

Ferrybank-Belview Local Area Plan

Strategic Environmental Assessment

DRAFT Environmental Report

DRAFT July 2008

Carried out by the
National Building Agency



On behalf of
Kilkenny County Council



Ecological Survey carried out by
OPENFIELD Ecological Services



Non-Technical Summary

This is a Strategic Environmental Assessment (SEA) for the Ferrybank-Belview Local Area Plan.

Strategic Environmental Assessment (SEA) is a process for evaluating at the earliest appropriate stage, the environmental quality, and consequences of policies, plans or programmes. The purpose is to ensure that any significant effects on the environment of implementing a Plan are assessed, before it is adopted. Where negative impacts on the environment are likely to arise through implementation of the Plan, measures can be proposed in order to alleviate/negate these impacts. The process also gives interested parties an opportunity to comment and to be kept informed on decisions that may impact on the environment.

The SEA complies with the European Directive 2001/42/EC 'on the Assessment of the effects of certain plans and programmes on the Environment', the objective of which is to '...provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes with a view to promoting sustainable development, by ensuring that, in accordance with the Directive, an environmental assessment is carried out of certain plans and programmes which are likely to have significant effects on the environment'.

The SEA is also in compliance with the associated regulations which have transposed the EU Directive into Irish law, namely the European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations 2004 (S.I. 435 of 2004); and the Planning and Development (Strategic Environmental Assessment) Regulations 2004 (S.I. 436 of 2004).

As the SEA aims to fully integrate sustainability objectives into the decision making process, the identification of objectives for the local area plan and sustainability criteria for the area were agreed at an early stage.

Scoping

The scoping of the proposed plan involved an assessment of compliance with relevant plans and guidance documents at national, regional and local level and consideration of the issues which would result in likely significant impacts on the environment as a result of the proposed development.

The following relevant statutory bodies were consulted with regard to their opinion on what issues should be included in the SEA:

- Environmental Protection Agency
- Minister for the Environment, Heritage and Local Government
- Minister for Communications, Marine and Natural Resources

Baseline Data

Baseline data was collected based on the indicators described in the SEA directive, namely, biodiversity, population, human health, fauna, flora, soil, water, air, climatic factors, material assets, cultural heritage including architectural and archaeological heritage, landscape and the interrelationship of these factors. Existing data sources were utilised, with additional ecological primary studies also carried out to enable the formulation of a more informed development strategy.

Consideration of Alternatives

Six models were identified and considered. The recommended model for the area is one of **concentric growth that would include neighbourhood centres**. The aim therefore is to consolidate growth in the existing areas of development and allow for residential development to the east, north and west of the existing residential estates of Christendom, Abbeylands, Belmont and Rockshire.

Environmental Assessment

A part of the methodology involved the use of a matrix assessing the key objectives of the local area plan against a list of environmental objectives for the area. This process enabled an overview of where potential environmental problems may result from implementation of the strategy option and allowed the objectives to be revised where necessary.

Difficulties encountered in compiling the required information

Having determined the scope of the environmental report, there were deficiencies in information in relation to the areas where likely significant environmental impacts were identified. This was addressed by undertaking primary ecological studies. While this was an element of the study which required further investigation and time, this information was necessary at the strategy stage to determine the potential extent of impacts. This information can now be utilised in the future monitoring of the area.

Mitigation and Monitoring Measures

Mitigation and monitoring measures have been proposed in light of the chosen development strategy. These measures, which are summarised below, will be implemented as part of the local area plan:

Mitigation & Monitoring Measures

	Potential Impacts	Mitigation Proposals	Action to be taken by	Monitor
Ecology	Degradation to SPA/NHA designated areas.	No direct loss of habitat to the SPA and NHA is anticipated as a result of the LAP.		
	Loss of scrub and recolonising bare ground in the Grannyferry area	<p>The NPWS stated that the land at the Red Bridge filling station has been the subject of much consultation and a plan for the site has been approved by ABP. The NPWS feel that the Retail Park Zoning is appropriate at this location from an ecological point of view.</p> <p>An area proposed for retail park further to the east by the New Rath roundabout has recently been infilled this area is under question and the NPWS would prefer no development to take place at this location. KCC propose to allow this area to be zoned however objectives are written into the LAP to 'maintain natural wetland characteristics and protect wetlands' within this area.</p> <p>Compensatory wetland areas could be provided and re-instated at another location in consultation with the NPWS.</p>	KCC in consultation with the NPWS	
	Loss of bat populations through destruction of derelict buildings at Old Mill area in Grannagh	A specialist bat ecologist is to be commissioned to survey the vacant Mill buildings and recommend avoidance or mitigation measures in compliance with the Wildlife (Amendment) Act, 2000. Objective is written into the LAP to this effect.	Survey to be requested of the developer at planning application stage by KCC.	To comply with findings from specialist survey.

	The development of Belview port and surrounds may involve the removal of wetland habitat which is directly adjacent to the SAC area.	An extension to the Port facilities has recently been approved by ABP and a comprehensive EIA was prepared for this area. All development covered in this planning application is to strictly adhere to all mitigation and monitoring measures as outlined in the <i>Port of Waterford Company – Extension to Belview Port EIS 2001 – 2005</i> . It is an objective of the LAP to request at planning application stage an Ecological Impact Assessment for any future built development project that may take place in this area.	Developer	To comply with findings from EIS
	Zoning for Passive Open Space	The Zoning Map indicates that all key areas of woodland, riparian corridors, swamp and wet grassland have been zoned as POS - Passive Open Space/Green Links and Biodiversity Conservation .	KCC	
	Zoning for built development on green field sites has the clear potential for removing significant stretches of Treelines and Hedgerows.	Hedgerows and Treelines have been mapped within the Objectives Map. Policy has also been written into the LAP requesting developers to carry out an ecological assessment where impacts on hedgerows and treelines are likely.	Assessment to be requested of the developer at planning application stage by KCC.	Heritage Section to establish hedgerow/ treeline baseline information from the collation of ecological assessment
	Invasion of Cherry laurel. In the absence of intervention, the advance of this species will destroy its host forest.	A policy within this LAP is for KCC to work with local community groups / conservation groups to seek the eradication of the invasive Cherry Laurel species.	KCC is to initiate the NeighbourWood Scheme, which promotes the restoration of Ireland's native woodland in consultation with local community groups.	LAP is reviewed every six years including review of the steps taken & status of all policies and objectives.
	Impact of Japanese knotweed	A policy within this LAP is for KCC to work with local community groups / conservation groups to seek the eradication of the invasive Japanese knotweed species.	KCC is to initiate the NeighbourWood Scheme, which promotes the restoration of Ireland's native woodland in consultation with local community groups.	LAP is reviewed every six years including review of the steps taken & status of all policies and objectives.
Transportation	Strategically one new river crossing has been proposed. The optimal location for such a crossing will need further detailed examination.	A separate EIA would need to be carried out to assess the environmental consequences and overall environmental feasibility.		To comply with findings from EIS
	Additional routes will also be needed in order to attain optimal circulation.	A traffic management appraisal should be carried out after the completion of the N25 and N9 upgrade to ensure the implementation of key transport objectives. A policy to this effect is written into the LAP.	KCC's transportation department is to initiate traffic management study.	LAP is reviewed every six years including review of the steps taken & status of all policies and objectives.

Surface Water	Potential degradation of water quality due to an increase in population and surface water run-off.	'Sustainable Urban Drainage' (SUDS) will be fully integrated with the LAP, thereby minimising the potential impact of pollutant run-off from surface water. In light of these factors it is believed that the potential for negative impacts on water quality are not significant. It should be noted however that individual construction projects, such as the construction or expansion of wastewater treatment facilities, that may have the potential to impact negatively on the conservation status of the SAC, are subject to their own Assessment.	KCC, Developers.	Water Quality will be monitored through the various forms of legislation. In compliance with the SUDS strategy, appropriate maintenance plans stipulating the necessary agreements on maintenance liabilities between stakeholders, e.g. Water Services, Transportation Department, Parks Department, etc. shall be agreed prior to development. The maintenance plans shall be framed within any subsequent 'Taking In Charge' procedures for the drainage infrastructure implemented by KCC, following the development of lands in the future.
Waste water Treatment	The new wastewater treatment plant currently being built is to become operational this year.	Further development is to be restricted until this treatment plant comes online. Additional septic tank use is also to be curtailed. The provision of efficient drainage systems with separate foul and surface water networks are to be required in all new developments and the necessary gravity and pumping stations are to be provided to service all zoned lands.	KCC, Developers.	LAP is reviewed every six years including review of the steps taken & status of all policies and objectives. Water quality is monitored as above.
Archaeology	Features of archaeological potential are to be duly considered and protected where appropriate.	Proposed developments that may, due to their size, location or nature, have implications on the archaeological heritage of the plan area, will be subject to an archaeological assessment.	Assessment to be requested of the developer at planning application stage by KCC.	LAP is reviewed every six years including review of the steps taken & status of all policies and objectives.
Built Heritage	There are a number of structures of architectural merit within the Ferrybank-Belview area.	Planning applications that would impinge upon any historic structure are to be referred to the Architectural Heritage Advisory Unit of the DoEHLG, and where considered necessary on the advice of the DoEHLG, development is to be prevented that would inappropriately and irreplaceably damage any such structure or monument.	KCC, DoEHLG	LAP is reviewed every six years including review of the steps taken & status of all policies and objectives.

1.0 Introduction

Environmental assessment is a procedure that ensures that the environmental implications of decisions are taken into account before the decisions are made. Environmental Impact Assessment, or EIA, is generally used for describing the process of environmental assessment which is limited to individual projects such as waste incinerators, housing developments or roads while Strategic Environmental Assessment, or SEA, is the term which has been given to the environmental assessment of plans, and other strategic actions, which help determine what kind of individual projects take place. 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 insure that these effects are appropriately addressed at the earliest appropriate stage of decision-making on a par with economic and social considerations.

What kind of development occurs in the Ferrybank-Belview area of County Kilkenny and where it occurs will be significantly determined by the implementation of the Ferrybank-Belview Local Area Plan. By anticipating the effects and avoiding areas in which growth cannot be sustainably accommodated and by directing development towards more compatible and robust receiving environments real improvements in environmental management and planning can occur.

1.1 Purpose of the Environmental Report

This is the Environmental report of the Draft Ferrybank-Belview Local Area Plan Strategic Environmental Assessment (SEA). The purpose of the report is to provide a clear understanding of the likely environmental consequences of decisions regarding the future accommodation of growth within the County Kilkenny part of the Waterford Environs, located north of the River Suir. This report is to ensure that the proposed Local Area Plan (LAP) takes into account the likely significant effects on the environment of the proposed development at an early stage and ensure the optimum development strategy is chosen and implemented in the interests of the proper planning and sustainable development of the area.

The Local Area Plan process will have a significant influence on the future growth and development of this area. Objectives set down in the Planning and Development Act 2002 must be included in the Local Area Plan. This plan will be valid for six years from the date of adoption by the Council however it is important that the plan is set within a longer-term strategic perspective for the next twenty years. The requirements of the SEA Directive were considered and it was determined that in accordance with Section 14B of the Planning and Development (Strategic Environmental Assessment) Regulations 2004 an environmental report should be prepared outlining the likely significant effects on the environment of implementing the Local Area Plan.

The Ferrybank-Belview LAP will contain an overall strategy setting out the future development of the area, land use zonings promoting particular uses in appropriate locations, policies and objectives with the intent of guiding development and development guidelines which will be applied to future planning applications in the area. This will ensure that such development occurs in a planned and orderly manner. The LAP will address:

- The need to accommodate the future growth of Waterford city.
- The need to protect the heritage and distinct environmental quality of the study area.
- The need for increased community services and facilities, such as schools, community halls, sport and recreation facilities, health facilities, etc.
- The need to provide the above services and facilities in conjunction with, and close to, new housing.
- The need for adequate economic and employment opportunities in the area.
- The need to provide various types of open space to meet the demands of a growing community, e.g. playgrounds, playing fields and public parks.

The SEA is being carried out in order to comply with the provisions of the SEA Regulations and in order to improve planning and environmental management in the County. This report should be read in conjunction with the Kilkenny County Development Plan.

1.2 Legislative Context

Directive 2001/42/EC of the European Parliament and of the Council, of 27 June 2001, on the assessment of the effects of certain plans and programmes on the environment, referred to hereafter as the SEA Directive, introduced the requirement that SEA be carried out on plans and programmes which are prepared for a number of sectors, including land use planning. The SEA Directive was transposed into Irish Law through the European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations 2004 [Statutory Instrument Number (SI No.) 435 of 2004], and, the Planning and Development (Strategic Environmental Assessment) Regulations 2004 (SI No. 436 of 2004). Both sets of regulations became operational on 21 July 2004.

1.3 Implications for Kilkenny County Council and the Elected Members

As a result of the above legislation, certain plans and programmes which are prepared by Kilkenny County Council - including Local Area Plans - are required to undergo some form of SEA. Although it is not mandatory to carry out a full SEA, as the area in question has a population of considerably less than 10,000 persons, it was deemed appropriate in this case to prepare a scoping report and ultimately an environmental report on the Ferrybank/Belview LAP due to the siting of two European and National protection designations within the boundary of this LAP.

The findings of the SEA are expressed in an Environmental Report which is submitted to the Elected Members alongside the LAP. The Elected Members must take account of the Environmental Report before the adoption of the plan. When the plan is adopted a statement must be made public, summarising how environmental considerations have been integrated into the plan, and the reasons for choosing the plan as adopted over other alternatives detailed in this report.

2.0 SEA Methodology

The main steps in the SEA process involve scoping, the carrying out of a baseline study, the consideration of alternatives, environmental assessment of the objectives of the plan, and the formulation of mitigation and monitoring measures. In undertaking this report, the planning authority has had regard to the European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations 2004, the Planning and Development (Strategic Environmental Assessment) Regulations 2004, and Guidelines for Planning Authorities on the Assessment of the Effects of Certain Plans and Programmes on the Environment (November 2004).

Scoping:

The scoping of the proposed plan involved an assessment of compliance with relevant plans and guidance documents at national, regional and local level and consideration of the issues which would result in likely significant impacts on the environment as a result of the proposed implementation of the Plan. Consultation took place in-house within Kilkenny County Council with the Heritage Officer, Biodiversity Officer, Conservation Officer, Environment Department, Transportation Department, Water Services Department, Community Recreation and Amenities Department.

The following relevant statutory bodies were consulted with regard to their opinion on what issues should be included in the SEA:

- 1) Environmental Protection Agency (EPA),
- 2) Minister for the Environment, Heritage and Local Government,
- 3) Minister for Communications, Energy and Natural Resources,

The following is a summary of the issues raised by all three bodies, which they consider should form part of the Environmental Report.

The issues raised by the EPA include:

- Provision of adequate drinking water supply,
- The Plan should implement and include, as appropriate, the relevant recommendations set out in *The Provision and Quality of Drinking Water in Ireland – A Report for the Years 2006-2007, (Office of Environment Enforcement- EPA, 2007)*.
- Promotion of water conservation measures,
- Promotion of the use of Rainwater Harvesting Systems where possible and appropriate,
- Specific provisions for the implementation of the relevant recommendations set out in *Urban Waste Water Discharges in Ireland for Population Equivalents Greater than 500 Persons – A Report for the Years 2004 and 2005 (Office of Environment Enforcement- EPA, 2007)*,
- Zoning for development should be linked to availability of treatment infrastructure. Priority should be given to provision of adequate infrastructure in advance of any development,
- A cessation of the current practice of untreated wastewater discharge to the River Suir should be sought during the life time of the Plan,
- Protection of surface and groundwater resources and their associated habitats and species,
- Provision and promotion of adequate and appropriate Sustainable Urban Drainage Systems,
- Management of flood risk. Appropriate zoning of lands and restriction of use should apply in areas liable to flooding to avoid increased risk of flooding of the lands either within or adjoining the zoned areas,
- Promotion of energy conservation measures in buildings,
- Provision of sustainable modes of transport,
- Development of traffic management measures to reduce the potential for traffic congestion and associated vehicular emissions,
- Provision of adequate and appropriate amenity to serve both existing community and likely future increases in population,
- Protection of the air quality in the Plan area,

- Protection of local biodiversity features – including rivers, wetlands, hedgerows, individual trees, streams, grassland etc,
- Protection, management, and as appropriate, enhancement of existing wetland habitats should be considered where flood protection/management measures are necessary,
- Protection of sites and features of archaeological importance,
- Protection of structures, features and zones of architectural value,
- Enhancement of existing views and prospects likely to be associated with the proposed Plan.

The *Department of Environment, Heritage and Local Government* recommended that the following environmental issues should be addressed in the environmental report:

- The impact on protected plants and animals. This should include the impact on animals such as otters, badgers, bats and birds. The impacts should include those of disturbance and/or loss of habitat and loss of roosting and feeding area,
- The impact on habitats outside of designated areas. This should include loss of habitats such as hedgerows, water courses and wetlands,
- The impact on the designated sites of the River Suir and Grannyferry. The impacts to be addressed should include habitat degradation and disturbance of species from amenity use by humans and water quality issues arising from any increase in discharges into the River.
- With regard to architectural heritage, due recognition should be given to significant elements of architectural heritage in the vicinity. The SEA process should identify the implication of the scale, type, location of significant development envisaged in the vicinity of structures of architectural merit, including demense lands and the perceived effect of that development on those elements of the architectural heritage.
- Impact of the plan on archaeological heritage, with the aim to avoid any direct impacts on known archaeological sites. Consideration must also be given to the discovery of unknown archaeology.

The issues raised by the Minster for Communications, Energy and Natural Resources include:

- Water quality in terms of surface water drainage and effluent discharges,
- Impacts on aquatic habitats,
- Potential increased flood risks,
- Potential disturbance of bio-diversity,
- Potential threat to aquaculture from Wastewater Treatment Plant discharge to the marine environment as Waterford Harbour and Estuary is a prime shellfish growing area.

Consultation with the community and local stakeholders took place in November 2004 and information arising from this was also considered as part of the LAP. The main issues, themes and proposals arising from the consultation process related to the following areas:

- Provision of a new Garda Station,
- Provision of community facilities and areas of open space and parkland,
- Provision of facilities for the youth,
- Congestion issues along the N25: traffic calming, safe pedestrian crossings, new urban street structure,
- Area needs a defined centre/heart to include shops, restaurants, social amenities etc,
- Provision of facilities for the elderly,
- Provision of walkways,
- Improvements to public transport,
- Amenity potential of access to the river,
- Protection of the environment.

Baseline Data

Baseline data was collected based on the indicators described in the SEA directive, namely, biodiversity, population, human health, fauna, flora, soil, water, air, climatic factors, material assets, cultural heritage including architectural and archaeological heritage, landscape and the interrelationship of these factors. Existing data sources were utilised, with additional primary studies carried out in relation to ecology, which enables the formulation of a more informed development strategy.

Consideration of Alternatives

The scoping process and baseline information gathered highlighted a number of key issues, which have been explored in the formulation of alternative development strategies for the LAP lands. A number of models were examined, six in total. Consideration was also given to a do-nothing scenario.

The preferred strategy as set out in the draft LAP is for the Ferrybank-Belview area to grow in a compact, relatively self contained, sustainable manner. Its unique location within south Kilkenny, yet in direct proximity to Waterford City, means that the area can benefit from an array of urban facilities and services, while preserving its own distinct identity and scenic natural setting. A key objective of this LAP is the preservation of the unique environmental attributes of the area. The protection of the many woodlands, stream corridors and wetlands, as well as the area's scenic riverside environment, is of paramount importance. In the context of economic development, it must be acknowledged that Waterford City is the main driver of the region. Therefore, if the Plan area is to continue to benefit from the City's prosperity, it must also contribute to its future growth and development.

Environmental Assessment

A part of the methodology involved the use of a matrix assessing the key objectives of the LAP against a list of environmental objectives for the area. This process enables an overview of where potential environmental problems may result from implementation of the strategy option and allows the objectives to be revised where necessary.

Difficulties encountered in compiling the required information

Having determined the scope of the environmental report, there were deficiencies in information in relation to the areas where significant environmental impacts were identified. This was addressed by undertaking primary studies in the area of ecology. While this was an element of the study which required further investigation and time, this information was necessary at the strategy stage to determine the potential extent of impacts. This information can now be utilised in the future monitoring of the area.

Mitigation and Monitoring Measures

Mitigation and monitoring measures have been proposed in light of the chosen development strategy, which will be implemented as part of the proposed LAP.

3.0 Characteristics of the Existing Environment

This Ferrybank/Belview LAP covers the area stretching from Grannagh in the west to Belview in the east and from the administrative boundary with Waterford City River Suir to the line of the Waterford City bypass taking in the townlands of Newrath, Mullinabro, Cloone, Ballyrobin, Rockshire, Killaspy, Belmont, Abbeylands, Christendom, Newtown, Ballynamona, Ballinavoher, Ratchculliheen, Kilmurry and Gorteens. It also includes the eastern section of the suburb of Ferrybank and the village of Milepost. It excludes the village of Slieverue, which is addressed through its own LAP, the Slieverue Local Area Plan 2006 – 2012 ([See LAP Map 2, Study Area for LAP](#)).

The area is currently experiencing a considerable amount of development pressure. Significant road improvements are underway, including the upgrade of the N9, which will consist of a motorway/high quality dual carriageway linking Waterford to Dublin, and the N25 Waterford City bypass. Associated with these road improvements, new interchanges will be constructed, creating strategic sites with significant development potential. Another important factor influencing the plan area at present is the construction of the Ferrybank-Abbeylands Shopping Centre, which will incorporate a variety of retail, health/medical, leisure and offices units. The area is also home to Belview Port, the country's fastest growing port, where significant expansion is envisaged.

The area has experienced significant population growth in recent years, and is expected to experience even greater growth in the near future. A recent study commissioned by Waterford City Council in 2002 – the Waterford Planning, Land Use and Transportation Study (PLUTS) – anticipates a population increase of almost 30,000 people in Waterford City and Environs by 2020, with the area north of the River Suir predicted to experience an increase of 12,000 people. Such levels of development and population increase pose significant challenges for the Ferrybank-Belview area.

3.1 Development Opportunities and Constraints

There is a mixture of naturally occurring and manmade features in the plan area which in terms of development, present both opportunities and constraints.

The proposed LAP (pLAP) promotes the protection of key landscape features and where appropriate, advocates their use for amenity purposes. There are a number of significant stream corridors in the plan area ([See LAP Map 4, Environmental Parameters Map](#)), and it is important that these are kept free from development. Accordingly, it is an objective of this LAP to implement landscape belts alongside these streams to provide Sustainable Urban Drainage Systems (SUDS), maintain ecological corridors and create areas of open space. The plan area is also rich in mature tree groups. These form important nature habitats and act as valuable recreational amenities.

With regard to manmade features, the rail lines running through the plan area and strategic transport routes, such as the N25 Waterford City by-pass, restrict the development potential of certain lands. The Waterford to New Ross rail line, which is currently disused, acts as a barrier to development in the Abbeylands area. However, in order to accommodate its potential re-opening in the future, it is crucial that this rail line be preserved. While the aforementioned by-pass, and other road improvements, such as the N9 upgrade, will serve to alleviate traffic congestion in the plan area, they will also constrain the development of certain lands. The pLAP acknowledges the complexity of this issue and in so far as possible, seeks to address it through appropriate land use zonings and development objectives.

3.2 The Future

The aim of the Plan area is to grow in a compact, relatively self contained, sustainable manner. Its unique location within south Kilkenny, yet in direct proximity to Waterford City, means that it can benefit from an array of urban facilities and services, while preserving its own distinct identity and scenic natural setting. A key objective of this LAP is the preservation of the plan area's unique environmental attributes. The protection of the many woodlands, stream corridors and wetlands, as well as the area's scenic riverside environment, is of paramount importance to the area. In the context of economic development, it must be acknowledged that Waterford City is the main driver of the region. Therefore, if the Ferrybank-Belview area is to continue to benefit from the City's prosperity, it must also contribute to its future growth and development.

Developing a Strategy

The gateway status that has been bestowed on Waterford City in the NSS reinforces its position as the economic driver of the southeast. There is an adequate amount of land available in the plan area; however, the development of this land requires an approach that is based on principles of equality and sustainability.

A Strategic Vision

The Council recognises that decisions on future development of the Plan area must be informed by the concept of sustainability. The following strategic aims will guide development in the future. These aims are outlined under the following headings:

- (A) Natural Environment
- (B) Residential and Mixed Use
- (C) Industry and Employment
- (D) Transport
- (E) Urban Village

(A) Natural Environment

A.1. Protection of Ecological Features: The proposed LAP (pLAP) seeks the protection of the unique environmental setting of the area, and in particular, its relationship with the River Suir.

A.2. Creation of a Riverside Amenity: The pLAP promotes the creation of a riverside walkway stretching from Rockland Woods in Christendom to Belview Port.

(B) Residential and Mixed Use

B.1. Compact Residential Model: The pLAP proposes a residential strategy of consolidation and infill, whereby new residential development will occur along side existing. This will enable the development of a compact residential model in the plan area, in preference to a pattern of dispersed housing and peripheral sprawl.

B.2. Network of Neighbourhood Centres: The pLAP proposes a number of neighbourhood centres at strategic locations in the plan area. These will serve the needs of both new and existing residential areas, enabling them to become more sustainable living environments.

B.3. New Mixed Use Zones: The pLAP proposes mixed-use zones at Newrath and Christendom, which have been given a zoning of C2: Commercial and Mixed Use. These zones will combine retail, commercial and service uses with residential development. There will also be a strong focus on the creation of enterprise zones and community facilities in these areas. (Maximum 50% of the land area to be allowed for residential needs with the exception of Newrath where only a maximum of 25% of the land area shall be given over to housing).

Newrath

The Newrath mixed-use zone is ideally located along the N25, with excellent access to the local road network. Given its strategic location, uses such as retail parks and business parks will be encouraged, alongside the uses highlighted above (B.3). However, such retail parks will be required to respect the existing urban form of the area, and in particular the existing form and scale of residential development.

Christendom

The Christendom mixed-use zone will create a high quality living and working environment in proximity to the River Suir. This zone will seek to re-address the River Suir, and will benefit from generous areas of open space and a riverside park. In light of this, high and medium densities will be encouraged in this zone. It is also proposed to create Ireland's second Sustainable Energy Zone (SEZ) at this location.

B.4. Arcadian Residential Development: The pLAP proposes an Arcadian Residential zoning (R0) at a number of locations in the plan area. Arcadian Development is based on the principle of low density housing which is hidden in the landscape, and generally developed on sites which already include mature trees and hedges. These zonings are proposed in visually sensitive areas, and in areas which already feature low density residential development.

(C) Industry and Employment

C.1. Rejuvenation of existing and former industrial lands: The pLAP aims to strengthen the area's potential to attract inward investment. At present, the area suffers from an over reliance on meat processing and related industries. Thus, the proposed LAP aims to facilitate the diversification of the area's industrial base into one which is more reflective of employment today; particularly service and knowledge based industries, as well as more specialised industries such as pharmaceuticals.

C.2. Belview Port: The pLAP recognises that the performance of Belview Port is of central importance to the area's economic development. The continued growth of portal activities will enable the development of employment opportunities in the wider Belview area.

(D) Transport

D.1. Potential of Existing Railway Lines: The pLAP proposes to preserve the Waterford to New Ross railway line, which is currently disused. In addition, a number of buffer zones have been identified along this line. These zones will be kept free from development in order to accommodate potential rail transit stops in the future. A key element of this strategy is to encourage high density development adjacent to, and along, this railway line in the future.

D.2. Making Connections: The pLAP recognises that enhanced connectivity between the plan area and Waterford City is vital for long-term development of both areas. It is acknowledged that there is a need for a third river crossing over the Suir. In addition, a number of improved road connections have been proposed within the plan area. The pLAP has identified optimal locations for these connections.

(E) Urban Village

Creation of a Focal Point: It is acknowledged that the plan area lacks a sense of identity and a recognisable "heart". The opportunity therefore exists to create a more meaningful community infrastructure in the area. The fact that the area lacks both informal public places such as parks and treed areas, and formal public spaces such as a main street, can be seen to be one of the key reasons why the area has failed to develop its own sense of identity and vitality. There are currently a number of strategic factors at play in the plan area which provide a strong rationale for the creation of an urban village (zoned C1: Urban Village) at Ferrybank – Abbeylands. These include:

N25 Waterford City bypass: This will allow for the needs of pedestrians to be prioritised in the Ferrybank-Abbeylands area, in particular the needs of school-going children. It will also allow cyclists greater ease of movement.

Downgrading of the existing N25: This will allow for traffic calming measures to be implemented in the Ferrybank – Abbeylands area. It will also provide an incentive to introduce visual traffic calming measures such as lane narrowing and widening of pedestrian footpaths. The opportunity exists to create a tree lined boulevard with on-street car parking and cycle paths. This would in turn support the establishment of a main street in the Ferrybank-Abbeylands area.

N25 Green Route Corridor: The establishment of a Green Route in the Ferrybank-Abbeylands area would add to the success of the proposed urban village in this area, prioritising the needs of pedestrians and cyclists, and those using public transport.

Ferrybank/Abbeylands Shopping Centre: The location of this centre adjacent to existing community facilities such as the schools, church, shops and services means that it will strengthen the present community infrastructure and create greater footfall in the Ferrybank-Abbeylands area. This will give the area its much need central point and provide an incentive for the creation of an attractive tree-lined main street.

Strategic Objectives

- S1** Assess all future development Land Use proposals in accordance with [LAP Map 9, Land Use Zoning Map](#) and [LAP Map 8, Development Objectives Map](#).
- S2** Ensure a co-ordinated approach for all sites or areas that adjoin the administrative boundary of Waterford City Council.
- S3** Support the redevelopment of docklands on the northern bank of the River Suir as an extension of Waterford City Centre.
- S4** Facilitate the development of a main street as part of the urban village concept which shall include:
- A tree lined boulevard.
 - Traffic calming measures.
 - Limited on-street car parking.
 - Public parking for bicycles.
 - Cycle Paths.
 - Taxi Ranks.
 - The development of bus-lanes as part of the proposed Green Route corridor
 - A strong and continuous building line, with a fairly uniform building setback and average heights of 4 storeys.
 - Car parking promoted to the rear of buildings, or as underground multi-storey facilities.
- Furthermore, it is an objective to ensure that no roundabouts are placed in the area stretching from the Belmont roundabout to the administrative boundary line of Kilkenny County Council. In order to facilitate pedestrian and cyclist movement in this area, traffic lights / traffic signal junctions will be the preferred option.
- S5** Reserve sites within the proposed urban village as strategic opportunity sites where the ground floor areas, to a height of 4 metres, are restricted to commercial, retail and community uses with residential and offices over-head.
- S6** Promote the development of key landmark buildings of outstanding architectural quality on strategic sites at key approach roads to the area as identified on [LAP Map 8, Development Objectives](#).

S7 Promote the development of a new mixed use street with a minimum height of 3 storeys and an almost continuous building line throughout the Christendom – Newtown area, commencing at the AIBP site and continuing eastwards to front onto the proposed riverside park.

Furthermore, it is an objective to require:

- A 4 metre footpath along the new street.
- The ground floor area to be a minimum height of 4 metres so as to enable the provision of retail and commercial development, and to facilitate residential and office overhead. (Maximum 10% of the land area to be allowed for residential needs).

Zoning Objectives

Below are the zoning objectives for the proposed plan area.

C1 Urban Village – It is the purpose of this zone to create a focus for the plan area by encouraging and providing residential, retail, commercial, and office, cultural and other uses appropriate to the centre of a developing area.

C2 Commercial/Mixed Use Development – This zoning allows for a mix of uses such as residential, hotels, medical facilities, offices, theatres, galleries, retail, bars and leisure/tourism related uses.

C3 Commercial – This zoning allows for a mix of uses such as retail, service stations, enterprise centres, hotels and offices; however the retail element will be restricted to small scale units.

R0 – R4 Residential – This zoning allows for new residential development and other services incidental to residential development. While housing is the primary use in this zone, childcare facilities and recreation will also be considered.

RE Protect and Enhance Existing Residential Amenity – This zoning allows for the protection and enhancement of existing residential amenity in the area.

BRA Belview Residential Amenity – This zoning allows for the protection of existing residential amenity in the area while prohibiting further future residential development.

NC Neighbourhood Centre – The objective of this zoning is to allow for local shops and associated businesses to service adjoining residential development.

CF Community Facilities – This zoning objective allows for local civic, community, educational and religious facilities and associated ancillary amenity facilities, open spaces/recreational areas to serve the immediate surroundings and hinterland.

PU Public Utilities – The zoning allows for the development and expansion of public utilities throughout the area.

RP Retail Park/Retail Warehousing – This zoning objective allows for a retail park and warehousing in these designated areas.

POS: Passive Open Space/Green Links/Biodiversity Conservation – Allows for the zoning of passive open space/green links/ biodiversity conservation throughout the area.

AOS: Active Open Space – Allows for the zoning of active open space throughout the area.

BITP Business, Industry & Technology Parks – This zoning will facilitate the development and expansion of business, industry and technology in the designated area.

PIT Pharmaceutical, Industry and Technology Parks – The purpose of this zoning is to allow for the development and expansion of pharmaceuticals, industry and technology in these designated areas.

WILT Waste Management, Industrial, Logistics and Transport Related Uses – This zoning objective allows for the development and expansion of waste management, industry, logistics and transport related uses in these areas.

SIA Specialist Industrial Activity – The objective of this zoning is to allow for the development of specialist industrial activities in these areas.

PFI Development of Port Facilities and Industry – The purpose of this zoning is to allow for the further development and expansion of port facilities and associated industries in these designated areas.

AG Agriculture – This zoning allows for the protection and improvement of countryside amenities.

4.0 Strategic Context

4.1 National, Regional and Local Policy Context

A number of relevant policy documents have been taken into account during the preparation of the pLAP including:

National Development Plan 2007-2013

The National Development Plan (NDP) considers Waterford to be the principle city in the South-East region. The City is viewed as a compact city with a high quality urban fabric, located in an outstanding estuarine setting, close to a major national port and containing a regional airport. The City is also considered to be a centre of educational excellence, with a fast developing retail and local services sector. Many of the city's priority investments are on-going and include:

- Completion by 2010 of the N9 Dublin-Waterford road and N25 Waterford City by-pass.
- Creation of an effective bus-based public transport network, building on recent fleet investment through widespread bus prioritisation measures.
- Enhancing road links to other Gateways along the Atlantic Road Corridor.
- Improving intercity rail services between Waterford and Dublin.
- Upgrading port facilities and facilitating relocation of port activities.
- Investment in the Research & Development capacity of the Waterford Institute of Technology (WIT) to underline the importance of education to Waterford as a centre of excellence.
- Development of industry/ WIT linkages within the South-East Region.
- Renewal and development of the North Quays.
- Development of strategic sites as part of the IDA Ireland Strategic Sites Initiative.
- Continued support for Waterford Regional Airport.

National Spatial Strategy 2002-2020

Waterford has been designated as a "gateway" in the southeast region. The National Spatial Strategy (NSS) believes that there is substantial potential for the enhancement of critical mass through the further expansion of the existing designated gateway of Waterford, including the port at Belview. This enhancement could also be supported by improving connections from Waterford to towns in the surrounding counties, and from Waterford to cities such as Dublin, Cork and Limerick. The strengthening of the position of Waterford should ensure that the area emerges as a strong driver of balanced regional development.

The NSS projects that the population of the southeast region will be 440,000 by 2020, of which 138,000 could be located in Waterford city and its hinterland. (Note: a hinterland is defined as those areas within which significant numbers of persons journey to the city for work from surrounding areas).

Kilkenny City is identified as a "hub" with a potential role to play in conjunction with Waterford City, particularly given the deepening economic relationship between south Kilkenny and Waterford City. Wexford town is also identified as a hub and all three (Wexford, Kilkenny and Waterford) are seen as forming a nationally strategic 'growth triangle'. These three will drive regional growth by providing a large and skilled population base, with substantial capacity for additional residential and employment related functions and an improving transport network.

South-East Regional Planning Guidelines 2004-2020

The strategic policies and objectives set out in the South-East Regional Planning Guidelines (RPGs) form the backdrop for socio-economic planning by national and regional agencies. Some of the policies relating to the area include:

- Supporting the development of Waterford City as a compact city of 70,000 persons, with a population in excess of 50,000 people living in the immediate hinterland (i.e. an area within twenty minutes commuting time).
- Securing the future balanced development of Waterford City through enhanced connectivity via the Waterford City Bypass Bridge and the development of a downstream river crossing.
- Establishing a spatial framework through which development of the ports in the region can be coordinated to deliver a critical mass of services and facilities boosting the national and international competitiveness of the region.
- Supporting the upgrading and rescheduling of services on the Rosslare to Limerick Rail Line (via Waterford). Its potential as a means of commuting to Waterford City and as an inter-regional link between the South-East and the Mid-West should be exploited.
- Promoting an increased frequency of rail services on the Waterford to Dublin line and a reduction in journey times for all of the centres of population along the line.
- Supporting the development of a University in the South-East by utilising and building upon the existing network of third-level educational establishments at Waterford, Carlow, Kilkenny, Wexford and Clonmel.
- Promoting and facilitating the decentralisation of services from the Dublin Metropolitan Area to the South-East

Waterford Planning, Land Use and Transportation Study 2002-2020

The Waterford Planning, Land Use and Transportation Study (herein referred to as the PLUTS) sets out a strategy for the balanced and sustainable growth of Waterford, while providing a high quality of life for its inhabitants over the next twenty years. The principal features included in the PLUTS strategy include:

- Provision for a population increase of almost 30,000 people, or 57% population growth, in Waterford City and Environs by 2020;
- Investment needed for almost 12,800 new jobs, or 46% growth, by 2020;
- Requirement for approximately 11,500 new dwellings located both north and south of the River Suir;
- Significant retail expansion in the expanding City Centre;
- A downstream river crossing to facilitate the extension of the Outer Ring Road northwards to the N25;
- A new city centre bridge for pedestrians and cyclists which will link the redeveloped North Quays with the existing City Centre;
- Provision of a rail-passenger platform on the North Quays as part of a new Public Transport Interchange;
- Development of a high-quality bus-based public transport system in the City supported by Park and Ride facilities located north and south of the River;
- Expansion and improvement of the South-East Regional Airport with an extended runway, more operators and improved transport linkages.

The PLUTS proposes to bring the North Quays and the Northern Suburbs fully into the social and economic domain of the City. In doing so, the study advocates that growth in Waterford City and Environs be distributed between the north and south sides of the River Suir in the ratio of approximately 2:3 respectively over the next twenty years. It is anticipated that a 50:50 balance will be achieved over a thirty year period.

It is envisaged that a compact city will be formed within a new orbital road network comprising of the N25 Waterford Bypass and the Outer Ring Road and facilitated by two

additional river crossings. These infrastructural works should result in the development of major employment at Belview and the North Quays and in the process lands at Rockshire, Ferrybank, Abbeylands and Christendom will be developed for residential use to accommodate the employment base in Belview and the North Quays. It is proposed that these residential areas will be linked to the City Centre by means of a new Green Route while the City Centre area would expand northwards across the River into the North Quays and be linked by means of a new bridge. In terms of industrial zoned land, PLUTS estimates an employment population of 1,000 for the North Quays while lands for light industry or distribution have been identified at Christendom and Grannagh.

Waterford City Development Plan 2007-2013

The Waterford City Development Plan (WCDP) focuses on the delivery of sustainable communities. It hopes to deliver this through the implementation of the Neighbourhood Strategy, and a number of neighbourhoods included in this strategy have been identified in the Waterford Environs. The Ferrybank area and the developing suburbs north of the River Suir, plus the neighbourhoods of Abbeylands and Rockshire, have been identified as potential neighbourhoods.

The WCDP sees the development of the port at Belview, and the subsequent sale of lands at the North Quays, as ideal opportunities to radically transform the area. Some 15 acres of docklands will be available for redevelopment to alternative uses, and it is a policy of Waterford City Council that a master plan for the overall site be prepared. Waterford City Council believes that the site should be redeveloped for mixed uses that would be appropriate to a city centre location.

Kilkenny County Draft Development Plan 2008-2014

Kilkenny County Council is committed to the role of Waterford City as a Gateway. It will facilitate the continued development of the Waterford City environs and Belview Port, two areas which are seen as having the potential to enhance the critical mass of the southern portion of County Kilkenny. It is a policy of the County Development Plan (CDP) to implement the NSS and RPG's by encouraging developments in the environs of the Waterford Gateway. In addition, the CDP seeks to develop the national role of Belview Port.

Ecological Policy Context

Policies governing biodiversity include:

The Irish government ratified the *Convention on Biological Diversity* (CBD) in 1996 and is currently drafting the second National Biodiversity Action Plan (BAP). The first BAP (2002 – 2007) required all local authorities to establish their own Local BAPs however to date only two counties have finalised such plans. Kilkenny County Council will be publishing a draft BAP in 2008.

At the local level, the protection of biodiversity is discussed in the context of the *Kilkenny Draft County Development Plan (2008 – 2012)*. Chapter 8, section 8.2.3 specifically mentions the conservation of biodiversity outside of designated areas and identified the following policies:

- Identify, in co-operation with the relevant statutory authorities and other relevant groups, sites of local nature conservation interest, not otherwise protected by legislation.
- To protect and enhance wildlife habitats and landscape features which form part of habitat networks, such as river corridors and associated habitats.
- To ensure that any development in or near sites of local conservation interest will minimise any significant adverse impact on the features for which the site has been designated.

- Minimise the loss of habitats and features of the wider countryside (hedgerows, ponds, streams, wetlands, trees etc) through the planning process, which are not within designated sites.
- Where the loss of habitats and features of the wider countryside is unavoidable as part of a development, to ensure that appropriate mitigation and/or compensation measures are put in place, to conserve and enhance biodiversity and landscape character.

It is possible to decouple the conservation of biodiversity from the needs of economic development but it does require careful planning from the earliest possible stage. One concept that is in use in the US, and has been adopted by the Institute of Ecology and Environmental Management (IEEM) in the UK is that of 'no net loss' (IEEM, 2006). It implies that where the destruction of habitat is unavoidable, it can, up to a point, be compensated for in a different location. So for example, if a development will remove 1 km of hedgerow, then 1 km of native hedgerow must be planted elsewhere to replace it.

The 2002 document: *'Making Ireland's Development Sustainable'* (DOEHLG, 2002) highlights "respect for ecological integrity and biodiversity" as a core theme, while the associated principle is that: "the diversity of wildlife, habitats and species should be maintained and improved". An update to this document was due in 2007 but is not expected until 2008.

Long-term Strategy of the Environmental Protection Agency (EPA)

In 2007 the EPA published '2020 Vision: Protecting and Improving Ireland's Environment' (EPA, 2007) and identified the protection of soil and biodiversity as one of six environmental goals.

South Eastern River Basin District Management Plan

Under the Water Framework Directive (Directive 2000/60/EC) all Irish waters must achieve 'good ecological status' by 2015. The South Eastern River Basin District encompasses all of county Kilkenny and the report, 'Water Matters' (SERBD, 2007) was recently published. In 2008 a program of measures will be published that will aim meet the targets of the Directive.

5.0 Summary of the Baseline Environment

Baseline data was collected relating to the indicators described in the SEA directive: biodiversity, fauna, flora, population, human health, soil, water, air, climatic factors, material assets, cultural heritage (including architectural and archaeological heritage), landscape and the interrelationship of these factors. While existing data sources were utilised, additional primary studies were commissioned in the area of ecology. This was necessary, as this aspect of the environment was identified as likely to be affected by implementation of the plan (See LAP Map 9, Land Use Zoning Map).

5.1 Biodiversity and Flora and Fauna

An ecological study of the LAP lands was undertaken by OPENFIELD Consultants, the objective of which was to evaluate the potential direct impacts of development on the biodiversity value of the LAP lands; to evaluate the potential indirect impacts of development of the LAP lands on surrounding features of ecological value on adjacent lands; and potential indirect impacts on the nearby designated nature conservation areas.

Biodiversity is a term used to describe the variety of life on Earth, including species richness, ecosystem complexity and genetic variation (Allaby, 2004). Its decline in recent decades has been cause for much concern and its acute nature was highlighted through the United Nations Millennium Ecosystem Assessment (Millennium Ecosystem Assessment, 2005). Biodiversity loss affects communities on both a global and a local scale, however in a recent survey of public attitudes to the issue among citizens of the European Community, people in Ireland expressed the belief that it is more of a problem elsewhere than in this country (Gallop, 2007). This is clearly not the case as many of our important habitats and species are under threat. The Department of the Environment, Heritage and Local Government's recent submission to the European Commission on the status of the Habitats Directive delivered the stark message that much of our valued biodiversity is in poor status (DOEHLG, 2008).

Biodiversity provides society with a wide range of 'ecosystem services' that are provided free of charge, and as a result are frequently taken for granted. These include: water and air purification; waste disposal; pollination of crops; flood alleviation; maintenance of soil fertility and prevention of erosion; tourism; and climate regulation. In fact, a recent study placed the 'marginal' value of biodiversity to the Irish economy at €2.6 billion annually (in other words, a conservative estimate) and far greater than the cost to the exchequer of conservation programmes (Bullock et al., 2008). There is clearly a business case to be made for the conservation of biodiversity, but there is also an equally strong moral imperative to protect the natural heritage of our countryside.

It is important to recognise that important biodiversity does not only exist within the confines of nature reserves and specially designated areas. Although poorly understood, many of the ecosystem services described above are provided for by species and habitats that would be considered common and are not afforded any special protection. Indeed, the value of the lowly Earthworm to Irish agriculture was placed at €1.3 billion per annum by the aforementioned report. In Ireland, biodiversity is protected mainly through the European Union's (EU) Natura 2000 network of Special Areas of Conservation (SACs) for habitats and species other than birds, and Special Protection Areas (SPAs) for birds. These sites are considered to be of international importance (NRA, 2006). Below that, sites that are designated as Natural Heritage Areas (NHAs) are of national importance, but most NHAs do not have full recognition in law and are generally protected by county development plans. Beneath the NHA there are currently no mechanisms by which a locally important area for biodiversity can be protected. This is in contrast to the UK where individual local authorities have identified criteria for establishing sites containing locally important habitats and species. A detailed methodology for such a scheme has been examined by the Heritage Council although this has not been developed further (Natura, 2005).

5.1.1 Methodology

This study examined the area of the Ferrybank-Belview Local Area Plan (LAP) in County Kilkenny in order to highlight important biodiversity areas, assess their importance, and suggest ways in which their conservation can be integrated into the objectives of the plan.

This involved a number of steps:

1) Literature review and consultation

Existing information on the study area was gathered through a literature search. Key stakeholders were identified and were asked for submissions to this report.

2) Field survey

The area of the LAP was surveyed by car and on foot in order to identify habitats present. This was done in accordance with the Heritage Council's draft Habitat Survey Guidelines (Heritage Council, 2002) and *A Guide to Habitats in Ireland* (Fossitt, 2000).

3) Habitat Map

A habitat map was drawn using ArcView 9.2 GIS software showing key habitats superimposed on aerial photography of the area. A description of particular sites is presented with a species list (vascular plants) and details of its conservation status.

4) Valuation

The sites are valued with regard to Annex I of the Habitats Directive and the National Road Authority's *Guidelines for Assessment of Ecological Impacts of National Road Schemes* (DG Environment, 2003)(NRA, 2006).

5) Recommendations

It is current best practice to design plans and projects that will result in a net enhancement of ecological resources, rather than merely minimising negative impacts. Such an approach can yield long-term community benefits with respect to sustainable development, maintenance of ecosystem services and general enrichment of quality of life in an area. This report will therefore set out avoidance and mitigation measures where impacts are likely as a result of this LAP, but in addition will suggest potential enhancement measures.

5.1.2 Consultation

The following stakeholders were consulted prior to and, in some cases, subsequent to carrying out the field survey:

- NPWS Development Application Unit
- Southern Regional Fisheries Board
- Dearbhla Ledwidge, Kilkenny Heritage Officer
- Clare Murphy, landscape architect with Kilkenny county council
- Michael Power, Coillte
- Pat Durkin, BirdWatch Ireland
- Roger Goodwillie, Botanical Survey of the British Isles (BSBI)
- Simon Walton, Kilkenny county council (Suir Catchment Flood Risk Assessment and Management Study)
- Marie Power, Irish Wildlife Trust. Waterford branch.
- Miriam Cass, Irish Wildlife Trust. Waterford branch.

No response was received from the Southern Regional Fisheries Board.

In some cases important biodiversity areas were highlighted, particularly woodlands at Rocklands, Rathculliheen and at Christdom. Tree Protection Orders (TPOs) exist for certain groups of trees, including those at Rocklands. There was also emphasis placed on the

importance of hedgerows, particularly those that form townland boundaries, as they may be centuries old.

5.1.3 Field Survey Constraints

Field survey was carried out over a period of four days in late May 2008, this is recognised as well within the optimal season for vegetation survey (NRA, 2006).

Because of the short time available, detailed ecological surveys of the habitats were not possible, and so the species lists presented cannot be seen as exhaustive.

Habitat identification was carried out on the basis of communities of vascular plants, as per the Guide to Habitats in Ireland (Fossitt, 2000). The group of vascular plants includes trees, flowers, grasses and ferns, but excludes mosses, liverworts and lichens.

In general habitats were easily accessible although in a small number of cases this was not the case. This was due to health and safety concerns (especially in wet areas) and where there was no permission to cross private land.

Due to the length of hedgerow in the study area, it was not possible to survey each stretch individually. A representative sample was surveyed to determine species composition, and the remainder were mapped from the road, or from aerial photography.

5.1.4 Habitats of the Area

All land types represent a habitat of some description, even seemingly lifeless places such as buildings and paved surfaces can be home to organisms. Despite this a distinction can be made between artificial habitats that are of low biodiversity value, and other semi-natural habitats. Truly natural habitats are rare in Ireland since a long human presence has altered virtually the entire country. In order to simplify the habitat map, these artificial habitats have been excluded and this includes:

- Built and paved surfaces
- Intensive agricultural land, including pasture and arable crops
- Stands of plantation forests consisting of monocultures of alien¹ coniferous species, such as Sitka spruce.
- Ground that has been cleared for development including roads and housing estates
- Gardens. While gardens are potentially good for biodiversity, in general their reliance on fertilisers, pesticides, herbicides and alien species means they are hostile places for many species.

Of the remaining land uses, a number of semi-natural habitats are present in the Ferrybank-Belview area. These are categorised according to Fossitt and are as follows, with the appropriate habitat code in parenthesis:

- Hedgerows (WL1) and Treelines (WL2)
- Mixed Broadleaved Woodland (WD1)
- Oak-Ash-Hazel Woodland (WN2)
- Scattered Trees and Parkland (WD5)
- Riparian Woodland (WN5)
- Scrub (WS1)
- Depositing/Lowland Rivers (FW2)
- Reed and Large Sedge Swamps (FS1)
- Wet Grassland (GS4)
- Disturbed Ground (ED3)

¹ An alien species is one that has been introduced to Ireland through human activity

It is important to remember that despite the apparent ease of habitat classification, the reality is rather messier. Habitats frequently blend from one type into another and in certain cases, different habitats can form intimate mosaics with one another. In these cases the dominant habitat type is assigned and its association with other habitats is discussed. Full species lists for each habitat classification is given in [Appendix A](#) of this report. (See [Habitats Map](#)).

Habitats

This section gives general descriptions of each of the habitats encountered. Where references are made to specific areas, these are given as six digit Irish grid reference numbers, followed by an alphanumeric identification code which corresponds to a marker on the habitat map (See [Habitats Map](#)).

Hedgerows and Treelines

These habitat types are familiar landscape features in the east of Ireland and are especially represented where they act as field boundaries. A Treeline differs from a Hedgerow where the dominant feature is mature trees greater than five metres in height. Occasionally Treelines are planted alien species that line a road or a driveway, but in the Ferrybank-Belview area the majority of Treelines are historical hedgerows that have been allowed to 'escape'. This term refers to the fact that hedgerows were traditionally grown to form stock proof barriers around field perimeters. This requires a degree of regular maintenance to ensure dense, bushy growth at the base of the hedge. When maintenance ceases, trees are allowed to grow to full maturity and gaps develop at the base of the hedge (Hickie, 2004). Many of these Treelines are impressive in their structure and can contain specimen native trees, in particular **Oak** *Quercus sp.*, **Elm** *Ulmus glabra*, **Hawthorn** *Crataegus monogyna* and **Ash** *Fraxinus excelsior*. Well maintained hedgerows meanwhile only have occasional tall trees and these are relatively rare in this region, occurring along roadsides and in clusters as field boundaries.

Hedgerows and Treelines are immensely important ecological features. They define much of our intensively managed landscape and provide habitats for a wide range of traditionally woodland plants and animals. Their insects pollinate crops, they help regulate surface water run-off, and they provide valuable links, or ecological corridors, along which species can disperse. They 'knit' together the ecological hotspots, such as forests and wetlands, ensuring that these areas do not become isolated islands of nature in a sea of development. Older Hedgerows and Treelines will have **Badger** *Meles meles* setts while tall, mature trees will be home to roosting **Bats** and **Barn Owls** *Tyto alba*.

While some Hedgerows and Treelines will be more ecologically valuable than others, in terms of their age and species composition, all these linear woodlands have value. Treelines of historical townland boundaries will have a particular value both in cultural as well as ecological terms.

There was found to be 136 km of linear woodland in the study area, of which 109 km was Treeline and 27 km was Hedgerow. It was observed however, that these features are being removed particularly around housing developments where boundaries are being planted with alien species. They are therefore especially vulnerable to cumulative losses, where small stretches are deemed to be of low value and so are not replaced. While Hedgerows are generally replaceable where native stock can be replanted, a mature Treeline containing Oak is not, as a newly planted sapling can be expected to take in excess of 100 years to reach a similar level of maturity.

Mixed Broadleaved Woodland

A Treeline that consists of more than one line of trees, or is greater than four metres wide at the base, is considered to be a narrow strip of woodland. Truly native woodland is exceedingly rare in Ireland as the forest that once cloaked the country was felled for agriculture during historical times. Semi-native woodland is dominated by native species,

particularly Oak, Ash, Birch, Hazel, and Holly. This too is a rare habitat type as forests were planted with, or were invaded by non-native broad-leaved species such as Sycamore, Beech, Lime, and Horse chestnut. These forests are classified by Fossitt as 'Highly modified / non-native woodland'.

A total of 50 land parcels were surveyed to consist of this type of woodland, covering a total of nearly 56 hectares. This is a locally important habitat type which is known to hold a significant number of **Long-eared owls** *Asio otus* (P. Durkin, pers. comm.). In general, the structure of these forests is good, with a well formed shrub and field layer. In addition to their ecological value, a number of them are frequented by local people, adding an important amenity dimension. Older forests have a closed canopy, and this encourages a distinctive woodland flora, with **Bluebells** *Hyacinthoides non-scripta*, **Ramsons** *Allium ursinum* and **Wood sorrel** *Oxalis acetosella* being the most frequent. These can be seen in impressive displays at woodlands at S630123 (W1), S616123 (W2, Christendom), S610137 (W3) and S617140 (W4).

At a number of sites the alien invasive tree, **Cherry laurel** *Prunus laurocerasus* is present. This is a serious threat to a woodland as its evergreen leaves aggressively prevent all light reaching the forest floor. This prevents the formation of a ground flora thereby reducing biodiversity. It also drastically inhibits the regeneration of the forest as saplings of other tree species cannot compete for light and space. Where Cherry laurel has taken hold, the forest is a dark and barren place with few other species surviving in its shadow. Serious Cherry laurel infestations have taken place, or are under way at W1, S650136 (W5) and at S627125 (W6). Although it may take a long time, this invasive species will ultimately suffocate a woodland and so it is important to take corrective measures.

These forests are classified as non-native due to the high proportion of alien tree species, particularly **Beech** *Fagus sylvatica*, **Sycamore** *Acer pseudoplatanus* and **Horse chestnut** *Aesculus hippocastanum*, although they are also home to natives such as Oak, **Birch** *Betula sp.*, **Hazel** *Corylus avellana* and **Holly** *Ilex aquifolium*. Despite this they are very important habitats at the local level, providing resources for woodland specialists, and in many cases having an amenity value.

These forested areas are not only valuable for biodiversity but also enhance the local landscape. For this reason a number of tree protection orders (TPOs) have been made by Kilkenny County Council. These are located in the Christendom area and centred on the following Irish grid reference numbers:

- S617 123
- S617 125
- S622 125
- S622 122
- S620 121

There is a strong link between the biodiversity, amenity and landscape value of broad-leaved woodland areas such as these and consideration should be given to the expansion of the TPO network within the LAP boundary.

Oak-Ash-Hazel Woodland

Two sites were surveyed that were found to have an unusually low proportion of non-native tree species and this allows them to be classified as semi-natural forests under the Fossitt scheme. These are to be found at S593148 (W7) and at S609151 (W8). They both had well formed canopies, closed in places that allowed a rich woodland flora to develop. A small stream connects the two sites, and this wet feature adds diversity. Their status is enhanced by the fact the alien invasive, Cherry laurel, is absent. At W7 impressive carpets of Ramsons covered the forest floor and filled the air with the smell of garlic. Although non-native tree species were present, such as Beech and Sycamore, these were greatly outnumbered by tall

Oak and Ash. The shrub layer was made up of Holly, Hawthorn and Hazel and in the ground layer saplings of all these species pointed to the healthy state of the woodland.

These two patches of semi-native woodland are of very high conservation importance. Although not linked to a Habitats Directive listed category, Fossitt recognises that 'it is very limited in extent in Ireland and should be regarded as being of conservation importance'.

These habitats may be of importance to woodland fauna, although time did not allow a thorough investigation. Also, it was not possible to survey the southern portion of W7 due to the Waterford by-pass road construction project.

Scattered Trees and Parkland

This habitat is represented in the Waterford golf course and also at a small area at S605159 (P1). The golf course is predominantly composed of non-native trees with tightly mown lawns and is therefore of low biodiversity value. The site at P1 however is adjacent to the semi-natural woodland at W8 and has a high number of Oaks with some Holly and **Gorse** *Ulex europaeus*. The site has the appearance of a woodland that was cleared for grazing while leaving occasional mature trees standing. The ground layer is overwhelmingly grass such as **Yorkshire fog** *Holcus lanatus* and **Common Bent** *Agrostis capillaris*. Because of its proximity to a habitat of high conservation value, it does have potential if regeneration of the forest was ever to become a management priority.

Riparian Woodland

With the exception of the river Blackwater, parts of which are designated at SAC or NHA, there are six small streams that flow into the Suir within the study area. Each of these have areas of Riparian Woodland that between them cover an area of approximately 31 ha. This type of woodland is characterised by the presence of **Willow** *Salix sp.* species and is subjected to periodic inundation by the rivers' floodwaters. While other tree species are present, both native and non-native, these do not dominate. The ground can be wet in places and typical flora includes **Nettle** *Urtica dioica*, **Creeping buttercup** *Ranunculus repens* and **Meadowsweet** *Filipendula ulmaria*. It is classified as a semi-natural woodland type by Fossitt and its ecological importance is amplified by the important role it plays in regulating surface water run-off and preventing soil erosion.

Similar to the Mixed Broadleaved Woodland type, some areas of Riparian Woodland have been infested with Cherry laurel. These include sites at S650133 (RW1), and particularly at S635124 (RW2) – where some areas are completely devoid of any vegetation other than Cherry laurel. The invasive nature of this species has already been discussed and its presence in these woodland places their conservation status at risk.

Scrub

This habitat type is generally represented in the study area by monocultural stands of impenetrable Gorse. Other areas are dominated by low growing Willow, sometimes in combination with Gorse. While they are generally poor in terms of their floristic diversity, scrub provides valuable cover for a wide range of breeding bird species. The **Linnet** *Carduelis cannabina* is one of BirdWatch Ireland's Amber listed birds of conservation concern – indicating that it is of medium conservation concern – and was noted to be breeding in an area of scrub adjacent to the golf course at S599133 (S1) (Lynas et al., 2007). This area, while dominated by Gorse and Willow scrub, also contains areas of Disturbed Ground, Dense **Bracken** *Pteridium aquilinum* and Mixed Broadleaved Woodland. This adds to the diversity of the area and provides resources for a number of important species. The area of scrub at S642145 (S2) was noted for the presence of **Irish hare** *Lepus timidus hibernicus*, a species listed under Annex V of the EU's Habitats directive and as Internationally Important in the Red Data Book (Whilde, 1993). It is one of the few endemic Irish mammals and has gone through a significant decline in recent years (Reid et al., 2007). It is also the subject of a recent all-Ireland Species Action Plan (NPWS, 2005).

Scrub can occur on rocky ground with shallow soil and is a feature of abandoned agricultural land, as the vegetation progresses back to woodland. It is also to be found along the banks of the railway line. Its sometimes bland appearance can give the impression of 'wasteland', a term which implies low value. The presence of important species like the Linnet and the Irish hare demonstrates however, that they can be deceptively important.

Depositing/Lowland Rivers

The numerous streams that are tributaries to the Suir are crucial freshwater conduits for draining the surrounding land. They are not only valuable wildlife habitats but also provide important 'ecosystem services' such as water purification, sediment retention and flood water attenuation. While they are seemingly small, they are home to important species. Evidence of **Otter** *Lutra lutra* activity, in the form of spraint (droppings), was found along the most easterly stream in the study area, at S655147 (R1). The Otter is listed on Annex I of the Habitats directive and, like the Irish hare, is described as Internationally Important in the Red Data Book.

The retention of vegetation along riparian corridors is vital in protecting the river's ecology and ensuring they continue to perform their ecosystem services. Historical canalisation of streams into drainage ditches, as well as culverting, has served to damage this ecological balance and contribute to poor water quality. The EU's Water Framework directive has set a target of achieving 'good ecological status' of all water bodies by 2016 and in Kilkenny the South Eastern River Basin District will be implementing a 'programme of measures' in order to meet this goal. Planning for development should ensure that conflicts do not arise in meeting this challenge and this is best achieved by maintaining sufficient development-free buffer zones along riparian corridors.

Reed and Large Sedge Swamps

This is a distinctive, although impenetrable, habitat that is characterised by species poor stands of reeds and large sedges. Within the study area these species are predominantly **Common reed** *Phragmites australis*, **Bulrush** *Typha sp.*, and **Sea club-rush** *Scirpus maritimus* and are located at the mouths of tributaries where they enter the Suir. These wetland areas are important components in the water cycle, removing sediment and pollutants, and alleviating the impacts of flood by acting as a sponge.

Wet Grassland

One area of Wet Grassland was identified at S628148 (WG1). While containing elements of Reed and Large Sedge Swamps, as well as Treelines and small patches of woodland, this area is distinctive in its dominance of grasses, rushes and sedges with a good mix of herbaceous species such as **Ragged robin** *Lychnis flos-cuculi*, Meadowsweet, **Meadow buttercup** *Ranunculus acris*, **Purple loosestrife** *Lythrum salicaria*, **Marsh pennywort** *Hydrocotyle vulgaris* and **Cuckoo flower** *Cardamine pratensis*. Open water was not apparent and while species such as Common reed and Bulrush were present, they did not dominate. This wetland appears from OS maps to be the final drainage area of a stream running from the north.

This is an important habitat as it is unusual in the locality and contains an assemblage of species not found elsewhere. Like other wetlands described, it also performs the range of ecosystem services as previously mentioned.

Disturbed Ground

One area of predominantly Disturbed Ground was surveyed to the south east of the study area, adjacent to Belview port. Sadly, this area has all the characteristics of a wetland that has been in-filled with concrete rubble. As a result there is a mish-mash of microhabitat types and species assemblages. Disturbed areas are surprisingly species rich in their floral diversity and the wetter areas of this site support additional specialist flora, such as the **Water forget-me-not** *Myosotis scorpioides*. In general however the species are ruderal, common

plants that are widespread. As a result of the in-filling, the conservation value of this area is greatly reduced.

5.1.5 Biodiversity of LAP lands

National Parks and Wildlife Service (NPWS) maintain a mapping tool on their web site and this has highlighted the presence of a number of important species in the area. These are detailed in [Table 1](#).

Table 1: Species of conservation concern recorded from the LAP area

Species	Level of Protection	Habitat
Otter <i>Lutra lutra</i>	Habitats Directive Annex II Red Data Book (Internationally Important) ²	Rivers, streams, lakes, wetlands and coasts. ³
Opposite-leaved pondweed <i>Groenlandia densa</i>	Flora Protection Order, 1999 Red Data Book ⁴	Base-rich waters such as rivers, canals, ditches and ponds. Records are only pre-1970. ²
Meadow barley <i>Hordeum secalinum</i>		Meadows, pastures, roadsides, often in valley floodplains and showing a strong preference for sticky clay soils. In coastal areas it is frequently abundant in grazing marsh grasslands and on earthen sea walls. ⁵
Betony <i>Stachys officinalis</i>		Hedge banks, grassland, heaths, open woods and woodland rides and margins. Records are only pre-1970. ²
Tufted-salt marsh grass <i>Puccinellia fasciculata</i>		Bare places by the sea, in grazing marshes around cattle-poached pools and depressions, on earthen sea walls, vehicle tracks and the mud dredged from ditches. It also occurs rarely beside salt-treated roads inland. ²

Species

Specific faunal surveys were not undertaken as part of this study but some incidental records were made of species of conservation importance. These include the presence of Otter along water courses, Irish hare in scrubland, and Linnet, also in scrubland. [Table 2](#) details the mammals of conservation importance that have been recorded from the Ferrybank-Belview area.

² *Irish Red Data Book* (Whilde, 1993)

³ *The Atlas of European Mammals* (Mitchell-Jones et al., 1999)

⁴ *Irish Red Data Book* (Curtis & McGough, 1988)

⁵ *New Atlas of the British and Irish Flora* (Preston et al., 2002)

Table 2 – Mammals known from the area and for which there is suitable habitat (Mitchell-Jones et al., 1999)

Species	Level of Protection	Habitat
Otter <i>Lutra lutra</i>	Annex II & IV Habitats Directive; Wildlife (Amendment) Act, 2000	Rivers and wetlands
Brown long-eared bat <i>Plecotus auritus</i>		Woodland
Leisler's bat <i>Nyctalus leisleri</i>		Woodlands and buildings
Common pipistrelle <i>Pipistrellus pipistrellus</i>	Annex IV Habitats Directive; Wildlife (Amendment) Act, 2000	Farmland, woodland and urban areas
Daubenton's bat <i>Myotis daubentonii</i>		Woodlands and bridges associated with open water
Irish hare <i>Lepus timidus hibernicus</i>	Annex V Habitats Directive; Wildlife (Amendment) Act, 2000	A wide range of habitats
Hedgehog <i>Erinaceus europaeus</i>		Woodlands and hedgerows
Pygmy shrew <i>Sorex minutus</i>		Woodlands, heathland, and wetlands
Red squirrel <i>Sciurus vulgaris</i>	Wildlife (Amendment) Act, 2000	Woodlands
Irish stoat <i>Mustela erminea hibernica</i>		Wide range of habitats
Badger <i>Meles meles</i>		Farmland, woodland and urban areas

Incidental recordings of birds were made and include many typical countryside species. Of particular note are the following:

- Herons *Ardea cinerea* breeding in the wetland at Belview
- Breeding Grasshopper warbler *Locustella naevia* in the Grannyferry NHA and listed on BirdWatch Ireland's Amber list of birds of conservation concern (Lynas et al., 2007).
- Both Linnet *Carduelis cannabina* and Barn owl *Tyto alba* are known from the area (Durkin, P., pers. comm.) – the former Amber listed while the latter is Red listed by BirdWatch.
- Water rail *Rallus aquaticus* is recorded from the NHA and is Amber listed.

Amphibians were not noted on the sites but wetlands of all types provide habitat for the Common frog *Rana temporaria* and the Smooth newt *Triturus vulgaris*, both are protected under the Wildlife (Amendment) Act, 2000 while the frog is also protected under Annex V of the Habitats Directive.

A large number of invertebrate species are likely to be present at all semi-natural sites and areas of disturbed ground in particular are known to be rich in insect diversity. It is unlikely that protected species are present on the sites but this is more to do with the limited number of protected invertebrates in Ireland and a similarly poor level of data.

5.1.6 Biodiversity of designated nature conservation areas

One of the main targets from the Convention on Biological Diversity is to significantly slow down the rate of biodiversity loss on Earth. The main policy instrument for meeting this target has been the Habitats Directive of 1992. This requires member states to designate areas of their territory to preserve a representative sample of important or endangered habitats and species. These areas are known as Special Areas of Conservation (SACs). Unlike

traditional nature reserves or national parks, SACs are not 'fenced-off' from human activity and are frequently in private ownership.

NHAs are designated under national legislation and so do not fall under the Habitats Directive. The Kilkenny Draft County Development Plan 2008 – 2014 affords NHAs equal protection to SACs

There is little site-specific information available for the SAC and the NHA except what is available from the NPWS as 'site synopses' (from 2005 and 1994 respectively). Specific conservation aspects are listed in these reports and are detailed in [Tables 3 & 4](#) below. Since only a small part of the Lower River Suir SAC is within the boundary of the LAP, not all of the listed conservation aspects will be relevant. Therefore it has been possible to 'scope out' those aspects considered not applicable and where this has been possible it is indicated in [Table 3](#). The potential for significant impacts on conservation aspects is also highlighted.

The Grannyferry area

The Grannyferry area is worthy of special consideration since it is an area of particular ecological sensitivity. It is defined by the river Blackwater, a tributary of the Suir, and its associated wetlands. The Grannyferry NHA is located to the north while a terrestrial portion of the SAC is located to the south. Wetland areas such as this provide important ecosystem services including: water purification; flood alleviation; sediment stabilisation and prevention of erosion. This area however has been much fragmented as it is the focus of transport infrastructure between Waterford city and Dublin/Kilkenny. In addition many areas of reed bed have been in-filled with builders rubble, mostly illegally (J. Conroy, pers. comm.). Despite this, it retains important wetland habitats and species and even in-filled sites can harbour a diversity of flora and fauna. This is emphasised by the discovery of Bee orchid *Ophrys apifera* at one such site – a plant that is listed as rare in the Red Data List (Curtis & McGough, 1988). These sites should be retained as buffer zones and important ecological corridors between the SAC and the NHA.

Lower River Suir SAC

SACs are part of the EU's Natura 2000 network and are conservation sites of international importance. The maintenance of 'good ecological status' for the Lower River Suir SAC (site code: 2137) is dependant upon a number of factors that are outside the boundary of the site. These include preserving the connectivity between the site and the surrounding countryside, with hedgerows, treelines and river corridors of particular importance. Since the river is mostly an aquatic habitat, good water quality is essential for maintaining its populations of important species. Construction of a new wastewater treatment facility at Belview will minimise water pollution from direct, or point sources. However, discharges from non-point, or diffuse sources, are best treated through preserving the natural vegetation and morphology (i.e. the shape) of small streams. For this reason sites such as these in the Ferrybank-Belview area is intricately linked to the SAC.

Table 3 – Conservation aspects of the Lower River Suir SAC

Aspect	Level of Protection	Relevant ⁶	Likelihood of potential impacts ⁷
Alluvial wet woodland (code: 91E0)	Habitats Directive Annex I priority	No	None
Yew Woodland (code: 91J0)		No	None
Atlantic Salt Meadows (code: 1330)	Habitats Directive Annex I	Possible	Possible
Mediterranean Salt Meadows (code: 1410)		Possible	Possible
Old Oak Woodlands (code: 91A0)		No	None
Eutrophic Tall Herbs (code: 6430)	Habitats Directive Annex I	Possible	Possible
Sea Lamprey <i>Petromyzon marinus</i>	Habitats Directive Annex II	Yes	Unlikely
River Lamprey <i>Lampetra fluviatilis</i>		Yes	Unlikely
Brook Lamprey <i>Lampetra planeri</i>		Yes	Unlikely
Freshwater Pearl Mussel <i>Margaritifera margaritifera</i>		No	None
Freshwater Crayfish <i>Austropotamobium pallipes</i>		No	None
Twaite Shad <i>Alosa fallax fallax</i>		Yes	Unlikely
Atlantic Salmon <i>Salmo salar</i>		Yes	Unlikely
Otter <i>Lutra lutra</i>		Yes	Possible
Opposite-leaved pondweed <i>Groenlandia densa</i>		Flora Protection Order, 1999	No
Meadow Barley <i>Hordeum secalinum</i>	Yes		Possible
Daubenton's bat <i>Myotis daubentoni</i>	Habitats Directive Annex IV; Wildlife Act, 2000	Yes	Possible
Natterer's Bat <i>Myotis nattereri</i>		Yes	Possible
Pipistrelle <i>Pipistrellus pipistrellus</i>		Yes	Possible
Pine Marten <i>Martes martes</i>	Habitats Directive Annex V; Wildlife Act, 2000	No	None
Irish Hare <i>Lepus timidus hibernicus</i>		Yes	Possible
Common Frog <i>Rana temporaria</i>		Yes	Possible
Badger <i>Meles meles</i>	Wildlife Act, 2000	No	None

⁶ Relevance is interpreted as meaning the likely presence of the habitat/species in the study area and is taken from relevant literature sources

⁷ The likelihood of impact is based on the potential presence of habitats from aerial photography and presence of suitable habitats for different species

Aspect	Level of Protection	Relevant ⁸	Likelihood of potential impacts ⁹
Greenland White-fronted Goose <i>Anser albifrons flavirostris</i>	Birds Directive Annex I; Wildlife Act 2000	No	None
Golden Plover <i>Pluvialis apricaria</i>		Yes	Possible
Whooper Swan <i>Cygnus cygnus</i>		Yes	Possible
Kingfisher <i>Alcedo atthis</i>		Yes	Possible
Smelt <i>Osmerus eperlanus</i>	-	Yes	Unlikely

Table 4 – Conservation aspects of the Grannyferry NHA

Conservation aspect	Level of protection	Likelihood of potential impact
Meadow Barley <i>Hordeum secalinum</i>	Flora Protection Order, 1999	Possible
Strawberry clover <i>Trifolium maritimum</i>	-	Possible
Brookweed <i>Samolus valerandi</i>	-	Possible
Slender spike rush <i>Eleocharis uniglumis</i>	-	Possible
Water rail <i>Rallus aquaticus</i>	-	Possible
Sedge warbler <i>Acrocephalus schoenobaenus</i>	-	Possible
Reed bunting <i>Emberiza schoeniclus</i>	-	Possible

Of relevance to this study is the potential impact of the LAP on Habitats Directive listed habitats (Atlantic Salt Meadows, Mediterranean Salt Meadows and Eutrophic Tall Herbs) and species (Otter, Daubenton's bat, Natterer's bat, Pipistrelle, Irish hare and Common frog); the Flora Protection Order plant Meadow Barley; and Birds Directive listed species (Golden Plover, Whooper Swan and Kingfisher).

5.1.7 Valuation of Ecological Features

The National Roads Authority recently published *Guidelines for Assessment of Ecological Impacts of National Road Schemes* (NRA, 2006), Appendix 3 of which sets out a matrix for evaluating the importance of individual sites. Because of the broad-brush nature of this survey many features may exist, particularly important fauna species that have not been recorded. Nevertheless, the habitat types that were surveyed can be applied to this matrix. This is shown in [Table 5](#).

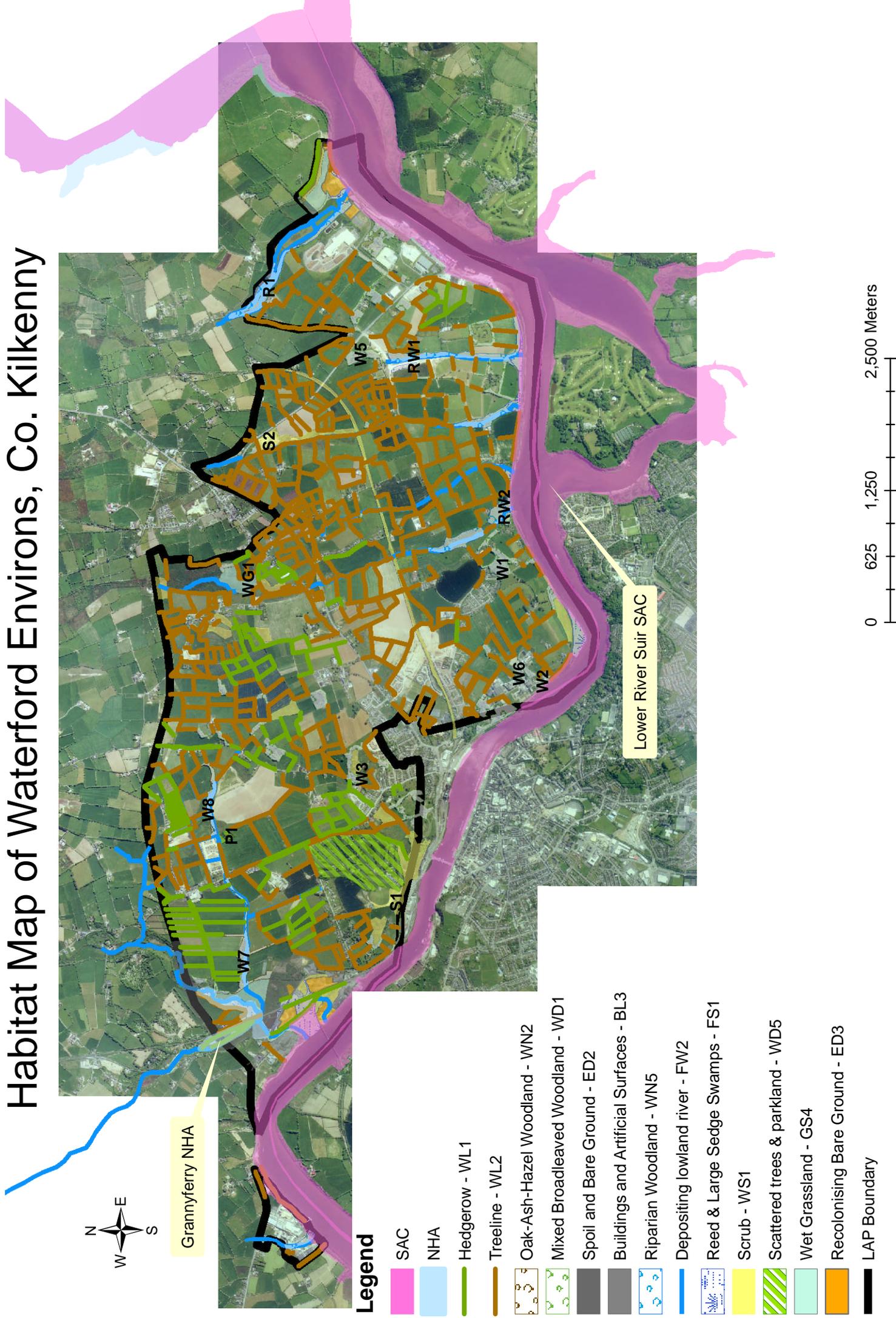
⁸ Relevance is interpreted as meaning the likely presence of the habitat/species in the study area and is taken from relevant literature sources

⁹ The likelihood of impact is based on the potential presence of habitats from aerial photography and presence of suitable habitats for different species

Table 5 Site evaluations based on the NRA's guidance

Habitat	Rating	Criteria
Any area within the SAC	A – Internationally important	Sites designated as SAC under the EU's Habitats Directive
Any area within the NHA	B – Nationally important	Sites designated as NHA
FW2 – Depositing/lowland river	C – High value, locally important	Important for maintaining wildlife corridors and water quality associated with the SAC/NHA. Also containing important species (Otter, possibly Common frog & Smooth newt)
FS2 – Reed and large sedge swamps		
GS4 – Wet grassland (Grannyferry)		
WN5 – Riparian woodland		
WD1 – Mixed broad-leaved woodland	C – High value, locally important	Sites containing semi-natural habitat types with high biodiversity in a local context.
WN2 – Oak-Ash-Hazel woodland		
WL2 - Treelines		
BL3 – Buildings and artificial surfaces	Potentially C – High Value, locally important (derelict buildings)	Sites containing resident or regularly occurring species protected under Annex IV of the Habitats Directive and the Wildlife (Amendment) Act, 2000. In this case, bats.
ED3 – Recolonising bare ground	D – Moderate value, locally important	Sites containing some semi-natural habitat or locally important for wildlife. The wet grassland in this case is species poor. Sites may also contain protected species such (Irish hare, Barn owl)
WS1 - Scrub		
GS4 – Wet grassland (Belview)		
WL1 - Hedgerow		
ED2 – Spoil and bare ground	E – Low value	Artificial or highly modified habitats with low species diversity

Habitat Map of Waterford Environs, Co. Kilkenny



Grannyferry NHA

Lower River Suir SAC

Legend

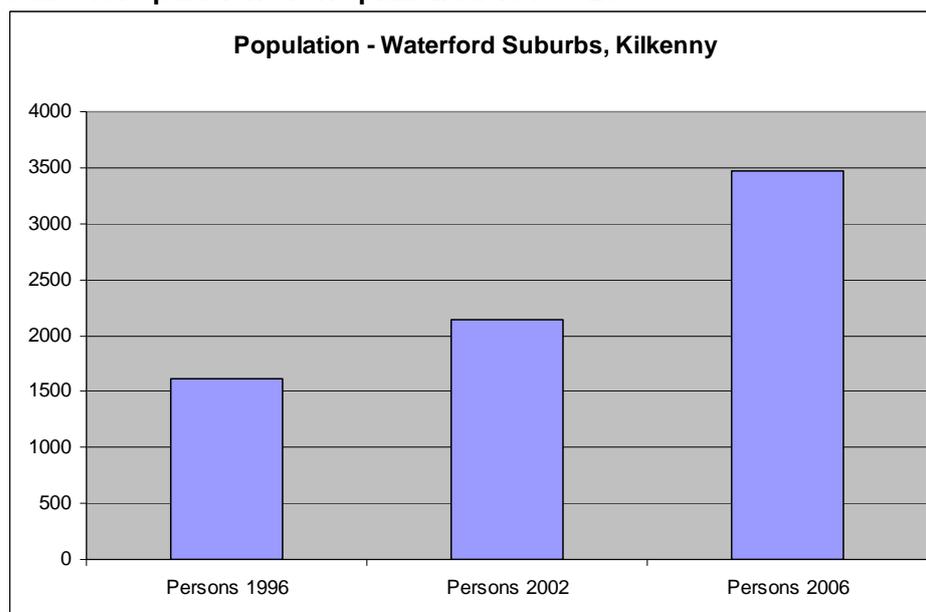
- SAC
- NHA
- Hedgerow - WL1
- Treeline - WL2
- Oak-Ash-Hazel Woodland - WN2
- Mixed Broadleaved Woodland - WD1
- Spoil and Bare Ground - ED2
- Buildings and Artificial Surfaces - BL3
- Riparian Woodland - WN5
- Depositing lowland river - FW2
- Reed & Large Sedge Swamps - FS1
- Scrub - WS1
- Scattered trees & parkland - WD5
- Wet Grassland - GS4
- Recolonising Bare Ground - ED3
- LAP Boundary

5.2 Population and Human Health

5.2.1 Population Changes

Census 2006 results for the Waterford Suburbs in County Kilkenny show that there was a phenomenal 61.8% population increase between 2002 and 2006. This represents an increase of 1,323 persons to 3,465 persons. In comparison, Census results for the same period show a 9% increase in the population of County Kilkenny. It is therefore evident that the plan area is one of the fastest growing areas in County Kilkenny.

Chart 1: Population of the plan area 1996 - 2006



Source: Central Statistics Office

The extraordinary population growth in the plan area between 2002 and 2006 is in stark contrast to the population increase in Waterford City for the same period, which was only 2.6%. The lack of suitable residential land in Waterford City has meant that the majority of recent housing developments have occurred in the Ferrybank-Belview area. Consequently, the population structure of the plan area is quite dynamic, featuring a high proportion of young people.

5.2.2 Current Population Structure

In order to achieve a more accurate picture of the population of the Ferrybank-Belview area, the area was broken down into the constituent townlands and then compared to the Electoral District information gathered in the census. The Ferrybank-Belview area forms part of three Electoral Divisions namely:

- ED101 Dunkitt (comprising the townlands of Ballynamona, Newtown, Mullinabro, Cloone and Killaspy).
- ED 106 Kilculliheen (comprising the townlands of Ballinvoher, Rathculliheen, Abbeylands, Christendom, Newrath, Ballyrobin, Rockshire and Belmont).
- ED 111 Rathpatrick (Gorteens and Kilmurry).

In terms of age cohorts, some 23% of the population recorded was in the 0-14 age category, 49% were in the 15-44 age cohort, 19% were in the 45-64 age cohort and 8% of the population was recorded as being over 65. The fact that nearly half of the population recorded in these Electoral Divisions falls into the 15-44 age cohort indicates that much of the population are in the family formation years, and are most likely first time buyers.

Owner occupiers represent the majority of households in the plan area; however there are a high proportion of rental households in the Electoral District of Kilculliheen, with a third of all households in this area being rental properties. The majority of recent housing development has occurred in Kilculliheen, principally in the areas of Abbeylands, Rathculliheen, Rockshire and Belmont.

5.2.3 Key Population Figures

Census 2006 population figures for the plan area relate only to the Waterford suburbs in County Kilkenny. As previously stated, the population of this area was recorded as being 3,465 persons for the period 2002 – 2006. This figure does not take into account people residing in outer suburban areas such as Cloone, Mullinabro and Gorteens. Therefore, with these areas included, the population of the plan area is estimated to be approximately 3,995 persons

5.2.4 Land Use Requirements

To achieve the critical mass that Waterford City requires to function as an effective Gateway, it is important that lands are made available for residential and industrial development in the Ferrybank-Belview area. The projected population increases advocated by the PLUTS should be easily facilitated in the plan area; however it is crucial that over-zoning does not occur. In this context, it is important that the population capacity of both the North Quays and the village of Slieverue (located to the south of the plan area) be taken into account.

It is therefore apparent that the zoning strategy for the Ferrybank-Belview area must be formulated in a balanced and sustainable manner. Accordingly, the LAP will be implemented in a 'plan-monitor-manage' approach, ensuring that adjustments to land use zoning, if needed, can occur in the future.

5.2.5 Future Population Potential

The pLAP proposes to zone 102 hectares of land for residential development. The breakdown is:

C1	Urban Village	40-50+ units per hectare / 16-20+ per acre (Maximum 10% of the land area to be allowed for residential needs)
C2	Commercial/Mixed Use	40-50+ units per hectare / 16-20+ per acre (Maximum 50% of the land area to be allowed for residential needs with the exception of Newrath where a maximum of 25% of the land area shall be given over to housing).
R3	Residential Medium	30-40 units per hectare / 12-16 per acre
R2	Residential Low to Medium	20-30 units per hectare / 8-12 per acre
R1	Residential Low Density	15-20 per hectare / 6-8 per acre
R0	Residential Arcadian	1-5 per hectare / 0.4-2 per acre

5.3 Traffic Demands

In terms of transport and movement, the area's most important defining factor is its proximity to Waterford City. Four national road corridors converge at Waterford City, three of which run through the plan area. This has a significant influence on transport movement within the plan area, meaning that it suffers from heavy volumes of traffic at peak times and is consequently an unsafe environment for pedestrians and cyclists.

However, the Waterford City N25 bypass is due to be finished by 2010. It is imperative that the potential offered by the new bypass, in terms of traffic calming, is fully realised. The pLAP seeks to introduce a number of transport objectives that would enable the much-needed rejuvenation of the area leading from the Belmont roundabout to the Ferrybank-Abbeylands Shopping Centre. In order for this area to become a successful urban centre, local traffic travelling through this area would need to be traffic calmed. Hence, the pLAP proposes the implementation of a number of additional routes, which would serve to increase interconnectivity between existing and proposed residential areas. An additional bridge crossing over the River Suir is proposed as part of the pLAP, the implementation of which would serve to enhance connectivity between the plan area and Waterford City.

5.3.1 Public Transport

A private bus operator links Ferrybank-Abbeylands to Waterford City and runs on average once an hour with no set stops (no Sunday service). The plan area is also served by the Ring-a-Link bus service, which receives funding from various bodies including the Rural Transport Initiative. In terms of national and inter-regional services from Waterford City, Bus Eireann, as well as a number of private companies, operates routes. While Waterford City has an adequate amount of bus services, the plan area itself would benefit from an increased number of services.

5.3.2 Green Route

Green Routes are roads which include dedicated or shared facilities for buses and cyclists and improved pedestrian facilities. Waterford City Council has identified two Green Route Corridors linking the suburbs to Waterford City Centre. One of these routes is within the plan area following the N25 Corridor: from Belmont to Ballinaneesagh, via Ferrybank, the Quay, Parnell St. and the Cork Road.

The principle aims of Green Routes are to shorten journey times and improve the reliability of bus services by providing:

- Bus lanes
- New and improved pedestrian crossings
- Better facilities for cyclists
- Shorter journey times for emergency vehicles and taxis

The Green Route scheme also involves the creation of Park and Ride facilities on the N25. The pLAP proposes the following areas as suitable locations for Park and Ride facilities:

- (1) On the N25 site near Milepost
- (2) Near the N29/N25 Junction

5.3.3 Rail

The plan area contains three railway lines, the main Dublin line, the Waterford to New Ross line, which is currently disused and the Limerick to Rosslare Europort line, which is still in use, but does not operate on a frequent basis. The most direct route to Dublin from Waterford is via Kilkenny, which runs up to 6 times a day. There are a number of inter-regional routes, such as to Limerick and Cork.

5.3.4 Data Deficiencies

A specific traffic management study for this area has not been carried out. This situation should be investigated especially when the by-pass becomes operational to assess definite impacts.

5.4 Soils

The subject lands are largely greenfield and have not been developed. The Geological Survey of Ireland (GSI) provides information on bedrock and subsoil. With regard to bedrock, the Ferrybank-Belview area is located in an area of lower-middle Ordovician slate, sandstone, greywacke, conglomerate. It is not envisaged that the pLAP will have any significant impact on the lands in question. Any zoning that may take place will affect mainly soil that is favourable to agriculture/horticulture but not to a significant degree.

5.5 Water

The main watercourses are the River Suir and its tributary, the Blackwater. The Lower Suir River is a candidate Special Area of Conservation. Smartcastle Stream, which runs through the townland of Mullinabro, is one of the most significant streams in the area. These watercourses represent an important environmental resource in the Ferrybank-Belview area. However, a recent report found a slight deterioration in the quality of water in the Blackwater River (2005: Environmental Protection Agency River Water Quality Report). The same report found that the River Suir exhibited signs of slight to moderate pollution.

The potential of these watercourses to enhance the quality of life of residents in the area should not be underestimated. The LAP proposes the protection of river water quality throughout the plan area. An important objective in this respect is the integration of stream corridors into broader areas of open space which can accommodate storm water attenuation ponds in accordance with Sustainable Urban Drainage Systems – SUDS.

The Water Framework Directive (WFD) 2000/60/EC 'establishes a framework for community action in the field of water policy' and was transposed into Irish Law in 2003. The Directive aims at maintaining and improving the aquatic environment in the European Community. The overall objective of the Directive is to prevent deterioration in the status of any waters and achieve at least 'good status' by 2015. The South Eastern River Basin District (SERBD) is one of eight river basin districts established in Ireland arising out of the legal requirements of the Water Framework Directive. The SERBD includes the Waterford Ferrybank-Belview LAP Area.

5.6 Surface Water Drainage

Tests carried out by RPS Consulting Engineers on the quality of raw surface water from the Pollonassa and Blackwater as a source of potable water have indicated that in general the raw water quality is good.

Drainage systems in the area currently serve the existing residential neighbourhoods. The gradients fall naturally towards the River Suir in these residential areas, so there are no major problems with drainage.

There are no flooding problems in the area except in the Newrath area adjacent to the River Suir, which suffers from tidal flooding and occasionally leads to flooding on the N9. This road will eventually become a local access road when the new Waterford City N25 by-pass is opened. The pLAP seeks to protect all stream and river corridors from development, with opportunities for storm water attenuation ponds in the proposed areas of open space, so as to ensure the water quality of rivers and streams is maintained.

Stormwater retention facilities, such as attenuation ponds, store water which is in excess of the capacity available in downstream channels until storm flows have abated. The provision of such facilities enables an economical and environmental approach to stormwater control. The provision of such ponds provides enormous environmental benefits in terms of protecting

the SAC status of the River Suir by filtering potential pollutants that may be included in water runoff.

5.7 Wastewater Treatment

The new Urban Wastewater Treatment Plant (WWTP) being provided by Waterford City Council (WCC) at Gorteens will have a PE of 190,600, with two thirds of that capacity to be reserved for industry and commercial. There will be a substantial PE for the IDA site at Belview, with a capacity of 65,000 PE set aside.

The current system in the area is at capacity and Kilkenny County Council have agreed with WCC to purchase 11,500 PE capacity at Belview, with the option of acquiring a further 8,500 capacity if needed. Of that 11,500 PE, some 1680 is set aside for commercial use, leaving 9,820 for residential needs. It is anticipated that further capacity will be required in the future. A combination of gravity and pumping stations will be used to link up with new wastewater treatment centre. Belview Port has its own treatment plant but will acquire capacity at the treatment works operated by WCC. Many households in the area possess their own septic tank.

5.8 Water Supply

There is presently no spare potable water capacity in the plan area. However, the Council is currently working on a scheme which will see the development of additional supplies. It is likely to be approximately two years before there is full capacity for the area. When full capacity is achieved, the network will serve a Population Equivalent (PE) of 20,000 -30,000, and a further 2,000-3,000 persons at Slieverue. Some 2 million gallons of water will be dispensed on a daily basis in order to meet both residential and industrial demand.

The current water supply forms part of the Regional Water Supply Scheme which is sourced from Mullinavat. Presently there are plans to augment water provision from the Mooncoin scheme by pumping water from the Blackwater up to Mullinavat. A water reservoir located at Mount Sion (Killaspy) services the existing area. Belview Port is presently not serviced by a public water supply; water is extracted from wells in the area. Similarly many individual houses in the area rely on wells for their water provision.

New water sources are currently being examined including the abstraction of surface water from the rivers Blackwater, Barrow, Suir, Nore and Suir tributaries (Lingaun, Clodiagh, Dawn and Whelan's Bridge rivers). It is envisaged that surface water will provide for the majority of future water needs. Abstraction of water from the river Blackwater and Lough Cullin is likely, with the raw water being pumped via the Blackwater pump-house to the Clonassy plant at Mullinavat for treatment. Groundwater sources are being actively explored with the extraction of water from wells around the Kilmacow and Mooncoin areas being considered. The water from these wells would be pumped to a treatment works site at Cloone, and subsequently to water reservoirs at Mount Sion and Killaspy. Belview Port would be supplied directly from the Killaspy reservoir. Water from groundwater schemes such as the Waterford Port Scheme and the South Kilkenny Regional Schemes are also being considered.

5.9 Air and Climatic Factors

It is known that fossil fuels have a substantial impact on air quality, contributing enormously to greenhouse gases. However, Fossil fuels are used on a daily basis in transport and in homes/businesses etc. Transport and air quality are therefore interlinked and in order to improve air quality, the mode of transports used in the plan area need to be considered. Reducing the amount of individual car trips made by car, and choosing other methods of travel such as public transport, cycling and walking, would result in air quality being improved.

The National Climate Change Strategy 2007-2012 states that reducing greenhouse gas emissions will benefit air quality. The role of the Council, along with the Environmental Protection Agency is to protect, enhance and control air and noise pollution, and ensure provision of the highest standards. A number of EU and Irish Directives/Acts are in place to help regulate air quality including the Air Framework Directive 1996 (was due for revision in 2007), Air Pollution Act, 1987, Air Quality Standards Regulations 2002 and Ozone in Ambient Regulations, 2004.

There is no air quality monitoring carried out in the plan area at present, however the EPA constantly monitor air quality in Waterford City. The current air quality recorded in Waterford City by the EPA is **'good'**. Monitoring commenced at The Mall in the city centre on 12 January 2007 and was completed on the 18th February 2008. Levels of Nitrogen Dioxide, Sulphur Dioxide, Particulate Matter (PM10), Benzene, and metals were assessed.

5.10 Material Assets

Material assets are taken to be infrastructure and buildings, transport infrastructure and utilities. Other material assets include natural resources covered in soils, landscape, and water. The existing material assets will be utilised, upgraded, and protected where applicable, in the future development of the area.

Of note within the pLAP the development of a **Sustainable Energy Zone (SEZ)** in the C2: Commercial and Mixed Use Zone at Christendom is proposed. This SEZ would be based on the lines of the Dundalk SEZ and would include a number of stakeholders such as Sustainable Energy Ireland, Kilkenny County Council, WIT, ESB, IDA etc.

The Dundalk project titled 'Dundalk 2020' initially focuses on developing a four square kilometre sustainable energy zone in the town. The project goal is to demonstrate how all sectors can work together to significantly reduce their impact on the environment. Specific targets are to be achieved by 2010, including the commitment to supply 20% of heat and electricity from renewable sources and improving energy efficiency in designated buildings by 40%. The Dundalk SEZ provides an important template for the Ferrybank-Belview area in terms of sustainable energy practices. Many features of this SEZ could be adopted in the plan area, and include:

- Renewable energy street lighting
- Biomass (wood chip) fired district heating scheme
- Domestic electricity meters to help householders control electricity usage
- Refurbishment of buildings to a high standard of energy efficiency
- Training programmes with Sustainable Energy Ireland

5.11 Cultural Heritage including Architectural and Archaeological Heritage

The subject lands comprise of both built and archaeological heritage.

5.11.1 Built Heritage

13 structures are listed within the County Kilkenny Record of Protected Structures (RPS), in accordance with the provisions of Section 51 of the Planning and Development Act, 2000 – 2006.

Table 6: Structures included the 2008 County Kilkenny Development Plan Record of Protected Structures (RPS)

Built Heritage Map ID No.	Structure	Location	RPS Number
1	Belview House	Gorteens	C480
2	Prospect House	Larkfield	C481
3	Glass House	Gorteens	C483
4	Springfield House	Gorteens	C482
5	Pair of watchtowers	Ferrybank	C456
6	Rockshire House	Rockshire	C374
7	Kilmurry Castle	Kilmurry	C435
8	Grannagh Bridge	Grannagh	D154
9	Grannagh Railway	Grannagh	D11
10	Grain Mill	Gorteens	D136
11	Outbuilding	Mullinabro	C370
12	Rockland House	Christendom	C473
13	Grannagh Castle	Grannagh	C432

Where a National Inventory of Architectural Heritage (NIAH) survey has been carried out, those structures which have been given a rating of international, national or regional importance in the survey will be recommended for inclusion in the RPS by the Minister for the Environment, Heritage and Local Government. In this context, 3 structures are included in the NIAH for County Kilkenny which are not currently on the RPS (See Map 7, Built Heritage).

Table 7: Structures included in the NIAH

Built Heritage Map ID No.	Structure	Location	NIAH Referece	Rating
14	Turret	Mullinabro	12404315	Regional
15	Worker's House	Newrath	12404323	Regional
16	Thatched Cottage	Grannagh	12404309	Regional

5.11.2 Archaeological Heritage

The Ferrybank-Belview area contains many sites of archaeological interest. There is one national monument in the plan area - Grannagh castle (KK043-034001), a medieval castle dating from c. 1450. Two of the most noteworthy recorded monuments in the plan area are the remains of castles at Gorteens (SMR KK047-001) and at Kilmurry (SMR KK046-028). Many other significant archaeological features are apparent in the form of ecclesiastical remains, fulacht fia, gibbets, standing stones, holy wells and graveyards. Some of these features occur as monuments, while others are the sites of monuments (See Map 4, Environmental Parameters).

A programme of archaeological excavations (2003 – 2005) was carried out within the plan area as part of the N25 bypass scheme. Amongst the most significant findings were a Neolithic stone axehead and arrowhead which were unearthed during excavations at Nerwrath. The Council will ensure that such artifacts are preserved and protected for future generations.

5.12 Landscape Appraisal

The Suir Valley has been identified within the *Landscape Appraisal of County Kilkenny* as a *Principal Landscape Character Area*. The valley moves in a west to north-east direction, parallel with the Waterford – Kilkenny boundary. Although noted as a special landscape area it was identified during consultation that the *'general tendency was to allow development*

where it already exists, and therefore..... the Kilkenny/Waterford border was perceived as appropriate for the establishment of future developments. This area can support new development, as it is less likely to be conspicuous in the context of existing development in the landscape. River valley areas represent potentially vulnerable linear landscape features, as they are often highly distinctive in the context of the general landscape. However, as stated in the *Landscape Appraisal of County Kilkenny* landscape sensitivities are often very localised or site-specific within this unit. A number of policies within the landscape appraisal are relevant to the Kilkenny Waterford environs area namely:

- Direct new development whenever possible towards the vicinity of existing structures and mature vegetation.
- Ensure that development will not detract from scenic vistas, especially from bridges, as identified in the development plan, and visible from relevant scenic routes and settlements.
- Continue to permit development that can utilise existing structures, settlement areas and infrastructure, whilst taking account of the visual absorption opportunities provided by existing topography and vegetation.
- Control development that will adversely affect distinctive linear sections of river valleys, especially open floodplains, when viewed from relevant scenic routes and settlements.

Due to its riverside location and dramatic topography, the area has a distinct environmental character. In the west of the plan area, the land rises sharply upwards, reaching a height of 80m above sea level along the Rockshire Hill ridgeline. In contrast to this, the eastern portion of the plan area features undulating, low lying land which runs alongside the river corridor. This area of land gradually rises upward to reach a height of 40-50m above sea level, forming an important scenic feature in the landscape.

Given the close proximity of this area to Waterford City, a significant portion of the environment is suburban in character, particularly around Ferrybank and Abbeylands. However, much of the plan area is rural in character, featuring large tracts of gently sloping agricultural land lined with hedgerows and mature trees. These trees perform a valuable function by assisting the integration of housing developments into the landscape, particularly in hillside locations.

6.0 A “do-nothing” Scenario

Under the do-nothing scenario, development within the Plan area would be market led and would occur in a piecemeal and haphazard manner, with potentially negative impacts on the Suir River. Such a piecemeal approach could:

- impact negatively on the visual amenities of the area,
- result in serious traffic congestion and disruption to existing residents,
- result in increased rate and volume of run-off leading to deterioration of water quality,
- result in a lack of provision of local services (including retail), schools, public open space/recreational facilities etc provided in tandem with residential development.

7.0 Key Environmental Issues

From an analysis of the existing baseline in the context of the proposed development, the following environmental parameters are considered to be of significance.

7.1 Biodiversity and Environmental Quality of the Estuaries

7.1.1 *Likely impacts on the SAC/NHA*

There will be no direct loss of habitat within either the SAC or the NHA as a result of the LAP. The screening report for the Appropriate Assessment determined that current projects would see a net improvement of water quality in the river Suir and so this has been discounted as a potential impact of the LAP.

Potential indirect impacts may occur through the loss of adjacent habitats, disruption of hydrological flow, decrease in population of key species (otter, bats, barn owl, plus species listed in tables 1 and 2 that were not recorded during the site survey). An attempt will be made to quantify these indirect impacts and determine their significance.

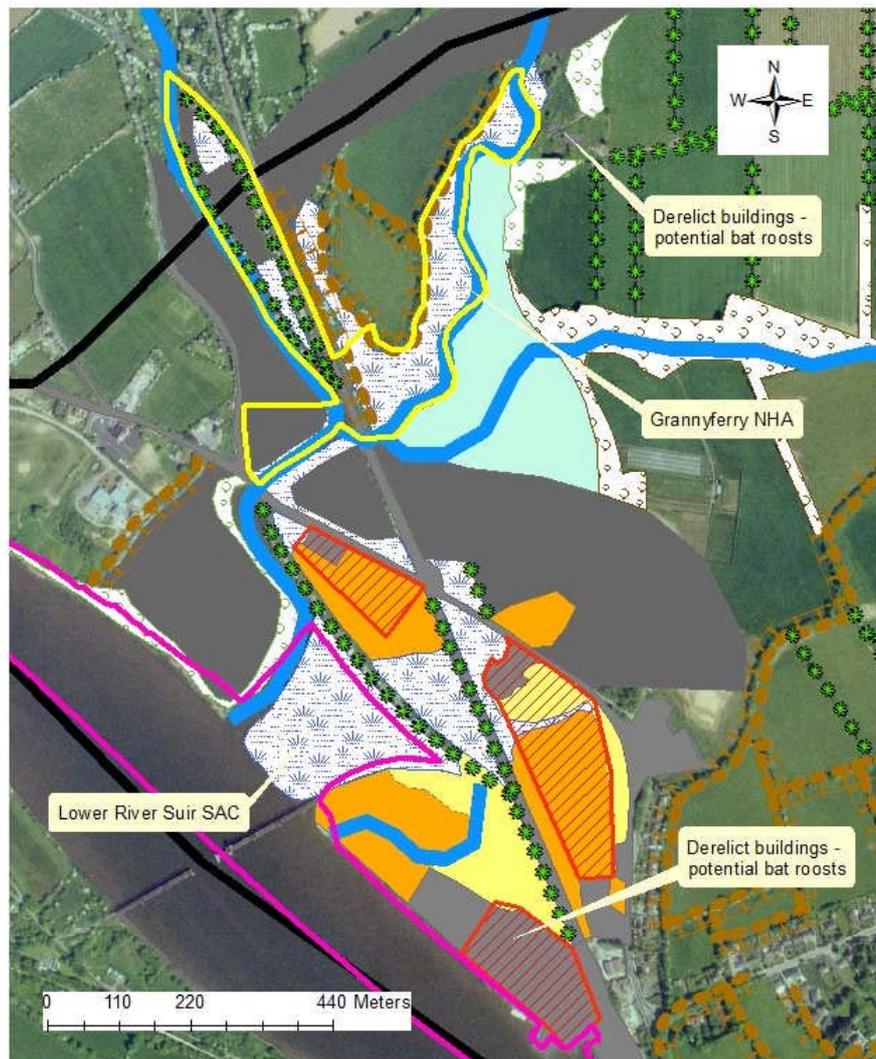
There is also an indirect impact from zoning areas of conservation value as 'passive open space'. This does not adequately communicate the importance or function of these sites and may lead to ambiguity, particularly where planning applications for amenity are concerned.

Loss of ecosystem function

The Blackwater is a tributary of the river Suir whose lower reaches are tidal and consists of reed swamp, marshes and wet fields with a salt influence (NPWS, 1994). It is a wetland area that contains the Grannyferry NHA to the north and a portion of the Lower River Suir SAC to the south. The area in between has no conservation designation but is clearly a part of the overall habitat. Some development has already occurred around the edges and both the main Dublin-Waterford road and railway line cut through it. The LAP proposes zoning for 'RP: Retail Park/Warehousing' that will further reduce this wetland habitat. It is important to appreciate that as a wetland, its functioning is dependant on maintaining a hydrological balance and any further built development will disrupt this, and may lead to a loss of adjacent habitats. Wetlands are important not only for the specialised species inhabiting them, but also in acting as a 'sponge' in moderating floodwaters, and removing pollutants – thereby maintaining water quality in rivers and streams. The undesignated land between the SAC and NHA also acts as a 'wildlife corridor' linking the two and is therefore important in allowing for the movement of species and maintaining the health of populations. In this instance the SAC and NHA can not be seen in isolation as activities in the surrounding land can directly impact upon their conservation status. This area is shown in [Figure 1](#).

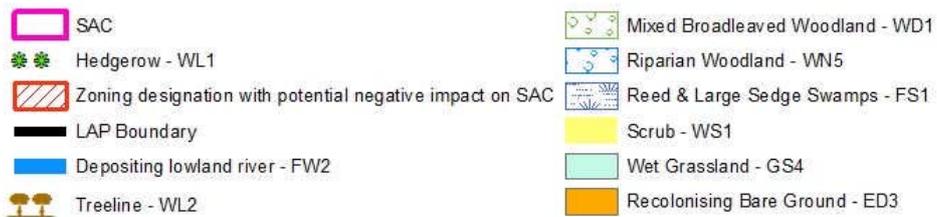
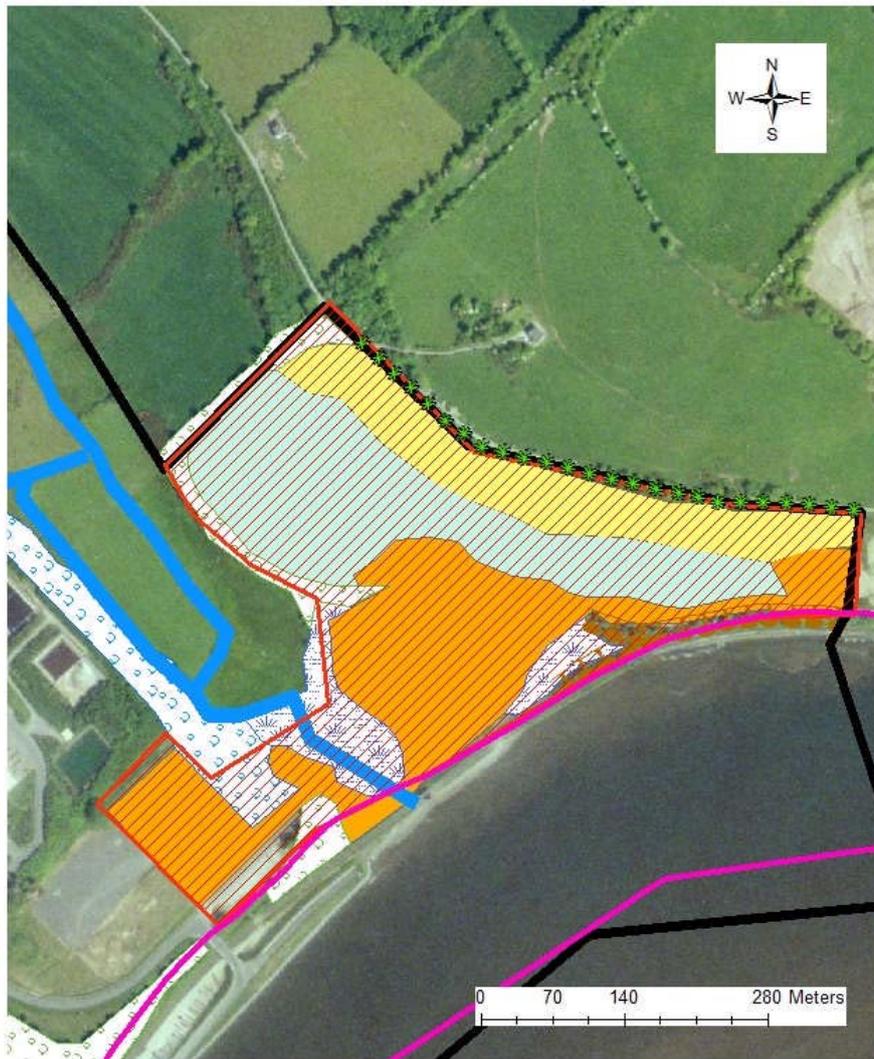
An old mill in the Grannagh area and adjacent to the SAC and NHA, near the banks of the Suir, is zoned for redevelopment as 'C3: Commercial'. It is reasonable to assume that a building of this nature has been colonised by bats and could potentially be used as either a maternity roost or for hibernation in winter. All bats are protected under Annex IV of the Habitats Directive and the Wildlife (Amendment) Act, 2000. While not within either the SAC or the NHA, three types of bats have been listed as conservation aspects for the SAC by the NPWS (NPWS, 2005). This area is shown in [Figure 1](#).

Figure 1: Habitats of the Grannyferry Area



Another small tributary of the Suir enters the SAC to the north east of Belview port. While most of the river corridor has been zoned as 'POW: Passive Open Space', a significant portion of what appears from aerial photography to be a wetland, and the area directly around the mouth of the river are to be zoned as 'PFI: Development of Port Facilities and Industry'. The area is directly adjacent to the SAC without actually crossing the boundary. Nevertheless, this river and its wetland are intimately associated with the SAC in terms of maintaining water quality, flood alleviation and in acting as a 'wildlife corridor'. This is shown in [figure 2](#).

Figure 2: Habitats of the Belview Area



Water Quality in the River Suir

Changes in land use as proposed under the LAP can impact on water quality in three ways: ① through increased flows of treated or untreated domestic wastewater; ② increased abstraction for commercial, industrial and domestic use; and ③ the discharge of untreated surface water from paved surfaces. These activities all have the potential to increase pollutant concentrations in the river Suir and consequently impact negatively on the ecology of the system.

Other plans and projects for the Suir catchment are likely to result in additional, 'in combination' impacts. These include the LAPs that are currently, or have recently been prepared for other towns upstream of Waterford City including, Clonmel and Carrick-on-Suir,

both in county Tipperary. Extra development pressures in these towns as a result of their LAPs have the potential to further deteriorate water quality. However, a number of plans have the potential to improve water quality in the catchment and these include a project to expand capacity at the wastewater treatment works to be completed by 2008 and the Programme of Works by the South Eastern River Basin District Management Plan will be published in 2008. The former will not only accommodate predicted future population expansion but will also better treat existing discharges, while the latter is part of the implementation of the EU's Water Framework Directive which requires 'good ecological status' of all water bodies by 2016.

Potential impacts on the SAC/NHA sites as a whole

The principle impact is reduced ecosystem function, resulting in lower available resources for important species (Bats, Otter, Irish hare, Common frog, birds and plants) and changes in hydrology that may result in lower species populations and a reduction in habitat area. This impact will be seen in both the Grannagh and Belview areas as shown in [Figures 1 & 2](#).

The upgrading of the Waterford wastewater treatment plant, and the adoption of SUDS in the LAP, will improve the quality of water in the Suir estuary and thereby potentially improve the conservation status of aquatic species.

7.1.2 Impacts of the Ferrybank-Belview LAP on overall Biodiversity

Zoning for built development on green field sites including Residential and particularly in the Belview port area

Zoning for built development on green field sites has the clear potential for removing significant stretches of Treelines and Hedgerows. These are important ecological corridors and many in this area are particularly valuable due to their age and species composition. Many of these stretches would be evaluated under the NRA guidance as rating C – High value, locally important. Their removal for a project would therefore require mitigation measures. This type of habitat destruction is especially vulnerable to cumulative impacts as short stretches are taken here and there, an impact that can already be seen in the area. This is by far the greatest potential negative impact of the LAP on the ecological resources within its boundary.

Zoning for Development of Port Facility and Industry

The area to the east of Belview port (at the eastern extremity of the LAP boundary) has been zoned for Development of Port Facility and Industry. This area was once a wetland but has since been in-filled, thereby removing its biodiversity value. There is also an area of scrub on the embankment that is low ranking (D – moderate value, locally important) but is nevertheless an important habitat for breeding birds. A small remnant of the original wetland still exists and this may be further impacted by built development in the area.

Impacts on Woodlands

A number of woodlands were identified during this survey as having problems with invasion of Cherry laurel. In the absence of intervention, the advance of this species will destroy its host forest. Doing nothing can therefore result in a major deterioration of woodland quality in affected areas.

Impact of Japanese knotweed

Japanese knotweed was noted at two locations within the study area:

- On scrubland adjacent to the golf course at S602133
- On the roadside at S628142

Japanese knotweed is an alien invasive weed than can cause major economic and ecological damage. It is well known for its ability to grow up through concrete surfaces and can engulf whole areas.

Overall ecological impacts

Specifically, there are eight potential impacts from this Plan.

1. Loss of recolonising bare ground and scrub on two sites in the Grannyferry area (see figure 2). Potential further loss of connectivity between semi-natural habitats and permanent disruption of hydrological flow within the broader wetland area.
2. Loss of potential bat roosts at vacant Mill buildings in the Grannyferry area (see figure 2). Bats have been identified as a conservation aspect of the NHA.
3. Loss of habitats, including scrub, wet grassland, recolonising bare ground, mixed broad-leaved woodland, riparian woodland and reed and tall sedge swamp.
4. Loss of biodiversity and pollution of water courses through the construction of buildings in these areas.
5. Threat from development pressure through designation of conservation areas as 'passive open space'.
6. Removal of significant stretches of Treelines and Hedgerows.
7. Negative impact of the encroachment of the invasive Cherry Laurel species.
8. Negative impact of the encroachment of the invasive Japanese Knotweed species.

Overall, the following statements can be made:

- There is one potentially minor negative impact on the SAC in the Grannyferry area as a result of habitat loss.
- There is one potentially major negative impact on the NHA depending on the significance of the derelict factory buildings for bats.
- There is a potential for moderate negative impacts on the SAC in the Belview area as a result of habitat loss.
- There is a potential for minor negative impacts as a result of construction works in both the Grannyferry and Belview areas.
- There are potential indeterminate impacts on within the area though zoning important conservation areas as 'passive open space'.

7.2 Traffic Generation and Movement

The congested quality of the existing road network in the plan area contributes to the residents' dissatisfaction with their quality of life in the Ferrybank-Belview area. However, a number of strategic-level improvements to the transport infrastructure are underway. When complete, these improvements will alleviate traffic congestion in the area and enable greater emphasis to be placed on the public transport system. Improvements to existing routes are largely to consist of design measures to improve pedestrian friendliness, access and the overall quality of the public realm.

Strategically one new river crossing has been proposed, within the specific plan area, which would work in tangent with a second bridge crossing as proposed in the PLUTS strategy. The optimal location for such a crossing will need further detailed examination and a separate Environmental Impact Assessment (EIA) would need to be carried out to assess the environmental consequences and overall environmental feasibility.

Additional routes will also be needed in order to attain optimal circulation. The Ferrybank Relief Road is one such route proposed which will require a separate EIA.

The Plan's aim is to create a sustainable environment and although vehicular movements are likely to increase due to the proposed population increase the implementation of the plan should improve the overall circulation and movement patterns within the Ferrybank-Belview area. The transportation objectives propose increased public transport use and efficiency, cycling and pedestrian access and improvements and shorter journey times.

7.3 Surface Water

In accordance with the principles of SUDS, a more natural system of managing surface/storm water run-off is required from all new developments. Given the sensitivity of the River Suir and tributary waters it is imperative that the implementation of the plan does not increased levels of pollutant run-off and ensures that there is no reduction in the quality of the rivers and wetland areas.

7.4 Wastewater Treatment

The new wastewater treatment plant currently being built is to become operational this year. Further development is to be restricted until this treatment plant comes online. Septic tank use is also to be curtailed. The provision of efficient drainage systems with separate foul and surface water networks are to be required in all new developments and the necessary gravity and pumping stations are to be provided to service all zoned lands.

7.5 Archaeology

As stated previously the Ferrybank-Belview area contains many sites of archaeological interest. Future development of the LAP lands must ensure that features of archaeological potential are duly considered and protected where appropriate. Proposed developments that may, due to their size, location or nature, have implications on the archaeological heritage of the plan area, will be subject to an archaeological assessment. Such an assessment will ensure that the development is designed in a way as to avoid or minimise any potential effects on archaeological features. The Council shall consult with the National Monuments Service of the Department of the Environment, Heritage and Local Government (DOEHLG).

7.6 Architectural Heritage

There are a number of structures of architectural merit within the Ferrybank-Belview area. Planning applications that would impinge upon any historic structure are to be referred to the Architectural Heritage Advisory Unit of the DoEHLG, and where considered necessary on the advice of the DoEHLG, development is to be prevented that would inappropriately and irreplaceably damage any such structure or monument.

Architectural Heritage Impact Assessments are also to be prepared as part of any planning applications for the deletion of structures from the RPS and for the demolition of Protected Structures. Such assessments will also be required for more extensive and complex works such as major refurbishment projects.

7.7 Interrelationship between the above factors

The interaction and resultant impacts of the above key environmental factors is an important consideration when examining the existing environmental issues in the context of future development.

The main interactions can be seen in the following areas:

1. Landscape and biodiversity:
Development of the LAP lands will materially alter the landscape and in so doing will also impact on the biodiversity range. These two issues are considered as interdependent in the analysis of the future development strategy and any mitigation measures.
2. Surface water disposal and biodiversity:
The range of biodiversity is impacted upon by the altering of the existing landscape with development, and also in terms of the impacts relating to surface water quantity and quality as a result of development. The proposed development strategy will consider the interaction of these elements.

3. Human beings, noise, high quality residential environment and traffic:
Transport movement and the capacity of the network interrelates with urban design and the creation of quality urban environments, with pedestrian friendly networks and spaces to enable safe and enjoyable walking and cycling routes and to encourage the use of public transport above the private car. Interlinked with this is the impact which noise can have on both human beings and fauna, such as birds.

These are some of the primary interactions, which may occur in the development of the LAP lands. Such interactions are considered in the analysis of the appropriate development strategy options and also in the matrix assessment, where comments have been made on potential impacts.

8.0 SEA Objectives

The SEA carried out on the Kilkenny County Development Plan 2008 – 2014 identified a number of Strategic Environmental Objectives (SEO's), Indicators and Targets for the entire county. These SEO's should remain consistent for the LAP area in order to provide consistency throughout the county.

The following strategic environmental objectives identified in the County SEA are relevant to the area of the LAP. Additional environmental objectives, which are considered, appropriate in terms of site specific/ local objectives have also been identified.

Biodiversity, Flora and Fauna

County SEA:

- B1: To avoid loss of relevant habitats, geological features, species or their sustaining resources in designated ecological sites.
- B2: 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.
- B3: To sustain, enhance or where relevant to prevent the loss of, ecological networks or parts thereof which provide significant connectivity between areas of local biodiversity.

Local:

- B4: Improve people's quality of life based on high-quality residential, working and recreational environments and on sustainable travel patterns.

Population and Human Health

County SEA:

- HH1: To protect human health from hazards or nuisances arising from exposure to incompatible landuses.

Local:

- HH2: Minimise noise and emissions from traffic.

Soil and Water

County SEA:

- S1: Maximise the sustainable re-use of brownfield lands, and maximise the use of the existing built environment rather than developing greenfield lands where possible.
- W1: To maintain and improve, where possible, the quality of rivers.
- W2: To prevent pollution and contamination of ground water.
- W3: To maintain and improve, where possible, the quality of estuarine waters.
- W4: To serve new development with appropriate waste water treatment.

Local:

- W5: Conserve water through replacement/repair of water supply network where defective.

Air/Climatic Factors

County SEA:

- A1: To minimise increases in travel related emissions to air.

Local:

- A2: Reduce all forms of air pollution and provide an upgraded/improved public transport network.
- A3: Minimise emission of greenhouse gases to contribute to a reduction and avoidance of human-induced global climate change.

Material Assets

County SEA:

- CH1: To protect the archaeological heritage of County Kilkenny with regard to: entries to the Record of Monuments and Places; entries to the Register for Historic Monuments; National Monument subject to Preservation Orders, and; the context of the above within the surrounding landscape where relevant.
- CH2: To preserve and protect the special interest and character of County Kilkenny's architectural heritage with regard to: entries to the Record of Protected Structures; Architectural Conservation Areas; entries to the National Inventory of Architectural Heritage, and; the context of the above within the surrounding landscape where relevant.
- L1: To protect County Kilkenny's sensitive landscapes and designated scenic views.

Local:

- L2: Conserve and enhance valued natural landscape features.
- E1: Reduce waste of energy, promote use of renewable energy sources and support energy conservation initiatives.
- C1: Maintain and improve the accessibility of key services to local communities.

9.0 Consideration of Alternatives

Due to the lower hierarchical level of LAPs certain strategic planning issues have already been determined at National, Regional and County level and therefore the strategic options are limited within the scope of the LAP.

9.1 Strategic Options

A number of models have been examined including:

- 1) **Re-balancing Model** which would see growth to the west of the area primarily concentrated around the golf course and the Newrath area. This model would allow for the rebalancing of existing residential development which has been traditionally centred on the N25 entrance into Waterford City.
- 2) A **Concentric Model** would allow for development in all directions from existing development. The concentric model would allow for residential development on lands adjoining existing development and would include the golf course.
- 3) The **Compact Urban Centre** was also considered which would allow for a compact urban form concentrating on the existing developed areas and allowing for the development of the golf course for residential development.
- 4) A **Polycentric Model** of development was also considered for the area with development concentrated in nodes at the existing developed areas, Belview Port, Slieverue, Cloone, Newrath, N/M9 interchange and Grannagh Business Park.
- 5) A **Strategic Rail Model** was also taken into consideration. Development would be concentrated to the east of existing development along the old Waterford-New Ross line. This would allow for high density sustainable development based on the reintroduction of a train passenger service.
- 6) A series of **Neighbourhood Centres** were also considered, these centres would be located on the boundaries of the existing developed areas of Christendom, Rathculliheen, Belmont, Rockshire and Newrath. Neighbourhood centres would be located at least 500 metres of walking distance and provide essential local services.

Having considered the various options it is felt that the recommended model for the area is one of **concentric growth that would include neighbourhood centres** (this would be in preference to uncontrolled peripheral sprawl and dispersed urban generated housing in the more rural areas). The aim therefore is to consolidate growth in the existing areas of development and allow for residential development to the east, north and west of the existing residential estates of Christendom, Abbeylands, Belmont and Rockshire. It is envisaged that a number of neighbourhood centres will be included in this model while a town centre zoning which already exists for the Ferrybank lands within the boundary of Waterford Borough will be expanded to include the district shopping centre currently under construction and some lands to the north and east of the district centre.

The Strategy will allow for a more compact urban form that will support public transport and pedestrian movement patterns. Medium to high density housing will form part of the model with some low density development (RO: Residential Arcadian) being permitted.

The continued development of Belview Port as an important national strategic port is central to the economic development of the area. Its strategic location and its quick accessibility to the national routeways should ensure that its stature grows in the future. It is envisaged that various employment will be generated with the growth of port activities. It is therefore important that sufficient lands are zoned for the continued growth of the port.

In essence, the model for the area is a development corridor extending along the N25 from Gorteens in the east to Newrath in the west. Development at Belview and Grannagh will be stand alone in terms of having port-related, industrial or retail warehousing zonings while residential development will be concentrated in the areas of existing development. The model will also interact with the redevelopment plans for the north quays and the Slieverue area and their projected populations. Development will be encouraged around the Ferrybank-Abbeylands shopping centre, while the intensity of development will be gradually reduced the further away from the corridor or in the advent of more environmentally sensitive areas.

10.0 Likely Significant Effects on the Environment of the Preferred Development Option

The methodology involves the use of a matrix assessing the key objectives of the local area plan against the list of environmental objectives for the area. This process enables an overview of where potential environmental problems may result from implementation of the preferred concentric growth including neighbourhood centres strategy option and allows the objectives to be revised where necessary. Overall the proposed strategy will not have a negative impact on the environment. Where difficulties occur mitigation measures will be put in place and monitoring during and post construction will ensure there is no deterioration in environmental quality. (See [Table 8 Environmental Matrix](#)).

Table 8: Environmental Matrix (read in conjunction with proposed draft Zoning and Objectives Map)

	B1	B2	B3	B4	HH1	HH2	SI	W1	W2	W3	W4	W5	A1	A2	A3	A3	CH1	CH2	L1	L2	E1	C1	Comments	Summary of monitoring/mitigation
Natural Environment Protection of Ecological Features: The proposed LAP (pLAP) seeks the protection of the unique environmental setting of the Waterford Environs area, and in particular, its relationship with the River Suir. Creation of a Riverside Amenity: The pLAP promotes the creation of a riverside walkway stretching from Rockland Woods in Christendom to Belview Port. Protect, maintain, improve and enhance the quality of watercourses throughout the plan area, through the promotion of Sustainable Urban Drainage Systems (SUDS). Retain, where possible, significant hedgerows and tree groupings and incorporate into future development layouts within the area. Require future planning applications for development in the vicinity of the proposed NHA (Grannyferry) and the SAC (Lower River Suir) to include a report on the likely potential impacts and any necessary mitigation impacts. This report should be carried out by a professional ecologist or other suitably qualified professional. Planning applications within 30 metres of designated wetland/peatland ecological sites must be accompanied by an eco-hydrological assessment: which complies with Section 18 of the European Communities (Natural Habitats) Regulations 1997 and must also be accompanied by evidence of consultation between the applicant and the National Parks and Wildlife Service with regard to the findings of this assessment.	+	+	+	+	+	0	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	0	An ecological study of the plan area has highlighted key habitats which will be enhanced and protected as part of the development strategy. An Ecological Impact Assessment of any route options shall be undertaken at an early stage.	
Residential and Mixed Use Compact Residential Model: The pLAP proposes a residential strategy of consolidation and infill, whereby new residential development will occur along side existing. This will enable the development of a compact residential model in the plan area, in preference to a pattern of dispersed housing and peripheral sprawl. Network of Neighbourhood Centres: The pLAP proposes a number of neighbourhood centres at strategic locations in the plan area. These will serve the needs of both new and existing residential areas, enabling them to become more sustainable living environments.	+	+	+	0	+	0	+	+	+	+	+	+	+	+	+	+	0	0	+	+	+	+	0	Development of the LAP lands will result in loss of habitats and biodiversity, and affect surface water run-off. However, habitats of greatest value will be maintained and development will be supplemented with additional open space / recreational facilities and green networks, enhancing new biodiversity ranges. Implementation of SUDS strategy will protect the quality of groundwater and the estuaries, negating any potentially negative impacts. The clustering of facilities within walking distance of the town and local service areas will reduce traffic demands. Clustering of facilities will reduce traffic movements and aid in facilitating the efficient provision of utilities. This zoning will alleviate pressure for one-off housing within the surrounding environs lying outside the LAP boundary. The arcadian zoning is within the urban framework & travel distances are still within walking distances to facilities & services. All residential zonings are to be served through the mains wastewater treatment negating the use of septic tanks.
New Mixed Use Zones: The pLAP proposes mixed-use zones at Newrath and Christendom, which have been given a zoning of C2: Commercial and Mixed Use. These zones will combine retail, commercial and service uses with higher density residential development. There will also be a strong focus on the creation of enterprise zones and community facilities in these areas. Arcadian Residential Development: The pLAP proposes an Arcadian Residential zoning (RD) at a number of locations in the plan area. Arcadian Development is based on the principle of low density housing which is hidden in the landscape, and generally developed on sites which already include mature trees and hedges. These zonings are proposed in visually sensitive areas, and in areas which already feature low density residential development.	0	0	0	+	+	0	+	0	X	0	+	0	+	+	+	+	0	0	+	+	+	+	0	Through the planning application process ensure the setting of dwellings is not visually intrusive on the landscape and that significant trees and hedgerows are kept.

Biodiversity, Flora and Fauna
County SEA:
B1: To avoid loss of relevant habitats, geological features, species or their sustaining resources in designated ecological sites.
B2: 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.
B3: To sustain, enhance or where relevant to prevent the loss of, ecological networks or parts thereof which provide significant connectivity between areas of local biodiversity.
Local:
B4: Improve people's quality of life based on high-quality residential, working and recreational environments and on sustainable travel patterns.

Population and Human Health
County SEA:
HH1: To protect human health from hazards or nuisances arising from exposure to incompatible landuses.
Local:
HH2: Minimise noise and emissions from traffic.

Soil and Water
County SEA:
S1: Maximise the sustainable re-use of brownfield lands, and maximise the use of the existing built environment rather than developing greenfield lands where possible.
W1: To maintain and improve, where possible, the quality of rivers.
W2: To prevent pollution and contamination of ground water.
W3: To maintain and improve, where possible, the quality of estuarine waters.
W4: To serve new development with appropriate waste water treatment.
Local:
W5: Conserve water through replacement/repair of water supply network where defective.

Air/Climate: Factors
County SEA:
A1: To minimise increases in travel related emissions to air.
Local:
A2: Reduce all forms of air pollution and provide an upgraded/improved public transport network.
A3: Minimise emission of greenhouse gases to contribute to a reduction and avoidance of human-induced global climate change.

Material Assets
County SEA:
CH1: To protect the archaeological heritage of County Kilkenny with regard to: entries to the Record of Monuments and Places; entries to the Register for Historic Monuments; National Monument subject to Preservation Orders, and; the context of the above within the surrounding landscape where relevant.
CH2: To preserve and protect the special interest and character of County Kilkenny's architectural heritage with regard to: entries to the Record of Protected Structures; Architectural Conservation Areas; entries to the National Inventory of Architectural Heritage, and; the context of the above within the surrounding landscape where relevant.
Local:
L1: To protect County Kilkenny's sensitive landscapes and designated scenic views.
Local:
L2: Conserve and enhance valued natural landscape features.
E1: Reduce waste of energy, promote use of renewable energy sources and support energy conservation initiatives.
C1: Maintain and improve the accessibility of key services to local communities.

	B1	B2	B3	B4	HH1	HH2	S1	W1	W2	W3	W4	W5	A1	A2	A3	CH1	CH2	L1	L2	E1	C1	Comments	Summary of monitoring/mitigation
Urban Village Facilitate the development of a "main street" as part of the urban village concept at Ferrybank-Abbeysands	0	0	0	+	+	+	+	0	0	0	+	0	+	+	+	0	0	+	+	+	+	The introduction of the main street will incorporate traffic calming measures ensuring pedestrian accessibility, attractive public realm with community facilities and a critical mass to ensure viability of shops etc.	
Built Heritage Ensure the protection of all structures identified in the Built Heritage Map.	+	+	+	+	0	0	+	0	0	0	0	0	0	0	0	+	+	+	+	0	0	All planning applications that would impinge upon any historic structure are to be referred to the Architectural Heritage Advisory Unit of the DOEHLG, and where considered necessary on the advice of the DOEHLG, prevent development that would inappropriately and irreplacably damage any such structure or monument.	Ensure Architectural Heritage Impact Assessments are prepared as part of any planning applications for the deletion of structures from the RPS and for the demolition of Protected Structures.
Archaeology Preserve and protect the archaeological heritage of the Waterford Environs and safeguard the integrity and setting of recorded sites	+	+	+	+	0	0	+	0	0	0	0	0	0	0	0	+	+	+	+	0	0	If a development has the potential to impact upon the archaeology of an area, the planning application will be referred to the National Monuments Service of the DOEHLG for their recommendations.	
Energy Establish a Sustainable Energy Zone (SEZ) for undeveloped lands identified at Christendom and Newtown, including lands proposed for redevelopment. All future development in these areas will be required to ensure the supply of 20 per cent heat and electricity from renewable sources over the period of the plan.	+	+	+	+	+	0	+	+	+	0	0	0	0	0	0	+	0	0	0	+	+	This SEZ would be based on the lines of the Dundalk SEZ.	
Waste Management Implement the Joint Waste Management Plan for the South East Region 2006-2011	0	0	0	0	+	0	0	+	+	+	+	+	0	+	+	0	0	+	+	+	+		
Implementation Prepare a schedule for the implementation of Development Objectives, which will identify each objective, an implementation strategy, primary responsibility (i.e., LA department, private developers, etc.) and proposed timeline.	+	+	+	+	?	0	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	Green Public Procurement is the approach by which Public Authorities integrate environmental criteria into all stages of their procurement process, thus encouraging the spread of environmental technologies and the development of environmentally sound products, by seeking and choosing outcomes and solutions that have the least possible impact on the environment throughout their whole life-cycle.	

11.0 Mitigation Measures

A range of mitigation measures are required to ensure the proposed LAP development does not impact negatively on the environment.

11.1 Ecology

Water Quality

The EPA has identified the status of the River Suir at Waterford to be 'potentially eutrophic' (eutrophic refers to a high nutrient status and is associated with polluted waters). Given this poor status it is believed that current plans are likely to improve the water quality along this stretch of the river. It is also anticipated that 'Sustainable Urban Drainage' (SUDS) will be fully integrated with the LAP, thereby minimising the potential impact of pollutant run-off from surface water. In light of these factors it is believed that the potential for negative impacts on water quality are not significant. It should be noted however that individual construction projects, such as the construction or expansion of wastewater treatment facilities, that may have the potential to impact negatively on the conservation status of the SAC, are subject to their own Assessment.

Loss of habitat

No direct loss of habitat to the SPA and NHA is anticipated as a result of the LAP.

Loss of scrub and recolonising bare ground in the Grannyferry area

Permanent loss of habitat cannot be mitigated for. The preferred option in this case is avoidance of the impact altogether. This can be done by rezoning these areas for biodiversity conservation. There are a number of reasons why avoidance would be of benefit to the area:

1. This sensitive ecological area has already suffered significant damage through built infrastructure and illegal infilling of wetlands. Further built development would exacerbate this loss of habitat and is unsustainable.
2. The zoned areas are important buffer zones around both the SAC and the NHA, retaining them as conservation areas would ensure that they continue to act as wildlife corridors between the two designated sites.
3. While damaged, these sites continue to perform certain ecosystem services, albeit to a lesser degree than when they were intact. This includes attenuation of flood events. It is likely that continued built development will contribute to flooding in the area.

Permission for development at the site of the Red Bridge filling station, near the Grannagh roundabout, has recently been granted by An Bord Pleanála. This has been done in consultation with NPWS and with their agreement.

According to NPWS, the site at the other filling station, near the Newrath roundabout, was until recently wetland habitat. This has now been in-filled and the legality of this action is under question. It is therefore recommended, in consultation with NPWS personnel, that there should be no zoning for built development in this area. Instead the zoning designation should be changed for biodiversity conservation.

This action would reduce this **minor negative** impact to **neutral**.

Loss of bat populations through destruction of derelict buildings at the old Mill in Grannagh

There is currently insufficient data to determine the nature of this impact or to predict its likely significance.

To mitigate against the occurrence of this potential impact a specialist bat ecologist should be commissioned to survey these sites and recommend avoidance or mitigation measures in

compliance with the Wildlife (Amendment) Act, 2000. There is no imminent threat to the farm buildings further north however it would be good practice to survey this area as a preemptive measure given its potential importance for the NHA.

Implementing this recommendation could reduce the magnitude of this impact from potentially **major negative** to **neutral**.

Passive open space zoning

The Zoning and Objectives map indicates that all of the areas of woodland, riparian corridors, swamp and wet grassland have been zoned as 'passive open space'. While this designation is designed to protect ecological features, a stronger zoning designation is recommended, for instance as '**biodiversity conservation**', that better communicates the intended purpose and function of these areas and avoids any future ambiguity whereby the term 'passive open space' may be construed as to allow development for amenity purposes. This should apply to all passive open space areas.

Zoning for built development on green field sites including Residential and particularly in the Belview port area

To avoid major negative impacts on hedgerow/treeline habitats a number of things can be done. The Hedgerows and Treelines should be mapped within the Development Objectives Map. This would recognise their presence. Since not all of these habitats are of the highest value, it is important to establish a mechanism whereby the most important ones are retained, while compensation is made for the removal of less important ones. In other words, a clear Hedgerow/Treeline policy should be formulated that can easily be implemented by planners in Kilkenny County Council. Following consultation with Kilkenny County Council it is recommended that a policy be made to request developers to carry out an ecological assessment where impacts on hedgerows and treelines are likely.

Zoning for Development of Port Facility and Industry

Ensure that an Ecological Impact Assessment is requested of the developer at the design stage of future building projects in the area.

An extension to the Port facilities has recently been approved by An Bord Pleanála and a comprehensive Environmental Impact Assessment was prepared for this area. All development covered in this planning application is to strictly adhere to all mitigation and monitoring measures as outlined in the *Port of Waterford Company – Extension to Belview Port EIS 2001 – 2005*.

With careful planning it may be possible to avoid negative impacts on the wetland and indeed there is ample scope for enhancement of this habitat. Wetlands are excellent for attenuating water pollution and are routinely used as part of Sustainable Drainage Systems (SUDS). This wetland could therefore be seen as a valuable asset to a future tenant.

Impacts on Woodlands

It is recommended that a programme of eradication of Cherry laurel be initiated under this plan. Where woodlands have an amenity value, there is already a scheme run by the Forestry Service of the Department of Agriculture which provides funding such projects. Known as the NeighbourWood Scheme, it promotes the restoration of Ireland's native woodland and must be initiated by Kilkenny county council in consultation with local community groups.

The implementation of such a programme would have major benefits both for biodiversity and for people.

Impact of Japanese knotweed

Where Japanese knotweed has been identified it must be eradicated. This survey noted its presence in only two locations and it did not seem to be widespread in these areas. Control

now would therefore be cheap and effective. A policy should be identified under this plan to ensure that the problem of Japanese knotweed is addressed in a timely manner upon its discovery.

Further Recommendations

- The Kilkenny County Development Plan, section 8.2.3, allows for the designation of ecological sites that are of 'county importance' (this is a level below SAC and NHA which are of international and national importance respectively). While a mechanism for identification of these sites has yet to be finalised, a number of sites within the study are potential candidates. These are proposed as they are of particular conservation value and feature habitats that are relatively natural, and rare in a local context (meaning a low proportion of alien species). These are:
 - a) Oak-Ash-Hazel woodland sites indicated as W7 and W8 on the habitat map (S593 148 & S609 151)
 - b) Riparian Woodland sites at S657 145; S650 130; S644 125; and S633 126)
 - c) Wet Grassland site indicated on the habitat map as WG1 (S628 148)
- A comprehensive ecological survey should be carried out for each of these sites against the criteria established by Kilkenny County Council for the designation of sites of county importance.
- Any planting to be carried out by Kilkenny County Council, or private companies developing sites within the LAP area should at all times utilise native tree species only (See Appendix B for a full list). The NRA's guidance document *A Guide to Landscape Treatments for National Road Schemes in Ireland* may also be useful in this regard.
- Expand the TPO network in the Ferrybank-Belview area to include groups of trees identified in this survey.

11.2 Surface Water Drainage and Water Quality

The 'Strategic Urban Drainage Solutions' (SUDS) strategy proposes surface water mitigation proposals in association with the future development of the LAP lands, where there will be a significant increase in the quantity and quality of surface water run-off.

The SUDS principle is to move away from the traditional approach of managing the volume and rate of runoff from larger storm events through rapid collection and disposal of flows into watercourses and to move towards integrating flood control with runoff treatment using more natural means. Wherever practicable runoff flows and pollutants are managed on the site, rather than being directed to the nearest receiving waters. This has the benefits of reducing the problems associated with rapid runoff rates and volumes and the shock loading problems this causes, e.g. flooding, scour, etc; as well as helping to recharge aquifers and groundwater sources more efficiently (an essential element of effective water cycle management). There are also the qualitative benefits with natural treatment of contaminated surface waters (e.g. percolation through the soil) being encouraged.

SUDS therefore involves a shift in our way of managing runoff from solely looking at volume control, to an integrated approach which considers land use planning, water quality, water quantity, amenity and habitat enhancements.

As a result SUDS approaches provide an excellent mechanism through which we can change the way of managing urban drainage, and help achieve the objectives of the EU Water Framework Directive.

The SUDS solutions for the Ferrybank-Belview area will involve a combination of Source Control and Regional Control measures, with use being made of swales along proposed some routes and detention ponds to be strategically sited within the Plan area according to topography and the groundwater capacity. The application of more aesthetically pleasing solutions such as wetlands will very much depend upon the nature of each development proposal and the availability of lands, as they tend to require greater land uptake than specifically designed ponds. For the purpose of this assessment ponds have been identified as the most appropriate solution for balancing surface water flows from the development areas, never the less the feasibility of wetland solutions shall be considered for each site through liaison between the developers and Kilkenny County Council.

Source control measures are where flows are detained or infiltrated into the natural environment (or groundwaters) as close as possible to the point of origin to reduce the peak runoff rate and attenuate flows, thus reducing stress on downstream facilities, allowing them to be smaller in capacity. The infiltration of flows will ensure that unavoidable pollutants are treated where practicable.

Typical installations would include:-

- Waterbutts on properties or other roof collectors;
- Filter Strips and / or other infiltration devices, and
- Small swales.

Imposing such measures may require consideration during the detailed planning of the layout of new developments and would always be recommended, where possible.

Regional control measures: This comprises treatment facilities to reduce pollutants from contaminated runoff, with the potential to provide biological treatment. These installations deal with runoff on a catchment scale rather than at source level, typically controlling areas of 2 hectares or larger. They are often end-of-pipe facilities such as:-

- Detention ponds
- Reed beds or specifically constructed wetlands

Particular care will also be required to avoid facilities that rely solely upon natural drainage to soakaway without some additional balancing, as the groundwater regime and in particular the variations due to tidal influence on the River Suir limit the efficiency of such drainage techniques. Therefore, swales must be carefully located and ponds must be installed appropriately as end of pipe systems to buffer the quantitative and qualitative impact of storm waters arising from the new development.

Drainage and pollution control will be issues not only once the drainage solutions are implemented but also during the construction period, particularly in the area of the LAP lands where large areas will be under development.

At planning application stage plans shall indicate how flood flows, and pollution risk shall be controlled during the construction period, particularly at times of heavy earth movement, partial reinstatement and surface finishing, as all these aspects can impact upon the groundwater flow regime, and surface runoff characteristics.

Consideration shall be given to the early construction of retention ponds and planting during the construction period to stabilise the landscape with a view to making these permanent features of the finished sites once the development is complete.

11.2 Wastewater Treatment

A new waste water treatment plant is currently under construction within the Waterford City Council (WCC) boundary of the Ferrybank-Belview area. This plant should become operational by the end of this year and will have a PE of 190,600, with two thirds of that capacity to be reserved for industry and commercial. Kilkenny County Council have agreed with WCC to purchase 11,500 PE capacity, with the option of acquiring a further 8,500 capacity if needed. Of that 11,500 PE, some 1680 is set aside for commercial use, leaving 9,820 for residential needs.

Kilkenny County Council in conjunction with private developers are to ensure that the necessary gravity and pumping stations are provided to service all zoned lands within the Ferrybank-Belview area. Also separate foul and surface water networks will be required in all new developments to ensure efficient drainage systems.

11.3 Traffic Management

The proposed development will result in an increased level of traffic within the Ferrybank-Belview area pLAP lands. Currently there are a number of strategic route links under construction.

The N25 Waterford City bypass is the most significant development in transport infrastructure. The project consists of a new river crossing in the vicinity of Grannagh, i.e. close to the location of the existing N24/N9 Junction. The by-pass commences in the vicinity of Kilmeaden to the west of the City, crosses the River Suir at Grannagh and ties in with the existing N25 to the east of Slieverue Village. The project includes a new connection, known as the Western Link, which connects the By-Pass to industrial areas to the south west of the City and links the N9 and N24 to the Grannagh Interchange. This bypass is due to be operational by 2010. When complete, it will facilitate easy access from Belview to the major national routes to the west and north i.e. the M9, N24 and N25. The second river crossing will bring much needed relief to the city centre and local community from traffic congestion and is anticipated to be open to traffic in 2010.

In line with the bypass, is the upgrade of the N9 which will consist of a motorway/high quality dual carriageway linking Waterford to Dublin. Already substantial elements of the route have been delivered and the work on the remaining sections of the N9 to Waterford is already well underway, due for completion in 2010.

The study also recognises the importance of improving the public transport and providing for safe and desirable pedestrian and cycle facilities. A traffic management appraisal should be carried out after the completion of the N25 and N9 upgrade to ensure the implementation of the key transport objectives is having the desired effect within the Ferrybank-Belview area.

11.4 Air Quality

Fossil fuels, which affect air quality and contribute to the greenhouse gas effect, are used in transport and general energy consumption in heating/lighting/business etc. In order to facilitate improvement in air quality, the proposed LAP shall encourage a reduction in the number of individual trips made by car, and encourage alternative modes of travel, such as public transport, walking and cycling. The proposed LAP is also encouraging the development of a Sustainable Energy Zone in the C2: Commercial and Mixed Use Zone at Christendom. Sustainable energy features that could be adopted in the plan are include:

- Renewable energy street lighting
- Biomass (wood chip) fired district heating scheme
- Domestic electricity meters to help householders control electricity usage
- Refurbishment of buildings to a high standard of energy efficiency
- Training programmes with Sustainable Energy Ireland.

12.0 Monitoring

12.1 Surface Water Monitoring

A key aspect of the maintenance responsibility will be ensuring that the drainage solutions continue to manage surface waters to ensure no future detriment in water quality and flood control. As a relatively new approach to surface water management, SUDS solutions such as the ones being indicated in this report will require planned, rather than merely reactive maintenance to ensure they operate as intended. In addition, evidence of their performance will need to be gathered to allow Kilkenny County Council to understand the practical benefits and problems of the approach. The following legislation gives guidance on the legislative drivers that are likely to guide the approach to a SUDS policy for the Ferrybank-Belview area and provide recommendations on the issues of maintenance and monitoring that are likely to be most relevant:

European Legislation

Bound into this is adherence with Irish environmental law that operates within a framework that is overarched by European Community (EC) Legislation. All EC legislation is applicable and legally binding in Ireland and the incorporation of these directives into Irish law is achieved through the development of National Regulations (statutory instruments (S.I.s)).

A primary piece of legislation on pollution monitoring and control is Directive 2000/60/EC of the European Parliament and of the Council for establishing a framework for Community action in the field of water policy, commonly known as the Water Framework Directive (WFD) (2000/60/EC). In contrast to the aims of many existing water directives, which seek to protect specific uses of water, the new directive is concerned with the protection of the aquatic ecosystem and where necessary, its restoration, to achieve a 'good' condition status. This status in the case of surface waters is based on both the ecological status as well as the natural chemical and physical characteristics.

In addition to qualitative targets, the directive also promotes the sustainable use of water resources and most notably, the elimination of the discharge of specified hazardous substances.

The WFD actually incorporates and will subsequently repeal a number of existing directives including the Shellfish Waters Directive and the Dangerous Substances Regulations. While there will be a number of other Directives that will remain to support the objectives of the WFD, those most relevant to the need for an interceptor to protect from pollution at this site are:-

Council Directive 91/271/EEC 21 May 1991 concerning urban waste water treatment. Commonly known as the **Urban Waste Water Treatment Directive** (amended by 98/15/EC). S.I 419,1994;

Council Directive 96/61/EC of 24 September 1996 concerning integrated pollution prevention and control. Commonly known as the **Integrated Pollution Prevention and Control Directive**. S.I.85, 1994.

One of the underlying principles of these pieces of legislation is the protection of the natural environment and open water bodies from man made pollution. The legislation places the onus upon stakeholders, including both the polluters and the regulators, to ensure all measures are taken to protect the environment from this risk. It should also be noted that as a result of evolving legislation stemming from the WFD, future standards may result in tighter discharge consent levels which would have implications for treatment facility specifications and their current operational capacities.

National Legislation

In addition, certain National Legislation also has implications for surface waters, urban drainage control and the protection and improvement of water quality. Those most relevant in this instance include:-

The Planning and Development Act, 2000 (S.I. 600, 2001) and associated regulations, which will give Kilkenny County Council power of sanction regarding the acceptance (or otherwise) of developer proposals.

The Local Government (Water Pollution) Acts, 1977/1990, (Various S.I.) that sets out a general prohibition on the entry of polluting matter to open water bodies and gives Local Authority's the powers to require measures to be taken to prevent such water pollution. The legislation also set out the roles and responsibilities of the local authority with respect to monitoring of water bodies and reporting of results to the Environmental Protection Agency (EPA).

Water Quality (Dangerous Substances) Regulations, 2001. S.I. 12 of 2001, which is one piece of legislation that already guides the WQ monitoring programme in the region.

Maintenance Plans

As has already been stated one of the cornerstones of a successful SUDS implementation plan for the Ferrybank-Belview area is appropriate maintenance plans stipulating the necessary agreements on maintenance liabilities between stakeholders, e.g. Water Service, Roads Service, Parks Department, etc. In addition, the maintenance plans must be framed within any subsequent 'Taking In Charge' procedures for the drainage infrastructure implemented by KCC, following the development of lands in the future.

As the apparent water quality benefits of SUDS solutions is still relatively unknown in this country it is essential that as part of the planning application, taking in charge procedures and general developer control that developers shall give KCC demonstrable evidence of successful pollution control over, for example, a 2 year maintenance period to any drainage solution being taken in charge by the Water Services Department, and / or Transportation or Parks Departments.

Typically, parameters such as total suspended solids, phosphorus, nitrates, metals and BOD / COD shall be assessed periodically during this period. Evidence that the structures are being maintained, are not deteriorating, eroding, leaking, etc, shall also be provided and shall be subjected to audit scrutiny by Water Service operational staff.

A specific pollution monitoring programme shall be agreed between developers and KCC at the outset of the development process and maintained throughout the life cycle of the development process right up until the drainage solutions are taken in charge.

Studies

The Suir Catchment Flood Risk Assessment and Management Study is currently being undertaken by the OPW and Local Authorities. The study is primarily focusing on developed areas and areas subject to significant development pressure known to have experienced flooding in the past. This study is to be complete in 2009/2010 and will itself require a SEA.

12.2 Water Services Monitoring

The quality of the water bodies within the area shall continue to be monitored in accordance with the following legislation:

Local Government (Water Pollution) Act 1977 and Amendment Act 1990

Water Framework Directive

Local Government (Water Pollution) Act, 1977 (Water Quality Standards for Phosphorus) Regulations 1998, S.I No:258 of 1998.

S.I. No. 12 of 2001 Water Quality (Dangerous Substances) Regulations 2001.

S.I. No. 293/1988: European Communities (Quality of Salmonid Waters).

The River Suir and Blackwater are monitored as part of the Southeastern River Basin District Project (SERBD). This Project is part of Ireland's implementation of the Water Framework Directive (WFD)(2000/60/EC) and shall be monitored accordingly.

12.3 Air Monitoring

The LAP shall comply with the Air Quality Standard Regulations (2002), which have transposed the European Framework Directive and the Directives (CEC, 1999, 2000) into Irish law and established new air quality standards for SO₂, NO₂ and NO_x, lead, PM₁₀, CO and benzene.

Future analysis of Air Quality will utilize modal split data, traffic volumes and distances travelled by person per year by mode of transport, to indicate levels of change.

12.4 Population and Human Health

The draft LAP will have an impact on the quality of life of existing and proposed residents with the increased population resulting in increased traffic levels, noise, air pollution, requirement for schools, local services, public open space and requirement for quality residential developments.

The proposed LAP strategy has taken into account and addressed issues relating to transportation, local service facilities, provision of pedestrian and cyclist facilities, provision of public open spaces and creation of well designed residential and urban quarters.

13.0 Overall Findings

The proposed LAP will have an impact (positive and negative) on the environmental quality of the lands involved.

Environmentally significant impacts were identified as being likely in relation to the following areas: ecology and biodiversity, visual amenity, surface water quantity and quality, waste water treatment, and transportation.

Consultation with the designated authorities and the local community also highlighted concerns in these areas.

The Ferrybank-Belview area contains a surprising wealth of important semi-natural habitats. If the region is to develop in a sustainable fashion, then these ecological resources must be safeguarded. This plan was found to have only one major potential negative impact on biodiversity, namely the cumulative impacts of removal of Hedgerows and Treelines, some of which are hundreds of years old. Doing nothing may also be an impact where alien invasive species are not controlled.

These, and other impacts identified in this report, can all be addressed through careful planning as detailed in the suggested recommendations and mitigation measures. Implementation of these actions would help to ensure that sustainable development becomes a reality under this plan.

The chosen development strategy as set out in the LAP has been assessed in terms of sustainability and potentially significant environmental impacts, with the environmental objectives of the SEA assessed against the objectives of the draft LAP. This assessment shows that the strategy is overall acceptable.

Where negative impacts are likely, mitigation and monitoring measures have been identified. The implementation of these measures will ensure the proposed LAP is acceptable from an environmental and sustainability perspective.

Appendix A – Species lists

The nomenclature that was followed for this Appendix comes from the *Census Catalogue of the Flora of Ireland* (Scannell et al., 1987). The presence of an asterisk, *, beside a species indicates that it is widely accepted to be non-native, while a § indicated that it was probably introduced.

1. Hedgerows (WL1) and Treelines (WL2)

<i>Acer pseudoplatanus*</i>	Sycamore
<i>Anthriscus sylvestris</i>	Cow parsley
<i>Bellis perennis</i>	Daisy
<i>Cardamine pratensis</i>	Cuckooflower
<i>Cirsium arvense</i>	Creeping thistle
<i>Crataegus monogyna</i>	Hawthorn
<i>Dactylis glomerata</i>	Cock's-foot
<i>Epilobium angustifolium</i>	Rosebay willowherb
<i>Fagus sylvatica*</i>	Beech
<i>Fraxinus excelsior</i>	Ash
<i>Galium aparine</i>	Cleavers
<i>Geranium robertianum</i>	Herb-Robert
<i>Hedera helix</i>	Ivy
<i>Heracleum sphondylium</i>	Hogweed
<i>Holcus lanatus</i>	Yorkshire-fog
<i>Hyaninthoides non-scripta</i>	Bluebell
<i>Ilex aquifolium</i>	Holly
<i>Lonicera periclymenum</i>	Honeysuckle
<i>Medicago lupulina</i>	Black medick
<i>*Petasites fragrans</i>	Winter heliotrope
<i>Pinus sylvestris</i>	Scots pine
<i>Prunus spinosa</i>	Blackthorn
<i>Quercus sp.</i>	Oak
<i>Ranunculus acris</i>	Meadow buttercup
<i>Reynoutria japonica*</i>	Japanese knotweed
<i>Rubus fruticosus</i>	Bramble
<i>Rumex obtusifolius</i>	Broad-leaved dock
<i>Salix sp.</i>	Willow
<i>Sambucus nigra</i>	Elder
<i>Senecio jacobaea</i>	Common ragwort
<i>Sisymbrium officinale</i>	Hedge mustard
<i>Sonchus arvensis</i>	Perennial sow-thistle
<i>Symphoricarpos albus*</i>	Snowberry
<i>Pteridium aquilinum</i>	Bracken
<i>Taraxacum sp.</i>	Dandelion
<i>Ulex Europaeus</i>	Gorse
<i>Ulmus glabra</i>	Wych elm
<i>Urtica dioica</i>	Common nettle
<i>Veronica chamaedrys</i>	Germander speedwell
<i>Vicia cracca</i>	Tufted vetch

2. Mixed Broadleaved Woodland (WD1)

<i>Acer pseudoplatanus</i> *	Sycamore
<i>Aesculus hippocastanum</i> *	Horse-chestnut
<i>Agrostis stolonifera</i>	Creeping bent
<i>Allium ursinum</i>	Ramsons
<i>Anthoxanthum odoratum</i>	Sweet vernal-grass
<i>Anthriscus sylvestris</i>	Cow parsley
<i>Arum maculatum</i>	Lords-and-ladies
<i>Athyrium filix-femina</i>	Lady-fern
<i>Betula</i> sp.	Birch
<i>Buddleja davidii</i> *	Butterfly-bush
<i>Carex pendula</i>	Pendulus sedge
<i>Carex remota</i>	Remote sedge
<i>Carex sylvatica</i>	Wood sedge
<i>Castanea sativa</i> *	Sweet chestnut
<i>Circaea lutetiana</i>	Enchanter's-nightshade
<i>Conopodium majus</i>	Pignut
<i>Calystegia sepium</i>	Hedge bindweed
<i>Corylus avellana</i>	Hazel
<i>Crataegus monogyna</i>	Hawthorn
<i>Dactylis glomerata</i>	Cock's-foot
<i>Dryopteris dilatata</i>	Broad buckler-fern
<i>Dryopteris filix-mas</i>	Male-fern
<i>Epilobium angustifolium</i>	Rosebay willowherb
<i>Fagus sylvatica</i> *	Beech
<i>Galium aparine</i>	Cleavers
<i>Geum urbanum</i>	Wood avens
<i>Geranium molle</i>	Dove's-foot cranes-bill
<i>Geranium robertianum</i>	Herb-Robert
<i>Hedera helix</i>	Ivy
<i>Heracleum sphondylium</i>	Hogweed
<i>Holcus lanatus</i>	Yorkshire-fog
<i>Hyaninthoides non-scripta</i>	Bluebell
<i>Hypericum androsaemum</i>	Tutsan
<i>Ilex aquifolium</i>	Holly
<i>Juncus inflexus</i>	Hard rush
<i>Leucanthemum vulgare</i>	Oxeye daisy
<i>Lonicera periclymenum</i>	Honeysuckle
<i>Medicago lupulina</i>	Black medick
<i>Mentha aquatica</i>	Water mint
<i>Oxalis acetosella</i>	Wood-sorrel
<i>Petasites fragrans</i> *	Winter heliotrope
<i>Phyllitis scolopendrium</i>	Hart's-tongue
<i>Plantago lanceolata</i>	Ribwort Plantain
<i>Polystichum setiferum</i>	Soft Shield-fern
<i>Populus</i> sp.	Poplar
<i>Primula vulgaris</i>	Primrose
<i>Prunus laurocerasus</i> *	Cherry laurel
<i>Pteridium aquilinum</i>	Bracken
<i>Quercus</i> sp.	Oak
<i>Ranunculus ficaria</i>	Lesser Celandine
<i>Ranunculus repens</i>	Creeping buttercup
<i>Rubus fruticosus</i>	Bramble

<i>Rumex acetosa</i>	Common sorrel
<i>Rumex crispus</i>	Curled dock
<i>Rumex obtusifolius</i>	Broad-leaved dock
<i>Sanicula europaea</i>	Sanicle
<i>Sambucus nigra</i>	Elder
<i>Smyrniium olusatrum</i> §	Alexanders
<i>Stellaria graminea</i>	Lesser stitchwort
<i>Taraxacum sp.</i>	Dandelion
<i>Taxus baccata</i>	Yew
<i>Teucrium scorodonia</i>	Wood sage
<i>Ulmus glabra</i>	Wych elm
<i>Umbilicus rupestris</i>	Navelwort
<i>Urtica dioica</i>	Common nettle
<i>Veronica chamaedrys</i>	Germander speedwell
<i>Viola riviniana</i>	Common dog-violet

3. Oak-Ash-Hazel Woodland (WN2)

<i>Acer pseudoplatanus</i> *	Sycamore
<i>Ajuga reptans</i>	Bugle
<i>Allium ursinum</i>	Ramsons
<i>Alnus glutinosa</i>	Alder
<i>Betula sp.</i>	Birch
<i>Blechnum spicant</i>	Hard fern
<i>Carex remota</i>	Remote sedge
<i>Carex sylvatica</i>	Wood-sedge
<i>Corylus avellana</i>	Hazel
<i>Crataegus monogyna</i>	Hawthorn
<i>Dactylis glomerata</i>	Cock's-foot
<i>Dryopteris dilatata</i>	Broad buckler-fern
<i>Dryopteris filix-mas</i>	Male-fern
<i>Epilobium montanum</i>	Broad-leaved willowherb
<i>Fagus sylvatica</i> *	Beech
<i>Fraxinus excelsior</i>	Ash
<i>Filipendula ulmaria</i>	Meadowsweet
<i>Fraxinus excelsior</i>	Ash
<i>Galium aparine</i>	Cleavers
<i>Geranium molle</i>	Dove's-foot cranes-bill
<i>Geum urbanum</i>	Wood avens
<i>Hedera helix</i>	Ivy
<i>Heracleum sphondylium</i>	Hogweed
<i>Holcus lanatus</i>	Yorkshire-fog
<i>Hyaninthoides non-scripta</i>	Bluebell
<i>Juncus effusus</i>	Soft rush
<i>Ilex aquifolium</i>	Holly
<i>Juncus inflexus</i>	Hard rush
<i>Lonicera periclymenum</i>	Honeysuckle
<i>Luzula sp.</i>	Wood-rush
<i>Lysimachia nemorum</i>	Yellow pimpernel
<i>Nasturtium officinale</i>	Water-cress
<i>Phyllitis scolopendrium</i>	Hart's-tongue
<i>Polystichum setiferum</i>	Soft Shield-fern
<i>Prunus spinosa</i>	Blackthorn
<i>Quercus sp.</i>	Oak
<i>Ranunculus acris</i>	Meadow buttercup
<i>Ranunculus ficaria</i>	Lesser celandine
<i>Ranunculus repens</i>	Creeping buttercup
<i>Rosa arvensis</i>	Field-rose
<i>Rubus fruticosus</i>	Bramble
<i>Rumex crispus</i>	Curled dock
<i>Salix sp.</i>	Willow
<i>Scrophularia auriculata</i>	Water figwort
<i>Sonchus arvensis</i>	Perennial sow-thistle
<i>Teucrium scorodonia</i>	Wood sage
<i>Urtica dioica</i>	Common nettle
<i>Veronica chamaedrys</i>	Germander speedwell
<i>Vicia cracca</i>	Tufted vetch
<i>Viola riviniana</i>	Common dog-violet

4. Scattered Trees and Parkland (WD5)

<i>Acer pseudoplatanus</i> *	Sycamore
<i>Acer campestre</i> *	Field maple
<i>Aesculus hippocastanum</i> *	Horse-chestnut
<i>Agrostis stolonifera</i>	Creeping bent
<i>Anthoxanthum odoratum</i>	Sweet vernal-grass
<i>Holcus lanatus</i>	Yorkshire-fog
<i>Ilex aquifolium</i>	Holly
<i>Quercus</i> sp.	Oak
<i>Ulex Europaeus</i>	Gorse

5. Riparian Woodland (WN5)

<i>Acer pseudoplatanus</i> *	Sycamore
<i>Agrostis stolonifera</i>	Creeping bent
<i>Ajuga reptans</i>	Bugle
<i>Alnus glutinosa</i>	Alder
<i>Anthoxanthum odoratum</i>	Sweet vernal-grass
<i>Anthriscus sylvestris</i>	Cow parsley
<i>Athyrium filix-femina</i>	Lady-fern
<i>Blechnum spicant</i>	Hard fern
<i>Cardamine pratensis</i>	Cuckooflower
<i>Carex remota</i>	Remote sedge
<i>Corylus avellana</i>	Hazel
<i>Crataegus monogyna</i>	Hawthorn
<i>Digitalis purpurea</i>	Foxglove
<i>Dryopteris dilatata</i>	Broad buckler-fern
<i>Epilobium angustifolium</i>	Rosebay willowherb
<i>Equisetum</i> sp.	Horsetail
<i>Fagus sylvatica</i> *	Beech
<i>Fraxinus excelsior</i>	Ash
<i>Filipendula ulmaria</i>	Meadowsweet
<i>Fraxinus excelsior</i>	Ash
<i>Galium aparine</i>	Cleavers
<i>Geum urbanum</i>	Wood avens
<i>Geranium robertianum</i>	Herb-Robert
<i>Hedera helix</i>	Ivy
<i>Heracleum sphondylium</i>	Hogweed
<i>Hyaninthoides non-scripta</i>	Bluebell
<i>Ilex aquifolium</i>	Holly
<i>Iris pseudacorus</i>	Yellow iris
<i>Lonicera periclymenum</i>	Honeysuckle
<i>Juncus effusus</i>	Soft rush
<i>Lychnis flos-cuculi</i>	Radded-Robin
<i>Mentha aquatica</i>	Water mint
<i>Nasturtium officinale</i>	Water-cress
<i>Oenanthe crocata</i>	Hemlock water-dropwort
<i>Petasites fragrans</i> *	Winter heliotrope
<i>Phorium tenax</i> *	New Zealand flax
<i>Phyllitis scolopendrium</i>	Hart's-tongue
<i>Plantago lanceolata</i>	Ribwort Plantain
<i>Polystichum setiferum</i>	Soft Shield-fern
<i>Potentilla erecta</i>	Tormentil
<i>Prunus avium</i>	Wild cherry
<i>Prunus laurocerasus</i> *	Cherry laurel
<i>Quercus</i> sp.	Oak
<i>Ranunculus acris</i>	Meadow buttercup
<i>Ranunculus ficaria</i>	Lesser Celandine
<i>Ranunculus repens</i>	Creeping buttercup
<i>Rubus fruticosus</i>	Bramble
<i>Rumex crispus</i>	Curled dock
<i>Rumex obtusifolius</i>	Broad-leaved dock
<i>Salix</i> sp.	Willow
<i>Sambucus nigra</i>	Elder
<i>Sanicula europaea</i>	Sanicle

<i>Scrophularia auriculata</i>	Water figwort
<i>Sonchus arvensis</i>	Perennial sow-thistle
<i>Trifolium pratense</i>	Red clover
<i>Ulex Europaeus</i>	Gorse
<i>Ulmus glabra</i>	Wych elm
<i>Urtica dioica</i>	Common nettle
<i>Veronica chamaedrys</i>	Germander speedwell
<i>Vicia cracca</i>	Tufted vetch
<i>Vicia sepium</i>	Bush vetch
<i>Viola riviniana</i>	Common dog-violet

6. Scrub (WS1)

<i>Acer pseudoplatanus</i> *	Sycamore
<i>Achillea millefolium</i>	Yarrow
<i>Agrostis stolonifera</i>	Creeping bent
<i>Alnus glutinosa</i>	Alder
<i>Anagallis arvensis</i>	Scarlet pimpernel
<i>Angelica sylvestris</i>	Cow parsley
<i>Anthoxanthum odoratum</i>	Sweet vernal-grass
<i>Anthyllis vulneraria</i>	Kidney vetch
<i>Bellis perennis</i>	Daisy
<i>Buddleja davidii</i> *	Butterfly-bush
<i>Calystegia sepium</i>	Hedge bindweed
<i>Cardamine pratensis</i>	Cuckooflower
<i>Carex flacca</i>	Glaucous sedge
<i>Carex hirta</i>	Hairy sedge
<i>Chamomilla suaveolens</i> *	Pineappleweed
<i>Crataegus monogyna</i>	Hawthorn
<i>Crepis capillaris</i>	Smooth hawk's-beard
<i>Cichorium radicata</i>	Cat's-ear
<i>Cirsium arvense</i>	Creeping thistle
<i>Conopodium majus</i>	Pignut
<i>Dactylis glomerata</i>	Cock's-foot
<i>Daucus carota</i>	Wild carrot
<i>Epilobium angustifolium</i>	Rosebay willowherb
<i>Equisetum sp.</i>	Horsetail
<i>Festuca rubra</i>	Red fescue
<i>Fumaria officinalis</i>	Common fumitory
<i>Galieopsis angustifolia</i> §	Red hemp-nettle
<i>Geranium molle</i>	Dove's-foot cranes-bill
<i>Geranium robertianum</i>	Herb-Robert
<i>Holcus lanatus</i>	Yorkshire-fog
<i>Hyaninthoides non-scripta</i>	Bluebell
<i>Hypericum perforatum</i>	Perforate St. John's-wort
<i>Hypochoeris radicata</i>	Cat's-ear
<i>Juncus effusus</i>	Soft rush
<i>Juncus inflexus</i>	Hard rush
<i>Leucanthemum vulgare</i>	Oxeye daisy
<i>Lotus corniculatus</i>	Common bird's-foot-trefoil
<i>Luzula campestris</i>	Field wood-rush
<i>Medicago lupulina</i>	Black medick
<i>Plantago lanceolata</i>	Ribwort Plantain
<i>Potentilla anserina</i>	Silverweed
<i>Primula veris</i>	Cowslip
<i>Pteridium aquilinum</i>	Bracken
<i>Ranunculus acris</i>	Meadow buttercup
<i>Ranunculus repens</i>	Creeping buttercup
<i>Reseda luteola</i>	Weld
<i>Rubus fruticosus</i>	Bramble
<i>Rumex acetosa</i>	Common sorrel
<i>Rumex acetosella</i>	Sheep's sorrel
<i>Rumex crispus</i>	Curled dock
<i>Rumex obtusifolius</i>	Broad-leaved dock
<i>Salix sp.</i>	Willow

<i>Scrophularia auriculata</i>	Water figwort
<i>Sedum anglicum</i>	English stonecrop
<i>Senecio jacobaea</i>	Common ragwort
<i>Senecio vulgaris</i>	Groundsel
<i>Solanum dulcamara</i>	Bittersweet (Woody nightshade)
<i>Sonchus arvensis</i>	Perennial sow-thistle
<i>Sonchus oleraceus</i>	Smooth sow-thistle
<i>Stellaria graminea</i>	Lesser stitchwort
<i>Stellaria media</i>	Common chickweed
<i>Sisymbrium officinale</i>	Hedge mustard
<i>Taraxacum sp.</i>	Dandelion
<i>Teucrium scorodonia</i>	Wood sage
<i>Trifolium pratense</i>	Red clover
<i>Trifolium repens</i>	White clover
<i>Ulex Europaeus</i>	Gorse
<i>Urtica dioica</i>	Common nettle
<i>Centranthus ruber*</i>	Red valerian
<i>Veronica chamaedrys</i>	Germander speedwell
<i>Vicia cracca</i>	Tufted vetch
<i>Vicia sepium</i>	Bush vetch

7. Depositing/Lowland Rivers (FW2)

<i>Cladophora sp.</i>	Agla
<i>Oenanthe crocata</i>	Hemlock water-dropwort
<i>Nasturtium officinale</i>	Water-cress
<i>Pellia epiphylla</i>	Liverwort
<i>Ranunculs sp.</i>	Water-crowfoot

8. Reed and Large Sedge Swamps (FS1)

<i>Alnus glutinosa</i>	Alder
<i>Betula sp.</i>	Birch
<i>Cardamine pratensis</i>	Cuckooflower
<i>Carex disticha</i>	Brown sedge
<i>Carex pendula</i>	Pendulus sedge
<i>Filipendula ulmaria</i>	Meadowsweet
<i>Geranium robertianum</i>	Herb-Robert
<i>Glaux maritima</i>	Sea-milkwort
<i>Glechoma hederacea</i>	Ground ivy
<i>Iris pseudacorus</i>	Yellow iris
<i>Juncus maritimus</i>	Sea rush
<i>Lemna sp.</i>	Duckweed
<i>Mentha aquatica</i>	Water mint
<i>Myosotis scorpioides</i>	Water forget-me-not
<i>Nasturtium officinale</i>	Water-cress
<i>Oenanthe crocata</i>	Hemlock water-dropwort
<i>Phragmites australis</i>	Common reed
<i>Ranunculus acris</i>	Meadow buttercup
<i>Scrophularia auriculata</i>	Water figwort
<i>Typha latifolia</i>	Bulrush
<i>Salix sp.</i>	Willow
<i>Matricaria maritima</i>	Sea mayweed
<i>Vicia sepium</i>	Bush vetch

9. Wet Grassland (GS4)

<i>Cardamine pratensis</i>	Cuckooflower
<i>Carex flacca</i>	Glaucous sedge
<i>Cirsium palustre</i>	Marsh thistle
<i>Equisetum sp.</i>	Horsetail
<i>Epilobium angustifolium</i>	Rosebay willowherb
<i>Eriophorum vaginatum</i>	Hare's-tail cottongrass
<i>Hydrocotyle vulgaris</i>	Marsh pennywort
<i>Juncus effusus</i>	Soft rush
<i>Mentha aquatica</i>	Water mint
<i>Myosotis scorpioides</i>	Water forget-me-not
<i>Nasturtium officinale</i>	Water-cress
<i>Lychnis flos-cuculi</i>	Ragged-Robin
<i>Ranunculus acris</i>	Meadow buttercup
<i>Ranunculus flammula</i>	Lesser spearwort
<i>Rumex acetosella</i>	Sheep's sorrel
<i>Salix sp.</i>	Willow
<i>Scrophularia auriculata</i>	Water figwort
<i>Trifolium pratense</i>	Red clover
<i>Typha latifolia</i>	Bulrush
<i>Veronica beccabunga</i>	Brooklime

10. Disturbed Ground (ED3)

<i>Achillea millefolium</i>	Yarrow
<i>Ajuga reptans</i>	Bugle
<i>Anagallis arvensis</i>	Scarlet pimpernel
<i>Anthoxanthum odoratum</i>	Sweet vernal-grass
<i>Barbarea vulgaris</i>	Winter-cress
<i>Bellis perennis</i>	Daisy
* <i>Buddleja davidii</i>	Butterfly-bush
<i>Calystegia sepium</i>	Hedge bindweed
<i>Cardamine pratensis</i>	Cuckooflower
<i>Carex flacca</i>	Glaucous sedge
* <i>Centranthus ruber</i>	Red valerian
* <i>Chamomilla suaveolens</i>	Pineappleweed
* <i>Cymbalaria muralis</i>	Ivy-leaved toadflax
<i>Dipsacus fullonum</i>	Teasel
<i>Epilobium angustifolium</i>	Rosebay willowherb
<i>Fumaria officinalis</i>	Common fumitory
<i>Geranium molle</i>	Dove's-foot cranes-bill
<i>Geranium robertianum</i>	Herb-Robert
<i>Holcus lanatus</i>	Yorkshire-fog
<i>Juncus effusus</i>	Soft rush
<i>Juncus inflexus</i>	Hard rush
<i>Lemna sp.</i>	Duckweed
<i>Leucanthemum vulgare</i>	Oxeye daisy
<i>Lotus corniculatus</i>	Common bird's-foot-trefoil
<i>Luzula campestris</i>	Field wood-rush
<i>Lysimachia nemorum</i>	Yellow pimpernel
<i>Medicago lupulina</i>	Black medick
<i>Nasturtium officinale</i>	Water-cress
§ <i>Papaver rhoeas</i>	Common poppy
<i>Phragmites australis</i>	Common reed
<i>Plantago lanceolata</i>	Ribwort Plantain
<i>Primula veris</i>	Cowslip
<i>Ranunculus repens</i>	Creeping buttercup
<i>Reseda luteola</i>	Weld
<i>Rubus fruticosus</i>	Bramble
<i>Rumex acetosella</i>	Sheep's sorrel
<i>Rumex crispus</i>	Curled dock
<i>Salix sp.</i>	Willow
<i>Schoenoplectus lacustris</i>	Common club-rush
<i>Senecio jacobaea</i>	Common ragwort
<i>Sonchus arvensis</i>	Perennial sow-thistle
<i>Stellaria media</i>	Common chickweed
<i>Trifolium pratense</i>	Red clover
<i>Trifolium repens</i>	White clover
<i>Typha latifolia</i>	Bulrush
<i>Ulex Europaeus</i>	Gorse
<i>Veronica beccabunga</i>	Brooklime
<i>Veronica chamaedrys</i>	Germander speedwell

Appendix B - Native Irish Tress and Shrubs

Native Irish Tree Species - Where to Plant				
Common Name	Latin Name	Suitability		
		Public Open Spaces	Streets	Artificial
Alder (common)	<i>Alnus glutinosa</i>	*	-	*
Alder buckthorn	<i>Frangula alnus</i>	*	-	*
Strawberry Tree	<i>Arbutus unedo</i>	*	-	*
Ash	<i>Fraxinus excelsior</i>	*	*	-
Aspen	<i>Populus tremulus</i>	*	-	-
Birch (Silver)	<i>Betula pendula</i>	*	*	*
Birch (Downy)	<i>Betula pubescens</i>	*	*	*
Bird Cherry	<i>Prunus padus</i>	*	*	*
Crab apple	<i>Malus sylvestris</i>	*	-	-
Holly	<i>Ilex aquifolium</i>	*	-	*
Juniper	<i>Juniperus communis</i>	*	-	-
Oak (pedunculate)	<i>Quercus robur</i>	*	-	-
Oak (sessile)	<i>Quercus petraea</i>	*	-	-
Rowan/Mountain Ash	<i>Sorbus aucuparia</i>	*	*	*
Scot's Pine	<i>Pinus sylvestris</i>	*	-	-
Wild Cherry	<i>Prunus avium</i>	*	*	*
Whitebeam	<i>Sorbus aria</i>	*	*	*
Wych elm	<i>Ulmus glabra</i>	*	-	-
Yew	<i>Taxus baccata</i>	*	-	*

Public Open Space

* indicates a species of large proportions or of ornamental qualities suitable for planting in public open spaces such as parks or squares

Streets

* indicates ornmental trees which are suitable for planting in streets and confined spaces.

Artificial Conditions

* indicates trees which can be grown in paved areas, containers, raised beds and courtyards.

Sources

1. An Foras Forbartha. 1982. A Manual on Urban Trees