

**STRATEGIC ENVIRONMENTAL
ASSESSMENT FOR THE LEIXLIP
LOCAL AREA PLAN 2009 - 2015
NON-TECHNICAL REPORT**

MARCH 2010




ENVIRONMENTAL BALANCE IN DESIGN AND CONSTRUCTION



STRATEGIC ENVIRONMENTAL ASSESSMENT FOR THE LEIXLIP LOCAL AREA PLAN 2009 - 2015 NON-TECHNICAL REPORT

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Abstract: Fehily Timoney & Co. prepared an Environmental Report as part of a Strategic Environmental Assessment (SEA). The SEA is been conducted for the Leixlip Local Area Plan 2009 – 2015. This report is the non-technical summary of the Environmental report.

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Section 1

Introduction



1. INTRODUCTION

1.1 Terms of Reference

Fehily Timoney & Company (FTC) was appointed by Kildare County Council to conduct the Strategic Environmental Assessment (SEA) for the Leixlip Local Area Plan 2009 – 2015. The purpose of this environmental report is to assess the likely significant environmental effects from the implementation of the Leixlip Local Area Plan (LAP), develop mitigation measures to reduce identified significant impacts of the LAP and identify monitoring procedures to assess the impact of the LAP over its lifetime.

1.2 Plan Area

Leixlip is located in Co. Kildare approximately 15 km from Dublin city centre on the border of Fingal and South Dublin County Councils. The town is bypassed by the M4, Galway Dublin route but can be accessed by eastern and western road junctions. The town is also serviced by regular railway services with two railway stations.

Leixlip has been identified as a “moderate growth town” in the Greater Dublin Regional Planning Guidelines. In addition, a dynamic cluster has been identified between the towns of Leixlip, Maynooth, Celbridge and Kilcock in the Kildare County Development Plan 2006-2011.

The town area is presented in Figure 1.1.

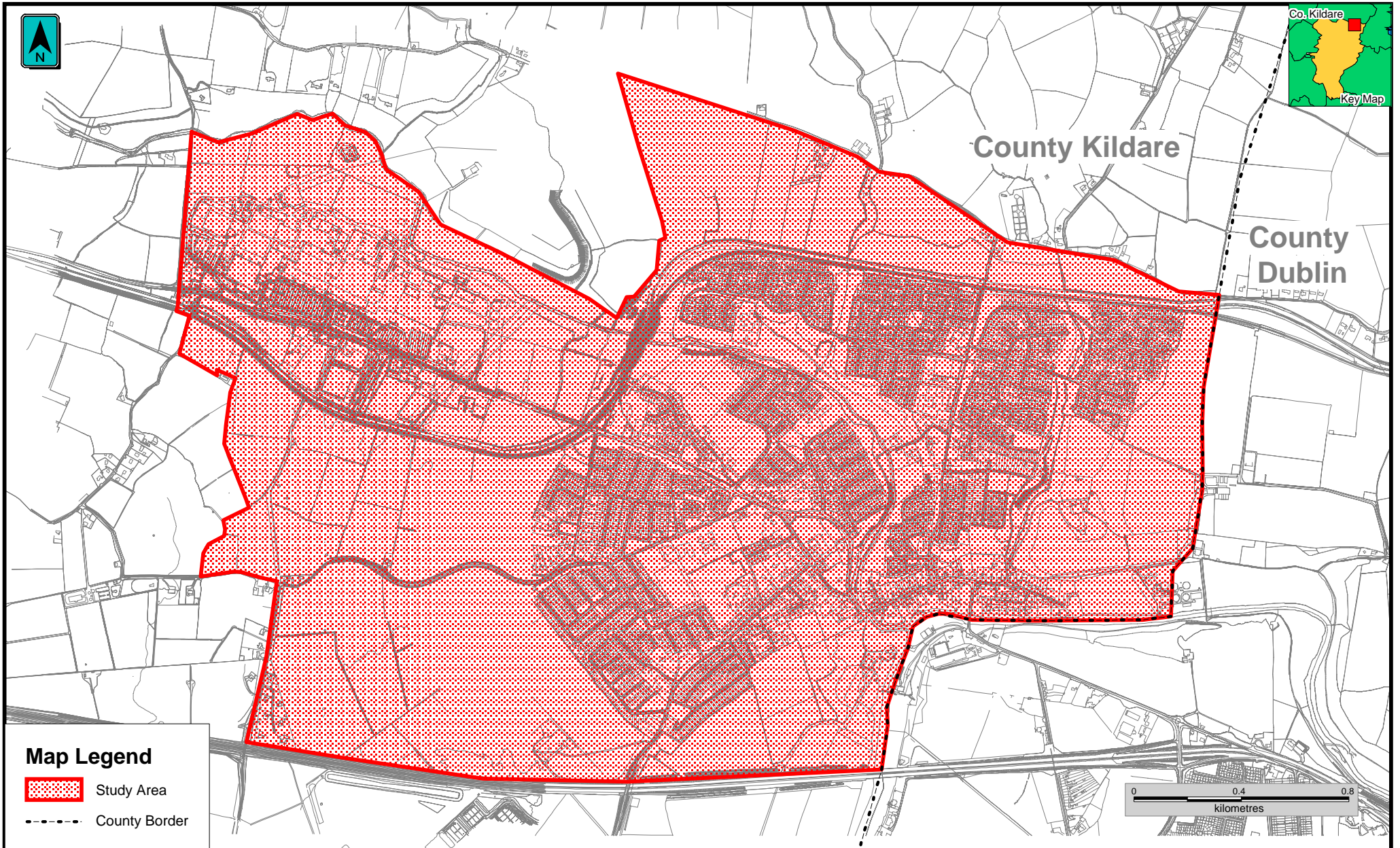
1.3 SEA Process

In the context of the production of a Local Area Plan, the SEA process comprises the following principal stages:

- **Screening:** to determine which plans and programmes are likely to have a significant impact on the environment
- **Scoping:** to liaise with statutory consultees to identify key issues of concern that should be addressed in the environmental assessment of the Plan
- **Assessment:** contains the findings of the assessment on the likely significant effects to the environment of implementing the Plan and describes the monitoring measures for the key effects that were identified.

- **Consultation:** to allow for submission from the public and interested bodies of the Draft Plan and associated Environmental Report
- **A SEA Statement:** to identify how environmental considerations and consultations have been integrated into the final Plan.

The development of the LAP, SEA and Appropriate Assessment (required as per the Habitats Directive) are conducted concurrently and each process contributes to the development of each document at each stage. The iterative process used in the preparation of a development plan, SEA and Appropriate Assessment are presented in Figure 1.2 overleaf.



Section 2

The Leixlip Local Area Plan 2009-2015



2. THE LEIXLIP LOCAL AREA PLAN 2009-2015

2.1 Introduction

The Leixlip LAP (2007-2011) has been prepared in response to:

- Requirements under the Planning and Development Act 2000
- The need to provide a framework for the future development of the study area that is consistent with higher level strategic planning actions including the National Development Plan 2007-2013, National Spatial Strategy 2000-2020, the Regional Planning Guidelines and the Kildare County Development Plan (2005 – 2011).

The current Leixlip LAP was adopted in February 2002. Under Section 11 (1) of the Planning and Development Act 2000 this LAP has been subject to review and sets the context for the Development Plan for the period 2009-2015.

The contents of the Leixlip Local Area Plan are presented in Table 2.1.

Table 2.1: Contents of the Leixlip Local Area Plan 2009-2015

Part A – Review Context

- Strategic Context and Relevant Policy Documents
- Strategic Environmental Assessment
- Population
- Public Utilities
- Development Vision for Celbridge
- Layout of Document

Part B – Objectives

- Introduction
- Housing
- Industry and Employment
- Community, Education, Childcare and Cultural Facilities
- Public Utilities
- Transportation
- Amenity and Recreation
- Town Centre Re-use and Regeneration of Derelict Sites and Buildings
- Heritage
- Environment

Part C – Specific Objectives

- Land Use and Zoning Objectives
- Zoning Matrix

2.2 Strategic Framework and Goals

The regional planning guidelines for the Greater Dublin Area have identified Leixlip as a “moderate growth town” in the metropolitan area of Greater Dublin. In order to sustain this, Kildare County Council has identified that Leixlip must “*sustain a range of residential, employment and services for the growing local community in accordance with National, Regional and County planning policy documents*”. Particular mention is made of the natural, built and archaeological heritage of the town and the protection/ enhancement which must be afforded to them. In order to apply such development principles and protection to Leixlip, Kildare County Council has established the following strategic policies for Leixlip during the lifetime of the plan.

- To promote and facilitate the growth and sustainable development of Leixlip as a Moderate Growth Town as recognised by the Regional Planning Guidelines for the Greater Dublin Area and the Kildare County Development Plan.
- To promote and support the growth and sustainable development of Leixlip as a town located in the Primary Dynamic Cluster of Leixlip, Maynooth, Celbridge and Kilcock.
- To strengthen the base for new residential development and additional areas for other uses including employment, retail and community uses appropriate for a Moderate Growth Town having regard to the areas natural and built heritage.

2.3 Consultation

Under Article 13D of the SEA Regulations 2004, there is a requirement on Kildare 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 or observation on the information to be included in the Environmental Report. Kildare County Council has used this stage to consult with the prescribed environmental authorities and other potentially interested bodies prior to preparing this Environmental Report. A scoping report was sent to a list of consultees (statutory and interested bodies) in April 2008.

Section 2

The following bodies were consulted with during the scoping process:

Statutory Consultees

- Environmental Protection Agency
- Development Applications Unit,
Department of the Environment, Heritage & Local Government
- Co-ordination Unit, Department of
Communications, Marine & Natural
Resources

Non- Statutory Consultees

- Office of Public Works, Flood Relief Section
- Eastern Regional Fisheries Board
- Liffey Valley Strategy Steering Group
- Leixlip Town Council
- Fingal County Council
- Waterways Ireland
- Intel Rye River Committee

Section 3

Baseline Environmental Assessment



3. BASELINE ENVIRONMENTAL ASSESSMENT

3.1 Introduction

The SEA Regulations require a baseline environmental assessment to be conducted for the area that may be effected by the Plan. The regulations require that a baseline assessment for biodiversity (flora and fauna), population, geology and soils, water, air and climate, material assets, cultural heritage, landscape and interaction of the foregoing is prepared. This section of the non-technical report summarises the baseline in Leixlip.

3.2 Biodiversity (Flora and Fauna)

In the Leixlip LAP study area, there is one candidate Special Area of Conservation (cSAC), the Rye Water Valley/Cartron. This site is located on the Rye Water (a tributary of the River Liffey) which runs through the study area. The main importance of the site lies in the presence of several rare and threatened plant and animal species and of the spring habitat.

There are two proposed Natural Heritage Areas (pNHAs), the Royal Canal which flows from west to east through Leixlip and the Liffey Valley which is located on the south-eastern boundary of the study area.

There are no habitats in Kildare listed in the 2008 report from NPWS "The Status of EU Protected Habitats and Species in Ireland". There are no SPA's or proposed SPA's in County Kildare.



Plate 3.1: Royal Canal

Source: Kildare County Development Plan 2003, Volume 2

In addition to the cSAC and NHAs designated in Leixlip, Kildare County Council has identified additional areas of ecological importance to protect. There are many important wildlife habitats and while they may not merit national designation are important in a local context and act as stepping-stones in a wider ecological network.

There are two natural springs located in Leixlip, namely, the Louisa Bridge Cold Spring and the Louisa Bridge Warm Spring. In a geological site report, Kildare County Council found that the Louisa Bridge spring complex is worthy of County Geological Sites (CGS) status. Although CGS sites have no statutory protection, they can be promoted through county heritage and development plans.

As per Article 6 (3) and (4) of the Habitats Directive 92/43/EEC, an Article 6 assessment for the LAP was completed using "Assessment of Plans and Projects Significantly Affecting Natura 2000 sites - Methodological Guidance on the Provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC".

The Article 6 assessment completed for the LAP environmental report is only applicable for reviewing proposed development zoning at a strategic level.

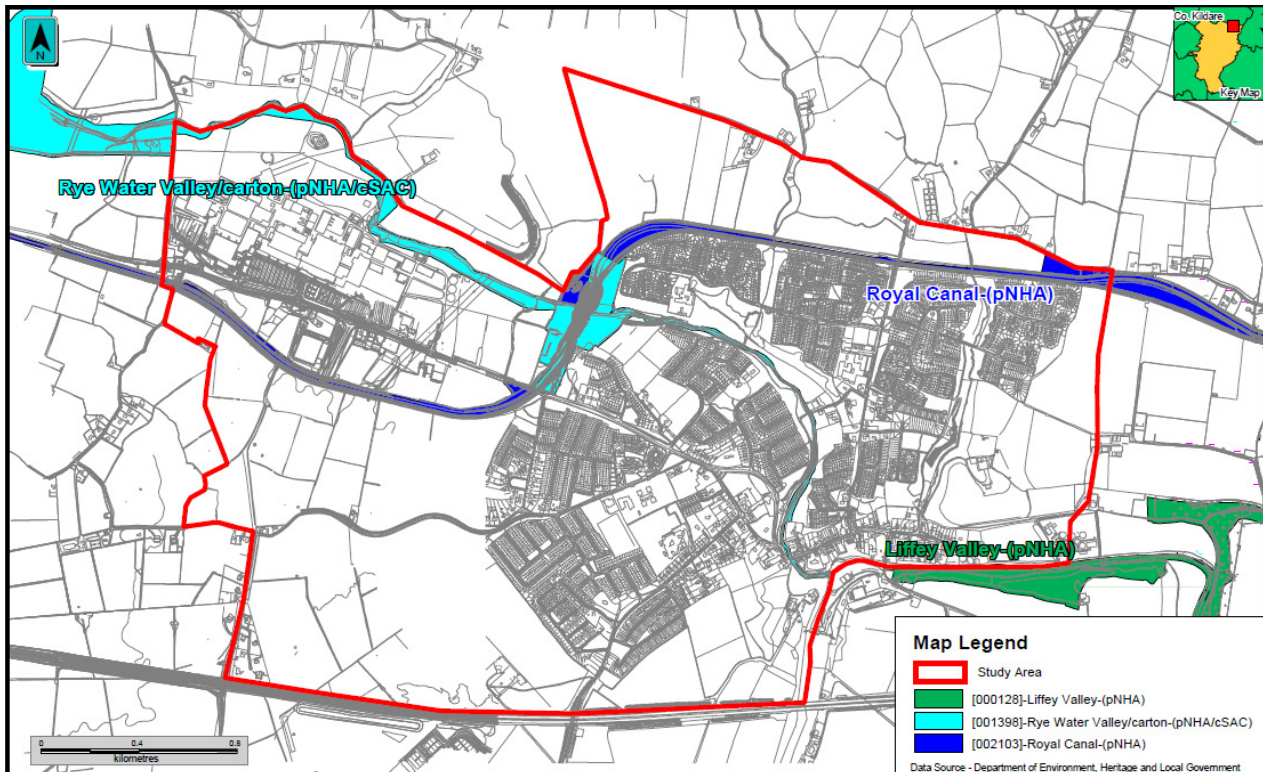


Figure 3.1: Ecological Designated Areas

3.3 Population and Human Health

Data prepared by the Central Statistics Office (CSO) for the 2006 Census Survey, shows the following trends for Kildare and Leixlip.

- Percentage population change in County Kildare overall between 2002 and 2006 was 13.7%
- Percentage population change in Leixlip between 2002 and 2006 was -2.3%.

During the lifetime of the Leixlip LAP (2009 – 2015), there is an expected population increase of 25% on the 2006 census population figure with an expected population in Leixlip of 20,220 by 2015.

The significant potential quality of life issues for the LAP generally relate to the impacts of development, infrastructure and industry on the population and these are listed below.

- Flooding in Leixlip is an issue for residents. Leixlip Main Street flooded in 2002 and 2000 from flash floods in the Rivers Rye Water and Sileacheann. Flood alleviation works are underway.

- Currently water quality in the area is good and residents do not experience water shortages. This water is supplied by the surface water treatment from outside the county. It is estimated that there will be sufficient drinking water for the lifetime of this LAP but it is expected that water supply may become an issue after 2016.
- Availability of social and affordable housing. Kildare County Council is currently using the 20% availability within housing applications for social and affordable accommodation.

3.4 Geology

Leixlip geology is dominated by dark grey to black limestone and shale, there are two bedrock types which border on a south-west to north-east axis. The majority of the study area is dark grey to black limestone and shale (Calp). The northern section of the study area is comprised of dark limestone and shale (Lucan Formation).

As referenced in Section 3.2, one site of geological importance has been identified in the Leixlip area the Louisa Bridge Spring.

Section 3

This site has a non statutory classification of County Geological Site (CGS). These are sites recommended to local authorities for inclusion in the County Development Plan as a scheduled list of sites, with a council policy to protect them from damage through any proposed development.

3.5 Water

3.5.1 Surface Water

Leixlip is located at the confluence of the River Liffey and the Rye Water. The Rye Water and Royal Canal are the dominant water features in the study area. The Royal Canal flows through the study area in an easterly direction. The River Rye is a tributary of the River Liffey, which flows through Dublin city and it joins the Liffey near Leixlip. The Rye is the only significant salmon spawning and nursery stream in the Liffey

catchments, downstream of Leixlip dam. Fishing is prohibited from the Rye Water to Leixlip Dam.

Surface water quality monitoring is conducted by Kildare County Council on average once per month at two locations in Leixlip. The data is supplied to the EPA for compilation on their website.

The biotic indices ratings indicate that water quality in the River Liffey has decreased slightly from 2002 to 2005. The 2005 River Water Quality Report (EPA, 2006) describes that the River Liffey from Leixlip to Lucan "remained moderately polluted by suspected sewage and water treatment plant effluents".

The water quality of the River Rye Water has not changed since 2002.

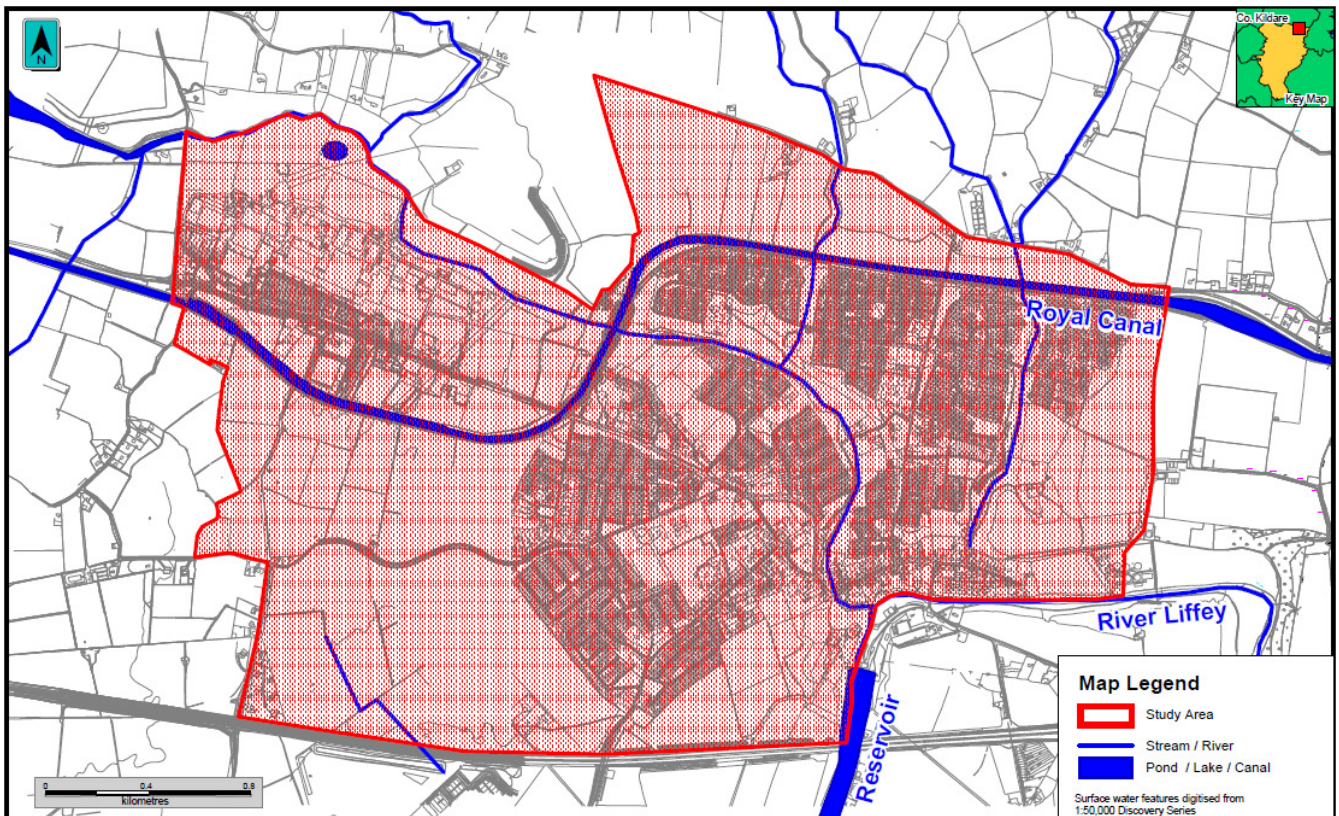


Figure 3.2: Surface Water Features

3.5.2 Groundwater

The study area is underlain predominantly by a locally important aquifer which is unproductive except for local zones. This corresponds to the band of calcareous shale and limestone bedrock.

Groundwater in the western and north western section of the study area is predominantly moderately vulnerable. In the remaining eastern section groundwater is highly vulnerable with sections of extreme vulnerability.

3.5.3 Water Framework Directive

The European Communities (Water Policy) Regulations, 2003 (SI No. 722 of 2003) transposed the Water Framework Directive (2000/60/EC) into Irish Law. The Water Framework Directive (WFD) sets an objective of achieving at least good status for all water bodies and aims to ensure that no further deterioration in status of any waters will occur by 2015.

The WFD groundwater risk assessments have identified a large section of the Leixlip area as possibly at risk of not achieving good status by 2015. The remaining section is at risk of not achieving good status by 2015. The Eastern River Basin District (ERBD) describes diffuse pollution as being the main influence on groundwater quality.

The WFD surface water risk assessments have identified an upstream tributary of the River Liffey (Kellystown tributary) as at risk of not achieving good status. The Eastern River Basin District (ERBD) highlights that diffuse and point pollution are the main impacts on river water quality.

3.6 Air Quality

The Health and Safety Executive conducted baseline air quality monitoring in Leixlip in 01 April 2003 to 31 March 2005. Monitoring was completed for sulphur dioxide and smoke in Leixlip Town Centre and the Leixlip Amenities Centre.

The sulphur dioxide (SO₂) concentrations quantified during the two year monitoring period identified that SO₂ levels are well within EU annual limits of 150 µg/m³. The smoke concentrations quantified are within the annual 98-percentile limit for black smoke of 250 µg/m³.

3.7 Material Assets

3.7.1 Transport Infrastructure

Leixlip is approximately 18 km from Dublin. It is connected to Dublin by the Arrow commuter rail service, mainline railway, provincial and Dublin bus services.

Commuting times available from the CSO 2006 Census show that 28% of Leixlip commuters travel for under 15 minutes. 46% commute for between 15 minutes and an hour. 15% commute for a period of greater than one hour.

3.7.2 Economy and Employment

Leixlip's economy is based on small to medium sized service and retail industries. Leixlip's main employers are Intel Ireland Ltd and Hewlett Packard Manufacturing Ltd with approximately 5,000 and 1,500 employees respectively.

The 2006 census results indicate that Leixlip has a working population of 7,885. There is an employment rate of 96% which compares favourably with 95% for County Kildare.

The employment trends from the 2006 census identify the presence of industry as one of the main employers for Leixlip. There is a 37% (male) and 7% (female) increase in the sector of Manufacturing when comparing Kildare and Leixlip. There is also a 66% (male) and 44% (female) increase in the Professional sector.

3.7.3 Wastewater

Leixlip is served by the Lower Liffey Valley Regional Sewerage Scheme and discharges into the wastewater treatment plant at Leixlip. Leixlip Water Treatment Plant is the second largest water treatment plant in Ireland and supplies drinking water to the Greater Dublin Region including Fingal, South Dublin, Dublin City and areas of Kildare and Meath. This treatment plant has a PE (person equivalent) capacity of 80,000.

This plant is being upgraded to a 150,000 PE by 2012. The proposed development will provide the infrastructure necessary to treat an additional 80 Ml/day of raw water, providing a total volume of 225 Ml/day.

Section 3

This development will provide the necessary standby capacity to enable Fingal County Council to meet the demands of its customers in the Greater Dublin Region, including Fingal, South Dublin, Dublin City and areas of Counties Meath and Kildare, while maintaining the required treated water quality at all times. This project will be funded by the Water Services Investment Programme and by development levies on the basis of the Water Pricing Policy. The estimated cost of this project is €54 m. A revised planning application was lodged with South Dublin County Council on 16 June 2006. On the 21 September 2006 South Dublin County Council granted full planning permission for the proposed development.

3.8 Landscape

Kildare County Council developed a Landscape Character Assessment (LCA) as part of the 2005 – 2011 County Development Plan.

The study area is located in a landscape character area “Northern Lowlands”, characterised by “generally flat terrain and open lands with regular (medium size) field patterns.” This low-lying landscape nature and low vegetation allow for extensive visibility and long distance views within the landscape.

The Royal Canal runs along the northern boundary from west to east. Both of these waterways provide for long distance viewing along the water body. Several viewpoints and scenic routes have been identified from the LCA.

3.9 Cultural Heritage

There are 64 no. buildings of importance in Leixlip which have been listed in the LAP for protection. Archaeological conservation is dealt with by the National Monuments Service operating under the National Monuments Acts, 1930 – 1994.

Zones of archaeological potential are identified in Oaklawn, Riverdale, Main Street and beside the River Liffey to the south of Leixlip.

Strategic Environmental Assessment Non-Technical Report for the Leixlip Local Area Plan 2009-2015



Plate 3.2 Leixlip Castle

3.10 Cumulative Environmental Baseline

In order to assess the impact of the Leixlip LAP on the environment FTC prepared a drawing detailing environmentally sensitive areas around Leixlip. The drawing was used as a general guidance for planners to develop a strategic zoning map for the area. The cumulative impact assessment drawing is shown in Figure 3.3. The colour zoning on the drawing demonstrates areas suitable for mixed planning, mixed planning with environmental restrictions and areas that are considered to be environmentally vulnerable to development.

Based on the results of the cumulative assessment, the scorings were broken down as follows:-

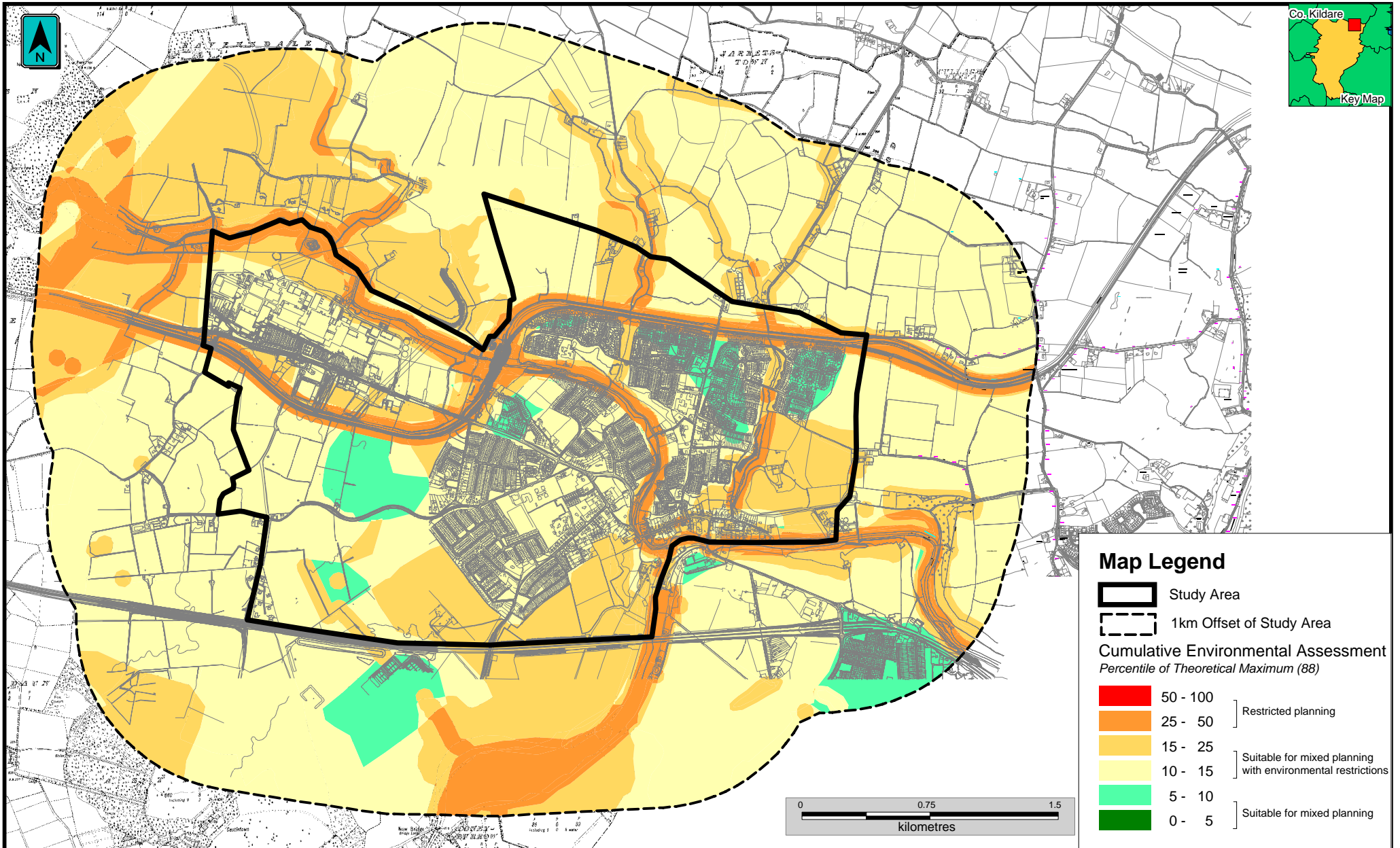
0-10 percentile – Suitable for mixed planning. FTC considers that areas under these scorings are amenable to most forms of town and environs planning.

10-25 percentile – Suitable for mixed planning with environmental restrictions. FTC considers that these areas are suitable for mixed planning but with environmental restrictions. These areas contain some environmental constraints which should be reviewed when zoning in these areas.

For example the centre of town is within the percentile range of 10-25 and the remaining town is in the lower percentile range of 5-10.

This higher score is caused by the presence of a zone of archaeological potential around Leixlip Castle and Tower House to the south east of the study area. We recommend when reviewing these areas for development opportunity, they are examined alongside the figures from Section 5 of this report. This will determine the source of the environmental sensitivity and the development type should be assessed to determine its impact on this particular environmental aspect.

25-100 percentile – Restricted planning. FTC considers these areas to be environmentally vulnerable to development. The scoring of these areas would be driven by European and national environmental policy and legislation through the presence of designated ecological areas, highly vulnerable groundwater and the presence of heritage sites/ monuments.



Section 4

Alternatives Considered



4. ALTERNATIVES CONSIDERED

4.1 Introduction

A drawing prepared by CAAS (Environmental Services) Ltd offered a number of residential zoning alternatives for Collinstown and Leixlip. Options A (A1, A2, A3 and A4) correspond to residential zoning options north of the Royal Canal while Options B (B1, and B2) offer residential zoning options for Collinstown.

Fehily Timoney & Company, as part of the Scoping Report for the SEA, prepared a cumulative environmental assessment drawing for the study area. The purpose of this drawing was to assist the planners in Kildare County Council to consider possible environmental constraints when preparing the zoning alternatives.

4.2 Identification and Development of Alternatives

A review of groundwater vulnerability for groundwater in the area found that for options A1 and A3 groundwater vulnerability is moderate. A large portion of Option A4 is situated in an area of extreme groundwater vulnerability. Both Options B1 and B2 are situated in areas of moderate vulnerability.

The Water Framework Groundwater Risk Assessment Characterisation Report found that with the exception of land zoned for option A2, groundwater in the area was strongly expected to achieve good status by 2015. Lands in option A2 are at risk of not achieving good status. The south western portion of Option A1 is located close to Rye Water/Carton SAC. Developments in this area will require a developer to prepare an Appropriate Assessment as per in the Habitat Regulations.

Option A3 includes land that contains an SMR (a ritual site – holy well) and development in this area will require agreement with Kildare County Council and possibly the DOE.

All the lands zoned at A1, A2, A3 and A4 will experience difficulties accessing the motorway. The main travel routes may be along the Dunboyne Road and down Captains Hill through the town. This will increase traffic in the town particularly in the morning and evening and may lead to traffic congestion.

Options B1 and B2 in Collinstown are currently green field sites. Collinstown is subject to its own Local Area Plan.

Notwithstanding the above any zoning for future development within the study area should demonstrate commitment to the principles of sustainable development as given in the Nation Sustainable Development Strategy. The sustainable abstraction of water, discharge of treated effluent into water bodies, the protection of groundwater and the protection of aquatic ecosystems must be considered in preparing this Plan. A commitment to the protection of water will ensure compliance with the requirements of the Eastern River Basin Management Plan and its associated Programme of Measures.

The presence of a candidate Special Area of Conservation (cSAC) within the study area (Rye Water Valley/Carton) will require developers to prepare Appropriate Assessments to demonstrate that development will not impact on the cSAC.

4.3 Preferred Scenario

The alternative planning scenarios were assessed. However due to traffic accessibility issues to the area along Cope Bride and Captains Hill areas to the north of the Royal Canal (Options A1, A2, A3 and A4) were not considered further. To address the residential requirements outstanding, the Collinstown local area plan will comprise 60% of the housing units needed with the remaining units to be based in the Leixlip LAP area, requiring approximately 10.1 hectares.

Since Leixlip is well established and development hindered somewhat by the traffic congestion little change could be made to the current land uses in the existing town centre and environs.

An area of land to the south west of the town centre was selected as most suitable from a transport and environmental impacts. Zoning of this land to residential is sympathetic to existing zoning in the Wonderful Barn Action Plan of new residential and amenity/open space.

Section 5

Strategic Environmental Objectives



5. STRATEGIC ENVIRONMENTAL OBJECTIVES

5.1 Introduction

In SEA the level of detail used to describe the baseline is much less refined than in EIA. SEA uses a combination of objectives, targets and indicators to describe and monitor change and predict impacts of proposed plans and programmes on the environment (Therivel, 2004).

Objectives and targets set aims and thresholds that should be taken into account when assessing the impact of proposed plans on the environment. Indicators are used to illustrate and communicate impact in a simple and effective manner. Indicators can also be used to form the basis of a monitoring programme for the Plan, the results of which will inform the next review.

This Environmental Report examined the compatibility of the SEA objectives and the Plan Policies and Objectives to identify potential areas of conflict between them.

5.2 Development of SEA objectives

The environmental objectives are derived from International, European and national policies on various aspects of the environment. Many of these policies have been transposed into Irish Law and are now mandatory and need to be integrated and implemented in Development Plans at county and lower levels.

The list of environmental objectives used in this report is based on the environmental topics set out in Paragraph F of Schedule 2B which is contained in the SEA Regulations which might be significantly impacted upon by the Plan. These include:

- biodiversity (flora & fauna)
- population/human health
- geology/soil
- water
- air/climatic factors
- material assets
- cultural heritage
- landscape
- and the interrelationships between these factors.

The SEA objectives are listed in Table 5.1.

5.3 Environmental Protection Objectives

In addition to the settlement objectives set out in the Plan, it also contains an array of international, European and national environmental protection policies and attendant objectives, for example Ireland is signatory to the Kyoto protocol and the Habitats Directive. The legislation governing the production of a Local Area Plan requires that the Plan be consistent with these objectives.

Table 5.1: SEA Objectives

<p>B1 Conserve protected habitats and species</p> <p>B2 Conserve the diversity of non-designated habitats and species</p> <p>B3 Protect aquatic and terrestrial habitats from invasive species.</p> <p>B4 Protection of wetlands</p> <p>P1 Improve people's quality of life based on high quality living environments, working and recreational facilities</p> <p>P2 Adhere to the County Emergency Plan and other objectives of relevance to human health.</p> <p>P3 Reduction of noise and vibration levels</p> <p>SG1 Maximise the sustainable re-use of brownfield sites and maximise the use of the existing built environment.</p> <p>W1 Maintain or improve the quality of surface water to status objectives as set out in the Water Framework Directive (WFD)</p> <p>W2 Maintain or improve the Biotic Quality Rating (Q Value) of surface waters</p> <p>W3 Prevent pollution of groundwater by adhering to aquifer protection plans</p> <p>W4 Provision of flood relief through management of flood risk and living with floods rather than engineered flood solutions</p> <p>AC1 Minimise greenhouse gas emissions to meet National and International standards</p> <p>AC2 Improve ambient air quality</p> <p>MA1 Development of a sustainable transportation infrastructure which reduces the need for travel and journey length</p> <p>MA2 Minimise waste production and introduce sustainable waste management practices</p> <p>MA3 Wastewater and water supply infrastructure to provided for new developments.</p> <p>L1 Protect views and prospects within the study area.</p> <p>L2 Designate and protect urban and industrial views and prospects.</p> <p>CH1 Promote best practice in heritage conservation and management</p> <p>CH2 Protection of individual sites and complexes</p> <p>CH3 Identification and protection of archaeological features</p>
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Section 6

Environmental Assessment of the Likely Significant Impacts of the Plan



6. ENVIRONMENTAL ASSESSMENT OF THE LIKELY SIGNIFICANT IMPACTS OF THE PLAN

The objective of this section is to determine the 'likely significant' effects of the LAP on the environment. The assessment methodology adopted here is based on assessing the impacts of the Plan objectives, if any, on the environmental objectives given in Table 5.1 in the previous chapter.

The assessment criteria used here is based on the determination of the 'likely significant' impacts of the Plan's policies and objectives on the environmental objectives. The likelihood of an impact occurring on any of the environmental objectives are determined (based on expert judgment of the SEA team) and the significance and duration of the likely impact is then determined. The SEA assessment tables are presented in Appendix 3 of the main Environmental Report and the findings are summarised in the following sections. In the following text the term "supports the environmental objective" infers a positive impact on the environment. The term "conflicts with an environmental objective" infers a negative impact on the environment.

The environmental objectives of water, biodiversity, cultural heritage and landscape, human health, soils, geology, air and climate are individually assessed against the Plan objectives given in the various chapters of the Plan, namely:

- Part A – Context of the Plan
- Part B – Specific Objectives
- Part C – Specific Zoning Objectives

6.1 Part A 1-7 Context of Plan

Part A sections 1 to 7 of the Plan detail the Development Plan process, the history of Leixlip and the baseline infrastructure and environment. There are no objectives or policies in these sections of the Plan requiring assessment.

6.2 Part A 8 Development Vision for Leixlip

This section of the Plan details the three overriding objectives of the Leixlip Development Plan. These objectives lay out how the purpose and drive

behind the Plan. Definite assessment against the SEA objectives is not possible as the objectives are vague in what is considered sustainable and what "having regard" to natural and built heritage.

Table 6.1: Leixlip Development Plan Strategic Policy Objectives

STRATEGIC POLICY OBJECTIVES
To promote and facilitate the growth and sustainable development of Leixlip as a <i>Moderate Growth Town</i> as recognised by the Regional Planning Guidelines for the Greater Dublin Area and the Kildare County Development Plan.
To promote and support the growth and sustainable development of Leixlip as a town located in the <i>Primary Dynamic Cluster</i> of Leixlip, Maynooth, Celbridge and Kilcock
To strengthen the base for new residential development and additional areas for other uses including employment, retail and community uses appropriate for a <i>Moderate Growth town</i> having regard to the areas natural and built heritage.

Part B of the LAP for Leixlip sets out the planning policies for the area.

An assessment of these policies is discussed below.

Housing

Housing objectives are detailed on Section 2 of Part B of the Plan. The housing policies are directed mainly at the provision of sustainable housing and therefore support SEA objective PO1.1 "Improve people's quality of life based on high quality living environments, working and recreational facilities".

Plan objective H1 is specifically referenced as this objective has significant and unknown environmental impacts. While it is highly positive in developing areas to live for Leixlip's population and supporting the regional planning guidelines, there will be negative and unknown impacts both permanent and temporary. The most notable conflict is with SEA objective B2 "Conserve the diversity of non-designated habitats and species". Development of dwellings will require significant virgin ground to be built on and existing habitats will be lost from this ground.

While the areas will not be designated ecological sites, the habitats may still be locally important whether solely or in provision of ecological corridors. The impacts of this objective will be however lessened with Plan Objective TC2 "To seek the renewal of derelict, underused and vacant sites" as this encourages the use of brownfield sites. This objective complements SEA objective SG1 "Maximise the sustainable re-use of brownfield sites and maximise the use of the existing built environment."

In addition, the construction of dwellings would have temporary negative impacts to air and water associated with the construction phases of the dwellings such as dust dispersion from vehicle movements and construction activities and water impact from site run-off. These temporary impacts could be mitigated by implementing Housing Objective H14 whereby Kildare County Council can require an environmental impact assessment (EIA) for certain sub-threshold developments. An EIA would assess temporary impacts from construction and where impacts were expected, specific mitigation measures would be designed and applied during the actual construction.

Industry and Employment

There are six objectives relating to industrial and employment development in Leixlip. These objectives are significantly positive for quality of life and thereby are highly compatible with SEA objective P1 "Improve people's quality of life based on high quality living environments, working and recreational facilities". Three of these objectives relate specifically to provision of lands and facilitating development for industry and employment.

Permanent negative impacts will arise due to the loss of local habitats and ecology from development on greenfield sites. In addition temporary negative impacts on air and water quality from construction impacts will also occur. Unlike housing, industrial sites carry additional impact from operational impacts such as solvent emissions from production, noise emissions from external activities and wastewater emissions from washing activities. Large-scale sites are typically licensed by the local authority or Environmental Protection Agency (EPA) such as Intel where, for example, air quality is monitored for solvent emissions. These additional impacts have been provided for by Kildare County Council with objective E3 "To safeguard residential areas and areas of high environmental quality from the adverse effects of industrial development".

Community, Educational, Childcare and Cultural Facilities

The objectives detailed in Section 4 relate to the provision of community, educational, childcare and cultural facilities. These Plan objectives support SEA objective P1 "Improve people's quality of life based on high quality living environments, working and recreational facilities". Aside from Objectives C8 and C9, there are no negative impacts (temporary or permanent) which would occur from implementation of these objectives in the Plan.

Water

There are several objectives related to water supply and they all provide long-term positive impacts to the environment. The objectives are compatible with the SEA objectives for water. The Plan objectives promote water conservation through supply upgrades and user charging and also the provision of water infrastructure for developing areas.

Surface Water

There are five objectives specifically related to surface water and groundwater in the Plan and they all relate to water quality protection. There are no negative impacts associated with these objectives.

Wastewater

The wastewater objectives promote the efficient use of the wastewater infrastructure, reducing dependence on septic tank systems and ensuring that wastewater discharges adhere to applied license limits.

Solid Waste

The solid waste Plan objectives in the Plan relate to both collection and drop-off locations for waste disposal. These objectives provide the required infrastructure for the residents of Leixlip while also promoting more environmentally sustainable methods of waste handling. These Plan objectives are compatible with SEA objective MAO2.1 "Minimise waste production and introduce sustainable waste management practices".

Flooding

Flooding objective FL1 requires a buffer zone to be designed between the River Liffey, the Rye River, the Silleachain and the Canal for any proposed new development. This is a permanent positive impact from the implementation of the plan since the Rivers Rye and Sileacheann are both prone to flooding. Plan objectives FL2 and FL3 both require implementation of best practice in flood mitigation by managing run-off from new developments through permeable materials and requiring SUDS analysis. These objectives are compatible with and will support SEA Objective W4 "Provision of flood relief through management of flood risk and living with floods rather than engineered flood solutions".

Telecommunications

The telecommunications objectives of the Plan relate specifically to landscape protection and provision of underground services rather than overground. These objectives would specifically aid in quality of life through provision of broadband services to the residents of Leixlip while also preventing negative landscape impacts through provision of underground services.

Transportation

The Roads, Streets and Car Parking (TR) objectives in the Plan provide for environmental protection through promotion of interceptors for protection of water quality, having regard to natural heritage when considering transportation developments and specifically referencing the Environmental Noise Directive when considering future developments on roads or railway.

Public Transport (PT)

The objectives included in this section relating to public transport are compatible with SEA objective MA1 "Development of a sustainable transportation infrastructure which reduces the need for travel and journey length". All the objectives listed have a positive impact on the Leixlip area by promoting the use of public transport and improving the travel times for commuters going to Dublin. Promotion of public transport will also positively impact ambient air quality by reducing private vehicle numbers on the road.

Pedestrian and Cycle Networks (PC)

Similarly the objectives put forward for pedestrian and cycle networks will be a positive impact on the current transport infrastructure by providing additional options for Leixlip residents over shorter journeys. The areas needed to create would not be expected to require large areas of land therefore a negative impact on local habitats is not predicted. In addition, the reduction in private vehicle usage would also assist in protecting and improving ambient air quality.

Amenity and Recreation

The amenity and recreation objectives relate to the provision of walkways, play facilities, improvement of green spaces, public parks and protection of flora as part of amenity. These are positive objectives relating and complementing SEA objective P1 "Improve people's quality of life based on high quality living environments, working and recreational facilities", BO1.1 "Conserve protected habitats and species" and B2 "Conserve the diversity of non-designated habitats and species". B1 and B2 are included under Amenity and Recreation Objectives as there are several objectives relating to the protection of significant trees and hedgerows with protection afforded through planning applications and conditions.

Town Centre Objectives

The town centre objectives relate to the development of strengthened pedestrian access through Leixlip town, use of derelict/ vacant sites for development and protection of the streetscape. Objectives TC1 and TC2 relate to the renewal of derelict sites and development of a new pedestrian linkage from Captains Hill to Mill Street. This positively impacts the environment as vacant sites rather than greenfield sites are developed. Objectives TC8 to TC10 relate to the protection of Leixlip's streetscape by ensuring new or renewed developments are in keeping with the current streetscape.

Architectural Conservation Area (ACA) Objectives

The ACA Objectives listed are all applicable to areas designated ACA in Leixlip. All the objectives complement SEA objective CH1 "Promote best practice in heritage conservation and management" as they are designed to ensure developments in the ACAs are considered sufficiently at planning stage to protect the urban heritage.

Part B 9 Re-use and Regeneration of Derelict Sites and Buildings

There is a single Plan objective in this section (DS1) relating to the re-use of derelict and brownfield sites. This Plan objective supports a number of environmental objectives in relation to the protection of non-designated ecological habitats (B2). The re-use of brownfield sites reduces the requirement to develop greenfield sites thereby protecting habitats and ecological corridors and reduces the potential for increase in surface water run-off and potential for flooding (assuming the site is hardcore/ concreted previously).

General Heritage

The three objectives listed under this section relate to the overall protection which will be afforded to heritage sites and natural heritage in Leixlip. The provision of objective HE1 "To protect, conserve and enhance the natural, built and archaeological heritage through all plans, programmes and policies" is the overriding objective which ensures natural and man-made heritage will be maintained and protected.

Natural Heritage

The objectives listed under Natural Heritage relate specifically to the protection of designated and non-designated ecological sites. These objectives specifically complement SEA objective B1 "Conserve protected habitats and species". The requirement for an Appropriate Assessment under Article 6 of the Habitats Directive would relate to objective NH4 but would need to be specifically referenced as per objective H11 "Ensure that developers for any developments in the vicinity of or affecting a designated candidate Special Area of Conservation or Natural Heritage Area provides sufficient information on how it will impact upon the site and what measure will be put in place to remedy same.

An Appropriate Assessment will be required for developments that may impact on the Rye Water Valley/ Carton SAC."

The remaining objectives relate to protection of sites or habitats which are not designated under legislation yet still considered under the draft Plan. Objective N2 details the protection measures which will be afforded to these sites and habitats.

Built Heritage

The objectives under Built Heritage provide, as per the ACA objectives, for protection of Leixlip's streetscape and buildings. These objectives directly complement SEA objectives CH1 "Promote best practice in heritage conservation and management" while also providing for positive impact for objective LO2.1 "Designate and protect urban and industrial views and prospects".

Archaeological Heritage

The three objectives listed under archaeological heritage allow for the protection of archaeological sites in Leixlip. These objectives provide for the protection (Objective AH1), designation (Objective AH2) and investigation (Objective AH3) of archaeological sites. These relate specifically to SEA objectives CH2 "Protection of individual sites and complexes" and CH3 "Identification and protection of archaeological features".

Environment

The five objectives listed under Section 11, Environment, are strictly environmentally sensitive objectives relating to Leixlip. The topics covered under these objectives are Green design, Renewable energy and clean-up of river/ canal.

6.3 Assessment of Variations to the Plan (Second Consultation Period)

The Environmental Report on the draft Plan was put on public display with the draft Plan between the 18 June and the 25 July 2009. This constituted a first public display period. A total of 71 no. general submissions/observations were received during the consultation period.

Section 6

Strategic Environmental Assessment Non-Technical Report for the Leixlip Local Area Plan 2009-2015

This document follows on from the Environmental Report and is a requirement under Article 13(g) of the Planning and Development (Strategic Environmental Assessment) Regulations, 2004 (S.I. No. 436 of 2004).

As such, there were no recommendations made to the Proposed Amendments in the Second Managers Report.

Almost half of the submissions related to zoning 10.2 Ha of land for New Residential within the Leixlip Demesne area. A large portion of the submissions refer to a change in zoning with others referring to transportation concerns, public transport/park and ride, car parking, amenities and flooding. In particular a number of large, detailed submissions were made in relation to the rezoning of land to residential and mixed uses north of Confey and within the Liffey Valley House Hotel grounds.

The proposed amendments to the draft Plan were presented in the "Proposed Amendments Report Draft Leixlip Local Area Plan 2009" dated 29 October 2009 prepared by Kildare County Council. There were 37 text amendments with 15 map amendments.

A large proportion of the amendments to the objectives or new objectives were likely to improve or have a positive impact on the environment and a smaller portion of the amended or new objectives will have no impact on the environment.

6.4 Assessment of Amendments to the Plan (Pre-Adoption)

The Proposed Amendments to the draft Plan were prepared based on the submissions received and released for public consultation from the 29 October to the 25 November 2009. This constituted the second consultation period. 8 no. submissions were received from the second consultation period on the Proposed Amendments.

The second Managers Report was prepared following the review of the submissions and recommended further proposed changes to the draft Plan. The amendments were considered by the Elected Members.

All the submissions have been considered in preparing both the Manager's Report and this Environmental Report.

The screening assessment did not identify any Proposed Amendments which cause significant conflict with the Environmental Objectives.

Section 7

Mitigation Measures



7. MITIGATION MEASURES

7.1 Introduction

Mitigation measures are required to eliminate/remediate/reduce significant negative environmental impacts. Based on the source/pathway/receptor concept where an environmental burden (e.g. water pollution, air pollution) can impact on a receptor e.g. human, water, biodiversity or landscape via particular pathways these significant impacts can be either mitigated at:

- Source e.g. avoid the impacts at source
- Pathway e.g. reduce the magnitude of the impact
- Receptor e.g. compensate for the impact by providing an alternative

To negate or minimise these impacts, mitigation measures are set out in Section 7.2.

7.2 Plan Specific Mitigation Measures

A number of the International and National environmental policies, for example, the Habitats Directive, the Water Framework Directive, have listed appropriate mitigation measures to minimise the impacts on the environment. Many of the mitigation measures, particularly for water will be driven by the Water Framework Directive and the requirement to meet good quality status by 2015.

The Council has considered these policies and directives and have formulated a number of policies in the draft Plan to implement their requirements. The following sections lists policies contained in the draft Plan aimed at protecting environmental resources and to providing improved quality of life for residents of the county. Where it is considered that additional mitigation measures are warranted, these are also listed.

Table 7.1: LAP Environmental Policies and Objectives

Section	Policy/ Objective
Part B 2 Housing	That solar panels be encouraged in the design of development schemes in the interest of sustainability particularly on south facing walls. All proposed developments shall have due regard to the EC Directive 2002/91/EC which relates to the energy performance of buildings.
	The preservation and reinforcement of existing mature trees and hedgerows in new residential areas where feasible. The felling or elimination of existing mature trees and hedgerows shall be strongly resisted.
	Ensure that developers for any developments in the vicinity of or affecting a designated candidate Special Area of Conservation or Natural Heritage Area provides sufficient information on how it will impact upon the site and what measure will be put in place to remedy same. An Appropriate Assessment will be required for developments that may impact on the Rye Water Valley/ Carton SAC
	Kildare County Council will have regard to the provisions of 'The Planning System and Flood Risk Management – Consultation Draft Guidelines for Planning Authorities (September 2008)' and further updates when considering applications for development in flood risk areas.
	Housing will be restricted within 10 metres (to be determined by Kildare County Council) from the River Liffey the Rye Water and the Royal Canal.
	Where the size of a development does not exceed the statutory threshold requirements the Council can if it considers that a potential environment impact may arise request an Environmental Impact Assessment or Appropriate Assessment
Part B 5 Public Utilities	It shall be an objective of the Council to require on site surface water attenuation measures if in its opinion a development is likely to cause flooding or potentially destructive storm surges in existing water courses
	Developers will need to demonstrate that their application will not impact on the requirements of the Water Framework Directive and associated River Basin Management Plans.

Section	Policy/ Objective
	<p>Ensure that planning applications shall have regard to any existing groundwater protection schemes and or the likely impacts that the development may have on groundwater</p> <p>Planning applications will provide for a 10m riparian corridor along the Rye Water, Royal Canal and River Liffey</p> <p>To require that all development incorporates the maximum provisions to reduce the quantity and rate of run-off</p> <p>To require developers to provide adequate wastewater service provision for any development proposed where insufficient wastewater facilities are currently in place and to ensure that the requirements of the Eastern River Basin District Plan and associated Programme of Measures are met. In this regard developers should liaise with the Water Services Department of Kildare County Council prior to the lodgment of any planning application, in order to ensure that any proposals made comply with all necessary and relevant standards.</p> <p>To ensure the changeover from septic tanks to mains connections in all cases where this is feasible and that all new developments utilise and connect to the existing wastewater infrastructure. The provision of individual septic tanks and treatment plants in the Leixlip area will be strongly discouraged to minimise the risk of groundwater pollution. Where such facilities are permitted, full compliance with the prevailing regulations and standards will be required.</p> <p>To ensure that all licensable operators discharging waste water are operating within permitted limits</p> <p>Ensure that the provisions of the Urban Wastewater Discharge Regulations are adhered to.</p>
Part B 6 Transportation	<p>In relation to car parking it is an objective of the Council:</p> <p>(i) To provide distinctly coloured disabled car parking spaces at appropriate locations throughout the town.</p> <p>(ii) To investigate the provision of additional off street public car parking in the town centre as part of the development of the new street linking Captain's Hill and Mill Lane.</p> <p>(iii) To ensure the provision of permanent durable surfaces to all public and private car parking facilities and the provision of suitably sized oil/water interceptors.</p> <p>(iv) To ensure adequate car parking spaces are provided in all new developments with suitably sized oil/water interceptors</p> <p>To have regard to the condition location and accessibility of designated heritage sites and sites of local importance that may not be designated in the planning and provision of transportation services. Appropriate mitigatory measure shall be incorporated into any development proposal</p> <p>When considering the landscaping requirements of new transport networks the council will promote the planting of native species</p> <p>To require all new developments to comply with the requirements of the Kildare Local Authorities Noise Action Plan.</p>
Part B 10 Heritage	<p>To protect all designated wildlife sites, including any additions or amendments to these, from any development that would adversely affect their conservation value.</p> <p>To ensure that any development proposal within the vicinity of or having an effect on a designated site, will provide sufficient detail illustrating how it will limit any possible impact upon the designated site and will include proposals for appropriate amelioration. In all such cases the developer shall consult with the National Parks and Wildlife Section of the DoEHLG.</p> <p>To conserve and protect the natural habitats in the River and Canal systems.</p> <p>To identify, protect, conserve, and enhance, wherever possible, wildlife habitats and species of local importance, not otherwise protected by legislation. Such habitats would include woodland, river, grassland areas and field boundaries (hedgerows, stone walls and ditches). Such features form part of a network of habitats and corridors, which allow wildlife to exist and flourish.</p>

Section	Policy/ Objective
	<p>To have regard to the County Bio-Diversity Plan and integrate the consideration of bio-diversity into all development proposals in order to ensure the protection and enhancement of this important aspect of the local environment.</p>
	<p>NH 5 To protect, by way of Tree Protection Orders, trees and groups of trees of special amenity value at the following locations;</p> <ul style="list-style-type: none"> (i) St.Catherine’s Park Demesne (ii) The Black Avenue (iii) Leixlip Castle Demesne (iv) Newtown House, Captains Hill (v) In grounds of Leixlip House, adjoining public open space at Ryevale Lawns (Squirrel Wood) (vi) Both sides of the aquaduct embankment (vii) Sileachainn Valley, between fire station and Glendale Meadows (viii) East side of laneway to Leixlip Gate (ix) Marshfield House, Mill Lane (x) Open space adjacent to Rye water at Rye River estate (xi) Along north bank of Canal, Collinstown (xii) Between River Forest and Ryevale Lawns.
	<p>Development shall be prohibited where it is likely that damage would be caused either to trees protected by a Tree Preservation Order or, to those which have a particular local amenity or nature conservation value. Development that requires the felling of mature trees of amenity value, conservation value or special interest notwithstanding the fact that they may not be listed in this plan, will be discouraged (See objective H3 – xv also).</p>
	<p>To encourage the protection of hedgerows, which provide a unique habitat for wildlife. It shall be expected that all new developments protect mature hedgerows and include hedgerows as an integral part of the overall development design (See objective H3 – xv also).</p>
	<p>Planning applications must;</p> <ul style="list-style-type: none"> (i) Identify all ecological corridors which are present on the proposed development lands (including hedgerows and masonry stone walls) that are likely to be affected by the development proposal, (ii) Identify any losses to these corridors which would result if the application in question was granted, and (iii) Show that such losses would be fully offset, if the application was to be granted, through the replacement of the relevant corridors, with corridors composed of similar species prior to any losses to the existing corridors.
	<p>To conserve and protect Riparian (beside rivers) corridors new development will not be permitted within a minimum of 10m from either side of all watercourses measured from the top of the bank, apart from in exceptional circumstances, to provide:</p> <ul style="list-style-type: none"> - visual amenity of the river; - public space and access; - public walkway/cycleways, lighting; - spaces to allow for the conservation and enhancement of landscape features, such as tree coverage - spaces to conserve and enhance biodiversity capacity <p>In all instances a buffer of 2.5m of vegetation shall be retained along the river bank to mitigate against pollution risks, reduce flooding potential and maintain habitat. Redevelopment shall seek to create riparian buffer strips of at least 2.5m, along either side of all watercourses measured from the top of the bank. Riparian buffers have the greatest potential to control environmental damage, reduce flooding potential and provide habitats.</p>

Section	Policy/ Objective
Part B 11 Environment	To require developers to demonstrate how they will implement a "green agenda" in building design, construction and operation. In terms of environmental performance encompassing building design, energy efficiency, waste/waste water management, construction and demolition waste, mobility management and CO2 reduction all new developments shall demonstrate how they intend to integrate best practice in the form of a written submission accompanying planning applications in line with the EU Directive 2002/91/EC on Energy Performance of Buildings. The implementation date for these sustainable building practices outlined above is 1st January 2008. All applicable developments seeking planning permission from that date will be subject to compliance with this policy. (See http://www.managenergy.net/products/R210.htm for complete wording of Directive)
	To encourage the development of renewable energy and the development of energy infrastructure while ensuring that residential amenities and the visual amenity of the local environment are protected.
	To ensure that illegal dumping does not occur either in or adjacent to the River Liffey or Rye and the Canal.
	To improve the vegetation management along the River Liffey and Rye River and the Canal.
	To require developers to demonstrate how they will implement a "green agenda" in building design, construction and operation. In terms of environmental performance encompassing building design, energy efficiency, waste/waste water management, construction and demolition waste, mobility management and CO2 reduction all new developments shall demonstrate how they intend to integrate best practice in the form of a written submission accompanying planning applications in line with the EU Directive 2002/91/EC on Energy Performance of Buildings. The implementation date for these sustainable building practices outlined above is 1st January 2008. All applicable developments seeking planning permission from that date will be subject to compliance with this policy. (See http://www.managenergy.net/products/R210.htm for complete wording of Directive)
To encourage the development of renewable energy and the development of energy infrastructure while ensuring that residential amenities and the visual amenity of the local environment are protected.	

7.3 Mitigation Measures Required for Implementation of the Plan

In addition to the mitigation measures incorporated into the draft plan, further mitigation is required for implementation of the draft Plan. The recommended mitigation measures required for implementation of the plan are set out in Table 7.2. Proposed changes are presented in italics.

Table 7.2: Proposed Mitigation Measures from implementation of the draft Plan

Draft Plan Policy	Proposed draft plan wording
Biodiversity	Objective NH10 Planning applications must; (i) Identify all ecological <i>habitats and corridors</i> (including hedgerows and masonry stone walls) which are present on the proposed development lands that are likely to be affected by the development proposal, (ii) Identify any losses to these <i>habitats and corridors</i> which would result if the application in question was granted, (iii) Show that such corridor losses would be fully offset, if the application was

Draft Plan Policy	Proposed draft plan wording
	to be granted, through the replacement of the relevant corridors, with corridors composed of similar species prior to any losses to the existing corridors and <i>(iv) Show that habitat loss will either be offset should the application be granted or is not locally important to the area.</i>
Soil Quality	<i>A provision should be included for the investigation of brownfield sites prior to development to identify and remediate any contaminated land in the study area. Planning conditions should specify environmental control measures, for example, surface water management plan, during investigation and construction.</i>
Air Quality	<i>Environmental Management Programme should be submitted and approved by Kildare Local Authorities for large scale building or infrastructural projects.</i>
Material Assets	TR1 To maintain and improve as required the local road network to ensure a high standard of road quality and safety <i>in accordance with the requirements of this plan and relevant legislation.</i>
Material Assets	TC1 To seek the renewal of derelict, underused and vacant sites <i>in accordance with relevant legislation</i>
Cultural Heritage	<i>It is recommended that all planning applications within 30 m of a listed archaeological site or a site of architectural heritage must be accompanied by an archaeological assessment.</i> <i>A registered archaeologist should be present during the initial stripping of the topsoil at these sites.</i> <i>For projects involving the construction of roads the developer will need to take cognisance on the NRA's guidelines on archaeological assessments.</i>

Section 8

Monitoring Programme



8. MONITORING PROGRAMME

8.1 Introduction

Under Article 10 and Section (i) of Schedule 2B of the SEA Regulations, monitoring is required in order to identify at an early stage any unforeseen adverse effects caused by the Plan. This allows remedial action to be taken. Monitoring prevents the actual impacts of the Plan to be measured against those that were predicted. It allows major problems to be identified and dealt with in a timely fashion, and environmental baseline information to be gathered for future Plan reviews. It also ensures that proposed mitigation measures are carried out and that no unforeseen impacts occur (Therivel, 2004).

Monitoring is carried out by reporting on the set of indicators and targets drawn up for the various environmental aspects and used to describe future trends in the baseline, which enable positive and negative impacts on the environment to be measured. The indicators that are used show changes that would be attributable to implementation of the Plan. In particular, the indicators can also in certain circumstances act as an early warning system should unforeseen impacts occur or conditions deteriorate further or faster than anticipated. For example, water quality indicators describe trends in both improvements and deterioration in water quality. If quality targets are not being reached and water is seen to be unexpectedly deteriorating immediate intervention will be required.

8.2 Monitoring Programme

Monitoring will focus on aspects of the environment that are likely to be significantly impacted by the Plan. Indicators and targets have been identified for the main environmental issues in the study area, namely water, biodiversity, cultural heritage and landscape.

Much of the indicator information required is already being actively collected and reported at a level sufficient to meet the needs of this Plan. The frequency of monitoring is set by relevant legislation.

8.3 Responsibilities

Kildare County Council will be responsible for the implementation of the monitoring programme in relation to the Plan.

8.4 Sources of information

Monitoring will focus on aspects of the environment that are likely to be significantly impacted by the Plan. Indicators and targets have been identified for the main environmental issues in the study area, namely water, biodiversity, cultural heritage and landscape. The indicators chosen are at a level, which is relevant to the Plan, and are collated and reported on by a variety of Government Agencies, such as EPA, OPW, National Parks and Wildlife Services and different sections within Kildare Local Authorities.

In Tables 8.1 to 8.8 the format for the monitoring programme for this Plan is detailed in relation to relevant indicators, targets and frequency of monitoring, point at which additional action may be required and what type of intervention is required if a problem is identified.

Based on the information above it can be seen that all of the indicator information required is already being actively collected and reported at a level sufficient to meet the needs of this Plan. The frequency of monitoring is set, the point at which additional action and its form are also detailed.

8.5 Frequency of Reporting

It is recommended that Kildare County Council carry out a mid-term review of performance against SEA Objectives. This would occur in 2013 and would use information in the most recent information from the EPA State of the Environment Report. It is further recommended that reporting on the overall monitoring of the Plan is made to the EPA SEA Section.

Table 8.1: Monitoring Programme

OBJECTIVES	PROVISIONAL TARGETS	PROVISIONAL INDICATORS	RESPONSIBLE AUTHORITY
B1 Conserve protected habitats and species.	No loss of protected habitats and species during the lifetime of the LAP. Protection of Natura 2000 (SAC) sites in study area from significant effects of proposed developments.	Percentage of unique habitats and species lost in designated sites through trending of annual/ bi-annual habitat surveys. Provision of Article 6 assessments with developments proposed for sites overlying or potentially impacting Natura 2000 sites in study area.	KCC DoEHLG
B2 Conserve the diversity of non-designated habitats and species.	Identification and inclusion of important non-designated sites in study area in proposed KCC biodiversity study. Inclusion of bio-diversity assessment with planning applications.	Percentage of unique habitats and species lost in non-designated sites through trending of annual/ bi-annual habitat surveys. Inclusion of bio-diversity assessment with planning applications	KCC DoEHLG
B3 Protect aquatic and terrestrial habitats from invasive species.	Support initiatives which reduce the likelihood of invasions Raise public awareness of invasive species and address international applications.	Number and types of invasive species identified during the lifetime of the LAP in the study area.	KCC in consultation with adjoining local authorities and ERBD
B4 Protection of wetlands	No loss of wetland habitat over lifetime of the plan	Area of wetland habitat	KCC
P1 Improve people's quality of life based on high quality living environments, working and recreational facilities.	No deterioration in human health as a result of environmental factors. Increase in the number of green spaces available to the public.	Occurrence of any decline in human health around a particular area of the county. Increase in the number of green spaces available to the public.	KCC
P2 Adhere to the County Emergency Plan and other objectives of relevance to human health.	Drinking water quality Maintain or improve levels of ambient SO ₂ , NO _x , and particulate matter Increase public amenities. Number of new civic amenity sites provided during the lifetime of the LAP.	Drinking water quality. Maintaining or improving air quality in the study area. Provision of new civic amenity sites.	KCC

OBJECTIVES	PROVISIONAL TARGETS	PROVISIONAL INDICATORS	RESPONSIBLE AUTHORITY
P3 Reduction of noise and vibration level	No increase in ambient noise and vibration levels	Increase in numbers of complaints relating to noise or vibration	KCC
SG1 Maximise the sustainable re-use of brownfield sites and maximise the use of the existing built environment.	Specified percentage of new applications granted to be on brownfield sites.	Percentage of new developments on brownfield sites.	KCC
W1 Maintain or improve the quality of surface water to status objectives as set out in the Water Framework Directive (WFD).	Improvement or at least no deterioration in surface water quality by 2015.	Changes in receiving water quality as identified during water quality monitoring for the WFD conducted by KCC and the EPA.	EPA KCC
W2 Maintain or improve the Biotic Quality Rating (Q Value) of surface waters.	To achieve a Q Rating of 4 as per the WFD 'good' quality status by 2015.	Biotic quality rating of river waters at EPA monitoring locations.	EPA KCC
W3 Prevent pollution of groundwater by adhering to aquifer protection plans.	Improvement or at least no deterioration in groundwater quality as per the WFD 'good' quality status by 2015.	Changes in groundwater quality as identified in monitoring programmes conducted by KCC and the EPA under the WFD.	EPA KCC
W4 Provision of flood relief through management of flood risk and living with floods rather than engineered flood solutions.	Prevention of flood damage to land and properties. Adherence to The Planning System and Flood Risk Management – Consultation Draft Guidelines for Planning Authorities (September 2008).	No. and type of developments in the recognised flooding area. Provision of flood risk evaluations with proposed developments/ changes to land zoning with emphasis on flood risk management.	KCC OPW
AC1 Minimise greenhouse gas emissions to meet National and International standards.	Increased use of public transport. Increase numbers of cycle lanes and pedestrian routes in the study area. Increase number of permissions granted for renewable energy projects.	Use of public transport. Provision of cycle lanes and walking routes. Number of permissions granted for renewable energy projects.	KCC

OBJECTIVES	PROVISIONAL TARGETS	PROVISIONAL INDICATORS	RESPONSIBLE AUTHORITY
AC2 Improve ambient air quality.	Maintain or improve ambient air quality through reduction of private vehicle usage.	Air quality indicators.	KCC EPA
MA1 Development of a sustainable transportation infrastructure which reduces the need for travel and journey length.	Reduce the number of private vehicles on the road. Increase use of public transport.	Number of private cars on road as a percentage of AADT.	KCC NRA
MA2 Minimise waste production and introduce sustainable waste management practices.	Production in the quantities of waste sent to landfill. Increase in the quantities of waste sent for recycling.	Quantity of household waste sent to landfill. Quantity of household waste sent for recycling.	KCC EPA
MA3 Wastewater and water supply infrastructure to provided for new developments.	Provision and upgrade to provide adequate wastewater infrastructure based on existing and forecasted population demands. Implement the Water Supply Plan as per the Water Services National Investment Programme.	Completion of WWTP upgrade to 120,000 PE capacity. Frequency of 'water shortage' notices	KCC
L1 Protect views and prospects within the study area.	No significant disruption of designated views and prospects	Number of developments located within the designated views and prospects as identified in the LCA.	KCC
L2 Designate and protect urban and industrial views and prospects.	No unauthorised developments in Leixlip Town that will impact significantly on their existing character.	Number of unauthorised developments in major towns that will impact significantly on their existing character.	KCC

OBJECTIVES	PROVISIONAL TARGETS	PROVISIONAL INDICATORS	RESPONSIBLE AUTHORITY
<p>CH1 Promote best practice in heritage conservation and management.</p>	<p>No unauthorised developments permitted over the lifetime of the LAP which will result in the loss or partial loss of protected structures or sites of archaeological importance Ensure that all planning applications that might have an impact on heritage are referred to the DoEHLG for comment and that their recommendations are adhered to. Use of National Heritage Plan (2002) in setting archaeological policies and principles</p>	<p>Number 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.</p>	<p>KCC Heritage Section DoEHLG</p>
<p>CH2 Protection of individual sites and complexes.</p>	<p>No unauthorised developments in protected sites and complexes.</p>	<p>Number of unauthorised developments in protected sites and complexes</p>	<p>KCC Heritage Section DoEHLG</p>
<p>CH3 Identification and protection of archaeological features.</p>	<p>No unauthorised developments permitted during the lifetime of the Plan which could result in damage to archaeological features Review of the annual Excavations Bulletin for archaeological potential in study area. Use of "Framework and Principles for the Protection of Archaeological Heritage" Department of Arts Heritage Gaeltacht and the Islands</p>	<p>Number of unauthorised developments permitted which result in the loss or damage to archaeological features</p>	<p>KCC Heritage Section DoEHLG</p>