

Strategic Environmental Assessment (SEA) of Kilkenny City & Environs Development Plan 2014-2020

1. SEA Statement
2. Environmental Report
3. Strategic Flood Risk
Assessment

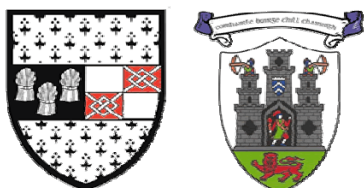


Planning Department
Kilkenny Borough &
County Councils
13th June 2014

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2. Environmental Report
3. Strategic Flood Risk Assessment

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1 Introduction

1.1 Terms of Reference

This is the SEA statement for the Kilkenny City & Environs Development Plan 2014-2020.

1.2 SEA Definition

SEA is a systematic process of predicting and evaluating the likely environmental effects of implementing a proposed plan, or other strategic action, in order to ensure that these effects are appropriately addressed at the earliest appropriate stage of decision-making on a par with economic, social and other considerations.

1.3 Legislative Context

Directive 2001/42/EC of the European Parliament and of the Council, of 27 June 2001, on the assessment of the effects of certain plans and programmes on the environment, referred to hereafter as the SEA Directive, introduced the requirement that SEA be carried out on plans and programmes which are prepared for a number of sectors, including land use planning.

The SEA Directive was transposed into Irish Law through the European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations 2004 (Statutory Instrument Number (SI No. 435 of 2004) and the Planning and Development (Strategic Environmental Assessment) Regulations 2004 (SI No. 436 of 2004). Both sets of Regulations became operational on 21 July 2004. The Regulations have been amended by the European Communities (Environmental Assessment of Certain Plans and Programmes) (Amendment) Regulations 2011 (SI No. 200 of 2011) and the Planning and Development (Strategic Environmental Assessment) (Amendment) Regulations 2011 (SI No. 201 of 2011).

The SEA Directive and the instruments transposing it into Irish Law require that after the making of a Development Plan, the plan or programme making authority is required to make a Statement available to the public and the competent environmental authorities. This Statement is referred to as an SEA Statement (DEHLG, 2004).

1.4 Content of the SEA Statement

The SEA Statement is required to include information summarising:

- a) How environmental considerations have been integrated into the Development Plan;
- b) How the following have been taken into account during the Council's consideration of the draft Development Plan:
 - The environmental report,
 - Submissions and observations made to the planning authority on the Development Plan and Environmental Report, and
 - Any transboundary consultations.
- c) The reasons for choosing the Development Plan in the light of the other reasonable alternatives dealt with; and

d) The measures decided upon to monitor the significant environmental effects of implementation of the Development Plan.

1.5 Implications of SEA for the Development Plan

Article 11 of the Planning and Development (Strategic Environmental Assessment) Regulations 2004 (SI No. 436 of 2004) as amended requires that SEA is undertaken for the preparation of Development Plans.

The findings of the SEA are expressed in an Environmental Report, which accompanied the Draft Development Plan on public display and was updated in order to take account of recommendations contained in submissions. The Environmental Report was also updated in order to take account of changes which were made to the original Draft Development Plan that was placed on public display. Changes which were Material Alterations underwent SEA, the findings of which were placed on public display alongside the Proposed Amendments (Material Alterations).

Members of the planning authority have taken into account the findings of all relevant SEA output during their consideration of the Draft Development Plan before its adoption. On the making of the Development Plan, this SEA Statement was prepared.

2 How Environmental Considerations were integrated into the Development Plan

2.1 Introduction

Environmental considerations were integrated into the Development Plan at all stages through:

- Consultations with environmental authorities;
- Communication within the Development Plan team of environmental considerations and integration of these considerations into the Development Plan;
- Detailing of the baseline situation and identification and mapping of environmental constraints and sensitivities, and
- Integration of environmental measures into the Plan.

2.2 Consultation

In line with the Planning and Development (SEA) Regulations 2004 as amended¹, the Environmental and Planning Authorities were given notice on the 15th June 2012 of the intention of Kilkenny Borough and County Councils to carry out an environmental assessment. The bodies notified were:

- The EPA
- Minister for Agriculture, Fisheries and Food.
- Minister for Environment, Community and Local Government.
- Minister of Arts, Heritage and Local Government.
- Minister for Communications, Marine and Natural Resources.
- Carlow County Council.
- Waterford County Council.
- Waterford City Council.
- Wexford County Council.
- New Ross Town Council.

A response was received from the EPA on the 12th July 2012, which included an SEA pack for all Local Authorities to incorporate in carrying out the Environmental Report. The letter listed general topics to be considered, covering issues such as water quality and flooding.

A response was received from the Department of Arts, Heritage and the Gaeltacht on the 13th July 2012 in relation to underwater archaeological heritage and to nature conservation.

The comments from both bodies were incorporated within the Scoping Report and are taken into account in the content of this Environmental Report in accordance with the Regulations. In addition, submissions were made on the Draft Development Plan and Environmental Report while they were on public display.

¹ Planning and Development Strategic Environmental Assessment (Amendment) Regulations 2011 S.I. 201 of 2011

2.3 Communication of environmental considerations and integration into the Plan

The Draft Plan, Environmental Report and Natura Impact Report were prepared by an in-house team of planners. The process was an iterative one. Environmental considerations were communicated to the Planning team throughout the plan-making process. This allowed the team to integrate these considerations into the text and maps of the Plan.

2.4 Integration of Environmental measures into the Development Plan

There are a number of significant changes for which the SEA is mainly responsible, which are noted here.

In the first place, the entire ethos behind the writing of the Plan was to provide a clarity which could readily be understood, and assessed by the SEA process. This led to a decision from the outset to structure the Plan mainly in terms of 'objectives' and 'development management standards'. The previous Plan used a combination of 'policies', 'objectives', 'actions' and 'development assessment/management criteria'. This made it more cumbersome for the SEA process. This time around, objectives were used as the main statement of intent. Objectives had to satisfy the criteria of SMART and be: Specific, Measurable, Attainable, Realistic and Time-sensitive. One example from Chapter 8 Heritage is: *"To preserve and improve places or areas from which views or prospects of special amenity value exist."*

This made the assessment clearer, and should lead to greater clarity in monitoring the effects of the Plan. 'Development management standards' were used to clearly set out what would be required to be satisfied as part of any planning application, so for the most part these were used as mitigation measures.

Another overall change, related to the structure of the Plan, is the use of 'strategic aims' to set out the overarching aim of each chapter. These strategic aims provide a standard against which every objective within the chapter is measured against.

Furthermore, specific changes to the text were introduced as a result of the SEA process. This includes sections on Conservation Management Plans for Natura 2000 sites, the National Survey of Native Woodlands and Ancient Woodlands and peatlands.

Mitigation measures are measures envisaged to prevent, reduce and, as fully as possible, offset any significant adverse impacts on the environment of implementing the development objectives. Mitigation has taken place throughout the plan-making process.

Mitigation took place through the consideration of alternatives, as environmental considerations were communicated to the Planning team to enable them to make an informed choice as to which alternative was put before the Members of the Council.

3 Environmental Report and Submissions & Observations

3.1 Introduction

This section details how both the Environmental Report and submissions and observations made to the planning authority on the Environmental Report and SEA process have been taken into account during the preparation of the Development Plan.

3.2 SEA Scoping Submissions

In line with the Planning and Development (SEA) Regulations 2004 as amended², the Environmental and Planning Authorities were given notice on the 15th June 2012 of the intention of Kilkenny County Council to carry out an environmental assessment indicating that submissions or observations in relation to the scope and level of detail of the information to be included in the environmental report could be made to the Council.

Two submissions on the scope of the SEA were received and these were taken into account during the formulation of the scope of the SEA.

A response was received from the EPA on the 12th July 2012, which included an SEA pack for all Local Authorities to incorporate in carrying out the Environmental Report. The letter listed general topics to be considered, covering issues such as water quality and flooding. In addition, one specific comment related to the Waterford Harbour Shellfish Growing Area and the recommendations of the Pollution Reduction Programme and Characterisation Report.

A response was received from the Department of Arts, Heritage and the Gaeltacht on the 13th July 2012 in relation to underwater archaeological heritage and to nature conservation.

3.3 Submissions and observations on the Environmental Report

Public consultation regarding the Plan commenced in March 2012 with the publication of *“Our Plan – A Guide to having your say”* which detailed the review process of the Plans. Submissions from the public were invited between the 15th June and 24th August 2012.

Two submissions were received in relation to the SEA; from An Taisce (ref. P18) and the Heritage Council (ref. P38). These are set out in Table 1 below.

² Planning and Development Strategic Environmental Assessment (Amendment) Regulations 2011 S.I. 201 of 2011

Table 1: Summary of issues raised in Pre-Draft Consultation

Submission ref.	Summary	Manager's Opinion and Recommendation
An Taisce, P18	1) Implement the policies related to heritage & environment which are not fully completed. 2) All policies must be proofed against climate change and biodiversity loss. 3) Proof plans against all national and EU laws & policies. 4) Subject plans to SEA & AA.	1) All policies will be reviewed as part of the new Plans and will be retained where appropriate. 2) This will be done as part of the Strategic Environmental Assessment. 3) This is required by law and will be done as part of SEA. 4) Plans will be subject to SEA & AA.
Heritage Council P38	3) The Strategic Environmental Assessment (SEA) process could be improved by involving stakeholders and including a reporting format which reflects open dialogue. 4) An audit of the environmental performance of the previous development plan should be made available.	3) An SEA will be undertaken in line with the requirements of legislation and the Guidelines, which includes for consultation with the environmental authorities and for public consultation. Every effort will be made to ensure that this is a readable, accessible document. 4) The environmental indicators as included in the previous SEA were generally indicators that are regularly published, such as water quality indicators. Information on these indicators is available from a variety of sources. A review of how the Plan functioned will be carried out as part of the Environmental Report on the Draft.

3.4 Submissions and observations on the Draft Plan and Proposed Amendments

The Draft Plan and Environmental Report were published on the 14th June 2013 and remained on public display until the 23rd August 2013. A total of 75 submissions were received, of which 3 referred to the SEA. These are summarised in Table 2 below.

Table 2: Summary of Issues Raised at Draft Plan stage

Submission ref.	Summary of Issues Raised	Manager's Opinion and Recommendation
DOE	The Planning authority should satisfy itself that the Plan is fully compliant with the requirements of the RPGs in relation to Appropriate Assessment, Strategic Environmental Assessment, all relevant EU directives and the Water Framework Directive.	The Plan is compliant with all relevant requirements. A Natura Impact Report and Strategic Environmental Assessment Report have been carried out for the Draft Plans.

EPA, D13b	24) There would be merit in taking into consideration and including a reference as relevant to the Draft Fresh Water Pearl Mussel Sub-basin Management Plans. 3: Current state of the Environment 25) Consideration should be given and reference made to any Designated Sites within 15m of the plan area. 26) The Plan should ensure that water quality is protected. 27) The EU's Common implementation strategy for the water framework directive, guidance document no. 20, in particular Section 3.5 should be taken into account. 28) In implementing the plan, a safe and secure drinking water supply should be provided and measures should be taken to remove the Radestown WSS from the EPA's remedial action list. 29) Consideration should be given to including a reference to the South Eastern CFRAMS and its associated SEA and the Plan should ensure a commitment to integrating the South East CFRAMS into the plan. 4: Policy Objectives 30) Consideration should be given to amending Biodiversity objective B1 to take into account the need to protect ecological linkages/corridors. 31) Consideration should be given to amending objective P1 to insert the word 'sustainable'. 5: Alternatives Assessment 32) There would be merit in including a summary of the full range of effects including cumulative effects in this assessment. 8: Monitoring measures 33) The requirements of the SEA, EIA, Habitats, Water Framework and Floods Directives and legislation should be taken into account where a Variation is proposed. 34) For Table 8.1, consideration should be given to including a	24) The Draft Fresh Water Pearl Mussel Management Plan for the Nore is included in the Natura Impact Report for the City Plan. A similar reference will be included in the SEA. 25) Designated sites within 15km of the Plan area should be included in Table 3.1. 26) Objectives are included in the Plan in relation to the Water Framework Directive, see Section 8.1.4.1. 27) Section 3.5 of this document is in relation to Article 4.7 of the Water Framework Directive. Article 4.7 sets out circumstances in which failure to achieve certain of the WFD objectives are permitted. The Plan states in Section 8.1.4.1 that it will meet in full all requirements of the WFD. 28) See point 13 above. Temporary measures are in place in the Radestown water supply scheme to deal with the issues. The Water Services objectives in Section 8.1.4.1 should be amended to include reference to the Drinking Water Regulations which will cover the quality of water supply. 29) Reference to the South East CFRAMS is included in the Strategic Flood Risk Assessment. A commitment to integrating the CFRAMS should be included in Section 3.1.2 of the SFRA, and in Section 8.2.4 of the Draft Plan. 30) Objective B1 will be amended. 31) Objective P1 will be amended. 32) The full range of effects is outlined under each Alternative and summarised under Section 4.2 of the NTS. Cumulative effects have been considered by the assessment but there is an opportunity to highlight this further in the SEA Environmental Report. 33) The requirements of all Directives must be taken into account in any Variation. 34) In Table 8.1, the column headed 'Data sources' outlines where the information comes from. It will be the Planning Department's responsibility to collate this information for each target. 35) The Plan sets out the requirements for Appropriate Assessment in Section 1.3. The requirements for EIA are set out in legislation and there is no necessity to restate them in the Plan. 36) An SEA was carried out for the Plan and
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	column for the allocation responsibility for each monitoring target. Appendix 1: Additional considerations 35) The Plan should highlight that an EIA and/or Appropriate Assessment of certain projects may be required. 36) Consideration should be given to the inclusion of a specific policy/objective to ensure full compliance with the SEA Directive. The SEA Regulations should be referenced and integrated into the Plan. The DoECLG Circular PSSP 6/2011 should be taken into account during preparation of the Draft Plan.	this has taken account of all relevant legislation and Circulars.
	Recommendation 24) Include reference to the Draft Fresh Water Pearl Mussel Management Plan for the Nore in Section 3.3.1 Designated Sites of the Environmental Report. 25) Amend Table 3.1 Protected Natural Heritage Sites of International and National importance to include designated sites within 15km of the Plan area. 26-27) No change recommended. 28) See point 13. 29) Include a commitment to integrating the CFRAMS in Section 3.1.2 of the SFRA and update text in Sections 2.2.2 and 2.2.2.2 of the SFRA. Amend Section 8.2.4 of the Draft Plan with the insertion of a new paragraph under last paragraph of Section 8.2.4 as follows: <i>The South East Catchment Flood Risk Management Plan (SECFRAM) is being produced at present, and is scheduled for completion in 2016. When finalised, the findings of this will be integrated into the Development Plan Strategic Flood Risk Assessment.</i> 30) Amend Biodiversity objective B1 as follows: "Protect, and where appropriate, enhance biodiversity, particularly protected areas, and protected species <i>including ecological linkages/corridors.</i>" 31) Amend Objective P1 as follows: "Improve people's quality of life based on <i>sustainable</i> high-quality residential, working and recreational environments and on sustainable travel patterns". 32) Include a description of the assessment of cumulative effects in Section 5.5 Assessment of Alternatives of the SEA. 33-36) No change recommended.	
DAHG, D23b	5) Table 3.10 needs amending to correct some apparent omissions. 6) The planning policy objective for biodiversity should include species, particularly protected species. 7) Table in Section 6.1 should be amended in relation to the Medieval Mile to correspond to the NIR. 8) Table 8.1 is missing some text from last column.	5) Table 3.10 will be amended to include an interaction between biodiversity, flora and fauna and air quality. 6) The broad planning policy objective in Table 4.1 will be amended to include species. 7) The table in Section 6.1 assessing the impact on SEA objectives will be amended to highlight uncertain effects on biodiversity from the Medieval Mile projects.

	8) Table 8.1 will be amended to include the missing text.
Recommendation 5) Amend Table 3.10 of the SEA to include an interaction between biodiversity, flora and fauna and air quality. 6) Reword the first Planning Policy Objective in Table 4.1 of the SEA as follows "Protect designated sites (SACs, NHAs and SPAs) <i>and species</i> from development" 7) Amend table in Section 6.1 of the SEA to highlight the uncertain effects on biodiversity from the Medieval Mile projects. Include this objective in discussion of mitigation measures in Section 7.2 Development objectives. 8) Table 8.1 will be amended.	

The Proposed Amendments to the Draft plan and Environmental Report were published on the 14th February 2014 and remained on public display until the 14th of March 2014. During the 4 week public consultation period, a total of 41 submissions were received (in relation to the County and City & Environs Plans) of which 2 referred to the SEA for the City & Environs. The two submissions were from the Environmental Protection Agency and Inland Fisheries Ireland. These are set out in table 3 below.

Table 3: Summary of Issues Raised at Proposed Amendments stage

Submission ref.	Summary	Manager's Opinion and Recommendation
EPA, PA 13	4) DoECLG Circulars (Circular PL 6 of 2011) ' <i>Further Transposition of EU Directive 2001/42/EC on Strategic Environmental Assessment (SEA)</i> ' should be taken into account. 5) Following adoption of the amended Plan, an SEA Statement should summarise the following: • How environmental considerations have been integrated into the Plan; • How the Environmental Report, submissions, observations and consultations have been taken into account during the preparation of the Plan; • The reasons for choosing the Plan adopted in the light of other reasonable alternatives dealt with; and, • The measures decided upon to monitor the significant environmental effects of implementation of the Plan.	4) All relevant Circulars (including PL 9/2013 & PSSP 6/2011) have been - and will be - taken into account throughout the Plan-preparation/SEA processes as relevant. 5) This will be done following adoption of the amended Plan.
	Recommendation No change recommended.	
IFI, PA 18	1) The IFI is concerned that the removal of 'enhance' and 'enhancement' from the Development Plan and Strategic Environmental Assessment will dilute protection of the aquatic	1) It is not the intention of the Council to dilute protection of the aquatic environment in this regard. The Water Frameworks Directive is addressed specifically in Section 9.2.8.1 of the Plan. A cross reference can be inserted into the Heritage Chapter to reinforce

	environment, as required under the Water Frameworks Directive. Of particular concern is the amended Strategic Aim in Chapter 8 (Heritage) and the removal of the final paragraph in Section 8.2 (Natural Heritage). 2) The proposed amendments to Section 8.2.1.3 (Rare or Protected Species and their Habitats) is insufficient. The Water Frameworks Directive requires the protection and enhancement of all aquatic ecosystems. 3) The proposed amendment to 8.2.3 (Nature Conservation) is insufficient in terms of compliance with the Water Frameworks Directive. 'Enhance' should not be omitted from the objective. 4) The amendment to the DMS in Section 9.2.11 is welcomed. However channel clearing/ maintenance/ in- stream works must only be carried out following consultation with the IFI.	this. The term 'enhancement' is referred to in the Water Frameworks Directive, but is not stated in the Planning & Development or Heritage Acts. Therefore, the term 'enhancement' is more appropriate to natural heritage than it is to built or cultural heritage. It is considered prudent to re-instate the term as it relates to natural heritage by reinstating the final paragraph in Section 8.2 (Natural Heritage). 2) This proposed amendment came directly from the Department of Arts, Heritage and the Gaeltacht's submission to the Draft Plan (D23-See Manager's Report 29 Nov 2013). A cross reference with Section 9.2.8.1 (Water Frameworks Directive) can be inserted at this point. 3) The term 'enhance' can be reinstated into Section 8.2.3 as it relates to natural heritage. 4) It is already a Development Management Standard in Section 8.2.6 (Inland Waters, Rivers, Streams, Wetlands and Groundwater) to consult with Inland Fisheries Ireland and the NPWS prior to undertaking, approving or authorising any works or development which may have an impact on rivers, streams and waterways.
	Recommendation 1) Reinstatement final paragraph in Section 8.2 (Natural Heritage): <i>It is the aim of the Council to conserve, enhance and manage the County's natural heritage including its biodiversity, landscapes and geological heritage and to promote understanding of and sustainable access to it.</i> Furthermore, a cross reference with Section 9.2.8.1 (Water Framework Directive) shall be inserted in Chapter 8 in Sections 8.2.3 and 8.2.6 accordingly. 2) Include new sentence at end of Section 8.2.1.3 (Rare or Protected Species and their Habitats): <i>See also Section 9.2.8.1 Water Frameworks Directive.</i> 3) Reinstatement 'and where possible enhance' in Section 8.2.3 (Nature Conservation Outside of International and National Protected Areas). 4) No change recommended. In the interests of clarity, these changes will be made to the City Plan also.	

4 Alternatives and the Development Plan

4.1 Introduction

One of the critical roles of the SEA was to facilitate an evaluation of the likely environmental consequences of a range of alternative scenarios for accommodating future growth in County Kilkenny as a result of the Development Plan. Alternatives need to be ‘realistic and capable of implementation’ and should represent a range of different approaches within the statutory and operational requirements of the particular plan. 3 Alternative Scenarios for the County were considered and these are described below.

4.2 Description of Alternative Plan Scenarios

Alternative 1: Focus on Loughmacask and Western Environs

Alternative 1 continues to concentrate growth into the two neighbourhoods of Loughmacask and the Western Environs, with no growth being allocated elsewhere. This alternative concentrates populations into locations where there are existing Local Area Plans in place to provide for future residential and commercial development, linked to infrastructural provision. Investment in key infrastructure can be concentrated into these two small areas.

Alternative 2: Dispersed growth

This scenario is one in which the ‘pot’ of zoned land would be distributed throughout the city, around its fringes, without prioritisation. Development would be allowed to proceed in an ad hoc manner and would follow market forces to a great extent. Most development would occur on greenfield sites.

Alternative 3: Consolidation of city and neighbourhoods

In this alternative, the ‘pot’ of zoned land is mainly allocated to the Loughmacask and Western Environs neighbourhoods, but growth is also encouraged in small parcels located throughout the remainder of the city. This alternative allows for the creation of new, well-planned neighbourhoods but also allows for infilling and consolidation in the remainder of the city.

4.3 Evaluation of Alternative Plan Scenarios

This section summarises the evaluation of the Alternative Scenarios that is found in Section 5.5 of the Environmental Report.

Alternative 1: Focus on Loughmacask and Western Environs - Likely significant effects

Environmental impacts

This alternative concentrates populations into locations where there are existing Local Area Plans in place to provide for future residential and commercial development, linked to infrastructural provision. Investment in key infrastructure can be concentrated into these two small areas. Sustainable travel is promoted. Valuable natural resources such as water quality are protected through targeted infrastructural measures. The compact nature of development allows for efficient public transport links. The rural environment surrounding the city is protected with a clear demarcation between rural and urban areas.

Planning impacts

This alternative does not support any growth outside of these two neighbourhoods, which may lead to a population decline in the central city area.

Alternative 2: Dispersed growth

Environmental impacts

This piecemeal approach would likely result in an increase in lower density development around the fringes of the city. In the long-term, this would have a negative effect on the viability of public transport provision, with resulting effects on air quality and greenhouse gas emissions. The provision of key social and physical infrastructure such as parks and schools would be costly.

Planning impacts

As this alternative lacks a detailed plan-led approach, the provision of social and physical infrastructure such as schools and parks would not be tied to the development of housing. This may result in a services deficiency in these new residential areas.

Alternative 3: Consolidation of city and neighbourhoods

Environmental impacts

The compact nature of development allows for efficient public transport links. The rural environment surrounding the city is protected with a clear demarcation between rural and urban areas.

To protect the cultural heritage within the city, appropriate mitigation measures are necessary, particularly for infill and renewal sites.

Planning impacts

Population is increased within the Borough boundary as infill sites are utilised.

4.4 Reasons for choosing the Development Plan, as adopted, in light of the other reasonable alternatives dealt with

Alternative 3 'Consolidation of city and neighbourhoods' emerged as the preferred alternative and scored highly in terms of positive impacts on environmental and planning policy objectives.

This scenario was the preferred alternative for the following reasons:

- It contributes towards the development of a compact and balanced city with resulting economies of scale in terms of service provision.
- It conforms to high level planning objectives and the protection of the environment.
- The compact nature of development allows for efficient public transport links and the prevention of unplanned and unnecessary urban sprawl.
- The rural environment surrounding the city is protected with a clear demarcation between rural and urban areas.
- Population is increased within the city centre as infill sites are utilised which will consolidate the urban core.
- It ensures the vitality and viability of the core of the city centre.

SEA Statement

By complying with appropriate mitigation measures - including those which have been integrated into the Plan - potential adverse environmental effects which could arise as a result of implementing this scenario would be likely to be avoided, reduced or offset.

Section 6 of the Environmental Report evaluates the individual strategic aims and objectives which have been prepared to realise the selected scenario.

5 Monitoring Measures

5.1 Introduction

The SEA Directive requires that the significant environmental effects of the implementation of plans and programmes are monitored. This section contains proposals for monitoring the likely significant effects of implementing the Development Plan.

Monitoring enables, at an early stage, the identification of unforeseen adverse effects and the undertaking of appropriate remedial action. In addition to this, monitoring can also play an important role in assessing whether the Development Plan is achieving its environmental objectives and targets - measures which the Plan can help work towards - whether these need to be re-examined and whether the proposed mitigation measures are being implemented.

5.2 Indicators and Targets

Monitoring is based around indicators which allow quantitative measures of trends and progress over time relating to the Strategic Environmental Objectives identified in the SEA Environmental Report and used in the assessment. Each indicator to be monitored is accompanied by the target(s) which were identified with regard to the relevant strategic actions.

Table 5 overleaf shows the indicators and targets which have been selected for monitoring the likely significant environmental effects of implementing the Development Plan, if unmitigated. The Monitoring Programme may be updated to deal with specific environmental issues - including unforeseen effects - as they arise. Such issues may be identified by the Council or identified to the Council by other agencies.

5.3 Sources

Measurements for indicators generally come from existing monitoring sources. Existing monitoring sources include those maintained by the Council and the relevant authorities e.g. the Environmental Protection Agency, the National Parks and Wildlife Service and the Central Statistics Office.

The Development Management Process in the Council will provide passive monitoring of various indicators and targets on an application by application basis. Where significant adverse effects - including positive, negative, cumulative and indirect - have the potential to occur upon, for example, entries to the RMP, entries to the RPS or ecological networks as a result of the undertaking of individual projects or multiple individual projects such instances should be identified and recorded and should feed into the monitoring evaluation.

5.4 Reporting

The Council is responsible for monitoring and the preparation of monitoring evaluation report(s), the publication of these reports and, if necessary, the carrying out of corrective action. The Manager's Report on the implementation of the Development Plan, which must be carried out within two years of the making of the Plan, will include detail on the monitoring of the indicators.

The SEA [Guidelines](#) state that monitoring must be linked to earlier stages in the SEA process, in particular to the environmental objectives and issues identified during the preparation of the Environmental Report. It is proposed to base monitoring on a series of indicators which measure changes in the environment, especially changes which are critical in terms of environmental quality, for example water or air pollution levels.

The indicators aim to simplify complex interrelationships and provide information about environmental issues which is easy to understand. A list of environmental indicators and targets is provided in Table. The indicators are based on the Strategic Environmental Objectives presented in Chapter 6 of the Environmental Report. While considerable environmental data is directly available to the Council such as water quality, and information on the RPS etc, other sources of information may need to be accessed to provide a comprehensive view of the impact of the Plan. The sources of information are also identified in Table.

Environmental indicator assessment during monitoring can show positive/neutral impacts or negative impacts on the environment. Where an indicator value highlights a positive/neutral impact on the environment, it is likely that the objectives of the Plan are well defined with regard to the environment. Conversely where the objectives of the Plan have a negative impact on the environment, it may be necessary to review the objectives of the Plan or to take some other form of intervention. For example, if an objective is having a significant adverse impact, a variation may be considered during the lifetime of the Plan. The Manager's Report on the implementation of the Development Plan will include a review of the indicators.

5.5 Thresholds

Thresholds at which corrective action will be considered include:

- The occurrence of flood events;
- Court cases taken by the Department of Arts, Heritage and the Gaeltacht regarding impacts upon archaeological heritage including entries to the RMP;
- Complaints received from statutory consultees regarding avoidable environmental impacts resulting from development which is granted permission under the Development Plan;
- Boil notices on drinking water; and
- Fish kills.

Table 5 Monitoring proposals for environmental categories

Environmental Category	Targets	Selected indicators	Data Sources	Monitoring frequency
Biodiversity - Flora and Fauna	No loss of important and/or designated habitats	Number of sites.	Kilkenny Local Authorities/National Parks and Wildlife Service/Fisheries Board (depending on available information from relevant statutory authorities).	<i>At monitoring evaluation</i>
	No deterioration in the quality of protected areas	Overall conservation status of habitats in Kilkenny	<i>The NPWS;</i> <i>For all European sites:</i> Report on Overall Conservation Status of Habitats in Ireland listed under the Habitats Directive (<i>NPWS</i>).	<i>Every 6 years</i>
	No loss of protected species	Overall conservation status of species in Kilkenny, distribution of protected species in Kilkenny	NPWS, Report on Overall Conservation Status of Habitats in Ireland listed under the Habitats Directive. National Biodiversity Data Centre	<i>Every 6 years</i>
	All actions contained within the Biodiversity Plan to be achieved during the lifetime of the County Development Plan.	Number of actions achieved.	Heritage Officer	<i>At monitoring evaluation</i>
	No spread of invasive species within the City	Numbers of new cases identified over 2013 levels	National Biodiversity Data Centre	<i>At monitoring evaluation</i>
Population and Human health	No further loss of population within Kilkenny Borough boundary; total population within Kilkenny Borough boundary not to decrease on 2011 levels.	Total population within Kilkenny Borough boundary.	Census	<i>Next Census</i>
Soil	No significant increase in number of landslides	Total number of landslides	National Landslide Database	<i>At monitoring evaluation</i>
Water	No decline in river water quality; no increase in percentage of sample stations in seriously polluted rivers.	Percentage of sample stations in seriously polluted rivers.	EPA Reports on River water quality	<i>At monitoring evaluation</i>

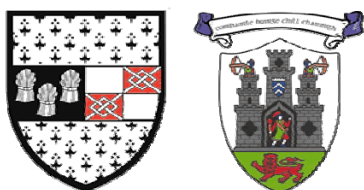
SEA Statement

	No decline in surface water quality; no decline in status of surface waters from current status	Status of surface water	EPA	<i>At monitoring evaluation</i>
	No decline in groundwater quality; no decline in status of groundwater from current status	Status of groundwater	EPA	<i>At monitoring evaluation</i>
	No reduction in processing of waste water and treated effluent quality; Purcellsinch WWTP to continue to meet recommended EPA limits.	Status of Purcellsinch WWTP in relation to recommended EPA limits.	EPA	<i>At monitoring evaluation</i>
	Improvement in quality of drinking water; Radestown WSS to be removed from EPA's Remedial Action List.	Status of Radestown WSS on the EPA's Remedial Action List.	EPA	<i>At monitoring evaluation</i>
	Improvement of application of ground water protection scheme.	Number of source protection areas that have been mapped.	GSI & Kilkenny County Council Environment	<i>At monitoring evaluation</i>
Air	Increase in proportion of people using sustainable transport	Proportion of people walking, cycling or using public transport to get to school or work.	Census	<i>Next Census</i>
	No decrease in air quality; no exceedances in Nitrogen Dioxide and Ozone.	Exceedances in Nitrogen Dioxide and Ozone.	EPA	<i>At monitoring evaluation</i>
Climatic factors	Improved Climate Change Adaptation measures.	Completion of Climate Change Adaptation Strategy.	Kilkenny Local Authorities	<i>At monitoring evaluation</i>
Material Assets	Improvements in energy infrastructure; upgrading of the Kilkenny city to Ballyragget line from 38 kv to 11 kv.	Status of the upgrade of the Kilkenny city to Ballyragget line	Eirgrid	<i>At monitoring evaluation</i>
Cultural Heritage (architectural and archaeological)	Increase in number of protected structures over that listed in 2008 Plan.	Number of protected structures.	Kilkenny Local Authorities	<i>At monitoring evaluation</i>

SEA Statement

Landscape	No reduction in number of protected views. Increase or no change in the number of protected views over that listed in the 2008 Plan – 13 views.	Number of protected views.	Kilkenny Local Authorities	<i>At monitoring evaluation</i>
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2. Environmental Report (SEA) of Kilkenny City & Environs Development Plan 2014-2020



Planning Department
Kilkenny Borough &
Kilkenny County Councils
13th June 2014

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Appendix 1: Strategic Flood Risk Assessment

Non-technical Summary

Section 1 Introduction and Terms of Reference

This is the Non-Technical Summary of the Environmental Report (ER) of the Kilkenny City & Environs Development Plan. The purpose of the ER is to provide a clear understanding of the likely environmental consequences of decisions regarding the future development of Kilkenny.

What is an SEA?

SEA is a systematic process of predicting and evaluating the likely environmental effects of implementing a proposed plan, or other strategic action, in order to ensure that these effects are appropriately addressed at the earliest appropriate stage of decision-making on a par with economic, social and other considerations.

Why is it needed?

The SEA is being carried out in order to comply with the provisions of the SEA Regulations and in order to improve planning and environmental management within Kilkenny. The output of the process is an ER and SEA Statement, both of which should be read in conjunction with the Development Plan.

How does it work?

All of the main environmental issues in Kilkenny are assembled and presented to the team who prepare the Plan. This helped them to devise a Plan that protects whatever is sensitive in the environment. It also helped to identify wherever there are environmental problems in the area and ideally the Plan tries to improve these. To decide how best to make a Plan that protects the environment as much as possible the planners examined alternative versions of the Plan. This helped to highlight the type of Plan that is least likely to harm the environment.

What is included in the Environmental Report which accompanies the Plan?

The ER contains the following information:

- A description of the environment and the key environmental issues;
- A description and assessment of alternatives for the Plan;
- An assessment of the Plan objectives; and,
- Mitigation measures which set out to aid compliance with important environmental protection legislation - e.g. the Water Framework Directive, the Habitats Directive - and which will avoid/reduce the environmental effects of implementing the Plan.

What happens at the end of the process?

On the making of the Plan a document will be made public, referred to as the SEA Statement. The SEA Statement includes information on how environmental considerations have been integrated into the Plan and why the preferred alternative was chosen for the Plan in light of the other alternatives.

Section 2 The Plan

2.1 Content of the Plan

The Plan has been prepared by Kilkenny County and Borough Councils and comprises a written document with maps, and appendices. The contents of the Plan (as set out in its chapter headings) are as follows;

1. Introduction
2. Demographic and Socio-Economic Trends
3. Core Strategy
4. Economic Development
5. Housing and Community
6. Recreation, Tourism & the Arts
7. Heritage
8. Infrastructure & Environment
9. Renewable Energy Strategy
10. Transport
11. Requirements for Developments

2.2 Interactions with Relevant Policy, Plans or Programmes

The Plan sits within a hierarchy of other plans. The Plan must comply with higher level strategic plans and may, in turn, guide lower level strategic plans. The higher level plans include the following:

- [National Climate Change Adaptation Framework](#)¹
- [National Spatial Strategy](#) (NSS)²
- [National Recovery Plan 2011-2014](#)³
- [Our Sustainable Future – A Framework for Sustainable Development for Ireland](#)⁴
- [Smarter Travel, A sustainable Transport Future, A new transport policy for Ireland 2009-2020](#) (2009)
- Ministerial Guidelines on [Architectural Heritage Protection](#), [Childcare Facilities](#), [Development Plans](#), [Landscapes](#), [The Planning System and Flood Risk Management](#), [Retail Planning](#), [Strategic Environmental Assessment](#), [Sustainable Residential Development in Urban Areas](#)
- [Food Harvest 2020, A vision for Irish agri-food and fisheries](#)⁵
- [South East River Basin Management Plan](#)⁶
- [Kilkenny 2002-2012, A Strategy for Economic, Social and Cultural Development](#)⁷
- The [South East Regional Planning Guidelines](#)⁸ (RPGs)

The Plan will set the strategic context for any lower-tier plans, such as Local Area Plans (LAPs) to be prepared in the city. An LAP is in place for Loughmacask. LAPs were also published for the Western Environs and the City Centre, and these LAPs are being incorporated into the Plan.

¹ Department of Environment, Community and Local Government, [National Climate Change Adaptation Framework](#), 2012

² Department of the Environment and Local Government, [The National Spatial Strategy 2002-2020, People, Places and Potential](#), 2002

³ Stationery Office Dublin, [The National Recovery Plan 2011-2014](#), 2011

⁴ Government of Ireland, [Our Sustainable Future – A Framework for Sustainable Development for Ireland](#), 2012

⁵ Department of Agriculture, Food and the Marine, [Food Harvest 2020, A vision for Irish agri-food and fisheries](#), 2010

⁶ South Eastern River Basin District, [South East River Basin Management Plan](#), 2010

⁷ Kilkenny County Development Board, [Kilkenny 2002-2012, A Strategy for Economic, Social and Cultural Development](#), 2002

⁸ South East Regional Authority, [Regional Planning Guidelines for the South East Region 2010-2022](#), 2010

Section 3 The Environmental Baseline

3.1 Introduction

The environmental baseline of Kilkenny City is described in this section. This baseline together with the Strategic Environmental Objectives, which are identified in Section 3.3, is used in order to identify, describe and evaluate the likely significant environmental effects of implementing the Plan and to determine appropriate monitoring measures.

The environmental baseline is described in line with the legislative requirements encompassing the following components –

1. Biodiversity, Flora and Fauna
2. Population and Human Health
3. Soil
4. Water
5. Air
6. Climatic factors
7. Material Assets
8. Cultural Heritage (architectural and archaeological)
9. Landscape
10. The inter-relationship between these issues

3.2 Evolution of Environment in the absence of a Plan

Problems were outlined under each heading above and historical trends were presented where possible. In the absence of the new Plan there would be no long term framework or guidance for development within Kilkenny. Specifically, the following could occur:

1. Biodiversity, Flora and Fauna

Although some areas of sensitivity, such as the Natura 2000 sites would continue to be protected under EU law, undesignated habitats such as hedgerows would suffer from a lack of protection.

2. Population and Human Health

In the absence of a Core Strategy and appropriate zoning there would be no framework directing development away from the most sensitive areas.

3. Soil

There would be no framework for directing development and growth to appropriate brownfield sites and therefore greenfield development would occur on an increased basis, resulting in a loss of non-renewable soil resources.

4. Water

Water supplies and wastewater treatment would continue to be governed by the Water Framework Directive. However the Groundwater Protection Scheme would not be implemented and therefore applications would proceed on an ad-hoc basis, without due regard to the potential for affecting a particular aquifer or source.

5. Air

In the absence of detailed Smarter Travel objectives and a settlement hierarchy, development would occur in a dispersed pattern, leading to an increase in unsustainable travel patterns and a subsequent increase in travel related emissions.

6. Climatic factors

With no Strategic Flood Risk Assessment, inappropriate development could take place in areas of flood risk.

7. Material Assets

There would be no framework to provide the infrastructure, such as energy infrastructure, that the city requires.

8. Cultural Heritage (architectural and archaeological)

The Plan includes a review of the Record of Protected Structures and Architectural Conservation Areas. If this were not to occur, cultural heritage would not be protected to the fullest extent possible, as additions to either the RPS or ACAs would not be carried out.

9. Landscape

In the absence of protected views, development would occur with no regard for its impact on important linkages between the city's historical and cultural landmarks.

3.3 Strategic Environmental Objectives

Strategic Environmental Objectives (SEOs) are measures against which the environmental effects of the Plan can be tested. If complied with in full, SEOs would result in an environmentally neutral impact from implementation of the Planning Scheme.

The SEA Directive requires that relevant environmental protection objectives (EPOs), established at international, EU or national level are listed in the Environmental Report. The [Guidelines](#) include an indicative list of EPOs, which has been followed here. The [Guidelines](#) also recommend that broad planning policy objectives (PPOs) are defined for the area. Both the EPOs and the PPOs combine to form the SEA objectives, and these are set out in Table NTS1.

Environmental Parameter	International, European, National policy documents/strategies /guidelines	No.	Objective (EPO)	Broad Planning Policy Objective (PPO)
Biodiversity, fauna and flora	EU Habitats Directive (92/43/EEC) EU Birds Directive (79/409/EEC) UN Convention on Biological Diversity Actions for Biodiversity 2011-2016, Ireland's National Biodiversity Plan (2011)	B1	Protect, and where appropriate, enhance biodiversity, particularly protected areas & protected species including ecological linkages/corridors.	Protect designated sites (SACs, NHAs and SPAs) and species from development. Identify locally important habitats for protection. Provide for green infrastructure. Concentrate development in areas with least sensitivities.
Population and Human Health	Agenda 21 (1992) Our Sustainable Future: A framework for sustainable development for Ireland (2012) The National Spatial Strategy (2002) Smarter Travel, A sustainable Transport Future, A new transport policy for Ireland 2009-2020 (2009)	P1	Improve people's quality of life based on sustainable high-quality residential, working and recreational environments, and travel patterns.	Provide adequate supply of zoned land for all uses in compliance with the National Spatial Strategy, and Regional Planning Guidelines. Promote higher density residential development in suitable locations. Promote sustainable transport patterns through appropriate zoning and provision for public transport. Require appropriate levels of recreational areas with any residential application.
	Directive 2002/49/EC of 25 June 2002 relating to the assessment and management of environmental noise – Directive 96/62/EC – Air Quality Framework Directive	P2	Minimise noise, vibration and emissions from traffic	Require noise controls with all relevant applications. Promote sustainable transport patterns through appropriate zoning and provision for public transport.
Soil	A Resource Opportunity, Waste Management Policy in Ireland ⁹ .	S1 S2	Maintain the quality of soils Maximise the sustainable re-use of brownfield lands, and maximise the use of the existing built environment	Direct development to brownfield lands in preference to developing greenfield lands.

⁹ Department of the Environment, Community and Local Government, [A Resource Opportunity, Waste Management Policy in Ireland](#), 2012

			rather than developing greenfield lands.	
		S3	Minimise the consumption of non-renewable sand, gravel and rock deposits	Encourage rehabilitation of existing housing stock where appropriate.
		S4	Minimise the amount of waste to landfill	Provide appropriate waste disposal facilities, including for composting and recycling in all developments.
Water	EU Water Framework Directive (2000/60/EC) EU Directive on the assessment and management of flood risks [2007/60/EC], The Planning System and Flood Risk Management Guidelines for Planning Authorities (2009)	W1	Protect and enhance the status of aquatic ecosystems and, with regard to their water needs, terrestrial ecosystems and wetlands directly depending on the aquatic ecosystems.	Provide for appropriate waste water treatment and disposal, in serviced urban areas and from septic tanks. Provide sufficient capacity in water services to serve zoned land. Include Strategic Flood Risk Assessment as part of the Plan.
		W2	Promote sustainable water use based on a long-term protection of available water resources.	
		W3	Reduce progressively discharges of polluting substances to waters	
		W4	To comply as appropriate with the provisions of The Planning System and Flood Risk Management Guidelines for Planning Authorities	
Air	Ambient Air Quality and Cleaner Air for Europe (CAFE) Directive (2008/50/EC)	A1	Reduce all forms of air pollution	Promote energy efficient developments. Promote sustainable transport patterns through appropriate zoning and provision for public transport.
Climatic factors	National Climate Change Adaptation Framework (2012)	C1	Reduce waste of energy, and maximise use of renewable energy sources	Promote energy efficient developments. Promote sustainable transport patterns through appropriate zoning and provision for public transport.
		C2	Minimise emissions	

			of greenhouse gases to contribute to a reduction and avoidance of human-induced global climate change	Include a climate change adaptation strategy.
		C3	Reduce the need to travel	
		C4	Assess, plan and manage adaptation to climate change impacts	
Material Assets	Our Sustainable Future: A framework for sustainable development for Ireland (2012)	M1	Make best of use of existing infrastructure and promote the sustainable development of new infrastructure.	Direct development to brownfield lands in preference to developing greenfield lands. Encourage rehabilitation of existing housing stock/buildings where appropriate.
Cultural Heritage (architectural and archaeological)	European Convention on the Protection of Archaeological Heritage (1992) Framework and Principles for the Protection of the Archaeological Heritage (1999) Architectural Heritage Protection Guidelines (2004)	H1	Promote the protection and conservation of the cultural heritage, including architectural and archaeological heritage	To conserve and protect the archaeological heritage with regard to entries on the RMP. To conserve and protect the special interest and character of the architectural heritage with regard to the RPS, the NIAH and ACAs.
Landscape	The European Convention on Landscape, 2000 A National Landscape Strategy for Ireland Strategy Issues paper for consultation (2011)	L1	Conserve and enhance valued natural and historic landscapes, their character and features within them.	Avoid the loss of designated views.

Section 4 Alternative Scenarios

4.1 Description of the Alternative Plan Scenarios

One of the critical roles of the SEA is to facilitate an evaluation of the likely environmental consequences of a range of alternative scenarios for the future development of Kilkenny. The [Regional Planning Guidelines](#) have allocated a projected population growth figure for the county, which must be adhered to. This population projection is translated into a housing land requirement, or a 'pot' of zoned land, which must be distributed in the county. The RPGs have specified what allocation must be directed to Kilkenny as a hub. Three alternatives were considered, each focusing on a different distribution of this growth.

Alternative 1: Focus on Loughmacask and Western Environs

Alternative 1 continues to concentrate growth into the two neighbourhoods of Loughmacask and the Western Environs, with no growth being allocated elsewhere. This alternative concentrates populations into locations where there are existing Local Area Plans in place to provide for future residential and commercial development, linked to infrastructural provision. Investment in key infrastructure can be concentrated into these two small areas.

Alternative 2: Dispersed growth

This scenario is one in which the 'pot' of zoned land would be distributed throughout the city, around its fringes, without prioritisation. Development would be allowed to proceed in an ad hoc manner and would follow market forces to a great extent. Most development would occur on greenfield sites.

Alternative 3: Consolidation of city and neighbourhoods

In this alternative, the 'pot' of zoned land is mainly allocated to the Loughmacask and Western Environs neighbourhoods, but growth is also encouraged in small parcels located throughout the remainder of the city. This alternative allows for the creation of new, well-planned neighbourhoods but also allows for infilling and consolidation in the remainder of the city.

4.2 Evaluation of Alternative Scenarios

This section summarises the evaluation of the Alternative Scenarios that is found in Section 5.5 of the Environmental Report.

Alternative 1: Focus on Loughmacask and Western Environs - Likely significant effects**Environmental impacts**

This alternative concentrates populations into locations where there are existing Local Area Plans in place to provide for future residential and commercial development, linked to infrastructural provision. Investment in key infrastructure can be concentrated into these two small areas. Sustainable travel is promoted. Valuable natural resources such as water quality are protected through targeted infrastructural measures. The compact nature of development allows for efficient public transport links. The rural environment surrounding the city is protected with a clear demarcation between rural and urban areas.

Planning impacts

This alternative does not support any growth outside of these two neighbourhoods, which may lead to a population decline in the central city area.

Alternative 2: Dispersed growth**Environmental impacts**

This piecemeal approach would likely result in an increase in lower density development around the fringes of the city. In the long-term, this would have a negative effect on the viability of public transport provision, with resulting effects on air quality and greenhouse gas emissions. The provision of key social and physical infrastructure such as parks and schools would be costly.

Planning impacts

As this alternative lacks a detailed plan-led approach, the provision of social and physical infrastructure such as schools and parks would not be tied to the development of housing. This may result in a services deficiency in these new residential areas.

Alternative 3: Consolidation of city and neighbourhoods

Environmental impacts

The compact nature of development allows for efficient public transport links. The rural environment surrounding the city is protected with a clear demarcation between rural and urban areas.

To protect the cultural heritage within the city, appropriate mitigation measures are necessary, particularly for infill and renewal sites.

Planning impacts

Population is increased within the Borough boundary as infill sites are utilised.

4.3 Selection of Preferred Alternative

Alternative 3: Consolidation of city and neighbourhoods emerges as the preferred alternative.

This scenario contributes towards the protection of the environment and conforms to high level planning objectives.

By complying with appropriate mitigation measures - including those which have been integrated into the Plan - potential adverse environmental effects which could arise as a result of implementing this scenario would be likely to be avoided, reduced or offset.

Section 6 of the Environmental Report evaluates the individual strategic aims and objectives which have been prepared to realise the selected scenario.

4.4 Appropriate Assessment and Flood Risk Assessment

A Strategic Flood Risk Assessment (SFRA) was carried out for the Plan; this forms Appendix 1 to the Environmental Report. An Appropriate Assessment has also been carried out for the Plan; this is produced as a separate Natura Impact Report.

The preparation of the Plan, SEA, AA and SFRA has taken place concurrently and the findings of the AA and SFRA have informed both the Plan and the SEA.

Section 5 Mitigation and Monitoring Measures

5.1 Mitigation

Mitigation measures are measures envisaged to prevent, reduce and, as fully as possible, offset any significant adverse impacts on the environment of implementing the Plan. Potential adverse effects have been and will be avoided, reduced or offset through:

- The consideration of alternatives;
- Through communication of environmental considerations and integration of these considerations into the Plan;
- Through the application of a comprehensive risk-based planning approach to flood management in the Strategic Flood Risk Assessment; and
- Adherence to mitigation measures which have been integrated into the Plan either as Objectives in the case of Natura 2000 sites and flood risk management, or Development Management Standards.

5.2 Monitoring

The SEA Directive requires that the significant environmental effects of the implementation of plans and programmes are monitored. The Environmental Report contains proposals for monitoring the Plan which are adopted alongside the Plan. Monitoring enables the identification of unforeseen adverse effects and the undertaking of appropriate remedial action.

The Environmental Report identifies indicators - which allow quantitative measures of trends and progress in the environment over time. Measurements for indicators generally come from existing monitoring sources. A monitoring report will be prepared as part of the Manager's Report on the implementation of the Development Plan, which must be carried out within two years of the making of the Plan.

1 Introduction

To satisfy the requirements of [European Directive 2001/42/EC](#)¹⁰, the Planning and Development (Strategic Environmental Assessment) (SEA) Regulations 2004 (as amended) require that an SEA is carried out on any development plan where the population (or target population) is more than 10,000 persons. The population of Kilkenny City and Environs is 24,423¹¹ therefore an SEA is required.

SEA is the formal, systematic evaluation of the likely significant effects of implementing the plan, before a decision is made. The process includes preparing an Environmental Report where the likely significant effects are identified and evaluated.

This report has been prepared in accordance with the [SEA Guidelines for Regional and Planning Authorities](#)¹².

1.1 Report Structure

Information to be included in the Environmental Report is set out in Schedule 2B to the Planning and Development Regulations 2001. The [SEA Guidelines for Regional and Planning Authorities](#) also include a recommended layout, which this Report follows for the most part. The table below sets out how the layout of this Report satisfies the requirements of the Regulations.

Requirements of SEA Directive	Section of Environmental Report
A. an outline of the contents and main objectives of the plan and relationship with other relevant plans;	Chapter 2: Contents and Description of the Plan
B. the relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan;	Chapter 3: Current state of the environment
C. the environmental characteristics of areas likely to be significantly affected;	Chapter 3: Current state of the environment
D. any existing environmental problems which are relevant to the plan including, in particular, those relating to any areas of a particular environmental importance, such as areas designated pursuant to the Birds Directive or Habitats Directive;	Chapter 3: Current state of the environment
E. the environmental protection objectives, established at international, European Union or national level, which are relevant to the plan and the way those objectives and any environmental considerations have been taken into account during its preparation;	Chapter 4: Policy objectives

¹⁰ EU, [Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment](#), Article 1

¹¹ CSO, Census 2011 Population Classified by Area

¹² [Implementation of SEA Directive \(2001/42/EC\): Assessment of the Effects of Certain Plans and Programmes on the Environment, Guidelines for Regional and Planning Authorities](#) November 2004

F. the likely significant effects ¹³ on the environment, including on issues such as biodiversity, population, human health, fauna, flora, soil, water, air, climatic factors, material assets, cultural heritage including architectural and archaeological heritage, landscape and the interrelationship between the above factors;	Chapter 6: Likely significant effects on the environment
G. the measures envisaged to prevent, reduce and as fully as possible offset any significant adverse effects on the environment of implementing the plan;	Chapter 7: Mitigation measures
H. an outline of the reasons for selecting the alternatives dealt with, and a description of how the assessment was undertaken including any difficulties (such as technical deficiencies or lack of know-how) encountered in compiling the required information;	Chapter 5: Assessment of Alternatives
I. a description of the measures envisaged concerning monitoring of the significant environmental effects of implementation of the plan;	Chapter 8: Development Plan Monitoring
J. a non-technical summary of the information provided under the above headings.	Non-technical summary

1.2 Methodology

1.2.1 Screening

Screening was not carried out, as SEA is mandatory for the preparation or review of a City & Environs Development Plan.

1.2.2 Scoping

A brief scoping report was prepared in July 2012 in accordance with the [SEA Guidelines for Regional and Planning Authorities](#)¹⁴. The purpose of the scoping report was to ensure the identification of relevant environmental issues so they could be addressed appropriately in the Environmental Report. The scoping report also indicated the level of detail necessary for the SEA of the Development Plan.

1.2.2.1 Consultation

In line with the Planning and Development (SEA) Regulations 2004 as amended¹⁵, the Environmental and Planning Authorities were given notice on the 15th June 2012 of the intention of Kilkenny County Council to carry out an environmental assessment.

¹³ These effects should include secondary, cumulative, synergistic, short, medium and long-term, permanent and temporary, positive and negative effects.

¹⁴ Implementation of SEA Directive (2001/42/EC): Assessment of the Effects of Certain Plans and Programmes on the Environment, Guidelines for Regional and Planning Authorities November 2004

¹⁵ Planning and Development Strategic Environmental Assessment (Amendment) Regulations 2011 S.I. 201 of 2011

A response was received from the EPA on the 12th July 2012, which included an SEA pack for all Local Authorities to incorporate in carrying out the Environmental Report. The letter listed general topics to be considered, covering issues such as water quality, protection of the cSAC and flooding.

A response was received from the Department of Arts, Heritage and the Gaeltacht on the 13th July 2012 in relation to underwater archaeological heritage and to nature conservation.

The comments from both bodies were incorporated within the Scoping Report and are taken into account in the content of this Environmental Report in accordance with the Regulations.

1.2.3 Public Consultation

Public consultation regarding the Plan commenced in March 2012 with the publication of *“Our Plan – A Guide to having your say”* which detailed the review process of the Plans. The full pre-draft consultation process is outlined in the *Manager’s Report on the Pre-draft Stage* (November 2012).

Submissions from the public were invited between the 15th June and 24th August 2012. Two submissions were received in relation to the SEA, from An Taisce, ref. P18 and the Heritage Council, ref. P38. These submissions were addressed in the Manager’s Report, and the relevant extracts are summarised below.

Submission ref.	Summary	Manager's Recommendation	Opinion and
An Taisce, Declan Murphy P18	1) Implement the policies related to heritage & environment which are not fully completed. 2) All policies must be proofed against climate change and biodiversity loss. 3) Proof plans against all national and EU laws & policies. 4) Subject plans to SEA & AA.	1) All policies will be reviewed as part of the new Plans and will be retained where appropriate. 2) This will be done as part of the Strategic Environmental Assessment. 3) This is required by law and will be done as part of SEA. 4) Plans will be subject to SEA & AA.	
Heritage Council c/o Colm Murray P38	3) The Strategic Environmental Assessment (SEA) process could be improved by involving stakeholders and including a reporting format which reflects open dialogue. 4) An audit of the environmental performance of the previous development plan should be made available.	3) An SEA will be undertaken in line with the requirements of legislation and the Guidelines, which includes for consultation with the environmental authorities and for public consultation. Every effort will be made to ensure that this is a readable, accessible document. 4) The environmental indicators as included in the previous SEA were generally indicators that are regularly published, such as water quality indicators. Information on these indicators is available from a variety of sources. A review of how the Plan functioned will be carried out as part of the Environmental Report on the Draft.	

Taking on board both submissions, this Report aims to be clear and easily accessible. It was found that it was difficult to obtain information on, and therefore monitor the indicators as selected in the previous SEA. In this SEA the indicators are selected with regard their relevance, and also to how practical it is to obtain the information.

1.2.4 Environmental Baseline Data

The baseline data assists in assessing the current state of the environment, facilitating the identification, evaluation and subsequent monitoring of the effects of the plan.

Baseline data was collected based on the various broad environmental topics described in the [SEA Directive](#); i.e. biodiversity, population, human health, fauna, flora, soil, water, air, climate factors, material assets, cultural heritage including architectural and archaeological heritage and landscape. The Directive requires that information be focused upon relevant aspects of the environmental characteristics of the area likely to be significantly affected by the plan and the likely change, both positive and negative terms where applicable. The baseline data was collated from currently available, relevant data sources, as the [SEA Directive](#) does not require major new research to be carried out. Where deficiencies or gaps in the information were identified, this is noted.

1.2.5 Selection of Strategic Environmental Objectives

The [Directive](#) requires that relevant environmental protection objectives (EPOs), established at international, EU or national level are identified and listed. The [Guidelines](#) include an indicative list of EPOs, which was followed, and these are set out in Chapter 4. In addition, the Step-by-Step Guide to the SEA process in the [Guidelines](#) recommends that broad planning policy objectives (PPOs) for

the area are defined. Both the EPOs and the PPOs were combined to form the Strategic Environmental Objectives, or SEOs, against which the alternatives and plan provisions were assessed.

1.2.6 Consideration of Alternatives

The SEA Directive (at Article 5) recommends that alternative development scenarios for the plan are included for assessment. Alternatives need to be 'realistic and capable of implementation' and should represent a range of different approaches within the statutory and operational requirements of the particular plan. Three alternatives were considered and assessed against the SEOs and one alternative emerged as the preferred plan strategy having satisfied the most SEOs. This is discussed in detail in Chapter 5.

1.2.7 Environmental Assessment of the Development Plan

The selected alternative forms the basis of the Plan. Detailed objectives were worked up around this Strategy to implement this Plan. This was an iterative process whereby the findings of the SEA were communicated to the plan making team on an ongoing basis in order to be integrated into the Plan.

The development objectives in the Plan were then assessed against the SEOs. The assessment described within this Environmental Report aims to highlight the potential conflicts, if they are present, between the stated development objectives contained in the Plan with the SEOs.

In accordance with SEA [Guidelines](#) the assessment categorised the potential effects of the Plan on the SEOs as follows:

- Significant beneficial impact
- Uncertain impact
- Significant adverse impact
- No relationship, or insignificant impact

1.2.8 Changes to the Plan as a result of SEA

The formulation of the Plan and the preparation of the SEA is an iterative process that takes place over many months (this stage is from March 2012 to May 2013) and therefore it is difficult to document the evolution of every objective in the Plan. However, there are a number of significant changes for which the SEA is mainly responsible, which are noted here.

In the first place, the entire ethos behind the writing of the Plan was to provide a clarity which could readily be understood, and assessed by the SEA process. This led to a decision from the outset to structure the Plan mainly in terms of 'objectives' and 'development management standards'. The previous Plan used a combination of 'policies', 'objectives', 'actions' and 'development assessment/management criteria'. This made it more cumbersome for the SEA process. This time around, objectives were used as the main statement of intent. Objectives had to satisfy the criteria of SMART and be; Specific, Measurable, Attainable, Realistic and Time-sensitive. One example from Chapter 8, Infrastructure and Environment is in relation to Section 8.2.7 Control of Major Accident Hazards Directive, where the objective is:

"To control the following for the purposes of reducing the risk or limiting the consequences of a major accident:

- The siting of Major Accident Hazard sites
- The modification of an existing Major Accident hazard site
- Development in the vicinity of a major accident hazard site."

This made the assessment clearer, and should lead to greater clarity in monitoring the effects of the Plan. ‘Development management standards’ were used to clearly set out what would be required to be satisfied as part of any planning application, so for the most part these were used as mitigation measures. An example of one of these in relation to CoMAH sites, is:

“The Councils will consult with the Health and Safety Authority when assessing proposals for development of, in or near sites which are identified under the COMAH (Seveso II) Directive.”

Another overall change, related to the above, is the use of ‘strategic aims’ to set out the overarching aim of each chapter. These strategic aims provide a standard against which every objective within the chapter is measured against.

Furthermore, specific changes to the text were introduced as a result of the SEA process. The detailed assessment of objectives led to the identification and removal of any inconsistencies. This affected objectives which were related to two separate chapters, such as objectives in relation to the Smithwick’s site (the former brewery site which is a major area of redevelopment in the city centre), which were included in Chapter 3 Core Strategy and Chapter 4 Economic Development. Another specific text change which came out of the SEA actually affected the County Plan, and that was the examination of the protected views in the City. As two of these could be significantly affected by development within the County, outside of the City, a reference to these two was included in the County Plan. Another specific change was the examination of the ACAs, which led to the identification of areas of overlap, and subsequent changes to the text and Figures in Chapter 8, Heritage. Finally, the examination in detail of the protected natural heritage sites in the city identified a change that should be made to the text of the Plan in relation to Archersgrove NHA, to recognise that it is outside the development boundary of the City, but may still be affected by developments within the boundary.

1.2.8.1 Strategic Flood Risk Assessment

A Strategic Flood Risk Assessment (SFRA) has been carried out as part of the SEA process. The SFRA is included as an appendix to this SEA. As outlined in that SFRA, the zoning map for the city was subjected to various changes as a result of the SFRA’s justification test. These changes, and the changes to the text in Section 8.2.4 Flooding, are all documented in detail in the SFRA.

1.2.9 Mitigation

Following on from the assessment of the detailed development objectives against the SEOs, if there was any uncertain impact identified, mitigation measures were identified to counter any negative effects. These are outlined in Chapter 7. As stated previously, the formulation of the Plan and the preparation of the SEA is an iterative process and therefore, many of the potential negative aspects of the Plan were removed prior to reaching this stage of the process.

1.2.10 Monitoring

Article 10 of the SEA Directive sets out the requirement that monitoring is to be carried out of the significant environmental effects of the implementation of the Plan in order to identify at an early stage any unforeseen adverse effects and to be able to undertake appropriate remedial action. Chapter 8 of this Report outlines the monitoring requirements. Methods of monitoring and indicators of change in the environment have been proposed with set targets to be reviewed over the duration of the Plan.

1.2.11 Technical Difficulties Encountered

The lack of a centralised data source that could make all environmental baseline data for the City available in a consistent format posed a significant difficulty to the SEA process. Each aspect had to be examined in detail individually.

Also, there are some gaps in information available, for instance in relation to complete ecological coverage, e.g. habitats, trees, hedgerows etc. Other gaps include a lack of availability of detailed conservation management plans for the two Natura 2000 sites within the City. Gaps are referenced under each relevant heading in Chapter 3.

1.2.12 Report Preparation

This report has been prepared by the Forward Planning Section of Kilkenny County Council.

2 Contents and Description of the Plan

2.1 Contents

Kilkenny County and Borough Councils prepared the Kilkenny City & Environs Development Plan 2014-2020 (hereafter referred to as the Plan) which replaces the Development Plan for 2008-2014. The Plan is prepared under the provisions of the Planning and Development Acts 2000-2013 to develop and improve the City & Environs (hereafter referred to as the City) in a sustainable manner.

A separate Development Plan will cover Kilkenny County. The area to be included in the Plan is shown on Figure 2.1. There are four main neighbourhoods in the City; Eastern Environs, Loughboy, Western Environs and Loughmacask. The Eastern Environs and Loughboy are largely built out. There are two large brownfield sites available for redevelopment in the city centre at present; the Smithwick's site west of the River Nore, which was formerly a brewery, and the old mart site, east of the River Nore.

The Plan contents are best described through a list of the chapter headings:

1. Introduction
2. Demographic and Socio-Economic Trends
3. Core Strategy
4. Economic Development
5. Housing and Community
6. Recreation, Tourism & the Arts
7. Heritage
8. Infrastructure
9. Renewable Energy Strategy
10. Transport
11. Requirements for Developments

As the Core Strategy included in Chapter 3 of the Plan outlines, the focus for new development will be in the neighbourhoods of Loughmacask and the Western Environs. The estimated population increase for the whole city and environs is 2,077.

2.2 Objectives

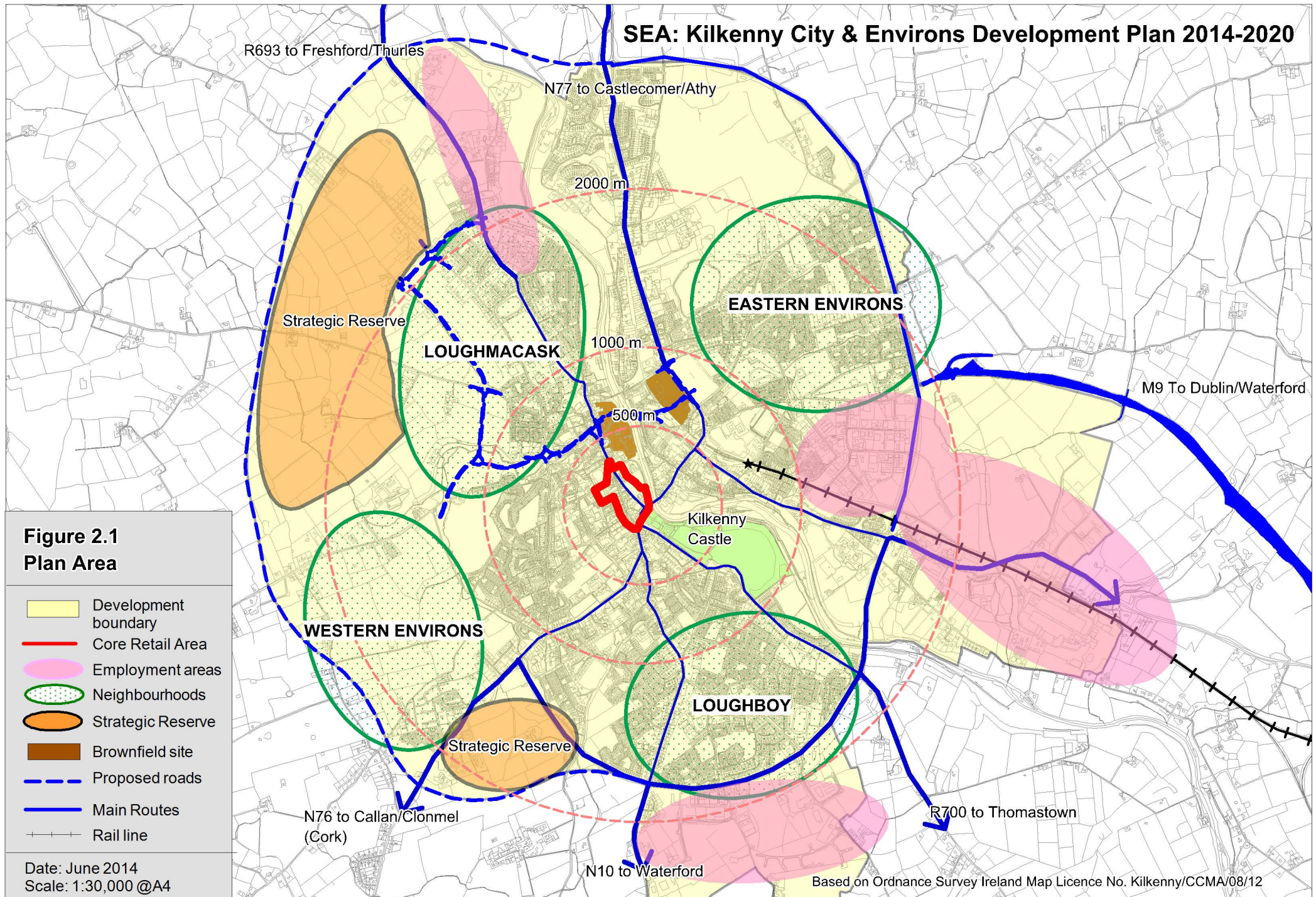
The main objectives and ethos of the Plan can be summarised in the Council Mission Statement (section 1.8) as follows:

“Kilkenny Local Authorities aim to work in partnership with the people of Kilkenny and relevant agencies to deliver quality services and to promote sustainable economic, social and cultural development for current and future generations.”

2.3 Relationship with other relevant plans and programmes

The Plan provides a land use framework for the sustainable development of Kilkenny City and Environs. The Plan will set the strategic context for any lower-tier plans, such as Local Area Plans to be prepared in the city. In its making, the Plan will have regard to all relevant planning and environmental policy and legislation including European Union directives, Ministerial guidelines and other national, regional and county plans and policies. These include the following:

SEA: Kilkenny City & Environs Development Plan 2014-2020



- [National Climate Change Adaptation Framework](#)¹⁶
- [National Spatial Strategy \(NSS\)](#)¹⁷
- [National Recovery Plan 2011-2014](#)¹⁸
- [Our Sustainable Future – A Framework for Sustainable Development for Ireland](#)¹⁹
- [Smarter Travel, A sustainable Transport Future, A new transport policy for Ireland 2009-2020 \(2009\)](#)
- Ministerial Guidelines on [Architectural Heritage Protection](#), [Childcare Facilities](#), [Development Plans](#), [Landscapes](#), [The Planning System and Flood Risk Management](#), [Retail Planning](#), [Strategic Environmental Assessment](#), [Sustainable Residential Development in Urban Areas](#)
- [Food Harvest 2020, A vision for Irish agri-food and fisheries](#)²⁰
- [South East River Basin Management Plan](#)²¹
- [Kilkenny 2002-2012, A Strategy for Economic, Social and Cultural Development](#)²²

In particular, the [South East Regional Planning Guidelines](#)²³ (RPGs) provide a context for the making of this Plan. The [RPGs](#) allocated a projected population growth figure for the city as a hub, which must be adhered to. This population projection is translated into a housing land requirement, or a 'pot' of zoned land, which must be distributed.

The Plan will set the strategic context for any lower-tier plans, such as Local Area Plans (LAPs) to be prepared in the city. There is one LAP in place for Loughmacask, and two other LAPs for the Western Environs and the City Centre have been incorporated into this Plan.

¹⁶ Department of Environment, Community and Local Government, [National Climate Change Adaptation Framework](#), 2012

¹⁷ Department of the Environment and Local Government, [The National Spatial Strategy 2002-2020, People, Places and Potential](#), 2002

¹⁸ Stationery Office Dublin, [The National Recovery Plan 2011-2014](#), 2011

¹⁹ Government of Ireland, [Our Sustainable Future – A Framework for Sustainable Development for Ireland](#), 2012

²⁰ Department of Agriculture, Food and the Marine, [Food Harvest 2020, A vision for Irish agri-food and fisheries](#), 2010

²¹ South Eastern River Basin District, [South East River Basin Management Plan](#), 2010

²² Kilkenny County Development Board, [Kilkenny 2002-2012, A Strategy for Economic, Social and Cultural Development](#), 2002

²³ South East Regional Authority, [Regional Planning Guidelines for the South East Region 2010-2022](#), 2010

3 Current state of the environment and do nothing scenario

3.1 Statistical overview of the area

Kilkenny City and Environs has a land area of 1,988 hectares. According to Census 2011, the population of the City and Environs was 24,423 and this is projected to increase to 27,400 during the period of this Plan. (Note: the City & Environs area as defined by the CSO does not correspond exactly with the area defined by the development boundary; however the difference in population is considered to be very minor.)

3.2 Description of the physical environment of the area

The baseline environmental data available is analysed under the headings below. Where possible, historical data and trends are outlined in order to provide a picture of the do nothing scenario; i.e. what would happen if current development trends in a certain area were to continue into the future.

1. Biodiversity, Flora and Fauna
2. Population and Human Health
3. Soil
4. Water
5. Air
6. Climatic factors
7. Material Assets
8. Cultural Heritage (architectural and archaeological)
9. Landscape
10. The inter-relationship between these issues

In accordance with the scoping report, and with the Department's Guidance, each element is only examined where relevant, in areas where the Plan would be likely to result in an impact, if unmitigated. Areas of environmental importance and areas experiencing environmental problems at present are examined in detail.

3.3 Biodiversity, Flora and Fauna

Information on habitats and biodiversity is available from the National Biodiversity Data Centre²⁴. Kilkenny also has a Biodiversity Plan which gives details on the types of habitats and species found in Kilkenny.

3.3.1 Designated sites

Habitats in the county, of international and national importance, are designated under EU and national legislation. The three categories of designated site in effect in the City are:

- I. Special Areas of Conservation (SAC)

²⁴ <http://www.biodiversityireland.ie/>

SAC's have been, and are being, designated under the EU Habitats Directive to conserve habitats and species of European importance. The River Nore in Kilkenny is a candidate SAC.

II. Special Protection Area (SPA)

SPAs have been, and are being, designated under the EU Habitats Directive to protect birds which are rare, in danger of extinction or vulnerable to changes in habitat and which need protection. In Kilkenny the River Nore is designated as an SPA due to the presence of kingfishers.

III. Natural Heritage Areas (NHA)

NHA's have been, and are being, designated to conserve habitats and species of national importance and sites of geological interest, under the Wildlife (Amendment) Act, 2000.

At present there are 5 designated natural heritage sites of international and national importance in Kilkenny city, covering approximately 5.3% of the city. One site, Archersgrove, is located adjoining the development boundary. The SAC and SPA form part of the Natura 2000 network of sites and in accordance with the Habitats Directive, the Plan is subject to a separate Appropriate Assessment to determine any effects on the Natura network.

Table 3.1 Protected Natural Heritage Sites of International & National Importance

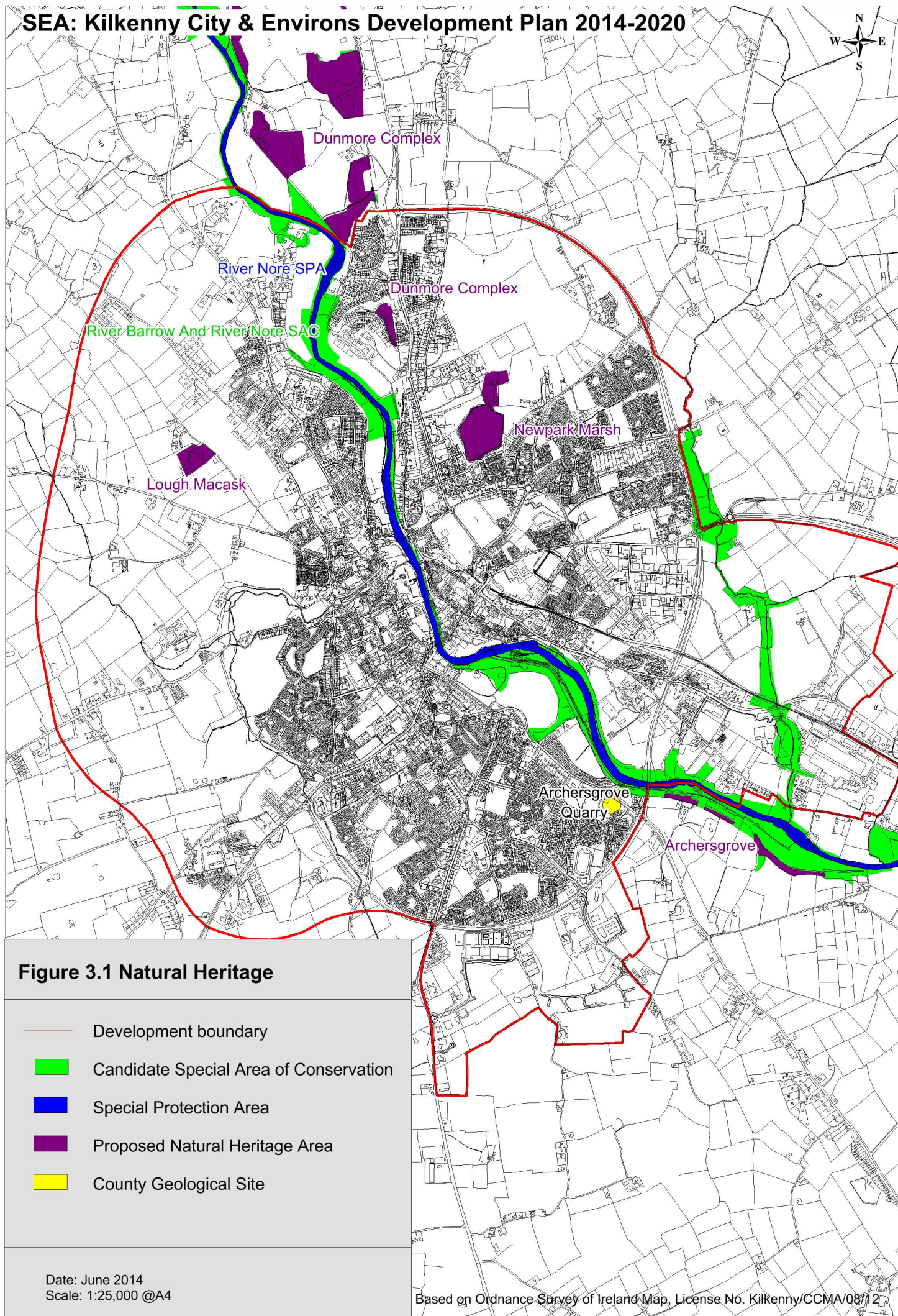
Site Name	Site Code	cSAC	SPA	pNHA	Area (ha)
River Barrow & River Nore	002162	✓		✓	91.7
River Nore (overlaps with SAC)	004233		✓		0
Archersgrove (outside development boundary but adjoining)	002051			✓	0
Dunmore Complex (consists of 7 sites, one of which is within the City development boundary)	001859			✓	1.7
Lough Macask	001914			✓	2.9
Newpark Marsh	000845			✓	9.9
Total					106.2

Maps and site synopses (to varying levels of detail) are available for all of these sites from the National Parks and Wildlife Service (NPWS), apart from Archersgrove. Conservation management plans (CMPs) have been devised by the NPWS for some SACs in the country, but a CMP has not been completed for the River Barrow and River Nore site to date. In 2010, a [Freshwater Pearl Mussel \(Second Draft\) Nore Sub-basin management plan](#) was published which gives further information on the pearl mussel in the River Nore. All sites within or adjacent to the City are identified on Figure 3.1 and sites within 15km of the city's development boundary are identified in Figure 3.1a.

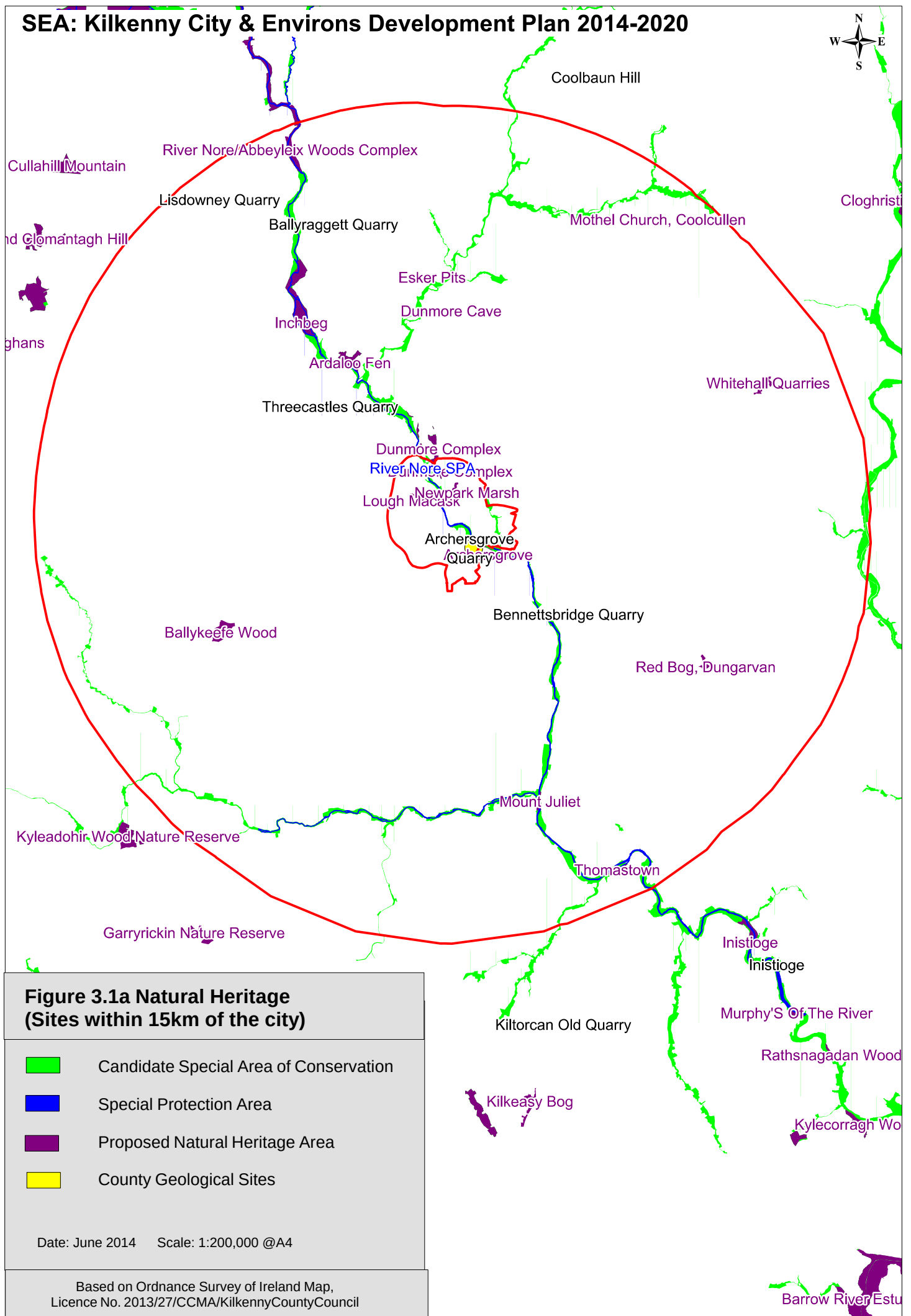
Table 3.1 Protected Natural Heritage Sites of International & National Importance

Site Name (within 15km of the City development boundary)	Site Code	cSAC	SPA	pNHA	SNR	WF
Thomastown Quarry	002252	✓				
River Nore/Abbeyleix Wood Complex	002162	✓		002076		✓
Mothel Church, Coolcullen	000408			✓		
Inchbeg	000836			✓		
Esker Pits	000832			✓		
Dunmore Cave	000401			✓		
Ardaloo Fen	000821			✓		
Whitehall Quarries	000855			✓		

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Ballykeeffe Woodland	000400			✓	✓	
Red Bog, Dungarvan	000846			✓		
Mount Juliet	000843			✓		
Thomastown	000410			✓		

The River Barrow and Nore cSAC Site Synopsis includes a section on potential threats to the SAC. Threats are outlined as follows:

- Fragmentation, abundance of alien invasive species, grazing regimes, fishing, water pollution, Eutrophication, Land reclamation, Afforestation, drainage, sea-level rise, weirs, channel maintenance.

According to the [Habitat Survey and Mapping of Kilkenny City](#)²⁵, the potential threats to the River Nore (SPA Site Code 4233) are as follows: potential developments, particularly on the improved grassland pastures on the river floodplains toward the north, water quality impacts and the spread of invasive species.

Both of these sites are subject to detailed examination in the accompanying Appropriate Assessment.

Every six years, the NPWS publish a report on the conservation status of habitats and species protected under the Habitats Directive. The last report was published in 2008, as *The Status of EU Protected Habitats and Species in Ireland*. The third assessment report covers the period (2007 – 2012). This report has not been published to date, but some of the information has been released, and this has been incorporated here where available. Table 3.2 sets out the conservation status of each SAC and the SPA by habitats and species.

The Dunmore Complex Site Synopsis also includes reference to threats:

The wetland basins are vulnerable to infilling and careless disposal of waste water also threatens the site.

²⁵ Kilkenny Local Authorities, [Habitat Survey and Mapping of Kilkenny City Habitat Survey Report](#), 2010

Table 3.2 Conservation status of Natura 2000 sites in Co. Kilkenny

Site Name	Site Code/Ref	Habitats	Conservation Status		Species	Conservation Status	
River Barrow & River Nore cSAC	002162	Estuaries [1130]	Poor		Vertigo moulinsiana [1016]	Bad	
		Mudflats and sandflats not covered by seawater at low tide [1140]	Poor		Margaritifera margaritifera [1029]	Bad	
		Salicornia and other annuals colonizing mud and sand [1310]	Poor		Austropotamobius pallipes [1092]	Poor	
		Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]	Poor		Petromyzon marinus [1095]	Poor	
		Mediterranean salt meadows (Juncetalia maritimi) [1410]	Poor		Lampetra planeri [1096]	Good	
					Lampetra fluviatilis [1099]	Good	
					Alosa fallax [1103]	Bad	
					Salmo salar (only in fresh water) [1106]	Bad	
					Lutra lutra [1355]	Poor	Good
					Trichomanes speciosum [1421]	Good	
River Nore SPA	004233				Alcedo atthis [breeding] Kingfisher	Amber ²⁶	

Source: The Status of EU Protected Habitats and Species in Ireland, 2008

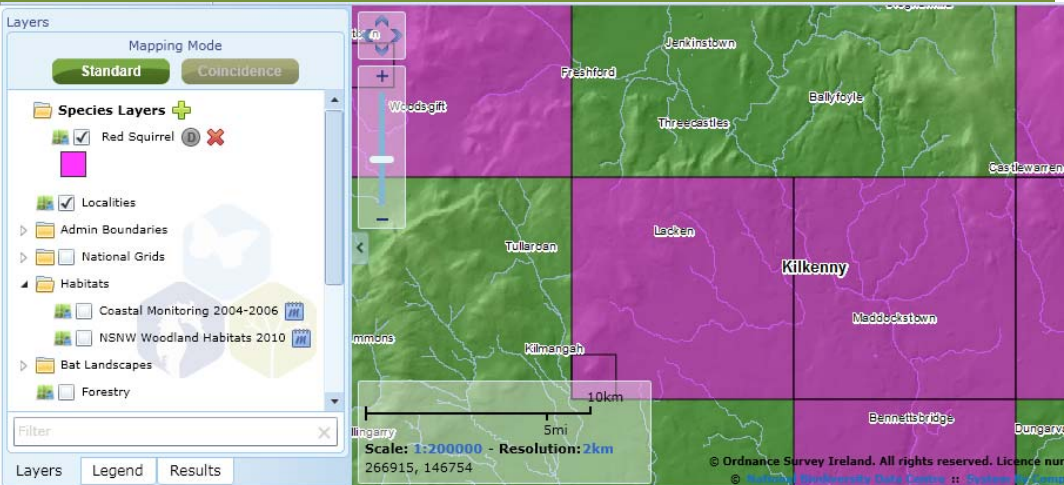
²⁶ BirdWatch Ireland and the RSPB NI have agreed a list of priority bird species for conservation action on the island of Ireland. These Birds of Conservation Concern in Ireland are published in a list known as the BoCCI List. In this BoCCI List, birds are classified into three separate lists (Red, Amber and Green), based on the conservation status of the bird and hence conservation priority. The **Red List** birds are of high conservation concern, the **Amber List** birds are of medium conservation concern and the **Green List** birds are not considered threatened.

3.3.2 Flora and Fauna

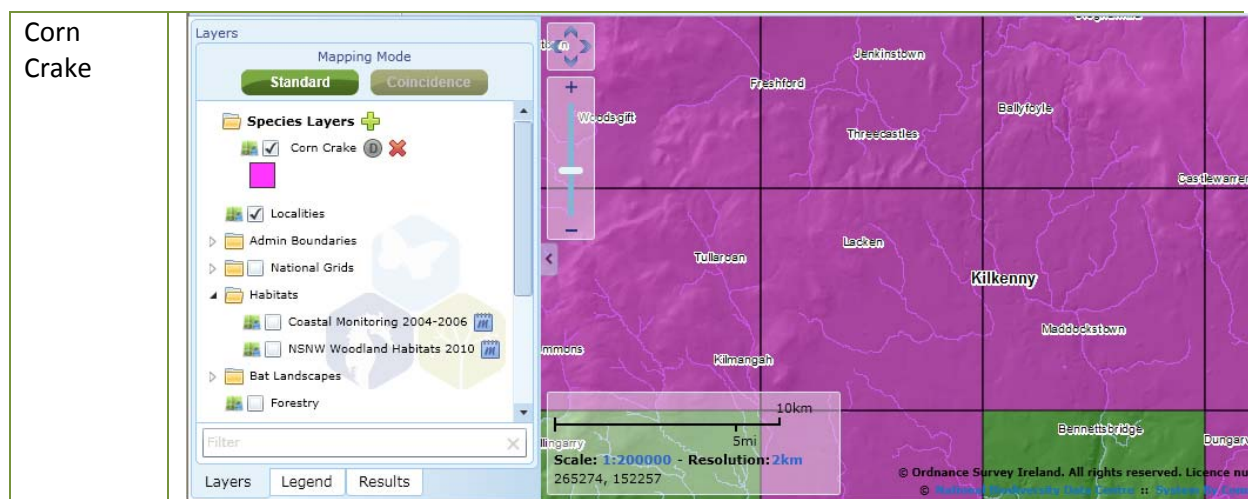
A number of species are protected under European and national law, under Annex IV of the Habitats Directive and the Wildlife Acts. Data is available from the National Biodiversity Data Centre on the occurrence of species in Kilkenny city. The NPWS produce a number of plans in relation to some protected species, these are set out below, and the distribution of the species in Kilkenny is included.

The NPWS have produced a number of Species Action Plans for particular species of highest conservation concern as follows;

Table 3.3: Distribution of species of conservation concern in Kilkenny

Species Action Plan	Distribution in Kilkenny City ²⁷
Species Action Plan Bats 2008	Widely found
Species Action Plan Killarney Fern 2008	Not found
Species Action Plan Red Squirrel 2008	
Species Action Plan Irish Lady's-tresses, Pollan, Hare, Corncrake 2005	
Irish Lady's-tresses	None in Kilkenny
Pollan	None in Kilkenny
Hare (Lepus timidus hibernicus)	Widely found

²⁷ [National Biodiversity Data Centre website](#) accessed March 2013



Threat Response plans have also been issued for particular species. These three year plans provide detailed information on range, distribution and habitat. They also focus on the particular threats facing each species and identify the measures required to address these threats, as well as identifying who is responsible for implementing them and providing a time frame for delivery.

Threat Response Plan Vesper Bats 2009-2011 – widely found

Threat Response Plan Otter 2009-2011 – widely found

Threat Response to Kerry Slug May 2010 – none found in Co. Kilkenny

Conservation Plan for Irish Cetaceans 2009 – none found in Co. Kilkenny

3.3.3 Woodlands, Trees and hedgerows

There are no Tree Preservation Orders in Kilkenny City & Environs at present.

Kilkenny Local Authorities commissioned a survey of mature trees in the City worthy of preservation²⁸. A total of 916 trees were identified. A map of these is included as Figure 3.2.

The National Survey of Native Woodlands (NSNW)

The NSNW surveyed a total of 58 sites in Kilkenny as part of the National Survey (BEC consultants 2003-2008), however no sites were identified in the City.

Ancient woodlands

Ancient woodlands are defined in Ireland as areas which have been wooded since 1660. Possible ancient woodlands (PAWS) and long established woodlands (LEWS) were identified from documentary and archaeological evidence by the NPWS. No PAWS or LEWS have been identified in the City.

Tree Register of Ireland (TROI)

The TROI, carried out in 2005, identified approx. 180 significant trees in the county. These are available to view at:

http://www.kilkennycoco.ie/eng/Services/Digital_Mapping/Tree_Register_of_Ireland_Survey/

²⁸ Fennell, A. 2007. A Survey of Mature Trees in Kilkenny City and Environs (An unpublished report for Kilkenny County Council.)

Figure 3.2 Survey of
Mature Trees in Kilkenny
City



3.3.4 Habitats

A report on [Habitat Survey and Mapping of Kilkenny City](#) was completed in 2010²⁹. This included a huge level of detail on the habitats present in Kilkenny city. The study area was slightly different from the development plan boundary, however they broadly correspond. Table 3.4 below sets out the habitat groups in Kilkenny City as a percentage of the total land area, see Figure 3.3 (Figure 2.2 from the Habitat Survey).

Table 3.4: Habitat Groups in Kilkenny

Habitat Group	Area (ha)	Percentage	Comment
Buildings & Gardens	883.0	46.0	Old buildings can be important as habitats for bats. Old stone walls can be a significant biodiversity and wildlife habitat resource. More built up areas provide little or no biodiversity value. Gardens can be of local importance for birds, insects and small mammals.
Intensive Agriculture	610.8	31.8	Little ecological value.
Amenity Grassland	191.0	10.0	Of little ecological value.
Woodland & Scrub	81.7	4.3	Of considerable ecological importance. Threats include invasive species and dumping.
Disturbed Ground	64.7	3.4	Recolonising disturbed ground can be important habitats.
Semi-natural Grassland	48.9	2.5	Of significant nature conservation value Threats include agricultural improvement.
Rivers	26.2	1.4	International and national significance.
Wetlands	9.8	0.5	
Lakes & Ponds	3.1	0.2	
Total	1919.2	100.0	

Kilkenny City supports over 104 km of hedgerows and over 13 km of treelines, some of which are shown on Figure 3.4 Green Infrastructure, as key linear green infrastructure. Hedgerows need active management to prevent them becoming gappy and losing their ecological function as wildlife habitats and corridors.

3.3.5 Green Infrastructure

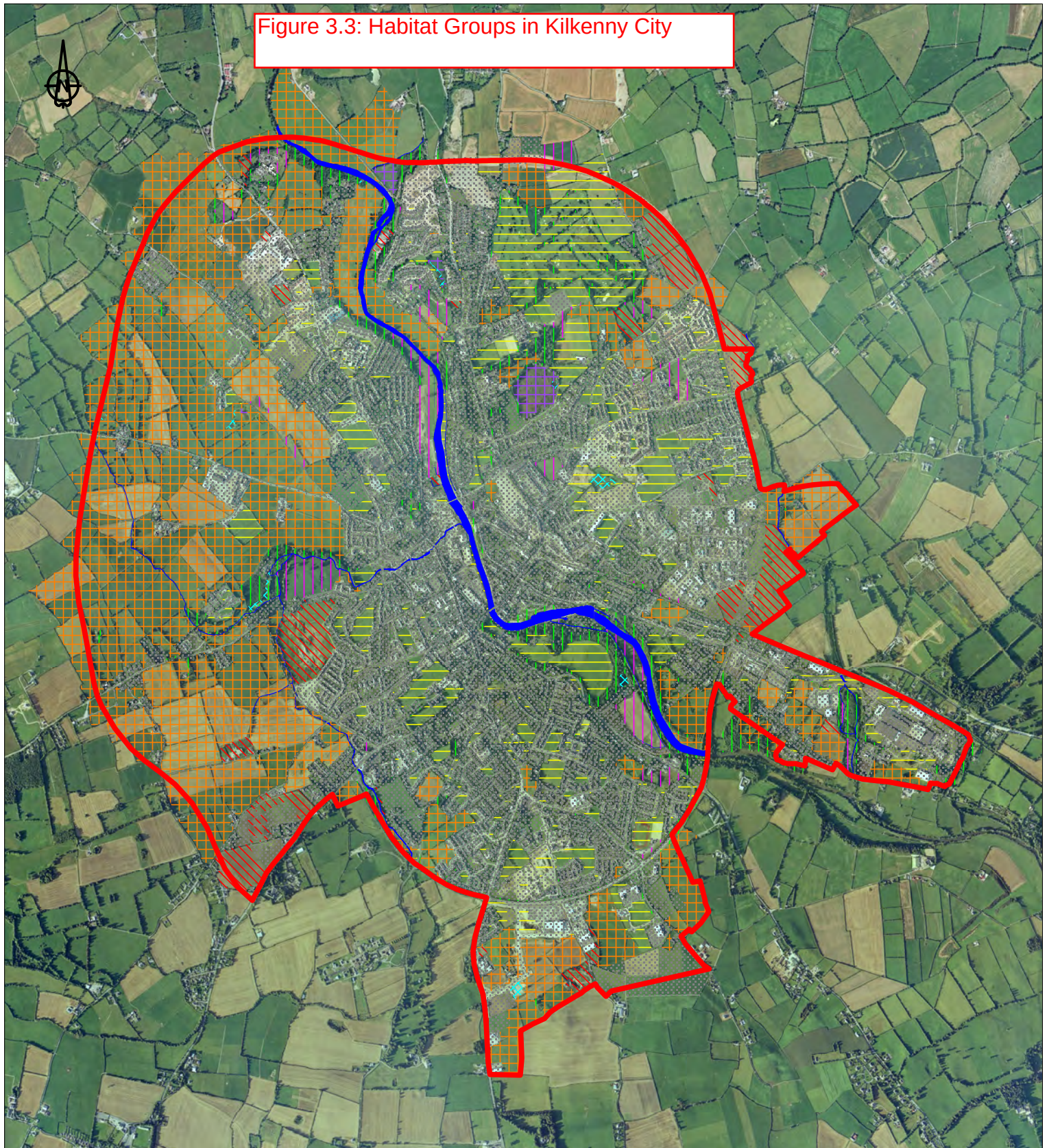
Ecological networks are important as corridors and stepping stones for wildlife, including for migration, dispersal and genetic exchange. Green infrastructure (GI) has been studied as part of the report on [Habitat Survey and Mapping of Kilkenny City](#), which was completed in 2010. Figure 3.4 illustrates the Green Infrastructure network in the City.

3.3.6 Invasive Species

Invasive species such as Japanese Knotweed, rhododendron, sycamore and laurel can cause major ecological changes and damage to habitats where they become established. Information is available

²⁹ Kilkenny Local Authorities, [Habitat Survey and Mapping of Kilkenny City Habitat Survey Report](#), 2010

Figure 3.3: Habitat Groups in Kilkenny City



LEGEND:

- | | | | |
|--|-----------------------|---|------------------------|
|  | Amenity Grassland |  | Rivers |
|  | Buildings & Gardens |  | Semi-natural Grassland |
|  | Disturbed Ground |  | Wetlands |
|  | Intensive Agriculture |  | Woodland & Scrub |
|  | Lakes & Ponds | | |

 Study Boundary

Client: Kilkenny County Council

Project: Habitat Survey and Mapping of Kilkenny City

Title: Broad Habitat Groups

Designed/Drawn:
KOH

Checked:
GS

Authorised: JN

Date: 23.11.10

Date: 23.11.10

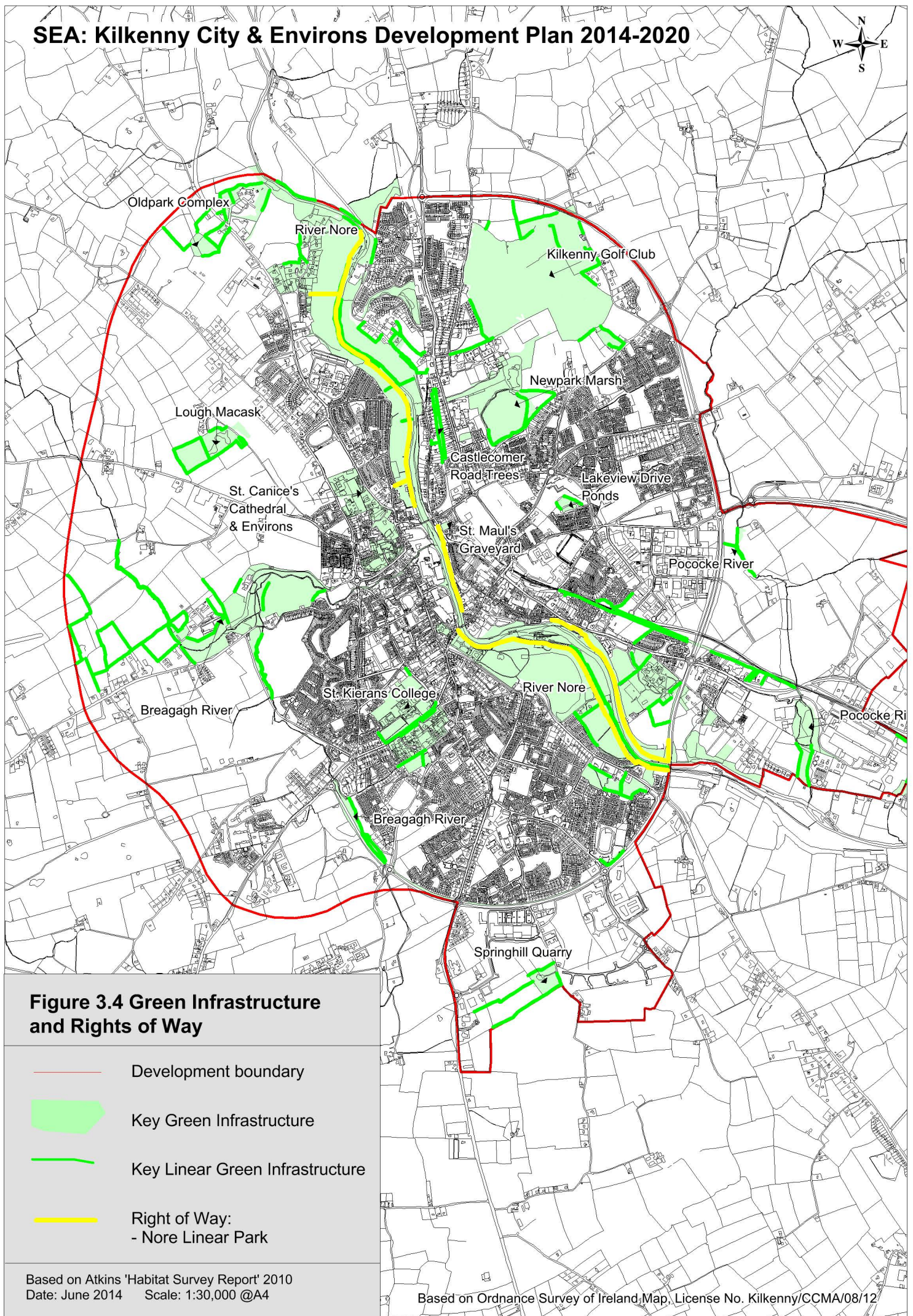
Date: 23.11.10

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2954 Figure 2.2

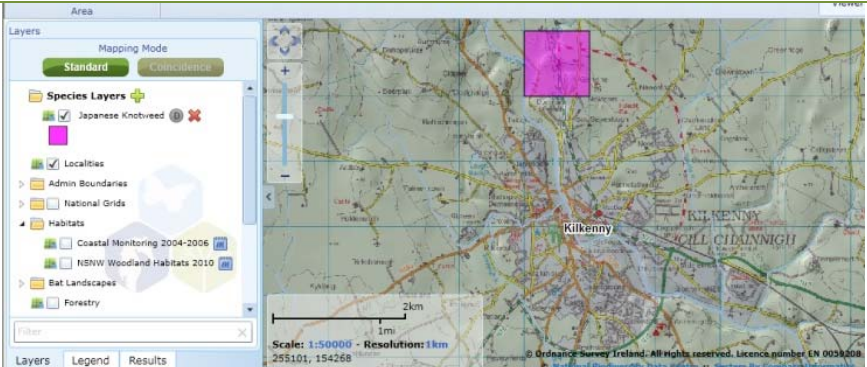
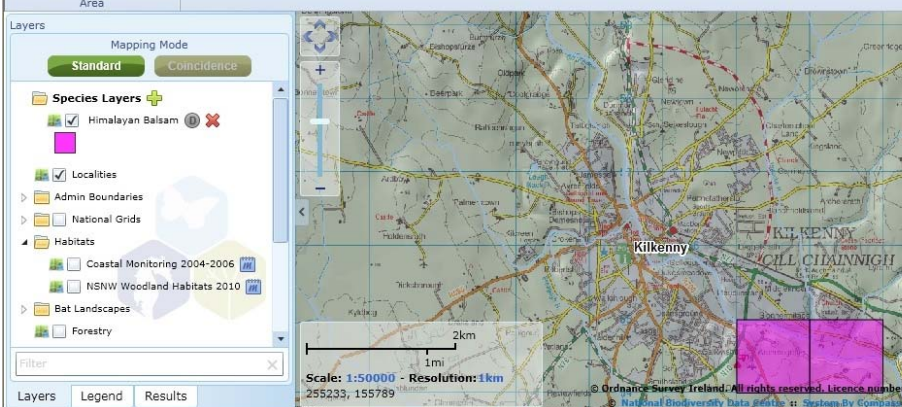
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on invasive species from the National Biodiversity Data Centre³⁰ and from Invasive Species Ireland³¹, which is a joint venture between the Northern Ireland Environment Agency and the National Parks and Wildlife Service. A list of the top twelve invasive species in the region, known as The Dirty Dozen Report³², was published by the National Biodiversity Data Centre in 2010. This report provides detailed information, including distribution maps and species profiles, for the top twelve invasive species in the region. The twelve species and their broad distribution within the city³³ are:

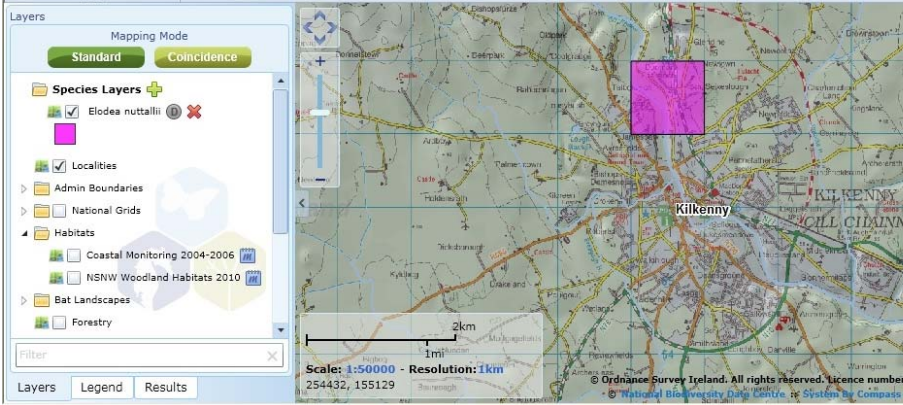
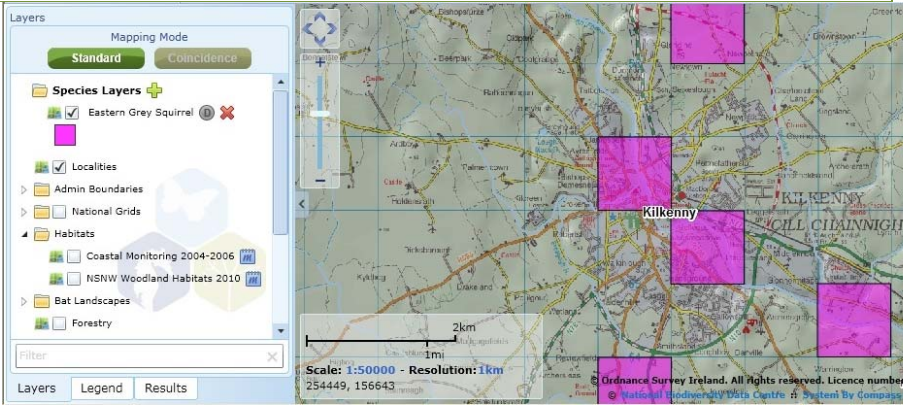
Table 3.5 Invasive species distribution 2013	
Name	Distribution (2013)
Japanese Knotweed (Falopia Japonica)	
Himalayan Balsam (Impatiens Glandulifera)	
Giant Hogweed (Heracleum Mantegazzianum)	None in Kilkenny city
Rhododendron (Rhododendron Ponticum)	None in Kilkenny city
Water fern (Azolla Filiculoides)	None in Kilkenny city

³⁰ <http://invasives.biodiversityireland.ie/>

³¹ <http://invasivespeciesireland.com/>

³² <http://invasives.biodiversityireland.ie/wp-content/uploads/Dirty-Dozen-invasive-species-Kilkenny-Co-Co-2010.pdf>

³³ Taken from <http://maps.biodiversityireland.ie/#/Map/NbdcTerrestrial/Species/28772> on 9/1/2013

Nuttall's Waterweed (<i>Elodea Nuttallii</i>)	
Least Duckweed (<i>Lemna Minuta</i>)	None in Kilkenny city
Common Cord-Grass (<i>Spartina Anglica</i>)	None in Kilkenny city
Asian Clam (<i>Corbicula Fluminea</i>)	None in Kilkenny city
Dace (Leusiscus Leusiscus)	None in Kilkenny city
Grey Squirrel (<i>Sciurus Carolinensis</i>)	
Wild Boar (Sus Scrofa)	None in Kilkenny city

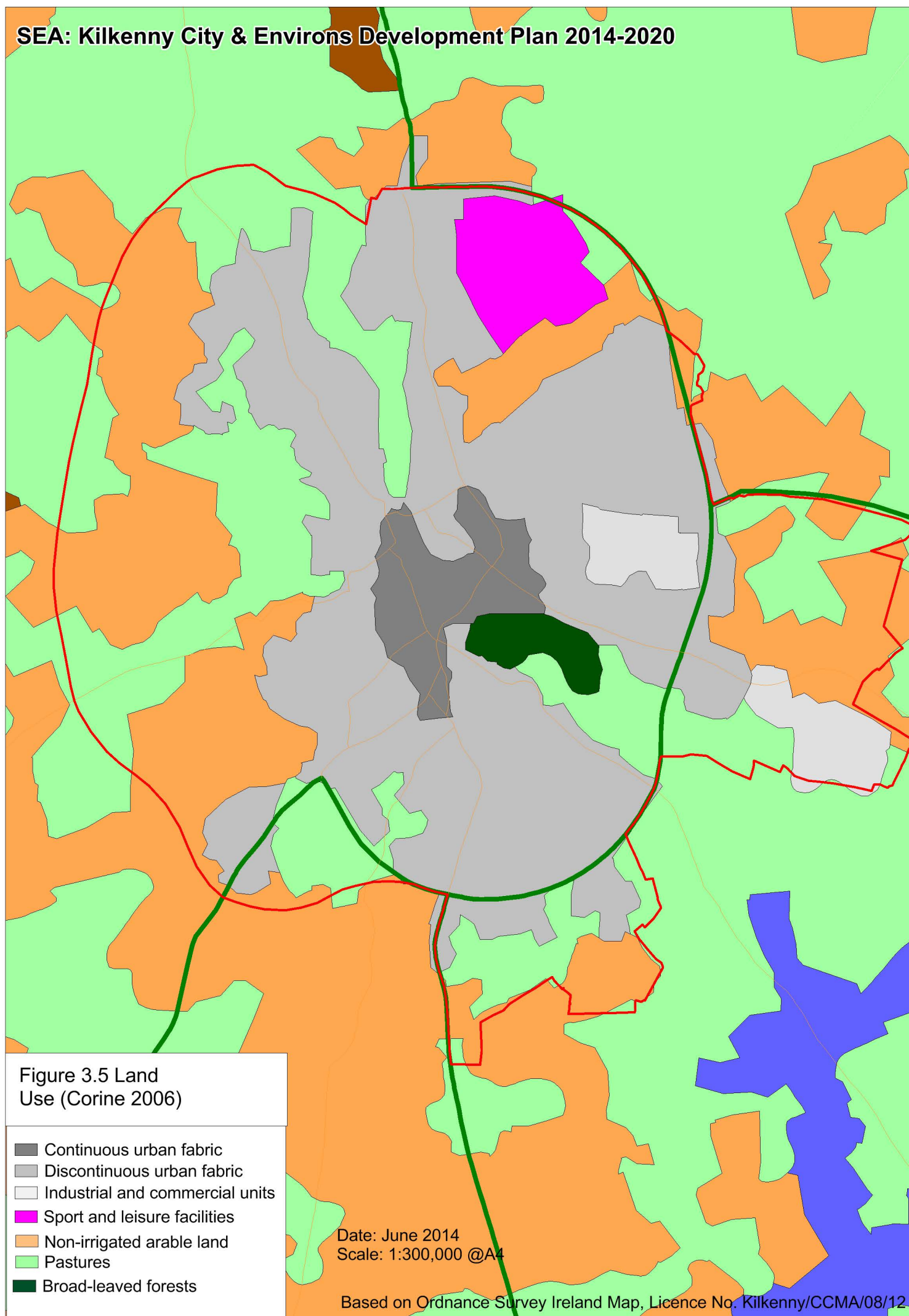
3.3.7 Land Cover

Land cover is the physical description of what is present on the surface of the land. The CORINE map for Co. Kilkenny provides a digital map of land cover. Corine stands for *Coordination of Information on the Environment* and is a map of the European environmental landscape based on interpretation of satellite images. The Corine Land Cover update of 2006 is shown on Figure 3.5. This shows that the majority of land in Kilkenny is covered with continuous urban fabric, discontinuous urban fabric or Industrial and commercial units pasture (grey). There are areas of non-irrigated arable land (orange) and pastures (light green). Kilkenny Castle Park is shown in dark green as a broad-leaved forest and Kilkenny golf club is categorised as a sport and leisure facility (pink).

3.3.8 Existing Problems

- River Barrow and Nore cSAC – the conservation status of most of the habitats and species is poor or bad.

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- River Nore SPA – the status of the kingfisher in this location is at Amber (medium conservation concern)
- As two of the city's main rivers (Nore and Pococke) are designated Natura 2000 sites, with the conservation status of species ranging from Poor to Bad, water quality is a hugely significant issue for Kilkenny.
- Continued replacement of natural and semi-natural habitats with artificial surfaces results in loss of non-designated flora and fauna and disturbance to protected species.
- Woodlands and Scrub habitats in the city are of considerable ecological importance but invasive species and dumping are a problem.
- Lack of management of hedgerows can result in an increase in gappiness and a loss of their ecological function.
- Invasive species pose a threat to biodiversity in the city.

3.4 Population and Human Health

3.4.1 Population Distribution

Kilkenny's population continues to grow, from 22,179 in 2006 to 24,423 in 2011, a 10.1% increase. There are four Electoral Divisions in Kilkenny city; Kilkenny No. 1 Urban, No. 2 Urban, part of Kilkenny Rural and part of Dunmore. Figure 3.6 shows the rates of population change for these EDs over the period 2006 to 2011.

As can be seen, Kilkenny Rural ED, outside the Borough boundary grew by 10.22%, whereas Kilkenny No. 2, to the west of the city centre, decreased by 0.2%. For Kilkenny No. 2 Urban this population loss is a continuing trend, and in total it has experienced a 12% decrease since 1996, see Table 3.6.

Table 3.6: Population change in Kilkenny City & Environs 1996-2011

Electoral Division		1996	2002 Persons	2006 Persons	2011 Persons	% change '06-11
Kilkenny Borough	Kilkenny No. 1 Urban	4,546	4,857	5,154	5,211	1.11
	Kilkenny No. 2 Urban	3,961	3,734	3,507	3,500	-0.2
Kilkenny Borough Sub-total		8,507	8,591	8,661	8,711	0.57
Environs of Kilkenny			12,144	13,518	15,712	16.2
Total Borough and Environs			20,735	22,179	24,423	10.1

Source: CSO 1996-2011

The Core Strategy of the current Plan, as set out in Chapter 3, identifies the neighbourhoods of Western Environs and Loughmacask for expansion. Both of these are located mainly within the Environs of Kilkenny ED.

3.4.2 Human health

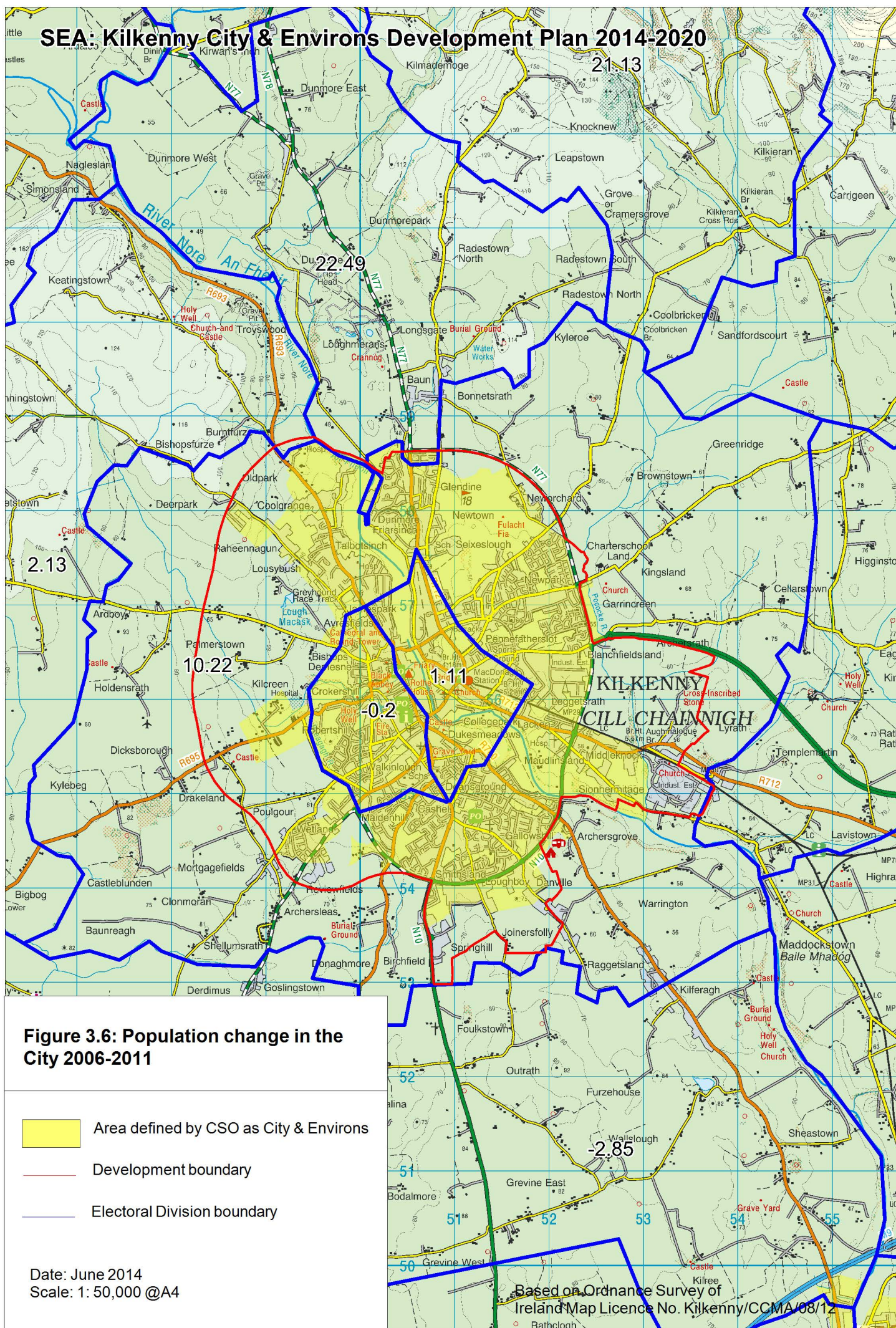
Availability of spatial data on human health is limited; however a key area for consideration is the interrelationships of human health and water quality to include drinking water, waste water treatment, fisheries and shellfish waters. There will also be interrelationships between human health and air quality and climatic factors, such as flood risk. These are examined under the relevant headings.

3.4.2.1 Major Accidents Directive

The Major Accidents Directive (EU Directive 96/82/EC, known as the Seveso II Directive), seeks to reduce the risk and to limit the consequences to both man and the environment, of accidents at manufacturing and storage facilities involving dangerous substances. There is 1 Seveso (Control of Major Accident Hazards Directive) site in the city; Grassland Fertilisers (Kilkenny) Ltd. Palmerstown on the Tullaroan Road.

3.4.3 Waste Management

The issue of waste is now dealt with on a regional basis, and there is a Joint Waste Management Plan in place for the South East Region. Waste management is being reviewed at a national level,



and the Government recently introduced its new waste management policy for Ireland entitled [A Resource Opportunity, Waste Management Policy in Ireland](#)³⁴. There is also a Litter Management Plan in place for the County (2012-2014). As this issue is addressed by other plans, it is not considered that this requires further detail here.

Local Authorities are required to identify historic waste disposal or recovery sites and to place them on a register. Non-hazardous sites are to be placed on the Section 22 Register and hazardous sites are to be placed on the Section 26 register. Once sites are on the registers, there is a requirement to carry out risk assessments. A total of 13 sites have been identified in County Kilkenny³⁵, but none are located within the City's development boundary.

3.4.4 Existing Problems

- In terms of population distribution, the decline in population in Kilkenny city's inner area is of concern.
- The Seveso (COMAH) site must be provided for in the land use zoning map

3.5 Soil

There is no national soil protection strategy. The EU Commission set up the Thematic Group for Soil Strategy in 2004 to identify the potential threats to soil function. Its analysis identified six soil degradation processes that impact on soils; soil sealing, erosion, organic matter decline, compaction, salination and landslides. While a number of these processes are naturally occurring, human activity can be an additional driver of degradation through poor land management. Protection of soils is not a significant issue in the City.

3.5.1 Landslides

The GSI maintain a [National Landslide Database](#). According to the GSI, it is likely that in the future there will be increased landslide activity as development increases and expands into potentially hazardous areas. It is also predicted that climate change will result in increased landslide hazard. To date, two landslides have been recorded in Co. Kilkenny; in Rossinan, Mullinavat and in Forestalstown, Glenmore. None have occurred in the City.

Landslide susceptibility mapping has not yet been produced for Ireland.

³⁴ Department of the Environment, Community and Local Government, [A Resource Opportunity, Waste Management Policy in Ireland](#), 2012

³⁵ South Tipperary County Council, [Report on the Evaluation of the Joint Waste Management Plan for the South East Region, 2006](#), November 2012

3.5.2 Peatland

Peatlands are important ecosystems sustaining a range of animal and plant species. There are no peatlands located within the city.

3.5.3 Geology

According to the GSI, the underlying bedrock geology of Kilkenny is dominated by Lower Carboniferous rocks, mostly of limestone, which were formed at a time when Ireland was almost completely submerged in tropical waters. To the south of this main body of limestone are older sedimentary and igneous rocks that have formed in a variety of geological environments over the past 500 million years. Some of the last sediments in Kilkenny accumulated during the Quaternary period (1.6 million years ago to present) when a series of large ice sheets moved over Ireland, depositing glacial till (clay, sand and gravel) and scouring the underlying bedrock to give Kilkenny much of its present day geomorphological characteristics³⁶.

3.5.3.1 County Geological Sites

A list of County Geological Sites was developed in partnership with the Geological Survey of Ireland and designated in 2007. One site has been identified in the City, Archersgrove Quarry, see Figure 3.1.

3.5.3.2 Aggregate Potential Mapping

As part of a National Development Plan funded programme, Aggregate Potential Mapping (APM) has been carried out by the GSI for County Kilkenny³⁷. Aggregate consists of any hard, inert material, used in variously-sized fragments, either loose or in bound form, in the building of roads and other construction. Aggregate in Ireland is acquired from (a) sands and gravels, known as granular, and (b) bedrock which is blasted and crushed in quarries. The APM has identified both the Granular Aggregate Potential (GAP) and the Crushed Rock Aggregate Potential (CRP).

The GAP map, Figure 3.7, shows very high potential along the River Nore. The CRP map, Figure 3.8 shows most of the city has either very high, high or moderate levels of potential.

3.5.3.3 Extractive Industries

The Geological Survey of Ireland maintains a record of all pits (sand and gravel) and quarries (crushed rock) in the country, see Figure 3.9.

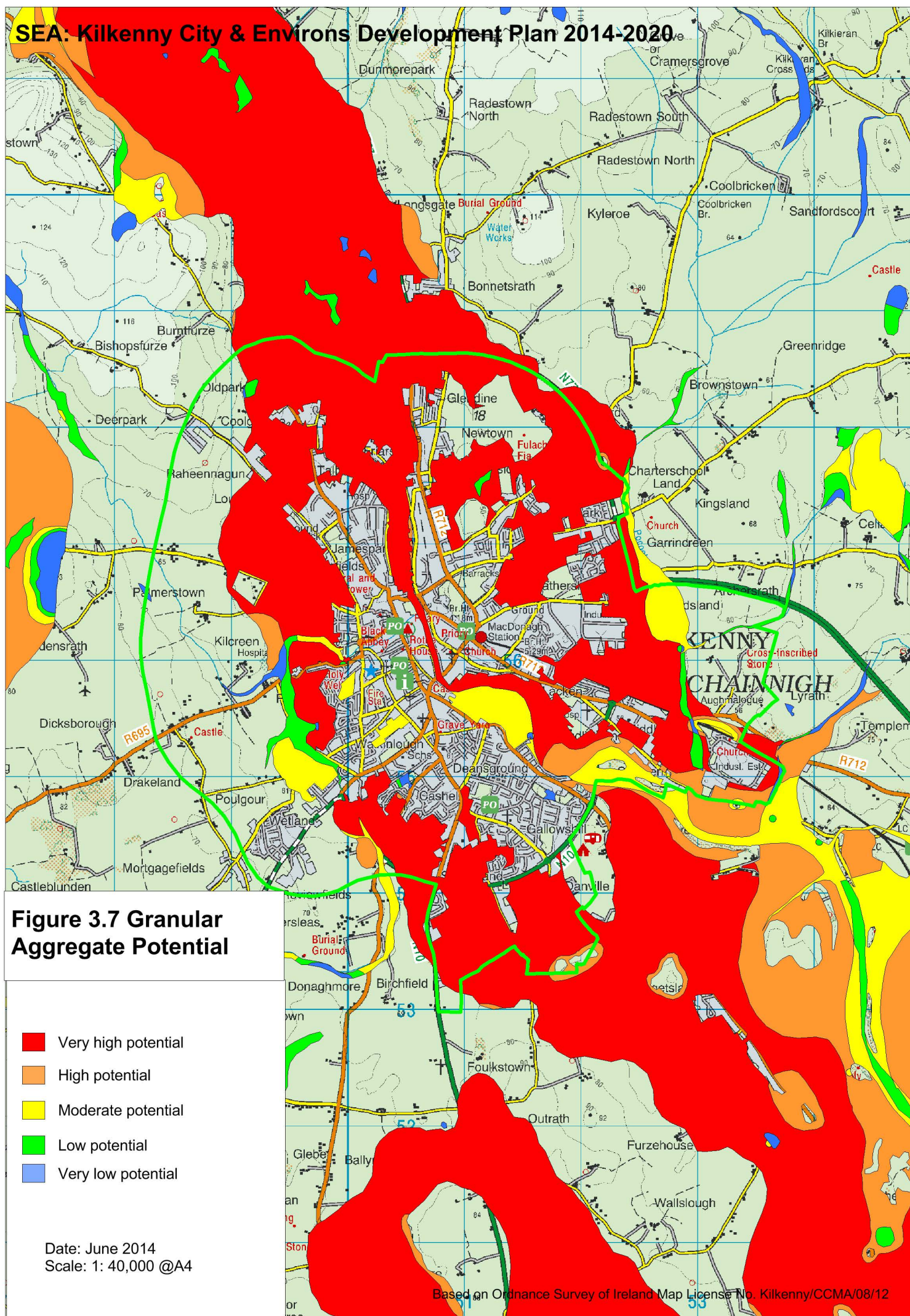
3.5.4 Existing Problems

- Landslide susceptibility mapping has not been produced.

³⁶ Aaron Clarke, Matthew Parkes and Sarah Gatley. GSI, *The Geological Heritage of Kilkenny An audit of County Geological Sites in Kilkenny*, 2007

³⁷ <http://spatial.dcenr.gov.ie/APM/index.html>

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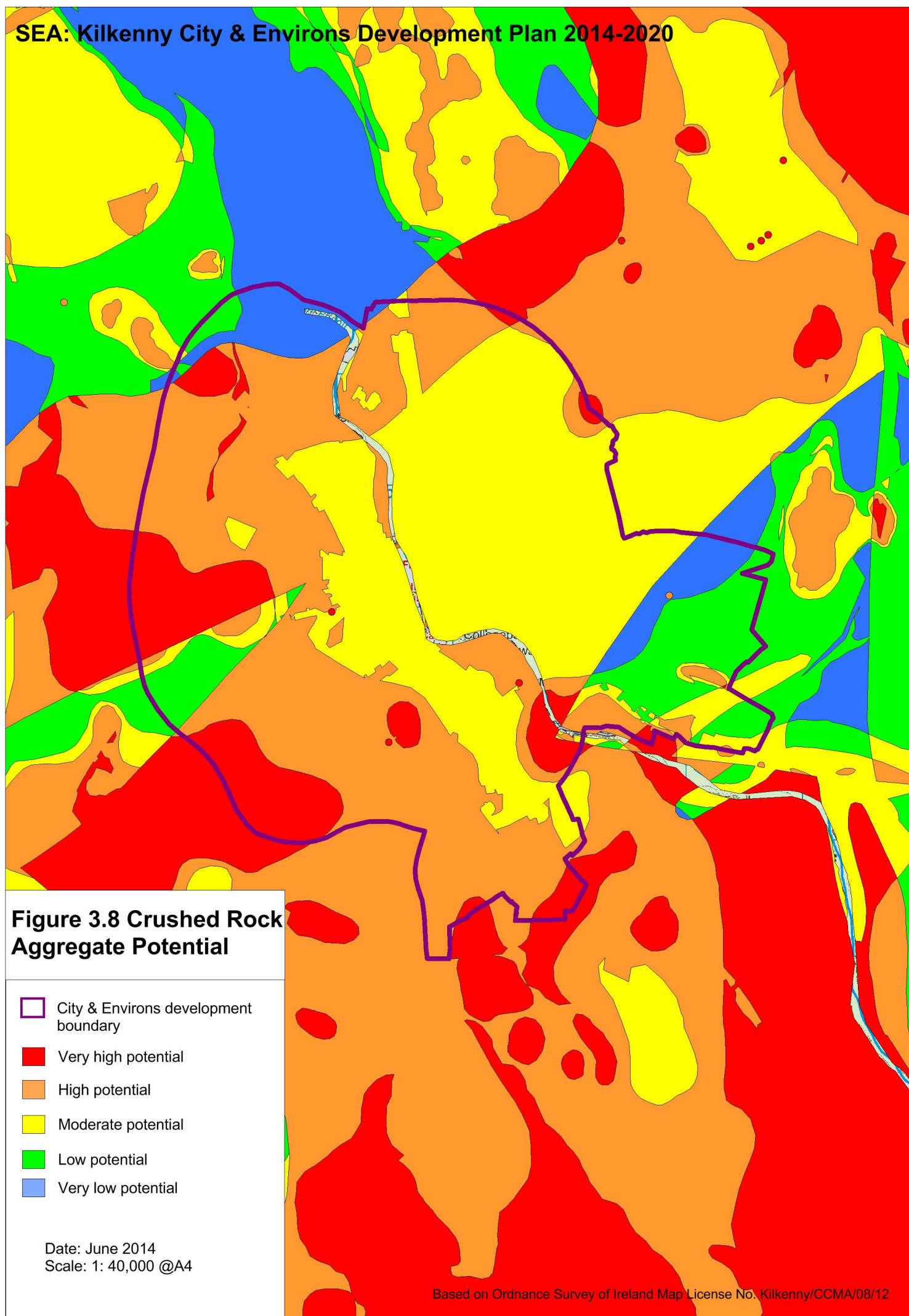
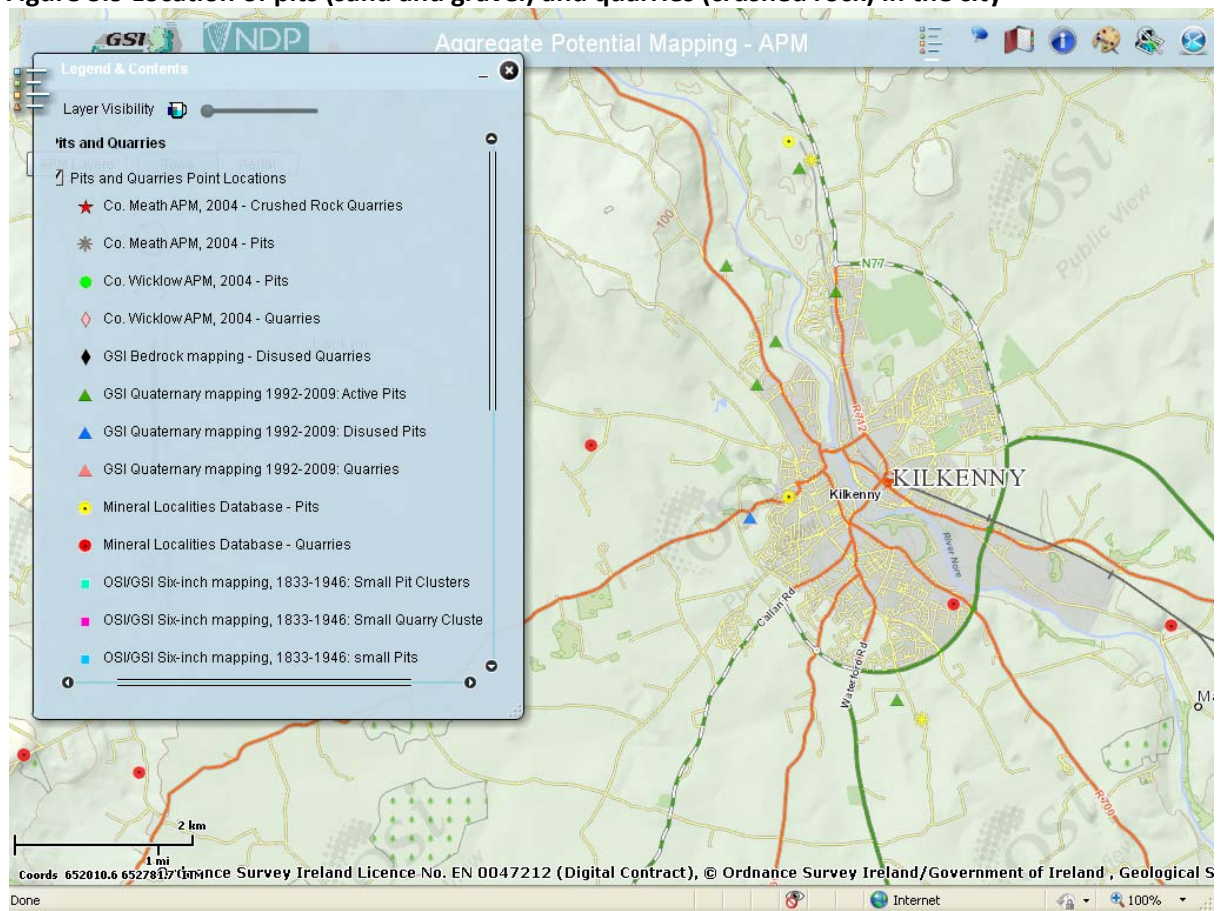


Figure 3.9 Location of pits (sand and gravel) and quarries (crushed rock) in the city



Source: <http://spatial.dcenr.gov.ie/APM/index.html>

3.6 Water

This topic can be broken down under various headings, as set out below.

3.6.1 Water Framework Directive

The [Water Framework Directive](#)³⁸ established a framework for the protection of all waters including rivers, lakes, estuaries, coastal waters, groundwater, canals and other artificial bodies for the benefit of everyone.

For the purposes of implementing the WFD, Ireland has been divided into eight river basin districts that are drained by a large river or number of rivers. County Kilkenny is located in the South Eastern River Basin District. The [South East River Basin Management Plan \(Water Matters\) 2009-2015](#) was published in 2010³⁹.

Water in the District has been divided into groundwater, rivers, lakes, estuarine and coastal waters, which are in turn divided into specific waterbodies. Each waterbody is categorised in terms of its water quality status as follows: High, good, moderate, poor, bad, yet to be determined. The Environmental Protection Agency manages the monitoring of all waterbodies, and the latest information on the status of each waterbody is available at <http://gis.epa.ie/Envision/>.

3.6.1.1 Groundwater quality

Groundwater is categorised as good status throughout the city.

3.6.1.2 Surface water quality

The [South East River Basin Management Plan](#) noted that two rivers in the county were classified as Bad status, the River Nore south of Thomastown IE_SE_15_1994_7 and the River Gowran (IE_SE_14_1879), which is a tributary of the Barrow, neither of which are located within the city. As at 9/5/2013, no river in the city is classified as Bad status, but the Nore at Brewery bridge is classified as Poor, see Figure 3.10.

Information on trends in river water quality is available from the EPA [Report on River Water Quality in County Kilkenny](#)⁴⁰. This shows that since 2008, river water quality has remained relatively stable, with a decrease in the number of unpolluted rivers, but also a decrease in the number of seriously polluted rivers.

³⁸ [Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy](#)

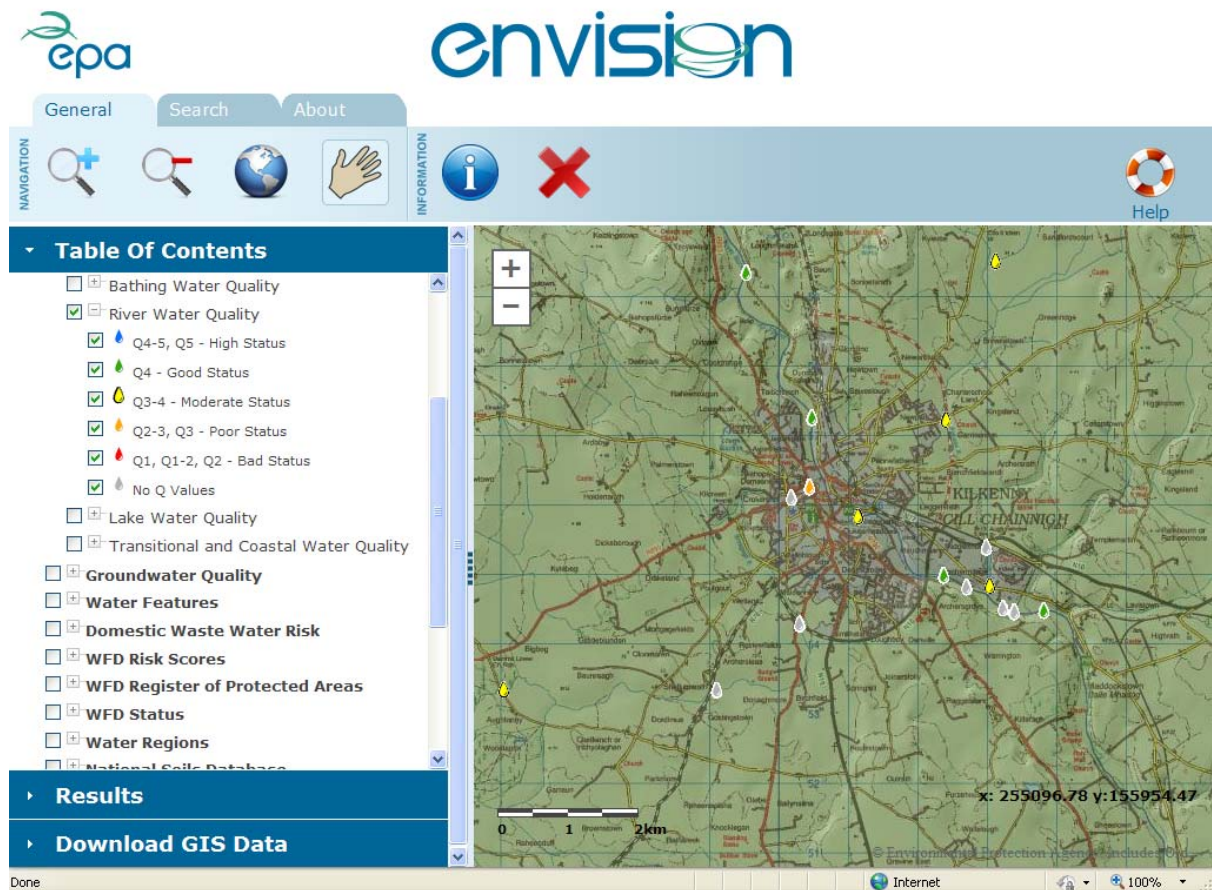
³⁹ South Eastern River Basin District, [South East River Basin Management Plan \(Water Matters\) 2009-2015](#), 2010

⁴⁰ Environmental Protection Agency, [Integrated Water Quality Report 2011 – South East Ireland Report on River Water Quality in County Kilkenny](#) 2011

Table 3.7: Water quality in Co. Kilkenny 2008-2011

Year	Number of Rivers Monitored	Total Number of Sample Stations	Number of Sample Stations in each category			Percent of Sample Stations in each Category		
			Polluted	Moderately Polluted	Seriously Polluted	Un-Polluted	Moderately Polluted	Seriously Polluted
2008	27	76	54	21	1	71.1%	27.6%	1.3%
2009	25	82	57	23	2	69.5%	28.0%	2.4%
2010	25	73	45	27	1	61.6%	37.0%	1.4%
2011	25	70	48	22	0	68.6%	31.4%	0.0%

Figure 3.10: Surface Water quality in Co. Kilkenny from EPA Envision website



3.6.2 Waste Water Treatment

There are two public wastewater treatment schemes within the city, of varying size and complexity, see Table 3.8 below.

Table 3.8: Waste Water Treatment plants in Kilkenny

Name of plant	WWTP Type	Design P.E. (Population Equivalent)	Current load P.E. (Population Equivalent) as at 9/2/2012	Comment on upgrade
Kilkenny City Purcellsinch	Secondary	107,650	54,504	Purcellsinch. EIS application for major upgrade given approval by An Bord Pleanála.
Kilkenny Sion Road	Primary	21	21	

The EPA publishes reports on the status of waste water treatment in Ireland. The latest of these is an [Update Report](#)⁴¹ to the [Focus on Urban Waste Water Discharges in Ireland, Urban Waste Water Treatment](#)⁴². This sets out which plants have treatment that is not appropriate based on the effluent results and/or have taken less than the recommended numbers of samples. The plants are categorised into Pass or Fail.

- *Pass* – the results met the standards set in the Directive for effluent quality, and a sufficient number of effluent samples were collected, analysed and reported to the EPA.
- *Fail* – the results did not meet the standards set in the Directive for effluent quality and/or an insufficient number of effluent samples was collected, analysed and reported to the EPA.
- *No secondary* – waste water received no treatment or a basic level of treatment (i.e. preliminary treatment or primary treatment) prior to discharge and consequently the effluent could not achieve the quality standards specified in the Directive.

In both 2010 and 2011, Purcellsinch passed. This compares favourably to 2009 when it failed.

3.6.3 Septic tanks

A small number of houses within the City area are served by on-site treatment systems. These systems vary in age, levels of maintenance and suitability to site-specific conditions. There is a large proportion of existing septic tanks within the county which were not designed to deal with the quantity and characteristics of the throughput arising from modern lifestyles. Reports by the EPA have identified septic tanks as a potential source of water pollution, particularly of groundwater sources but also of surface waters.

In 2009, the European Court of Justice ruled against Ireland in relation to septic tanks and other on-site wastewater treatment systems. The Court found that by failing to adopt the necessary legislation to comply with Articles 4 and 8 of Council Directive 75/442/EEC (The Waste Directive) as regards domestic waste waters disposed of in the countryside through septic tanks and other individual waste water treatment systems, Ireland has failed to fulfil its obligations under that directive. In 2012 the Department of Environment published the Water Services (Amendment) Act,

⁴¹ EPA, [Second Update Report on data presented in the EPA Report "Focus on Urban Waste Water Discharges in Ireland" Urban Waste Water Treatment](#), 2012

⁴² EPA, [Focus on Urban Waste Water Discharges in Ireland, Urban Waste Water Treatment](#), 2012

to regulate discharges from all homes that are not connected to the public sewer network. Measures to enforce this will be introduced nationally in 2013.

3.6.4 Water supply schemes

There are 2 public water supplies serving the city. Public water supplies have the potential to impact hugely on human health.

Table 3.9: Water Supply Schemes			
Water Supply Name	Source	Comment on capacity	Upgrade
Kilkenny City (Radestown) Ws 1010	Gaulstown impoundment and River Dinin	Capacity Available	Prioritised for upgrade
Kilkenny City (Troyswood) Ws 1011	River Nore	Capacity Available	

The EPA publishes annual reports on the quality of drinking water in Ireland which utilises the data collected by the local authorities.

<http://www.epa.ie/downloads/advice/drinkingwater/drinkingwatersupplies/Kilkenny%20Scheme%20Details.pdf>

Detail on water quality is contained in the EPA Report [*The Provision and Quality of Drinking Water in Ireland – A Report for the Year 2011*](#)⁴³.

The Radestown supply is listed on the Remedial Action List (RAL)⁴⁴ currently. The RAL is a list of public water supplies where remedial action was required to ensure compliance with drinking water standards and is used to focus attention on resolving any deficiencies in public water supplies. The reason it was included was for elevated levels of trihalomethanes above the standard in the Drinking Water Regulations. The remedial action is the development of a new wellfield which is due to be complete by 2016.

3.6.5 Ground water protection scheme

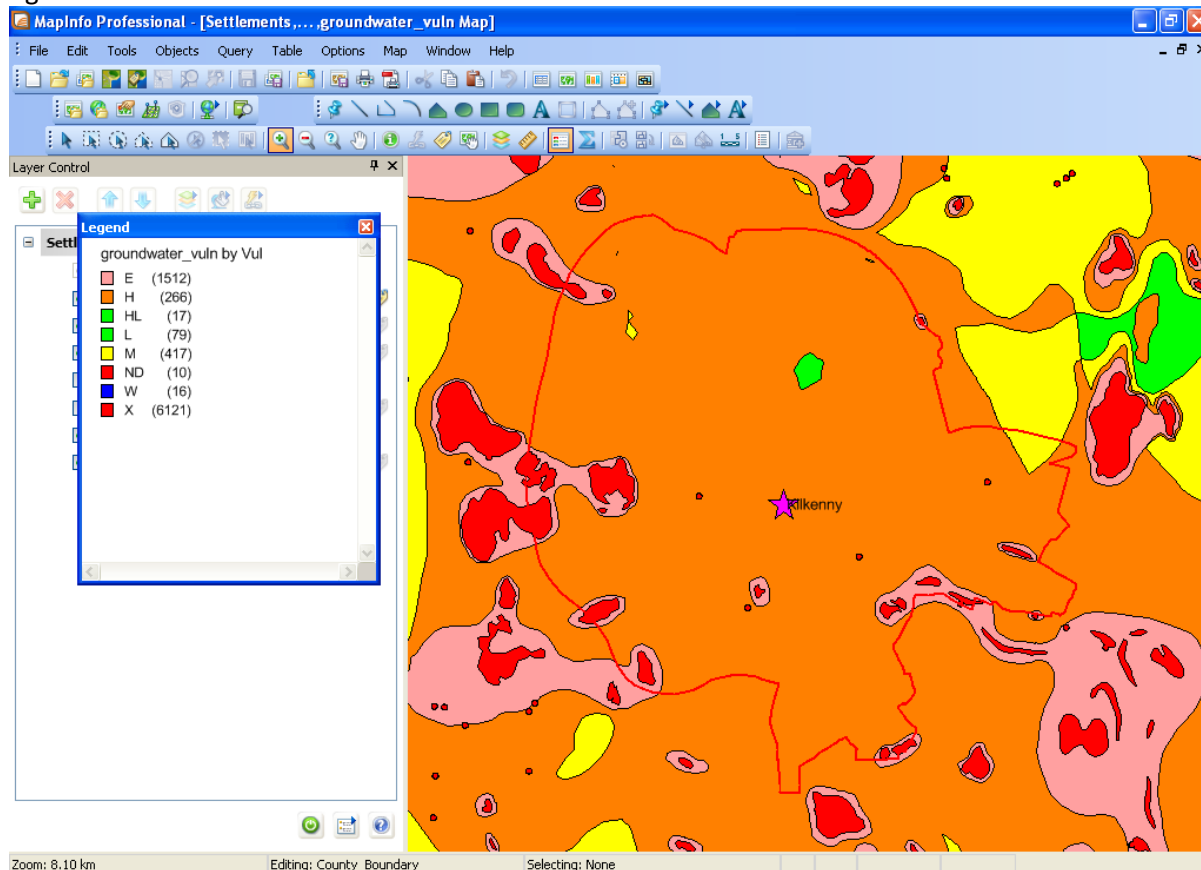
The Geological Survey of Ireland has completed a Groundwater Protection Scheme for County Kilkenny. The overall aim of a Groundwater Protection Scheme is to preserve the quality of groundwater, for drinking water, surface water ecosystems and terrestrial ecosystems, for the benefit of present and future generations. The Groundwater Protection Scheme rates aquifers according to their vulnerability to pollution and groundwater vulnerability is depicted on Figure 3.11. In the main, the City's aquifers are of high vulnerability.

The GSI will be updating the vulnerability mapping for the County in 2013.

⁴³ Office of Environment Enforcement, EPA [*The Provision and Quality of Drinking Water in Ireland – A Report for the Year 2011*](#), 2009

⁴⁴ [EPA Drinking Water Remedial Action List Q1 of 2013](#)

Figure 3.11: Groundwater Protection Scheme

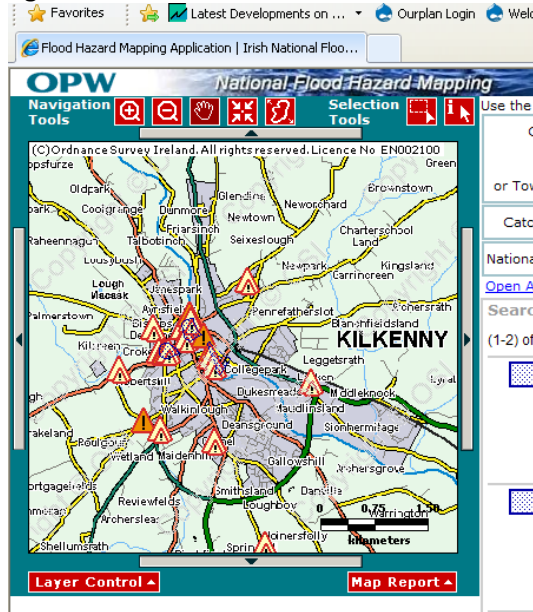


3.6.6 Flooding

The OPW record flood events throughout the country⁴⁵. The locations of all recorded flood events in the city are shown on Figure 3.12. A Strategic Flood Risk Assessment has been carried out as part of the Development Plan review process and forms an appendix to this SEA report.

⁴⁵ <http://www.floodmaps.ie/View/Default.aspx>

Figure 3.12: Location of flood events in the City



3.6.7 Existing Problems

- The River Nore is classified as being of Poor status under the Water Framework Directive, and this is of particular concern as this Poor status overlaps with the cSAC and SPA.
- The Radestown Water supply scheme is on the Remedial Action List and requires upgrading.
- In general, the City's aquifers are rated as high vulnerability, which presents challenges to determine appropriate uses.
- Flooding continues to occur in a number of locations in the city.

3.7 Air

Ambient air quality monitoring and assessment in Ireland is carried out in accordance with the requirements of the [Ambient Air Quality and Cleaner Air for Europe \(CAFE\) Directive](#)⁴⁶, also known as the CAFE Directive. The CAFE Directive has been transposed into national legislation by the [Air Quality Standards Regulations 2011](#).

Data on air quality is available from the EPA. EU legislation on air quality requires that member states divide their territory into zones for the assessment and management of air quality. Kilkenny city is located in Zone C (as a centre with a population greater than 15,000) and the rest of Co. Kilkenny is located within Zone D. As of 29/1/2013, air quality was categorised as Good in Zone C, and Very Good in Zone D.

Air quality is monitored at the EPA Regional Inspectorate at Seville Lodge on the Callan Road. The data published on the EPA website is real-time data⁴⁷. The ambient air quality pollutants of most importance on an EU-wide level are nitrogen dioxide, particulate matter and ozone. They can impact on human health and are at levels approaching the relevant limit value or long-term objective. Nitrogen dioxide (NO₂) and Ozone (O₃) are monitored at this site. The NO₂ hourly limit of 200 microgrammes per cubic metre is deemed breached if more than 18 exceedances have occurred. There were no exceedances at this site in 2012. The O₃ information threshold is 180 microgrammes per cubic metre. There were no exceedances at this site in 2012.

There has been no update to the Ambient Air Monitoring in Kilkenny report of 2005⁴⁸, as quoted in the previous SEA on the 2008 Development Plan. This recorded that no limit values were exceeded during the measurement period; concentrations of sulphur dioxide, nitrogen dioxide and lead were below their respective lower assessment thresholds while levels of PM10 exceeded the upper assessment threshold.

According to the EPA, emissions from road traffic are the main source of many air pollutants harmful to human health, including nitrogen dioxide, oxides of nitrogen, particulate matter, carbon monoxide, volatile organic compounds (VOC) and heavy metals.

Air pollution has a transboundary aspect meaning that emissions in one country can cause pollution in a different country. National emissions ceilings are in place across Europe to control emissions of four key transboundary pollutants: sulphur dioxide (SO₂), oxides of nitrogen (NO_x), volatile organic compounds (VOC) and ammonia (NH₃). These pollutants can contribute to acidification, eutrophication and ozone formation. Strategies implemented in Ireland in recent years have substantially reduced emissions of SO₂, VOC and NH₃, but levels of NO_x are expected to remain high in the short term. Large increases in road transport are responsible for high NO_x emissions levels.

A move towards sustainable modes of transport would reduce emissions from road traffic. According to Census 2011, a total of 12% of commuters used sustainable means of travel (cycling, walking, bus or train). This compared to 21% nationally⁴⁹. The philosophy of “Smarter Travel” involves using sustainable modes of transport, such as public transport, walking or cycling, and reducing overall travel demand. Locating houses close to places of employment and services can contribute to an increase in Smarter Travel. In general, rural housing increases car dependency and contributes to a rise in unsustainable modes of transport.

⁴⁶ EU, [Ambient Air Quality and Cleaner Air for Europe \(CAFE\) Directive](#), 2008

⁴⁷ <http://www.epa.ie/whatwedo/monitoring/air/data/kk/>

⁴⁸ EPA, [Ambient Air Monitoring in Kilkenny 29th April 2005 to 25th October 2005](#), 2005

⁴⁹ Census 2011, [Profile 10 Door to Door](#)

3.7.1 Existing Problems

- Road traffic is the main source of nitrogen oxides and air pollution generally and there is a need to reduce the level of unsustainable modes of commuting through prioritising sustainable patterns of land use whereby residential areas are located within walking distance of employment and social centres.

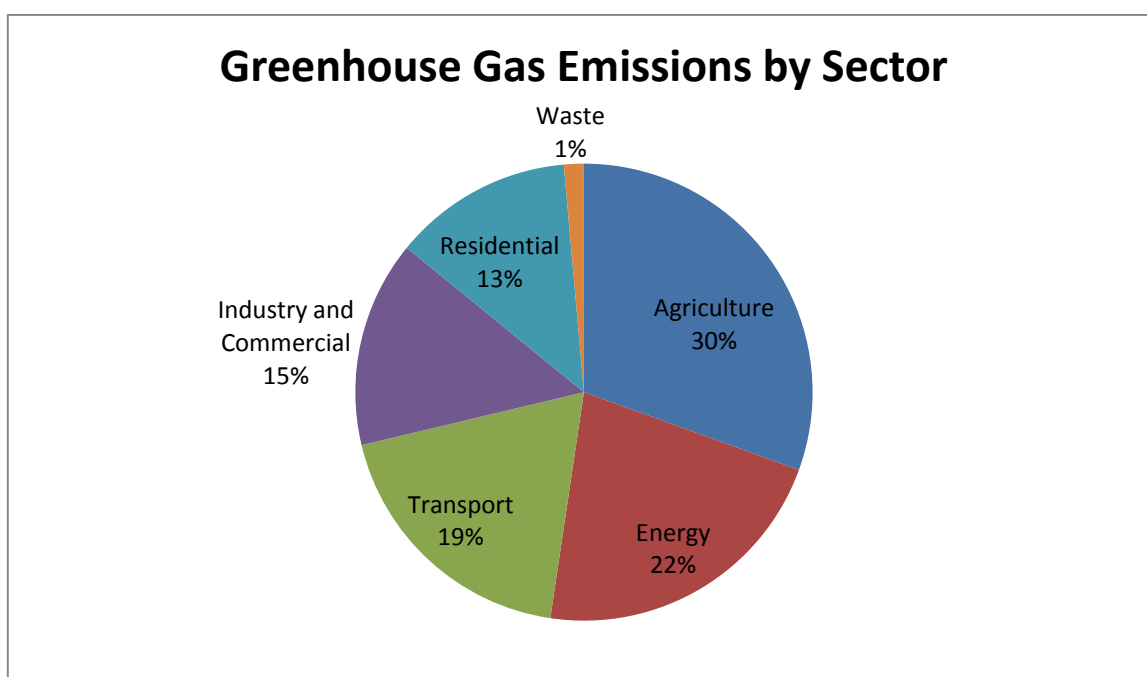
3.8 Climatic Factors

The causes and consequences of climate change pose an immense global challenge. The [National Climate Change Adaptation Framework](#)⁵⁰ recommends that local authorities incorporate climate change adaptation into their Development Plans.

3.8.1 Greenhouse gases

Increased atmospheric concentrations of greenhouse gases such as carbon dioxide (CO₂), methane (CH₄) and nitrous oxide (N₂O), released by human activities, trap additional energy in the Earth's climate system. This gives rise to a range of system changes, broadly referred to as climate change.

The single largest contributor to overall emissions in Ireland is Agriculture, at 30.5% of the total, see below⁵¹. This is proportionally higher than for most other EU member states. Transport is also a big contributor at 19%.



There is a necessity to reduce greenhouse gas emissions and to adapt to climate change impacts. The EPA is part of an International Carbon observational system, which has three monitoring sites in Ireland; Carnsore Point, Malin Head and Mace Head⁵². Limited data is available on emissions per county.

3.8.2 Noise

In 2006, the Government made regulations relating to Environmental noise ([S.I. 140 of 2006](#)). Environmental noise is defined in the Regulations as unwanted or harmful outdoor sound created by human activities, including noise emitted by means of transport, road traffic, rail traffic, air traffic, and from sites of industrial activity.

⁵⁰ Department of Environment, Community and Local Government, [National Climate Change Adaptation Framework](#), 2012

⁵¹ EPA, [Ireland's Environment, An Assessment](#), 2012

⁵² <http://www.icos-infrastructure.eu/>

The regulations require that a Noise Mapping Action Plan must refer to places near major roads, major railways and major airports, and within any relevant agglomeration. A [Noise Action Plan](#)⁵³ was finalised for Kilkenny in 2009. The major noise source meeting the criteria set out in the Regulations are those associated with roads with more than 6 million vehicle passages per year. In the case of Kilkenny the following areas are within the subject criteria of the Regulations:

- The Section of the N76 National Secondary Route from the Waterford Road Roundabout on the Kilkenny Ring Road to its junction with the R692 Kilbride Junction south of Callan
- The Section of the N77 National Secondary Route from its junction with the N78 at Hennebry's Cross to the Hebron Road Roundabout on the N77 Kilkenny Ring Road.

The following Sections of Regional Roads located within and in the vicinity of Kilkenny City:

- The R693 Regional Route from its junction with the L2647 local road at Talbot's Inch to its junction with St. Kieran's Street;
- The R695 Regional Route from its junction with the R693 at Irishtown to its junction with the Kennyswell Road;
- The R712 Regional Route from its junction with the N77 Castlecomer Road Roundabout on the N77 Kilkenny Ring Road to its junction with the L6704 local road at Lavistown;
- The R886 Regional Route from its junction with the R693 at Green Street to its junction with the R712 Castlecomer Road;
- The R887 Regional Route (John St and Rose Inn Street) from its junction with the R712 at the old Dublin Road to its junction with the R693 at The Parade;
- The R909 Regional Route from its junction with the N76 Callan Road Roundabout on the N76 Kilkenny Ring Road to its junction with the R950 at the Old Callan Road;
- The R910 Regional Route from its junction with the R693 at The Parade to its junction with the Bohernatounish Road (L2610);
- The R950 Regional Route from its junction with the R909 at College Road to its junction with Walkin Street

The Action Plan is therefore designed with the twin aims of;

- Avoiding significant adverse health impacts from noise and
- Preserving environmental noise quality where it is good

This Noise Action Plan is being updated at present.

As part of the Integrated Pollution Prevention Control (IPPC) and Waste Licensing systems, certain scheduled activities and operations have conditions attached to their licences which effect control over emissions of noise. Noise control measures and limits are generally stipulated by specific licensing conditions. The EPA compiles data on the number of licence exceedances due to noise disturbance or odours but in general, noise monitoring has not been carried out widely. Data is not available by county on exceedances.

⁵³ Kilkenny County and Borough Councils, [Noise Action Plan 2008](#), 2009

3.8.3 Existing Problems

- Projected impacts of climate change in Ireland include: increasing average temperatures, more extreme weather conditions including rainfall events, increased likelihood of river and coastal flooding, water shortages, changes in the type and distribution of species and the possible extinction of vulnerable species. The main sources of greenhouse gas emissions are Agriculture, Energy and Transport.
- Several locations in the city may be affected by environmental noise levels from roads.

3.9 Material Assets

Material assets are taken to include infrastructure and utilities including rail, road and energy/telecommunications infrastructure. It also includes economic/natural assets such as quarries.

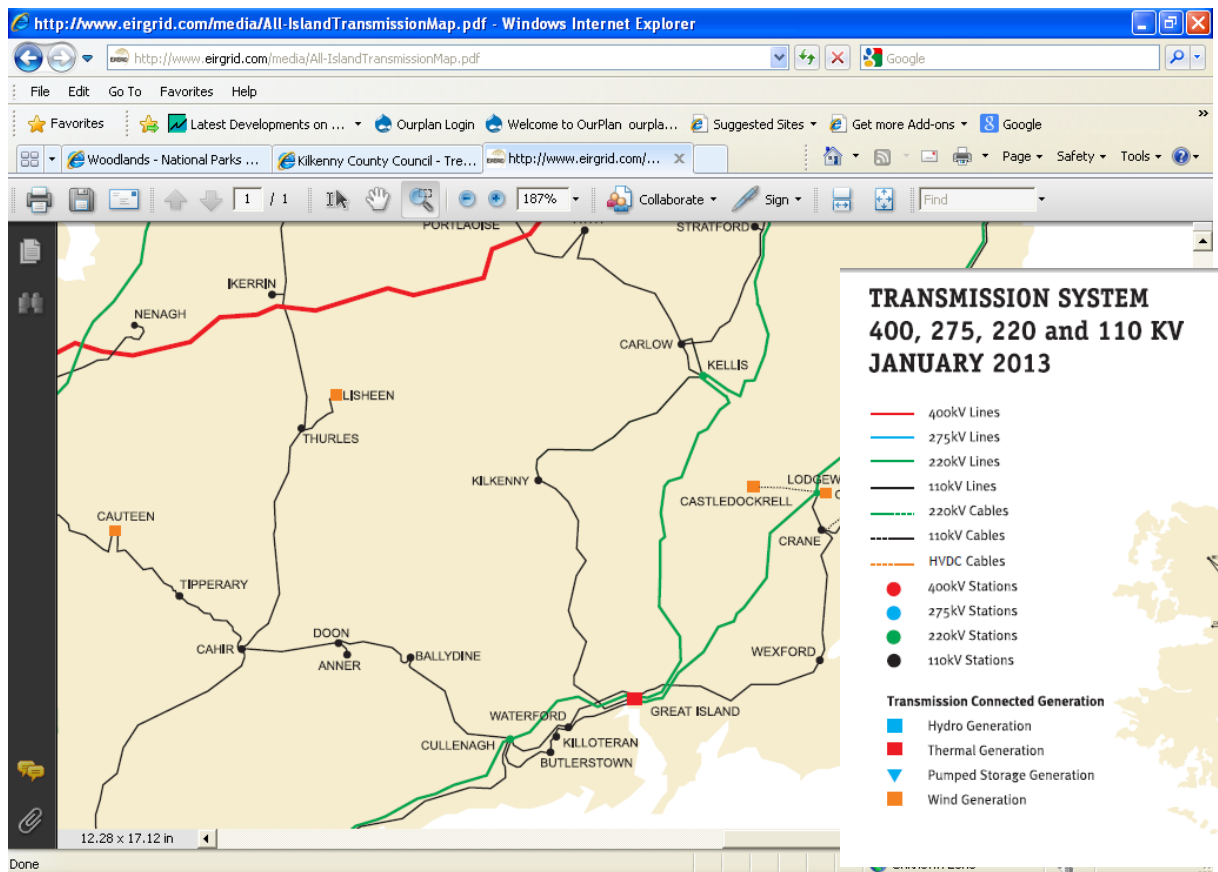
3.9.1 Transportation

The City's transportation infrastructure is shown on Figure 3.13, Street hierarchy.

3.9.2 Energy infrastructure

The existing transmission network in County Kilkenny comprises mostly 110 kV circuits and one 220 kV circuit in the south of the county. A transmission substation is located in Kilkenny city, which is served by two 110 kV overhead lines, see Figure 3.14.

Figure 3.14: Transmission network in Co. Kilkenny



Source: <http://www.eirgrid.com/media/All-IslandTransmissionMap.pdf>

Eirgrid is currently developing the Laois – Kilkenny Reinforcement Project to increase the quality and security of supply to the area. This will involve the upgrading (upgrading) of the existing Ballyragget - Kilkenny overhead line from 38 kV standard to 110 kV standard.

3.9.3 Quarries

Figure 3.9 shows the location of pits (sand and gravel) and quarries (crushed rock) in the city. Remediation of quarries is governed under the planning application for each quarry, and will not be

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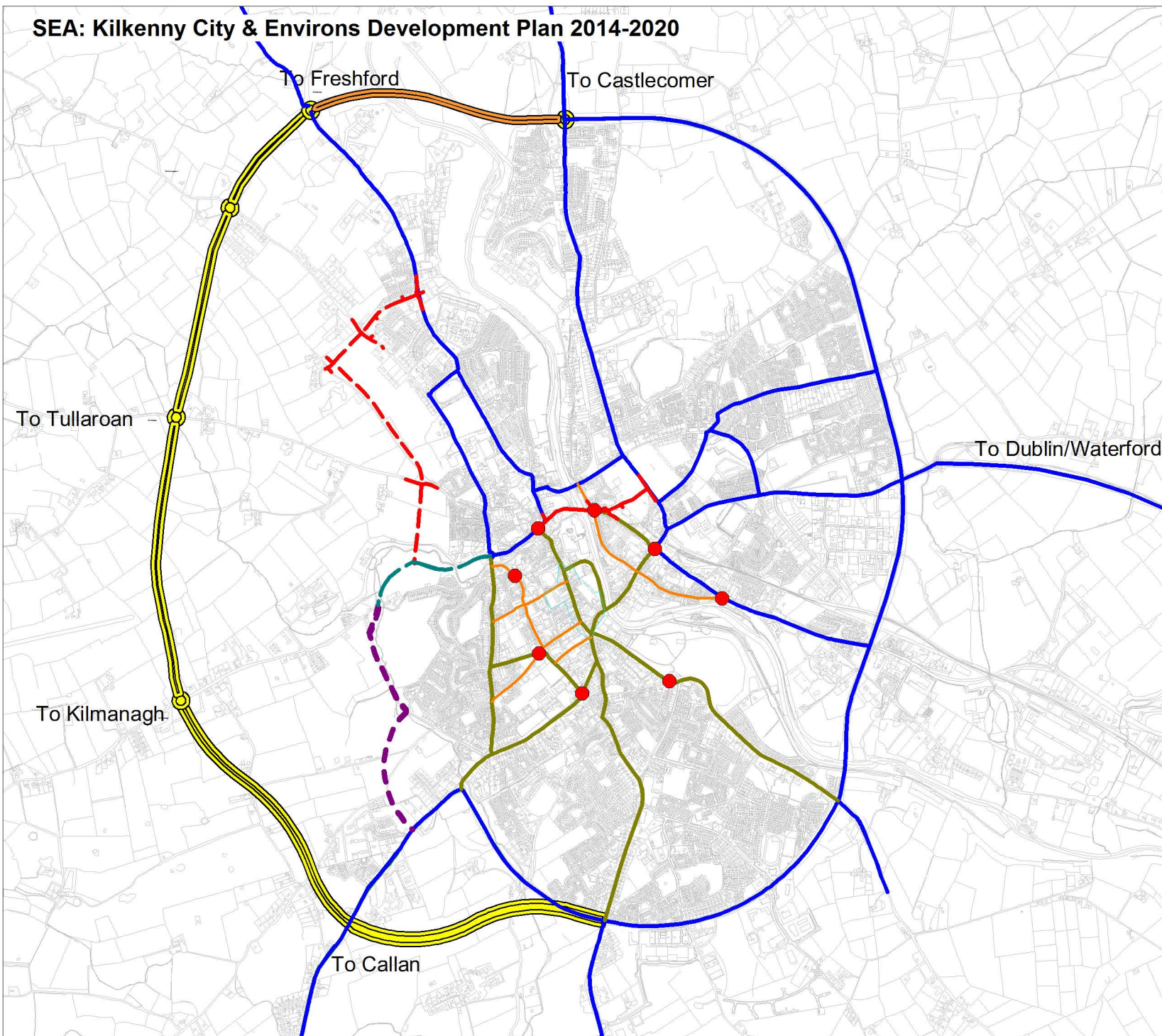


Figure 3.13 Street Hierarchy

- Distributor Road
- Primary Street
- Secondary Street
- Central Access Scheme (Phase 1)
- - - Central Access Scheme (Phase 2)
- . . . Central Access Scheme (Phase 3)
- Northern Ring Road extension
- Western bypass
- - - Western Environs Road
- Gateway
- Pedestrian portal
- Core Retail area

Date: June 2014

Scale 1:32,000 @A4

Based on Ordnance Survey
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2013/27/CCMA/
KilkennyCountyCouncil

addressed as part of the Development Plan. The Aggregate Potential of the county has been discussed under Section 3.5.3 Geology.

3.9.4 Existing Problems

- There is a need to upgrade the energy infrastructure in the county, including upgrading the 38kv line to 110 kv line between Kilkenny City and Ballyragget.

3.10 Cultural Heritage (architectural and archaeological)

Heritage, by definition, means inherited properties, inherited characteristics and anything transmitted by past ages and ancestors. It covers everything, from objects and buildings to the environment. Cultural heritage includes physical buildings, structures and objects complete or in part, which have been left on the landscape by previous and indeed current generations. Kilkenny has a wealth of architectural and archaeological heritage.

3.10.1 Archaeological Heritage

Archaeology in Ireland is protected under the National Monuments Acts.

3.10.1.1 Record of Monuments and Places

A level of universal protection is afforded to all monuments listed in the Record of Monuments and Places (RMP). A lesser number of monuments are accorded a higher level of protection, that is, some are entered on the Register of Historic Monuments, and some are deemed to be of national significance and are National Monuments. The up-to-date RMP is available at the Department of Arts, Heritage and the Gaeltacht's website www.archaeology.ie. See Figure 3.15 for the current distribution of recorded monuments. Development pressure can lead to loss or impairment of a feature of importance.

3.10.1.2 Underwater Archaeology

Section 3 of the National Monuments (Amendment) Act, 1987 makes specific provision for the protection of shipwrecks and underwater archaeological objects. Kilkenny's rivers may contain such objects. Flood relief schemes, dredging, bridge or drainage works may impact on this archaeological heritage.

3.10.2 Architectural Heritage

Kilkenny is rich in structures and places of historic and architectural value that are symbols of the social, economic and cultural development of the county and which contribute to its essential character.

3.10.2.1 Record of Protected Structures

A Protected Structure, unless otherwise stated in the RPS, includes the interior of the structure, the land lying within its curtilage, any other structures lying within that curtilage and their interiors, plus all fixtures and features which form part of the interior or exterior of any of these structures. See Figure 3.16 for the current distribution of Protected Structures (Note: mapping of the RPS is still underway, but is almost complete).

3.10.2.2 National Inventory of Architectural Heritage

The National Inventory of Architectural Heritage (NIAH) was a national survey of structures of importance, and can be viewed at www.niah.ie. See Figure 3.17 for the current distribution of NIAH structures in the city. The Council is responding to the Ministerial recommendation made in 2006 to consider structures included in the survey and rated Regional and above for inclusion in the RPS and additions are being made to the RPS on a phased basis.

3.10.2.3 Architectural Conservation Areas

The Planning and Development Act, 2000 provides for the inclusion of objectives for preserving the character of places, areas, groups of structures or townscapes where the planning authority is of the opinion that such an area:

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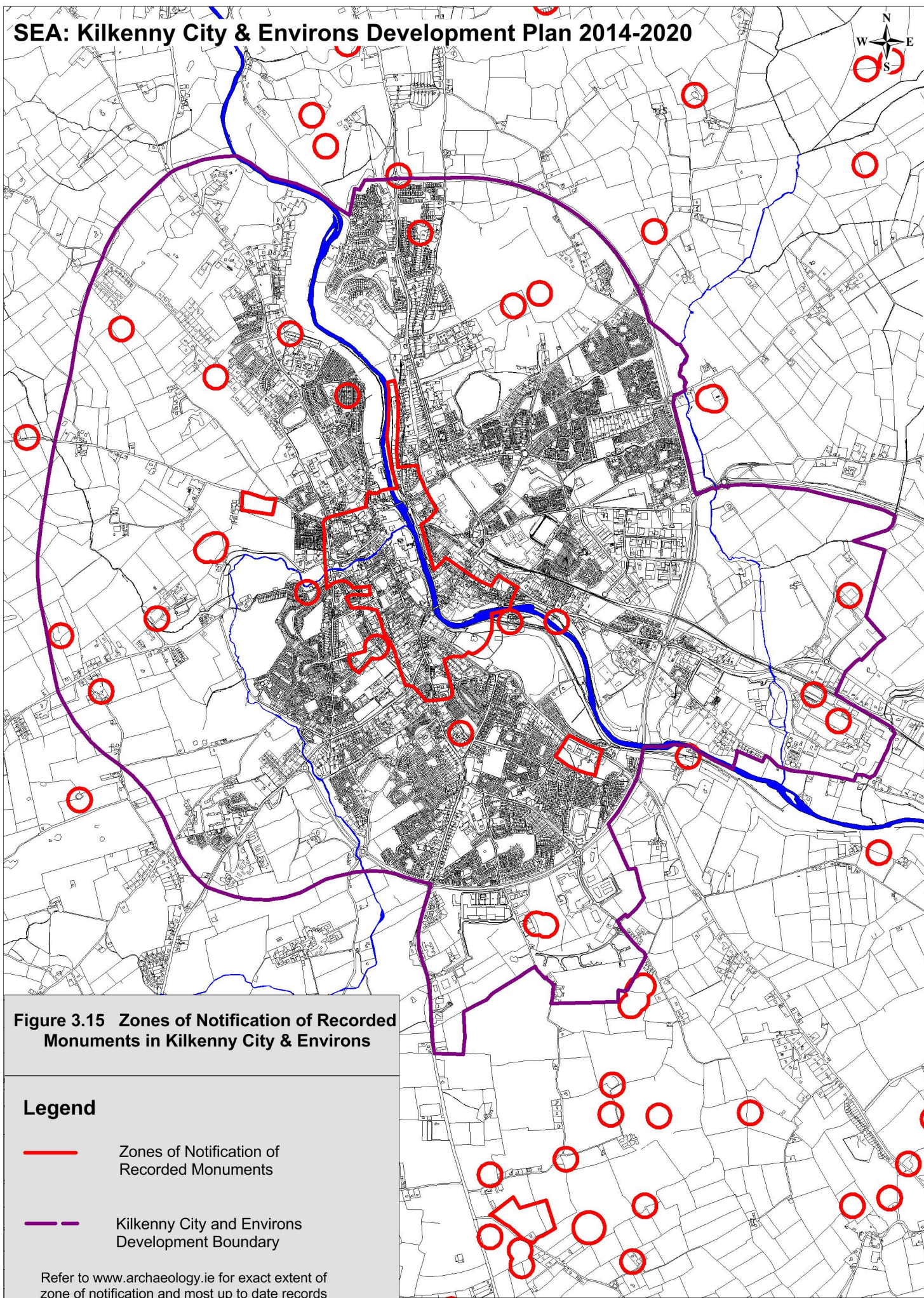


Figure 3.15 Zones of Notification of Recorded Monuments in Kilkenny City & Environs

Legend

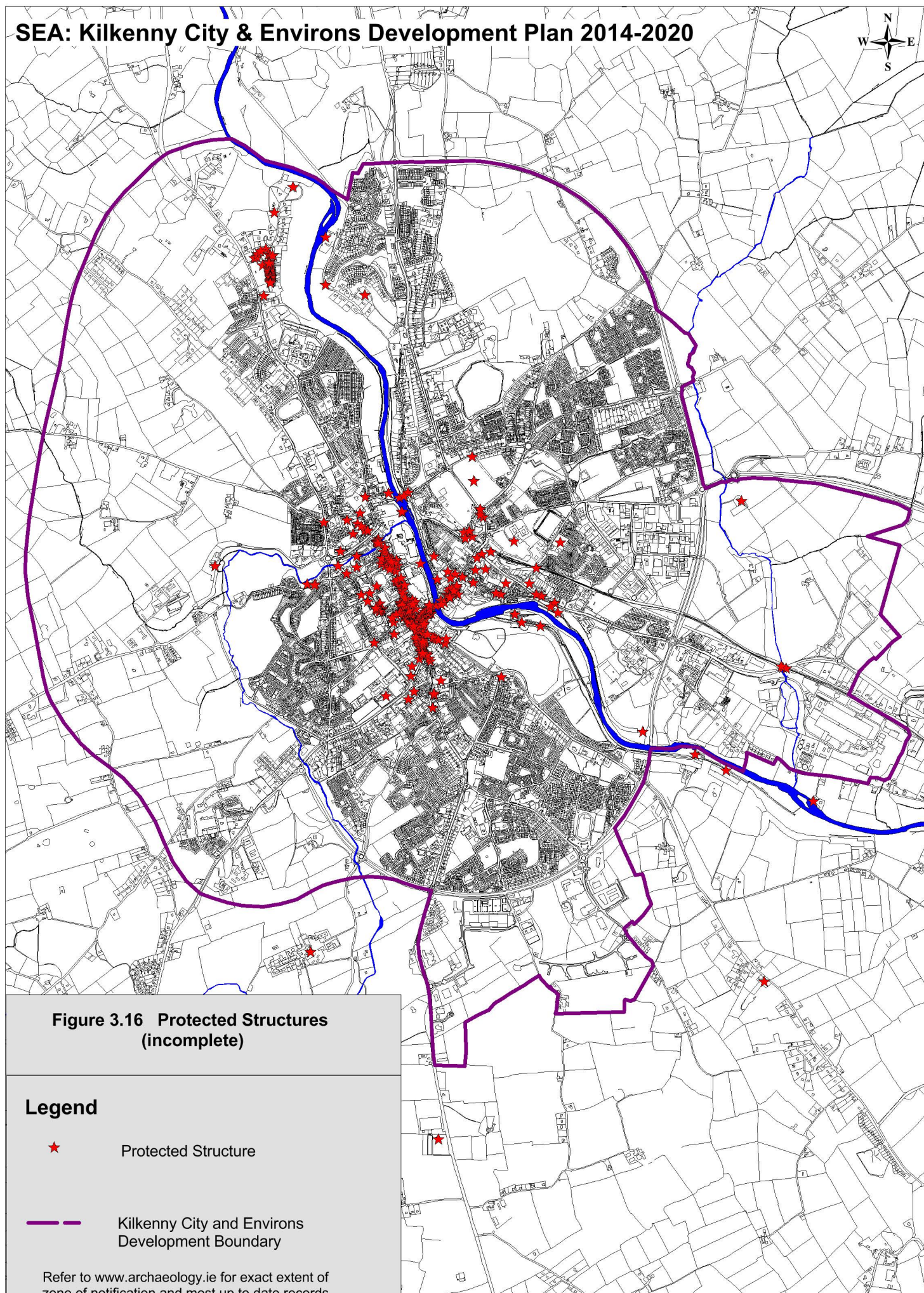
-  Zones of Notification of Recorded Monuments
-  Kilkenny City and Environs Development Boundary

Refer to www.archaeology.ie for exact extent of zone of notification and most up to date records

Date: June 2014

Scale: 1: 31,000 @A4

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



**Figure 3.16 Protected Structures
(incomplete)**

Legend

★ Protected Structure

— Kilkenny City and Environs
Development Boundary

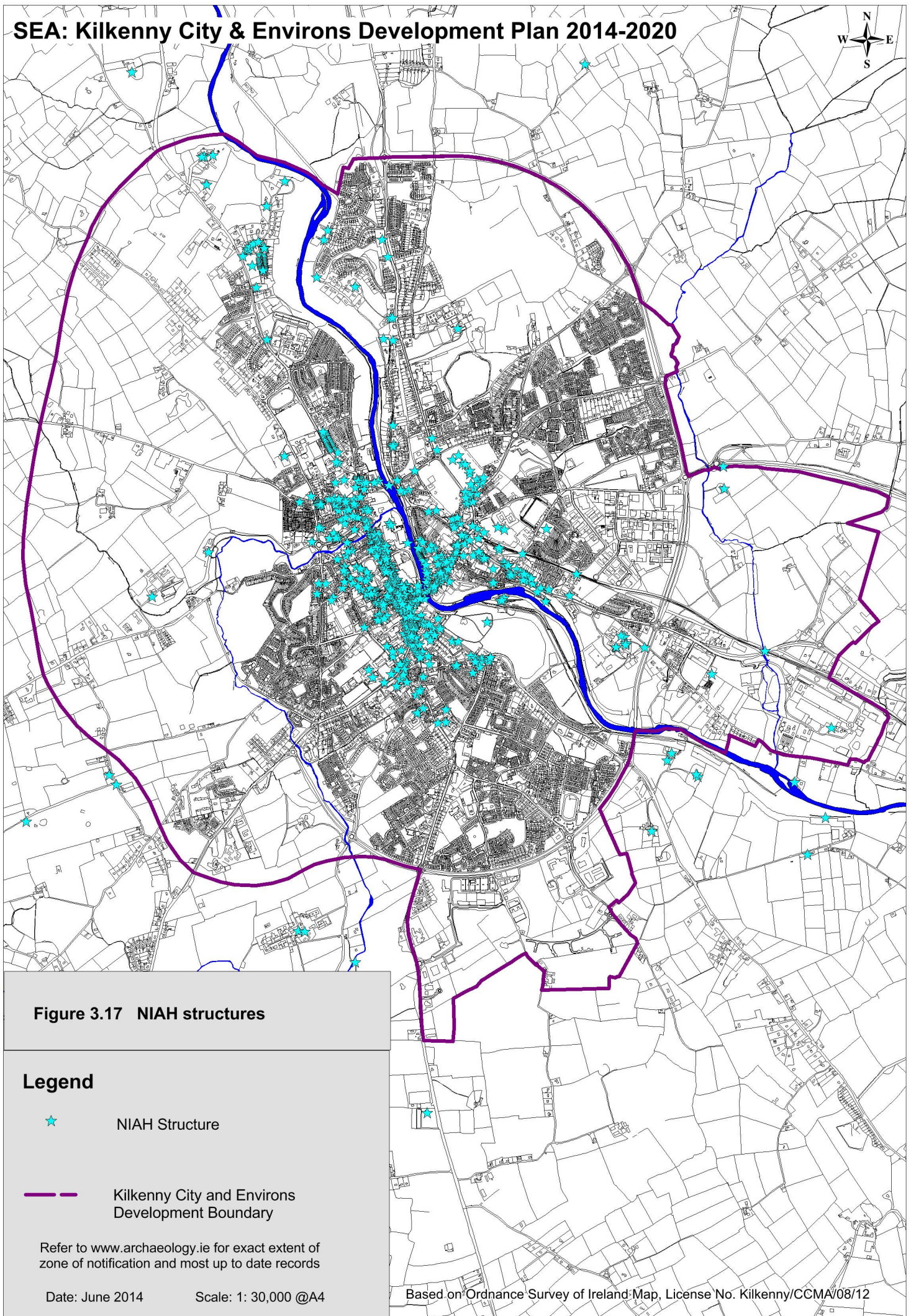
Refer to www.archaeology.ie for exact extent of
zone of notification and most up to date records

Date: June 2014

Scale: 1: 30,000 @A4

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

SEA: Kilkenny City & Environs Development Plan 2014-2020



- (a) is of special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest or value, or
- (b) contributes to the appreciation of protected structures.

There are 9 ACA's in the City, see Figure 3.18. In examining this composite map of all ACAs, it was found that there were some areas of overlap between the ACAs, which may lead to confusion in the implementation of objectives. These areas of overlap will be removed in the production of the Plan.

3.10.3 Existing Problems

- The process of adding NIAH structures, rated Regional and above, to the RPS has yet to be completed

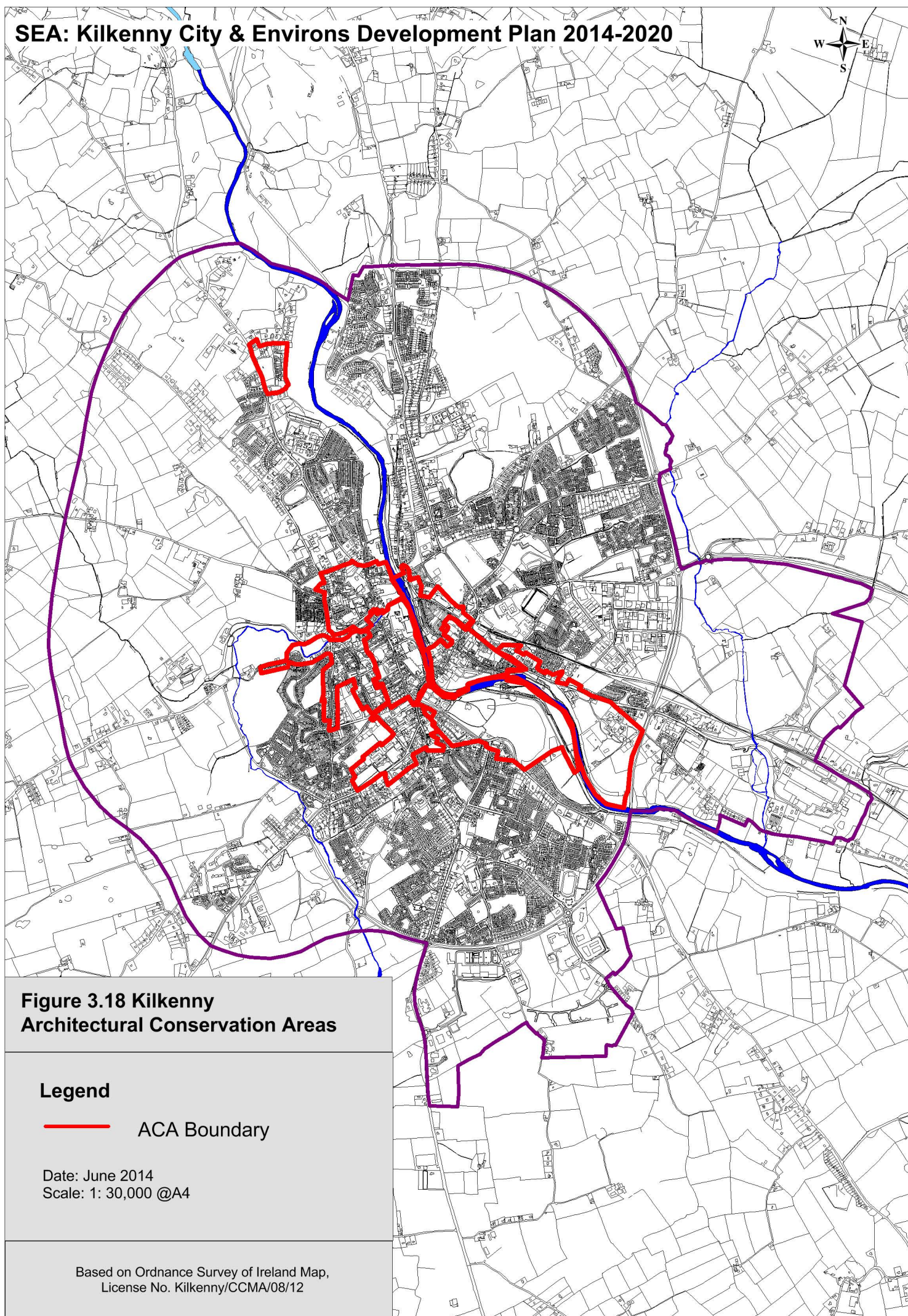
3.11 Landscape

The character of Kilkenny is the result of a combination of the natural features such as the river, topography, trees, the street spaces, as well as the City's cultural heritage including its various buildings. These elements have already been addressed under Sections 3.3 and 3.10.

There are also a number of protected views within the Plan, which are shown on Figure 3.19. The development of the Smithwick's site has the potential to open up new views around the city, which were previously blocked by the brewery buildings.

3.11.1 Existing Problems

- Removal of hedgerows & trees causes dilution of natural landscape character



**Figure 3.18 Kilkenny
Architectural Conservation Areas**

Legend

— ACA Boundary

Date: June 2014
Scale: 1: 30,000 @A4

Based on Ordnance Survey of Ireland Map,
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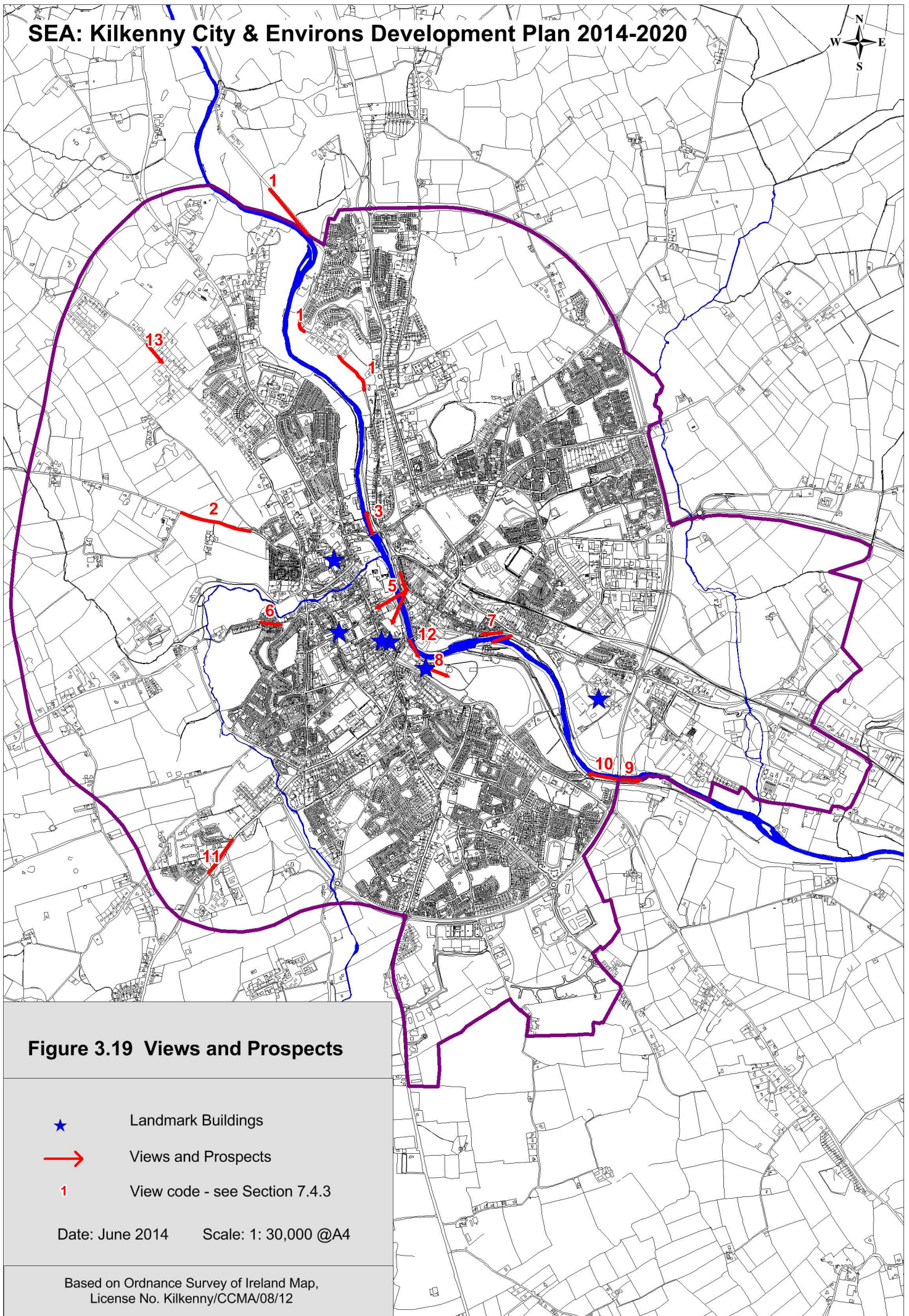


Figure 3.19 Views and Prospects

- ★ Landmark Buildings
- Views and Prospects
- 1 View code - see Section 7.4.3

Date: June 2014 Scale: 1: 30,000 @A4

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

3.12 Inter-relationship between these issues

Environmental factors as outlined above cannot be considered in isolation from each other. Many of the topics as outlined above have inter-relationships, such as that between human health and drinking water quality and waste water treatment and water quality.

This environmental report has approached each of the environmental receptors on an individual basis, at a 'root' level. Where interactions are likely, they have been identified under each topic.

To highlight the extent of the relationship between the various elements of the environment, Table 3.10 provides an indication of the interactions present between environmental receptors.

Is this aspect of the environment likely to interact with other aspects of the environment?	Biodiversity -Flora and Fauna	Population and Human Health	Soil	Water	Air	Climatic factors	Material Assets	Cultural Heritage	Landscape
Biodiversity -Flora and Fauna		Y	Y	Y	Y	Y	Y	Y	Y
Population and Human Health	Y		Y	Y	Y	Y	Y	Y	Y
Soil	Y	Y		Y			Y	Y	
Water	Y	Y	Y			Y	Y		
Air		Y							
Climatic factors	Y	Y		Y			Y	Y	Y
Material Assets	Y	Y	Y	Y		Y		Y	Y
Cultural Heritage	Y	Y	Y			Y	Y		Y
Landscape	Y	Y				Y	Y	Y	

3.13 Evolution of Environment without implementation of the Plan

Problems have been outlined under each heading and historical trends presented where possible. There are many plans and guidance documents at European, National and local level, which aim to guide development in order to ensure that the environment is protected and it is acknowledged that some areas of environmental sensitivity, such as the Natura sites, are protected under EU law and this protection would continue in the absence of a Plan. However, there are many areas and issues for which the Development Plan provides the main guidance document. Such areas include undesignated habitats such as hedgerows, County Geological sites, the Groundwater Protection scheme, the Record of Protected Structures, Architectural Conservation Areas, and Protected views.

In the absence of a Plan, environmental protection for these components would be reduced and the occurrence and magnitude of adverse impacts would likely increase. In the absence of the new Plan there would be no long term framework or guidance for development within Kilkenny. As a result, each planning application in the plan area would be determined in isolation and there would be no assessment of long term, cumulative or causal impacts on sensitive areas.

Future investment in key infrastructure would not be targeted appropriately to key development areas. The result would be a haphazard, un-coordinated delivery of service, resulting in negative environmental impacts.

Specifically, the following could occur:

10. Biodiversity, Flora and Fauna

Although some areas of sensitivity, such as the Natura 2000 sites would continue to be protected under EU law, undesignated habitats such as hedgerows would suffer from a lack of protection.

11. Population and Human Health

In the absence of a Core Strategy and appropriate zoning there would be no framework directing development away from the most sensitive areas.

12. Soil

There would be no framework for directing development and growth to appropriate brownfield sites and therefore greenfield development would occur on an increased basis, resulting in a loss of non-renewable soil resources.

13. Water

Water supplies and wastewater treatment would continue to be governed by the Water Framework Directive. However the Groundwater Protection Scheme would not be implemented and therefore applications would proceed on an ad-hoc basis, without due regard to the potential for affecting a particular aquifer or source.

14. Air

In the absence of detailed Smarter Travel objectives and a settlement hierarchy, development would occur in a dispersed pattern, leading to an increase in unsustainable travel patterns and a subsequent increase in travel related emissions.

15. Climatic factors

With no Strategic Flood Risk Assessment, inappropriate development could take place in areas of flood risk.

16. Material Assets

There would be no framework to provide the infrastructure, such as energy infrastructure, that the city requires.

17. Cultural Heritage (architectural and archaeological)

The Plan includes a review of the Record of Protected Structures and Architectural Conservation Areas. If this were not to occur, cultural heritage would not be protected to the fullest extent possible, as additions to either the RPS or ACAs would not be carried out.

18. Landscape

In the absence of protected views, development would occur with no regard for its impact on important linkages between the city's historical and cultural landmarks.

4 Policy Objectives

The SEA Directive requires that relevant environmental protection objectives (EPOs), established at international, EU or national level are listed in the Environmental Report. The [Guidelines](#) include an indicative list of EPOs, which has been followed here.

The [Guidelines](#) also recommend that broad planning policy objectives (PPOs) are defined for the area. Both the EPOs and the PPOs combine to form the SEA objectives, and these are set out in Table 4.1.

Table 4.1 SEA Objectives

Environmental Parameter	International, European, National policy documents/strategies /guidelines	No.	Objective (EPO)	Broad Planning Policy Objective (PPO)
Biodiversity, fauna and flora	EU Habitats Directive (92/43/EEC) EU Birds Directive (79/409/EEC) UN Convention on Biological Diversity Actions for Biodiversity 2011-2016, Ireland's National Biodiversity Plan (2011)	B1	Protect, and where appropriate, enhance biodiversity, particularly protected areas and protected species including ecological linkages/corridors.	Protect designated sites (SACs, NHAs and SPAs) and species from development. Identify locally important habitats for protection. Provide for green infrastructure. Concentrate development in areas with least sensitivities.
Population and Human Health	Agenda 21 (1992) Our Sustainable Future: A framework for sustainable development for Ireland (2012) The National Spatial Strategy (2002) Smarter Travel, A sustainable Transport Future, A new transport policy for Ireland 2009-2020 (2009)	P1	Improve people's quality of life based on sustainable high-quality residential, working and recreational environments and travel patterns.	Provide adequate supply of zoned land for all uses in compliance with the National Spatial Strategy, and Regional Planning Guidelines. Promote higher density residential development in suitable locations. Promote sustainable transport patterns through appropriate zoning and provision for public transport. Require appropriate levels of recreational areas with any residential application.
	Directive 2002/49/EC of 25 June 2002 relating to the assessment and management of environmental noise Directive 96/62/EC – Air Quality Framework Directive	P2	Minimise noise, vibration and emissions from traffic	Require noise controls with all relevant applications. Promote sustainable transport patterns through appropriate zoning and provision for public transport.
Soil	A Resource Opportunity, Waste Management Policy in Ireland ⁵⁴ .	S1	Maintain the quality of soils	Direct development to brownfield lands in preference to developing greenfield lands.
		S2	Maximise the sustainable re-use of brownfield lands, and maximise the	

⁵⁴ Department of the Environment, Community and Local Government, [A Resource Opportunity, Waste Management Policy in Ireland](#), 2012

			use of the existing built environment rather than developing greenfield lands.	
		S3	Minimise the consumption of non-renewable sand, gravel and rock deposits	Encourage rehabilitation of existing housing stock where appropriate.
		S4	Minimise the amount of waste to landfill	Provide appropriate waste disposal facilities, including for composting and recycling in all developments.
Water	EU Water Framework Directive (2000/60/EC) EU Directive on the assessment and management of flood risks [2007/60/EC], The Planning System and Flood Risk Management Guidelines for Planning Authorities (2009)	W1	Protect and enhance the status of aquatic ecosystems and, with regard to their water needs, terrestrial ecosystems and wetlands directly depending on the aquatic ecosystems.	Provide for appropriate waste water treatment and disposal, in serviced urban areas and from septic tanks. Provide sufficient capacity in water services to serve zoned land. Include Strategic Flood Risk Assessment as part of the Plan.
		W2	Promote sustainable water use based on a long-term protection of available water resources.	
		W3	Reduce progressively discharges of polluting substances to waters	
		W4	To comply as appropriate with the provisions of The Planning System and Flood Risk Management Guidelines for Planning Authorities	
Air	Ambient Air Quality and Cleaner Air for Europe (CAFE) Directive (2008/50/EC)	A1	Reduce all forms of air pollution	Promote energy efficient developments. Promote sustainable transport patterns through appropriate zoning and provision for public transport.
Climatic factors	National Climate Change Adaptation Framework (2012)	C1	Reduce waste of energy, and maximise use of renewable energy	Promote energy efficient developments. Promote sustainable transport patterns through appropriate

			sources	zoning and provision for public transport. Include a climate change adaptation strategy.
		C2	Minimise emissions of greenhouse gases to contribute to a reduction and avoidance of human-induced global climate change	
		C3	Reduce the need to travel	
		C4	Assess, plan and manage adaptation to climate change impacts	
Material Assets	Our Sustainable Future: A framework for sustainable development for Ireland (2012)	M1	Make best of use of existing infrastructure and promote the sustainable development of new infrastructure.	Direct development to brownfield lands in preference to developing greenfield lands. Encourage rehabilitation of existing housing stock/buildings where appropriate.
Cultural Heritage (architectural and archaeological)	European Convention on the Protection of Archaeological Heritage (1992) Framework and Principles for the Protection of the Archaeological Heritage (1999) Architectural Heritage Protection Guidelines (2004)	H1	Promote the protection and conservation of the cultural heritage, including architectural and archaeological heritage	To conserve and protect the archaeological heritage with regard to entries on the RMP. To conserve and protect the special interest and character of the architectural heritage with regard to the RPS, the NIAH and ACAs.
Landscape	The European Convention on Landscape, 2000 A National Landscape Strategy for Ireland Strategy Issues paper for consultation (2011)	L1	Conserve and enhance valued natural and historic landscapes, their character and features within them.	Avoid the loss of designated views.

5 Assessment of Alternatives

5.1 Introduction

The [SEA Directive](#)⁵⁵ requires the Environmental Report to consider reasonable alternatives taking into account the objectives and geographical scope of the plan or programme and the significant environmental effects of the alternatives selected.

The alternative plan scenarios were considered at an early stage of the process and through an iterative process, the most appropriate development plan scenario was selected.

In accordance with the [Guidelines](#) the alternatives put forward should be reasonable, realistic and capable of implementation. They should also be in line with the appropriate strategic level at which the Plan will be implemented within the national planning hierarchy. The Plan will be framed within a policy context set by a hierarchy of National and Regional level strategic plans as well as the Irish and European legislative framework. Therefore the options for alternatives are limited, and a scenario such as the 'do nothing' scenario has not been included as the Council is required to prepare a Plan and as such this scenario is not reasonable nor realistic.

As set out under Section 2.3, the [RPGs](#) have allocated a projected population growth figure for the county, which must be adhered to. This population projection is translated into a housing land requirement, or a 'pot' of zoned land, which must be distributed in the county. The RPGs have specified what allocation must be directed to Kilkenny as a hub. Therefore, it is alternative distributions of this growth that are examined here.

5.2 Alternative 1: Focus on Loughmacask and Western Environs

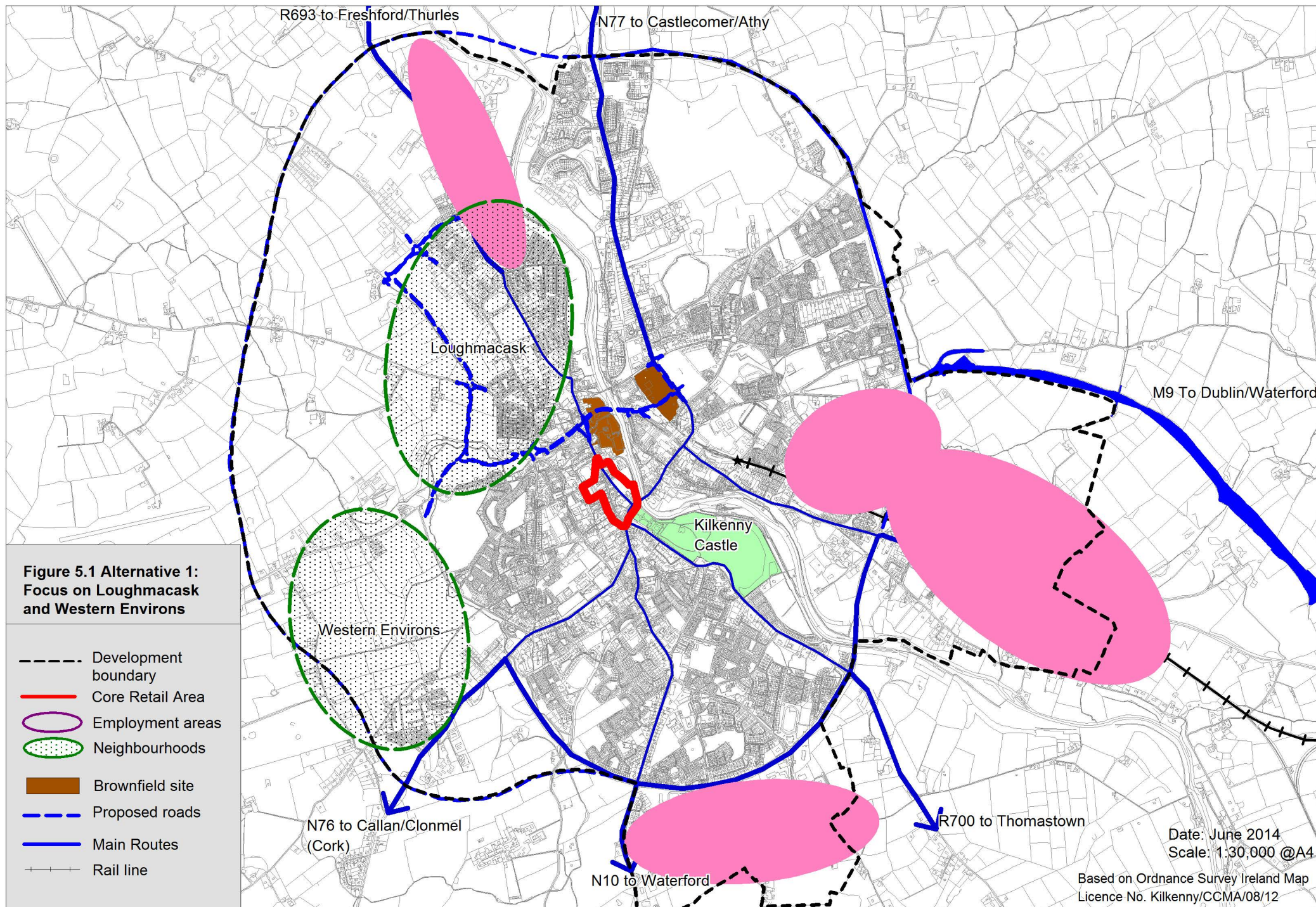
The currently adopted Core Strategy, as set out in Section 3.4.1 prioritises the neighbourhoods of Loughmacask and the Western Environs.

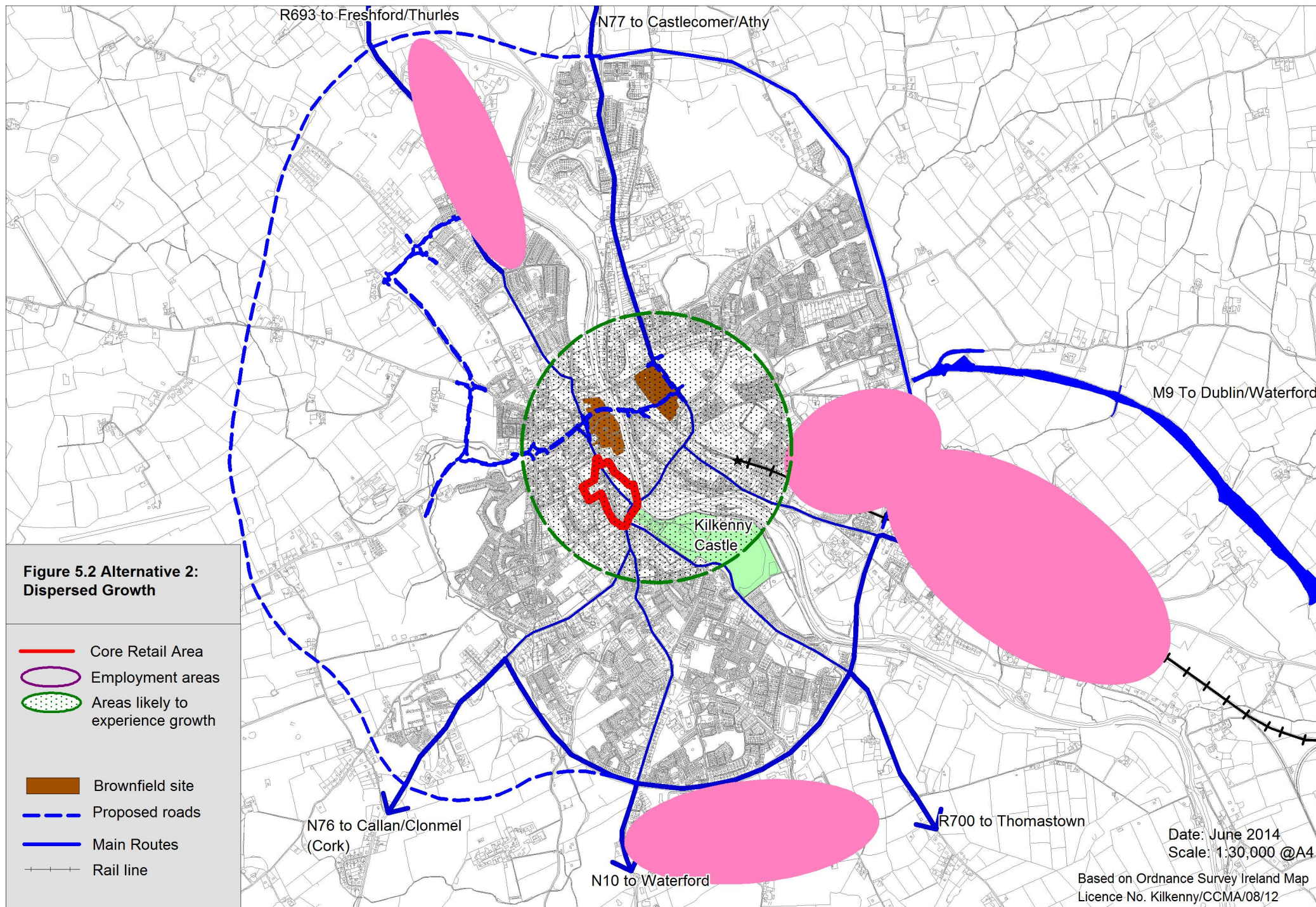
Alternative 1 continues to concentrate growth into these two neighbourhoods, with no growth being allocated elsewhere, see Figure 5.1. This alternative concentrates populations into locations where there are existing Local Area Plans in place to provide for future residential and commercial development, linked to infrastructural provision. Investment in key infrastructure can be concentrated into these two small areas.

5.3 Alternative 2: Dispersed growth

This scenario is one in which the 'pot' of zoned land would be distributed throughout the city, around its fringes, without prioritisation, see Figure 5.2. Development would be allowed to proceed in an ad hoc manner and would follow market forces to a great extent. Most development would occur on greenfield sites.

⁵⁵ EU, [Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment](#)





Alternative 2 envisages potentially inappropriate lands around the city zoned for low-density development. The city would grow in a piecemeal fashion, extending further out in all directions simultaneously, in some locations extending beyond the ring-road.

5.4 Alternative 3: Consolidation of city and neighbourhoods

In this alternative, the 'pot' of zoned land is mainly allocated to the Loughmacask and Western Environs neighbourhoods, but growth is also encouraged in small parcels located throughout the remainder of the city, see Figure 5.3. This alternative allows for the creation of new, well-planned neighbourhoods but also allows for infilling and consolidation in the remainder of the city.

5.5 Assessment of Alternatives

These three alternatives are assessed against the chosen planning policy objectives (PPOs) and Environmental Policy Objectives (EPOs) as identified in Chapter 4. Each alternative is assessed as to whether it would have a potentially **positive**, **neutral** or potentially **negative** impact on each objective. These effects include secondary, cumulative, synergistic, short, medium and long-term permanent and temporary, positive and negative effects.

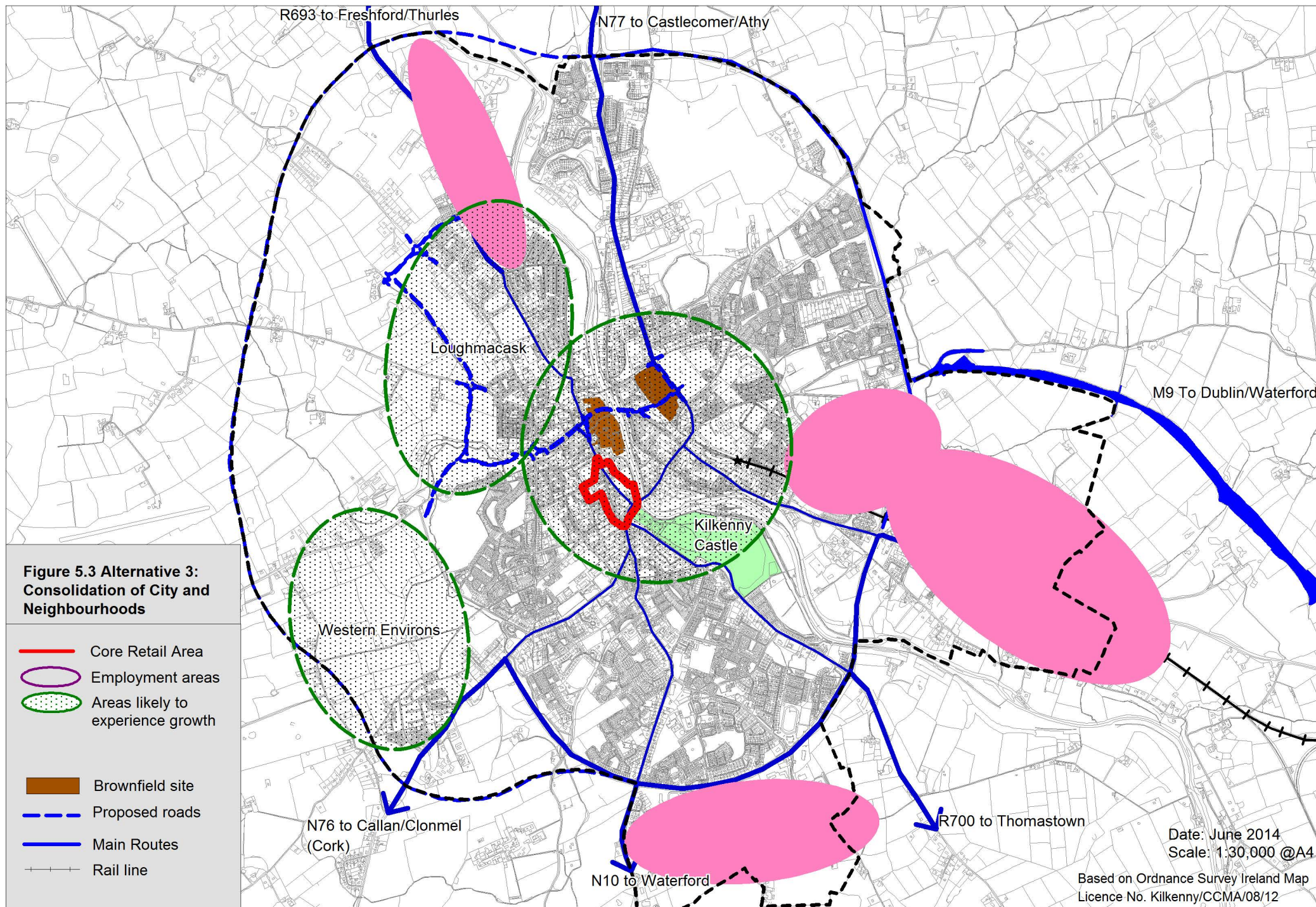
Cumulative effects have been considered in both the assessment of the alternatives and Plan provisions. Cumulative effects can be described as the addition of many small impacts to create one larger, more significant, impact. Two types of potential cumulative effects have been considered, namely:

- Potential intra-Plan cumulative effects - these arise from the interactions between different types of potential environmental effects resulting from the Plan; and,
- Potential inter-Plan cumulative effects - these arise when the effects of the implementation of one plan occur in combination with those of other plans or developments.

A variety of potential intra-Plan cumulative environmental effects occur when considering the implementation of the alternatives and/or the Plan. The interrelationships between environmental components that determine these potential effects are identified on Table 3.10 e.g. interrelationships between human health and water quality and human health and air quality.

With regard to potential inter-Plan cumulative environmental effects, these occur as a result of the combination of potential environmental effects which are identified by the assessment as arising from alternative and/or Plan measures; and the effects arising from other plans or developments. Other Plans and developments which have been considered by the assessment of environmental effects include those which are detailed under Section 2.3 Relationship with other Plans and Programmes.

The assessment of the likely inter-Plan cumulative environmental effects requires knowledge of the likely effects of all plans/developments under consideration. The assessment is limited in this instance as, other than for a small number of plans/developments (e.g. Regional Planning Guidelines, Development Plans, Local Area Plans and River Basin Management Plans), there has been very limited assessment of the likely types of developments provided for by other policies, plans and programmes (including those detailed under Section 2.3) that could occur in combination with the implementation of the City Development Plan.



Taking into account available information, the key potential inter-Plan cumulative environmental effects that are considered in the assessment relate to effects upon the status of surface and ground waters and associated interactions (in combination with Regional Planning Guidelines, Development Plans, Local Area Plans and River Basin Management Plans). Other potential inter-Plan cumulative environmental effects include those occurring on various environmental components within the county settlements where lower-tier Local Area Plans are in force and the potential cumulative visual impact of development in county boundary areas.

Effects that may arise as a result of implementing the Plan have been mitigated to the extent that no likely significant adverse effects as a result of implementation of the Plan have been identified.

A description of the various impacts of each alternative is set out below.

5.6 Alternative 1: Focus on Loughmacask and Western Environs

Environmental impacts

This alternative concentrates populations into locations where there are existing Local Area Plans in place to provide for future residential and commercial development, linked to infrastructural provision. Investment in key infrastructure can be concentrated into these two small areas. Sustainable travel is promoted. Valuable natural resources such as water quality are protected through targeted infrastructural measures. The compact nature of development allows for efficient public transport links. The rural environment surrounding the city is protected with a clear demarcation between rural and urban areas.

Planning impacts

This alternative does not support any growth outside of these two neighbourhoods, which may lead to a population decline in the central city area.

5.7 Alternative 2: Dispersed growth

Environmental impacts

This piecemeal approach would likely result in an increase in lower density development around the fringes of the city. In the long-term, this would have a negative effect on the viability of public transport provision, with resulting effects on air quality and greenhouse gas emissions. The provision of key social and physical infrastructure such as parks and schools would be costly.

Planning impacts

As this alternative lacks a detailed plan-led approach, the provision of social and physical infrastructure such as schools and parks would not be tied to the development of housing. This may result in a services deficiency in these new residential areas.

5.8 Alternative 3: Consolidation of city and neighbourhoods

Environmental impacts

The compact nature of development allows for efficient public transport links. The rural environment surrounding the city is protected with a clear demarcation between rural and urban areas.

To protect the cultural heritage within the city, appropriate mitigation measures are necessary, particularly for infill and renewal sites.

Planning impacts

Population is increased within the Borough boundary as infill sites are utilised.

5.8.1 Assessment against each SEA Objective

Table 5.1 below assesses each Alternative against each of the SEA objectives.

Table 5.1: Assessment of Alternatives			
Environmental Parameter – SEA objectives	Alternative		
	1: Loughmacask and Western Environs	2: Dispersed Growth	3: Consolidation of City and neighbourhoods
Biodiversity, fauna and flora			
Protect designated sites: SACs, NHAs and SPAs from development.			
Identify locally important habitats for protection.			
Provide for green infrastructure.			
Concentrate development in areas with least sensitivities.			
Protect, and where appropriate, enhance biodiversity, particularly protected areas and protected species.			
Population and Human Health			
Improve people's quality of life based on high-quality residential, working and recreational environments and on sustainable travel patterns.			
Provide adequate supply of zoned land for all uses in compliance with the National Spatial Strategy, and Regional Planning Guidelines.			
Promote higher density residential development in suitable locations.			
Promote sustainable transport patterns through appropriate zoning and provision for public transport.			
Require appropriate levels of recreational areas with any residential application.			
Minimise noise, vibration and emissions from traffic			
Require noise controls with all relevant applications.			
Soil			
Maintain the quality of soils			
Maximise the sustainable re-use of brownfield lands, and maximise the use of the existing built environment rather than developing greenfield lands.			
Minimise the consumption of non-renewable sand, gravel and rock deposits			
Minimise the amount of waste to landfill			
Direct development to brownfield lands in preference to developing greenfield lands.			
Encourage rehabilitation of existing housing stock where appropriate.			

Provide appropriate waste disposal facilities, including for composting and recycling in all developments.			
Water			
Protect and enhance the status of aquatic ecosystems and, with regard to their water needs, terrestrial ecosystems and wetlands directly depending on the aquatic ecosystems.			
Promote sustainable water use based on a long-term protection of available water resources.			
Reduce progressively discharges of polluting substances to waters			
Mitigate the effects of floods and droughts including vulnerability to climate change.			
Provide for appropriate waste water treatment and disposal, in serviced urban areas and from septic tanks.			
Provide sufficient capacity in water services to serve zoned land.			
Include Strategic Flood Risk Assessment as part of the Plan.			
Air			
Reduce all forms of air pollution			
Promote energy efficient developments.			
Promote sustainable transport patterns through appropriate zoning and provision for public transport.			
Climatic Factors			
Reduce waste of energy, and maximise use of renewable energy sources			
Minimise emissions of greenhouse gases to contribute to a reduction and avoidance of human-induced global climate change			
Reduce the need to travel			
Assess, plan and manage adaptation to climate change impacts			
Promote energy efficient developments.			
Promote sustainable transport patterns through appropriate zoning and provision for public transport.			
Include a climate change adaptation strategy.			
Material Assets			
Make best of use of existing infrastructure and promote the sustainable development of new infrastructure.			
Direct development to brownfield lands in preference to developing greenfield lands.			
Encourage rehabilitation of existing housing stock/buildings where appropriate.			
Cultural Heritage			
Promote the protection and conservation of the cultural heritage, including architectural and archaeological heritage			
To conserve and protect the archaeological heritage with regard to entries on the RMP.			
To conserve and protect the special interest and character of the architectural heritage with regard to the RPS, the NIAH and ACAs.			
Landscape			
Conserve and enhance valued natural and historic landscapes, their character and features within them.			
Avoid the loss of designated views.			

5.9 Selection of Preferred Alternative

Alternative 3: Consolidation of city and neighbourhoods emerges as the preferred alternative.

The preferred distribution of zoned land – Phase 1 land - is set out in Table 5.2.

Table 5.2: Core Strategy Areas of Phase 1 land	
Area	Total land in Phase 1 (hectares)
Western Environs	14.9
Loughmacask	23.5
Infill/Brownfield	21.63
Total	63.63

6 Likely significant effects on the Environment

6.1 Introduction

The preferred Plan strategy was selected based on an assessment of the three alternatives. This section evaluates the preferred Plan strategy in detail. It would be unworkable to evaluate every line of text in the Plan; therefore, to provide an overview, this evaluation focuses on each chapter's Strategic Aim, which sets out the main priorities and emphases of the chapter. The evaluation then moves to the objectives of each chapter.

In line with the requirements of Section 10 of the Planning and Development Acts 2000-2010, the Plan must include a number of mandatory objectives. In addition, a number of elective objectives have been devised. In order to distinguish between the SEA objectives, as outlined in Chapter 4, and the Plan objectives, the Plan objectives are referred to as 'Development objectives'. All development objectives are subjected to assessment in the context of each of the SEA Objectives as selected in Chapter 4.

The purpose of this section of the Environmental Report is to highlight the potential conflicts, if they are present, between the strategic aims and development objectives contained in the Plan and the SEA Objectives. Furthermore, the assessment examines the potential impact arising from the implementation of the development objectives on sensitive environmental receptors.

In accordance with the [Guidelines](#), the potential effects of the Plan are categorised as follows:

- Significant beneficial impact
- Uncertain impact (the impact will need mitigation to ensure that no significant adverse impacts occur.)
- Significant adverse impact
- No relationship, or insignificant impact

Where a development objective has a significant adverse impact, this is discussed in more detail.

Chapter	Development objective	Assessment of impact on SEA objectives (See Chapter 4)			
		Significant beneficial impact	Uncertain impact	Significant adverse impact	No relationship or insignificant impact
1	1A- To implement the provisions of Articles 6(3) and 6(4) of the EU Habitats Directive.	B1 W1 W3			P1 P2 S1 S2 S3 S4 W2 W4 A1 C1 C2 C3 C4 M1 H1 L1
	1B- To ensure that any plan or project within the functional area of the Planning Authority is subject to appropriate assessment in accordance with the Guidance <i>Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities</i> , 2009 and is assessed in accordance with Article 6 of the Habitats Directive in order to avoid adverse impacts on the integrity and conservation objectives of the site.	B1 W1 W3			P1 P2 S1 S2 S3 S4 W2 W4 A1 C1 C2 C3 C4 M1 H1 L1
	1C- To implement the Development Management Standards as set out in the Plan as appropriate.	B1 P1 P2 S2 S3 S4 W1 W2 W3 W4 A1 C1 C2 C3 C4 M1 H1 L1			S1
	1D- To prepare a Climate Change Adaptation plan following the adoption of the Development Plan.	B1 P1 S3 S4 W1 W2 W4 A1 C1 C2 C3 C4 M1	S2		P2 W3 H1 L1
	1E- To develop a consultation process for plans and projects proposed by the local authority.				B1 P1 P2 S1 S2 S3 S4 W1 W2 W3 W4 A1 C1 C2 C3 C4 M1 H1 L1
	1F- To restore and conserve St. Mary's Church using eco restoration practices and methodologies.	S2 S3 S4 C1 M1 H1			B1 P1 P2 S1 W1 W2 W3 W4 A1 C2 C3 C4 L1
3	<i>Strategic Aim: To implement the provisions of the Regional Planning Guidelines and to target the growth of Kilkenny City in a compact urban form to advance sustainable development.</i>	B1 P1 P2 S1 S2 S3 S4 W1 W2 W3 W4 A1 C1 C2 C3 C4 M1 H1 L1			

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	3B- To implement the vision, policy and objectives of the Western Environs Local Area Plan 2004 for the development of the area.	P1 P2 S2 W1 W2 W3 A1 C1 C2 C3 M1 H1 L1			B1 S1 S3 S4 W4 C4
	3C- To prepare a master plan/urban design framework for the Smithwick's site and Bateman Quay during the lifetime of the development plan.	P1 S2 A1 C2 C3 M1 H1	B1 W1		P2 S1 S3 S4 W2 W3 W4 C1 C4 L1
	3D- To take a fresh analysis of the development strategy for the City& Environs immediately following the agreed masterplan for the Smithwick's lands and taking account of the current and projected economic performance of the City and County.	P1 M1	B1 P2 W1 W3 W4 C1 C2 C3 C4 H1 L1		S1 S2 S3 S4 A1 W2
	3E- To implement the provisions of sections 2 of the City Centre LAP relating to transport, car parking, urban design and land uses.	P1 P2 S2 W1 W2 W3 A1 C1 C2 C3 M1 L1			B1 S1 S3 S4 W4 C4 H1
	3F- To implement the provisions of Section 3 of the City Centre LAP relating to the urban design frameworks and land uses for specific sites.	P1 P2 S2 W1 W2 W3 A1 C1 C2 C3 M1 L1			B1 S1 S3 S4 W4 C4 H1
	3G- To develop and implement a Living Over the Shop Scheme.	P1 P2 S2 S3 S4 C2 C3 M1 H1 L1			S1 W1 W2 W3 W4 A1 C1 C4
4	<i>Strategic Aim: To provide a framework for the implementation of the economic strategy and the protection of the environment and heritage, to position the city for sustainable economic growth and employment.</i>	B1 P1 W1 W2 W3 H1 L1	P2 S2		S1 S3 S4 W4 A1 C1 C2 C3 C4 M1
	4A- To increase co-operation between Kilkenny Local Authorities, existing third level institutions and the proposed Technological University for the South East to support employment creation, innovation and lifelong learning.	P1			B1 P2 S1 S2 S3 S4 W1 W2 W3 W4 A1 C1 C2 C3 C4 M1 H1 L1
	4B- To ensure the highest standards of environmental protection in the assessment of planning applications for all development proposals.	B1 P2 S1 W1 W2 W3 A1 C2 H1 L1			P1 S3 S4 W4 C1 C3 C4 M1
	4C- To ensure an adequate amount of employment land on a	P1			B1 P2 S1 S2 S3 S4 W1 W2

	campus type environment is available within the County for ICT and technology office based industry at the appropriate strategic locations.				W3 W4 A1 C1 C2 C3 C4 M1 H1 L1
	4D- To deliver and implement the 6 projects associated with the Medieval Mile proposals during the lifetime of the Plan 2014 – 2020 for the city and county.	P1 M1 H1	B1		P2 S1 S2 S3 S4 W1 W2 W3 W4 A1 C1 C2 C3 C4 L1
	4E- To ensure that an adequate quantity and range of land is available for enterprise development and that the appropriate infrastructure is provided.	P1			B1 P2 S1 S2 S3 S4 W1 W2 W3 W4 A1 C1 C2 C3 C4 M1 H1 L1
	4F-The Smithwick lands the subject of the masterplan referred to in Section 3.4.3 will be the focus for major new retail expansion (convenience and comparison retailing) in the City & Environs over the plan period.	P1, P2, S2, W3, W4, C3, M1,	B1, H1, L1		S1, S3, S4, W1, W2, A1, C1, C2, C4
	4G- No further retail parks will be granted permission in and around the City and Environs over the period 2014 – 2020	C2 C3			B1 P1 P2 S1 S2 S3 S4 W1 W2 W3 W4 A1 C1 C4 M1 H1 L1
	4H- To engage with other relevant local authorities within the region in the preparation of a joint retail strategy for the greater Waterford City area.	P1 S2 C3 M1			B1 P2 S1 W1 W3 W4 A1 C1 C2 C4 H1 L1
	4I- To sustain and enhance the vitality and viability of the role and potential of the four District Towns.	P1 P2 S1 S2 S3 S4 W4 C2 C3 M1 L1 H1	B1 W1		W3 A1 C1 C4
	4J- To improve convenience market share retained within the county to 80% post 2020 4K- To improve comparison market share retained within the county to 75% post 2020 4L- To increase convenience trade draw from 8% to 15% post 2020 4M- To maintain comparison trade draw at 58% post 2020				B1 P1 P2 S1 S2 S3 S4 W1 W2 W3 W4 A1 C1 C2 C3 C4 M1 H1 L1
5	<i>Strategic Aim: To integrate the planning and sustainable development of the city with regard to the housing, social, community and cultural requirements of the city and its</i>	P1 P2			B1 S1 S2 S3 S4 W1 W2 W3 W4 A1 C1 C2 C3 C4 M1 H1 L1

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<i>population</i>				
5A- To implement the Housing Strategy contained in Appendix B.	P1			B1 P2 S1 S2 S3 S4 W1 W2 W3 W4 A1 C1 C2 C3 C4 M1 H1 L1
5B- To require 20% of the land zoned for residential use, or for a mixture of residential and other uses, be made available for the provision of social housing.	P1			B1 P2 S1 S2 S3 S4 W1 W2 W3 W4 A1 C1 C2 C3 C4 M1 H1 L1
5C- To require that a mixture of residential unit types and sizes are developed to reasonably match the requirements of different categories of households within the city and county.	P1			B1 P2 S1 S2 S3 S4 W1 W2 W3 W4 A1 C1 C2 C3 C4 M1 H1 L1
5D- Complete the review of the Traveller Accommodation programme.	P1			B1 P2 S1 S2 S3 S4 W1 W2 W3 W4 A1 C1 C2 C3 C4 M1 H1 L1
5E- To implement the Kilkenny Travellers Horse project	P1			B1 P2 S1 S2 S3 S4 W1 W2 W3 W4 A1 C1 C2 C3 C4 M1 H1 L1
5F- To redevelop the Wetlands halting site as a group housing scheme.	P1			B1 P2 S1 S2 S3 S4 W1 W2 W3 W4 A1 C1 C2 C3 C4 M1 H1 L1
5G- To implement the provisions of the Traveller Accommodation programme	P1			B1 P2 S1 S2 S3 S4 W1 W2 W3 W4 A1 C1 C2 C3 C4 M1 H1 L1
5H- The Council will facilitate the provision of childcare and early childhood education facilities in a sustainable manner in appropriate locations which include the following: larger new housing estates, industrial estates and business parks, in the vicinity of schools, neighbourhood and district centres and adjacent to public transport facilities.	P1 P2 A1 C2 C3 M1			B1 S1 S2 S3 S4 W1 W2 W3 W4 C1 C4 H1 L1
5I- The Council will liaise with the Department of Education and Skills, and all providers of education, to assist where possible in the development of adequate education centres, and to identify and facilitate of suitable sites for new	P1			B1 P2 S1 S2 S3 S4 W1 W2 W3 W4 A1 C1 C2 C3 C4 M1 H1 L1

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	educational facilities.				
	5J- To integrate the planning and sustainable development of the county with regard to the social, community and cultural requirements of the county and its population.	P1 H1			B1 P2 S1 S2 S3 S4 W1 W2 W3 W4 A1 C1 C2 C3 C4 M1 L1
	5K- To progress and achieve the completion and opening of the new City Library at County Hall.	P1			B1 P2 S1 S2 S3 S4 W1 W2 W3 W4 A1 C1 C2 C3 C4 M1 H1 L1
6	<i>Strategic Aim: To protect and improve recreational, tourism and arts facilities for the benefit of residents and for the promotion of tourism</i>	P1	B1 W1 H1 L1		P2 S1 S2 S3 S4 W2 W3 W4 A1 C1 C2 C3 C4 M1
	6A- The Council shall seek the preservation and improvement of amenities and recreational amenity facilities, and shall facilitate and provide for the extension of recreational amenities in the city where appropriate, subject to environmental, heritage and financial considerations	B1 P1 H1			P2 S1 S2 S3 S4 W1 W2 W3 W4 A1 C1 C2 C3 C4 M1 L1
	6B- Complete the development of the River Nore Linear Park within the lifetime of the Plan	P1 L1	B1 W1		P2 S1 S2 S3 S4 W2 W3 W4 A1 C1 C2 C3 C4 M1 H1 L1
	6C-To establish an environmental management plan for the River Nore Linear Park.	B1 P1 L1			P2 S1 S2 S3 S4 W2 W3 A1 C1 C2 C3 C4 M1 H1 W1
	6D- The Council shall preserve and protect existing public rights of way which give access to seashore, uplands, riverbank or other places of natural beauty or recreational use.	P1			B1 P2 S1 S2 S3 S4 W1 W2 W3 W4 A1 C1 C2 C3 C4 M1 H1 L1
	6E- To undertake a survey of existing public rights of way in the county and establish a register within the life of the Plan	P1			B1 P2 S1 S2 S3 S4 W1 W2 W3 W4 A1 C1 C2 C3 C4 M1 H1 L1
	6F- To provide a skate park within the City & environs during the lifetime of the Plan.	P1			B1 P2 S1 S2 S3 S4 W1 W2 W3 W4 A1 C1 C2 C3 M1 H1 L1
	6G- To develop an arts venue within the county to fulfil a multiplicity artistic uses.	P1			B1 P2 S1 S2 S3 S4 W1 W2 W3 W4 A1 C1 C2 C3 C4 M1 H1 L1

	6H- To implement the Kilkenny Local Authorities Arts Strategy	P1			B1 P2 S1 S2 S3 S4 W1 W2 W3 W4 A1 C1 C2 C3 C4 M1 H1 L1
7	<i>Strategic Aim: To seek the protection, sustainable management and where possible, enhancement of heritage for the benefit of current and future generations and to promote increased awareness of heritage through policies and actions.</i>	B1 P1 W1 W2 W3 W4 H1 L1			P2 S1 S2 S3 S4 A1 C1 C2 C3 C4 M1
	7A- To implement, in partnership with the Kilkenny Heritage Forum and all relevant stakeholders, a County Heritage Plan and County Biodiversity Plan	B1 W1 H1			P1 P2 S1 S2 S3 S4 W2 W3 W4 A1 C1 C2 C3 C4 M1 L1
	7B- To protect and, where possible, enhance the natural heritage sites designated under EU Legislation and National Legislation (Habitats Directive, Birds Directive, European Communities (Birds and Natural Habitats) Regulations 2011 and Wildlife Acts). This protection will extend to any additions or alterations to sites that may arise during the lifetime of this plan.	B1 P1 L1 S1 W1 W2 W3 C4	S2 M1		P2 S1 S3 S4 A1 C1 C2 C3 H1
	7C- To protect and, where possible, enhance the plant and animal species and their habitats that have been identified under European legislation (Habitats and Birds Directive) and protected under national Legislation (European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477 of 2011), Wildlife Acts 1976-2010 and the Flora Protection Order (SI94 of 1999).	B1 P1 L1 S1 W1 W2 W3 C4	S2 M1		P2 S1 S3 S4 A1 C1 C2 C3 H1
	7D- To prepare and support the implementation of a Green Infrastructure Strategy for Kilkenny City and Environs, to include for a tree planting programme.	B1 P1 L1 S1 W1 W2 W3 C4			P2 S2 S3 S4 W4 A1 C1 C2 C3 M1 H1
	7E- To protect and where possible enhance wildlife habitats and landscape features which act as ecological corridors/networks and stepping stones, such as river corridors, hedgerows and road verges, and to minimise the	B1 P1 S1 W1 W2 W3 C4 L1			P2 S2 S3 S4 W4 A1 C1 C2 C3 M1 H1

loss of habitats and features of the wider countryside (such as ponds, wetlands, trees) which are not within designated sites. Where the loss of habitats and features of the wider countryside is unavoidable as part of a development, to ensure that appropriate mitigation and/or compensation measures are put in place, to conserve and enhance biodiversity and landscape character and green infrastructure networks.				
7F- The Council will promote the planting of native tree and shrub species, by committing to using native species (of local provenance wherever possible) in its landscaping work and on County Council property	B1			P1 P2 S1 S2 S3 S4 W1 W2 W3 W4 A1 C1 C2 C3 C4 M1 H1 L1
7G- To carry out a TPO for lands identified around the former Ayresfield House on the Granges road.	P1 L1			B1 P2 S1 S2 S3 S4 W1 W2 W3 W4 A1 C1 C2 C3 C4 M1 H1
7H- Protect archaeological sites and monuments (including their setting), underwater archaeology, and archaeological objects, including those that are listed in the Record of Monuments and Places, and in the Urban Archaeological Survey of County Kilkenny or newly discovered sub-surface and underwater archaeological remains.	H1			B1 P1 P2 S1 S2 S3 S4 W1 W2 W3 W4 A1 C1 C2 C3 C4 M1 L1
7I- To facilitate and support the implementation of existing (and any further) conservation plans as resources allow.	H1			B1 P1 P2 S1 S2 S3 S4 W1 W2 W3 W4 A1 C1 C2 C3 C4 M1 L1
7J- To ensure the protection of the architectural heritage of Kilkenny City & Environs by including all structures considered to be of special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest in the Record of Protected Structures.	H1			B1 P1 P2 S1 S2 S3 S4 W1 W2 W3 W4 A1 C1 C2 C3 C4 M1 L1
7K- To respond to the Ministerial recommendation to include in the Record of Protected Structures, structures which have been identified as being of Regional, National or International significance in the National Inventory of Architectural Heritage	H1			B1 P1 P2 S1 S2 S3 S4 W1 W2 W3 W4 A1 C1 C2 C3 C4 M1 L1

	survey of the city and county published in 2006.				
	7L- To carry out a review of the Record of Protected Structures for the functional area of Kilkenny City and Environs.	H1			B1 P1 P2 S1 S2 S3 S4 W1 W2 W3 W4 A1 C1 C2 C3 C4 M1 L1
	7M- To ensure the preservation of the special character of each ACA listed (Table 8.3)above and within the county particularly with regard to building scale, proportions, historical plot sizes, building lines, height, general land use, building materials, historic street furniture and paving.	H1			B1 P1 P2 S1 S2 S3 S4 W1 W2 W3 W4 A1 C1 C2 C3 C4 M1 L1
	7N- To designate ACAs where appropriate and provide a local policy framework for the preservation of the character of these areas.				
8	<i>Strategic Aim: To provide a framework for the protection of the environment, including water quality, the avoidance of flood risk and the provision of a high quality telecommunications infrastructure.</i>	B1 P1 P2 S1 S2 W1 W2 W3 W4 A1 C1 C2 C3 C4 M1			S3 S4 H1 L1
	8A- Implement the programme as outlined in the Water Services Investment Programme.	B1 P1 W1 W2 W3 M1			P2 S1 S2 S3 S4 W4 A1 C1 C2 C3 C4 H1 L1
	8B- Prioritise the upgrading of the Purcellsinch wastewater treatment plant.	B1 W1 W2 W3			P1 P2 S1 S2 S3 S4 W4 A1 C1 C2 C3 C4 M1 H1 L1
	8C- Meet in full the requirements of the E.U. Urban Waste Water Treatment , Water Framework Directives and the Drinking Water Regulations.	B1 P1 W1 W2 W3 M1			P2 S1 S2 S3 S4 W4 A1 C1 C2 C3 C4 H1 L1
	8D- To update Noise Mapping in accordance with revised or updated thresholds for Noise Mapping.	P1 P2			B1 S1 S2 S3 S4 W1 W2 W3 W4 A1 C1 C2 C3 C4 M1 H1 L1
	8E- To promote compliance with environmental standards and objectives established— for bodies of surface water, by the European Communities (Surface Waters) Regulations 2009; for groundwater, by the European Communities (Groundwater) Regulations 2010; which standards and objectives are included in the South East River Basin	B1 P1 W1 W2 W3 M1			P2 S1 S2 S3 S4 W4 A1 C1 C2 C3 C4 H1 L1

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	Management Plan				
	8F- To complete the mapping of source protection areas and to map Source Protection Areas for any new public water supply schemes as appropriate.	B1 P1 W1 W2 W3 M1			P2 S1 S2 S3 S4 W4 A1 C1 C2 C3 C4 H1 L1
	8G- To ensure that Source Protection Areas are identified for any multiple unit housing developments with private water supplies.	B1 P1 W1 W2 W3 M1			P2 S1 S2 S3 S4 W4 A1 C1 C2 C3 C4 H1 L1
	8H- To adopt a comprehensive risk-based planning approach to flood management to prevent or minimise future flood risk. In accordance with the Guidelines , the avoidance of development in areas where flood risk has been identified shall be the primary response	P1 W4 C4	S2 M1		B1 P2 S1 S3 S4 W1 W2 W3 A1 C1 C2 C3 H1 L1
	8I- To implement the Joint Waste Management Plan for the South East Region.	P1 S4			B1 P2 S1 S2 S3 W1 W2 W3 W4 A1 C1 C2 C3 C4 M1 H1 L1
	8J- To control the following for the purposes of reducing the risk or limiting the consequences of a major accident: • The siting of Major Accident Hazard sites • The modification of an existing Major Accident Hazard site • Development in the vicinity of a Major Accident Hazard site	P1			B1 P2 S1 S2 S3 S4 W1 W2 W3 W4 A1 C1 C2 C3 C4 M1 H1 L1
	8K- To set up and maintain a register of approved telecommunications structures which will provide a useful input to the assessment of future telecommunications developments and would also be useful from the point of view of maximising the potential for future mast sharing and co-location.	M1 L1			B1 P1 P2 S1 S2 S3 S4 W1 W2 W3 W4 A1 C1 C2 C3 C4 H1
9	<i>Strategic Aim: To promote and facilitate all forms of renewable energies and improvements in energy efficiencies as a response to climate change.</i>	P1 P2 A1 C1 C2 C4 M1	H1 L1		B1 S1 S2 S3 S4 W1 W2 W3 W4 C3
	9A- Investigate the feasibility of installing anaerobic digestion facilities at the Purcellsinch wastewater treatment plant.	C1 C2			B1 P1 P2 S1 S2 S3 S4 W1 W2 W3 W4 A1 C3 C4 M1 H1 L1

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	9B- The Planning Authority will make available advice on Passive Solar Design in preplanning consultations for domestic and commercial buildings.	P1 C1 C2			B1 P2 S1 S2 S3 S4 W1 W2 W3 W4 A1 C3 C4 M1 H1 L1
	9C- To review the progress of the <i>Climate Change Strategy</i> , report on the progress to date and thereafter develop a new strategy and action plan in line with national policy.	B1 W4 A1 C1 C2 C3 C4			P1 P2 S1 S2 S3 S4 W1 W2 W3 M1 H1 L1
10	<i>Strategic Aim: To co-ordinate transport and land use planning, reducing the demand for travel and the reliance on the private car in favour of public transport, cycling and walking.</i>	P1 P2 A1 C2 C3 M1			B1 S1 S2 S3 S4 W1 W2 W3 W4 C1 C4 H1 L1
	10A- To review the Mobility Management Plan (2009) and adopt a new MMP for the period 2015-2020	P1 P2 A1 C1 C2 C3 C4			B1 S1 S2 S3 S4 W1 W2 W3 W4 M1 H1 L1
	10B- Complete the demarcation of the Gateways as depicted on the map and prioritise pedestrian and cyclist movement within the Gateways.	P1 P2 A1 C1 C2 C3 C4			B1 S1 S2 S3 S4 W1 W2 W3 W4 M1 H1 L1
	10C- To re-examine options for pedestrian prioritisation in the city centre following implementation of the Central Access Scheme.	P1 P2 A1 C1 C2 C3 C4			B1 S1 S2 S3 S4 W1 W2 W3 W4 M1 H1 L1
	10D- Complete the improvements to the back lanes, including the lane from Fr. Murphy Square to Robertshill.	P1 P2 A1 C1 C2 C3 C4			B1 S1 S2 S3 S4 W1 W2 W3 W4 M1 H1 L1
	10E- Plan for the provision of the Greensbridge Way and the Ossory Bridge connection.	P1 P2 A1 C1 C2 C3 C4			B1 S1 S2 S3 S4 W1 W2 W3 W4 M1 H1 L1
	10F- To facilitate the provision of approved bus stops and shelters within the City and Environs as the need arises.	P1 P2 A1 C1 C2 C3 C4			B1 S1 S2 S3 S4 W1 W2 W3 W4 M1 H1 L1
	10G- To facilitate parking provision for tourist buses in the city.	P1 P2 A1 C1 C2 C3 C4			B1 S1 S2 S3 S4 W1 W2 W3 W4 M1 H1 L1
	10H- To carry out a Traffic Management Scheme at Loughboy Shopping Centre to include a stop for the city bus service	P1 P2 A1 C1 C2 C3 C4			B1 S1 S2 S3 S4 W1 W2 W3 W4 M1 H1 L1
	10J- To preserve free from development proposed road realignment/improvement lines and associated corridors where such development would prejudice the implementation of National Roads Authority or Council plans (See Figure 10.2 of Plan, Road hierarchy).	P1 M1			B1 P2 S1 S2 S3 S4 W1 W2 W3 W4 A1 C1 C2 C3 C4 H1 L1

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10K- Reserve the line of Phase 2 and Phase 3 of proposed Central Access Scheme free from development and to complete Phase 1 of the Central Access Scheme within the plan period.	P1 M1			B1 P2 S1 S2 S3 S4 W1 W2 W3 W4 A1 C1 C2 C3 C4 H1 L1
10L- To widen the Castlecomer Road to provide for two lanes south bound and one lane north bound carriageway.	P1 M1			B1 P2 S1 S2 S3 S4 W1 W2 W3 W4 A1 C1 C2 C3 C4 H1 L1
10M- Reserve the proposed line of the western by-pass for the city from the Castlecomer Road to the Waterford Road free from development, including for a river crossing and seek approval from An Bord Pleanála for Phase 1 of the Western By-pass, the Kilkenny Northern Ring Road Extension.	P1 M1	B1 P2 S3 W1 A1 H1 L1		S1 S2 S4 W2 W3 W4 C1 C2 C3 C4
10N- Reserve the proposed line of a new road link from the Callan Road to the Waterford Road roundabout free from development.	P1 M1			B1 P2 S1 S2 S3 S4 W1 W2 W3 W4 A1 C1 C2 C3 C4 H1 L1
10O- Provide a second entrance to the Hebron Industrial Estate from the Hebron Road.	P1 M1			B1 P2 S1 S2 S3 S4 W1 W2 W3 W4 A1 C1 C2 C3 C4 H1 L1
10P- Complete the R697 Kells Road Improvement Scheme from Upper Patrick St. to the Kells Road Roundabout.	P1 M1			B1 P2 S1 S2 S3 S4 W1 W2 W3 W4 A1 C1 C2 C3 C4 H1 L1
10Q- Complete the R712 Road Improvement Scheme from the Old Dublin Road Roundabout to the Leggettsrath Roundabout	P1 M1			B1 P2 S1 S2 S3 S4 W1 W2 W3 W4 A1 C1 C2 C3 C4 H1 L1
10R- The development of the lands located on the Waterford Road (known as the Murphy machinery lands) to be dependent on an alternative access to the national route	P1 M1			B1 P2 S1 S2 S3 S4 W1 W2 W3 W4 A1 C1 C2 C3 C4 H1 L1
10S- Prepare and implement traffic management and calming schemes for the City & Environs in line with the 3 year Roads Programmes.	P1 C1 C2 C3 C4 A1			B1 P2 S1 S2 S3 S4 W1 W2 W3 W4 M1 H1 L1
10T- Complete the Bohernatounish Road Traffic Management Scheme.	P1 M1			B1 P2 S1 S2 S3 S4 W1 W2 W3 W4 A1 C1 C2 C3 C4 H1

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					L1
	10U- Complete the Outrath Road Improvement Scheme	P1 M1			B1 P2 S1 S2 S3 S4 W1 W2 W3 W4 A1 C1 C2 C3 C4 H1 L1
	10V- Complete improvement works from the Parade Plaza to Dean Street under the Medieval Mile Project	P1 M1	B1 H1 L1		P2 S1 S2 S3 S4 W1 W2 W3 W4 A1 C1 C2 C3 C4
11	<i>Strategic Aim: To encourage the creation of living and working environments of the highest quality by ensuring a high quality of design, layout and function for all development under the Planning Acts and Regulations, to conserve and build upon positive elements in the built and natural environment, and to protect amenities.</i>	B1 P1 P2 W1 W2 W3 W4 C1 C2 C3 C4 M1 H1 L1			S1 S2 S3 S4 A1
	To restrict non essential advertising structures, or any advertising structure which would impact injuriously on amenity, the built environment or road safety.	P1			B1 P2 S1 S2 S3 S4 W1 W2 W3 W4 A1 C1 C2 C3 C4 M1 H1 L1

6.2 Summary of assessment

It is worth reiterating that the process of SEA and Development Plan formulation is an iterative one and as such environmental considerations have informed all stages of plan preparation carried out to date in order for the potential for significant adverse effects arising from implementation of the development objectives to be minimised.

Therefore, as can be seen, no development objectives are predicted to have a significant adverse impact. However, a number of development objectives are predicted to have an uncertain impact. Mitigation measures to lessen any possible impacts are outlined in Chapter 7 of this report.

7 Mitigation Measures

Mitigation measures are measures envisaged to prevent, reduce and, as fully as possible, offset any significant adverse impacts on the environment of implementing the development objectives. Mitigation has taken place throughout the plan-making process.

Mitigation took place through the consideration of alternatives, as environmental considerations (as outlined in Chapter 3) were communicated to the Planning team to enable them to make an informed choice as to which alternative was put before the Members of the Council. Mitigation also took place through the Strategic Flood Risk Assessment where land was rezoned to ensure no inappropriate uses would be considered on land which was subject to flood risk. A detailed description of all the zoning changes as a result of the SGFRA is included in Section 2 of the SFRA, see Appendix 1.

Environmental considerations were also communicated to the Planning team throughout the plan-making process. This allowed the team to integrate these considerations into the text and maps of the Plan. A key decision from the outset was for the most part, that mitigation measures would be incorporated into each section of the Plan as “Development Management Standards”, see Section 1.2.8.

The two main exceptions to this are the Objectives in relation to the Habitats Directive and Flooding. The objective for Natura 2000 sites is set out in Section 1.3 Appropriate Assessment of the Plan. This objective ensures that any plan or project is subject to appropriate assessment in order to avoid adverse impacts on any Natura 2000 sites. The objective in relation to flooding is set out in Section 8.2.4.1 of the Plan and this ensures that a comprehensive risk-based planning approach to flood management will take place to prevent or minimise flood risk.

As outlined in Chapter 6, no development objectives have been identified as having significant adverse impacts, and given this, the requirement for specific mitigation measures is largely unnecessary. However, a number of development objectives are predicted to have uncertain impacts. Uncertain impacts require mitigation to ensure that significant adverse impacts do not occur. Therefore this section of the Environmental Report will focus on and discuss how the SEA objective will be protected through mitigation of any uncertain effects.

7.1 Mitigation of environmental problems as identified

Section 3 of this report set out the current state of the environment, and a number of environmental problems were identified. As a result of the process of SEA, Specific mitigation measures have been included in the Plan to address these problems as follows:

- It was noted that there is only one Conservation Management Plan (CMP) in place for a Natura 2000 sites in Co. Kilkenny. A CMP can help protect whatever is important in Natura 2000 sites whilst enabling appropriate development. Section 7.2.1.1 of the Plan states that the National Parks and Wildlife Service will be requested to prioritise the preparation of Conservation Management Plans for Natura 2000 Sites which are located in Kilkenny.

7.2 Development objectives

A number of development objectives have been identified as having uncertain impacts on the SEA objectives. These are outlined below, with a discussion of the possible effects, and how the mitigation measures to be included in the Plan will ensure no significant adverse impact.

Chapter 1: Introduction	
Development Objective 1D	Uncertain effects on SEA objective
1D- To prepare a Climate Change Adaptation plan following the adoption of the Development Plan.	S2
Mitigation included in Plan: See Section 8.2.4.1 The avoidance of land at risk from flooding may include the avoidance of significant brownfield lands in central areas. As stated in Section 8.2.4.1, the Plan will “adopt a comprehensive risk-based planning approach to flood management to prevent or minimise future flood risk”, in accordance with the Guidelines . The Guidelines include for a justification test to be carried out where land is centrally located and is well situated for sustainable development reasons. If the justification test is satisfied, the land can be zoned. As the Plan will follow the Guidelines, adverse effects on sustainable and sequential development, from any Climate Change Adaptation Plan will be mitigated.	
Chapter 3: Core Strategy	
Development Objective 3C	Uncertain effects on SEA objective
3C- To prepare a master plan/urban design framework for the Smithwick’s site and Bateman Quay during the lifetime of the development plan.	B1 W1
Mitigation included in Plan: See Chapters 1,7 and 8 The development of this site may have an effect on natural heritage and water quality. There are numerous mitigation measures included in the Plan to ensure no negative effects from this objective. This includes objectives and development management standards in relation to natural heritage (Chapter 1 and Chapter 7), cultural heritage, landscape (Chapter 7) and water quality (Chapter 8). Therefore any adverse effects are unlikely.	
Chapter 4: Economic Development	
Development Objective	Uncertain effects on SEA objectives
Strategic Aim: To provide a framework for the implementation of the economic strategy and the protection of the environment and heritage, to position the city for sustainable economic growth and employment.	P2 S2
Mitigation included in Plan: See Chapters 8 and 3 The implementation of the Councils’ economic strategy may have numerous effects. The protection of environment and heritage however is built into this Strategic Aim. Protection of other environmental effects, such as noise and emissions and maximising brownfield land must be mitigated also. There are numerous mitigation measures included in the Plan to ensure no negative effects from this objective. This includes objectives and development management standards in relation to noise and air pollution (Chapter 8) and the promotion of areas in need of regeneration (Chapter 3). Therefore any adverse effects are unlikely.	
Chapter 4: Economic Development	
Development Objective 4D	Uncertain effects on SEA objectives
4D- To deliver and implement the 6 projects associated with the Medieval Mile proposals during the lifetime of the Plan 2014 – 2020 for the city and county.	B1

Mitigation included in Plan: See Chapters 1,7 and 8 The implementation of the Medieval Mile proposals may have effects on biodiversity, flora and fauna. There are numerous mitigation measures included in the Plan to ensure no negative effects from this objective. This includes objectives and development management standards in relation to natural heritage (Chapter 1 and Chapter 7) and water quality (Chapter 8). Therefore any adverse effects are unlikely.	
Development Objective 4F	Uncertain effects on SEA objective
4F- The Smithwick lands the subject of the masterplan referred to in Section 3.4.3 will be the focus for major new retail expansion (convenience and comparison retailing) in the City & Environs over the plan period.	B1, H1, L1
Mitigation included in Plan: See Section The redevelopment of the Smithwick lands could have a negative impact on biodiversity, cultural & built heritage and on historic landscapes. The mitigation measures contained in Chapter 7 of the Plan will ensure that any development proposal will not have a negative impact in this regard. The masterplan will also be screened for an Appropriate Assessment.	
Chapter 6: Recreation, Arts and Tourism	
Development Objective	Uncertain effects on SEA objectives
<i>Strategic Aim: To protect and improve recreational, tourism and arts facilities for the benefit of residents and for the promotion of tourism.</i>	B1 W1 H1 L1
Mitigation included in Plan: See Chapters 1,7 and 8 The development of such facilities may have impacts on natural and cultural heritage. There are numerous mitigation measures included in the Plan to ensure no negative effects from this objective. This includes objectives and development management standards in relation to natural heritage (Chapter 1 and Chapter 7), cultural heritage, landscape (Chapter 7) and water quality (Chapter 8). Therefore any adverse effects are unlikely.	
Development Objective 6B	Uncertain effects on SEA objective
6B- Complete the development of the River Nore Linear Park within the lifetime of the Plan	B1 W1
Mitigation included in Plan: See Chapter 1 The River Nore is a designated SPA and cSAC. Section 1.3 of the Plan sets out that any development must be subject to appropriate assessment in accordance with the Guidance <i>Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities</i> , 2009, therefore any potential adverse effects will be dealt with in that assessment.	
Chapter 7: Heritage	
Development Objective 7C	Uncertain effects on SEA objective
7C- To protect and, where possible, enhance the plant and animal species and their habitats that have been identified under European legislation (Habitats and Birds Directive) and protected under national Legislation (European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477 of 2011), Wildlife Acts 1976-2010 and the Flora Protection Order (SI94 of 1999)	S2 M1
Mitigation included in Plan: See Chapter 3 This objective may lead to the avoidance of centrally located sites with access to existing	

infrastructure due to the requirements for protection of plant and animal species. The mitigation measure for this is that Section 3.4 includes an objective for the promotion of areas in need of regeneration, but other measures in the Plan, as set out above, will ensure that any such regeneration must be in accordance with the protection of natural heritage as required by legislation.	
Development Objective 7B	Uncertain effects on SEA objective
7B- To protect and, where possible, enhance the natural heritage sites designated under EU Legislation and National Legislation (Habitats Directive, Birds Directive, European Communities (Birds and Natural Habitats) Regulations 2011 and Wildlife Acts). This protection will extend to any additions or alterations to sites that may arise during the lifetime of this plan.	S2 M1
Mitigation included in Plan: See Chapter 3 This objective may lead to the avoidance of centrally located sites with access to existing infrastructure due to the requirements for protection of plant and animal species. The mitigation measure for this is that Section 3.4 includes an objective for the promotion of areas in need of regeneration, but other measures in the Plan, as set out above, will ensure that any such regeneration must be in accordance with the protection of natural heritage as required by legislation.	
Chapter 8: Infrastructure and Environment	
Development Objective 8H	Uncertain effects on SEA objective
8H- To adopt a comprehensive risk-based planning approach to flood management to prevent or minimise future flood risk. In accordance with the Guidelines , the avoidance of development in areas where flood risk has been identified shall be the primary response.	S2 M1
Mitigation included in Plan: See Chapter 8 The avoidance of land at risk from flooding may include the avoidance of significant brownfield lands in central areas. As stated in Section 8.2.4.1, the Plan will “adopt a comprehensive risk-based planning approach to flood management to prevent or minimise future flood risk”, in accordance with the Guidelines . The Guidelines include for a justification test to be carried out where land is centrally located and is well situated for sustainable development reasons. If the justification test is satisfied, the land can be zoned. As the Plan will follow the Guidelines, adverse effects on sustainable and sequential development will be mitigated.	
Chapter 9: Renewable Energy Strategy	
Development Objective	Uncertain effects on SEA objectives
Strategic Aim: To promote and facilitate all forms of renewable energies and improvements in energy efficiencies as a response to climate change.	H1 L1
Mitigation included in Plan: See Chapter 7 In some cases the promotion of renewable energies may cause adverse effects on cultural heritage and landscape through adverse visual impacts. Mitigation measures are included in Chapter 7 as development management standards in relation to cultural heritage and landscape to ensure that no development will have a negative effect on cultural heritage or landscape.	
Chapter 10: Transport	
Development Objective 10M	Uncertain effects on SEA objective
10M- Reserve the proposed line of the western by-pass for the city from the	B1 P2 S3 W1 A1

Castlecomer Road to the Waterford Road free from development, including for a river crossing and seek approval from An Bord Pleanála for Phase 1 of the Kilkenny Northern Ring Road Extension (See Figure 3.3).	H1 L1
Mitigation included in Plan: See Section No detailed design work has been carried out for this project to date. The Plan is merely reserving the line free from development. The implementation of any such project will require environmental assessment and Chapters 1 & 7 contain mitigation measures in relation to the protection of natural and cultural heritage. In relation to Phase 1 of the Kilkenny Northern Ring Road Extension, an Environmental Impact Statement has been prepared by Kilkenny County Council and this will be submitted to ABP under Strategic Infrastructure legislation in 2013. This EIS includes mitigation measures in relation to heritage.	
Development Objective 10V	Uncertain effects on SEA objective
10V- Complete improvement works from the Parade Plaza to Dean Street under the Medieval Mile Project	B1 H1 L1
Mitigation included in Plan: See Chapter 7 The project is located within Architectural Conservation Areas as set out in Chapter 7 of the Development Plan. There are development management standards set out in Chapter 7 to protect the character of these ACA's which will mitigate the impact of this project. There are numerous mitigation measures included in the Plan to ensure no negative impacts on biodiversity, including objectives and development management standards in relation to natural heritage (Chapter 1 and 7). Therefore any adverse effects are unlikely.	

8 Development Plan Monitoring

The SEA Directive requires Member states to monitor the significant environmental effects of the implementation of plans. This section puts forward proposals for monitoring the Plan. Monitoring of the Plan enables the identification of unforeseen adverse effects and the undertaking of appropriate remedial action. Existing monitoring arrangements may be used if appropriate, to avoid duplication of monitoring. The Council is responsible for monitoring and the preparation of monitoring evaluation report(s), the publication of these reports and, if necessary, the carrying out of corrective action. The Manager's Report on the implementation of the Development Plan, which must be carried out within two years of the making of the Plan, will include detail on the monitoring of the indicators.

The SEA [Guidelines](#) state that monitoring must be linked to earlier stages in the SEA process, in particular to the environmental objectives and issues identified during the preparation of the Environmental Report. It is proposed to base monitoring on a series of indicators which measure changes in the environment, especially changes which are critical in terms of environmental quality, for example water or air pollution levels.

The indicators aim to simplify complex interrelationships and provide information about environmental issues which is easy to understand. A list of environmental indicators and targets is provided in Table 8.1. The indicators are based on the Strategic Environmental Objectives presented in Chapter 6. While considerable environmental data is directly available to the Council such as water quality, and information on the RPS etc, other sources of information may need to be accessed to provide a comprehensive view of the impact of the Plan. The sources of information are also identified in Table 8.1.

Environmental indicator assessment during monitoring can show positive/neutral impacts or negative impacts on the environment. Where an indicator value highlights a positive/neutral impact on the environment, it is likely that the objectives of the Plan are well defined with regard to the environment. Conversely where the objectives of the Plan have a negative impact on the environment, it may be necessary to review the objectives of the Plan or to take some other form of intervention. For example, if an objective is having a significant adverse impact, a variation may be considered during the lifetime of the Plan. The Manager's Report on the implementation of the Development Plan will include a review of the indicators, as set out in Table 8.1.

Table 8.1 Monitoring proposals for environmental categories

Environmental Category	Targets	Selected indicators	Data Sources	Monitoring frequency
Biodiversity - Flora and Fauna	No loss of important and/or designated habitats	Number of sites.	Kilkenny Local Authorities/National Parks and Wildlife Service/Fisheries Board (depending on available information from relevant statutory authorities).	At monitoring evaluation
	No deterioration in the quality of protected areas	Overall conservation status of habitats in Kilkenny	The NPWS; For all European sites: Report on Overall Conservation Status of Habitats in Ireland listed under the Habitats Directive (NPWS).	Every 6 years
	No loss of protected species	Overall conservation status of species in Kilkenny, distribution of protected species in Kilkenny	NPWS, Report on Overall Conservation Status of Habitats in Ireland listed under the Habitats Directive. National Biodiversity Data Centre	Every 6 years
	All actions contained within the Biodiversity Plan to be achieved during the lifetime of the Development Plan.	Number of actions achieved.	Heritage Officer	At monitoring evaluation
	No spread of invasive species within the City	Numbers of new cases identified over 2013 levels	National Biodiversity Data Centre	At monitoring evaluation
Population and Human health	No further loss of population within Kilkenny Borough boundary; total population within Kilkenny Borough boundary not to decrease on 2011 levels.	Total population within Kilkenny Borough boundary.	Census	Next Census
Soil	No significant increase in number of landslides	Total number of landslides	National Landslide Database	At monitoring evaluation
Water	No decline in river water quality; no increase in percentage of sample stations in seriously polluted rivers.	Percentage of sample stations in seriously polluted rivers.	EPA Reports on River water quality	At monitoring evaluation

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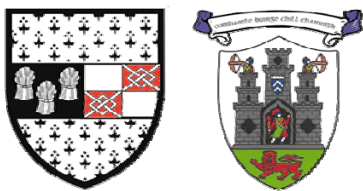
	No decline in surface water quality; no decline in status of surface waters from current status	Status of surface water	EPA	At monitoring evaluation
	No decline in groundwater quality; no decline in status of groundwater from current status	Status of groundwater	EPA	At monitoring evaluation
	No reduction in processing of waste water and treated effluent quality; Purcellsinch WWTP to continue to meet recommended EPA limits.	Status of Purcellsinch WWTP in relation to recommended EPA limits.	EPA	At monitoring evaluation
	Improvement in quality of drinking water; Radestown WSS to be removed from EPA's Remedial Action List.	Status of Radestown WSS on the EPA's Remedial Action List.	EPA	At monitoring evaluation
	Improvement of application of ground water protection scheme.	Number of source protection areas that have been mapped.	GSI & Kilkenny County Council Environment	At monitoring evaluation
Air	Increase in proportion of people using sustainable transport	Proportion of people walking, cycling or using public transport to get to school or work.	Census	Next Census
	No decrease in air quality; no exceedances in Nitrogen Dioxide and Ozone.	Exceedances in Nitrogen Dioxide and Ozone.	EPA	At monitoring evaluation
Climatic factors	Improved Climate Change Adaptation measures.	Completion of Climate Change Adaptation Strategy.	Kilkenny Local Authorities	At monitoring evaluation
Material Assets	Improvements in energy infrastructure; upgrading of the Kilkenny city to Ballyragget line from 38 kv to 11 kv.	Status of the upgrade of the Kilkenny city to Ballyragget line	Eirgrid	At monitoring evaluation
Cultural Heritage (architectural and archaeological)	Increase in number of protected structures over that listed in 2008 Plan.	Number of protected structures.	Kilkenny Local Authorities	At monitoring evaluation

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Landscape	No reduction in number of protected views. Increase or no change in the number of protected views over that listed in the 2008 Plan – 13 views.	Number of protected views.	Kilkenny Local Authorities	At monitoring evaluation
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3. Strategic Flood Risk Assessment (SFRA)

Appendix 1 to the Environmental Report on the Strategic Environmental Assessment of the Kilkenny City & Environs Development Plan 2014-2020



Forward Planning
Kilkenny Borough &
Kilkenny County Councils
13th June 2014

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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 City & Environs Development Plan (CEDP) 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 plan, and in this way inform the policies and objectives of the plan. A separate SEA, and SFRA, will be carried out of the County Development Plan.

1.1 City & Environs Development Plan

As set out in the Environmental Report, Kilkenny CEDP applies to the city of Kilkenny, which includes the area of the Borough Council plus the Environs of the city, within County Kilkenny's jurisdiction. The CEDP is strategic in nature, and sets out objectives for development within the City over the next 6 years.

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 the City 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 and Borough Councils and their 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:

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

- **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 City & Environs 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 CEDP,
- Identify whether flood risk is an issue in the areas under consideration for zoning proposals.

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 Summary and Recommendations of the RFRA state that at pre-review stage of Development Plan, 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 South East Catchment Flood Risk Management Plan (SECFRAM) is being produced at present, and is scheduled for completion in 2016. When finalized, the findings of this will be integrated into the Development Plan Strategic Flood Risk Assessment.

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

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.](#)

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 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). The Rivers Nore and Breagh in Kilkenny have been identified as AFAs.

Maps of the County, including the City, have been published as part of the 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 South Eastern River Basin District (SERBD) CFRAMS will affect the CEDP. This study commenced in summer 2011 and is scheduled for completion in 2016.

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;

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/>

- ensure that full and thorough public and stakeholder consultation and engagement is achieved.

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 the completed CFRAM study, a combination of the PFRA maps and alternative available sources of information will be used.

2.2.2.3 Kilkenny Flood Relief Scheme

A flood relief scheme was completed in Kilkenny city in 2005 to provide defence against the 100 year flood from the Nore.

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*. The benefiting lands map for the Kilkenny Scheme Design was obtained from the OPW. The Benefiting land outline generally equates to the 100 year flood outline or flood zone A. This map covers the centre of Kilkenny City, mainly around the Nore, but also with some coverage of the Breaghagh.

2.2.3 Alternative available sources

The data listed below is available for the city and provides information on the historical occurrence of flooding. This data was mapped. Flooding and surface water issues in the city were also identified through consultation with the Area Engineer 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 City. 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 Local Authority Personnel

The Area Engineer was 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 is identified in a Flood Risk Indicator Matrix. As Kilkenny City could be subject to a potential flood risk issue, the assessment proceeds to Stage 2.

Flood Risk Indicator Matrix for Kilkenny City & Environs

Available Data by source

www.floodmaps.ie	Alluvial Soils	Benefitting lands	6" OS maps	Local Authority information	Other/PFRA 2011
A number of flood incident points recorded for the Breaghagh and the Nore. The last flood recorded for the Nore was in 1997, the last for the Breaghagh in 2006. The most recent Breaghagh 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. Breaghagh to the west and Pococke to the east.	Benefitting lands mapped along River Nore through the centre of the city and also along the R. Breaghagh to the west and Pococke to the east.	Lands along River Nore to the north (in Friarsinch and Talbotsinch) are described as "Liable to Floods". Also lands along the Pococke in Leggetsrath to the east.	Flooding in Irishtown and Blackmill Street has been addressed through the Nore Flood Relief Scheme. Three locations in the city were subject to flooding: R. Breaghagh on Circular Road, adjacent to Robertshill housing estate and at the Water Barrack and R. Nore at Canal Walk. Flooding at Water Barrack affects the roadway and prevents vehicular access to some properties. Sections of the Breaghagh 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. Minor river channel maintenance carried out in 2010 on R. Breaghagh upstream of Kennyswell Road appears to have been very beneficial to the Circular Road, Robertshill area and no flooding event has taken place since. 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 Rivers Nore and Breaghagh in Kilkenny identified as Areas of Further Assessment.

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.

An iterative process of flood risk assessment has been undertaken.

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

2.3.1.1 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.

Using a combination of the PRFA mapping and the flood risk indicators as described earlier, an area of flood risk was mapped. As discussed above, the Flood Relief Scheme included an outline of Flood Zone A. Where this was mapped, this was taken directly as Flood Zone A.

The PFRA maps included delineation of both flood zones A and B. For the remainder of the City & Environs, beyond the extent of the 1999 outline, Flood Zone A was taken directly as Flood Zone A as identified in the PFRA mapping.

Flood Zone B 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.

2.3.2 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 for the City. This was taken from Variation 1, Core Strategy (2011). 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 zoned land is located 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.

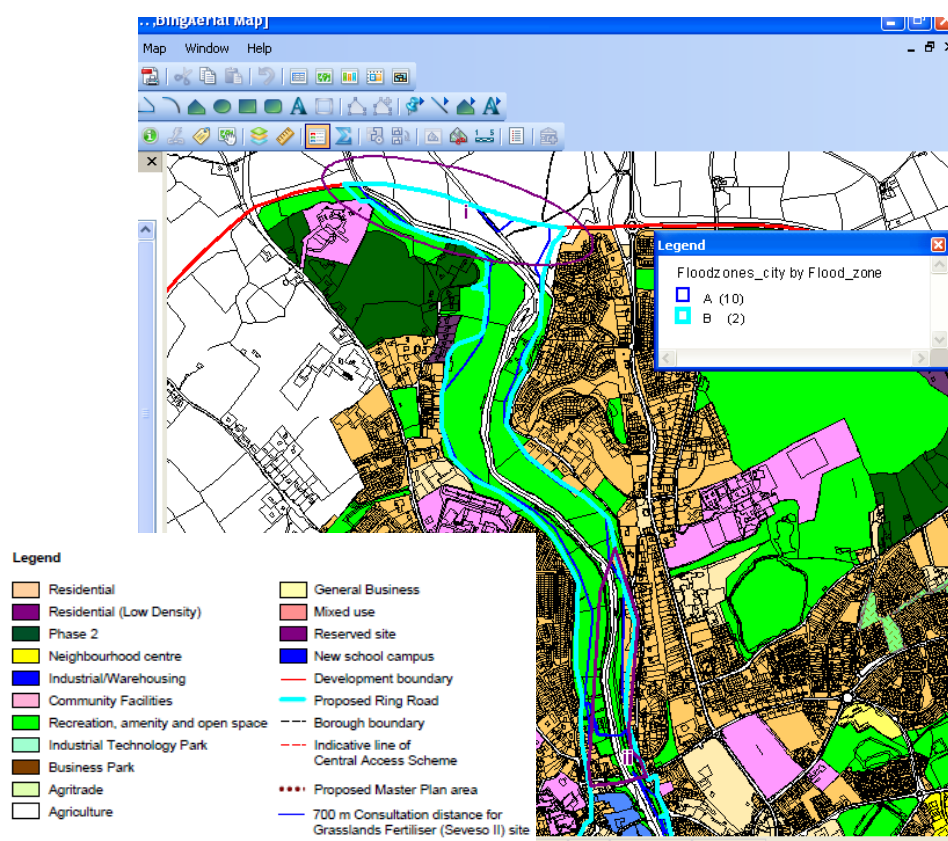
Note: Vulnerability to pluvial flood risk should not be a limitation to development, but should be incorporated into the local drainage strategy, therefore areas of pluvial flooding were not subjected to the Sequential approach. Areas of pluvial risk are available as part of the PFRA mapping at http://www.cfram.ie/pfra-pdfs/PFRA%20Integrated%20Map_137.pdf

2.3.3 Zoning Proposals

The Flood Zones in Kilkenny City were overlain on the Zoning Map, taken from the City & Environs Development Plan, Core Strategy Variation (2011), see Figure 1.

A total of six areas of flood zones are mapped, and the zoning in each of these areas was examined.

Area 1: Either side of the River Nore, north of Greens Bridge



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

compatible uses, the Sequential approach was used and this resulted in the avoidance of a site and rezoning as follows:

- i. From Agriculture to outside the Development boundary at Dunmore

The amended zoning map is shown on Figure 2. Only a small amount of residentially zoned land remains within the flood zones, around Greens Bridge (ii). In order for this land to remain zoned for residential use, 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....

Kilkenny is identified as a Hub in the [South East Regional Planning Guidelines](#) and in the County and City Development Plans.

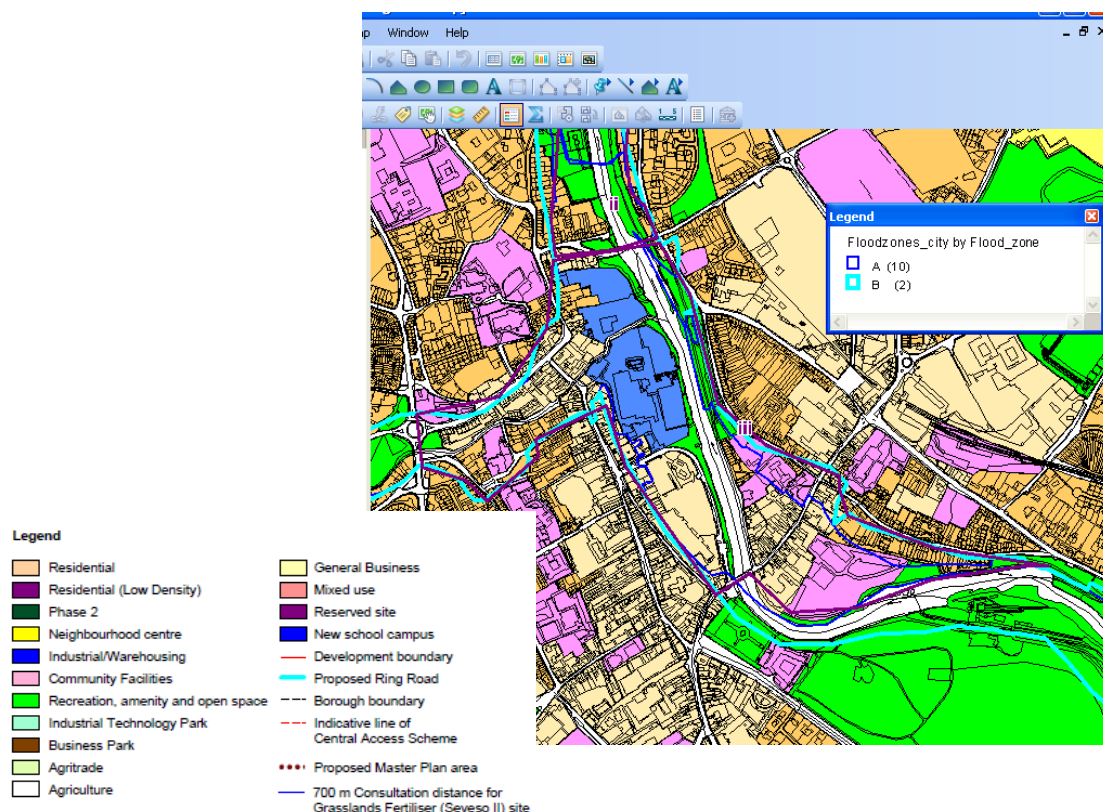
2) The zoning or designation of the lands for the particular use or development type is required to achieve the proper and sustainable planning of the urban settlement

- i. The zoning of this area for residential use 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.
- ii. All of the land is currently in use.
- iii. All of the land adjoins the core of Kilkenny (as core is defined in the [Flooding Guidelines](#)).
- iv. The continued development of this land is essential in achieving compact and sustainable urban growth as it will provide residential use to Kilkenny.
- v. 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 CEDP 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.

Area 2: Between Green's bridge and John's Bridge/John Street as far as Maudlin Street/Dublin Road junction, around River Nore and to Dominic Street/Dean Street roundabout around R. Breaghagh (see iii on Figure 1).



This area forms part of Kilkenny city centre and was zoned for numerous uses, namely General Business, Industrial, Open Space, Residential and Community facilities. The proposed zoning for the Brewery site is as General Business. Open space is a water compatible use and does not require the Justification test, however the other uses, all of which are partially located within Flood Zone A, 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....

Kilkenny is identified as a Hub in the [South East Regional Planning Guidelines](#) and in the County and City Development Plans.

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

- i. The zoning of this area for this range of uses is intended mainly to reflect the existing uses in operation. The General Business zoning of the Smithwick's site will be essential to facilitate the regeneration and/or expansion of the centre.
- ii. The land comprises significant previously developed and/or under-utilised lands.
- iii. All of the land is within the core of Kilkenny (as core is defined in the [Flooding Guidelines](#)).
- iv. The continued development of this land is essential in achieving compact and sustainable urban growth.

- v. There are no suitable alternative lands within or adjoining the core to provide such city centre uses.

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. The Smithwick's site is one large site with development potential. Mitigation measures are included in the CEDP 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.

Area 3: West of Dominic Street/Dean Street roundabout around Breaghagh, north of Croker's Hill.

This area adjoins the city centre and is zoned for numerous uses, namely Residential, Open Space, Community facilities and Agriculture. For the non-compatible uses, the Sequential approach was used and this resulted in the avoidance of three sites and rezoning as follows:

- iv) From Agriculture to Open space at Palmerstown and Kilcreene (within Flood Zone A)
- v) From Community Facilities to Open Space at Kilcreene Hospital
- vi) From Residential to Open space at Croker's Hill

One area of land, zoned for Agricultural use, located adjacent to the development boundary is within Flood Zone B (vii). As Agriculture is a less vulnerable use, there is no need for the Justification test to be applied to this parcel.

The amended zoning map is shown on Figure 2. Only a small amount of residentially zoned land remains within the flood zones, near the Dean Street roundabout (viii). As a highly vulnerable use, this must be subjected to the Justification Test, as follows:

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

Kilkenny is identified as a Hub in the [South East Regional Planning Guidelines](#) and in the County and City Development Plans.

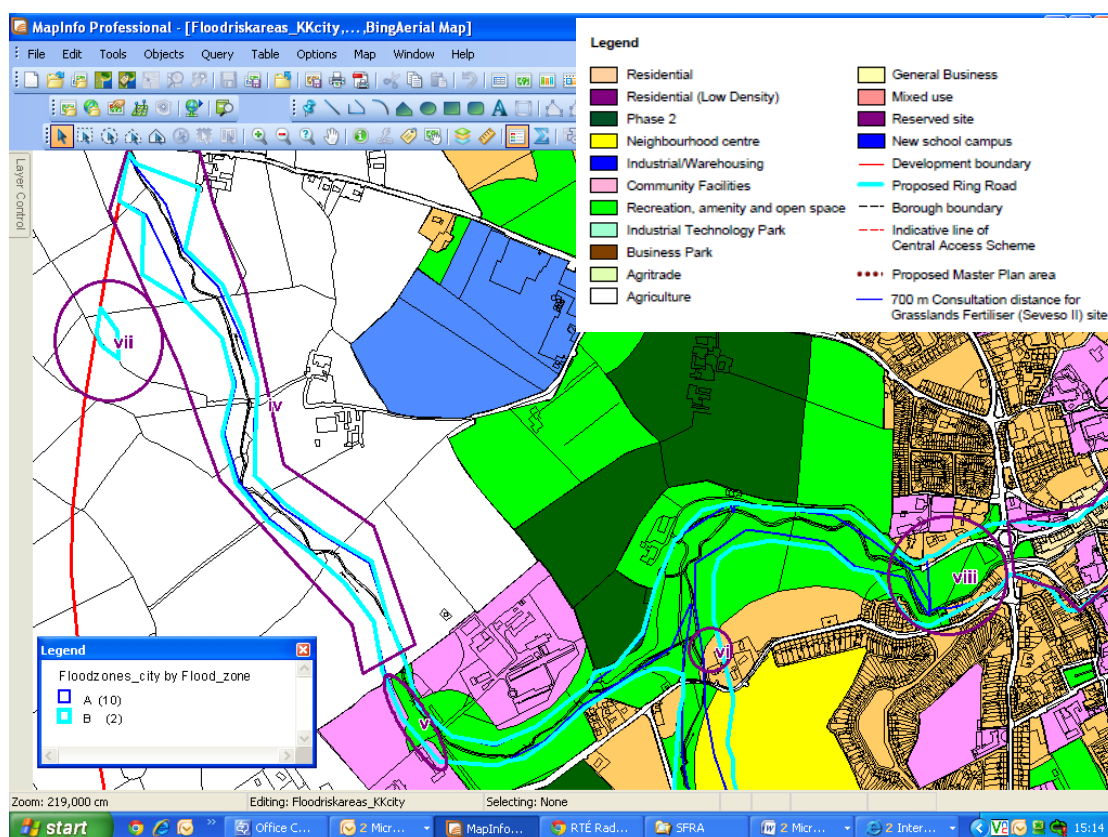
2) The zoning or designation of the lands for the particular use or development type is required to achieve the proper and sustainable planning of the urban settlement

- i. The zoning of this area for residential use 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.
- ii. All of the land is currently in residential use.
- iii. All of the land adjoins the core of Kilkenny (as core is defined in the [Flooding Guidelines](#)).
- iv. The continued development of this land is essential in achieving compact and sustainable urban growth as it will provide residential use to Kilkenny.

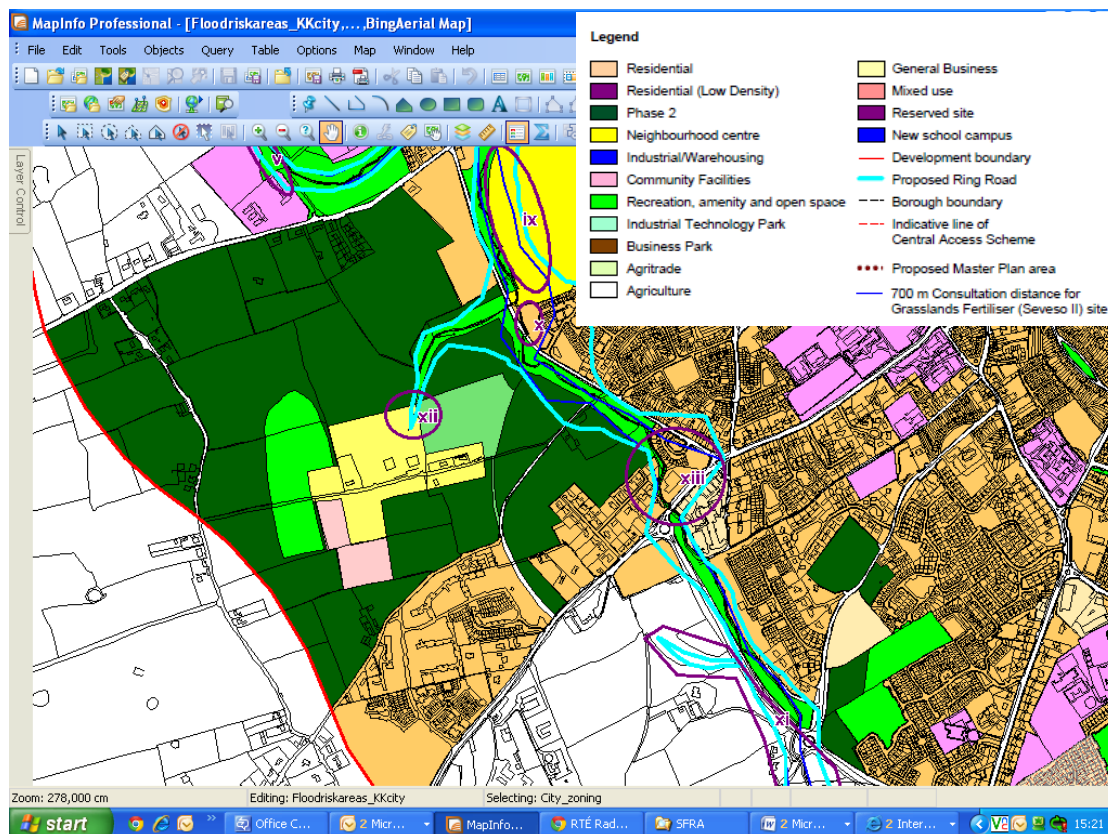
- v. The zoning of this land reflects the existing uses on the sites, and is intended to facilitate their appropriate expansion. Therefore this land is the most suitable for this purpose.

2) 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 CEDP 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.



Area 4: South of Croker's Hill around the River Breaghagh, to the Kells road roundabout.



This area adjoins the city centre and is zoned for numerous uses, namely Mixed use, Residential, Open Space, Phase 2, Neighbourhood centre and Agriculture.

Both Open Space and Phase 2 (development not to take place during the lifetime of this plan) are considered water compatible uses. For the non-compatible uses, the Sequential approach was used and this resulted in the avoidance of a number of sites and rezoning as follows:

- ix) From Mixed Use to Open space at Croker's hill
- x) From Residential to Open space at Robert's Hill, north of entrance to housing estate
- xi) From Agriculture to open space west of ring road.
- xii) From Neighbourhood Centre, Phase 2 and new school campus to open space at Poulgour.

The amended zoning map is shown on Figure 2. Only a small amount of zoned land (General Business and Residential) remains within the flood zones, near the Ring Road (xiii). As both zones can contain residential uses, which are a highly vulnerable use, they must be subjected to the Justification Test, as follows:

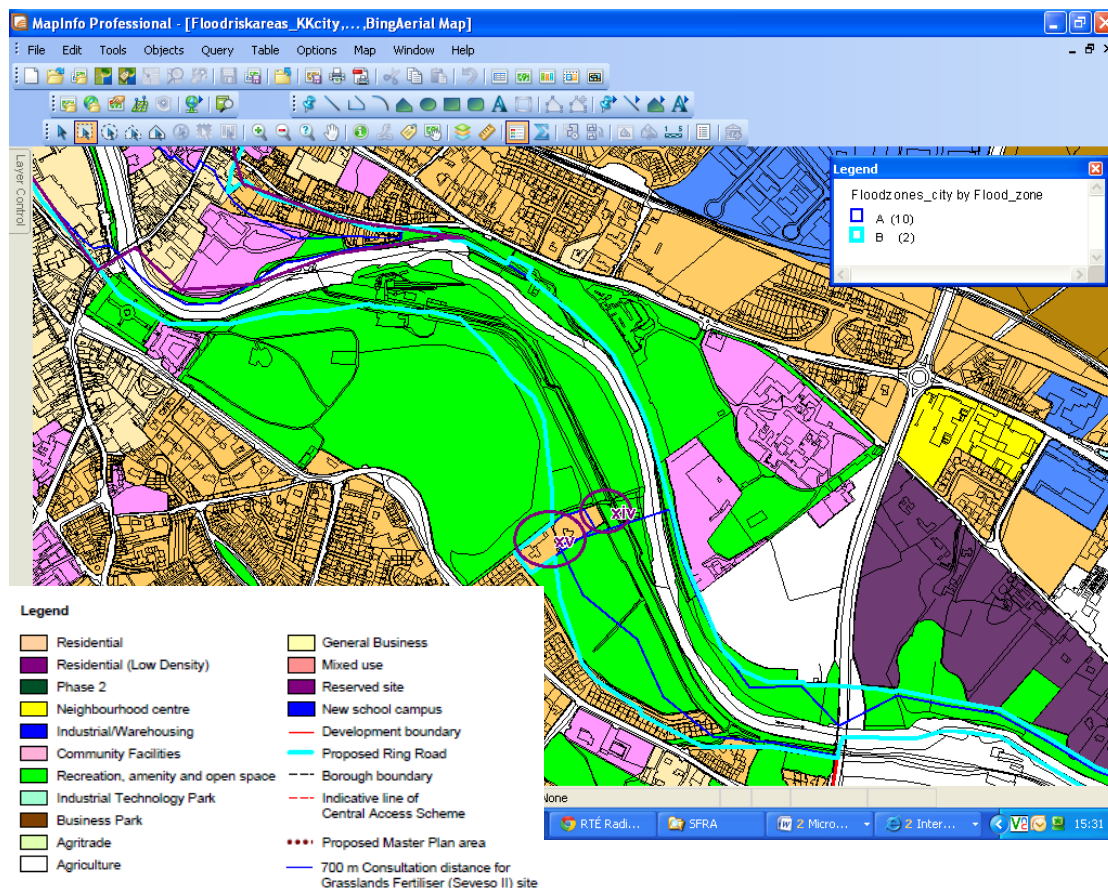
- 1) The urban settlement is targeted for growth....
Kilkenny is identified as a Hub in the [South East Regional Planning Guidelines](#) and in the County and City Development Plans.
- 2) The zoning or designation of the lands for the particular use or development type is required to achieve the proper and sustainable planning of the urban settlement....

- i. The zoning of this area for residential and General Business use is intended mainly to reflect the existing uses; Hotel Kilkenny, private residences and some sites with permission for residential use. The continued zoning of the land will facilitate the regeneration and/or expansion of the centre.
- ii. The land comprises significant previously developed and/or under-utilised lands.
- iii. All of the land adjoins the core of Kilkenny (as core is defined in the [Flooding Guidelines](#)).
- iv. The continued development of this land is essential in achieving compact and sustainable urban growth.
- v. 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 CEDP 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.

Area 5: From Lacken Mill to City's eastern boundary around the River Nore.



This area adjoins the city centre and is mainly zoned for Open Space with some small pockets of Residential use.

For the non-compatible uses, the Sequential approach was used and this resulted in the avoidance of sites and rezoning as follows:

xiv) Undeveloped parcel, from Residential to Open space at Canal Walk

The amended zoning map is shown on Figure 2. Only a small amount of (Residential) zoned land remains within the flood zones (xv). As a highly vulnerable use, this land must be subjected to the Justification Test, as follows:

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

Kilkenny is identified as a Hub in the [South East Regional Planning Guidelines](#) and in the County and City Development Plans.

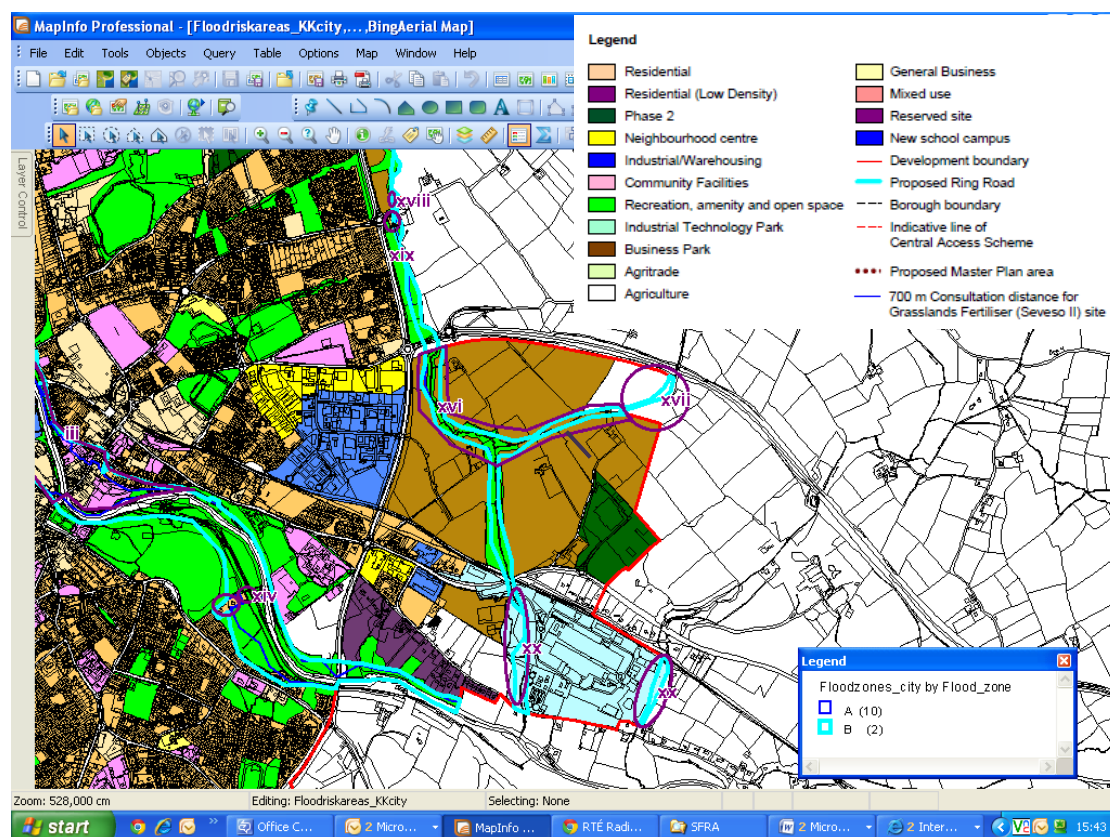
2) The zoning or designation of the lands for the particular use or development type is required to achieve the proper and sustainable planning of the urban settlement

- i. The zoning of this area for residential use is intended mainly to reflect the existing uses of private residences. The continued zoning of the land will facilitate the regeneration and/or expansion of the centre.
- ii. The land comprises significant previously developed and/or under-utilised lands.
- iii. All of the land adjoins the core of Kilkenny (as core is defined in the [Flooding Guidelines](#)).
- iv. The continued development of this land is essential in achieving compact and sustainable urban growth.
- v. 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.

4) 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 CEDP 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.

Area 6: Area around Pockocke River to east of city



This area adjoins the city centre and is zoned for numerous uses, namely Industrial/Technology park, Residential, Open Space, Business park and Residential.

For the non-compatible uses, the Sequential approach was used and this resulted in the avoidance of sites and rezoning as follows:

- xvi) From Business Park to Open space at Leggetsrath and Blanchfieldsland
- xvii) From Agriculture to Open space at Leggetsrath
- xviii) From Business Park to Open Space at Newpark Upper
- xix) From Residential to unzoned land at Newpark Upper

The amended zoning map is shown on Figure 2. Only a small amount of (Industrial/technology park) zoned land remains within the flood zones (xx). In this area Flood Zones A and B almost overlap and as vulnerable uses, this land must be subjected to the Justification Test, as follows:

- 1) The urban settlement is targeted for growth....
Kilkenny is identified as a Hub in the [South East Regional Planning Guidelines](#) and in the County and City Development Plans.
- 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

- vi. The zoning of this area for industrial use is intended mainly to reflect the existing uses of Purcellsinch. The continued zoning of the land will facilitate the regeneration and/or expansion of the centre.
- vii. The land comprises significant previously developed and/or under-utilised lands.
- viii. All of the land adjoins the core of Kilkenny (as core is defined in the [Flooding Guidelines](#)).
- ix. The continued development of this land is essential in achieving compact and sustainable urban growth.
- x. 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.

5) 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 CEDP 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 the City & Environs of Kilkenny.

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, an objective will be included in the CEDP 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 text, as included in Chapter 8 of the Plan, is as follows:

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 single 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](#)⁷⁷ 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 City.

The OPW were consulted with at each stage of the Plan preparation process.

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.

⁷⁷ Greater Dublin Local Authorities, [Greater Dublin Regional Code of Practice for Drainage Works](#), 2006

4 Maps of Flood Risk Indicators

Zoning maps:

- 1) Areas of flood risk on Variation 1 Zoning Map
- 2) Areas of flood risk on zoning map

SFRA: Kilkenny City & Environs Development Plan 2014-2020

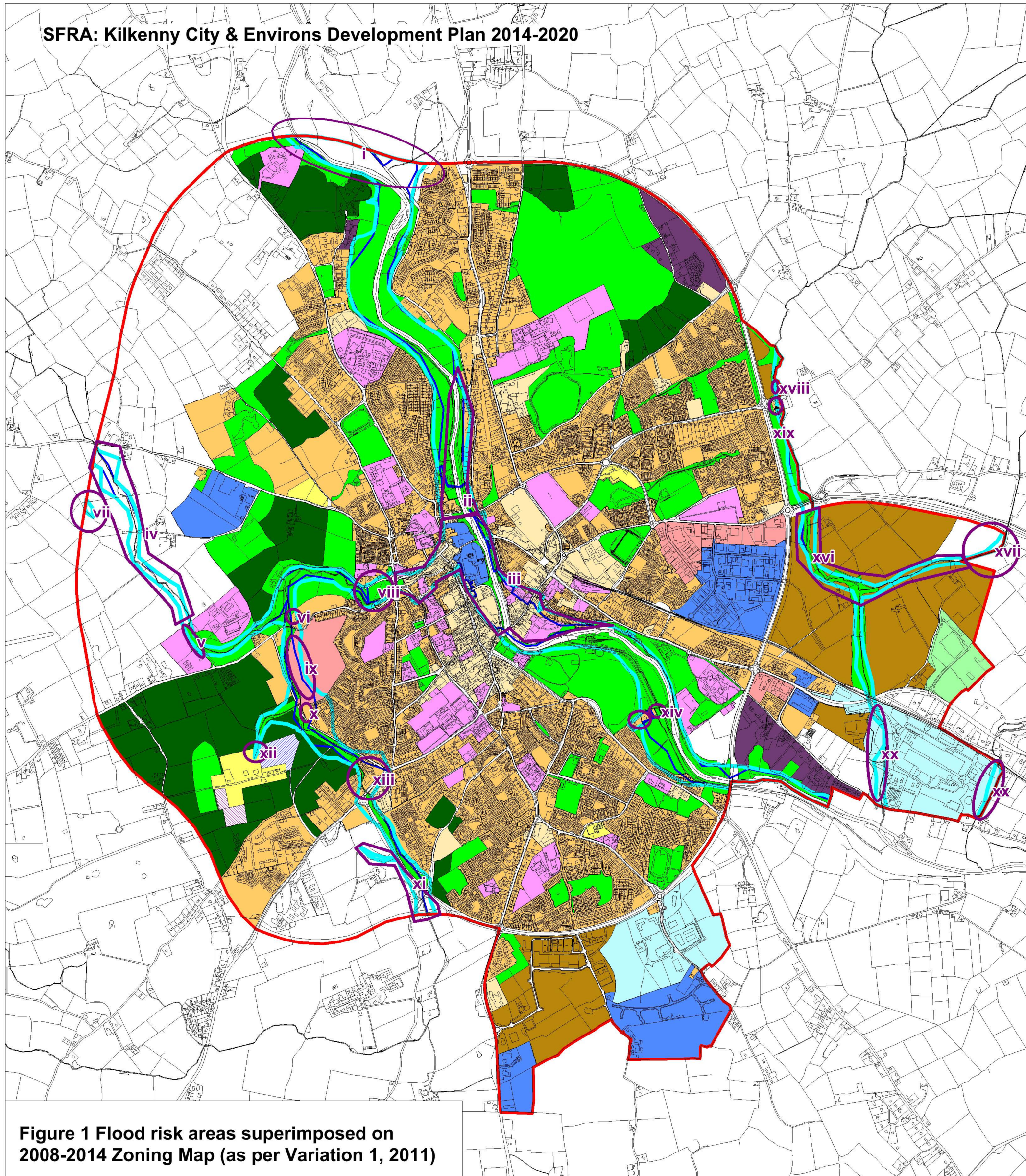


Figure 1 Flood risk areas superimposed on 2008-2014 Zoning Map (as per Variation 1, 2011)

- | | | |
|------------------------------------|--|--|
| Residential | General Business | Area of potential conflict between flood risk and zoning |
| Residential (Low Density) | Mixed use | |
| Phase 2 | Reserved site | Flood Zone A |
| Neighbourhood centre | New school campus | Flood Zone B |
| Industrial/Warehousing | Development boundary | |
| Community Facilities | Proposed Ring Road | |
| Recreation, amenity and open space | Borough boundary | |
| Industrial Technology Park | Indicative line of Central Access Scheme | |
| Business Park | | |
| Agritrade | | |
| Agriculture | | |
- Date: June 2014
 Scale 1: 22,000 at A3
 Based on Ordnance Survey of Ireland Map, Licence No. "Kilkenny/CCMA/08/12"

SEA: Kilkenny City & Environs Development Plan 2014-2020

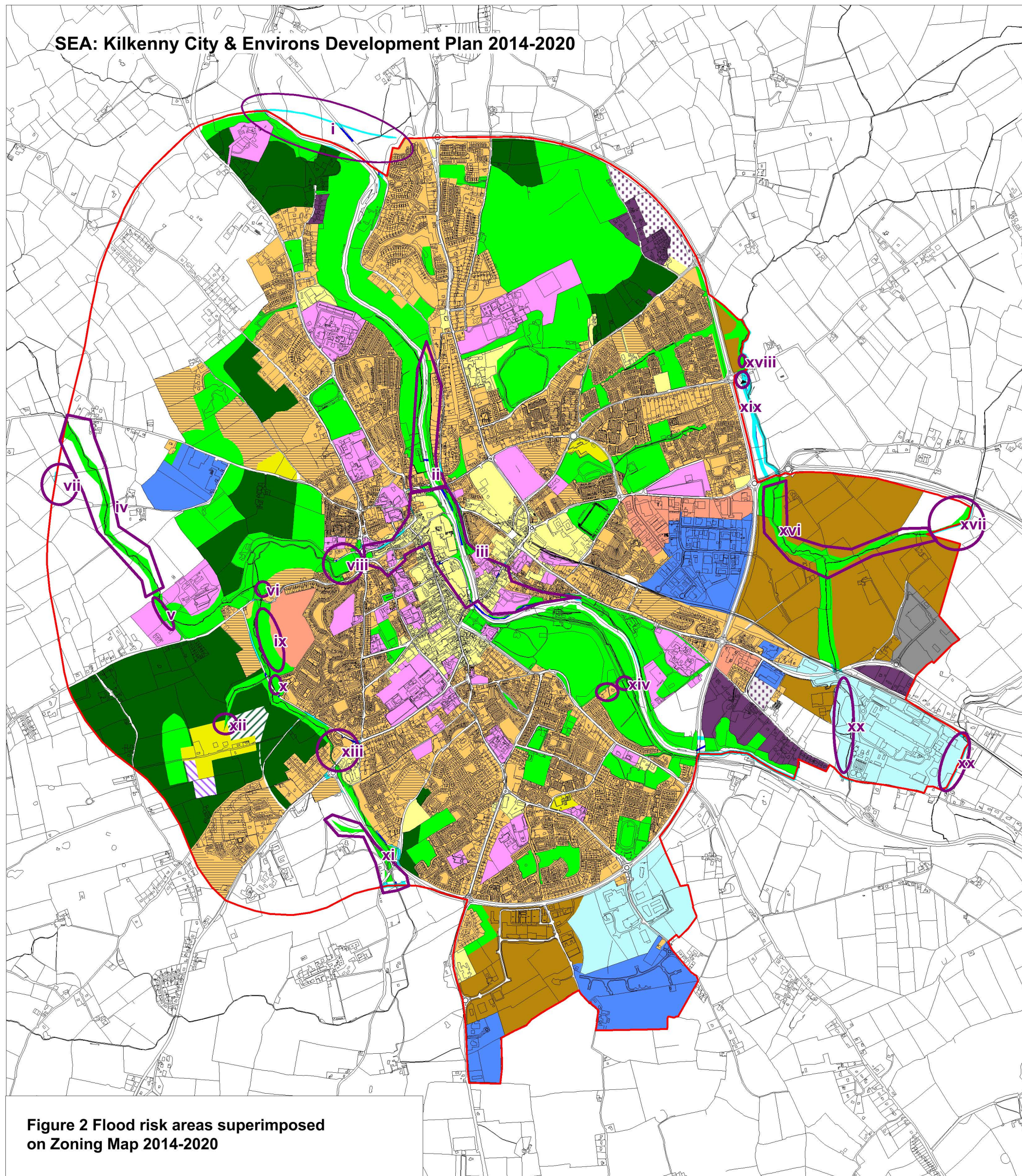


Figure 2 Flood risk areas superimposed on Zoning Map 2014-2020

- | | |
|------------------------------------|--|
| Existing Residential | Agritrade |
| Phase 1 Residential | Agriculture |
| Existing Low Density Residential | General Business |
| Phase 1 Low Density Residential | Mixed use |
| Phase 2 | Reserved site |
| Neighbourhood centre | New school campus |
| Industrial/Warehousing | Development boundary |
| Community Facilities | Proposed Ring Road |
| Recreation, amenity and open space | Borough boundary |
| Industrial Technology Park | Indicative line of Central Access Scheme |
| Business Park | |

Area of potential conflict between flood risk and zoning

Date: June 2014
Scale 1: 22,000 at A3
Based on Ordnance Survey of Ireland Map,
Licence No. "Kilkenny/CCMA/08/12"