

BALLINA TOWN COUNCIL

STRATEGIC FLOOD RISK ASSESSMENT



Ballina Town & Environs Development Plan  
2009 - 2016

Proposed Variation No. 2



March 2014

## **1.0 INTRODUCTION & POLICY**

### **1.1 Introduction and Terms of Reference**

The Ballina Town Council has prepared Proposed Amendments to the Ballina Town & Environs Development Plan 2009-2015.

This document presents the results of the findings of the Strategic Flood Risk Assessment (SFRA) which was undertaken alongside the preparation of the Proposed Amendments. The SFRA has been undertaken and prepared in accordance with 2009 The Planning System and Flood Risk Management - Guidelines for Planning Authorities Department of the Environment, Heritage and Local Government and Office of Public Works (see Section 1.2.4).

The SFRA is an assessment of flood risk within the Development Plan area against which to assess the Proposed Amendments.

### **1.2 Flood Risk Management Policy**

#### **1.2.1 EU Floods Directive**

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

- Carry out a preliminary assessment by December 2011 in order to identify the river basins and associated coastal areas where potential significant flood risk exists.
- Prepare flood hazard and risk maps for the identified areas by December 2013.
- Prepare flood risk management plans focused on prevention, protection and preparedness by December 2015. These plans are to include measures to reduce the probability of flooding and its potential consequences.

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

#### **1.2.2 National Flood Policy**

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

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

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

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

### **1.2.3 National CFRAM Programme**

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

The Programme comprises three phases as follows:

- The Preliminary Flood Risk Assessment (PFRA) in 2011;
- The CFRAM Studies and parallel activities, from 2011 to 2015; and
- Implementation and Review from 2016 onwards.

The Programme provides for three main consultative stages as follows:

- PFRAs in 2011;
- Flood Hazard Mapping, in 2014; and
- Flood Risk Management Plans in 2015.

The Office of Public Works is the lead agency for flood risk management in Ireland. The coordination and implementation of Government policy on the management of flood risk in Ireland is part of its responsibility. The European Communities (Assessment and Management of Flood Risks) Regulations 2010 (S.I. No. 122) identifies the Commissioners of Public Works as the 'competent authority' with overall responsibility for implementation of the Floods Directive 2007/60/EC which includes requirements to prepare a preliminary assessment by 2011, flood risk mapping by 2013 and flood risk management plans by 2015. It is

the principal agency involved in the preparation of Flood Risk Assessment and Management studies (FRAMs).

The PFRAs identified areas at risk of significant flooding and includes maps showing areas deemed to be at risk. The areas deemed to be at significant risk, where the flood risk that is of particular concern nationally, are identified as Areas for Further Assessment (AFAs) and more detailed assessment on the extent and degree of flood risk will be required in these areas.

#### **1.2.4 DEHLG and OPW Flood Risk Management Guidelines**

##### **1.2.4.1 Introduction**

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

The core objectives of the Guidelines are to:

- Avoid inappropriate development in areas at risk of flooding;
- Avoid new developments increasing flood risk elsewhere, including that which may arise from surface water run-off;
- Ensure effective management of residual risks for development permitted in floodplains;
- Avoid unnecessary restriction of national, regional or local economic and social growth;
- Improve the understanding of flood risk among relevant stakeholders; and
- Ensure that the requirements of EU and national law in relation to the natural environment and nature conservation are complied with at all stages of flood risk management.

##### **1.2.4.2 Principles of Flood Risk Management**

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

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

The Guidelines follow the principle that development should not be permitted in flood risk areas, particularly floodplains, except where there are no alternative

and appropriate sites available in lower risk areas that are consistent with the objectives of proper planning and sustainable development.

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

#### **1.2.4.3 Stages of SFRA**

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

**Stage 1 Flood risk identification** – to identify whether there may be any flooding or surface water management issues related to either the area of regional planning guidelines, development plans and LAP's or a proposed development site that may warrant further investigation at the appropriate lower level plan or planning application levels;

**Stage 2 Initial flood risk assessment** – to confirm sources of flooding that may affect a plan area or proposed development site, to appraise the adequacy of existing information and to scope the extent of the risk of flooding which may involve preparing indicative flood zone maps. Where hydraulic models exist the potential impact of a development on flooding elsewhere and of the scope of possible mitigation measures can be assessed. In addition, the requirements of the detailed assessment should be scoped; and

**Stage 3 Detailed flood risk assessment** – to assess flood risk issues in sufficient detail and to provide a quantitative appraisal of potential flood risk to a proposed or existing development or land to be zoned, of its potential impact on flood risk elsewhere and of the effectiveness of any proposed mitigation measures.

#### **1.2.4.4 Flood Zones**

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

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

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

Consequences of flooding depend on the hazards associated with the flooding (e.g. depth of water, speed of flow, rate of onset, duration, wave-action effects, water quality), and the vulnerability of people, property and the environment potentially affected by a flood (e.g. the age profile of the population, the type of development, presence and reliability of mitigation measures etc.).

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

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

**Flood Zone A** – where the probability of flooding from rivers and the sea is highest (greater than 1% or 1 in 100 for river flooding or 0.5% or 1 in 200 for coastal flooding);

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

**Flood Zone C** – where the probability of flooding from rivers and the sea is low (less than 0.1% or 1 in 1000 for both river and coastal flooding). Flood Zone C covers all areas of the plan which are not in zones A or B.

### **1.3 Content of the Proposed Amendments**

It is not proposed to change the plan boundary and a high level review would indicate that the implementation of the Proposed Amendment will not increase levels of risk in the town arising from existing zoning. The Proposed Amendments are outlined on Table 1 below.

**Table 1: - Proposed Amendments**

VT-1	<b>Section 2.3.8 Neighbourhood Centres (p. 58-59)</b> Include additional text regarding total permitted comparison and convenience retail floor space as follows:
VT-2	<b>Section 2.3.9 Policies and Objectives (p. 59-60)</b> Include additional text regarding total permitted comparison and convenience retail space
VT-3	<b>Section 2.4.14 Roads Objectives</b> Include new objective to develop a thru-road between Pound Road and Market Road as follows:
VT-4	<b>Section 2.5.3 Architectural Conservation Areas (p. 71-72)</b> Modify section as follows to incorporate additional areas to the Architectural Conservation Areas of Ballina:
VT-5	<b>Section 2.6 Community and Cultural Amenities</b> <b>Section 2.6.2 Policies and Objectives</b> Modify Objective CC8 as follows:
VT-6	<b>Section 3.1.2 Plot Ratio (P. 104-105)</b> Modify section to allow for relaxed plot ratios in specific circumstances and indicate additional areas which require buildings to adhere to the town centre plot ratio objectives as follows:
VT-7	<b>Section 3.8.11 Advertising and Signage (P. 126-127)</b> Include additional paragraph relating to signage by laws at the beginning of the section as follows:
VM-1	<b>Map No. 06 (Variation) and Map No. 06A – Land Use Zoning</b> Rezone lands currently zoned C1 Commercial at Scoil Padraig and adjoining sports ground to CF Community Facilities.
VM-2	<b>Map No. 07 A - Specific Objectives 2</b> Include a second Specific Objectives Map (07 A) indicating indicative line of thru road from Pound Road to Market Road.
VM-3	<b>Map No. 07 A - Specific Objectives</b> Indicate area of proposed Salmon Quarter in the town on second Specific Objectives Map (07 A).

## **2.0 STAGE 1 STRATEGIC FLOOD RISK ASSESSMENT**

Stage 1 SFRA (flood risk identification) was undertaken in order to identify whether there may be any flooding or surface water management issues within the Ballina Town & Environs Development Plan 2009-2015 which relate to the Proposed Amendments, and consequently whether a Stage 2 SFRA (initial flood risk assessment) should be carried out.

### **2.1 Sources of Information**

The SFRAs will use all available sources of information when screening for flood hazard and flood risk, including the following:

- Preliminary Flood Risk Assessment maps which delineate areas potentially prone to flooding from fluvial, coastal, pluvial, groundwater and lakes.
- Office of Public Works National Flood Hazard Mapping recorded on [www.floodmaps.ie](http://www.floodmaps.ie)
- Office of Public Works Benefitting Land Maps
- Mineral Alluvial Soil mapping
- Ordnance Survey of Ireland "Lands liable to floods" mapping (6" OS maps)
- Working knowledge from Town Engineer and Area Engineer.

### **2.2 Sources of Flooding in County Mayo**

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 with flooding. With climate change the frequency, pattern and severity of flooding are expected to change, becoming more uncertain and more damaging. The SFRA looks at the risks from the following sources of flooding;

#### **a) 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.

The main River flowing through Ballina is the Moy River.

#### **b) Coastal Flooding**

Coastal flooding is caused by higher sea levels than normal, which in turn, results in the sea overflowing onto the land. There are many established uses along the Mayo coastline including ports, harbours, fishing and aquaculture, residential, leisure and amenity. The Moy River is subject to tidal influences.



**c) Pluvial Flooding**

The PFRA provides a preliminary assessment of pluvial flooding the County. This type of flooding is a result of rainfall-generated overland flows which arise before run-off enters any watercourse or sewer. The intensity of rainfall can be such that the run-off totally overwhelms surface water and underground drainage systems.

For pluvial flooding, the PFRA mapping has generally not taken into account local drainage structures such as culverts through embankments or other local drainage that would not be resolved in the model used for the mapping at a national scale. In addition to the above limitations, there are further intrinsic uncertainties associated with these flooding types e.g. pluvial flooding can be influenced by drains blocked with farm plastic, for example, and groundwater flooding can be influenced by tidal interactions.

**d) Groundwater Flooding**

The PFRA also provides a preliminary assessment of groundwater flooding for the County. 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 methodology used to map areas potentially prone to groundwater flooding was evidence-based, with the vast majority of extensive, recurring groundwater floods originating at turloughs. A model-based approach to groundwater flooding was not possible due to the lack of data, so only one set of flood extents were generated, with no specific event probability (although where observed flood data was used, these are likely to represent quite extreme events). The indicative national groundwater flood maps are included in the PFRA maps.

## **2.3 Review of Amendments**

Table 2 below reviews the proposed Amendments against the flood risk derived from the above information.

**Table 2:- Assessment of Proposed Amendments against Flood Risk**

VT-1	No impact on Flood Risk
VT-2	No impact on Flood Risk
VT-3	Potential impact on Flood Risk - Stage 2 Assessment Required for this Amendment
VT-4	No impact on Flood Risk
VT-5	No impact on Flood Risk
VT-6	Potential impact on Flood Risk - Stage 2 Assessment Required for this Amendment
VT-7	No impact on Flood Risk
VM-1	Potential impact on Flood Risk - Stage 2 Assessment Required for this Amendment
VM-2	Potential impact on Flood Risk - Stage 2 Assessment Required for this Amendment
VM-3	No impact on Flood Risk

## **2.4 Conclusion**

After considering the available information there are potential flood risk issues for a number of the proposed amendments and a Stage 2 SFRA is required to cover these proposals.

### *Note*

*The above sources of information (SECTION 2.1) will be used for screening purposes only. Therefore, an applicant when preparing a detailed Flood Risk Assessment should seek professional advice from a suitably qualified person to verify the data/information. If during this process of independent verification it is submitted that the subject lands are not located within an area vulnerable to flooding (either Flood Zone A and Flood Zone B), the onus will be on the applicant to objectively demonstrate this based on the best scientific information available at the time of the planning application.*

### **3.0 STAGE 2 STRATEGIC FLOOD RISK ASSESSMENT**

The main flood risks identified for lands which are the subject of the Ballina Town & Environs Development Plan 2009-2015 were screened based on the available information detailed in Section 2.1.

#### **3.1 Sources of Flooding**

The Moy River flows through Ballina and is the main source of fluvial flooding in the town. Ballina is located just upstream of the Moy Estuary and the section of the Moy which flows through Ballina is affected by the tide.

There are two major tributaries of the Moy River flowing through the town and these are the Sruffaunbrogue and the Brusna River. The Sruffaunbrogue flows in a southerly direction and joins the Moy upstream of Lower Bridge and the Brusna flows in northerly direction and joins the Moy downstream of Ham Bridge.

There are five historical flood points in Ballina;

- a) Road flooding on Howley Street/Sligo road during high tides. Road gullies are pumped to the sewers. – recurring Flood ID 10219
- b) Road flooding on Bachelors walk, Ballina town during high tides. – recurring Flood ID 10220
- c) Road flooding in Quignamanger area from river Moy during extreme high tides, it is a rare event. Flood ID 10221
- d) Road flooding on Barret street from river Moy during extreme high tides, it is a rare event. Flood ID 10222
- e) Road flooding on Humbert street in Ballina in past but is a very rare event. Flood ID 10230

We have reviewed the information noted in Section 2.0. In addition we have examined the draft Flood Maps for Ballina prepared under the Western CFRAM Project. Note that this maps are only in draft format but they have been reviewed by Mayo County Council and provide hydraulic models for the main fluvial flood risks in Ballina.

#### **3.2 Proposed Amendments**

Table 2 provides a Stage 2 Assessment of flood risk for the proposed amendments to the Plan.

**Table 2:- Stage 2 Assessment of Proposed Amendments**

VT-3	Thru-road between Pound Road and Market Road Based on available information, the road corridor would be considered in Zone C, and not at flood risk. An surface water collected from the road should be dealt with in line with the Flood Planning Guidelines so as not to increase flood risk to adjacent properties.
VT-6	Modify Section 3.1.2 to allow for relaxed plot ratios. Some of this Zoned lands would be considered to be within Zone A and Zone B, and accordingly at risk of flooding. In line with the Flood Planning Guidelines a Site Specific FRA would be required for any development in this area, with the Sequential Approach recommending justification and mitigation. We would recommend that the following text be added to the criteria where higher plots may be considered; <i>"The proposed development shall be in compliance with The Planning System and Flood Risk Management Guidelines for Planning Authorities"</i>
VM-1	Re-Zoning Lands Zoned C1 Commercial to CF Community Facilities Based on available information, the road corridor would be considered in Zone C, and not at flood risk.
VM-2	Thru-road between Pound Road and Market Road See VT-3 Above