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Strategic Flood Risk Assessment for Draft Carlow County Development Plan 2022-2028

Technical Report

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Purpose

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Abbreviations

1D	One Dimensional (modelling)
2D	Two Dimensional (modelling)
AEP	Annual Exceedance Probability
AFA	Area for Further Assessment
CCC	Carlow County Council
CCCDP	Carlow County Council Development Plan
CDP	County Development Plan
CFRAM	Catchment Flood Risk Assessment and Management
CSO	Combined Sewer Overflow
DoEHLG	Department of the Environment, Heritage and Local Government
EC	European Community
FRA	Flood Risk Assessment
FRR	Flood Risk Review
GDSDS	Greater Dublin Strategic Drainage Strategy
GSI	Geological Survey of Ireland
HEC-RAS Army)	Hydrologic Engineering Center – River Analysis System (developed by the US
HEFS	High End Future Scenario
LA	Local Authority
MPW	Medium Priority Watercourse
MRFS	Medium Range Future Scenario
OPW	Office of Public Works
PFRA	Preliminary Flood Risk Assessment
SFRA	Strategic Flood Risk Assessment
SI	Site Investigation
SPR	Standard percentage runoff
TBC	To be confirmed
TC	Town Centre
Tp	Time to Peak
WWTP	Waste Water Treatment Plant

1 Introduction

JBA Consulting was commissioned by Carlow County Council (CCC) to provide assistance in the preparation of the Strategic Flood Risk Assessment (SFRA) to inform the Draft Carlow County Development Plan 2022-2028 (CCDP).

The SFRA is a live document that is designed to be updated as further flood risk information becomes available and changes to the development plan are proposed under any future variations.

1.1 Terms of Reference

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. SFRA's enable the LA 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".

More specifically the SFRA will complete the following tasks;

- Undertake a flood risk assessment for the settlements within the CCDP,
- Review the various sources of potential Flood Zone mapping,
- Assist CCC in the review of land use zoning objectives and the application of the sequential approach and justification test,
- Prepare flood risk management policies, objectives and recommendations.

1.2 Report Structure

Section 2 provides an introduction to the study area. Section 3 provides an introduction to the Planning System and Flood Risk Management and covers important information on the philosophy and approach of the guidelines.

Section 4 provides a review of data collection, flood history and predicted flood extent (including climate change impacts) in each of the settlements. Section 5 and 6 provides policy and guidance on suggested approaches to managing flood risk and development. Section 7 discusses the settlement review.

2 Carlow Study Area

The study area is the County of Carlow, with a focus on the land use zoning objectives of the Tier 1 and Tier 3-4 settlements, which are defined in the plan and identified in Table 2-1.

Table 2-1 Settlements contained within the CCDP

Settlement Tier	Settlement Typology	Description	Settlements
1	Key Town	Large population scale urban centre functioning as self – sustaining regional drivers. Strategically located urban centre with accessibility and significant influence in a sub-regional context.	Carlow Town
2	District Towns	Well-developed serviced settlements with a moderate level of jobs supporting services and community facilities with good transport links and capacity for continued commensurate growth to become more self-sustaining.	Tullow Muine Bheag (NEITHER IN CDP)
3	Small Towns	Smaller towns with an urban structure providing local services and employment functions catering for a wider rural hinterland area.	Rathvilly Leighlinbridge Ballon Borris Hacketstown Carrickduff Tinnahinch (NOT IN CDP)
4	Larger Serviced Rural Villages	Serviced villages with established populations circa. 200 and settlement structure which provide important local level services.	Palatine Ballinabrannagh Rathoe Fennagh Myshall Clonegal Kildavin Tinryland
5	Smaller Serviced Rural Villages	Villages with more limited services established populations <200 and settlement structure which provide important local level services and community facilities.	Bennekerry Old Leighlin Nurney Ardattin Glynn Tiknock Ballinkillen Bilboa St Mullins Clonmore
6	Rural Nodes	Villages with established populations <200 and a weaker settlement structure but contain important local services and community facilities e.g. local schools, churches and community facilities	Grange Drumphaea Ballymurphy Garryhill Rathanna Newtown Newtown Fennagh

Carlow is a land-locked county located in the South Eastern Region. The county has an area of 897km². Carlow's southern, western and eastern boundaries are demarcated by the county's three principal geographic features - the River Barrow, the River Slaney and the Blackstairs Mountains.

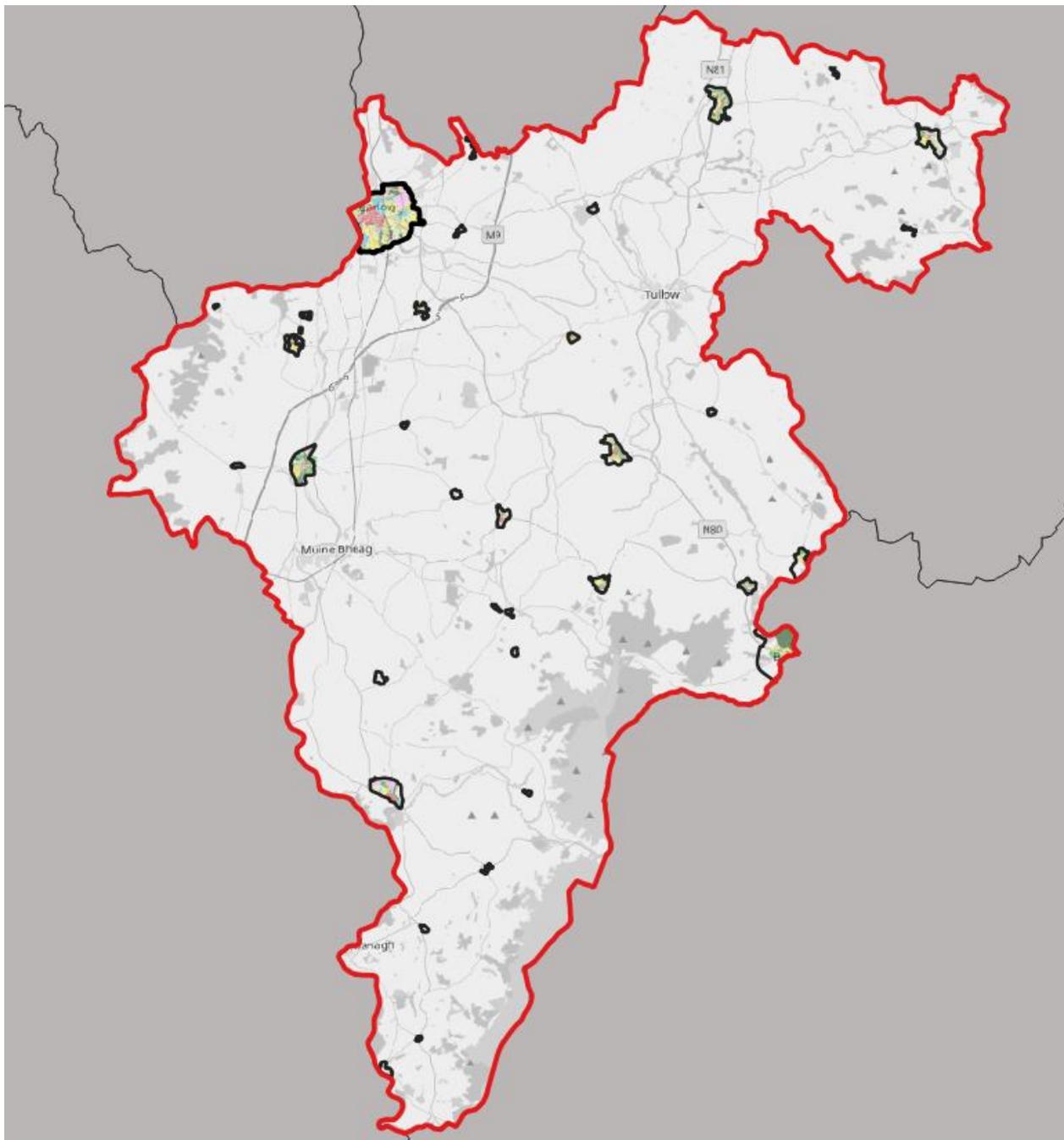


Figure 2-1 Settlement Map

The River Barrow is 192 km long, making it the second-longest river in Ireland. The river cuts out a low-lying valley as it traverses through the county, and much of the county is drained by the Barrow and its tributaries. The most prominent tributary of the Barrow in the area is the Burren River, which rises at Mount Leinster and flows through the county for 39 km before joining the Barrow at Carlow town. The east and northeast of the county are drained by the River Slaney and its tributaries - the River Derreen, which flows through Hacketstown and Tullow, and the River Derry, which rises at Eagle Hill south of Hacketstown and forms the border between Carlow and Wicklow before joining the Slaney at Bunclody.

The Blackstairs Mountains which are one of the most striking physical features in Co. Carlow, lie along the border with Co. Wexford. The peak of Mount Leinster rises to a height of 735m.

2.1 Planning Policy

2.1.1 Ireland 2040 - National Planning Framework

A Strategic Flood Risk Assessment of the National Policy Objectives (NPO) within the Ireland 2040 – National Planning Framework was undertaken with the aim of ensuring that flood risk is a key consideration in delivering the proposed strategic sustainable land-use planning decisions. It sets out how all levels of the planning process, from national level strategic assessments to individual planning applications, should follow the sequential approach set out in the 2009 Guidelines on Planning and Flood Risk Management.

The NPF recognises that it is not always possible to avoid developing in flood risk areas due to spatial, economic, environmental and physical constraints. Development should be encouraged to continue, and in flood risk areas should follow the sequential approach and application of Justification Test set out in the Department's Guidelines on the Planning System and Flood Risk Management. These guidelines will facilitate the integration of flood risk and land risk planning in the Southern region, at all tiers of the planning hierarchy from national level through regional, city/county and local plans, masterplans and individual planning applications.

2.1.2 Regional Spatial and Economic Strategy (Southern Regional Assembly)

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 Carlow, amongst others, is 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 Carlow town, County Carlow's key town, and towns and villages 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 and Justification Test 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.
- Development and Local Area Plans in the region should take account of and incorporate the recommendations of the Flood Risk Management Plans, including planned investment measures for managing and reducing flood risk. Natural Water Retention Measures (NWRMS) should be incorporated where appropriate.

2.1.3 Carlow County Development Plan 2015-2021

As part of the Carlow County Development Plan 2015-2021 a Strategic Flood Risk Assessment was undertaken. The purpose of the SFRA is to provide a broad assessment of all types of flood risk to inform strategic land use planning decisions. Parts of County Carlow are vulnerable to flooding and are mapped as part of the Carlow County Development Plan 2015-2021

The flood management policies of Carlow County Council, as laid out in the development plan include:

- Carry out flood risk assessment for the purpose of regulating, restricting and controlling development in areas at risk of flooding and to minimise the level of flood risk to people, business, infrastructure and the environment through the identification and management of existing and potential future flood risk;
- Lower tier plans shall undertake Strategic Flood Risk Assessment in accordance with the requirements of the Planning System and Flood Risk Management-Guidelines for Planning Authorities (DEHLG and OPW, 2009);
- Apply the sequential approach which is based on the principles of avoidance, reduction and mitigation of flood risks when preparing town development plans and local area plans and when assessing planning applications for development proposals;
- Require the use of Sustainable Urban Drainage Systems (SuDS) to minimise the extent of hard surfacing and paving and require the use of sustainable drainage for new development or extensions to existing developments;
- Ensure that all development proposals comply with the requirements of the Planning System and Flood Risk Management-Guidelines for Planning Authorities' (DEHLG and OPW 2009) and to ensure that the Justification Test for Development Management is applied to required development proposals and in accordance with methodology set out in the guidelines;
- Preserve appropriately sized riparian strips alongside river channels free of development and of adequate width to permit access for river maintenance;
- Integrate as appropriate the recommendations of any relevant CFRAM Studies, Flood Risk Management Plans, future flood hazard maps or flood risk maps;
- Ensure that where flood protection or alleviation works take place that the natural and cultural heritage and rivers, streams and watercourses are protected and enhanced. Such works will be subject to Appropriate Assessment as required under Article 6 of the EU Habitats Directive;
- Ensure that development proposals in areas at moderate (Flood Zone B) or high (Flood Zone A) risk of flooding which are considered acceptable in principle demonstrate that appropriate mitigation measures can be put in place and that residual risks can be managed to acceptable levels;
- Site-specific Flood Risk Assessment (FRA) is required for all planning applications in areas at risk of flooding, even for developments appropriate to the particular Flood Zone. The detail of these site-specific FRAs will depend on the level of risk and scale of development. A detailed site-specific FRA should quantify the risks, the effects of selected mitigation and the management of any residual risks. The Council shall have regard to the results of any CFRAM Study in the assessment of planning applications;
- Support, in co-operation with the OPW, the implementation of the EU Flood Risk Directive (2007/60/EC), the Flood Risk Regulations (SI No. 122 of 2010) and the DEHLG/OPW publication The Planning System and Flood Risk Management Guidelines (2009) (and any updated/superseding legislation or policy guidance). Carlow County Council will also take account of the South Eastern Catchment Flood Risk Assessment and Management Study;
- Protect water bodies and watercourses within the County from inappropriate development, including rivers, streams, associated undeveloped riparian strips, wetlands and natural floodplains. This will include protection buffers in riverine and wetland areas as appropriate. For larger river channels (over 10m), the recommended width of the core riparian core (CZR) is 35-60m (18-30m on each side of the river) and may be larger where flood plains adjoin the riparian zone. For smaller channels (under 10m), a core riparian zone (CZR) of 20m or greater (minimum 10m on each side of the river) is recommended.
- In addition, the Specific Objective for Flood Risk Management requires a detailed site-specific FRA for identified potential flood risk areas, taking into consideration findings of the CFRAM Study when completed.

3 The Planning System and Flood Risk Management

3.1 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.

3.2 Definition of 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:

$$\text{Flood Risk} = \text{Probability of Flooding} \times \text{Consequences of Flooding}$$

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 3-1, illustrates this and is a widely used environmental model to assess and inform the management of risk.

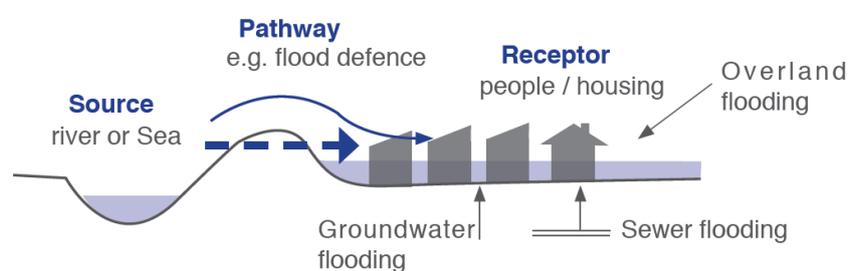


Figure 3-1: Source Pathway Receptor Model

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.

3.3 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 3-1.

Table 3-1: 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.

3.4 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.

3.5 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 3-2.

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 3-2: 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).

3.6 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.' SFRA 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.

3.7 The Sequential Approach & Justification Test

Each stage of the Flood Risk Assessment (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.

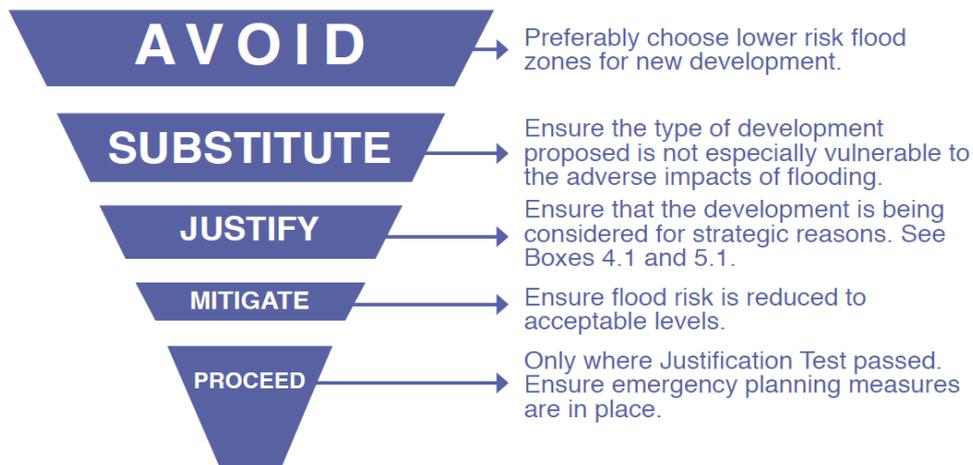


Figure 3-2: Sequential Approach Principles in Flood Risk Management

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 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 assess 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 3-3 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 3-3: Matrix of Vulnerability versus Flood Zone

	Flood Zone A High Probability	Flood Zone B Moderate Probability	Flood Zone C Low Probability
Highly Vulnerable Development (Including essential infrastructure)	Justification Test	Justification Test	Appropriate
Less Vulnerable Development	Justification Test	Appropriate	Appropriate
Water-Compatible Development	Appropriate	Appropriate	Appropriate

3.8 Scales and Stages of 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 Flood Risk Appraisal (RFRA)** – a broad overview of flood risk issues across a region to influence spatial allocations for growth in housing and employment and to identify where flood risk management measures may be required at a regional level to support the proposed growth. This should be based on readily derivable information and undertaken to inform the Regional Planning Guidelines.

- **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 RFRA 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.

4 Data Collection and Review

4.1 Overview

This section reviews the data collection and the flood history for the settlements 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) and key sources of flood risk.

Table 4-1: Available Flood Risk Data

Description	Coverage	Robustness	Comments on usefulness
South Eastern CFRAM Study	Areas for further assessment (AFAs), or settlements falling along modelled lengths, in County Carlow are: Muinebheag Carlow Leighlinbridge Tullow	Modelling is 'best available', and outputs will allow informed decisions on zoning objectives. Design water levels will inform decisions relating to raising land and setting finished floor levels.	Very useful but undertaken at a catchment level. In general, CFRAM provides all information needed to apply the Justification Test (JT) for Plan Making under the SFRA. Site specific FRAs will still be required for planning applications, but information on water levels can form the basis of decision in relation to finished floor levels. However, it is important to note that CFRAM outputs should not be relied upon without review and consideration of appropriateness to the site in question.
South Eastern CFRAM Study Medium Priority Watercourse (MPW)	CFRAM mapping extends downstream of AFAs to the coastal outlet, or in-between AFAs.	MPW mapping is a less detailed 1D only model with level projection to provide flood extents. Flood levels are not provided.	Second tier of CFRAM modelling and useful for screening and high-level assessment. Site specific FRAs will still be required for planning applications. The maps should not be used to assess the flood risk associated with individual properties or point locations, or to replace a detailed site specific flood risk assessment.
OPW National Indicative Fluvial Model (NIFM)	All fluvial catchments greater than 5km ² on watercourses where CFRAM not available.	Low/Moderate	The National Indicative Fluvial Maps provide an indication of areas that may flood during a flood of an estimated probability of occurring. A number of assumptions have been made in order to produce a dataset suitable for national level flood risk assessments. The maps should not be used to assess the flood risk associated with individual

			properties or point locations, or to replace a detailed site specific flood risk assessment.
Dunleckney Stream Flood Mapping (Carlow County Council)	Dunleckney Stream	Moderate/High	1D hydraulic model completed in 2016 to improve quality of mapping on Dunleckney Stream in Muinebheag.
Historical event outlines and point observations and reports	Various, taken from www.floodmaps.ie	Indicative	Used indirectly to validate flood zones and identify non-fluvial flooding in the SFRA. Useful background information for site specific FRAs, but note the database is not exhaustive, absence of a record does not necessarily mean absence of flood risk.
Flood relief schemes	Existing OPW flood relief schemes are in place at Carlow, Leighlinbridge and Tullow. There are new schemes also proposed for Carlow, Tinnahinch and Leighlinbridge.	n/a	n/a
Site Specific FRAs	Settlement or sub-settlement.	Moderate	Helpful for additional verification of NIFM.
Site Visits		Moderate	Site visits used to verify flood extents where there were potential conflicts with predicted flood extent and undeveloped land uses with highly or less vulnerable land use zoning objectives.

Table 4-2: Other Available Data

Description	Coverage	Robustness	Comment on usefulness
Alluvial Soil Maps	Full Study Area	Low	Used in the Regional FRA Report to provide initial assessment of risks. Not used in SFRA and little or no value to FRA.
Groundwater vulnerability maps	Broadscale, County wide	Moderate	Initial assessment of groundwater vulnerability. Provides a screening tool for use in FRA.
Historic Flood Records including photos, aerial photos and reports.	Broad, spot coverage	Various	Yes, indirectly to validate Flood Zones & identify other flood sources. Review of such sources will be required for all site specific FRAs.

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 Carlow County.

4.1.1 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 6 studies are currently underway in the East, South-East, South-West, West, North-West and Neagh-Bann regions.

County Carlow falls within the South Eastern CFRAM Study area. During the initial Flood Risk Review (FRR) stage of the SE CFRAM four areas in Carlow County were selected as an Area for Further Assessment (AFA). These areas are Carlow town, Tinnahinch, Leighlinbridge, and Tullow. This was based on the historical flood record and PFRA flood outlines for the area.

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. Existing flood defence walls and embankments, including the maintenance of, will be incorporated into the flood risk management plan.

The results of the Flood Risk Management Plans confirms further measures for Carlow and Leighlinbridge, these are discussed below in Section 4.1.2 & 4.1.3. Tullow includes maintenance of existing measures and in Graiguenamanagh-Tinnahinch a scheme is to be progressed, as discussed in Section 4.1.5.

4.1.2 Carlow Flood Relief Scheme

The Carlow Flood Relief Scheme was initiated in 1996 following severe flooding in 1995 and was constructed from 2010 to 2013. The Scheme, which comprises flood defence walls and embankments along the River Barrow and Burren Stream with a pumping station at their confluence, provides protection against fluvial flooding to the 1% AEP for 185 properties.

Further works on the Burrin River in the Mill Race/Springfield area and on the Knocknagee Stream in the Castle Oaks area were recommended by the CFRAM and have been included as part of the first 50 FRSSs to be investigated further under the 10-year government spending plan announced in May 2018.

4.1.3 Leighlinbridge Flood Relief Scheme

The flood alleviation works at Leighlinbridge were initiated in 2010 following flooding in 2009 which overwhelmed existing defences and were constructed from 2011 to 2012. The Scheme, that comprises a storm water pumping station, flood defence walls, flood defence gates and embankments provide protection to the 1% AEP for 37 properties.

Further works to augment the existing measures were proposed from the CFRAM Management Plan. The proposed measure consists of augmenting the existing defences with the construction of embankments, walls set back from the river where possible and the installation of automatic flood gates. The new hard defences would protect to the 1% AEP flood event with an estimated average height of 1.2m and a total length of 1.1km. The measure will be investigated further under the 10-year government spending plan announced in May 2018.

4.1.4 Tullow Flood Relief Scheme

The Tullow Scheme was initiated in 2003 (pre-feasibility study) and was constructed from 2011 to 2012. The Scheme, comprising of flood defence walls and embankments along the Slaney River and an upgrade of the drainage along Thomas Traynor road with pumps and sumps, provides

protection to the 100-Year Standard of Protection for 42 properties against flooding from the River Slaney.

4.1.5 Graiguenamanagh-Tinnahinch Flood Relief Scheme

Kilkenny County Council as the Lead Authority, in partnership with Carlow County Council and The Office of Public Works (OPW) are now advancing with Graiguenamanagh-Tinnahinch Flood Relief Scheme. The OPW has recommended the development of a Flood Relief Scheme for Graiguenamanagh-Tinnahinch as a result of the work completed in the South Eastern Catchment Flood Risk Assessment and Management (CFRAM) Study.

Work began in March 2020 and the last newsletter in January 2021 indicates that the baseline modelling is underway, and hydrology has been signed off by OPW. There will be revised flood mapping for the area, but this is not available in time for the plan making process. The management options are yet to be determined and would be several years way from construction.

4.1.6 Drainage Districts

Drainage Districts are areas where drainage schemes to improve land for agricultural purposes were constructed under a number of Acts of Parliament and Acts of the Oireachtas prior to 1945. 170 Drainage District Schemes were established, covering 4,600km of channel. The statutory duty of maintenance for these schemes lies with the local authorities concerned. The standard of this maintenance varies widely from county to county.

Works after 1945 are referred to as Arterial Drainage Schemes, they are operated and maintained by the OPW, there are no such schemes in Carlow. Work within Drainage Districts was completed to improve agricultural lands by drainage and preventing or substantially reducing the flooding of the lands. These were often completed in piecemeal fashion and did not operate on a catchment basis, creating the potential to increase flood risk downstream.

There are 4 drainage districts In County Carlow, Barrow, Burren, Quinagh and Douglas., the extent of the Drainage District channels and benefitting lands is shown in Figure 4-1. Currently, none of the drainage districts are active in County Carlow, with the Barrow Drainage District being the most recently disbanded in 2014.

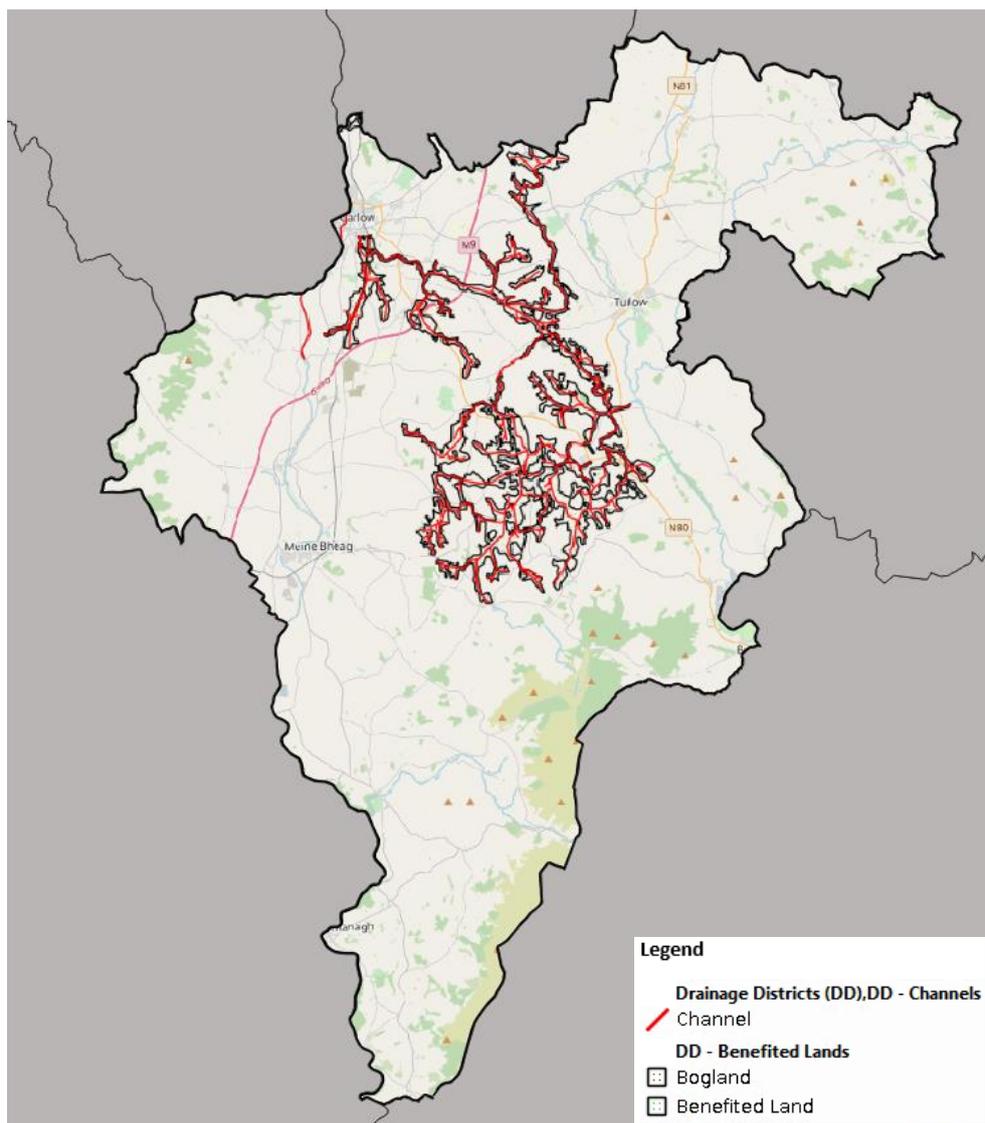


Figure 4-1 Carlow Drainage Districts

4.1.7 Dunleckey Stream Flood Mapping

A 1D HEC-RAS model was constructed of the Dunleckney Stream in Muinebheag in order to improve upon the PFRA maps on this watercourse in 2016. Results were provided by Carlow County Council.

4.1.8 National Indicative Fluvial Model (NIFM) Outlines

The OPW define the NIFM dataset as follows:

These maps are 'predictive' flood maps showing indicative areas predicted to be inundated during a theoretical fluvial flood event with an estimated probability of occurrence, rather than information for actual floods that have occurred in the past, which is presented, where available, on the 'past' flood maps.

The National Indicative Fluvial Maps provide an indication of areas that may flood during a flood of an estimated probability of occurring. A number of assumptions have been made in order to produce a dataset suitable for national level flood risk assessments.

The National Indicative Fluvial Maps are not the best achievable representation of flood extents and they are not as accurate as the Flood Maps produced under the National Catchment Flood Risk Assessment and Management (CFRAM) Programme.

The NIFM maps should not be used to assess the flood risk associated with individual properties or point locations, or to replace a detailed site-specific flood risk assessment.

4.2 Flood Zone Mapping

As set out in the RSES Regional Flood Risk Appraisal Report, and under the Planning Guidelines, the Flood Zone mapping for the County is principally derived from the CFRAM where possible. However, a number of settlements in the CCDP are not covered by the CFRAM and in this case a range of other datasets, as shown in Table 4-1, were used as supplementary information to inform this SFRA.

The approach used under the Carlow 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). A single dataset of County Flood Zones has been prepared on the basis that the best available dataset is used within each settlement.

Specific guidance is provided for each settlement based on the data review and where appropriate the site visit is used to confirm the most appropriate dataset and flood extents to define the Flood Zones. During the site visit the flood mapping was appraised on site by an experienced flood risk manager and professional opinion and judgement has been used to develop the recommendations within the Settlement Review of Section 7.

The review of the suite of flood risk data has been developed as a spatial planning tool to guide CCC in making land-use zoning and development management decisions. The data sets have been deemed appropriate for the planning decisions being made at this stage of the plan making process and where flood risk is identified the following approach has been undertaken;

- Application of the Justification Test and/or;
- Further detailed analysis, or;
- Rezoning to a less vulnerable use, or;
- Further assessment at Development Management stage in limited circumstances where it has been determined that development should be possible in principle, taking into account a site-specific opinion.

In general, where CFRAM modelling has been carried out, flood levels are available at selected node points along the watercourse. Once an appropriate level of validation has been undertaken as part of the site-specific FRA, these flood levels may be used to form the basis of the development design.

4.3 Historic Flood Review

Records of past flooding are useful for looking at the sources, seasonality, frequency and intensity of flooding.

4.3.1 Floodinfo.ie

The OPW makes available information on areas potentially at risk from flooding. This website provides information on historical flood events across the country and formed the basis of the Regional Flood Risk Appraisal.

Information is provided in the form of reports and newspaper articles which generally relate to rare and extreme events. Since the establishment of the hazard mapping website, more records are available which identify more frequent and often recurring events. These tend to include memos and meeting records from local authority area engineers, often relating to road flooding.

4.3.2 Summary of Flood History

The pertinent flood risk history is summarised in Figure 4-2 and Table 4-3.

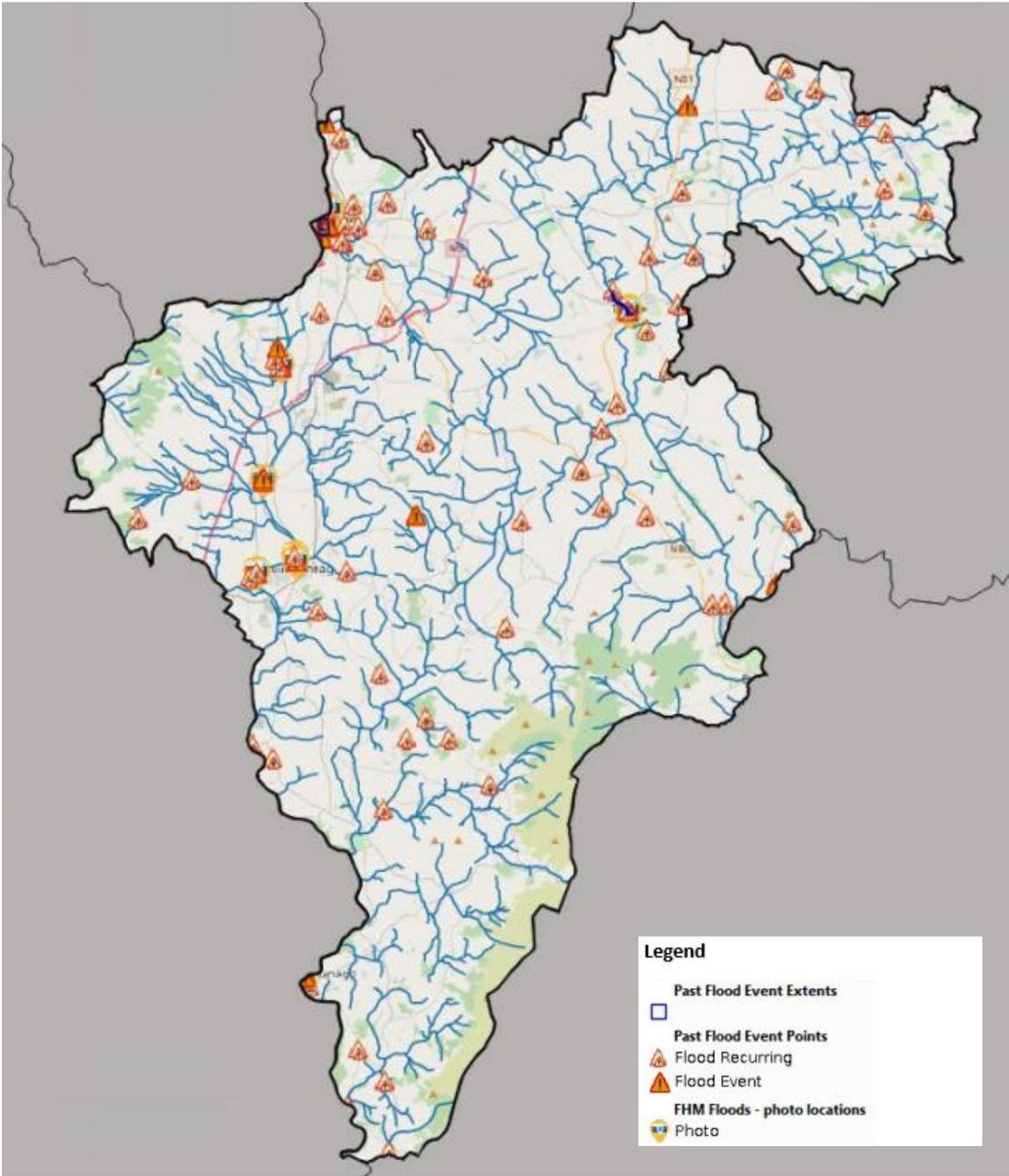


Figure 4-2 Historic Flood Events (Source; www.floodinfo.ie)

Table 4-3: Summary of flood history

Settlement	Comment on Flood History
Ardattin	No historic records found within settlement boundary.
Ballinabrannagh	No flood events found within the settlement boundary.
Ballinakillen	No historic records found within settlement boundary.
Ballymurphy	No historic records found within settlement boundary.
Bennekerry	No historic records found within settlement boundary.
Ballon	Recurring Flooding at Ballon following very heavy rain, the surface drainage in the village cannot deal adequately with runoff from adjacent high ground. One pub flooded.
Bilboa	No historic records found within settlement boundary.
Borris	No historic records found within settlement boundary.
Carrickduff	No historic records found within settlement boundary.
Carlow	<p>Carlow town is subject to regular flooding. Locations vulnerable to flooding include:</p> <ul style="list-style-type: none"> • Carlow Town Centre, • Paupish Lane (Alleviation works have increased the level of protection to Paupish Lane), • Dr Cullen Road (Lack of capacity of surface water drainage system. Will be alleviated following Carlow Main Drainage Scheme), • Green Lane (Road lowered beneath railway bridge. Deficiencies in surface water drainage.), • Askagh Drive Pollerton (Lack of capacity of surface water drainage system. To be alleviated following Carlow Main Drainage Scheme), • Green Road Ballycarney (Lack of capacity of surface water drainage system) • Ballynakillbeg, • Pollerton Big (Lack of capacity of surface water drainage), • Ford Bridge, • Ballinacarrig (Alleviation works have reduced severity of flooding), • Oak Park Entrance. • Severe flooding was recorded between the 19th and 27th of November 2009 after the Barrow burst its banks following prolonged period of heavy rain. A maximum flood depth of 1.5m was recorded during this time and 33 residential and 16 commercial properties were affected by the flooding
Clonegal	Recurring flooding at Clonegal Bridge 5-6no. houses regularly flooded. 4no. residential properties flooded in November 2000. First time since mid-1960s the River Derry flowed on the streets in the lower part of the village.
Clonmore	No historic records found within settlement boundary.
Drumpeha	No historic records found within settlement boundary.
Fennagh	No historic records found within settlement boundary.
Garryhill	No historic records found within settlement boundary.
Glynn	No historic records found within settlement boundary.
Grange	No historic records found within settlement boundary.
Fennagh	No historic records found within settlement boundary.
Hacketstown	No historic records found within settlement boundary.

Settlement	Comment on Flood History
Kildavin	Kildavin village – recurring flood. Following very heavy rain, the surface drainage in the village cannot deal adequately with runoff from adjacent high ground.
Leighlinbridge	Recurring flooding has been recorded at Leighlinbridge, with events recorded in January 1995, November 2000 and November 2009. Extent of the flooding in 1995 and 2009 is unknown but flooding of 6 residential and 4 commercial properties is recorded to have occurred in Nov 2000.
Myshall	No historic records found within settlement boundary.
Newtown	<ul style="list-style-type: none"> No historic records found within settlement boundary.
Newtown Fennagh	<ul style="list-style-type: none"> November 2000, two properties noted as being flooded. Not clear if this is within the settlement boundary. Drainage District channels are noted to the east of the settlement boundary.
Nurney	<ul style="list-style-type: none"> No historic records found within settlement boundary.
Oldleighlin	Oldleighlin subject to recurring flooding at Johnduffs road. Road is periodically impassable
Palatine	No historic records found within settlement boundary.
Rathanna	No historic records found within settlement boundary.
Rathoe	No flood events found within the settlement boundary.
Rathvilly	Significant flooding occurred in Rathvilly in November 2000, and resulted in 2 residential properties being flooded
St Mullins	Barrow St Mullins. Recurring. Flood ID 258. Road and houses near quay affected. Caused by heavy rains and high tides.
Tiknok	No historic records found within settlement boundary.
Tinryland	Tinryland recurring. Dip in road – insufficient drainage capacity. Road periodically impassable. This point is outside the settlement boundary.

4.4 Sources of Flooding

This SFRA has reviewed flood risk from fluvial, pluvial and groundwater sources. Flooding events have become more pronounced in Ireland, and County Carlow, A review of the historical event data and predictive flood information has highlighted a number of sources of potential flood risk to the town. These are discussed in the following sections.

4.4.1 Fluvial Flooding

Flooding from rivers and streams is associated with the exceedance of channel capacity during higher flows. The process of flooding from watercourses depends on numerous characteristics associated with the catchment including; geographical location and variation in rainfall, steepness of the channel and surrounding floodplain and infiltration and rate of runoff associated with urban and rural catchments. Generally, there are two main types of catchments; large and relatively flat or small and steep, both giving two very different responses during large rainfall events.

In a large, relatively flat catchment, flood levels will rise slowly, and natural floodplains may remain flooded for several days or even weeks, acting as the natural regulator of the flow. In small, steep catchments local intense rainfall can result in the rapid onset of deep and fast-flowing flooding with little warning. Such “flash” flooding, which may only last a few hours, can cause considerable damage and possible risk to life.

4.4.2 Fluvial Summary

The form of the floodplain, either natural, semi-natural (drained) or urbanised, can influence flooding along watercourses. The location of buildings and roads can significantly influence flood depths and velocities by altering flow directions and reducing the volume of storage within the floodplain. Critical structures such as bridge and culverts can also significantly reduce capacity creating pinch points within the floodplain. These structures are also vulnerable to blockage by natural debris within the channel or by fly tipping and waste.

Rivers are the primary cause of flooding in Carlow. Flood risk to specific settlements is discussed in Section 7 and has been used to inform the zoning objectives for the Development Plan.

4.4.3 Flooding from Defence Overtopping or Breach

There are currently three flood relief schemes in County Carlow, Carlow Town, Leighlinbridge and Tullow. There are also plans to progress the development of Flood Relief Schemes in both Carlow and Leighlinbridge to augment the existing Schemes.

In addition to the defences in place as part of these schemes 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 intention of releasing green field 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.

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."

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.

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.

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.

4.4.4 Pluvial Flooding

Flooding of land from surface water runoff is usually caused by intense rainfall that may only last a few hours. The resulting water follows along 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.

The PFRA study considered pluvial flood risk and produced a national set of pluvial flood maps. This dataset was reviewed and used to identify development areas at particular risk of surface water

and pluvial flooding. However, the level of detail contained in the PFRA map, and the widespread distribution of areas at risk did not allow a commentary relating to pluvial flood risk to be developed, or for particularly high-risk areas to be identified. Instead, an overall strategy for the management of pluvial risk is presented and should be implemented across all development proposals. This, and recommendations for the assessment of surface water risks, are provided in the Flood Risk Management Policy section.

4.4.5 Flooding from Drainage Systems

Flooding from artificial drainage systems occurs when flow entering a system, such as an urban storm water drainage system, exceeds its discharge capacity, it becomes blocked, or it cannot discharge due to a high-water level in the receiving watercourse.

Flooding in urban areas can also be attributed to sewers. Sewers have a finite capacity which, during certain load conditions, will be exceeded. In addition, design standards vary and changes within the catchment areas draining to the system, in particular planned growth and urban creep, will reduce the level of service provided by the asset. Sewer flooding problems will often be associated with regularly occurring storm events during which sewers and associated infrastructure can become blocked or fail. This problem is exacerbated in areas with under-capacity systems. In the larger events that are less frequent but have a higher consequence, surface water will exceed the sewer system and flow across the surface of the land, often following the same flow paths and ponding in the same areas as overland flow.

Foul sewers and surface water drainage systems are spread extensively across the urban areas with various interconnected systems discharging to treatment works and into local watercourses.

4.4.6 Groundwater Flooding

A review of the GSI Groundwater Flooding Data Viewer, as presented in Figure 4-3, shows no records of groundwater flooding occurring within any of the settlements. There are some isolated areas of historic groundwater/surface water flooding to the north and south of Carlow town. The risk of ground water flooding for the county is deemed to be low but in general it would be prudent to consider groundwater risk on a case by case basis and mitigation measures for excavations during construction should be employed to avoid flooding from the local water table.

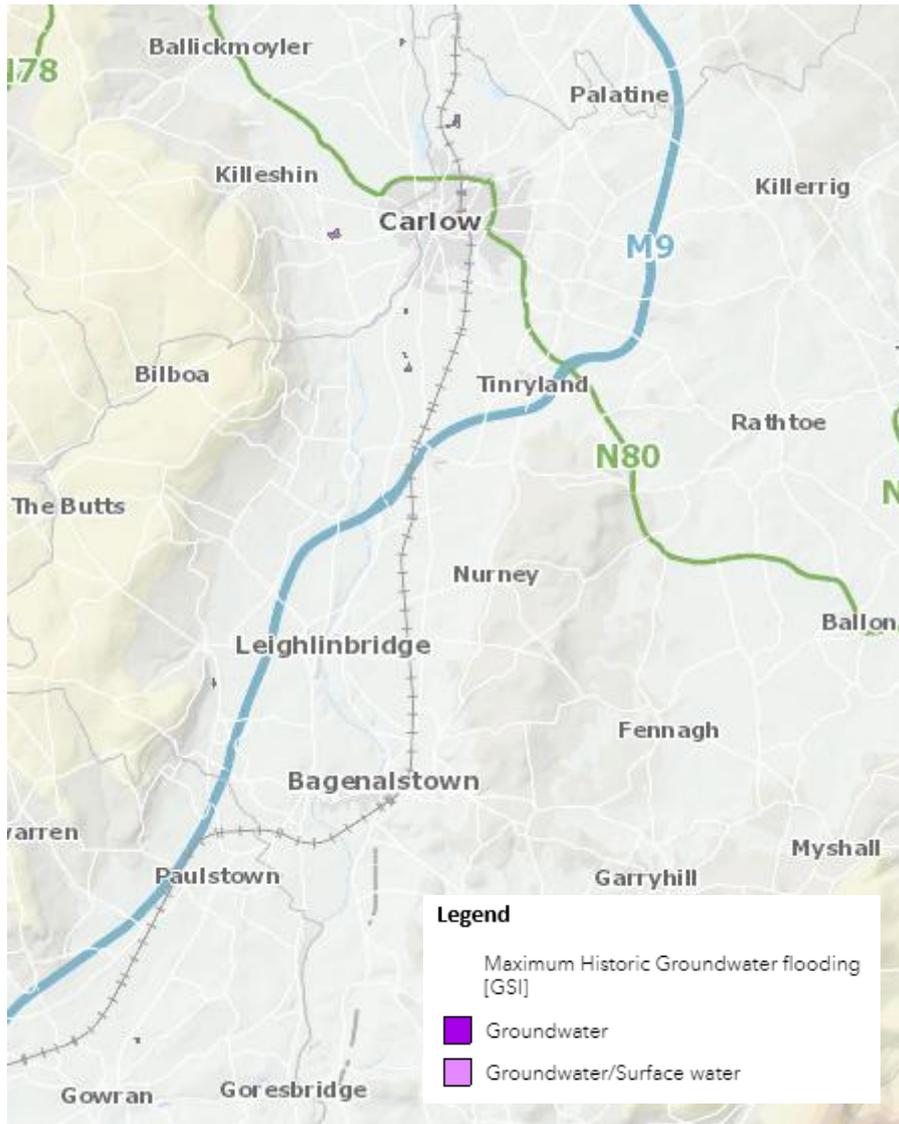


Figure 4-3 GSi Groundwater Flooding Data Viewer

5 Flood Risk Management Policy

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 the policies and objectives contained within Chapter 6 of the CCDP 2022-2028.

The use and application of the policies and guidelines constitutes the formal plan for flood risk management in County Carlow. This approach has been achieved in the development plan making process in the settlements contained within the plan and covered in this SFRA.

The specific management of risk is discussed for each settlement in Section 7.

5.1 Surface Water

Section 6.5 of the CDP outlines the approach to surface water management. CCC will require compliance with best practice guidance for the collection, reuse, treatment and disposal of surface waters for all future development proposals.

CCC seeks to ensure the sustainable management of surface water discharges through the use of Sustainable Urban Drainage Systems (SuDS). SuDS manage the water as close as possible to its origin replicating the natural characteristics of rainfall runoff from any site, ensuring water is infiltrated or conveyed more slowly to the drainage system and ultimately to water courses via permeable paving, swales, green roofs, rainwater harvesting, detention basins, ponds and wetlands. SuDS provides an integrated approach which addresses water quantity thereby reducing potential for flood risk, water quality, amenity and habitat.

CCC policy and objectives are outlined in the tables below.

Table 5-1 Surface Water Policy

Policy	Description
SW P1	Ensure adequate surface water drainage systems are in place which meet the requirements of the Water Framework Directive and the River Basin Management Plan.
SW P2	Ensure that all development proposals incorporate Sustainable Drainage Systems and to promote the use of green infrastructure e.g. green roofs, green walls, planting and green spaces for surface water retention purposes, as an integrated part of SuDS and maximise the multi-functional potential of these systems including benefits for biodiversity and amenity value wherever possible.
SW P3	Require appropriate maintenance of surface water drainage infrastructure to avoid flood risk.
SW P4	To require all new developments, provide for separated drainage systems.

Table 5-2 Surface Water Objectives

Objective	Description
SW O1	Require all development (including extensions to existing development) proposals to incorporate design criteria and SuDS measures in accordance with Carlow County Council SuDS Policy in order to reduce the potential impact of existing and predicted flood risks and to improve biodiversity and amenity value.

5.2 Flood Risk Management

Section 6.10 of the CDP outlines the policy for the management of flooding. It highlights the context to the policy through an introduction to the EU Directive and national policy driven by the OPW's response to the Directive and the Planning Guidelines. CCC policy is outlined in the table below.

Table 5-3 Flood Management Policy

Policy	Description
FR P1	Support, in co-operation with the OPW the implementation of the EU Flood Risk Directive (2007/60/EC) on the assessment and management of flood risks, the Flood Risk Regulations (SI No. 122 of 2010) and relevant outputs of the South Eastern Catchment and Flood Risk Assessment and Management Study.
FR P2	Carry out flood risk assessment for the purpose of regulating, restricting and controlling development in areas at risk of flooding and to minimise the level of flood risk to people, business, infrastructure and the environment through the identification and management of existing and potential future flood risk.
FR P3	Ensure that all 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 (or any amendments thereto), in particular through the application of the sequential approach and the Development Management Justification Test.
FR P4	Require the submission of a Site-Specific Flood Risk Assessment (FRA) in areas at risk of flooding. The assessment 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 flooding. The FRA shall be prepared in accordance with the Planning System and Flood Risk Management - Guidelines for Planning Authorities and shall address climate change, residual risk, avoidance of contamination of water sources and any proposed site-specific flood management measures.
FR P5	To protect and enhance the county's floodplains and wetlands as "green infrastructure" which provides space for storage and conveyance of floodwater, enabling flood risk to be more effectively managed. Riparian buffer zones shall have regard to Policies contained in Section 10.8 of this Plan.
FR P6	To ensure each flood risk management activity is examined to determine actions required to embed and provide for effective climate change adaptation as set out in the OPW Climate Change Sectoral Adaptation Plan Flood Risk Management.

Table 5-4 Flood Risk Management Policy

Policy	Description
FR O1	Ensure that flood risk management is incorporated into the preparation of future statutory local 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 updates of these guidelines.
FR O2	Facilitate the provision of new, or the augmentation of existing flood defences and protective measures where necessary, and to support the implementation of proposed flood schemes subject to compliance with the requirements of the EU Habitats Directive, the protection of natural and built heritage and visual amenities.
FR O3	Seek to ensure that where flood risk management works take place that the cultural and natural heritage of rivers, streams and watercourses are protected, and improved where possible.

6 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 – which states that the land has in the first instance been zoned accordingly in a development plan (that underwent an SFRA). In addition to the general recommendations in the following sections, Section 7 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.

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 study, 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.

6.1 Requirements for a Flood Risk Assessment

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 (low probability of flooding) where a 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 should be reviewed.

For sites within Flood Zone A or B (high/moderate probability of flooding), 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 an 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.

6.2 Drainage Design

All proposed development, whether in Flood Zone A, B or C, must consider the impact of surface water flood risks on drainage design as specified by the surface water management policies in the Greater Dublin Strategic Drainage Study (GSDSDS) and this will be considered in the planning process. This may be in the form of a section within the flood risk assessment (for sites in Flood Zone A or B) or part of a surface water management plan.

Areas vulnerable to ponding are indicated on the OPW's PFRA mapping. Particular attention should be given to development in low-lying areas which may act as natural ponds for collection of run-off.

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 should at 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.

6.3 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 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. The most likely mitigation measure will involve setting finished floor levels to a height that is above the 1 in 100-year fluvial 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 6.6.

6.4 Applications for Developments in Flood Zone A and B

6.4.1 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 accompany such applications. This must demonstrate that the development would not increase flood risks, by introducing significant numbers of additional people into the flood plain 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 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.

6.4.2 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, schools, hospitals, emergency services and caravan parks.

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.

For extant permissions in Flood Zone A/B if the site remains unconstructed and the planning application lapses, any future planning applications on the site should be subject to an appropriately detailed FRA specific to the new site layout and it may be found that the site cannot be developed as planned. As part of any future variation to the Development Plan or the preparation of a Local Area Plan (as applicable to the relevant settlement) lands with no extant permission should be considered in line with the sequential approach and Justification Test for Plan Making.

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 previously and, subject to application of the Plan Making Justification Test and site specific flood risk assessment including the Development Management Justification Test, can in some cases be considered.

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 the following sections and also the settlement review in Section 7 and Appendix A for the application of the Justification Test. 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.

6.4.3 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 3.1 of the Planning System and Flood Risk Management Guidelines.

The design and assessment of less vulnerable development should generally begin with 1% AEP fluvial event 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.

6.5 Key points for FRA for all types of developments

- Finished floor levels to be set above the 1% AEP fluvial 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 (where possible) to balance floodplain loss as a result of raising ground levels within Flood Zone A. 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.

6.6 Incorporating Climate Change into Development Design

In all developments, climate change should be considered when assessing flood risk and in particular residual flood risk. Climate change may result in increased flood extents and therefore caution should be taken when zoning lands in transitional areas (i.e. on the edge of the floodplain). 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 and river flows (sea levels are not a pertinent consideration in Carlow).

The 'Planning System and Flood Risk Management' recommends that a precautionary approach to climate change is adopted due to the level of uncertainty involved in the potential effects. A significant amount of research into climate change has been undertaken on both a national and international front, and updates are ongoing.

Advice on the expected impacts of climate change and the allowances to be provided for future flood risk management in Ireland is given in the OPW draft guidance. Two climate change scenarios are considered; these are the Mid-Range Future Scenario (MRFS) and the High-End Future Scenario (HEFS). The MRFS is intended to represent a "likely" future scenario based on the wide range of future predictions available. The HEFS represents a more "extreme" future scenario at the upper boundaries of future projections. Based on these two scenarios the OPW recommended allowances for climate change are given in the table below. These climate change allowances are particularly important at the development management stage of planning and will ensure that proposed development is designed and constructed to take into account best current knowledge.

Table 6-1: 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***
<p>Notes:</p> <p>* Applicable to the southern part of the country only (Dublin - Galway and south of this)</p> <p>** 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.</p> <p>*** Add 10% to the Standard Percentage Runoff (SPR) rate; this allows for increased runoff rates that may arise following felling of forestry</p>		

Through the CFRAM and NIFM Studies, both MRFS and HEFS model runs have been completed on all study watercourses, providing flood extent and depth maps. This information can be used to support flood risk assessments.

For watercourses that are not part of the CFRAM or NIFM programme, fluvial flood extents can be qualitatively assessed by using the Flood Zone B outline as a surrogate for 'Flood Zone A with allowance for the possible impacts of climate change', as suggested in the 'Planning System and Flood Risk Management'. Quantitative assessment of risks may require an additional model run to fully understand risks.

For most development, including residential, nursing homes, shops and offices, the medium-range future scenario (20% increase in flows) 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, airports, Seveso sites or power stations, and those which represent a high-economic and long-term investment within the scale of development across the county. In such situations it would be reasonable to expect the high-end future scenario (30% increase in flow) to be investigated in the site-specific FRA and used as the design standard.

In general, climate change will be accounted for the setting of finished floor levels to a height which includes an allowance for climate change. However, climate change may also reveal additional flow paths which need to be protected or give rise to flows which exceed culvert capacity or overtop defences. These outcomes will need to be specifically investigated for each site, and an appropriate response provided.

Further consideration to the potential future impacts of climate change is given for each settlement in Section 7.

6.7 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 (i.e. has passed the Plan Making Justification Test), the site-specific FRA must demonstrate that appropriate mitigation measures can be put in place and that residual risks can be managed to acceptable levels. This may include 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.

6.7.1 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 (with appropriate flood management plan) and 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.

6.7.2 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 site. However, in most areas of fluvial flood risk, conveyance or flood storage would be reduced locally and could increase 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.
- The land being given over to storage must be land which does not flood in the 1% AEP fluvial event (i.e. Flood Zone B or C).
- 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 compensatory storage area should be constructed before land is raised to facilitate development.
- Compensatory storage is generally not required for loss of floodplain in locations behind defences.

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.

6.7.3 Raised Defences

Construction of raised defences (i.e. flood walls and embankments) has traditionally 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.

6.8 Green Corridor

It is recommended that, where possible, and particularly where there is greenfield land adjacent to the river, a 'green corridor', is retained on all rivers and streams. This will have a number of benefits, including:

- Retention of all, or some, of the natural floodplain;
- Potential opportunities for amenity, including riverside walks and public open spaces;
- Maintenance of the connectivity between the river and its floodplain, encouraging the development of a full range of habitats;
- Natural attenuation of flows will help ensure no increase in flood risk downstream;
- Allows access to the river for maintenance works;
- Retention of clearly demarcated areas where development is not appropriate on flood risk grounds, and in accordance with the Planning System and Flood Risk Management.

The width of this corridor should be determined by the available land, and topographically constraints, such as raised land and flood defences, but would ideally span the fully width of the floodplain (i.e. all of Flood Zone A).

7 Settlement Zoning 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:

- Outline the strategic approach to flood risk management.
- Consider the land use zoning objectives utilised within the CCDP settlements 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 the settlements. 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.

7.1 A Strategic Approach to Flood Risk Management

A strategic approach to the management of flood risk is important in County Carlow as the risks are varied and disparate, with scales of risk and scales of existing and proposed development varying greatly across the county.

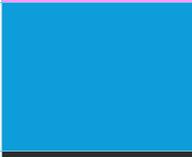
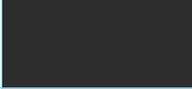
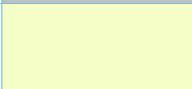
Following the Planning Guidelines, development should always be located in areas of lowest flood risk first, and only when it has been established that there are no suitable alternative options should development (of the lowest vulnerability) proceed. Consideration may then be given to factors which moderate risks, such as defences, and finally consideration of suitable flood risk mitigation and site management measures is necessary.

It is important to note that whilst it may be technically feasible to mitigate or manage flood risk at site level, strategically it may not be a sustainable approach.

A summary of flood risks associated with each of the zoning objectives has been provided in the following settlement reviews. The Flood Risk commentary indicates whether a certain land zoning, in Flood Zone A or B, will need to have the Plan Making Justification Test (JT) applied and passed.

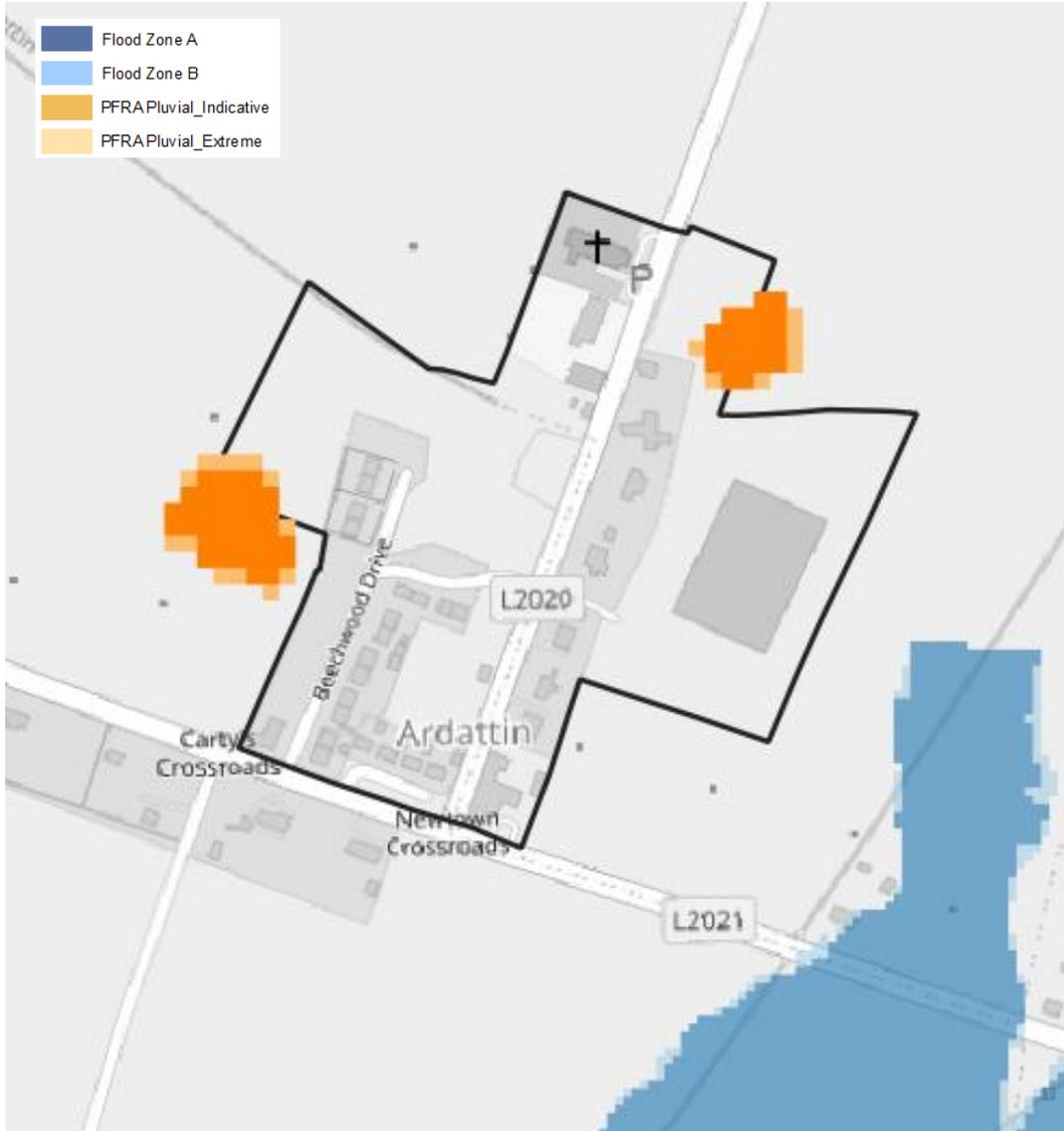
When carrying out a site-specific FRA, or when planning applications are being considered, it is important to remember that not all uses will be appropriate on flood risk grounds, hence the need to work through the Justification Test for Development Management on a site by site basis and with reference to Table 7-1. For example, a Mixed Use Town / Village Centre zoning objective is to include for an integrated mix of residential, commercial, community and social uses which have varying vulnerabilities and would not be equally permissible within Flood Zone A and B.

Table 7-1: Zoning Objective Vulnerability

Zoning Objective	Map Legend	Indicative Vulnerability	Primary	Justification Test requirement
Agriculture		Water compatible		JT not needed.
Business & Innovation		Less / vulnerable	highly	For highly vulnerable development in Flood Zone A or B. For less vulnerable development in Flood Zone A.
Commercial / Residential (Carlow Town only)		Less / vulnerable	highly	For highly vulnerable development in Flood Zone A or B. For less vulnerable development in Flood Zone A.
Community Education /		Less / vulnerable	highly	For highly vulnerable development in Flood Zone A or B. For less vulnerable development in Flood Zone A.
Existing / Infill Residential		Highly Vulnerable		JT required for within Flood Zone A and B.
New Residential		Highly Vulnerable		JT required for within Flood Zone A and B.
Enterprise & Employment		Less vulnerable		Appropriate use in Flood Zone B, but JT will be needed in Flood Zone A.
Neighbourhood Centre (Neighbourhood Facilities / Centre – Carlow Town only)		Less vulnerable		Appropriate use in Flood Zone B, but JT will be needed in Flood Zone A.
Open Space and Amenity		Water compatible		JT not needed. Land use appropriate and should be retained.
Retail Warehousing		Less vulnerable		Appropriate use in Flood Zone B, but JT will be needed in Flood Zone A.
Strategic Reserve		Less / vulnerable	highly	Lands cannot be developed within the lifetime of the plan and the JT does not apply.
Town Centre		Less / Vulnerable	Highly	For highly vulnerable development in Flood Zone A or B.
Village Core		Less / Vulnerable	Highly	For highly vulnerable development in Flood Zone A or B.
Village Expansion Area		Less / Vulnerable	Highly	For highly vulnerable development in Flood Zone A or B.
Utilities		Less / Vulnerable	Highly	For highly vulnerable development in Flood Zone A or B. For less vulnerable development in Flood Zone A.
Tourism & Leisure		Less / vulnerable	highly	For highly vulnerable development in Flood Zone A or B.

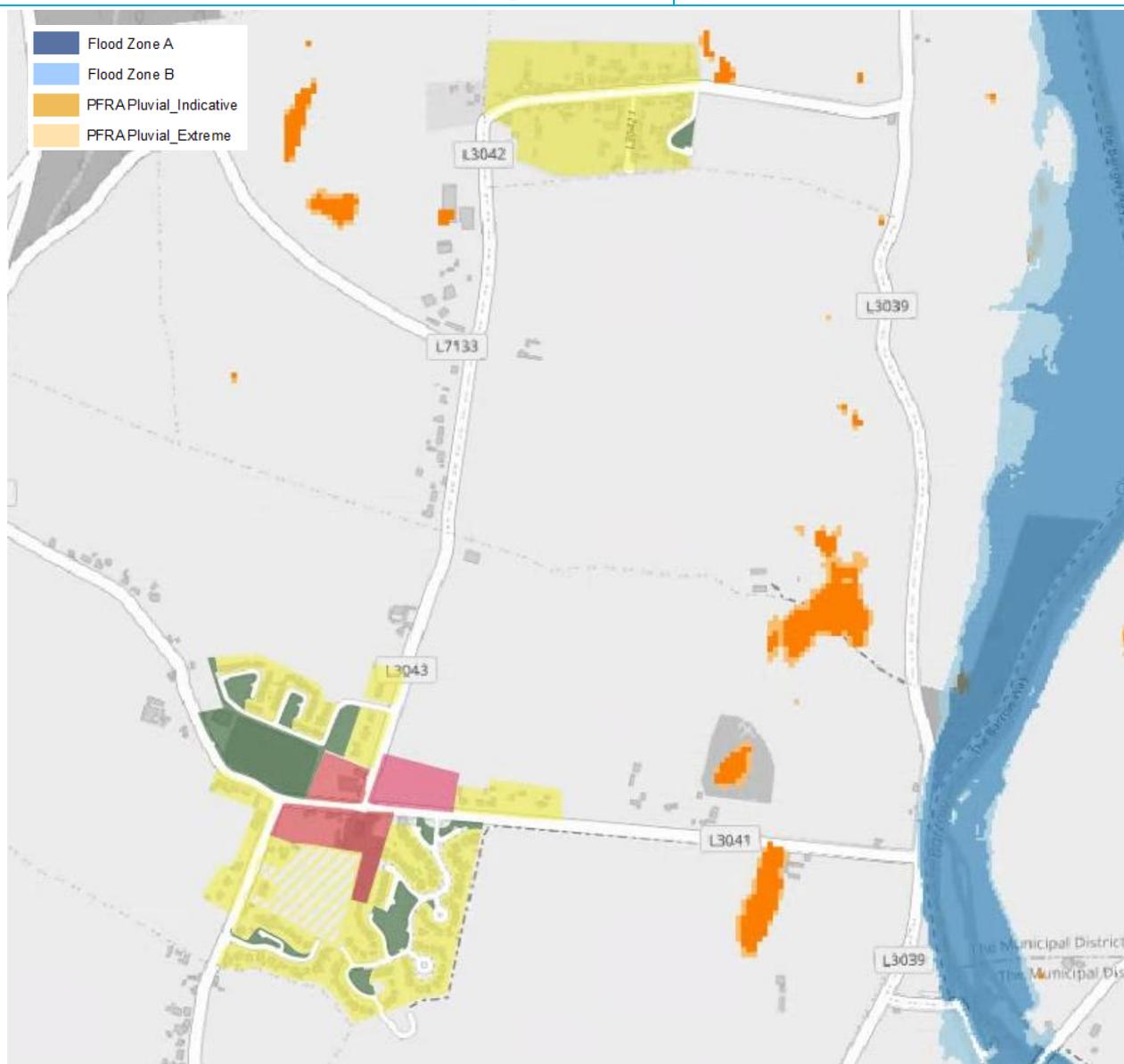
The following sections review the land use zoning objectives for each settlement within the plan and provide a comprehensive summary of flood risk and justification where necessary.

7.2 Ardattin

Hierarchy/Tier	Tier 5 - Smaller Serviced Rural Villages
Area for Further Assessment under CFRAM programme?	No
	
<p>© OpenStreetMap contributors, CC-BY-SA, The flood 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.</p>	
Flood Zone Data	NIFM & PFRA Pluvial
Historic Flooding	No records within the settlement boundary.
Comment	There is no predicted fluvial flooding within the site boundary. A small amount of predicted PFRA pluvial flooding is located to the east in the west of the settlement, the PFRA pluvial mapping is indicative and related to localised topographic low spots.
Climate Change	No fluvial impacts, potential increase in rainfall runoff.
Conclusion	Pluvial flood risk can be managed in line with approved CCCDP Policy and the guidance provided within Section 6 of this SFRA.

7.3 Ballinabrannagh

Hierarchy/Tier	Tier 4 - Larger Serviced Village
Area for Further Assessment under CFRAM programme?	No



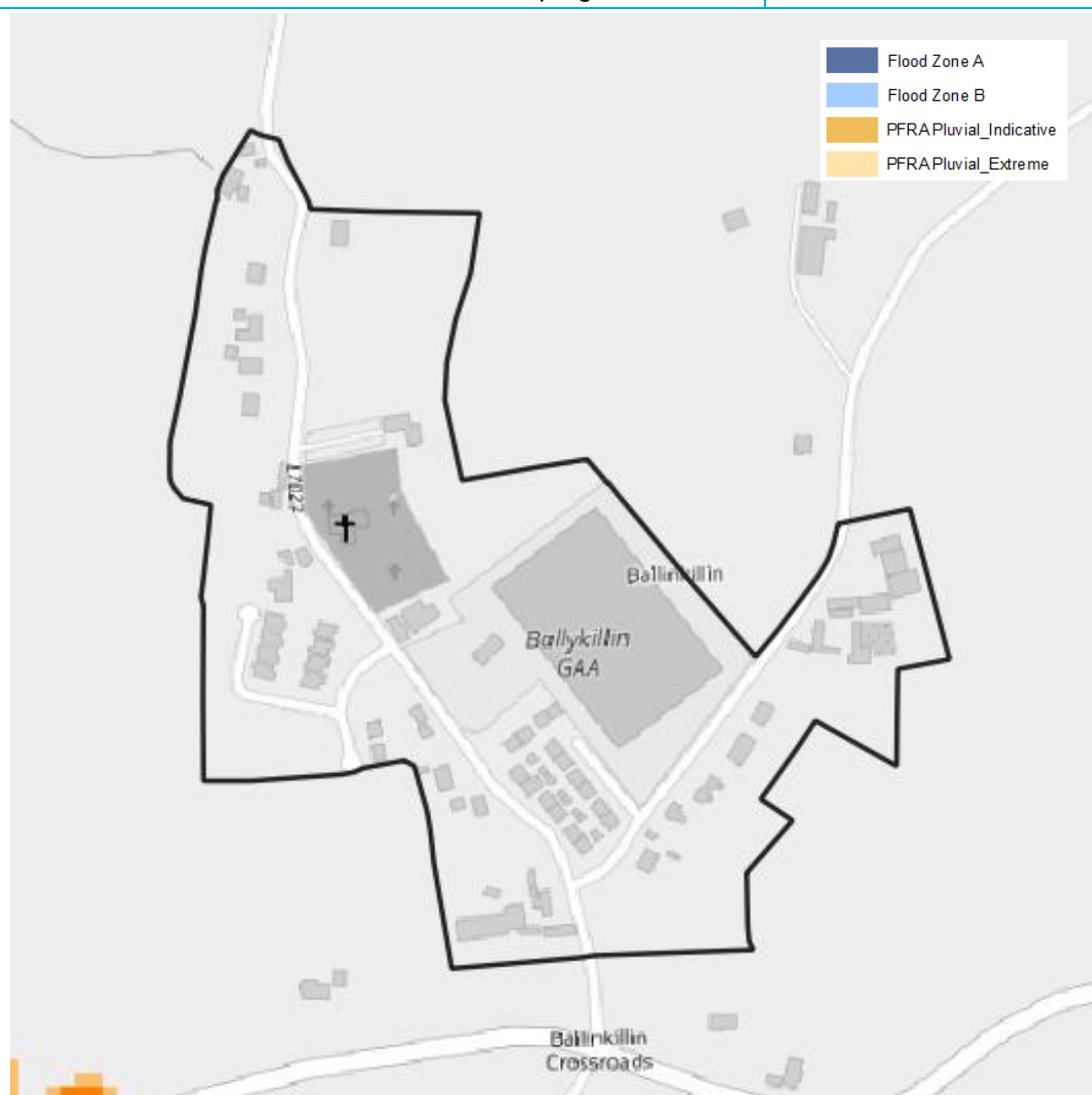
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The flood mapping has been produced in accordance with the Planning Guidelines and therefore ignores the impact of flood protection structures. Areas protected by flood defences still carry a residual risk of flooding due to overtopping or breach, there may also be no guarantee of maintenance in perpetuity. Areas that benefit from defences are annotated separately.

Flood Zone Data	CFRAM
Historic Flooding	No records within the settlement boundary.
Comment	The settlement is located circa 750m to the west of the River Barrow and there is no predicted fluvial flood risk within the settlement. A small amount of predicted PFRA pluvial flooding is located to the east of the northernmost part of the settlement.
Climate Change	No fluvial impacts, potential increase in rainfall runoff.
Conclusion	Pluvial flood risk can be managed in line with approved CCCDP Policy and the guidance provided within Section 6 of this SFRA.

7.4 Ballinkillen

Hierarchy/Tier	Tier 5 - Smaller Serviced Rural Villages
Area for Further Assessment under CFRAM programme?	No



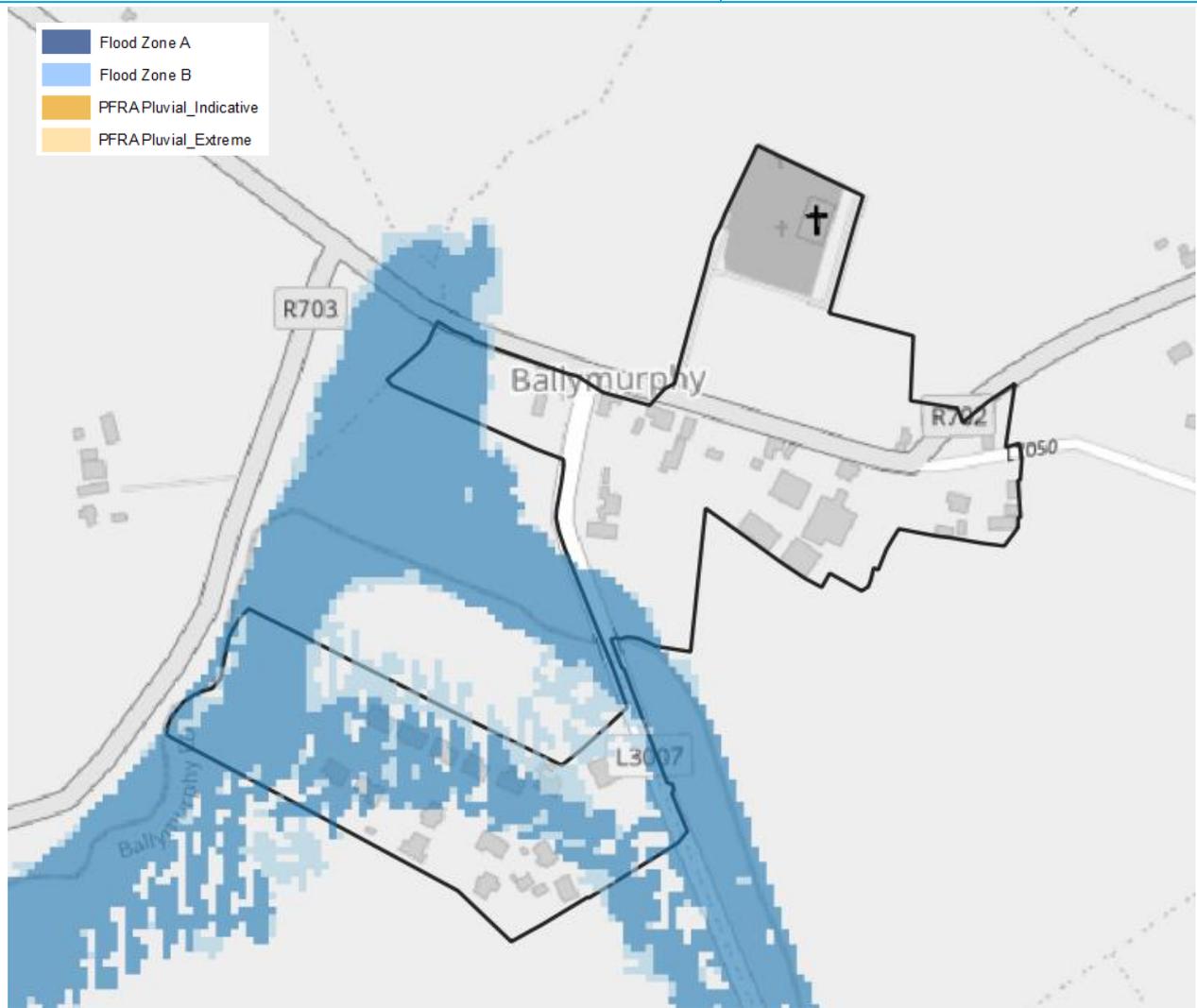
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The flood mapping has been produced in accordance with the Planning Guidelines and therefore ignores the impact of flood protection structures. Areas protected by flood defences still carry a residual risk of flooding due to overtopping or breach, there may also be no guarantee of maintenance in perpetuity. Areas that benefit from defences are annotated separately.

Flood Zone Data	PFRA Pluvial
Historic Flooding	No records within the settlement boundary.
Comment	There is no predicted fluvial or pluvial flooding within the site boundary
Climate Change	No fluvial impacts, potential increase in rainfall runoff.
Conclusion	Flood risk can be managed in line with approved CCCDP Policy and the guidance provided within Section 6 of this SFRA.

7.5 Ballymurphy

Hierarchy/Tier	Tier 6 - Rural Nodes
Area for Further Assessment under CFRAM programme?	No



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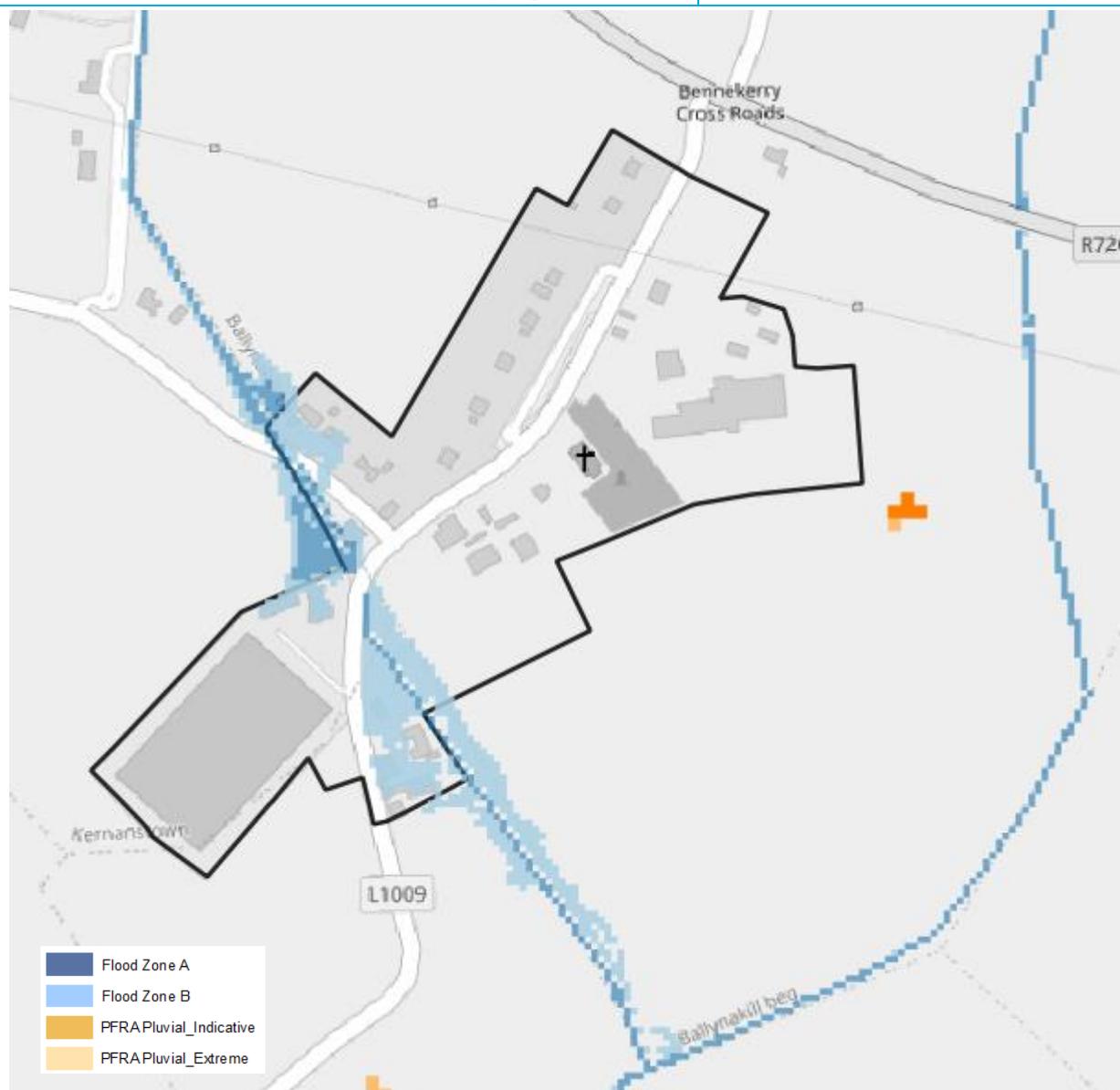
The flood mapping has been produced in accordance with the Planning Guidelines and therefore ignores the impact of flood protection structures. Areas protected by flood defences still carry a residual risk of flooding due to overtopping or breach, there may also be no guarantee of maintenance in perpetuity. Areas that benefit from defences are annotated separately.

Flood Zone Data	NIFM
Historic Flooding	No records within the settlement boundary.
Comment	There is a confluence of two watercourses within the settlement and the NIFM predicts significant flooding, with some existing development at potential risk.
Climate Change	Moderate to high fluvial impacts, potential increase in rainfall runoff.
Conclusion	As there are no land use zoning objectives within the settlement the Justification Test cannot be applied, specific recommendations have been provided to manage the risk. New highly vulnerable development is only appropriate within Flood Zone C. New less vulnerable development is only appropriate within Flood Zone B/C. For existing development within Flood Zone A/B it is not appropriate to undertake significant redevelopment whereby additional numbers of people are introduced into the Flood Zone. Any future development should be subject to an FRA which must follow the general guidance provided in Section 6 of the SFRA and specifically address the following:

- Existing flood data is indicative and does not provide flood levels. An appropriately detailed hydraulic model will be required to confirm flood levels and extents.
- FRA should address climate change scenarios in relation to FFLs and potential mitigation measures;
- Finished floor levels should be above the 1% AEP level plus climate change and freeboard;
- For existing development in Zone A/B extensions/renovations bedrooms should be located in the upstairs of two-story buildings;
- Flood resilient construction materials and fittings should be considered if in Flood Zone A/B;
- Proposals should not impede existing flow paths or cause flood risk impacts to the surrounding areas, and;
- Emergency evacuation plan and defined access / egress routes should be developed for extreme flood events.
- Any development shall also be required to be built in accordance with CCC SuDS Policy.

7.6 Bennekerry

Hierarchy/Tier	Tier 5 - Smaller Serviced Rural Villages
Area for Further Assessment under CFRAM programme?	No



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The flood 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 Data	CFRAM & PFRA Pluvial
Historic Flooding	No records within the settlement boundary.
Comment	A watercourse flows through the centre of the settlement and the CFRAM predicts significant flooding, with some existing development at potential risk.
Climate Change	High sensitivity to fluvial climate change impacts, potential increase in rainfall runoff.
Conclusion	As there are no land use zoning objectives within the settlement the Justification Test cannot be applied, specific recommendations have been provided to manage the risk. New highly vulnerable development is only appropriate within Flood Zone C. New less vulnerable development is only appropriate within Flood Zone B/C. For existing development within Flood Zone A/B it is not appropriate to undertake significant redevelopment whereby additional numbers of people

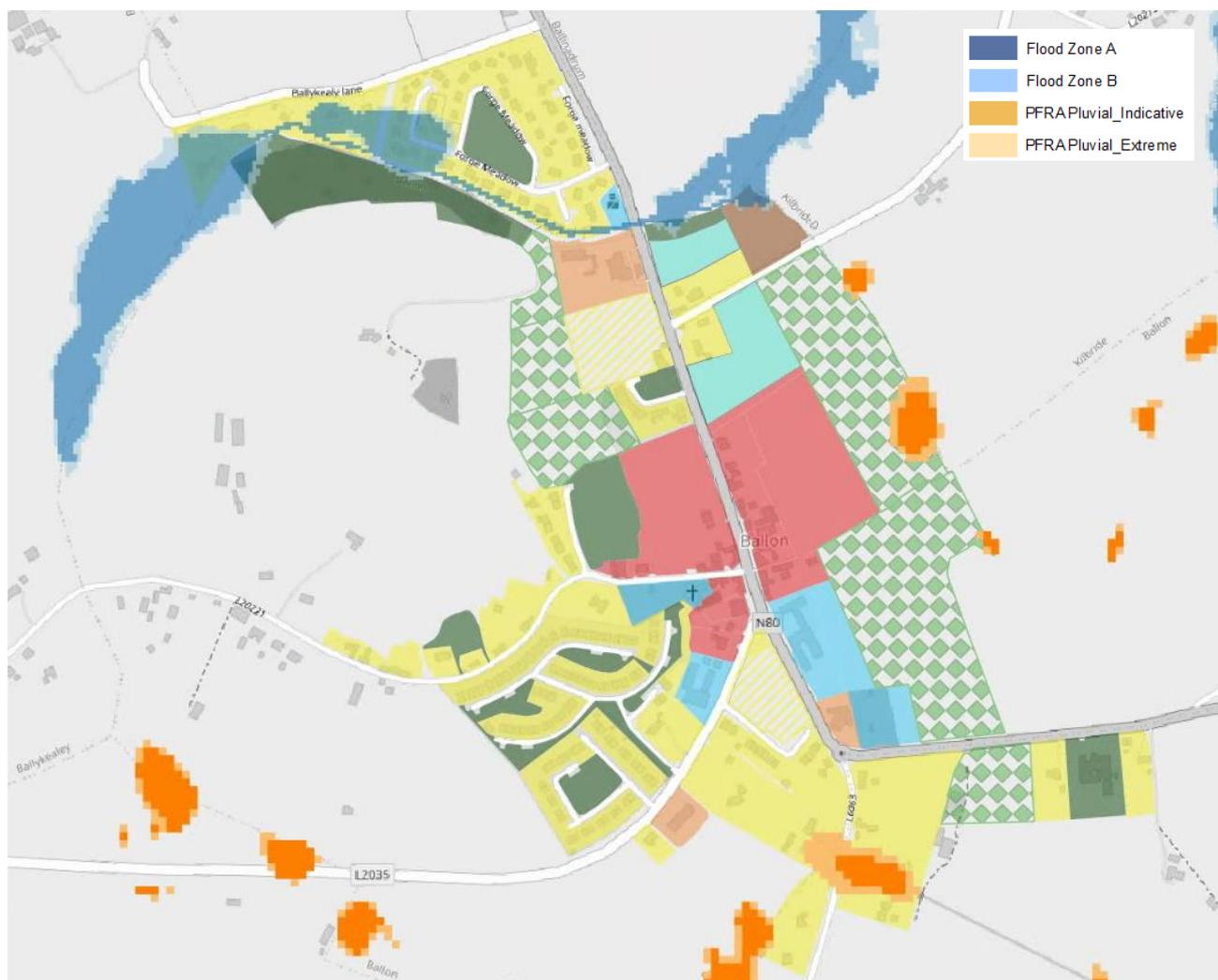
are introduced into the Flood Zone.

Any future development should be subject to an FRA which must follow the general guidance provided in Section 6 of the SFRA and specifically address the following:

- Existing flood data is indicative and does not provide flood levels. An appropriately detailed hydraulic model will be required to confirm flood levels and extents.
- FRA should address climate change scenarios in relation to FFLs and potential mitigation measures;
- Finished floor levels should be above the 1% AEP level plus climate change and freeboard;
- For existing development in Zone A/B extensions/renovations bedrooms should be located in the upstairs of two-story buildings;
- Flood resilient construction materials and fittings should be considered if in Flood Zone A/B;
- Proposals should not impede existing flow paths or cause flood risk impacts to the surrounding areas, and;
- Emergency evacuation plan and defined access / egress routes should be developed for extreme flood events.
- Any development shall also be required to be built in accordance with CCC SuDS Policy.

7.7 Ballon

Hierarchy/Tier	Tier 3 - Small Town
Area for Further Assessment under CFRAM programme?	No



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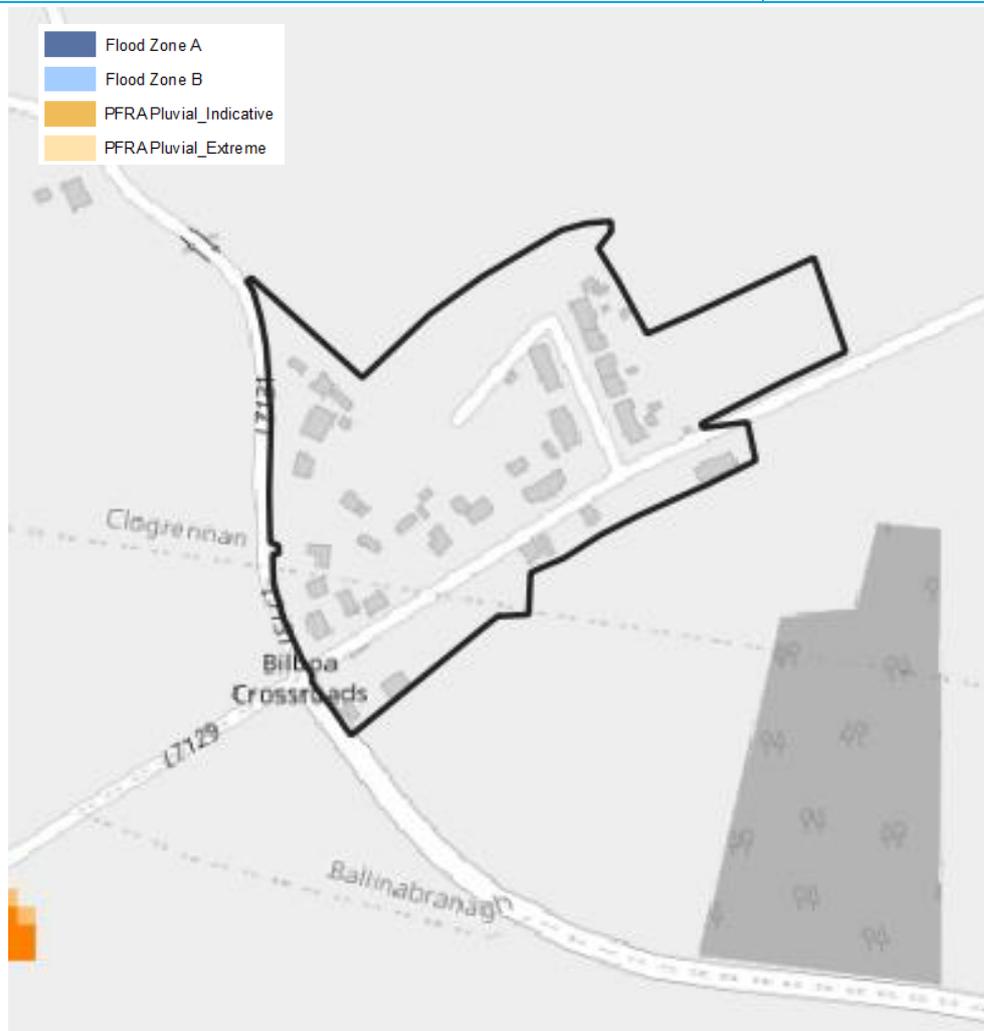
The flood mapping has been produced in accordance with the Planning Guidelines and therefore ignores the impact of flood protection structures. Areas protected by flood defences still carry a residual risk of flooding due to overtopping or breach, there may also be no guarantee of maintenance in perpetuity. Areas that benefit from defences are annotated separately.

Flood Zone Data	NIFM & PFRA Pluvial
Historic Flooding	Recurring Flooding at Ballon following very heavy rain, the surface drainage in the village cannot deal adequately with runoff from adjacent high ground. One pub flooded.
Comment	The Ballinadrum River is a Drainage District channel and flows in an easterly direction to the north of the town centre. The watercourse is predicted to impact existing residential and utilities use (WWTP). The WWTP and the residential zoning must apply the Justification Test. There are some isolated low spots within the settlement that result in predicted pluvial flooding.
Climate Change	There is limited predicted increase in fluvial flood extent resulting from climate change. Potential increase in surface water runoff from increased rainfall.
Conclusion	Risk is limited to existing development and the Justification Test has been applied and passed for existing residential and utilities use (see Appendix A.1). The Justification Test for existing residential is passed on the basis that development is; Limited to extensions, renovations and change of use.

	<p>Infill residential development and demolition and reconstruction can only take place in Flood Zone C.</p> <p>Any future development should be subject to an FRA which should follow the general guidance provided in Section 6 of the SFRA and must specifically address the points detailed in Part 3 of the JT under Appendix A.1.1.</p> <p>The Justification Test for existing utilities use (WWTP) is passed on the basis that any future expansion of the WWTP should be subject to an FRA which should follow the general guidance provided in Section 6 of the SFRA and must specifically address the points detailed in Part 3 of the JT under Appendix A.1.2.</p> <p>Elsewhere in the settlement risk can be managed in line with approved CCCDP Policy (particularly surface water) and the guidance provided within Section 6 of this SFRA.</p>
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7.8 Bilboa

Hierarchy/Tier	Tier 5 - Smaller Serviced Rural Villages
Area for Further Assessment under CFRAM programme?	No



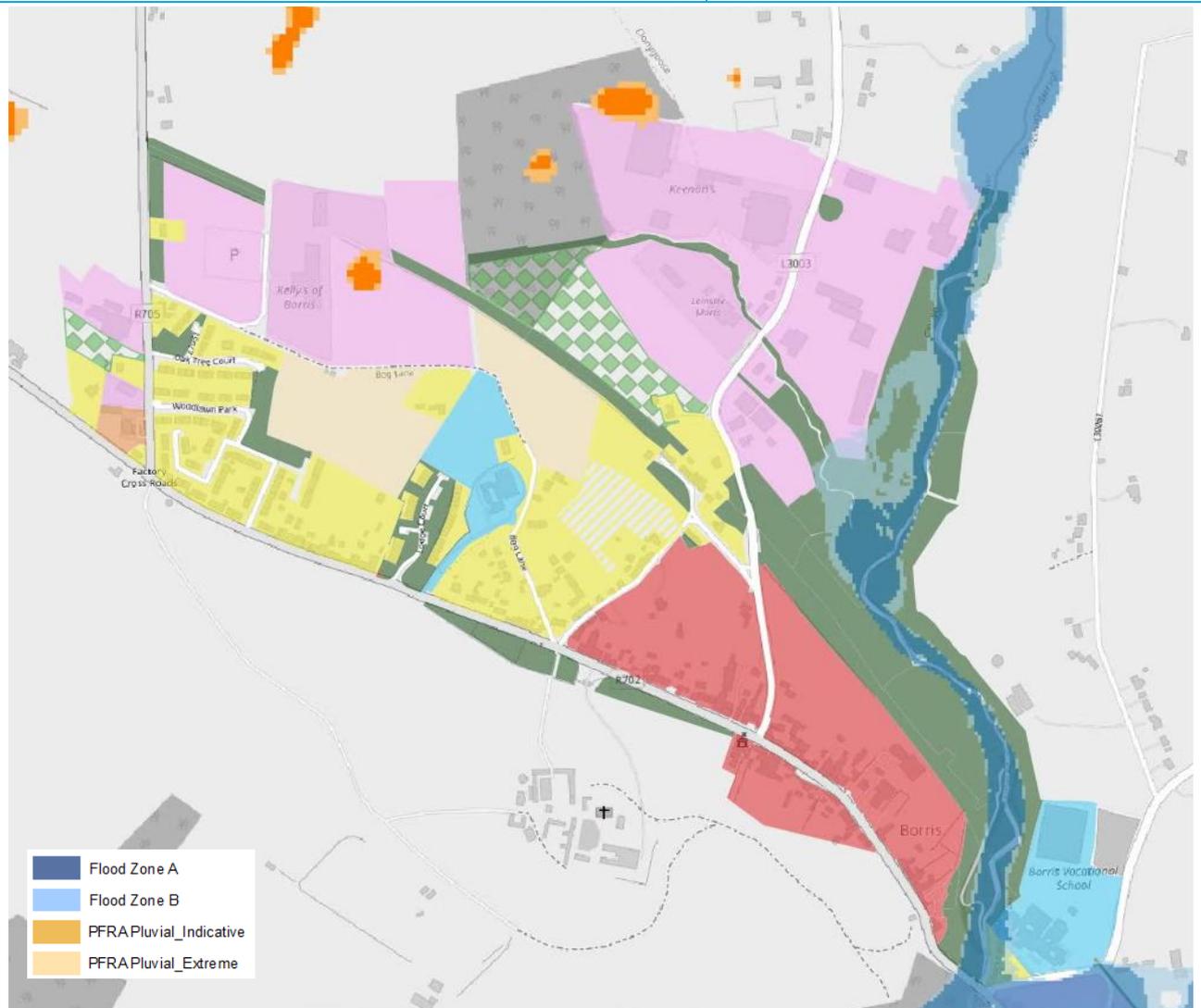
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The flood mapping has been produced in accordance with the Planning Guidelines and therefore ignores the impact of flood protection structures. Areas protected by flood defences still carry a residual risk of flooding due to overtopping or breach, there may also be no guarantee of maintenance in perpetuity. Areas that benefit from defences are annotated separately.

Flood Zone Data	n/a
Historic Flooding	No records within the settlement boundary.
Comment	There is no predicted fluvial or pluvial flooding within the site boundary
Climate Change	No fluvial impacts, potential increase in rainfall runoff.
Conclusion	Flood risk can be managed in line with approved CCCDP Policy and the guidance provided within Section 6 of this SFRA.

7.9 Borris

Hierarchy/Tier	Tier 3 - Small Towns
Area for Further Assessment under CFRAM programme?	No



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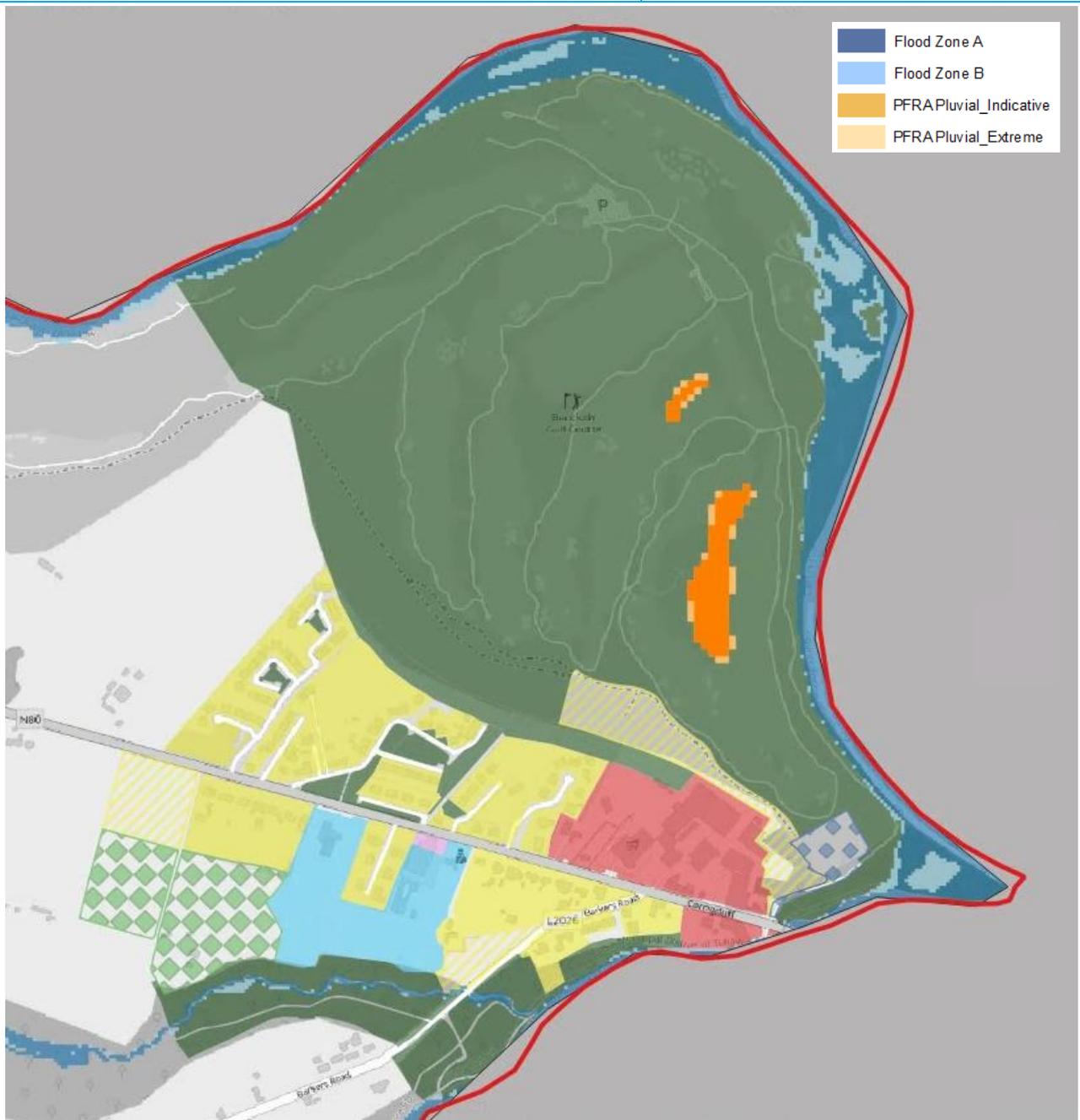
The flood mapping has been produced in accordance with the Planning Guidelines and therefore ignores the impact of flood protection structures. Areas protected by flood defences still carry a residual risk of flooding due to overtopping or breach, there may also be no guarantee of maintenance in perpetuity. Areas that benefit from defences are annotated separately.

Flood Zone Data	NIFM & PFRA Pluvial
Historic Flooding	No historic records found within settlement boundary.
Comment	<p>The Mountain River flows in a westerly direction along the southern boundary of the settlement. A tributary of the Mountain River (the River Durin) approaches from the north and is for the most part contained within Amenity and Open Space zoning. However, the tributary (Flood Zone A & B) impacts existing Community Services & Education lands and the Mountain River (Flood Zone A & B) impacts existing enterprise and employment lands. The Justification Test has been applied to these lands.</p> <p>Flood Zone B impacts undeveloped enterprise and employment lands to the east of the L303 which are under commercial use, the Justification Test does not apply here as the use is less vulnerable.</p>
Climate Change	There is limited predicted increase in fluvial flood extent resulting from climate change on the Mountain River, but the River Durin has more sensitivity due to potential increase in surface water runoff from increased rainfall.

<p>Conclusion</p>	<p>Risk to existing development has had the Justification Test applied and has passed for existing Community Services & Education (Borris Vocational School) and existing enterprise and employment (Kelly's Steelworks), see Appendix A.2.</p> <p>Any future expansion of the Borris Vocational School should be subject to an FRA which should follow the general guidance provided in Section 6 of the SFRA and must specifically address the points listed in Appendix A.2.1.</p> <p>The Justification Test for existing enterprise and employment (Kelly's Steelworks) is passed on the basis that development is limited to the existing less vulnerable use. Redevelopment as highly vulnerable housing would not be permitted and any future planning applications on the site should be subject to an FRA which should follow the general guidance provided in Section 6 of the SFRA and must specifically address the points detailed in Part 3 of the JT under Appendix A.2.2.</p> <p>Elsewhere in the settlement there are some Enterprise and Employment lands either bounding Flood Zone B or containing Flood Zone B. On these lands for any future applications these must be subject to an appropriately detailed FRA. In all other areas risk can be managed in line with approved CCCDP Policy and the guidance provided within Section 6 of this SFRA.</p>
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7.10 Carrickduff

Hierarchy/Tier	Tier 3 - Small Town
Area for Further Assessment under CFRAM programme?	No



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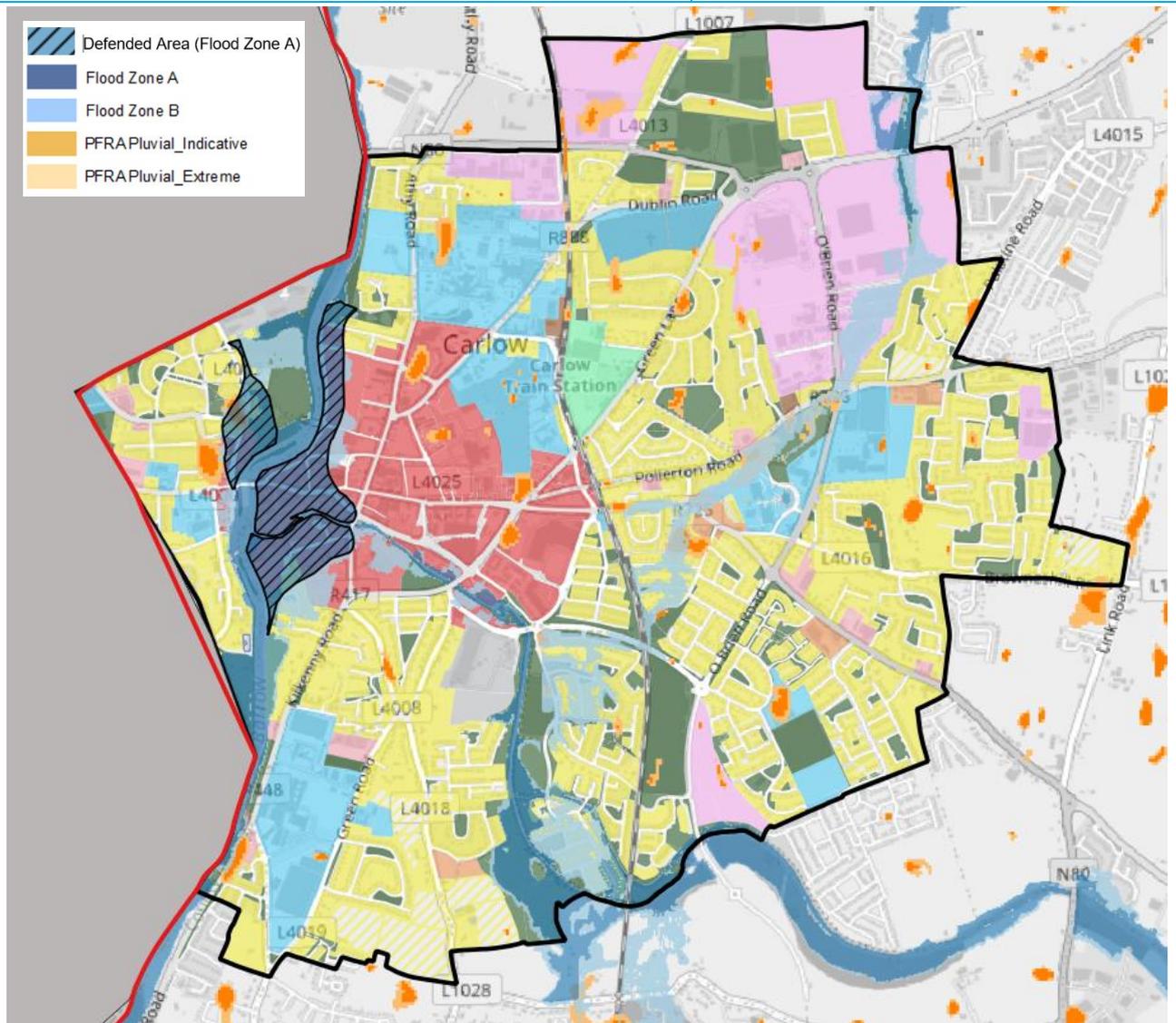
The flood mapping has been produced in accordance with the Planning Guidelines and therefore ignores the impact of flood protection structures. Areas protected by flood defences still carry a residual risk of flooding due to overtopping or breach, there may also be no guarantee of maintenance in perpetuity. Areas that benefit from defences are annotated separately.

Flood Zone Data	CFRAM & PFRA Pluvial
Historic Flooding	No historic records found within settlement boundary.
Comment	Carrickduff is a relatively steeply sloping site with the low-lying River Slaney floodplain to the east. Tributary watercourses flow through the town centre and into the Slaney. There is a significant amount of open space surrounding the watercourses that accommodate the Flood Zones. The only conflict is a small overlap with Flood Zone A/B and the Town Centre zoning along the edge of the River Clody in the southern boundary of the settlement. The Justification

	Test has been applied in this case.
Climate Change	There is limited predicted increase in fluvial flood extent resulting from climate change. Potential increase in surface water runoff from increased rainfall.
Conclusion	Risk to the Town Centre zoning has had the Justification Test applied and has passed. Any future development in the Town Centre zoning must place water compatible development within Flood Zone A/B with no raising of land levels. All development should be subject to an FRA which should follow the general guidance provided in Section 6 of the SFRA and must specifically address the details listed under Part 3 of the Justification Test in Appendix A.3.1.

7.11 Carlow

Hierarchy/Tier	Tier 1 - Key Town
Area for Further Assessment under CFRAM programme?	Yes



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The flood 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 Data	CFRAM & PFRA Pluvial
Historic Flooding	Carlow town is subject to regular flooding, see Table 4-3 for further information.
Comment	<p>Carlow is subject to an existing flood relief scheme which protects significant areas of Town Centre zoning from the River Barrow. As well as undefended and defended existing Town Centre there are also major redevelopment sites earmarked within the defended Town Centre zoning which must also apply the Justification Test.</p> <p>Two areas are also subject to proposed Flood Relief Schemes. Works on the Burrin River in the Mill Race/Springfield area and on the Knocknagee Stream in the Castle Oaks area are proposed and these areas require application of the Justification Test.</p> <p>Downstream of Castle Oaks the Knocknagee Stream enters a culvert and surcharging flow at the 0.1% AEP results on overland flow and a significant area of Flood Zone B extending downstream through Enterprise & Employment land and existing Residential. The Justification Test must also be applied here.</p>

Climate Change	West of the River Barrow lands are sensitive to climate change, the Burrin River is also sensitive. Potential increase in surface water runoff from increased rainfall.
Conclusion	<p>The Justification Test has been applied to a number of sites and these are detailed in Appendix A.4. Within defended areas new/redevelopment has been passed subject to conditions relating to the assessment of risk. In the Mill Race/Springfield area and on the Knocknagee Stream in the Castle Oaks area where there are proposed flood relief measures the Justification Test requires that further new development is limited prior to delivery of the scheme. In areas of existing undefended development then redevelopment is restricted due to the risk of flooding. Detailed guidance is provided in Appendix A.4 for each area.</p> <p>Elsewhere, risk can be managed in line with approved CCCDP Policy and the guidance provided within Section 6 of this SFRA.</p>

7.12 Clonegal

Hierarchy/Tier	Tier 4 - Larger Serviced Village
Area for Further Assessment under CFRAM programme?	No
<p>© OpenStreetMap contributors, CC-BY-SA, The flood 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.</p>	
Flood Zone Data	NIFM
Historic Flooding	Recurring flooding at Clonegal Bridge 5-6no. houses regularly flooded. 4no. residential properties flooded in November 2000. First time since mid-1960s the River Derry flowed on the streets in the lower part of the village.
Comment	Clonegal is situated to the west of the River Derry, a sub-catchment of the River Slaney. Flooding is predicted to impact a limited amount of existing Village Core development and there is a significant area of undeveloped floodplain to the east of the centre. The Justification Test must be applied to the Village Core zoning.
Climate Change	Low sensitivity to climate change. Potential increase in surface water runoff from increased rainfall.
Conclusion	Risk to existing development has had the Justification Test applied and has passed for existing Village Core lands see Appendix A.5.

The Justification Test for Town Centre is passed on the basis that development is;

- Limited to extensions, renovations and change of use.
- Infill residential development and demolition and reconstruction can only take place in Flood Zone C.

Any future development should be subject to an FRA which should follow the general guidance provided in Section 6 of the SFRA and must specifically address the points detailed in Part 3 of the JT under Appendix A.5.1.

Elsewhere in the settlement risk can be managed in line with approved CCCDP Policy and the guidance provided within Section 6 of this SFRA.

7.13 Clonmore

Hierarchy/Tier	Tier 5 - Smaller Serviced Rural Villages
Area for Further Assessment under CFRAM programme?	No



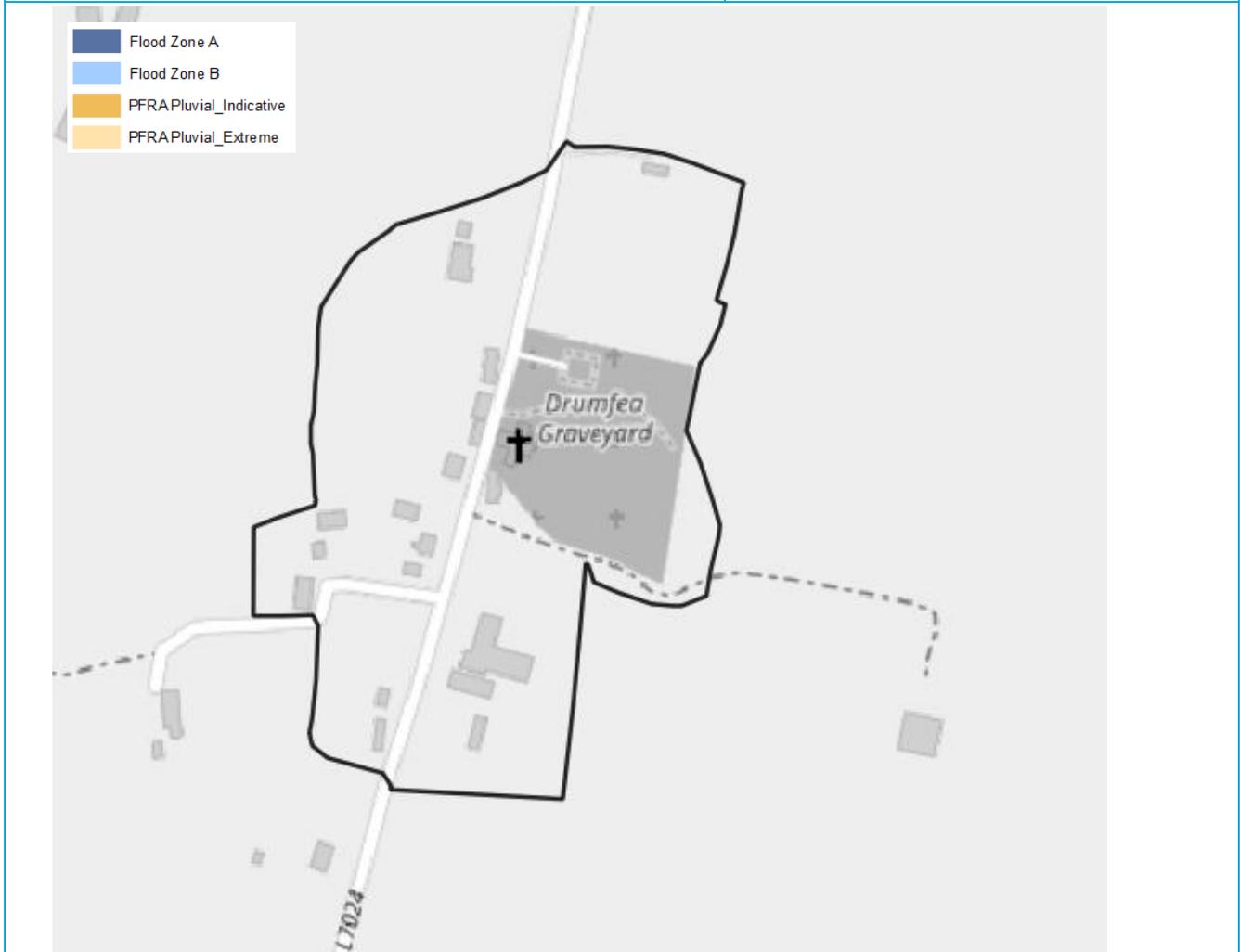
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The flood mapping has been produced in accordance with the Planning Guidelines and therefore ignores the impact of flood protection structures. Areas protected by flood defences still carry a residual risk of flooding due to overtopping or breach, there may also be no guarantee of maintenance in perpetuity. Areas that benefit from defences are annotated separately.

Flood Zone Data	n/a
Historic Flooding	No records within the settlement boundary.
Comment	There is no predicted fluvial or pluvial flooding within the site boundary
Climate Change	No fluvial impacts, potential increase in rainfall runoff.
Conclusion	Flood risk can be managed in line with approved CCCDP Policy and the guidance provided within Section 6 of this SFRA.

7.14 Drumpeha

Hierarchy/Tier	Tier 6 - Rural Nodes
Area for Further Assessment under CFRAM programme?	No



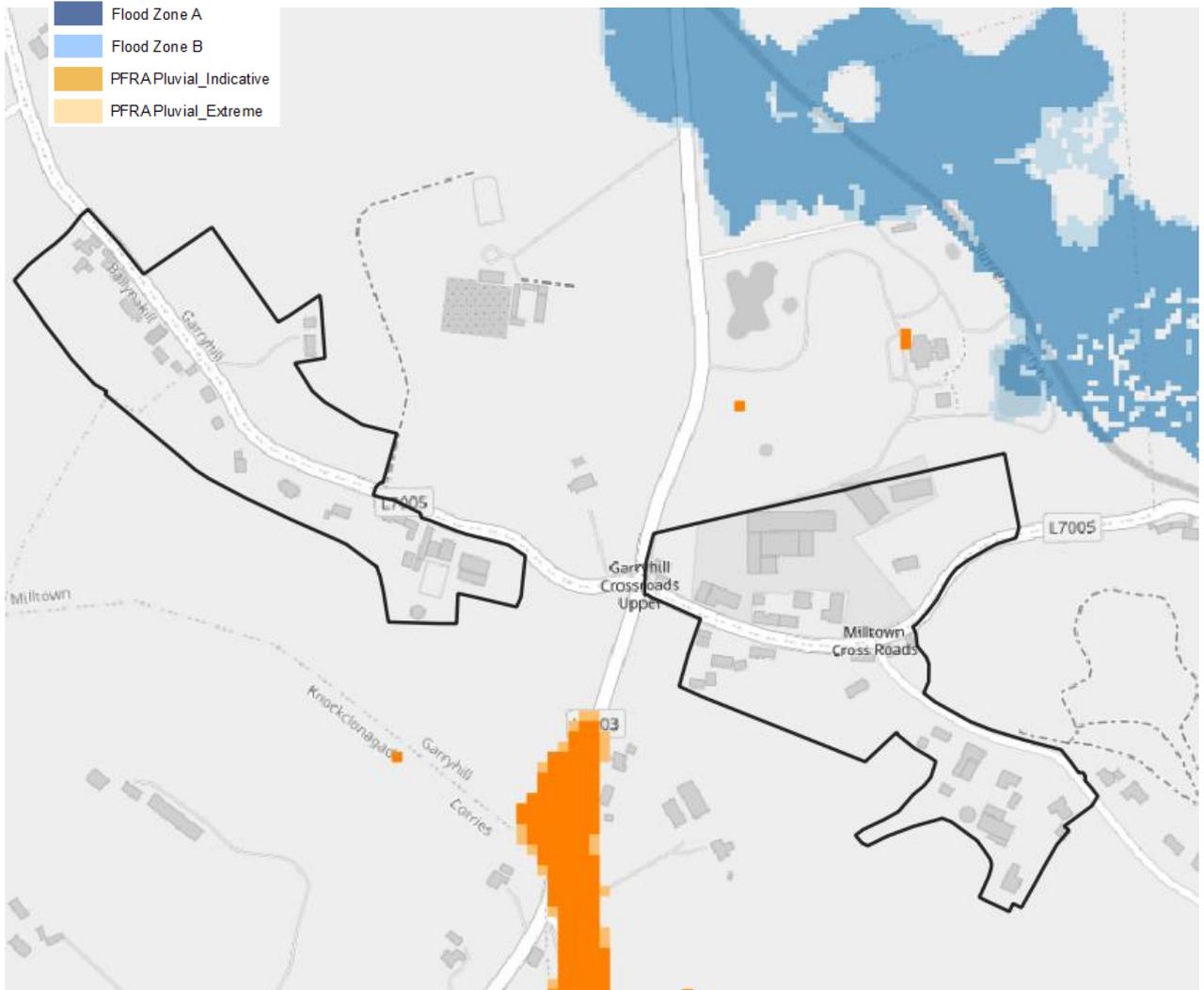
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The flood mapping has been produced in accordance with the Planning Guidelines and therefore ignores the impact of flood protection structures. Areas protected by flood defences still carry a residual risk of flooding due to overtopping or breach, there may also be no guarantee of maintenance in perpetuity. Areas that benefit from defences are annotated separately.

Flood Zone Data	n/a
Historic Flooding	No records within the settlement boundary.
Comment	There is no predicted fluvial or pluvial flooding within the site boundary
Climate Change	No fluvial impacts, potential increase in rainfall runoff.
Conclusion	Flood risk can be managed in line with approved CCCDP Policy and the guidance provided within Section 6 of this SFRA.

7.15 Garryhill

Hierarchy/Tier	Tier 6 - Rural Nodes
Area for Further Assessment under CFRAM programme?	No



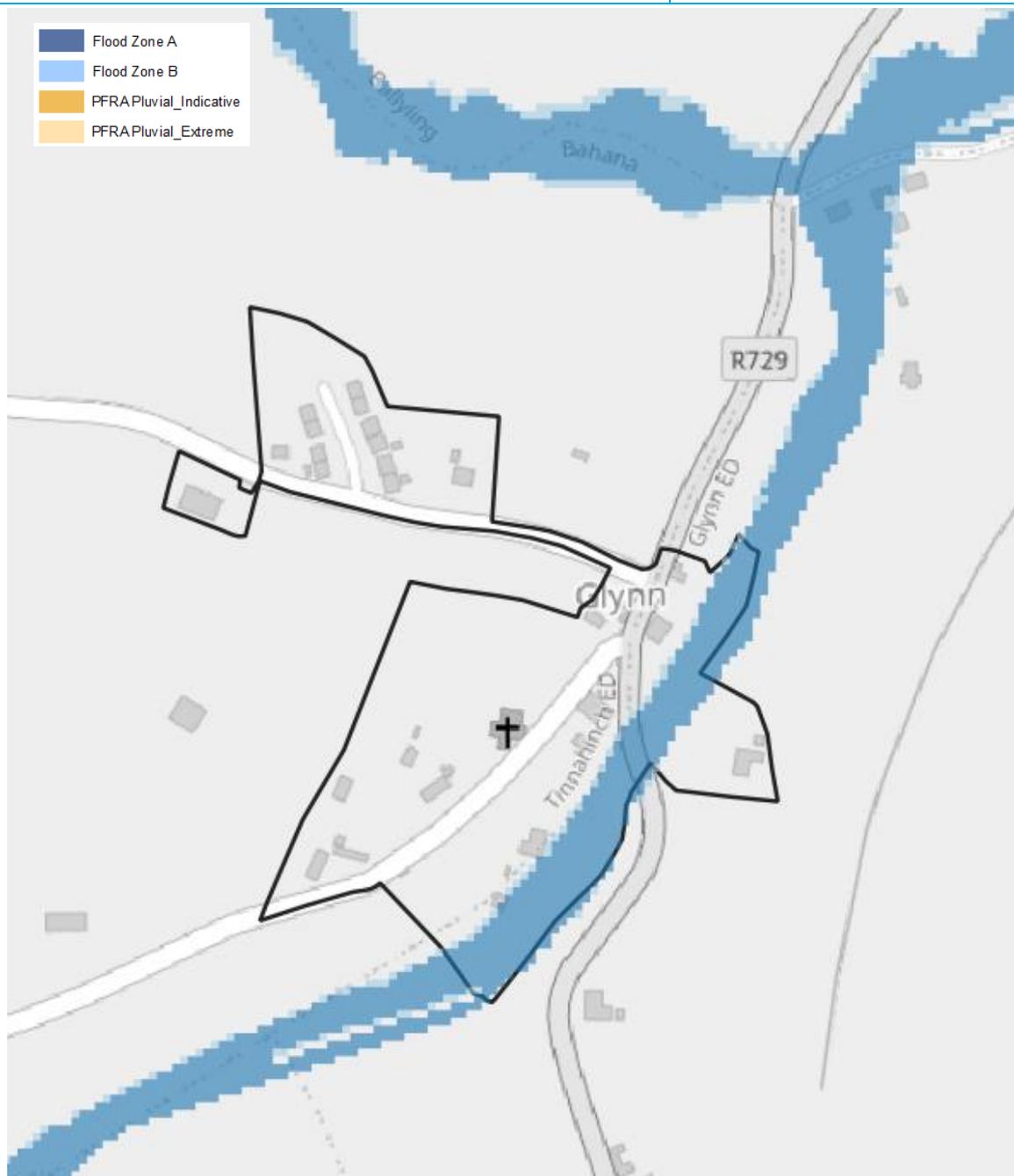
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The flood mapping has been produced in accordance with the Planning Guidelines and therefore ignores the impact of flood protection structures. Areas protected by flood defences still carry a residual risk of flooding due to overtopping or breach, there may also be no guarantee of maintenance in perpetuity. Areas that benefit from defences are annotated separately.

Flood Zone Data	PFRA Pluvial
Historic Flooding	No records within the settlement boundary.
Comment	There is no predicted fluvial or pluvial flooding within the site boundary
Climate Change	No fluvial impacts, potential increase in rainfall runoff.
Conclusion	Flood risk can be managed in line with approved CCCDP Policy and the guidance provided within Section 6 of this SFRA.

7.16 Glynn

Hierarchy/Tier	Tier 5 - Smaller Serviced Rural Villages
Area for Further Assessment under CFRAM programme?	No



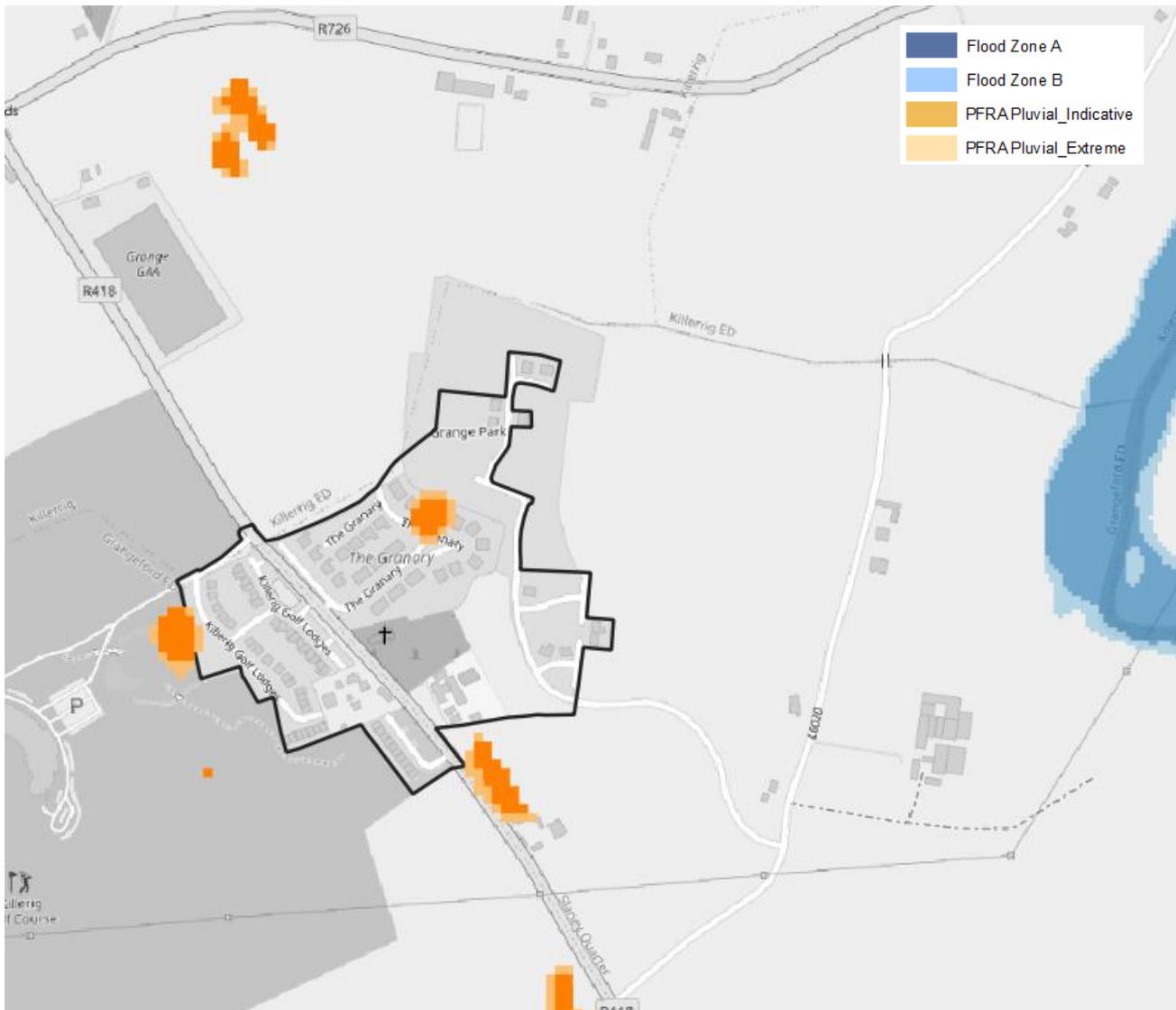
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The flood mapping has been produced in accordance with the Planning Guidelines and therefore ignores the impact of flood protection structures. Areas protected by flood defences still carry a residual risk of flooding due to overtopping or breach, there may also be no guarantee of maintenance in perpetuity. Areas that benefit from defences are annotated separately.

Flood Zone Data	NIFM
Historic Flooding	No records within the settlement boundary.
Comment	A watercourse flows through the centre of the settlement and the CFRAM predicts a narrow floodplain that potentially affects some limited existing development.
Climate Change	Low sensitivity to fluvial climate change impacts, potential increase in rainfall runoff.
Conclusion	As there are no land use zoning objectives within the settlement the

	<p>Justification Test cannot be applied, specific recommendations have been provided to manage the risk.</p> <p>New highly vulnerable development is only appropriate within Flood Zone C. New less vulnerable development is only appropriate within Flood Zone B/C. For existing development within Flood Zone A/B it is not appropriate to undertake significant redevelopment whereby additional numbers of people are introduced into the Flood Zone.</p> <p>Any future development should be subject to an FRA which must follow the general guidance provided in Section 6 of the SFRA and specifically address the following:</p> <ul style="list-style-type: none"> • Existing flood data is indicative and does not provide flood levels. An appropriately detailed hydraulic model will be required to confirm flood levels and extents. • FRA should address climate change scenarios in relation to FFLs and potential mitigation measures; • Finished floor levels should be above the 1% AEP level plus climate change and freeboard; • For existing development in Zone A/B extensions/renovations bedrooms should be located in the upstairs of two-story buildings; • Flood resilient construction materials and fittings should be considered if in Flood Zone A/B; • Proposals should not impede existing flow paths or cause flood risk impacts to the surrounding areas, and; • Emergency evacuation plan and defined access / egress routes should be developed for extreme flood events. • Any development shall also be required to be built in accordance with CCC SuDS Policy.
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7.17 Grange

Hierarchy/Tier	Tier 6 - Rural Nodes
Area for Further Assessment under CFRAM programme?	No
	
<p>© OpenStreetMap contributors, CC-BY-SA, The flood 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.</p>	
Flood Zone Data	CFRAM & PFRA Pluvial
Historic Flooding	No records within the settlement boundary.
Comment	The settlement is located in between the River Slaney and the River Aghalona and there is no predicted fluvial flood risk within the settlement. A small amount of predicted PFRA pluvial flooding is located in isolated areas within the settlement.
Climate Change	No fluvial impacts, potential increase in rainfall runoff.
Conclusion	Pluvial flood risk can be managed in line with approved CCCDP Policy and the guidance provided within Section 6 of this SFRA.

7.18 Fennagh

Hierarchy/Tier	Tier 4 - Larger Serviced Village
Area for Further Assessment under CFRAM programme?	No



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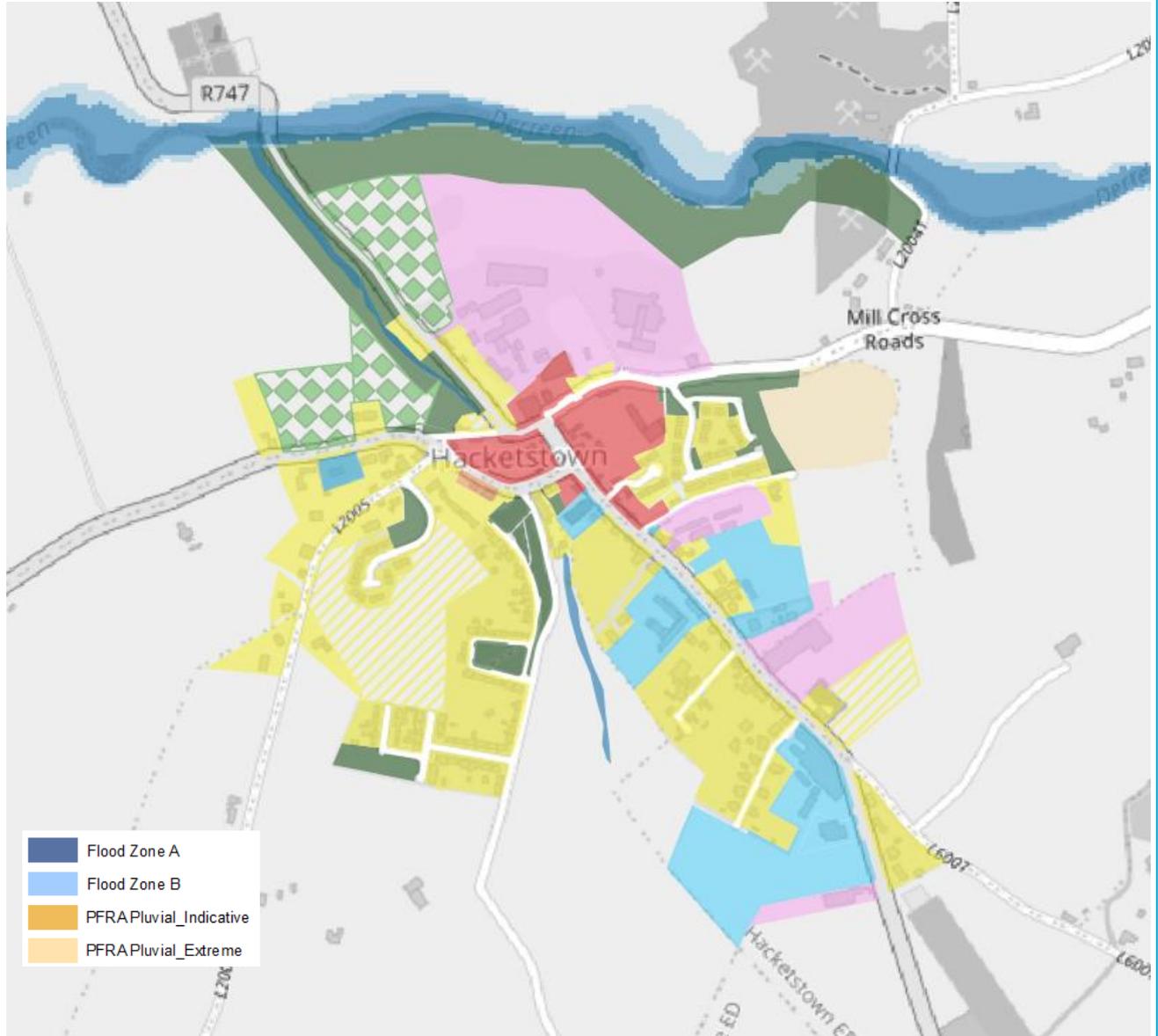
The flood mapping has been produced in accordance with the Planning Guidelines and therefore ignores the impact of flood protection structures. Areas protected by flood defences still carry a residual risk of flooding due to overtopping or breach, there may also be no guarantee of maintenance in perpetuity. Areas that benefit from defences are annotated separately.

Flood Zone Data	NIFM & PFRA Pluvial
Historic Flooding	No records within the settlement boundary.
Comment	A Drainage District channel flows through the settlement in a south easterly direction. Predictive flood mapping from the NIFM suggests that a margin of the Village Core and Utilities zoning (a WWTP), Community Education (burial ground and creche) and Existing Residential is within Flood Zone A/B. The Justification Test must be applied to these zonings.

Climate Change	Low/moderate sensitivity to climate change. Potential increase in surface water runoff from increased rainfall.
Conclusion	<p>Risk to existing development has had the Justification Test applied and has passed for existing zoned lands see Appendix A.6.</p> <p>The Justification Test for Existing Residential is passed on the basis that development is;</p> <ul style="list-style-type: none"> • Limited to extensions, renovations and change of use. • Infill residential development and demolition and reconstruction can only take place in Flood Zone C. <p>Any future development should be subject to an FRA which should follow the general guidance provided in Section 6 of the SFRA and must specifically address the points detailed in Part 3 of the JT under Appendix A.6.1.</p> <p>The Village Core & Utility lands within Flood Zone A/B are in use as a WWTP. The Justification Test has been applied and passed; development here must address the points highlighted in A.6.2.</p> <p>The Community Education lands host a Creche and a burial ground. The Justification was passed on the basis of the conditions set out in A.6.3.</p> <p>Elsewhere in the settlement risk can be managed in line with approved CCCDP Policy and the guidance provided within Section 6 of this SFRA.</p>

7.19 Hacketstown

Hierarchy/Tier	Tier 3 - Small Towns
Area for Further Assessment under CFRAM programme?	No



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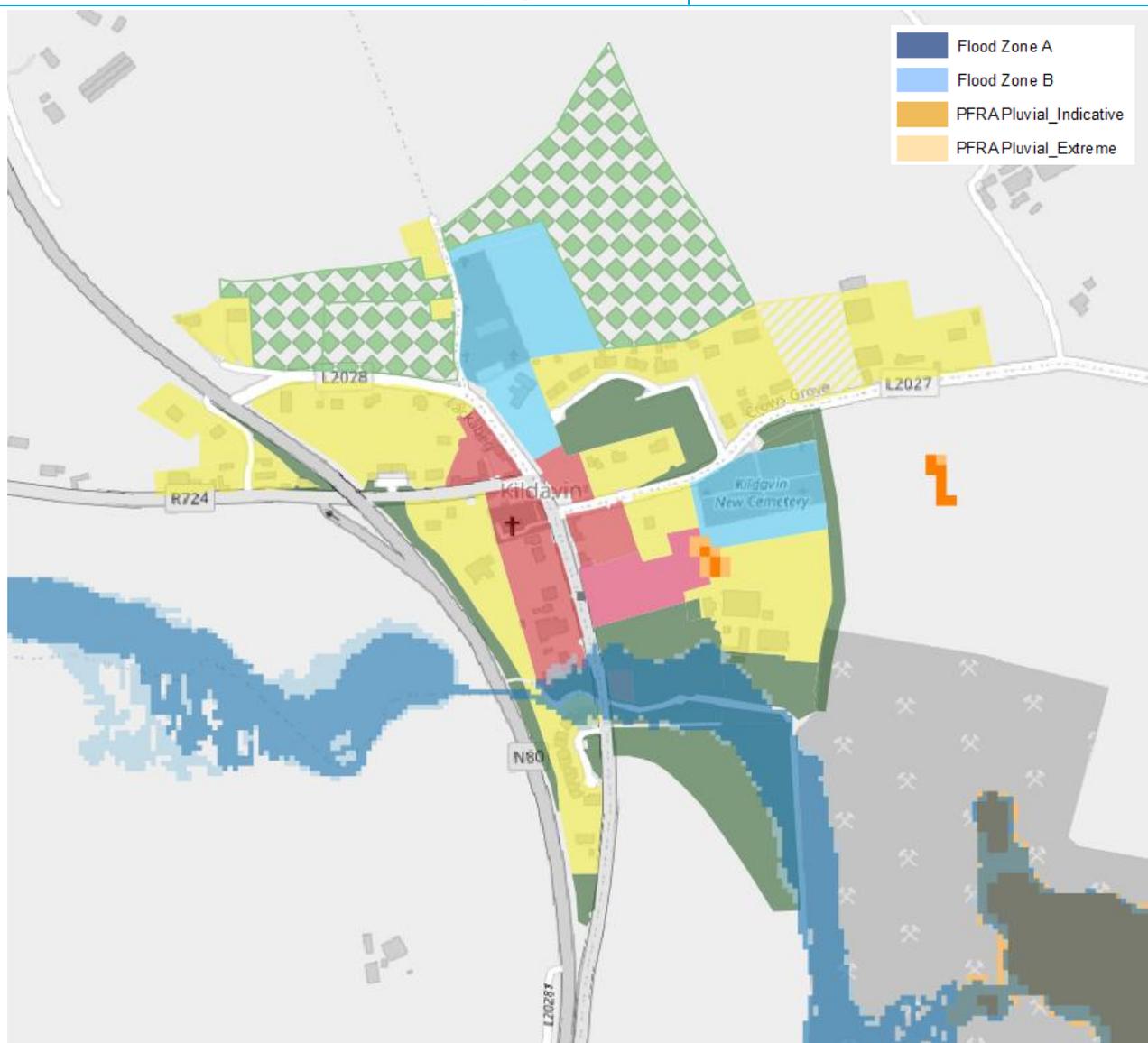
The flood mapping has been produced in accordance with the Planning Guidelines and therefore ignores the impact of flood protection structures. Areas protected by flood defences still carry a residual risk of flooding due to overtopping or breach, there may also be no guarantee of maintenance in perpetuity. Areas that benefit from defences are annotated separately.

Flood Zone Data	NIFM & JBA
Historic Flooding	No historic records found within settlement boundary.
Comment	Hacketstown is situated on a hillside that slopes steeply down to the River Derreen. The floodplain of the Derreen is reserved as open space. A small stream flows through the centre of the settlement in a culvert. The stream is small and steep, a significant riparian corridor has been created along its length (where it is in open channel).
Climate Change	Low sensitivity to climate change. Potential increase in surface water runoff from increased rainfall.
Conclusion	Risk is limited to existing development and the Justification Test has been applied and passed for the town centre zoning (see Appendix A.7). The Justification Test for Town Centre is passed on the basis that development

	<p>is;</p> <ul style="list-style-type: none"> • Limited to extensions, renovations and change of use. • Infill residential development and demolition and reconstruction can only take place in Flood Zone C. <p>Any future development should be subject to an FRA which should follow the general guidance provided in Section 6 of the SFRA and must specifically address the points detailed in Part 3 of the JT under Appendix A.7.1.</p> <p>Any future expansion of the WWTP should be subject to an FRA which must follow the general guidance provided in Section 6 of the SFRA.</p> <p>Elsewhere in the settlement risk can be managed in line with approved CCCDP Policy and the guidance provided within Section 6 of this SFRA.</p>
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7.20 Kildavin

Hierarchy/Tier	Tier 3 - Larger Serviced Village
Area for Further Assessment under CFRAM programme?	No



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The flood 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 Data	NIFM & PFRA Pluvial
Historic Flooding	Kildavin village – recurring flood. Following very heavy rain, the surface drainage in the village cannot deal adequately with runoff from adjacent high ground.
Comment	A tributary of the River Slaney flows in a south easterly direction through the village. The watercourse impacts a limited number of existing properties, including Villag3 Core (WWTP & a Childcare facility) and some Existing Residential lands. There are significant areas of undeveloped floodplain within the settlement boundary zoned appropriately as open space. The Justification Test will be applied to the existing zoned lands.
Climate Change	Low sensitivity to climate change. Potential increase in surface water runoff from increased rainfall.
Conclusion	Risk to existing development has had the Justification Test applied and has passed for existing zoned lands see Appendix A.8. The Village Core lands

within Flood Zone A/B are in use as a WWTP and Childcare facility. The Justification Test has been applied and passed; development here must address the points highlighted A.8.1.

The Justification Test for Existing Residential is passed on the basis that development is;

- Limited to extensions, renovations and change of use.
- Infill residential development and demolition and reconstruction can only take place in Flood Zone C.
- And it is noted that existing flood data is indicative and does not provide flood levels. An appropriately detailed hydraulic model will be required to confirm flood levels and extents.

Any future development should be subject to an FRA which should follow the general guidance provided in Section 6 of the SFRA and must specifically address the points detailed in Part 3 of the JT under Appendix A.8.2.

Elsewhere in the settlement risk can be managed in line with approved CCCDP Policy and the guidance provided within Section 6 of this SFRA.

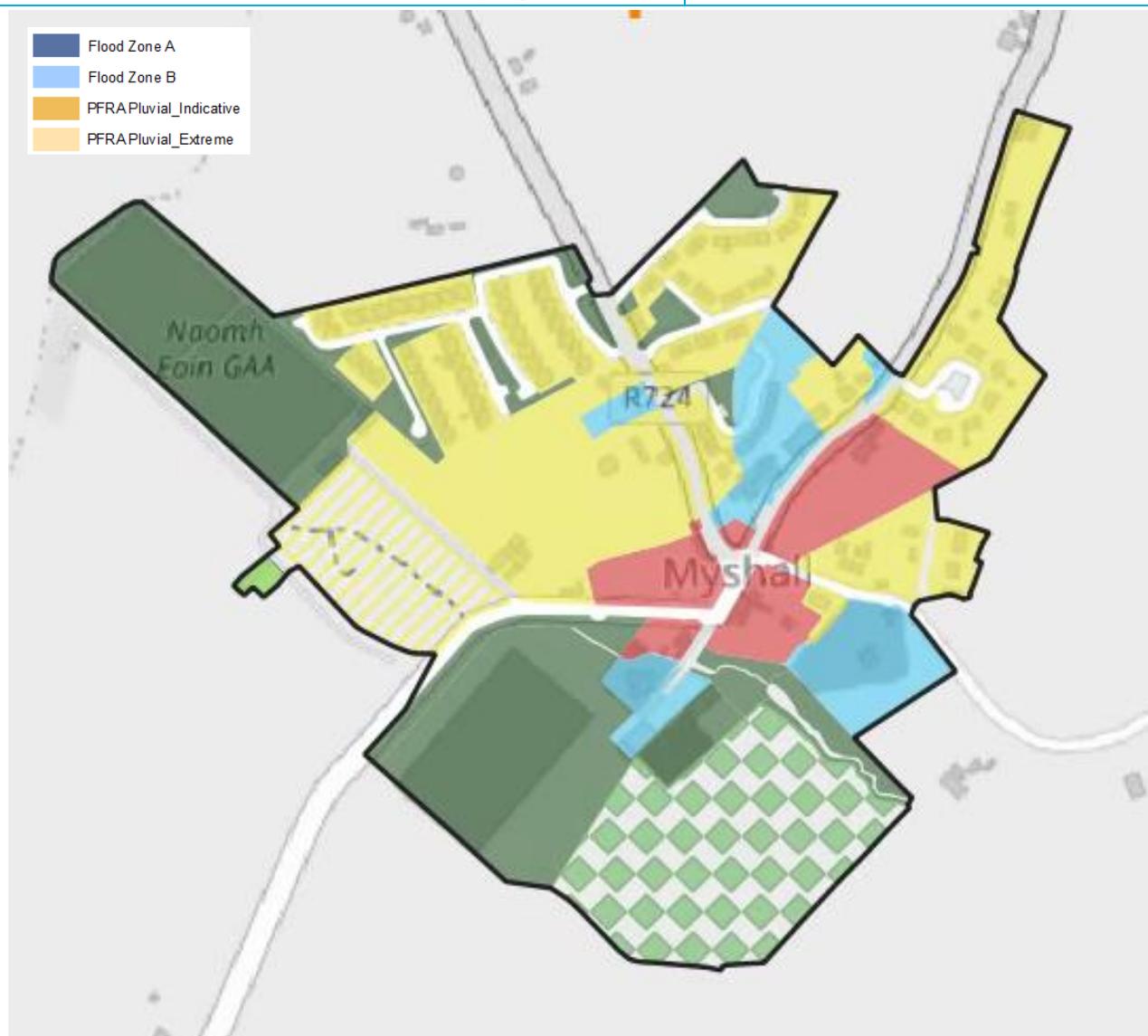
7.21 Leighlinbridge

Hierarchy/Tier	Tier 3 - Small Towns
Area for Further Assessment under CFRAM programme?	Yes
<p>© OpenStreetMap contributors, CC-BY-SA, The flood 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.</p>	
Flood Zone Data	CFRAM & PFRA Pluvial
Historic Flooding	Recurring flooding has been recorded at Leighlinbridge, with events recorded in January 1995, November 2000 and November 2009. Extent of the flooding in 1995 and 2009 is unknown but flooding of 6 residential and 4 commercial properties is recorded to have occurred in Nov 2000.

<p>Comment</p>	<p>Leighlinbridge is partly protected by a scheme that comprises a storm water pumping station, flood defence walls, flood defence gates and embankments provide protection to the 1% AEP for 37 properties.</p> <p>Further works to augment the existing measures were proposed from the CFRAM Management Plan, but are yet to be constructed.</p> <p>The River Barrow flows in a southerly direction through the settlement, a significant amount of the floodplain is appropriately set aside as open space. But there are areas of defended and undefended existing Town Centre and Residential development which requires application of the Justification Test.</p>
<p>Climate Change</p>	<p>Low sensitivity to climate change. Potential increase in surface water runoff from increased rainfall.</p>
<p>Conclusion</p>	<p>Although Leighlinbridge is subject to an existing scheme, this requires augmentation to fully achieve the required standard of protection for existing development, as such a precautionary approach has been applied to development and this is outlined in the Justification Test under Appendix A.9.1. The test has passed on the basis that development is limited to the existing vulnerability use and extensions/refits/change of use. Significant redevelopment within Flood Zone A/B would not be appropriate prior to any future flood relief scheme and then it would need to be justified at plan making stage, presumably in a future iteration of the development plan. Any future planning applications for extensions/refits/change of use should be subject to an FRA.</p> <p>Elsewhere, risk can be managed in line with approved CCCDP Policy and the guidance provided within Section 6 of this SFRA.</p>

7.22 Myshall

Hierarchy/Tier	Tier 4 - Larger Serviced Village
Area for Further Assessment under CFRAM programme?	No



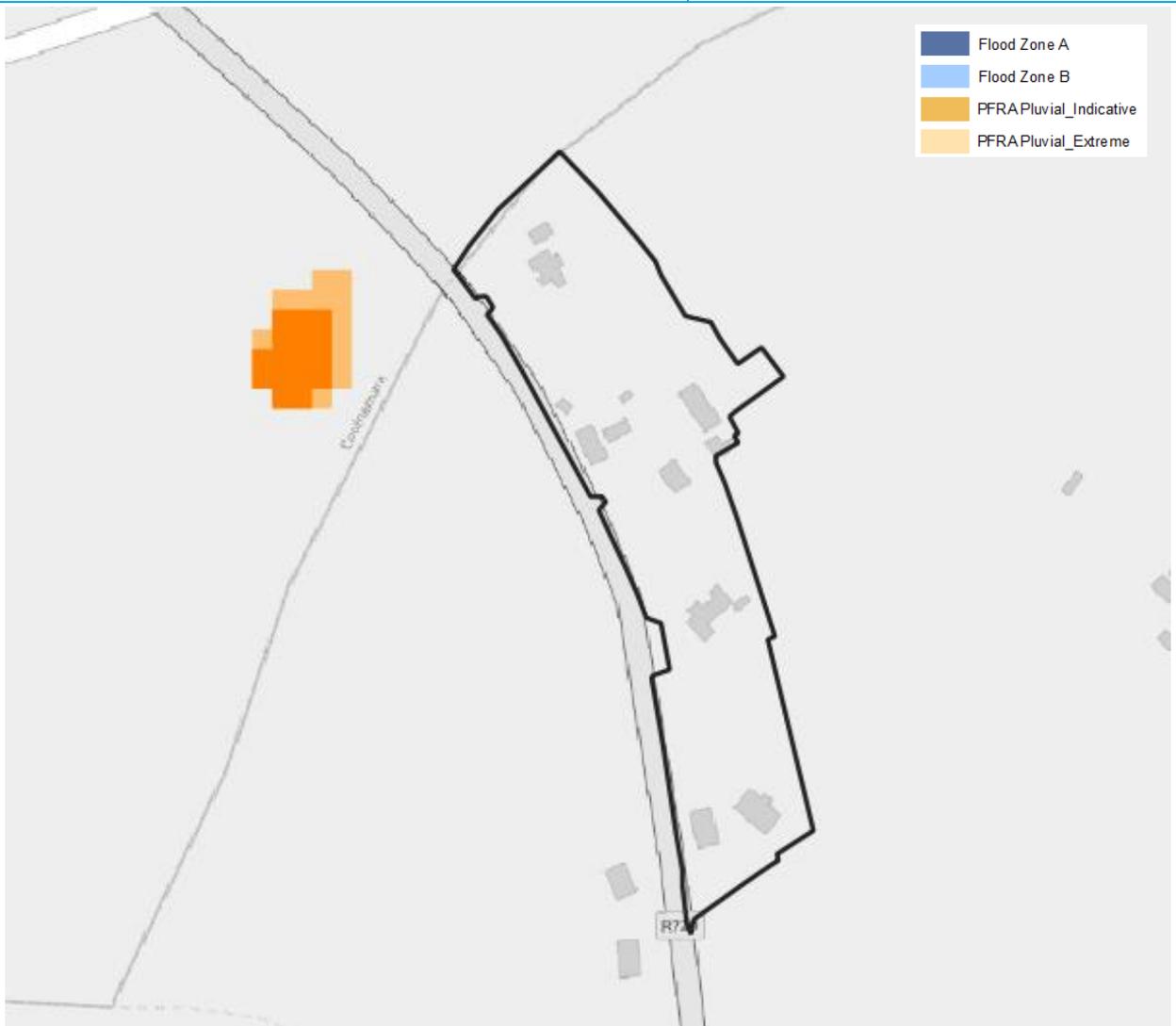
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The flood mapping has been produced in accordance with the Planning Guidelines and therefore ignores the impact of flood protection structures. Areas protected by flood defences still carry a residual risk of flooding due to overtopping or breach, there may also be no guarantee of maintenance in perpetuity. Areas that benefit from defences are annotated separately.

Flood Zone Data	NIFM
Historic Flooding	No records within the settlement boundary.
Comment	A Drainage District channel flows in a northerly direction to the west of the village. There is no predicted flood mapping that impacts the settlement and there is no recorded flood history.
Climate Change	Potential increase in rainfall runoff.
Conclusion	Pluvial flood risk can be managed in line with approved CCCDP Policy and the guidance provided within Section 6 of this SFRA.

7.23 Newtown

Hierarchy/Tier	Tier 6 - Rural Nodes
Area for Further Assessment under CFRAM programme?	No



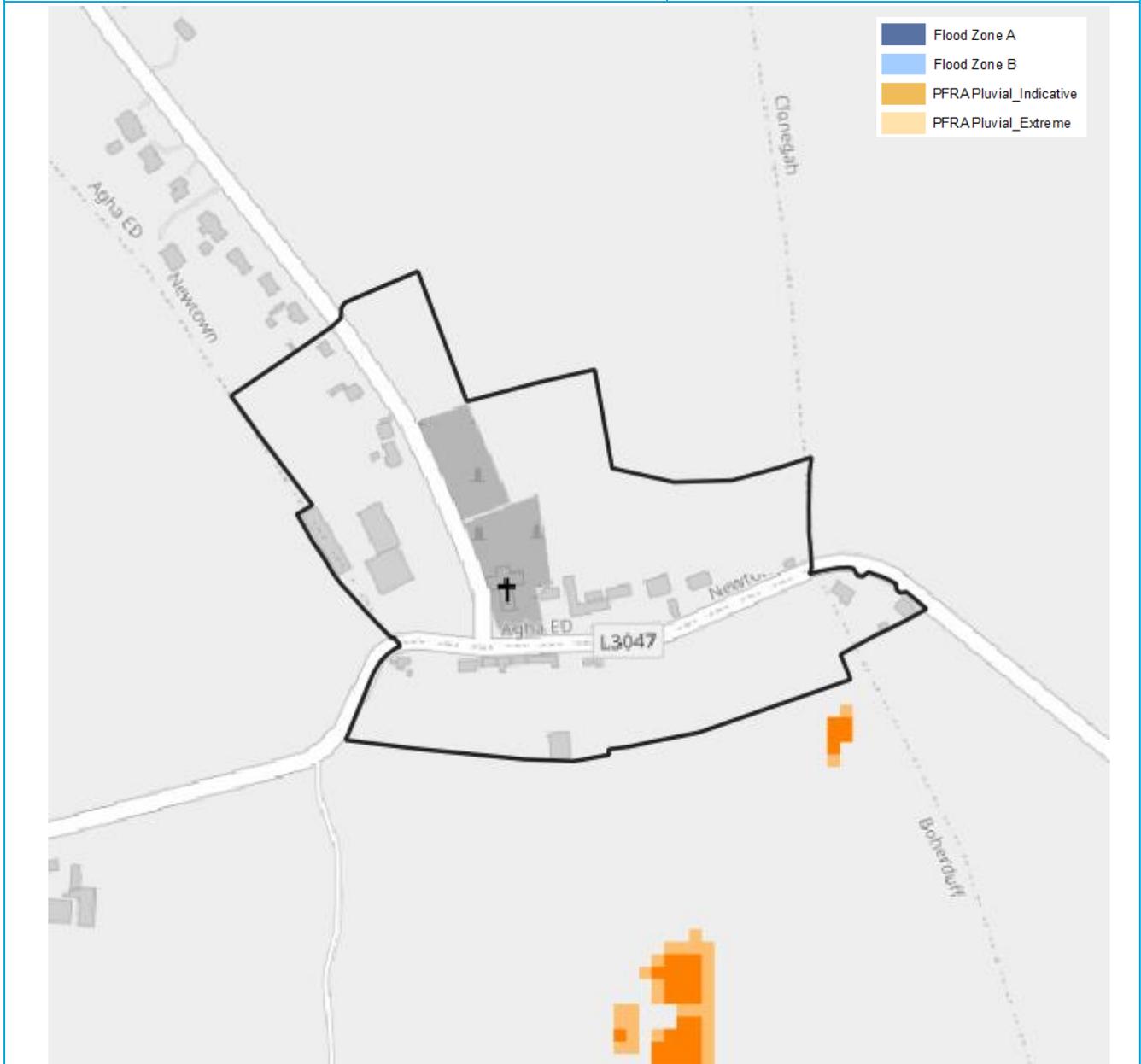
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The flood mapping has been produced in accordance with the Planning Guidelines and therefore ignores the impact of flood protection structures. Areas protected by flood defences still carry a residual risk of flooding due to overtopping or breach, there may also be no guarantee of maintenance in perpetuity. Areas that benefit from defences are annotated separately.

Flood Zone Data	PFRA Pluvial
Historic Flooding	No records within the settlement boundary.
Comment	There is no predicted fluvial or pluvial flooding within the site boundary
Climate Change	No fluvial impacts, potential increase in rainfall runoff.
Conclusion	Flood risk can be managed in line with approved CCCDP Policy and the guidance provided within Section 6 of this SFRA.

7.24 Newtown Fennagh

Hierarchy/Tier	Tier 6 - Rural Nodes
Area for Further Assessment under CFRAM programme?	No



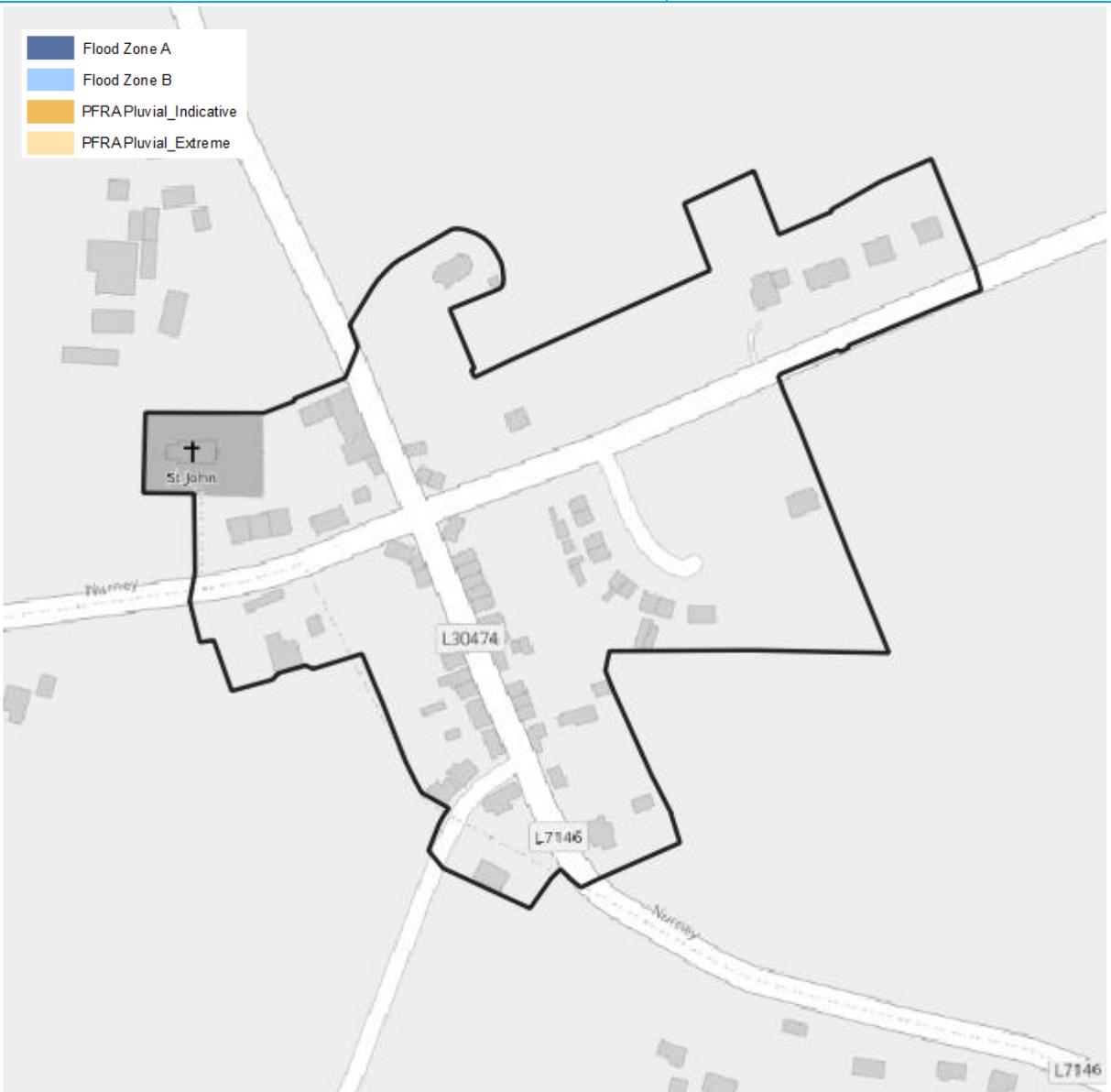
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The flood mapping has been produced in accordance with the Planning Guidelines and therefore ignores the impact of flood protection structures. Areas protected by flood defences still carry a residual risk of flooding due to overtopping or breach, there may also be no guarantee of maintenance in perpetuity. Areas that benefit from defences are annotated separately.

Flood Zone Data	PFRA Pluvial
Historic Flooding	November 2000, two properties noted as being flooded. Not clear if this is within the settlement boundary. Drainage District channels are noted to the east of the settlement boundary.
Comment	There is no predicted fluvial or pluvial flooding within the site boundary
Climate Change	No fluvial impacts, potential increase in rainfall runoff.
Conclusion	Flood risk can be managed in line with approved CCCDP Policy and the guidance provided within Section 6 of this SFRA.

7.25 Nurney

Hierarchy/Tier	Tier 5 - Smaller Serviced Rural Villages
Area for Further Assessment under CFRAM programme?	No



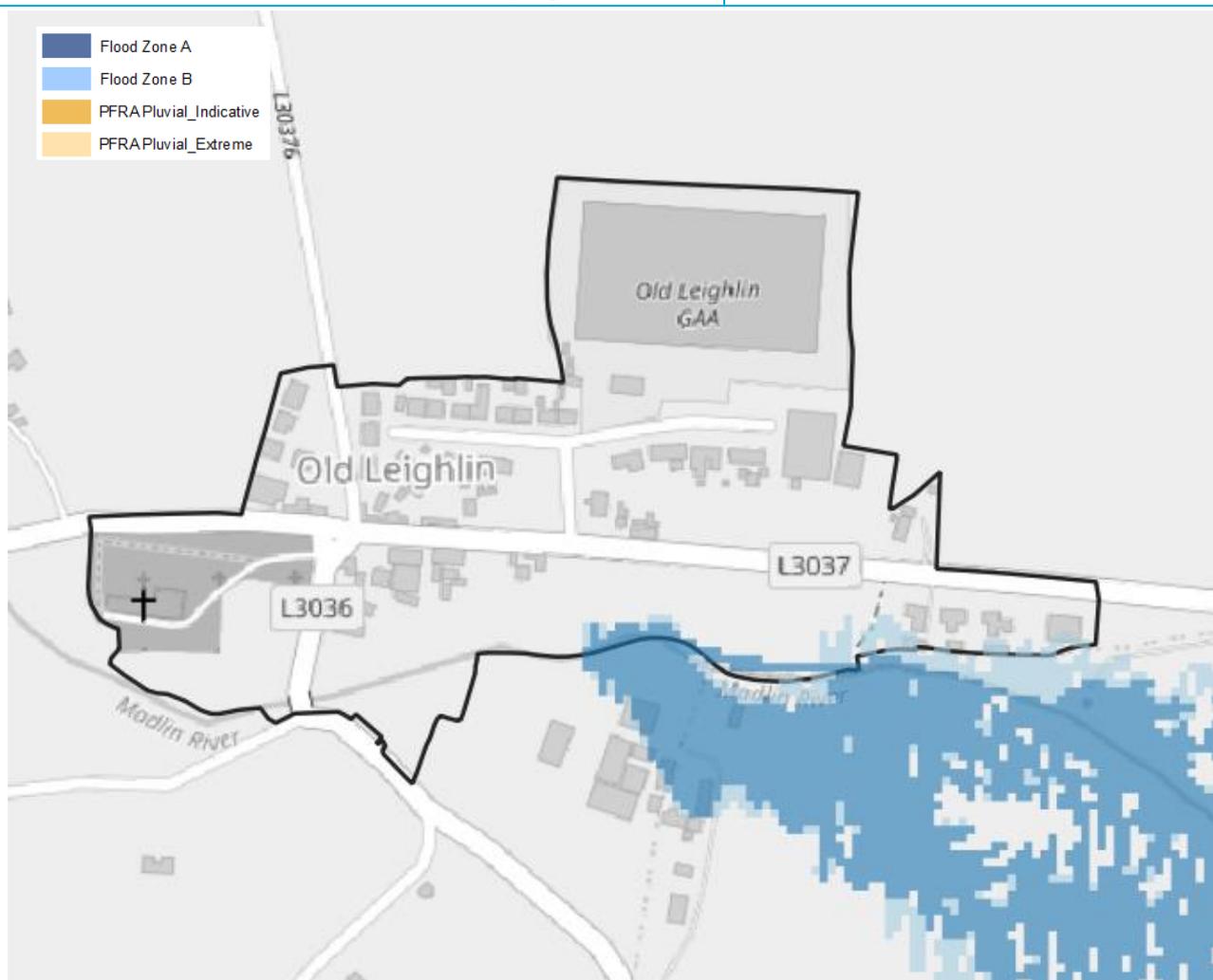
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The flood mapping has been produced in accordance with the Planning Guidelines and therefore ignores the impact of flood protection structures. Areas protected by flood defences still carry a residual risk of flooding due to overtopping or breach, there may also be no guarantee of maintenance in perpetuity. Areas that benefit from defences are annotated separately.

Flood Zone Data	n/a
Historic Flooding	No records within the settlement boundary.
Comment	There is no predicted fluvial or pluvial flooding within the site boundary
Climate Change	No fluvial impacts, potential increase in rainfall runoff.
Conclusion	Flood risk can be managed in line with approved CCCDP Policy and the guidance provided within Section 6 of this SFRA.

7.26 Old Leighlin

Hierarchy/Tier	Tier 5 - Smaller Serviced Rural Villages
Area for Further Assessment under CFRAM programme?	No



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The flood 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.

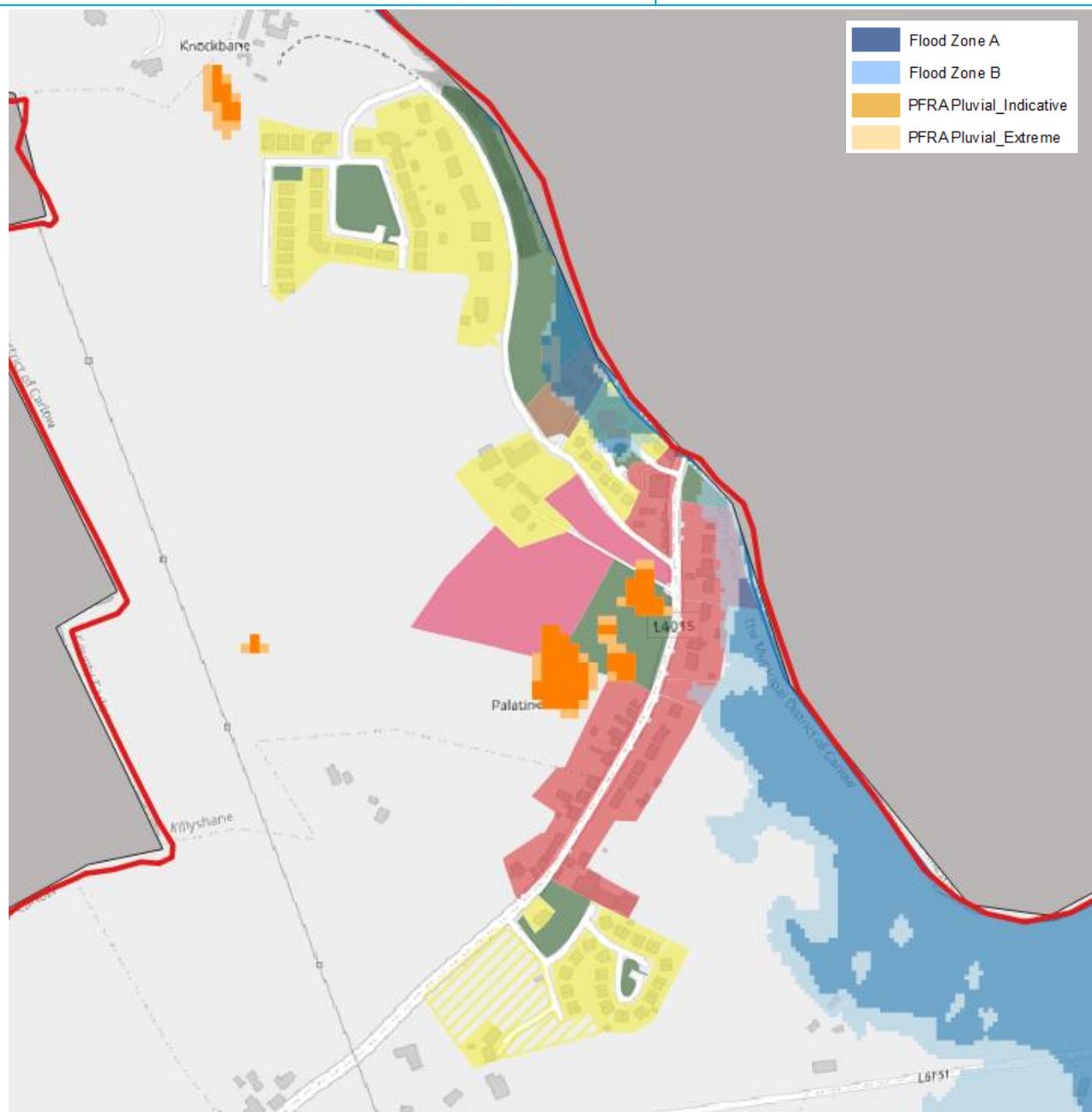
Flood Zone Data	NIFM
Historic Flooding	Oldleighlin Johnduffswood road recurring. Flood ID 2958. Road periodically impassable.
Comment	A Madlin River flows in an easterly direction to the south of the centre of the settlement and the NIFM predicts a wide floodplain that potentially affects some existing development. The NIFM mapping only commences halfway through the settlement and flood risk will be associated with the unmapped portion of the settlement.
Climate Change	Moderate sensitivity to fluvial climate change impacts, potential increase in rainfall runoff.
Conclusion	As there are no land use zoning objectives within the settlement the Justification Test cannot be applied, specific recommendations have been provided to manage the risk. New highly vulnerable development is only appropriate within Flood Zone C. New less vulnerable development is only appropriate within Flood Zone B/C. For existing development within Flood Zone A/B it is not appropriate to undertake significant redevelopment whereby additional numbers of people are introduced into the Flood Zone.

Any future development south of the L3037 should be subject to an FRA which must follow the general guidance provided in Section 6 of the SFRA and specifically address the following:

- Existing flood data is indicative and does not provide flood levels, nor is it comprehensive in its coverage. An appropriately detailed hydraulic model will be required to confirm flood levels and extents.
- FRA should address climate change scenarios in relation to FFLs and potential mitigation measures;
- Finished floor levels should be above the 1% AEP level plus climate change and freeboard;
- For existing development in Zone A/B extensions/renovations bedrooms should be located in the upstairs of two-story buildings;
- Flood resilient construction materials and fittings should be considered if in Flood Zone A/B;
- Proposals should not impede existing flow paths or cause flood risk impacts to the surrounding areas, and;
- Emergency evacuation plan and defined access / egress routes should be developed for extreme flood events.
- Any development shall also be required to be built in accordance with CCC SuDS Policy.

7.27 Palatine

Hierarchy/Tier	Tier 4 - Larger Serviced Village
Area for Further Assessment under CFRAM programme?	No



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The flood 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 Data	NIFM & PFRA Pluvial
Historic Flooding	No records within the settlement boundary.
Comment	A tributary of the River Barrow flows in a north westerly direction through the settlement. It is predicted to impact some existing development including Village Core (residential), Existing Residential and the Utilities zoning (WWTP). The Justification Test must be applied for these areas. Some pockets of pluvial flooding are predicted in the central area of the settlement, principally in open space zoning, but some is within Village Core lands. The pluvial mapping is indicative and representative of topographic depressions.
Climate Change	Moderate sensitivity to climate change impacts. Potential increase in surface

	water runoff from increased rainfall.
Conclusion	<p>Risk to existing development has had the Justification Test applied and has passed for existing zoned lands see Appendix A.10.</p> <p>The Justification Test for Village Core and Existing Residential is passed on the basis that development is;</p> <ul style="list-style-type: none"> • Limited to extensions, renovations and change of use. • Infill residential development and demolition and reconstruction can only take place in Flood Zone C. <p>Any future development should be subject to an FRA which should follow the general guidance provided in Section 6 of the SFRA and must specifically address the points detailed in Part 3 of the JT under Appendix A.10.1 & A.10.2.</p> <p>The Utilities lands within Flood Zone A/B are in use as a WWTP. The Justification Test has been applied and passed; development here must address the points highlighted in A.10.3.</p> <p>Elsewhere in the settlement risk can be managed in line with approved CCCDP Policy and the guidance provided within Section 6 of this SFRA. Development within Village Core areas that are adjacent to the predicted pluvial flooding should ensure that the risk is managed through the appropriate design of the stormwater system and compliance with the surface water policies and objectives.</p>

7.28 Rathanna

Hierarchy/Tier	Tier 6 - Rural Nodes
Area for Further Assessment under CFRAM programme?	No



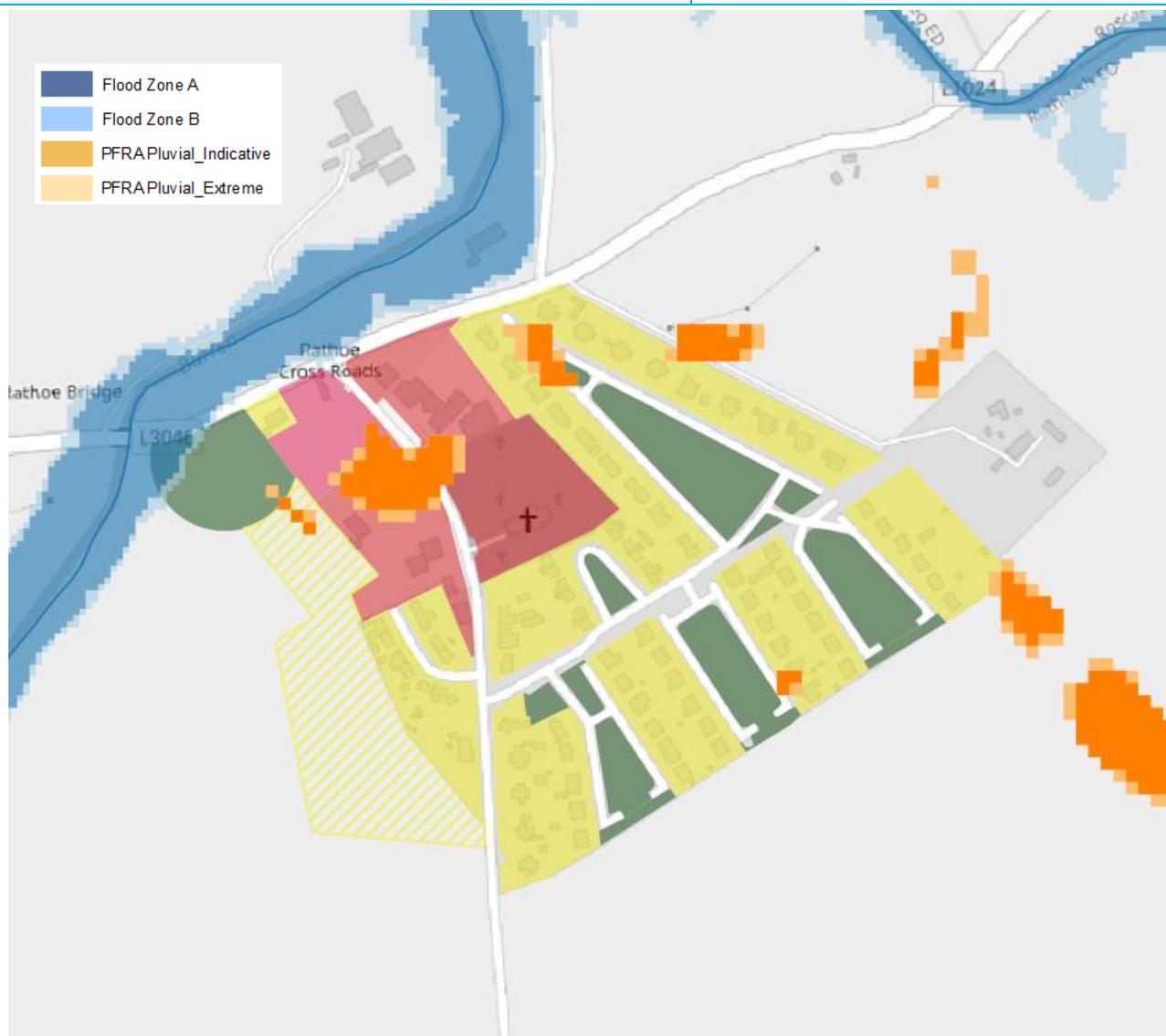
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The flood mapping has been produced in accordance with the Planning Guidelines and therefore ignores the impact of flood protection structures. Areas protected by flood defences still carry a residual risk of flooding due to overtopping or breach, there may also be no guarantee of maintenance in perpetuity. Areas that benefit from defences are annotated separately.

Flood Zone Data	PFRA Pluvial
Historic Flooding	No records within the settlement boundary.
Comment	There is no predicted fluvial flooding within the site boundary. An area of predicted pluvial flooding exists to the rear of the graveyard. The indicative pluvial mapping is representative of a localised low spot.
Climate Change	No fluvial impacts, potential increase in rainfall runoff.
Conclusion	Flood risk can be managed in line with approved CCCDP Policy and the guidance provided within Section 6 of this SFRA. Particular attention should be paid to the potential pluvial risk highlighted above and steps should be taken at Development Management stage to assess the potential risk further prior to development.

7.29 Rathoe

Hierarchy/Tier	Tier 4 - Larger Serviced Village
Area for Further Assessment under CFRAM programme?	No



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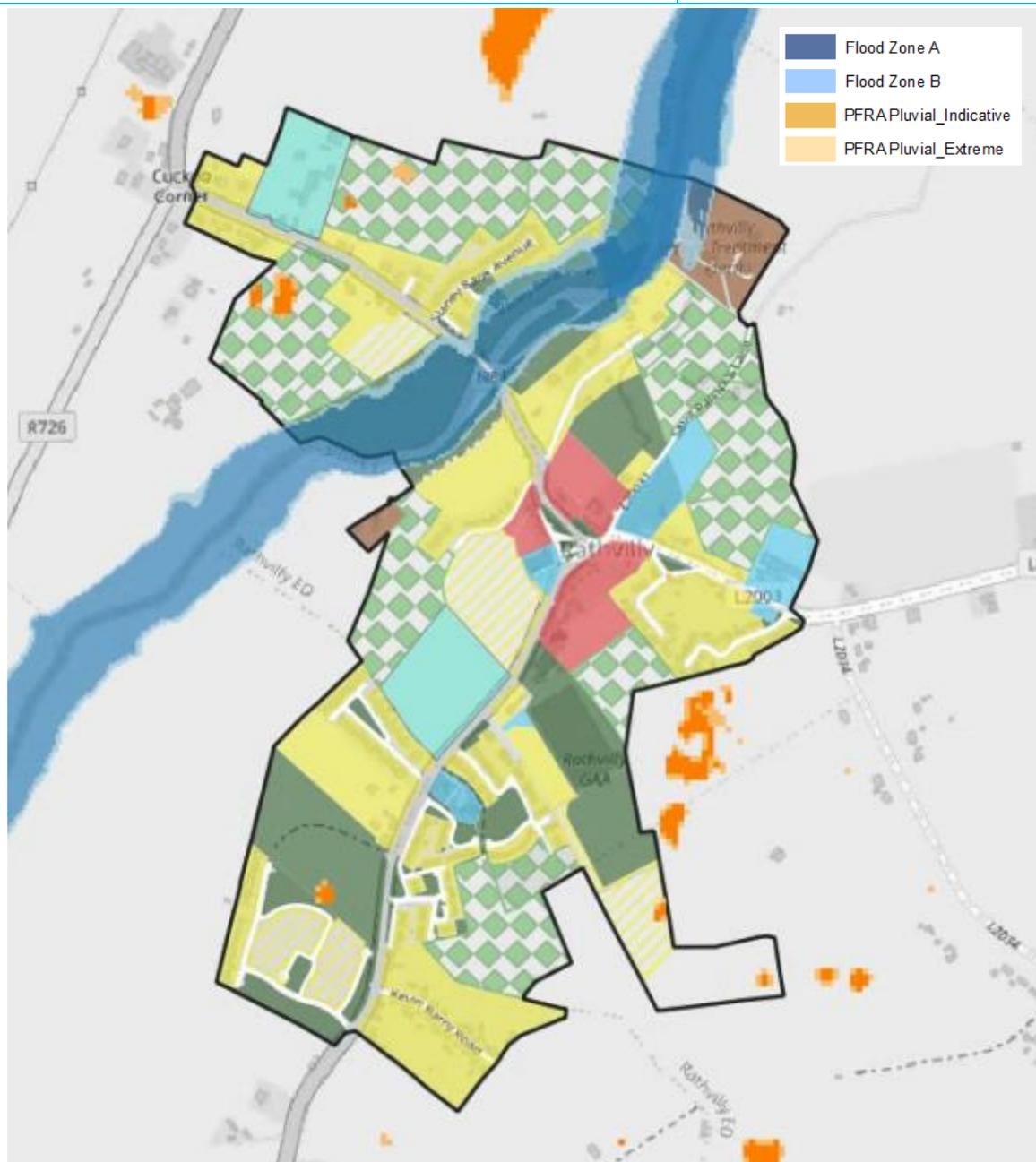
The flood mapping has been produced in accordance with the Planning Guidelines and therefore ignores the impact of flood protection structures. Areas protected by flood defences still carry a residual risk of flooding due to overtopping or breach, there may also be no guarantee of maintenance in perpetuity. Areas that benefit from defences are annotated separately.

Flood Zone Data	NIFM & PFRA Pluvial
Historic Flooding	No records within the settlement boundary.
Comment	The Burren River (Drainage District channel) flows in a north easterly direction along the western boundary of the settlement. There is no existing development that is predicted to be within Flood Zone A/B, other than open space. Some predicted pluvial flooding is indicative and represents isolated topographic depressions, that do not have any related historic flooding associated with them.
Climate Change	Moderate sensitivity to climate change impacts. Potential increase in surface water runoff from increased rainfall.
Conclusion	New highly vulnerable development is only appropriate within Flood Zone C. New less vulnerable development is only appropriate within Flood Zone B/C. Any future development adjacent to the Flood Zones should be subject to an

	<p>FRA which must follow the general guidance provided in Section 6 of the SFRA and specifically address the following:</p> <ul style="list-style-type: none"> • Existing flood data is indicative and does not provide flood levels. An appropriately detailed hydraulic model will be required to confirm flood levels and extents. • FRA should address climate change scenarios in relation to FFLs and potential mitigation measures; • Finished floor levels should be above the 1% AEP level plus climate change and freeboard; • Emergency evacuation plan and defined access / egress routes should be developed for extreme flood events. • Any development shall also be required to be built in accordance with CCC SuDS Policy.
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7.30 Rathvilly

Hierarchy/Tier	Tier 3 - Small Town
Area for Further Assessment under CFRAM programme?	No



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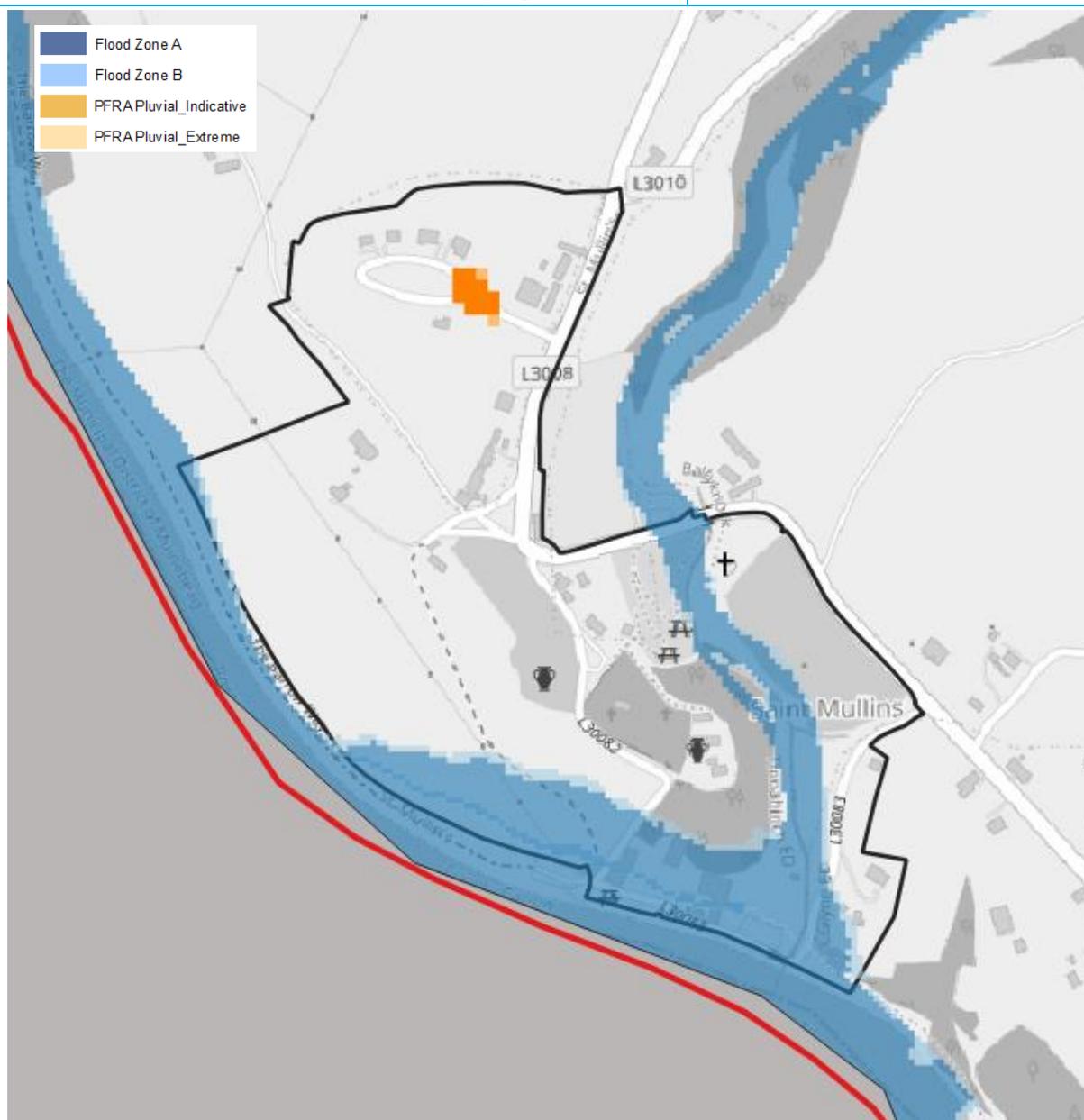
The flood mapping has been produced in accordance with the Planning Guidelines and therefore ignores the impact of flood protection structures. Areas protected by flood defences still carry a residual risk of flooding due to overtopping or breach, there may also be no guarantee of maintenance in perpetuity. Areas that benefit from defences are annotated separately.

Flood Zone Data	CFRAM MPW (flood levels not provided)
Historic Flooding	Significant flooding occurred in Rathvilly in November 2000, and resulted in 2 residential properties being flooded.
Comment	The River Slaney flows through Rathvilly in a south westerly direction. Flood Zone mapping predicts that some existing Residential development is located within Flood Zone A/B both to the north and south of the channel. The Justification Test is required for these lands. Elsewhere the Water Treatment Plant (Utilities) is also predicted to be impacted and requires application of the Justification Test as well.
Climate Change	Significant increases to the floodplain in the northeast of the settlement

	<p>indicating high sensitivity to climate change impacts. Potential increase in surface water runoff from increased rainfall.</p>
<p>Conclusion</p>	<p>Risk is limited to existing development and the Justification Test has been applied and passed for existing residential and utilities use (see Appendix A.11. The Justification Test for existing residential is passed on the basis that development is;</p> <ul style="list-style-type: none"> • Limited to extensions, renovations and change of use. • Infill residential development and demolition and reconstruction can only take place in Flood Zone C. <p>Any future development should be subject to an FRA which should follow the general guidance provided in Section 6 of the SFRA and must specifically address the points detailed in Part 3 of the JT under Appendix A.11.1.</p> <p>The Justification Test for existing utility use (WTP) is passed on the basis that any future expansion of the WTP should be subject to an FRA which should follow the general guidance provided in Section 6 of the SFRA and must specifically address the points detailed in Part 3 of the JT under Appendix A.11.2.</p> <p>Elsewhere in the settlement risk can be managed in line with approved CCCDP Policy and the guidance provided within Section 6 of this SFRA.</p>

7.31 St Mullins

Hierarchy/Tier	Tier 5 - Smaller Serviced Rural Villages
Area for Further Assessment under CFRAM programme?	No



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The flood 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 Data	CFRAM & NIFM & PFRA Pluvial
Historic Flooding	Barrow St Mullins. Recurring. Flood ID 258. Road and houses near quay affected. Caused by heavy rains and high tides.
Comment	The River Barrow flows along the western boundary of the settlement and a tributary flows through the centre of the settlement into the Barrow. There is some existing development in Flood Zone A.
Climate Change	Low/moderate sensitivity to fluvial climate change impacts, potential increase in rainfall runoff.
Conclusion	As there are no land use zoning objectives within the settlement the Justification Test cannot be applied, specific recommendations have been provided to manage the risk.

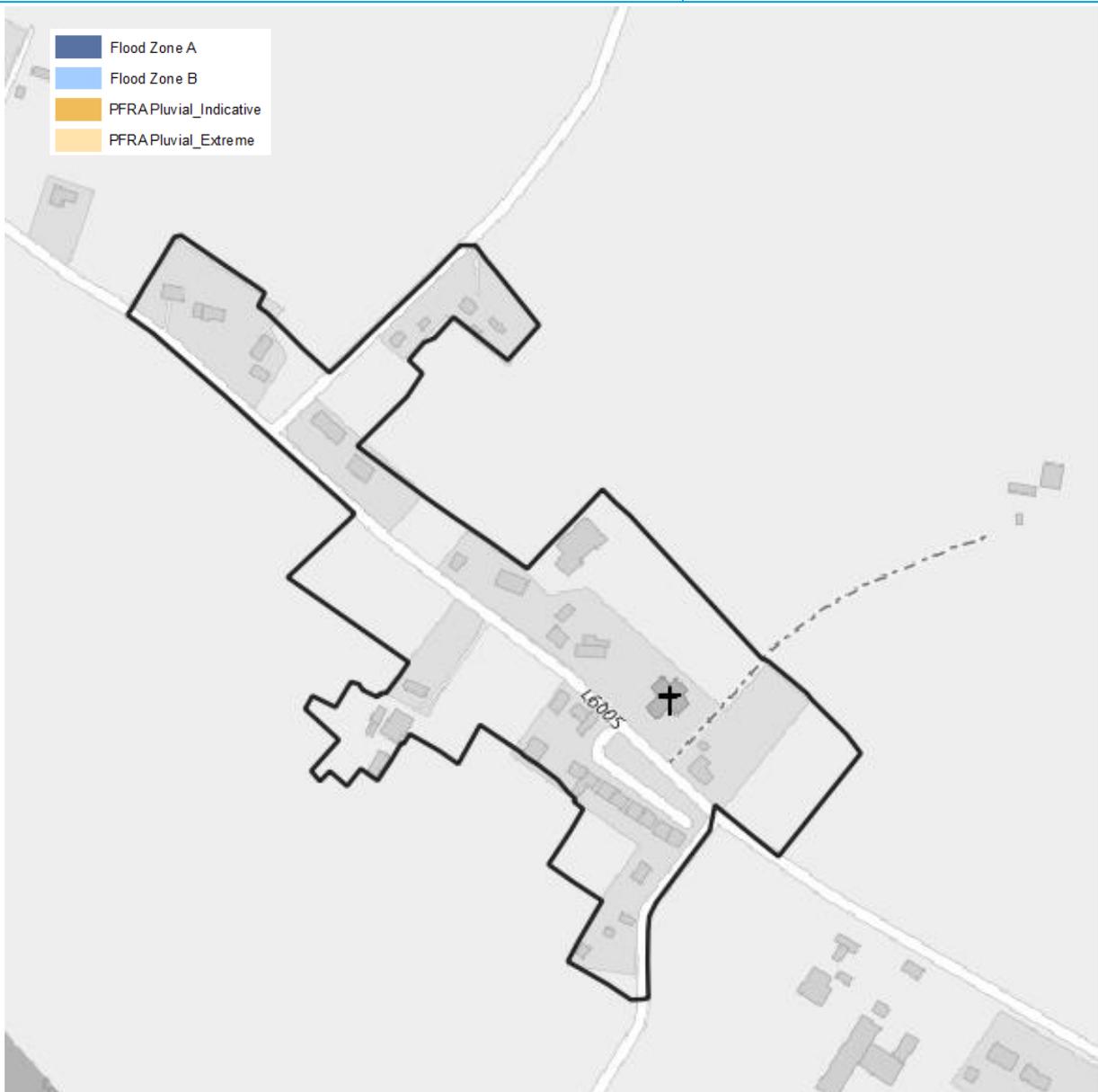
New highly vulnerable development is only appropriate within Flood Zone C. New less vulnerable development is only appropriate within Flood Zone B/C. For existing development within Flood Zone A/B it is not appropriate to undertake significant redevelopment whereby additional numbers of people are introduced into the Flood Zone.

Any future development should be subject to an FRA which must follow the general guidance provided in Section 6 of the SFRA and specifically address the following:

- Existing flood data is indicative and does not provide flood levels. An appropriately detailed hydraulic model will be required to confirm flood levels and extents.
- FRA should address climate change scenarios in relation to FFLs and potential mitigation measures;
- Finished floor levels should be above the 1% AEP level plus climate change and freeboard;
- For existing development in Zone A/B extensions/renovations bedrooms should be located in the upstairs of two-story buildings;
- Flood resilient construction materials and fittings should be considered if in Flood Zone A/B;
- Proposals should not impede existing flow paths or cause flood risk impacts to the surrounding areas, and;
- Emergency evacuation plan and defined access / egress routes should be developed for extreme flood events.
- Any development shall also be required to be built in accordance with CCC SuDS Policy.

7.32 Ticknok

Hierarchy/Tier	Tier 5 - Smaller Serviced Rural Villages
Area for Further Assessment under CFRAM programme?	No



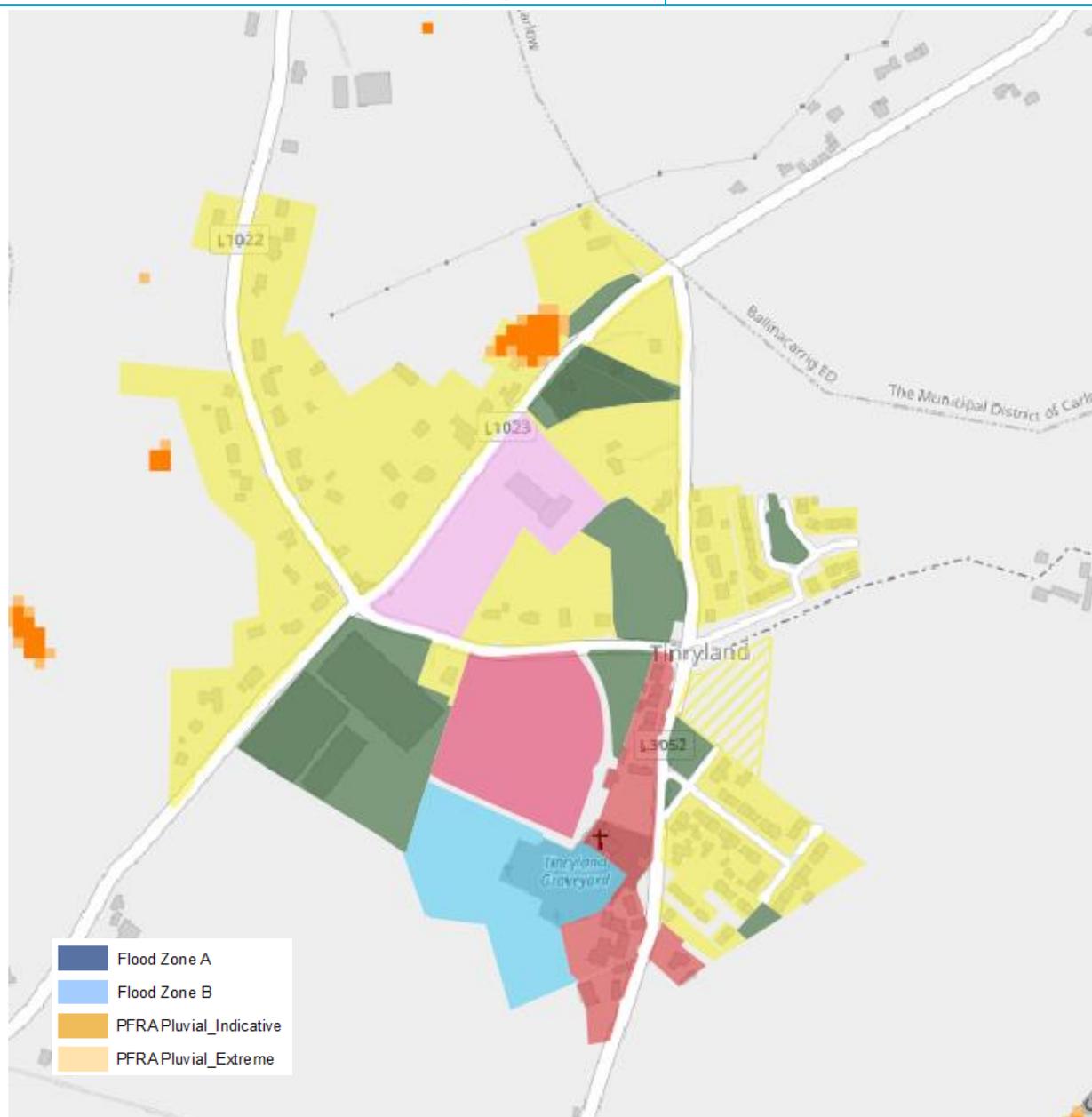
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The flood mapping has been produced in accordance with the Planning Guidelines and therefore ignores the impact of flood protection structures. Areas protected by flood defences still carry a residual risk of flooding due to overtopping or breach, there may also be no guarantee of maintenance in perpetuity. Areas that benefit from defences are annotated separately.

Flood Zone Data	n/a
Historic Flooding	No records within the settlement boundary.
Comment	There is no predicted fluvial or pluvial flooding within the site boundary
Climate Change	No fluvial impacts, potential increase in rainfall runoff.
Conclusion	Flood risk can be managed in line with approved CCCDP Policy and the guidance provided within Section 6 of this SFRA.

7.33 Tinryland

Hierarchy/Tier	Tier 4 - Larger Serviced Village
Area for Further Assessment under CFRAM programme?	No



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The flood 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 Data	NIFM & PFRA Pluvial
Historic Flooding	Dip in road – insufficient drainage capacity. Road periodically impassable
Comment	A watercourse (Drainage District channel) to the east of the settlement impacts some agricultural lands, but not any of the zoned lands. Some minor pluvial risk is also predicted.
Climate Change	High sensitivity to climate change in the east of the settlement. Potential increase in surface water runoff from increased rainfall.
Conclusion	Pluvial flood risk can be managed in line with approved CCCDP Policy and the guidance provided within Section 6 of this SFRA.

A Justification Tests

A.1 Ballon

A.1.1 Existing Residential

Forge Meadow and area west of Forge Meadow	
<p>1. The urban settlement is targeted for growth under the National Planning Framework, Regional Spatial and Economic Strategy (RSES), statutory plans as defined above or under the Planning Guidelines or Planning Directives provisions of the Planning and Development Act, 2000, as amended.</p>	<p>Ballon is designated as a Small Town within the Carlow County settlement hierarchy. It plays an important role in providing services for the town and the surrounding rural area. Facilitating sustainable development in existing towns and villages is recognised as paramount within the NPF and the RSES to ensuring sustainability, vitality and viability of rural areas.</p>
<p>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:</p>	<p>Zoning for Existing Residential reflects existing established developed land use at this location.</p>
<p>i. Is essential to facilitate regeneration and/or expansion of the centre of the urban settlement</p>	<p>Existing development.</p>
<p>ii. Comprises significant previously developed and/or underutilised lands,</p>	<p>Yes, comprises significant previously developed land.</p>
<p>iii. Is within or adjoining the core of an established or designated urban settlement,</p>	<p>Yes, is within the established designated urban settlement.</p>
<p>iv. Will be essential in achieving compact and sustainable urban growth, and</p>	<p>Lands already developed</p>
<p>v. There are no suitable alternative lands for the particular use or development type, in areas at lower risk of flooding within or adjoining the core of the urban settlement.</p>	<p>Lands already developed</p>
<p>3. A flood risk assessment to an appropriate level of detail has been carried out as part of the Strategic Environmental Assessment as part of the development plan preparation process, which demonstrates that flood risk to the development can be adequately managed and the use or development of the lands will not cause unacceptable adverse impacts elsewhere. N.B. The acceptability or otherwise of levels of any residual risk should be made with consideration for the proposed development and the local context and should</p>	<p>Areas of the existing residential zoning are within Flood Zone A and Flood Zone B. Parts 1 & 2 of the test found that it is considered appropriate to retain the existing zoning. This is on the basis that development is;</p> <ul style="list-style-type: none"> Limited to extensions, renovations and change of use. Infill residential development and demolition and reconstruction can only take place in Flood Zone C.

<p>be described in the relevant flood risk assessment</p>	<p>Any future development should be subject to an FRA which should follow the general guidance provided in Section 6 of the SFRA and must specifically address the following:</p> <ul style="list-style-type: none"> • Existing flood data is indicative and does not provide flood levels. An appropriately detailed hydraulic model will be required to confirm flood levels and extents. • The sequential approach should be applied and highly vulnerable infill and redevelopment shall not be permitted in Flood Zone A or B; • FRA should address climate change scenarios in relation to FFLs and potential mitigation measures; • Finished floor levels should be above the 1% AEP level plus climate change and freeboard; • Bedrooms should be located in the upstairs of two-story buildings when extending existing property; • Flood resilient construction materials and fittings should be considered if in Flood Zone A/B; • Proposals should not impede existing flow paths or cause flood risk impacts to the surrounding areas, and; • Emergency evacuation plan and defined access / egress routes should be developed for extreme flood events. • Any development shall also be required to be built in accordance with CCC SuDS Policy.
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A.1.2 Existing Utilities

WWTP Site	
	
<p>1. The urban settlement is targeted for growth under the National Planning Framework, Regional Spatial and Economic Strategy (RSES), statutory plans as defined above or under the Planning Guidelines or Planning Directives provisions of the Planning and Development Act, 2000, as amended.</p>	<p>Ballon is designated as a Small Town within the Carlow County settlement hierarchy. It plays an important role in providing services for the town and the surrounding rural area. Facilitating sustainable development in existing towns and villages is recognised as paramount within the NPF and the RSES to ensuring sustainability, vitality and viability of rural areas.</p>
<p>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:</p>	<p>The zoning of the site reflects the existing established use for utilities purposes (WWTP) which services the existing settlement. Flood risk identified on a minimal portion to the north east of the overall site. Zoning of the site for this purpose is in accordance with the proper planning and sustainable development of the urban settlement.</p>
<p>i. Is essential to facilitate regeneration and/or expansion of the centre of the urban settlement</p>	<p>Existing development required to service the existing and proposed population growth of the settlement.</p>
<p>ii. Comprises significant previously developed and/or underutilised lands,</p>	<p>Comprises developed and underutilised lands.</p>
<p>iii. Is within or adjoining the core of an established or designated urban settlement,</p>	<p>Yes, is within the established designated urban settlement.</p>
<p>iv. Will be essential in achieving compact and sustainable urban growth, and</p>	<p>Yes, the site contains infrastructure necessary to support the existing and future growth of the settlement.</p>
<p>v. There are no suitable alternative lands for the particular use or development type, in areas at lower risk of flooding within or adjoining the core of the urban settlement.</p>	<p>Lands already developed and established use.</p>
<p>3. A flood risk assessment to an appropriate level of detail has been carried out as part of the Strategic Environmental Assessment as part of the development plan preparation process, which demonstrates that flood risk to the development can be adequately managed and the use or development of the lands will not cause unacceptable adverse impacts elsewhere. N.B. The acceptability or otherwise of levels of any residual risk should be made with consideration for the proposed development and the local context and should be described in the relevant flood risk</p>	<p>Areas of the institutional zoning (WWTP) are within Flood Zone A and Flood Zone B. Parts 1 & 2 of the test found that it is considered appropriate to retain the existing zoning. Any future expansion of the WWTP should be subject to an FRA which should follow the general guidance provided in Section 6 of the SFRA and must specifically address the following:</p> <ul style="list-style-type: none"> Existing flood data is indicative and does not provide flood levels. An appropriately

<p>assessment</p>	<p>detailed hydraulic model will be required to confirm flood levels and extents.</p> <ul style="list-style-type: none"> • The sequential approach should be applied and highly vulnerable elements of the site should be located in Flood Zone C, or raised/bunded/protected; • FRA should address climate change scenarios in relation to operational levels and potential mitigation measures; • Proposals should not impede existing flow paths or cause flood risk impacts to the surrounding areas, and; • Emergency evacuation plan and defined access / egress routes should be developed for extreme flood events. • Any development shall also be required to be built in accordance with CCC SuDS Policy.
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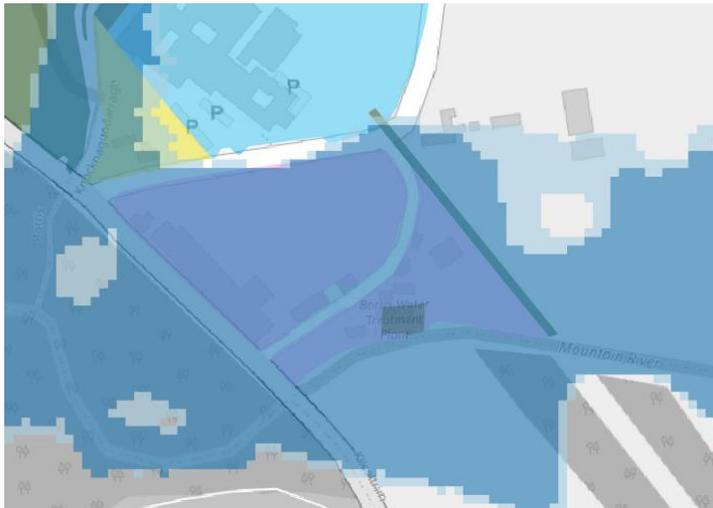
A.2 Borris

A.2.1 Existing Community Services & Education

Borris Vocational School Site	
<p>1. The urban settlement is targeted for growth under the National Planning Framework, Regional Spatial and Economic Strategy (RSES), statutory plans as defined above or under the Planning Guidelines or Planning Directives provisions of the Planning and Development Act, 2000, as amended.</p>	<p>Borris is designated as a Small Town within the Carlow County settlement hierarchy. It plays an important role in providing services for the town and the surrounding rural area. Facilitating sustainable development in existing towns and villages is recognised as paramount within the NPF and the RSES to ensuring sustainability, vitality and viability of rural areas.</p>
<p>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:</p>	<p>Lands are zoned community / education reflecting the long established lands at this location.</p>
<p>i. Is essential to facilitate regeneration and/or expansion of the centre of the urban settlement</p>	<p>Existing development</p>
<p>ii. Comprises significant previously developed and/or underutilised lands,</p>	<p>Yes, comprises significant previously developed lands</p>
<p>iii. Is within or adjoining the core of an established or designated urban settlement,</p>	<p>Yes, the site is located within the established designated urban settlement</p>
<p>iv. Will be essential in achieving compact and sustainable urban growth, and</p>	<p>Lands already developed</p>
<p>v. There are no suitable alternative lands for the particular use or development type, in areas at lower risk of flooding within or adjoining the core of the urban settlement.</p>	<p>Lands already developed</p>
<p>3. A flood risk assessment to an appropriate level of detail has been carried out as part of the Strategic Environmental Assessment as part of the development plan preparation process, which demonstrates that flood risk to the development can be adequately managed and the use or development of the lands will not cause unacceptable adverse impacts elsewhere. N.B. The acceptability or otherwise of levels of any residual risk should be made with consideration for the proposed</p>	<p>Areas of the Borris Vocational School are within Flood Zone A and Flood Zone B. Parts 1 & 2 of the test found that it is considered appropriate to retain the existing zoning. Any future expansion of the school should be subject to an FRA which should follow the general guidance provided in Section 6 of the SFRA and must specifically address the following:</p>

<p>development and the local context and should be described in the relevant flood risk assessment</p>	<ul style="list-style-type: none"> • Existing flood data is indicative and does not provide flood levels. An appropriately detailed hydraulic model will be required to confirm flood levels and extents. • The sequential approach should be applied and highly vulnerable elements of the site should be located in Flood Zone C, or raised/bunded/protected; • Flood Zone A/B would principally be suitable for playing pitches/water compatible use only; • FRA should address climate change scenarios in relation to operational levels and potential mitigation measures; • Proposals should not impede existing flow paths or cause flood risk impacts to the surrounding areas, and; • Emergency evacuation plan and defined access / egress routes should be developed for extreme flood events. • Any development shall also be required to be built in accordance with CCC SuDS Policy.
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A.2.2 Existing Enterprise & Employment

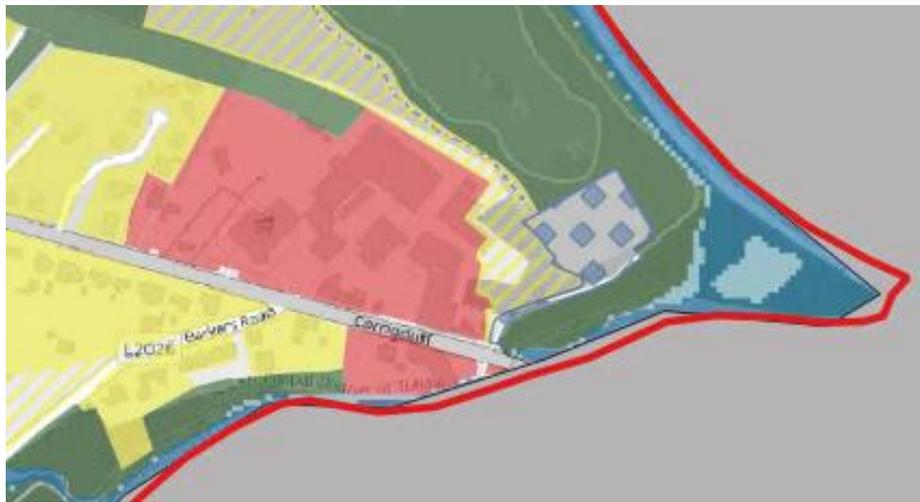
Kelly's Steelworks Site	
	
<p>1. The urban settlement is targeted for growth under the National Planning Framework, Regional Spatial and Economic Strategy (RSES), statutory plans as defined above or under the Planning Guidelines or Planning Directives provisions of the Planning and Development Act, 2000, as amended.</p>	<p>Borris is designated as a Small Town within the Carlow County settlement hierarchy. It plays an important role in providing services for the town and the surrounding rural area. Facilitating sustainable development in existing towns and villages is recognised as paramount within the NPF and the RSES to ensuring sustainability, vitality and viability of rural areas.</p>
<p>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:</p>	<p>Lands are zoned enterprise and employment in recognition of a long-established employment uses at this location.</p>
<p>i. Is essential to facilitate regeneration and/or expansion of the centre of the urban settlement</p>	<p>Existing development site and area identified for regeneration over the period of this plan.</p>
<p>ii. Comprises significant previously developed and/or underutilised lands,</p>	<p>Yes, comprises previously developed and underutilised lands.</p>
<p>iii. Is within or adjoining the core of an established or designated urban settlement,</p>	<p>Yes, is located within the established designated urban settlement.</p>
<p>iv. Will be essential in achieving compact and sustainable urban growth, and</p>	<p>This site is located in proximity to the Viaduct a tourist attraction in the area and where redevelopment of the site and utilisation of underutilised lands for appropriate uses would achieve compact development and would be in accordance with the proper planning and sustainable development of the area.</p>
<p>v. There are no suitable alternative lands for the particular use or development type, in areas at lower risk of flooding within or adjoining the core of the urban settlement.</p>	<p>Enterprise and employment use already established on these lands.</p>
<p>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</p>	<p>The entire Kelly's Steel Works Site is within Flood Zone A and Flood Zone B. Parts 1 & 2 of the test found that it is considered appropriate to retain the existing zoning. This is on the basis that development is limited to the existing less vulnerable use. Redevelopment as highly vulnerable housing would not be permitted.</p>

<p>elsewhere. N.B. The acceptability or otherwise of levels of any residual risk should be made with consideration for the proposed development and the local context and should be described in the relevant flood risk assessment</p>	<p>Any future planning applications on the site should be subject to an FRA which should follow the general guidance provided in Section 6 of the SFRA and must specifically address the following:</p> <ul style="list-style-type: none"> • Existing flood data is indicative and does not provide flood levels. An appropriately detailed hydraulic model will be required to confirm flood levels and extents. • The sequential approach should be applied if possible; • FRA should address climate change scenarios in relation to operational levels and potential mitigation measures; • Proposals should not impede existing flow paths or cause flood risk impacts to the surrounding areas, and; • Emergency evacuation plan and defined access / egress routes should be developed for extreme flood events. • Any development shall also be required to be built in accordance with CCC SuDS Policy.
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A.3 Carrickduff

A.3.1 Town Centre

Town Centre lands bounding the River Clody

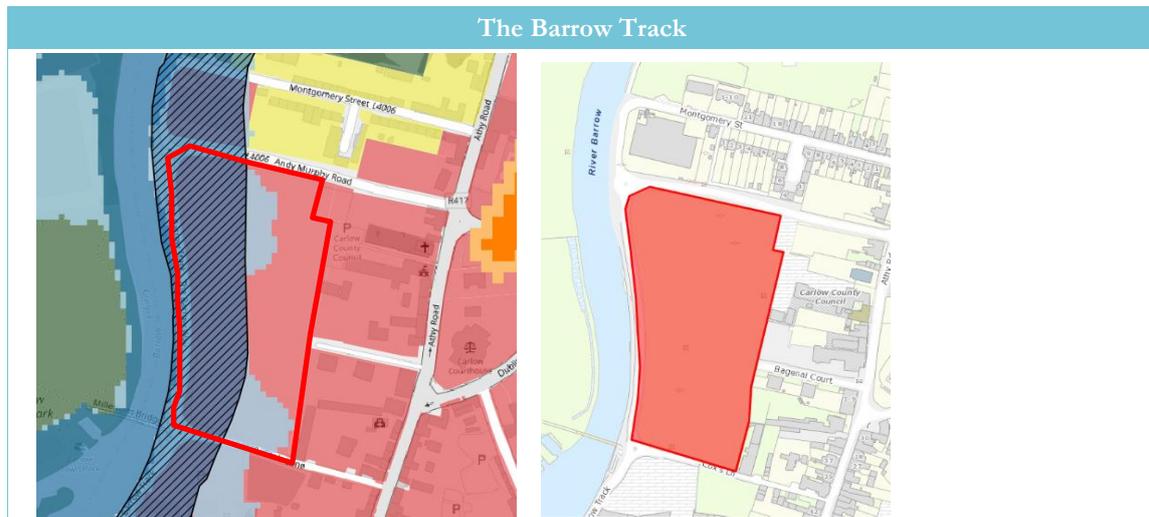


<p>1. The urban settlement is targeted for growth under the National Planning Framework, Regional Spatial and Economic Strategy (RSES), statutory plans as defined above or under the Planning Guidelines or Planning Directives provisions of the Planning and Development Act, 2000, as amended.</p>	<p>Carrickduff is designated as a Small Town within the Carlow County settlement hierarchy. It plays an important role in providing services for the town and the surrounding rural area. Facilitating sustainable development in existing towns and villages is recognised as paramount within the NPF and the RSES to ensuring sustainability, vitality and viability of rural areas.</p>
<p>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:</p>	<p>Lands are zoned town centre and largely developed.</p>
<p>i. Is essential to facilitate regeneration and/or expansion of the centre of the urban settlement</p>	<p>Lands are largely developed</p>
<p>ii. Comprises significant previously developed and/or underutilised lands,</p>	<p>Yes, comprises previously developed lands</p>
<p>iii. Is within or adjoining the core of an established or designated urban settlement,</p>	<p>Yes, is within the established designated urban settlement</p>
<p>iv. Will be essential in achieving compact and sustainable urban growth, and</p>	<p>Lands are largely developed</p>
<p>v. There are no suitable alternative lands for the particular use or development type, in areas at lower risk of flooding within or adjoining the core of the urban settlement.</p>	<p>Lands are largely developed</p>
<p>3. A flood risk assessment to an appropriate level of detail has been carried out as part of the Strategic Environmental Assessment as part of the development plan preparation process, which demonstrates that flood risk to the development can be adequately managed and the use or development of the lands will not cause unacceptable adverse impacts elsewhere. N.B. The acceptability or otherwise of levels of any residual risk should be made with consideration for the proposed development and the local context and should</p>	<p>There is a small overlap with Town Centre zoning along the Clody River, some of the lands are undeveloped.</p> <p>Parts 1 & 2 of the test found that it is considered appropriate to retain the existing zoning.</p> <p>Any future development in this area must place water compatible development within Flood Zone A/B with no raising of land levels. All development should be subject to an FRA which should follow the general guidance</p>

<p>be described in the relevant flood risk assessment</p>	<p>provided in Section 6 of the SFRA and must specifically address the following:</p> <ul style="list-style-type: none"> • The sequential approach should be applied and highly vulnerable elements of the site should be located in Flood Zone C, or raised/bunded/protected; • Flood Zone A/B would principally be suitable for water compatible use only; • FRA should address climate change scenarios in relation to FFLs and potential mitigation measures; • Proposals should not impede existing flow paths or cause flood risk impacts to the surrounding areas, and; • Any development shall also be required to be built in accordance with CCC SuDS Policy.
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A.4 Carlow

A.4.1 Town Centre Redevelopment 1 including former Celtic Linen Site (lands immediately to north in flood zone but defended)



Site Description

The subject site is located in Carlow Town and includes a significant area for identified for regeneration. The western boundary of the site abuts the Barrow Track and River Barrow. To the north of the regeneration site is Andy Murphy Road, the former Celtic Linen plant, and existing housing fronting and accessed from Montgomery Street. To the east, are the offices of Carlow County Council and other commercial and retail development fronting Dublin Street and the Athy Road. Cox's Lane adjoins the southern boundary. The regeneration site was previously occupied by industrial and storage uses which have since been demolished and removed. The subject site presents a significant opportunity for new development at this location to strengthen the existing mixed uses in a town centre location in Carlow, increasing the service, residential and employment offering in the town.

1. The urban settlement is targeted for growth under the National Planning Framework, Regional Spatial and Economic Strategy (RSES), statutory plans as defined above or under the Planning Guidelines or Planning Directives provisions of the Planning and Development Act, 2000, as amended.

Regional Spatial and Economic Strategy: The Regional Spatial and Economic Strategy for the Southern Region 2020-2032 recognises the strategic role of Carlow Town which has been designated a Key Town within the region and as regional and inter-regional economic growth driver. Regional Policy Objective no 14 of the RSES specifically supports development of underused lands along the River Barrow as a strategic natural asset for the town. The growth strategy of the RSES supports the future development of Carlow Town and in particular the need for compact growth, regeneration, placemaking together with its role as an economic growth driver. Key provisions of the RSES which support development of Carlow Town include;

- Designation of Carlow Town as a Key Town to function as an economic self-sustaining regional driver and a focus of significant growth within the county. A population growth rate of more than 30% by 2040 relative to CSO 2016 baseline is targeted for Carlow Town. This entails also delivering important infrastructure and services, ensuring that it can grow as a successful regional employment centre and service hub. RPO 11 sets an objective for delivering population growth and infrastructure provision in Key Towns, as well as promoting sustainable transport, culture, placemaking, tourism development, education, sustainable development, and water infrastructure.
- Supporting town centre led regeneration in Carlow Town, and the development of underutilised lands with improvements to the public realm, investment in infrastructure together with sustainable transport solutions.
- Delivering new homes on urban infill and brownfield land within the town to support urban regeneration with at least 30% of all new homes targeted in settlements (other than the

Cities and their suburbs) to be delivered within their existing built-up footprints. (RPO 35)

- Requirement for a coordinated planning framework (JUAP) for the Greater Carlow Urban area to strategically plan for the growth and development of the town, to identify and deliver strategic sites and regeneration areas for the future physical, economic and social development of Carlow Town in conjunction with Laois County Council.
- Supporting the strategic employment development potential of Carlow Town and facilitating economic integration between urban centres throughout the region including Tullow and Muine Bheag.
- Acknowledging the inter-regional role of Carlow town given its location to the north of the Southern Region and adjacent to the Eastern Midlands Regional Assembly region. Opportunities afforded to Carlow are noted as part of a network of regionally significant drivers of collaboration and growth located on the Waterford-Kilkenny-Carlow-Dublin M9/Rail Network/Axis.
- Identifying Carlow Town as an important regional centre of education and research, supporting the establishment of a Multi-Campus Technological University for the South East.

Draft Carlow County Development Plan 2022-2028:

Carlow Town is designated as a Key Town (Tier 1 in the Settlement Hierarchy) in the Draft Carlow County Development Plan 2022-2028. The strategic vision for Carlow Town is to support and promote the role of Carlow Town as a regional and inter-regional economic growth driver and to fulfil its role as a key town, focused on regeneration, implementation of Project Carlow 2040, sustainable development, quality of life and economic investment. As a designated Key Town, Carlow Town is to play a critical role in underpinning the RSES and ensuring a consolidated spread of growth beyond cities at a sub-regional level. The success of Carlow as a Key Town will be dependent on the delivery of targeted compact growth of a minimum of 30%, through regeneration and redevelopment of vacant, infill and/or brownfield sites. Carlow town is targeted to accommodate population growth of more than 30% by 2040 relative to CSO 2016 baseline. It is also an objective of the Plan to seek to build on existing economic attributes e.g. third level education provision, proximity to Dublin etc. and to secure continued investment in the town to support increased employment provision and expansion.

Project Carlow 2040, A Vision for Regeneration: Project Carlow 2040, A Vision for Regeneration, identifies the Barrow Track / Civic Spine as a key intervention area providing the opportunity to shape the town's future and deliver an exemplary model for sustainable compact growth in an urban environment. The vision for this area is to create a distinctive mixed-use quarter that brings the river back into the heart of the town centre as a key attribute. It acknowledges that Carlow's Riverfront will play a critical role in the future growth and expansion of the town, complementing other town centre uses, as well as providing connections to Carlow College, Carlow Railway Station, Carlow Castle and more.

Figure; Barrow Track / Civic Spine Regeneration Site

Layout Plan



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 site is situated on land zoned 'Town Centre' in the Carlow Town Development Plan 2012-2018 (as extended) and as contained in the Joint Spatial Plan for the Greater Carlow Graiguecullen Urban Area 2012-2018. It is identified as an 'Opportunity Site' in Part 11, Section 3 of the Joint Spatial Plan as referred to above i.e. Opportunity Site 2: Barrow Track Site. It is the Policy of the Council to encourage the urban renewal and advancement of opportunity sites. The following policies, objectives and related provisions of the Plan are noted in this regard:

- It is a principle of the Carlow Town Development Plan Core Strategy to "Advance key opportunity sites by preparing development briefs or urban design frameworks". (Pg. 22)
- Objective CO3 seeks to "Present a schedule of landbanks within the Greater Urban Area which offer particular opportunities and are of strategic importance for the future development of the Greater Carlow Graiguecullen Urban Area, offering site briefs for each site".
- Carlow Town Objective CT04 seeks to "Promote the development of the River Quarter and Riverside Regeneration".
- Carlow Town Objective CT05 seeks to "Encourage specific urban renewal projects and advance opportunity sites".
- Policy CTP22 seeks to "Promote the development of opportunity sites with the River Quarter, subject to appropriate assessment, flood risk considerations as well as other general planning considerations".
- Policy CTP30 seeks to "Support the principle of redeveloping...Barrow Track Site (Opportunity Site 2)...".

The regeneration of this site is also supported in the Project Carlow 2040, A Vision for Regeneration as outlined above. It is a strategic objective of the Council (SO 3) as contained in the Carlow Draft County Development Plan 2022-2028 *to support and promote the role of Carlow Town as a Regional and Inter-regional economic growth driver and to fulfil its role as a*

Key Town, focussed on regeneration, implementation of Project Carlow 2040, sustainable development, quality of life and economic investment.

- ii. **Comprises significant previously developed and/or under-utilised lands &;**
- iii. **Is within or adjoining the core of an established or designated urban settlement;**

The site comprises a brownfield site and is a visually prominent tract of land with significant road frontage along the Barrow Track. Following significant clearance and groundworks, the site presents as a combination of old areas of hard standing / building floor slabs and overgrown stockpiles of soils. The site is located within the town centre and immediately adjoins the Core Retail Area of Carlow Town. It is highly accessible through existing established linkages e.g. Andy Murphy Road and Cox's Lane to Dublin Street and Tullow Street. The under-utilised brownfield site represents an appropriate expansion area for mixed use development facilitating compact development in a sequential manner.

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

The subject site comprises a long-standing zoned town centre zoned site. It is considered that the development of this site is essential in realising the compact and sustainable growth of Carlow as it provides for a natural extension to the town centre on a previously developed site. It will enable the development of a new attractive neighbourhood to be developed with frontage to the River Barrow. The land presents the opportunity to expose the River and integrate it back into the public realm as part of a network of amenity areas within and surrounding the town. Opening up the river Barrow through the provision of enhanced walkways, new link streets and the potential for an additional pedestrian bridge will deliver significant benefits for an improved quality of life for residents of the town. Direct routes east and west across the River and through a proposed Civic Spine as well as south to the historic town centre and north to the Barrow way will enhance the quality of place and achieving compact and sustainable urban growth.

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

The subject brownfield lands comprise a significant tract of town centre lands that could facilitate an integrated mixed use development within the town contributing to compact and sustainable urban growth. Alternative lands for the particular mixed-use development which is necessary to contribute to the regeneration of the town and sustainable compact growth are unavailable in areas at lower risk of flooding.

3. A flood risk assessment to an appropriate level of detail has been carried out as part of the Strategic Environmental Assessment as part of the development plan preparation process, which demonstrates that flood risk to the development can be adequately managed and the use or development of the lands will not cause unacceptable adverse impacts elsewhere. N.B. The acceptability or otherwise of levels of any residual risk should be made with consideration for the proposed development and the local context and should be described in the relevant flood risk assessment.

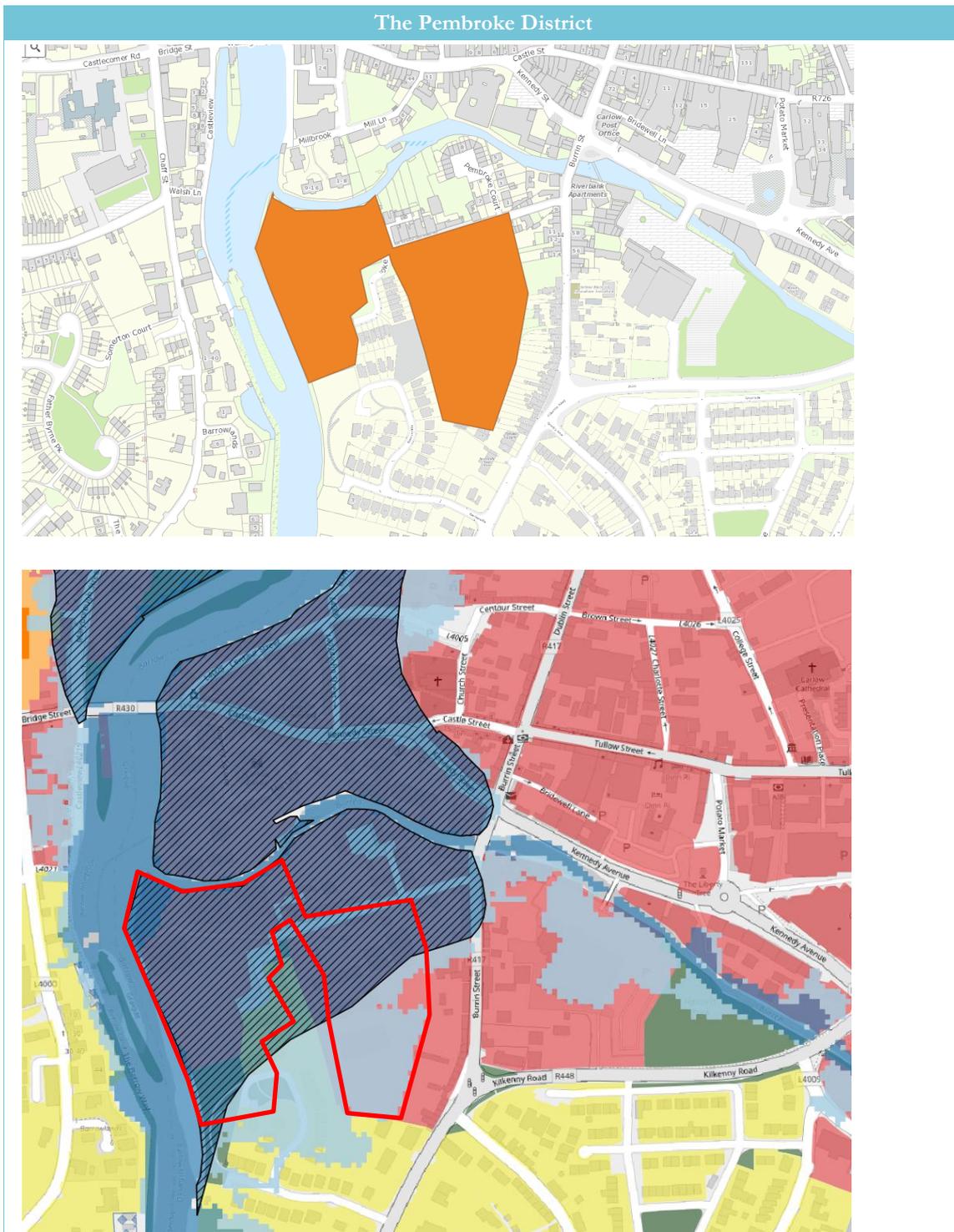
The site is now protected to the 1% AEP standard by the Carlow Flood Relief Scheme. Protection is provided by the high level of the Barrow Track (road), rather than a discreet wall or embankment. Site levels adjacent to the road are lower than the road but increase in an easterly direction. A masterplan of the area has been provided under the Carlow 2040 document which has been used to guide the consideration of Part 3.

Parts 1 & 2 of the test found that it is considered appropriate to zone the lands as Town Centre. Future development in this area can develop within the defended Flood Zone A and Flood Zone B. Due to the presence of the defences ground levels can be raised appropriately to achieve the design FFL for the type of development proposed, without the need for compensatory storage. All development should be subject to an FRA which should follow the general guidance provided in Section 6 of the SFRA and must specifically address the following:

- The Masterplan should be subject to an appropriately detailed FRA that finalises the design flood levels and mitigation approach;
- The FRA should address climate change scenarios in relation to FFLs;

- Basement levels are permitted, but no highly vulnerable development would be permitted on this level and the access point to the basement and any vents/opes should be above the design flood level including freeboard;
- Any development shall also be required to be built in accordance with CCC SuDS Policy.

A.4.2 Town Centre Redevelopment 2



Site Description

The subject site is located in Carlow Town and has an area of c. 4ha. The site comprises of two under-utilised land parcels in the Pembroke District, the eastern parcel comprising former industrial land that includes a number of large semi-derelict sheds/warehouses and silos/tanks. The western boundary of the site abuts the River Barrow. To the north is the Burren River and existing housing along Pembroke Road. Located between the two land parcels are existing established residential areas of Barrowville and Pembroke. To the east, are mixed use properties which front Burren Street. The subject site presents a significant opportunity for new development at this location to strengthen the residential uses in this town centre location in Carlow contributing to the vibrancy and vitality of the town centre.

- 1. The urban settlement is targeted for growth under the National Planning Framework,**

Regional Spatial and Economic Strategy (RSES), statutory plans as defined above or under the Planning Guidelines or Planning Directives provisions of the Planning and Development Act, 2000, as amended.

Regional Spatial and Economic Strategy: The Regional Spatial and Economic Strategy for the Southern Region 2020-2032 recognises the strategic role of Carlow Town which has been designated a Key Town within the region and as regional and inter-regional economic growth driver. Regional Policy Objective no 14 of the RSES specifically supports development of underused lands along the River Barrow as a strategic natural asset for the town. The growth strategy of the RSES supports the future development of Carlow Town and in particular the need for compact growth, regeneration, placemaking together with its role as an economic growth driver. Key provisions of the RSES which support development of Carlow Town include;

- Designation of Carlow Town as a Key Town to function as an economic self-sustaining regional driver and a focus of significant growth within the county. A population growth rate of more than 30% by 2040 relative to CSO 2016 baseline is targeted for Carlow Town. This entails also delivering important infrastructure and services, ensuring that it can grow as a successful regional employment centre and service hub. RPO 11 sets an objective for delivering population growth and infrastructure provision in Key Towns, as well as promoting sustainable transport, culture, placemaking, tourism development, education, sustainable development, and water infrastructure.
- Supporting town centre led regeneration in Carlow Town, and the development of underutilised lands with improvements to the public realm, investment in infrastructure together with sustainable transport solutions.
- Delivering new homes on urban infill and brownfield land within the town to support urban regeneration with at least 30% of all new homes targeted in settlements (other than the Cities and their suburbs) to be delivered within their existing built-up footprints. (RPO 35)
- Requirement for a coordinated planning framework (JUAP) for the Greater Carlow Urban area to strategically plan for the growth and development of the town, to identify and deliver strategic sites and regeneration areas for the future physical, economic and social development of Carlow Town in conjunction with Laois County Council.
- Supporting the strategic employment development potential of Carlow Town and facilitating economic integration between urban centres throughout the region including Tullow and Muine Bheag.
- Acknowledging the inter-regional role of Carlow town given its location to the north of the Southern Region and adjacent to the Eastern Midlands Regional Assembly region. Opportunities afforded to Carlow are noted as part of a network of regionally significant drivers of collaboration and growth located on the Waterford-Kilkenny-Carlow-Dublin M9/Rail Network/Axis.
- Identifying Carlow Town as an important regional centre of education and research, supporting the establishment of a Multi-Campus Technological University for the South East.

Draft Carlow County Development Plan 2022-2028:

Carlow Town is designated as a Key Town (Tier 1 in the Settlement Hierarchy) in the Draft Carlow County Development Plan 2022-2028. The strategic vision for Carlow Town is to support and promote the role of Carlow Town as a regional and inter-regional economic growth driver and to fulfil its role as a key town, focused on regeneration, implementation of Project Carlow 2040, sustainable development, quality of life and economic investment. As a designated Key Town, Carlow Town is to play a critical role in underpinning the RSES and ensuring a consolidated spread of growth beyond cities at a sub-regional level. The success of Carlow as a Key Town will be dependent on the delivery of targeted compact growth of a minimum of 30%, through regeneration and redevelopment of vacant, infill and/or brownfield sites. Carlow town is targeted to accommodate population growth of more than 30% by 2040 relative to CSO 2016 baseline. It is also an objective of the Plan to seek to build on existing economic attributes e.g. third level education provision, proximity to Dublin etc. and to secure continued investment in the town to support increased employment provision and expansion.

Project Carlow 2040, A Vision for Regeneration: Project Carlow 2040, A Vision for

Regeneration identifies the Pembroke District as a key intervention area providing the opportunity to reimagine it as a new and vibrant residential quarter that benefits from its position on the banks of the River Barrow, new public spaces and enhanced connections with the Town Centre and key attractions in the immediate vicinity of the site. This intervention is central to the promotion and delivery of compact growth and town centre living as advocated by the National Planning Framework and the Regional Spatial and Economic Strategy. The redevelopment of the area will facilitate integration with the existing urban fabric, improving the built environment and enhancing access to amenities. The reuse of these lands will also unlock the River Barrow as an amenity asset for both residents of and visitors to the area, including Carlow Castle to the north.

Figure; Pembroke District Regeneration Site



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 site is situated on land zoned 'Town Centre' in the Carlow Town Development Plan 2012-2018 (as extended) and as contained in the Joint Spatial Plan for the Greater Carlow Graiguecullen Urban Area 2012-2018.

The site is identified as an 'Opportunity Site' in Part 4, Section 3 of the Joint Spatial Plan as referred to above i.e. Opportunity Site 6: Pembroke Road Sites. This overall opportunity site includes lands on the northern and southern sides of Pembroke Road.

It is the Policy of the Council to encourage the urban renewal and advancement of opportunity sites.

The following policies, objectives are related provisions of the Plan are noted in this regard:

- It is a principle of the Carlow Town Development Plan Core Strategy to "Advance key opportunity sites by preparing development briefs or urban design frameworks". (Pg. 22)
- Objective CO3 seeks to "Present a schedule of landbanks within the Greater Urban Area which offer particular opportunities and are of strategic importance for the future development of the Greater Carlow Graiguecullen Urban Area, offering site briefs for each site". (Pg. 24)
- Carlow Town Objective CT05 seeks to "Encourage specific urban renewal projects and advance opportunity sites". (Pg. 205)

- Policy CTP30 seeks to “Encourage the redevelopment of the listed sites having regard to the urban design frameworks...”

(iii) Pembroke Road Sites (Opportunity Sites 6)

The regeneration of this site is also supported in the Project Carlow 2040, A Vision for Regeneration as outlined above. It is a strategic objective of the Council (SO 3) as contained in the Carlow Draft County Development Plan 2022-2028 to support and promote the role of Carlow Town as a Regional and Inter-regional economic growth driver and to fulfil its role as a Key Town, focussed on regeneration, implementation of Project Carlow 2040, sustainable development, quality of life and economic investment. The delivery of the Pembroke District intervention will support the overall strategy of regeneration in Carlow Town, promote town centre sustainable healthy living and an innovative, culturally rich and socially connected community activity.

- ii. **Comprises significant previously developed and/or under-utilised lands &;**
- iii. **Is within or adjoining the core of an established or designated urban settlement;**

The majority of the site comprises vacant and former industrial land including a number of large semi-derelict sheds/warehouses and silos/tanks, previously in use by Drummond Seeds and Pembroke Nursery. A portion of the overall area appears to be in use as a construction compound for the storage of building materials. To the north west of Pembroke Road is located a vehicle recovery business. These existing uses are on under-utilised lands located in a prime town centre location. The under-utilised brownfield site represents an appropriate expansion area for town centre residential development facilitating compact development in a sequential manner.

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

The subject site is a long-standing town centre zoned site. It is considered that the development of this site is essential in realising the compact and sustainable growth of Carlow as it provides for a natural extension to the town centre on an under-utilised central town centre site. It will enable the development of a new attractive neighbourhood to be developed with frontage to the River Barrow. The land also presents the opportunity to create a vibrant town centre through the delivery of an enhanced public realm with improved accessibility for sustainable transport modes, improving connectivity between the town centre and the River Barrow and River Burrin. Development of the site will support compact urban growth by building on existing assets and capacity to create critical mass and scale for sustainable living.

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

The subject lands comprise a significant tract of under-utilised town centre lands that could facilitate a new integrated residential district development within the town contributing to compact and sustainable urban growth. Alternative lands for the particular development, which supports healthy town centre initiatives and the creation of vibrant and viable town centres, is necessary to contribute to the regeneration of the town and sustainable compact growth. Lands to achieve compact urban growth on brownfield/infill lands are unavailable in areas at lower risk of flooding.

3. A flood risk assessment to an appropriate level of detail has been carried out as part of the Strategic Environmental Assessment as part of the development plan preparation process, which demonstrates that flood risk to the development can be adequately managed and the use or development of the lands will not cause unacceptable adverse impacts elsewhere. N.B. The acceptability or otherwise of levels of any residual risk should be made with consideration for the proposed development and the local context and should be described in the relevant flood risk assessment.

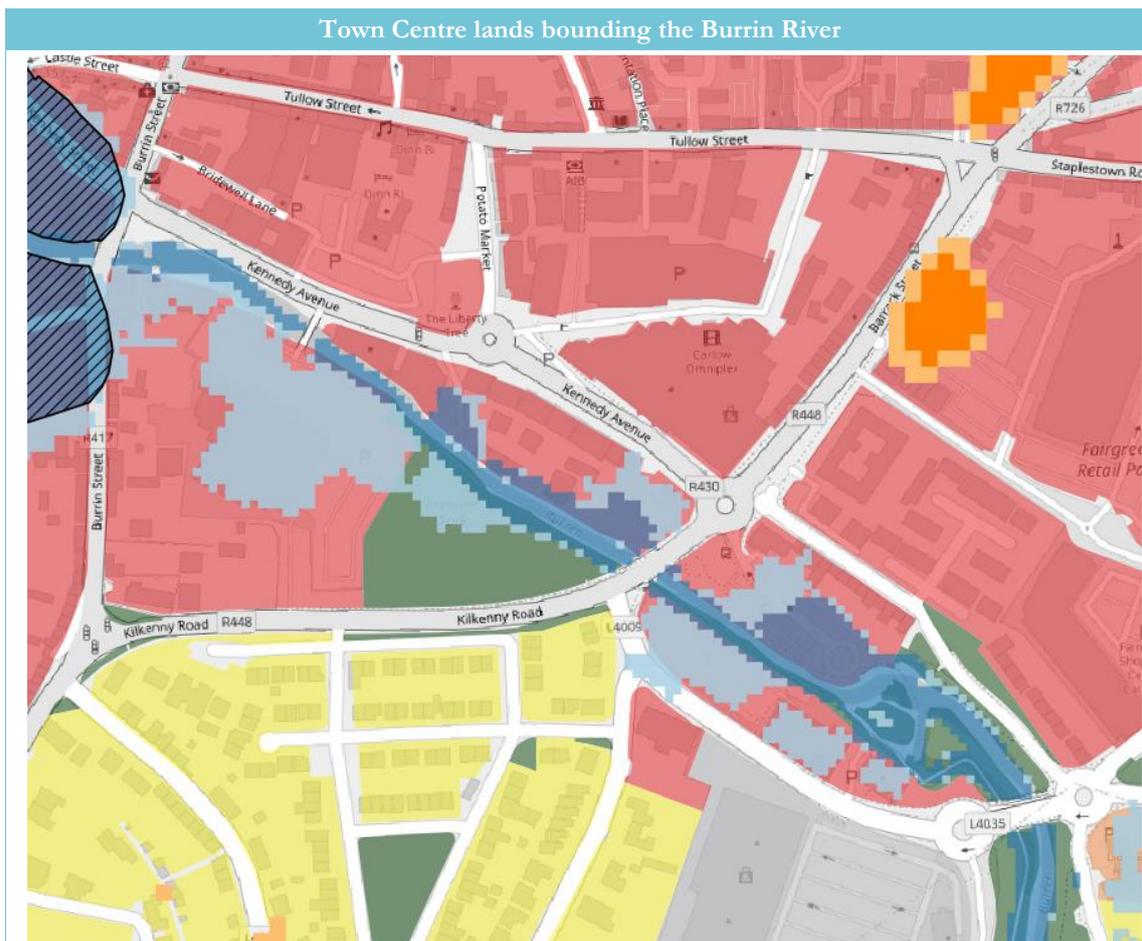
The site is now protected to the 1% AEP standard by the Carlow Flood Relief Scheme. Protection is provided by a floodwall. A masterplan of the area has been provided under the Carlow 2040 document which has been used to guide the consideration of Part 3.

Parts 1 & 2 of the test found that it is considered appropriate to zone the lands as Town Centre. Future development in this area can develop within the defended Flood Zone A and Flood Zone

B. Due to the presence of the defences ground levels can be raised appropriately to achieve the design FFL for the type of development proposed, without the need for compensatory storage. All development should be subject to an FRA which should follow the general guidance provided in Section 6 of the SFRA and must specifically address the following:

- FRA should address climate change scenarios in relation to FFLs;
- The FRA should also investigate the impacts of defence breach (residual risk) and this should also feed into the FFL;
- Basement levels are permitted, but no highly vulnerable development would be permitted on this level and the access point to the basement and any vents/opes should be above the design flood level including freeboard;
- Any development shall also be required to be built in accordance with CCC SuDS Policy.

A.4.3 Undefended Town Centre



<p>1. The urban settlement is targeted for growth under the National Planning Framework, Regional Spatial and Economic Strategy (RSES), statutory plans as defined above or under the Planning Guidelines or Planning Directives provisions of the Planning and Development Act, 2000, as amended.</p>	<p>Carlow Town is designated as a Key Town in the RSES and in the Settlement Hierarchy in the Draft Carlow County Development Plan 2022-2028. The strategic vision for Carlow Town is to support and promote the role of Carlow Town as a regional and inter-regional economic growth driver and to fulfil its role as a key town, focused on regeneration, sustainable development, quality of life and economic investment. As a designated Key Town, Carlow Town is to play a critical role in underpinning the RSES and ensuring a consolidated spread of growth beyond cities at a sub-regional level.</p>
<p>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:</p>	<p>Lands are zoned town centre and amenity and open space reflecting existing established uses on this site.</p>
<p>i. Is essential to facilitate regeneration and/or expansion of the centre of the urban settlement</p>	<p>Existing significantly developed area suitable for regeneration of established uses.</p>
<p>ii. Comprises significant previously developed and/or underutilised lands,</p>	<p>Yes, comprises significant previously developed land.</p>
<p>iii. Is within or adjoining the core of an established or designated urban settlement,</p>	<p>Yes, is located within the core area of the urban settlement</p>
<p>iv. Will be essential in achieving compact and</p>	<p>Lands significantly development with regeneration of this area facilitating the</p>

sustainable urban growth, and	achievement of compact and sustainable growth
v. There are no suitable alternative lands for the particular use or development type, in areas at lower risk of flooding within or adjoining the core of the urban settlement.	Lands significantly developed
3. A flood risk assessment to an appropriate level of detail has been carried out as part of the Strategic Environmental Assessment as part of the development plan preparation process, which demonstrates that flood risk to the development can be adequately managed and the use or development of the lands will not cause unacceptable adverse impacts elsewhere. N.B. The acceptability or otherwise of levels of any residual risk should be made with consideration for the proposed development and the local context and should be described in the relevant flood risk assessment	<p>The Burrin River overtops its banks and undefended Flood Zone A/B extends into existing developed lands. For the most part Flood Zone A extends into lands that are subject to open space (e.g. Hanover Park) but some areas of existing Town Centre are at risk. Flood Zone B extends into lands that are under existing commercial/retail use and the key site is the Penneys redevelopment which has extant planning permission for redevelopment and was subject to an appropriately detailed FRA.</p> <p>Parts 1 & 2 of the test found that it is considered appropriate to retain the existing zoning. This is on the basis that development is limited to the existing vulnerability use and extensions/refits/change of use. Significant redevelopment within Flood Zone A/B would not be appropriate as there is no recommended flood relief scheme for the area.</p> <p>Any future planning applications for extensions/refits/change of use should be subject to an FRA which should follow the general guidance provided in Section 6 of the SFRA and must specifically address the following:</p> <ul style="list-style-type: none"> • The sequential approach should be applied if possible; • FRA should address climate change scenarios in relation to operational levels and potential mitigation measures; • Proposals should not impede existing flow paths or cause flood risk impacts to the surrounding areas, and; • Emergency evacuation plan and defined access / egress routes should be developed for extreme flood events. • Any development shall also be required to be built in accordance with CCC SuDS Policy.

A.4.4 Enterprise & Employment 1

Knocknagee Stream in the Castle Oaks area	
	
<p>1. The urban settlement is targeted for growth under the National Planning Framework, Regional Spatial and Economic Strategy (RSES), statutory plans as defined above or under the Planning Guidelines or Planning Directives provisions of the Planning and Development Act, 2000, as amended.</p>	<p>Carlow Town is designated as a Key Town in the RSES and in the Settlement Hierarchy in the Draft Carlow County Development Plan 2022-2028. The strategic vision for Carlow Town is to support and promote the role of Carlow Town as a regional and inter-regional economic growth driver and to fulfil its role as a key town, focused on regeneration, sustainable development, quality of life and economic investment. As a designated Key Town, Carlow Town is to play a critical role in underpinning the RSES and ensuring a consolidated spread of growth beyond cities at a sub-regional level.</p>
<p>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:</p>	<p>Lands located immediately along the stream are zoned for open space. Further to the west the lands are zoned for enterprise and employment purposes and have been subject to a recent grant of permission. Development of these lands will facilitate sustainable development of the settlement</p>
<p>i. Is essential to facilitate regeneration and/or expansion of the centre of the urban settlement</p>	<p>Yes, development of these lands will support the development of enterprise and employment within the settlement which has been recognised in the RSES as regional and inter-regional economic growth driver.</p>
<p>ii. Comprises significant previously developed and/or underutilised lands,</p>	<p>These under-utilised lands are strategically located and will facilitate compact growth of Carlow over the period of this plan</p>
<p>iii. Is within or adjoining the core of an established or designated urban settlement,</p>	<p>Yes, is within the urban settlement of Carlow Town</p>
<p>iv. Will be essential in achieving compact and sustainable urban growth, and</p>	<p>Yes, development of this under utilised site will facilitate compact and sustainable growth.</p>
<p>v. There are no suitable alternative lands for the particular use or development type, in areas at lower risk of flooding within or adjoining the core of the urban settlement.</p>	<p>Enterprise and employment uses permitted on this site which have been subject to FRA.</p>
<p>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</p>	<p>Despite the new residential development in the area (outside of the development plan boundary) the Knocknagee Stream is still subject to surcharging from undersized twin</p>

<p>process, which demonstrates that flood risk to the development can be adequately managed and the use or development of the lands will not cause unacceptable adverse impacts elsewhere. N.B. The acceptability or otherwise of levels of any residual risk should be made with consideration for the proposed development and the local context and should be described in the relevant flood risk assessment</p>	<p>pipes and this source of flooding is earmarked for further Flood Relief measures under the CFRAM. The scheme is yet to be implemented.</p> <p>Parts 1 & 2 of the test found that it is considered appropriate to retain the existing zoning. This is on the basis that development is limited to the existing development and extensions or refurbishment. Significant redevelopment within Flood Zone A/B would not be appropriate until the flood relief scheme for the area is delivered.</p> <p>Future zoning of additional highly vulnerable or less vulnerable land should be delayed until the scheme is in place, or an objective created to preclude development until that time.</p> <p>Development to the IDA land is subject to an extant permission which undertook an FRA.</p> <p>Any future planning applications for extensions/refits/change of use should be subject to an FRA which should follow the general guidance provided in Section 6 of the SFRA and must specifically address the following:</p> <ul style="list-style-type: none"> • FRA should address climate change scenarios in relation to operational levels and potential mitigation measures; • Proposals should not impede existing flow paths or cause flood risk impacts to the surrounding areas, and; • Emergency evacuation plan and defined access / egress routes should be developed for extreme flood events. • Any development shall also be required to be built in accordance with CCC SuDS Policy.
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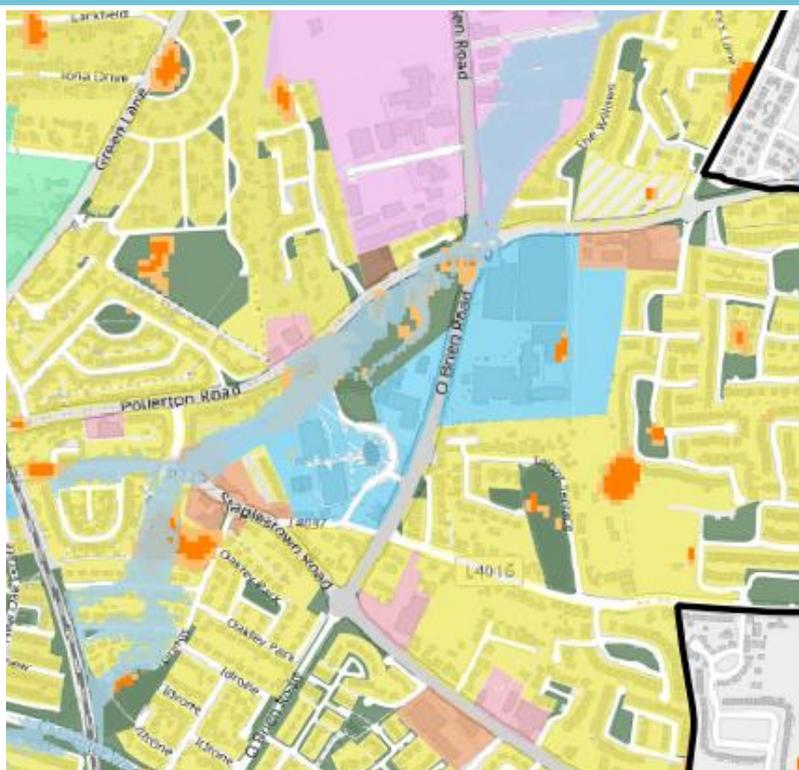
A.4.5 Enterprise & Employment 2

Knocknagee Stream downstream of the Castle Oaks area	
<p>1. The urban settlement is targeted for growth under the National Planning Framework, Regional Spatial and Economic Strategy (RSES), statutory plans as defined above or under the Planning Guidelines or Planning Directives provisions of the Planning and Development Act, 2000, as amended.</p>	<p>Carlow Town is designated as a Key Town in the RSES and in the Settlement Hierarchy in the Draft Carlow County Development Plan 2022-2028. The strategic vision for Carlow Town is to support and promote the role of Carlow Town as a regional and inter-regional economic growth driver and to fulfil its role as a key town, focused on regeneration, sustainable development, quality of life and economic investment. As a designated Key Town, Carlow Town is to play a critical role in underpinning the RSES and ensuring a consolidated spread of growth beyond cities at a sub-regional level.</p>
<p>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:</p>	<p>Lands zoned enterprise and employment with riparian area zoned open space and amenity and existing residential further to the south west. Area is significantly developed and further development would contribute to the sustainable development of the settlement.</p>
<p>i. Is essential to facilitate regeneration and/or expansion of the centre of the urban settlement</p>	<p>Yes, development of these lands will support the development of enterprise and employment within the settlement which has been recognised in the RSES as regional and inter-regional economic growth driver.</p>
<p>ii. Comprises significant previously developed and/or underutilised lands,</p>	<p>These under-utilised lands are strategically located and will facilitate compact growth of Carlow over the period of this plan</p>
<p>iii. Is within or adjoining the core of an established or designated urban settlement,</p>	<p>Yes, is within the urban settlement of Carlow Town</p>

<p>iv. Will be essential in achieving compact and sustainable urban growth, and</p>	<p>Yes, development of this under utilised site will facilitate compact and sustainable growth.</p>
<p>v. There are no suitable alternative lands for the particular use or development type, in areas at lower risk of flooding within or adjoining the core of the urban settlement.</p>	<p>Enterprise and employment uses permitted on this site which have been subject to FRA.</p>
<p>3. A flood risk assessment to an appropriate level of detail has been carried out as part of the Strategic Environmental Assessment as part of the development plan preparation process, which demonstrates that flood risk to the development can be adequately managed and the use or development of the lands will not cause unacceptable adverse impacts elsewhere. N.B. The acceptability or otherwise of levels of any residual risk should be made with consideration for the proposed development and the local context and should be described in the relevant flood risk assessment</p>	<p>Downstream of the car dealerships / R448 the Knocknagee Stream flows into a culvert which surcharges at the 0.1% AEP. The land is undeveloped and zoned Enterprise & Employment. A riparian zone (open space) covers all but a very small area of Flood Zone A. Existing development extends to the east and south.</p> <p>Parts 1 & 2 of the test found that it is considered appropriate to retain the Enterprise & Employment zoning. This is on the basis that no less vulnerable development takes place within Flood Zone A.</p> <p>Any future planning applications for development/redevelopment within Flood Zone B should be subject to an FRA which should follow the general guidance provided in Section 6 of the SFRA and must specifically address the following:</p> <ul style="list-style-type: none"> • FRA should address climate change scenarios in relation to operational levels and potential mitigation measures; • Proposals should not impede existing flow paths or cause flood risk impacts to the surrounding areas, and; • Emergency evacuation plan and defined access / egress routes should be developed for extreme flood events. • Any development shall also be required to be built in accordance with CCC SuDS Policy.

A.4.6 Community / Education, Commercial and Residential Lands

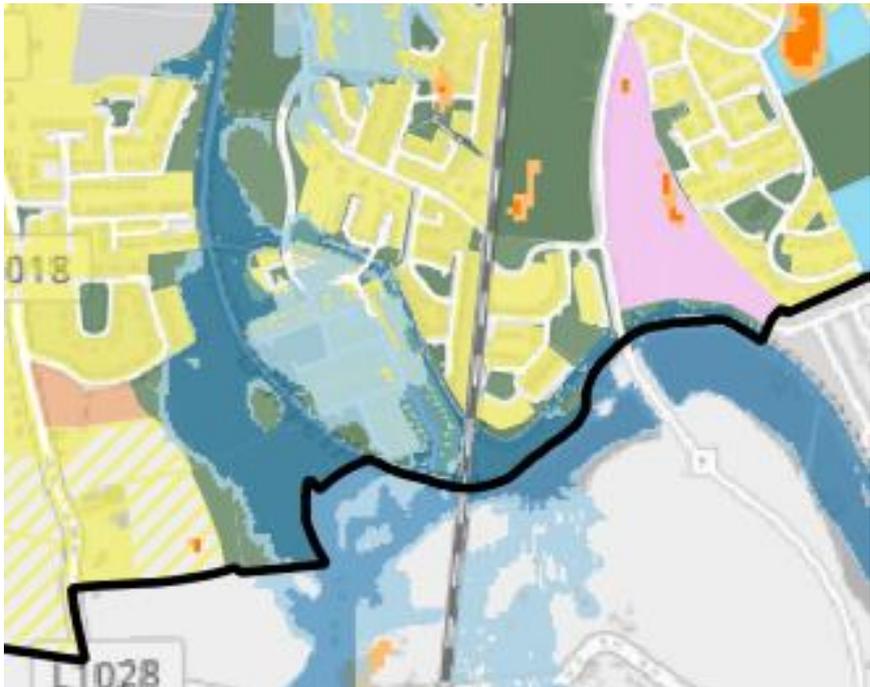
Knocknagee Stream downstream of Castle Oaks



<p>1. The urban settlement is targeted for growth under the National Planning Framework, Regional Spatial and Economic Strategy (RSES), statutory plans as defined above or under the Planning Guidelines or Planning Directives provisions of the Planning and Development Act, 2000, as amended.</p>	<p>Carlow Town is designated as a Key Town in the RSES and in the Settlement Hierarchy in the Draft Carlow County Development Plan 2022-2028. The strategic vision for Carlow Town is to support and promote the role of Carlow Town as a regional and inter-regional economic growth driver and to fulfil its role as a key town, focused on regeneration, sustainable development, quality of life and economic investment. As a designated Key Town, Carlow Town is to play a critical role in underpinning the RSES and ensuring a consolidated spread of growth beyond cities at a sub-regional level.</p>
<p>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:</p>	<p>Lands are zoned to reflect existing established uses within the established urban environment.</p>
<p>i. Is essential to facilitate regeneration and/or expansion of the centre of the urban settlement</p>	<p>Existing development</p>
<p>ii. Comprises significant previously developed and/or underutilised lands,</p>	<p>Yes, comprises significant portion of developed lands.</p>
<p>iii. Is within or adjoining the core of an established or designated urban settlement,</p>	<p>Yes, is within the designated urban settlement of Carlow Town.</p>
<p>iv. Will be essential in achieving compact and sustainable urban growth, and</p>	<p>While significantly development further infill opportunities will achieve compact and sustainable urban growth</p>
<p>v. There are no suitable alternative lands for the particular use or development type, in areas at lower risk of flooding within or</p>	<p>Lands, significantly developed.</p>

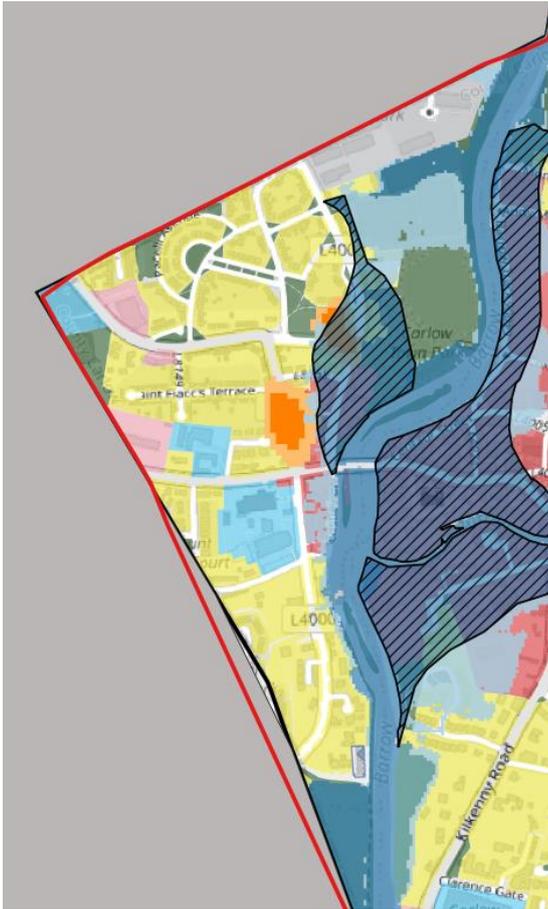
<p>adjoining the core of the urban settlement.</p>	
<p>3. A flood risk assessment to an appropriate level of detail has been carried out as part of the Strategic Environmental Assessment as part of the development plan preparation process, which demonstrates that flood risk to the development can be adequately managed and the use or development of the lands will not cause unacceptable adverse impacts elsewhere. N.B. The acceptability or otherwise of levels of any residual risk should be made with consideration for the proposed development and the local context and should be described in the relevant flood risk assessment</p>	<p>Downstream of Castleoaks in the Knocknagee Stream flows into a long culvert with an outlet at Paupish Bridge that is predicted to surcharge at the 0.1% AEP event. This creates a large area of Flood Zone B that flows in a south westerly direction through existing Community / Education, Commercial and Residential Lands.</p> <p>Parts 1 & 2 of the test found that it is considered appropriate to retain the existing zoning. This is on the basis that development is;</p> <ul style="list-style-type: none"> • Limited to extensions, renovations and change of use. • Infill residential development and demolition and reconstruction can only take place in Flood Zone C. <p>Significant redevelopment within Flood Zone A/B would not be appropriate until wider relief measures for the surcharging culvert is provided.</p> <p>Any future development should be subject to an FRA which should follow the general guidance provided in Section 6 of the SFRA and must specifically address the following:</p> <ul style="list-style-type: none"> • The sequential approach should be applied and highly vulnerable infill and redevelopment shall not be permitted in Flood Zone A or B; • Less Vulnerable development is permissible in Flood Zone B subject to an FRA; • FRA should address climate change scenarios in relation to FFLs and potential mitigation measures; • Highly vulnerable FFLs should be above the 1% AEP level plus climate change and freeboard; • Bedrooms should be located in the upstairs of two-story buildings when extending existing property; • Flood resilient construction materials and fittings should be considered if in Flood Zone A/B; • Proposals should not impede existing flow paths or cause flood risk impacts to the surrounding areas, and; • Emergency evacuation plan and defined access / egress routes should be developed for extreme flood events. • Any development shall also be required to be built in accordance with CCC SuDS Policy.

A.4.7 Existing Residential and Enterprise & Employment - part of site affected rezoned open space

Burrin River in the Mill Race/Springfield area	
	
<p>1. The urban settlement is targeted for growth under the National Planning Framework, Regional Spatial and Economic Strategy (RSES), statutory plans as defined above or under the Planning Guidelines or Planning Directives provisions of the Planning and Development Act, 2000, as amended.</p>	<p>Carlow Town is designated as a Key Town in the RSES and in the Settlement Hierarchy in the Draft Carlow County Development Plan 2022-2028. The strategic vision for Carlow Town is to support and promote the role of Carlow Town as a regional and inter-regional economic growth driver and to fulfil its role as a key town, focused on regeneration, sustainable development, quality of life and economic investment. As a designated Key Town, Carlow Town is to play a critical role in underpinning the RSES and ensuring a consolidated spread of growth beyond cities at a sub-regional level.</p>
<p>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:</p>	<p>Lands zoned for existing residential / infill and largely developed.</p>
<p>i. Is essential to facilitate regeneration and/or expansion of the centre of the urban settlement</p>	<p>Existing development</p>
<p>ii. Comprises significant previously developed and/or underutilised lands,</p>	<p>Yes, comprises significant previously developed lands</p>
<p>iii. Is within or adjoining the core of an established or designated urban settlement,</p>	<p>Yes, is within the established designated urban settlement</p>
<p>iv. Will be essential in achieving compact and sustainable urban growth, and</p>	<p>Lands already developed</p>
<p>v. There are no suitable alternative lands for the particular use or development type, in areas at lower risk of flooding within or adjoining the core of the urban settlement.</p>	<p>Lands already developed</p>
<p>3. A flood risk assessment to an appropriate level of detail has been carried out as part of</p>	<p>The Burrin River presents flood risk to a significant area of existing residential land and</p>

<p>the Strategic Environmental Assessment as part of the development plan preparation process, which demonstrates that flood risk to the development can be adequately managed and the use or development of the lands will not cause unacceptable adverse impacts elsewhere. N.B. The acceptability or otherwise of levels of any residual risk should be made with consideration for the proposed development and the local context and should be described in the relevant flood risk assessment</p>	<p>this source of flooding is earmarked for further Flood Relief measures under the CFRAM. The scheme is yet to be implemented.</p> <p>Parts 1 & 2 of the test found that it is considered appropriate to retain the existing zoning. This is on the basis that development is;</p> <ul style="list-style-type: none"> • Limited to extensions, renovations and change of use. • Infill residential development and demolition and reconstruction can only take place in Flood Zone C. • Any Enterprise & Employment development must avoid Flood Zone A.- rezoned open space. <p>Significant redevelopment within Flood Zone A/B would not be appropriate until the flood relief measures are delivered.</p> <p>Any future development should be subject to an FRA which should follow the general guidance provided in Section 6 of the SFRA and must specifically address the following:</p> <ul style="list-style-type: none"> • FRA should address climate change scenarios in relation to FFLs and potential mitigation measures; • Residential FFLs should be above the 1% AEP level plus climate change and freeboard; • Bedrooms should be located in the upstairs of two-story buildings when extending existing property; • Flood resilient construction materials and fittings should be considered if in Flood Zone A/B; • Proposals should not impede existing flow paths or cause flood risk impacts to the surrounding areas, and; • Emergency evacuation plan and defined access / egress routes should be developed for extreme flood events. • Any development shall also be required to be built in accordance with CCC SuDS Policy.
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A.4.8 Town Centre & Residential

Area to west of the River Barrow	
	
<p>1. The urban settlement is targeted for growth under the National Planning Framework, Regional Spatial and Economic Strategy (RSES), statutory plans as defined above or under the Planning Guidelines or Planning Directives provisions of the Planning and Development Act, 2000, as amended.</p>	<p>Carlow Town is designated as a Key Town in the RSES and in the Settlement Hierarchy in the Draft Carlow County Development Plan 2022-2028. The strategic vision for Carlow Town is to support and promote the role of Carlow Town as a regional and inter-regional economic growth driver and to fulfil its role as a key town, focused on regeneration, sustainable development, quality of life and economic investment. As a designated Key Town, Carlow Town is to play a critical role in underpinning the RSES and ensuring a consolidated spread of growth beyond cities at a sub-regional level.</p>
<p>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:</p>	<p>Existing town centre and existing residential zoned lands which are largely developed.</p>
<p>i. Is essential to facilitate regeneration and/or expansion of the centre of the urban settlement</p>	<p>Existing development.</p>
<p>ii. Comprises significant previously developed and/or underutilised lands,</p>	<p>Yes, comprises significant previously developed lands</p>
<p>iii. Is within or adjoining the core of an established or designated urban settlement,</p>	<p>Yes, is within the established designated urban settlement</p>
<p>iv. Will be essential in achieving compact and</p>	<p>Lands already development, any infill opportunities will facilitate further</p>

sustainable urban growth, and	consolidation of compact and sustainable growth
v. There are no suitable alternative lands for the particular use or development type, in areas at lower risk of flooding within or adjoining the core of the urban settlement.	Lands generally developed
<p>3. A flood risk assessment to an appropriate level of detail has been carried out as part of the Strategic Environmental Assessment as part of the development plan preparation process, which demonstrates that flood risk to the development can be adequately managed and the use or development of the lands will not cause unacceptable adverse impacts elsewhere. N.B. The acceptability or otherwise of levels of any residual risk should be made with consideration for the proposed development and the local context and should be described in the relevant flood risk assessment</p>	<p>The area is characterised by those Town Centre and Residential lands defended by the Carlow Flood Relief Scheme and those that are not, all are subject to existing use.</p> <p>Parts 1 & 2 of the test found that it is considered appropriate to retain the existing zoning. This is on the basis that development is, in undefended areas within Flood Zone A/B;</p> <ul style="list-style-type: none"> • Limited to extensions, renovations and change of use. • Infill residential development and demolition and reconstruction can only take place in Flood Zone C. • Less vulnerable development can take place in Flood Zone B. <p>And in defended areas;</p> <ul style="list-style-type: none"> • Future development in this area can develop within the defended Flood Zone A and Flood Zone B. • Due to the presence of the defences ground levels can be raised appropriately to achieve the design FFL for the type of development proposed, without the need for compensatory storage. <p>Any future development should be subject to an FRA which should follow the general guidance provided in Section 6 of the SFRA and must specifically address the following:</p> <ul style="list-style-type: none"> • FRA should address climate change scenarios in relation to FFLs and potential mitigation measures; • Residential FFLs should be above the 1% AEP level plus climate change and freeboard; • Bedrooms should be located in the upstairs of two-story buildings when extending existing property; • Flood resilient construction materials and fittings should be considered if in Flood Zone A/B; • Proposals should not impede existing flow paths or cause flood risk impacts to the surrounding areas, and; • Emergency evacuation plan and defined access / egress routes should be developed for extreme flood events. • Any development shall also be required to be built in accordance with CCC SuDS Policy.

A.5 Clonegall

A.5.1 Village Core lands

Village Core - east of L2021	
	
<p>1. The urban settlement is targeted for growth under the National Planning Framework, Regional Spatial and Economic Strategy (RSES), statutory plans as defined above or under the Planning Guidelines or Planning Directives provisions of the Planning and Development Act, 2000, as amended.</p>	<p>Clonegall is designated as a Larger Served Village within the Carlow County settlement hierarchy. It plays an important role in providing services for the village and the surrounding rural area. Facilitating sustainable development in existing towns and villages is recognised as paramount within the NPF and the RSES to ensuring sustainability, vitality and viability of rural areas.</p>
<p>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:</p>	<p>Lands are zoned village core reflecting the long-established historical development in the village centre. Zoning is required to maintain the proper planning and sustainable development of Clonegall.</p>
<p>i. Is essential to facilitate regeneration and/or expansion of the centre of the urban settlement</p>	<p>Lands are largely developed with some limited opportunities as outline in 3 below.</p>
<p>ii. Comprises significant previously developed and/or underutilised lands,</p>	<p>Yes, lands are largely previously developed or comprise rear amenity space to village centre uses.</p>
<p>iii. Is within or adjoining the core of an established or designated urban settlement,</p>	<p>Yes, lands are within the designated village settlement.</p>
<p>iv. Will be essential in achieving compact and sustainable urban growth, and</p>	<p>While lands are largely developed limited opportunities exist which could facilitate further compact and sustainable growth in the future</p>
<p>v. There are no suitable alternative lands for the particular use or development type, in areas at lower risk of flooding within or adjoining the core of the urban settlement.</p>	<p>Having regard to the developed nature of the lands it is reasonable to retain the use on these subject to stipulations outlined hereunder.</p>
<p>3. A flood risk assessment to an appropriate level of detail has been carried out as part of the Strategic Environmental Assessment as</p>	<p>Part of the Village Core lands to the east of the L2021 are within Flood Zone A and Flood Zone B. some of the lands are undeveloped</p>

<p>part of the development plan preparation process, which demonstrates that flood risk to the development can be adequately managed and the use or development of the lands will not cause unacceptable adverse impacts elsewhere. N.B. The acceptability or otherwise of levels of any residual risk should be made with consideration for the proposed development and the local context and should be described in the relevant flood risk assessment</p>	<p>and are currently back gardens.</p> <p>Parts 1 & 2 of the test found that it is considered appropriate to retain the existing zoning. This is on the basis that development is;</p> <ul style="list-style-type: none"> • Limited to extensions, renovations and change of use. • Infill residential development and demolition and reconstruction can only take place in Flood Zone C. <p>Any future development should be subject to an FRA which should follow the general guidance provided in Section 6 of the SFRA and must specifically address the following:</p> <ul style="list-style-type: none"> • Existing flood data is indicative and does not provide flood levels. An appropriately detailed hydraulic model will be required to confirm flood levels and extents. • The sequential approach should be applied and highly vulnerable infill and redevelopment shall not be permitted in Flood Zone A or B; • FRA should address climate change scenarios in relation to FFLs and potential mitigation measures; • Finished floor levels should be above the 1% AEP level plus climate change and freeboard; • The residual risk of bridge blockage should be investigated; • Bedrooms should be located in the upstairs of two-story buildings when extending existing property in Flood Zone A/B; • Flood resilient construction materials and fittings should be considered if in Flood Zone A/B; • Proposals should not impede existing flow paths or cause flood risk impacts to the surrounding areas, and; • Emergency evacuation plan and defined access / egress routes should be developed for extreme flood events. • Any development shall also be required to be built in accordance with CCC SuDS Policy.
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A.6 Fennagh

A.6.1 Existing Residential

Parts of Woodglade Estate	
	
<p>1. The urban settlement is targeted for growth under the National Planning Framework, Regional Spatial and Economic Strategy (RSES), statutory plans as defined above or under the Planning Guidelines or Planning Directives provisions of the Planning and Development Act, 2000, as amended.</p>	<p>Fennagh is designated as a Larger Served Village within the Carlow County settlement hierarchy. It plays an important role in providing services for the village and the surrounding rural area. Facilitating sustainable development in existing towns and villages is recognised as paramount within the NPF and the RSES to ensuring sustainability, vitality and viability of rural areas.</p>
<p>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:</p>	<p>Zoning for Existing Residential reflects existing established developed land use at this location.</p>
<p>i. Is essential to facilitate regeneration and/or expansion of the centre of the urban settlement</p>	<p>Existing development.</p>
<p>ii. Comprises significant previously developed and/or underutilised lands,</p>	<p>Yes, comprises significant previously developed land.</p>
<p>iii. Is within or adjoining the core of an established or designated urban settlement,</p>	<p>Yes, is within the established designated village settlement.</p>
<p>iv. Will be essential in achieving compact and sustainable urban growth, and</p>	<p>Lands already developed</p>
<p>v. There are no suitable alternative lands for the particular use or development type, in areas at lower risk of flooding within or adjoining the core of the urban settlement.</p>	<p>Lands already developed</p>
<p>3. A flood risk assessment to an appropriate level of detail has been carried out as part of the Strategic Environmental Assessment as part of the development plan preparation process, which demonstrates that flood risk to the development can be adequately managed and the use or development of the lands will not cause unacceptable adverse impacts elsewhere. N.B. The acceptability or otherwise of levels of any residual risk should be made</p>	<p>Areas of the existing residential zoning within the Woodglade Estate are within Flood Zone A and Flood Zone B.</p> <p>Parts 1 & 2 of the test found that it is considered appropriate to retain the existing zoning. This is on the basis that development is;</p> <ul style="list-style-type: none"> Limited to extensions, renovations and change of use.

<p>with consideration for the proposed development and the local context and should be described in the relevant flood risk assessment</p>	<ul style="list-style-type: none"> • Infill residential development and demolition and reconstruction can only take place in Flood Zone C. <p>Any future development should be subject to an FRA which should follow the general guidance provided in Section 6 of the SFRA and must specifically address the following:</p> <ul style="list-style-type: none"> • Existing flood data is indicative and does not provide flood levels. An appropriately detailed hydraulic model will be required to confirm flood levels and extents. • The sequential approach should be applied and highly vulnerable infill and redevelopment shall not be permitted in Flood Zone A or B; • FRA should address climate change scenarios in relation to FFLs and potential mitigation measures; • Finished floor levels should be above the 1% AEP level plus climate change and freeboard; • Bedrooms should be located in the upstairs of two-story buildings when extending existing property; • Flood resilient construction materials and fittings should be considered if in Flood Zone A/B; • Proposals should not impede existing flow paths or cause flood risk impacts to the surrounding areas, and; • Emergency evacuation plan and defined access / egress routes should be developed for extreme flood events. • Any development shall also be required to be built in accordance with CCC SuDS Policy.
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A.6.2 Village Core / Utility Lands

Village Core and Utilities - east of R724	
	
<p>1. The urban settlement is targeted for growth under the National Planning Framework, Regional Spatial and Economic Strategy (RSES), statutory plans as defined above or under the Planning Guidelines or Planning Directives provisions of the Planning and Development Act, 2000, as amended.</p>	<p>Fennagh is designated as a Larger Served Village within the Carlow County settlement hierarchy. It plays an important role in providing services for the village and the surrounding rural area. Facilitating sustainable development in existing towns and villages is recognised as paramount within the NPF and the RSES to ensuring sustainability, vitality and viability of rural areas.</p>
<p>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:</p>	<p>The zoning of the site reflects the existing established use including utilities purposes (WWTP) which services the existing settlement. Zoning of the site for this purpose is in accordance with the proper planning and sustainable development of the urban settlement.</p>
<p>i. Is essential to facilitate regeneration and/or expansion of the centre of the urban settlement</p>	<p>Existing development required to service the existing and proposed population growth of the settlement.</p>
<p>ii. Comprises significant previously developed and/or underutilised lands,</p>	<p>Comprises largely developed lands.</p>
<p>iii. Is within or adjoining the core of an established or designated urban settlement,</p>	<p>Yes, is within the established designated urban settlement.</p>
<p>iv. Will be essential in achieving compact and sustainable urban growth, and</p>	<p>Yes, the site contains infrastructure necessary to support the existing and future growth of the settlement.</p>
<p>v. There are no suitable alternative lands for the particular use or development type, in areas at lower risk of flooding within or adjoining the core of the urban settlement.</p>	<p>Having regard to the developed nature of the lands it is reasonable to retain the use on these subject to stipulations outlined hereunder.</p>
<p>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</p>	<p>Part of the Village Core lands to the east of the R724 are within Flood Zone A and Flood Zone B. The main use appears to be for the purposes of water/waste water treatment. Parts 1 & 2 of the test found that it is considered appropriate to retain the existing zoning. Parts 1 & 2 of the test found that it is considered appropriate to retain the existing</p>

<p>elsewhere. N.B. The acceptability or otherwise of levels of any residual risk should be made with consideration for the proposed development and the local context and should be described in the relevant flood risk assessment</p>	<p>zoning.</p> <p>Any future expansion of the WWTP should be subject to an FRA, it would not be appropriate to place residential or other highly vulnerable use in the Village Core lands. Any future FRA should follow the general guidance provided in Section 6 of the SFRA and must specifically address the following:</p> <ul style="list-style-type: none"> • Existing flood data is indicative and does not provide flood levels. An appropriately detailed hydraulic model will be required to confirm flood levels and extents. • The sequential approach should be applied and highly vulnerable elements of the site should be located in Flood Zone C, or raised/bunded/protected; • FRA should address climate change scenarios in relation to operational levels and potential mitigation measures; • Proposals should not impede existing flow paths or cause flood risk impacts to the surrounding areas, and; • Emergency evacuation plan and defined access / egress routes should be developed for extreme flood events. • Any development shall also be required to be built in accordance with CCC SuDS Policy.
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A.6.3 Community Education

Church and Creche sites	
	
<p>1. The urban settlement is targeted for growth under the National Planning Framework, Regional Spatial and Economic Strategy (RSES), statutory plans as defined above or under the Planning Guidelines or Planning Directives provisions of the Planning and Development Act, 2000, as amended.</p>	<p>Fennagh is designated as a Larger Served Village within the Carlow County settlement hierarchy. It plays an important role in providing services for the village and the surrounding rural area. Facilitating sustainable development in existing towns and villages is recognised as paramount within the NPF and the RSES to ensuring sustainability, vitality and viability of rural areas.</p>
<p>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:</p>	<p>Lands are zoned to reflect existing established uses within the established village of Fennagh.</p>
<p>i. Is essential to facilitate regeneration and/or expansion of the centre of the urban settlement</p>	<p>Existing development</p>
<p>ii. Comprises significant previously developed and/or underutilised lands,</p>	<p>Yes comprises developed lands.</p>
<p>iii. Is within or adjoining the core of an established or designated urban settlement,</p>	<p>Yes, is within the designated village of Fennagh.</p>
<p>iv. Will be essential in achieving compact and sustainable urban growth, and</p>	<p>No, Lands developed.</p>
<p>v. There are no suitable alternative lands for the particular use or development type, in areas at lower risk of flooding within or adjoining the core of the urban settlement.</p>	<p>Lands developed at this location.</p>
<p>3. A flood risk assessment to an appropriate level of detail has been carried out as part of the Strategic Environmental Assessment as part of the development plan preparation process, which demonstrates that flood risk to the development can be adequately managed and the use or development of the lands will not cause unacceptable adverse impacts elsewhere. N.B. The acceptability or otherwise of levels of any residual risk should be made</p>	<p>Parts of the Creche and Church site were found to be within Flood Zone A/B. Parts 1 & 2 of the test found that it is considered appropriate to retain the existing zoning. Any future expansion of the creche should be subject to an FRA which should follow the general guidance provided in Section 6 of the SFRA and must specifically address the following:</p>

<p>with consideration for the proposed development and the local context and should be described in the relevant flood risk assessment</p>	<ul style="list-style-type: none"> • Existing flood data is indicative and does not provide flood levels. An appropriately detailed hydraulic model will be required to confirm flood levels and extents. • The sequential approach should be applied and highly vulnerable elements of the site should be located in Flood Zone C, or raised/bunded/protected; • Flood Zone A/B would principally be suitable for playing pitches/water compatible use only; • FRA should address climate change scenarios in relation to operational levels and potential mitigation measures; • Proposals should not impede existing flow paths or cause flood risk impacts to the surrounding areas, and; • Emergency evacuation plan and defined access / egress routes should be developed for extreme flood events. • Any development shall also be required to be built in accordance with CCC SuDS Policy. <p>The Church lands adjacent/within the Flood Zone are used as a burial ground. A groundwater impact assessment may be advisable for the lower lying part of the site adjacent/within the Flood Zones to ensure groundwater is not negatively impacted.</p>
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A.7 Hacketstown

A.7.1 Residential

Residential lands adjacent to the stream	
	
<p>1. The urban settlement is targeted for growth under the National Planning Framework, Regional Spatial and Economic Strategy (RSES), statutory plans as defined above or under the Planning Guidelines or Planning Directives provisions of the Planning and Development Act, 2000, as amended.</p>	<p>Hacketstown is designated as a Small Town within the Carlow County settlement hierarchy. It plays an important role in providing services for the town and the surrounding rural area. Facilitating sustainable development in existing towns and villages is recognised as paramount within the NPF and the RSES to ensuring sustainability, vitality and viability of rural areas.</p>
<p>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:</p>	<p>Lands are zoned existing / new residential and comprise largely developed areas. The new residential zoning comprises a small infill site which has obtained planning permission following an FRA.</p>
<p>i. Is essential to facilitate regeneration and/or expansion of the centre of the urban settlement</p>	<p>Site is largely development with permitted infill opportunities facilitating regeneration of this urban settlement.</p>
<p>ii. Comprises significant previously developed and/or underutilised lands,</p>	<p>Lands are largely development</p>
<p>iii. Is within or adjoining the core of an established or designated urban settlement,</p>	<p>Yes, is within the designated urban settlement.</p>
<p>iv. Will be essential in achieving compact and sustainable urban growth, and</p>	<p>Lands largely developed</p>

<p>v. There are no suitable alternative lands for the particular use or development type, in areas at lower risk of flooding within or adjoining the core of the urban settlement.</p>	<p>Lands largely developed</p>
<p>3. A flood risk assessment to an appropriate level of detail has been carried out as part of the Strategic Environmental Assessment as part of the development plan preparation process, which demonstrates that flood risk to the development can be adequately managed and the use or development of the lands will not cause unacceptable adverse impacts elsewhere. N.B. The acceptability or otherwise of levels of any residual risk should be made with consideration for the proposed development and the local context and should be described in the relevant flood risk assessment</p>	<p>There is a small overlap with existing residential zoning along the steep unnamed stream flowing in culvert through the residential lands.</p> <p>Parts 1 & 2 of the test found that it is considered appropriate to retain the existing zoning. This is on the basis that development is;</p> <ul style="list-style-type: none"> • Limited to extensions, renovations and change of use. • Infill residential development and demolition and reconstruction can only take place in Flood Zone C. <p>Any future development should be subject to an FRA which should follow the general guidance provided in Section 6 of the SFRA and must specifically address the following:</p> <ul style="list-style-type: none"> • Existing flood data is indicative and does not provide flood levels. An appropriately detailed hydraulic model will be required to confirm flood levels and extents. • The sequential approach should be applied and highly vulnerable infill and redevelopment shall not be permitted in Flood Zone A or B; • FRA should address climate change scenarios in relation to FFLs and potential mitigation measures; • Finished floor levels should be above the 1% AEP level plus climate change and freeboard; • The residual risk of culvert blockage should be investigated; • Bedrooms should be located in the upstairs of two-story buildings when extending existing property in Flood Zone A/B; • Flood resilient construction materials and fittings should be considered if in Flood Zone A/B; • Proposals should not impede existing flow paths or cause flood risk impacts to the surrounding areas, and; • Emergency evacuation plan and defined access / egress routes should be developed for extreme flood events. • Any development shall also be required to be built in accordance with CCC SuDS Policy.

A.8 Kildavin

A.8.1 Village Core and Utilities Lands

Village Core and Utilities - east and west of R724	
<p>1. The urban settlement is targeted for growth under the National Planning Framework, Regional Spatial and Economic Strategy (RSES), statutory plans as defined above or under the Planning Guidelines or Planning Directives provisions of the Planning and Development Act, 2000, as amended.</p>	<p>Kildavin is designated as a Larger Served Village within the Carlow County settlement hierarchy. It plays an important role in providing services for the village and the surrounding rural area. Facilitating sustainable development in existing towns and villages is recognised as paramount within the NPF and the RSES to ensuring sustainability, vitality and viability of rural areas.</p>
<p>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:</p>	<p>Lands are zoned village core to the west reflecting the long-established historical development in the village centre and Utilities to the east for the WWTP. Zoning is required to maintain the proper planning and sustainable development of Kildavin.</p>
<p>i. Is essential to facilitate regeneration and/or expansion of the centre of the urban settlement</p>	<p>Existing development required to service the existing and proposed population growth of the settlement.</p>
<p>ii. Comprises significant previously developed and/or underutilised lands,</p>	<p>Comprises largely developed lands.</p>
<p>iii. Is within or adjoining the core of an established or designated urban settlement,</p>	<p>Yes, is within the established designated village settlement.</p>
<p>iv. Will be essential in achieving compact and sustainable urban growth, and</p>	<p>Yes, the site contains infrastructure necessary to support the existing and future growth of the settlement.</p>
<p>v. There are no suitable alternative lands for the particular use or development type, in areas at lower risk of flooding within or adjoining the core of the urban settlement.</p>	<p>Lands already developed and established use.</p>
<p>3. A flood risk assessment to an appropriate level of detail has been carried out as part of the Strategic Environmental Assessment as part of the development plan preparation process, which demonstrates that flood risk to the development can be adequately managed and the use or development of the lands will not cause unacceptable adverse impacts elsewhere. N.B. The acceptability or otherwise of levels of any residual risk should be made</p>	<p>Part of the Village Core lands to the east and west of the R724 are within Flood Zone A and Flood Zone B. The main use is the WWTP and the Childcare facility.</p> <p>Parts 1 & 2 of the test found that it is considered appropriate to retain the existing zoning. Parts 1 & 2 of the test found that it is considered appropriate to retain the existing zoning.</p> <p>Any future expansion of the WWTP or</p>

<p>with consideration for the proposed development and the local context and should be described in the relevant flood risk assessment</p>	<p>Childcare facility should be subject to an FRA which should follow the general guidance provided in Section 6 of the SFRA and must specifically address the following:</p> <ul style="list-style-type: none"> • Existing flood data is indicative and does not provide flood levels. An appropriately detailed hydraulic model will be required to confirm flood levels and extents. • The sequential approach should be applied and highly vulnerable elements of the site should be located in Flood Zone C, or raised/bunded/protected; • FRA should address climate change scenarios in relation to operational levels and potential mitigation measures; • Proposals should not impede existing flow paths or cause flood risk impacts to the surrounding areas, and; • Emergency evacuation plan and defined access / egress routes should be developed for extreme flood events. • Any development shall also be required to be built in accordance with CCC SuDS Policy.
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A.8.2 Existing Residential

Parts of Glasheen Estate	
	
<p>1. The urban settlement is targeted for growth under the National Planning Framework, Regional Spatial and Economic Strategy (RSES), statutory plans as defined above or under the Planning Guidelines or Planning Directives provisions of the Planning and Development Act, 2000, as amended.</p>	<p>Kildavinis designated as a Larger Serviced Village within the Carlow County settlement hierarchy. It plays an important role in providing services for the village and the surrounding rural area. Facilitating sustainable development in existing towns and villages is recognised as paramount within the NPF and the RSES to ensuring sustainability, vitality and viability of rural areas.</p>
<p>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:</p>	<p>Zoning for Existing Residential reflects existing established developed land use at this location.</p>
<p>i. Is essential to facilitate regeneration and/or expansion of the centre of the urban settlement</p>	<p>Existing development.</p>
<p>ii. Comprises significant previously developed and/or underutilised lands,</p>	<p>Yes, comprises significant previously developed land.</p>
<p>iii. Is within or adjoining the core of an established or designated urban settlement,</p>	<p>Yes, is within the established designated village settlement.</p>
<p>iv. Will be essential in achieving compact and sustainable urban growth, and</p>	<p>Lands already developed</p>
<p>v. There are no suitable alternative lands for the particular use or development type, in areas at lower risk of flooding within or adjoining the core of the urban settlement.</p>	<p>Lands already developed</p>
<p>3. A flood risk assessment to an appropriate level of detail has been carried out as part of the Strategic Environmental Assessment as part of the development plan preparation process, which demonstrates that flood risk to the development can be adequately managed and the use or development of the lands will not cause unacceptable adverse impacts elsewhere. N.B. The acceptability or otherwise of levels of any residual risk should be made with consideration for the proposed development and the local context and should be described in the relevant flood risk assessment</p>	<p>Areas of the existing residential zoning within the Glasheen Estate are within Flood Zone A and Flood Zone B.</p> <p>Parts 1 & 2 of the test found that it is considered appropriate to retain the existing zoning. This is on the basis that development is;</p> <ul style="list-style-type: none"> • Limited to extensions, renovations and change of use. • Infill residential development and demolition and reconstruction can only take place in Flood Zone C. <p>Any future development should be subject to an FRA which should follow the general guidance provided in Section 6 of the SFRA</p>

	<p>and must specifically address the following:</p> <ul style="list-style-type: none"> • Existing flood data is indicative and does not provide flood levels. An appropriately detailed hydraulic model will be required to confirm flood levels and extents. • The sequential approach should be applied and highly vulnerable infill and redevelopment shall not be permitted in Flood Zone A or B; • FRA should address climate change scenarios in relation to FFLs and potential mitigation measures; • Finished floor levels should be above the 1% AEP level plus climate change and freeboard; • Bedrooms should be located in the upstairs of two-story buildings when extending existing property; • Flood resilient construction materials and fittings should be considered if in Flood Zone A/B; • Proposals should not impede existing flow paths or cause flood risk impacts to the surrounding areas, and; • Emergency evacuation plan and defined access / egress routes should be developed for extreme flood events. • Any development shall also be required to be built in accordance with CCC SuDS Policy.
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A.9 Leighlinbridge

A.9.1 Existing Town Centre & Residential

Town Centre lands bounding the river	
	
<p>1. The urban settlement is targeted for growth under the National Planning Framework, Regional Spatial and Economic Strategy (RSES), statutory plans as defined above or under the Planning Guidelines or Planning Directives provisions of the Planning and Development Act, 2000, as amended.</p>	<p>Leighlinbridge is designated as a Small Town within the Carlow County settlement hierarchy. It plays an important role in providing services for the town and the surrounding rural area. Facilitating sustainable development in existing towns and villages is recognised as paramount within the NPF and the RSES to ensuring sustainability, vitality and viability of rural areas.</p>
<p>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:</p>	<p>Lands are zoned town centre and existing residential.</p> <p>Lands are located within and adjoining the town centre, zoning is required to maintain the proper planning and sustainable development of Leighlinbridge.</p>
<p>i. Is essential to facilitate regeneration and/or expansion of the centre of the urban settlement</p>	<p>Lands are largely developed and / or under utilised with some infill opportunities within town centre zoned lands.</p>
<p>ii. Comprises significant previously developed and/or underutilised lands,</p>	<p>Yes, lands are largely previously developed or comprise underutilised town centre lands</p>
<p>iii. Is within or adjoining the core of an established or designated urban settlement,</p>	<p>Yes, lands are within the designated urban settlement.</p>
<p>iv. Will be essential in achieving compact and sustainable urban growth, and</p>	<p>While lands are largely developed infill opportunities could facilitate further compact and sustainable growth in the future</p>
<p>v. There are no suitable alternative lands for the particular use or development type, in areas at lower risk of flooding within or adjoining the core of the urban settlement.</p>	<p>Having regard to the developed nature of the lands it is reasonable to retain the use on these subject to stipulations outlined hereunder.</p>

<p>3. A flood risk assessment to an appropriate level of detail has been carried out as part of the Strategic Environmental Assessment as part of the development plan preparation process, which demonstrates that flood risk to the development can be adequately managed and the use or development of the lands will not cause unacceptable adverse impacts elsewhere. N.B. The acceptability or otherwise of levels of any residual risk should be made with consideration for the proposed development and the local context and should be described in the relevant flood risk assessment</p>	<p>The River Barrow impacts a significant area of existing development - both Town Centre and Residential zoning is impacted. A Flood Relief Scheme is in place but the CFRAM Management Plan recommends works to augment the scheme. There are no significant redevelopment sites identified for the town and a precautionary approach has been applied.</p> <p>Parts 1 & 2 of the test found that it is considered appropriate to retain the existing zoning types. This is on the basis that development is limited to the existing vulnerability use and extensions/refits/change of use. Significant redevelopment within Flood Zone A/B would not be appropriate prior to any future flood relief scheme and then it would need to be justified at plan making stage, presumably in a future iteration of the development plan.</p> <p>Any future planning applications for extensions/refits/change of use should be subject to an FRA which should follow the general guidance provided in Section 6 of the SFRA and must specifically address the following:</p> <ul style="list-style-type: none"> • The sequential approach should be applied if possible; • FRA should address climate change scenarios in relation to operational levels and potential mitigation measures; • Proposals should not impede existing flow paths or cause flood risk impacts to the surrounding areas, and; • Emergency evacuation plan and defined access / egress routes should be developed for extreme flood events. • Any development shall also be required to be built in accordance with CCC SuDS Policy.
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A.10 Palatine

A.10.1 Village Core Lands

Village Core - east of L4015	
	
<p>1. The urban settlement is targeted for growth under the National Planning Framework, Regional Spatial and Economic Strategy (RSES), statutory plans as defined above or under the Planning Guidelines or Planning Directives provisions of the Planning and Development Act, 2000, as amended.</p>	<p>Palatine is designated as a Larger Served Village within the Carlow County settlement hierarchy. It plays an important role in providing services for the village and the surrounding rural area. Facilitating sustainable development in existing towns and villages is recognised as paramount within the NPF and the RSES to ensuring sustainability, vitality and viability of rural areas.</p>
<p>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:</p>	<p>Lands are zoned village core reflecting the long-established historical development in the village centre. Zoning is required to maintain the proper planning and sustainable development of Palatine.</p>
<p>i. Is essential to facilitate regeneration and/or expansion of the centre of the urban settlement</p>	<p>Lands are largely developed .</p>
<p>ii. Comprises significant previously developed and/or underutilised lands,</p>	<p>Yes, lands are largely previously developed or comprise rear amenity space to village centre uses.</p>
<p>iii. Is within or adjoining the core of an established or designated urban settlement,</p>	<p>Yes, lands are within the designated village settlement.</p>
<p>iv. Will be essential in achieving compact and sustainable urban growth, and</p>	<p>Lands are largely developed.</p>
<p>v. There are no suitable alternative lands for the particular use or development type, in areas at lower risk of flooding within or adjoining the core of the urban settlement.</p>	<p>Having regard to the developed nature of the lands it is reasonable to retain the use on these subject to stipulations outlined hereunder.</p>
<p>3. A flood risk assessment to an appropriate</p>	<p>Part of the Village Core residential lands to the</p>

<p>level of detail has been carried out as part of the Strategic Environmental Assessment as part of the development plan preparation process, which demonstrates that flood risk to the development can be adequately managed and the use or development of the lands will not cause unacceptable adverse impacts elsewhere. N.B. The acceptability or otherwise of levels of any residual risk should be made with consideration for the proposed development and the local context and should be described in the relevant flood risk assessment</p>	<p>east of the L4015 are within Flood Zone A and Flood Zone B.</p> <p>Parts 1 & 2 of the test found that it is considered appropriate to retain the existing zoning. Parts 1 & 2 of the test found that it is considered appropriate to retain the existing zoning. This is on the basis that development is;</p> <ul style="list-style-type: none"> • Limited to extensions, renovations and change of use. • Infill residential development and demolition and reconstruction can only take place in Flood Zone C. <p>Any future development should be subject to an FRA which should follow the general guidance provided in Section 6 of the SFRA and must specifically address the following:</p> <ul style="list-style-type: none"> • Existing flood data is indicative and does not provide flood levels. An appropriately detailed hydraulic model will be required to confirm flood levels and extents. • The sequential approach should be applied and highly vulnerable infill and redevelopment shall not be permitted in Flood Zone A or B; • FRA should address climate change scenarios in relation to FFLs and potential mitigation measures; • Finished floor levels should be above the 1% AEP level plus climate change and freeboard; • Bedrooms should be located in the upstairs of two-story buildings when extending existing property; • Flood resilient construction materials and fittings should be considered if in Flood Zone A/B; • Proposals should not impede existing flow paths or cause flood risk impacts to the surrounding areas, and; • Emergency evacuation plan and defined access / egress routes should be developed for extreme flood events. • Any development shall also be required to be built in accordance with CCC SuDS Policy.
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A.10.2 Existing Residential

Parts of Meadowbank Estate	
	
<p>1. The urban settlement is targeted for growth under the National Planning Framework, Regional Spatial and Economic Strategy (RSES), statutory plans as defined above or under the Planning Guidelines or Planning Directives provisions of the Planning and Development Act, 2000, as amended.</p>	<p>Palatine is designated as a Larger Served Village within the Carlow County settlement hierarchy. It plays an important role in providing services for the village and the surrounding rural area. Facilitating sustainable development in existing towns and villages is recognised as paramount within the NPF and the RSES to ensuring sustainability, vitality and viability of rural areas.</p>
<p>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:</p>	<p>Zoning for Existing Residential reflects existing established developed land use at this location.</p>
<p>i. Is essential to facilitate regeneration and/or expansion of the centre of the urban settlement</p>	<p>Existing development.</p>
<p>ii. Comprises significant previously developed and/or underutilised lands,</p>	<p>Yes, comprises significant previously developed land.</p>
<p>iii. Is within or adjoining the core of an established or designated urban settlement,</p>	<p>Yes, is within the established designated village settlement.</p>
<p>iv. Will be essential in achieving compact and sustainable urban growth, and</p>	<p>Lands already developed</p>
<p>v. There are no suitable alternative lands for the particular use or development type, in areas at lower risk of flooding within or adjoining the core of the urban settlement.</p>	<p>Lands already developed</p>
<p>3. A flood risk assessment to an appropriate level of detail has been carried out as part of the Strategic Environmental Assessment as part of the development plan preparation process, which demonstrates that flood risk to the development can be adequately managed and the use or development of the lands will not cause unacceptable adverse impacts elsewhere. N.B. The acceptability or otherwise of levels of any residual risk should be made with consideration for the proposed development and the local context and should be described in the relevant flood risk assessment</p>	<p>Areas of the existing residential zoning within the Meadowbank Estate are within Flood Zone A and Flood Zone B.</p> <p>Parts 1 & 2 of the test found that it is considered appropriate to retain the existing zoning. This is on the basis that development is;</p> <ul style="list-style-type: none"> • Limited to extensions, renovations and change of use. • Infill residential development and demolition and reconstruction can only take place in Flood Zone C. <p>Any future development should be subject to an FRA which should follow the general guidance provided in Section 6 of the SFRA and must specifically address the following:</p>

	<ul style="list-style-type: none"> • Existing flood data is indicative and does not provide flood levels. An appropriately detailed hydraulic model will be required to confirm flood levels and extents. • The sequential approach should be applied and highly vulnerable infill and redevelopment shall not be permitted in Flood Zone A or B; • FRA should address climate change scenarios in relation to FFLs and potential mitigation measures; • Finished floor levels should be above the 1% AEP level plus climate change and freeboard; • Bedrooms should be located in the upstairs of two-story buildings when extending existing property; • Flood resilient construction materials and fittings should be considered if in Flood Zone A/B; • Proposals should not impede existing flow paths or cause flood risk impacts to the surrounding areas, and; • Emergency evacuation plan and defined access / egress routes should be developed for extreme flood events. • Any development shall also be required to be built in accordance with CCC SuDS Policy.
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A.10.3 Existing Utilities

WWTP Site	
	
<p>1. The urban settlement is targeted for growth under the National Planning Framework, Regional Spatial and Economic Strategy (RSES), statutory plans as defined above or under the Planning Guidelines or Planning Directives provisions of the Planning and Development Act, 2000, as amended.</p>	<p>Palatine is designated as a Larger Served Village within the Carlow County settlement hierarchy. It plays an important role in providing services for the village and the surrounding rural area. Facilitating sustainable development in existing towns and villages is recognised as paramount within the NPF and the RSES to ensuring sustainability, vitality and viability of rural areas.</p>
<p>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:</p>	<p>The zoning of the site reflects the existing established use for utilities purposes (WWTP) which services the existing settlement. Zoning of the site for this purpose is in accordance with the proper planning and sustainable development of the urban settlement.</p>
<p>i. Is essential to facilitate regeneration and/or expansion of the centre of the urban settlement</p>	<p>Existing development required to service the existing and proposed population growth of the settlement.</p>
<p>ii. Comprises significant previously developed and/or underutilised lands,</p>	<p>Comprises largely developed lands.</p>
<p>iii. Is within or adjoining the core of an established or designated urban settlement,</p>	<p>Yes, is within the established designated urban settlement.</p>
<p>iv. Will be essential in achieving compact and sustainable urban growth, and</p>	<p>Yes, the site contains infrastructure necessary to support the existing and future growth of the settlement.</p>
<p>v. There are no suitable alternative lands for the particular use or development type, in areas at lower risk of flooding within or adjoining the core of the urban settlement.</p>	<p>Lands already developed and established use.</p>
<p>3. A flood risk assessment to an appropriate level of detail has been carried out as part of the Strategic Environmental Assessment as part of the development plan preparation process, which demonstrates that flood risk to the development can be adequately managed and the use or development of the lands will not cause unacceptable adverse impacts elsewhere. N.B. The acceptability or otherwise of levels of any residual risk should be made</p>	<p>Areas of the Utilities zoning (WWTP) are within Flood Zone A and Flood Zone B. Parts 1 & 2 of the test found that it is considered appropriate to retain the existing zoning.</p> <p>Any future expansion of the WWTP should be subject to an FRA which should follow the general guidance provided in Section 6 of the SFRA and must specifically address the following:</p>

<p>with consideration for the proposed development and the local context and should be described in the relevant flood risk assessment</p>	<ul style="list-style-type: none"> • Existing flood data is indicative and does not provide flood levels. An appropriately detailed hydraulic model will be required to confirm flood levels and extents. • The sequential approach should be applied and highly vulnerable elements of the site should be located in Flood Zone C, or raised/bunded/protected; • FRA should address climate change scenarios in relation to operational levels and potential mitigation measures; • Proposals should not impede existing flow paths or cause flood risk impacts to the surrounding areas, and; • Emergency evacuation plan and defined access / egress routes should be developed for extreme flood events. • Any development shall also be required to be built in accordance with CCC SuDS Policy.
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A.11 Rathvilly

A.11.1 Existing Residential

Slaney Bank and Station Road areas



<p>1. The urban settlement is targeted for growth under the National Planning Framework, Regional Spatial and Economic Strategy (RSES), statutory plans as defined above or under the Planning Guidelines or Planning Directives provisions of the Planning and Development Act, 2000, as amended.</p>	<p>Rathvilly is designated as a Small Town within the Carlow County settlement hierarchy. It plays an important role in providing services for the town and the surrounding rural area. Facilitating sustainable development in existing towns and villages is recognised as paramount within the NPF and the RSES to ensuring sustainability, vitality and viability of rural areas.</p>
<p>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:</p>	<p>Lands are zoned existing residential comprising established residential areas.</p>
<p>i. Is essential to facilitate regeneration and/or expansion of the centre of the urban settlement</p>	<p>No, these lands are established residential areas.</p>
<p>ii. Comprises significant previously developed and/or underutilised lands,</p>	<p>Yes, comprises significant previously developed lands.</p>
<p>iii. Is within or adjoining the core of an established or designated urban settlement,</p>	<p>Yes, is within the established designated urban settlement.</p>
<p>iv. Will be essential in achieving compact and sustainable urban growth, and</p>	<p>No, as lands in the area are already developed through historic town centre expansion.</p>
<p>v. There are no suitable alternative lands for the particular use or development type, in areas at lower risk of flooding within or adjoining the core of the urban settlement.</p>	<p>Existing developed land.</p>
<p>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</p>	<p>Areas of the existing residential zoning (residential and low density residential) are within Flood Zone A and Flood Zone B. Parts 1 & 2 of the test found that it is considered appropriate to retain the existing zoning. This is on the basis that development is;</p> <ul style="list-style-type: none"> Limited to extensions, renovations and

<p>impacts elsewhere. N.B. The acceptability or otherwise of levels of any residual risk should be made with consideration for the proposed development and the local context and should be described in the relevant flood risk assessment</p>	<p>change of use.</p> <ul style="list-style-type: none"> • Infill residential development and demolition and reconstruction can only take place in Flood Zone C. <p>Any future development should be subject to an FRA which should follow the general guidance provided in Section 6 of the SFRA and must specifically address the following:</p> <ul style="list-style-type: none"> • Existing flood data is indicative (CFRAM MPW) and does not provide flood levels. An appropriately detailed hydraulic model will be required to confirm flood levels and extents. • The sequential approach should be applied and highly vulnerable infill and redevelopment shall not be permitted in Flood Zone A or B; • FRA should address climate change scenarios in relation to FFLs and potential mitigation measures; • Finished floor levels should be above the 1% AEP level plus climate change and freeboard; • Bedrooms should be located in the upstairs of two-story buildings when extending existing property; • Flood resilient construction materials and fittings should be considered if in Flood Zone A/B; • Proposals should not impede existing flow paths or cause flood risk impacts to the surrounding areas, and; • Emergency evacuation plan and defined access / egress routes should be developed for extreme flood events. • Any development shall also be required to be built in accordance with CCC SuDS Policy.
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A.11.2 Existing Utilities

Rathvilly Water Treatment Plant (WTP) Site	
	
<p>1. The urban settlement is targeted for growth under the National Planning Framework, Regional Spatial and Economic Strategy (RSES), statutory plans as defined above or under the Planning Guidelines or Planning Directives provisions of the Planning and Development Act, 2000, as amended.</p>	<p>Rathvilly is designated as a Small Town within the Carlow County settlement hierarchy. It plays an important role in providing services for the town and the surrounding rural area. Facilitating sustainable development in existing towns and villages is recognised as paramount within the NPF and the RSES to ensuring sustainability, vitality and viability of rural areas.</p>
<p>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:</p>	<p>The zoning of the site reflects the existing established use for utilities purposes (WWTP) which services the existing settlement. Flood risk identified on a small portion to the north east of the overall site. Zoning of the site for this purpose is in accordance with the proper planning and sustainable development of the urban settlement.</p>
<p>i. Is essential to facilitate regeneration and/or expansion of the centre of the urban settlement</p>	<p>Existing development required to service the existing and proposed population growth of the settlement.</p>
<p>ii. Comprises significant previously developed and/or underutilised lands,</p>	<p>Comprises largely developed lands.</p>
<p>iii. Is within or adjoining the core of an established or designated urban settlement,</p>	<p>Yes, is within the established designated urban settlement.</p>
<p>iv. Will be essential in achieving compact and sustainable urban growth, and</p>	<p>Yes, the site contains infrastructure necessary to support the existing and future growth of the settlement.</p>
<p>v. There are no suitable alternative lands for the particular use or development type, in areas at lower risk of flooding within or adjoining the core of the urban settlement.</p>	<p>Lands already developed and established use.</p>
<p>3. A flood risk assessment to an appropriate level of detail has been carried out as part of the Strategic Environmental Assessment as part of the development plan preparation process, which demonstrates that flood risk to the development can be adequately managed and the use or development of the lands will not cause unacceptable adverse impacts elsewhere. N.B. The acceptability or otherwise of levels of any residual risk should be made with consideration for the proposed development and the local context and should</p>	<p>The western section of the institutional zoning (WTP) is within Flood Zone A and Flood Zone B.</p> <p>Parts 1 & 2 of the test found that it is considered appropriate to retain the existing zoning.</p> <p>Any future expansion of the WTP should be subject to an FRA which should follow the general guidance provided in Section 6 of the SFRA and must specifically address the following:</p> <ul style="list-style-type: none"> Existing flood data is indicative and does

<p>be described in the relevant flood risk assessment</p>	<p>not provide flood levels. An appropriately detailed hydraulic model will be required to confirm flood levels and extents.</p> <ul style="list-style-type: none"> • The sequential approach should be applied and highly vulnerable elements of the site should be located in Flood Zone C, or raised/bunded/protected; • FRA should address climate change scenarios in relation to operational levels and potential mitigation measures; • Proposals should not impede existing flow paths or cause flood risk impacts to the surrounding areas, and; • Emergency evacuation plan and defined access / egress routes should be developed for extreme flood events. • Any development shall also be required to be built in accordance with CCC SuDS Policy.
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