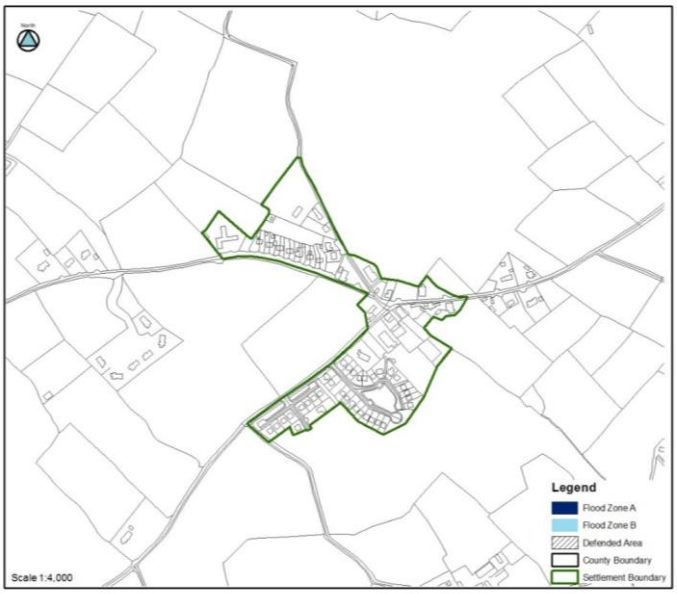
Flood Zone Data	OPW PFRA.
Historic Flooding	Recurring flooding was reported in Kilmuckridge which has resulted in buildings being flooded and a road being blocked.
Comment	A stream flows through the settlement from the northwest. The flood extents within the settlement are limited with the principal risk area adjacent to the culvert under the R742 road.
Climate Change	The settlement has low sensitivity to climate change.
Conclusion	Any new development should follow the guidance provided in Section 4.4 to 4.11. In general the sequential approach should be followed and Flood Zone A/B should be avoided for any highly or less vulnerable development (Section 4.7). Residual risk of bridge blockage should be considered when assessing property adjacent to the watercourse. It is noted that the Flood Zone mapping is indicative and further detailed modelling under a Stage 3 FRA would improve the quality and reliability of the assessment.

~~5.61~~5.62 Kilmyshall

Hierarchy	Small Village
Area for Further Assessment under CFRAM programme?	No



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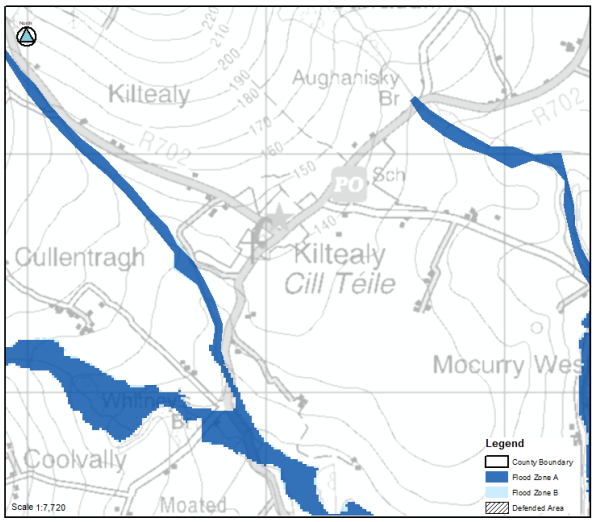
Flood Zone Data	n/a
Historic Flooding	None recorded
Comment	No fluvial flood risk identified and no flood history.
Climate Change	No fluvial impacts, potential increase in runoff.
Conclusion	Manage flood risk and development in line with approved policies and objectives.

~~5.62~~5.63 Kiltealy

Hierarchy	Small Village
Area for Further Assessment under CFRAM programme?	No



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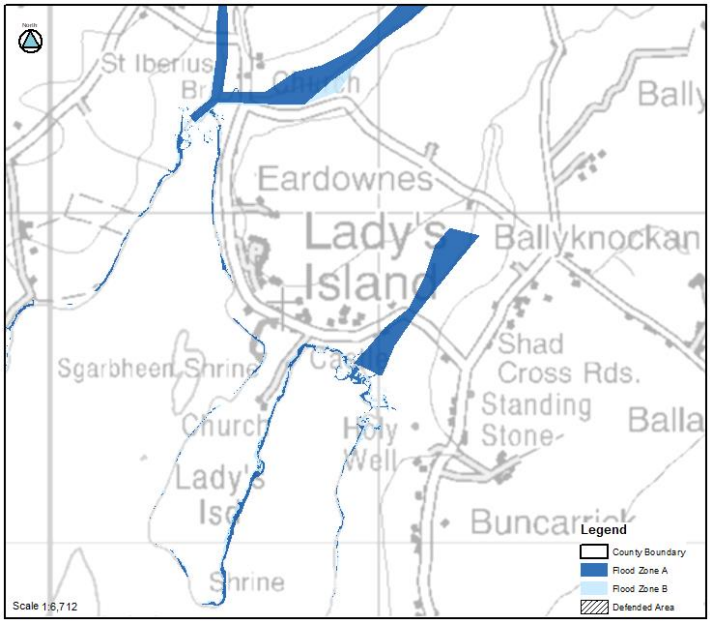
Flood Zone Data	OPW CFRAM & JBA
Historic Flooding	None recorded
Comment	Small streams flow to the southwest and the east of the settlement but do not present risk to any existing development.
Climate Change	Low sensitivity to climate change.
Conclusion	Manage flood risk and development in line with approved objectives and general practice as explained in Section 4 of this document. It is noted that the Flood Zone mapping is indicative and further detailed modelling under a Stage 3 FRA would improve the quality and reliability of the assessment.

~~5.63~~5.64 Lady's Island

Hierarchy	Small Village
Area for Further Assessment under CFRAM programme?	No



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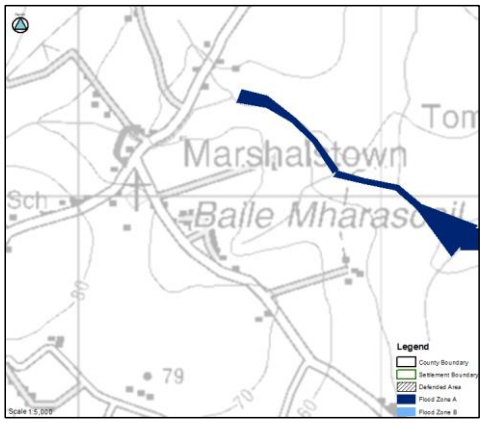
Flood Zone Data	OPW PFRA, ICPSS & JBA
Historic Flooding	None recorded
Comment	A small stream flows under the local road and into Lady's Island Lake, which is technically a back-barrier seepage lagoon and has no direct link with the sea. It is therefore not subject to tidal influence and the risk presented by the lake is therefore aligned with fluvial input. Development is situated at higher elevations and risk is low.

Climate Change	The lake would be highly sensitive to sea level rise and erosion of the sand barrier/link with Atlantic Ocean.
Conclusion	The settlement itself is presently at low risk of flooding, but will be vulnerable to future climate change impacts, in line with many other coastal communities. Manage flood risk and development in line with approved objectives and general practice as explained in Section 4 of this document. It is noted that the Flood Zone mapping is indicative and further detailed modelling under a Stage 3 FRA would improve the quality and reliability of the assessment.

~~5.64~~5.65 Marshalstown

Hierarchy	Small Village
Area for Further Assessment under CFRAM programme?	No



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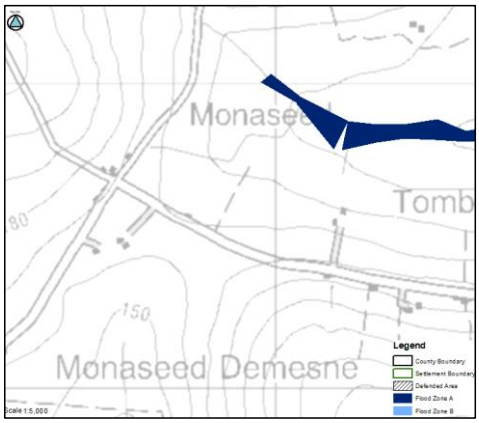
Flood Zone Data	PFRA
Historic Flooding	No historic risk identified.
Comment	A watercourse flows in a south east direction but is remote from the settlement and does not pose a significant risk.
Climate Change	Low impact.
Conclusion	Manage flood risk and development in line with approved objectives and general practice as explained in Section 4 of this document. It is noted that the Flood Zone mapping is indicative and further detailed modelling under a Stage 3 FRA would improve the quality and reliability of the assessment.

~~5.65~~5.66 Monaseed

Hierarchy	Small Village
Area for Further Assessment under CFRAM programme?	No



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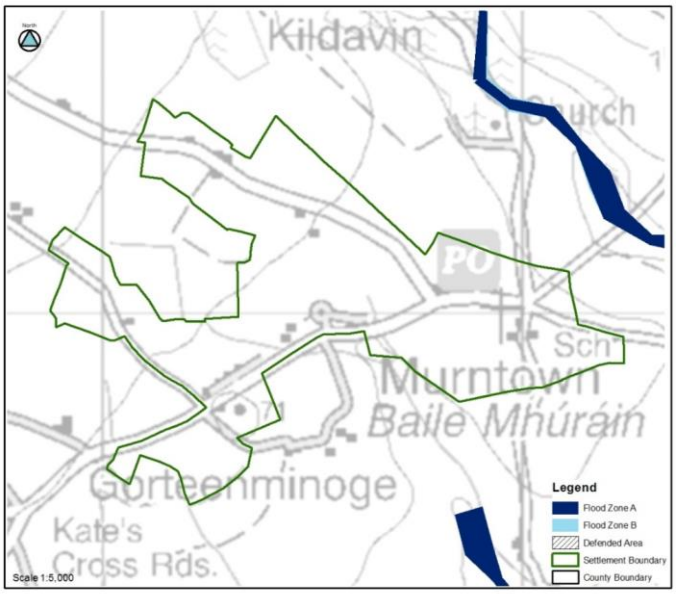
Flood Zone Data	PFRA
Historic Flooding	No historic risk identified.
Comment	A watercourse flows in an easterly direction but is remote from the settlement and does not pose a significant risk.
Climate Change	Low impact.
Conclusion	Manage flood risk and development in line with approved objectives and general practice as explained in Section 4 of this document. It is noted that the Flood Zone mapping is indicative and further detailed modelling under a Stage 3 FRA would improve the quality and reliability of the assessment.

~~5.66~~5.67 Murntown

Hierarchy	Large Village
Area for Further Assessment under CFRAM programme?	No



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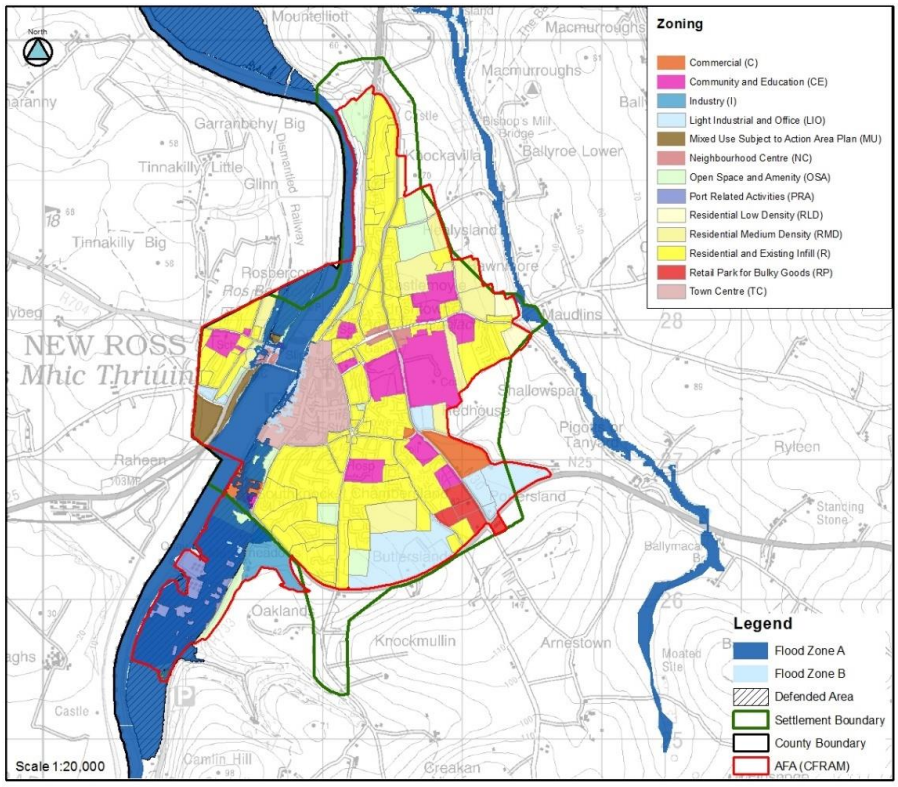
Flood Zone Data	n/a

Historic Flooding	None recorded
Comment	No fluvial flood risk identified and no flood history within the CSO boundary. Some remote watercourses but low risk to the settlement.
Climate Change	No fluvial impacts, potential increase in runoff.
Conclusion	Manage flood risk and development in line with approved policies and objectives. It is noted that the Flood Zone mapping is indicative and further detailed modelling under a Stage 3 FRA would improve the quality and reliability of the assessment.

~~5.67~~5.68 New Ross

Hierarchy	Large Town
Area for Further Assessment under CFRAM programme?	Yes



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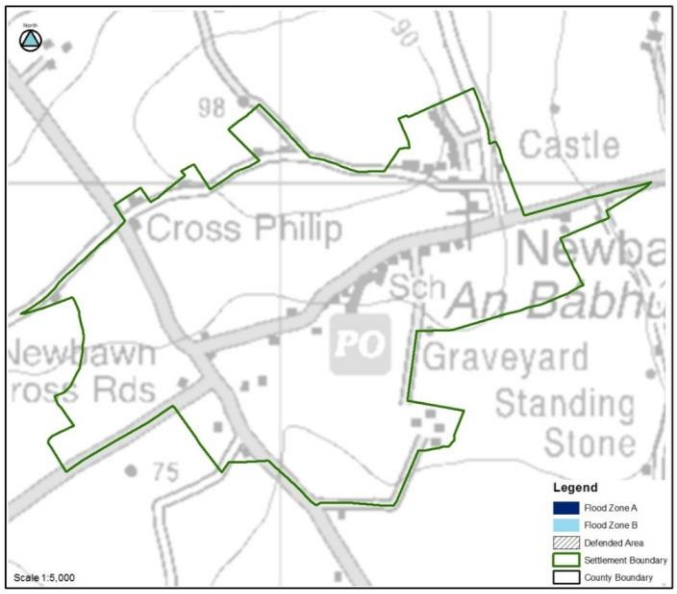
Flood Zone Data	CFRAM

Historic Flooding	Bridge Street, Marshmeadows and the Quay area have been subject to recurring flooding.
Comment	Flooding from the tidal River Barrow is the primary historic risk in this settlement. A flood defence scheme has now been substantially completed in New Ross. The Scheme, which comprises 2.1km of tidal flood defence walls and engineered embankments, glass flood panels, demountable barriers, drainage and storm water pumping. Defended areas are shown in the above map.
Climate Change	New Ross will be sensitive to the impacts of climate change, however the flood defence scheme will have included an adaptive approach, allowing future improvements to be made to the scheme, as required.
Conclusion	A new LAP will be prepared for New Ross and with it the zoning objectives should be reviewed in line with the sequential approach. It is anticipated that most new development located within defended Flood Zone A will be related to the expansion of the port and port related activities, this is largely less vulnerable and water compatible use that can be facilitated within the defended area in accordance with the recommendations under Section 4.7 to 4.11 – but this should be explored and justified under the new LAP. Re-development of any existing property within Flood Zone A/B should be assessed in line with Section 4.7. New development should preferentially avoid Flood Zone A/B and the impacts of climate change should be robustly incorporated into any potential development FRA. When the new LAP is being prepared it is important that the zonings are considered in line with the sequential approach and Justification Test..

~~5.68~~5.69 Newbawn

Hierarchy	Small Village
Area for Further Assessment under CFRAM programme?	No



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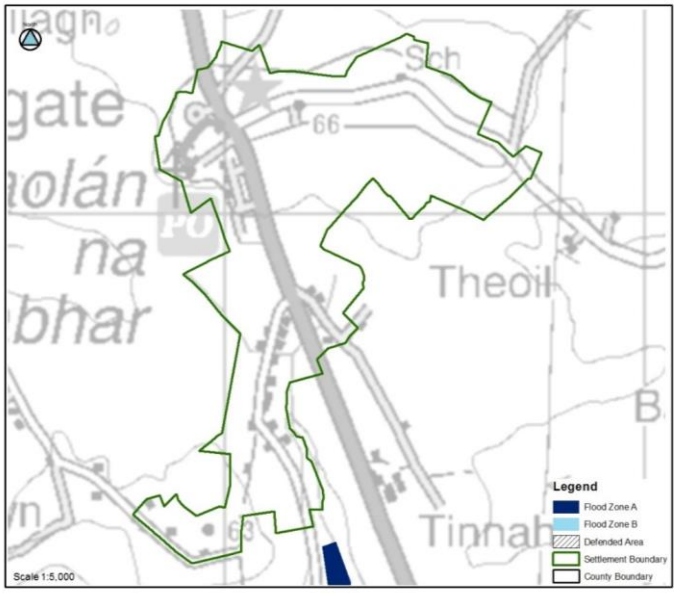
Flood Zone Data	n/a

Historic Flooding	None recorded
Comment	No fluvial flood risk identified and no flood history
Climate Change	No fluvial impacts, potential increase in runoff.
Conclusion	Manage flood risk and development in line with approved policies and objectives.

~~5.69~~5.70 Oilgate

Hierarchy	Large Village
Area for Further Assessment under CFRAM programme?	No



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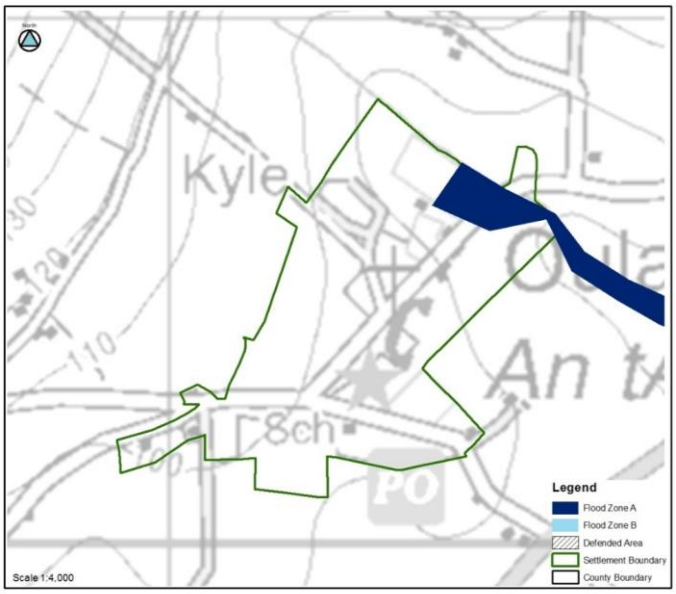
Flood Zone Data	PFRA
Historic Flooding	None recorded
Comment	A watercourse flows in a southerly direction from the southern periphery of the settlement.
Climate Change	No fluvial impacts, potential increase in runoff.
Conclusion	The watercourse originates from within the CSO boundary and risk should be assessed for any adjacent property. Any new development should follow the guidance provided in Section 4.4 to 4.11. In general the sequential approach should be followed and Flood Zone A/B should be avoided for any highly or less vulnerable development. It is noted that the Flood Zone mapping is indicative and further detailed modelling under a Stage 3 FRA would improve the quality and reliability of the assessment.

~~5.70~~5.71 Oulart

Hierarchy	Large Village
Area for Further Assessment under CFRAM programme?	No



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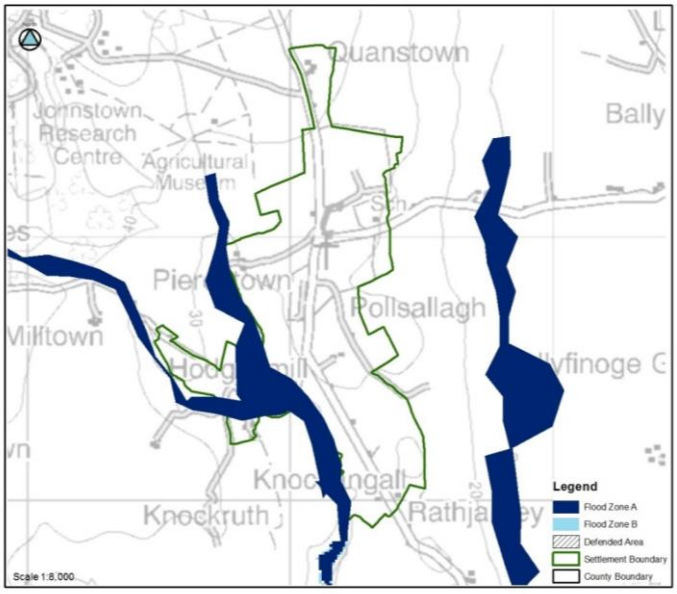
Flood Zone Data	OPW PFRA.

Historic Flooding	No significant fluvial flood risk identified.
Comment	PFRA flood mapping suggests potential risk adjacent to the Owenavoragh River that flows along the northern boundary of the settlement. The flood extents appear to be overestimated and indicate potential risk to a housing estate in the north east corner.
Climate Change	Low sensitivity.
Conclusion	Any new development in or adjacent to the PFRA Flood Zones should undertake an appropriately detailed FRA and must specifically consider the residual risk of bridge blockage. Any new development should follow the guidance provided in Section 4.4 to 4.11. In general the sequential approach should be followed and Flood Zone A/B should be avoided for any highly or less vulnerable development. It is noted that the Flood Zone mapping is indicative and further detailed modelling under a Stage 3 FRA would improve the quality and reliability of the assessment.

~~5.71~~5.72 Piercetown

Hierarchy	Large Village
Area for Further Assessment under CFRAM programme?	No



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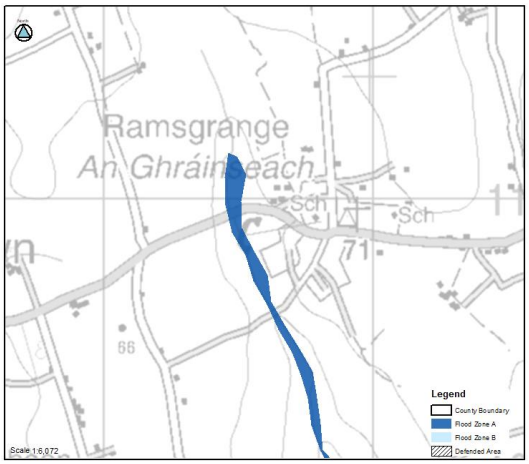
Flood Zone Data	OPW PFRA
Historic Flooding	No significant fluvial flood risk identified.
Comment	Two small watercourses join in the Hodgesmill area where there are also a couple of culvert/bridge structures. Flood mapping is from the indicative PFRA source which can tend to overestimate risk. Nevertheless, the topography in this area is relatively flat and it is likely that there is potential risk to existing property.
Climate Change	The area is expected to be moderately sensitive to climate change.
Conclusion	New development should follow the sequential approach and principally avoid Flood Zone A/B. It is noted that the Flood Zone mapping is indicative and further detailed modelling under a Stage 3 FRA might be able to revise flood outlines. Any new development should follow the guidance provided in Section 4.4 to 4.11. In general the sequential approach should be followed and Flood Zone A/B should be avoided for any highly or less vulnerable development.

~~5.72~~5.73 Ramsgrange

Hierarchy	Large Village
Area for Further Assessment under CFRAM programme?	No



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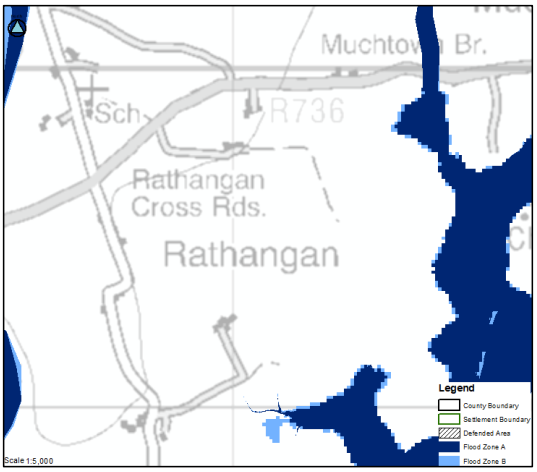
Flood Zone Data	OPW PFRA
Historic Flooding	None recorded
Comment	Flood risk in Ramsgrange is low and principally linked to a small stream that flows in a southerly direction in a location to the west of the settlement. There is no impact to existing development.
Climate Change	Low sensitivity to climate change.
Conclusion	Any new development should follow the guidance provided in Section 4.4 to 4.11. In general the sequential approach should be followed and Flood Zone A/B should be avoided for any highly or less vulnerable development. It is noted that the Flood Zone mapping is indicative and further detailed modelling under a Stage 3 FRA would improve the quality and reliability of the assessment.

~~5.735~~.74 Rathdangan

Hierarchy	Small Village
Area for Further Assessment under CFRAM programme?	No



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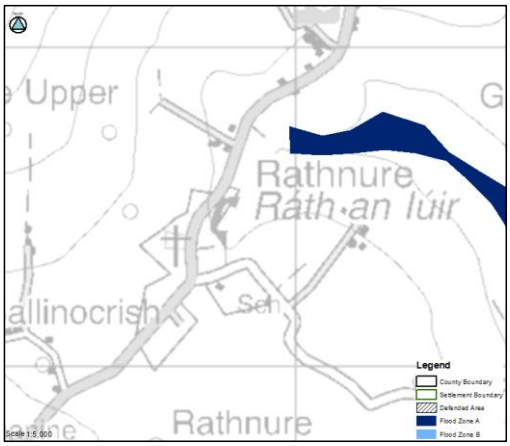
Flood Zone Data	PFRA, ICPSS & JFLOW
Historic Flooding	No historic risk identified.
Comment	Flood risk is remote from the settlement.
Climate Change	Near coastal location suggests a high sensitivity to climate change.
Conclusion	Manage flood risk and development in line with approved objectives and general practice as explained in Section 4 of this document. It is noted that the Flood Zone mapping is indicative and further detailed modelling under a Stage 3 FRA would improve the quality and reliability of the assessment.

~~5.74~~5.75 Rathnure

Hierarchy	Small Village
Area for Further Assessment under CFRAM programme?	No



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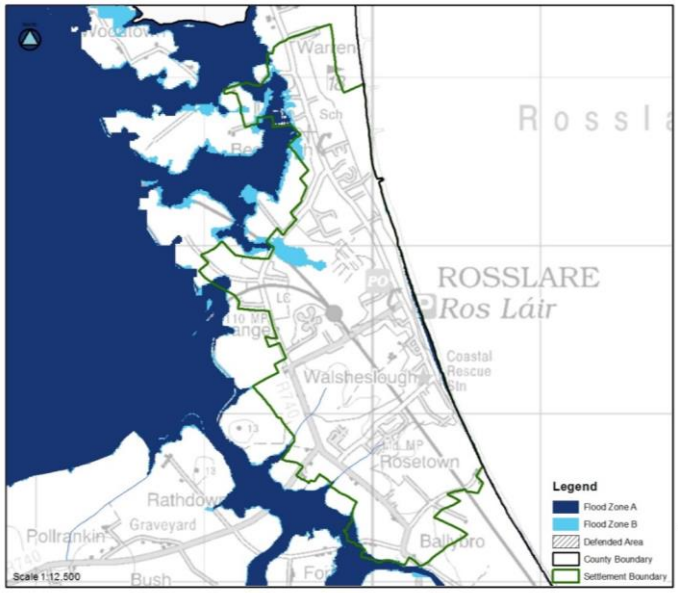
Flood Zone Data	PFRA
Historic Flooding	No historic risk identified.
Comment	No fluvial flood risk identified and no flood history within the CSO boundary. A remote watercourse to the east but low risk to the settlement.
Climate Change	No fluvial impacts, potential increase in runoff.
Conclusion	Manage flood risk and development in line with approved objectives and general practice as explained in Section 4 of this document. It is noted that the Flood Zone mapping is indicative and further detailed modelling under a Stage 3 FRA would improve the quality and reliability of the assessment.

~~5.75~~5.76 Rosslare

Hierarchy	Service Settlement
Area for Further Assessment under CFRAM programme?	South Slobs (for north western boundary)



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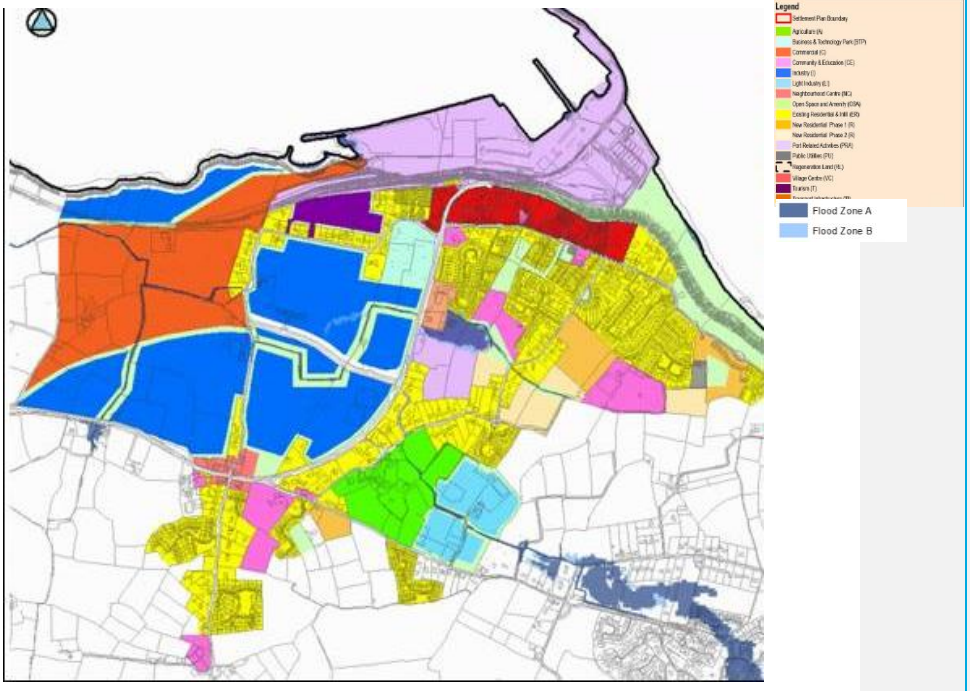
Flood Zone Data	CFRAM, PFRA, ICPSS and JFLOW
Historic Flooding	Reports of recurring historic flooding within the town.
Comment	Flood risk is present along the western fringe of the town, predominantly linked to a tidal influence. Existing development is at risk in the north west corner of the settlement. As confirmed by the CFRAM Management Plan there is a relatively low level of flood risk to South Slobs from rivers and/or the sea, and no structural flood relief measures are proposed at this time.
Climate Change	Rosslare would be sensitive to increase in sea level, particularly along the western boundary.
Conclusion	Any new development should follow the guidance provided in Section 4.4 to 4.11. In general the sequential approach should be followed and Flood Zone A/B should be avoided for any highly or less vulnerable development. It is noted that the Flood Zone mapping is indicative and further detailed modelling under a Stage 3 FRA would improve the quality and reliability of the assessment.

~~5.76~~5.77 Rosslare Harbour / Kilrane[i]

Hierarchy	Service Settlement
Area for Further Assessment under CFRAM programme?	No



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Flood Zone Data	JBA Stage 3 Flood Mapping & ICPSS.

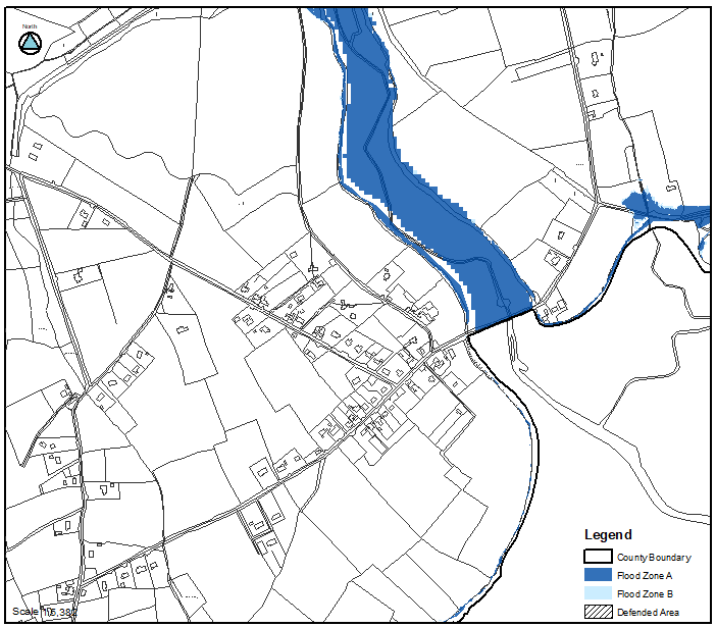
Historic Flooding	Recurring flooding of the Rosslare Transport Centre compound by undersized culvert. Surface water drainage issue in Churchfields – flooding of fields and road adjacent to houses, one house flooded. Recurring flooding of land upstream of N25 due to undersized culvert.
Comment	Rosslare Harbour & Kilrane are at low risk of tidal flooding due to the increase in elevation (most lands circa 15-20mOD). The principle risk is from the small urbanised watercourses flowing through the settlement, risk is related to culvert sizing and blockage. A small stream rises in Kilrane, predominantly fed by stormwater runoff and flows in an easterly / south easterly direction towards St Helens. A second stream rises in greenfield lands to the east of Rosslare Harbour and flows through Rosslare Harbour in a westerly direction, causing significant flooding to the former Rosslare Transport Centre lands where an undersized culvert causes ponding on the low lying land (zoned Port Related Activities - PRA). Upstream of this there are undeveloped Community Education lands and New Residential (Tier 2) lands, that are bordering the stream, but are not subject to significant out of bank flooding. Downstream of the PRA lands the watercourse flows through Industrial lands, but Flood Zone A remains in bank. Further downstream there are lands reserved for Transport Infrastructure – the potential road route is yet to be confirmed but will cross Flood Zone A/B. A third stream rises to the south of the N25 to the west of Kilrane and flows in a northerly direction under the N25 where an undersized culvert causes flooding to farmland/farmyard. The watercourse continues in a northerly direction and joins the main Rosslare Harbour stream. Surface water related issues are present downstream in Churchtown where a local field drain has been subject to blockage and has resulted in flooding of one property and close proximity to others. Residual risk from culvert blockage and surface water drainage is significant for many of the culverts within the settlement.

Climate Change	Most land circa 15-20mOD within the settlement and is therefore not sensitive to the impacts of seal level rise. Climate change increase in flow is low/moderately sensitive – climate change runs completed under the modelling study confirm a small increase in flood extents with +20% flow.
Conclusion	The proposed Transport Infrastructure zoning incorporates a large area of land and incorporates Flood Zone A/B. As the road will cross both the Flood Zones the Justification Test has been applied and passed, further detail is provided in Appendix A, transport routes routinely cross watercourses and in this case the route consideration will be configured to minimise environmental impact and the strategic requirement for the alignment is clearly demonstrated by the Justification Test. The management of flood risk is achievable through the application of appropriate culvert/structure design in line with OPW Section 50 considerations. Risk from the watercourse has already been modelled in detail by JBA and is mainly contained within bank and an appropriate design can adequately mitigate the potential impacts of flooding and ensure there are no significant adverse impacts elsewhere. Any future planning applications for the proposed road must be subject to an appropriately detailed FRA at development management stage to demonstrate that the application fully adheres to the guidance in Section 4.4 to 4.11. Section 50 consent will also be required from the OPW to ensure the appropriate design of culverts. Risk to the Port Related Activities lands (the former Rosslare Transport Centre) can be accommodated by the application of the sequential approach at Development Management stage but this must be clearly demonstrated by an FRA following the guidance in Section 4.4 to 4.11. Community Education land upstream of the former transport centre border the Flood Zone and should be subject to an appropriately detailed FRA at Development Management Stage in accordance with Section 4.4 to 4.11 and should investigate the residual risk of culvert blockage if the intended use include highly or less vulnerable development. The New Residential ~~(Tier 2)~~ lands upstream of the former transport centre has a watercourse flowing through it that remains in bank. Nevertheless, any proposed development should be subject to an appropriately detailed FRA at Development

	Management Stage in accordance with Section 4.4 to 4.11 and should investigate the residual risk of culvert blockage. The Industrial zoned lands to the east of the N25 accommodate the passage of the same watercourse that flows through the New Residential ~~Tier 2~~, CE and PRA lands. Through the Industrial lands Flood Zone A remains in bank and the use is appropriate. Any planning applications should be subject to an appropriately detailed FRA at DM stage, in accordance with Section 4.4 to 4.11 and should investigate the residual risk of culvert blockage. Further maintenance work/or re-culverting is recommended to assist in alleviating surface water flooding to the housing in Churchfields. Under Objective FRM18 a buffer zone of at least 10m is required from any watercourse. This objective will ensure that for the undeveloped Industrial, New Residential, Light Industrial and Community and Education lands, there is appropriate space created for the watercourse to allow a green corridor and adequate space for maintenance. Elsewhere, any new development should follow the guidance provided in Section 4.4 to 4.11. In general the sequential approach should be followed and Flood Zone A/B should be avoided for any highly or less vulnerable development. As with the other sites discussed above, particular attention should be paid to the residual risk of culvert blockage and this must be used to inform development.

~~5.77~~5.78 Saltmills

Hierarchy	Rural Node
Area for Further Assessment under CFRAM programme?	No



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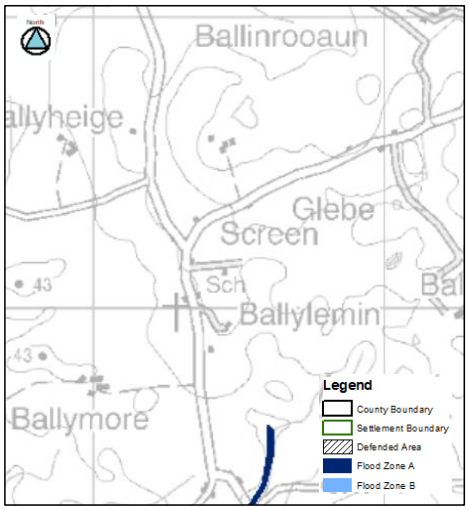
Flood Zone Data	OPW PFRA, ICPSS & JBA
Historic Flooding	Saltmills - recurring flood. Flood ID 3012. Road blocked periodically. Caused by high tides, strong winds.
Comment	The only predicted fluvial/tidal flooding in Saltmills impacts the L4041 at Tintern Bridge where the low levels are vulnerable to high tidal levels. There is a significant increase in elevation towards the centre of the settlement and the risk is low.

Climate Change	Given the elevation of the settlement the increase the risk to property from climate change is low. Risk of tidal road flooding will increase due to climate change, however there are other access routes to Saltmills that avoid this impact.
Conclusion	Manage flood risk and development in line with approved objectives and general practice as explained in Section 4 of this document. It is noted that the Flood Zone mapping is indicative and further detailed modelling under a Stage 3 FRA would improve the quality and reliability of the assessment.

~~5.78~~5.79 Screen

Hierarchy	Small Village
Area for Further Assessment under CFRAM programme?	No



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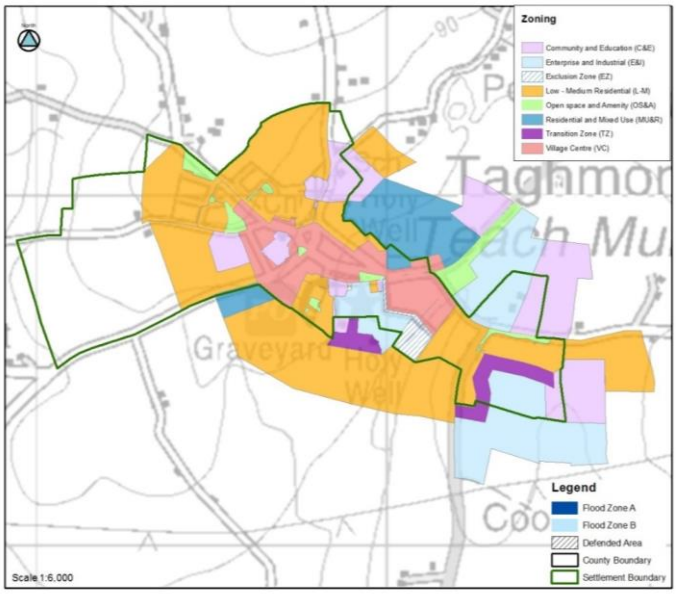
Flood Zone	PFRA

Data	
Historic Flooding	None recorded
Comment	Flood risk is low.
Climate Change	No fluvial impacts, potential increase in runoff.
Conclusion	Risk to the core of the development is low. Manage flood risk and development in line with approved objectives and general practice as explained in Section 4 of the SFRA. It is noted that the Flood Zone mapping is indicative and further detailed modelling under a Stage 3 FRA would improve the quality and reliability of the assessment.

~~5.795~~.80 Taghmon

Hierarchy	~~Service~~ Strategic Settlement
Area for Further Assessment under CFRAM programme?	No



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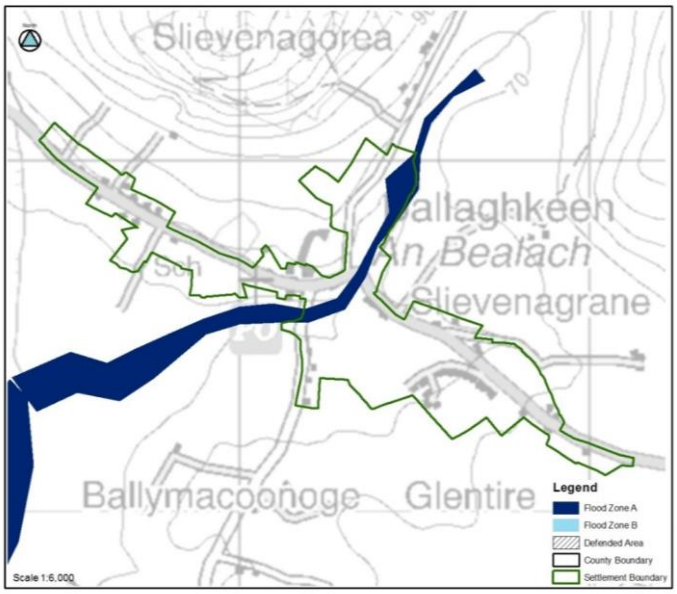
Flood Zone Data	n/a
Historic Flooding	None recorded
Comment	No fluvial flood risk identified and no flood history
Climate Change	No fluvial impacts, potential increase in runoff.
Conclusion	Manage flood risk and development in line with approved policies and objectives.

~~5.80~~5.81 The Ballagh

Hierarchy	Large Village
Area for Further Assessment under CFRAM programme?	No



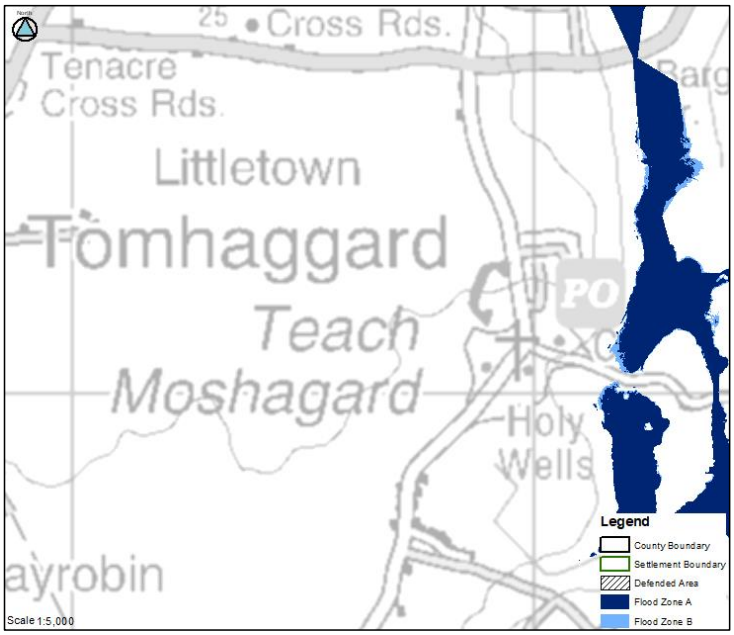
The boundaries used to identify this settlement for the purposes of this flood risk assessment are those used and published by CSO. These boundaries are not intended nor to be interpreted as the Planning Authority's intended settlement boundaries and are just the study areas for the FRA. In all cases, a prospective applicant should seek confirmation from the Planning Authority on whether their development site is considered to fall within or outside of the settlement for the purpose of the implementation of planning policies in the County Development Plan.

The Flood Zone mapping has been produced in accordance with the Planning Guidelines and therefore ignores the impact of flood protection structures. Areas protected by flood defences still carry a residual risk of flooding due to overtopping or breach, there may also be no guarantee of maintenance in perpetuity. Areas that benefit from defences are annotated separately. Flood Zone A – Fluvial: 1 in 100 year or 1% AEP, Tidal: 1 in 200 year or 0.5% AEP. Flood Zone B – 1 in 1000 year or 0.1% AEP.

Flood Zone Data	OPW PFRA.
Historic Flooding	No significant fluvial flood risk identified.
Comment	The River Sow flows in a southerly direction through the village. Potential impact to some existing development adjacent to the river. Residual risk of blockage is present at two bridge locations.
Climate Change	Low sensitivity to climate change.
Conclusion	Any new development should follow the guidance provided in Section 4.4 to 4.11. In general the sequential approach should be followed and Flood Zone A/B should be avoided for any highly or less vulnerable development. It is noted that the Flood Zone mapping is indicative and further detailed modelling under a Stage 3 FRA would improve the quality and reliability of the assessment.

~~5.81~~5.82 Tomhaggard

Hierarchy	Small Village
Area for Further Assessment under CFRAM programme?	No



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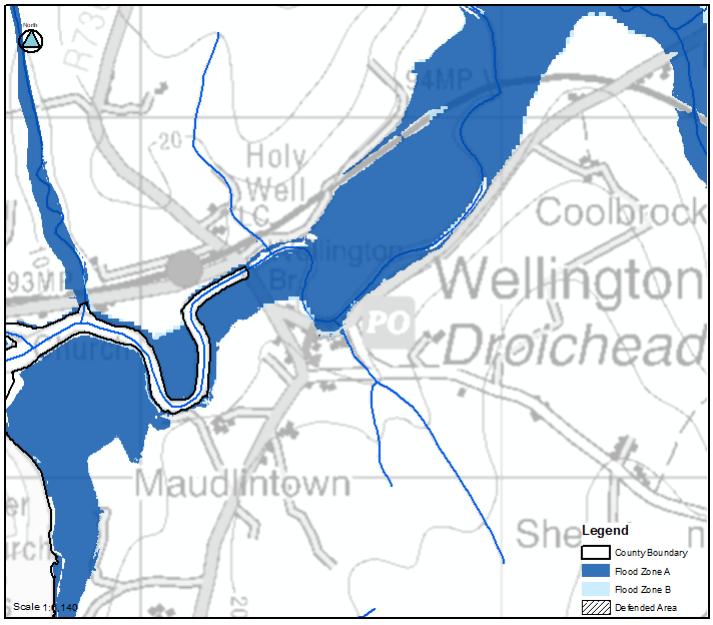
Flood Zone Data	PFRA & ICPSS
Historic Flooding	No historic risk identified.
Comment	The settlement lies on high ground to the west of a well-defined valley with a watercourse that drains into Tacumshin Lake. Tomhaggard is at low risk from fluvial/coastal risk.

Climate Change	The settlement is elevated above 10mOD and is at low risk.
Conclusion	Manage flood risk and development in line with approved objectives and general practice as explained in Section 4 of this document. It is noted that the Flood Zone mapping is indicative and further detailed modelling under a Stage 3 FRA would improve the quality and reliability of the assessment.

~~5.82~~5.83 Wellington Bridge

Hierarchy	~~Service~~ Strategic Settlement
Area for Further Assessment under CFRAM programme?	No



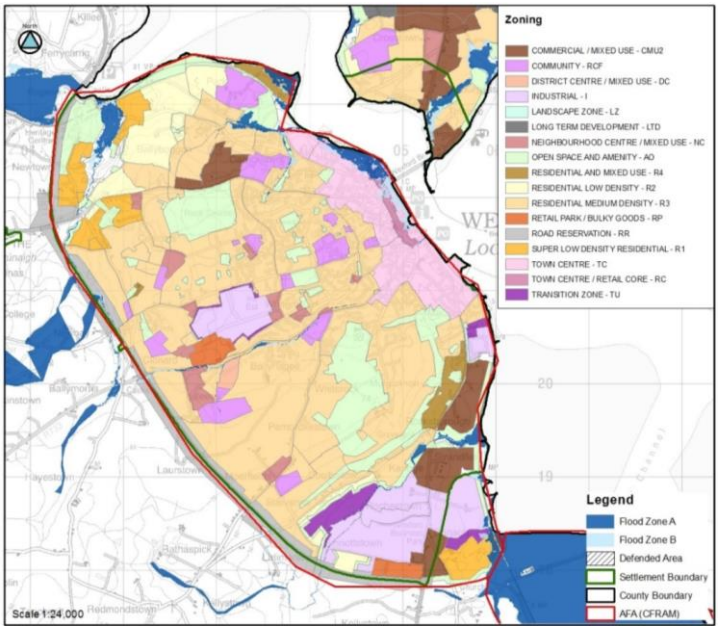
The Flood Zone mapping has been produced in accordance with the Planning Guidelines and therefore ignores the impact of flood protection structures. Areas protected by flood defences still carry a residual risk of flooding due to overtopping or breach, there may also be no guarantee of maintenance in perpetuity. Areas that benefit from defences are annotated separately. Flood Zone A – Fluvial: 1 in 100 year or 1% AEP, Tidal: 1 in 200 year or 0.5% AEP. Flood Zone B – 1 in 1000 year or 0.1% AEP.

Flood Zone Data	OPW PFRA, ICPSS & JBA
Historic Flooding	Flooding occurred at Wellington Bridge on 3rd of February 2014. The source of the flood waters was the Owenduff River which was overtopped during a period of high tides and strong winds. The flooded area is adjacent to the bank of the Owenduff River. Recurring flooding is also recorded at Corock Wellington Bridge as a result of high tides and heavy rain resulting in the road blocking periodically.

Comment	The predominant flood risk is related to tidal/fluvial flooding from the Corock River. Historic flooding limited to impact on the public highway, however, predictive mapping suggests that the impacts may extend to commercial development.
Climate Change	Moderate impacts from climate change – sea level rise.
Conclusion	Any new development should follow the guidance provided in Section 4.4 to 4.11. In general the sequential approach should be followed and Flood Zone A/B should be avoided for any highly or less vulnerable development. It is noted that the Flood Zone mapping is indicative and further detailed modelling under a Stage 3 FRA would improve the quality and reliability of the assessment.

~~5.83~~5.84 Wexford

Hierarchy	Key Town
Area for Further Assessment under CFRAM programme?	Yes



The Flood Zone mapping has been produced in accordance with the Planning Guidelines and therefore ignores the impact of flood protection structures. Areas protected by flood defences still carry a residual risk of flooding due to overtopping or breach, there may also be no guarantee of maintenance in perpetuity. Areas that benefit from defences are annotated separately. Flood Zone A – Fluvial: 1 in 100 year or 1% AEP, Tidal: 1 in 200 year or 0.5% AEP. Flood Zone B – 1 in 1000 year or 0.1% AEP.

Flood Zone Data	CFRAM
Historic Flooding	Severe flooding occurred in Wexford Town on the 27th of October 2004: There was significant damage to properties on the main street and connecting streets, and of Redmond Road and Square. Ferrycarrig Bog Road is affected by recurring flooding.
Comment	Flood risk to Wexford is present from both tidal and fluvial sources. As of May 3rd, 2018, Wexford has been included in a list of 50 new Flood Relief Schemes to be

	advanced to the initial phase of design. Until the scheme is complete the risk will remain to property and is principally focussed around a circa 200m fringe of the town centre that fronts the harbour. Ballyboggan and Parkside are also areas that are subject to existing development and flood risk. Other areas of the town area also at potential risk but are not developed and most of the zoned land is appropriately attributed to open space.
Climate Change	Wexford is most sensitive to the impacts of sea level rise and the increase in risk is significant. The future flood relief scheme will adopt an appropriate strategy for the management of climate change risk.
Conclusion	The management of flood risk in Wexford is now being formalised by the CFRAM Management Plan and the ensuing Flood Relief Scheme. Wexford County Council should make provision for the measures outlined within the scheme under the objectives of the new Local Area Plan. When the zoning objectives are reviewed under the next iteration of the LAP then undeveloped zoning objectives should be reviewed in line with the sequential approach and the advice given under Section 4.4 to 4.11. .

A Justification Test – Rosslare Harbour & Kilrane

Development Plan Justification Test for the Transport Infrastructure Zoning (Proposed Rosslare Europort Access Road) in the Rosslare Harbour and Kilrane Settlement Plan

A.1 Background

The proposed route options for the Rosslare Europort Access Road traverse lands identified on the flood zone mapping as being within Flood Zone A and Flood B. These lands are zoned Transport Infrastructure (TI) to provide specifically for this proposed access road. The road is considered to constitute critical infrastructure and as such is a highly vulnerable use for the purposes of the Flood Risk Management Guidelines. The application and passing of the Development Plan Justification Test is required for highly vulnerable development in Flood Zone A and Flood Zone B.

A.2 The Test

The following Justification Test has been prepared in accordance with the criteria outlined in Box 4-1 in Chapter 4 of the Flood Risk Management Guidelines for Planning Authorities (DEHLG and OPW, 2009).

Part 1: **The urban settlement is targeted for growth under the National Spatial Strategy, the Regional Planning Guidelines, statutory development/local area plans or under Planning Guidelines or Planning Directives of the Planning and Development Act, 2000, as amended.**

Rosslare Europort is located in Rosslare Harbour. Given the strategic location of the Europort in the settlement, Rosslare Harbour and Kilrane is targeted for growth and accordingly designated as a Level 3 Service Settlement in the County Core Strategy.

The Europort is a key strategic transport link between Ireland and both the European mainland and the United Kingdom. Improved access to Rosslare Europort from the N25 National Primary Road, which will be provided for by the

proposed access road, is required to ensure and secure the sustainability and competitiveness of the Europort.

The improvement of road linkages to Rosslare Europort is supported in the National Planning Framework, the National Development Plan 2018-2027, the National Marine Planning Framework and the Regional Spatial and Economic Strategy for the Southern Region (RSES).

RPO 146 in the RSES aims to achieve high quality international connectivity through our ports and the strengthening and maintenance of access to ports through enhanced transport networks and improved journey times. Support for the M11 and the N80 improved connectivity to the Rosslare Europort is highlighted.

The RSES also identifies Rosslare Europort as a Strategic Economic Location, and advocates for its elevation to Tier 1 Port Status. The Eastern Economic Corridor, which is provided for in both the RSES for the Southern Region and the RSES for the Eastern and Midlands Region, is a transport and economic corridor that will link the Belfast –Dublin Corridor to Rosslare Europort. The location on the Eastern Economic Corridor provides significant economic development opportunities to expand the Europort's functions and to support the development of Rosslare Harbour and Kilrane and other towns in the county along the Corridor. The RSES further highlights the reciprocal relationship between the Key Town of Wexford Town and the Europort with the strategic location of Wexford Town in relation to the Europort significant in the context of the Eastern Economic Corridor.

The development of the access road to Rosslare Europort and associated linkages is therefore considered part of the critical infrastructure required for both the Europort to grow and to enable the future development of Rosslare Harbour and Kilrane, Key and Large Towns and the county in general.

Part 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 settlement.

The proposed access road will provide for the development of Rosslare Europort itself and the expansion and development of the settlement. The new access road will contribute to the re-ordering of traffic flows through settlement, providing for a safer and more attractive environment that will attract and enable other uses and contribute to the regeneration of the settlement.

ii. Comprises significant previously developed and/or under-utilised lands.

The route of the access road is considered to include under-utilised lands at the Europort and in the vicinity of the Rosslare Harbour to Dublin railway line.

iii. Is within or adjoining the core of an established settlement or designated urban settlement.

The Flood Risk Management Guidelines define the core of an urban settlement as 'the area of a city, town or village which acts as a centre for a broad range of employment, retail, community, residential and transport functions'. The proposed access road approaches the settlement from the west of the core and traverses the northern section of the core of the settlement to the Europort.

iv. Will be essential in achieving compact and sustainable urban growth.

The proposed access road will improve road safety and the local environment in the settlements of Rosslare Harbour and Kilrane, making them more attractive to future development. The access road will also facilitate a range of land uses in

the settlement including industrial, business and technology, port –related and tourism.

v. There are no suitable alternative lands available for the particular use or development type, in areas at lower risk of flooding within or adjoining the core of the urban settlement.

The proposed access road will provide enhanced linkages from the N25 and forms part of the wider N11/N25 Oilgate to Rosslare Harbour Road Scheme. As such there are no suitable alternative lands at this particular location.

Part 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. (NB - the acceptable or otherwise of levels of any residual risk should be made with consideration for the proposed development and the local context and should be discussed in the relevant flood risk assessment).

Transport routes routinely cross watercourses and in this case the route consideration will be configured to minimise environmental impact and the strategic requirement for the alignment is clearly demonstrated by the Justification Test. The management of flood risk is achievable through the application of appropriate culvert/structure design in line with OPW Section 50 considerations. Risk from the watercourse has already been modelled in detail by JBA and is mainly contained within bank and an appropriate design can adequately mitigate the potential impacts of flooding and ensure there are no significant adverse impacts elsewhere.

Any future planning applications for the proposed road must be subject to an appropriately detailed FRA at development management stage to demonstrate that the application fully adheres to the Planning System and Flood Risk Management Guidelines. Section 50 consent will also be required from the OPW to ensure the appropriate design of culverts.

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