Draft

2014 - 2020

ENNISCORTHY

STRATEGIC FLOOD RISK ASSESSMENT

Draft
Enniscorthy Town and Environs
Development Plan 2014-2020
Appendix 5: Strategic Flood Risk Assessment
September 2013

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Abbreviations

AFA	Areas for Further Assessment
CFRAM	Catchment Flood Risk Assessment and Management
DEHLG	Department of the Environment, Heritage and Local Government
JBA	JBA Consulting Engineers and Scientists
NSS	National Spatial Strategy
OPW	Office of Public Works
PFRA	Preliminary Flood Risk Assessment
RFRA	Regional Flood Risk Assessment
SERPG	Regional Planning Guidelines for the South-East Region 2010-2022
SFRA	Strategic Flood Risk Assessment

1.0 Context and Background

1.1 Introduction

Flooding is a natural process that can happen at any time in a wide variety of locations. Flooding from the sea and rivers is probably best known but prolonged, intense and localised rainfall can also cause sewer flooding, overland flow and groundwater flooding. Development can also exacerbate the problems of flooding by accelerating and increasing surface water run-off, altering watercourses and removing floodplain storage. Flooding has significant impacts on human activities. It can threaten people's lives and their property, and in addition to economic and social damage, floods can have severe environmental consequences.

The town of Enniscorthy has a long history of flooding from the River Slaney and to a lesser extent, the River Urrin. Due to the town's riverside setting the location of devlopment within the river's floodplain was inevitable. Over the years, flooding from the River Slaney has caused extensive damage to both residential and commercial properties, particularly along Island Road, Abbey Quay, The Promenade and Shannon Quay. While the town's flooding problem cannot be eliminated, it can be managed appropriately so as to reduce its impact.

1.2 Legislative and Planning context

Flood risk management is set in an evolving framework of European and national legislation and guidance.

1.2.1 EU Floods Directive 2007/60/EC

This Directive on the assessment and management of flood risks came into force on 26 November 2007. It aims to reduce and manage the risks that floods pose to human health, the environment, cultural heritage and economic activity.

The Directive requires Member States to:

- Carry out a Preliminary Flood Risk Assessment of their river basins and associated coastal zones to identify areas where potential significant flood risk exists by December 2011.

- Prepare flood hazard maps and flood risk maps for the identified areas by December 2013, and
- Prepare flood risk management plans for these zones by December 2015. These plans are to include measures to reduce the probability of flooding and its potential consequences.

The Directive requires that the above be carried out in coordination with the Water Framework Directive through the synchronisation of flood risk management plans and river basin management plans.

1.2.2 National Flood Risk Management Guidelines

The Planning System and Flood Risk Management-Guidelines for Planning Authorities' (DEHLG and OPW, 2009), hereon referred to as the guidelines, were issued by the Minister for the Environment, Heritage and Local Government under Section 28 of the Planning and Development Act (2000) as amended. Planning authorities and An Bord Pleanála are required to have regard to the guidelines when carrying out their functions under the Planning Acts.

The guidelines set out government policy on development and flood risk management. The overall aim of the guidelines is to deliver sustainable development that minimises the risk of flooding to people and property by the avoidance of inappropriate development in areas at risk of flooding. Planning authorities are now required to incorporate flood risk management as a key consideration in the preparation of development plans, local area plans and the assessment of planning applications.

The core objectives of the guidelines are to:

- Avoid inappropriate development in areas at risk of flooding;
- Avoid new developments increasing flood risk elsewhere, including that which may arise from surface water run-off;
- Ensure effective management of residual risks for developments permitted in floodplains;
- Avoid unnecessary restriction of national, regional or local economic and social growth;

- Improve 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 outline three key principles that should be adopted by regional authorities, local authorities, developers and their agents when considering flood risk. These are:

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

1.2.3 CFRAM Programme

The Catchment Flood Risk Assessment and Management (CFRAM) Programme was developed to meet the requirements of the Floods Directive. The CFRAM programme includes these main stages:

- Stage 1 Preliminary Flood Risk Assessment 2011
- Stage 2 Flood Risk and Hazard Mapping 2013
- Stage 3 Flood Risk Management Plans 2015

The programme is being implemented through CFRAM studies. The country has been divided in six river basin districts and a CFRAM study is being carried out for each district. Enniscorthy Town is located within the South-Eastern CFRAM study area.

Stage 1, which was a national screening exercise known as the Preliminary Flood Risk Assessment (PFRA), identified areas where there might be a significant risk associated with flooding. Its intention was to identify communities (cities, towns, villages and townlands), facilities and sites (for example environmentally designated areas) around the country where the risk due to flooding might be potentially significant. These areas were identified as Areas for Further Assessment (AFA) which will be subject to more detailed assessment to establish the extent and degree

of flood risk. The PFRA identified Enniscorthy Town as an AFA. The Stage 1 PFRA maps for Enniscorthy identify areas at risk of fluvial flooding (1 in 100 and 1 in 1000 events) and pluvial flooding (1 in 100 and 1 in 1000 events). These areas are shown on Map 2 which is located at the back of this document.

Stage 2 is currently underway in the identified AFAs. Survey work is being carried out to provide information on river channels, structures within the channels, for example, bridge, weirs, sluices) and flood defences (for example walls and embankments). This information will be used to provide essential information for the assessment of both current and future flood levels, flood extents, flood hazards, and the development of measures to manage such risks.

The Enniscorthy Town and Environs Development Plan 2014-2020 is being prepared at a significant and tentative time in the formulation of a flood risk management plan for the town. Nonetheless, the Planning Authority must address the issue of flood risk management in the plan, and comply with requirements of the guidelines with the flood hazard and flood risk information currently available. One of the main benefits of the CFRAM study will be a greater availability of flood risk data and maps. This information will not necessarily trigger a review of the development plan but will provide a significant resource for the local authority when screening for flood risk and for applicants when carrying a flood risk assessments for individual sites.

1.2.4 Regional Flood Risk Management Policy

The Regional Planning Guidelines for the South-East Region 2010-2022 (SERPG) requires its constituent local authorities to take account of the issues raised in the Regional Flood Risk Assessment (RFRA) which was carried out during the preparation of the guidelines. The SERPG also requires its local authorities to undertake Strategic Flood Risk Assessment of future plans in line with Government's guidance on the planning system and flood risk management. It states that the local authorities should ensure they adhere to the principles of avoiding risks where possible in preparing future plans.

The River Slaney is discussed in the appraisal; however, Enniscorthy Town is not specifically referenced . The RFRA acknowledges that towns in hinterland areas

have been identified as vulnerable to flooding, based on the current information available. It is stated that within these towns, (which is considered to include Enniscorthy), implementation of the 2009 planning guidelines on flood risk establishes the mechanism to reconcile development and flood risk issues.

1.3 Purpose of Strategic Flood Risk Assessment

The Flood Risk Assessment technique for development plans is called a Strategic Flood Risk Assessment, hereon referred to as SFRA. The purpose of this SFRA is to provide a broad assessment of the types of flood risk to Enniscorthy Town, which in turn will inform strategic land-use planning decisions for the plan area. The SFRA will:

- Identify the degree to which flood risk is an issue;
- Identify flood zones within and adjoining the plan area;
- Apply the sequential approach to land use zoning by directing new development towards land that is at low risk of flooding;
- Apply the Justification Test where it is intended to zone or otherwise designate land which is at moderate or high risk of flooding; and
- Outline the key requirements for the management of development in areas at risk of flooding.

1.4 Advice Note

Flood hazard and flood risk information is an emerging dataset of information. The flood hazard maps used by the Council may be altered in light of future data and analysis. Therefore, all landowners and developers are advised that Wexford County Council and Enniscorthy Town Council accept no responsibility for losses or damages arising due to assessments of vulnerability to flooding of lands, uses and developments. Owners, users and developers are advised to take all reasonable measures to assess the vulnerability to flooding.

2.0 Strategic Flood Risk Assessment

2.1 Stages

The Strategic Flood Risk Assessment is based on two stages

- Stage 1 Flood Risk Identification
- Stage 2 Initial Flood Risk Assessment

2.2 Stage 1 Flood Risk Idenitifcation

Different types of flooding present different forms and degrees of danger to people, property, infrastructure and the environment. This is due to varying depth, velocity, duration, rate of onset and other hazards associated with flooding. With climate change the frequency, pattern and severity of flooding are expected to change, becoming more uncertain and more damaging. The purpose of this stage is to identify whether there are any flooding or surface water management issues relating to the plan area that may warrant further investigation. In this regard, the SFRA reviewed flood risk from fluvial, pluvial and groundwater sources.

2.2.1 Fluvial Flooding

This type of flooding occurs when the capacity of a river is either exceeded or the flow of the river becomes blocked or restricted. The excess water spills out from the channel onto adjacent low-lying areas; the flood plain. Rivers have associated natural flood plains; the purpose of which is to hold this excess water until it can be released slowly back into the river or seep into the ground.

2.2.2 Pluvial Flooding

Pluvial flooding is a result of rainfall-generated overland flows which arise before run-off enters any watercourse of sewer. The intensity of rainfall can be such the run-off totally overwhelms surface water and underground drainage systems.

2.2.3 Groundwater Flooding

Groundwater flooding occurs where the level of water stored in the ground rises as a result of prolonged rainfall and flows out over the ground.

The focus of the SFRA is the risk from fluvial flooding. The reasons for this are:

- A review of historical flood records indicates rivers to be the main cause of flooding in the plan area.
- There is readily available information for fluvial flood risk, particularly, JBA Flood Zone maps and the OPW PFRA Flood Extent maps.

2.3 Sources of Data

The data sources reviewed to identify potential flood risk included:

- National Flood Hazard mapping website www.floodmaps.ie
- Reports prepared by the OPW in respect to the flooding problem in Enniscorthy;
- The proposed Enniscorthy Flood Relief Scheme and supporting Environmental Impact Statement;
- OPW PFRA flood extent maps;
- Flood zone maps prepared by JBA Consulting Engineers.
- Local knowledge from Area Engineers who provided knowledge on particular lands.

2.3.1 OPW Flood Database

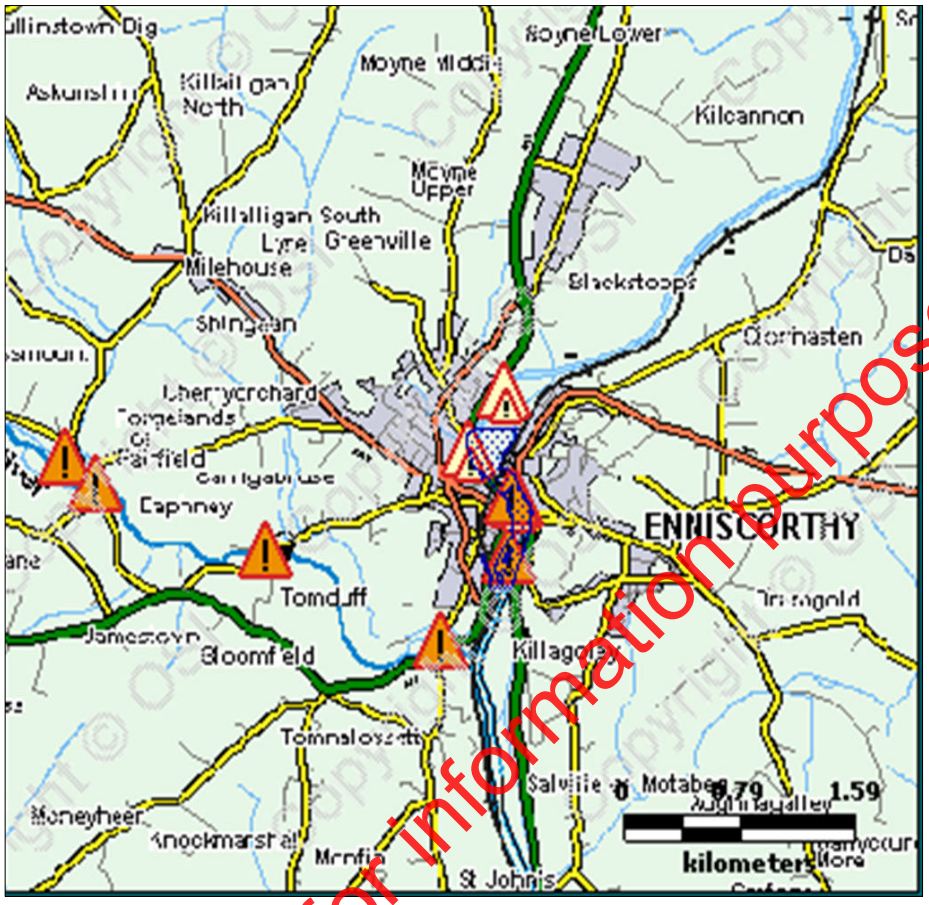
The National Flood Hazard mapping website, operated by the Office of Public Works, provides information on flood vulnerable locations in the town. This website www.floodmaps.ie has recorded 12 past flood events in the town; all fluvial. Information is provided on the event; including whether it was a recurrent or extreme event.

The OPW flood database (www.floodmaps.ie) identifies a number of recurring flood points in or adjoining the plan area, as shown on Map No. 1. These points are:

- The Island and Island Road
- The Quays
- The Promenade

Single flood events were recorded at St. John's Bridge and Carley's Bridge in November 2000 as a result of flooding from the River Urrin.

Map No. 1 Recorded Flood Events in the Plan Area



Source: www.floodmaps.ie April 2013

2.3.2 OPW Feasibility Report on the Enniscorthy Flooding Problem

This report provides a history of flooding in the town. The study identifies that there were were four major floods in Enniscorthy Town in the 20th Century; these occurred in 1924, 1947, 1965 and 2000. The 1965 was the largest relative to the November 2000 flood, it produced levels about 1.25m higher upstream of Enniscorthy Bridge and about 0.9m higher downstream of Seamus Rafter Bridge than the 2000 flood event.

However, the flood event in November 2000 caused considerable damage with many properties over one metre deep in water. It is stated that in many cases the properties did not flood from the river adjacent to them, instead their flooding resulted from waters exiting the river at a point further upstream and moving overland to them. The report provides details of the extent of flooding at the following points:

- Upstream (north) of the railway line;
- From the railway line to Enniscorthy Bridge
- From Enniscorthy Bridge to Seamus Rafter Bridge
- Downstream of Seamus Rafter Bridge

The report outlines how the surprising depths of the flooding are, in part, due to the lack of floodplains at Enniscorthy. The high ground to its west is part of the foothills of the Blackstairs Mountain and the eastern part of the town is partially built on Vinegar Hill. The depth of flooding is also due to the lack of a substantial floodplain throughout most of the catchment. It is stated that generally, the floodplains of the River Slaney and its tributaries are not wide and end abruptly in steep sided escarpments and hills; the majority of large Irish rivers do not share this condition. This means that the river only has a small area to flood over, so the peak is not attenuated to the same degree as is common elsewhere[1].

The report included a feasibility investigation and an outline design of a preferred flood relief scheme to reduce flooding problems in the town.

2.3.3 Enniscorthy Town Flood Relief Scheme

It was in response to the 2000 flood event that the OPW carried out the investigation into the flooding problem in the town, and as result, the OPW intends to provide improved flood alleviation to the town through the carrying out a flood relief scheme; further details of which are outlined in Section 3.2. The design standard for the flood alleviation provides protection from flooding up to and including a 1 in 100 year event. This means that there is a 1% chance of a flood of this magnitude, or larger, occurring in every year. With the scheme in place, Enniscorthy will flood in the future albeit at a significantly reduced frequency[2]. The scheme has been designed to take account of the climate change by taking an estimated 15% expected increase in flood peaks.

[1] OPW River Slaney Drainage Scheme EIS Final Report February 2009 2-1
[2] OPW EIS 3-1

2.3.4 OPW Preliminary Flood Risk Assessment

As discussed in Section 1.2.3, the PFRA identified EnniscorthyTown as an Area for Further Assessment. The PFRA map for Enniscorthy show areas at risk of fluvial flooding and pluvial flooding for indicative (1 in 100) and extreme (1 in 1000) flood events.

Fluvial Mapping Methodology

The following methodology is set out in the National Preliminary Flood Risk Assessment[3]. The OPW generated flood flow estimates for a range of flood event possibilities at major nodes every 500m, and upstream and downstream of confluences, on the entire river network in the country (based on the EPA 'blue-line' GIS data). A typical Irish river will carry what is called the 'mean annual flood' in-bank, with flows greater than this spilling out as flood water. The out-of-bank, or flood flow, was determined at the nodes by deducting the mean annual flood flow from the derived flood flow for the relevant flood event probability.

At each major node, and at intermediate nodes at 100m spacing, a floodplain cross-section was derived from the OPW's Digital Terrain Model (DTM). A hydraulic calculation, using Manning's equation, was then used to calculate a flood level for the given out-of-bank flood flow, based on the cross-section, slope and resistance to flow. This level was extarpolated across the cross-section to identify the outer extents of the flood on that cross-section. The outer extents of the flood were then joined up (linearly) to create a map of the projected flood extents. This process was undertaken, for the national river network for all nodes with a catchment area greater than 1km2, for the three event probabilities (the 10%, 1% and 0.1% AEP events) to create the indicative national fluvial flood maps.

The maps have certain limitiations and potential sources of local error, notably:

- Local errors in the DTM
- The method assumes a certain channel capacity so the flood levels are likely to be over-estimated where works have been carried out to enhance channel capacity.

[3] Office of Public Works, The National Preliminary Flood Risk (PFRA), Overview Report-Draft for Public Consultation, Dublin, August 2011, p13.

- The method does not take account of flood defences.
- The method does not take account of structures in or over the channel.

Also, some building and other infrastructure may be shown as being within the flooded area, but in reality may be above the flood level.

The indicative PFRA fluvial flood extents for the plan area are shown on Map 2 which is located at the back of this document. The show fluvial flood risk for the 1 in 100 flood event (indicative) and the 1 in 1000 flood event (extreme). The main areas identified as at risk are:

- Lands along the course of the River Slaney; Island Road, Island Street, Abbey Quay, the Promenade and the lower parts of Templeshannon (public swimming pool and railway station). Areas along Barrack Street and lands between the Promenade and Millpark Road are also identified).
- Lands to the east of St. John's Bridge (where the River Urrin enters the River Slaney)
- Lands to the west of St. John's Bridge: along the route of the River Urrin from St. John's Bridge to Carrigabruse, Cherryorchard, the Lyre and Greenville.
- Part of, and lands to the rear of Bridgemeadow Housing Estate which is located at Shingulan/Bloody Bridge and part of land at Sliabh Amharc Housing Estate also at Bloody Bridge.
- Lands to the south-west of Blackstoops Roundabout and lands at Quarry Park.
- Lands to the south-east of Blackstoops Roundabout.

Pluvial Flood Mapping Methodology

The following methodology is set out in the National Preliminary Flood Risk Assessment.[4] The process for developing the pluvial flood extent maps was based on 'dropping' various depths and intensities of rainfall over a range of durations and modelling how that rainfall would flow over land and, in particular, pond in low-lying areas. The amount of rainfall that was absorbed by the ground or, in urban area,

[4] Office of Public Works, The National Preliminary Flood Risk (PFRA), Overview Report-Draft for Public Consultation, Dublin, August 2011, pp15-16.

drained by the urban storm-water drainage system, and hence deducted from the water that would flow overland and pond, was estimated using the Flood Studies Update methodologies and from analysis against mapped events based on more detailed modelling (in Dublin) respectively. The process produced maps of areas likely to flood from intense rainfall events for three flood event probabilities (3.33%, 1% and 0.1% AEP events).

The maps were adapted to show only the extents where the flood depths were greater than 200mm (on the basis that depths lower than this would not cause significant damage given door-step levels above ground level). It is noted that the process assumed a constant capacity of urban storm-water drainage systems, and, due to the scale of analysis, has not taken into account local drainage structures such as culverts through embankments or other local drainage that would not be resolved in the DTM at national scale.

The indicative PFRA pluvial flood extents for the plan area are shown on Map 2. The main areas at risk are:

- Lands at Blackstoops Roundabout.
- Lands at Clonhasten.
- Lands at Moyne Lower (Old Dublin Road).
- Lands at Greenville
- Lands at Drumgold.

2.3.5 JBA Flood Zones

These zones were prepared by JBA Consulting Engineers and Scientists Limited. For the fluvial (river) flood mapping, the processes involved two stages:

1. Hydrology – This stage involved generating inflows for use in the hydraulic modelling by creating digital catchment descriptors from a wide range of environmental datasets. The design flows were calculated from these descriptors using a statistical method based on the Flood Estimation Handbook. The flows were adjusted based on records from river flow gauges.
2. Hydraulic Modelling – The design flows, input at 300 metre intervals along each river reach, were then used to simulate overload flooding using a multi-

scale two-dimensional hydraulic model, with the resulting flood outlines captured on flood maps

In accordance with the guidelines the sources of flooding are mapped without regard for any form of flood defence and do not specifically model interaction with anything other than the land surface, stripped of all man-made features. This approach is required by the guidelines to take into account the risk of defence failure or overtopping. The Flood Maps do not directly take climate change into account. However, climate change flood extents can be assessed using the Flood Zone B outline as a surrogate for Flood Zone A with allowances.

It should also be noted that the flood zones are indicative of river and coastal flooding only. They should not be used to suggest that any areas are free from flood risk, since they do not include the effects of other forms of flooding such as from groundwater or artificial drainage systems.

Map 3, which is located at the back of this document, identifies the flood zones within and adjoining the plan area. The areas at risk of fluvial flooding, either within Flood Zone A or Flood Zone B are:

- Lands along the course of the River Slaney; Island Road, Island Street, Abbey Quay, the Promenade, Shannon Quay and small area of land in the lower part of Templeshannon (area around the public swimming pool and railway station).
- An extensive area of land to the east of St.John's (the River Urrin enters the River Slaney at this point)
- An extensive area land along the route of the River Urrin west of St. John's Bridge to Carrigabruse, Cherryorchard, the Lyre and Greenville.
- Parts of Bridgemeadow and Sliabh Amharc housing estates which are located at Shinguan/Bloody Bridge.

2.3.6 Comparison between OPW PFRA and JBA Flood Mapping

While the mapping methodologies for both are inherently different, both datasets have produced indicative flood maps which are based on robust methodologies and which correlate very well. In accordance with the Planning System and Flood Risk

Management-Guidelines for Planning Authorities (DEHLG and OPW, 2009) both sets of maps were developed without regard for any form of flood defence and do not specifically model interaction with anything other than the land surface, stripped of all manmade features. This approach is required to take into account the risk of defence failure or overtopping.

2.4 Conclusions

Stage 1 concludes that there are fluvial flood risk issues in the plan in the following areas:

- Lands along the course of the River Slaney; Island Road, Island Street, Abbey Quay, the Promenade, Shannon Quay and the lower parts of Templeshannon (public swimming pool and railway station). Areas along Barrack Street and lands between the Promenade and Millpark Road are also identified).
- Lands to the east of St.John's (the River Urrin enters the River Slaney at this point)
- Lands along the route of the River Urrin west of St. John's Bridge to Carrigabruse, Cherryorchard, the Lyre and Greenville.
- Part of, and lands to the rear of Bridgemeadow Housing Estate which is located at Shinguan/Bloody Bridge and part of land at Sliabh Amharc Housing Estate also at Bloody Bridge.
- Lands to the south-west of Blackstoops Roundabout and lands at Quarry Park.
- Lands to the south-east of Blackstoops Roundabout.

This stage also identified areas where pluvial flood risk may be an issue

- Lands at Blackstoops Roundabout.
- Lands at Clonhasten.
- Lands at Moyne Lower (Old Dublin Road).
- Lands at Greenville
- Lands at Drumgold.

2.5 Stage 2 Initial Flood Risk Assessment

This stage confirms the sources of flooding that may affect the plan area, to appraise the adequacy of existing information and to scope the extent of the risk through the preparation of indicative flood maps which identify flood zones for river flooding. Having identified the flood zones, the sequential approach is used to direct, where possible, new development to areas at low risk of flooding.

2.5.1 What are Flood Zones?

Flood zones are geographical areas within which the likelihood of flooding is in a particular range. The guidelines define three types or levels of flood zones.

Table 1: 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).

The Flood Zones were identified and mapped by JBA Consulting Engineers and Scientists Limited and are mapped on Map 3 of this document. The OPW PFRA map (Map 2) was also used when applying the sequential approach and considering land use zoning in the plan area. Both these data sets, and other future updated versions of them, will be used to screen for flood risk in the plan area; either at development plan or development proposal/planning application stage and when deciding whether a detailed Flood Risk Assessment is required.

2.6 Sequential Approach

Having identified the flood zones within and adjoining the plan area the next step is to apply the sequential approach to land use planning in the area. The guidelines require a sequential approach to planning and flood risk management as it is considered a key tool in ensuring that development, particularly new development, is directed towards land that is at low risk of flooding. The philosophy underpinning the sequential approach in flood risk management is:

Avoid: Preferably chose lower risk flood zone for new development.

Subsitute: Ensure the type of development proposed is not especially vulnerable to the adverse impacts of flooding.

Justify: Ensure that the development is being considered for strategic reasons.

Mitigate: Ensure flood risk is reduced to acceptable levels.

2.6.1 Vulnerable Uses

The guidelines classify the vulnerability of different types of development and match this vulnerability to the appropriate flood zone. The planning implications for each flood zone are outlined in Table 2.

Table 2: Vulnerability and Type of Development

Vulnerability Class	Land uses and types of development which include*:
Highly vulnerable development (including essential infrastructure)	• Garda, ambulance and fire stations and command centres required to be operational during flooding; • Hospitals; • Emergency access and egress points; • Schools; • Dwelling houses, student halls of residence and hostels;

	• Residential Institutions such as residential care homes, children's homes and social services homes; • Caravans and mobile home parks; • Dwelling houses designed, constructed or adapted for the elderly or, other people with impaired mobility; and • Essential infrastructure, such as primary transport and utilities distribution, including electricity generating power stations and sub-stations, water and sewage treatment, and potential significant sources of pollution (SEVESO and IPPC sites etc) in the event of flooding.
Less Vulnerable Development	• Buildings used for: retail, leisure, warehousing, commercial, industrial and non-residential institutions; • Land and buildings used for holiday or short-let caravans and camping subject to specific warning and evacuation plans; • Land and buildings used for agriculture and forestry; • Waste treatment (except landfill and hazardous waste); • Mineral working and processing; and • Local transport infrastructure
Water-compatible development	• Flood control infrastructure; • Docks, marinas and wharves; • Navigation facilities; • Ship building, repairing and dismantling, dockside fish processing and refrigeration and compatible activities requiring a waterside location; • Water-based recreation and tourism (excluding sleeping accommodation); • Lifeguard and coastguard stations; • Amenity open space, outdoor sports and recreation and essential facilities such as changing rooms; and • Essential ancillary sleeping or residential

	accommodation for staff required by uses in this category(subject to specific warning and evacuation plan)

* Uses not listed in this table should considered on their own merits

2.6.2 Application of the Sequential Approach

The JBA Flood Zone map and the OPW Flood Extent maps was overlaid on the existing plan area which identified the key areas where flood risk management and future development within them required further consideration. This process identified:

(a) previously developed areas, brownfield sites and under-utilised sites which have a high or moderate risk of flooding and are currently zoned for highly vulnerable or less vulnerable uses

(b) Undeveloped lands that have a high or moderate risk of flooding and are currently zoned for highly vulnerable or less vulnerable uses.

The continued zoning of some of the undeveloped lands for uses that are vulnerable to flooding could not be justified for strategic reasons and would not satisfy the criteria in the Justification Test. It was decided to either replace these existing zonings with lower vulnerability land uses (water compatible uses) or to remove the subject land from the plan area.

2.6.2.1 Removal of Land from the Plan Area (Dezoning)

An assessment of undeveloped land zoned for residential use or a mixture of residential and other uses in the Enniscorthy Town and Environs Development Plan 2008-2014 was carried out. This identified an excess of 306.1 ha. from what is required to accommodate the allocated population growth for the period of this Plan. The excess zoning has been addressed by dezoning (236ha) and rezoning (70ha). The lands retained for future residential development (74 ha.) have been selected to allow the town to develop in a compact manner while ensuring the efficient use of existing and planned infrastructure. Flood risk management was one of the criteria used to inform where the future residential land should be located. In terms of the removal of land from the plan boundary, it directly influenced the removal of a small

portion of lands to the northeast of Sliabh Amharc Housing Estate, lands to the south of Bridgemeadow Housing Estate and undeveloped lands at the Lyre and Greenville.

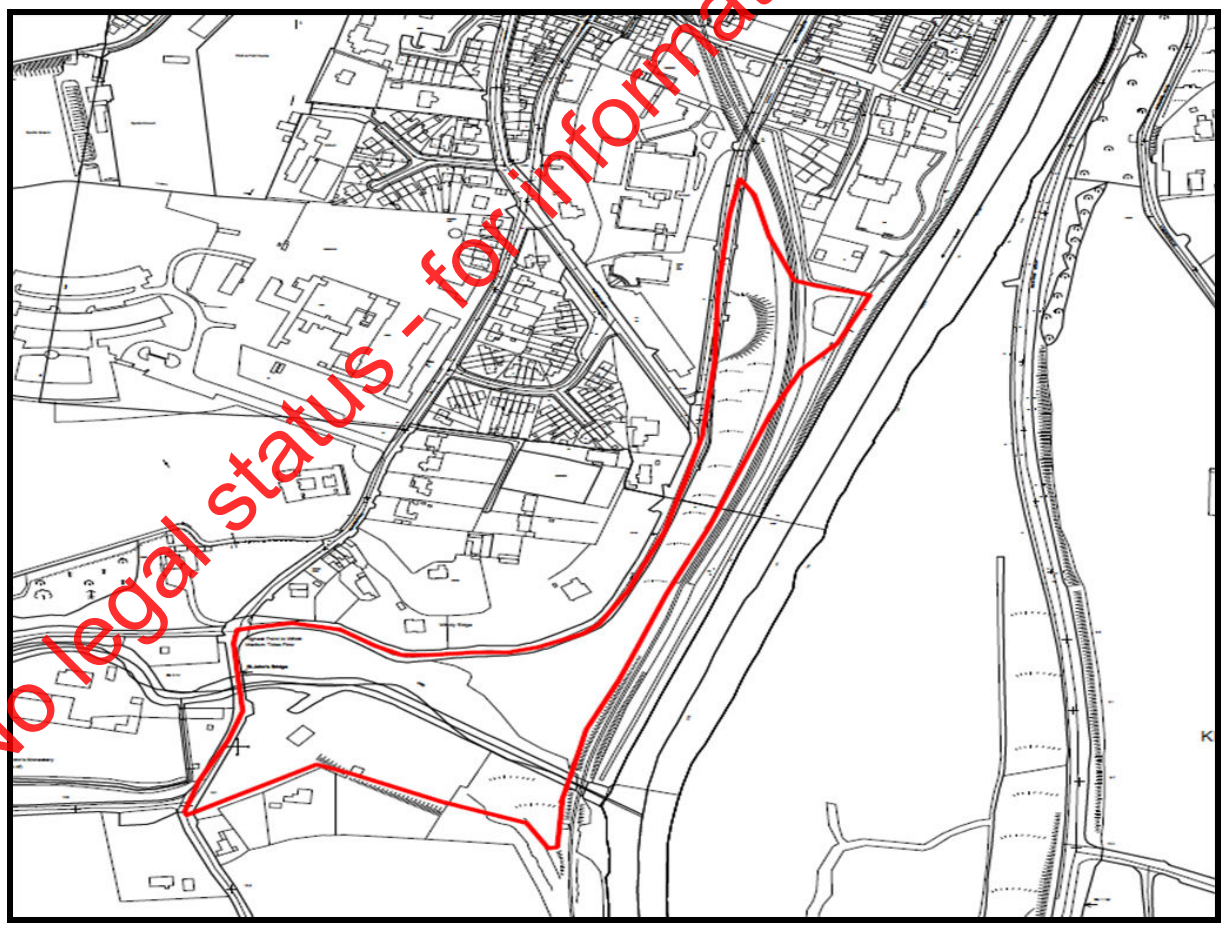
2.6.2.2 Rezoning of Land

As outlined above, flood risk management was one of the key criteria used to inform land use zoning objectives. It directly influenced the rezoning of the following areas of land:

Land to the East of St. John's Bridge

This land, which is shown on Figure 1, is a significant brownfield site on the edge of the plan area.

Figure 1



Under the 2008-2014 Plan, part of the lands were zoned Open Space and Amenity and part for residential development. Permission was granted in 2005 to develop a

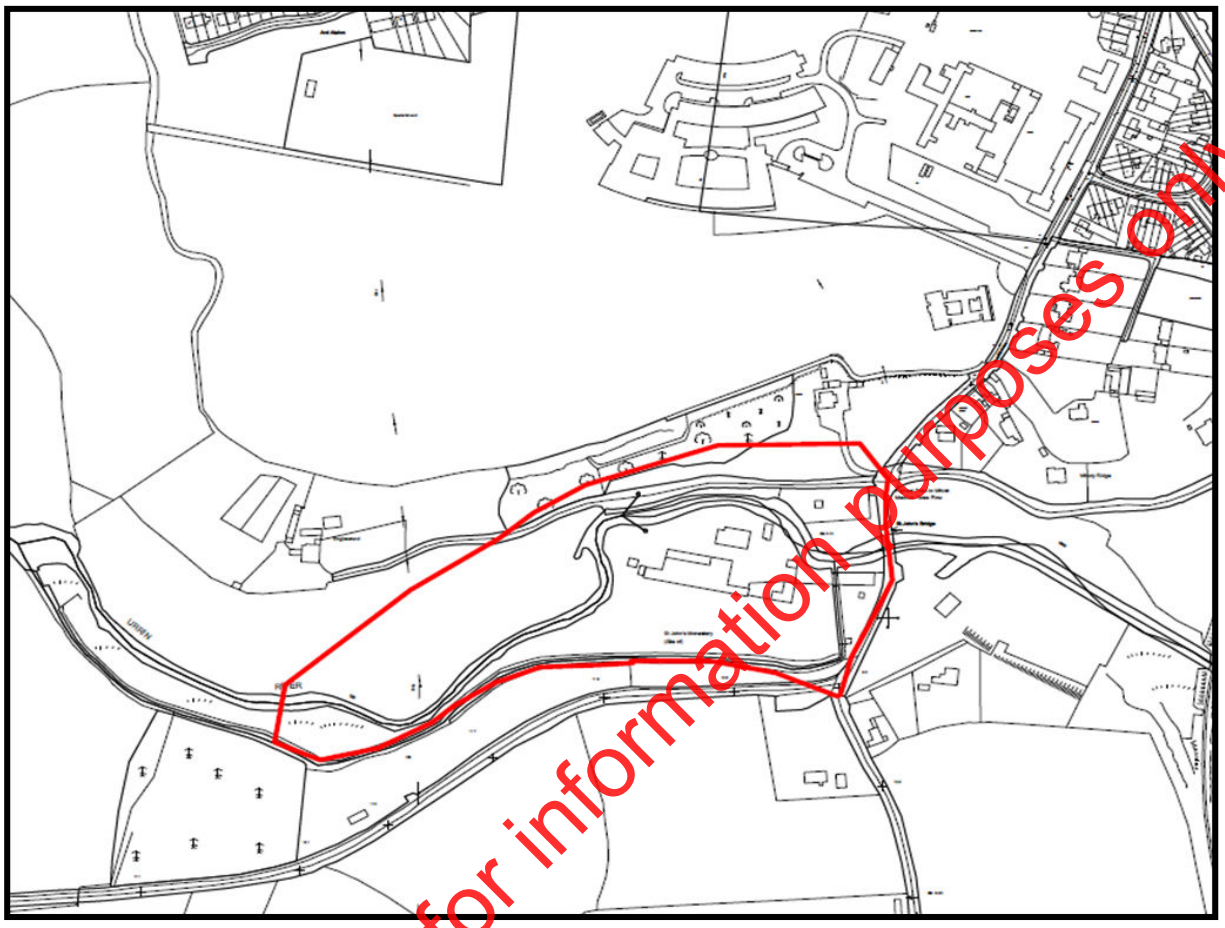
hotel and apartment development on the lands. However, this development was not undertaken and the permission has since expired.

Based on the Flood Zone Map the lands previously zoned for residential development lie within Flood Zone A. Having regard to the criteria set out in the Development Plan Justification Test (refer to Section 3 Table 4), the future development of these lands for vulnerable uses (either high or moderate vulnerability) could not be justified. However, give the site's location and its landmark characteristics, the Planning Authority would support the approrpriate redevelopment of the lands. Accordingly, the lands previously zoned as residential and open space and amenity have been rezoned to Leisure and Amenity. Future developments on this site must be water compatible development as set out in the Guidelines

Lands to the West of St. John's Bridge

These lands, which are identified on Figure 2, are to the west of St. John's Bridge.Under the 2008-2014 Plan some of the lands were zoned for residential development and some lands for open space and amenity. Based on the Flood Zone Map the lands previously zoned for residential development lie within Flood Zone A. Having regard to the criteria set out in the Development Plan Justification Test (refer to Section 3 Table 4), the future development of these lands for vulnerable uses (either high or moderate vulnerability) could not be justified as there are more appropriate lands available with no flood risk issues. Accordingly, the lands previously zoned as residential and open space and amenity have been rezoned Leisure and Amenity. Future developments on the Leisure and Amenity lands must be water compatible development as set out in the Guidelines.

Figure 2



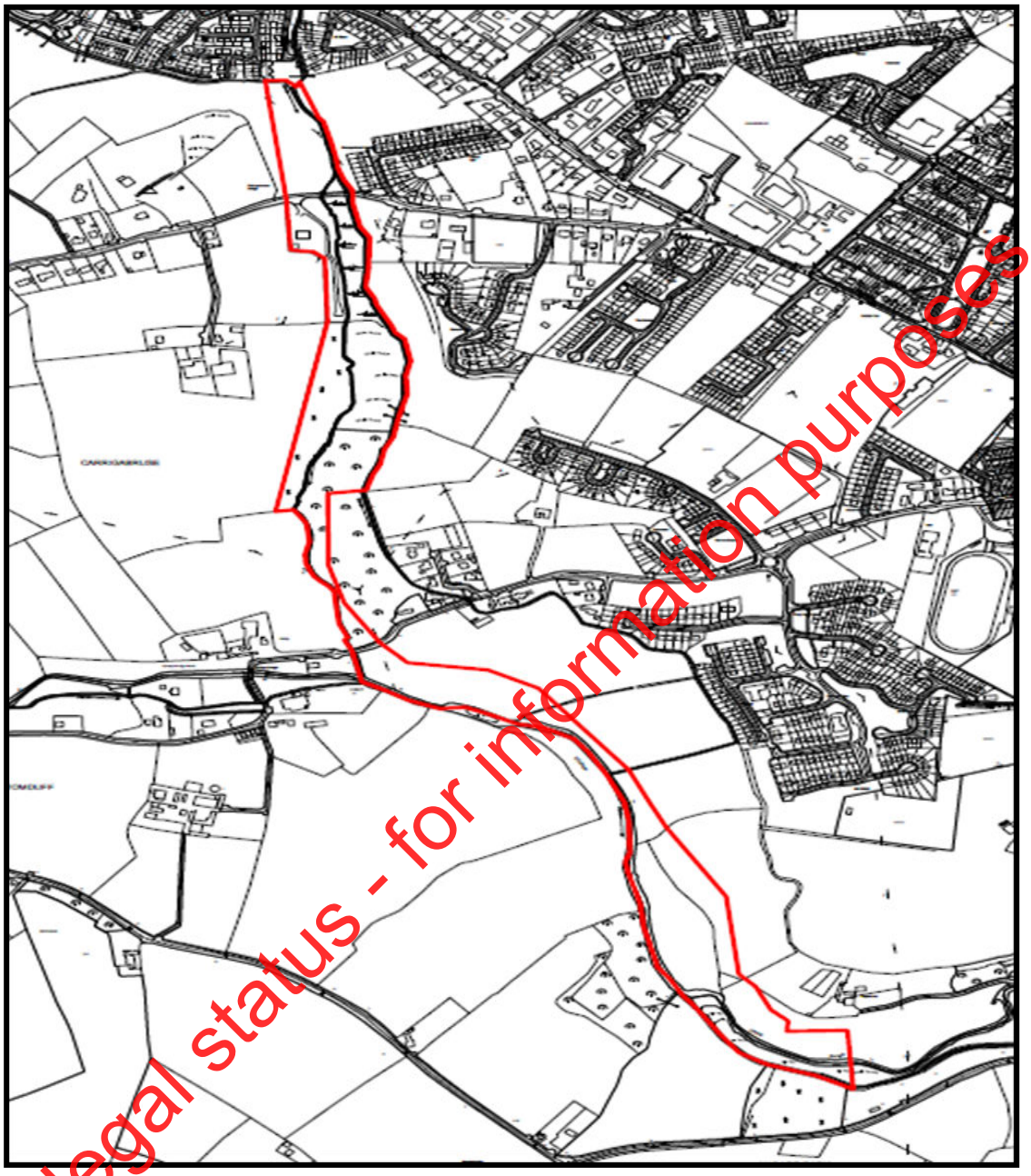
Lands along the Route of the River Urrin at Carrigabruse and Cherryorchard

These lands, which are identified on Figure 3, are located along the route of the River Urrin. The majority of the lands were zoned Open Space and Amenity under the 2008-2014 A small amount of the lands were zoned residential.

Having regard to the criteria set out in the Development Plan Justification Test (refer to Section 3 Table 4), the future development of these lands for vulnerable uses (either high or moderate vulnerability) could not be justified as there are more appropriate lands available with no flood risk issues.

Accordingly, where the lands lie either within or adjoing a flood zone, the zoning has been changed to Leisure and Amenity. Any future developments will have to be water-compatible in accordance with the guidelines.The Open Space and Amenity has been retained on the remaining lands.

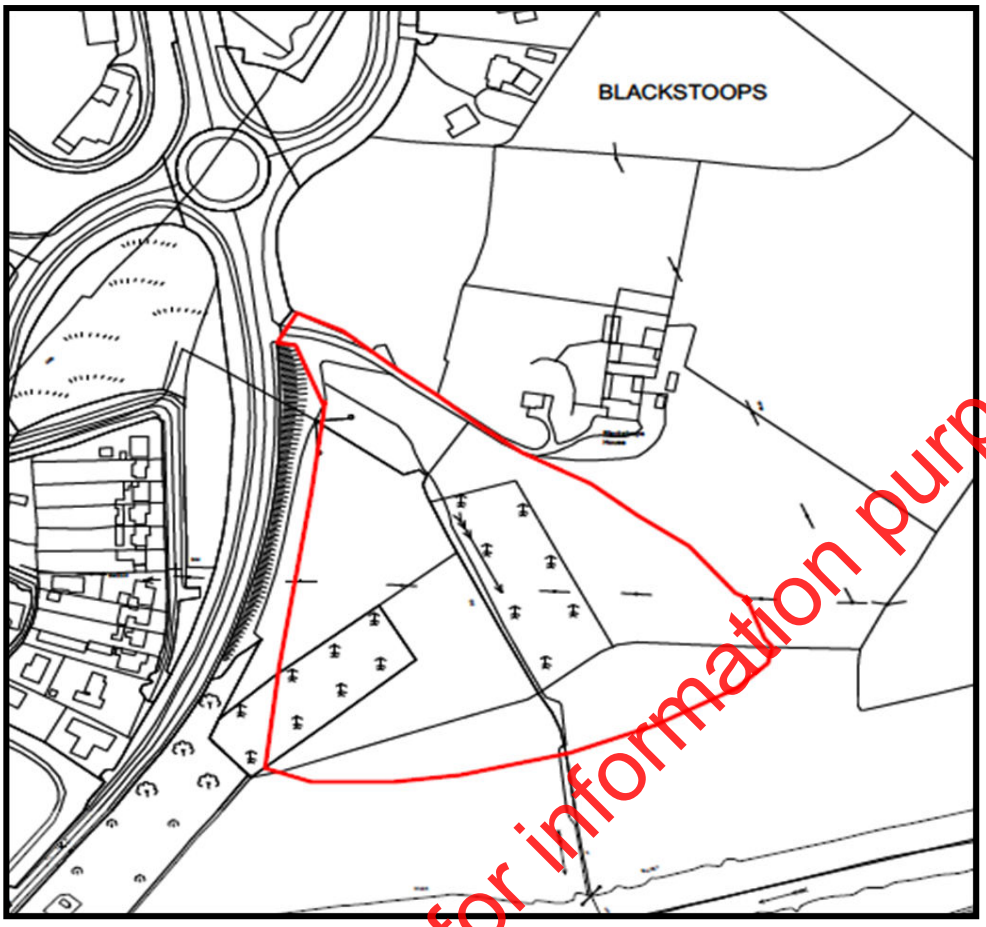
Figure 3



Lands to the South-East of Blackstoops Roundabout

These lands are identified on Figure 4. Under the 2008-2014 Plan the subject lands were zoned Mixed Use and Residential. The area at risk from flooding has been rezoned to Leisure and Amenity with adjoining areas rezoned to Open Space and Amenity.

Figure 4

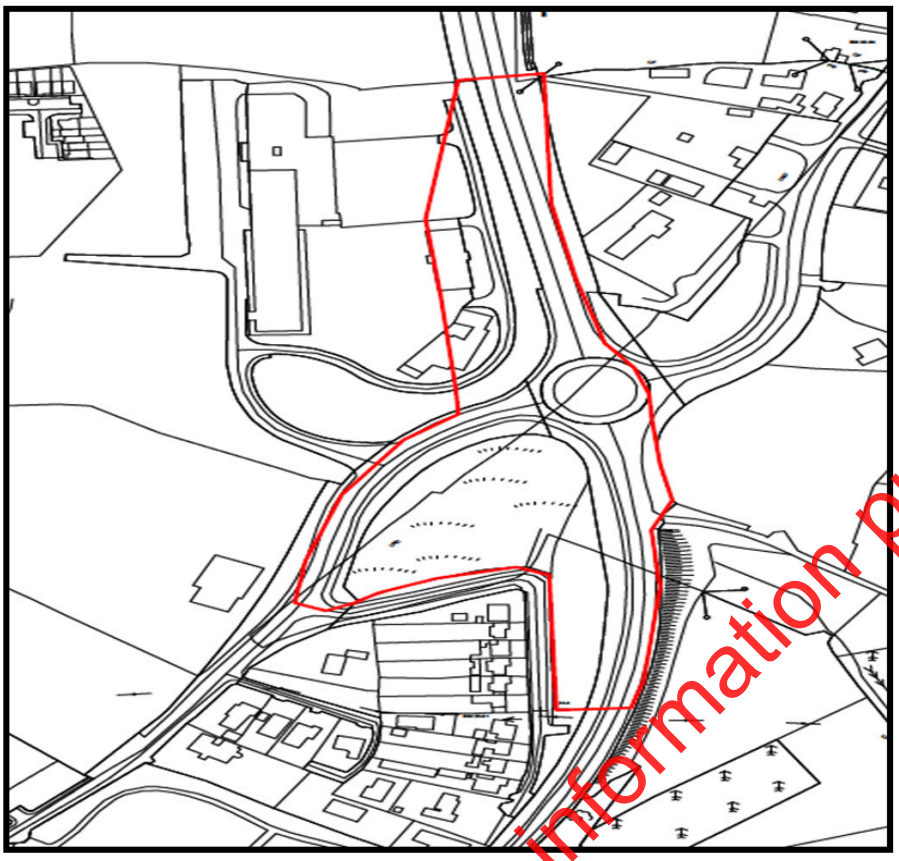


2.6.3 Other Lands Considered

2.6.3.1Lands to the South of Blackstoops Roundabout and Quarry Park

While the Flood Zone Map does not show any flood risk to these lands which are identified on Figure 5, the OPW PFRA Flood Extent map identifies pluvial flood risk and a small section of the lands having an Indicative fluvial risk (1 in 100 event). These landshave been reviewed by the Area Engineer. The review confirmed that there is no known record of flooding, either fluvial or pluvial. The lands which were previously zoned for residential development have been rezoned for mixed use development given the landmark nature of the site and its potential for commerical development. The lands at Quarrypark have retained their mixed use zoning. Future developments on these land will be require to carry out an appropriately detailed flood risk assessment, and where requried, propose necessary mitigation measures in place.

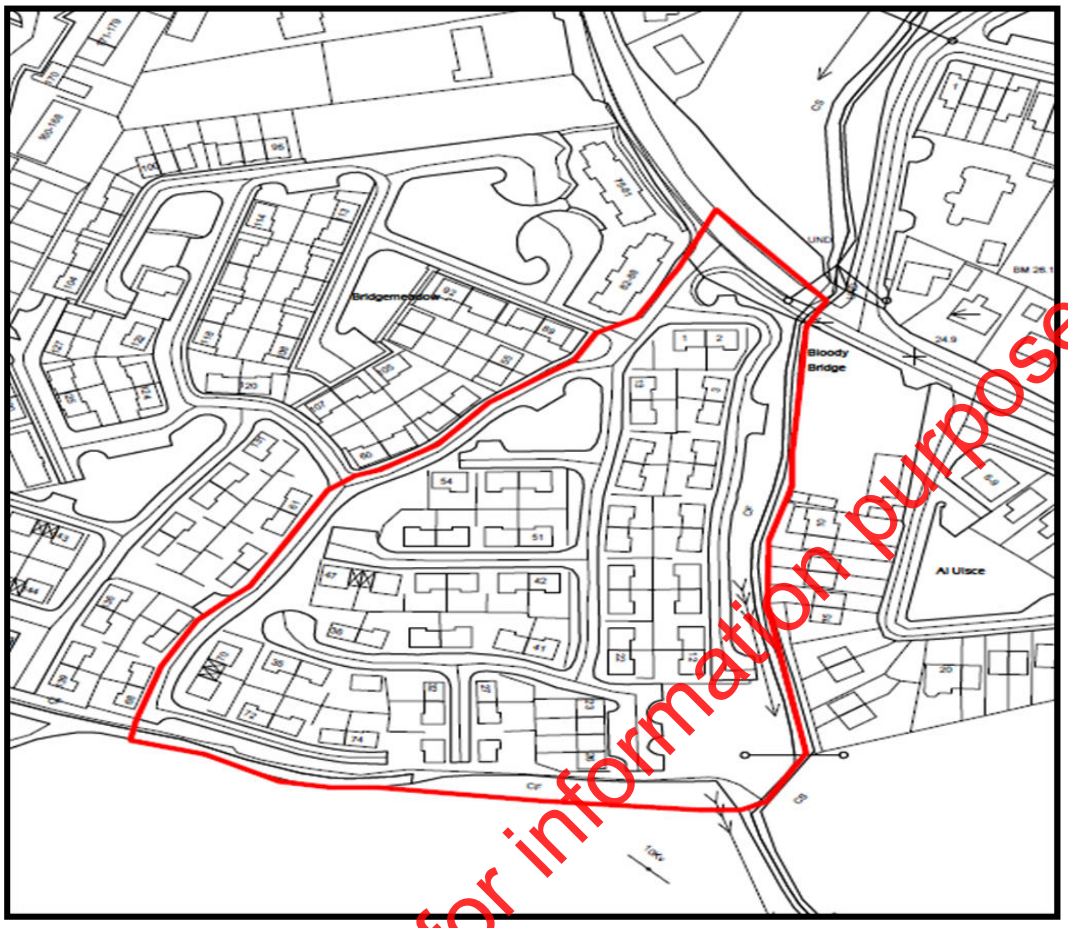
Figure 5



2.6.3.2 Bridgemeadow Housing Estate

The Flood Zone Map identifies part of these lands, which are shown on Figure 6, within Flood Zone A.

Figure 6



The land use objective for these lands is 'Existing Residential and Infill: to protect and enhance the residential amenity of existing and developed communities. This zoning relates to residential lands that are fully or partially built on. The purpose of this zoning is to preserve existing residential uses and to provide for infill residential development at a density that is considered suitable to the area.

It is expected any future development proposals within this housing estate will be extensions to dwelling houses, and in this case, the provisions of Section 5. 28 of the guidelines will apply (assessment of minor proposals in areas of flood risk).
It is noted that there is an undeveloped area in the south-east corner of the housing development. This area, which based on the particulars of the planning permission provides the stormwater attenuation services for the development, should not be developed for housing.

2.6.3.3 Pluvial Flood Risk (including lands at Clonhasten, Moyne Lower and Greenville)

The OPW PFRA Flood Extent map (Map 2) identifies sporadic small scale pockets of land at risk of pluvial flooding (surface water). These lands, which can be identified are identified on Figures 7(a), 7(b) 7(c) and 7(d) are zoned for residential (Clonhasten, Greenville and Drumgold) and General Industry and Commercial (Moyne Lower).

Site-specific flood risk assessments should be carried out to an appropriate level of detail to assess the potential for these lands to contribute to, or be vulnerable to pluvial flooding. Such assessments and future developments should consider drainage thoroughly, in particular, whether there are any surface water flow paths or ponding on the lands. Any development proposals must demonstrate that it will not impact negatively on flood risk elsewhere.

Figure 7 (a) Clonhasten (Residential)

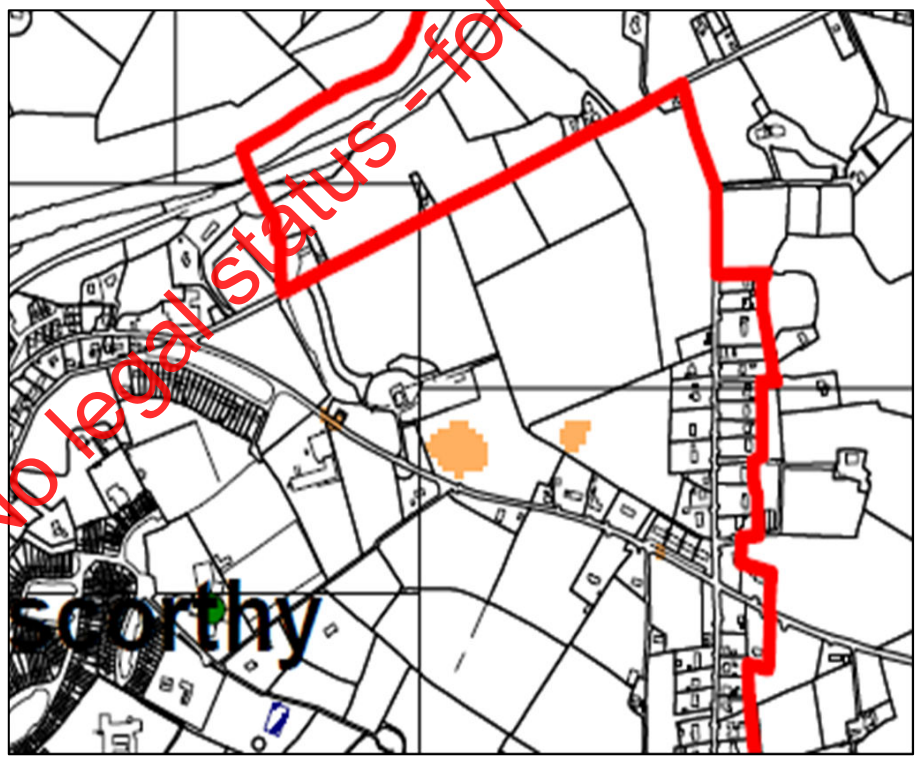


Figure 7(b) Greenville (Residential)

Figure 7(c) Drumgold (Residential)

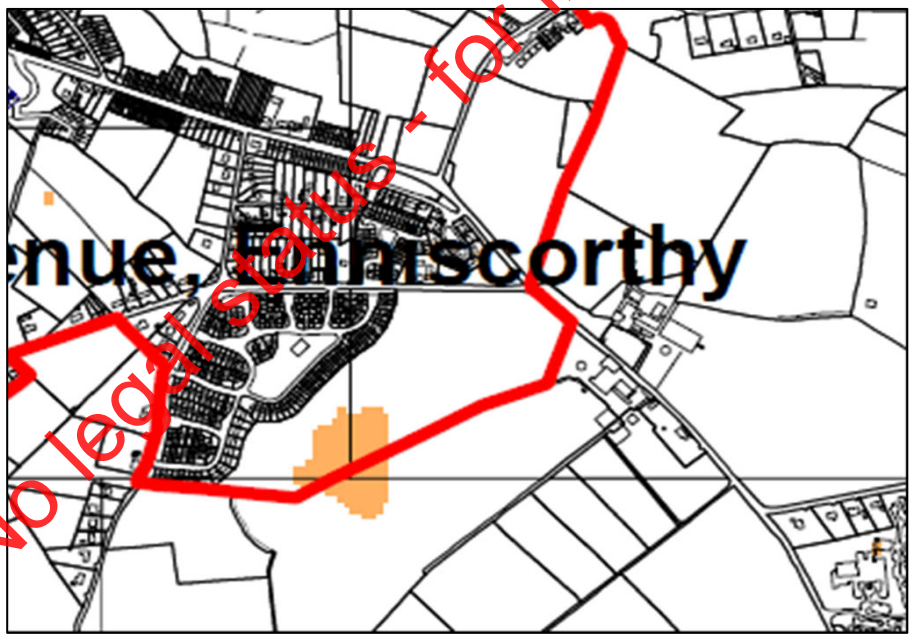
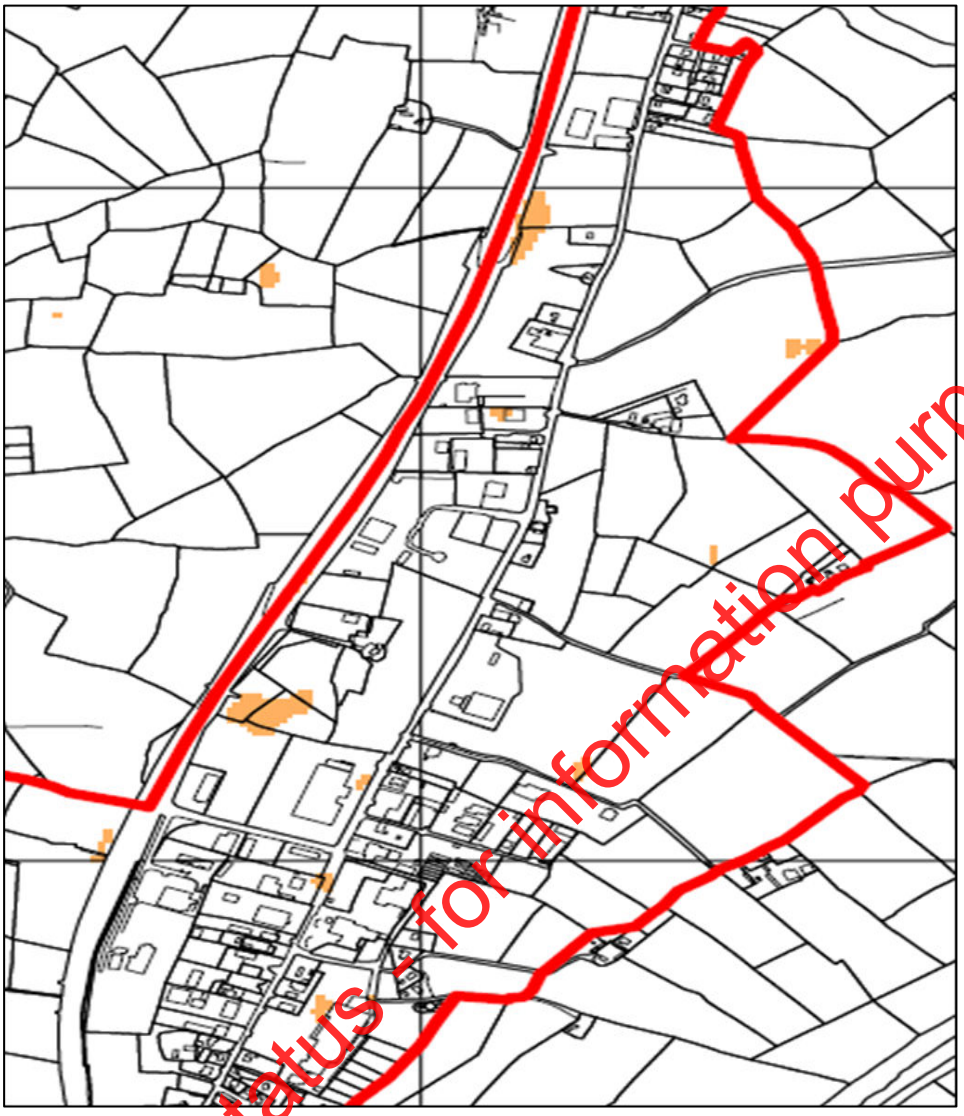


Figure 7(d) The Moyne and Old Dublin Road (Industry and Commerical)



2.7 Conclusions

Flood risk management has played a key role in informing decisions regarding land use zoning objectives in the plan area. In the most part, where flood risk was an issue, the subject lands were either rezoned to more appropriate water compatible land use or removed from the plan area.

However, for strategic reasons and in the interests of the proper planning and sustainable development of the area it is proposed to retain the zoning of previously developed lands, brownfield and underutilised sites for uses and development that are highly vulnerable or less vulnerable to flooding in the town centre. The subject lands are:

- Island Road, Island Street, Abbey Quay, the Promenade, Mill Park Road, Shannon Quay and the lower part of Templeshannon (including the area of the railway line and station and public swimming pool).

In accordance with the Guidelines the required Development Plan Justification Tests were carried out for these lands are discussed in further detail in Section 3.

3.0 Justification Test

3.1 Justification Test

The guidelines state that where a Planning Authority is considering the future development of areas in an urban settlement that are at moderate or high risk of flooding, for uses or development vulnerable to flooding that would generally be inappropriate, the Planning Authority must be satisfied that it can clearly demonstrate on a solid evidence base that the zoning or designation for development will satisfy the Justification Test. Table 3 below illustrates those types of development that would be required to meet the Justification Test.

Table 3: Type of Development Requiring the Justification Test

	Flood Zone A	Flood Zone B	Flood Zone C
Highly vulnerable development (including essential infrastructure)	Justification Test	Justification Test	Appropriate
Less vulnerable development	Justification Test	Appropriate	Appropriate
Water-compatible development	Appropriate	Appropriate	Appropriate

Section 4.23 of the guidelines outlines all of the criteria that must be satisfied in the Justification Test. This is shown in Table 4.

Table 4: Justification Test for Development Plans

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

1. The urban settlement is targeted for growth under the National Spatial Strategy, regional planning guidelines, statutory plans or under the Planning Guidelines or Planning Directives provisions of the Planning and Development Act 2000, as amended.
2. The zoning or designation of the lands for the particular use or development type is required to achieve the proper planning and sustainable development of the urban settlement and, in particular:
   (i) Is essential to facilitate regeneration and/or expansion of the centre of the urban settlement;
   (ii) Comprises significant previously developed and/or under-utilised lands;
   (iii) Is within or adjoining the core of an established or designated urban settlement;
   (iv) Will be essential in achieving compact and sustainable urban growth; and,
   (v) There are no suitable alternative lands for the particular use or development type, in areas at lower risk of flooding within or adjoining the core of the urban settlement.
3. A flood risk assessment to an appropriate level of details 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 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.

3.2 Application of the Justification Test

3.2.1 Area 1: Town Centre

This area, which is outlined on Map 4, comprises Island Road, Island Street, Abbey Quay, the Promenade, parts of Mill Park Road, Shannon Quay and the lower part of Templeshannon including the area occupied by the swimming pool and the railway line and station. The flood zone map identify these lands as being in Flood Zone A (purple) with the outer reaches of the area in Flood Zone B (pink).

The land use zoning objective for these lands is Town Centre. The aim of this zoning is to strengthen the structure of the town centre and promotes policies which would attract suitable development and investment. A range of commercial and retail activities will be focused in the town centre to promote vitality and vibrancy. It is important that the town centre is multifunctional and includes residential, retail and craft/amenity which is vital to the character and dynamism of the town's historic core. Residential use in the town centre will be encouraged through apartment development schemes such as 'living over the shop' to ensure a vibrant atmosphere in the town centre after the closing of shops and offices.

Having regard to the foregoing, there are both highly vulnerable (residential) and less vulnerable (retail and commercial) uses in the area.

This area lies within the zone of influence of the proposed Flood Relief Scheme which currently proposes the following works:

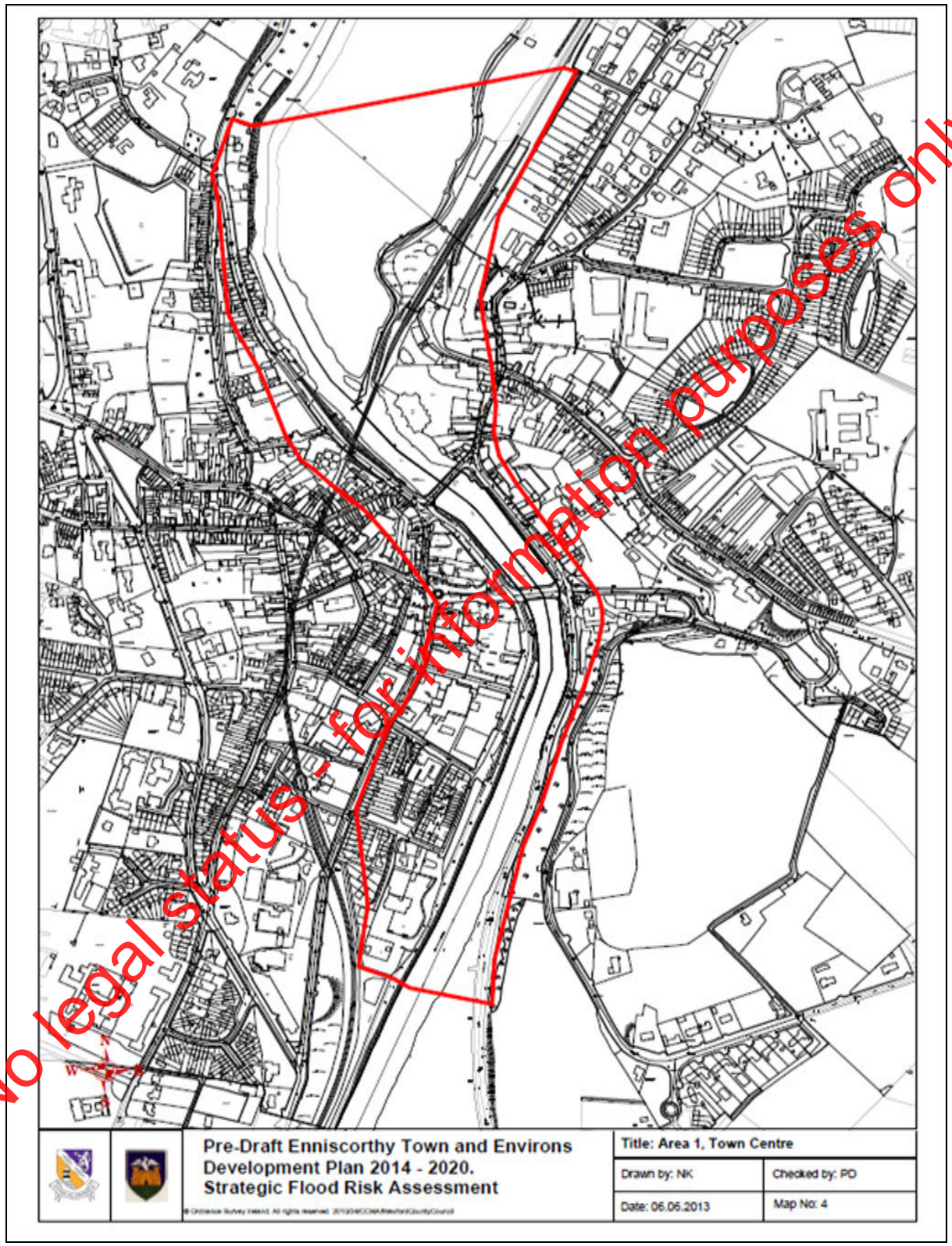
- 1.8km of the river will be re-graded through dredging and in-filling measures in order to achieve the desired Design Bed Level.
- The river will be widened upstream of the railway bridge for a length of 1.1km and at three locations within the town. In addition, a diversion channel will be excavated directly downstream of the town.
- The Seamus Rafter Bridge will be removed and a new road bridge constructed downstream of the town.
- A pedestrian bridge will be constructed close to the site of the Seamus Rafter Bridge to ensure connectivity for pedestrians between the right and left banks of the river.

- Containment measures such as flood walls and embankments will also be constructed, with localised areas of ground raising to ensure that the containment measures do not exceed 1.2m. These areas will be focussed on Abbey Quay, Promenade Road and Shannon Quay.
- The removal and alteration of obstructions is also key to the successful operation of this flood alleviation scheme. The left hand bank in the area upstream of the Enniscorthy Bridge will be realigned, effectively blocking up the first eye of the bridge to minimise them impact on two houses in the vicinity of the works[5].

As previously outlined in Section 2.3.3, the design standard for the flood alleviation provides protection from flooding up to and including a 1 in 100 year event. This means that there is a 1% change of a flood of this magnitude, or larger, occurring in every year. With the scheme in place, Enniscorthy will flood in the future albeit at a significantly reduced frequency[6]. The scheme has been designed to take account of the climate change by taking an estimated 15% expected increase in flood peaks.

[5] Addendum to the River Slaney (Enniscorthy) Drainage Scheme Environmental Impact Statement, OPW, July 2012, Appendix D
[6] OPW EIS 3-1

Map 4: Area 1 Town Centre



Justification Test: Criteria 1

Ennicorthy Town is designated under the National Spatial Strategy (NSS) and the Regional Planning Guidelines for the South-East Region 2010-2022 (SERPG) as a Larger Town with urban strengthening opportunities. It has been targeted for growth having regard to its strategic location, capacity for growth and potential to deliver on the core objectives of critical mass and balanced regional development.

The Core Strategy in the Plan sets out a spatial strategy for the town that is based on consolidating the existing built urban area through planned redevelopment and infill development in the town centre and by the sequential development of greenfield lands. This gives direct effect to the policies and strategy of the SERPG.

Justification Test: Criteria 2

2(i) The zoning of these lands for the proposed uses is essential to facilitate regeneration and/or expansion of the centre of an urban settlement. It is considered that the Town Centre zoning and its associated land uses will:

- Allow for higher densities in the town centre to build the critical mass necessary to create a self-sufficient town and fulfil the town's role as a Larger Town;
- Allow for, and achieve, an efficient use of infrastructure and resources;
- Contribute to much needed vibrancy and vitality in the town centre;
- Encourage a reduction in the number and length of car journeys and associated greenhouse gas emissions;
- Allow for the appropriate re-use of Protected Structures and elements of the built heritage which form part of the character of the town, to keep them in use and prevent them from further deterioration.

2 (ii) This area comprises significant previously developed and/or under-utilised lands. Historically, as the town developed along the river, this area became the commercial hub of the town. However, the commercial heart of the town now lies further west around Market Square and Rafter Street. This has resulted in a number of brownfield and underutilised sites along the Quays such as Abbey Square, Abbey Centre and adjoining buildings, the old Chivers building on the Promenade and Minch Norton on Island Road. Their redevelopment would

significantly enhance the visual appearance and their economic development potential.

2 (iii) This area is the core of the urban settlement of Enniscorthy Town.

2 (iv) The zoning of these lands is essential in achieving compact and sustainable urban growth. The Plan proposes a spatial strategy that concentrates on the renewal and regeneration of underutilised sites within the town centre. Preference is given to the development of brownfield and infill sites but where these are considered unavailable for development, the strategy allows for the sequential development of greenfield lands. This approach is consistent with the Urban Consolidations Priorities for Large Towns outlined in the SERPG, which states that under-utilised, derelict or undeveloped lands within the built-up area should be identified and opportunities realised.

2 (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.

Justification Test: Criteria 3

The Strategic Environmental Assessment (SEA) Environmental Report documents the current state of the environment, including flood risk, and outlines the likely significant effects on the environment of implementing the Plan. A matrix was used to identify conflicts or potential conflicts between the policies and objectives of the Plan and the Strategic Environmental Objectives (SEOs) contained in the Environmental Report. Where conflicts arose, opportunities to prevent, reduce or offset any significant adverse effects of implementing the Plan were examined and readdressed, and if necessary, some objectives were improved with measures to mitigate the effects on the environment. The mitigation measures relating to flood risk are shown in Table 5.

Table 5: SEA Mitigation Measures Relating to Flood Risk

MM8	Identify flood risk areas, zone for compatible uses in these areas and mitigate the risk of flooding through layout and design of new developments.
MM9	Require the provision of adequate storm water retention facilities in all new developments, including the use of soft landscaping and sustainable drainage techniques.
MM10	Ensure that development should not itself be subject to an inappropriate risk of flooding nor should it cause or exacerbate such a risk at other locations
MM11	Support the implementation of the proposed Flood Relief Scheme.

The mitigation measures have been incorporated into the Plan through the land use zoning objectives and the objectives contained in Section 13. 6 Flood Risk Management of the Written Statement.

Objective No.	Objective
FRM01	To 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.
FRM02	To have regard to any future flood hazard maps, flood risk maps amd flood risk management plans for the plan area prepared as part of the South-East Catchment Flood Risk Assessment and Managament Study (CFRAM).
FRM03	To apply the sequential approach which is based on the principles of avoidance, reduction and mitigation of flood risks when preparing town development plans, variations and when assessing planning applications for development proposals.

FRM04	To 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 the methodology set out in the guidelines.
FRM05	To require planning applications for development proposals within, incorporating or adjoining areas at moderate (Flood Zone B) to high (Flood Zone A) risk of fluvial flooding or at extreme or indicative risk of pluvial flooding, to carry out a site-specific and appropriately detailed flood risk assessment. The site-specified flood risk assessment shall be carried out by a suitably qualified and indemnified professional and in accordance with the requirements of the Planning System and Flood Risk Management Guidelines For Planning Authorities (DEHLG, OPW 2009).
FRM06	To require the verification of Flood Zone maps and Flood Extent Maps at the edge of identified flood zone or extent areas given the broad-scale nature of the modelling which these maps are based on. In the event that it is concluded that the area is at moderate or high risk flooding, it will be necessary to carry out a site-specific and appropriately detailed flood risk assessment. The site-specified flood risk assessment shall be carried out by a suitably qualified and indemnified professional and in accordance with the requirements of the Planning System and Flood Risk Management Guidelines for Planning Authorities (DEHLG, OPW 2009).
FRM07	To 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.

FRM08	To require the separation of foul and surface water discharges in new developments through the provision by the developer of separate networks.
FRM09	To protect and enhance the town's floodplains and wetlands as 'green infrastructure' which provide space for storage and conveyance of floodwater, enabling flood risk to be more effectively managed and reducing the need to provide flood defences in the future.
FRM10	To support and facilitate the OPW's proposed flood relief scheme for the town, and to facilitate the provision of any other necessary appropriate flood risk management infrastructure by the Office of Public Works, the local authority or private developers subject to compliance with the requirements of the EU Habitats and Environment Impact Assessment Directives and associated national legislation.
FRM11	To 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.
FRM12	To ensure riparian buffer zones, a minimum of 5-10m in width, are created between all watercourse and any future development.
FRM13	To ensure that development proposals in areas at moderate (Flood Zone B) or high (Flood Zone A) risk of fluvial flooding or at extreme or indicative risk of pluvial flooding, which are considered acceptable in principle in accordance with the Development Management Justification Test, demonstrate that appropriate mitigation measures can be put in place and that residual risks can be managed to acceptable levels.
FRM14	To ensure new development does not increase flood risk elsewhere including that which may arise from surface water run-off.

FRM15	To ensure that screening for Environmental Impact Assessment is undertaken of planning applications in areas at risk of flooding as flood risk could constitute a significant environmental effect of a proposal, a sub-threshold Environmental Impact Statement may be triggered.

The mitigation measures have also been incorporated into Section 8.4 of the Written Statement (Storm Water Managment) through the following objectives

Objective No	Objective
Objective SWM01	To promote storm water retention facilities in new developments and require design solutions that provide for collection and recycling of surface water in accordance with Sustainable Urban Drainage Systems.
Objective SWM02.	To ensure that all storm water generated in new developments is disposed of on-site or is attenuated and treated prior to discharge to an approved storm water system

The Environmental Report also contains a monitoring programme to cross check for significant effects which arise during the implementation stage of the Development Plan against those predicted during the plan preparation stage. The monitoring programme outlines a number of targets and indicators to measure impacts during the lifetime of the Plan, so that residual or unforeseen impacts can be monitored and remedial action taken where necessary.

4.0 Flooding and Development Management

4.1 Development Management Process

The Planning Authority shall have regard to the requirements of The Planning System and Flood Risk Management (and Technical Appendices) Guidelines for Planning Authorities (DEHLG, OPW, 2009) when assessing development proposals where flood risk may be an issue. The following key requirements for the management of development in areas at risk of flooding shall be adhered to:

- Development proposals within, or incorporating, areas at moderate to high risk of flooding will require a site-specific and appropriately detailed flood risk assessment.
- Development proposals within, or incorporating, areas at moderate to high risk of flooding will require the application of the development management justification test in accordance with The Planning System and Flood Risk Management (and Technical Appendices) Guidelines for Planning Authorities (DEHLG, OPW, 2009); and
- Any proposal that is considered acceptable in principle shall demonstrate the use of the sequential approach to inform the site layout and design of development. Proposals shall demonstrate that appropriate mitigation and management measures can be put in place and that development will not increase flood risk elsewhere.

4.2 Pre-application discussions

Pre-application discussions will be important in identifying the broad range of issues affecting a site and present an opportunity for the Planning Authority to make clear to the applicants that an appropriate flood risk assessment should be carried out as part of the application preparation process. It is recommended that where flood issues are present, the Planning Authority should highlight the policies and objectives of the Development Plan in relation to flood risk and the available information on flood zones.

4.3 Site-specific Flood Risk Assessment

Where flood risk may be an issue for any development, a more detailed flood risk assessment should be carried out appropriate to the scale and nature of the development and the risks arising. It will be necessary to verify the flood maps at the edge of identified flood zone or extent areas given the broad-scale nature of the modelling which these maps are based on. In the event that it is concluded that the area is at moderate or high risk flooding, it will be necessary to carry out a site-specific and appropriately detailed flood risk assessment. The detailed site-specific flood risk assessment should quantify the risks and the effects of any necessary mitigation, together with the measures needed or proposed to manage residual risks. A site-specific flood risk assessment should provide the information detailed in Appendix A of The Planning System and Flood Risk Management (and Technical Appendices) Guidelines for Planning Authorities (DEHLG and OPW, 2009) but in general should include:

- Plans showing the site, the development proposal and its relationship with watercourses and structures which may influence local hydraulics;
- Surveys of site levels and cross-sections relating relevant development levels to sources of flooding and likely flood water levels;
- Assessments of:
    - All potential sources of flooding;
    - Flood alleviation measures already in place;
    - The potential impact of flooding on the site;
    - How the layout and form of the development can reduce those impacts, including arrangements for safe access and egress;
    - Proposals for surface water management according to sustainable drainage principles;
    - The effectiveness and impacts of any necessary mitigation measures;
    - The residual risks to the site after the construction of any necessary measures and the means of managing those risks; and
    - A summary sheet which describes how the flood risks have been managed for occupants of the site and its infrastructure.

4.4 Application of the Justification Test in Development Management

Where the planning authority is considering proposals for new development in areas at high or moderate risk of flooding that include types of development that are vulnerable to flooding and that would generally be inappropriate as set out in Table 3.2 of the guidelines, the Planning Authority must be satisfied that the development satisfies all of the criteria of the Justification Test as it applies to development management. Section 5.15 of the guidelines outlines all of the criteria that must be satisfied in the Justification Test. This is shown in the box below.

Table 6: Justification Test for Development Management

Justification Test for Development Management
When considering proposals for development, which may be vulnerable to flooding, and that would generally be inappropriate as set out in Table 3.2, the following criteria must be satisfied: 1. The subject lands have been zoned or otherwise designated for the particular use or form of development in an operative development plan, which has been adopted or varied taking account of the guidelines. 2. The proposal has been subject to an appropriate flood risk assessment that demonstrates: (i) the development proposed will not increase flood risk elsewhere, and if practicable, will reduce overall flood risk, (ii) The development proposal includes measures to minimise flood risk to people, property, the economy and the environment as far as reasonably possible; (iii) The development proposed includes measures to ensure that residual risks to the area and/or development can be managed to an acceptable level as regards the adequacy of existing flood protection measures or the design, implementation and funding of any future flood risk management measures and provisions for emergency services; and (iv) The development proposed addresses the above in a manner that is also compatible with the achievement of wider planning

objectives in relation to development of good urban design and vibrant and active streetscapes.

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

5.0 Conclusion

5.1 Conclusion

Land use management and spatial planning is a key tool in flood risk management. The Planning System and Flood Risk Management: Guidelines for Planning Authorities (DEHLG and OPW, 2009) aims to deliver sustainable development that minimises the risk of flooding to people and property by the avoidance of inappropriate development in areas at risk of flooding.

The SFRA was prepared in accordance with the guidelines and forms an intrinsic part of the development plan preparation process. The land use zoning and objectives in the Plan have been reviewed against the recommendations set out in the guidelines. The flood zones identified in this assessment have been used to guide land use zoning in the areas identified as being vulnerable to flooding. Most of the lands in Flood Zone A and Flood Zone B are either developed or brownfield sites. These lands are zoned either Town Centre or Open Space and Amenity Uses. In the case of undeveloped lands, these lands have been either rezoned to water-compatible use or removed from the plan area.

It is considered that a fair balance has been struck between avoiding flood risk and facilitating necessary development, enabling future development to avoid areas of highest risk and ensuring that appropriate measures will be taken to reduce flood risk to an acceptable level for those developments that have to take place, for reasons of proper planning and sustainable development, in areas at risk of flooding.

Flood Extents

- Fluvial Indicative
- Fluvial Extreme
- Pluvial Indicative
- Pluvial Extreme
- Areas for Further Assessment

N
W E
S

Draft Enniscorthy Town and Environs Development Plan 2014 - 2020

Title: OPW Flood Extents

Drawn by: NK	Checked by: PD
Date: 01.09.2013	Map No: 2

Flood Zones

Flood Zone A

Flood Zone B

N

W E

S

No legal status - for information purposes only

Draft Enniscorthy Town and Environs Development Plan 2014 - 2020

Title: JBA Flood Zones

Drawn by: NK	Checked by: PD
Date: 01.09.2013	Map No: 3