

STRATEGIC FLOOD RISK ASSESSMENT

Appendix 1 to the Environmental Report on the
Strategic Environmental Assessment of the
Kilkenny Draft County Development Plan 2014-2020



Forward Planning

Kilkenny County Council

14/6/2013

Contents

1	Introduction.....	1
1.1	Draft County Development Plan	1
1.2	Disclaimer	1
1.3	Structure of a Flood Risk Assessment (FRA).....	2
1.4	Scales of Flood Risk Assessments	2
1.5	The Sequential Approach	2
1.6	Purpose of Strategic Flood Risk Assessment	3
2	Strategic Flood Risk Assessment.....	4
2.1	Stages.....	4
2.2	Stage 1 Flood Risk Identification	4
2.2.1	Regional Flood Risk Appraisal	4
2.2.2	OPW Publications.....	4
2.2.3	Alternative available sources	6
2.2.4	Flood Risk Indicators	7
2.3	Stage 2 Initial Flood Risk Assessment	14
2.3.1	Settlements with settlement boundaries.....	14
2.3.2	Zoned settlements: Bennettsbridge, Kilmacow and New Ross Environs.....	14
2.3.3	Application of the Sequential Approach.....	15
2.3.4	Bennettsbridge Zoning Proposals	17
2.3.5	Kilmacow Zoning Proposals	18
2.3.6	Environs of New Ross Zoning Proposals	19
3	Recommendations	20
3.1.1	Surface Water Drainage	20
3.1.2	Monitoring and Review	21
4	Maps of Flood Risk Indicators	23

1 Introduction

The [Planning System and Flood Risk Management – Guidelines for Planning Authorities](#)¹ 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).

This SFRA forms Appendix 1 to the Environmental Report for the Kilkenny Draft County Development Plan (DCDP) and should be read in conjunction with that Environmental report. The purpose of this SFRA is to inform the Strategic Environmental Assessment (SEA) of the draft plan, and in this way inform the policies and objectives of the plan. A separate SEA, and SFRA, will be carried out of the Draft City & Environs Development Plan.

1.1 Draft County Development Plan

As set out in the Environmental Report, Kilkenny DCDP applies to the entire county. The DCDP is strategic in nature, and sets out broad strategies, including a settlement strategy, on a County-wide basis. The CDP includes a development framework for a total of 15 settlements. Three settlements are dealt with in detail and include zoning maps (Bennettsbridge, Kilmacow and New Ross Environs). These settlements were previously subject to Local Area Plans, but were incorporated into the Development Plan as a result of Variation 2, Core Strategy (2011). In addition, twelve settlements (Ballyhale, Ballyragget, Freshford, Goresbridge, Kells, Knocktopher, Inistioge, Mooncoin, Mullinavat, Slieverue, Stoneyford and Urlingford) are subject to a development boundary in the DCDP.

There are other Local Area Plans covering settlements in the county, which are not affected by this DCDP. These Plans are scheduled for review on a rolling six-year basis over the life of the CDP (Callan, Castlecomer, Ferrybank/Belview, Fiddown, Gowran, Graiguenamanagh, Piltown, Thomastown and Woodstock).

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 the [Floods' Directive](#)² 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 of the 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 Department of Environment, [The Planning System and Flood Risk Management – Guidelines for Planning Authorities](#), 2009

² EC, [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](#), 2007

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

A detailed FRA is carried out where necessary to assess flood risk issues in sufficient detail and to provide a quantitative appraisal of potential flood risk.

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.

This assessment is for a Draft County Development Plan and therefore is at SFRA scale.

1.5 The Sequential Approach

The sequential approach in terms of flood risk management is based on the following principles: AVOID - SUBSTITUTE - JUSTIFY - MITIGATE – PROCEED.

The primary objective of the sequential approach is that development is primarily directed towards land that is at low risk of flooding (AVOID). The next stage is to ensure that the type of development proposed is not especially vulnerable to the adverse impacts of flooding (SUBSTITUTION).

The Justification Test is designed to rigorously assess the appropriateness, or otherwise, of particular developments that, for various reasons, are being considered in areas of moderate or high flood risk (JUSTIFICATION). The test is comprised of two processes, namely the Plan-Making Justification Test and the Development Management Justification Test. Only the

former (Plan-Making Justification Test) is relevant to a Strategic Flood Risk Assessment for a Plan, and this is described as follows.

Justification Test for Development Plans (See p.37 of the Guidelines)

"Where, as part of the preparation and adoption or variation or 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 of the Guidelines, 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 as defined above 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 and sustainable planning of the urban settlement and in particular:
 - a. Is essential to facilitate regeneration and/or expansion of the centre of the urban settlement
 - b. Comprises significant previously developed and/or under-utilised lands;
 - c. Is within or adjoining the core of an established or designated urban settlement;
 - d. Will be essential in achieving compact or sustainable urban growth;
 - e. 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 detail has been carried out as part of the Strategic Environmental Assessment as part of the development plan preparation process, which demonstrates that flood risk to the development can be adequately managed and the use or development of the lands will not cause unacceptable adverse impacts elsewhere.

N.B. The acceptability or otherwise of levels of any residual risk should be made with consideration for the proposed development and the local context and should be described in the relevant flood risk assessment."

MITIGATION is the process where the flood risk is reduced to acceptable levels by means of land use strategies or by means of detailed proposals for the management of flood risk and surface water, all as addressed in the Flood Risk Assessment. The decision to PROCEED should only be taken after the Justification Test has been passed.

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 Development Plan,
- Identify whether flood risk is an issue in the settlements for which the development management framework (e.g. zoning map or settlement boundary) is being altered.

This SFRA presents available flood related data to identify areas within which a detailed Flood Risk Assessment will be required. It also reviews the existing text and policies in the Development Plan in relation to flooding and proposes changes where necessary. 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](#)³. 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. A meeting was held with the OPW on the 20th July 2012 to discuss the approach to the SFRA. The broad approach to the SFRA was agreed. The OPW will be consulted at every stage of the Development Plan process.

2.2.2 OPW Publications

To comply with the 'Floods' Directive⁴, the OPW commenced a CFRAM (Catchment Flood Risk Assessment and Management) programme in Ireland in 2011.

The CFRAM Programme comprises three phases:

1. The Preliminary Flood Risk Assessment (PFRA): 2011
2. The CFRAM Studies and parallel activities: 2011-2015
3. Implementation and Review: 2016 onwards

The Programme provides for three main consultative stages:

1. 2011 Preliminary Flood Risk Assessments
2. 2013 Flood Hazard Mapping
3. 2015 Flood Risk Management Plans

2.2.2.1 Preliminary Flood Risk Management

The '[Floods' Directive](#)⁵ required Member States to undertake a national preliminary flood risk assessment by 2011 to identify areas where significant flood risk exists or might be

³ South East Regional Authority, [South East Regional Planning Guidelines](#), 2010

⁴ [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.](#)

considered likely to occur. In August 2011, the OPW published the National Preliminary Flood Risk Assessment, Draft for Public Consultation⁶ which comprised a Report and a set of maps.

This national screening exercise identified where there may be a significant risk associated with flooding, based on available and easily derivable information. The objective of the PFRA is to identify Areas for Further Assessment (AFA's) and this further assessment will take place through Catchment Flood Risk Assessment and Management Studies (CFRAMS).

Of the 15 settlements included in the DCDP, five settlements are identified as Areas of Further Assessment⁷; Ballyhale, Ballyragget, Freshford, Inistioge and Mullinavat.

Maps of the County have been published as part of the Draft PFRA. The OPW have stated that the maps, although draft and indicative, may be of use to the Local Authorities in a number of areas of activity, particularly in the performance of their planning function in relation to the implementation of the [Flooding Guidelines](#).

These maps indicate flood extents – for fluvial flooding they indicate the 100 year event and the extreme event, or 1 in 1000 year event. They also indicate coastal, pluvial and groundwater flood extents. This mapping is now an important and primary input into flood risk assessment studies. Fluvial flooding is flooding from a river or other watercourse. Pluvial flooding is a result of rainfall-generated overland flows which arise before run-off enters any watercourse or sewer.

2.2.2.2 Catchment Based Management Plans

Phase 2 of the CFRAM programme is the production of CFRAM studies. 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.

The two CFRAMS that will affect the DCDP are the Suir and South Eastern CFRAMS.

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 commenced in summer 2011 and will run until the end of 2015. The South Eastern district is one of Ireland's largest river basin districts covering about one fifth of the country with an area of nearly 13,000km².

The main aims of the South Eastern CFRAM Study are to:

- assess flood risk, through the identification of flood hazard areas and the associated impacts of flooding;
- identify viable structural and non-structural measures and options for managing the flood risks for localised high-risk areas and within the catchment as a whole;
- prepare a strategic Flood Risk Management Plan (FRMP) and associated Strategic Environmental Assessment (SEA) that sets out the measures and policies that should be pursued to achieve the most cost effective and sustainable management of flood risk;
- ensure that full and thorough public and stakeholder consultation and engagement is achieved.

⁵ 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.

⁶ <http://www.cfram.ie/pfra/>

⁷ See <http://www.cfram.ie/wordpress/wp-content/uploads/2011/06/AFA-Designation-Report-120514-Final-2.pdf>

For these risk areas, flood risk maps and flood hazard maps will be drawn up later in 2013.

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

2.2.3 Alternative available sources

The data listed below is available for the county and provides information on the historical occurrence of flooding. This data was mapped for each of the 15 settlements included under this DCDP. Flooding and surface water issues in the county were also identified through consultation with the Area Engineers and from any other relevant sources.

i) 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, the 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 15 settlements. 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 changed since they were prepared.

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. These three towns are subject to separate Local Area Plans and are not addressed in the DCDP.

A Strategic Flood Risk Assessment was carried out for the Wexford County Development Plan by JBA Consulting. As part of this, flood zone mapping was produced for both sides of the River Barrow in New Ross, and Wexford County Council kindly made this information available to Kilkenny County Council.

A flood relief scheme has been completed in Kilkenny city, this will be addressed in the City & Environs SFRA.

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 the DCDP is identified in a Flood Risk Indicator Matrix. Of the 15 settlements included in the DCDP, only one, Slieverue shows no fluvial Flood Risk indicators but does show indicative pluvial flooding. As all of the settlements could be subject to a potential flood risk issue, the assessment proceeds to Stage 2.

Flood Risk Indicator Matrix

Town/ village	Available Data by source					
	www.floodmaps.ie	Alluvial Soils	Benefitting lands	6" OS maps	Local Authority information	Other/PFRA Maps 2013
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. 2003 – 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 in 2010 by church.	Identified as Area for further assessment
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.	Identified as Area for further assessment

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.	Possible Area for Further Assessment – not selected as AFA.
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.	Identified as Area for further assessment
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.	Indicative pluvial & fluvial flooding shown

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.	Identified as Area for further assessment
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.	Indicative pluvial & fluvial flooding shown
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. Works for alleviation of flooding are proposed.	Suir CFRAM Possible Area for further assessment – not selected as AFA.

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.	Indicative pluvial & fluvial flooding shown
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 completed.	Possible Area for further assessment – not selected.
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 were undertaken in conjunction with the OPW to eliminate flood risk to houses.	Included in OPW Minor Flood Mitigation Works & Studies Scheme Approved Projects 2010

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.	Possible Area for further assessment – not selected.
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.	Indicative pluvial flooding shown
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 and its environs in 2009/2010/2011 have eased drainage issues significantly in the main area of the town. No incidents of note have occurred since this work was completed.	Indicative fluvial flooding shown

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.	Indicative pluvial & fluvial flooding shown
------------	--	---	--	---	-----------------------------	---

2.3 Stage 2 Initial Flood Risk Assessment

The purpose of this stage is to ensure that all relevant flood risk issues are assessed in relation to the decisions to be made and potential conflicts between flood risk and development are addressed to the appropriate level of detail. As there are two different development frameworks proposed under this DCDP, there are two different approaches to this stage, depending on whether a settlement boundary or zoning framework is proposed.

2.3.1 Settlements with settlement boundaries

Under this DCDP, twelve settlements will be subject to settlement boundaries, within which the following objective will apply:

“To facilitate development of housing, economic development, services and infrastructure in the smaller towns and villages of the county at a scale and character which is appropriate in order to sustain and renew populations and services in these areas”.

Using a combination of the PRFA mapping and the flood risk indicators as described earlier, an area of flood risk was mapped for each of these settlements, see Maps 1-12. The map illustrates the proposed settlement boundary under the DCDP. The proposed settlement boundary was devised having regard to a number of factors, including a consideration of flood risk.

In cases where land contains any flood risk indicators within the settlement boundary, the full extent of any indicators present are amalgamated and enclosed by a dashed line. 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. Therefore, 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”. Section 9.2.9 of the DCDP contains text referring to this requirement. As this land is not zoned, it is not necessary to proceed to the Justification Test.

2.3.2 Zoned settlements: Bennettsbridge, Kilmacow and New Ross Environs

For each of the three settlements which include zoning under this DCDP, an iterative process of flood risk assessment has been undertaken.

This has involved the refinement of the zoning objective maps, which have been reviewed and amended according to the Flood Zones and the vulnerability of the proposed development.

2.3.2.1 Flood zone mapping

Flood zones are geographical areas within which the likelihood of flooding is in a particular range. There are three types of flood zones defined:

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

The PFRA maps included delineation of both flood zones A and B. For each of these three settlements, Flood Zone A was taken directly as Flood Zone A as identified in the PFRA mapping. Flood Zone B however was defined as Flood Zone B from the PFRA mapping

combined with any other area of flood risk indicators. Flood Zone B therefore is in general larger than the Flood Zone B as identified in the PFRA mapping.

2.3.3 Application of the Sequential Approach

Having identified the area of flood risk within the plan areas the next step is to apply the sequential approach to land use planning. The areas of flood risk were overlaid on the current zoning/boundary for each settlement. (This was taken from Variation 2, Core Strategy (2011) which provided the most recent development framework for the 3 settlements.) This identified where flood risk management and future development may cause a conflict.

The Guidelines have categorised land uses into three vulnerability classes and have also specified which vulnerability class would be appropriate in each flood zone, or where the Justification Test would be required.

The table of vulnerability classes (Table 3.1 of the Guidelines) is as follows:

Table 1: Classification of vulnerability of different types 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 sites, 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 a specific warning and evacuation plan).
*Uses not listed here should be considered on their own merits Source: Table 3.1 of the Flooding Guidelines	

Table 3.2 of the Guidelines sets out how the vulnerability classes interact with the flood zones and when the Justification Test is required.

Table 2: Interaction of vulnerability classes and flood zones			
Development	Flood Zone A	Flood Zone B	Flood Zone C
Highly vulnerable	Justification Test	Justification Test	Appropriate
Less vulnerable	Justification Test	Appropriate	Appropriate
Water-compatible	Appropriate	Appropriate	Appropriate

Source: Table 3.2 of the Flooding Guidelines

Where some of the settlement is within either Flood Zone A or B, the need for a further review of flood risk, and the specific zoning objectives, is required. If the proposed zoning was found to be water compatible and located within either Flood Zone A or B, there was no requirement to apply the Justification Test. If, however, less vulnerable uses were proposed for Flood Zone A, or highly vulnerable uses were proposed for Flood Zones A or B, the Justification Test was applied, and if necessary, the zoning objective revised. This process is detailed below.

Note: Vulnerability to pluvial flood risk should not be a limitation to development, but should be incorporated into the local drainage strategy, therefore areas of pluvial flooding were not subjected to the Sequential approach.

2.3.4 Bennettsbridge Zoning Proposals

The Flood Zones in Bennettsbridge were overlain on the current Zoning Map, as taken from the County Development Plan, Core Strategy Variation (2011).

A large proportion of the land located within the flood zones is zoned for Open Space. This is a water compatible use, therefore no Justification Test is required.

A total of seven areas of potential conflict between flood risk and future development were identified. These are shown on Map 13a. The Sequential approach was used and this resulted in the avoidance of three sites and rezoning as follows:

- i. From Residential to Open space at Kilree Park
- ii. From Residential to Open Space east of the River Nore
- iii. Parcels of land zoned for Agricultural use were removed from the zoning map and the settlement boundary was adjusted.

The amended zoning map, and development boundary, is shown on Map 13b. Four parcels of zoned land remain, which must be subjected to the Justification Test, as follows:

- iv. Land to the west of the main street is zoned for Village Centre. This land is presently developed, however some of the parcels may have potential for redevelopment.
- v. A parcel of land west of the River is zoned for Industrial/Employment. This parcel is in current use as Nicholas Mosse's pottery mill and shop.
- vi. A parcel of land west of the River, currently vacant is zoned for Industrial/Employment
- vii. The Esso service station, located to the south of the village is zoned for Industrial/Employment, and an adjoining house is zoned Residential.

In order for this land to remain zoned for the uses as outlined, the zoning must satisfy the Justification Test. The criteria are outlined in Section 1.5 and the test is set out below.

1) The urban settlement is targeted for growth....

Bennettsbridge is identified as a Smaller Town or Village in the County Development Plan, with an existing LAP. The Draft Development Plan states "Towns with existing LAPs are targeted for growth having regard to their position within the settlement hierarchy of the County and the scale and character of the individual settlement".

2) The zoning or designation of the lands for the particular use or development type is required to achieve the proper and sustainable planning of the urban settlement

- a. The zoning of this area for a number of uses (Industrial/employment, residential and village centre) is intended mainly to reflect the existing uses in operation. The continued zoning of the land will facilitate the regeneration and/or expansion of the centre.
- b. All of the land is currently in use, apart from one Industrial/Employment zoned parcel at the bridge, which is under-utilised as it contains a vacant building.
- c. All of the land is either in, or adjoins the core of Bennettsbridge (as core is defined in the [Flooding Guidelines](#)).

- d. The continued development of this land is essential in achieving compact and sustainable urban growth as it will provide employment and services to this settlement.
- e. The zoning of this land reflects the existing uses on the sites, and is intended to facilitate their appropriate expansion. Therefore this land is the most suitable for this purpose.

3) A flood risk assessment to an appropriate level of detail has been carried out....

In the main, this land is built out and the opportunities for future development are limited. In this context, this FRA contains sufficient information appropriate to the scale and nature of the development potential. Mitigation measures are included in the DCDP and an objective will state that any development within Flood Zone A or B will be subject to a site specific Flood Risk Assessment appropriate to the scale and type of the development being proposed. This mitigation measure will ensure that any development taking place will not exacerbate any flooding issue. Any vulnerable development proposed will have to satisfy the development management Justification Test.

2.3.5 Kilmacow Zoning Proposals

The Flood Zones in Kilmacow were overlain on the Zoning Map, taken from the County Development Plan, Core Strategy Variation (2011). A large proportion of the land within the area of flood risk is zoned for Rural Conservation. This zoning is intended primarily as a conservation zone, to protect the amenity value and rural character of the area. Therefore this zone is considered to be water-compatible, and does not require the application of the Justification Test. A small area of land is zoned for Open Space, which is a water-compatible use.

A total of four areas of potential conflict were identified. These are shown on Map 14a. The Sequential approach was used and this resulted in the avoidance of sites in Dangan and rezoning as follows:

- i. From Residential, General development and Phase 2 to Open Space.

The amended zoning map is shown on Map 14b. Three parcels of zoned land remain, which require the Justification Test, as follows:

- ii. An area in the village centre is zoned for General Development. This land is presently developed, however some of the parcels may have potential for redevelopment.
- iii. A parcel of land east of the River is zoned for Community Facilities. This parcel contains the Sports Complex.
- iv. Parcels of land in the centre of Lower Kilmacow are zoned for General Development.

In order for this land to remain zoned for the uses as outlined, the zoning must satisfy the Justification Test. The criteria are outlined in Section 1.5 and the test is set out below.

1) The urban settlement is targeted for growth....

Kilmacow is identified as a Smaller Town or Village in the County Development Plan, with an existing LAP. The Draft Development Plan states "Towns with existing LAPs are targeted for growth having regard to their position within the settlement hierarchy of the County and the scale and character of the individual settlement".

2) The zoning or designation of the lands for the particular use or development type is required to achieve the proper and sustainable planning of the urban settlement

- a. The zoning of this area for a number of uses (General development and community facilities) is intended mainly to reflect the existing uses in operation. The continued zoning of the land will facilitate the regeneration and/or expansion of the centre.
- b. All of the land is currently in use.

- c. All of the land is either in, or adjoins the core of Kilmacow (as core is defined in the [Flooding Guidelines](#)).
- d. The continued development of this land is essential in achieving compact and sustainable urban growth as it will provide employment and services to Kilmacow.
- e. The zoning of this land reflects the existing uses on the sites, and is intended to facilitate their appropriate expansion. Therefore this land is the most suitable for this purpose.

3) A flood risk assessment to an appropriate level of detail has been carried out...

In the main, this land is built out and the opportunities for future development are limited. In this context, this FRA contains sufficient information appropriate to the scale and nature of the development potential. Mitigation measures are included in the DCDP and an objective will state that any development within Flood Zone A or B will be subject to a site specific Flood Risk Assessment appropriate to the scale and type of the development being proposed. This mitigation measure will ensure that any development taking place will not exacerbate any flooding issue. Any vulnerable development proposed will have to satisfy the development management Justification Test.

2.3.6 Environs of New Ross Zoning Proposals

The Flood Zones in the Environs of New Ross were overlain on the Zoning Map, taken from the County Development Plan, Core Strategy Variation (2011).

Two areas of possible conflict between flood risk and future development were identified;

- i) the industrial zoning in the south and
- ii) agricultural zoning to the north of the N25

These are shown on Map 15a. The Sequential approach was used and this resulted in the alteration of the settlement boundary and the exclusion of the agricultural zoning within the area of flood risk.

The amended zoning map is shown on Map 15b. One area of industrially zoned land remains, and in accordance with the Guidelines, a Justification test will be carried out for the land. In order for this land to remain zoned, the zoning must satisfy the Justification Test. The criteria are outlined in Section 1.5 and the test is set out below.

1) The urban settlement is targeted for growth...

New Ross is identified as a Larger Town in the Regional Planning Guidelines 2010, and in the County Development Plan. According to the RPGs, "New Ross, Carrick-on-Suir and Tipperary Town have been targeted for growth having regard to their strategic locations, capacity for growth and potential to deliver on the core objectives of critical mass and balanced regional development"⁸.

2) The zoning or designation of the lands for the particular use or development type is required to achieve the proper and sustainable planning of the urban settlement

- a. The zoning of this area for industrial development is intended mainly to reflect the existing uses in operation. The continued zoning of the land will facilitate the regeneration and/or expansion of the centre.
- b. Most of the land is currently in use.
- c. The land adjoins the core of New Ross (as core is defined in the [Flooding Guidelines](#)).
- d. The continued development of this land is essential in achieving compact and sustainable urban growth as it provides employment and services to New Ross.

⁸ South-East Regional Authority, South Eastern Regional Planning Guidelines, 2010, p.53

- e. The zoning of this land reflects the existing uses on the sites, and is intended to facilitate their appropriate expansion. Therefore this land is the most suitable for this purpose.

3) A flood risk assessment to an appropriate level of detail has been carried out....

In the main, this land is built out and the opportunities for future development are limited. In this context, this FRA contains sufficient information appropriate to the scale and nature of the development potential. Mitigation measures are included in the DCDP and an objective will state that any development within Flood Zone A or B will be subject to a site specific Flood Risk Assessment appropriate to the scale and type of the development being proposed. This mitigation measure will ensure that any development taking place will not exacerbate any flooding issue. Any vulnerable development proposed will have to satisfy the development management Justification Test.

3 Recommendations

This SFRA considers Kilkenny county, and towns and villages for which a specific development framework is included in the DCDP.

For those functional areas where strategic land-use decisions will be made through any Local Area Plans, it is recommended that detailed flood risk assessments are carried out in respect of each such areas.

For the areas identified through this SFRA that contain flood risk indicators, text will be included in Chapter 9 of the DCDP 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 Flooding Guidelines.

3.1.1 Surface Water Drainage

This SFRA has also included a review of the current text in relation to flooding and surface water drainage. In line with the recommendations of the Guidelines, changes are proposed to the surface water drainage text to encourage the use of Sustainable Drainage Systems.

The proposed text is set out below.

Surface Water Drainage

Surface water drainage systems are designed to channel stormwater (rainwater) to the nearest suitable river. Rain falling on impervious surfaces is usually directed into surface water drainage systems. Best practice is to separate the surface water drainage system from the foul drainage system to maximise the efficiency of our waste water treatment plants.

Surface water drainage systems are effective at transferring surface water quickly, but they can cause the volume of water in the receiving watercourse to increase more rapidly thereby increasing flood risk. Sustainable Drainage Systems (SuDS) can play a role in reducing and managing run-off to surface water drainage systems as well as improving water quality.

Development Management Standards

- *Development must so far as is reasonably practicable incorporate the maximum provision to reduce the rate and quantity of runoff. e.g.:-*
 - *Hard surface areas (car parks, etc.), should be constructed in permeable or semi-permeable materials,*
 - *On site storm water ponds to store and/or attenuate additional runoff from the development should be provided,*

- Soak-aways or french drains should be provided to increase infiltration and minimise additional runoff.
- Individual developments shall be obliged, in all cases where surface water drainage measures are required, to provide a surface water drainage system separated from the foul drainage system.
- In the case of one-off rural dwellings or extensions, except in circumstances where an existing surface water drainage system is available to the proposed site for development, and which in the opinion of the planning authority has adequate capacity to accommodate the identified surface water loading, surface water shall be disposed of, in its entirety within the curtilage of the development site by way of suitably sized soak holes.
- In the case of driveways, drainage measures shall be provided to a detail acceptable to the planning authority so as to avoid run-off from the site to the adjoining public road.
- For all other green-field developments in general the limitation of surface water run-off to pre-development levels will be required. Where a developer can clearly demonstrate that capacity exists to accommodate run-off levels in excess of green-field levels then the planning authority shall give consideration to such proposals on a case by case basis.
- In the case of brown-field development, while existing surface water drainage measures will be taken into account, some attenuation measures for surface water may be required at the discretion of the planning authority in the interests of balanced and sustainable development.
- In line with the above Kilkenny County Council will consider all drainage proposals consistent with SuDS (Sustainable Drainage Systems).
- For developments adjacent to watercourses of a significant conveyance capacity any structures (including hard landscaping) must be set back from the edge of the watercourse to allow access for channel clearing/maintenance. A setback of 5m-10m is required depending on the width of the watercourse. Development consisting of construction of embankments, wide bridge piers, or similar structures will not normally be permitted in or across flood plains or river channels.
- All new development must be designed and constructed to meet the following minimum flood design standards:-
 - Where streams, open drains or other watercourses are being culverted - the minimum permissible culvert diameter is 900mm. (Access should be provided for maintenance as appropriate.)
- To give adequate allowance for climate change in designing surface water proposals a multiplication factor of 1.2 shall be applied to all river return periods up to 100 years except in circumstances where the OPW have provided advice specifying the particular multiplication factor for return periods up to 100 years. In the case of rainfall a multiplication factor of 1.1 shall be applied to rainfall intensities to make allowance for climate change requirements.
- In the design of surface water systems, regard shall be had to the [Greater Dublin Regional Code of Practice for Drainage Works](#)⁹⁹ and associated GDSDS technical documents.

3.1.2 Monitoring and Review

As outlined in Section 2, additional information, in the form of CFRAM mapping, will be made available from the OPW later this year that will inform flood risk assessments in the County.

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 amendments to the Draft.

⁹⁹ Greater Dublin Local Authorities, [Greater Dublin Regional Code of Practice for Drainage Works](#), 2006

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.

4 Maps of Flood Risk Indicators

Maps are included for the following settlements:

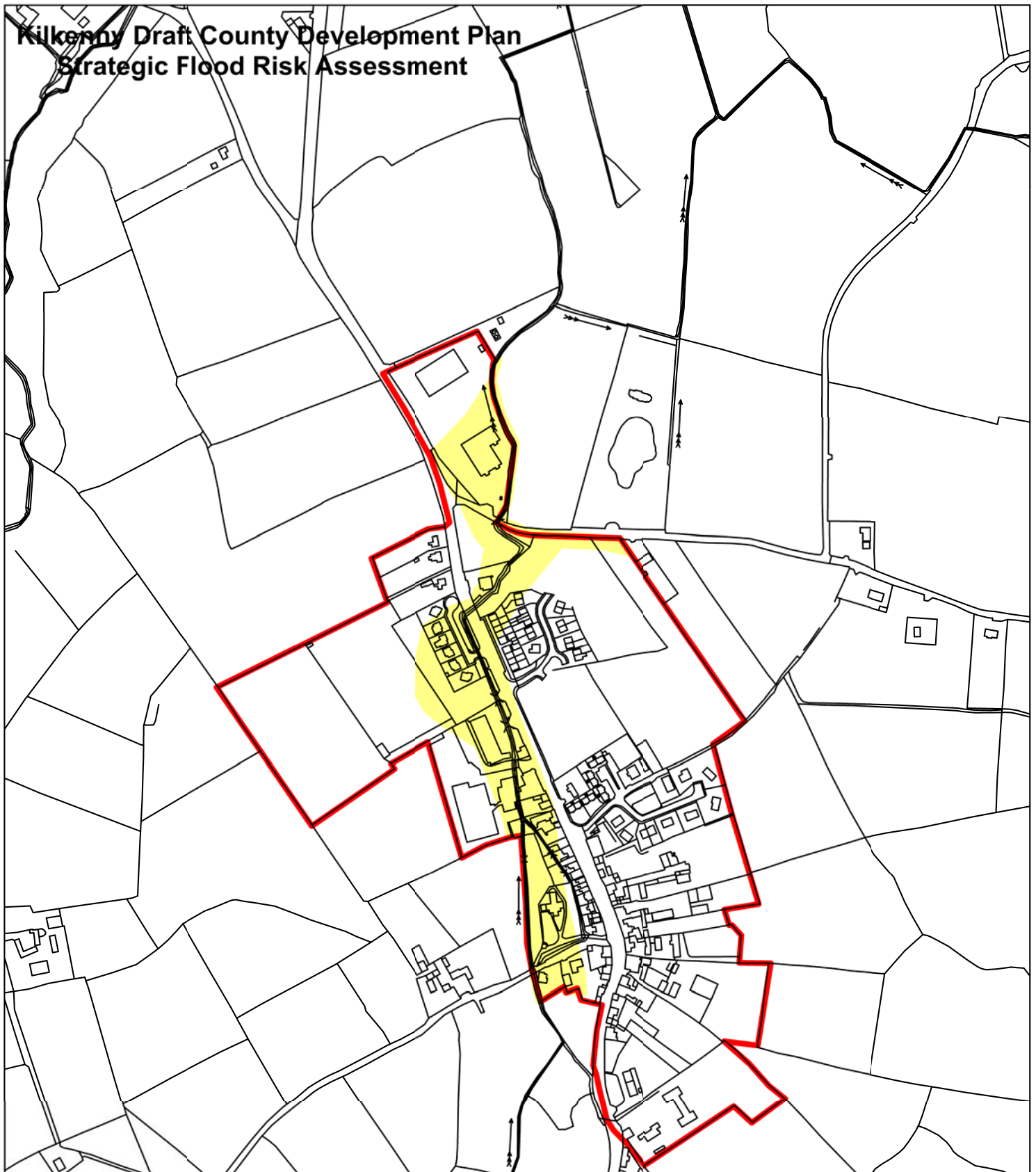
Settlement boundary maps:

- 1) Ballyhale
- 2) Ballyragget
- 3) Freshford
- 4) Goresbridge
- 5) Inistioge
- 6) Kells
- 7) Knocktopher
- 8) Mooncoin
- 9) Mullinavat
- 10) Slieverue
- 11) Stoneyford
- 12) Urlingford


Zoning maps:


- 13a) Bennettsbridge – Areas of flood risk on Variation 2 Zoning Map
- 13b) Bennettsbridge – Areas of flood risk on Draft zoning map
- 14a) Kilmacow – Areas of flood risk on Variation 2 Zoning Map
- 14b) Kilmacow – Areas of flood risk on Draft zoning map
- 15a) New Ross Environs – Areas of flood risk on Variation 2 Zoning Map
- 15b) New Ross Environs – Areas of flood risk on Draft zoning map

Kilkenny Draft County Development Plan Strategic Flood Risk Assessment



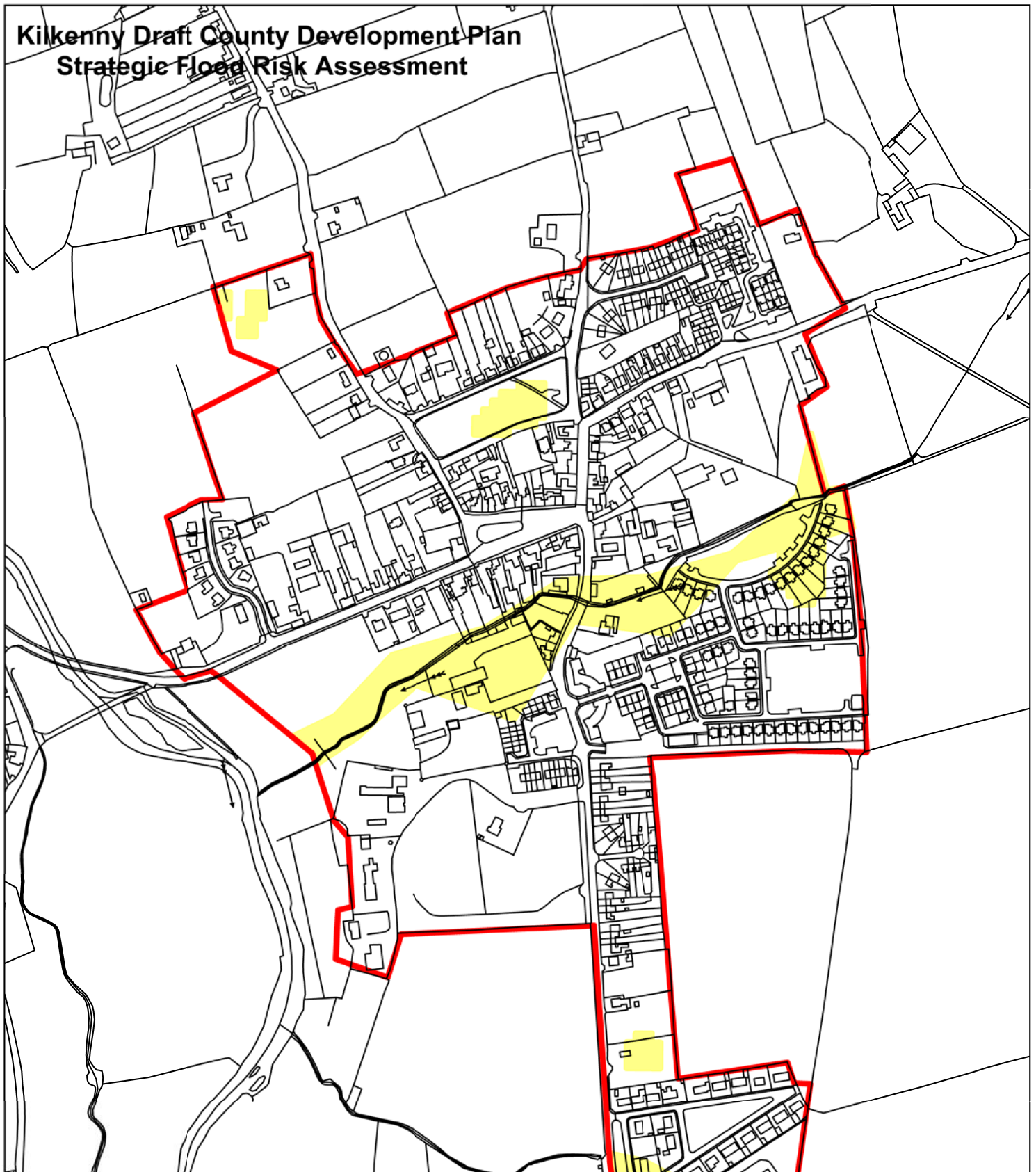
Map 1: Ballyhale

 Area within which any development proposal will be the subject of site-specific Flood Risk Assessment appropriate to the type and scale of the development being proposed.


 Settlement boundary


Date: April 2013
Scale: 1: 6,000 @A4

Kilkenny Draft County Development Plan Strategic Flood Risk Assessment



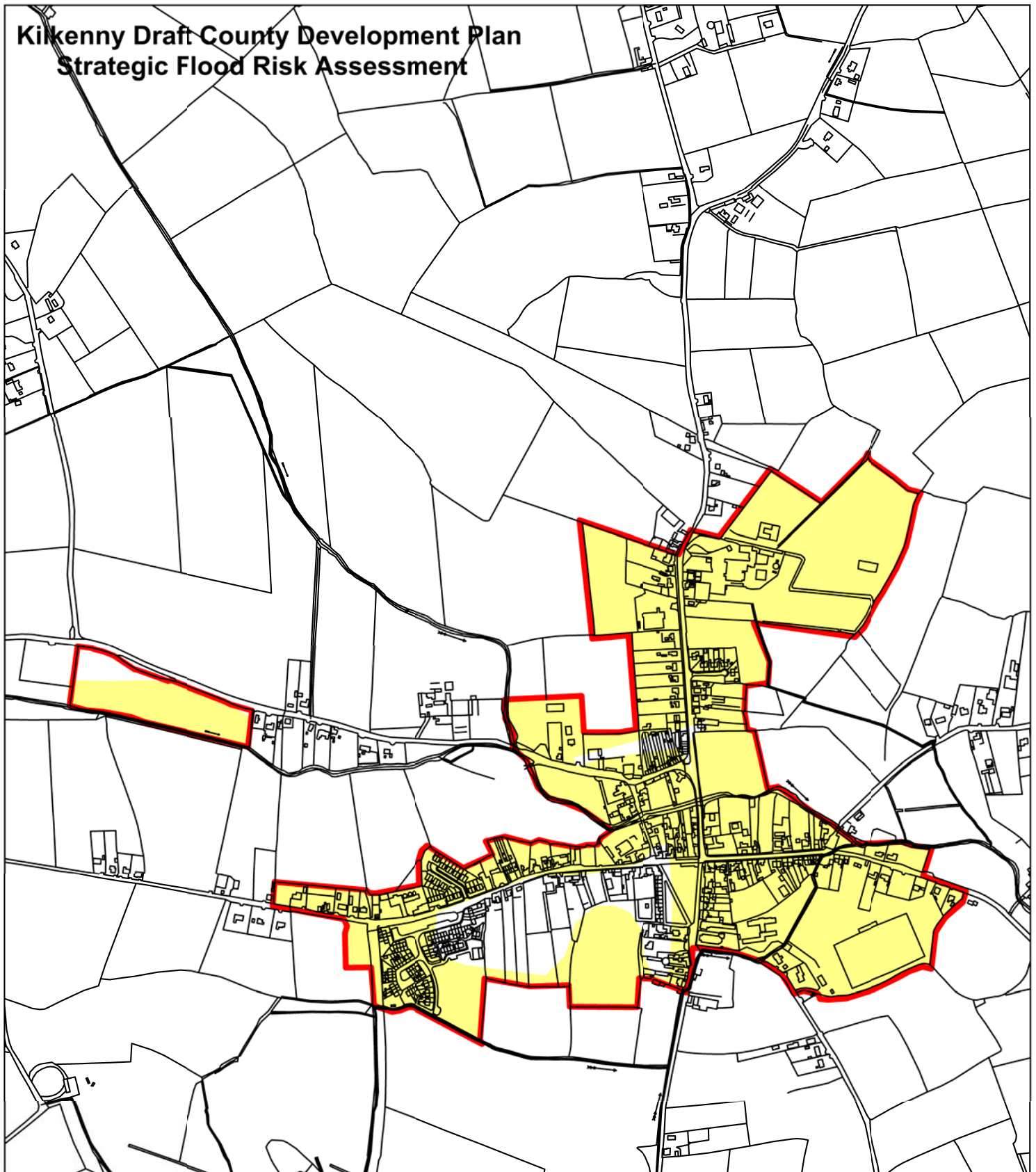
Map 2: Ballyragget

 Area within which any development proposal will be the subject of site-specific Flood Risk Assessment appropriate to the type and scale of the development being proposed.


 Settlement boundary


Date: April 2013
Scale: 1: 6,000 @A4

Kilkenny Draft County Development Plan Strategic Flood Risk Assessment



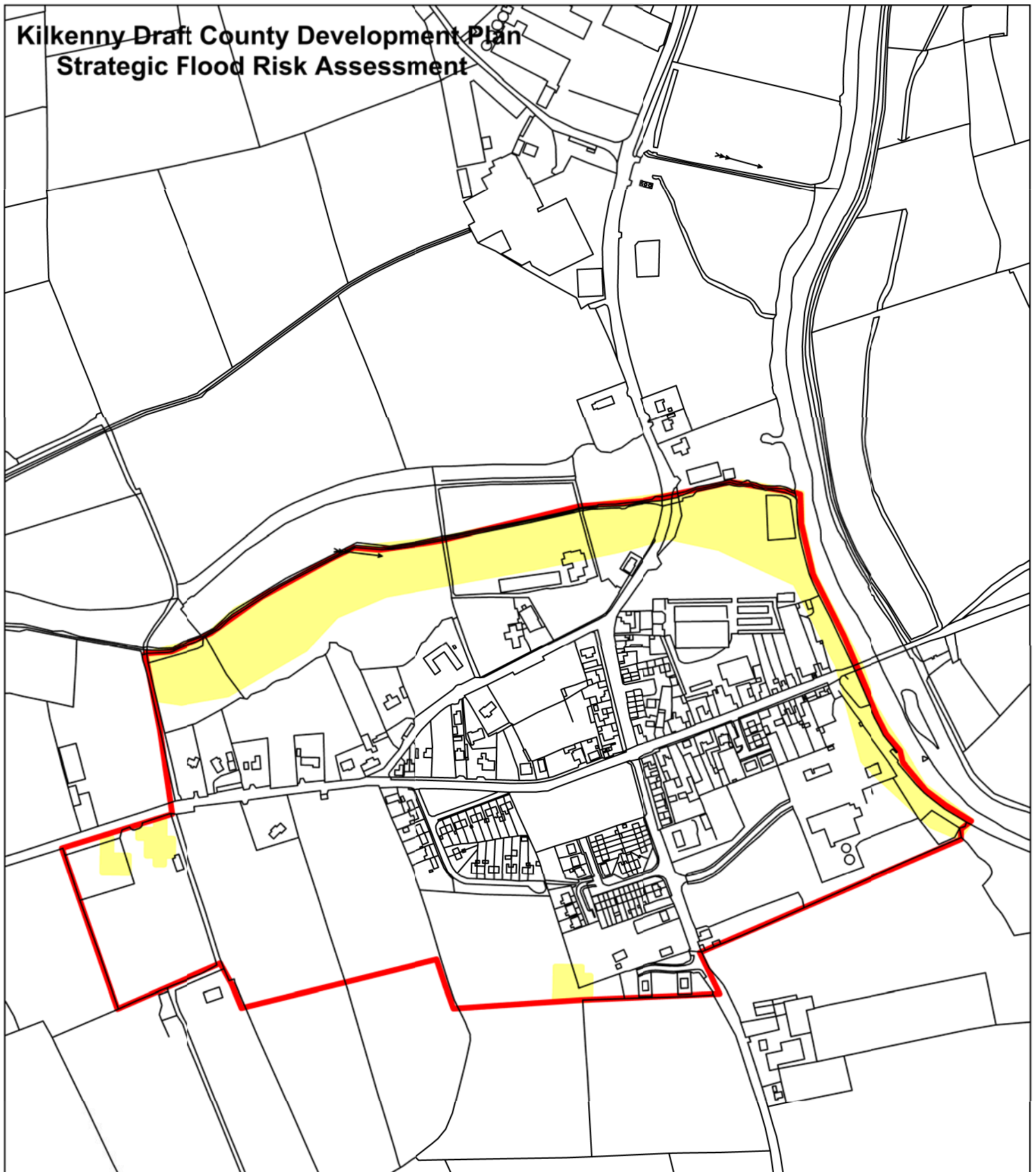
Map 3: Freshford

 Area within which any development proposal will be the subject of site-specific Flood Risk Assessment appropriate to the type and scale of the development being proposed.


 Settlement boundary


Date: April 2013
Scale: 1: 10,000 @A4

Kilkenny Draft County Development Plan Strategic Flood Risk Assessment



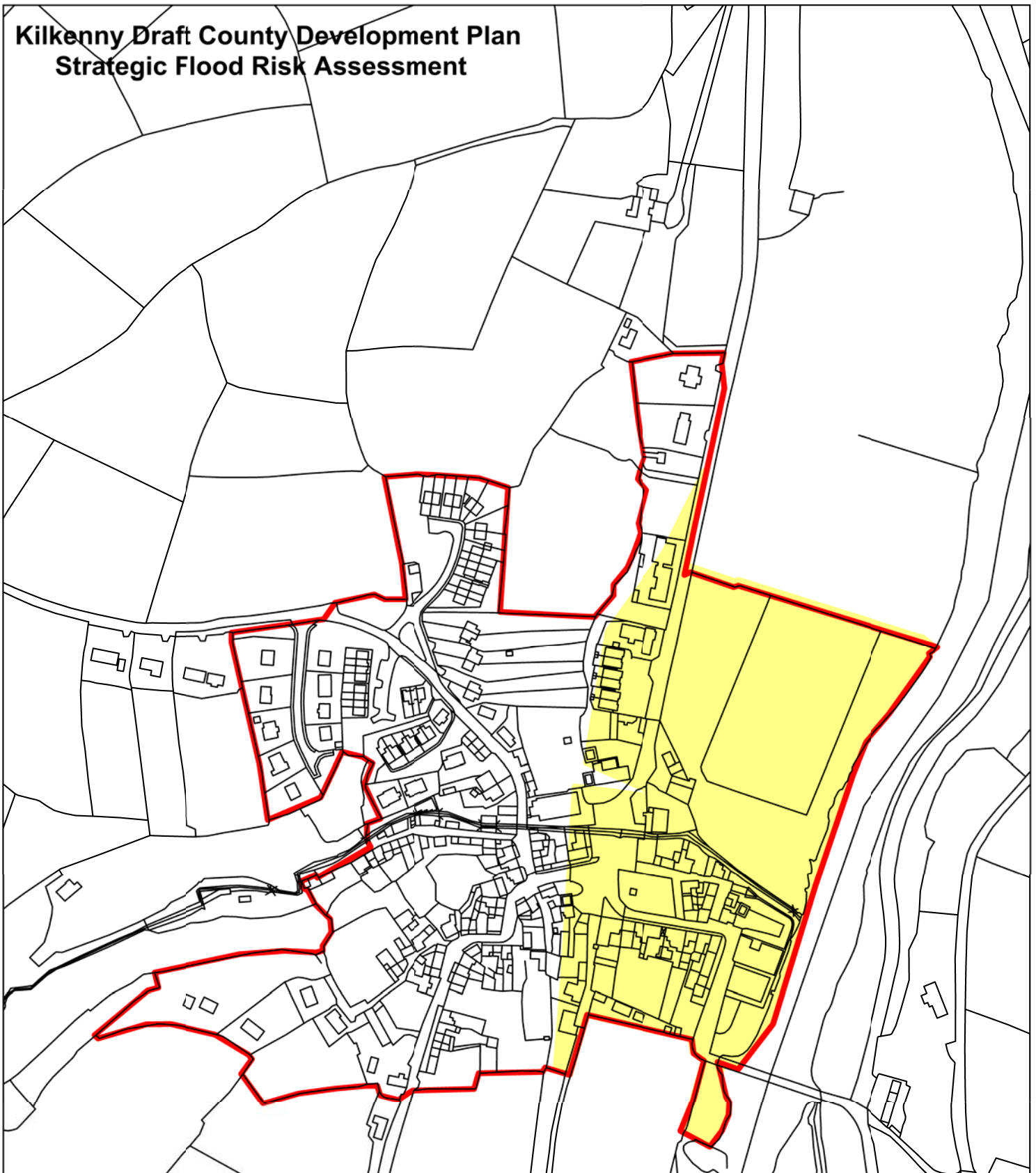
Map 4: Goresbridge

 Area within which any development proposal will be the subject of site-specific Flood Risk Assessment appropriate to the type and scale of the development being proposed.


 Settlement boundary


Date: April 2013
Scale: 1: 6,000 @A4

Kilkenny Draft County Development Plan Strategic Flood Risk Assessment



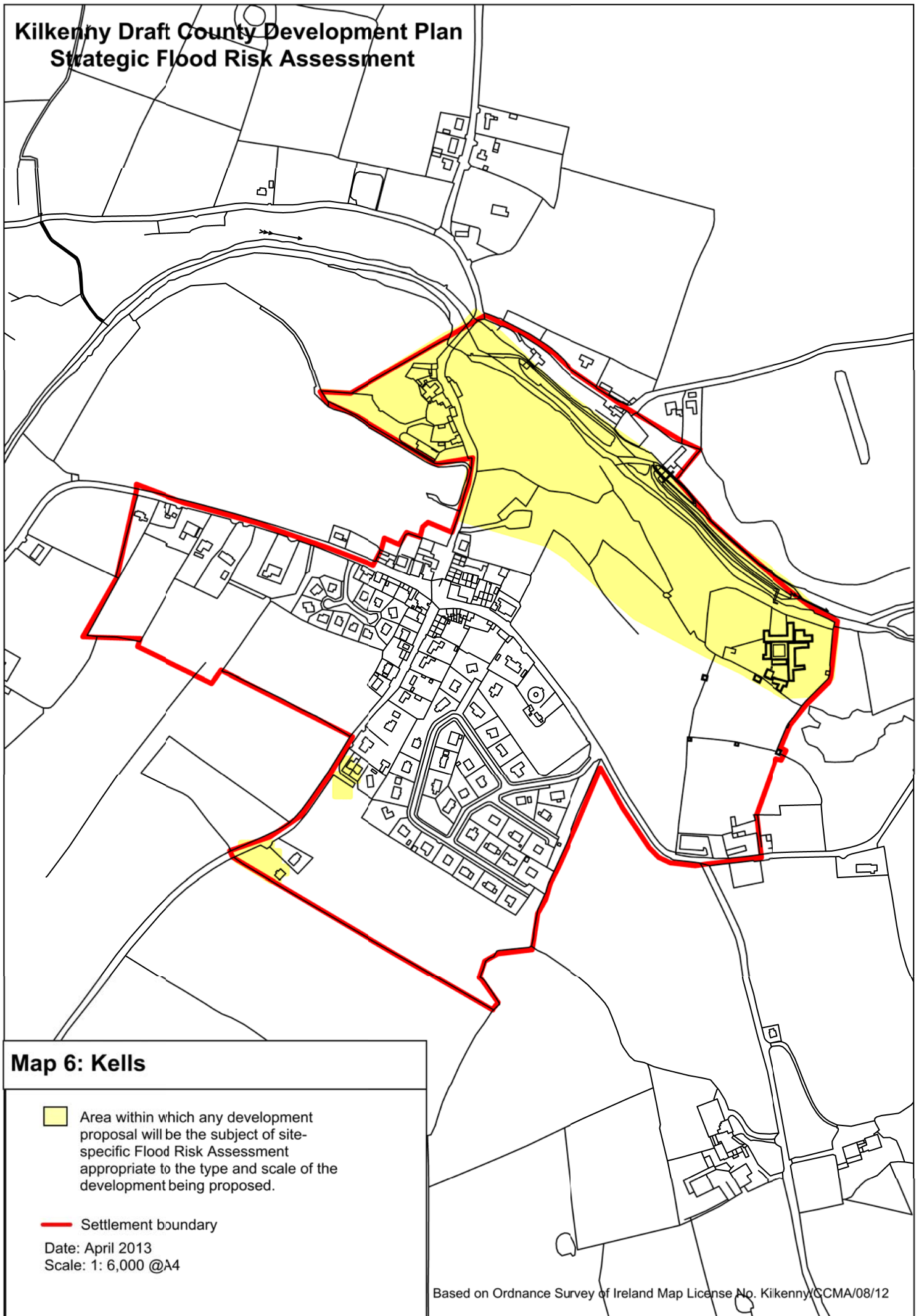
Map 5: Inistioge

 Area within which any development proposal will be the subject of site-specific Flood Risk Assessment appropriate to the type and scale of the development being proposed.


 Settlement boundary

Date: April 2013
Scale: 1: 6,000 @A4

Kilkenny Draft County Development Plan Strategic Flood Risk Assessment



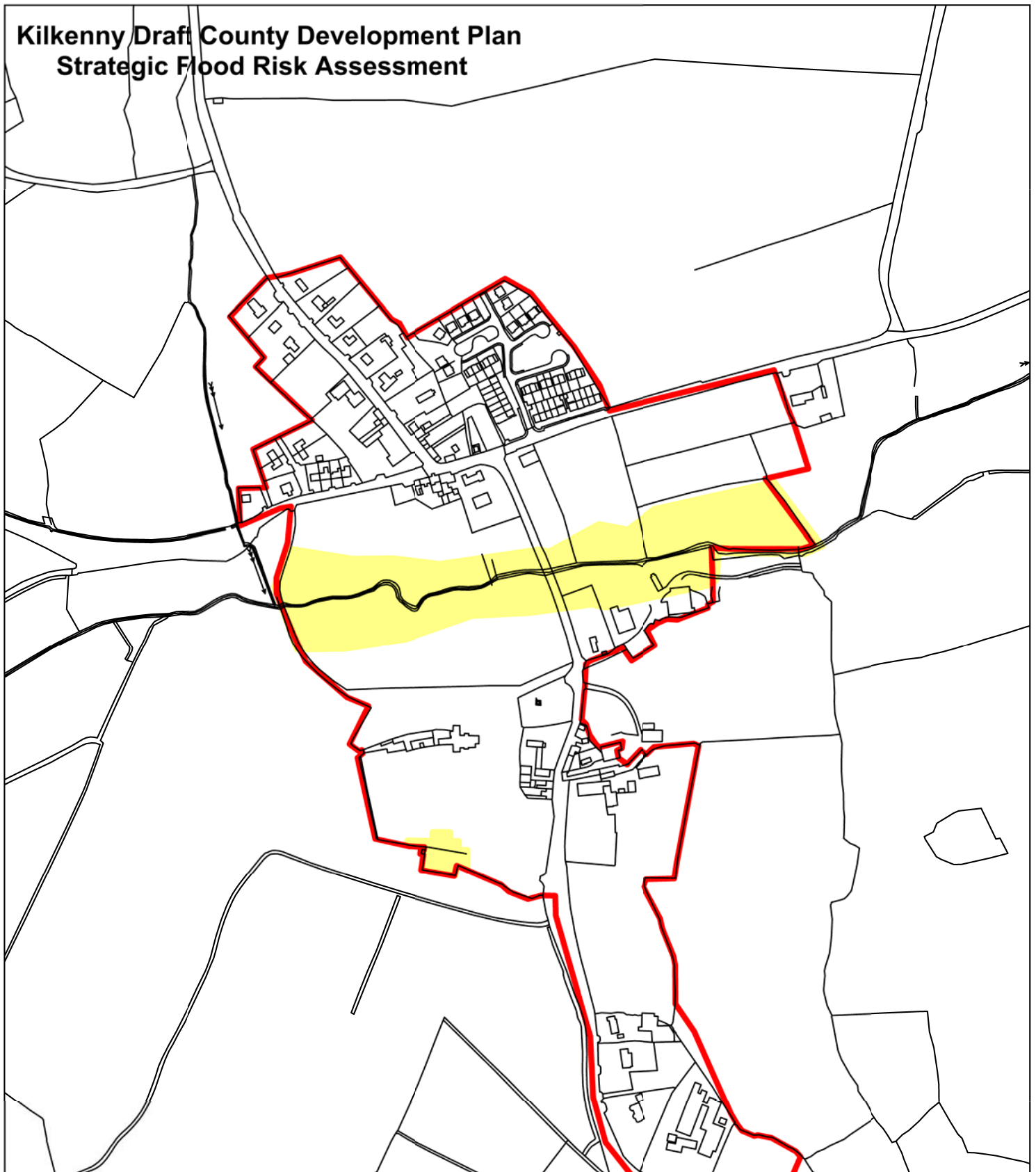
Map 6: Kells

 Area within which any development proposal will be the subject of site-specific Flood Risk Assessment appropriate to the type and scale of the development being proposed.


 Settlement boundary


Date: April 2013
Scale: 1: 6,000 @A4

Kilkenny Draft County Development Plan Strategic Flood Risk Assessment



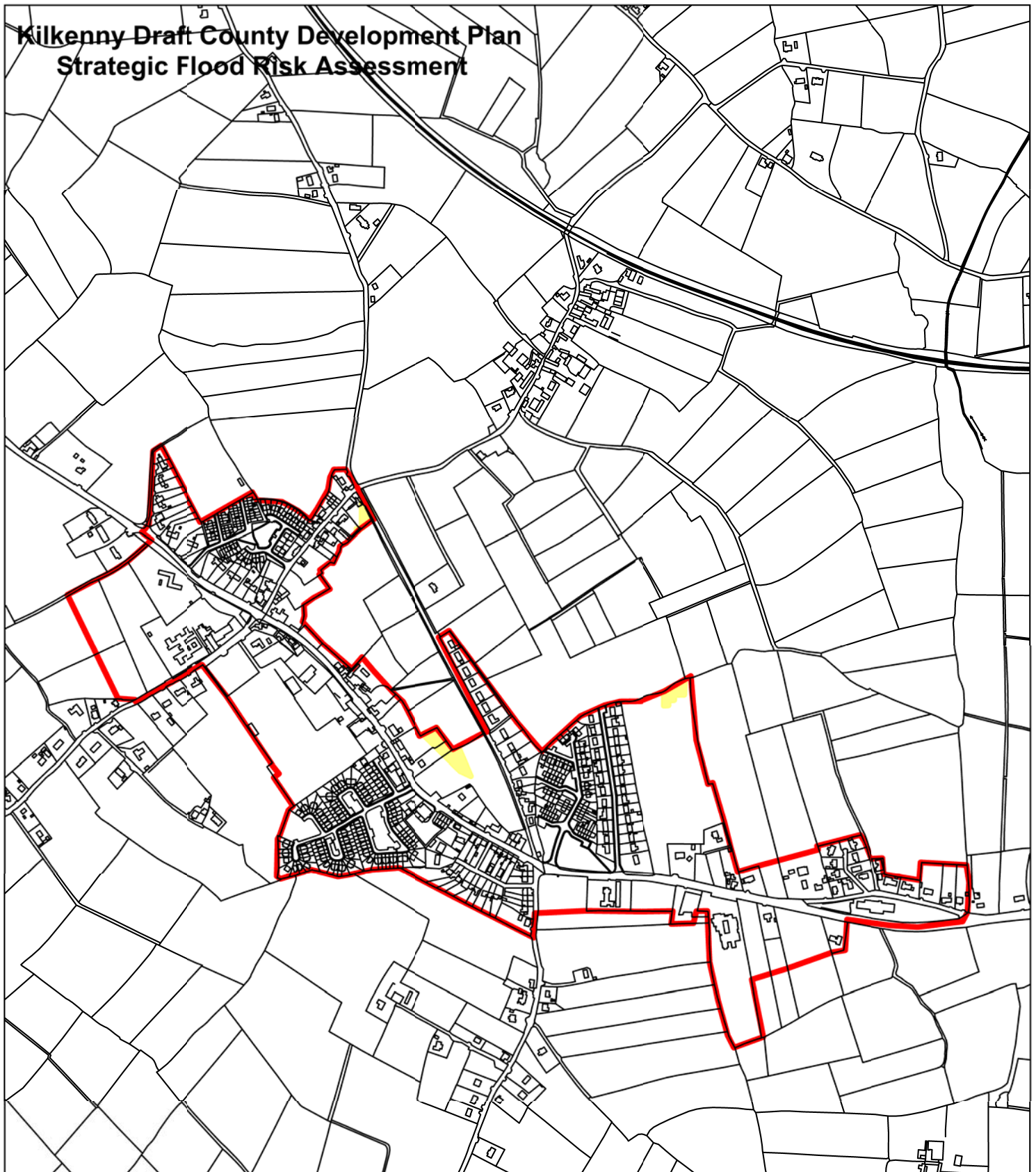
Map 7: Knocktopher

 Area within which any development proposal will be the subject of site-specific Flood Risk Assessment appropriate to the type and scale of the development being proposed.


 Settlement boundary


Date: April 2013
Scale: 1: 6,000 @A4

Kilkenny Draft County Development Plan Strategic Flood Risk Assessment



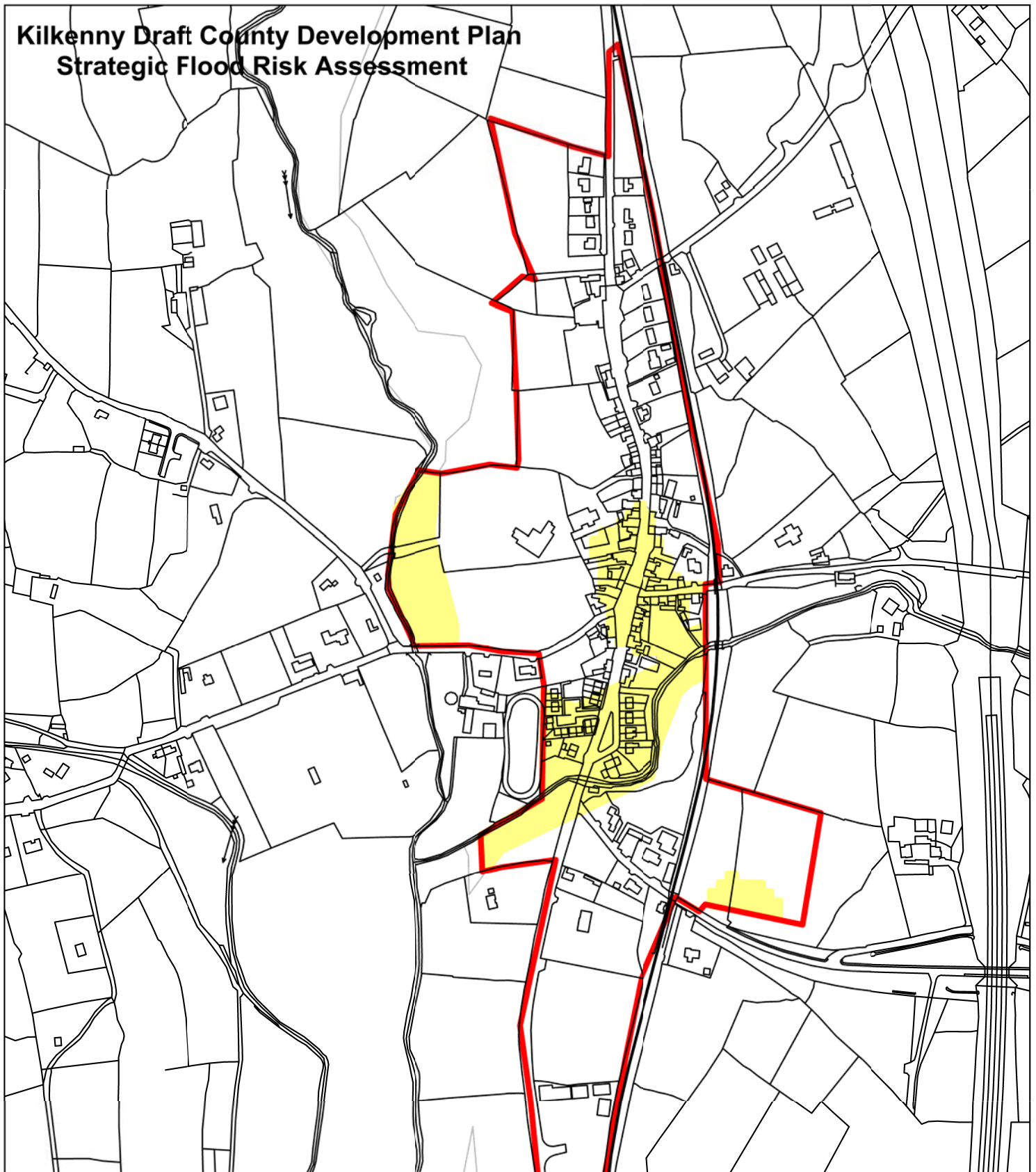
Map 8: Mooncoin

 Area within which any development proposal will be the subject of site-specific Flood Risk Assessment appropriate to the type and scale of the development being proposed.


 Settlement boundary


Date: April 2013
Scale: 1: 10,000 @A4

Kilkenny Draft County Development Plan Strategic Flood Risk Assessment



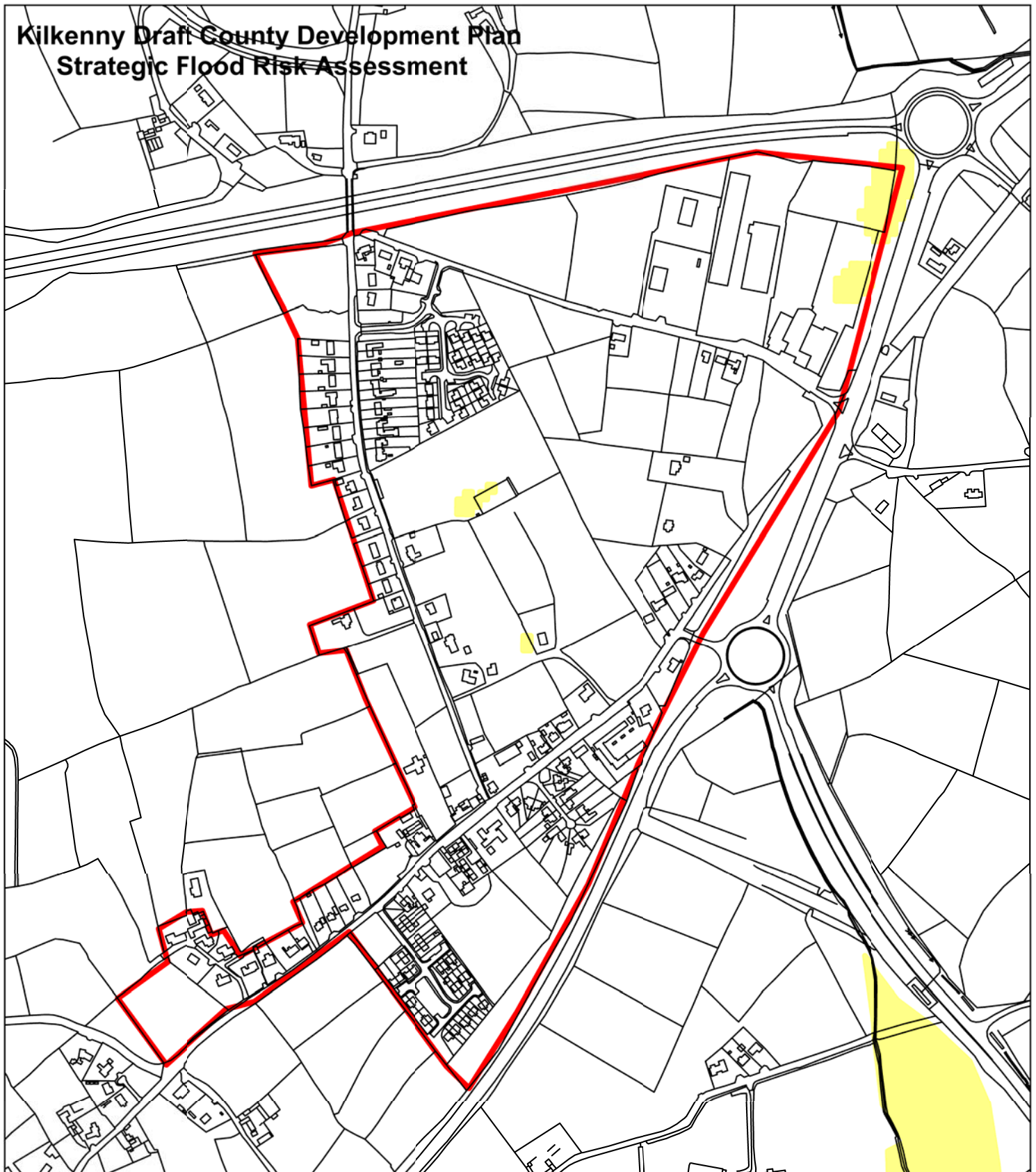
Map 9: Mullinavat

 Area within which any development proposal will be the subject of site-specific Flood Risk Assessment appropriate to the type and scale of the development being proposed.


 Settlement boundary


Date: April 2013
Scale: 1: 10,000 @A4

Kilkenny Draft County Development Plan Strategic Flood Risk Assessment



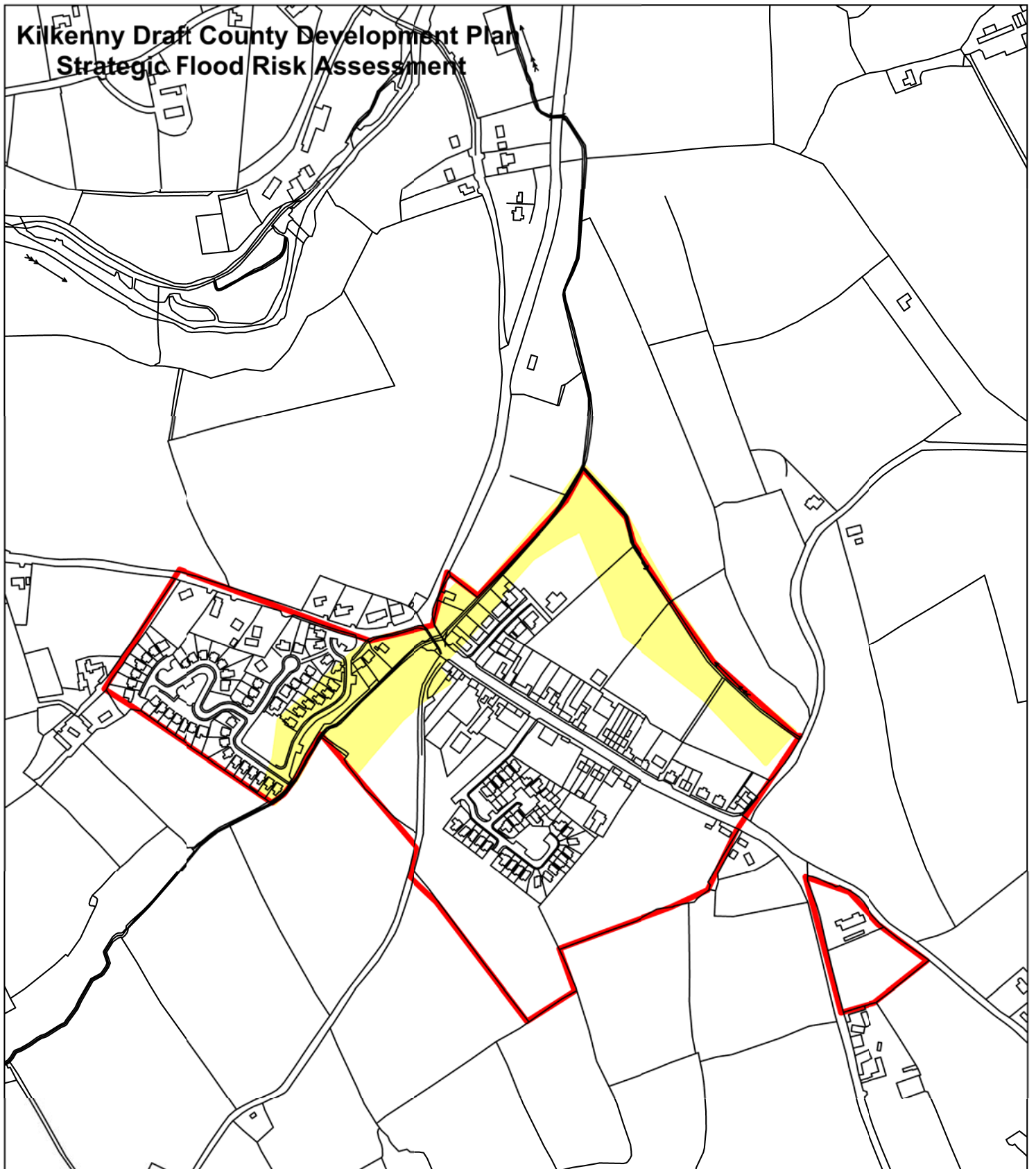
Map 10: Slieverue

 Area within which any development proposal will be the subject of site-specific Flood Risk Assessment appropriate to the type and scale of the development being proposed.


 Settlement boundary


Date: April 2013
Scale: 1: 10,000 @A4

Kilkenny Draft County Development Plan Strategic Flood Risk Assessment



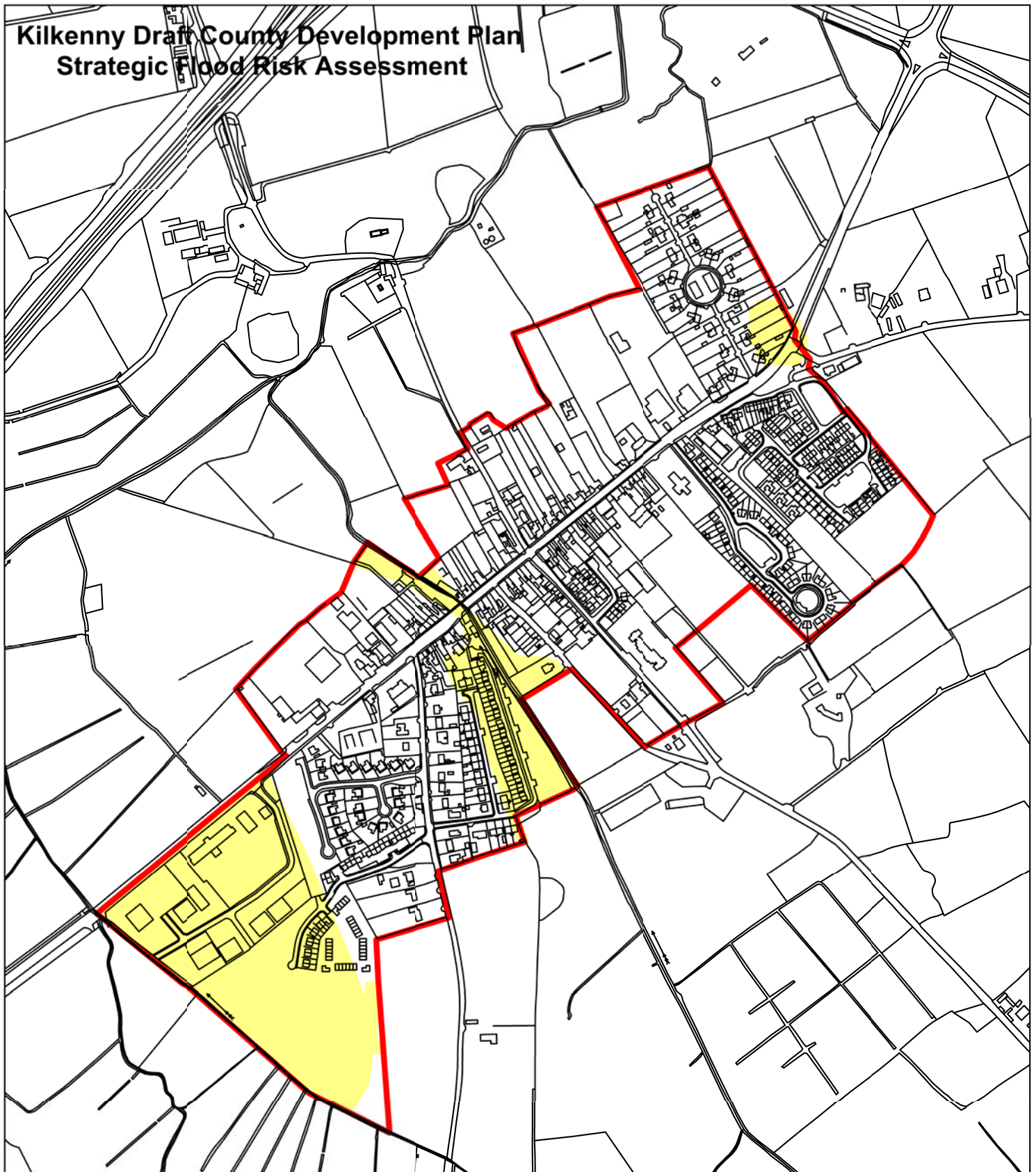
Map 11: Stoneyford

 Area within which any development proposal will be the subject of site-specific Flood Risk Assessment appropriate to the type and scale of the development being proposed.


 Settlement boundary

Date: April 2013
Scale: 1: 10,000 @A4

Kilkenny Draft County Development Plan Strategic Flood Risk Assessment



Map 12: Urlingford

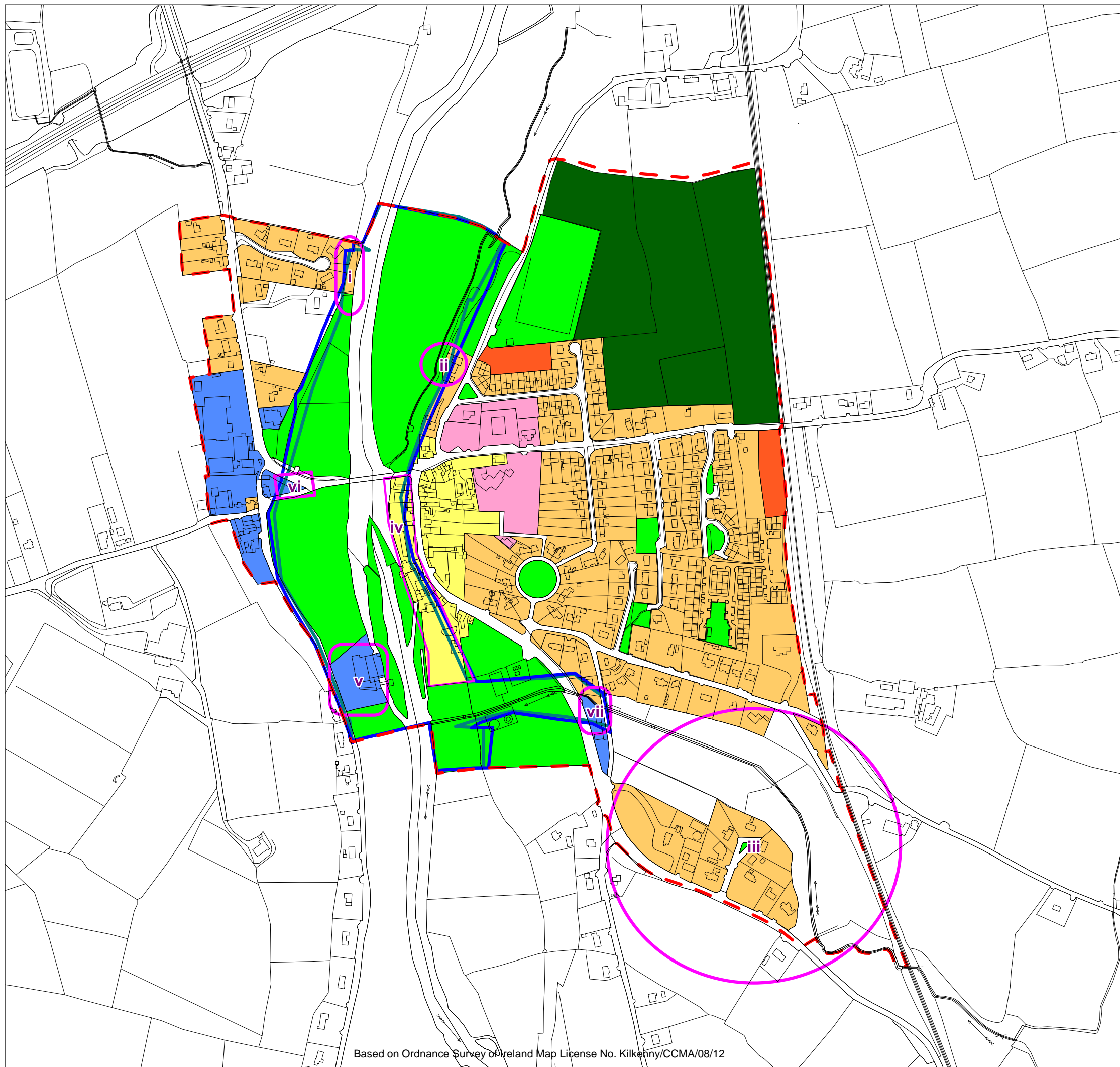
 Area within which any development proposal will be the subject of site-specific Flood Risk Assessment appropriate to the type and scale of the development being proposed.

 Settlement boundary

Date: April 2013
Scale: 1: 10,000 @A4

Kilkenny Draft County Development Plan
 Strategic Flood Risk Assessment
 Figure 13a Bennettsbridge
 Flood risk areas superimposed on
 current Zoning Map (Variation 2, 2011)

- - - Plan Boundary
- Residential
- Existing Residential
- Village Centre
- Community Facilities
- Open Space
- Phase 2
- Industrial/Employment
- Agricultural
- Flood Zone A
- Flood Zone B
- Area of potential conflict between flood risk and zoning

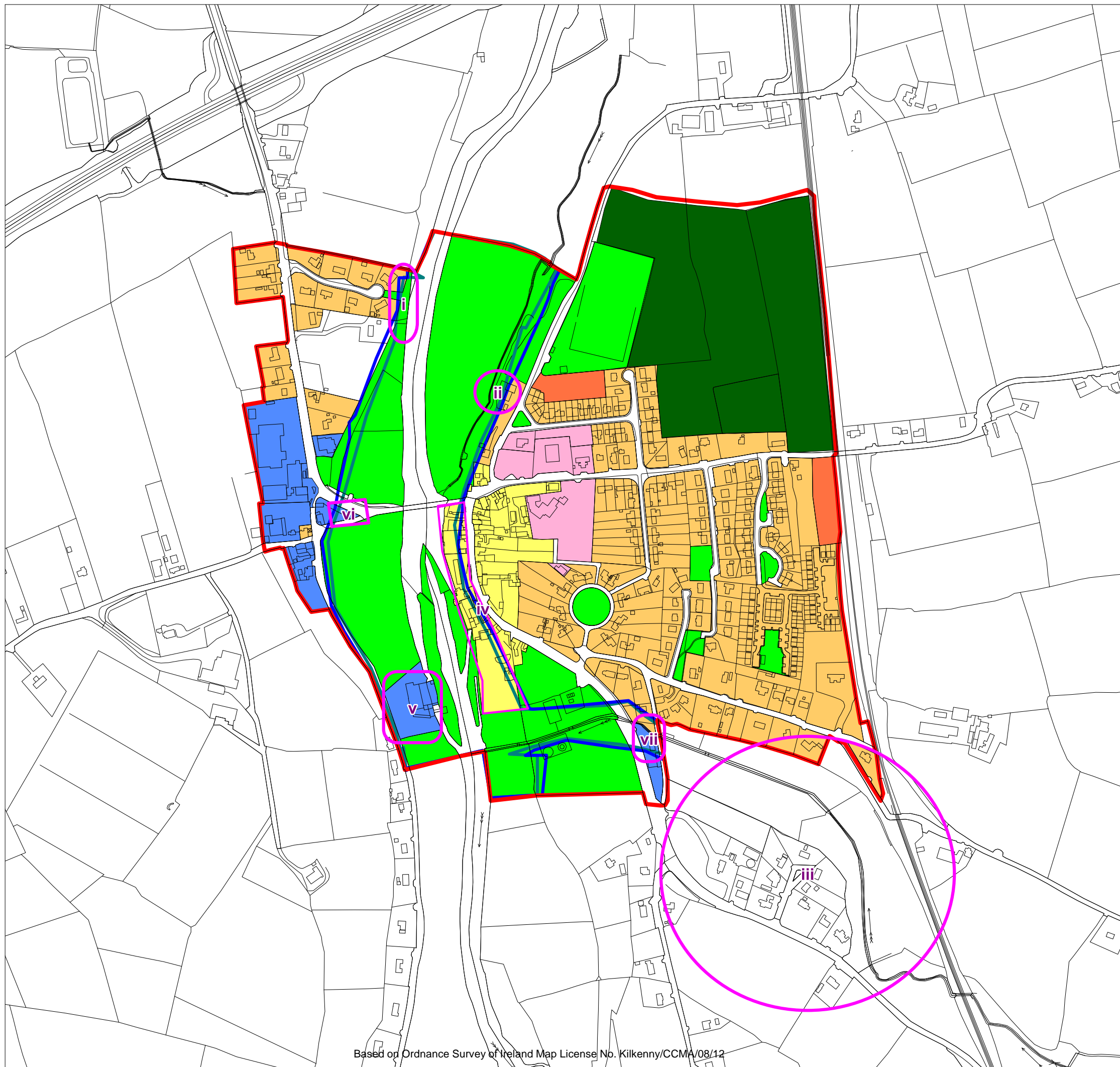


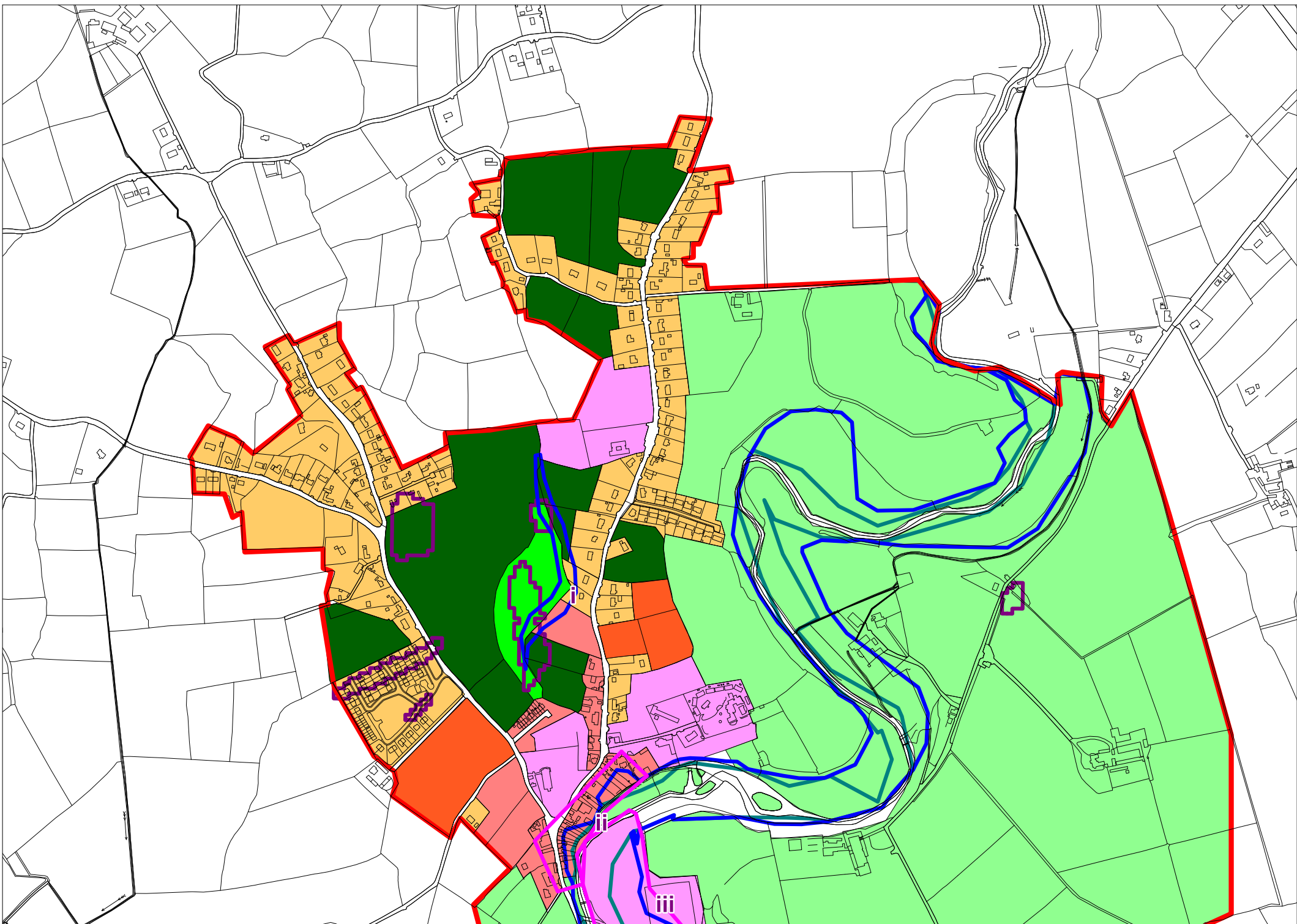
Date: April 2013
 Scale: 1: 6,000 @A3

Kilkenny Draft County Development Plan
 Strategic Flood Risk Assessment
 Figure 13b Bennettsbridge
 Flood risk areas superimposed on
 Draft Zoning Map

-  Plan Boundary
-  Residential
-  Existing Residential
-  Village Centre
-  Community Facilities
-  Open Space
-  Phase 2
-  Industrial/Employment
-  Agricultural
-  Flood Zone A
-  Flood Zone B
-  Area of potential conflict between flood risk and zoning

Date: April 2013
 Scale: 1: 6,000 @A3





Kilkenny Draft County Development Plan
 Strategic Flood Risk Assessment
 Figure 14b Kilmacow
 Flood Risk Areas superimposed
 on Draft Zoning map

- Plan Boundary
- Existing Residential
- New Residential
- General development
- Community Facilities
- Open Space
- Phase 2
- Rural Conservation Area
- Flood Zone A
- Flood Zone B
- Pluvial flooding
- Area of potential conflict between flood risk and zoning

Date: April 2013
 Scale: 1: 9,000 @A3

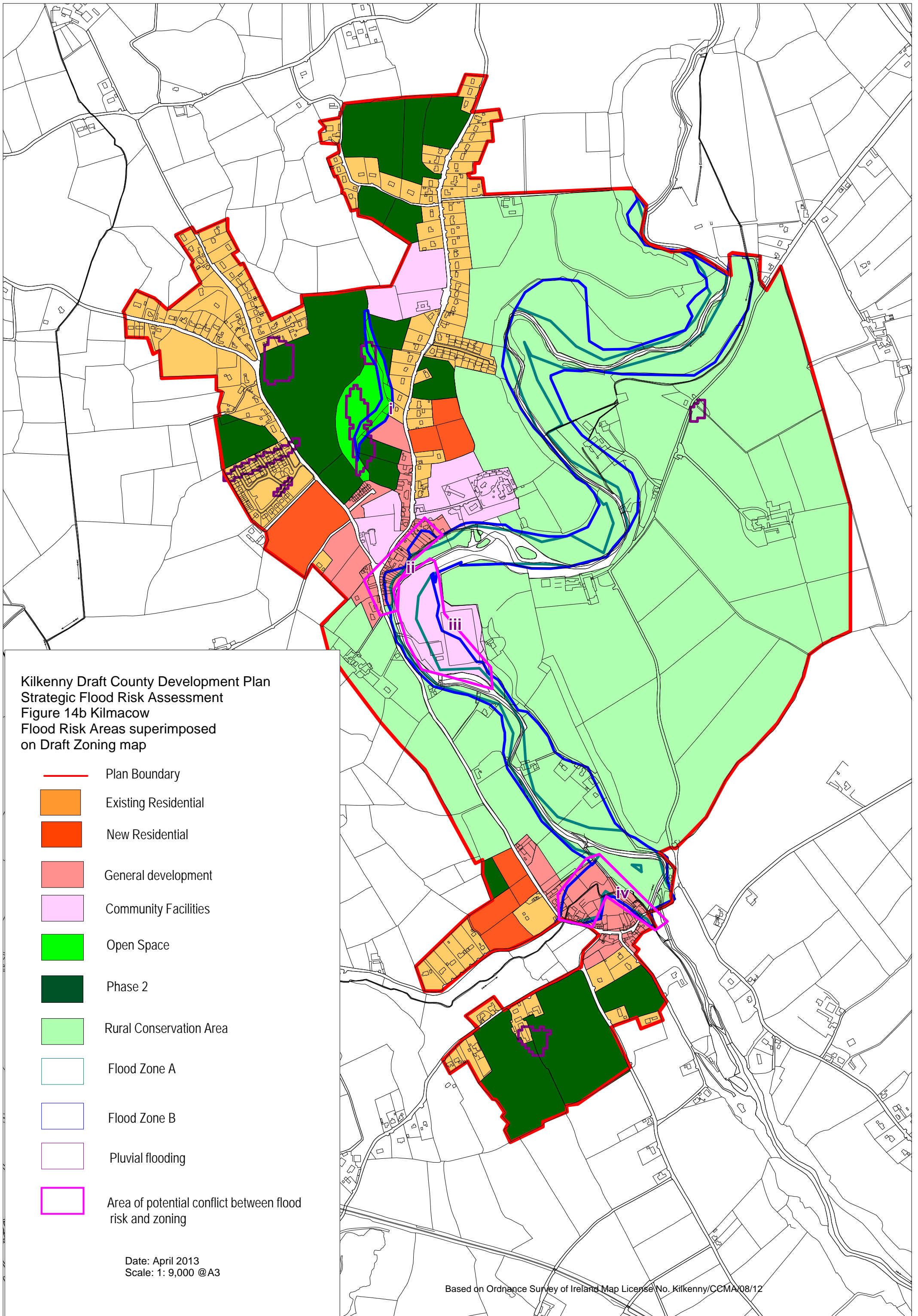
Based on Ordnance Survey of Ireland Map License No. Kilkenny/CCMA/08/12

Kilkenny Draft County Development Plan
 Strategic Flood Risk Assessment
 Figure 14b Kilmacow
 Flood Risk Areas superimposed
 on Draft Zoning map

-  Plan Boundary
-  Existing Residential
-  New Residential
-  General development
-  Community Facilities
-  Open Space
-  Phase 2
-  Rural Conservation Area
-  Flood Zone A
-  Flood Zone B
-  Pluvial flooding
-  Area of potential conflict between flood risk and zoning

Date: April 2013
 Scale: 1: 9,000 @A3

Based on Ordnance Survey of Ireland Map License No. Kilkenny/CCMA/08/12

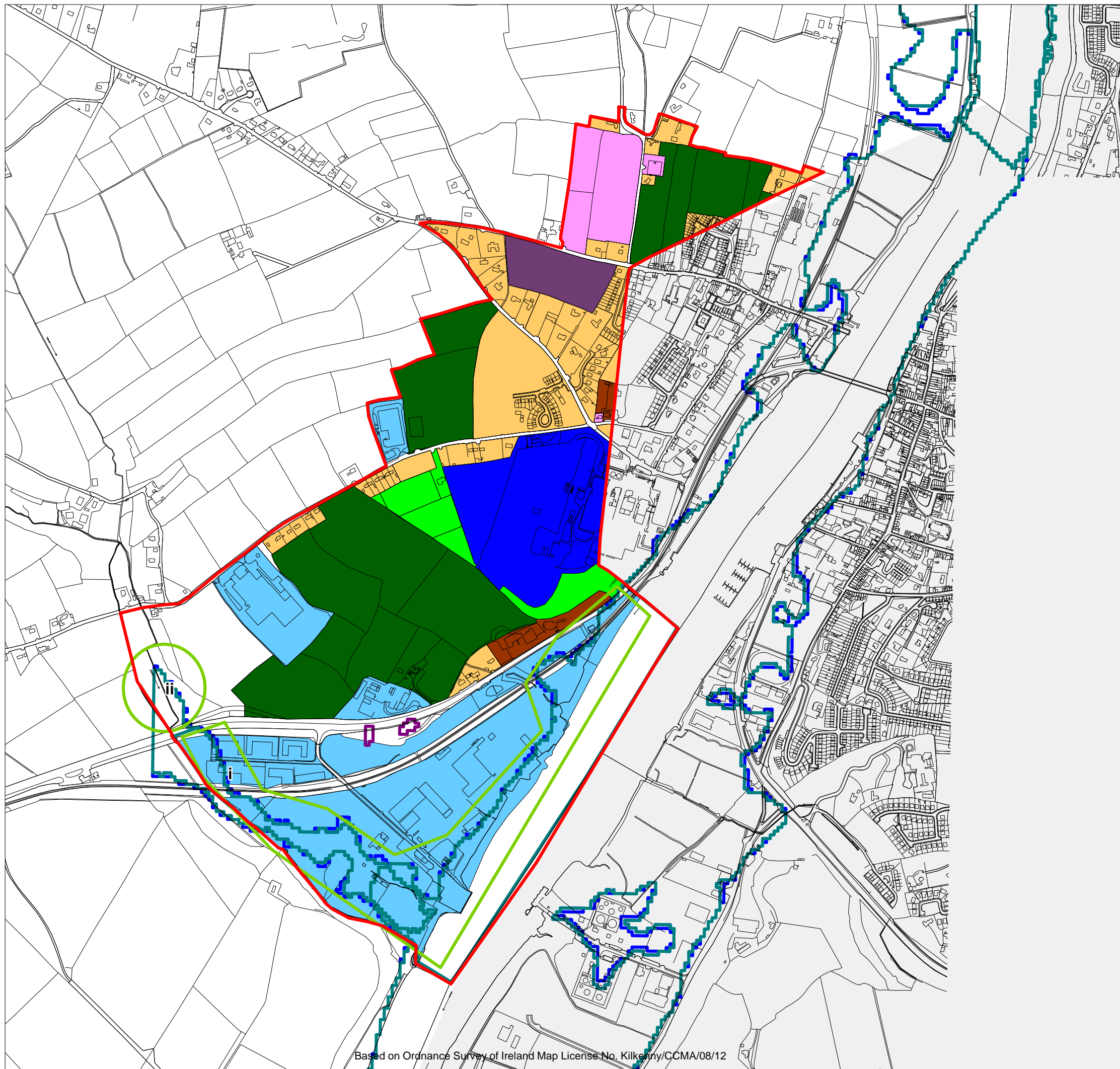


Kilkenny Draft County Development Plan
 Strategic Flood Risk Assessment
 Figure 15a: New Ross Environs
 Areas of flood risk superimposed on existing
 Zoning map (Variation 2, 2011)

Legend












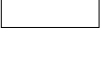


- Plan Boundary
- Residential
- Mixed Use
- Community Facilities
- Open Space
- Phase 2
- Industrial
- Residential (Low density)
- General Development
- Agricultural
- Flood Zone A
- Flood Zone B
- Pluvial
- Area of potential conflict between zoning and flood risk

Date: April 2013
 Scale: 1: 10,000 @A3



Kilkenny Draft County Development Plan
 Strategic Flood Risk Assessment
 Figure 15b: New Ross Environs
 Areas of flood risk superimposed on
 Draft Zoning map

Legend

-  Plan Boundary
-  Residential
-  Mixed Use
-  Community Facilities
-  Open Space
-  Phase 2
-  Industrial
-  Residential (Low density)
-  General Development
-  Agricultural
-  Flood Zone A
-  Flood Zone B
-  Pluvial
-  Area of potential conflict between zoning and flood risk

Date: April 2013
 Scale: 1: 10,000 @A3

