

SEA STATEMENT OF THE

**Joint Spatial Plan for the
Greater Carlow Graiguecullen Urban Area
2012-2018**

**Comprising the
Carlow Town Development Plan 2012-2018 (Oct 4th)
Graiguecullen Local Area Plan 2012-2018 (Sept 24th)
Carlow Town Environs Local Area Plan 2012-2018 (Oct 8th)**

STRATEGIC ENVIRONMENTAL ASSESSMENT



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1. INTRODUCTION

This Is the SEA Statement of the Joint Spatial Plan for the Greater Carlow Graiguecullen Urban Area 2012-2018 Strategic Environmental Assessment.

1.1 Legislative context

The European Community Strategic Environmental Assessment (SEA) Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment was issued in July 2001.

(Article 1) ‘The objective of this Directive is to provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes with a view to promoting sustainable development....’

This introduced the requirement that SEA be carried out on plans and programmes, including those of land use planning. The SEA Directive was transposed into Irish Law in 2004 coming into effect on the 21st July 2004, through the following Regulations:

European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations 2004, S.I. No. 435 of 2004, and the

Planning and Development (Strategic Environmental Assessment) Regulations 2004, S.I. No. 436 of 2004.

DoCELG SEA Circular PSSP/6 2011 gave notice that these were amended by:

European Communities (Environmental Assessment of Certain Plans and Programmes)(Amendment) Regulations, 2011, S.I. No. 200 of 2011;

European Communities (Strategic Environmental Assessment) Regulations, 2001, S.I. No. 201 of 2011.

This Review will also have regard to other relevant SEA documentation such as;

Implementation of SEA Directive (2001/42/EC): Assessment of the Effects of Certain Plans and Programmes on the Environment – Guidelines for Regional Authorities and Planning Authorities, published by the Department of the Environment, Heritage and Local Government (2004) and,

Development of Strategic Environmental Assessment (SEA) Methodologies for Plans and Programmes in Ireland – Synthesis Report, published by the EPA (2003).

These documents together with the above legislation have been used to guide this environmental assessment process.

It may also be noted that the EPA SEA Process Draft Checklist (2008) has been considered in the preparation of this Report

1.2 Content of the SEA Statement

The SEA Statement is required to include information summarising:

- a) how environmental considerations have been integrated into the Plan,
 - b) how
 - the environmental report,
 - submissions and observations made to the planning authority on the proposed Plan and Environmental Report, and
 - any transboundary consultations
- have been taken into account during the preparation of the Plan,
- c) the reasons for choosing the Plan, as adopted, 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 Plan.

1.3 Implications of SEA for the Plan

As a result of the aforementioned legislation, the Joint Spatial Plan 2012-2018 was required to undergo SEA. The findings of the SEA were expressed in a Draft Environmental Report which was submitted to the elected members alongside the proposed Draft Plan. The purpose of the report was to provide a clear understanding of the likely environmental consequences of decisions regarding the planned development of the Greater Carlow Graiguecullen Urban Area. At each stage of the process the Elected Members took into account the findings of the Environmental Report and/or the Addenda as appropriate. The SEA process ran alongside the plan-making process throughout, inter-linking at key stages including:

TIMELINE	PLAN-MAKING	SEA PROCESS
March 2011- November 2011	<p>Pre-Draft Public Consultation and First Manager's Report</p> <p>The rationale and an outline of the SEA process along with details of the plan-making process were presented to the members of the planning authorities at Joint Meeting of Carlow Town Councillors, Luggacurran Area Members, Carlow East-West Electoral Area</p> <p>The First Manager's Report was presented to Carlow Town Councillors, this included submissions relating to SEA and along with a general outline of the plan-making process including the SEA process.</p>	<p>First Manager's Report – SEA Screening and Scoping</p> <p>SEA screening – SEA mandatory SEA Issues Paper</p> <p>Section in general Issues Paper on SEA</p> <p>SEA Scoping Report finalized</p>
November 2011-April 2012	<p>Preparation of Draft Joint Spatial Plan for the Greater Carlow Graiguecullen Urban Area 2012-2018 comprising Draft Carlow Town Development Plan 2012-2018, Draft Graiguecullen Local Area Plan 2012-2018, Draft Carlow Town Environs Local Area Plan 2012-2018.</p> <p>Preparation of Draft Plan was informed by the SEA Scoping Stage.</p> <p>The Draft Town Plan was presented to Carlow Town Council before it went on Public Display and the findings and detail of the Draft Environmental Report were also presented to the Town Council.</p>	<p>Preparation of Draft Environmental Report</p>

	Following the finalization of the Draft, the findings of the Draft Environmental Report informed some policy changes in the Draft.	
April 2012-June 2012	Second Public Consultation process and Second Manager's Report. Following Public Consultation, the Manager's Report including the contents and findings of the Environmental Report and related submissions were presented to the elected members of the 3 planning authorities	Pages 82-90 of Manager's Report relate to Environmental Reports, changes made to Environmental Report as per the Manager's Report, Environmental Report updated . Manager's Report also recommended changes to Draft Objectives and Policies in light of submissions.
June 2012	Proposed Amendments (also known as material alterations) to Draft Plan as resolved by Planning Authorities	Proposed Amendments Screened under section 12(7) and 20(3) of Act and determined that SEA of one or more Proposed Amendments was not required. Determination published alongside the Proposed Amendments and submissions or observations sought from members of the Public (addendum 1 to Environmental Report)
July 2012-October 2012	Third Public Consultation process and Third Manager's Report prepared, Joint Spatial Plan adopted including some Proposed Amendments and Modifying other Proposed Amendments	In accordance with the Act, the Modifications of the Proposed Amendments may only be made where they are minor in nature and therefore not likely to have significant effects on the environment or adversely affect the integrity of a European site (addendum 2 to Environmental Report). In addition the Environmental Report was updated.

2. HOW ENVIRONMENTAL CONSIDERATIONS WERE INTEGRATED INTO THE DEVELOPMENT PLAN

2.1 Scoping and Consultations

On March 29 2011, the Issues Paper was placed on public display, the Issues Paper included a summary of the SEA process and invited submissions relating to any aspect of the preparation of the Joint Spatial Plan for the Greater Carlow Graiguecullen Urban Area including the SEA process. The Issues Paper was also circulated to statutory bodies including the environmental authorities.

In addition a SEA Scoping Issues Paper was prepared and circulated to the Environmental Authorities. This document invited relating to the scope and level of detail of the information to be included in the SEA environmental report before 4pm, April 26, 2011. Following on from this a roundtable meeting with available representatives from the environmental authorities held on May 10 and a draft SEA Scoping Report circulated in advance. A finalised SEA Scoping Report circulated to environmental authorities on September 14.

As part of the scoping exercise undertaken for this SEA, an extensive literature review of relevant documents including:

- ENVIRONMENTAL DATASETS
- GSI DATABASE
- CORINE LANDUSE DATABASE
- NPWS DATABASE FOR DESIGNATED SITES
- OPW FLOODING DATABASE
- DOEHLG SITES AND MONUMENTS DATABASE

The Scoping Report was prepared in accordance with the SEA Guidelines prepared by the Minister for the Environment, Heritage and Local Government and the Planning and Development Act 2000 as amended. The purpose of a Scoping Report is to ensure the identification of relevant environmental issues at this early stage. Also, a Scoping Report details the baseline information and the chosen methodologies for carrying out SEA. The scoping report indicated the level of detail necessary for the SEA of the Joint Spatial Plan. These elements have informed the assessment framework for the evaluation of Joint Spatial Plan Objectives and Policies.

Submissions received relating to the scope of the Environmental Report or environmental issues generally are detailed in the SEA Scoping Report. The Scoping Report sets out baseline data relating to the nature, sensitivity and condition of the environment in the Greater Carlow Graiguecullen Urban Area. Thereafter, it identified international, national and regional environmental objectives relevant to the preparation of the Joint Spatial Plan for the Greater Carlow Graiguecullen Urban Area 2012-2018 in the context of the baseline data. It set out the chosen methodology for the SEA, alternative options for the preparation of the Joint Spatial Plan and the SEA Assessment Framework.

Under article 13D of the SEA Regulations 2004, there is a requirement of Carlow Local Authorities and Laois County Council to give notice to the Environmental Authorities and scope the Environmental report. Section (c) of this article allows the environmental authorities to make a submission / observation on the information to be included in the environmental report.

Carlow Local Authorities and Laois County Council used this stage to consult with prescribed environmental authorities and other bodies with an environmental remit. The Planning Authorities also consulted members of the public by way of a general issues paper dealing with a range of planning and environmental issues including the SEA process. The Planning Authorities thereby satisfied the following articles of the SEA Directive:

- Prescribed environmental authorities (Art.6)
- Transboundary consultation(Art.7)
- Public (Art.6)

Carlow Local Authorities and Laois County Council formally consulted with the designated Environmental Authorities during Scoping which commenced in March 2011. In addition a scoping report was sent to the Authorities in September 2011.

The Planning Authorities were required to formally consult the following Environmental Authorities during the Scoping process: Environmental Protection Agency, Minister for the Environment Heritage and Local Government, the Minister for Communications, Marine and Natural Resources and adjoining local authorities. As the consultation process followed central government departmental restructuring and the environmental remit of organisations, the list of environmental authorities was expanded and the following organisations/departments were consulted:

- Environmental Protection Agency
- Department of Environment, Community and Local Government
- Department of Arts, Heritage and Gaeltacht Affairs
- Department of Agriculture, Marine and Food
- Department of Communications, Energy and Natural Resources
- South Eastern River Basin District
- Waterways Ireland
- Geological Survey of Ireland
- National Parks and Wildlife Service
- Office of Public Works
- Heritage Council
- Adjoining local authorities

Consultation with key internal stakeholders within the Planning Authorities was also undertaken, as was consultation with consultants appointed by the Planning Authorities to carry out an Appropriate Assessment (Appendix 3 of Joint Spatial Plan) and Strategic Flood Risk Assessment (Appendix 2 of Joint Spatial Plan) of the Joint Spatial Plan. Details of written submissions are set out in the Environmental Report (pages 24-27) and the first Manager's Report.

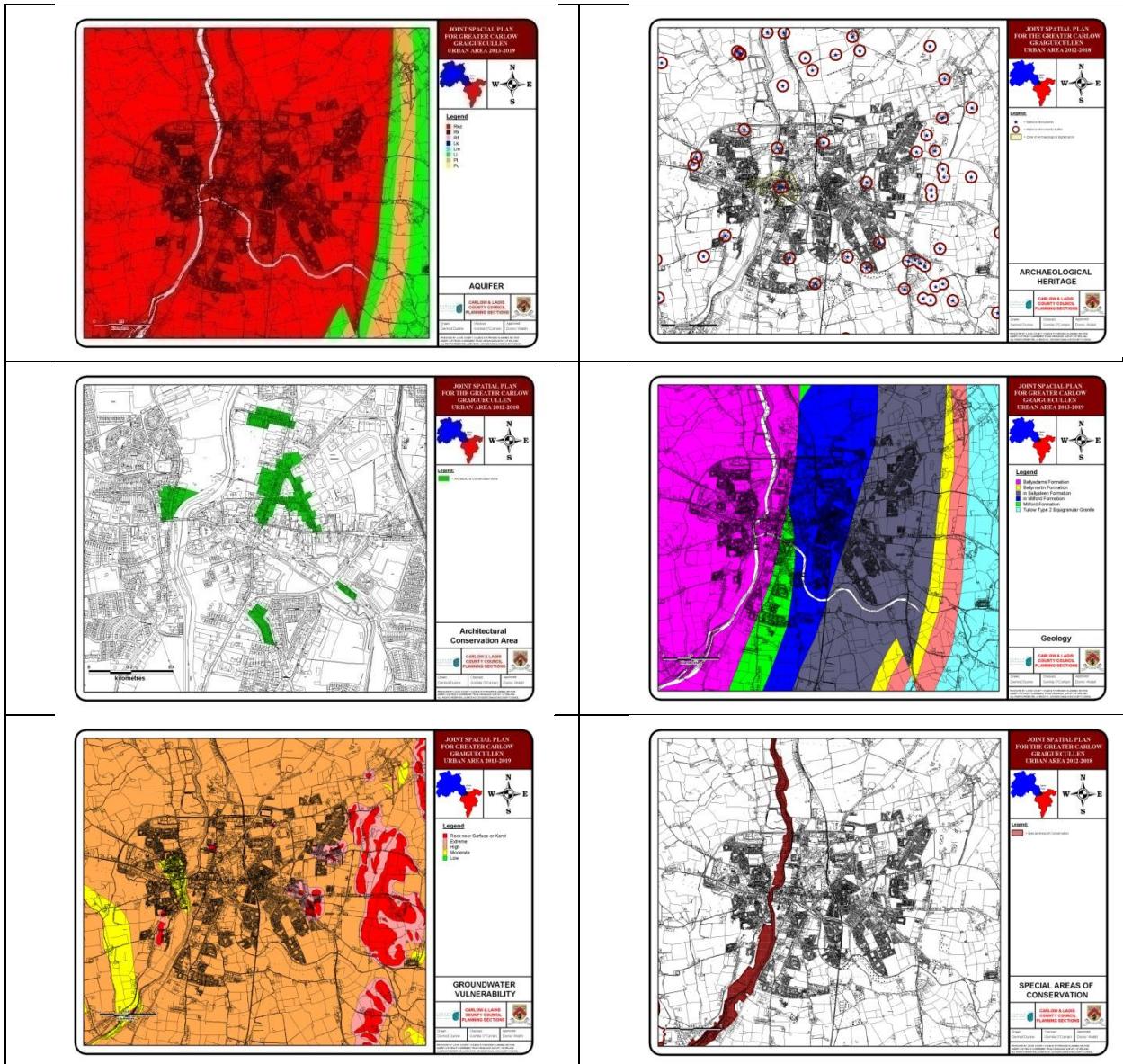
The Draft Joint Spatial Plan and Draft Environmental Report went on public display from February to April. The subsequent related Manager's Report details submissions that were relevant to the Draft Environmental Report and issues relevant to potential environmental effects of Draft Plan objectives and policies. Pages 82-90 of the second Manager's Report deals specifically with submissions relating to the Environmental Report, as well as the Natura Impact Report and Strategic Flood Risk Assessment. Changes were made to the Environmental Report as per this Manager's Report. In

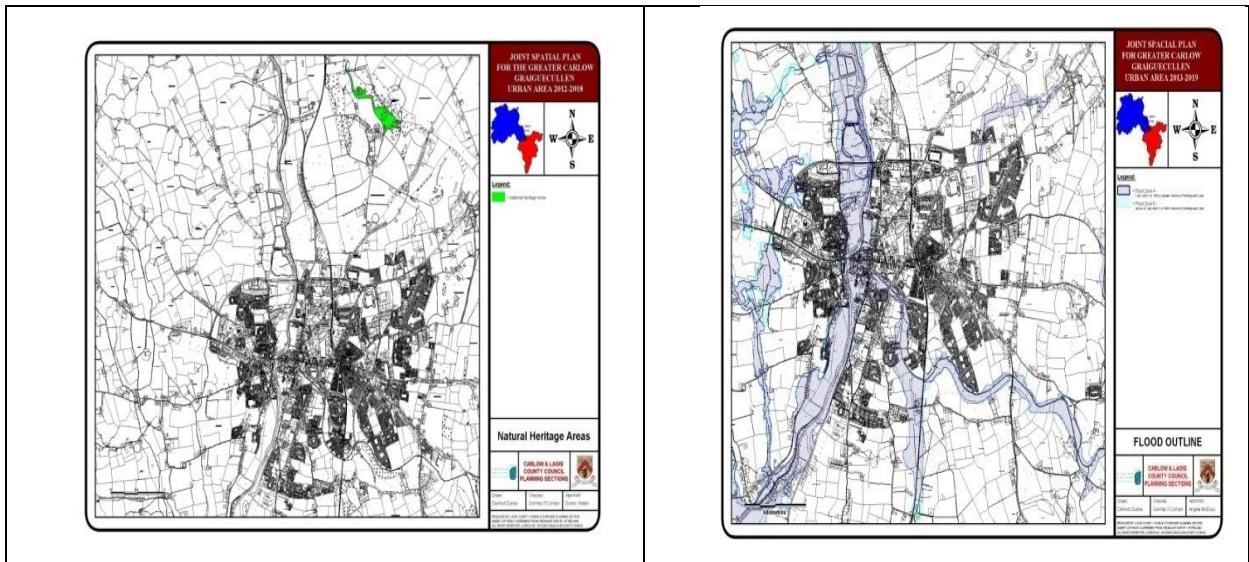
addition, amendments were proposed to the Draft Plan objectives and policies in response to concerns about environmental effects.

Each Proposed Amendment (also known as Material Alterations) as resolved by the members In June 2012, was screened pursuant to section 12(7) and 20(3) of the Planning and Development Act 2000, as amended. It was determined that a strategic environmental assessment of the Proposed Amendments was not required. This determination was put on public display along with the Proposed Amendments in July 2012. Notwithstanding the screening decision, any submissions relating to the environmental effects of the Proposed Amendments were considered as part of the preparation of the Third Manager's Report. At the meetings of the Planning Authorities, the elected members were reminded that any modifications of the Proposed Amendments may only be made where they are minor in nature and therefore not likely to have significant effects on the environment or adversely affect the integrity of a European site. The modifications of any included Amendments are set out in Addendum 2 of the Environmental Report along with a determination that the modifications meet this test.

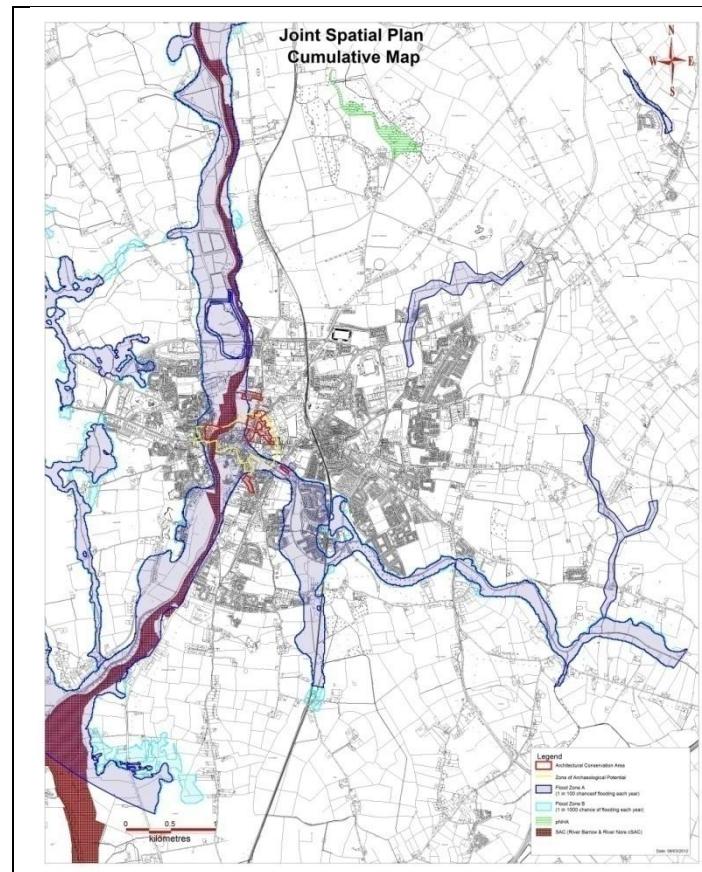
2.2 Environmental Sensitivities

In order to identify where the most sensitivities within the Greater Carlow Graiguecullen Urban Area occur, different types of environmental sensitivities were mapped and examined

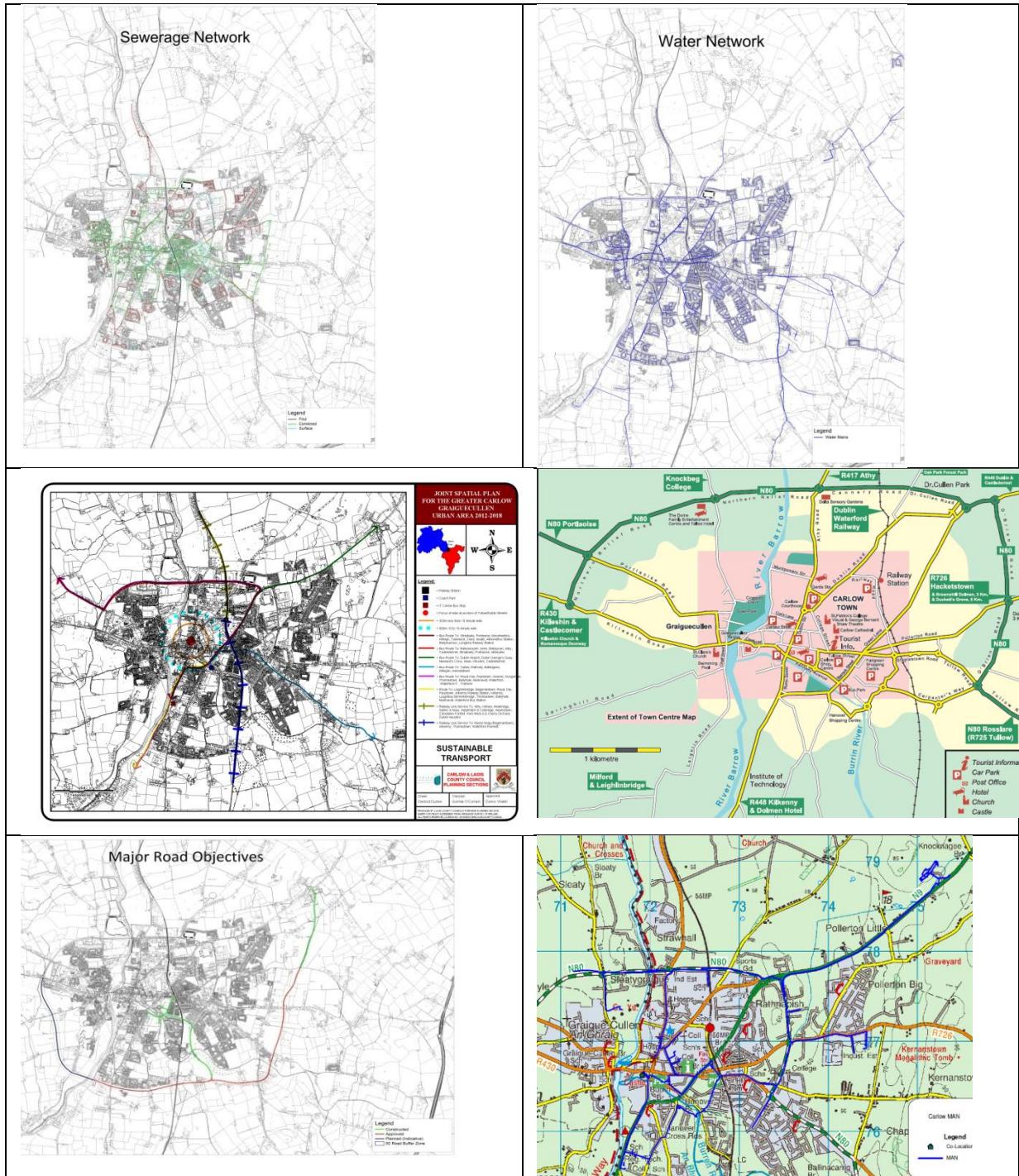




A cumulative sensitivities map was produced by overlapping environmental sensitivities maps



Some material assets within the Greater Carlow Graiguecullen Urban Area were also examined and mapped



Conclusions relating to Environmental Sensitivities

Ecological, archaeological, architectural heritage and flood risk factors were taken into consideration in the generation of the map of cumulative sensitivities. The resulting graphic indicates particularly sensitive areas within the Greater Carlow Graiguecullen Greater Urban Area. The town centre is the most sensitive area within the Greater Carlow Graiguecullen Urban Area as it contains flood zones A and B, Architectural Conservation Area designations, a Special Area of Conservation designation and an Area of Archaeological Potential designation. Considerations of the environmental sensitivities of this area must be balanced against the investment in material assets within the area, the position of Carlow within the Regional Settlement Hierarchy and emphasis in national guidelines on the environmental sustainability of town-centre based development.

Relevant material asset investments include the development of flood defense works in Carlow Town Centre and the upgrading of combined sewer networks to storm and foul-water networks, the laying the fibre broadband network, the commercial and retail activities carried out in this area over centuries, the development of the Town Park in Graiguecullen and the VISUAL and County Museum within the Cultural Quarter.

2.3 REASONS FOR CHOOSING THE PLAN, AS ADOPTED IN THE LIGHT OF THE OTHER REASONABLE ALTERNATIVES

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 sustainable development of the Greater Carlow Graiguecullen Urban Area. These alternative development scenarios must be realistic, capable of implementation, and should represent a range of different approaches within statutory and operational requirements of the Carlow Town Development Plan, Graiguecullen Local Area Plan and the Carlow Town Environs Local Area Plan

Having regard to the above, the first set of alternatives consisted of the following plan-making approaches:

- Approach 1: Prepare and Adopt three standalone plans as per current planning policy framework
- Approach 2: Prepare Joint Spatial Plan for the Greater Carlow Graiguecullen Urban Area constituting a Carlow Town Development Plan, Graiguecullen LAP, Carlow Town LAP

These approaches were examined and evaluated in detail, the table below is a summary of the principle reasons for selecting Approach 2 as the Preferred Approach

Summary Statement of Reasons for Choosing Preferred Approach

Approach One	Approach Two
Disjointed and potentially incongruous development strategies	Co-ordinated development strategy playing to strengths of sub-areas and taking account of environmental sensitivities
LAPs to be screened for SEA, potentially would not be subject to full SEA	Full SEA of all Joint Spatial Plan objectives and policies providing for comprehensive environmental evaluation
Overlapping and distinct time horizons	Unitary time horizons
Potential for meaningful targets and indicators based and environmental effects are more verifiable	Targets and indicators of limited utility because of small geographic scope and difficulty isolating effects of one plan, from adjoining plan
The focus of policy development and related SEA of individual elements (Development Plan, LAPs) more localised, potentially cumulative and synergistic effects could be under-emphasized	Provides for more effective evaluation of cumulative and synergistic effects as geographic scope of evaluation is wider and Joint Spatial Plan is more outward looking.
Focus on statutory development plan objectives for Carlow Town Development Plan. As LAP objectives are not prescribed in detail in legislation, potential for slippage away from strong environmental focus	Focus on statutory development plan objectives, which have strong environmental emphasis throughout Joint Spatial Plan. The environmental emphasis of statutory development plan objectives is detailed in the review of international, European and EU environmental objectives.
The three planning authorities could rely in successive plans on the same infrastructural spare capacity leading to over-zoning of lands relative to capacity.	Focus on shared spare infrastructural capacity and infrastructure planning: spare capacity to be allocated and worked out in a collaborative manner
Each planning authority seeking funding for additional infrastructure within functional area.	Case for additional shared infrastructure is more robust and compelling, where closer working relationship exists and Joint Spatial Plan is in place. Provides for more efficient management of Greater Carlow Graiguecullen Urban Area

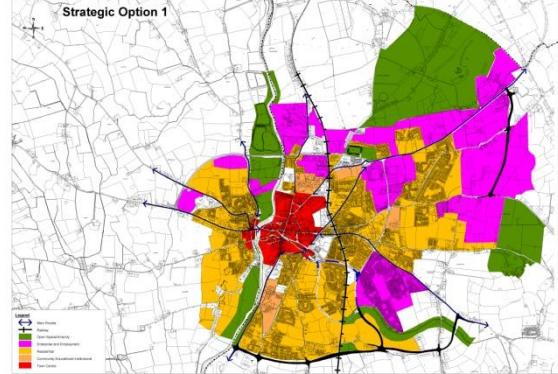
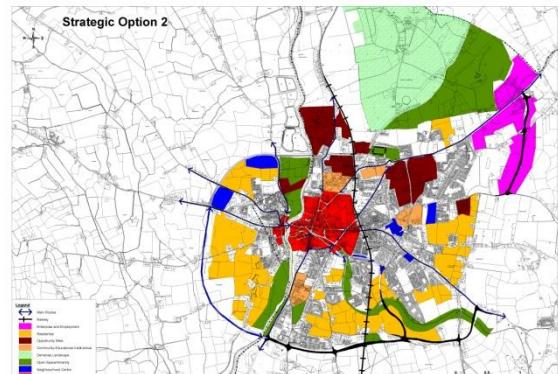
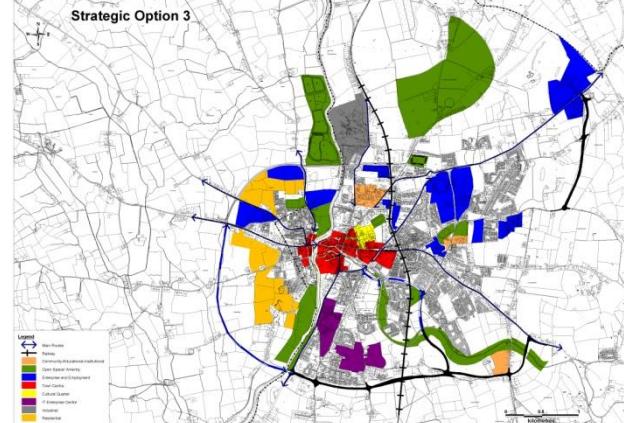
ALTERNATIVE DEVELOPMENT STRATEGIES

To contribute to the robustness of the SEA process, further options were identified and tested.

- Development Strategy A: Market-Led Planning
- Development Strategy B: Transport and Infrastructure-Led Planning
- Development Strategy C: Consolidation and Function-Led Planning

These options were mapped, thereafter they were considered in the context of environmental sensitivities and objectives as well as other considerations.

The options are considered realistic alternatives in relation to the Joint Spatial Plan for the Greater Carlow Graiguecullen Urban Area. All three options are based on policy emphasis at national level.

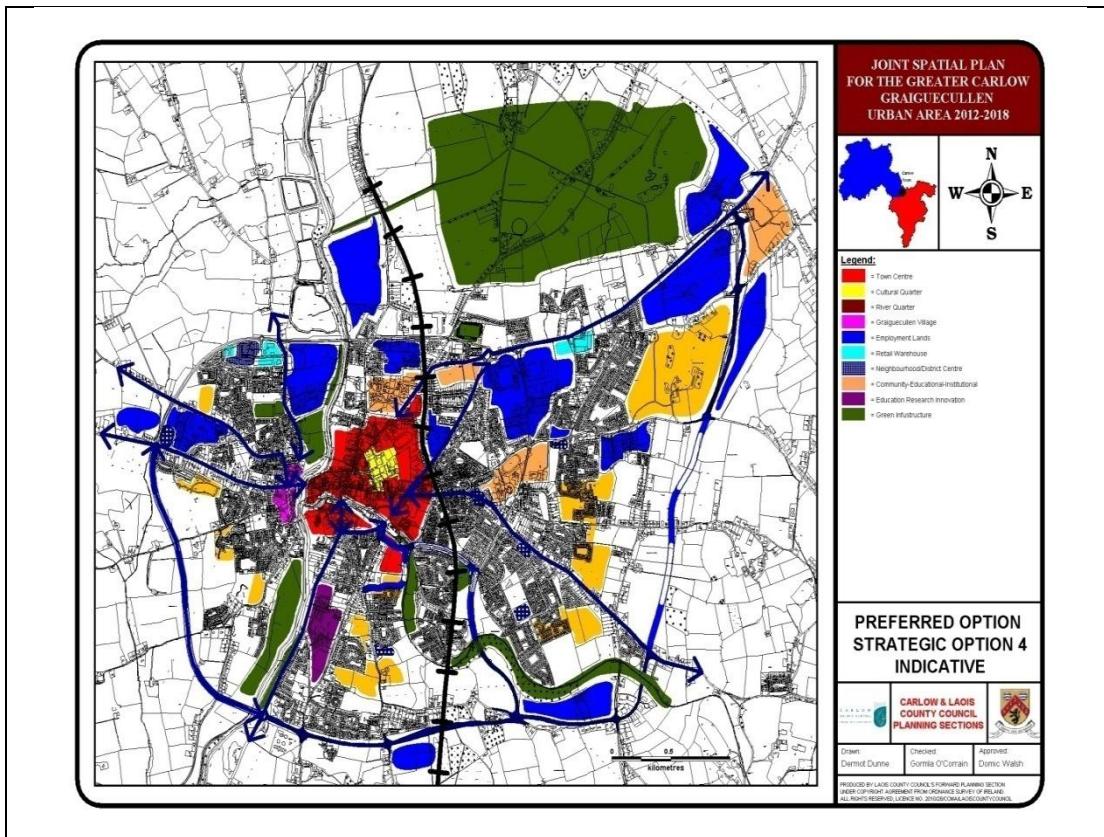
Development Strategy Option	Outline of Reasons for Selecting the Options	
Option A: Market-Led Planning	<p>Reflects concerns about national planning guidelines constraining economic development including retail caps and motorway-driven development and more generally any constraining of economic development in the current economic crisis</p>	 <p>Strategic Option 1</p> <p>Legend:</p> <ul style="list-style-type: none"> Black Hatched: Residential Light Green: Commercial and Employment Pink: Residential and Employment Yellow: Residential and Employment Orange: Residential and Employment Red: Residential and Employment Dark Green: Residential and Employment Blue: Residential and Employment Light Blue: Residential and Employment Grey: Residential and Employment White: Residential and Employment Black: Residential and Employment Black outline: New Roads Blue outline: Existing Roads Black outline: Motorways Black outline: Rail Lines Black outline: Water Courses Black outline: National Grid Black outline: Implementations Black outline: Town Centre
Option B: Transport and Infrastructure-Led Planning	<p>Reflects promotion of smarter travel, emphasis on scientific research including in the economic development potential of food production and bio-energy and concern for value-for-money of public investment projects including the construction of the Eastern Relief Road and investment in town centre infrastructure (Inner Relief Road, Barrow Track pedestrian facilities, Town Park, Flood defense works, upgrading combined sewerage network).</p>	 <p>Strategic Option 2</p> <p>Legend:</p> <ul style="list-style-type: none"> Black Hatched: Residential Light Green: Commercial and Employment Pink: Residential and Employment Yellow: Residential and Employment Orange: Residential and Employment Red: Residential and Employment Dark Green: Residential and Employment Blue: Residential and Employment Light Blue: Residential and Employment Grey: Residential and Employment White: Residential and Employment Black: Residential and Employment Black outline: New Roads Blue outline: Existing Roads Black outline: Motorways Black outline: Rail Lines Black outline: Water Courses Black outline: National Grid Black outline: Implementations Black outline: Town Centre
Option C: Consolidation and Function-Led Planning	<p>Reflects concern about maintaining the vitality and vibrancy of the town centre and emphasis on developing critical mass and synergistic relationships between different industries and uses to proactively encourage economic growth</p>	 <p>Strategic Option 3</p> <p>Legend:</p> <ul style="list-style-type: none"> Black Hatched: Residential Light Green: Commercial and Employment Pink: Residential and Employment Yellow: Residential and Employment Orange: Residential and Employment Red: Residential and Employment Dark Green: Residential and Employment Blue: Residential and Employment Light Blue: Residential and Employment Grey: Residential and Employment White: Residential and Employment Black: Residential and Employment Black outline: New Roads Blue outline: Existing Roads Black outline: Motorways Black outline: Rail Lines Black outline: Water Courses Black outline: National Grid Black outline: Implementations Black outline: Town Centre

Option Identification	Option Description
Development Strategy A: Market-Led Planning	Having regard to the location of the motorway to the east of the urban area, provide for large industry and enterprise zoning to the north and east of the urban area to capture motorway-driven demand for land designated for economic uses. Delete roads objective for western relief road and associated road bridge over the Barrow, contrary to the Midland and South East Regional Planning Guidelines. Retain residential land zonings for greenfield lands in suburban areas notwithstanding identification of flood zones.
Development Strategy B: Transport and Infrastructure-Led Planning	Have regard to the location of the newly constructed Eastern Relief Road to the east of the urban area and the location of the train station, direct development to key opportunity sites (brownfield or serviced sites) within the Greater Carlow Graiguecullen Urban Area including lands adjacent to the train station and the vacant former Braun manufacturing site. Improve transport network including the provision of a linear park alongside the River Burrin with walking and cycle routes provided and within the wider area also. Designate lands at Oak Park as demesne landscape and protect the recreational amenity of this area as the green lungs for the Greater Urban Area. Further Suburban residential development sequentially located in and around existing suburban areas, subject to flood risk considerations. Zone lands adjoining Eastern Relief Road for enterprise and enterprise to make use of the new road infrastructure in place and proximity to the M9 to facilitate economic development
Development Strategy C: Consolidation and Function-Led Planning	Consolidate town centre, reflecting its current functional boundaries to prevent sprawl in order to reinforce its vitality and vibrancy. This will mean reducing the size of the town centre and also and also directing retail and commercial development towards the town centre. Designate an area within the town centre as a cultural quarter reflecting the current and proposed cultural uses within the area. Facilitate the development of a Carlow Technology and Enterprise Campus to the south of the town in proximity to Carlow Institute of Technology to foster links between enterprise and the education sector and fourth level education and research. Preserve the open nature and demesne landscape of Oak Park to the north of the Urban Area in order to secure the longevity and integrity of field research currently carried out by Met Eireann and Teagasc, which is dependent on the green field character of the area and has significant potential to contribute to the sustainable economic development of the Greater Urban Area

Assessment of Alternatives using SEOs

Development Strategy Options	Direct Positive Effect on SEO	Indirect Positive Effect on SEOs	Uncertain Effect on SEOs	Neutral Effect on SEOs	Indirect Negative Effect on SEOs	Direct Negative Effect on SEOs
Evaluation of Development Strategy Options against SEOs						
A: Market-Led Planning		PHH2	CH1-2, BFF3	CH3, BFF1, S2, W2-4, W6, MA2	MA1, BFF2, W1, AC2-3	L1, S1, W1, W5, AC1, PHH3, PHH1
B: Transport and Infrastructure -Led Planning	PHH1, W5, AC1-3, W5, L1	W6, W1-4 PHH2-3, MA1, S1, BFF2-3		BFF1, S2, MA2, CH1-3		
C: Consolidation and Function-Led Planning	BFF2, PHH3, S2, AC1-3, MA1, L1	W1-6, CH1-2	PHH1-2	BFF1-3, S2, MA2, CH3		

These Development Strategy Options were described in detail and evaluated using the Strategic Environmental Objectives. Following consideration, it was determined that option A would have an adverse effect on the environment. Options B and C were considered sustainable on balance, the preferred development strategy consists of a combination of these options. The Vision, Core Objectives, Core Aims and Housing Land Requirement Table which collectively make up the Core Strategy sets out this Preferred Development Strategy in broadbrush terms.



The Preferred Development Strategy does involve trade-offs. For example, policies promoting growth, have clear beneficial effects on social and economic sustainability objectives, because they will provide people with accommodation, jobs and more consumer choice. However, this cannot be achieved without generating additional waste and creating more greenhouse gas emissions. To some extent, these potential negative environmental impacts have been mitigated through other policy requirements promoting sustainable construction techniques, fostering biodiversity across the Greater Urban Area and ensuring new development occurs in the most accessible locations. The balancing of different environmental objectives is also challenging. For example, the preferred strategy provides for certain classes of less vulnerable land use zonings and uses were considered appropriate within flood zone A (1% of greater chance of flooding each year). This is justified because of the environmental merits of town-centre development including: the sequestration of embodied energy in the existing built environment of the town centre, improved feasibility of sustainable modes of transport within town centres, the use of existing material assets within town centres such as flood defences and drainage systems, the suitability of town centre locations for high density development minimizing sprawl in peripheral locations, the use of protected structures protecting them from deterioration associated with vacancy and neglect.

It is also important to note that the requirement to prepare a Strategic Flood Risk Assessment and Appropriate Assessment mean that these particular environmental considerations are given a high-level of protection within the Joint Spatial Plan.

On balance, the preferred development strategy is considered to perform well against the Strategic Environmental Objectives and environmental considerations are considered well-embedded within the policy framework.

3.0 MITIGATION

3.1 Introduction

Mitigation measures are intended to prevent or reduce significant adverse environmental effects that are predicted to occur as a result of the Plan.

3.2 Mitigation through Consideration of Alternatives

The first mitigatory measure taken involved the consideration of alternatives. The selection of plan-making approach 2 (joint approach) in favour of approach 1 reduced the potential adverse effects of the Plan on the Environment.

Thereafter, the selection of a development strategy option combining (transport, infrastructure, consolidation and functional relationships) over a market-led development strategy option having tested the options against the Strategic Environmental Objectives reduced the potential adverse effects of the Joint Spatial Plan on the Environment.

3.3 Mitigation by testing compatibility of SEOs

Strategic Environmental Objectives (SEOs) are methodological measures which are developed from international and national objectives, policies and requirements governing environmental protection.

The SEOs are used to assess the environmental effects of the Joint Spatial Plan for the Carlow Graiguecullen Greater Urban Area 2012-2018. Specifically, the SEOs are used as standards against which the Development Strategy Options, Joint Spatial Plan Objectives and Policies and cumulative effects can be examined in order to help identify significant adverse impacts. SEOs are distinct from the objectives of the Joint Spatial Plan for the Greater Carlow Graiguecullen Greater Urban Area 2012-2018, although they may overlap.

This exercise is undertaken to identify potential areas of consistency and conflict in relation to each objective. This internal testing of compatibility is important, in order to ensure good environmental outcomes in the Plan's implementation. Generally the SEOs are internally compatible with the SEA themes, for example the SEO to improve surface water quality is strongly supportive of biodiversity. In some cases there is no obvious relationship such as the effect on conserving protected structures and ACAs on water quality. There may be conflict between the objective of addressing health inequality by way of economic development and biodiversity or water quality.

Selected SEOs:

SELECTED SEOs	
Biodiversity, fauna and flora	
BFF1	Conserve protected habitats and species
BFF2	Promote biodiversity in non-designated areas
BFF3	Protect aquatic and terrestrial eco-systems from invasive species

Population & Human Health	
PHH1	Improve people's quality of life based on high-quality residential, working and recreational environments
PHH2	Promote social cohesion, balanced economic development and access to education to address health inequality
PHH3	Minimise noise, vibration and emissions from traffic, industrial processes and extractive industry
Soil	
S1	Maximise the re-use of brownfield sites, subject to decontamination as necessary
S2	Promote waste reduction and waste segregation and diversion of food waste, recyclable waste, reusable waste from landfill
Water	
W1	Maintain or improve the chemical and biological quality of surface water
W2	Maintain or improve the quality of groundwater
W3	Maintain or improve the quality of drinking water
W4	Promote the sustainable use of water
W5	Avoid development on flood plain where possible
W6	Implement SUDs to reduce risk of flash floods
Air/climatic factors	
AC1	Reduce all forms of air pollution
AC2	Promote energy conservation and use of renewable energy sources
AC3	Promote the development of sustainable transport infrastructure
Material assets	
MA1	Maximise use of the existing built environment and embodied energy of same
MA2	Adapt or plan essential public infrastructure to be resistant and resilient to flood damage
Cultural heritage	
CH1	Conserve protected structures and ACAs
CH2	Protect national and recorded monuments
CH3	Provide for the effective management of zones of archaeological potential and undiscovered sub-

	surface archaeological deposits
Landscape	
L1	Conserve and enhance valued streetscapes and rural landscapes

SEO	Biodiversity	Population & Human Health	Soil	Water	Air/Climatic Factors	Material Assets	Cultural Heritage	Landscape
BFF1	0	+	0	0	0	0	0	+
BFF2	0	++	++	++	++	0	0	++
BFF3	0	+	++	+	+	0	0	++
PHH1	0	0	0	0	+	++	++	0
PHH2	-	-	-	-	-	++	0	0
PHH3	++		++	++	++	0	++	+
S1	++	+		++	0	+	++	++
S2	++	++		++	+	0	0	++
W1	++	++	++		++	0	0	+
W2	++	++	++		0	++	0	0
W3	++	++	0		++	++	0	0
W4	++	++	++		++	++	0	0
W5	++	++	++		+	++	+	++
W6	++	++	++		0	++	+	0
AC1	++	++	++	++		++	0	0
AC2	++	++	++	++		++	++	?
AC3	++	++	+	++		++	0	=
MA1	++	++	++	++	++		++	++
MA2	0	++	0	0	++		0	0
CH1	0	0	0	0	0	+		++
CH2	0	0	0	0	0	+		++

CH3	0	0	0	0	0	0		++
L1	0	0	0	0	0	0	++	

Symbol	Meaning
++	Means a strong positive outcome
+	Means a less strong, but nevertheless positive outcome.
0	Means that there was no strong relationship identified or that the net outcome was neutral.
-	Means a negative relationship was identified.
--	Means a strongly negative relationship was identified.
?	Means that the relationship was uncertain.

3.4 Mitigation through integration of Environmental Report into Joint Spatial Plan

Following on from the consideration of alternatives, objectives and policies were prepared. These Joint Spatial Plan Objectives and Policies were tested against Strategic Environmental Objectives (SEOs), this process is set out in the Environmental Report.

Predicting the outcome of objectives and policies on a complex mix of cultural heritage, natural heritage, human health, climatic factors, environmental receptors etc. is an inherently difficult task and can only be undertaken on the basis of the finite background data available. Consequently, there may be valid questions about the way some objectives or policies were ranked against particular Strategic Environmental Objectives. However, while some individual rankings may be challenged at this level, it is the overall performance of a policy against the Assessment Framework taken as a whole, which is important.

All of the Joint Spatial Plan Objectives and Policies were considered to have potential for some beneficial direct or indirect effects on the Strategic Environmental Objectives. None of the Joint Spatial Plan Objectives or Policies have direct adverse effects on the Strategic Environmental Objectives.

Some Joint Spatial Plan Objectives and Policies had indirect adverse effects or uncertain adverse effects on the SEOs. It is important to note that in practice when a Planning Authority is considering development proposals or infrastructural projects, objectives and policies are not applied in a standalone manner, instead several relevant objectives and policies will be used to inform a decision by the planning authority. Therefore, where an objective or policy may have a potential adverse effect on a particular environmental receptor, this may be offset by another objective or policy which deals specifically with the management of that environmental receptor.

In addition specific reference to the environmental receptor or environmental sensitivities may be made in background text or explanatory notes relating to the objective or policy concerned. For example, the adverse effect of applying land use zonings that include some vulnerable land use classes to Flood Zones A and B is overcome by explanatory text relating to the purpose of each land use zoning objective in Section 11 of the Plan. This inclusion of this text in addition to specific flood risk policies mitigates potential adverse environmental effects associated with flood risk.

In some cases, where a number of potential adverse effects were identified, revisions to the objectives or policies were made to strengthen environmental protection. Where wording was not revised, offsetting objectives or policies addressing the specific potential indirect adverse environmental effect have been signposted in the table below.

Joint Spatial Plan Objectives and Policies with Potential Indirect Adverse Effects			
Code	Objective/Policy	Revision of Wording to include explicit reference to environmental considerations	Signpost to Relevant Objective which address potential for adverse indirect environmental effect
CO2	<p><i>Opportunity Sites</i></p> <p>Present a schedule of landbanks within the Greater Urban Area which offer particular opportunities and are of strategic importance for the future development of the Greater Carlow Graiguecullen Urban Area, offering site briefs for each site.</p>		ENVP18-20, HERP01-03
CO3 +	<p><i>Infrastructure Enabling Economic Development</i></p> <p>Harness the economic development potential associated with infrastructure including IT Carlow, Carlow College, Teagasc Agricultural Research Centre, broadband fibre network, other utilities, the railway network connecting Waterford, Carlow and Dublin, the N80, the M9 and road improvements within the Greater Urban Area.</p>	✓	
CO4	<p><i>Jobs and Prosperity</i></p> <p>Create a strong, efficient local economy, delivering growing numbers of jobs and a diverse range of industrial, commercial and retailing enterprises, which can be easily accessed by residents and visitors; in particular retail development shall be permitted in line with the retail hierarchy, strategy and guidelines.</p>		ENV P02-3, ENV 002, ENV P18-20
CO5	<p><i>Skilled Workforce</i></p> <p>Provide for accessible and high-quality learning opportunities in order to support a strong and diverse local economy, support personal development and overcome barriers to taking part in learning and training</p>		CA4, ENV P18-20
CO6	<p><i>Ease of Access</i></p> <p>Promote sustainable modes of transport in particular public transport, cycling and walking, improve transport infrastructure generally and in particular for those with mobility impairments, and deliver development patterns that are conducive to sustainable modes of transport</p>		CA4, ENV P18-20
CO10 +	<p><i>Turning towards the River</i></p> <p>Make the best use of the river side location of the Greater Carlow</p>	✓	

	Graiguecullen Urban Area by improving the relationship between the built environment and watercourses in urban design terms, developing town centre sites adjacent to watercourses subject to flood risk assessment and appropriate assessment. In particular, enhance the amenity value of the Barrow Track and provide amenity space along the Burrin watercourse.		
ECN 007	Foster a compact and permeable town centre in order to support and generate synergistic commercial and retail relationships, to ensure the town centre is a bustling and attractive social and recreational hub that continuously builds on its potential to draw in locals and visitors		HER 001, ENV P18-20
ECN P01	Collaborate with IDA Ireland, Enterprise Ireland, County Enterprise Boards, Teagasc, Institute of Technology Carlow and Carlow College to drive growth in the industrial and enterprise base of the Greater Carlow Graiguecullen Urban Area		CH3
ECN P02	Foster the development of clusters of complementary enterprises and specialist skills in particular sectors, including the following: <ul style="list-style-type: none"> • Pharmaceutical research, development and production • Food science, engineering and production • Process engineering and manufacturing • Bio-fuel research, development and production • Life Sciences including Biotechnology • Environmental Science and Bio-Energy • Information Communication Technology and Digital Media • Financial services • Project management • Business, management, sales and human resources 		CH3, ENV P18-20 ENV P01-02 ENV 002 HER 012
ECN P03	Steer proposals for labour-intensive enterprise development towards the town centre locations		ENV P18-20
ECN P04	Direct industrial or enterprise developments with high space requirements towards suitable opportunity sites or serviced enterprise areas in order to make efficient use of existing transport, broadband and water services and with a view to creating small clusters of businesses locating together to achieve economies of scale		ENV P18-20, CH3, EN002, ENV P05
ECN P05	Work with relevant agencies to facilitate the full occupation of industrial, enterprise and business parks within the Greater Carlow Graiguecullen Urban Area		ENV P18-20
ECN P06	Market the advantages of the Greater Carlow Graiguecullen Urban Area as a suitable location for large-scale food production or other types of commodity processing such as bio-energy production;		ENV P18-20, CH3, ENV 002, ENV P05-06
ECN P12	Support the retail primacy of Carlow Town Centre within the Greater Carlow Graiguecullen Urban Area and County Carlow and the focus for comparison retail development in accordance with the Joint Retail Strategy and Retail Planning Guidelines 2005 or as amended;		ENV P18-20
ECN P13 +	Provide for the development of an appropriate quantum and type of retail uses at district centres and neighbourhood centres in accordance with the Joint Retail Strategy and retail hierarchy for the Greater Carlow Graiguecullen Urban Area and Retail Planning Guidelines 2005 or as	✓	

	amended;		
ECN P27	Support the development of purpose-built live-work units within the town centre or district centres, ensuring that such units are fit-for-purpose		ENV P18-20
TRANS P03 +	Encourage the improvement of the N80, in particular in line with the recommendations of the National Secondary Roads Needs Study (NRA 2010), having regard to its function as a key inter and intra-regional route	✓	
TRANS P06 +	Advance the completion of the Northern Relief Road including the provision of a new vehicular bridge over the River Barrow, to the east of the Greater Carlow Graigecullen Urban Area, in order to enhance connectivity between the Midlands and South East Regions and within the Greater Carlow Graigecullen Urban Area.	✓	
TRANS P07 +	Support the completion of the Inner Relief Road to the south of the River Burrin and the linking of the Inner Relief Road with the N80 to the east and the Southern Relief Road to the west.	✓	
TRANS P14	Support the commencement or completion of the following projects: Western Relief Road, New multi-modal bridge joining the Western and Southern Relief Routes, Southern Relief Road, Inner Relief Road, Eastern Relief Road		HER 012 HER 001-03
TRANS P23 +	Encourage and facilitate investment in the local road network including the improvement of local roads that are deficient in terms of alignment, structural condition or capacity, as resources allow	✓	
TRANS P28 +	Provide a network of green recreational routes, high quality pedestrian and cycling transport corridors with dedicated space in the following locations: 1. Along the Barrow Track within the Greater Urban Area 2. Between Barrow Track and Oak Park 4. Along the River Burrin between the N80 and Barrack Street 5. Bridge linking IT Carlow and Barrow Track	✓	
TRANS P36	Discourage the provision of extensive surface-based car parking within the town centre and free up such town centre sites for re-development		ENV P18-20
TRANS P37	Support the provision short-stay multistory car parks at suitable locations within the town centre		ENV P18-20
TRANS P38	Encourage the provision of long stay car parks at the edge of the town centre and at public transport nodes		ENV P18-20
TRANS P39	Ensure new multi-storey car parks are designed to be visually unobtrusive. They should generally be to the rear of street frontages, but may be permitted on street frontages in exceptional circumstances subject to very high quality design		ENV P18-20
TRANS P40 +	Provide for the undergrounding of car parking in association with new residential and mixed-use development within the town centre, where feasible	✓	
PI P01 +	Ensure the treatment of a sufficient quantum of drinking water to meet current and future water needs for domestic, commercial and industrial	✓	

	use		
PI P10 +	Assess all applications in the context of available infrastructural facilities and to prohibit those proposals that would put undue pressure on available resources	✓	
PI P13 +	Ensure that arrangements for the treatment and disposal of effluent from all forms of development are sustainable and meet environmentally acceptable standards.	✓	
PI P15 +	Assess proposals to develop in close proximity to sewerage treatment plants and pumping stations having regard to: ➤ The nature of the effluent being treated; ➤ Prevailing wind direction; ➤ Noise; ➤ Type of treatment process employed; ➤ Sludge treatment; ➤ Visibility and screening of treatment plant	✓	
PI P18 +	Focus development in areas that are already served by the storm sewerage system in the interests of efficiency and sustainable development, where development proposals are acceptable in principle the cost of extending the storm sewer network will be borne by the developer; soakaways will generally not be accepted within the Greater Carlow Graiguecullen Urban Area	✓	
ENV P17 +	Protect the Greater Urban Area from flooding by completion of the Carlow Flood Relief Scheme including measures such as the construction of flood protection walls and embankments, improvements to foul and surface drainage systems and water conservation measures	✓	
E&S P01 +	Ensure that adequate and appropriate lands and services are zoned and reserved to cater for the establishment, improvement or expansion of primary and secondary educational facilities in the County.	✓	
REC P20 +	Reserve lands in order to provide a walking and cycling track along the River Burrin between the N80 and the town centre	✓	
SOC P33 +	Facilitate the provision of new burial grounds, extension of existing burial grounds and crematoria as appropriate to cater to the diverse needs of a multi-cultural local society, ensuring such facilities do not have an adverse effect on water quality.	✓	
HOUS P1 +	Implement the Carlow Housing Strategy 2009-2015 in tandem with the Laois Housing Strategy 2011-2017	✓	
HOUS P2 +	Ensure that sufficient and suitable land is zoned in the Greater Carlow Graiguecullen Urban Area for residential use to meet the requirements of the Housing Strategy and to ensure that a scarcity of such land does not occur at any time during the period of the Joint Spatial Plan, ensure that any plan or project associated with the provision of new housing which has the potential to significantly affect a Natura 2000 site is appropriately assessed in accordance with Article 6 of the Habitats Directive in order to avoid adverse impacts on the integrity of the site and in compliance with environmental legislation	✓	

HER P23	Total or substantial demolition of a Protected Structure or any significant element of the Protected Structure will not be acceptable in principle, save in exceptional circumstances, for example where it can be decisively shown that a greater public interest will be served and this clearly outweighs the loss of architectural heritage.		HER 001 CA9
DBF/O2	Deliver a high-quality built environment, by consolidating the urban structure, and reinforcing and enhancing the existing character with infill development or urban renewal and focusing on place-making with greenfield development		ENV P18-20
DBF/P02 +	Deliver new development and public realm improvement works that are consistent with the above streetscape principles	✓	
Industrial GZT No. C2.2	To provide for and foster industrial development		EN002, ENV P05, ENV P09
CTO1	Consolidate the built form of Carlow Town		ENV P18-20, HER P010
CTP1 +	Focus development on Carlow Town Centre and the wider Carlow Town functional area to make efficient use of existing infrastructure and services and provide for sustainable land use patterns	✓	
CTP13	Utilise statutory provisions relating to derelict sites to provide for efficient use of building stock and improve the visual amenity of Carlow Town Centre and the wider Carlow Town Area		ENV P18-20
CT P22	Support the principle of redeveloping the former Penny's site (Opportunity Site 1), Barrow Track site (Opportunity Site 2), Court Place site (Opportunity Site 3) referred to above and mapped in (appendix 1)		ENV P18-20, HER 005, HER 007
CT P23	Encourage the redevelopment of the listed sites having regard to the urban design frameworks as presented in appendix 2: (i) Plas na Saoirse and Potato Market (Opportunity Site 4) (ii) Stonemasons' Site (Opportunity Site 5) (iii) Pembroke Road Sites (Opportunity Sites 6)		ENV P18-20
CT P24	Facilitate the redevelopment of opportunity sites in appendix 4 at (i) Marlborough Street, Graiguecullen (Opportunity Sites 7) (ii) Barrack Street (Opportunity Sites 8) (iii) In and around Train Station (Opportunity Sites 9)		ENV P18-20
CT P25 +	Encourage the redevelopment or intensification of uses within employment opportunity sites including set out in appendix 5 at (i) Former Braun Factory (Opportunity Site 10) (ii) Former Celtic Linen Site (Opportunity Site 11) (iii) Kelvin Grove Site (Opportunity Site 12) (iv) Former Erin Foods Site (Opportunity Site 13) (v) O'Brien Road (Opportunity Site 14) (vi) Sleaty Road, which straddles boundary with Laois (Opportunity Site 15)	✓	

	(vii) Pollerton Industrial Estate, which straddles boundary with Carlow Town Environs (Opportunity Site 16)		
GL03	Consolidate the urban form of Graiguecullen, County Laois in the interests of sustainable transport, sustainable communities and efficient use of public infrastructure	✓	
GL P4	Encourage the full use of vacant or under-used commercial and retail warehousing space at Doyles of the Shamrock and on the Sleaty Road		ENV P18-20
GL P5	Encourage economic development opportunities using opportunity site briefs prepared for the Glanbia Site, Sleaty Road District Centre and related Retail Warehousing and Barrowside Business Park		ENV P18-20
GLP9	Provide for the development of further river-based recreational activities, including commercial recreational activities in Crossneen north of the proposed new bridge and also to the south of Bill Duggan Bridge	✓	
CLP10	Seek the improvement of the surface and appearance of the Barrow Track south of Graiguecullen Bridge	✓	
CTE 02	Advance the development of identified Opportunity Sites in the Environs in light of their development potential and strategic importance to the economic development of the Greater Carlow Graiguecullen Urban Area		CTE P8
CTE P2	Advance the extension of the Eastern Relief Road in the medium term	✓	
CTE P6	Market the development of the following opportunity sites (OP16, OP 21-24) in the Environs Area		ENV P18-20

4.0 ENVIRONMENTAL REPORT, SUBMISSIONS AND OBSERVATIONS

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 Plan.

Although adjoining planning authorities were consulted as part of the SEA and plan-making processes, no submissions were received. The most relevant boundaries for the preparation of this Plan were the boundaries of Carlow Town Council, Laois County Council and Carlow County Council. The preparation of a Joint Plan negated the importance of transboundary consultations.

Written Submission on ER and SEA informing Plan-Making		
Pre-Draft Submissions/ Scoping Submissions		
Development Applications Unit, Department of Environment, Heritage and Local Government	<ul style="list-style-type: none"> -Recommend Plan include Natural Heritage Section -Ensure Plan does not adversely affect protected species and designated sites -Protect linear features and stepping stones under Article 10 of Habitats Directive -Ensure canal/riverside walkways are carefully planned to protect riparian zones (site suitable distance from water's edge, bankside vegetation, light) -Protect ground and surface water from pollution including from municipal WWTP -SEOs should cover undesignated/ unprotected sites and species as well as European Site and NHAs -Should be consultation between SEA team, plan-making team, and AA team <p>Signpost to data sources</p>	<p>Informed preparation of Draft Plan and preparation of Draft Environmental Report. Specifically, section of Natural Heritage included, as are general biodiversity policies, policies about ecological corridors and riparian buffer zones and water quality protection.</p> <p>SEOs related to non-designated sites and species in addition to designated sites and species.</p>
Geological Survey of Ireland	Detail available datasets	Used in preparation of Environmental Report
Environmental Protection Agency	Encloses SEA Scoping Pack and SEA Guidelines to assist in the preparation of SEA Scoping Report	Used in preparation of Environmental Report
Office of Public Works	Welcome inclusion of reference to SFRA in the Plan's Issues Paper. Recommendations on key focus of SFRA	Used in the preparation of the Environmental Report as well as SFRA
Submissions relating to Draft ER or Draft Plan relevant to the Environmental Effects		
Department of Environment, Community and Local Government	Consider further integration of flood zone assessment and zoning objectives is required to ensure appropriate uses of areas at risk of flooding, in particular opportunity sites	Amendments to Opportunity Site briefs where located in Flood Zone A
Department of Arts, Heritage and the Gaeltacht	Site-specific conservation objectives published in July 2011 should be referenced in lieu of generic conservation objectives	Sections 2.3, 4.1.3, 5.3.1 of AA amended
Inland Fisheries Ireland	Concern of increased abstraction from River Slaney to drinking water to serve urban area	Clarification that spare capacity in place (new)

		boreholes), no increase in abstraction planned
Office of Public Works	OPW welcomes SFRA carried out in parallel with plan-making including following relevant policies ENV P07, ENV P17-20, ENV P22, ENV O09.	No changes
Environmental Protection Agency	Acknowledges comprehensive Plan and high degree of integration of environmental considerations into plan-making	Noted
	Issues raised in relation to AA	AA sections 4.1.3 and 5.4 amended to clarify issues raised
	Extent to which transport infrastructure and related projects TRANS P03, P06, P07, P023 have been assessed for AA/EIA should be clarified	Resultant amendments adding “as well as cumulative and in-combination effects” to TRANS P03, P06, P06, P023. TRANS 14 supplemented: “providing the above projects will not have significant adverse effects on environmental receptors including cumulative and in-combination effects
	Consideration to inclusion of policy to ensure Plan’s implementation will not conflict with objectives of WFD	ENV O03 amended accordingly
	In preparing local biodiversity plan, consideration to be given to designation of ecological networks and buffer zones	HER P07 amended to refer to HER O06 and HER P9, P10
	Plan should promote traffic management measures to reduce congestion and vehicular emissions	TRANS O05 supplemented: and reduce traffic congestion and associated emissions

	EIA Screening requirements to be noted	HER P01 supplemented: and ensure application of EIA Directive
	Suggested changes to Draft ER including moving section on alternatives to follow baseline environmental data; reference to National Biodiversity Action Plan 2011-2016; Inclusion of additional monitoring information; indication on whether monitoring indicators are quantitative/qualitative or in-combination	Draft Environmental Report updated as a result
Monaco Properties	Challenge methodology and robustness of flood mapping	Delineation of flood zones defended and supplementary information added to SFRA. No changes to flood zones.
Thompson Holdings	Challenge flood zones by way of site-specific flood risk assessment	Flood zones amended in light of site-specific flood risk assessment
The members of the Planning Authorities resolved to Amend the Draft Plan, the Proposed Amendments (also known as Material Alterations) were screened to determine whether SEA was required in relation to any amendments, it was determined that SEA was not required and this determination was published along with the Proposed Amendments and submissions were invited. (Addendum 1)		
Submissions relating to SEA Determination or Environmental Effects of Proposed Amendments		
Department of Environment, Community and Local Government	Concern about zoning of residential lands in flood zone A contrary to Flood Risk Guidelines (mapped amendment 23)	Justification provided, site-specific flood risk assessment required before any development can proceed, FRA symbol inserted on zoning map and text in legend and plan relates
South East Regional Authority	Also concern about mapped amendment 23	Justification provided, site-specific flood risk assessment required before any development can proceed, FRA symbol inserted on zoning map and text in legend and plan relates

Environmental Protection Agency	Also concern about mapped amendment 23	Justification provided, site-specific flood risk assessment required before any development can proceed, FRA symbol inserted on zoning map and text in legend and plan relates
	CTE P2(A) should be supplemented to refer to Habitats Directive and EIA Directive Requirements	Policy modified accordingly
	Note determination in relation to SEA of Proposed Amendments	
Office of Public Works		
Concern about opportunity site briefs in flood zone A and related commentary		
Commentary amended to refer specifically to justification text, application of flood risk guidelines, flood defenses and requirements for site-specific flood risk assessments.		
Consideration of modifications to Included Amendments considered to ensure modifications meet legal test: "minor in nature and therefore not likely to have significant effects on the environment or adversely affect the integrity of a European Site (Addendum 2)		

6.0 MONITORING MEASURES

6.1 Introduction

The SEA Directive requires that the significant environmental effects of the implementation of plans and programmes are monitored. This Environmental Report puts forward proposals for monitoring the likely significant effects of implementing the Plan 2012-2018.

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 Plan 2012-2018 is achieving 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.

6.2 Indicators and Targets

Monitoring is based around the indicators which were chosen earlier in the process. These indicators allow quantitative and qualitative measures of trends and progress over time relating to the Strategic Environmental Objectives used in the evaluation. Focus is given to indicators which are relevant to the likely significant environmental effects of implementing the Plan 2012-2018 and existing monitoring arrangements will be used in order to monitor the selected indicators. Each indicator to be monitored is accompanied by the target(s).

The Table below shows the indicators and targets which have been selected for monitoring the likely significant environmental effects of implementing the Plan 2012-2018.

6.3 Sources

Measurements for indicators should come from existing monitoring sources and no new monitoring should be required to take place. Existing monitoring sources exist for each of the indicators and include those conducted by Carlow Town Council, Laois County Council and Carlow County Council and other relevant authorities e.g. the Environmental Protection Agency, the National Parks and Wildlife Service and the Central Statistics Office.

Where significant adverse environmental effects - including positive, negative, cumulative and indirect - are likely to occur as a result of implementing relevant lower-tier plans and programmes such instances should be identified and recorded and should feed into the monitoring evaluation.

6.5 Reporting

Under the Planning and Development Act 2000 as amended, the County Manager is required to prepare a Manager's Report on the implementation of a Development Plan within 2 years of adoption of the Plan. The environment is a significant consideration and the progress report will contain the key findings of the environmental monitoring programme as outlined for each of the environmental criteria of the Strategic Environmental Assessment. The required Manager's Report will be extended to include the implementation of the Joint Spatial Plan as well as the Carlow Town Development Plan in order to capture any relevant environmental impacts. Thus 2014 will be the first monitoring milestone. Thereafter the review of the Joint Spatial Plan will commence in 2016 and this will also provide a key milestone to consider the implementation of the Plan and any relevant environmental effects of its implementation.

6.6 Responsibility

The Forward Planning Section of Carlow and Laois Local Authorities will be responsible for collating existing relevant monitored data, the preparation of preliminary and final monitoring evaluation reports, the publication of these reports and, if necessary, the carrying out of corrective action.

6.7 Thresholds

Thresholds at which corrective action will be considered are as follows:

- boil notices on drinking water;
- fish kills;
- the failing of Mandatory Standards under Directive 76/160/EEC or the failure to achieve a classification of Sufficient under Directive 2006/7/EC by bathing waters.
- court cases taken by the DoEHLG regarding impacts upon archaeological heritage including entries to the Record of Monuments and Places; and,
- complaints received from government departments and other regulatory agencies that monitor the state of the Monuments and Places

Table 6: Selected Indicators, Targets and Monitoring Sources

SEO	Targets	Monitoring Indicators	Indicators Information Source
Biodiversity Flora and Fauna			
Conserve protected habitats and species	No loss of protected species and safeguard protected areas from encroachment	Meeting Natura 2000 Conservation Objectives and no loss of protected species	NPWS National Biodiversity Data Centre (NBDC)
Promote biodiversity in non-designated areas	No reduction in habitat diversity or loss of species in non designated sites	No reduction in habitat diversity or loss of species in non designated sites	NPWS Inland Fisheries Ireland Carlow and Laois County Councils
Protect aquatic and terrestrial habitats from invasive species	Safeguarding of aquatic and terrestrial habitats from encroachment by invasive species	Monitor location and extent of invasive species	NPWS Inland Fisheries Ireland
Population and Human Health			
Improve people's quality of life based on high-quality residential, working and recreational environments	Ensure newly developed residential, recreational and employment areas, spaces and structures are of good quality and enable a good quality of life	Qualitative Assessment of whether newly developed residential, recreational and employment areas, spaces and structures are of good quality and	Carlow and Laois County Councils

		enable a good quality of life	
Promote social cohesion, balanced economic development and access to education to address health inequality	Increase quantum of recreational open space	Increase Ha of open space	Carlow and Laois County Councils
Minimise noise, vibration and emissions from traffic, industrial processes and extractive industry	Reduction in 2005 PM10 levels	Reduction in PM10 levels	EPA
Soils and Minerals			
Maximise the re-use of brownfield sites, subject to decontamination as necessary	Specified percentages of new applications granted on brownfield sites	% of developments on brownfield sites	Carlow and Laois County Councils
Promote waste reduction and waste segregation and diversion of food waste, recyclable waste, reusable waste from landfill	Reduction in per capita quantum of waste to landfill	% per capita reduction in waste to landfill	Carlow County Council
Water Quality			
Maintain or improve the chemical and biological quality of surface water	Achieve the objectives of the South Eastern River Basin District Management Plan 2009-2015	Using chemical standards and biological species indicators	South Eastern River Basin District EPA, NPWS
Maintain or improve the quality of groundwater	Achieve the objectives of the South Eastern River Basin District Management Plan 2009-2015	Using chemical standards	South Eastern River Basin District EPA
Maintain or improve the quality of drinking water	No further boil notices issued	Boil notices	HSE, EPA
Promote the sustainable use of water	Reduction in per capita consumption of drinking water	Quantum of drinking water consumed	Carlow and Laois County Councils
Avoid development on flood plain where possible	Apply the sequential and justification tests in the consideration of planning applications	Qualitative assessment	Carlow and Laois County Councils
Implement SUDs to reduce risk of flash floods	Apply SUDs policy	Qualitative assessment	Carlow and Laois County Councils

Air and Climate			
Minimise all forms of air pollution	Reduce PM 10 levels	PM10 levels	EPA
Promote energy conservation and use of renewable energy sources	Increase number of sustainability statements indicating how sustainable construction and design methods were utilised	No of sustainability statements submitted	Carlow County Councils and Laois County Council
Materials Assets			
Maximise use of the existing built environment and embodied energy of same	Increase % of development on brownfield serviced sites	% of applications on brownfield serviced sites	Carlow and Laois County Councils
Adapt or plan essential public infrastructure to be resistant and resilient to flood damage	Apply Strategic Flood Risk Guidelines, making public infrastructure flood resistant and flood reliant where it cannot be located away from flood zones A or B	Qualitative assessment	Carlow and Laois County Councils
Cultural Heritage			
Conserve protected structures and ACAs	No authorised developments permitted over the lifetime of the plan which will result in the loss of protected structures	No of unauthorised developments permitted over the lifetime of the plan which resulted in the loss or partial loss of protected structures or sites of archaeological status	Carlow and Laois County Councils
Protect national and recorded monuments	Ensure applications within the setting of a national monument or relating to a recorded monument are referred to the Department of Heritage, Culture and the Gaeltacht for assessment by a competent archaeologist	Qualitative assessment	Carlow and Laois County Councils
Provide for the effective management of zones of	Ensure applications relating to areas of	Review of referrals for applications within area	Carlow and Laois County Councils

archaeological potential and undiscovered sub-surface archaeological deposits	archaeological potential are referred to the Department of Heritage, Culture and the Gaeltacht for assessment by a competent archaeologist	of archaeological potential	
Landscape			
Conserve and enhance valued streetscapes and rural landscapes	Ensure the protection of valued urban and rural landscapes	Qualitative assessment	Carlow and Laois County Councils