



Kilkenny Local Authorities

STRATEGIC FLOOD RISK ASSESSMENT

**Appendix 1 to Strategic Environmental Assessment Screening of
Variation No. 2 to Kilkenny County Development Plan 2008-2014
and Variation 1 to Kilkenny and City & Environs Development
Plan 2008-2014**

Forward Planning
August 2011

1 INTRODUCTION

The *Planning System and Flood Risk Management – Guidelines for Planning Authorities* were published in November 2009. These Guidelines were issued under Section 28 of the Planning and Development Act 2000 as amended, and require Planning Authorities to introduce flood risk assessment as an integral and leading element of their development planning functions. This is achieved by ensuring that the various steps in the process of making a development plan, together with the associated Strategic Environmental Assessment (SEA), are supported by an appropriate Strategic Flood Risk Assessment (SFRA).

Section 7 of the Planning and Development (Amendment) Act 2010, sets out that the written statement of a Development Plan must contain a Core Strategy which shows that the development objectives in the development plan are consistent, as far as practicable, with national and regional development objectives set out in the National Spatial Strategy and Regional Planning Guidelines. A planning authority shall prepare a core strategy not later than one year after the making of the Regional Planning Guidelines and shall accordingly vary the development plan. The Regional Planning Guidelines for the South East Region were adopted on the 26th July 2010 and these variations, *Variation No. 2 to County Development Plan, Core Strategy* and *Variation No. 1 to Kilkenny City & Environs Development Plan, Core Strategy* provides for the inclusion of the core strategy in the Development Plans.

The variation to the County Plan includes text and a set of maps illustrating the core strategy at county level and its impact on a number of settlements. The variation to the City Plan also includes text and a set of maps. This SFRA forms Appendix 1 to the SEA Screening for the Variations to the Kilkenny County Development Plan and City & Environs Development Plan and should be read in conjunction with the relevant screening report.

1.1 Variation – Core Strategy

As set out in the SEA Screening Report, at present, Kilkenny County contains zoned land in 18 Local Area Plans and in the Kilkenny City & Environs Development Plan.

The South Eastern Regional Planning Guidelines have allocated Kilkenny a projected target population over the period 2010-2016. In order to meet the objectives of the Regional Planning Guidelines, the core strategy will involve a significant level of down-zoning through phasing of zoned land.

As part of this core strategy, a total of fifteen Local Area Plans (Ballyhale, Ballyragget, Bennettsbridge, Freshford, Goresbridge, Inistioge, Kells, Kilmacow, Knocktopher, Mooncoin, Mullinavat, New Ross Environs, Slieverue Stoneyford and Urlingford) will be affected.

Of these fifteen, six Local Area Plans have expired (for Ballyhale, Ballyragget, Inistioge, Knocktopher, Mooncoin and Urlingford). These will be incorporated into the County Development Plan. These settlements will no longer be subject to zoning maps, but a tight development boundary will be delineated around the built-up area. An objective will be inserted in the Development Plan to encourage development appropriate to the scale and character of the settlement within this boundary.

The remaining Local Area Plans (Bennettsbridge, Freshford, Goresbridge, Kells, Kilmacow, Mullinavat, Slieverue, Stoneyford and New Ross Environs) will be revised, and in every case, an amount of land currently zoned for residential development will be phased for development. Land identified as Phase 2 will not be permitted to be developed during the lifetime of the plan.

A further five LAPs (Callan, Castlecomer, Ferrybank/Belview, Graiguenamanagh and Thomastown) will be revised following on from the adoption of the core strategy.

The City & Environs Development plan will also be revised to take account of the city's core strategy. The amount of zoned land will be reduced through phasing.

Separate SEA screenings have been undertaken for the Kilkenny City & Environs Development Plan Variation and County Development Plan Variation. This Strategic Flood Risk Assessment (SFRA) forms Appendix 1 to both SEA screening reports. The purpose of this SFRA is to inform the Strategic Environmental Assessment (SEA) of the draft variations, and in this way inform the policies and objectives of the Variations.

1.2 Disclaimer

It is important to note that compliance with the requirements of *The Planning System and Flood Risk Management - Guidelines for Planning Authorities*, and of the Floods Directive 2007 60/EC is a work in progress and is currently based on emerging and incomplete data as well as estimates of the locations and likelihood of flooding. In particular, the assessment and mapping of areas of flood risk awaits the publication both of Preliminary Flood Risk Assessments [PFRAs] and Catchment-based Flood Risk Assessment and Management Plans [CFRAMs]. As a result, this Strategic Flood Risk Assessment for County Kilkenny is based on available information.

Accordingly, all information in relation to flood risk is provided for general policy guidance only. It may be substantially altered in light of future data and analysis. As a result, all landowners and developers are advised that Kilkenny County Council and its agents can accept no responsibility for losses or damages arising due to assessments of the vulnerability to flooding of lands, uses and developments. Owners, users and developers are advised to take all reasonable measures to assess the vulnerability to flooding of lands in which they have an interest prior to making planning or development decisions.

1.3 Structure of a Flood Risk Assessment (FRA)

The Guidelines recommend that a staged approach is adopted when undertaking a Flood Risk Assessment (FRA). The recommended stages are briefly described below:

- Stage 1 ~ Flood Risk Identification

To identify whether there may be any flooding or surface water management issues that will require further investigation. This stage mainly comprises a comprehensive desk study of available information to establish whether a flood risk issue exists or whether one may exist in the future.

- Stage 2 ~ Initial Flood Risk Assessment

If a flood risk issue is deemed to exist arising from the Stage 1 Flood Risk Identification process, the assessment proceeds to Stage 2 which confirms the sources of flooding, appraises the adequacy of existing information and determines the extent of additional surveys and the degree of modelling that will be required. Stage 2 must be sufficiently detailed to allow the application of the sequential approach (as described in Section 1.5) within the flood risk zone.

- Stage 3 ~ Detailed Flood Risk Assessment

Where Stages 1 and 2 indicate that a proposed area of possible zoning or development may be subject to a significant flood risk, a Stage 3 Detailed Flood Risk Assessment must be undertaken.

1.4 Scales of Flood Risk Assessments

Flood Risk Assessments are undertaken at different scales by different organisations for many different purposes. The scales are as follows:

- Regional Flood Risk Appraisal (RFRA): A Regional Flood Risk Appraisal provides a broad overview of the source and significance of all types of flood risk across a region and highlights

areas where more detailed study will be required. These appraisals are undertaken by regional authorities.

- **Strategic Flood Risk Assessment (SFRA):** A Strategic Flood Risk Assessment provides a broad (area-wide or county-wide) assessment of all types of flood risk to inform strategic land use planning decisions. The SFRA allows the Planning Authority to undertake the sequential approach (described below) and identify how flood risk can be reduced as part of the development plan process.
- **Site Flood Risk Assessment (Site FRA):** A Site FRA is undertaken to assess all types of flood risk for a new development. This requires identification of the sources of flood risk, the effects of climate change on the flood risk, the impact of the proposed development, the effectiveness of flood mitigation and management measures and the residual risks that then remain.

1.5 The Sequential Approach

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, and
- Mitigate and manage the risk, where avoidance and substitution are not possible

1.6 Purpose of Strategic Flood Risk Assessment

The purpose of this SFRA is to integrate an assessment of flood risk into the planning process, specifically to:

- Provide for an improved understanding of flood risk issues within the County and City Development Plans,
- Identify whether flood risk is an issue in the settlements for which the development management framework (e.g. zoning map) is being altered

This SFRA evaluates the existing text and policies in the Development Plans in relation to flooding and proposed changes to bring the policies into line with the Guidelines. It also presents available flood related data to identify areas within which a detailed Flood Risk Assessment is required. The concluding section discusses the approach to monitoring and review of this SFRA.

2 Strategic Flood Risk Assessment

2.1 Stages

The Strategic Flood Risk Assessment for the plan area is based on two stages:

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

2.2 Stage 1 Flood Risk Identification

This 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. Sources which were consulted are outlined below.

2.2.1 Regional Flood Risk Appraisal

A Regional FRA was carried out and published as Appendix 3 to the Strategic Environmental Assessment of the South East Regional Planning Guidelines, 2010. This document provided guidance on the issues to be addressed in any SFRA.

The Regional FRA referred to the Suir Catchment Flood Risk Management Plan, which identified areas of potential significant flood risk within the Suir Catchment in Co. Kilkenny as Fiddown, Mullinavat and Piltown. In relation to other areas that have experienced flooding, the RFRA noted that Callan, Graiguenamanagh and Thomastown will benefit from Flood Risk Management Studies which are being undertaken by Kilkenny County Council. These studies have been completed and have proposed a range of mitigation measures.

The Summary and Recommendations of the RFRA state that at pre-review stage of County Development Plans, local authorities should consult with the OPW on the SFRA at least 3-6 months in advance of commencement of review. Also, the SEA of County Development Plans should include indicators of areas of land zoned for vulnerable development e.g. residential development in Flood Zones A and B.

2.2.2 OPW Publications in development

2.2.2.1 Preliminary Flood Risk Management

The 'Floods' Directive¹ requires Member States to undertake a national preliminary flood risk assessment by 2011 to identify areas where significant flood risk exists or might be considered likely to occur. Member States are also required to prepare catchment-based Flood Risk Management Plans (FRMPs) by 2015 that will set out flood risk management objectives, actions and measures. The OPW are preparing Preliminary Flood Risk Management maps, but these are not available for use yet. When this is finished, which is scheduled for late in 2011, this mapping will be an important and primary input into future flood risk assessment studies.

2.2.2.2 Catchment Based Management Plans

The OPW in co-operation with various Local Authorities are producing Catchment Flood Risk Assessment and Management Studies. These CFRAMS aim to map out current and possible future flood risk areas and develop risk assessment plans. They will also identify possible structural and non-structural measures to improve the flood risk of the area. A few studies are being piloted around the country, and one of these is for the Suir catchment area.

¹ Directive 2007/ 60/ EC of the European Parliament and of the Council of 23rd October 2007 on the assessment and management of flood risk: Official Journal L288/ 27-34.

A scoping of the CFRAMS for the Suir Catchment identified Fiddown, Mullinavat and Piltown as areas of potential significant flood risk, however the study is on-going.

The South Eastern River Basin District (SERBD) CFRAMS will cover the rest of County Kilkenny, and this study will commence in Summer 2011. The flood mapping from the CFRAMS studies will be provided by the end of 2013.

In the absence of flood zone maps from the OPW and in the absence of completed CFRAM studies, alternative sources of information will be used.

2.2.3 Available sources

The data listed below is available for the county and provides information on the historical occurrence of flooding. Flooding and surface water issues in the county were also identified through consultation with the Area Engineers and from any other relevant sources.

i) Office of Public Works OPW Flood Events Mapping

As part of the National Flood Risk Management Policy, the OPW developed the www.floodmaps.ie web based data set, which contains information concerning historical flood data, displays related mapped information and provides tools to search for and display information about selected flood events.

ii) OPW Benefitting Lands mapping

These maps were prepared to identify areas that would benefit from land drainage schemes, and typically indicate low-lying land near rivers and streams that might be expected to be prone to flooding.

iii) Mineral Alluvial Soil Mapping

The soils and subsoils maps were created by the Spatial Analysis Unit, Teagasc. The project was completed in May 2006 and was a collaboration between Teagasc, Geological Survey of Ireland, Forest Service and the EPA. The presence of alluvial soils can indicate areas that have flooded in the past (the source of the alluvium).

iv) Ordnance Survey "Lands liable to floods" mapping (6" OS maps)

These maps have been studied to see if there are any areas marked as being "Liable to Floods" in or in the vicinity of the zoned areas. It is noted that the OS maps simply show the text "Liable to Floods" without delineating the extent of these areas.

It should be noted that some of this data is historically derived, not prescriptive in relation to flood return periods and not yet predictive or inclusive for climate change analysis. Many of these maps were based on survey work carried out from 1833-1844 with many updated in the 1930s and 1940s. Therefore they do not show or take account of recent changes in surface drainage, such as development in floodplains, road realignments or drainage works for forestry or agriculture. So there is significant potential that flood risk in some areas may have increased or been reduced since they were prepared.

County Kilkenny has been analysed using GIS for the presence of the flood risk factors as outlined above; flood events, benefitting lands and mineral alluvial soils. Figure 2.1 maps the occurrence of these factors across the County. Benefitting lands occur along most of the County's rivers. Alluvial soils also broadly correspond to the path of the county's rivers.

2.2.3.1 Flood Studies, Reports and Flood Relief Schemes

Flood reports have been completed for a number of areas within the county. Studies have been undertaken in respect of Callan, Graiguenamanagh and Thomastown. Following on

from the publication of these Flood Management Studies, flood relief schemes are due to commence in the near future.

A flood relief scheme has been completed in Kilkenny city. A report entitled *Kilkenny City Flooding Study* was published in 1986 by M.C. O'Sullivan. A subsequent report was published by the OPW in 1999, entitled *Kilkenny City Flood Relief Scheme Engineering Report – Protecting against the 100 year flood*. A comprehensive flood defence scheme providing defence against the 100 year flood from the Nore was completed in Kilkenny City in 2005.

2.2.3.2 Local Authority Personnel

The Area Engineers were consulted regarding historical flooding and flood relief works in the areas under consideration.

2.2.4 Flood Risk Indicators

Having regard to all of the information sources as outlined above, the occurrence of flood risk indicators for each settlement included in this Variation is identified in a Flood Risk Indicator Matrix.

This information is also mapped for each settlement. The map illustrates the development boundary of the most recent Local Area/development plan. In cases where land contains flood risk indicators within this development boundary, the full extent of any indicators present are amalgamated and enclosed by a dashed line. This line delineates land within which any development proposal will be subject to detailed site-specific flood risk assessment. These maps are included in Section 4, Maps².

The development boundary illustrated in each case is the boundary of the most recent LAP/development plan. As stated in Section 1, to comply with the Regional Planning Guidelines, the amount of zoning for each settlement will be reduced as a result of this variation. This will be done through phasing and where a plan has expired, replacing the zoning map with a delineated development boundary. Therefore, for every settlement, the older development boundary as depicted covers a larger development area than that proposed under this variation.

Although these mapped areas of flood risk indicators are not reliable as a flood extent, they do provide an indication that further assessment of flood potential may be required. These areas are identified on the maps as "Areas within which development proposals will be the subject of site-specific Flood Risk Assessment appropriate to the type and scale of the development being proposed". A policy will be included in the text of the Development Plans referring to this requirement.

² A map is not included for Slieverue as no flood risk indicators were present

Flood Risk Indicator Matrix

Town/ village	Available Data by source						Proposal under variation
	www.floodmaps.ie	Alluvial Soils	Benefitting lands	6" OS maps	Local Authority information	Other	
Ballyhale	Recurring Flood Points recorded at Main Street. Road liable to flooding and properties affected	Alluvial Soils mapped to north and west	Benefitting lands mapped in village	No indication of flooding occurrences shown	Flooding experienced to the rear of properties on Main St in the past – bridge on Station road replaced approx. 8 years ago – this has helped to alleviate the flooding. Collapsed walls in the area of the church replaced in recent years and river banks in area of church cleared last year by church.		No zoning
Ballyragget	Recurring Flood Points recorded at River Nore	Alluvial soils along River Nore	Benefitting lands mapped along River Nore	Lands adjacent to the River on both banks are described as "Liable to Flooding" west of the town	Flooding has occurred on several occasions in 2008, 2009 and 2010 during spell of prolonged heavy rain, affecting a commercial property at the bridge. Meeting held between Area Engineer and OPW to come up with solution to contain the flood and to protect the premises. Application for OPW funding for "Non coastal Minor Scheme"		No zoning

Bennetts-bridge	Recurring Flood points recorded at Ennisnag Road	Alluvial soils along River Nore and stream to east of town	Benefitting lands mapped along River Nore	Lands adjacent to the River on both banks are described as "Liable to Flooding" west of the town	In severe events Annamult/Ennisnag road (LP4201) can become impassable as area is part of flood plain of River Nore. Worst affected from Mosses Mill to road leading to Danesfort (LP4200) Frequency/severity of events increasing.		Revised zoning & phasing
Freshford	Recurring flood points recorded at New Bridge Street, damage to shops and dwellings	Alluvial soils along Nuenna River to the east of the town	Benefitting lands mapped along Nuenna River through most of the town	No indication of flooding occurrences shown	Severe flooding occurred on the 29 th October 2010 at Creel Street from the junction with Old Bridge Street to the junction with Bohergloss Street, on the lower part of New Bridge Street and at Bohergloss Street. Flooding caused by a tributary of the Nuenna River.		Revised zoning & phasing
Gores-bridge	No flood incident points recorded.	Alluvial soils along River Barrow, and Gowran stream to the north of the village.	No benefitting lands mapped in village.	Lands adjacent to the River Barrow north and south of the town are described as "Liable to Flooding"	No knowledge of properties being flooded.		Revised zoning & phasing

Inistioge	Recurring flood points at GAA pitch on R700 (Thomastown Road)	Alluvial soils mapped along River Nore	Benefitting lands mapped along River Nore	No indication of flooding occurrences shown	Recurring flooding in the area from the GAA pitch to the bridge over the river Nore on the R700 (western bank of river). Properties fronting onto the river (between the square and the bridge) have been badly flooded on a number of occasions.		No zoning
Kells	Recurring flood points recorded at King's River Kells Bridge	Alluvial soils mapped along King's River	Benefitting lands mapped along King's River	Lands adjacent to the King's River east and west of the village are described as "Liable to Flooding"	R697 near Glory Cottage floods, road impassable on occasions. LP1023 Kells-Stoneyford road also floods circa 750m east of Kells Priory and road can be impassable. Frequency/severity of events increasing.		Revised zoning & phasing
Kilmacow	No flood incident points recorded in village.	Alluvial soils mapped along River Blackwater and in two other locations to the west of the Upper village	Benefitting lands mapped along River Blackwater	No indication of flooding occurrences shown	Flooding occurred in 2007 and 2008 on Upper Street in the village. Also flooding affected Dunkitt two houses flooded. Report by Ryan Hanley.	Suir CFRAM	Revised zoning & phasing

Knocktopher	Recurring flood incident recorded to west of Knocktopher on R699 road and recurring incident to northwest on N10 road near Barretstown.	Alluvial soils mapped along stream to west and through village	Benefitting lands mapped along stream through centre of village	No indication of flooding occurrences shown	Regular flooding events on R699 link road from R448 (Old N10) to Knocktopher village and R448 in vicinity of Moanrue X. Floods from Little Arrigle River. Road generally always passable.		No zoning
Mooncoin	Flood incident recorded to the northwest of the village	Alluvial soils mapped either side of New Road.	No benefitting lands mapped in village.	No indication of flooding occurrences shown	Local information - surface-water/ storm-water run-off along the New Road and Ballytarsna Crossroads Ballytarsna Cross and Chapel St 2009/2010 Drainage measures underway		No zoning
Mullinavat	Flood incident recorded on Main street in November 2000	Alluvial soils mapped along River Blackwater to west and Mill Stream to east	Benefitting lands mapped along the River Blackwater to the west of the town.	No indication of flooding occurrences shown	Flooding of Glen Crescent in 2008 and 2009. Works to be undertaken in conjunction with the OPW to eliminate flood risk to houses	Included in OPW Minor Flood Mitigation Works & Studies Scheme Approved Projects 2010	Revised zoning & phasing

New Ross Environs	Flood incident recorded at the Quay, in Wexford's administrative area	Alluvial soils mapped in Raheen in the south and to the north	No benefitting lands mapped	No indication of flooding occurrences shown	Flooding occurred on the N24 west Of New Ross in 2009. Road closed to all but HGV's for a period of time.		Revised zoning & phasing
Slieverue	No flood incident points recorded in village	No alluvial soils mapped in village	No benefitting lands mapped in village.	No indication of flooding occurrences shown	No occurrences of flooding to the village over the past number of years.		Revised zoning & phasing
Stoneyford	Two recurring flood incident points recorded on the Main Street	Alluvial soils mapped along the King's River and along the stream in the centre of the village	Benefitting lands mapped along the stream through the centre of the village.	No indication of flooding occurrences shown in the village, lands to the southwest are described as "Liable to Flooding"	Improved drainage works in the town in 2009/2010 have eased drainage issues significantly in the main area of the town. More works proposed in 2011 on Norelands Rd near School.		Revised zoning & phasing

Urlingford	No flood incident points recorded in village	Alluvial soils mapped along River Goul to north of town	Benefitting lands mapped along River Goul to north, along stream through centre and on lands to southwest of town.	Large area of lands to west described as "Liable to Floods"	No flooding issues in town.		No zoning

Town/ village	Available Data by source						Proposal under variation
	www.floodmaps.ie	Alluvial Soils	Benefitting lands	6" OS maps	Local Authority information	Other	
Kilkenny	A number of flood incident points recorded for the Breagh and the Nore. The last flood recorded for the Nore was in 1997, the last for the Breagh in 2006. The most recent Breagh flooding affected a sports pitch at the Water Barrack and properties on the Circular Road.	Alluvial soils mapped along the River Nore through the centre of the city and also along the R. Breagh to the west and Pocke to the east.	Benefitting lands mapped along River Nore through the centre of the city and also along the R. Breagh to the west and Pocke to the east.	Lands along River Nore to the north (in Friarsinch and Talbotsinch) are described as "Liable to Floods". Also lands along the Pocke in Leggetsra to the east.	Flooding in Irishtown and Blackmill Street has been addressed through the Nore Flood Relief Scheme. Three locations in the city are subject to flooding currently: R. Breagh on Circular Road, adjacent to Robertshill housing estate and at the Water Barrack. Flooding at Water Barrack affects the roadway and prevents vehicular access to some properties. Sections of the Breagh are cleaned annually to alleviate the problem. Construction of the Western Environs access road will relieve flooding but not totally eliminate in Circular Road area. The R. Nore floods along the Canal Walk, directly downstream of the area remediated under Flood Relief scheme. It affects the Canal Walk footpath and prevents vehicular access to three residences.	Flood Relief Scheme for River Nore was completed in 2005	Revised zoning & phasing

3 Recommendations

This SFRA considers Kilkenny city, and towns and villages which are subject to revised development management approaches as a result of the core strategy. For those functional areas where strategic land-use decisions will be made through the preparation of subsequent Local Area Plans, it is recommended that detailed flood risk assessments are carried out in respect of each such areas (Callan, Castlecomer, Ferrybank, Graigenamanagh and Thomastown).

The CDP 2008-2014 contains text and policies on flooding in Section 9.12.5 (Policies IE89-94). As the Guidelines were published in 2009, after publication of the Development Plan in 2008, the text will be updated to reflect the Guidelines. For the areas identified through this SFRA that contain flood risk indicators, a policy will be included in both Development Plans to ensure that development proposals shall be the subject of a site-specific Flood Risk Assessment, appropriate to the type and scale of the development being proposed and shall be carried out in line with the Guidelines.

3.1 MONITORING AND REVIEW

As outlined in Section 2, additional information will be made available from the OPW later this year that will inform flood risk assessments in the County. The review of the County and City Development Plans (2008-2014) will commence in 2012, and at that stage a comprehensive Strategic Flood Risk Assessment will be carried out.

It is recommended that the OPW be consulted and that their progress in implementation of the requirements of the EU Flood Directive is reviewed prior to the preparation of any subsequent LAPs and prior to the next County and City Development Plans.

This SFRA is based on currently available data and in accordance with its status as a “living document” it will be subject to modification by these emerging datasets of maps and plans as they become available. In the interim any development proposal in the areas identified in this SFRA shall be subject to detailed flood risk assessment.

Section 4: Maps of Flood Risk Indicators

Maps are included for the following settlements in alphabetical order:

- a) Ballyhale
- b) Ballyragget
- c) Bennettsbridge
- d) Freshford
- e) Goresbridge
- f) Inistioge
- g) Kells
- h) Kilkenny
- i) Kilmacow
- j) Knocktopher
- k) Mooncoin
- l) Mullinavat
- m) New Ross Environs
- n) Stoneyford
- o) Urlingford