

# APPENDIX II NON TECHNICAL SUMMARY

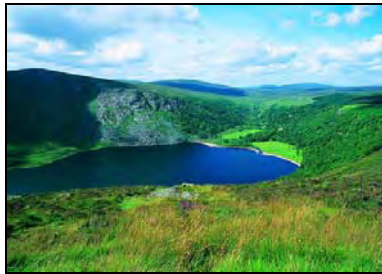
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## ENVIRONMENTAL REPORT

OF THE

## WICKLOW COUNTY DEVELOPMENT PLAN 2010-2016

## STRATEGIC ENVIRONMENTAL ASSESSMENT



**For: Wicklow County Council**

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**SEPTEMBER 2010**

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## **Section 1 Introduction and Terms of Reference**

This is the Non-Technical Summary of the Environmental Report of the Wicklow County Development Plan 2010-2016 Strategic Environmental Assessment (SEA). The purpose of the Environmental Report is to provide a clear understanding of the likely environmental consequences of decisions regarding the future accommodation of growth in certain areas of Wicklow.

### **What is an SEA?**

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

### **Why is it needed?**

The SEA has been carried out in order to comply with the provisions of the SEA Regulations and in order to improve planning and environmental management within Wicklow. The output of the process is an Environmental Report which should be read in conjunction with the County Development Plan.

### **How does it work?**

All of the main environmental issues in Wicklow were assembled and presented to the team who prepared the new Plan. This helped them to devise a plan that protects whatever is sensitive in the environment. It also helped to identify wherever there are environmental problems in the area - so that these won't get any worse - and ideally the Plan tries to improve these.

To decide how best to make a plan that protects the environment as much as possible the planners examined alternative versions of the plan. This helped to highlight the type of plans that are least likely to harm the environment.

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

The Environmental Report contains the following information:

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

### **What happens at the end of the process?**

On adoption of the Plan a document must be made public, referred to as the SEA Statement.

The SEA Statement must include information on how environmental considerations have been integrated into the Plan and why the preferred alternative was chosen for the Plan in light of the other alternatives - this introduces accountability, credibility and transparency into the Plan-making process.

## Section 2 The Development Plan

### 2.1 Structure and Content

The Plan consists of a written statement and accompanying maps and appendices. The written statement consists of 18 chapters as follows:

- Chapter 1: Introduction
- Chapter 2: Strategic Context
- Chapter 3: Vision and Strategic Goals
- Chapter 4: Population, Housing and Settlement
- Chapter 5: Urban Development
- Chapter 6: Rural Housing
- Chapter 7: Employment, Enterprise and Economic Development
- Chapter 8: The Rural Economy
- Chapter 9: Tourism
- Chapter 10: Retail
- Chapter 11: Roads and Transportation
- Chapter 12: Water Infrastructure
- Chapter 13: Waste and Environmental Emissions
- Chapter 14: Energy and Communications
- Chapter 15: Social and Community Infrastructure, including open space
- Chapter 16: Built Heritage
- Chapter 17: Natural Environment
- Chapter 18: Coastal Zone Management

### 2.2 Vision and Goals

The Plan puts forward the following vision for the County:

*For County Wicklow to be a cohesive community of people enjoying distinct but interrelated urban and rural environments; where natural surroundings and important resources are protected; where opportunities abound to live and work in a safe atmosphere, allowing people to enjoy the benefits of well paid jobs, a variety of housing choices, excellent public services, ample cultural and leisure opportunities, and a healthy environment*

In order to help implement this vision, the Plan sets out a number of strategic goals that underpin all the policies and objectives of the Plan. These strategic goals are as follows:

Goal 1: To implement the overarching guidance offered by the National Spatial Strategy 2002 – 2020, the National Development Plan 2007 – 2013, the Regional Planning Guidelines for the Greater Dublin Area, and manage the spatial organisation of the County in an efficient sustainable manner.

Goal 2: To facilitate and encourage the growth of employment, enterprise and economic activity in the County, across all economic sectors and in all areas.

Goal 3: To integrate land use planning with transportation planning, with the dual aim of reducing the distance that people need to travel to work, shops, schools and places of recreation and social interaction, and facilitating the delivery of improved public transport.

Goal 4: To enhance existing housing areas and to provide for high quality new housing, at appropriate locations and to ensure the development of a range of house types, sizes and tenures in order to meet the differing needs of all in society and to promote balanced communities.

Goal 5: To maintain and enhance the viability and vibrancy of settlements, to ensure that towns and villages remain at the heart of the community and provide a wide range of retail, employment, social, recreational and infrastructural facilities.

Goal 6: To protect and enhance the County's rural assets and recognise the housing, employment, social and recreational needs of those in rural areas

Goal 7: To protect and improve the County's transport, water, waste, energy and communications infrastructure, whilst having regard to our responsibilities to respect areas protected for their important flora, fauna or other natural features

Goal 8: To promote and facilitate the development of sustainable communities through land use planning, by providing for land uses capable of accommodating community, leisure, recreational and cultural facilities, accessible to and meeting the needs of all individuals and local community groups, in tandem with the delivery of residential and physical infrastructure in order to create a quality built environment in which to live.

Goal 9: To protect and enhance the diversity of the County's natural and built heritage

Goal 10: To address the climate change challenge, as a plan dynamic, throughout the County Plan, directly in the areas of flooding and renewal energy, and indirectly by integrating climate change and sustainable development into statements of plan policy, strategies and objectives.

## Section 3 Existing Environment

### 3.1 Introduction

The environmental baseline of County Wicklow is described in this section. This baseline together with the Strategic Environmental Objectives, which are outlined in Section 4 of the Environmental Report, is used in order to identify, describe and evaluate the likely significant environmental effects of implementing the County Development Plan and in order to determine appropriate monitoring measures.

### 3.2 Biodiversity and Flora and Fauna

#### 3.2.1 CORINE Land Cover Mapping<sup>1</sup>

The CORINE land cover mapping<sup>2</sup> for Wicklow for the year 2000 which classifies land cover under various headings indicates that land cover in about half of the County is generally made up of *Pastures* interspersed with areas of *Non-Irrigated Arable Land*, *Complex Cultivation Patterns* and *Transitional Woodland Scrub*. The remaining area, covering the Uplands, comprises primarily *Peat Bogs* with *Coniferous Forest*, *Broad Leaved Forest* and *Mixed Forest* occurring throughout. *Sport and Leisure Facilities*, *Beaches*, *Dunes*, *Sand*, *Salt Marches* and *Lagoons* occur along the coastline.

#### 3.2.2 Ecological Networks

Article 10 of the Habitats Directive recognises the importance of ecological networks as corridors and stepping stones for wildlife, including for migration, dispersal and genetic exchange of species of flora and fauna. Within and surrounding the County, the ecological networks are made up of components including the Avoca, Vartry, Avonmore, Aughrim, Ow, Liffey, Derry Water, Avonbeg and Slaney Rivers and their tributaries and banks, the various woodlands, parks, gardens and hedgerows within and surrounding the Plan area and lands used for agriculture.

#### 3.2.3 Designations

County Wicklow has one National Park, six<sup>3</sup> Special Protection Areas (SPAs), thirteen Special Areas of Conservation (SACs), thirty (proposed) Natural Heritage Areas (NHAs) and six Nature Reserves.

#### 3.2.4 Existing Problems

Generally, development in Wicklow has not significantly impacting upon designated ecological sites however site synopses for these sites identify certain threats to the conservation value of these sites. Such threats include: grazing by sheep and deer in the woodlands of the Wicklow Uplands, disturbance of species and habitats by recreational use of designated sites and agricultural practices.

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<sup>1</sup> European Environment Agency Coordination of Information on the Environment (2004) *Ireland's Corine Land Cover 2000 (CLC2000)* Copenhagen: EEA

<sup>2</sup> CORINE Land Cover (CLC) is a map of the European environmental landscape based on interpretation of satellite images. Land cover is the observed physical cover, as seen from the ground or through remote sensing, including for example natural or planted vegetation, water and human constructions which cover the earth's surface. Because of the scale of the CORINE data and the method by which it was collected there are likely to be a number of inaccuracies at the local level. It is noted, however, that the land cover shown on the maps is generally accurate. The European Environment Agency, in conjunction with the European Space Agency, the European Commission and member countries is currently updating the CORINE land cover database.

<sup>3</sup> Awaiting confirmation from NPWS

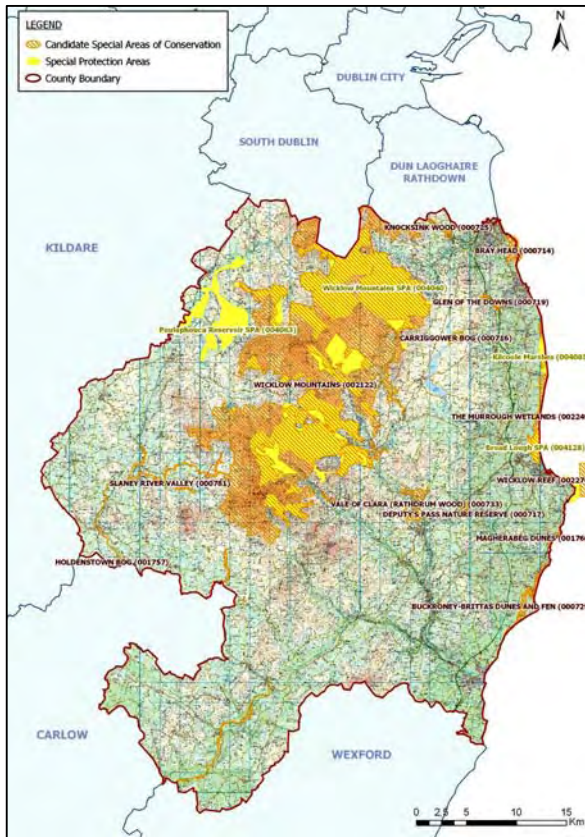


Figure 3.1 Natura 2000 Sites



Figure 3.2 Nature Reserves and pNHAs

### 3.3 Population<sup>4</sup> and Human Health

County Wicklow has been experiencing an upward trend in population growth since 1991. The most recent Census recorded a growth rate of 10.04% for the period from 2002-2006, higher than the national average of 8.2% for the same period.

Human health has the potential to be impacted upon by environmental vectors (i.e. environmental components such as air, water or soil through which contaminants or pollutants, which have the potential to cause harm, can be transported so that they come into contact with human beings). Hazards or nuisances to human health can arise as a result of exposure to these vectors arising from incompatible adjacent land uses for example. These factors have been considered with regard to the description of: the baseline of each environmental component; and the identification and evaluation of the likely significant environmental effects of implementing the Plan and the alternatives.

#### 3.3.1 Existing Problems

Certain environmental vectors within the Plan area - such as air, water or soil - have the potential to transport and deposit contaminants or pollutants, which have the potential to cause harm and adversely impact upon the health of the area's population. IPPC licensed facilities and Seveso sites could be potential polluters to the Plan area if the facilities do not comply with their licenses. Wicklow is vulnerable to adverse effects from small changes in sea level combined with changes in the occurrence of severe rainfall events and associated flooding of the rivers and streams in the Plan area. Flooding is an environmental phenomenon which in certain circumstances could pose a risk to human health.

<sup>4</sup> CSO (various) *Census 2006 Volume 1 - Population Classified by Area; Census 2002 Volume 1 - Population Classified by Area; Census 1996 Volume 1 - Population Classified by Area* Cork: CSO.

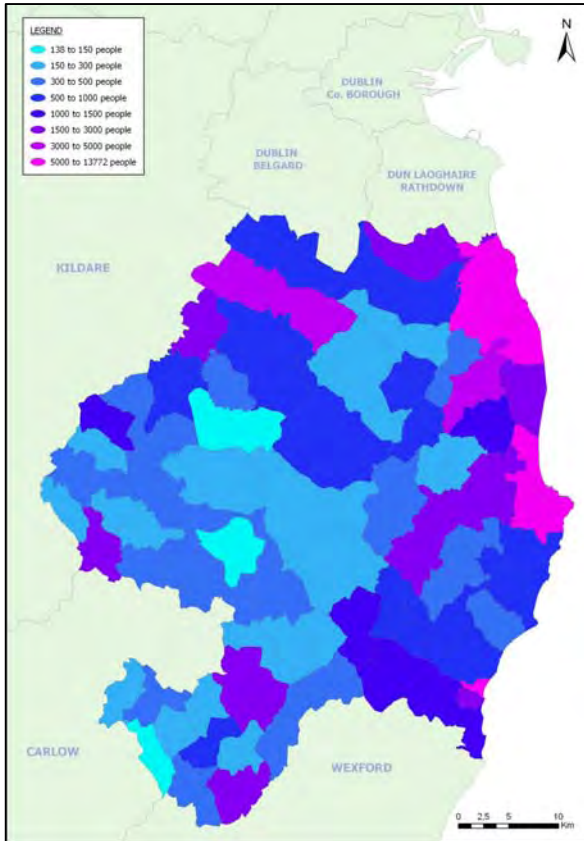


Figure 3.3 Population 2006

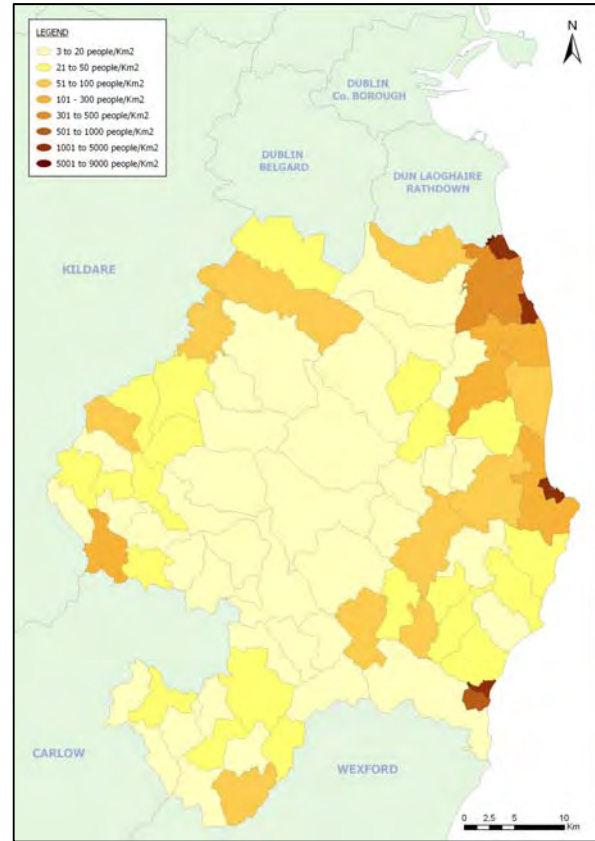


Figure 3.4 Population Density 2006

### 3.4 Soil and Geology

Soil is the top layer of the earth's crust. It is formed by mineral particles, organic matter, water, air and living organisms. Soil can be considered as a non-renewable natural resource because it develops over very long timescales. It is an extremely complex, variable and living medium and performs many vital functions including: food and other biomass production, storage, filtration and transformation of many substances including water, carbon, and nitrogen. Soil has a role as a habitat and gene pool, serves as a platform for human activities, landscape and heritage and acts as a provider of raw materials. Such functions of soil are worthy of protection because of their socio-economic as well as environmental importance.

The biodiversity, flora and fauna detailed under Section 3.2 in the Environmental Report are facilitated by these soils, as is an extent of agricultural land use. A large part of the Plan area is covered by blanket peat. This occurs mainly in the Uplands. The soils and habitats of Wicklow have been influenced by the area's underlying geology. County Wicklow has a long and rich heritage of mining. The main areas of mining activity were the Avoca Valley, Glendalough and Glendasan Valleys and in Glenmalur.

#### 3.4.1 Existing Problems relating to Soil

Greenfield development involves the building upon and thereby sealing off of soil thus representing an environmental problem.

Soil has the potential to be polluted and contaminated as a result of pollution from development which is not serviced by appropriate waste water infrastructure and from agricultural sources.

Soil erosion due mainly to surface erosion resulting from construction works and agricultural / forestry / quarrying / mining operations has major potential to impact on water quality and fishery resources.



In addition to water quality and fishery impacts, these can impact on infrastructure and can have health and safety implication.

## 3.5 Water

### 3.5.1 Potential Pressures on Water Quality

Human activities, if not properly managed, can cause deterioration in water quality. Pressures exerted by human activities include the following:

- sewage and other effluents discharged to waters from point sources, e.g. pipes from treatment plants;
- discharges arising from diffuse or dispersed activities on land;
- abstractions from waters; and
- structural alterations to water bodies.

### 3.5.2 The Water Framework Directive

#### 3.5.2.1 Introduction and Requirements

Since 2000, Water Management in the EU has been directed by the Water Framework Directive The WFD requires that all Member States implement the necessary measures to prevent deterioration of the status of all waters with the aim of achieving good status by 2015.

#### 3.5.2.2 WFD Risk Assessments

In order to achieve the objectives of the WFD it is necessary:

- to assess the risk that water bodies may not achieve good quality status;
- to identify the pressures from human activities causing this risk; and,
- to develop strategies and management plans to minimise the risk.

In terms of achieving the WFD's objectives by 2015, most of the Counties rivers are currently classified as being *(1a) at significant risk* or *(1b) probably at significant risk* of failing to achieve the WFD's objectives by 2015. Reasons for rivers being *(1a) at significant risk* include: Section 4 (Local Authority licensed discharges) and Water treatment plants and other pressures, EPA Biological Q rating and intensive landuse.

Four lakes are classified as being *(1a) at significant risk*, four lakes are classified as *(1b) probably at significant risk* and one each is classified as being *(2a) probably not at significant risk* and *(2b) not at significant risk*.

The coastal waters stretching from the north of the County (Southwestern Irish Sea - Killiney Bay, code: IE\_EA\_100\_0000) are classified as being *(1a) at significant risk* as far as Brittas Bay (Southwestern Irish Sea - Brittas Bay, code: IE\_EA\_140\_0000) where the catagorisation changes to *(1b) probably at significant risk*.

The majority of the Plan area is underlain by groundwater classified as *(2a) probably not at significant risk*. A large area in the central and south eastern part of the Plan area is classified as being *(1a) at significant risk*. Some smaller areas classified as being *(1b) probably at significant risk* exist in the south east, north east, north west and west of the County.

#### 3.5.2.3 WFD Registers of Protected Areas

In addition to the these assessments, the WFD requires that Registers of Protected Areas (RPAs) are compiled for a number water bodies or part of water bodies which must have extra controls on their quality by virtue of how their waters are used by people and by wildlife. Stretches of various rivers in the County are listed on the RPA for Drinking Water. Ground water underlying the County is also listed on the RPA for Drinking Water. Water bodies in the uplands are on the RPA for Water Dependent Habitats. The Slaney, Vartry and Dargle are also listed on the RPA for Water Dependent Species and Habitats.

### 3.5.3 Water Quality

Water quality of rivers is monitored by the EPA at a number of locations throughout the County. The EPA's water quality data identifies thirty-six locations throughout the County achieving Q4-5 or Q5<sup>5</sup> "high status". Twenty-nine locations achieved Q4 "good status", sixteen achieved "moderate status", eleven are of Q2-3, Q3 "poor status" and at one location, water quality is of Q2, Q1-2, Q1 "bad status".

The Vartry and Pollaphuca Reservoirs and the Dan and Bray Lower Lakes are the lakes in the Plan area which are monitored by the EPA. Bathing water quality at Bray, Greystones and Silver Strand is compliant with Guide Values. Bathing water at Clogga Beach in south Wicklow is compliant with Mandatory Values. Bathing water at Brittas Bay North and Brittas Bay South is non-compliant with Mandatory Values.

### 3.5.4 Groundwater Vulnerability

The Geological Survey of Ireland (GSI) rates aquifers according to their vulnerability to pollution. Aquifer vulnerability refers to the ease with which pollutants of various kinds can enter underground water.

Groundwater underlying County Wicklow is mainly classed as Extreme with much of that area being rock surface/karst. The eastern boundary, particularly in the south east and the mid west at the boundary are classified as low or moderate. The remainder of the Plan area is classified as being of high vulnerability.

### 3.5.5 Ground Productivity

The GSI rates aquifers based on the hydrogeological characteristics and on the value of the groundwater resource. Ireland's entire land surface is divided into nine aquifer categories.

The Plan area is generally underlain by poorly productive bedrock aquifers, which are generally unproductive except for local zones. Some small areas are underlain by gravel, mainly in the north of the County.

### 3.5.6 Flooding

Flooding is an environmental phenomenon which, as well have causing economic and social impacts, could in certain circumstances pose a risk to human health. Wicklow is vulnerable to adverse effects from changes in the occurrence of severe rainfall events and associated flooding of the County's rivers combined with small changes in sea level.

Flood events in the County, as identified by the Office of Public Works, occur along the Slaney, Greece and Avonbeg Rivers and at estuarine locations on the Vartry, Avoca and Dargle Rivers.

### 3.5.7 Existing Problems

The above descriptions identify a number of sensitivities with regard to the status of water bodies within the Wicklow Plan area. By virtue of how they are used by people and by wildlife, a number of beaches, rivers and all underlying groundwater are listed on the Registers of Protected Areas under the Water Framework Directive. Most rivers, all transitional and coastal waters, most lakes and some underlying groundwater within and surrounding the County are "at significant risk" or "probably at significant risk" with regard to meeting legislative water quality objectives under the Water Framework Directive.

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<sup>5</sup> The Biotic Index Values, or Q values, are assigned to rivers in accordance with biological monitoring of surface waters - low Q ratings, as low as Q1, are indicative of low biodiversity and polluted waters, and high Q ratings, as high as Q5, are indicative of high biodiversity and unpolluted waters. Good status as defined by the Water Framework Directive equates to approximately Q4 in the national scheme of biological classification of rivers as set out by the EPA.



Figure 3.5 Q Values

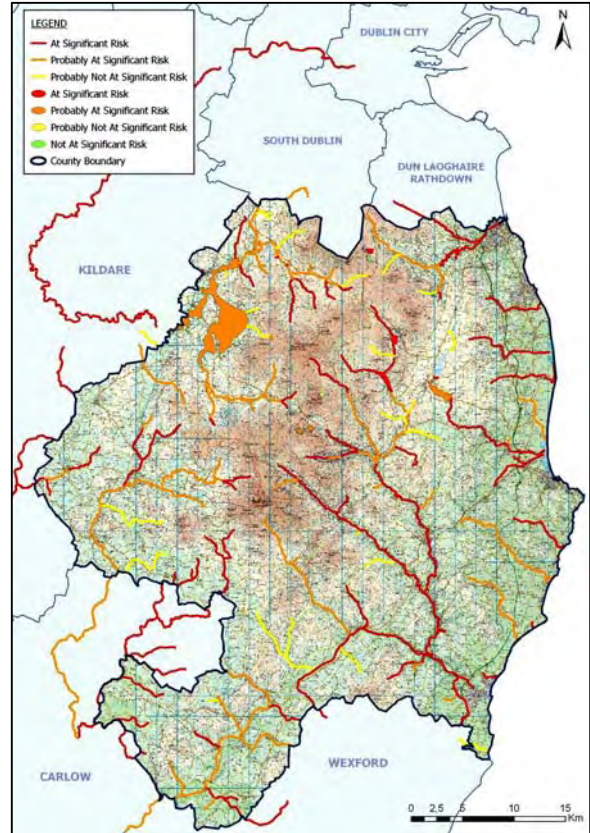


Figure 3.6 WFDRA of Surface Waters

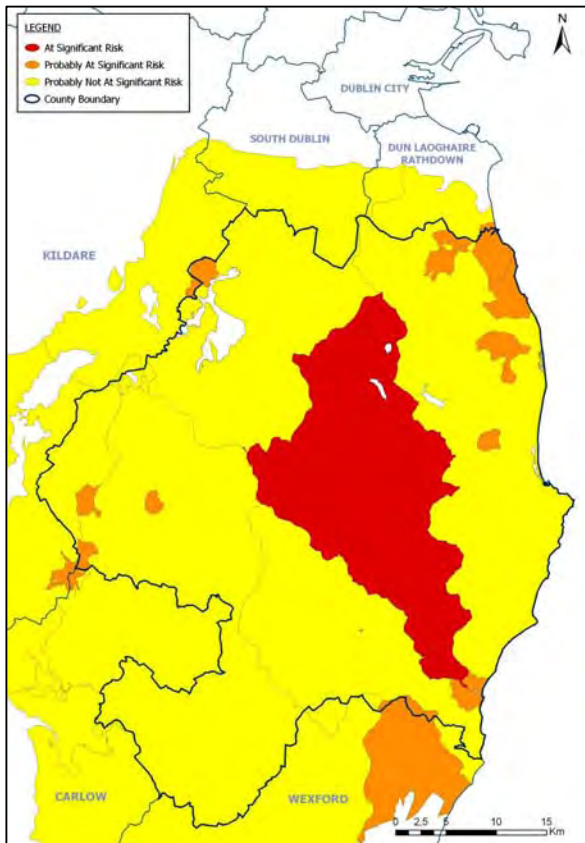


Figure 3.7 WFDRA of Ground Waters

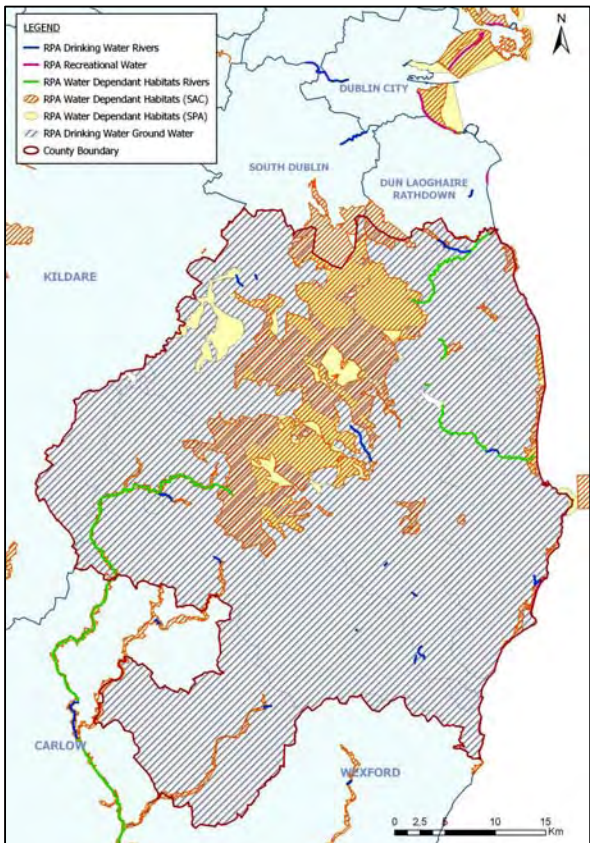


Figure 3.8 WFD RPAs

## 3.6 Air and Climatic Factors

In order to protect human health, vegetation and ecosystems, EU Directives set down air quality standards in Ireland and the other Member States for a wide variety of pollutants. These pollutants are generated through fuel combustion, in space heating, traffic, electricity generation and industry and, in sufficient amounts, could affect the well being of the areas inhabitants. The EU Directives include details regarding how ambient air quality should be monitored, assessed and managed.

Four daughter Directives lay down limits or thresholds for specific pollutants. In order to comply with these directives, the EPA measures the levels of a number of atmospheric pollutants. For the purposes of monitoring in Ireland, four zones are defined in the Air Quality Standards Regulations 2002 (SI No. 271 of 2002).

The majority of the County falls into Zone D. Bray falls under Zone C. Current air quality in Zones C and D is "good". The index is calculated based on the latest available measurements of PM10, sulphur dioxide, nitrogen dioxide and ozone in Zones C and D.

### 3.6.1 Potential Point Sources of Emissions

#### 3.6.1.1 IPPC Licensed Facilities

There are nineteen IPPC licensed facilities in the Plan area. Three of these are located at Bray, two each at Wicklow and near the village of Ballyconnell, six at Arklow and one each at Aughrim, Carnew, Dunlavin, Rathdrum, Shilleagh and Blessington.

#### 3.6.1.2 Waste Licensed Facilities

In 1996 the EPA began licensing certain activities in the waste sector. These include landfills, transfer stations, hazardous waste disposal and other significant waste disposal and recovery activities. There are ten licensed waste facilities in the County. Eight of these are landfill facilities while there is one composting facility at Glenealy and one integrated waste management facility at Bray.

#### 3.6.1.3 Seveso Sites

The control of major accident hazards involving dangerous substances Directive, also referred to as the Seveso II or COMAH Directive, aims to ensure that, at locations where dangerous substances are handled in quantities above specified thresholds; there will be a high level of protection for people, property and the environment. This is to be achieved by: preventing or minimising the risk of a major accident; and, taking all the necessary measures to limit the consequences of such an accident, should it occur. There are two designated Seveso sites located within the Plan. One is located at Rathdrum with the other at Arklow.

### 3.6.2 Noise

In County Wicklow areas commonly affected by noise are urban areas and areas along roadsides. Noise is unwanted sound. It can seriously harm human health and interfere with daily activities at school, at work, at home and during leisure time. The over-riding noise source in Wicklow is from traffic. In addition, there are localised noise sources which include air conditioning equipment, marine traffic, port activities, train movements and night clubs.

### 3.6.3 Existing Problems

*Traffic hotspots* within the urban parts of the Plan area are likely to have elevated levels of air pollution and noise due to traffic congestion.

Localised air pollution incidences with regard to PM10 and PM2.5 and noise pollution are both likely to occur when demolition/construction takes place - especially in relation to PM10 if suppression techniques are not introduced - and when traffic is queuing for long periods of time.

Ireland's current emissions are exceeding targets agreed in the peer review of Ireland's 2006 submission to the United Nations Framework Convention on Climate Change. It is unlikely that Ireland will meet these targets and it is likely therefore that financial penalties will be incurred. Transport related emissions continue to be the dominant growth sector.

Changes in sea level and/or changes in the occurrence of severe rainfall events as a result of climate change could adversely impact upon the County's human beings, its biodiversity and its economy (see also Section 3.5.5 *Flooding*).

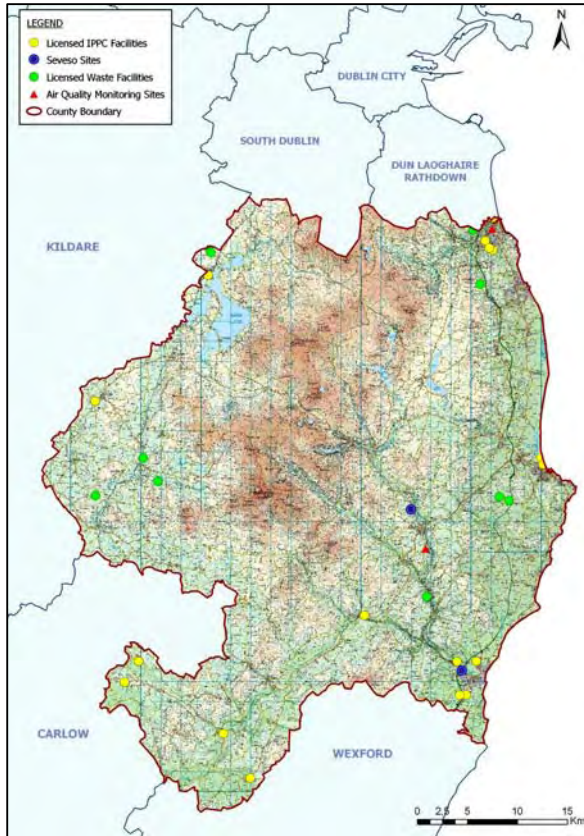


Figure 3.9 Licensed Facilities

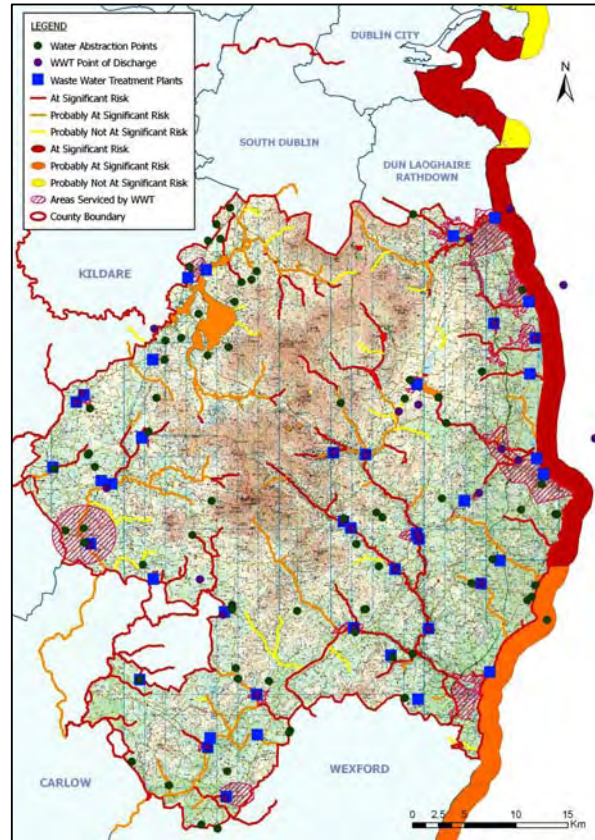


Figure 3.10 Water Infrastructure and WFDRA

## 3.7 Material Assets

### 3.7.1 Waste Water

There are 39 waste water schemes in operation in the County of which twelve are larger waste water treatment plants serving urban areas and 27 are smaller local schemes. The larger schemes include Wicklow, Greystones, Arklow, Tinahely, Roundwood, Blessington and Rathdrum. The general breakdown of 85% domestic demand to 15% non-domestic demand applies to the County.

Shortfalls exist at the Blessington Plant and overloading from surface water is a problem at Roundwood and Tinahely. There is no waste water treatment plant at Arklow which serves a PE of 16,997.

Shortfalls also exist at plants in Avoca, Ballycoonnell, Bardarrig, Coolboy, Donard, Dunlavin (both plants), Grangecon, Kiltegan, Kilpedder, Kirikee Lower, Knockananna, Rathdangan, Redcross and Shilleagh.

### 3.7.2 Drinking Water

There are approximately 69 water abstraction points in County Wicklow. These abstraction points can be seen on Figure 3.10 above. There are 29 water supply schemes in the County. There are 7 supplies from Dublin, these are Bray, Enniskerry, Greystones, Kilmacanogue, Kilpedder, Wicklow Regional and Newtownmountkennedy/Kilcoole/Newcastle.

Generally, current demand for water in the County is being met. Where there are any shortfalls in capacity, this is being addressed under the Assessment of Needs Programme.

### 3.7.3 Existing Problems

Certain regions of the Plan area are not within the catchment of the waste water treatment network and consequently development in these areas use septic tanks to treat waste water arising.

Figure 3.10 maps the risk assessment categorisation of surface water bodies in the Plan area. Some of the poor risk scores assigned to the water bodies are as a result of point source pressures or abstraction pressures on the water body. This is apparent from the overlaying of abstraction points and points of discharge on the risk assessments of the water bodies.

For example, the Vartry River has a score of (1a) *at significant risk*. The abstraction of water is one of the reasons for this score.

## 3.8 Cultural Heritage

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

### 3.8.1 Archaeological Heritage

Wicklow contains various types of archaeological heritage which are protected as monuments. Of note on a national scale are the Baltinglass Hillfort complex and Rathgall hillfort in south Wicklow. Glendalough Monastic Settlement has been proposed for the tentative list as a UNESCO World Heritage Site due to its international significance.

#### 3.8.1.1 Record of Monuments and Places

Wicklow's archaeological heritage is protected under the National Monuments Acts (1930-2004), Natural Cultural Institutions Act 1997 and the Planning Acts.

These are largely concentrated along the western boundary of the County. There is an even distribution throughout the remainder of the County with less Monuments in the Upland areas.

#### 3.8.1.2 Zones of Archaeological Potential

Areas of Archaeological Potential or Significance were identified in the Wicklow County Development Plan (2004-2010). These areas are Hollywood, Buraige in Blessington, Mulsoes Court at Powerscourt, Newcastle, Ennidboyne at Brittas, Macreddin at Caryfot, Dunlavin, Donoughmore and Killickabawn at Kilpedder. Zones of Archaeological Potential or Significance exist at Glendalough and Baltinglass Hills.

### 3.8.2 Architectural Heritage

The County's Military Heritage is evident from the sites and structures of historical and heritage value, including castles, protective structures and military infrastructure, particularly Military Road which runs from Rathfarnham to Aghavannagh.

Wicklows Industrial and Mining Heritage manifest itself in the many mines, mills, roads, harbours and bridges in the County.

### 3.8.2.1 Architectural Conservation Areas

There are six Architectural Conservation Areas adopted in County Wicklow, these are Enniskerry, Delgany, Greystones, Tinahely, Dunlavin and Rathdrum.

## 3.8.3 Existing Environmental Problems

The cumulative accommodation of large scale development in County Wicklow has the potential to cumulatively impact upon cultural heritage of the Plan area.

Archaeology can be previously unknown but can be damaged through development causing ground disturbance.

Development which involves material alteration or additions to protected structures can detract from the special character of the structure and its setting and have the potential to result in the loss of features of architectural or historic interest and the historic form and structural integrity of the structure are retained. Development on sites adjoining protected monuments, places or structures can also impact upon the setting of these cultural heritage items.

Encouraging and facilitating the accommodation of growth on brownfield sites will contribute to mitigating a number of the adverse impacts associated with greenfield development, however, brownfield development has the potential to significantly adversely impact upon cultural heritage - both archaeological and architectural - if unmitigated against.

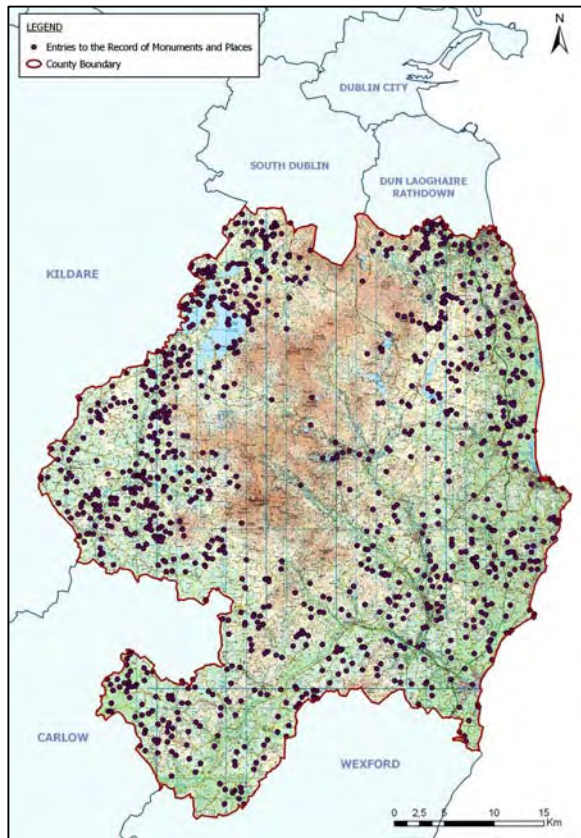


Figure 3.8 Record of Monuments and Places

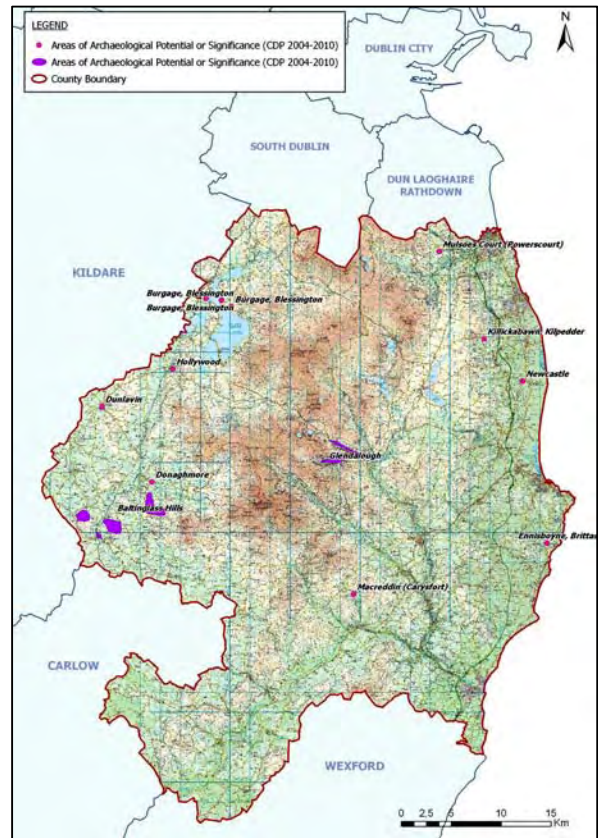


Figure 3.11 Archaeological Potential

## **3.9 Landscape**

Landscapes are areas which are perceived by people and are made up of a number of layers: landform, which results from geological and geomorphological history; land cover, which includes vegetation, water, human settlements, and; human values which are a result of historical, cultural, religious and other understandings and interactions with landform and land cover.

### **3.9.1 Landscape Classification**

Wicklow County Council's Landscape Characterisation (2004) classifies landscapes in Wicklow according to their sensitivity – their ability to accommodate change or intervention without suffering unacceptable effects to character and values. The most sensitive landscapes are Areas of Outstanding Natural Beauty - which are of a very high sensitivity - and Areas of Special Amenity - which are of a high sensitivity. Landscapes of lesser sensitivity are Rural and Corridor Areas which are both of medium sensitivity. Urban Areas are considered low sensitivity areas.

### **3.9.2 Special Amenity Area Orders**

A Special Amenity Area Order (SAAO) is designed to protect areas that are of particularly high amenity value, which are sensitive to intense development pressure and which cannot be adequately protected by existing planning controls. An SAAO for Bray Head was drawn up in 2007. Areas Considered for an SAAO include the Dargle Glen, The Little Sugar Loaf, The Great Sugar Loaf. The SAAO at Bray Head is mapped on Figure 3.12.

### **3.9.3 Views and Prospects**

The County contains many sites, areas and vantage points from which views over areas of great natural beauty, local landmarks, historic landscapes, adjoining Counties and the City of Dublin may be obtained. In addition to scenic views, the County also contains important prospects i.e. prominent landscapes or areas of special amenity value or special interest which are visible from the surrounding area.

There are forty listed views in the County with three proposed views included in the Draft Plan. There are sixty-five listed prospects in the draft Plan and there are four proposed additions to Listed Prospects.

### **3.9.4 Existing Environmental Problems**

A problem with regard to the environmental component of landscape is the cumulative visual impact which occurs as a result of developments such as one off houses. Such developments, which individually often do not have significant adverse impacts, have the potential to cumulatively and adversely significantly impact upon sensitive landscapes.



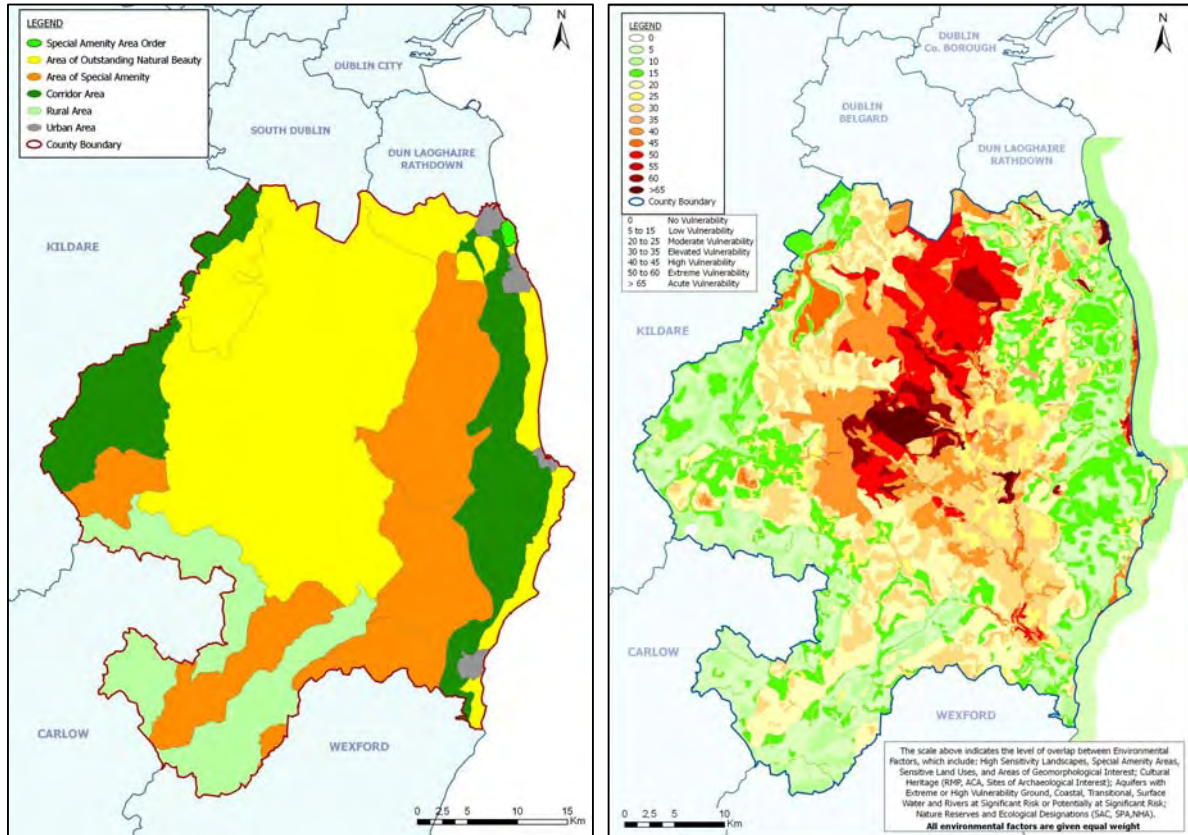


Figure 3.12 Landscape Character Areas Figure 3.13 Environmental Overlay

### 3.10 Overlay Mapping of Environmental Sensitivities

In order to identify where most sensitivities within the County occur, a number of the environmental sensitivities described above were weighted and mapped overlapping each other.

Environmental sensitivities are indicated by colours which range from extreme vulnerability (red) to high vulnerability (orange) to moderate vulnerability (yellow) and low vulnerability (green). Where the mapping shows a concentration of environmental sensitivities there is an increased likelihood that development will conflict with these sensitivities and cause environmental deterioration. This is particularly the case where the cumulative development of small-scale projects, such as rural housing, gradually causes a slow deterioration of a resource, such as water quality.

Figure 3.13 quantifies the area of the County which falls under each of the vulnerability area classifications when all selected factors are given equal weighting. It is noted that the majority of the County's area (62.2%) is classified, under this weighting system, as being of a low or moderate vulnerability with a relatively smaller area (36.7%) classified as being elevated, high or extreme. 1.1% of the County is classified as being of acute vulnerability.

Most of the Plan area is identified as being of Low to Moderate Vulnerability. The central part of the County from north to south is classified as being elevated to high and extreme with areas of acute vulnerability occurring in the Uplands. Bray Head is also classified as being of acute vulnerability. Areas along the western and eastern boundaries are classified as being low except for some coastal areas.

## Section 4 Alternative Plan Scenarios

### 4.1 Introduction

One of the critical roles of the SEA is to facilitate an evaluation of the likely environmental consequences of a range of alternative strategies for accommodating future development in Wicklow.

These alternative strategies must be realistic, capable of implementation, and should represent a range of different approaches within statutory and operational requirements of the particular plan. In some cases the preferred strategy will combine elements from the various alternatives considered.

This section identifies and describes different plan scenarios, taking into account higher level strategic actions as well as the geographical scope of the County Development Plan.

The alternative scenarios are evaluated in Section 4.3 resulting in the identification of potential impacts and informing the selection of an alternative scenario for the Plan. The policies and objectives which are required to realise the selected scenario are evaluated in Section 8 of the Environmental Report.

Mitigation measures which attempt to prevent, reduce and as fully as possible offset any significant adverse effects on the environment of implementing the selected scenario and which have been integrated into the Plan are identified in Section 9 of the Environmental Report.

Scenarios are evaluated in a succinct and focused way for both planning and environmental impacts against both the existing environment and Strategic Environmental Objectives (SEOs). In order to comply with the SEA Directive, Strategic Environmental Objectives have been grouped under relevant parent components such as *water* and *landscape*.

### 4.2 Description of Alternative Plan Scenarios

#### 4.2.1 Introduction

The following summarises a series of 'Scenarios' which provide alternative visions of how the future development of Wicklow might occur. These are neither predictions nor preferences - instead they offer a range of plausible and internally consistent narratives of the outcome of different planning and development strategies. These provide the basis for the comparative evaluation of the likely environmental effects of each plan, which in turn serves the purpose of identifying which features of plans and policies are likely to be sensitive or robust over the widest range of circumstances.

#### 4.2.2 Alternative Scenario 1: *Dispersed Scenario*

*Rural Dispersed growth with limited Growth in urban centres (Laissez Faire Approach)*

The characteristics of this Scenario are as follows:

- Laissez Faire Approach to Planning
- Extensive rural development throughout the County with little or no growth in Urban Areas.
- Social cohesion and fabric of urban areas are diminished
- Limited development on Brownfield sites
- Increased demands on provision of Water/Infrastructure in the rural area
- Conflict with infrastructural provision, new roads/road improvements, EIR Grid and Bord Gas Networks
- Negative Impact on Landscape
- Negative Impact on Environmental Designations (no regard)
- Weak Social Infrastructure
- Travel Demands unsustainable

- Natural resources such as forestry, wind energy and mineral extraction will be interspersed with large areas of rural housing
- Proliferation of individual effluent disposal system and associated pollution risks
- Proliferation of individual wells and associated impacts on the ground water
- Increased pressure on public services to remain economic leading to decline in service provision

#### **4.2.3 Alternative Scenario 2: *Neutral Scenario-Strict application of RPGs/ Protectionist***

*Emphasis on growth in both rural and urban areas (Planned approach for growth in both rural and urban areas throughout the County).*

The characteristics of this Scenario are as follows:

- Development concentrated into the Regional Planning Guidelines designated towns
- Development in remainder of the County limited to "local need" only
- Reduced options for settlement, leading to social dissatisfaction
- Emphasis in growth in both rural and urban areas, but source of growth of these areas differ from area to area
- Increased Demands on Public services/Infrastructure across all areas
- Impact on landscape with some regard to environmental designations
- Investment in social infrastructure spread leading to uneven provision
- Poor provision of public transport due to lack of concentrated population

#### **4.2.4 Alternative Scenario 3: *Structured Scenario***

*Well Developed Urban Structure supporting diverse rural growth*

The characteristics of this Scenario are as follows:

- Balanced sustainable Approach to Planning
- Concentration of growth in Urban Centres and appropriate growth in rural areas
- Rural Areas supported by larger urban centres and control of sporadic rural housing
- More sustainable modes of transport
- Increased use of public transport
- Reduced commuting distances to employment opportunities and greater accessibility
- Increased provision of Social Infrastructure
- Protection of landscape and environmental designations
- Reduced impact on water resources
- Infrastructural networks protected

#### **4.2.5 Alternative Scenario 4: *Centred Scenario***

*Development concentrated along existing Rail line with limited regard for environmental designation along the coastline, population loading along east coast*

The characteristics of this Scenario are as follows:

- Concentration of development along rail line
- Population loading in Bray, Greystones, Kilcoole, Newcastle, Wicklow, Glenealy, Rathdrum, Avoca and Arklow. Densification of these settlements
- Restricted growth in all other parts of the County
- Little regard to Environmental Designations along the East Coast in place of Growth
- Strong regard to Environmental Designations within the rest of the County
- Demand for Increased Social Infrastructure in growth towns
- Population Decline in areas without public transport.
- Investment in other forms of transport diverted

- Investment in remainder of County diverted
- Economic strength and attractiveness of remainder of the County significantly reduced as an indirect effect there would be lack of employment
- Increased Loading on Water Services, Demands on Rivers Systems along settlement concentrations and flooding

#### **4.2.6 Alternative Scenario 5: *Prescriptive Scenario***

*Strict application of all environmental designations throughout the County*

The characteristics of this Scenario are as follows:

- Strong and Robust Environmental protection
- Development limited to settlements remote from designated areas
- Limited Rural Development
- Increased demands on a small number of existing settlements and infrastructure in those settlements
- Social networks in rural areas or locations near protected sites will be curtailed
- Lack of infrastructure at locations at or near designated sites
- Reduced Recreational and tourism use of the County and associated economic impacts
- The potential to exploit natural resources reduced

## **4.3 Evaluation of the Alternative Plan Scenarios**

### **4.3.1 Methodology**

#### **4.3.1.1 Existing Environment and Overlay Mapping**

Scenarios are evaluated in a succinct and focused way for both planning and environmental impacts against both the existing environment (summarised in Section 3 and including the Overlay of Environmental Sensitivities shown on Figure 3.13) and the Strategic Environmental Objectives (SEOs) (see below).

#### **4.3.1.2 Strategic Environmental Objectives (SEOs)**

Based on an understanding of the existing and emerging environmental conditions in the County a series of SEOs were identified and developed in order to assess the likely environmental effects which would be caused by implementation of each of the 5 alternative scenarios described in Section 4.2. The alternatives are evaluated using compatibility criteria (see Table 4.1) in order to determine how they are likely to affect the status of these SEOs.

Table 4.2 brings together all the SEOs which have been developed from international, national and regional policies which generally govern environmental protection objectives.

The SEOs and the alternative scenarios are arrayed against each other to identify which interactions - if any - would cause impacts on specific components of the environment.

Where the appraisal identifies a likely conflict with the status of an SEO the relevant SEO code is entered into the conflict column - e.g. B1 which stands for SEO likely to be affected - in this instance 'to avoid loss of relevant habitats, geological features, species or their sustaining resources in designated ecological sites'.

|   |  |   |  |  |  |
|---|--|---|--|--|--|
| Likely to <b>Improve</b> status of SEOs | Probable <b>Conflict</b> with status of SEOs- unlikely to be mitigated | Potential <b>Conflict</b> with status of SEOs- likely to be mitigated | <b>Uncertain</b> interaction with status of SEOs | <b>Neutral</b> Interaction with status of SEOs | <b>No Likely</b> interaction with status of SEOs |
|---|--|---|--|--|--|

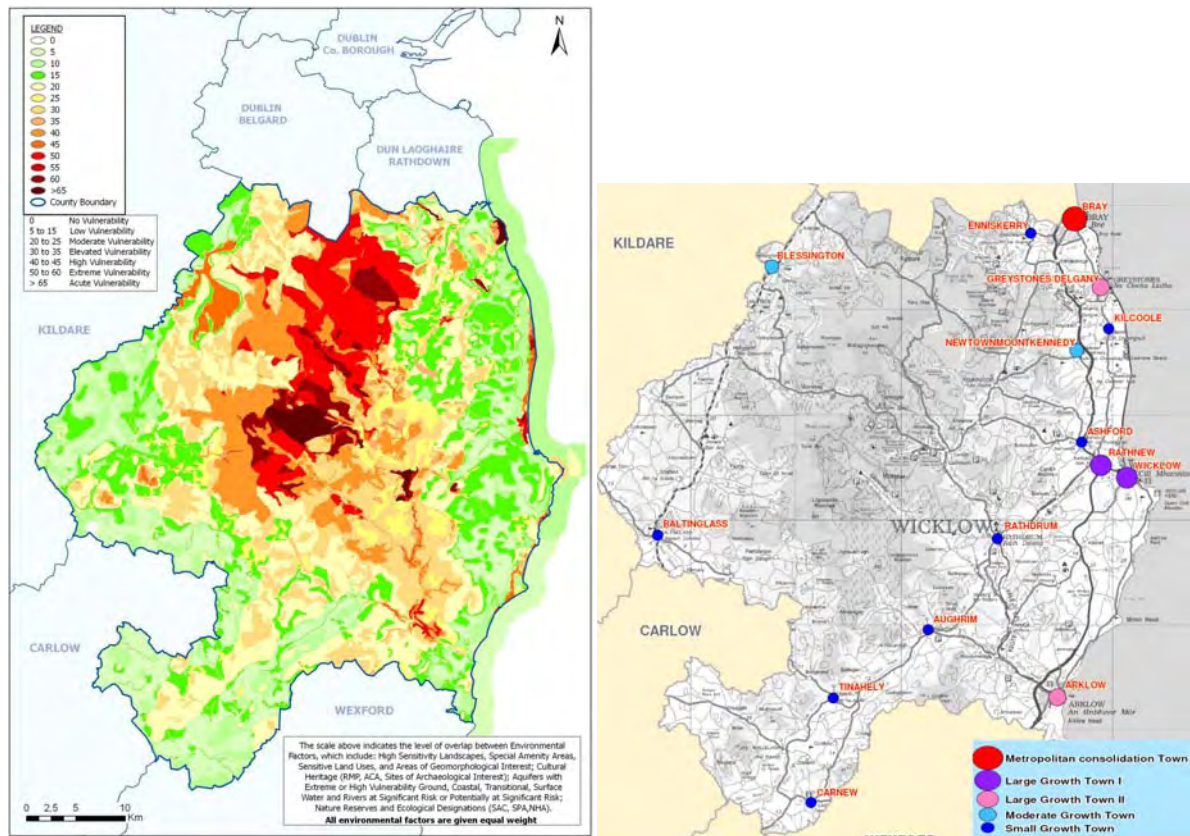
**Table 4.1 Criteria for appraising the effect of Plan provisions on Strategic Environmental Objectives**

| SEO Code   | SEO   |
|------------|---|
| <b>B1</b>  | To avoid loss of relevant habitats, geological features, species or their sustaining resources in designated ecological sites   |
| <b>B2</b>  | To avoid significant adverse impacts, including direct, cumulative and indirect impacts, to relevant habitats, geological features, species or their sustaining resources in designated ecological sites by development within or adjacent to these sites |
| <b>B3</b>  | To sustain, enhance or - where relevant - prevent the loss of ecological networks or parts thereof which provide significant connectivity between areas of local biodiversity   |
| <b>HH1</b> | To protect human health from hazards or nuisances arising from exposure to incompatible landuses  |
| <b>S1</b>  | Maximise the sustainable re-use of brownfield lands, and maximise the use of the existing built environment rather than developing greenfield lands   |
| <b>W1</b>  | To maintain and improve, where possible, the quality of surface waters  |
| <b>W2</b>  | To prevent pollution and contamination of ground water  |
| <b>W3</b>  | To prevent development on lands which pose - or are likely to pose in the future - a significant flood risk   |
| <b>C1</b>  | To minimise increases in travel related greenhouse emissions to air   |
| <b>C2</b>  | To reduce car dependency within the County by way of, inter alia, encouraging modal change from car to more sustainable forms of public transport and encouraging development which will not be dependent on private transport                            |
| <b>M1</b>  | To serve new development with appropriate waste water treatment   |
| <b>M2</b>  | To serve development within the County with drinking water that is both wholesome and clean   |
| <b>CH1</b> | To protect the archaeological heritage of County Wicklow with regard to entries to the Record of Monuments and Places - including Zones of Archaeological Potential - and the context of the above within the surrounding landscape where relevant        |
| <b>CH2</b> | To preserve and protect the special interest and character of County Wicklow's architectural heritage with regard to entries to the Record of Protected Structures and their context within the surrounding landscape where relevant                      |
| <b>L1</b>  | To avoid significant adverse impacts on the landscape, especially with regard to Areas of Outstanding Natural Beauty and views and prospects of special amenity   |

**Table 4.2 Strategic Environmental Objectives (SEOs)<sup>6</sup>**

<sup>6</sup> Strategic Environmental Objectives (SEOs) are methodological measures which are developed from international, national and regional policies which generally govern environmental protection objectives and against which the environmental effects of the Plan can be tested. The SEOs are used as standards against which the provisions of the Plan can be evaluated in order to help identify areas in which significant adverse impacts are likely to occur, if unmitigated against.

### 4.3.2 Evaluation of Alternative Scenarios



**Figure 4.1 Environmental Sensitivity mapping compared to locations of Main Settlement Centres**

#### 4.3.2.1 Introduction

This section summarises where each development scenario is likely to give rise to concentrations of settlement. Such settlement will also give rise to associated economic activity that is likely to give rise to additional environmental pressures.

In general, the most environmentally robust parts of the County are in the East, South and West. Most of the main settlement areas are in the East which is generally robust, except for the coastline. Apart from any occurring along rivers or on the coast most settlement is unlikely to cause adverse effects. The South and West are less developed but each have sizeable robust areas.

The central and Northern upland areas are however highly sensitive and while they are generally sparsely populated, some parts are subject to considerable pressure for settlement and development, including wind energy and forestry projects.

Notwithstanding the generally robust nature of the existing environment, most of the main settlement centres have their discharge points located on rivers that are classified as being at 'significant risk' of not meeting Water Framework Directive Standards by 2015.

Having described where development might occur under Section 4.2, the following sections provide a more detailed analysis of the likely effects of each scenario.

#### 4.3.2.2 Alternative Scenario 1: *Dispersed Scenario*

Likely Environmental Effects include -

- *Flora & Fauna*

High potential for conflicts between developments and ecologically designated sites and other key habitats – particularly those dependant on water quality as a sustaining resource. The most pronounced conflicts are likely to occur in upland areas, along coastline and along river corridors.

- *Water*

Dispersed rural settlement will continue to significantly threaten groundwater and surface water quality.

- *Landscape*

Widespread rural housing, especially that sited for amenity reasons, will give rise to continued change of rural character from being classified as 'agricultural' to 'settled' – with strong associated perception of loss of amenity to areas that are valued for scenery and tourism.

- *Air [Mobility]*

Highly dispersed settlement patterns will lead to very high levels of private vehicle movements with associated effects on air, including noise, air emissions and climate change effects.

#### 4.3.2.3 Alternative Scenario 2: **Neutral Scenario-Strict application of RPGs/ Protectionist**

Likely Environmental Effects include -

- *Flora & Fauna*

Some habitat fragmentation and disturbance – mostly in the vicinity of main settlement centres with little potential to affect designated sites.

- *Water*

Future threats to water quality of rivers serving principal towns.

- *Landscape*

Little effect except in the vicinity of main settlement centres with limited potential to affect designated landscapes.

- *Air [Mobility]*

Concentrated settlement patterns will lead to lower levels of private vehicle movements with associated minimisation of effects on air, including noise, air emissions and climate change effects.

#### 4.3.2.4 Alternative Scenario 3: **Structured Scenario Alternative**

Likely Environmental Effects include -

- *Flora & Fauna*

Potential adverse effects on water quality, together with some potential for habitat fragmentation and disturbance.



- *Water*

Future threats to water quality of rivers serving principal towns. Potential exacerbation of water quality status of other waters.

- *Landscape*

Little effect except in the vicinity of main settlement centres with some limited potential to affect designated landscapes

- *Air [Mobility]*

Concentrated settlement patterns will generally lead to lower levels of private vehicle movements with associated minimisation of effects on air, including noise, air emissions and climate change effects.

#### **4.3.2.5 Alternative Scenario 4: Centred Scenario Alternative**

Likely Environmental Effects include -

- *Flora & Fauna*

High potential for conflicts between developments and ecologically designated sites and other key habitats – particularly those dependant on water quality as a sustaining resource and coastal habitats that are vulnerable to disturbance.

- *Water*

Future threats to water quality of rivers serving main settlement centres and to quality of bathing waters.

- *Landscape*

High potential for adverse effects on Coastal Areas of Outstanding Natural Beauty and on protected prospects and views close to coastline.

- *Air [Mobility]*

Concentrated settlement patterns will tend to lead to lower levels of private vehicle movements with associated minimisation of effects on air, including noise, air emissions and climate change effects. Higher utilisation of rail transport likely.

#### **4.3.2.6 Alternative Scenario 5: *Prescriptive Scenario***

Likely Environmental Effects include -

- *Flora & Fauna*

Low potential for effects on designated sites.

- *Water*

Potential for deterioration of water quality.

- *Landscape*

Strong control of potential adverse landscape impacts.

- *Air [Mobility]*

Settlement patterns will continue to lead to high levels of private vehicle movements with associated effects on air, including noise, air emissions and climate change effects.

#### 4.3.2.7 Qualitative Summary of Relative Likely Environmental Effects

The table below provides a qualitative summary of the relative environmental effects of implementing each of the alternative scenarios for the Development Plan.

Scenario 5, would give rise to the least environmental effects. Scenario 3, the selected scenario, and scenario 2 both have increased potential to cause adverse effects. Scenarios 1 and 4 have the highest potential to cause adverse effects

| Scenario  | Main Potential Environmental Effects |                         |                         |                         |
|---|--------------------------------------|-------------------------|-------------------------|-------------------------|
|   | Flora & Fauna                        | Water                   | Landscape               | Air [Mobility]          |
| <b>Alternative Scenario 1:</b><br><i>Dispersed Scenario</i>   | Significant, widespread              | Significant, widespread | Significant, widespread | Significant, widespread |
| <b>Alternative Scenario 2:</b><br><i>Neutral Scenario-Strict application of RPGs/ Protectionist</i> | Some localised significant           | Significant             | Slight localised        | Minimal                 |
| <b>Alternative Scenario 3:</b><br><i>Structured Scenario</i>  | Some localised significant           | Significant             | Slight localised        | Minimal                 |
| <b>Alternative Scenario 4:</b><br><i>Centred Scenario</i>   | Significant                          | Significant             | Significant             | Slight                  |
| <b>Alternative Scenario 5 -</b><br><i>Prescriptive Scenario</i>                                     | Minimal                              | Significant             | Minimal                 | Significant             |

**Table 4.3 Qualitative Summary of the Relative Environmental Effects of each of the Alternative Development Plan Scenarios**

#### 4.3.2.8 Evaluation against SEOs

The table below provides an evaluation of each of the alternative scenarios for the Development Plan against the Strategic Environmental Objectives (SEOs).

Scenario 3, the selected scenario, creates significantly less effects – including none on designated habitats.

|  | Likely to Improve status of SEOs | Probable Conflict with status of SEOs - unlikely to be mitigated | Potential Conflict with status of SEOs - would be mitigated | Uncertain interaction with status of SEOs | Neutral Interaction with status of SEOs | No Likely interaction with status of SEOs |
|--|----------------------------------|--|---|---|---|---|
| Alternative Scenario 1:<br><i>Dispersed Scenario</i>   |                                  | HH1 S1 W1<br>W2 W3 C1<br>C2 M1 M2<br>CH1 CH2 L1                  | B1 B2 B3  |   |   |   |
| Alternative Scenario 2:<br><i>Neutral Scenario-Strict application of RPGs/ Protectionist</i> | HH1 S1 W2<br>L1                  |  | B1 B2 B3<br>W1 W3 M1<br>M2 CH1 CH2                          |   | C1 C2                                   |   |
| Alternative Scenario 3:<br><i>Structured Scenario</i>  | HH1 S1 W2<br>C1 C2 M2<br>L1      |  | B1 B2 B3<br>W1 W3 M1<br>CH1 CH2                             |   |   |   |
| Alternative Scenario 4:<br><i>Centred Scenario</i>   | S1 W2 W3<br>C1 C2 CH1<br>CH2     | HH1 L1   | B1 B2 B3<br>W1 M1 M2  |   |   |   |
| Alternative Scenario 5:<br><i>Prescriptive Scenario</i>                                      | HH1 S1 W1<br>W2 CH1<br>CH2 L1    |  | B1 B2 B3<br>W3 M1 M2  |   | C1 C2                                   |   |

**Table 4.4 Evaluation of Alternative Scenarios against SEOs**

#### **4.3.2.9 Summary; the Selected Alternative Scenario**

The Alternatives that were examined were produced and evaluated at an earlier - more embryonic - stage to facilitate the evaluation and selection of a plan - having regard, *inter alia* to environmental consequences.

The Alternative Scenario that emerged from the Plan preparation process and was adopted was Scenario 3 – this Scenario achieves a good balance between potential environmental impact and conformance with relevant National and Regional planning objectives.

The assessment showed that the *Dispersed* and *Centred* Scenarios (1 and 4 respectively) have the potential to give rise to the most adverse environmental effects and these scenarios should be regarded as the least environmentally compatible versions. The *Neutral Scenario-Strict application of RPGs/Protectionist* and *Structured* Scenarios (2 and 3 respectively) have more potential to cause adverse environmental effects but achieve better balance with development needs and conformance with planning objectives. The Prescriptive Scenario (5) would be likely to cause the least adverse environmental effects but has poor conformance with planning objectives.

The Settlement Hierarchy Map for the top main towns within the County (Levels 1 to 5) from the Development Plan (Scenario 3) is shown on Figure 4.2.

#### **4.3.2.10 Evaluation of Plan Provisions prepared to realise the Selected Scenario**

Section 8 of the main Environmental Report document evaluates the individual policies and specific objectives which have been prepared to realise Scenario 3 (the selected Scenario).

Some of these Plan provisions are likely to have a range of beneficial effects with regard to the protection of the environment while some are likely to have a range of potential adverse effects which will be mitigated by other provisions within the Plan (including the measures integrated into the Plan as part of the SEA/Draft Plan preparation process). Some provisions are likely to have a range of both beneficial effects and potential adverse effects which will be mitigated by other provisions within the Plan (including the measures integrated into the Plan as part of the SEA/Draft Plan preparation process).

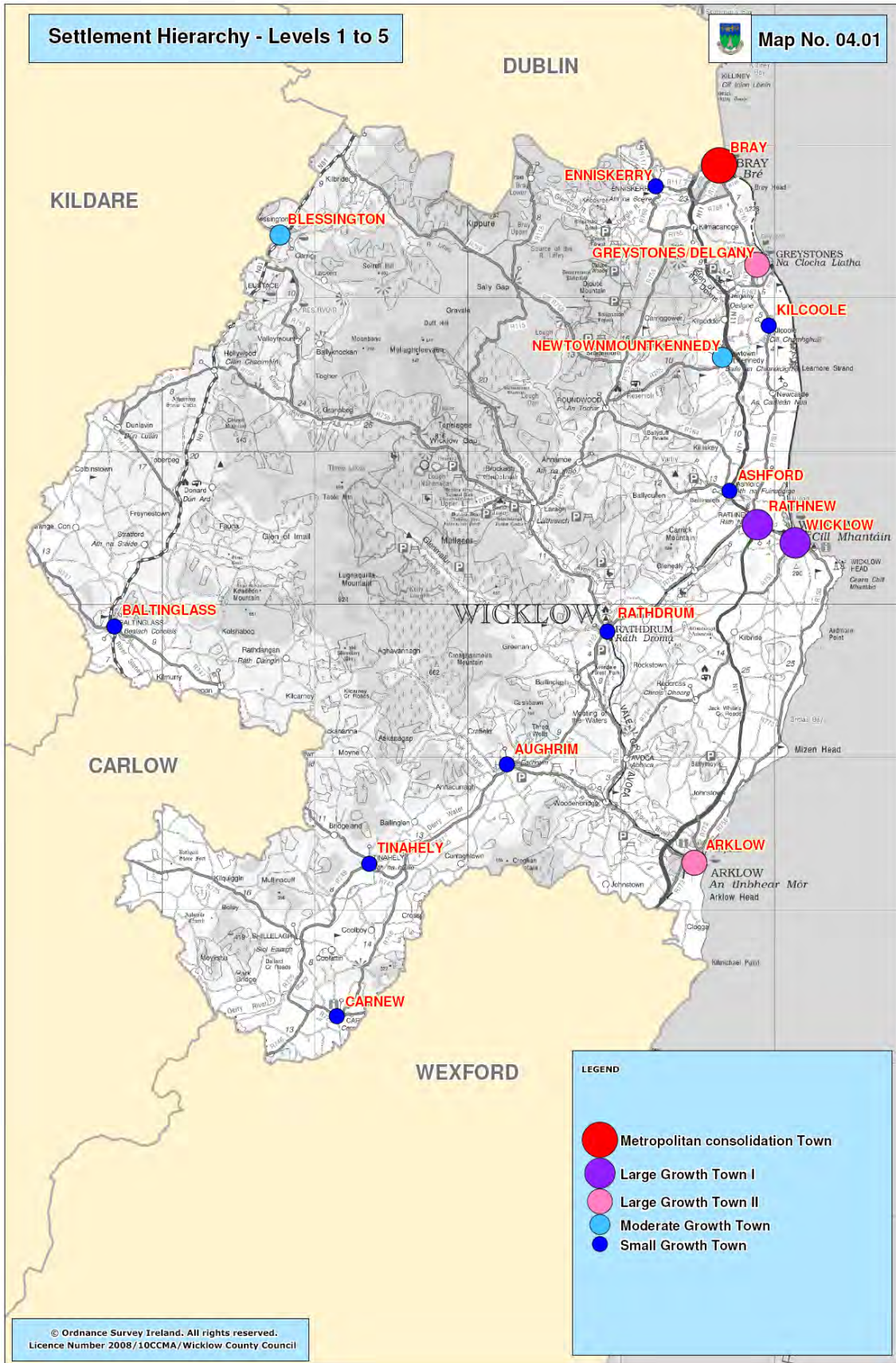


Figure 4.2 Settlement Hierarchy Map (Levels 1 to 5) from the Plan

## Section 5 Mitigation and Monitoring Measures

### 5.1 Mitigation

Mitigation measures are measures envisaged to prevent, reduce and, as fully as possible, offset any significant adverse impacts on the environment of implementing the County Development Plan. Mitigation involves ameliorating significant negative effects. Where there are significant negative effects, consideration is given in the first instance to preventing such effects or, where this is not possible for stated reasons, to lessening or offsetting those effects. Mitigation measures can be roughly divided into those that: *avoid* effects; *reduce* the magnitude or extent, probability and/or severity of effects; *repair* effects after they have occurred, and; *compensate* for effects, balancing out negative impacts with other positive ones.

Mitigation measures have been incorporated into the Plan through the early consideration of environmental sensitivities, through the selection of the Structured Alternative Scenario for the Plan and through objectives for the following topics:

- Designated Ecological Sites
- Ecological Connectivity
- Human Health
- Brownfield Development
- Status of Surface and Groundwaters
- Flooding
- Water Services (Waste Water and Drinking Water)
- Greenhouse gas emissions and car dependency
- Archaeological Heritage
- Architectural Heritage
- Landscape

### 5.2 Monitoring

The SEA Directive requires that the significant environmental effects of the implementation of plans and programmes are monitored. The Environmental Report contains proposals for monitoring the likely significant environmental effects of implementing the Plan. Monitoring enables, at an early stage, the identification of unforeseen adverse effects and the undertaking of appropriate remedial action. In addition to this, monitoring can also play an important role in assessing whether the Plan is achieving its environmental objectives and targets - measures which the Plan can help work towards - whether these need to be re-examined and whether the proposed mitigation measures are being implemented.

The Environmental Report identifies indicators - which allow quantitative measures of trends and progress in the environment over time. Measurements for indicators should come from existing monitoring sources and no new monitoring should be required to take place. A preliminary monitoring evaluation report on the effects of implementing the Plan will be prepared within two years of the making of the Plan. The Council is responsible for collating existing relevant monitored data, the preparation of a monitoring report, the publication of this report, if necessary, the carrying out of corrective action and ongoing review of targets and indicators as necessary.