

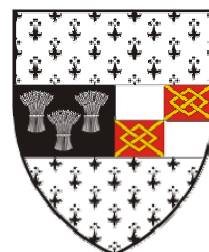
SEA ENVIRONMENTAL REPORT

FOR THE

DRAFT MASTERPLAN FOR ABBEY CREATIVE QUARTER 2015

for: Kilkeny County Council

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List of Abbreviations

AA	Appropriate Assessment
CSO	Central Statistics Office
DAHG	Department of Arts, Heritage and the Gaeltacht
DCENR	Department of Communications, Energy and Natural Resources
DEHLG	Department of the Environment, Heritage and Local Government
DECLG	Department of the Environment, Community and Local Government
EIA	Environmental Impact Assessment
EPA	Environmental Protection Agency
EU	European Union
GSI	Geological Survey of Ireland
NHA	Natural Heritage Area
NIAH	National Inventory of Architectural Heritage
RBD	River Basin District
RMP	Record of Monuments and Places
RPS	Record of Protected Structures
RPGs	Regional Planning Guidelines
SAC	Special Area of Conservation
SEA	Strategic Environmental Assessment
SEO	Strategic Environmental Objective
SI No.	Statutory Instrument Number
SPA	Special Protection Area
WFD	Water Framework Directive

Glossary

Appropriate Assessment

The obligation to undertake Appropriate Assessment derives from Article 6(3) and 6(4) of the Habitats Directive 92/43/EEC. AA is a focused and detailed impact assessment of the implications of a strategic action or project, alone and in combination with other strategic actions and projects, on the integrity of a Natura 2000 site in view of its conservation objectives.

Biodiversity and Flora and Fauna

Biodiversity is the variability among living organisms from all sources including inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are a part; this includes diversity within species, between species and of ecosystems' (United Nations Convention on Biological Diversity 1992).

Flora is all of the plants found in a given area.

Fauna is all of the animals found in a given area.

Environmental Problems

Annex I of Directive 2001/42/EC of the European Parliament and of the Council of Ministers, of 27th June 2001, on the assessment of the effects of certain Plans and programmes on the environment (the Strategic Environmental Assessment Directive) requires that information is provided on 'any existing environmental problems which are relevant to the plan or programme', thus, helping to ensure that the proposed strategic action does not make existing environmental problems worse.

Environmental problems arise where there is a conflict between current environmental conditions and ideal targets. If environmental problems are identified at the outset they can help focus attention on important issues and geographical areas where environmental effects of the plan or programme may be likely.

Environmental Vectors

Environmental vectors are environmental components, such as air, water or soil, through which contaminants or pollutants, which have the potential to cause harm, can be transported so that they come into contact with human beings.

Mitigate

To make or become less severe or harsh.

Mitigation Measures

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

Protected Structure

Protected Structure is the term used in the Planning and Development Act and Regulations (as amended) to define a structure included by a planning authority in its Record of Protected Structures. Such a structure shall not be altered or demolished in whole or part without obtaining planning permission or confirmation from the planning authority that the part of the structure to be altered is not protected.

Recorded Monument

A monument included in the list and marked on the map which comprises the Record of Monuments and Places that is set out County by County under Section 12 of the National Monuments (Amendment) Act, 1994 by the Archaeological Survey of Ireland. The definition includes Zones of Archaeological Potential in towns and all other monuments of archaeological interest which have so far been identified. Any works at or in relation to a recorded monument requires two months' notice to the former Department of the Environment, Heritage and Local Government (now Department of Arts, Heritage and the Gaeltacht) under section 12 of the National Monuments (Amendment) Act, 1994.

Scoping

Scoping is the process of determining what issues are to be addressed, and setting out a methodology in which to address them in a structured manner appropriate to the plan or programme. Scoping is carried out in consultation with appropriate environmental authorities.

Strategic Actions

Strategic actions include: Policies/Strategies, which may be considered as inspiration and guidance for action and which set the framework for Plans and programmes; Plans, sets of co-ordinated and timed objectives for the implementation of the policy; and Programmes, sets of projects in a particular area.

Strategic Environmental Assessment (SEA)

Strategic Environmental Assessment (SEA) is the formal, systematic evaluation of the likely significant environmental effects of implementing a plan or programme before a decision is made to adopt it.

Strategic Environmental Objective (SEO)

Strategic Environmental Objectives (SEOs) are methodological measures developed from policies which generally govern environmental protection objectives established at international, Community or Member State level and are used as standards against which the provisions of the Masterplan and the alternatives can be evaluated in order to help identify which provisions would be likely to result in significant environmental effects and where such effects would be likely to occur, if - in the case of adverse effects - unmitigated.

Section 1 SEA Introduction and Background

1.1 Introduction and Terms of Reference

This is the Strategic Environmental Assessment (SEA) Environmental Report for the Draft Masterplan for Abbey Creative Quarter 2015. It has been undertaken by CAAS Ltd. on behalf of Kilkenny County Council.

The purpose of this report is to provide a clear understanding of the likely environmental consequences of decisions regarding the adoption and implementation of the Masterplan. The SEA is carried out in order to comply with the provisions of the SEA Directive and can be read in conjunction with the Masterplan.

1.2 SEA Definition

Environmental assessment is a procedure that ensures that the environmental implications of decisions are taken into account before such decisions are made. Environmental Impact Assessment, or EIA, is generally used for describing the process of environmental assessment for individual projects, while Strategic Environmental Assessment, or SEA, is the term which has been given to the environmental assessment of plans and programmes, which help determine the nature and location of individual projects taking place. SEA is a systematic process of predicting and evaluating the likely significant environmental effects of implementing a proposed plan or programme in order to ensure that these effects are adequately addressed at the earliest appropriate stages of decision-making in tandem with economic, social and other considerations.

1.3 SEA Directive and its transposition into Irish Law

Directive 2001/42/EC of the European Parliament and of the Council of Ministers, of 27th 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 21st July 2004. The Regulations have been amended by the European Communities (Environmental Assessment of Certain Plans and Programmes) (Amendment) Regulations 2011 (SI No. 200 of 2011) and the Planning and Development (Strategic Environmental Assessment) (Amendment) Regulations 2011 (SI No. 201 of 2011).

1.4 Implications for the Masterplan and the Planning Authority

The Habitats Directive requires, inter alia, that plans and programmes undergo an Appropriate Assessment (AA) process to establish the likely or potential effects arising from implementation of the Masterplan. Arising from this assessment, it is necessary to undertake Stage 2 AA of the Masterplan as it is likely to have a significant environmental effect or a potentially significant environmental effect on the Natura 2000 Network of designated ecological sites. The undertaking of Stage 2 AA necessitates the undertaking of SEA as the SEA Directive (Article 3 (2)) requires that SEA is carried out for plans and programmes which are being subjected to Stage 2 AA.

The findings of the SEA are expressed in this Environmental Report. This report will be altered to take account of both: recommendations contained in submissions; and changes which may be made to the Draft Masterplan before adoption on foot of submissions. Elected Members of Kilkenny County Council will take into account the findings of this report and other related SEA output during their consideration of the Draft Masterplan.

An SEA Statement will be prepared and will accompany the adopted Masterplan and shall summarise, inter alia, how environmental considerations have been integrated into the Masterplan.

Section 2 The Draft Masterplan

2.1 Introduction

It is an objective in the Kilkenny City and Environs Development Plan 2014-2020 (Objective 3C) to prepare a Masterplan and Urban Design Framework for the Smithwick's site and Bateman Quay area in Kilkenny City. Kilkenny County Council has prepared the Masterplan and Urban Design Framework in compliance with this objective.

The Masterplan document is a non-statutory document. It is intended to place the document on a statutory footing by way of Variation No. 1 to the City Development Plan (this Proposed Variation and associated SEA and AA documents have been placed on public display at the same time as the Masterplan and its associated SEA and AA documents).

The City Development Plan currently zones the Masterplan area as 'General Business' with 'Recreation, Amenity and Open Space' zoning provided along the river.

2.2 Draft Masterplan preparation process

In November 2013, an initial Masterplan document was published for a period of consultation.

Following that period of consultation, an AA screening report was carried out in March 2014. The AA Screening examined the likely impacts that could arise from the Masterplan in the context of a number of factors that could potentially affect the integrity of the Natura 2000 network. The AA concluded that the Masterplan may have significant impacts on the Natura 2000 network and that a Stage 2 AA is required. The undertaking of Stage 2 AA necessitates the undertaking of SEA as Article 3 (2) of the SEA Directive requires that SEA is carried out for plans and programmes which are being subjected to Stage 2 AA.

A Chief Executive's report on the initial Masterplan and consultation period was prepared and presented to the Council in November 2014. It recommended that taking account of the submissions made and the issues presenting that the initial Masterplan

document published in November 2013 be revised taking account of:

- The adopted Kilkenny City and Environs Development Plan 2014 – 2020;
- Appropriate Assessment and Strategic Environmental Assessment;
- Archaeological recommendations from further archaeological assessment;
- Submissions made to the initial Masterplan; and
- Further public consultation.

As part of the revisioning of the Masterplan various public consultation exercises have been undertaken by the Council.

2.3 Content and Layout

The Masterplan is laid out in six sections as follows:

Section One: Introduction

1 Introduction

- 1.1. Introduction
- 1.2 Project Brief
- 1.3 Public Consultations
- 1.4 Appropriate Assessment
- 1.5 Strategic Environmental Assessment

Section Two: Context

2.1 Historical Context of Kilkenny

- 2.1.1 History of Kilkenny
- 2.1.2 Timeline for Kilkenny
- 2.1.3 Townscape and Urban Structure
- 2.1.4 The City and the River

2.2 Current Context of Kilkenny

- 2.2.1 Vision arising from Public Consultation
- 2.2.2 Kilkenny attracting New Industries

Section Three: Analysis

3.1 Masterplan Area Context

- 3.1.1 Description of Study Area
- 3.1.2 Context of the Study Area
- 3.1.3 Statutory Planning & Planning Policy
- 3.1.4 Site Analysis - Archaeology

- 3.1.5 Site Analysis - Views
- 3.1.6 Site Analysis - Architectural Heritage
- 3.1.7 Site Analysis - Conservation Policies
- 3.1.8 Site Analysis - Linear Park
- 3.1.9 Site Analysis - River Bank
- 3.1.10 Site Analysis --- Tourism
- 3.1.11 Site Analysis --- Flood Risk
- 3.1.12 Site Analysis - Urban Scale

3.2 Urban Planning & Analysis

- 3.2.1 Site Analysis --- Lynchian Method
- 3.2.2 Opportunities and Weaknesses
- 3.2.3 Context

Section Four: Masterplan Strategies

4.1 Connectivity and Movement Strategy

- 4.1.1 Smarter Travel / Mobility Management Plan
- 4.1.2 Key Connectivity and Movement Issues
- 4.1.3 Pedestrian & Cyclist Movement
- 4.1.4 Vehicular Movement
- 4.1.5 Public Transport
- 4.1.6 Parking / Traffic Management

4.2 Conservation & Heritage Strategy

- 4.2.1 Conservation Objectives
- 4.2.2 Archaeological Strategy
- 4.2.3 Summary of Archaeological Recommendations
- 4.2.4 Heritage Structures Strategy
- 4.2.5 Existing Structures Strategy

4.3 Key Urban Design Strategy

- 4.3.1 Character Areas
- 4.3.2 Environmental Strategy
- 4.3.3 New Linear Park
- 4.3.4 Archaeology Sensitivity
- 4.3.5 Public Park / Garden
- 4.3.6 Public Real Strategy
- 4.3.7 Movement Strategy
- 4.3.8 Streets / Lanes Strategy
- 4.3.9 New Buildings Strategy
- 4.3.10 Urban Grain Strategy
- 4.3.11 Public Consultation / Vision Statement

4.4 Sustainability Strategy

- 4.4.1 Sustainability Strategy
- 4.4.2 Density and Mixed Uses
- 4.4.3 Transport
- 4.4.4 Environmental Quality
- 4.4.5 Energy
- 4.4.6 Zero Brown Waste
- 4.4.7 Water Conservation
- 4.4.8 R&D Funding

4.4.9 Exemplar Developments

Section Five: Masterplan Proposals

5.1 Establishing a New Creative Quarter

- 5.1.1 Defining a new role for the Quarter
- 5.1.2 Integration of site into the existing Medieval fabric
- 5.1.3. Links to the Historic Spine / Medieval Mile
- 5.1.4 Public Open Spaces

5.2 Urban Framework Plan Options Considered

5.3 Final Urban Framework Masterplan

- 5.3.1 Phasing Proposals
- 5.3.2 Overall Masterplan
- 5.3.3 Lynchian Diagram --- Post Construction
- 5.3.4 Site Sections
- 5.3.5 3D Views

Section Six: Appendices

- Appendix A City Development Plan Environmental Protection Provisions
- Appendix B Appropriate Assessment SEA Environmental Report
- Appendix C Archaeological Strategy
- Appendix D Flood Risk Assessment
- Appendix E Spatial, Context & Process Principles
- Appendix F Observations on Urban Code

2.4 High level Objectives

Arising from an analysis of the issues identified in the Kilkenny City and Environs Development 2014 -2020 Plan the following objectives were developed for the Masterplan:

- To advance the co-operation between Kilkenny Local Authorities, existing third level institutions and the proposed Technology University for the South East.
- To support employment creation, innovation and lifelong learning.
- To promote the sustainable development of the city
- To provide the highest quality living environments possible
- To guide the location and pattern of development whilst ensuring a relatively compact urban form is maintained

- To promote balanced and sustainable economic development and employment by ensuring that a diverse range of economic sectors are developed
- To develop an integrated transport strategy for the city linked to land use objectives, which facilitates access to a range of transport modes
- To protect, conserve and enhance the built and natural heritage of the city
- To promote the regeneration of the city centre and to protect and promote the city centre as the commercial and cultural focus for the city
- To advance the redevelopment of the Bateman Quay site for civic and prime retail use
- To provide a hierarchy of parks, open spaces and outdoor recreation areas and to use the river corridors of the River Nore, Breagagh and Pockocke to provide open space for the city while having due consideration to their ecological sensitivity¹.

2.5 Relationship with other relevant Plans and Programmes

2.5.1 Introduction

The Masterplan sits within a hierarchy of strategic actions such as plans and programmes, including those detailed under Sections 2.5.2 and 2.5.3 and Table 2.1 below (see also Section 4, Section 5 and Section 9).

The Masterplan complies with relevant higher level strategic actions as relevant and appropriate and will guide lower level projects. The Masterplan is at the lower level of the hierarchy in the context of national, regional, county and City level plans.

The Masterplan is subject to a number of high level environmental protection policies and objectives with which it must comply, including those which have been identified as Strategic Environmental Objectives in Section 5. Examples of Environmental Protection Objectives include the aim of the EU Habitats Directive - which is to contribute towards ensuring biodiversity through the conservation

of natural habitats and of wild fauna and flora in the European territory of Member States - and the purpose of the Water Framework Directive - which is to establish a framework for the protection of inland surface waters, transitional waters, coastal waters and groundwater which, among other things, prevents deterioration in the status of all water bodies and protects, enhances and restores all waters with the aim of achieving good status by 2015.

2.5.2 Kilkenny City Development Plan 2014-2020

The City Development Plan currently zones the Masterplan area as 'General Business' with 'Recreation, Amenity and Open Space' zoning provided along the river.

It is an objective in the Kilkenny City and Environs Development Plan 2014-2020 (Objective 3C) to prepare a Masterplan and Urban Design Framework for the Smithwick's site and Bateman Quay area in Kilkenny City. Kilkenny County Council has prepared the Masterplan and Urban Design Framework in compliance with this objective.

2.5.3 Proposed Variation No. 1 to the City Development Plan

It is intended to place the document on a statutory footing by way of Variation No. 1 to the City Development Plan (this Proposed Variation and associated SEA and AA documents have been placed on public display at the same time as the Draft Masterplan and its associated SEA and AA documents).

¹ These rivers are partly designated within the Natura 2000 Network.

Table 2.1 Relationship with Legislation and Other Plans and Programmes²

European				
Directive/ Plan/ Programme	Highest Level Aim/ Purpose/ Objective	Lower level objectives, actions etc.	Relevant legislation in Ireland	Relevance to the Masterplan
UN Kyoto Protocol and the Second European Climate Change Programme (ECCP II)	The UN Kyoto Protocol set of policy measures to reduce greenhouse gas emissions The Second European Climate Change Programme (ECCP II) aims to identify and develop all the necessary elements of an EU strategy to implement the Kyoto Protocol	<ul style="list-style-type: none"> The Kyoto Protocol is implemented through the European Climate Change Programme (ECCP II) EU member states implement measures to improve on or complement the specified measures and policies arising from the ECCP 	National Policy Position and final Heads of the Climate Action and Low-Carbon Development Bill	To cumulatively contribute towards – in combination with other users and bodies – the achievement of the objectives of the regulatory framework for environmental protection and management
EU 2020 climate and energy package	<ul style="list-style-type: none"> Binding legislation which aims to ensure the European Union meets its climate and energy targets for 2020 Aims to achieve a 20% reduction in EU greenhouse gas emissions from 1990 levels Aims to raise the share of EU energy consumption produced from renewable resources to 20% Achieve a 20% improvement in the EU's energy efficiency 	<p>Four pieces of complimentary legislation:</p> <ul style="list-style-type: none"> Reform of the EU Emissions Trading System (EU ETS) to include a cap on emission allowances in addition to existing system of national caps Member States have agreed national targets for non-EU ETS emissions from countries outside the EU Meet the national renewable energy targets of 16% for Ireland by 2020 Preparing a legal framework for technologies in carbon capture and storage 	<p>The Framework for Climate Change Bill</p> <p>European Communities (Renewable Energy) Regulations 2011 (S.I. No. 147/2011)</p>	To cumulatively contribute towards – in combination with other users and bodies – the achievement of the objectives of the regulatory framework for environmental protection and management
Habitats Directive (92/43/EEC)	<ul style="list-style-type: none"> Promote the preservation, protection and improvement of the quality of the environment, including the conservation of natural habitats and of wild fauna and flora Contribute towards ensuring biodiversity through the conservation of natural habitats and of wild fauna and flora Maintain or restore to favourable conservation status, natural habitats and species of wild fauna and flora of Community interest Promote the maintenance of biodiversity, taking account of economic, social, cultural and regional requirements. 	<ul style="list-style-type: none"> Propose and protect sites of importance to habitats, plant and animal species Establish a network of Natura 2000 sites hosting the natural habitat types listed in Annex I and habitats of the species listed in Annex II, to enable the natural habitat types and the species' habitats concerned to be maintained or, where appropriate, restored at a favourable conservation status in their natural range Carry out comprehensive assessment of habitat types and species present Establish a system of strict protection for the animal species and plant species listed in Annex IV 	<p>European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477/2011)</p> <p>The Wildlife Act 1976 and the Wildlife (Amendment) Act 2000</p>	The Council is obliged to comply with, as relevant and appropriate, the requirements of the Directive and transposing regulations
Birds Directive (2009/147/EC)	<ul style="list-style-type: none"> Conserve all species of naturally occurring birds in the wild state including their eggs, nests and habitats Protect, manage and control these species and comply with regulations relating to their exploitation The species included in Annex I shall be the subject of special conservation measures 	<ul style="list-style-type: none"> Preserve, maintain or re-establish a sufficient diversity and area of habitats for all the species of birds referred to in Annex 1. Preserve, maintain and establish biotopes and habitats to include the creation of protected areas (Special Protection Areas); ensure the upkeep and management in accordance with the ecological needs of habitats 	European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477/2011)	The Council is obliged to comply with, as relevant and appropriate, the requirements of the Directive and transposing regulations

² Table 2.1 is not intended to be a full and comprehensive review of EU Directives, the transposing regulations or the regulatory framework for environmental protection and management. The information is not exhaustive and it is recommended to consult the Directive, Regulation, Plan or Programme to become familiar with the full details of each.

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	concerning their habitat in order to ensure their survival and reproduction in their area of distribution	inside and outside the protected zones, re-establish destroyed biotopes and creation of biotopes <ul style="list-style-type: none"> Measures for regularly occurring migratory species not listed in Annex I is required as regards their breeding, moulting and wintering areas and staging posts along their migration routes. The protection of wetlands and particularly wetlands of international importance. 		
European Union Biodiversity Strategy to 2020	<ul style="list-style-type: none"> Aims to halt or reverse biodiversity loss and speed up the EU's transition towards a resource efficient and green economy Halting the loss of biodiversity and the degradation of ecosystem services in the EU by 2020, and restoring them in so far as feasible 	<ul style="list-style-type: none"> Outlines six targets and twenty actions to aid European in halting the loss to biodiversity and eco-system services The six targets cover: <ul style="list-style-type: none"> Full implementation of EU nature legislation to protect biodiversity Maintaining, enhancing and protecting for ecosystems, and green infrastructure Ensuring sustainable agriculture, and forestry Sustainable management of fish stocks Reducing invasive alien species Addressing the global need to contribute towards averting global biodiversity loss 	Actions for Biodiversity 2011-2016 Ireland's National Biodiversity Plan, 2011	To cumulatively contribute towards – in combination with other users and bodies – the achievement of the objectives of the regulatory framework for environmental protection and management
The Clean Air for Europe Directive (2008/50/EC)	<ul style="list-style-type: none"> The CAFE Directive merges existing legislation into a single directive (except for the fourth daughter directive) Sets new air quality objectives for PM2.5 (fine particles) including the limit value and exposure related objectives Accounts for the possibility to discount natural sources of pollution when assessing compliance against limit values Allows the possibility for time extensions of three years (PM10) or up to five years (NO2, benzene) for complying with limit values, based on conditions and the assessment by the European Commission. 	<ul style="list-style-type: none"> Sets objectives for ambient air quality designed to avoid, prevent or reduce harmful effects on human health and the environment as a whole Aims to assess the ambient air quality in Member States on the basis of common methods and criteria; Obtains information on ambient air quality in order to help combat air pollution and nuisance and to monitor long-term trends and improvements resulting from national and Community measures; Ensures that such information on ambient air quality is made available to the public; Aims to maintain air quality where it is good and improving it in other cases; Aims to promote increased cooperation between the Member States in reducing air pollution. 	Air Quality Standards Regulations 2011 (S.I. No. 180 of 2011) Arsenic, Cadmium, Mercury, Nickel and Polycyclic Aromatic Hydrocarbons in Ambient Air Regulations 2009 (S.I. No. 58 of 2009)	The Council is obliged to comply with, as relevant and appropriate, the requirements of the Directive and transposing regulations
Fourth Daughter Directive (2004/107/EC)	<ul style="list-style-type: none"> The Fourth Daughter Directive lists pollutants, target values and monitoring requirements for the following: arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air 			
Noise Directive 2002/49/EC	The Noise Directive - Directive 2002/49/EC relating to the assessment and management of environmental noise - is part of an EU strategy setting out to reduce the number of people affected by noise in the longer term and to provide a framework for developing existing Community policy on noise reduction from source.	The Directive requires competent authorities in Member States to: <ul style="list-style-type: none"> Draw up strategic noise maps for major roads, railways, airports and agglomerations, using harmonised noise indicators and use these maps to assess the number of people which may be impacted upon as a result of excessive noise levels; 	Environmental Noise Regulations 2006 (S.I. No. 140 of 2006)	The Council is obliged to comply with, as relevant and appropriate, the requirements of the Directive and transposing regulations

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		<ul style="list-style-type: none"> • Draw up action plans to reduce noise where necessary and maintain environmental noise quality where it is good; and • Inform and consult the public about noise exposure, its effects, and the measures considered to address noise. <p>The Directive does not set any limit value, nor does it prescribe the measures to be used in the action plans, which remain at the discretion of the competent authorities.</p>		
Floods Directive (2007/60/EC)	<ul style="list-style-type: none"> • Establishes a framework for the assessment and management of flood risks • Reduce adverse consequences for human health, the environment, cultural heritage and economic activity associated with floods in the Community 	<ul style="list-style-type: none"> • Assess all water courses and coast lines at risk from flooding through Flood Risk Assessment • Prepare flood hazard maps and flood risk maps outlining the extent or potential of flooding and assets and humans at risk in these areas at River Basin District level (Article 3(2) (b)) and areas covered by Article 5(1) and Article 13(1) (b) in accordance with paragraphs 2 and 3 • Implement flood risk management plans and take adequate and coordinated measures to reduce flood risk for the areas covered by the Articles listed above • Inform the public and allow the public to participate in planning process 	<p>European Communities (Assessment and Management of Flood Risks) Regulations (S.I. 122/2010)</p> <p>European Union (Environmental Impact Assessment) (Flood Risk) Regulations 2012 (S.I. No. 470/2012)</p>	The Council is obliged to comply with, as relevant and appropriate, the requirements of the Directive and transposing regulations
Water Framework Directive (2000/60/EC)	<ul style="list-style-type: none"> • Establish a framework for the protection of water bodies to include inland surface waters, transitional waters, coastal waters and groundwater and their dependent wildlife and habitats • Preserve and prevent the deterioration of water status and where necessary improve and maintain "good status" of water bodies • Promote sustainable water usage • The Water Framework Directive repealed the following Directives: <ul style="list-style-type: none"> ○ The Drinking Water Abstraction Directive ○ Sampling Drinking Water Directive ○ Exchange of Information on Quality of Surface Freshwater Directive ○ Shellfish Directive ○ Freshwater Fish Directive ○ Groundwater (Dangerous Substances) Directive ○ Dangerous Substances Directive 	<ul style="list-style-type: none"> • Protect, enhance and restore all water bodies and meet the environmental objectives outlined in Article 4 of the Directive • Achieve "good status" for all waters by December 2015 • Manage water bodies based on identifying and establishing river basins districts • Involve the public and streamline legislation • Prepare and implement a River Basin Management Plan for each river basin districts identified and a Register of Protected Areas • Establish a programme of monitoring for surface water status, ground water status and protected areas • Recover costs for water services 	<p>European Communities (Water Policy) Regulations 2003 (S.I. No. 722 of 2003) (as amended)</p>	The Council is obliged to comply with, as relevant and appropriate, the requirements of the Directive and transposing regulations
Groundwater Directive (2006/118/EC)	<ul style="list-style-type: none"> • Protect, control and conserve groundwater • Prevent the deterioration of the status of all bodies of groundwater • Implements measures to prevent and control groundwater pollution, including 	<ul style="list-style-type: none"> • Meet minimum groundwater standards listed in Annex 1 of Directive • Meet threshold values adopted by national legislation for the pollutants, groups of pollutants and indicators of pollution which have been identified as contributing to 	<p>European Communities Environmental Objectives (Groundwater) Regulations 2010 (S.I.</p>	The Council is obliged to comply with, as relevant and appropriate, the requirements of the Directive and transposing regulations

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	criteria for assessing good groundwater chemical status and criteria for the identification of significant and sustained upward trends and for the definition of starting points for trend reversals.	the characterisation of bodies or groups of bodies of groundwater as being at risk, also taking into account Part B of Annex II	No. 9/2010) (as amended)	
Bathing Water Directive (2006/7/EC)	<ul style="list-style-type: none"> Preserve, protect and improve the quality of the environment and to protect human health by complementing the Water Framework Directive 2000/60/EC 	<ul style="list-style-type: none"> Identify all bathing waters and define the length of the bathing season Monitor bathing water quality as per Annex 1, Column A at the frequency outlined in Annex IV of the Directive Determine the quality status of the bathing water Achieve at least 'sufficient' standard by 2015 with the aim increase the standard to 'excellent' or 'good' Prepare, review and update a bathing water profile of each in accordance with Annex III Manage bathing water areas in exceptional circumstances to prevent an adverse impact on bathing water quality and on bathers' health Provide public information on bathing water quality 	Bathing Water Quality (Amendment) Regulations 2008 (S.I. No. 79 of 2008) (as amended)	The Council is obliged to comply with, as relevant and appropriate, the requirements of the Directive and transposing regulations
Drinking Water Directive (98/83/EC)	<ul style="list-style-type: none"> Improve and maintain the quality of water intended for human consumption Protect human health from the adverse effects of any contamination of water intended for human consumption by ensuring that it is wholesome and clean 	<ul style="list-style-type: none"> Set values applicable to water intended for human consumption for the parameters set out in Annex I Set values for additional parameters not included in Annex I, where the protection of human health within national territory or part of it so requires. The values set should, as a minimum, satisfy the requirements of Article 4(1) (a) Implement all measures necessary to ensure that regular monitoring of the quality of water intended for human consumption is carried out, in order to check that the water available to consumers meets the requirements of this Directive and in particular the parametric values set in accordance with Article 5 Ensure that any failure to meet the parametric values set in accordance with Article 5 is immediately investigated in order to identify the cause Ensure that the necessary remedial action is taken as soon as possible to restore its quality and shall give priority to their enforcement action Undertake remedial action to restore the quality of the water where necessary to protect human health Notify consumers when remedial action is being undertaken except where the competent authorities consider the non-compliance with the parametric value to be trivial 	<p>European Union (Drinking Water) Regulations 2014 (S.I. No. 106 of 2007) (as amended)</p> <p>European Communities (Water Policy) Regulations 2003 (S.I. No. 722 of 2003)</p>	The Council is obliged to comply with, as relevant and appropriate, the requirements of the Directive and transposing regulations
Urban Waste Water Treatment Directive (91/271/EEC)	<ul style="list-style-type: none"> This Directive concerns the collection, treatment and discharge of urban waste water and the treatment and discharge of waste water from certain industrial sectors 	<ul style="list-style-type: none"> Urban waste water entering collecting systems shall before discharge, be subject to secondary treatment Annex II requires the designation of areas sensitive to eutrophication which receive water discharges Establishes minimum requirements for urban waste water collection and treatment systems in specified 	European Communities (Urban Waste Water Treatment) Regulations 2001 (S.I. No. 254/2001)	The Council is obliged to comply with, as relevant and appropriate, the requirements of the Directive and transposing regulations

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	<ul style="list-style-type: none"> The objective of the Directive is to protect the environment from the adverse effects of waste water discharges 	<p>agglomerations to include special requirements for sensitive areas and certain industrial sectors</p>		
Environmental Liability Directive (2004/35/EC)	<ul style="list-style-type: none"> Establish a framework of environmental liability based on the 'polluter-pays' principle, to prevent and remedy environmental damage 	<ul style="list-style-type: none"> Relates to environmental damage caused by any of the occupational activities listed in Annex III, and to any imminent threat of such damage occurring by reason of any of those activities; damage to protected species and natural habitats caused by any occupational activities other than those listed in Annex III, and to any imminent threat of such damage occurring by reason of any of those activities, whenever the operator has been at fault or negligent Where environmental damage has not yet occurred but there is an imminent threat of such damage occurring, the operator shall, without delay, take the necessary preventive measures Where environmental damage has occurred the operator shall, without delay, inform the competent authority of all relevant aspects of the situation and take all practicable steps to immediately control, contain, remove or otherwise manage the relevant contaminants and/or any other damage factors in order to limit or to prevent further environmental damage and adverse effects on human health or further impairment of services and the necessary remedial measures, in accordance with Article 7. The operator shall bear the costs for the preventive and remedial actions taken pursuant to this Directive The competent authority shall be entitled to initiate cost recovery proceedings against the operator The operator may be required to provide financial security guarantees to ensure their responsibilities under the directive are met 	European Communities (Environmental Liability) Regulations, 2008	The Council is obliged to comply with, as relevant and appropriate, the requirements of the Directive and transposing regulations
SEA Directive (2001/42/EC)	<ul style="list-style-type: none"> Contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes with a view to promoting sustainable development Provide for a high level of protection of the environment by carrying out an environmental assessment of plans and programmes which are likely to have significant effects on the environment 	<ul style="list-style-type: none"> Carry out and environmental assessment for plans or programmes referred to in Articles 2 to 4 of the Directive Prepare an environmental report which identifies, describes and evaluates the likely significant effects on the environment of implementing the plan or programme and reasonable alternatives that consider the objectives and the geographical scope of the plan or programme Consult with relevant authorities, stakeholders and public allowing sufficient time to make a submission Consult other Member States where the implementation of a plan or programme is likely to have transboundary environmental effects 	European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations 2004 (S.I. No. 435/ 2004) (as amended) Planning and Development (Strategic Environmental Assessment) Regulations 2004 (S.I. No. 436/2004) (as amended)	The Council is obliged to comply with, as relevant and appropriate, the requirements of the Directive and transposing regulations

		<ul style="list-style-type: none"> • Inform relevant authorities and stakeholders on the decision to implement the plan or programme • Issue a statement to include requirements detailed in Article 9 of the Directive • Monitor and mitigate significant environmental effects identified by the assessment 		
<p>EIA Directive (2011/92/EU as amended by 2014/52/EU)</p>	<ul style="list-style-type: none"> • Requires the assessment of the environmental effects of public and private projects which are likely to have significant effects on the environment • Aims to assess and implement avoidance or mitigation measures to eliminate environmental effects, before consent is given of projects likely to have significant effects on the environment by virtue, inter alia, of their nature, size or location are made subject to a requirement for development consent and an assessment with regard to their effects. Those projects are defined in Article 4 	<ul style="list-style-type: none"> • All projects listed in Annex I are considered as having significant effects on the environment and require an EIA • For projects listed in Annex II, a "screening procedure" is required to determine the effects of projects on the basis of thresholds/criteria or a case by case examination. This should take into account Annex III. • The environmental impact assessment shall identify, describe and assess in an appropriate manner, in the light of each individual case and in accordance with Articles 4 to 12, the direct and indirect effects of a project on the following factors: human beings, fauna and flora, soil, water, air, climate and the landscape, material assets and the cultural heritage, the interaction between each factor • Consult with relevant authorities, stakeholders and public allowing sufficient time to make a submission before a decision is made • The information to be provided by the developer in accordance with paragraph 1 shall include at least: <ul style="list-style-type: none"> ○ a description of the project comprising information on the site, design and size of the project; ○ a description of the measures envisaged in order to avoid, reduce and, if possible, remedy significant adverse effects; ○ the data required to identify and assess the main effects which the project is likely to have on the environment; ○ an outline of the main alternatives studied by the developer and an indication of the main reasons for his choice, taking into account the environmental effects; ○ a non-technical summary of the information referred to each of the above. 	<p>European Communities (Environmental Impact Assessment) Regulations 1989 (S.I. No. 349/1989) (as amended)</p> <p>European Union (Environmental Impact Assessment) (Flood Risk) Regulations 2012 (S.I. No. 470/2012)</p>	<p>The Council is obliged to comply with, as relevant and appropriate, the requirements of the Directive and transposing regulations</p>

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National/Regional				
Plan/Programme	Highest Level Aim/ Purpose/ Objective	Lower level relevant objectives , actions etc.	Relevant legislation	Relevance to the Masterplan
Infrastructure and Capital Investment 2012-16: Medium Term Exchequer Framework	<ul style="list-style-type: none"> Reviews infrastructure and capital spending over a medium timeframe to ensure investment is made in the best areas Identifies gaps in existing infrastructure that require addressing to aid economic recovery, social cohesion and environmental sustainability 	<p>The approach identifies four main components of the investment strategy as follows:</p> <ul style="list-style-type: none"> Economic infrastructure – encompassing transport networks, energy provision and telecommunications capacity Investment in the productive sector and human capital – such as direct supports for enterprise development; science, technology and innovation advancement; supports for tourism, agriculture, fisheries and forestry; and capital investment in education infrastructure Environmental infrastructure – including our waste and water systems and investment for environmental sustainability Critical social investment – such as the health service and social housing programmes 	not applicable	To cumulatively contribute towards – in combination with other users and bodies – the achievement of the objectives of the regulatory framework for environmental protection and management
Smarter Travel Initiative 2012-2016	Sustainable transport investment programme to encourage transport initiatives such as cycling, car sharing, the use of public transport etc.	Limerick, Dungarvan and Westport were targeted demonstration areas for smarter transport initiatives and allocated funds to implement same	not applicable	In combination with this Initiative the Masterplan will contribute towards smarter travel and associated positive environmental effects.
Smarter Travel – A Sustainable Transport Future – A New Transport Policy for Ireland 2009 – 2020 (2009)	<ul style="list-style-type: none"> Outlines a policy for how a sustainable travel and transport system can be achieved Sets out five key goals: <ul style="list-style-type: none"> To reduce overall travel demand. To maximise the efficiency of the transport network. To reduce reliance on fossil fuels. To reduce transport emissions. To improve accessibility to transport. 	<ul style="list-style-type: none"> Others lower level aims include: <ul style="list-style-type: none"> reduce distance travelled by private car and encourage smarter travel, including focusing population growth in areas of employment and to encourage people to live in close proximity to places of employment ensuring that alternatives to the car are more widely available, mainly through a radically improved public transport service and through investment in cycling and walking improving the fuel efficiency of motorised transport through improved fleet structure, energy efficient driving and alternative technologies strengthening institutional arrangements to deliver the targets 	not applicable	In combination with this Policy the Masterplan will contribute towards smarter travel and associated positive environmental effects.
Ireland's First National Cycle Policy Framework (2009)	<ul style="list-style-type: none"> Outlines objectives and actions aimed at developing a strong cycle network in Ireland Sets out 19 specific objectives, and details the 109 actions, aimed at ensuring that a cycling culture is developed 	<ul style="list-style-type: none"> Sets a target where 10% of all journeys will be made by bike by 2020 Proposes the planning, infrastructure, communication, education and stakeholder participations measures required to implement the initiative 	not applicable	In combination with this Framework the Masterplan will contribute towards smarter travel and associated positive environmental effects.
Scoping Study for a National Cycle Network (NCN)	<ul style="list-style-type: none"> Investigated the feasibility of developing a National Cycle Network for recreational routes in rural areas, urban areas and connecting larger urban areas 	not applicable	not applicable	In combination with this Study the Masterplan will contribute towards smarter travel and

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	<ul style="list-style-type: none"> The scoping study and subsequent workshops resulted in a recommended National Cycle Network 			associated positive environmental effects.
National Climate Change Strategy 2007 – 2012 (2007)	<ul style="list-style-type: none"> Outlines measures to be undertaken to meet the commitments under the Kyoto Protocol Identifies specific measures to meet the commitment up to 2012 and further measures to meet the 2020 target 	not applicable	not applicable	To cumulatively contribute towards – in combination with other users and bodies – the achievement of the objectives of the regulatory framework for environmental protection and management
Delivering a Sustainable Energy Future for Ireland – The Energy Policy Framework 2007 – 2020 (2007)	<ul style="list-style-type: none"> White paper setting out a framework for delivering a sustainable energy future in Ireland Outlines strategic Goals for: <ul style="list-style-type: none"> Security of Supply Sustainability of Energy Competitiveness of Energy Supply 	<p>The underpinning Strategic Goals are:</p> <ul style="list-style-type: none"> Ensuring that electricity supply consistently meets demand Ensuring the physical security and reliability of gas supplies to Ireland Enhancing the diversity of fuels used for power generation Delivering electricity and gas to homes and businesses over efficient, reliable and secure networks Creating a stable attractive environment for hydrocarbon exploration and production Being prepared for energy supply disruptions 	not applicable	To cumulatively contribute towards – in combination with other users and bodies – the achievement of the objectives of the regulatory framework for environmental protection and management
National Renewable Energy Action Plan	<ul style="list-style-type: none"> A strategic approach for Ireland including measures to meet European targets for 2020 including Ireland's 16% target of gross final consumption to come from renewables by 2020 	not applicable	Renewable Energy Directive 2009/28/EC	To cumulatively contribute towards – in combination with other users and bodies – the achievement of the objectives of the regulatory framework for environmental protection and management
National Energy Efficiency Action Plan for Ireland 2007 – 2020 (2007)	<ul style="list-style-type: none"> This is the second National Energy Efficiency Action Plan for Ireland 	<ul style="list-style-type: none"> The Plan reviews the original 90 actions outlined in the first Plan and updates/renews/removes them as appropriate 	not applicable	To cumulatively contribute towards – in combination with other users and bodies – the achievement of the objectives of the regulatory framework for environmental protection and management
Sustainable Development – A Strategy for Ireland (1997)	<ul style="list-style-type: none"> Provides an analysis and a strategic framework for sustainable development in Ireland Identifies the approaches required to support sustainable development 	not applicable	not applicable	To cumulatively contribute towards – in combination with other users and bodies – the achievement of the objectives of the regulatory framework for environmental protection and management
Wildlife Act of 1976 Wildlife (Amendment) Act, 2000	<ul style="list-style-type: none"> The act provides protection and conservation of wild flora and fauna 	<ul style="list-style-type: none"> Provides protection for certain species, their habitats and important ecosystems Give statutory protection to NHAs Enhances wildlife species and their habitats Includes more species for protection 	not applicable	The Council is obliged to comply with, as relevant and appropriate, the requirements of this legislation

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<p>Actions for Biodiversity 2011-2016 Ireland's National Biodiversity Plan, 2011</p>	<ul style="list-style-type: none"> Sets out strategic objectives, targets and actions to conserve and restore Ireland's biodiversity and to prevent and reduce the loss of biodiversity in Ireland and globally 	<ul style="list-style-type: none"> To mainstream biodiversity in the decision making process across all sectors To substantially strengthen the knowledge base for conservation, management and sustainable use of biodiversity To increase awareness and appreciation of biodiversity and ecosystems services To conserve and restore biodiversity and ecosystem services in the wider countryside To conserve and restore biodiversity and ecosystem services in the marine environment To expand and improve on the management of protected areas and legally protected species To substantially strengthen the effectiveness of international governance for biodiversity and ecosystem services 	<p>not applicable</p>	<p>To cumulatively contribute towards – in combination with other users and bodies – the achievement of the objectives of the regulatory framework for environmental protection and management</p>
<p>The Planning System and Flood Risk Management – Guidelines for Planning Authorities (2009)</p>	<ul style="list-style-type: none"> Sets out comprehensive mechanisms for the incorporation of flood risk identification, assessment and management into the planning process Ensures flood risk is a key consideration in preparing development plans and local area plans and in the assessment of planning applications Implementation of the Guidelines is through actions at national, regional, local authority and site-specific levels 	<ul style="list-style-type: none"> Avoid inappropriate development in areas at risk of flooding Avoid new developments increasing flood risk elsewhere, including that which may arise from surface water run-off Ensure effective management of residual risks for development permitted in floodplains Avoid unnecessary restriction of national, regional or local economic and social growth Improve the understanding of flood risk among relevant stakeholders Ensure that the requirements of EU and national law in relation to the natural environment and nature conservation are complied with at all stages of flood risk management. 	<p>Planning and Development Act 2000 (as amended)</p> <p>S.I. No. 122/2010 EC (Assessment and Management of Flood Risks) Regulations 2010</p> <p>S.I. No. 470/2012 European Union (Environmental Impact Assessment) (Flood Risk) Regulations 2012.</p>	<p>The Council is obliged to comply with, as relevant and appropriate, the requirements of these Guidelines</p>
<p>European Communities (Water Policy) Regulations of 2003 (SI 722 of 2003)</p> <p>European Communities (Water Policy) Regulations of 2003 (SI 350 of 2014)</p>	<ul style="list-style-type: none"> Transposes the Water Framework Directive into legislation Outlines the general duty of public authorities in relation to water Identifies the competent authorities in charge of water policy (amended to Irish Water in 2013) and gives EPA and the CER the authority to regulate and supervise their actions 	<ul style="list-style-type: none"> Implements River basin districts and characterisation of RBDs and River Basin Management Plans Requires the public to be informed and consulted on the Plan and for progress reports to be published on RBDs Implements a Register of protected areas, Classification systems and Monitoring programmes for water bodies Allows the competent authority to recover the cost of damage/destruction of status of water body Outlines environmental objectives and programme of measures and environmental quality standards for priority substances Outlines criteria for assessment of groundwater 	<p>Water Framework Directive 2000/60/EC</p>	<p>The Council is obliged to comply with, as relevant and appropriate, the requirements of this legislation</p>
<p>European Communities Environmental Objectives (Surface</p>	<ul style="list-style-type: none"> Transposes the requirements of the Water Framework Directive into Irish Legislation 	<ul style="list-style-type: none"> Outlines environmental objectives to be achieved for surface water bodies Outlines surface water quality standards 	<p>Water Framework Directive 2000/60/EC</p>	<p>The Council is obliged to comply with, as relevant and appropriate, the requirements of this legislation</p>

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waters) Regulations of 2009 (SI 272 of 2009)		<ul style="list-style-type: none"> Establishes threshold values for the classification and protection of surface waters against pollution and deterioration in quality 		
European Communities Environmental Objectives (Groundwater) Regulations of 2010 (SI 9 of 2010)	<ul style="list-style-type: none"> Transposes the requirements of the Groundwater Directive 2006/118/EC into Irish Legislation 	<ul style="list-style-type: none"> Outlines environmental objectives to be achieved for groundwater bodies of groundwater against pollution and deterioration in quality Sets groundwater quality standards Outlines threshold values for the classification and protection of groundwater 	<p>Water Framework Directive 2000/60/EC Groundwater Directive (2006/118/EC)</p> <p>European Communities Environmental Objectives (Groundwater) Regulations 2010 (S.I. No. 9/2010) (as amended)</p>	The Council is obliged to comply with, as relevant and appropriate, the requirements of this legislation
Water Pollution Acts 1977 to 1990	<ul style="list-style-type: none"> The Water Pollution Acts allow Local Authorities the authority regulate and supervise actions relating to water in their division 	<p>The Water Pollution Acts enable local authorities to:</p> <ul style="list-style-type: none"> prosecute for water pollution offences; attach appropriate pollution control conditions in the licensing of effluent discharges from industry, etc., made to waters; issue notices ("section 12 notices") to farmers, etc., specifying measures to be taken within a prescribed period to prevent water pollution; issue notices requiring a person to cease the pollution of waters and requiring the mitigation or remedying of any effects of the pollution in the manner and within the period specified in such notices; seek court orders, including High Court injunctions, to prevent, terminate, mitigate or remedy pollution/its effects; prepare water quality management plans for any waters in or adjoining their functional areas 	Water Services Act 2013	The Council is obliged to comply with, as relevant and appropriate, the requirements of this legislation
Water Quality Management Plans	<ul style="list-style-type: none"> Ensure that the quality of waters covered by the plan is maintained Maintain and improve the quantity and quality of water included in the Plan scope 	<ul style="list-style-type: none"> Monitoring of water bodies against quality standards Outlines management programmes for water catchments Purpose is to maintain and improve the quantity and quality of groundwater 	Water Pollution Acts 1977 to 1990	To cumulatively contribute towards – in combination with other users and bodies – the achievement of the objectives of the regulatory framework for environmental protection and management
European Communities (Urban Waste Water Treatment) Regulations 2001 (S.I. No. 254/2001)	<ul style="list-style-type: none"> Transposes the Urban Waste Water Treatment Directive into Irish Legislation Aims to protect receiving waters from environmental damage arising from Urban Wastewater 	<ul style="list-style-type: none"> Sets out the legislative requirements for urban waste water collection and treatment systems Provides for monitoring programmes of discharges Specifies threshold values and minimum standards for water quality 	Urban Waste Water Treatment Directive (91/271/EEC)	The Council is obliged to comply with, as relevant and appropriate, the requirements of this legislation
Water Services Act 2007	<ul style="list-style-type: none"> Provides the water services infrastructure Outlines the responsibilities involved in delivering and managing water services 	<p>Key strategic objectives include:</p> <ul style="list-style-type: none"> Ensuring Irish Water delivers infrastructural projects that meet key public health, environmental and economic objectives in the water services sector. 	not applicable	The Council is obliged to comply with, as relevant and appropriate, the requirements of this legislation

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<p>Water Services (Amendment) Act 2012</p> <p>Water Services Act 2013</p>	<ul style="list-style-type: none"> Identifies the authority in charge of provision of water and waste water supply Irish Water was given the responsibility of the provision of water and wastewater services in the amendment act during 2013, therefore these services are no longer the responsibility of the 34 Local Authorities in Ireland 	<ul style="list-style-type: none"> Ensuring the provision of adequate water and sewerage services in the gateways and hubs listed in the National Spatial Strategy, and in other locations where services need to be enhanced. Ensuring good quality drinking water is available to all consumers of public and group water supplies, in compliance with national and EU drinking water standards Ensuring the provision of the remaining infrastructure needed to provide secondary wastewater treatment, for compliance with the requirements of the EU Urban Wastewater Treatment Directive. Promoting water conservation through Irish Water's Capital Investment Plan, the Rural Water Programme and other measures. Monitoring the on-going implementation of septic tanks inspection regime and the National Inspection Plan for Domestic Waste Water Treatment Systems. Ensuring a fair funding model to deliver water services. Overseeing the establishment of an economic regulation function under the CER. 		
<p>National Spatial Strategy 2002-2020 (2002)</p>	<ul style="list-style-type: none"> Planning framework for Ireland Aims to achieve a better balance of social, economic and physical development across Ireland, supported by effective planning 	<ul style="list-style-type: none"> Proposes that areas of sufficient scale and critical mass will be built up through a network of gateways, hubs and key town 	<p>Local Government (Planning and Development) Act, 1963 (as amended)</p> <p>Requirement of the Planning and Development (Amendment) Act (2010)</p>	<p>To cumulatively contribute towards – in combination with other users and bodies – the achievement of the objectives of the regulatory framework for environmental protection and management</p>
<p>Grid25 Implementation Programme</p>	<ul style="list-style-type: none"> Framework for the development of the electricity transmission grid in the short, medium and long terms, to support a long-term sustainable and reliable electricity supply 	<ul style="list-style-type: none"> Seeks to implement the provisions of the 2007 Government White Paper on Energy - "Delivering a Sustainable Energy Future for Ireland" in terms of development of electricity transmission infrastructure 	<p>not applicable</p>	<p>To cumulatively contribute towards – in combination with other users and bodies – the achievement of the objectives of the regulatory framework for environmental protection and management</p>
<p>National Landscape Strategy 2015</p>	<ul style="list-style-type: none"> Aims to implement the European Landscape Convention in Ireland by providing for specific measures to promote the protection, management and planning of the landscape. 	<p>The objectives of the National Landscape Strategy are to:</p> <ul style="list-style-type: none"> Recognise landscapes in law Develop a National Landscape Character Assessment; Develop Landscape Policies; Increase Landscape Awareness; Identity Education, Research and Training Needs; and Strengthen Public Participation. 	<p>not applicable</p>	<p>To cumulatively contribute towards – in combination with other users and bodies – the achievement of the objectives of the regulatory framework for environmental protection and management</p>
<p>National Rural Development Programme (draft/in preparation)</p>	<ul style="list-style-type: none"> The National Rural Development Programme, prepared by the Department of Agriculture, Fisheries and Food, sets out a national programme based on the EU 	<p>At a more detailed level, the programme also:</p> <ul style="list-style-type: none"> Supports structural change at farm level including training young farmers and encouraging early 	<p>not applicable</p>	<p>To cumulatively contribute towards – in combination with other users and bodies – the achievement of the objectives</p>

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	<p>framework for rural development and prioritises improving the competitiveness of agriculture, improving the environment and improving the quality of life in rural areas</p>	<p>retirement, support for restructuring, development and innovation;</p> <ul style="list-style-type: none"> • Aims to improve the environment, biodiversity and the amenity value of the countryside by support for land management through funds such as Natura 2000 payments etc.; and • Aims to improve quality of life in rural areas and encouraging diversification of economic activity through the implementation of local development strategies such as non-agricultural activities 		<p>of the regulatory framework for environmental protection and management</p>
<p>National Peatlands Strategy (draft/in preparation)</p>	<ul style="list-style-type: none"> • This Draft Strategy, prepared by the National Parks and Wildlife Service, will, when finalised, establish principles in relation to Irish peatlands in order to guide Government policy. The Draft Strategy aims to provide a framework for which all of the peatlands within the State can be managed responsibly in order to optimise their social, environmental and economic contribution. 	<p>not applicable</p>	<p>not applicable</p>	<p>To cumulatively contribute towards – in combination with other users and bodies – the achievement of the objectives of the regulatory framework for environmental protection and management</p>
<p>National Biodiversity Action Plan</p>	<ul style="list-style-type: none"> • This Action Plan sets out an integrated strategy for collective delivery of the potential benefits of bioenergy resources across the agriculture, enterprise, transport, environment and energy sectors. 	<p>Includes detailed actions for the electricity sector, transport fuel sector, heat sector, research and development sector.</p>	<p>not applicable</p>	<p>To cumulatively contribute towards – in combination with other users and bodies – the achievement of the objectives of the regulatory framework for environmental protection and management</p>
<p>Flood Risk Management Plans arising from National Catchment Flood Risk Assessment and Management Programme (draft/in preparation)</p>	<ul style="list-style-type: none"> • The national Catchment Flood Risk Assessment and Management (CFRAM) programme commenced in Ireland in 2011 and is being overseen by the Office of Public Works. The CFRAM Programme is intended to deliver on core components of the National Flood Policy, adopted in 2004, and on the requirements of the EU Floods Directive. The Programme is being implemented through CFRAM Studies which are being undertaken for each of the six river basin districts in Ireland. 	<p>CFRAM Studies are being undertaken for all River Basin Districts.</p> <p>The studies are focusing on areas known to have experienced flooding in the past and areas that may be subject to flooding in the future either due to development pressures or climate change. In 2014, draft Flood Maps will be published. The final output from the studies will be CFRAM Plans, to be published in December 2016. The Plans will define the current and future flood risk in the River Basin Districts and set out how this risk can be managed.</p>	<p>not applicable</p>	<p>To cumulatively contribute towards – in combination with other users and bodies – the achievement of the objectives of the regulatory framework for environmental protection and management</p>

Regional, County and Local				
Plan/Programme	Highest Level Aim/ Purpose/ Objective	Lower level relevant objectives , actions etc.	Relevant legislation in Ireland	Relevance to the Masterplan
South Eastern River Basin Management Plans and associated Programme of Measures	<ul style="list-style-type: none"> Establish a framework for the protection of water bodies at River Basin District (RBD) level Preserve, prevent the deterioration of water status and where necessary improve and maintain "good status" of water bodies in that RBD before 2015 Promote sustainable water usage 	<ul style="list-style-type: none"> Aims to protect and enhance all water bodies in the RBD and meet the environmental objectives outlined in Article 4 of the Water Framework Directive Identifies and manages water bodies in the RBD Establishes a programme of measures for monitoring and improving water quality in the RBD Involves the public through consultations 	<p>Requirement of the Water Framework Directive (2000/60/EC)</p> <p>European Communities (Water Policy) Regulations, 2003 (SI No. 722) (as amended)</p> <p>Guidelines for the Establishment of River Basin District Advisory Councils (RBDAC)</p>	To cumulatively contribute towards – in combination with other users and bodies – the achievement of the objectives of the regulatory framework for environmental protection and management
South East Regional Planning Guidelines	<ul style="list-style-type: none"> Provides a long-term strategic planning framework for the development of regions 	<ul style="list-style-type: none"> Aim to give regional effect to the National Spatial Strategy Guide the Development Plans and lower tier plans of planning authorities 	Requirement of the Planning and Sustainable Development Act (2000), as amended	To cumulatively contribute towards – in combination with other users and bodies – the achievement of the objectives of the regulatory framework for environmental protection and management
Kilkenny Biodiversity and Heritage Plans	Both plans are 5 year plans which outline how the local authority, in association with its partners, aims to identify, protect, conserve and manage the heritage and biodiversity, respectively, of the City and County.	Both plans are 5 year plans which outline how the local authority, in association with its partners, aims to identify, protect, conserve and manage the heritage and biodiversity, respectively, of the City and County.	not applicable	To cumulatively contribute towards – in combination with other users and bodies – the achievement of the objectives of the regulatory framework for environmental protection and management
Freshwater Pearl Mussel Sub-Basin Management Plans	<ul style="list-style-type: none"> Identifies the current status of the species and the reason for loss or decline Identifies measure required to improve or restore current status 	<ul style="list-style-type: none"> Identifies pressures on Freshwater Pearl Mussels for each of the designated populations in Ireland Outlines restoration measures required to ensure favourable conservation status 	<p>Requirement of Water Framework Directive (2000/60/EC) and Habitats Directive (92/43/EEC)</p> <p>European Communities (Water Policy) Regulations 2003 (S.I. No. 722 of 2003)</p> <p>European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477/2011)</p> <p>The Wildlife Act 1976 and the Wildlife (Amendment) Act 2000</p>	To cumulatively contribute towards – in combination with other users and bodies – the achievement of the objectives of the regulatory framework for environmental protection and management

Section 3 SEA Methodology

3.1 Introduction to the Iterative Approach

This section details how the SEA has been undertaken alongside the preparation of the Masterplan. Figure 3.1 provides an overview of the integrated Masterplan preparation, SEA and AA processes. The preparation of the Draft Masterplan, SEA and Appropriate Assessment (AA) are taking place concurrently and the findings of the SEA and AA have informed the content of the Masterplan.

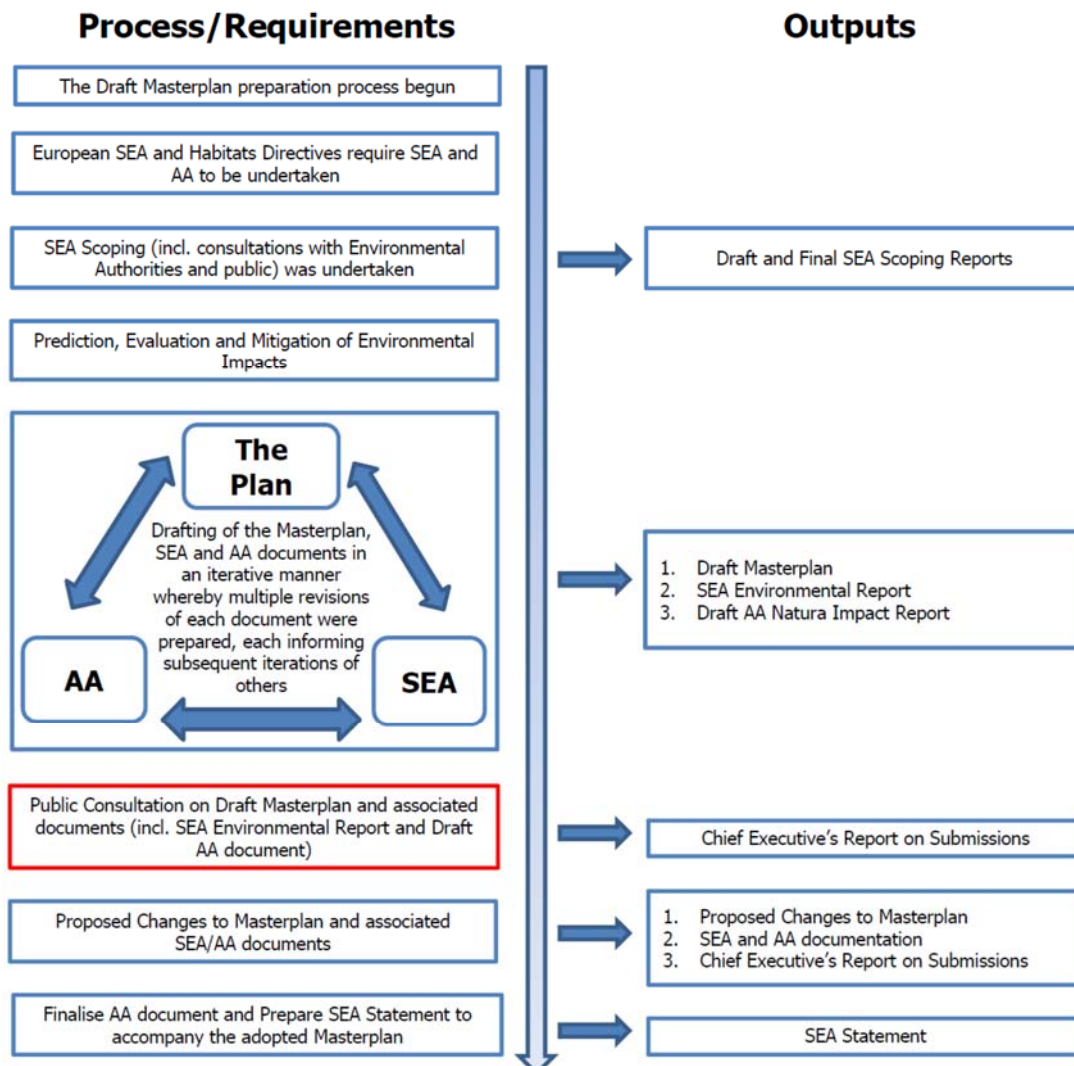
The process is currently at a stage where this Environmental Report has been placed on public display alongside the Draft Masterplan. The findings of the AA which are contained in a

Natura Impact Report also accompany the Draft Masterplan on public display.

Submissions made on the Draft Masterplan and associated SEA and AA documents will be responded to in a Chief Executive's report on public consultation, with updates made to the SEA and AA documentation where relevant. Proposed changes to the Draft Masterplan will be screened for the need to undergo SEA and AA and full, detailed assessments will be undertaken where required.

When the Masterplan is adopted, the SEA and AA documents will be finalised and an SEA Statement, which will include information on how environmental considerations were integrated into the Masterplan, will be prepared.

Figure 3.1 Overview of Masterplan/SEA/AA Processes



3.2 Appropriate Assessment and Integrated Biodiversity Impact Assessment

3.2.1 Appropriate Assessment

A Stage 2 Appropriate Assessment (AA) has been undertaken alongside the preparation of the Masterplan.

The requirement for AA is provided under the EU Habitats Directive (Directive 1992/43/EEC).

The AA concluded that the Masterplan will not affect the integrity of the Natura 2000 network³.

The preparation of the Masterplan, SEA and AA has taken place concurrently and the findings of the AA have informed both the Masterplan and the SEA. All recommendations made by the AA were integrated into the Masterplan.

3.3 Flood Risk Assessment

A Flood Risk Assessment (FRA) has been undertaken alongside the preparation of the Masterplan.

The requirement for FRA is provided under 'The Planning System and Flood Risk Management Guidelines for Planning Authorities' (DEHLG and OPW, 2009).

The preparation of the Masterplan, SEA and FRA has taken place concurrently and the findings of the FRA have informed both the Masterplan and the SEA.

The FRA has facilitated the integration of flood risk management considerations into the Masterplan.

3.4 Scoping

3.4.1 Introduction

In consultation with the environmental authorities, the scope of environmental issues to be dealt with by the SEA together with the level of detail to which they are addressed was broadly decided upon taking into account the collection of environmental baseline data and input from environmental authorities. Scoping allowed the SEA to become focused upon key issues relevant to the environmental components which are specified under the SEA Directive⁴.

As the Masterplan is not likely to have significant effects on the environment in another Member State transboundary consultations as provided for by Article 7 of the SEA Directive were not undertaken.

³ Except as provided for in Section 6(4) of the Habitats Directive, viz. There must be:
(a) no alternative solution available;
(b) imperative reasons of overriding public interest for the plan/programme/project to proceed; and
(c) adequate compensatory measures in place.

⁴ These components comprise biodiversity, fauna, flora, population, human health, soil, water, air, climatic factors, material assets, cultural heritage including architectural and archaeological heritage, landscape and the interrelationship between the above factors.

3.4.2 Scoping Notices

All relevant environmental authorities⁵ identified under the SEA Regulations as amended, were sent SEA scoping notices by the Council indicating that submissions or observations in relation to the scope and level of detail of the information to be included in the environmental report could be made to the Council. Environmental authorities were informed that submissions, or parts of submissions, made on the AA or FRA would also be taken into account.

3.4.3 Scoping Responses

Submissions were made by the Department of Agriculture, Food and the Marine, the Department of Arts, Heritage and the Gaeltacht and the Environmental Protection Agency. These submissions influenced the scope of the assessments.

3.5 Environmental Baseline Data

The SEA process is informed by the environmental baseline (i.e. the current state of the environment) to facilitate the identification and evaluation of the likely significant environmental effects of implementing the provisions of the Masterplan and the alternatives and the subsequent monitoring of the effects of implementing the provisions of the Masterplan.

3.6 Alternatives

The SEA Directive requires that reasonable alternatives (taking into account the objectives and the geographical scope of the plan or programme) are identified, described and evaluated for their likely significant effects on the environment. In accordance with this requirement, alternatives are considered in Section 6.

⁵ The following authorities were notified: Department of Agriculture, Food and the Marine; Department of Arts, Heritage and the Gaeltacht; Department of Communications, Energy and Natural Resources; Department of the Environment, Community and Local Government; Environmental Protection Agency; Carlow County Council; Laois County Council; Tipperary County Council; Waterford County Council; and Wexford County Council

3.7 The SEA Environmental Report

In this Environmental Report, which will be placed on public display alongside the Draft Masterplan, the likely environmental effects of the Draft Masterplan and the alternatives are predicted and their significance evaluated.

The Environmental Report provides the Council, stakeholders and the public with a clear understanding of the likely environmental consequences of implementing the Draft Masterplan.

Mitigation measures to prevent or reduce significant adverse effects posed by the Masterplan are identified in Section 9 - these have been integrated into the Masterplan.

The Environmental Report will be updated in order to take account of recommendations contained in submissions and in order to take account of changes which are made to the Draft Masterplan that is being placed on public display.

The Environmental Report is required to contain the information specified in Annex I of the SEA Directive (see Table 3.1).

3.8 The SEA Statement

On the adoption of the Masterplan by the Council, an SEA Statement will be prepared which will include information on:

- How environmental considerations have been integrated into the Masterplan, highlighting the main changes to the Masterplan which resulted from the SEA process;
- How the SEA Environmental Report and consultations have been taken into account, summarising the key issues raised in consultations and in the Environmental Report indicating what action was taken in response;
- The reasons for choosing the Masterplan in the light of the other alternatives, identifying the other alternatives considered, commenting on their potential effects and explaining why the Masterplan, as adopted, was selected; and
- The measures decided upon to monitor the significant environmental effects of implementing of the Masterplan.

3.9 Difficulties Encountered

The lack of a centralised data source that could make all environmental baseline data for the county both readily available and in a consistent format posed a challenge to the SEA process. This difficulty is one which has been encountered while undertaking SEAs at local authorities across the country and was overcome by investing time in the collection of data from various sources and through the use of Geographical Information Systems.

Table 3.1 Checklist of Information included in this Environmental Report

Information Required to be included in the Environmental Report	Corresponding Section of this Report
(A) Outline of the contents and main objectives of the plan or programme, and of its relationship with other relevant plans and programmes	Sections 2, 5 and 7
(B) Description of relevant aspects of the current state of the environment and the evolution of that environment without implementation of the plan or programme	Section 4
(C) Description of the environmental characteristics of areas likely to be significantly affected	Sections 4, 6 and 7
(D) Identification of any existing environmental problems which are relevant to the plan or programme, particularly those relating to European protected sites	Section 4
(E) List environmental protection objectives, established at international, EU or national level, which are relevant to the plan or programme and describe how those objectives and any environmental considerations have been taken into account when preparing the Plan	Sections 5, 6, 7 and 8
(F) Describe the likely significant effects on the environment	Sections 6 and 7
(G) Describe any measures envisaged to prevent, reduce and as fully as possible offset any significant adverse environmental effects of implementing the plan or programme	Section 8
(H) Give an outline of the reasons for selecting the alternatives considered, and a description of how the assessment was undertaken (including any difficulties)	Sections 3, 6 and 7
(I) A description of proposed monitoring measures	Section 9
(J) A non-technical summary of the above information	Non-Technical Summary (Appendix I)
(K) Interrelationships between each environmental topic	Addressed as it arises within each Section

Section 4 Environmental Baseline

4.1 Introduction

The SEA Directive requires that the information on the baseline environment is focused upon the relevant aspects of the environmental characteristics of areas likely to be significantly affected and the likely evolution of the current environment in the absence of the Masterplan. Being consistent with the strategic provisions of the Masterplan, this section provides a strategic description of aspects of environmental components which have the greatest potential to be affected by implementation of the Masterplan, if unmitigated.

Article 5 of the SEA Directive states that the report shall include the information that may *reasonably* be required taking into account:

- Current knowledge and methods of assessment;
- The contents and level of detail in the plan or programme and its stage in the decision-making process; and
- The extent to which certain matters are more appropriately assessed at different levels in that process in order to avoid duplication of the assessment.

What this means in practice is, inter alia, that SEA involves collating currently available, relevant environmental data; it does not require major new research. Where data deficiencies or gaps exist, this should be acknowledged in the report.

Notwithstanding this, Kilkenny County Council made resources available to facilitate the undertaking of the following studies which have informed the baseline description provided in this section:

- Appropriate Assessment⁶;
- Flood Risk Assessment⁷; and
- Kilkenny Masterplan Area Archaeological Framework⁸.

The area to which the Masterplan relates can be seen on Figure 4.1.

⁶ CAAS for Kilkenny County Council (2015) *Appropriate Assessment Natura Impact Report for the Draft Masterplan for Abbey Creative Quarter*

4.2 Likely Evolution of the Environment in the Absence of the Masterplan

The City Development Plan currently zones the Masterplan area as 'General Business' with 'Recreation, Amenity and Open Space' zoning provided along the river.

The Masterplan in combination with Proposed Variation No. 1 to the City Development Plan (the Proposed Variation and associated SEA and AA documents have been placed on public display at the same time as the Masterplan and its associated SEA and AA documents) provides a framework for the development of the Masterplan area that adds further direction to the type of development that should occur at this site as well as providing further detail to the protection of the environment that is provided at the strategic City Plan level.

Although higher level environmental protection objectives – such as those of the City Plan and various EU Directives and transposing Irish Regulations – would still apply, the absence of the detailed framework would mean that new development would be less coordinated and controlled.

Less coordinated and controlled development would be less certain to result in the positive effects provided for by the Masterplan and Variation, namely:

- Contribution towards the protection of designated ecological sites (River Barrow and River Nore candidate Special Area of Conservation and the River Nore Special Protection Area) and ecological connectivity
- Contribution towards enhancement of ecological connectivity along the banks of the Nore
- Reduces need to develop greenfield lands (with associated impacts upon biodiversity elsewhere)

⁷ RPS for Kilkenny County Council (2015) *Abbey Creative Quarter, Kilkenny Flood Risk Assessment*

⁸ Courtney Deery Heritage Consultancy (2015) *Kilkenny Masterplan Area Archaeological Framework*

- Contribution towards the protection of human health as a result of contributing towards the protection of environmental vectors, especially air
- Reduces need to develop greenfield lands (with associated impacts upon soil elsewhere)
- Contribution towards the protection of status of surface and ground waters
- Contribution towards a shift from car to more sustainable and non-motorised transport modes
- Contribution towards managing traffic flows and associated adverse effects on air quality
- Contribution towards reductions in travel related greenhouse gas and other emissions to air
- Contribution towards reduction in energy usage
- Enhances public assets
- Facilitates provision of water services and waste management
- Contribution towards the protection of architectural and archaeological heritage and its context by facilitating compliance with relevant legislation
- Reduces need to develop greenfield lands (with associated impacts upon architectural and archaeological heritage elsewhere)
- Contribution towards the protection of landscape designations by facilitating compliance with City Development Plan
- Opens up new views
- Reduces need to develop greenfield lands (with associated impacts upon landscapes elsewhere)
- Loss of/disturbance to biodiversity with regard to ecological connectivity and non-designated biodiversity
- Loss of/disturbance to biodiversity with regard to listed species
- Spatially concentrated deterioration in human health
- Damage to the hydrogeological and ecological function of soil
- Potential interactions with the status of water bodies (River Nore, River Breagagh and groundwater) and entries to the WFD Register of Protected Areas, arising from:
 - Changes in quality, flow and/or morphology; and
 - Increases in outflow at waste water treatment plant as a result of increases in population.
- Increase in flood risk
- The need to provide adequate and appropriate water services (it is the function of Irish Water to provide for such needs)
- Failure to contribute towards sustainable transport and associated impacts (energy usage and emissions to air including noise and greenhouse gases)
- Increases in waste levels
- Effects on the Zone of Archaeological Potential, St. Francis Abbey, Kilkenny Town wall, Evans Tower, entries to the Record of Monuments and Places and other archaeological heritage
- Effects on entries to the Records of Protected Structures, National Inventory of Architectural Heritage and Architectural Conservation Areas (St. Canice's ACA and City Centre ACA) and other architectural heritage
- Occurrence of adverse visual impacts especially with respect to protected views and prospects

Less coordinated and controlled development would have the potential to result in an increase in the occurrence of adverse effects on all environmental components, especially those arising cumulatively. Cumulative effects occur as a result of the addition of many small impacts to create one larger, more significant, impact. Such adverse effects could include the following and measures – including those already contained in the City Plan – would need to be complied with in order to ensure that effects were mitigated:

- Loss of/disturbance to biodiversity with regard to Natura 2000 Sites, including the River Barrow and River Nore candidate Special Area of Conservation and the River Nore Special Protection Area

4.3 Biodiversity and Flora and Fauna

4.3.1 Natura 2000

Candidate Special Areas of Conservation (cSACs) have been selected for protection under the European Council Directive on the conservation of natural habitats and of wild fauna and flora (92/43/EEC) by the (former) Department of the Environment, Heritage and Local Government due to their conservation value for habitats and species of importance in the European Union.

Special Protection Areas (SPAs) have been selected for protection under the 1979 European Council Directive on the Conservation of Wild Birds (79/409/EEC) due to their conservation value for birds of importance in the European Union. SPAs, along with SACs, comprise Ireland's Natura 2000 network – part of an EU-wide network of protected areas established under the Habitats Directive.

There are two Natura 2000 sites occurring adjacent to the Masterplan area (the River Barrow and River Nore cSAC and the River Nore SPA). The boundary of the cSAC was provided by the National Parks and Wildlife Service (NPWS). This boundary was drawn using the OSI 6 inch mapping overlaid on the most current OSI Mapping. As identified by the ecologist who is undertaking the Appropriate Assessment, the intended boundary of the cSAC in the vicinity of the Masterplan area is likely to correspond with the SPA boundary (drawn using the most recent mapping). Taking into account this identification, the area subject to both cSAC and SPA designations is mapped on Figure 4.1.

There is only one more Natura 2000 Site within 15km of the Masterplan area Thomastown Quarry cSAC.

Natura 2000 Sites within 15km of the Masterplan area are listed on Table 4.1 and mapped on Figure 4.2.

Table 4.1 Natura 2000 sites within 15km of the Masterplan area

Natura 2000 Sites		
Designation	Code	Site Name
cSAC	002162	River Barrow and River Nore
	002252	Thomastown Quarry
SPA	004233	River Nore

The following text comes from the Site Synopsis (Version date: 25.11.2010) for the River Nore SPA (NPWS, 2010):

The River Nore SPA is a long, linear site that includes the following river sections: the River Nore from the bridge at Townparks, (north-west of Borris in Ossory) to Coolnamuck (approximately 3 km south of Inistioge) in Co. Kilkenny; the Delour River from its junction with the River Nore to Derrynaseera bridge (west of Castletown) in Co. Laois; the Erkina River from its junction with the River Nore at Durrow Mills to Boston Bridge in Co. Laois; a 1.5 km stretch of the River Goul upstream of its junction with the Erkina River; the Kings River from its junction with the River Nore to a bridge at Mill Island, Co. Kilkenny. The site includes the river channel and marginal vegetation.

The River Nore SPA is of high ornithological importance as it supports a nationally important population of Kingfisher, a species that is listed on Annex I of the Birds Directive.

The following text comes from the Site Synopsis (Version date: 01.04.2014) for the River Barrow and River Nore cSAC (NPWS, 2014):

The River Barrow and River Nore cSAC consists of the freshwater stretches of the Barrow/Nore River catchments as far upstream as the Slieve Bloom Mountains and it also includes the tidal elements and estuary as far downstream as Creadun Head in Waterford. The site passes through eight counties.

The cSAC was selected for alluvial wet woodlands and petrifying springs, priority habitats on Annex I of the Habitats Directive. The site is also selected as a candidate SAC for old oak woodlands, floating river vegetation, estuary, tidal mudflats, Salicornia mudflats, Atlantic salt meadows, Mediterranean salt meadows, dry heath and eutrophic tall herbs, all habitats listed on Annex I of the Habitats Directive. The site is also selected for the following species listed on Annex II of the same

directive – Sea Lamprey, River Lamprey, Brook Lamprey, Freshwater Pearl Mussel, Nore Freshwater Pearl Mussel, Crayfish, Twaite Shad, Atlantic Salmon, Otter, Desmoulin's Whorl Snail *Vertigo moulinsiana* and the Killarney Fern.

Overall, the site is of considerable conservation significance for the occurrence of good examples of habitats and of populations of plant and animal species that are listed on Annexes I and II of the Habitats Directive respectively. Furthermore it is of high conservation value for the populations of bird species that use it. The occurrence of several Red Data Book plant species including three rare plants in the salt meadows and the population of the hard water form of the Pearl Mussel.

4.3.2 Proposed Natural Heritage Area

Natural Heritage Areas (NHAs) are designated due to their national conservation value for ecological and/or geological/geomorphological heritage. They cover nationally important semi-natural and natural habitats, landforms or geomorphological features, wildlife plant and animal species or a diversity of these natural attributes. NHAs are designated under the Wildlife (Amendment) Act 2000. Proposed NHAs (pNHA) were published on a non-statutory basis in 1995, but have not since been statutorily proposed or designated.

There are three pNHA's occurring inside the City Development Plan boundary (mapped on Figure 4.3) as follows:

- Archersgrove (outside City boundary but adjoining) Site Code 002051
- Dunmore Complex (consists of 7 sites, one of which is within the City development boundary) Site Code 001859
- Lough Macask 001914
- Newpark Marsh 000845

4.3.3 Water Framework Directive Registers of Protected Areas

Under the requirements of the Water Framework Directive, a Registers of Protected Areas has been compiled to identify surface water and ground water bodies of importance. The aim is to protect and conserve important

water bodies for habitats, species, nutrient sensitive areas, recreational areas and drinking waters. The River Nore within and in the vicinity of Kilkenny City is listed on the Register of Protected Areas for the following:

- cSAC and SPA designations;
- Salmonid River;
- Nutrient Sensitive River (downstream of the City only); and
- Groundwater for Drinking Water.

4.3.4 Ecological Networks and Connectivity

Ecological networks are important in connecting areas of local biodiversity with each other and with nearby designated sites so as to prevent islands of habitat from being isolated entities. They are composed of linear features, such as treelines, hedgerows and rivers/streams, which provide corridors or stepping stones for wildlife species moving within their normal range. They are important for the migration, dispersal and genetic exchange of species of flora and fauna particularly for mammals, especially for bats and small birds and facilitate linkages both between and within designated ecological sites, the non-designated surrounding countryside and the City.

Important ecological network features within and adjacent to the Masterplan site comprise the Rivers Nore and Breaghagh and, where they remain, their banks.

Key green infrastructure valuable to biodiversity and which has been identified by the City Development Plan is mapped on Figure 4.4. In the vicinity of the Masterplan area, the Rivers Nore and Breaghagh are identified as being part of the City's key green infrastructure.

4.3.5 Habitat Survey and Tree Survey

A Habitat Survey was undertaken by Kilkenny Local Authorities for Kilkenny City in 2010. Apart from the *River Nore* and *grassy banks*, the Habitat Survey does not identify any habitats of significance within or adjacent to the Masterplan area.

A Tree Survey was undertaken for Kilkenny City in 2007 which did not identify any trees within the Masterplan area as being worthy of preservation.

4.3.6 Other Protected Species/Habitats

In addition to biodiversity already mentioned above, other species are protected under law wherever they occur, such as:

- 'Protected Species and natural habitats' as defined in the Environmental Liability Directive (2004/35/EC) and European Communities (Environmental Liability) Regulations 2008 including annexed habitats and species listed under Annexes I, II and IV of the EU Habitats Directive and Annex I of the EU Birds Directive;
- Species/Habitats legally protected under the Flora Protection Order in the Wildlife (Amendment) Act 2000;
- Other species of flora and fauna and their key habitats which are protected under the Wildlife Acts 1976-2000 including all native mammals; and
- Stepping stones and ecological corridors including nature conservation sites (other than Natura 2000 sites), habitats and species locations covered by Article 10 of the Habitats Directive.

4.3.7 Existing Problems

As occurs with the development of all settlements, built development within the vicinity of the Masterplan site has resulted in loss of biodiversity and flora and fauna however legislative objectives governing biodiversity and fauna were not identified as being currently conflicted with.

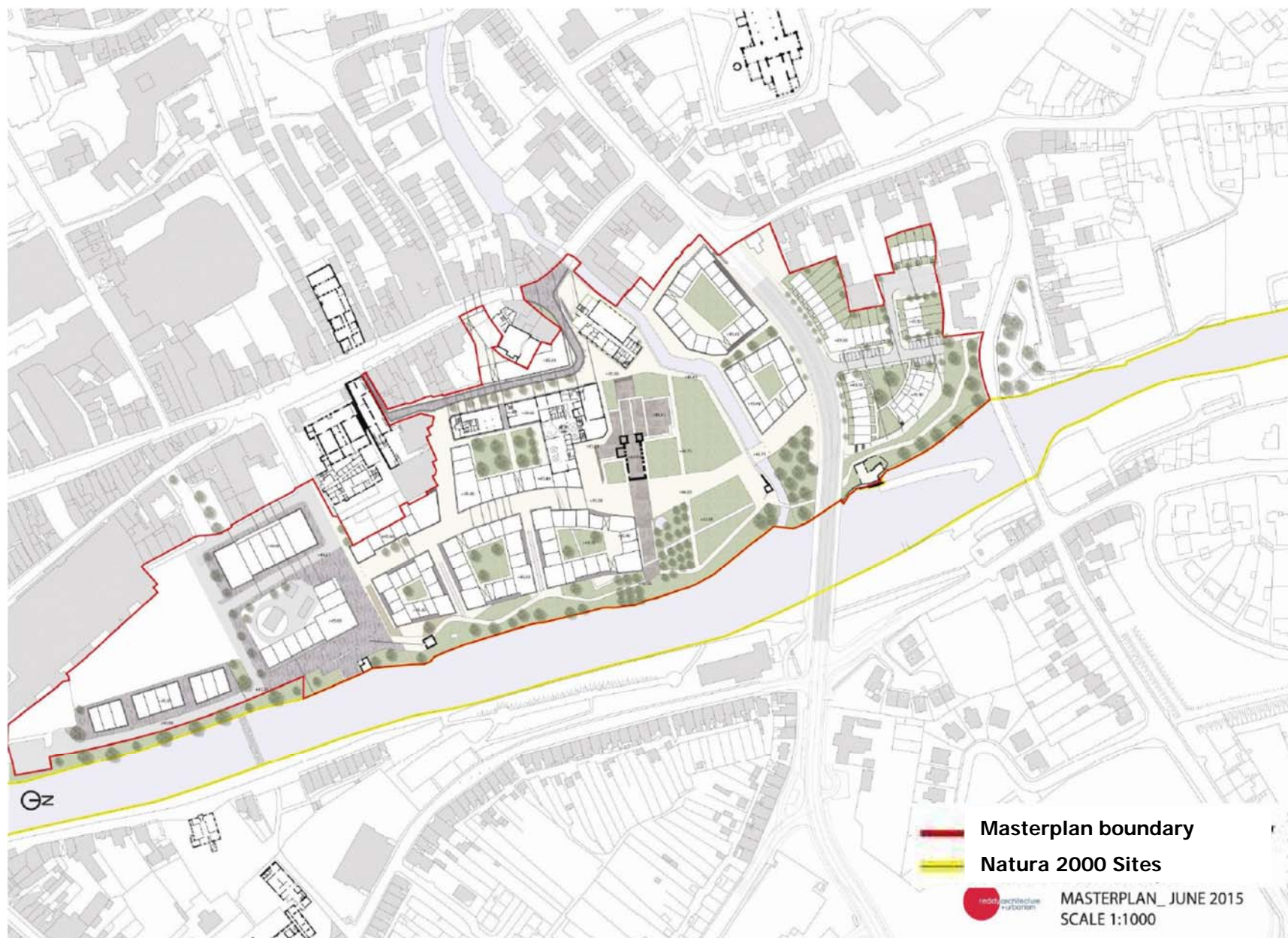


Figure 4.1 Area subject to both cSAC and SPA designation in the vicinity of the Masterplan area

Source: Draft Masterplan Final Design Map; NPWS (datasets downloaded March 2015). See Section 4.3.1 for clarification

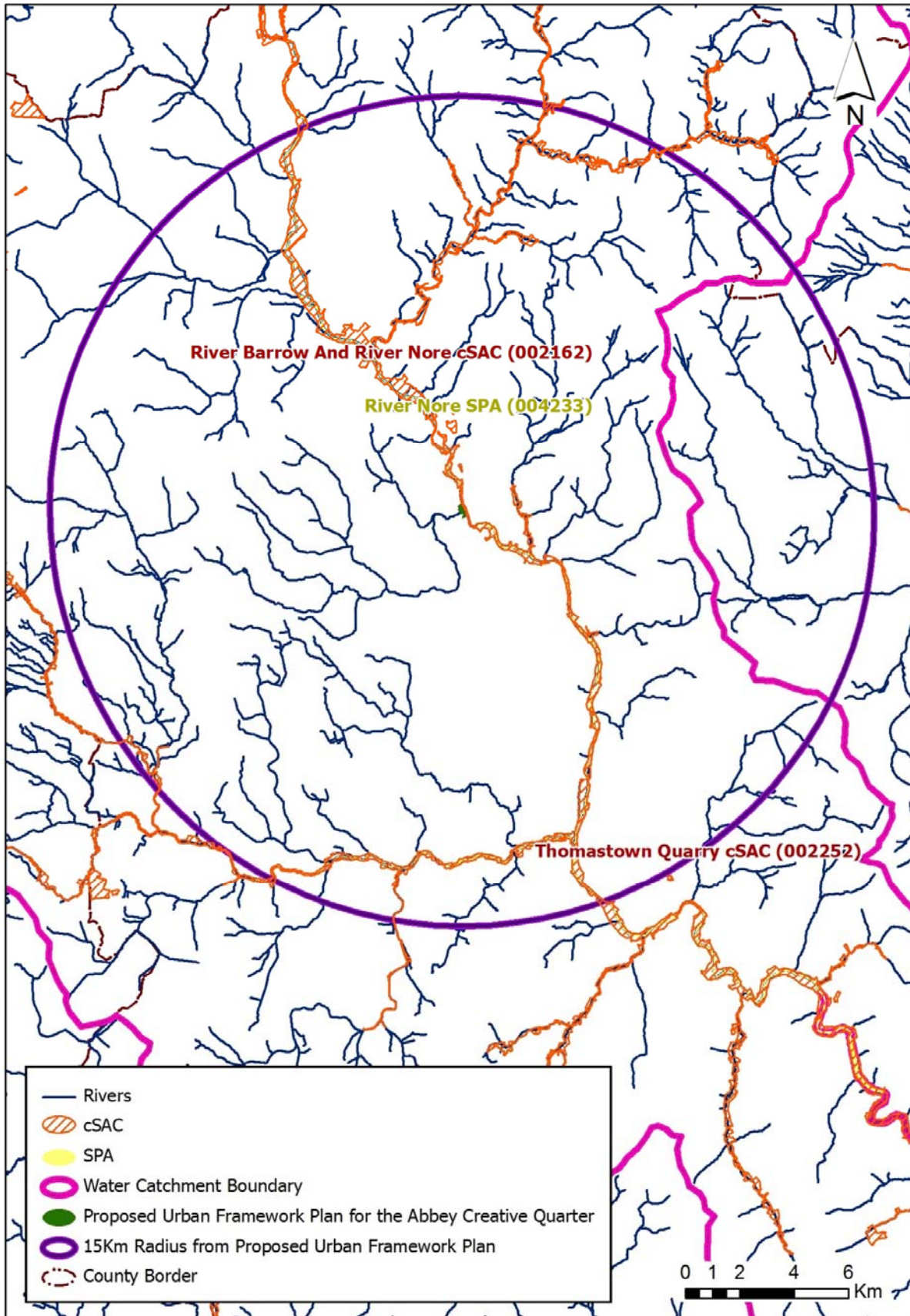


Figure 4.2 Natura 2000 sites occurring within 15 km of Masterplan area

Source: NPWS (datasets downloaded March 2015)

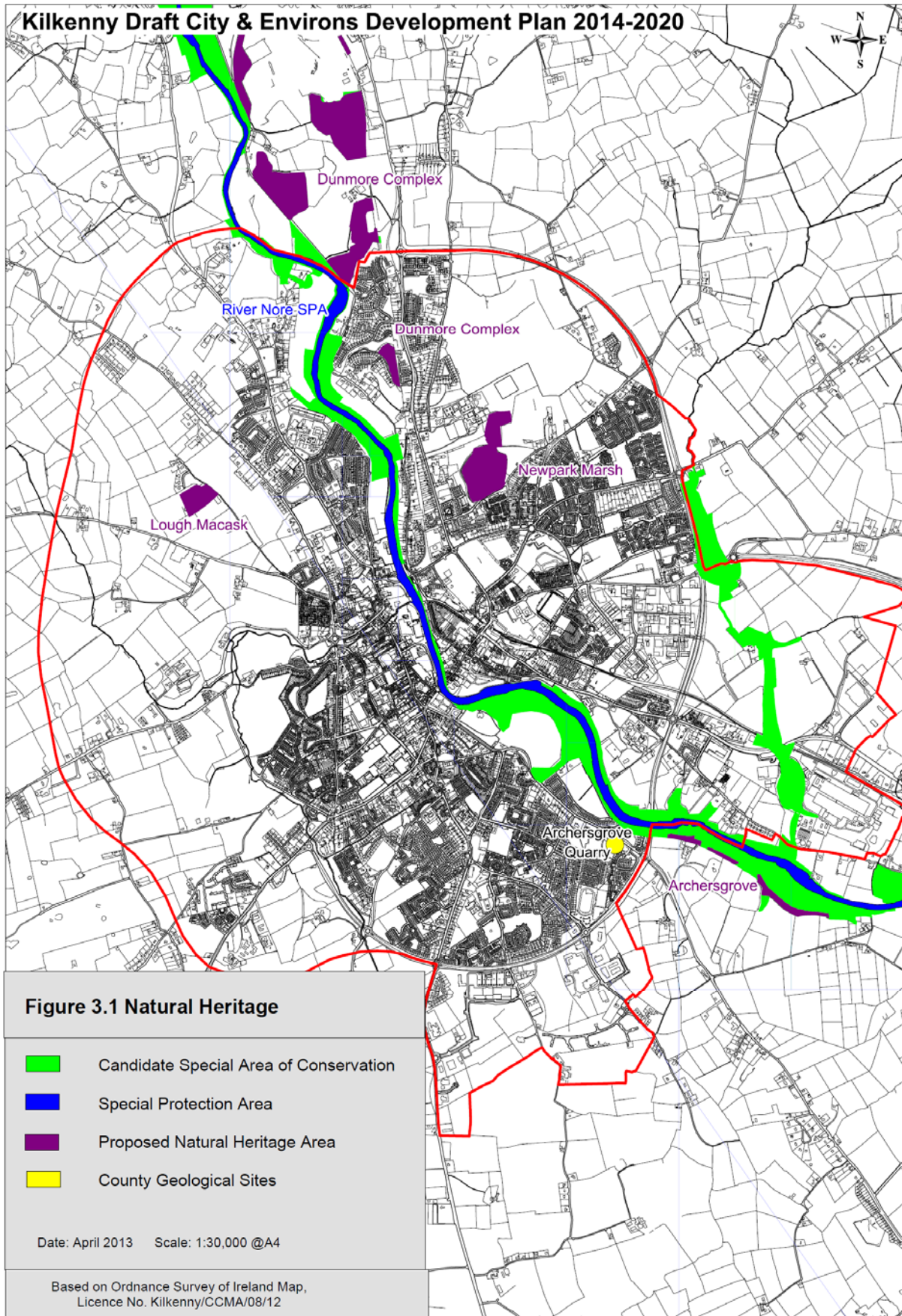


Figure 4.3 pNHAs (and other designated ecological sites) within and adjacent to the City
 Source: Kilkenny County Council (2014) SEA Environmental Report for the Kilkenny City Development Plan 2014-2020

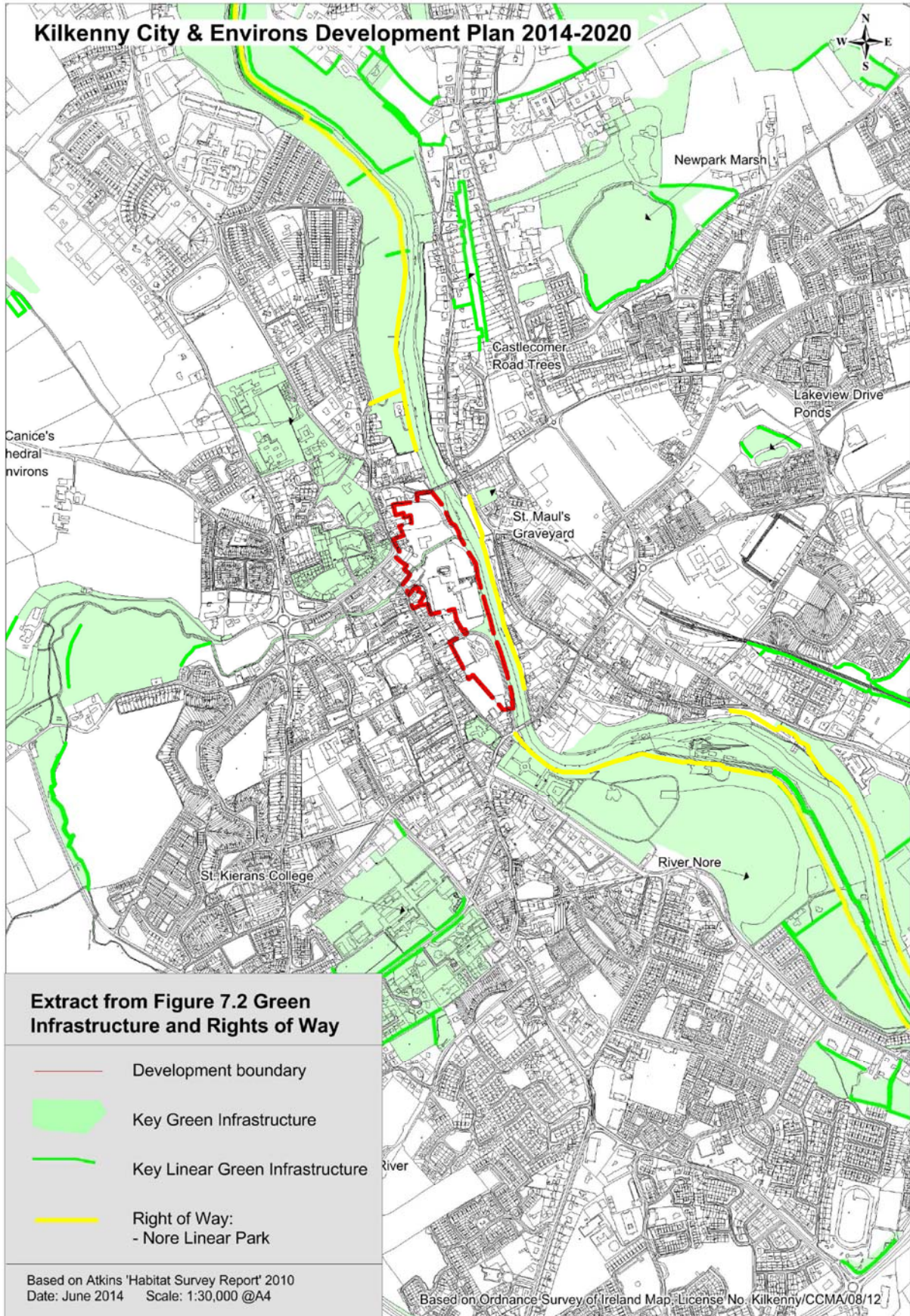


Figure 4.4 Key Green Infrastructure and Rights of Way

Kilkenny County Council (2014) SEA Environmental Report for the Kilkenny City Development Plan 2014-2020

4.4 Population and Human Health

4.4.1 Population

Much of the area in question is a brown field site at the site of the former Smithwick's Brewery. The population of Kilkenny Legal Town and its Environs (both Urban and Rural CSO areas) was recorded as being 24,423 persons in 2011.

The Masterplan area will accommodate new residential and employment populations through the development of this brownfield site – this will allow for a greater number of journeys via sustainable transport modes and associated positive environmental effects on overall energy usage and air and noise emissions.

4.4.2 Human Health

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

4.4.3 Existing Problems

The Flood Risk Assessment (FRA) undertaken alongside the preparation of the Masterplan has identified lands that are at elevated levels of flood risk within the Masterplan area. The FRA has facilitated the integration of flood risk management considerations into the Masterplan.

The Kilkenny City (Radestown) drinking water supply is listed on the the EPA's most recent (Q1 of 2015) RAL. This is due to the presence of elevated levels of trihalomethanes (THMs)

above the standard in the Drinking Water Regulations. Remedial action involves the development of a new well field, due to be completed by 2016⁹. This is the responsibility of Irish Water.

4.5 Soil

4.5.1 Introduction

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

To date, there is no Directive which is specific to the protection of soil resources. However, there is currently an EU Thematic Strategy on the protection of soil which includes a proposal for a Soil Framework Directive which proposes common principles for protecting soils across the EU.

4.5.2 Soil Types/Potential Contamination

Because the site has been previously developed many of the soils have been excavated or overlain (and sealed) by development. By providing for brownfield development, the Masterplan would be likely to reduce the need for greenfield development (and associated impacts on soil) elsewhere.

The St. Francis Abbey Brewery which is located within the Masterplan site was operated by Diageo Global Supply until production activities ceased on 12th May 2014. With respect to the on-site condition of soils, the potential for

⁹ EPA Drinking Water Remedial Action List Q4 of 2015

contaminated land within the site was considered by the EPA in their Site Visit Report (March, 2015) which identifies that: *The condition of the site was assessed and it is the opinion of this inspector that the site of the activity was in a satisfactory state on the day of the site visit and it was considered unlikely to cause environmental pollution or to contain any potentially polluting residues.*

4.5.3 County Geological Sites

A list of County Geological Sites was developed in partnership with the Geological Survey of Ireland and designated in 2007. One site is identified in the City, Archersgrove Quarry. This site is designated as a pNHA and mapped on Figure 4.3.

4.5.4 Existing Problems

Legislative objectives governing soil were not identified as being conflicted with.

4.6 Water

4.6.1 The Water Framework Directive

Since 2000, Water Management in the EU has been directed by the Water Framework Directive 2000/60/EC (WFD). The WFD requires that all Member States implement the necessary measures to prevent deterioration of the status of all waters - surface, ground, estuarine and coastal - and protect, enhance and restore all waters with the aim of achieving "good status" by 2015. All public bodies are required to coordinate their policies and operations so as to maintain the good status of water bodies which are currently unpolluted and improve polluted water bodies to good status by 2015.

Article 4 of the WFD sets out various exemptions for deterioration in status caused as a result of certain physical modifications to water bodies. This is provided: all practicable mitigation measures are taken; there are reasons of overriding public interest or the benefits to human health, safety or sustainable development outweigh the benefits in achieving the WFD objective; there are no better alternatives; and the reasons for the physical modification are explained in the relevant river basin management plan.

For the purpose of implementing the WFD, Ireland has been divided into eight River Basin Districts (RBDs) or areas of land that are drained by a large river or number of rivers and the adjacent estuarine/coastal areas. Within each RBD - for the purpose of assessment, reporting and management - water has been divided into groundwater, rivers, lakes, estuarine waters and coastal waters which are in turn divided into specific, clearly defined water bodies. The Masterplan area is located within the South-Eastern RBD.

River Basin Management Plans have been prepared for each RBD which are being implemented in order to help protect and improve all waters. The Management Plans provides specific policies for individual river basins in order to implement the requirements of the WFD.

4.6.2 Surface Water

The WFD defines 'surface water status' as the general expression of the status of a body of surface water, determined by the poorer of its ecological status and its chemical status. Thus, to achieve 'good surface water status' both the ecological status and the chemical status of a surface water body need to be at least 'good'.

Ecological status is an expression of the structure and functioning of aquatic ecosystems associated with surface waters. Such waters are classified as of "good ecological status" when they meet Directive requirements.

Chemical Status is a pass/fail assignment with a failure defined by a face-value exceedance of an Environmental Quality Standards (EQS) for one or more Priority Action Substances (PAS) listed in Annex X of the Water Framework Directive (WFD). The EQS values for individual PAS substances are set at European level. Good surface water chemical status means that concentrations of pollutants in the water body do not exceed the environmental limit values specified in the Directive.

The area to which the Masterplan relates is bounded to the east by the River Nore and is separated in two by the Breaghagh River which flows into the Nore from the west.

River water status for the period 2007-2009 is shown on Figure 4.5 which status for the period 2010-2012 is shown on Figure 4.6. The status of the main channel of the River Nore has

improved from *Poor* to *Moderate* while the status of the Breagagh has remained *Poor* over both monitoring periods.

4.6.3 Ground Water

4.6.3.1 Introduction

Groundwater is stored in the void spaces in underground layers of rock, or aquifers. These aquifers are permeable, allowing both the infiltration of water from the soils above them and the yielding of water to surface and coastal waters. Groundwater is the part of the subsurface water that is in the saturated zone - the zone below the water table, the uppermost level of saturation in an aquifer at which the pressure is atmospheric, in which all pores and fissures are full of water.

4.6.3.2 WFD Groundwater Status

For groundwater bodies, the approach to classification is different from that for surface water. For each body of groundwater, both the chemical status and the quantitative must be determined. Both have to be classed as either good or poor. The WFD sets out a series of criteria that must be met for a body to be classed as good chemical and quantitative status.

The status of groundwater within and adjacent to the Masterplan area is identified as being Good for both 2007-2009 and 2010-2012.

4.6.3.3 Aquifer Vulnerability

The Geological Survey of Ireland (GSI) rates aquifers according to its vulnerability to pollution.

Aquifer vulnerability refers to the ease with which pollutants of various kinds can enter underground water. The Masterplan area is identified as being of high vulnerability.

4.6.4 Register of Protected Areas

Under the requirements of the Water Framework Directive, a Register of Protected Areas has been compiled to identify surface water and ground water bodies of importance. The aim is to protect and conserve important water bodies for habitats, species, nutrient sensitive areas, recreational areas and drinking waters. The River Nore within and in the vicinity

of Kilkenny City is listed on the Register of Protected Areas for the following:

- cSAC and SPA designations;
- Salmonid River;
- Nutrient Sensitive River (downstream of the City only); and
- Groundwater for Drinking Water.

4.6.5 Flooding

4.6.5.1 Introduction

Flooding is an environmental phenomenon which, as well as having caused economic and social impacts, could in certain circumstances pose a risk to human health.

4.6.5.2 EU Floods Directive

European Directive 2007/60/EC on the assessment and management of flood risks requires Member States to carry out a preliminary assessment by 2011 in order to identify the river basins and associated coastal areas at risk of flooding. For such zones, flood risk maps currently being finalised. Flood risk management plans focused on prevention, protection and preparedness will be finalised in 2016. The Office of Public Works has prepared Preliminary Flood Risk Assessment (PFRA) maps which identify areas where the risks associated with flooding might be significant. These areas, Areas for Further Assessment (AFAs) are where more detailed assessment is required to more accurately assess the extent and degree of flood risk. Flood hazard and flood risk maps for AFAs will be finalised in 2015 and Flood Risk Management Plans will be finalised in 2016.

4.6.5.3 DEHLG Flood Risk Management Guidelines

In 2009 the then Department of the Environment Heritage and Local Government and OPW published The Planning System and Flood Risk Management Guidelines for Planning Authorities. These are aimed at ensuring a more consistent, rigorous and systematic approach which will fully incorporate flood risk assessment and management into the planning system. Planning authorities are required to undertake flood risk identification, assessment and management processes as appropriate when preparing land use plans and in the consideration of applications for planning permission.

4.6.5.4 Flood Risk Assessment

A Flood Risk Assessment (FRA) has been undertaken alongside the preparation of the Draft Masterplan by RPS.

The requirement for FRA is provided under 'The Planning System and Flood Risk Management Guidelines for Planning Authorities' (DEHLG and OPW, 2009). The preparation of the Masterplan, SEA and FRA has taken place concurrently and the findings of the FRA have informed both the Masterplan and the SEA. The FRA has facilitated the integration of flood risk management considerations into the Masterplan.

RPS have assessed the flood risk to the proposed development and determined the predominant source of flood risk emanates from fluvial flooding from the River Nore and River Breagagh. Under the 'Planning System and Flood Risk Management Planning Guidelines' (2009) the application site would be classified predominantly as Flood Zones A and B, and is therefore subject to the Justification Test.

This FRA assesses the proposed development against the requirements of the Development Management Justification Test and proposes a range of flood mitigation measures which comply with the criteria set out under this part of the test.

The proposed development is, in the opinion of RPS, compliant with the 'Planning System and Flood Risk Management Planning Guidelines' (2009).

4.6.6 Existing Problems

With regard to overall Water Framework Directive status, the main channel of the River Nore is identified as being of *Moderate* status while the status of the Breagagh is identified as being of *Poor* status.

The FRA has identified lands that are at elevated levels of flood risk within the Masterplan area and has facilitated the integration of flood risk management considerations into the Masterplan.



Figure 4.5 WFD Surface Water Status 2007-2009

Source: EPA (downloaded February 2015)



Figure 4.6 WFD Surface Water Status 2010-2012

Source: EPA (downloaded February 2015)

4.7 Air and Climatic Factors

4.7.1 Ambient Air Quality

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

The principles to this European approach are set out in the Ambient Air Quality and Cleaner Air for Europe (CAFE) Directive (2008/50/EC) (which replaces the earlier Air Quality Framework Directive 1996 and the first, second and third *Daughter Directives*; the fourth *Daughter Directive* will be included in CAFE at a later stage).

The CAFE Directive:

- Sets new air quality objectives for PM_{2.5} (fine particles) including the limit value and exposure related objectives;
- Accounts for the possibility to discount natural sources of pollution when assessing compliance against limit values; and
- Allows the possibility for time extensions of three years (PM₁₀) or up to five years (NO₂, benzene) for complying with limit values, based on conditions and the assessment by the European Commission.

The fourth Daughter Directive lists pollutants, target values and monitoring requirements for the following: arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air.

The CAFE Directive was transposed into Irish legislation by the Air Quality Standards Regulations 2011 (S.I. No. 180 of 2011). It replaces the Air Quality Standards Regulations 2002 (S.I. No. 271 of 2002), the Ozone in Ambient Air Regulations 2004 (S.I. No. 53 of 2004) and S.I. No. 33 of 1999.

The fourth Daughter Directive was transposed into Irish legislation by the Arsenic, Cadmium, Mercury, Nickel and Polycyclic Aromatic

Hydrocarbons in Ambient Air Regulations 2009 (S.I. No. 58 of 2009).

The EPA's (2014) *Air Quality in Ireland 2013* identifies that, overall, air quality in Ireland compares favourably with other EU Member States and continues to be of good quality relative to other EU countries.

With regard to the transport sector the report identifies that:

- Under the CAFE Directive, Ireland is required to reduce levels of PM_{2.5} by 10% by 2020. This reduction will be challenging as it will require an integrated approach across a number of sectors including industrial, transport and residential areas.
- Ireland must develop and implement policies to reduce travel demand, increase the use of alternatives to the private motor car, reduce NO_x emissions from motorised transport and also consider motorised vehicle fuel choice. The EPA identifies that this process will require joined-up action between Government departments, national agencies and local authorities. These bodies must make air quality an integral part of their traffic management and planning processes.

On NO₂ and NO_x, the report identifies that:

- NO₂ concentrations in Ireland in 2013 were below the limit values set out in the CAFE Directive and WHO guidelines.
- NO₂ levels across all zones of Ireland have remained relatively static since 2003, with signs of a slight increasing trend in the years 2008 - 2010. During this period, NO₂ levels have been close to the limit value at Dublin City and Cork City centre monitoring sites with the limit value exceeded in Dublin in 2009. However, NO₂ levels decreased in 2010, 2011 and 2012. This downward trend may have stabilised in 2013.
- High NO_x emissions within urban centres may lead to an exceedance of the limit value in the future due to our continued reliance on motorised vehicles. Although technological advances in the future may lead to lower NO_x emissions from individual cars, this technology will take time to

make an impact on the levels as they stand. The actions set out in the Smarter Travel Policy for Sustainable Transport (DOT, 2009) should be implemented to ensure that we can control levels of NO_x in Ireland in the future. These include actions to reduce travel demand, increase alternatives to the private car, reduce the NO_x emissions of motorised transport and by also considering our choice of motor vehicle fuel.

The Masterplan area will accommodate new residential and employment populations through the development of a brownfield site – this will allow for a greater number of journeys via sustainable transport modes and associated positive environmental effects on overall greenhouse gas emissions, energy usage and air and noise emissions.

4.7.2 Noise

Noise is unwanted sound. The Environmental Noise Regulations (SI No. 140 of 2006) transpose into Irish law the EU Directive 2002/49/EC relating to the assessment and management of environmental noise, which is commonly referred to as the Environmental Noise Directive or END. The END defines a common approach intended to avoid, prevent or reduce on a prioritised basis the harmful effects, including annoyance, due to exposure to environmental noise. The END does not set any limit value, nor does it prescribe the measures to be used in the action plans, which remain at the discretion of the competent authorities. Limit values are left to each member state. At this point in time, Ireland does not have any statutory limit values.

As identified above, the Masterplan area will accommodate new residential and employment populations through the development of a brownfield site – this will allow for a greater number of journeys via sustainable transport modes and associated positive environmental effects on, inter alia, overall noise emissions.

Kilkenny County Council have adopted a Noise Action Plan 2014-2018 which has been designed and is being implemented with the twin aims of:

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

4.7.3 Climatic Factors

The key issue involving the assessment of the effects of implementing the Masterplan on climatic factors relates to greenhouse gas emissions arising from transport. Land-use planning contributes to what number and what extent of journeys occur. By addressing journey time through land use planning and providing more sustainable modes and levels of mobility, noise and other emissions to air and energy use can be minimised.

The Draft Masterplan facilitates improvements in sustainable mobility, thereby facilitating reductions in and limiting increases of greenhouse gas emissions. Such emissions would occur otherwise with higher levels of motorised transport and associated traffic.

Ireland's emissions profile has changed considerably since 1990, with the contribution from transport more than doubling and the share from agriculture reducing since 1998. Travel is a source of:

1. Noise;
2. Air emissions; and
3. Energy use (39% of Total Final Energy Consumption in Ireland in 2012 was taken up by transport, the largest take up of any sector)¹⁰.

Between 2008 and 2011, Ireland's greenhouse gas emissions decreased across all sectors due to the effects of the economic downturn with emissions falling by 15.2% between 2008 and 2011. However, 2012 saw emissions rise by 1.2% when compared with 2011.¹¹

Between 1990 and 2013, the Transport sector shows the greatest overall increase at 115.5%. Emissions increased by 2.1% in 2013, the first increase in Transport emissions since 2007. However, Transport emissions have decreased by 23.1% below peak levels in 2007 primarily due to the economic downturn, improving vehicle standards due to the changes in vehicle registration tax and the increase use in biofuels. The increase up to 2007 can be attributed to general economic prosperity, increasing

¹⁰ Sustainable Energy Ireland (2014) *Energy in Ireland 1990 – 2012*

¹¹ EPA (2013) Ireland's Greenhouse Gas Emissions in 2012

population with a high reliance on private car travel as well as rapidly increasing road freight transport.¹²

Maximising sustainable mobility will help Ireland meet its emission target for greenhouse gases under the 2020 EU Effort Sharing target which commits Ireland to reducing emissions from those sectors that are not covered by the Emissions Trading Scheme (e.g. transport, agriculture, residential) to 20% below 2005 levels.

The EPA 2015 publication *Ireland's Greenhouse Gas Emission Projections 2014-2035*, identifies that:

- Under the 'worst case' scenario, Ireland is projected to cumulatively exceed its obligations by 4 Mtonnes of CO₂eq over the period 2013-2020.
- Under the 'best case' scenario, Ireland is projected to cumulatively meet its compliance obligations over the 2013-2020 period and meet its 2020 target. This takes into account the overachievement of the annual limits in the period 2013- 2017 which is banked and used in the years 2018-2020. The report identifies that achieving the outlook under the 'best case' scenario will require focus and effort which includes meeting renewable targets for transport and heat as well as energy efficiency targets.

Transport emissions are projected to show strong growth over the period to 2020 with a 13%-19% increase on current levels depending on the level of policy implementation. Relative to 2005, transport emissions are projected to remain the same or, at best, decrease by 4% by 2020.

Flooding (see Section 4.6.5) - is influenced by climatic factors. There are emerging objectives relating to climate adaptation and that there is likely to be future Guidance for climate change proofing of land use plan provisions as is flagged in the National Climate Change Adaptation Framework (DECLG, 2012). Some of these objectives might relate to green infrastructure which can achieve synergies with regard to the following:

- Provision of open space amenities;

- Sustainable management of water;
- Protection and management of biodiversity;
- Protection of cultural heritage; and
- Protection of protected landscape sensitivities.

Flooding and Green Infrastructure are key issues which have been integrated into the Masterplan.

4.7.4 Existing Problems

Legislative objectives governing air and climatic factors in Kilkenny City were not identified as being conflicted with.

¹² EPA (2014) Ireland's Provisional Greenhouse Gas Emissions in 2013

4.8 Material Assets

4.8.1 Introduction

Resources that are valued and that are intrinsic to specific places are called 'material assets'. Material Assets relevant to this SEA include:

- Water Services; and
- Waste management.

Other material assets covered by the SEA include archaeological and architectural heritage (see Section 4.9) natural resources of economic value, such as air and water¹³ (see Sections 4.7 and 4.6) and transport (see Section 4.7).

4.8.2 Water Services

4.8.2.1 Irish Water

Since January 2014 the delivery, integration and implementation of strategic water and waste water projects and infrastructural improvements are now the responsibility of the newly established State body 'Irish Water'.

Kilkenny County Council no longer has a direct role in this area; however the Local Authority will work with Irish Water to ensure that the Masterplan and any water services investment plan will align with both the National Spatial Strategy and the Regional Planning Guidelines and that the provision of water/waste water services will not be a limiting factor in terms of forecasted growth.

The function and role of Irish Water includes:

- Abstracting and treating water;
- Delivering water and waste water services to homes and businesses;
- Installing water meters and billing domestic and business customers;
- Raising finance to fund improvements and repairs in the water system; and
- Maintaining and operating the water system.

The upgrading of the infrastructure will contribute towards compliance with the Water Framework Directive, EU Urban Waste Water Treatment Directive and Drinking Water

Regulations and will help to protect human health and maintain the quality of coastal waters.

The responsibility for the provision of these services now lies with Irish Water, supported by Kilkenny County Council, as appropriate.

4.8.2.2 Waste Water

The EPA's most recent report on waste water treatment performance 'Focus on Urban Waste Water Treatment in 2013', (2014) identified that the Kilkenny City Waste Water Treatment Plant (WWTP) passed the requirements of the Urban Waste Water Treatment Directive i.e. the WWTP met the standards set in the Directive for effluent quality, and a sufficient number of effluent samples were collected, analysed and reported to the EPA. However, Kilkenny City did not meet the quality standard for phosphorus set in the Directive. Phosphorus removal was provided in late 2013.

The public wastewater treatment scheme in Kilkenny City has capacity for approximately 107,650 Population Equivalent (PE). There is currently spare capacity in the scheme.

4.8.2.3 Drinking Water Performance

Drinking water must be clean and wholesome. That means it must meet the relevant water quality standards and must not contain any other substance or micro-organism in concentrations or numbers that constitute a potential danger to human health.

Compliance with the drinking water requirements is determined by comparing the results of analyses submitted by water suppliers to the standard for 48 parameters specified in the European Communities (Drinking Water) Regulations (No. 2), 2007. To ensure that these standards are met, each water supply must be monitored on a regular basis.

Under Section 58 of the Environmental Protection Agency Act 1992 the EPA is required to collect and verify monitoring results for all water supplies in Ireland covered by the European Communities (Drinking Water) Regulations, 2000. The EPA publishes their results in annual reports which are supported by Remedial Action Lists (RALs). The RAL identifies water supplies which are not in

¹³ Including water bodies identified in Fáilte Ireland's (2009) report *Determination of Waters of National Tourism Significance and Associated Water Quality Status*.

compliance with the Regulations mentioned above.

The Kilkenny City (Radestown) drinking water supply is listed on the the EPA's most recent (Q1 of 2015) RAL. This is due to the presence of elevated levels of trihalomethanes (THMs) above the standard in the Drinking Water Regulations. Remedial action involves the development of a new well field, due to be completed by 2016¹⁴. This is the responsibility of Irish Water.

4.8.3 Waste Management

EU and National waste management policy can be summarised by the waste hierarchy of prevention, recycling, energy recovery and disposal.

For the purposes of waste management planning, Ireland is now divided into three regions: Southern, Eastern-Midlands and Connacht-Ulster. The Kilkenny City is located within the Southern Region. Draft waste management plans for each waste management region were published for public consultation in November 2014.

4.8.4 Existing Problems

The Kilkenny City (Radestown) drinking water supply is listed on the the EPA's most recent (Q1 of 2015) RAL. This is due to the presence of elevated levels of trihalomethanes (THMs) above the standard in the Drinking Water Regulations. Remedial action involves the development of a new well field, due to be completed by 2016¹⁵. This is the responsibility of Irish Water.

4.9 Cultural Heritage

4.9.1 Introduction

This section has been informed by and can be read in conjunction with the Masterplan documents, including Section 3 of the Masterplan and the *Kilkenny Masterplan Area Archaeological Framework* (Courtney Deery Heritage Consultancy, 2015).

The southern quarter of the Masterplan area contains the majority of the existing buildings

and is industrial in nature with large production and warehouse buildings surrounded by extensive concrete marshalling yards. The River Nore, the River Breagagh and the Old City Walls are hidden by these structures.

St. Francis Abbey Brewery, due to its industrial nature, has for many years been separated from the city. It has been an impediment to creating a permeable city and has prevented the formation of linkages through the city.

Vehicular access to the Brewery site is restricted primarily to the main entrance from Parliament Street. A secondary vehicular access point lies on the southern boundary of the site to the rear of the Courthouse with access from Bateman Quay.

4.9.2 Urban Grain

The City of Kilkenny is readily identifiable by its distinctive urban grain, with the main thoroughfare of High Street and Parliament Street intersected with parallel slipways in a herringbone pattern.

On the former Smithwick's Brewery and Bateman Quay sites, historical maps reveal that the Northern and Southern ends of the Masterplan area was subdivided into long plots of ground with one end on the main street known as burgage plots.

These burgage plots were first established by William Marshall in 1207. A 'burgess' rented a burgage plot for a shilling a year and built a house on the street. Behind the house stretched a long narrow garden for growing fruit and vegetables.

An analysis of the 1841 map of Kilkenny was undertaken as part of the Masterplan preparation process which revealed that while a strong pattern of burgage plots existed on the southern end of the Masterplan site this pattern diminished to the north of the Courthouse.

To maintain the existing scale within the city centre the Masterplan will be cognisant of the variety and pattern of building heights and plot widths within the existing city centre.

¹⁴ EPA Drinking Water Remedial Action List Q4 of 2015

¹⁵ EPA Drinking Water Remedial Action List Q4 of 2015

4.9.3 Archaeological Heritage

The Masterplan area is located in the heart of medieval Kilkenny and is located within the Zone of Archaeological Potential for Kilkenny City (see Figure 4.7). The site encompasses a number of significant heritage structures including:

- St Francis' Abbey (National Monument)
- City Walls (National Monument)
- Evans Turret (National Monument)
- Woollen Mills (Protected structure)
- Tea / Pleasure Houses (Protected Structures)
- Bull Inn (Recorded Monument)

The preparation of the Draft Masterplan and accompanying *Kilkenny Masterplan Area Archaeological Framework*¹⁶ has been informed by consultations with the Department of Arts, Heritage and the Gaeltacht. The Masterplan and Framework have been informed by these ongoing consultations.

The Department have identified St. Francis' Abbey as a monument of National importance, noting that it is afforded the highest protection under the National Monuments Acts. Kilkenny Town Wall and Evans Tower have also been identified as being of national significance.

The Masterplan area's archaeological heritage is protected under the National Monuments Acts (1930-2004), Natural Cultural Institutions Act 1997 and the Planning Acts. The Record of Monuments and Places (RMP) is an inventory, established under Section 12 of the National Monuments (Amendment) Act 1994, of sites and areas of archaeological significance, numbered and mapped. The RMP includes all known monuments and sites of archaeological importance dating to before 1700 AD, and some sites which date from after 1700 AD.

The recommendations made by the *Kilkenny Masterplan Area Archaeological Framework* have been integrated into the Masterplan.

4.9.4 Architectural Heritage

The Planning and Development Act 2000, as amended, provides for conservation principles of care and protection of the architectural heritage. The Act, inter alia, facilitates the

listing of significant buildings and the formulation of policies and objectives relating to such structures.

The Act includes a number of definitions in relation to architectural heritage which are detailed below.

"Structure" is defined as any building, structure, excavation, or other thing constructed or made on, in or under any land, or any part of a structure so defined, and -

(a) where the context so admits, includes the land on, in or under which the structure is situate, and

(b) in relation to a protected structure or proposed protected structure, includes—

- (i) the interior of the structure,
- (ii) the land lying within the curtilage of the structure,
- (iii) any other structures lying within that curtilage and their interiors, and
- (iv) all fixtures and features which form part of the interior or exterior of any structure or structures referred to in subparagraph (i) or (iii).

"Protected structure" means - (a) a structure, or (b) a specified part of a structure, which is included in a record of protected structures, and, where that record so indicates includes any specified feature which is within the attendant grounds of the structure and which would not otherwise be included in this definition.

A "Record of Protected Structures" is a record, required to be included in every Development Plan, of every structure which, in the opinion of the planning authority, is of special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest and which forms part of the architectural heritage within the functional area of the planning authority.

The Planning and Development Act and Regulations (as amended) require that Development Plans include objective(s) to preserve the character of a place, area, group of structures or townscape, taking account of building lines and heights, that -

¹⁶ Courtney Deery Heritage Consultancy (2015) *Kilkenny Masterplan Area Archaeological Framework*

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

If the planning authority is of the opinion that its inclusion is necessary for the preservation of the character of the place, area, group of structures or townscape concerned. Such places, areas, groups of structures or townscapes are known as and are referred to in the Act "architectural conservation areas".

Entries to the Record of Protected Structures within and adjacent to the Masterplan area are mapped on Figure 4.8.

Entries to the National Inventory of Architectural Heritage (NIAH) (these provide the basis for the recommendations of the Minister for Arts, Heritage and the Gaeltacht for the inclusion of particular structures into the Record of Protected Structures) are mapped on Figure 4.9.

There are two main Architectural Conservation Areas within the indicative area to which the Masterplan relates - St. Canice's Architectural Conservation Area and City Centre Architectural Conservation Area (see Figure 4.10).

4.9.5 Existing Problems

The context of archaeological and architectural heritage has changed over time within the Masterplan site however no existing conflicts with legislative objectives governing archaeological and architectural heritage have been identified.

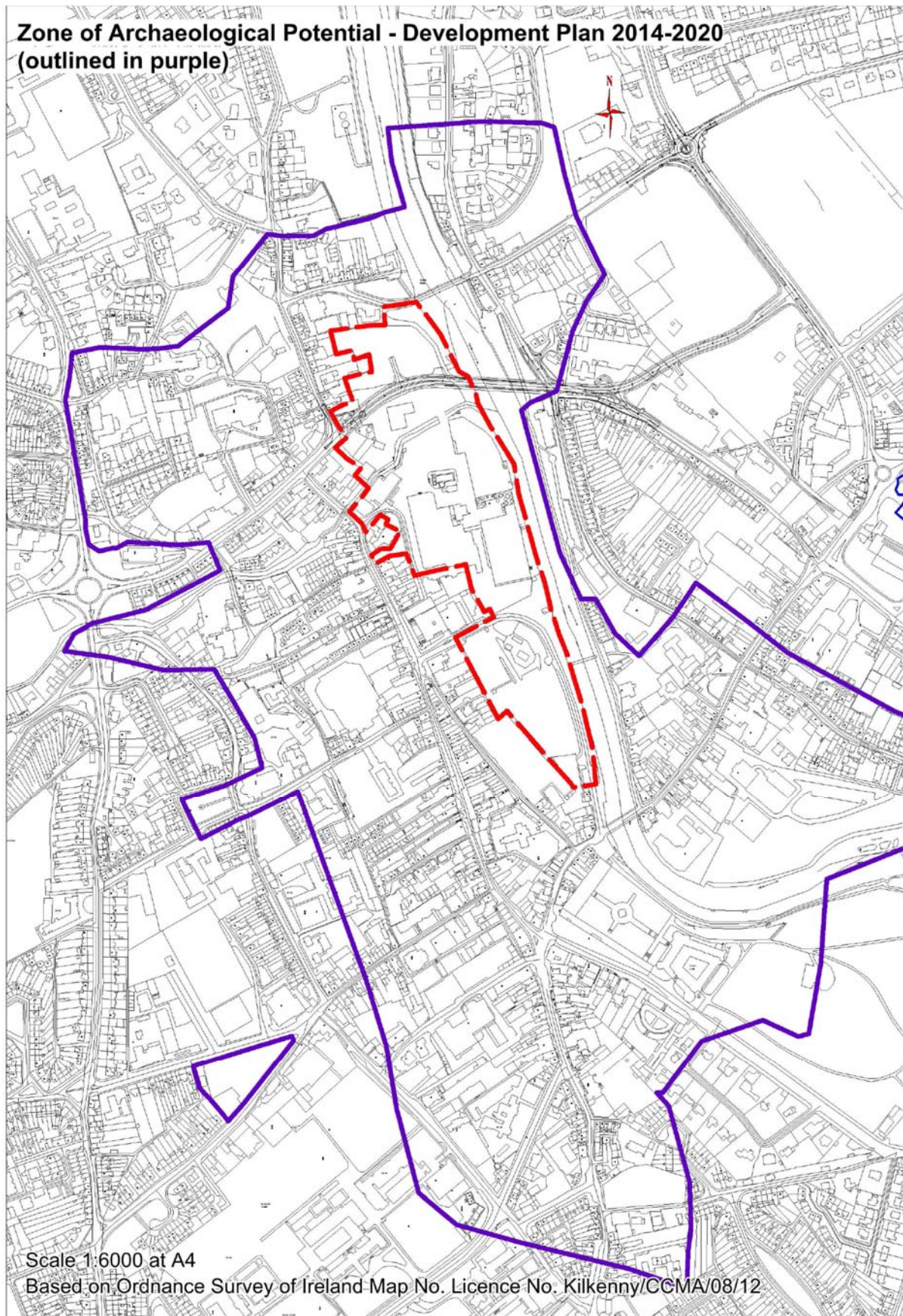


Figure 4.7 Archaeological Heritage - Zone of Archaeological Importance
Source: Kilkenny County Council (2015)

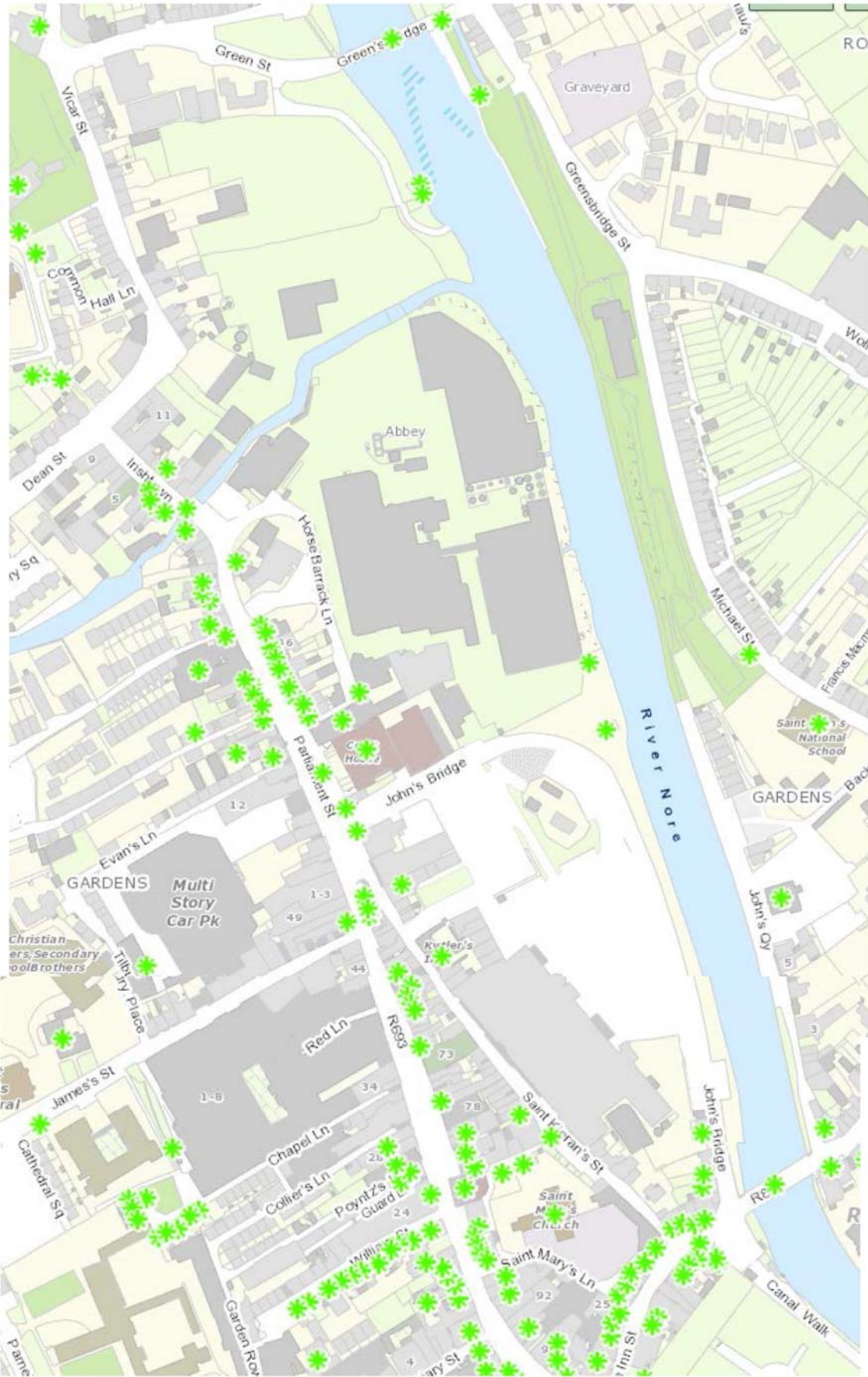


Figure 4.8 Architectural Heritage - Entries to the Record of Protected Structures
Source: Kilkenny County Council (2015)

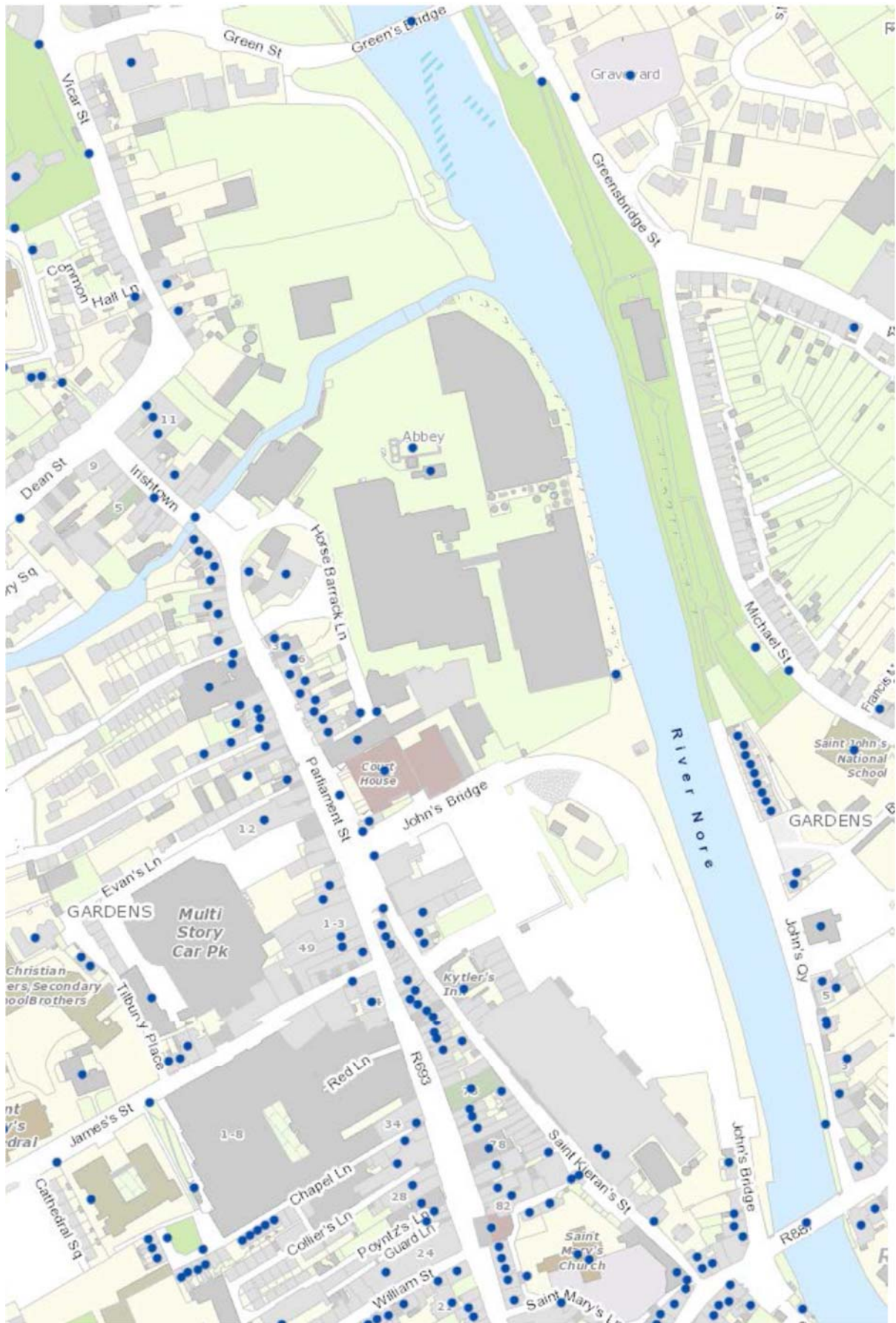


Figure 4.9 Architectural Heritage - Entries to the National Inventory of Architectural Heritage
Source: Kilkenny County Council (2015)

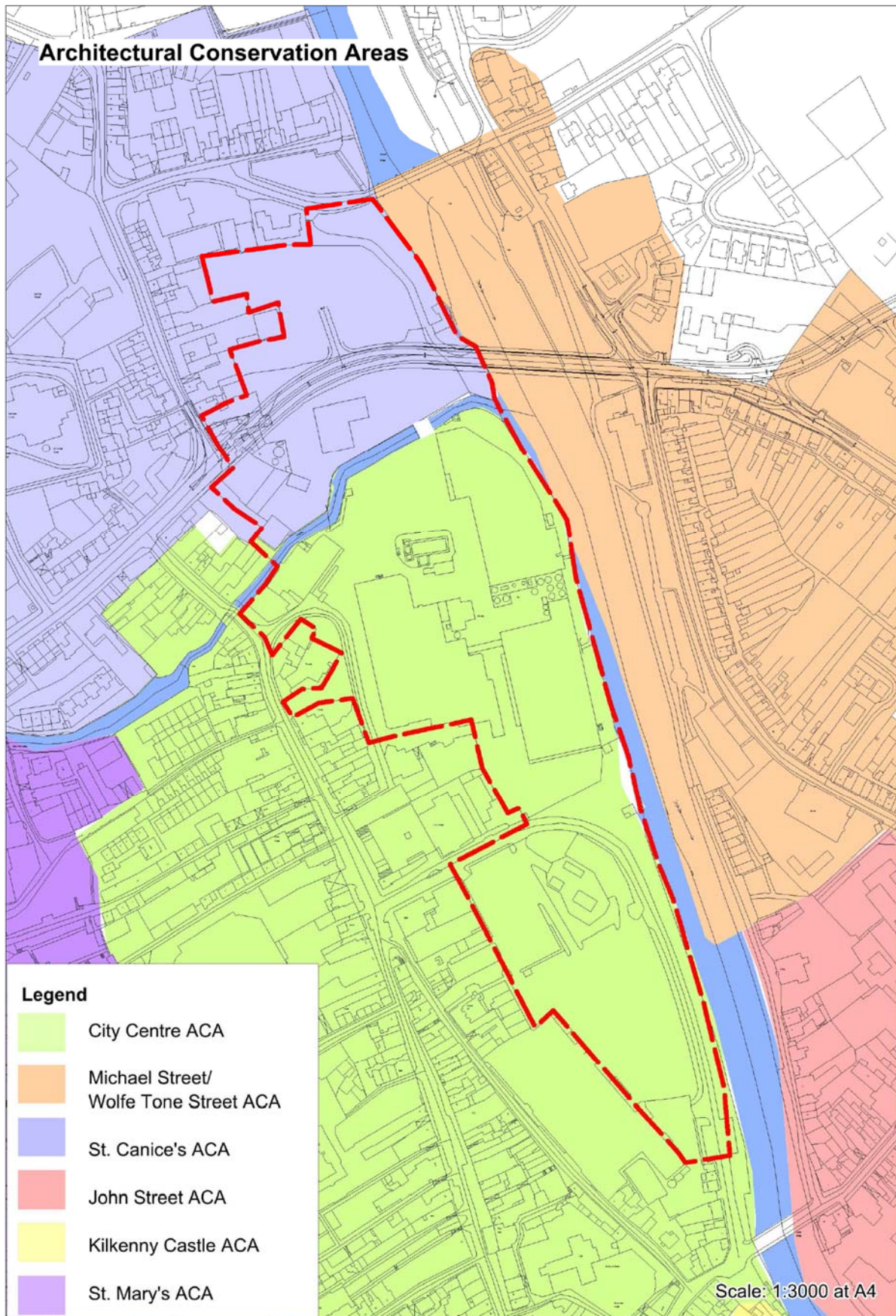


Figure 4.10 Architectural Heritage – Architectural Conservation Areas

Source: Kilkenny County Council (2015)

4.10 Landscape

4.10.1 Overview

This section has been informed by and can be read in conjunction with the Masterplan and associated documents.

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

The Masterplan area comprises an area of 8.25 hectares or 20.4 acres which is currently inaccessible to the public and lies at the heart of the medieval core of Kilkenny City Centre. The topography of the site is generally flat with the ground gently sloping from west to east down to the river. The ground is generally level from south to north, with the ground levels rising at the junction with Greens Bridge.

The River Breagagh and sections of the old city wall traverse the site on an east west axis and effectively subdivide the site into two distinct quarters of very different character. The southern quarter contains the majority of the existing buildings and is quite industrial in nature with large industrial and warehouse buildings surrounded by extensive concrete marshalling yards. The northern quarter is less developed and was primarily used by the Brewery for vehicular parking, truck washing, etc.

The most northerly section of the site is a parcel of land known as Sweeney's Orchard. This would best be described as a disused back lot. The site is bordered to the south by Bateman Quay and the Market Yard. To the west lies Parliament Street, containing many three storeys over basement Georgian buildings, Horse Barack Lane and Vicar Street with predominantly two storey residential terraced buildings. To the north lies some residential properties and industrial units which are accessed from Green Street. To the east is the River Nore. The River Nore flows from north to south and divides the City into two distinct halves. The River is a predominant landscape

feature in the City, providing amenity in the centre of the City.

There are several existing heritage structure within the site. These are;

- St. Francis Abbey,
- The City Walls,
- Evan's Turret
- Tea Houses
- Wall of the Bull Inn

Due to the inaccessibility of the site these structures remain in reasonable condition. There are a further eight individual structures on the site. These vary in scale from single storey to 7 storeys. A detailed analysis of these buildings suggested that the majority of these structures are not suitable for reuse. However it was determined that the renovation and re-use of the Mayfair and Brewhouse buildings accords with the principle of sustainable re-use of existing building assets.

4.10.2 Legislation

The importance of landscape and visual amenity and the role of its protection are recognised in the Planning and Development Act and Regulations (as amended), which requires that Plans include objectives for the preservation of the landscape, views and the amenities of places and features of natural beauty.

4.10.3 Protected Views

The current City Development Plan 2014-2020 lists the following views and prospects for protection (note that numbering corresponds to that which is provided on Figure 4.11):

3. View (north) of River Nore and Linear Park from Greensbridge
5. View of St. Mary's Cathedral, Tholsel and St. Mary's Church from No. 30-35 Michael Street
6. View of St. Mary's Cathedral from Kenny's Well Road
7. Panoramic view from Dublin Road/Windgap Hill area to River Nore and city skyline
8. View of Castle Park, open countryside from Castle
12. View of Kilkenny Castle from John's Bridge

While not identified within the development plan the following views are design drivers for the Masterplan;

- View from Parliament Street to St. Francis' Abbey;
- view from the Central Access Scheme to St Francis Abbey;
- View from St. Francis' Abbey to the City Wall;
- Evans Turret and St. Canice's Cathedral; and
- View from Evans Turret to Kilkenny Castle.

It is the intention to design the Masterplan so that interruption to existing views and prospects is minimised. The development of the Masterplan area as per the provisions of the Masterplan will open up and incorporate new views around the City, which were previously blocked by the brewery buildings. These new views will include those to and from National Monuments and significant historical sites and landmarks within the City. It will be a matter for future City Development Plans to add consider and add if relevant and appropriate new views to the list of Protected Views.

4.10.4 Existing Environmental Problems

Developments have resulted in changes to the visual appearance of the landscape within the Masterplan area however legislative objectives governing landscape and visual appearance were not identified as being conflicted with.

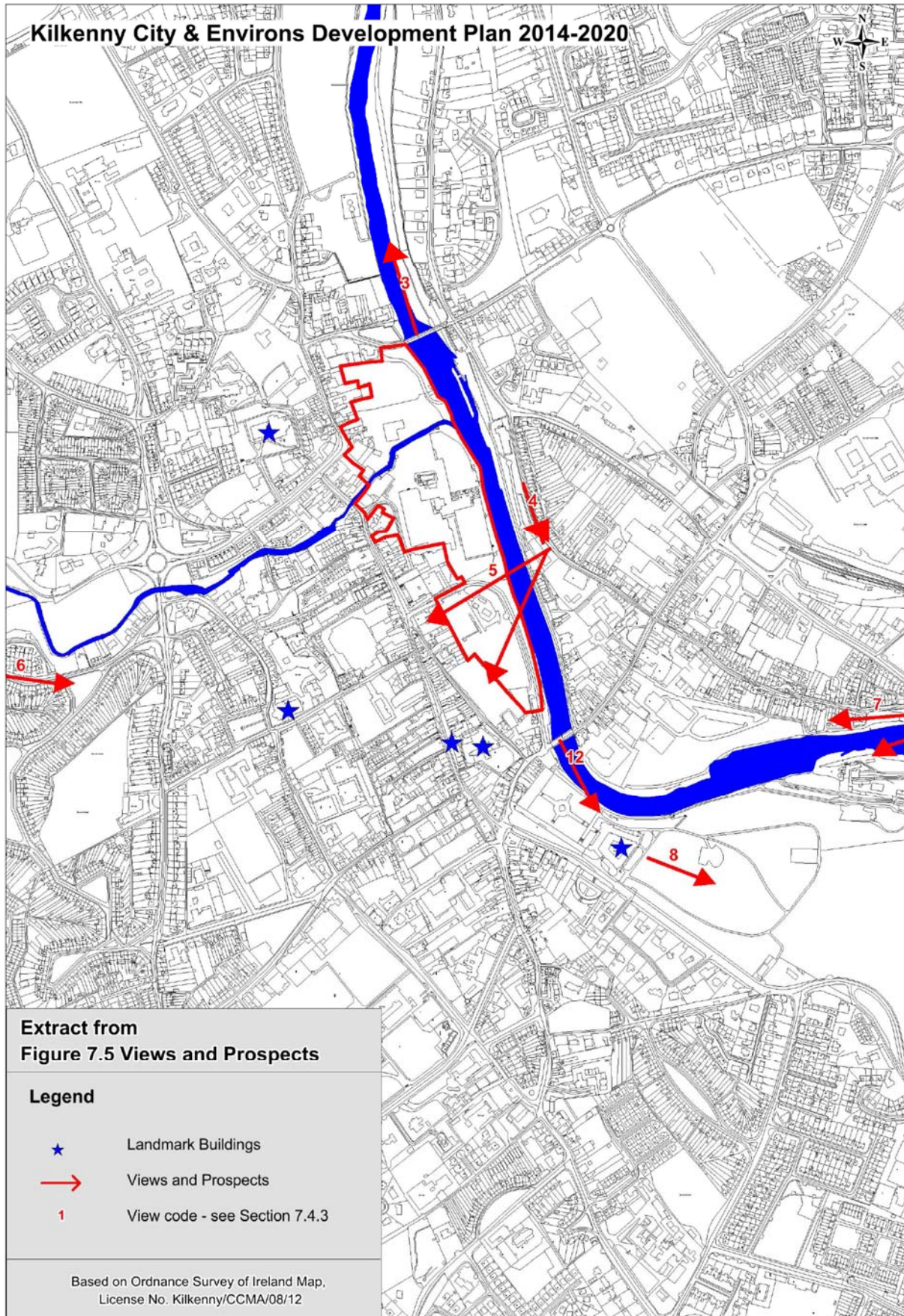


Figure 4.11 Views and Prospects

Source: Kilkenny County Council (2014)

Section 5 Strategic Environmental Objectives

5.1 Introduction

Strategic Environmental Objectives (SEOs) are methodological measures developed from policies which generally govern environmental protection objectives established at international, Community or Member State level e.g. the environmental protection objectives of various European Directives which have been transposed into Irish law and which are required to be implemented. Some of these are detailed below in this section and others are identified on Table 2.1 Relationship with Legislation and Other Plans and Programmes.

The SEOs are set out under a range of topics and are used as standards against which the provisions of the Masterplan and the alternatives are evaluated in order to help identify which provisions would be likely to result in significant environmental effects and where such effects would be likely to occur, if - in the case of adverse effects - unmitigated.

SEOs are distinct from the objectives of the Masterplan - although they will often overlap - and they are not given statutory weight by virtue of their use in Strategic Environmental Assessments.

The SEOs are linked to indicators which can facilitate monitoring the environmental effects of the Masterplan as well identifying targets which the Masterplan can help work towards.

SEOs were developed taking into account feedback provided by the environmental authorities.

The monitoring of potential significant effects within the Masterplan area will be undertaken in conjunction with the monitoring programme for Proposed Variation No. 1 to the Kilkenny City Development Plan. The indicators below are the same as those included as part of the monitoring programme detailed for Proposed Variation No. 1.

5.2 Biodiversity, Flora and Fauna

5.2.1 Habitats Directive 1992

The European Council Directive on the Conservation of natural habitats and of wild fauna and flora (92/43/EEC), referred to as the Habitats Directive, aims to ensure the conservation of certain natural habitats and species which are at favourable conservation status.

Special Areas of Conservation (SACs) are designated and protected under the Habitats Directive 1992 (92/43/EEC) due to their conservation value for habitats and species of importance in the European Union.

The Habitats Directive establishes Natura 2000, a network of protected areas throughout the EU. SACs together with Special Protection Areas (SPAs) - which are designated under the 1979 Birds Directive - make up the Natura 2000 network of protected sites.

Article 6 of the Habitats Directive provides for the need to undertake Appropriate Assessments of plans or projects which have the potential to impacts upon Natura 2000 sites.

Article 10 of the Habitats Directive recognises the importance of ecological networks as corridors and stepping stones for wildlife, including for migration, dispersal and genetic exchange of species of flora and fauna. The Directive requires that ecological connectivity and areas of ecological value outside the network of designated ecological sites are maintained, and it recognises the need for the management of these areas through land use planning and development policies.

In Ireland, the habitats and species occurring in both SACs and SPAs are protected from effects of development occurring outside their boundaries under Section 18 "Prohibition of works on lands outside a European site" of the European Communities (Natural Habitats)

Regulations 1997. The Regulations require that where a development is proposed to be carried out, on any land that is not within a protected site and is liable to have an adverse impact on the protected site in question, including direct, cumulative and indirect impacts, an Appropriate Assessment is required.

The integration of the requirements of Article 6 of the Habitats Directive into the Planning and Development Act and Regulations (as amended) and the European Communities (Birds and Natural Habitats) Regulations 2011 puts the requirement for Appropriate Assessment into context for both projects and plans.

5.2.2 Birds Directive 1979

The 1979 European Council Directive on the Conservation of Wild Birds (79/409/EEC), referred to as the Birds Directive, - as well as its amending acts - seeks to protect, manage and regulate all bird species naturally living in the wild within the European territory of the Member States, including the eggs of these birds, their nests and their habitats; and to regulate the exploitation of these species.

The Directive places great emphasis on the protection of habitats for endangered as well as migratory species, especially through the establishment of a coherent network of Special Protection Areas (SPAs).

SPAs are protected under the Directive and have been designated in Ireland by the Department of Arts, Heritage and the Gaeltacht due to their conservation value for birds of importance in the European Union.

5.2.3 European Communities (Birds and Natural Habitats) Regulations 2011

The European Communities (Birds and Natural Habitats) Regulations 2011 consolidate the European Communities (Natural Habitats) Regulations 1997 to 2005 and the European Communities (Birds and Natural Habitats)(Control of Recreational Activities) Regulations 2010, as well as addressing

transposition failures identified in the CJEU judgements.

The Regulations have been prepared to address several judgments of the Court of Justice of the European Union (CJEU) against Ireland, notably cases C-418/04 and C-183/05, in respect of failure to transpose elements of the Birds Directive and the Habitats Directive into Irish law.

5.2.4 UN Convention on Biological Diversity 1992

The United Nations Convention on Biological Diversity 1992 requires the promotion of the conservation and sustainable use of biodiversity.

5.2.5 National Biodiversity Plan 2011

The preparation and implementation of Ireland's 2nd National Biodiversity Plan 2011¹⁷ 'Actions for Biodiversity 2011 – 2016' complies with an obligation under the UN Convention on Biological Diversity. The Masterplan has been developed in line with the EU and International Biodiversity strategies and policies.

The measures Ireland will take are presented as 102 actions under a series of 7 Strategic Objectives. Some of the actions within the plan are continuing elements of existing work and many are requirements under existing EU Directives. The objectives cover the conservation of biodiversity in the wider countryside and in the marine environment, both within and outside protected areas; the mainstreaming of biodiversity across the decision making process in the State; the strengthening of the knowledge base on biodiversity; increasing public awareness and participation; and Ireland's contribution to international biodiversity issues, including North South co-ordination on issues of common interest.

¹⁷ Department of Arts, Heritage, Gaeltacht and the Islands (2002) National Biodiversity Plan Dublin: Government of Ireland

5.2.6 Wildlife Act 1976 and Wildlife (Amendment) Act 2000

The basic designation for wildlife is the Natural Heritage Area (NHA). They cover nationally important semi-natural and natural habitats, landforms or geomorphological features, wildlife plant and animal species or a diversity of these natural attributes. Under the Wildlife Amendment Act (2000), NHAs are legally protected from damage from the date they are formally proposed for designation. Proposed NHAs (pNHAs) were published on a non-statutory basis in 1995, but have not since been statutorily proposed or designated - designation will proceed on a phased basis over the coming years.

The Planning and Development Act (as amended) defines a 'wildlife site' as:

- (a) an area proposed as a natural heritage area and the subject of a notice made under section 16(1) of the Wildlife (Amendment) Act 2000,
- (b) an area designated as or proposed to be designated as a natural heritage area by a natural heritage area order made under section 18 of the Wildlife (Amendment) Act 2000,
- (c) a nature reserve established or proposed to be established under an establishment order made under section 15 (amended by section 26 of the Wildlife (Amendment) Act 2000) of the Wildlife Act 1976,
- (d) a nature reserve recognised or proposed to be recognised under a recognition 5 order made under section 16 (amended by section 27 of the Wildlife (Amendment) Act 2000) of the Wildlife Act 1976, or
- (e) a refuge for fauna or flora designated 10 or proposed to be designated under a designation order made under section 17 (amended by section 28 of the Wildlife (Amendment) Act 2000) of the Wildlife Act 1976.

¹⁸ 'Annexed habitats and species' refer to those listed under Annex I, II & IV of the EU Habitats Directive and Annex I of the EU Birds Directive.

¹⁹ Except as provided for in Section 6(4) of the Habitats Directive, viz. There must be:

5.2.7 SEOs, Indicators and Targets

SEO B1:	To ensure compliance with the Habitats and Birds Directives with regard to the protection of Natura 2000 Sites and Annexed habitats and species ¹⁸
Indicator B1:	Conservation status of habitats and species as assessed under Article 17 of the Habitats Directive
Target B1:	Maintenance of favourable conservation status for all habitats and species protected under national and international legislation to be unaffected by implementation of the Variation ¹⁹

SEO B2:	To ensure compliance with Article 10 of the Habitats Directive with regard to the management of features of the landscape which - by virtue of their linear and continuous structure or their function act as stepping stones (designated or not) - are of major importance for wild fauna and flora and essential for the migration, dispersal and genetic exchange of wild species
Indicator B2:	Percentage loss of functional connectivity without remediation resulting from development granted permission in the Masterplan area
Target B2:	No significant ecological networks or parts thereof which provide functional connectivity to be lost without remediation resulting from development granted permission in the Masterplan area

- (a) no alternative solution available;
- (b) imperative reasons of overriding public interest for the plan/programme/project to proceed; and
- (c) adequate compensatory measures in place.

SEO B3:	To avoid significant impacts on relevant habitats, species, environmental features or other sustaining resources and to ensure compliance with the Wildlife Acts 1976-2010 with regard to the protection of species listed on Schedule 5 of the principal Act
Indicator B3i:	Number of significant impacts on relevant habitats, species, environmental features or other sustaining resources resulting from development granted permission in the Masterplan area
Target B3i:	Avoid significant impacts on relevant habitats, species, environmental features or other sustaining resources resulting from development granted permission in the Masterplan area
Indicator B3ii:	Number of significant impacts on the protection of species listed on Schedule 5 of the Wildlife Act 1976
Target B3ii:	No significant impacts on the protection of species listed on Schedule 5 of the Wildlife Act 1976

5.3 Population and Human Health

5.3.1 Population

The population in the Masterplan area will interact with various environmental components. Potential interactions include:

- Recreational and development pressure on habitats - consideration of SEOs B1, B2 and B3 cover this issue;
- Increase in demand for wastewater treatment - consideration of SEO M1 covers this issue;
- Increase in demand for water supply - consideration of SEO M2 covers this issue;
- Potential development in flood-sensitive areas - consideration of SEO W3 covers this issue; and
- Effect on water quality - consideration of SEOs W1 and W2 cover this issue.

5.3.2 Human Health

5.3.2.1 Overview

The impact of implementing the Masterplan on human health is determined by the impacts which the Masterplan will have upon environmental vectors. Environmental vectors are components, such as air, water or soils, through which contaminants or pollutants, have the potential to cause harm, can be transported so that they come into contact with human beings. Impacts would be influenced by the extent to which new development is accompanied by appropriate infrastructure - this relates to SEOs M1 and M2; impacts upon the quality of water bodies - these relate to SEOs W1 and W2; and the extent of development provided which would affect flood risk - this relates to SEO W3.

5.3.2.2 Emission Limits

Emission limits for discharges to air, soil and water are set with regards to internationally recognised exposure limit values. These are generally set to be many times the safe exposure limit - in order to provide protection. In the event that a land-use plan began to have adverse health effects on surrounding populations it is likely that it would have been identified as being in breach of such emission standards at a very early stage - and long

before the manifestation of any adverse health effects in the population.

5.3.3 SEO, Indicator and Target

SEO PHH1:	To protect human health from exposure to incompatible landuses
Indicator PHH1:	Occurrence (any) of a spatially concentrated deterioration in human health arising from environmental factors resulting from development granted permission in the Masterplan area, as identified by the Health Service Executive and Environmental Protection Agency
Target PHH1:	No spatial concentrations of health problems arising from environmental factors as a result of implementing the Variation

5.4 Soil

5.4.1 Overview

Soil is potentially subject to a series of threats including erosion, decline in organic matter, local and diffuse contamination, sealing, compaction, decline in biodiversity, salinisation, floods and landslides. A combination of some of these threats can ultimately lead arid or sub-arid climatic conditions to desertification.

Given the importance of soil and the need to prevent further soil degradation, the Sixth Environment Action Programme²⁰ called for the development of a Thematic Strategy on Soil Protection.

²⁰ Decision No 1600/2002/EC of the European Parliament and of the Council of 22nd July 2002 laying

5.4.2 SEO, Indicator and Target

SEO S1:	To avoid damage to the hydrogeological and ecological function of the soil resource
Indicator S1:	Soil extent and hydraulic connectivity
Target S1:	To minimise reductions in soil extent and hydraulic connectivity

5.5 Water

5.5.1 The Water Framework Directive 2000

Since 2000, Water Management in the EU has been directed by the Water Framework Directive 2000/60/EC (WFD). The WFD has been transposed into Irish legislation by the European Communities (Water Policy) Regulations 2003 (SI No. 722 of 2003). The WFD requires that all member states implement the necessary measures to prevent deterioration of the status of all waters - surface, ground, estuarine and coastal - and protect, enhance and restore all waters with the aim of achieving good status by 2015.

5.5.2 Quality Standards for Surface Waters

The European Communities Environmental Objectives (Surface Waters) Regulations 2009 (SI No. 272 of 2009) is the final major piece of legislation needed to support the WFD and gives statutory effect to Directive 2008/105/EC on environmental quality standards in the field of water policy. The Surface Waters Regulations also give further effect to the WFD, establishing a framework for Community action in the field of water policy and Directive 2006/11/EC on pollution caused by certain dangerous substances discharged into the aquatic environment of the Community.

The Surface Waters Regulations apply to all surface waters - including lakes, rivers, canals, transitional waters, and coastal waters - and provide, inter alia, for:

down the Sixth Community Environment Action Programme (OJ L 242, 10.9.2002, p. 1).

- The establishment of legally binding quality objectives for all surface waters and environmental quality standards for pollutants;
- The examination and where appropriate, review of existing discharge authorisations by Public Authorities to ensure that the emission limits laid down in authorisations support compliance with the new water quality objectives/standards;
- The classification of surface water bodies by the EPA for the purposes of the Water Framework Directive;
- The establishment of inventories of priority substances by the EPA, and;
- The drawing up of pollution reduction plans by coordinating local authorities (in consultation with the EPA) to reduce pollution by priority substances and to cease and/or phase out discharges, emissions or losses of priority hazardous substances.

In order to satisfy the overall WFD objective of 'good status', a surface water body must achieve the requirements of the good ecological²¹ and chemical²² status.

The EU's Common Implementation Strategy Guidance Document No. 20 provides guidance on exemptions to the environmental objectives of the Water Framework Directive.

5.5.3 Quality Standards and Threshold Values for Ground Water

Detailed provisions to achieve the aims of the WFD for ground water have been presented in a Groundwater Directive (Directive

²¹ Ecological status comprises: biological quality elements, physiochemical conditions and hydromorphological quality elements. The overall ecological status of the water body is determined by the lowest level of status achieved across all quality elements.

²² Chemical status assessment is based on compliance with the standards laid down for priority substances by Directive 2008/105/EC on environmental quality standards in the field of water policy (the Surface Waters Regulations give effect to the environmental standards established by this Directive).

²³ 'Pesticides' means plant protection products and biocidal products as defined in Article 2 of Directive 91/414/EEC and in Article 2 of Directive 98/8/EC, respectively.

2006/118/EC on the protection of groundwater against pollution and deterioration).

This Directive sets up environmental objectives of good groundwater quantity and good groundwater quality (chemical status), as well as ensuring a continuity to the 1980 Groundwater Directive (Directive 80/68/EEC on the protection of groundwater against pollution caused by dangerous substances) which is due to be repealed under the WFD by the end of 2013.

Article 3 of the 2006 Directive requires that the assessment of the chemical status of groundwater use both quality standards identified in Annex I of the Directive and threshold values to be set by individual member states.

Groundwater quality standards are environmental quality standards expressed as the concentration of a particular pollutant, group of pollutants or indicator of pollution in groundwater, which should not be exceeded in order to protect human health and the environment. Annex I of the Directive sets standards for two pollutants: Nitrates - 50mg/l - and; Active substances in pesticides²³, including their relevant metabolites, degradation and reaction products - 0,1 µg/l and 0,5 µg/l (total²⁴).

Irish groundwater threshold values²⁵ are currently in the process of being set by the EPA.

5.5.4 River Basin Management Plans

Kilkenny is located within the South Eastern River Basin District. This District has a River Basin Management Plan and a Programme of

²⁴ 'Total' means the sum of all individual pesticides detected and quantified in the monitoring procedure, including their relevant metabolites, degradation and reaction products.

²⁵ Threshold values are to be established by Member States for all pollutants and indicators of pollution which characterise groundwater bodies classified as being at risk of failing to achieve good groundwater chemical status under the WFD. Threshold values are required to be established in a way that, should the monitoring results at a representative monitoring point exceed the thresholds, this will indicate a risk that one or more of the conditions for good groundwater chemical status - with regard to the ability of groundwater to support human uses and with regard to waters used for the abstraction of drinking water - are not being met.

Measures which are implemented in order to enable the achievement of the requirements of the WFD.

5.5.5 Flooding

5.5.5.1 EU Floods Directive

European Directive 2007/60/EC on the assessment and management of flood risks aims to reduce and manage the risks that floods pose to human health, the environment, cultural heritage and economic activity. The Directive applies to inland waters as well as all coastal waters across the whole territory of the EU.

The Directive requires Member States to carry out a preliminary assessment by 2011 in order to identify the river basins and associated coastal areas at risk of flooding. For such zones flood risk maps are currently being finalised. Flood risk management plans focused on prevention, protection and preparedness will be finalised in 2016.

The Directive is to be carried out in coordination with the Water Framework Directive and Flood Risk Management Plans and River Basin District Management Plans should be coordinated.

5.5.5.2 DEHLG Flood Risk Management Guidelines

In November 2009 the (then) Department of the Environment, Heritage and Local Government (DEHLG) and the OPW issued The Planning System and Flood Risk Management Guidelines for Planning Authorities. These are aimed at ensuring a more consistent, rigorous and systematic approach which will fully incorporate flood risk assessment and management into the planning system.

The Guidelines require the planning system to, among other things:

- Avoid development in areas at risk of flooding, particularly flood plains, unless there are proven sustainability grounds that justify appropriate development and where flood risk can be reduced or managed to an acceptable level, without increasing flood risk elsewhere;

- Adopt a sequential approach to flood risk management when assessing the location for new development based on avoidance, reduction and mitigation of flood risk; and
- Incorporate flood risk assessment into the process of making decisions on planning applications and planning appeals.

5.5.5.3 Flood Risk Assessment

A Flood Risk Assessment (FRA) has been undertaken and is available alongside the Masterplan. The FRA has facilitated the integration of flood risk management considerations into the Masterplan.

5.5.6 SEOs, Indicators and Targets

Note that SEOs W1 and W2 also relate to the quality of soils.

SEO W1:	To maintain and improve, where possible, the quality and status of surface waters
Indicator W1i:	Classification of Overall Status (comprised of ecological and chemical status) under the European Communities Environmental Objectives (Surface Waters) Regulations 2009 (SI No. 272 of 2009)
Target W1i:	Not to cause deterioration in the status of any surface water or affect the ability of any surface water to achieve 'good status' ²⁶

²⁶ Good status as defined by the WFD equates to approximately Q4 in the current national scheme of biological classification of rivers as set out by the EPA.

SEO W2:	To prevent pollution and contamination of ground water
Indicator W2:	Groundwater Quality Standards and Threshold Values under Directive 2006/118/EC
Target W2:	Not to affect the ability of groundwaters to comply with Groundwater Quality Standards and Threshold Values under Directive 2006/118/EC

SEO W3:	To comply as appropriate with the provisions of the Flood Risk Management Guidelines for Planning Authorities
Indicator W3:	Number of incompatible developments granted permission on lands which pose - or are likely to pose in the future - a significant flood risk
Target W3:	Minimise developments granted permission on lands which pose - or are likely to pose in the future - a significant flood risk in compliance with The Planning System and Flood Risk Management Guidelines for Planning Authorities

the development of policy regarding the regulation of the provision of water services. The Act provides that the Commission may do all things necessary in preparation for the performance of water regulatory functions and that the Commission may undertake the necessary consultations with Bord Gáis Éireann and Irish Water, water services authorities, or any other person.

In the medium-to-long-term Irish Water will produce and implement a series of 6 year Multi-Annual Capital Investment Plans which will synchronise with the 6 year River Basin Management Plan cycles. The 6 year Capital Investment Plans are to be guided by a 25-year Water Services Strategic Plan which focuses on how capacity deficits will be addressed and the primary strategic objectives of Irish Water.

5.6.3 Urban Waste Water Treatment Directive 2001

The treatment of wastewater is governed by the Urban Waste Water Treatment Directive (91/271/EEC) (amended by Directive 98/15/EEC) transposed into Irish law by the Urban Waste Water Treatment Regulations 2001 (SI No. 254 of 2001). The Directive aims to protect the environment from the adverse effects of the wastewater discharges by ensuring that wastewater is appropriately treated before it is discharged to the environment. The Regulations stipulate that sewage treatment facilities are in place in all towns by 2005.

Appropriate treatment is essential in order to meet the requirements of the Water Framework Directive (see Section 5.5.1).

5.6.4 Drinking Water Regulations 2007

The European Communities (Drinking Water) Regulations (No. 2) 2007 require the compliance of water intended for human consumption with 48 parameters.

5.6.5 Waste Management

For the purposes of waste management planning, Ireland is now divided into three regions: Southern, Eastern-Midlands and Connacht-Ulster. Kilkenny City is located within the Southern Region. Draft waste

5.6 Material Assets

5.6.1 Water Services Act 2007

Major legislative revisions were provided for in the Water Services Act 2007 (No. 30 of 2007). The Act incorporates a comprehensive review, update and consolidation of all existing water services legislation, and facilitates the establishment of a comprehensive supervisory regime to ensure compliance with specified performance standards.

5.6.2 Water Services Act 2013

The Water Services Act 2013 provided for the establishment of Irish Water as a subsidiary of Bord Gáis Éireann. The Act provides the Commission for Energy Regulation with a function to advise the Government in relation to

management plans for each waste management region were published for public consultation in November 2014.

5.6.6 SEOs, Indicators and Target

SEO M1:	To serve new development with adequate and appropriate waste water treatment infrastructure
Indicator M1:	Number of new developments granted permission which can be adequately and appropriately served with waste water treatment infrastructure over the lifetime of the Masterplan
Target M1:	All new developments granted permission to be connected to and adequately and appropriately served by waste water treatment infrastructure over the lifetime of the Masterplan

SEO M2:	To serve new development with adequate drinking water that is both wholesome and clean
Indicator M2:	Number of non-compliances with the 48 parameters identified in the European Communities (Drinking Water) Regulations (No. 2) 2007 which present a potential danger to human health as a result of implementing the Variation
Target M2:	No non-compliances with the 48 parameters identified in the European Communities (Drinking Water) Regulations (No. 2) 2007 which present a potential danger to human health as a result of implementing the Variation

SEO M3:	To reduce waste volumes, minimise waste to landfill and increase recycling and reuse
Indicator M3:	Preparation and implementation of construction and environmental management plans
Target M3:	For construction and environmental management plans to be prepared and implemented for relevant projects

5.7 Air and Climatic Factors

5.7.1 Introduction

The impact of implementing the Masterplan on air quality and climatic factors will be determined by the impacts which the Masterplan has upon the greenhouse gas emissions arising from transport which relate to SEO C1.

Travel is a source of:

1. Noise;
2. Air emissions; and
3. Energy use (39% of Total Final Energy Consumption in Ireland in 2012 was taken up by transport, the largest take up of any sector)²⁷.

Land-use planning contributes to what number and what extent of journeys occur. By addressing journey time through land use planning, noise and other emissions to air and energy use can be minimised. Furthermore, by concentrating populations, greenfield development - and its associated impacts - can be minimised and the cost of service provision can be reduced.

5.7.2 Air Quality

In order to protect human health, vegetation and ecosystems, EU Directives set down air quality standards in Ireland and the other Member States for a wide variety of pollutants. These pollutants are generated through fuel combustion, in space heating, traffic, electricity

²⁷ Sustainable Energy Ireland (2014) *Energy in Ireland 1990 – 2012*

generation and industry and, in sufficient amounts, could affect the well-being of inhabitants. The EU Directives include details regarding how ambient air quality should be monitored, assessed and managed.

The principles to this European approach are set out in the Ambient Air Quality and Cleaner Air for Europe (CAFE) Directive (2008/50/EC) (which replaces the earlier Air Quality Framework Directive 1996 and the first, second and third *Daughter Directives*) and the fourth Daughter Directive (2004/107/EC).

The Draft Strategy facilitates improvements sustainable mobility, thereby facilitating reductions in and limiting increases of greenhouse gas emissions, noise emissions and other emissions to air. Such emissions would occur otherwise with higher levels of motorised transport and associated traffic. The Draft Strategy also facilitates other transport options which would be likely to contribute towards greenhouse gas emissions.

5.7.3 Climatic Factors

The 2020 EU Effort Sharing target commits Ireland to reducing emissions from those sectors that are not covered by the Emissions Trading Scheme (e.g. transport, agriculture and residential) to 20% below 2005 levels.

5.7.4 Noise

Noise is unwanted sound. Traffic noise alone is harming today the health of almost one third of Europeans²⁸.

The Noise Directive - Directive 2002/49/EC relating to the assessment and management of environmental noise - is part of an EU strategy setting out to reduce the number of people affected by noise in the longer term and to provide a framework for developing existing Community policy on noise reduction from source. The Directive requires competent authorities in Member States to:

- Draw up strategic noise maps for major roads, railways, airports and agglomerations, using harmonised noise indicators²⁹ and use these maps

to assess the number of people which may be impacted upon as a result of excessive noise levels;

- Draw up action plans to reduce noise where necessary and maintain environmental noise quality where it is good; and
- Inform and consult the public about noise exposure, its effects, and the measures considered to address noise.

The Directive does not set any limit value, nor does it prescribe the measures to be used in the action plans, which remain at the discretion of the competent authorities.

5.7.5 SEOs, Indicators and Targets

SEO C1:	To reduce travel related emissions to air and to encourage modal change from car to more sustainable forms of transport
Indicator C1:	Percentage of the City's population travelling to work, school or college by public transport or non-mechanical means
Target C1:	An increase in the percentage of the City's population travelling to work, school or college by public transport or non-mechanical means

²⁸ World Health Organization Regional Office for Europe (2003) Technical meeting on exposure-response relationships of noise on health 19-21 September 2002 Bonn, Germany Bonn: WHO

²⁹ [L_{den} (day-evening-night equivalent level) and L_{night} (night equivalent level)]

5.8 Cultural Heritage

5.8.1 Archaeological Heritage

5.8.1.1 Valletta Convention 1992

The European Convention on Protection of the Archaeological Heritage known as the Valletta Convention of 1992 was ratified by Ireland in 1997 and requires that appropriate consideration be given to archaeological issues at all stages of the planning and development process.

5.8.1.2 National Heritage Plan for Ireland 2002

The core objective of the National Heritage Plan for Ireland 2002³⁰ is to protect Ireland's heritage. In this regard the polluter pays and the precautionary principle are operable.

5.8.1.3 National Monuments Acts

Archaeology in Ireland is protected under the National Monuments Acts 1930 to 2004.

Recorded monuments are protected by inclusion on the list and marked on the map which comprises the Record of Monuments and Places (RMP) set out County by County under Section 12 of the National Monuments (Amendment) Act, 1994 by the Archaeological Survey of Ireland. The definition includes Zones of Archaeological Potential in towns and all other monuments of archaeological interest which have so far been identified.

Any works at, or in relation to a recorded monument requires two months' notice to the Department of the Environment, Heritage and Local Government under section 12 of the National Monuments (Amendment) Act, 1994.

Direct impacts on national monuments in State or Local Authority care or subject to a preservation order require the consent of the Minister for the Environment, Heritage and Local Government under Section 14 of the National Monuments Act 1930 as amended by Section 5 of the National Monuments (Amendment) Act 2004.

5.8.2 Architectural Heritage

Records of Protected Structures are legislated for under the Planning and Development Act and Regulations (as amended) and include structures which form part of the architectural heritage and which are of special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest. Architectural Conservation Areas (ACAs) are places, areas or groups of structures or townscapes which are of special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest or value, or contribute to the appreciation of protected structures. The ACA designation requires that planning permission must be obtained before significant works can be carried out to the exterior of a structure in the ACA which might alter the character of the structure or the ACA.

5.8.3 SEO, Indicators and Targets

SEO CH1:	To protect archaeological heritage including entries to the Record of Monuments and Places and/or their context
Indicator CH1:	Percentage of entries to the Record of Monuments and Places - including Zones of Archaeological Potential (and the context of the above within the surrounding landscape where relevant) – protected from adverse effects resulting from development which is granted permission in the Masterplan area
Target CH1:	Protect entries to the Record of Monuments and Places - including Zones of Archaeological Potential (and their context of the above within the surrounding landscape where relevant) from adverse effects resulting from development which is granted permission in the Masterplan area

³⁰ Department of Arts, Heritage, Gaeltacht and the Islands (2002) National Heritage Plan for Ireland Dublin: Government of Ireland

SEO CH2:	To protect architectural heritage including entries to the Record of Protected Structures and Architectural Conservation Areas and their context
Indicator CH2:	Percentage of entries to the Record of Protected Structures and Architectural Conservation Areas and their context protected from adverse effects resulting from development which is granted permission in the Masterplan area
Target CH2:	Protect entries to the Record of Protected Structures and Architectural Conservation Areas and their context from adverse effects resulting from development which is granted permission in the Masterplan area

5.9.2 SEO, Indicator and Target

SEO L1:	To avoid significant adverse impacts on the landscape - especially with regard to protected views
Indicator L1:	Number of complaints received from statutory consultees regarding avoidable impacts on the landscape - especially with regard to protected views - resulting from development which is granted permission in the Masterplan area
Target L1:	No developments permitted which result in avoidable impacts on the landscape - especially with regard to protected views - resulting from development which is granted permission in the Masterplan area

5.9 Landscape

5.9.1 Overview

The SEO for landscape is guided by landscape designations contained in the City Development Plan. The Plan lists and protects a number of views relevant to the Masterplan area.

Section 6 Description of Alternatives

6.1 Introduction

The SEA Directive requires that reasonable alternatives (taking into account the objectives and the geographical scope of the plan or programme) are identified, described and evaluated for their likely significant effects on the environment.

The description of the environmental baseline (both maps and text) and Strategic Environmental Objectives (SEOs) are used in the strategic evaluation of alternatives.

In considering the future development of the Masterplan site a number of strategic, high level alternatives were considered.

These are detailed below.

6.2 Alternative 1

Redevelop the Brewery Site, and reuse of existing buildings on site (Mayfair, Brewhouse, & Maturation building) providing for a new City Quarter with linear park.

This would involve the upgrading and retrofitting of the existing buildings to a near zero energy building standard for use as third/fourth level education, office and other appropriate uses depending on demand and the provision of a linear park along the river Nore.

The following would be the key elements of this development strategy:

- Mayfair and Brewhouse buildings retained and upgraded and retrofitted, other non-protected buildings demolished;
- Develop remaining land for mixed use development; and
- Linear park provided along the river Nore from Bateman Quay to Greens Bridge.

6.3 Alternative 2

Redevelop the Brewery Site, without retaining the existing buildings, and provide for a new City Quarter with linear park.

This would involve the demolition of all existing industrial buildings and the provision of a linear park along the river Nore.

The following would be the key elements of this development strategy:

- Demolition of all existing buildings (excluding St Francis Abbey & City Walls);
- Develop the lands for mixed use development; and
- Linear Park provided along the river Nore from Bateman Quay to Greens Bridge.

6.4 Alternative 3

Intensive redevelopment of the Brewery Site to maximise the development footprint incorporating mixed uses (e.g. retail, office, leisure and other commercial activity along with third level uses) providing for a new City Quarter.

This would involve maximizing the development potential of the site reducing the linear park to a minimum and intensifying the uses on the site.

The following would be the key elements of this development strategy:

- Demolition of all existing buildings (after relevant structures are delisted from protection);
- Develop (for mixed uses) buildings and structures to maximise development potential;
- Linear park provided along the river Nore but minimised to allow increased development potential.

6.5 Alternative 4

Low intensity intervention with the majority of the Brewery Site devoted to a public park.

This would involve the retention of Mayfair, Brewhouse and Maturation building with the remainder of the area devoted to recreational use including a linear park along the river Nore from Bateman quay to Greens Bridge.

The following would be the key elements of this development strategy:

- Mayfair and Brewhouse buildings retained and upgraded and retrofitted, other non-protected buildings demolished;
- Linear park provided along the river Nore from Bateman Quay to Greens Bridge; and
- The remainder of the site developed as a public park.

Section 7 Evaluation of Alternatives

7.1 Introduction

This section provides a comparative evaluation of the environmental effects of implementing the four strategic alternatives described in Section 6. This determination sought to understand whether each alternative was likely to improve, conflict with or have a neutral interaction with environmental components.

7.2 Methodology

The relevant aspects of the current state of the environment (see Section 4) and the Strategic Environmental Objectives (see Section 5 and Table 7.1) are used in the evaluation of alternatives.

The alternatives are evaluated using compatibility criteria (see Table 7.2 below) in order to determine how they would be likely to affect the status of the SEOs. The SEOs and the alternatives are arrayed against each other to identify which interactions - if any - would cause effects on specific components of the environment. Where the appraisal identifies a likely conflict with the status of an SEO the relevant SEO code is entered into the conflict column - e.g. B1 which stands for the SEO likely to be affected - in this instance 'to ensure compliance with the Habitats and Birds Directives with regard to the protection of Natura 2000 Sites and Annexed habitats and species'³¹.

The interactions identified are reflective of likely significant environmental effects³²:

1. Interactions that would be likely to improve the status of a particular SEO would be likely to result in a significant positive effect on the environmental component to which the SEO relates. The extent of positive effects which would be likely to occur varies and there are two 'likely to improve columns' (see Table 7.2).
2. Interactions that would potentially conflict with the status of an SEO and would be likely to be mitigated would

be likely to result in potential significant negative effects however these effects could be mitigated. The extent to which effects could be mitigated varies and there are three 'likely to be mitigated columns' (see Table 7.2).

3. Interactions that would probably conflict with the status of an SEO and would be unlikely to be mitigated would be likely to result in a significant negative effect on the environmental component to which the SEO relates.

The degree to which effects can be determined is limited as the Masterplan will be implemented through lower tier decision making and project level environmental assessment as relevant. Nonetheless a comparative evaluation of the various alternatives can be provided.

³¹ 'Annexed habitats and species' refer to those listed under Annex I, II & IV of the EU Habitats Directive and Annex I of the EU Birds Directive.

³² These effects include secondary, cumulative, synergistic, short, medium and long-term permanent and temporary, positive and negative effects.

Table 7.1 Strategic Environmental Objectives

Environmental Component	SEO Code	SEO
Biodiversity, Flora and Fauna	B1	To ensure compliance with the Habitats and Birds Directives with regard to the protection of Natura 2000 Sites and Annexed habitats and species ³³
	B2	To ensure compliance with Article 10 of the Habitats Directive with regard to the management of features of the landscape which - by virtue of their linear and continuous structure or their function act as stepping stones - are of significant importance for wild fauna and flora and/or essential for the migration, dispersal and genetic exchange of wild species
	B3	To avoid significant impacts on relevant habitats, species, environmental features or other sustaining resources and to ensure compliance with the Wildlife Acts 1976-2010 with regard to the protection of species listed on Schedule 5 of the principal Act
Population and Human Health	HH1	To protect populations and human health from exposure to incompatible landuses
Soil	S1	To avoid damage to the hydrogeological and ecological function of the soil resource
Water	W1	To maintain and improve, where possible, the quality and status of surface waters
	W2	To prevent pollution and contamination of ground water
	W3	To comply as appropriate with the provisions of the Flood Risk Management Guidelines
Air and Climatic Factors	C1	To reduce travel related emissions to air and to encourage modal change from car to more sustainable forms of transport
Material Assets	M1	To serve new development with adequate and appropriate waste water treatment infrastructure
	M2	To serve new development with adequate drinking water that is both wholesome and clean
	M3	To reduce waste volumes, minimise waste to landfill and increase recycling and reuse
Cultural Heritage	CH1	To protect archaeological heritage including entries to the Record of Monuments and Places and/or their context
	CH2	To protect architectural heritage including entries to the Record of Protected Structures and Architectural Conservation Areas and their context
Landscape	L1	To avoid significant adverse impacts on the landscape - especially with regard to protected views

Table 7.2 Criteria for appraising the effect of Alternatives on SEOs

Likely to Improve status of SEOs to a greater degree	Likely to Improve status of SEOs to a lesser degree	Least Potential Conflict with status of SEOs- likely to be mitigated (any residual effects likely to be less)	Most Potential Conflict with status of SEOs- likely to be mitigated (any residual effects likely to be greater)	Probable Conflict with status of SEOs- unlikely to be mitigated
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³³ 'Annexed habitats and species' refer to those listed under Annex I, II & IV of the EU Habitats Directive and Annex I of the EU Birds Directive.

7.3 Cumulative Effects

Cumulative effects are one of the types of effects which have been considered by the assessment of the alternatives. Cumulative effects can be described as the addition of many small impacts to create one larger, more significant, impact.

There are 2 types of potential cumulative effects that have been considered, namely:

- Potential *intra-Plan* cumulative effects - these arise from the interactions between different types of potential environmental effects resulting from a plan, programme, etc. The interrelationships between environmental components that help determine these potential effects are identified on Table 8.4 e.g. interrelationships between: human health and air quality; human health and water quality; human health and flood risk; and ecology and water quality.
- Potential *inter-Plan* cumulative effects - these arise when the effects of the implementation of one plan occur in combination with those of other plans, programmes, projects, etc.

Effects that may arise as a result of implementing the Masterplan have been mitigated to the extent that the only residual adverse effects likely to occur are those which are identified under Section 8.7.

With regard to potential *inter-Plan* cumulative environmental effects, these occur as a result of the combination of: potential environmental effects which are identified by the assessment; and the effects arising from other legislation, plans, programmes or developments arising. Other legislation, plans, programmes or developments arising which have been considered by the assessment of environmental effects include those which are detailed under Sections 2.5, 4 and 5.

The SEA undertaken for the Masterplan has taken account of the need for the implementation of the Masterplan to comply with all environmental legislation and align with and cumulatively contribute towards – in combination with other users and bodies and their plans etc. – the achievement of the objectives of the regulatory framework for environmental protection and management.

In considering the relationship with legislation and other plans and programmes it is important to note that the Masterplan will be implemented within an area which is already subject to existing plans and programmes for a range of sectors [e.g. water management, land use, energy] at a range of levels [e.g. National, River Basin District, Regional, County and City] that are already subject to SEA and AA.

The assessment of the likely *inter-Plan* cumulative environmental effects requires knowledge of the likely effects of all plans/developments under consideration. Taking into account available information, potential cumulative effects include those resulting from the Masterplan, the Regional Planning Guidelines for the South East, the Kilkenny County Development Plan, the Kilkenny City Development Plan, the South Eastern River Basin Management Plan and associated Programme of Measures, outputs from the South Eastern Catchment Flood Risk Assessment and Management Study, Irish Water's Proposed Capital Investment Plan 2014-2016 and relevant projects. Such effects include:

- Potential cumulative effects upon the use of water and wastewater treatment capacity;
- Potential cumulative effects upon surface and ground water quality;
- Potential cumulative effects arising from linear developments;
- Potential cumulative effects on flood risk; and
- Potential cumulative positive effects arising from improved and secured ecological connectivity along and adjacent to the River Nore.

Some of the issues covered by the Masterplan provisions have been considered already in higher tier plans including the South Eastern Regional Planning Guidelines, the Kilkenny County Development Plan and the Kilkenny City Development Plan. The solutions to these issues are often regional/county solutions which are subject their own consenting procedures. Works arising outside of the Masterplan area as a result of providing for new development within the Masterplan area including those arising as a result of the cumulative provision of development in the wider City would potentially conflict with a number of environmental components, across the wider City area and beyond, including: ecology, the status of water bodies and the landscape. Some of these conflicts would be mitigated by measures

which have been integrated into the Masterplan (see Section 9) with additional mitigation provided through measures arising out of separate consent procedures.

7.4 Detailed Evaluation of Alternatives³⁴

7.4.1 Effects common to all alternatives

A number of potentially significant adverse effects, if unmitigated, are common to all alternatives as each alternative provides for the development of the Masterplan site. These effects would be present to varying degrees as is detailed in Table 7.4 and are as a result of activities including demolition, construction and usage including that arising from recreation and tourism.

Table 7.3 Potentially Significant Adverse Effects common to all Alternatives

Environmental/Component	Potential Significant Adverse Effect, if unmitigated
Biodiversity and Flora and Fauna³⁵	Loss of/disturbance to biodiversity with regard to Natura 2000 Sites, including the River Barrow and River Nore candidate Special Area of Conservation and the River Nore Special Protection Area Loss of/disturbance to biodiversity with regard to ecological connectivity and non-designated biodiversity Loss of/disturbance to biodiversity with regard to listed species
Population and Human Health³⁶	Spatially concentrated deterioration in human health
Soil³⁷	Damage to the hydrogeological and ecological function of soil
Water³⁸	Potential interactions with the status of water bodies (River Nore, River Breagagh and groundwater) and entries to the WFD Register of Protected Areas ³⁹ , arising from: - Changes in quality, flow and/or morphology; and - Increases in outflow at waste water treatment plant as a result of increases in population.
Flood Risk⁴⁰	Increase in flood risk
Material Assets⁴¹	The need to provide adequate and appropriate water services (it is the function of Irish Water to provide for such needs) Increases in waste levels
Archaeological and Architectural Heritage⁴²	Effects on the Zone of Archaeological Potential, St. Francis Abbey, Kilkenny Town wall, Evans Tower, entries to the Record of Monuments and Places and other archaeological heritage Effects on entries to the Records of Protected Structures, National Inventory of Architectural Heritage and Architectural Conservation Areas (St. Canice's ACA and City Centre ACA) and other architectural heritage
Landscape⁴³	Occurrence of adverse visual impacts especially with respect to protected views and prospects

³⁴ Footnotes like this are used in this section in order to identify instances where interactions between the relevant alternative and the relevant SEOs occur. The nature of these interactions is identified on Table 7.4.

³⁵ SEOs B1 B2 B3

³⁶ SEO HH1

³⁷ SEO S1

³⁸ SEOs W1 W2

³⁹ The River Nore is a designated Salmonid water under SI 293 of 1988 and groundwater under the area is listed on the Register for groundwater that is used for drinking water.

⁴⁰ SEO W3

⁴¹ SEOs M1 M2 M3

⁴² SEOs CH1 CH2

⁴³ SEO L1

7.4.2 Alternative 1

Alternative 1 facilitates the reuse and regeneration of brownfield lands thereby contributing towards a higher efficiency of land utilisation, sustainable mobility and a reduction in the need to develop greenfield lands on the outskirts of the City. By reducing the need to develop greenfield lands, potential adverse effects upon environmental components including ecology, landscape designations, architectural and archaeological heritage and soil will be avoided⁴⁴. The site also has access to existing water and other services⁴⁵. This alternative also allows for a greater number of journeys via sustainable transport modes and would be likely to contribute towards associated positive environmental effects on overall greenhouse gas emissions, energy usage and air and noise emissions⁴⁶.

Potential conflicts associated with the redevelopment of the site under this alternative⁴⁷ - including demolition of certain non-protected buildings and construction of new buildings and other development – are less than those under Alternatives 2 and 3.

This alternative provides for the retention of designated archaeological and architectural heritage⁴⁸. In response to the Architectural Heritage Protection - Guidelines for Planning Authorities' aspiration to reuse existing buildings Alternative 1 proposes to retain the Mayfair and Brewhouse Buildings. The Brewhouse building is not a Protected Structure but it has been identified both as having architectural merit as an industrial building of its type and as not being replicated elsewhere in the City. The Mayfair building is identified as having merit with respect to social heritage. Renovation and re-use of the Mayfair and Brewhouse buildings accords with the principle of sustainable re-use of existing building assets and facilitates the protection of non-designated architectural heritage⁴⁹.

Once undertaken in compliance with the provisions of the Habitats Directive, the development of the Linear Park from Bateman Quay to Greens Bridge would facilitate contributions towards sustainable mobility and enhancement of ecological connectivity along the banks of the Nore⁵⁰.

7.4.3 Alternative 2

The evaluation for Alternative 2 is the same as that provided for Alternative 1 with one difference. Alternative 2 provides for the demolition of the Mayfair and Brewhouse Buildings. The Brewhouse building is not a Protected Structure but it has been identified both as having architectural merit as an industrial building of its type and as not being replicated elsewhere in the City. The Mayfair building is identified as having merit with respect to social heritage. Demolition of these buildings potentially conflicts with the protection of non-designated architectural heritage⁵¹.

7.4.4 Alternative 3

Alternative 3 facilitates the reuse and regeneration of brownfield lands thereby contributing towards a higher efficiency of land utilisation, sustainable mobility and a reduction in the need to develop greenfield lands on the outskirts of the City - it does this to a higher intensity than is the case under Alternatives 1 and 2, maximising the development footprint and associated positive effects. By reducing the need to develop greenfield lands, potential adverse effects upon environmental components including ecology,

⁴⁴ SEOs B1 B2 B3 S1 HH1 W1 W2 W3 CH1 CH2 L1

⁴⁵ SEOs M1 M2 M3

⁴⁶ SEO C1

⁴⁷ SEOs B1 B2 B3 HH1 S1 W1 W2 W3 C1 M1 M2 M3 CH1 CH2 L1

⁴⁸ SEOs CH1 CH2

⁴⁹ SEO CH2

⁵⁰ SEOs B1 B2 B3 C1

⁵¹ SEO CH2

landscape designations, architectural and archaeological heritage and soil will be avoided⁵². The site also has access to existing water and other services⁵³. This alternative also allows for a greater number of journeys via sustainable transport modes and would be likely to contribute towards associated positive environmental effects on overall greenhouse gas emissions, energy usage and air and noise emissions⁵⁴.

Due to the intensity of the development provided for by this alternative, potential conflicts – and any residual effects – associated with the redevelopment of the site under⁵⁵ are greater than those likely under Alternatives 1 and 2. This includes loss of cultural heritage (including context and associated interactions with landscape)⁵⁶ as a result of the demolition of all existing buildings (after relevant structures delisted are from protection).

The development of the Linear Park under this alternative – which would be required to be developed in compliance with the Habitats Directive – would be minimised and would be unlikely to contribute towards enhancement of ecological connectivity along the banks of the Nore⁵⁷.

7.4.5 Alternative 4

Alternative 4 would not contribute towards efficiency of land utilisation. Under this alternative there would be a failure to maximise sustainable mobility (and associated interactions with greenhouse gas emissions, energy usage and air and noise emissions)⁵⁸.

This alternative would not provide for the reduction in the need to develop greenfield lands on the outskirts of the City (as would be provided for by Alternatives 1, 2 and 3) – as a result the avoidance of adverse effects upon environmental components including ecology, landscape designations, architectural and archaeological heritage and soil would not be achieved⁵⁹.

There would be potential conflicts associated with the redevelopment of the site under this alternative⁶⁰ - including the demolition of buildings and development of a public park.

This alternative provides for the retention of designated archaeological and architectural heritage⁶¹. In response to the Architectural Heritage Protection - Guidelines for Planning Authorities' aspiration to reuse existing buildings Alternative 4 proposes to retain the Mayfair and Brewhouse Buildings. The Brewhouse building is not a Protected Structure but it has been identified both as having architectural merit as an industrial building of its type and as not being replicated elsewhere in the City. The Mayfair building is identified as having merit with respect to social heritage. Retention of these buildings facilitates the protection of non-designated architectural heritage⁶².

Once undertaken in compliance with the provisions of the Habitats Directive, the development of the Linear Park from Bateman Quay to Greens Bridge would facilitate contributions towards sustainable mobility and enhancement of ecological connectivity along the banks of the Nore⁶³.

⁵² SEOs B1 B2 B3 S1 HH1 W1 W2 W3 CH1 CH2 L1

⁵³ SEOs M1 M2 M3

⁵⁴ SEO C1

⁵⁵ SEOs B1 B2 B3 HH1 S1 W1 W2 W3 C1 M1 M2 M3

⁵⁶ SEOs CH1 CH2 L1

⁵⁷ SEOs B1 B2 B3 C1

⁵⁸ SEO C1

⁵⁹ SEOs B1 B2 B3 S1 HH1 W1 W2 W3 CH1 CH2 L1 M1 M2 M3

⁶⁰ SEOs B1 B2 B3 HH1 S1 W1 W2 W3 C1 M1 M2 M3 CH1 CH2 L1

⁶¹ SEOs CH1 CH2

⁶² SEO CH2

⁶³ SEOs B1 B2 B3 C1

Table 7.4 Evaluation of Alternatives against SEOs

Alternative	Likely to Improve status of SEOs to a greater degree	Likely to Improve status of SEOs to a lesser degree	Least Potential Conflict with status of SEOs- likely to be mitigated (any residual effects likely to be less)	Most Potential Conflict with status of SEOs- likely to be mitigated (any residual effects likely to be greater)	Probable Conflict with status of SEOs- unlikely to be mitigated
Alternative 1		<p>B1 B2 B3 HH1 S1 W1 W2 W3 M1 M2 M3 C1 CH1 CH2 L1 Due to reducing the need for greenfield development - and associated impacts – elsewhere</p> <p>C1 Due to contributions towards sustainable mobility</p>	<p>B1 B2 B3 HH1 S1 W1 W2 W3 M1 M2 M3 CH1 CH2 L1 Due to development of the site</p>		
Alternative 2		<p>B1 B2 B3 HH1 S1 W1 W2 W3 M1 M2 M3 C1 CH1 CH2 L1 Due to reducing the need for greenfield development - and associated impacts – elsewhere</p> <p>C1 Due to contributions towards sustainable mobility</p>	<p>B1 B2 B3 HH1 S1 W1 W2 W3 M1 M2 M3 CH1 CH2 L1 Due to development of the site</p>	<p>CH2 Due to loss of non-protected structures of architectural value and development of the site</p>	
Alternative 3	<p>B1 B2 B3 HH1 S1 W1 W2 W3 M1 M2 M3 C1 CH1 CH2 L1 Due to reducing the need for greenfield development - and associated impacts – elsewhere</p> <p>C1 Due to contributions towards sustainable mobility</p>			<p>B1 B2 B3 HH1 S1 W1 W2 W3 M1 M2 M3 Due to development of the site at a higher intensity</p>	<p>CH1 CH2 L1 Due to demolition of all structures and loss of views</p>
Alternative 4		<p>CH1 CH2 Due to the retention of protected structures and monuments and non-protected structures of architectural value</p> <p>B1 B2 B3 C1 Due to development of Linear Park</p>		<p>B1 B2 B3 HH1 S1 W1 W2 W3 M1 M2 M3 CH2 L1 Due to increasing the need for greenfield development elsewhere and on-site works</p>	<p>CH1 Due to impacts upon context of archaeological heritage</p> <p>C1 Due to failure to maximise sustainable mobility</p>

7.4.6 The Selected Alternative for the Masterplan and the Variation

The selected alternative for the Masterplan and the Variation⁶⁴ is *Alternative 1*.

This alternative facilitates the improvements in various environmental components by accommodating new development on the Masterplan site thereby reducing the need for new greenfield development on the outskirts of the City. This alternative also allows for a greater number journeys via sustainable transport modes and would be likely to contribute towards associated positive environmental effects on overall greenhouse gas emissions, energy usage and air and noise emissions. Potential conflicts associated with the redevelopment of the site under this alternative - including demolition of certain non-protected buildings and construction of new buildings and other development – are less than those under the other alternatives.

There are potentially significant adverse effects arising from the alternative and these are tabulated overleaf. These effects will be mitigated by, inter alia, the various provisions which have been integrated into the Masterplan. These mitigating provisions together with the contribution that the Masterplan will make towards sustainable mobility will mean that the selected alternative facilitates various significant positive effects upon environmental components.

A number of design options were considered to varying degrees at various stages throughout the Masterplan preparation process. These considerations were informed by the environmental sensitivities which are presented in this SEA Environmental Report and other associated Masterplan documents.

By complying with appropriate mitigation measures - including those which have been integrated into the Draft Masterplan (see Section 9 of this report) – potentially significant adverse environmental effects which could arise as a result of implementing the Masterplan would be likely to be avoided, reduced or offset.

Table 7.4 overleaf details the following with respect to the selected alternative which was developed for the Masterplan and placed on public display (this final design is provided at Figure 7.1):

- Significant positive effects facilitated;
- Potentially significant adverse effects, if unmitigated; and
- Potential significant Residual Adverse Effect once all mitigation is adhered to.

⁶⁴ It is intended to place the Masterplan on a statutory footing by way of Variation No. 1 to the City Development Plan (this Proposed Variation and associated SEA and AA documents have been placed on public display at the same time as the Draft Masterplan and its associated SEA and AA documents).

Table 7.5 Significant positive effects facilitated, potentially significant adverse effects, if unmitigated, and residual non-significant adverse effects

Environmental/ Component	Significant Positive Effect facilitated	Potentially Significant Adverse Effect, if unmitigated	Potential Significant Residual Adverse Effect once all mitigation is adhered to
Biodiversity and Flora and Fauna	<ul style="list-style-type: none"> • Contribution towards the protection of designated ecological sites (River Barrow and River Nore candidate Special Area of Conservation and the River Nore Special Protection Area) and ecological connectivity • Contribution towards enhancement of ecological connectivity along the banks of the Nore • Reduces need to develop greenfield lands (with associated impacts upon biodiversity elsewhere) 	<ul style="list-style-type: none"> • Loss of/disturbance to biodiversity with regard to Natura 2000 Sites, including the River Barrow and River Nore candidate Special Area of Conservation and the River Nore Special Protection Area • Loss of/disturbance to biodiversity with regard to ecological connectivity and non-designated biodiversity • Loss of/disturbance to biodiversity with regard to listed species 	<ul style="list-style-type: none"> • None
Population and Human Health	<ul style="list-style-type: none"> • Contribution towards the protection of human health as a result of contributing towards the protection of environmental vectors, especially air 	<ul style="list-style-type: none"> • Spatially concentrated deterioration in human health 	<ul style="list-style-type: none"> • Flood related risks remain due to uncertainty with regard to extreme weather events
Soil	<ul style="list-style-type: none"> • Reduces need to develop greenfield lands (with associated impacts upon soil elsewhere) 	<ul style="list-style-type: none"> • Damage to the hydrogeological and ecological function of soil 	<ul style="list-style-type: none"> • None
Water	<ul style="list-style-type: none"> • Contribution towards the protection of status of surface and ground waters 	<ul style="list-style-type: none"> • Potential interactions with the status of water bodies (River Nore, River Breaghagh and groundwater) and entries to the WFD Register of Protected Areas⁶⁵, arising from: <ul style="list-style-type: none"> - Changes in quality, flow and/or morphology; and - Increases in outflow at waste water treatment plant as a result of increases in population. • Increase in flood risk 	<ul style="list-style-type: none"> • Flood related risks remain due to uncertainty with regard to extreme weather events

⁶⁵ The River Nore is a designated Salmonid water under SI 293 of 1988 and groundwater under the area is listed on the Register for groundwater that is used for drinking water.

Environmental/ Component	Significant Positive Effect facilitated	Potentially Significant Adverse Effect, if unmitigated	Significant Residual Adverse Effect once all mitigation is adhered to
Air and Climatic Factors and Sustainable Transport	<ul style="list-style-type: none"> • Contribution towards a shift from car to more sustainable and non-motorised transport modes • Contribution towards managing traffic flows and associated adverse effects on air quality • Contribution towards reductions in travel related greenhouse gas and other emissions to air • Contribution towards reduction in energy usage 	<ul style="list-style-type: none"> • Failure to contribute towards sustainable transport and associated impacts (energy usage and emissions to air including noise and greenhouse gases) 	<ul style="list-style-type: none"> • None
Material Assets	<ul style="list-style-type: none"> • Enhances public assets • Facilitates provision of water services and waste management 	<ul style="list-style-type: none"> • The need to provide adequate and appropriate water services (it is the function of Irish Water to provide for such needs) • Increases in waste levels 	<ul style="list-style-type: none"> • Residual wastes to be disposed of in line with higher level waste management policies
Archaeological and Architectural Heritage	<ul style="list-style-type: none"> • Contribution towards the protection of architectural and archaeological heritage and its context by facilitating compliance with relevant legislation • Reduces need to develop greenfield lands (with associated impacts upon architectural and archaeological heritage elsewhere) 	<ul style="list-style-type: none"> • Effects on the Zone of Archaeological Potential, St. Francis Abbey, Kilkenny Town wall, Evans Tower, entries to the Record of Monuments and Places and other archaeological heritage • Effects on entries to the Records of Protected Structures, National Inventory of Architectural Heritage and Architectural Conservation Areas (St. Canice's ACA and City Centre ACA) and other architectural heritage 	<ul style="list-style-type: none"> • Potential alteration to the context and setting of designated cultural heritage however these will occur in compliance with provisions of the Masterplan and relevant legislation. • Potential loss of unknown archaeology however this loss will be mitigated by measures which have been integrated into the Masterplan
Landscape	<ul style="list-style-type: none"> • Contribution towards the protection of landscape designations by facilitating compliance with City Development Plan • Opens up new views • Reduces need to develop greenfield lands (with associated impacts upon landscapes elsewhere) 	<ul style="list-style-type: none"> • Occurrence of adverse visual impacts especially with respect to protected views and prospects 	<ul style="list-style-type: none"> • None

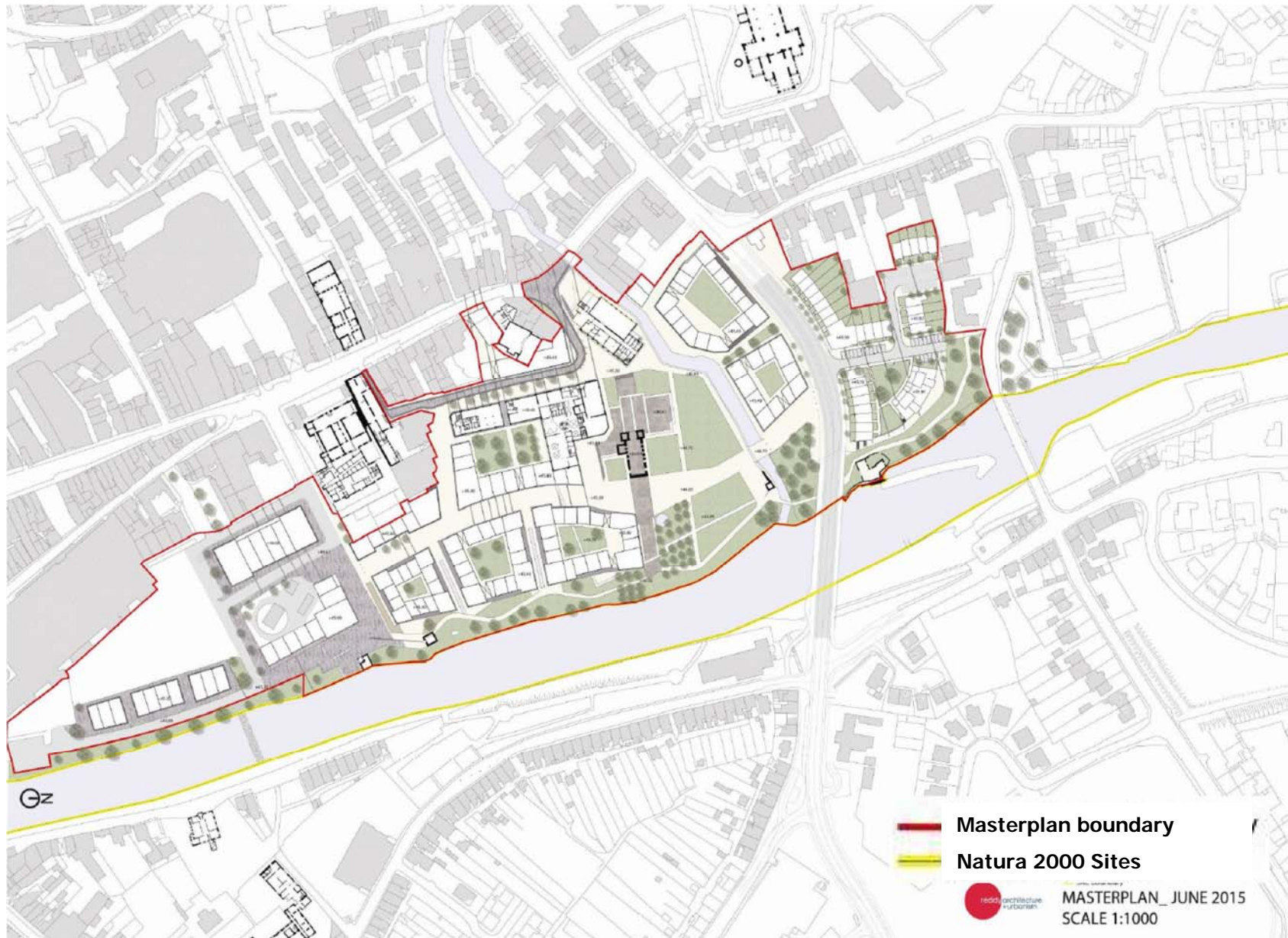


Figure 7.1 Final Masterplan Design

Source: Draft Masterplan Final Design Map; NPWS (datasets downloaded March 2015). See Section 4.3.1 for clarification

Section 8 Evaluation of Draft Masterplan Provisions

8.1 Overall Findings

The overall findings of the SEA are that:

- The Council have integrated all recommendations arising from the SEA, Appropriate Assessment and Flood Risk Assessment processes into the Masterplan, facilitating compliance of the Masterplan with various European and National legislation and Guidelines relating to the protection of the environment and the achievement of sustainable development.
- The Masterplan facilitates the reuse and regeneration of brownfield lands thereby contributing towards a higher efficiency of land utilisation, sustainable mobility and a reduction in the need to develop greenfield lands on the outskirts of the City. By reducing the need to develop greenfield lands, potential adverse effects upon ecology, landscape designations, architectural and archaeological heritage and soil will be avoided. By contributing towards sustainable mobility, the Masterplan would be likely to contribute towards compliance with targets relating to greenhouse gas emissions, energy usage and air and noise emissions.
- Some Masterplan provisions would be likely to result in significant positive effects such as contributions towards achieving sustainable mobility and the protection of ecology, archaeological heritage and the status of waters.
- Some Masterplan provisions would have the potential to result in significant negative environmental effects however these effects will be mitigated by mitigation measures, including those which have been integrated into the Masterplan (see Section 9).

8.2 Methodology

This section evaluates the provisions of the Masterplan. The relevant aspects of the current state of the environment (see Section 4) and the Strategic Environmental Objectives (see Section 5 and Table 7.1) are used in the evaluation of Masterplan provisions.

The provisions of the Masterplan are evaluated using compatibility criteria (see Table 8.1 below) in order to determine how they would be likely to affect the status of the SEOs. The SEOs and the alternatives are arrayed against each other to identify which interactions - if any - would cause effects on specific components of the environment. Where the appraisal identifies a likely conflict with the status of an SEO the relevant SEO code is entered into the conflict column - e.g. B1 which stands for the SEO likely to be affected - in this instance 'to ensure compliance with the Habitats and Birds Directives with regard to the protection of Natura 2000 Sites and Annexed habitats and species⁶⁶'.

The interactions identified are reflective of likely significant environmental effects⁶⁷;

1. Interactions that would be likely to improve the status of a particular SEO would be likely to result in a significant positive effect on the environmental component to which the SEO relates.
2. Interactions that would probably conflict with the status of an SEO and would be unlikely to be mitigated would be likely to result in a significant negative effect on the environmental component to which the SEO relates.

⁶⁶ 'Annexed habitats and species' refer to those listed under Annex I, II & IV of the EU Habitats Directive and Annex I of the EU Birds Directive.

⁶⁷ These effects include secondary, cumulative, synergistic, short, medium and long-term permanent and temporary, positive and negative effects.

3. Interactions that would potentially conflict with the status of an SEO and would be likely to be mitigated would be likely to result in potential significant negative effects however these effects would be likely to be mitigated by measures which have been integrated into the Masterplan.

The degree to which effects can be determined is limited as the Masterplan will be implemented through lower tier decision making and project level environmental assessment as relevant. Mitigation measures to prevent or reduce significant adverse effects posed by the Masterplan are identified in Section 9 - these have been integrated into the Masterplan.

Table 8.1 Criteria for appraising the effect of Masterplan provisions on SEOs

Likely to Improve status of SEOs	Probable Conflict with status of SEOs- unlikely to be mitigated	Potential Conflict with status of SEOs- likely to be mitigated	No Likely interaction with status of SEOs
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Table 8.2 Strategic Environmental Objectives⁶⁸

Environmental Component	SEO Code	SEO
Biodiversity, Flora and Fauna	B1	To ensure compliance with the Habitats and Birds Directives with regard to the protection of Natura 2000 Sites and Annexed habitats and species ⁶⁹
	B2	To ensure compliance with Article 10 of the Habitats Directive with regard to the management of features of the landscape which - by virtue of their linear and continuous structure or their function act as stepping stones - are of significant importance for wild fauna and flora and/or essential for the migration, dispersal and genetic exchange of wild species
	B3	To avoid significant impacts on relevant habitats, species, environmental features or other sustaining resources and to ensure compliance with the Wildlife Acts 1976-2010 with regard to the protection of species listed on Schedule 5 of the principal Act
Population and Human Health	HH1	To protect populations and human health from exposure to incompatible landuses
Soil	S1	To avoid damage to the hydrogeological and ecological function of the soil resource
Water	W1	To maintain and improve, where possible, the quality and status of surface waters
	W2	To prevent pollution and contamination of ground water
	W3	To comply as appropriate with the provisions of the Flood Risk Management Guidelines
Air and Climatic Factors	C1	To reduce travel related emissions to air and to encourage modal change from car to more sustainable forms of transport
Material Assets	M1	To serve new development with adequate and appropriate waste water treatment infrastructure
	M2	To serve new development with adequate drinking water that is both wholesome and clean
	M3	To reduce waste volumes, minimise waste to landfill and increase recycling and reuse
Cultural Heritage	CH1	To protect archaeological heritage including entries to the Record of Monuments and Places and/or their context
	CH2	To protect architectural heritage including entries to the Record of Protected Structures and Architectural Conservation Areas and their context
Landscape	L1	To avoid significant adverse impacts on the landscape - especially with regard to protected views

⁶⁸ See Section 5 for a description of Strategic Environmental Objectives.

⁶⁹ 'Annexed habitats and species' refer to those listed under Annex I, II & IV of the EU Habitats Directive and Annex I of the EU Birds Directive.

8.3 Appropriate Assessment and Flood Risk Assessment

A Stage 2 Appropriate Assessment (AA) and a Flood Risk Assessment (FRA) have both been undertaken alongside the preparation of the Masterplan.

The requirement for AA is provided under the EU Habitats Directive (Directive 1992/43/EEC). The requirement for FRA is provided under 'The Planning System and Flood Risk Management Guidelines for Planning Authorities' (DEHLG and OPW, 2009).

The AA concluded that the Masterplan will not affect the integrity of the Natura 2000 network⁷⁰ and the FRA has facilitated the integration of flood risk management considerations into the Masterplan.

The preparation of the Masterplan, SEA, AA and FRA has taken place concurrently and the findings of the AA and FRA have informed both the Masterplan and the SEA. All recommendations made by the AA and SEA were integrated into the Masterplan.

8.4 Potential Adverse Effects and their Determination

Environmental impacts which occur, if any, will be determined by the nature and extent of multiple or individual projects and site specific environmental factors.

Avoidance of conflict with SEOs and the environment is dependent upon compliance with mitigation measures, including those which have emerged through the SEA, AA and FRA processes and which have been integrated into the Masterplan. The potentially significant adverse environmental effects arising from implementation of the Masterplan are detailed on Table 8.3 below.

⁷⁰ Except as provided for in Section 6(4) of the Habitats Directive, viz. There must be:

- (a) no alternative solution available;
- (b) imperative reasons of overriding public interest for the plan/programme/project to proceed; and
- (c) adequate compensatory measures in place.

Table 8.3 Potentially Significant Adverse Effect, if unmitigated

Environmental/Component	Potentially Significant Adverse Effect, if unmitigated
Biodiversity and Flora and Fauna	<ul style="list-style-type: none"> • Loss of/disturbance to biodiversity with regard to Natura 2000 Sites, including the River Barrow and River Nore candidate Special Area of Conservation and the River Nore Special Protection Area • Loss of/disturbance to biodiversity with regard to ecological connectivity and non-designated biodiversity • Loss of/disturbance to biodiversity with regard to listed species
Population and Human Health	<ul style="list-style-type: none"> • Spatially concentrated deterioration in human health
Soil	<ul style="list-style-type: none"> • Damage to the hydrogeological and ecological function of soil
Water	<ul style="list-style-type: none"> • Potential interactions with the status of water bodies (River Nore, River Breagagh and groundwater) and entries to the WFD Register of Protected Areas⁷¹, arising from: <ul style="list-style-type: none"> - Changes in quality, flow and/or morphology; and - Increases in outflow at waste water treatment plant as a result of increases in population. • Increase in flood risk
Air and Climatic Factors and Sustainable Transport	<ul style="list-style-type: none"> • Failure to contribute towards sustainable transport and associated impacts (energy usage and emissions to air including noise and greenhouse gases)
Material Assets	<ul style="list-style-type: none"> • The need to provide adequate and appropriate water services (it is the function of Irish Water to provide for such needs) • Increases in waste levels
Archaeological and Architectural Heritage	<ul style="list-style-type: none"> • Effects on the Zone of Archaeological Potential, St. Francis Abbey, Kilkenny Town wall, Evans Tower, entries to the Record of Monuments and Places and other archaeological heritage • Effects on entries to the Records of Protected Structures, National Inventory of Architectural Heritage and Architectural Conservation Areas (St. Canice's ACA and City Centre ACA) and other architectural heritage
Landscape	<ul style="list-style-type: none"> • Occurrence of adverse visual impacts especially with respect to protected views and prospects

8.5 Interrelationship between Environmental Components

The SEA Directive requires the Environmental Report to include information on the likely significant effects on the environment, including on issues such as biodiversity, fauna, flora, population, human health, soil, water, air, climatic factors, material assets, cultural heritage including architectural and archaeological heritage, landscape and the interrelationship between the above factors.

Likely significant effects on environmental components which are identified include those which are interrelated; implementation of the Masterplan will not affect the interrelationships between these components. The presence of significant interrelationships between environmental components is identified on Table 8.4.

⁷¹ The River Nore is a designated Salmonid water under SI 293 of 1988 and groundwater under the area is listed on the Register for groundwater that is used for drinking water.

Table 8.4 Presence of Interrelationships between Environmental Components

Component	Biodiversity, flora and fauna	Population and human health	Soil	Water	Air and Climatic factors	Material assets	Cultural heritage	Landscape
Biodiversity, flora and fauna		No	Yes	Yes	Yes	Yes	No	Yes
Population and human health			Yes	Yes	Yes	Yes	No	No
Soil				Yes	No	Yes	No	No
Water					No	Yes	No	No
Air and Climatic factors						Yes	No	No
Material assets							Yes	Yes
Cultural heritage								Yes
Landscape								

8.6 Cumulative Effects

Cumulative effects are one of the types of effects which have been considered by the assessment of the Masterplan provisions. Cumulative effects can be described as the addition of many small impacts to create one larger, more significant, impact.

There are 2 types of potential cumulative effects that have been considered, namely:

- Potential *intra-Plan* cumulative effects - these arise from the interactions between different types of potential environmental effects resulting from a plan, programme, etc. The interrelationships between environmental components that help determine these potential effects are identified on Table 8.4 e.g. interrelationships between: human health and air quality; human health and water quality; human health and flood risk; and ecology and water quality.
- Potential *inter-Plan* cumulative effects - these arise when the effects of the implementation of one plan occur in combination with those of other plans, programmes, projects, etc.

Effects that may arise as a result of implementing the Masterplan have been mitigated to the extent that the only residual adverse effects likely to occur are those which are identified under Section 8.7.

With regard to potential *inter-Plan* cumulative environmental effects, these occur as a result of the combination of: potential environmental effects which are identified by the assessment; and the effects arising from other legislation, plans, programmes or developments arising. Other legislation, plans, programmes or developments arising which have been considered by the assessment of environmental effects include those which are detailed under Sections 2.5, 4 and 5.

The SEA undertaken for the Masterplan has taken account of the need for the implementation of the Masterplan to comply with all environmental legislation and align with and cumulatively contribute towards – in combination with other users and bodies and their plans etc. – the achievement of the objectives of the regulatory framework for environmental protection and management.

In considering the relationship with legislation and other plans and programmes it is important to note that the Masterplan will be implemented within an area which is already subject to existing plans and programmes for a range of sectors [e.g. water management, land use, energy] at a range of levels [e.g. National, River Basin District, Regional, County and City] that are already subject to SEA and AA.

The assessment of the likely *inter-Plan* cumulative environmental effects requires knowledge of the likely effects of all plans/developments under consideration. Taking into account available information, potential cumulative effects include those resulting from the Masterplan, the Regional Planning Guidelines for the South East, the Kilkenny County Development Plan, the Kilkenny City Development Plan, the South Eastern River Basin Management Plan and associated Programme of Measures, outputs from the South Eastern Catchment Flood Risk Assessment and Management Study, Irish Water's Proposed Capital Investment Plan 2014-2016 and relevant projects. Such effects include:

- Potential cumulative effects upon the use of water and wastewater treatment capacity;
- Potential cumulative effects upon surface and ground water quality;
- Potential cumulative effects arising from linear developments;
- Potential cumulative effects on flood risk; and
- Potential cumulative positive effects arising from improved and secured ecological connectivity along and adjacent to the River Nore.

Some of the issues covered by the Masterplan provisions have been considered already in higher tier plans including the South Eastern Regional Planning Guidelines, the Kilkenny County Development Plan and the Kilkenny City Development Plan. The solutions to these issues are often regional/county solutions which are subject their own consenting procedures. Works arising outside of the Masterplan area as a result of providing for new development within the Masterplan area including those arising as a result of the cumulative provision of development in the wider City would potentially conflict with a number of environmental components, across the wider City area and beyond, including: ecology, the status of water bodies and the landscape. Some of these conflicts would be mitigated by measures

which have been integrated into the Masterplan (see Section 9) with additional mitigation provided through measures arising out of separate consent procedures.

8.7 Residual Adverse Effects

Section 9 outlines the measures that have mitigated and will mitigate the potential negative effects that are detailed above. Potential significant residual adverse effects likely to occur - considering the extent of detail provided by the Masterplan and assuming that all mitigation measures are complied with by development - are identified for each of the environmental components on Table 8.5 below.

Table 8.5 Potential Significant Residual Adverse Effects

Environmental/ Component	Potential Significant Residual Adverse Effect once all mitigation is adhered to
Biodiversity and Flora and Fauna	<ul style="list-style-type: none"> • None
Population and Human Health	<ul style="list-style-type: none"> • Flood related risks remain due to uncertainty with regard to extreme weather events
Soil	<ul style="list-style-type: none"> • None
Water	<ul style="list-style-type: none"> • Flood related risks remain due to uncertainty with regard to extreme weather events
Air and Climatic Factors and Sustainable Transport	<ul style="list-style-type: none"> • None
Material Assets	<ul style="list-style-type: none"> • Residual wastes to be disposed of in line with higher level waste management policies
Archaeological and Architectural Heritage	<ul style="list-style-type: none"> • Potential alteration to the context and setting of designated cultural heritage however these will occur in compliance with provisions of the Masterplan and relevant legislation. • Potential loss of unknown archaeology however this loss will be mitigated by measures which have been integrated into the Masterplan
Landscape	<ul style="list-style-type: none"> • None

8.8 Detailed Evaluation

8.8.1 Section 1 Introduction

	Likely to Improve status of SEOs	Probable Conflict with status of SEOs - unlikely to be mitigated	Potential Conflict with status of SEOs- likely to be mitigated	No Likely interaction with status of SEOs
SEA and AA measures				
This section includes many of the mitigation measures which have been integrated into the Masterplan through the SEA and AA processes. These are reproduced with the high level mitigating Strategies which are contained within the Masterplan under Section 9 of this report.	B1 B2 B3 HH1 S1 W1 W2 W3 M1 M2 M3 C1 CH1 CH2 L1			
Commentary:				
These measures will facilitate contributions towards environmental protection and management and sustainable development – they will benefit all environmental components.				

8.8.2 Section 2 Context

	Likely to Improve status of SEOs	Probable Conflict with status of SEOs - unlikely to be mitigated	Potential Conflict with status of SEOs- likely to be mitigated	No Likely interaction with status of SEOs
Vision arising from Public Consultation Workshops (Section 2.2.1)				
To plan the area as a seamless complement to the medieval city as an inclusive place for an inter-generational community to work, live, visit and play with St. Francis Abbey at its core. The regeneration of the area will focus on embracing the sites' natural, cultural and built heritage, whilst maximising the benefits of the rivers Nore and Breagagh, providing for a broad range of uses, sustaining growth in employment and advancing economic activity in a sustainable and energy efficient fashion where innovation can flourish. The area will be a permeable expansion of the city for pedestrians and cyclists where smarter travel principles are provided for.	B1 B2 B3 HH1 S1 W1 W2 W3 M1 M2 M3 C1 CH1 CH2 L1		B1 B2 B3 HH1 S1 W1 W2 W3 M1 M2 M3 CH1 CH2 L1	
The following objectives are fundamental to achieving that vision:				
<ul style="list-style-type: none"> Integration of former Smithwick's Brewery site and quayside into the medieval city. Redevelop and regenerate the former Smithwick's Brewery site as a modern, vibrant and permeable complement to the medieval core of Kilkenny City which will consolidate the city's role as a regional hub. Creation of a quayside quarter which addresses the River Nore Establishment of a mixed use Creative Quarter which enhances the Life of the City in Economic, Commercial and Social Terms Development of Kilkenny as a location for Creative Industries, Research and Development, Incubation Clusters, University Faculties and Cultural Institutions Development of Kilkenny as Ireland's Environmental centre of excellence through regeneration of the quayside quarter Establishment of 'Green City' Kilkenny as a model for Irish and European cities and communities 				

	Likely to Improve status of SEOs	Probable Conflict with status of SEOs - unlikely to be mitigated	Potential Conflict with status of SEOs- likely to be mitigated	No Likely interaction with status of SEOs
<ul style="list-style-type: none"> Allow for the Government 'Smarter Travel' initiative published in 2009 and the 'Mobility Management Plan' adopted for Kilkenny City. 				
Commentary: <i>The evaluation against Strategic Environmental Objectives (SEOs) provided for the Plan's high-level Vision arising from Public Consultation Workshops (and associated objectives) reflects the selected Alternative and is consistent with the evaluation of this Alternative which is detailed in Section 7.</i>				

8.8.3 Section 3 Analysis

	Likely to Improve status of SEOs	Probable Conflict with status of SEOs - unlikely to be mitigated	Potential Conflict with status of SEOs- likely to be mitigated	No Likely interaction with status of SEOs
Masterplan Objectives (Section 3.1.3)				
<p>Arising from an analysis of the issues identified in the Kilkenny City and Environs Development 2014 -2020 Plan the following objectives were developed for this masterplan;</p> <ul style="list-style-type: none"> To advance the co-operation between Kilkenny Local Authorities, existing third level institutions and the proposed Technology University for the South East. 	B1 B2 B3 HH1 S1 W1 W2 W3 M1 M2 M3 C1 CH1 CH2 L1		B1 B2 B3 HH1 S1 W1 W2 W3 M1 M2 M3 CH1 CH2 L1	
Commentary: <i>This objective will facilitate the development of mixed uses within the Masterplan site. The evaluation of this objective against Strategic Environmental Objectives (SEOs) provided above is consistent with the evaluation of the selected alternative which is detailed in Section 7.</i>				
<ul style="list-style-type: none"> To support employment creation, innovation and lifelong learning. 	B1 B2 B3 HH1 S1 W1 W2 W3 M1 M2 M3 C1 CH1 CH2 L1		B1 B2 B3 HH1 S1 W1 W2 W3 M1 M2 M3 CH1 CH2 L1	
Commentary: <i>This objective will facilitate the development of mixed uses within the Masterplan site. The evaluation of this objective against Strategic Environmental Objectives (SEOs) provided above is consistent with the evaluation of the selected alternative which is detailed in Section 7.</i>				
<ul style="list-style-type: none"> To promote the sustainable development of the city 	B1 B2 B3 HH1 S1 W1 W2 W3 M1 M2 M3 C1 CH1 CH2 L1		B1 B2 B3 HH1 S1 W1 W2 W3 M1 M2 M3 CH1 CH2 L1	
Commentary: <i>The evaluation of this objective against Strategic Environmental Objectives (SEOs) provided above is consistent with the evaluation of the selected alternative which is detailed in Section 7. The Masterplan facilitates contributions towards sustainable development and environmental protection.</i>				

	Likely to Improve status of SEOs	Probable Conflict with status of SEOs - unlikely to be mitigated	Potential Conflict with status of SEOs- likely to be mitigated	No Likely interaction with status of SEOs
<ul style="list-style-type: none"> To provide the highest quality living environments possible 	B1 B2 B3 HH1 S1 W1 W2 W3 M1 M2 M3 C1 CH1 CH2 L1		B1 B2 B3 HH1 S1 W1 W2 W3 M1 M2 M3 CH1 CH2 L1	
Commentary:				
<i>This objective will facilitate the overall development of the Masterplan site as per the selected Alternative (see evaluation detailed in Section 7).</i>				
<ul style="list-style-type: none"> To guide the location and pattern of development whilst ensuring a relatively compact urban form is maintained 	B1 B2 B3 HH1 S1 W1 W2 W3 M1 M2 M3 C1 CH1 CH2 L1		B1 B2 B3 HH1 S1 W1 W2 W3 M1 M2 M3 CH1 CH2 L1	
Commentary:				
<i>The guidance of the location and pattern of development provided in the Masterplan contributes towards and supports the overall development of the site as per the selected Alternative (see evaluation detailed in Section 7).</i>				
<ul style="list-style-type: none"> To promote balanced and sustainable economic development and employment by ensuring that a diverse range of economic sectors are developed 	B1 B2 B3 HH1 S1 W1 W2 W3 M1 M2 M3 C1 CH1 CH2 L1		B1 B2 B3 HH1 S1 W1 W2 W3 M1 M2 M3 CH1 CH2 L1	
Commentary:				
<i>This objective will facilitate the development of mixed uses within the Masterplan site. The evaluation of this objective against Strategic Environmental Objectives (SEOs) provided above is consistent with the evaluation of the selected alternative which is detailed in Section 7.</i>				
<ul style="list-style-type: none"> To develop an integrated transport strategy for the city linked to land use objectives, which facilitates access to a range of transport modes 	B1 B2 B3 HH1 S1 W1 W2 W3 M1 M2 M3 C1 CH1 CH2 L1		B1 B2 B3 HH1 S1 W1 W2 W3 M1 M2 M3 CH1 CH2 L1	
Commentary:				
<i>This objective will primarily contribute towards sustainable mobility and minimise transport related emissions (SEOs C1 PHH1).</i>				
<i>Directly (from the development and operation of transport infrastructure) and indirectly (from facilitating non-transport development) this objective has the potential to result in significant adverse effects upon most environmental components including ecology (B1 B2 B3), soil function (S1), the status of water bodies (W1), flood risk (W3), cultural heritage (CH1 CH2) and the landscape (L1). Such effects will be mitigated by the measures, including those which have been integrated into the Draft Masterplan (see Section 9).</i>				
<i>This objective will contribute towards and support the overall development of the Masterplan site, in line with the selected alternative strategy – see Section 7. This overall development of the Masterplan site will contribute towards sustainable development and beneficial effects upon the protection/management of all environmental components.</i>				

	Likely to Improve status of SEOs	Probable Conflict with status of SEOs - unlikely to be mitigated	Potential Conflict with status of SEOs- likely to be mitigated	No Likely interaction with status of SEOs
<ul style="list-style-type: none"> To protect, conserve and enhance the built and natural heritage of the city 	B1 B2 B3 HH1 S1 W1 W2 W3 M1 M2 M3 CH1 CH2 L1			C1
<p>Commentary:</p> <p><i>This objective will contribute towards the protection and management of the environment, benefitting environmental components including:</i></p> <ul style="list-style-type: none"> <i>Biodiversity, flora and fauna (SEOs B1 B2 B3);</i> <i>Landscape (SEO L1);</i> <i>Cultural heritage (SEO CH1 CH2);</i> <i>Waters (SEOs W1 W2);</i> <i>Soil (SEO S1);</i> <i>Flood risk management (SEOs W3 HH1);</i> <i>Human health (SEO HH1); and</i> <i>The provision of appropriate infrastructure and services (SEOs M1 M2 M3).</i> 				
<ul style="list-style-type: none"> To promote the regeneration of the city centre and to protect and promote the city centre as the commercial and cultural focus for the city 	B1 B2 B3 HH1 S1 W1 W2 W3 M1 M2 M3 C1 CH1 CH2 L1		B1 B2 B3 HH1 S1 W1 W2 W3 M1 M2 M3 CH1 CH2 L1	
<p>Commentary:</p> <p>By facilitating the regeneration of the City centre, this objective will contribute towards sustainable mobility and reduce the need to develop greenfield lands on the outskirts of the City. By reducing the need to develop greenfield lands, potential adverse effects upon environmental components occurring elsewhere including ecology, landscape designations, architectural and archaeological heritage and soil will be avoided. Regeneration will also present a range of potential adverse effects which will be mitigated by measures, including those which have been integrated into the Masterplan</p>				
<ul style="list-style-type: none"> To advance the redevelopment of the Bateman Quay site for civic and prime retail use 	B1 B2 B3 HH1 S1 W1 W2 W3 M1 M2 M3 C1 CH1 CH2 L1		B1 B2 B3 HH1 S1 W1 W2 W3 M1 M2 M3 CH1 CH2 L1	
<p>Commentary:</p> <p><i>This objective will facilitate the overall development of the Masterplan site as per the selected Alternative (see evaluation detailed in Section 7). As is the case with other developments within the Masterplan site, any development at this site will be required to comply with the provisions of the Habitats Directive.</i></p>				
<ul style="list-style-type: none"> To provide a hierarchy of parks, open spaces and outdoor recreation areas and to use the river corridors of the River Nore, Breagagh and Pockocke to provide open space for the city while having due consideration to their ecological sensitivity⁷². 	B1 B2 B3 HH1 S1 W1 W2 W3 M1 M2 M3 C1 CH1 CH2 L1		B1 B2 B3 HH1 S1 W1 W2 W3 M1 M2 M3 CH1 CH2 L1	

⁷² These rivers are partly designated within the Natura 2000 Network.

	Likely to Improve status of SEOs	Probable Conflict with status of SEOs - unlikely to be mitigated	Potential Conflict with status of SEOs- likely to be mitigated	No Likely interaction with status of SEOs
Commentary:				
<i>This objective will facilitate the overall development of the Masterplan site as per the selected Alternative (see evaluation detailed in Section 7). Once undertaken in compliance with the provisions of the Habitats Directive, the parks, open spaces and outdoor recreation areas and the use of the river corridors will facilitate contributions towards sustainable mobility and enhancement of ecological connectivity along the banks of the Nore.</i>				

8.8.4 Section 4 Masterplan Strategies

	Likely to Improve status of SEOs	Probable Conflict with status of SEOs - unlikely to be mitigated	Potential Conflict with status of SEOs- likely to be mitigated	No Likely interaction with status of SEOs
Connectivity and Movement Strategy (Section 4.1)				
The Connectivity and Movement Strategy addresses a number of issues including Smarter Travel / Mobility Management Plan, Pedestrian and Cyclist Movement, Vehicular Movement (including a new street located centrally within the site that would link with Bateman Quay to the south and the Central Access Scheme to the north, via the existing bridge over the River Breagagh) and Public Transport.	B1 B2 B3 HH1 S1 W1 W2 W3 M1 M2 M3 C1 CH1 CH2 L1		B1 B2 B3 HH1 S1 W1 W2 W3 M1 M2 M3 CH1 CH2 L1	
Commentary:				
<i>Likely Positive effects facilitated by this Strategy include the following:</i>				
<ul style="list-style-type: none"> • Contribution towards a shift from car to more sustainable and non-motorised transport modes; • Contribution towards managing traffic flows and associated adverse effects on air quality; • Contribution towards reductions in travel related greenhouse gas and other emissions to air; and • Contribution towards reduction in energy usage. 				
<i>Similar to other types of built development provided for by the Masterplan, the development of a new street and the design and construction of access points will potentially conflict with a variety of environmental components through excavations, potential run-off etc.; however, these potential effects will be mitigated by measures, including those which have been integrated into the Draft Masterplan (see Section 9).</i>				
<i>This objective will facilitate the overall development of the Masterplan site as per the selected Alternative (see evaluation detailed in Section 7).</i>				
Conservation & Heritage Strategy (Section 4.2)				
The Conservation and Heritage Strategy addresses both archaeology and architectural heritage and includes strategies for archaeology, heritage structures and existing structures.	CH1 CH2 L1		B1 B2 B3 HH1 S1 W1 W2	W3 M1 M2 M3 C1
Commentary:				
<i>This objective primarily relates to the protection of the environment and will be likely to facilitate a contribution towards the protection of architectural and archaeological heritage and its context. In order to ensure that works arising from this strategy, such as excavations, do not conflict with the protection of the environment (including ecology and water), mitigating measures, including those integrated into the Masterplan, will have to be complied with.</i>				

	Likely to Improve status of SEOs	Probable Conflict with status of SEOs - unlikely to be mitigated	Potential Conflict with status of SEOs- likely to be mitigated	No Likely interaction with status of SEOs
Key Urban Design Strategy (Section 4.3)				
The Key Urban Design Strategy incorporates a number of strategies including Movement Strategy, Public Realm Strategy, Archaeology Strategy, Streets / Lanes Strategy, Linear Park Strategy, Environmental Strategy, New Buildings Strategy, Architectural Strategy and Urban Grain Strategy.	B1 B2 B3 HH1 S1 W1 W2 W3 M1 M2 M3 C1 CH1 CH2 L1		B1 B2 B3 HH1 S1 W1 W2 W3 M1 M2 M3 CH1 CH2 L1	
<p>Commentary:</p> <p><i>Likely Positive effects facilitated by this Strategy include the following:</i></p> <ul style="list-style-type: none"> • Contribution towards a shift from car to more sustainable and non-motorised transport modes • Contribution towards managing traffic flows and associated adverse effects on air quality • Contribution towards reductions in travel related greenhouse gas and other emissions to air • Contribution towards reduction in energy usage • Contribution towards the protection of architectural and archaeological heritage and its context by facilitating compliance with relevant legislation • Contribution towards the protection of designated ecological sites (candidate Special Area of Conservation and Special Protection Area) and ecological connectivity • Contribution towards enhancement of soil function • Contribution towards protection of water status • Enhancement of ecological connectivity and protection • Contribution towards flood risk management <p><i>These development of the park has the potential, if unmitigated, to result in the following significant adverse effects:</i></p> <ul style="list-style-type: none"> • Loss of/disturbance to biodiversity with regard to Natura 2000 Sites, including the River Barrow and River Nore candidate Special Area of Conservation and the River Nore Special Protection Area • Loss of/disturbance to biodiversity with regard to ecological connectivity and non-designated biodiversity • Loss of/disturbance to biodiversity with regard to listed species • Potential interactions during construction with the status of River Nore, River Breaghagh and groundwater and entries to the WFD Register of Protected Areas <p><i>However these effects would be mitigated by the measures which have been integrated into the Variation and the Masterplan.</i></p> <p><i>These urban design provisions will facilitate the overall development of the Masterplan site as per the selected Alternative (see evaluation detailed in Section 7).</i></p>				
4.4 Sustainability Strategy				
The Sustainability Strategy addresses various issues including Transport, Environmental Quality, Density and Mixed Uses, Energy, Zero Brown Waste and Water Conservation.	B1 B2 B3 HH1 S1 W1 W2 W3 M1 M2 M3 C1 CH1 CH2 L1		B1 B2 B3 HH1 S1 W1 W2 W3 M1 M2 M3 CH1 CH2 L1	
<p>Commentary:</p> <p>Likely Positive effects facilitated by this Strategy include the following:</p> <ul style="list-style-type: none"> • Contribution towards a shift from car to more sustainable and non-motorised transport modes • Contribution towards managing traffic flows and associated adverse effects on air quality • Contribution towards reductions in travel related greenhouse gas and other emissions to air • Contribution towards reduction in energy usage • Contribution towards waste management 				

	Likely to Improve status of SEOs	Probable Conflict with status of SEOs - unlikely to be mitigated	Potential Conflict with status of SEOs- likely to be mitigated	No Likely interaction with status of SEOs
<ul style="list-style-type: none"> Contribution towards the protection of designated ecological sites (candidate Special Area of Conservation and Special Protection Area) and ecological connectivity Contribution towards the protection of status of surface waters <p><i>This Strategy identifies the mixed uses to be provided (including housing, jobs, services and amenities). This is consistent with the selected Alternative for the Masterplan which is evaluated in Section 7.</i></p>				

8.8.5 Section 5 Masterplan Proposals

	Likely to Improve status of SEOs	Probable Conflict with status of SEOs - unlikely to be mitigated	Potential Conflict with status of SEOs- likely to be mitigated	No Likely interaction with status of SEOs
Connectivity and Movement Strategy (Section 4.1)				
This section includes the final Masterplan design and phasing details.	B1 B2 B3 HH1 S1 W1 W2 W3 M1 M2 M3 C1 CH1 CH2 L1		B1 B2 B3 HH1 S1 W1 W2 W3 M1 M2 M3 CH1 CH2 L1	
Commentary:				
This evaluation is consistent with that detailed under Section 7 for the final Masterplan design which is provided as Figure 7.1. The phasing contained in the Masterplan provides for the provision of services and infrastructure in advance of use of the lands.				

Section 9 Mitigation Measures

9.1 Integration of Environmental Considerations

The Draft Masterplan has been prepared with environmental considerations being one of the key Masterplan informants and influences.

The undertaking of Strategic Environmental Assessment, Appropriate Assessment (see Section 9.3) and Flood Risk Assessment (see Section 9.4) has further informed the Draft Masterplan. By integrating related recommendations into the Masterplan, the Council have ensured that both the beneficial environmental effects of implementing the Masterplan have been and will be maximised and that potential adverse effects have been and will be avoided, reduced or offset.

The text of the Masterplan outlines how the various Strategies in the Masterplan will contribute towards environmental protection and sustainable development. Key Strategies and the environmental components which they would benefit are identified in the subsections below.

In addition to these Strategies, proposals for development within the Masterplan area must comply as appropriate with the relevant provisions included within the Kilkenny City Development Plan 2014-2020. A number of City Plan provisions which contribute towards environmental protection and sustainable development are reproduced in an Appendix to the Masterplan and on Table 9.1 below. Proposals for development are required to adhere to these and the other provisions contained within the City Plan.

9.2 Strategies contained within the Masterplan

9.2.1 Connectivity and Movement Strategy

The Connectivity and Movement Strategy addresses a number of issues including Smarter Travel / Mobility Management Plan, Pedestrian and Cyclist Movement and Public Transport.

Likely Positive effects facilitated by this Strategy include the following:

- Contribution towards a shift from car to more sustainable and non-motorised transport modes
- Contribution towards managing traffic flows and associated adverse effects on air quality
- Contribution towards reductions in travel related greenhouse gas and other emissions to air
- Contribution towards reduction in energy usage

9.2.2 Conservation and Heritage Strategy

The Conservation and Heritage Strategy addresses both archaeology and architectural heritage.

Likely Positive effects facilitated by this Strategy include the following:

- Contribution towards the protection of architectural and archaeological heritage and its context by facilitating compliance with relevant legislation

9.2.3 Urban Design Strategy

The Urban Design Strategy addresses various issues including Movement Strategy, Archaeology Strategy, Environmental Strategy and Architectural Strategy.

Likely Positive effects facilitated by this Strategy include the following:

- Contribution towards a shift from car to more sustainable and non-motorised transport modes
- Contribution towards managing traffic flows and associated adverse effects on air quality
- Contribution towards reductions in travel related greenhouse gas and other emissions to air
- Contribution towards reduction in energy usage

- Contribution towards the protection of architectural and archaeological heritage and its context by facilitating compliance with relevant legislation
- Contribution towards the protection of designated ecological sites (candidate Special Area of Conservation and Special Protection Area) and ecological connectivity
- Contribution towards the protection of status of surface waters

9.2.4 Sustainability Strategy

The Sustainability Strategy addresses various issues including Transport, Environmental Quality, Energy and Water Conservation.

Likely Positive effects facilitated by this Strategy include the following:

- Contribution towards a shift from car to more sustainable and non-motorised transport modes
- Contribution towards managing traffic flows and associated adverse effects on air quality
- Contribution towards reductions in travel related greenhouse gas and other emissions to air
- Contribution towards reduction in energy usage
- Contribution towards waste management
- Contribution towards the protection of designated ecological sites (candidate Special Area of Conservation and Special Protection Area) and ecological connectivity
- Contribution towards the protection of status of surface waters

9.3 Appropriate Assessment

The Appropriate Assessment resulted in a number of updates being made to the Masterplan which are detailed below:

Removal of all proposals for development within the Natura 2000 sites.

Insertion of the following text into Section 1 Introduction:

This Masterplan requires that:

1. All projects and plans arising from the Masterplan will be screened for the need to undertake Appropriate Assessment under Article 6 of the Habitats Directive. A plan or project will only be authorised after the Council has ascertained, based on scientific evidence, Screening for Appropriate Assessment, and a Stage 2 Appropriate Assessment where necessary, that:

a. The Plan or project will not give rise to significant adverse direct, indirect or secondary effects on the integrity of any European site (either individually or in combination with other plans or projects); or

b. The Plan or project will have significant adverse effects on the integrity of any European site (that does not host a priority natural habitat type/and or a priority species) but there are no alternative solutions and the plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of a social or economic nature. In this case, it will be a requirement to follow procedures set out in legislation and agree and undertake all compensatory measures necessary to ensure the protection of the overall coherence of Natura 2000; or

c. The Plan or project will have a significant adverse effect on the integrity of any European site (that hosts a natural habitat type and/or a priority species) but there are no alternative solutions and the plan or project must nevertheless be carried out for imperative reasons for overriding public interest, restricted to reasons of human health or public safety, to beneficial consequences of

d. primary importance for the environment or, further to an opinion from the Commission, to other imperative reasons of overriding public interest. In this case, it will be a requirement to follow procedures set out in legislation and agree and undertake all compensatory measures necessary to ensure the protection of the overall coherence of Natura 2000.

2. No projects giving rise to significant cumulative, direct, indirect or secondary impacts on Natura 2000 sites arising from their size or scale, land take, proximity, resource requirements, emissions (disposal to land, water or air), transportation requirements, duration of construction, operation, decommissioning or from any other effects shall be permitted on the basis of this Masterplan (either individually or in combination with other plans or projects⁷³).

Proposals for development within the Masterplan area must comply as appropriate with the relevant provisions included within the Kilkenny City Development Plan 2014-2020. A number of City Plan provisions which contribute towards environmental protection and sustainable development are reproduced in the Masterplan.

3. Proposals for development should ensure that they are consistent with all the provisions contained within the City Plan.

⁷³ Except as provided for in Section 6(4) of the Habitats Directive, viz. There must be:
a) no alternative solution available,

b) imperative reasons of overriding public interest for the plan to proceed; and
c) Adequate compensatory measures in place.

Insertion of the following text into Section 4.3.2
Environment Strategy:

Developments which may lead to adverse impacts on the River Nore will not be permitted as part of the Masterplan. Linear Park development and associated works will not be permitted within the boundaries of either Natura 2000 site, unless it is demonstrated, by means of project level Appropriate Assessment, that such development will not lead to adverse impacts on the integrity of the sites⁷⁴.

Insertion of the following text into Section 4.3.3
Linear Park Strategy:

In addition to the provision of walking and cycling facilities along the river bank, access to the river for water based leisure facilities will be considered in the detailed design of the park subject to compliance with the EU Habitats and Birds Directives.

Insertion of the following text into Section 4.3.8
New Street / Lanes Strategy:

Have regard to the natural heritage and ensure compliance with the requirements of the EU Habitats and Birds Directives.

Insertion of the following text into Section 4.4.7
Water Conservation:

Details of this proposal will need to consider the potential for adverse effects on the ecology of the River Barrow and Nore cSAC and the River Nore SPA as required under Article 6 of the EU Habitats Directive.

9.4 Flood Risk Assessment

The Flood Risk Assessment assessed the flood risk in the context of the proposed development and identified suitable mitigation measures which were incorporated into the Masterplan where appropriate, including setting finished floor levels for the development.

⁷⁴ Except as provided for in Section 6(4) of the Habitats Directive, viz. There must be:
a) no alternative solution available,

b) imperative reasons of overriding public interest for the plan to proceed; and
c) Adequate compensatory measures in place.

Table 9.1 Selected provisions from the Kilkenny City Development 2014-2020 and potential adverse effects, if unmitigated

Environmental/ Component	Potential Significant Adverse Effect, if unmitigated	Kilkenny City Development Plan Provision (policy/objective/development management standard)
Biodiversity and Flora and Fauna	<p>Loss of/disturbance to biodiversity with regard to Natura 2000 Sites, including the River Barrow and River Nore candidate Special Area of Conservation and the River Nore Special Protection Area</p> <p>Loss of/disturbance to biodiversity with regard to ecological connectivity and non-designated biodiversity</p> <p>Loss of/disturbance to biodiversity with regard to listed species</p>	<p><i>See also measures on this table under Soil, Water, Flood Risk Management and Drainage and Water Services</i></p> <ul style="list-style-type: none"> • To implement the provisions of Articles 6(3) and 6(4) of the EU Habitats Directive • To ensure that any plan or project within the functional area of the Planning Authority is subject to appropriate assessment in accordance with the Guidance Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities, 2009 and is assessed in accordance with Article 6 of the Habitats Directive in order to avoid adverse impacts on the integrity and conservation objectives of the site. • To protect and where possible enhance the natural heritage sites designated in National legislation (the Wildlife Acts and the Flora Protection Order). This protection will extend to any additions or alterations to sites that may arise during the lifetime of this plan. • To protect and, where possible, enhance wildlife habitats and landscape features which act as ecological corridors/networks and stepping stones, such as river corridors, hedgerows, gardens and road verges, and to minimise the loss of habitats and features of the wider countryside (such as ponds, wetlands, trees) which are not within designated sites. Where the loss of habitats and features of the wider countryside is unavoidable as part of a development, to ensure that appropriate mitigation and/or compensation measures are put in place, to conserve and enhance biodiversity and landscape character and green infrastructure networks. The Council will promote the planting of native tree and shrub species, by committing to using native species (of local provenance wherever possible) in its landscaping work and on Council property • To implement, in partnership with the Kilkenny Heritage Forum and all relevant stakeholders, a County Heritage Plan and County Biodiversity Plan • To allow for green links and biodiversity conservation and to preserve, provide and improve recreational open space. • Ensure that an ecological impact assessment is carried out for any proposed development likely to have a significant impact on rare and threatened species including those species protected by law and their habitats. Ensure appropriate avoidance and mitigation measures are incorporated into development proposals as part of any ecological impact assessment. • Proposals must demonstrate that they will not adversely affect any habitats and/or species of interest or compromise the river's function as a green infrastructure corridor • To consult with Inland Fisheries Ireland and the National Parks and Wildlife Service prior to undertaking, approving or authorising any works or development which may have an impact on rivers, streams and waterways. • To protect existing woodlands, trees and hedgerows which are of amenity or biodiversity value and/or contribute to the landscape character of the city and environs, and to ensure that proper provision is made for their protection and management, when undertaking, approving or authorising development. • To ensure that when undertaking, approving or authorising development that sufficient information is provided to enable an assessment of impacts on woodlands, trees, and hedgerows. • Retain hedgerows, and other distinctive boundary treatment such as stone walls, when undertaking, authorising or approving development; where the loss of the existing boundary is unavoidable as part of development, to ensure that a new hedgerow is planted using native species, and species of local provenance to replace the existing hedgerow and/or that the wall is re-built using local stone and local vernacular design. • Ensure, as far as is possible, that the potential for spread of invasive species is examined as part of any application. • To promote the use of native plants and seeds from indigenous seed sources in all landscape projects • To ensure the protection of the special character and setting of protected structures, ACAs and Recorded Monuments, and protected species when considering proposals for floodlighting.
Population and Human Health	Spatially concentrated deterioration in human health	<p><i>See also measures on this table under Soil, Water, Water Services, Air and Climatic Factors and Flood Risk Management</i></p> <ul style="list-style-type: none"> • To ensure the highest standards of environmental protection in the assessment of planning applications for all development proposals. • To integrate the planning and sustainable development of the county with regard to the social, community and cultural requirements of the county and its population.

Environmental/ Component	Potential Significant Adverse Effect, if unmitigated	Kilkenny City Development Plan Provision (policy/objective/development management standard)
Soil	Damage to the hydrogeological and ecological function of soil	<p><i>See also measures on this table under Biodiversity, Flora and Fauna, Water, Water Services and Flood Risk Management</i></p> <ul style="list-style-type: none"> • Development will be encouraged and facilitated where it can be demonstrated that the development of the potentially contaminated site will result in a recreational and social benefit to the local area/community provided that identified remediation measures for the lands are carried out. The Council will require that a detailed investigation is carried out and appropriate measures are taken to ensure that the land is treated properly before development takes place. • The Council will consult the Geological Survey of Ireland when considering undertaking, approving or authorising developments which are likely to affect Geological Sites.
Water	Potential interactions with the status of water bodies (River Nore, River Breagagh and groundwater) and entries to the WFD Register of Protected Areas ⁷⁵ , arising from: <ul style="list-style-type: none"> - Changes in quality, flow and/or morphology; and - Increases in outflow at waste water treatment plant as a result of increases in population. 	<p><i>See also measures on this table under Biodiversity, Flora and Fauna, Soil, Water Services and Flood Risk Management</i></p> <ul style="list-style-type: none"> • Meet in full the requirements of the E.U. Urban Waste Water Treatment and Water Framework Directives. • To have regard to the Groundwater Protection Scheme and the Water Services Acts 2007 & 2012 in decision-making on the location, nature and control of developments and activities in order to protect groundwater. • To promote compliance with environmental standards and objectives established: <ul style="list-style-type: none"> for bodies of surface water, by the European Communities (Surface Waters) Regulations 2009; for groundwater, by the European Communities (Groundwater) Regulations 2010; which standards and objectives are included in the South East River Basin Management Plan.

⁷⁵ The River Nore is a designated Salmonid water under SI 293 of 1988 and groundwater under the area is listed on the Register for groundwater that is used for drinking water.

Environmental/ Component	Potential Significant Adverse Effect, if unmitigated	Kilkenny City Development Plan Provision (policy/objective/development management standard)
Flood Risk	Increase in flood risk	<p><i>See also measures on this table under Human Health</i></p> <ul style="list-style-type: none"> • To adopt a comprehensive risk-based planning approach to flood management to prevent or minimise future flood risk. In accordance with the Guidelines, the avoidance of development in areas where flood risk has been identified shall be the primary response • To promote compliance with environmental standards and objectives established: for bodies of surface water, by the European Communities (Surface Waters) Regulations 2009 and for groundwater, by the European Communities (Groundwater) Regulations 2010; which standards and objectives are included in the South East River Basin Management Plan. • To complete the mapping of source protection areas and to map Source Protection Areas for any new public water supply schemes as appropriate. • Where flood risk may be an issue for any proposed development, a flood risk assessment shall be carried out that is appropriate to the scale and nature of the development and the risks arising. This FRA shall be undertaken in accordance with the Flood Risk Management Guidelines. • All new development must be designed and constructed to meet the following minimum flood design standards: Where streams open drains or other watercourses are being culverted - the minimum permissible culvert diameter is 900mm. (Access should be provided for maintenance as appropriate.); To give adequate allowance for climate change in designing surface water proposals a multiplication factor of 1.2 shall be applied to all river return periods up to 100 years except in circumstances where the OPW have provided advice specifying the particular multiplication factor for return periods up to 100 years.; In the case of rainfall a multiplication factor of 1.1 shall be applied to rainfall intensities to make allowance for climate change requirements.; In the design of surface water systems, regard shall be had to the Greater Dublin Regional Code of Practice for Drainage Works114 and associated GSDS technical documents. • Development must, so far as is reasonably practicable, incorporate the maximum provision to reduce the rate and quantity of runoff e.g.: Hard surface areas (car parks, etc.), should be constructed in permeable or semi-permeable materials, On site storm water ponds to store and/or attenuate additional runoff from the development should be provided, Soak-aways or french drains should be provided to increase infiltration and minimise additional runoff. • Individual developments shall be obliged, in all cases where surface water drainage measures are required, to provide a surface water drainage system separated from the foul drainage system. • In the case of single dwellings or extensions, except in circumstances where an existing surface water drainage system is available to the proposed site for development and which, in the opinion of the planning authority has adequate capacity to accommodate the identified surface water loading, surface water shall be disposed of, in its entirety within the curtilage of the development site by way of suitably sized soak holes. • In the case of brown-field development, while existing surface water drainage measures will be taken into account, some attenuation measures for surface water may be required at the discretion of the planning authority in the interests of balanced and sustainable development • In line with the above Kilkenny Local Authorities will consider all drainage proposals consistent with SuDS (Sustainable Drainage Systems). • For developments adjacent to watercourses of a significant conveyance capacity any structures (including hard landscaping) must be set back from the edge of the watercourse to allow access for channel clearing/maintenance. A setback of 5m-10m is required depending on the width of the watercourse. Development consisting of construction of embankments, wide bridge piers, or similar structures will not normally be permitted in or across flood plains or river channels.
Water Services	The need to provide adequate and appropriate water services (it is the function of Irish Water to provide for such needs)	<p><i>See also measures on this table under Human Health</i></p> <ul style="list-style-type: none"> • Prioritise the upgrading of the Purcellsinch wastewater treatment plant. • Investigate the feasibility of installing anaerobic digestion facilities at the Purcellsinch wastewater treatment plant • Implement the programme as outlined in the Water Services Investment Programme.

Environmental/ Component	Potential Significant Adverse Effect, if unmitigated	Kilkenny City Development Plan Provision (policy/objective/development management standard)
Air and Climatic Factors and Sustainable Transport	Failure to contribute towards sustainable transport and associated impacts (energy usage and emissions to air including noise and greenhouse gases)	<p><i>See also measures on this table under Human Health</i></p> <ul style="list-style-type: none"> • To prepare a Climate Change Adaptation plan following the adoption of the Development Plan • To review the progress of the Climate Change Strategy, report on the progress to date and thereafter develop a Climate Change Adaptation strategy and action plan in line with national policy • Prepare and implement traffic management and calming schemes for the City & Environs in line with the 3 year Roads Programmes. • To review the Mobility Management Plan (2009) and adopt a new MMP for the period 2015-2020 • Complete the demarcation of the Gateways as depicted on the map and prioritise pedestrian and cyclist movement within the Gateways. • To prepare and support the implementation of a Green Infrastructure Strategy for Kilkenny city and environs, as resources allow. • Complete the River Nore Linear Park within the lifetime of the Plan. • Plan for the provision of the Greensbridge Way and the Ossory Bridge connection. • To ensure that developments which are subject to the requirements of the Air Pollution Act 1987 and Air Pollution (Licensing of Industrial Plant) Regulations 1988 or any subsequent regulations meet appropriate emission standards and other relevant national and international standards. • To seek to minimise noise and dust through the planning process by ensuring that the design of developments incorporate measures to prevent or mitigate the transmission of dust, noise and vibration, where appropriate • Ensure traffic noise levels are considered as part of all new developments along the N77 and N10, or other roads as identified in the Noise Action Plan. • Require planning applications to demonstrate the development proposal's accessibility for pedestrians and cyclists. Planning applications for residential/commercial or mixed use developments need to: <ul style="list-style-type: none"> • Demonstrate detailed layouts and design which reflect the importance of walking and cycling by providing safe and direct access to local services and public transport nodes. • Demonstrate how walking and cycling is integrated with open space provision. • Demonstrate that the proposal is easily accessible to pedestrians and cyclists alike with the layouts displaying high internal pedestrian and cyclist permeability. • Show a high quality of internal routes which are safe, secure and convenient for users. • Require that adequate covered facilities for the secure parking of bicycles are provided at convenient locations close to building entrances in order to encourage cycling. The number of bicycle parking spaces required will be in accordance with Table T1 below.
Waste Management	Increases in waste levels	<ul style="list-style-type: none"> • To implement the Joint Waste Management Plan for the South East Region • To have regard to the waste produced by proposed developments including the nature and amount of waste produced and proposed method of disposal. • Proposed apartment and housing developments must be appropriately laid out to enable the implementation of three bin collection systems. • Proposed apartment, housing and commercial developments must be either serviced by existing infrastructure or make appropriate provision for bring sites in their layout. The sites shall be made available to the Council at the developer's own expense and will be maintained by the Council or its agents. Adequate access must be provided in developments to service proposed bring sites. • For significant construction/demolition projects, the developer shall include construction and demolition waste management plans, to be prepared in accordance with the Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects. These plans should seek to focus on waste minimisation in general and optimise waste prevention, re-use and recycling opportunities, and shall provide for the segregation of all construction wastes into recyclable, biodegradable and residual wastes. • For any development, the developer shall ensure that all operations at the site during the construction and demolition phase shall be managed and programmed in such a manner as to minimise waste production and that procedures are in place to deal with any litter arising.

Environmental/ Component	Potential Significant Adverse Effect, if unmitigated	Kilkenny City Development Plan Provision (policy/objective/development management standard)
<p>Archaeological and Architectural Heritage</p>	<p>Effects on the Zone of Archaeological Potential, St. Francis Abbey, Kilkenny Town wall, Evans Tower, entries to the Record of Monuments and Places and other archaeological heritage</p> <p>Effects on entries to the Records of Protected Structures, National Inventory of Architectural Heritage and Architectural Conservation Areas (St. Canice's ACA and City Centre ACA) and other architectural heritage</p>	<p><i>See also measures on this table under Landscape</i></p> <ul style="list-style-type: none"> • Protect archaeological sites and monuments (including their setting), underwater archaeology, and archaeological objects, including those that are listed in the Record of Monuments and Places, and in the Urban Archaeological Survey of County Kilkenny or newly discovered sub-surface and underwater archaeological remain • Endeavour to preserve in situ all archaeological monuments, whether on land or underwater, listed in the Record of Monuments and Places (RMP), and any newly discovered archaeological sites, features, or objects by requiring that archaeological remains are identified and fully considered at the very earliest stages of the development process and that schemes are designed to avoid impacting on the archaeological heritage. • Ensure that development within the vicinity of a Recorded Monument is sited and designed appropriately so that it does not seriously detract from the setting of the feature or its zone of archaeological potential. Where upstanding remains of a Recorded Monument exist a visual impact assessment may be required to fully determine the effect of any proposed development. • To require archaeological assessment, surveys, test excavation and/or monitoring for planning applications in areas of archaeological importance if a development proposal is likely to impact upon in-situ archaeological monuments, their setting and archaeological remains. • Require the retention of surviving medieval plots and street patterns and to facilitate the recording of evidence of ancient boundaries, layouts etc. in the course of development. • To protect and retain the historic integrity of the city walls, in accordance with the Kilkenny City Walls Conservation Plan. • To seek the conservation of St Francis Abbey and its setting • To ensure the protection of the special character and setting of protected structures, ACAs and Recorded Monuments, and protected species when considering proposals for floodlighting. <ul style="list-style-type: none"> • To ensure the protection of the architectural heritage of Kilkenny City & Environs by including all structures considered to be of special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest in the Record of Protected Structures. • To respond to the Ministerial recommendation to include in the Record of Protected Structures, structures which have been identified as being of Regional, National or International significance in the National Inventory of Architectural Heritage survey of the city and county published in 2006. • To carry out a review of the Record of Protected Structures for the functional area of Kilkenny City and Environs • To ensure the preservation of the special character of each ACA listed)above and within the county particularly with regard to building scale, building lines, height, general land use, building materials, proportions, historical plot sizes, historic street furniture and paving • To designate ACAs where appropriate and provide a local policy framework for the preservation of the character of these areas. • To ensure the protection of the special character and setting of protected structures, ACAs and Recorded Monuments, and protected species when considering proposals for floodlighting. • To improve the visual appearance of the car parking area at the Market Yard and to ensure a high standard of architectural design for any development at Bateman Quay.

Environmental/ Component	Potential Significant Adverse Effect, if unmitigated	Kilkenny City Development Plan Provision (policy/objective/development management standard)
Landscape	Occurrence of adverse visual impacts especially with respect to protected views and prospects	<p><i>See also measures on this table under Biodiversity, Flora and Fauna, Archaeological Heritage and Architectural Heritage</i></p> <ul style="list-style-type: none"> • To protect and, where possible, enhance wildlife habitats and landscape features which act as ecological corridors/networks and stepping stones, such as river corridors, hedgerows, gardens and road verges, and to minimise the loss of habitats and features of the wider countryside (such as ponds, wetlands, trees) which are not within designated sites. Where the loss of habitats and features of the wider countryside is unavoidable as part of a development, to ensure that appropriate mitigation and/or compensation measures are put in place, to conserve and enhance biodiversity and landscape character and green infrastructure networks. • To protect existing woodlands, trees and hedgerows which are of amenity or biodiversity value and/or contribute to the landscape character of the city and environs, and to ensure that proper provision is made for their protection and management, when undertaking, approving or authorising development. • To protect views and prospects identified on Figure 7.5 by requiring new development or extensions to existing development to be designed and located so as not to have a significant impact on its character. • To encourage street layouts in newly developed areas which create new vistas to existing and new landmarks, in particular within brownfield sites, the Western Environs and the Loughmacask Local Area Plan lands. • Where the Council believes development has the potential to either diminish or enhance significant views into and/or out of the city and environs, it may require that a visual impact assessment be carried out prior to development being undertaken on any site. • Safeguard the importance of significant archaeological or historic landscapes from developments that would unduly sever or disrupt the relationship, connectivity and/or inter-visibility between sites. • To seek the protection, and enhancement of significant historic gardens, parklands and designed landscapes in the city and environs, their setting and views to and from them • To require an assessment of the potential visual, heritage and environmental impacts of proposals to floodlight buildings and structures • To ensure that any development occurring along the River Nore will be sensitive in its design and mindful of its proximity to the river.

Section 10 Monitoring Measures

10.1 Introduction

The SEA Directive requires that the significant environmental effects of the implementation of plans and programmes are monitored. The monitoring of potential significant effects within the Masterplan area will be undertaken in conjunction with the monitoring programme for Proposed Variation No. 1 to the Kilkenny City Development Plan. The indicators below are the same as those included as part of the monitoring programme detailed for Proposed Variation No. 1.

Monitoring can enable, at an early stage, the identification of unforeseen adverse effects and the undertaking of appropriate remedial action.

10.2 Indicators and Targets

Monitoring is based around indicators which allow quantitative measures of trends and progress over time relating to the Strategic Environmental Objectives identified in Section 4 and used in the evaluation. Each indicator to be monitored is accompanied by the target(s) which were identified with regard to the relevant strategic actions.

Table 10.1 overleaf shows the indicators and targets which have been selected for monitoring the likely significant environmental effects of implementing the Masterplan, if unmitigated.

The Monitoring Programme may be updated to deal with specific environmental issues - including unforeseen effects - as they arise. Such issues may be identified by the Council or identified to the Council by other agencies.

10.3 Sources

Measurements for indicators generally come from existing monitoring sources. Existing monitoring sources include those maintained by the Council and the relevant authorities e.g. the

⁷⁶ The likely significant effects of development proposals on environmental sensitivities are further determined during the development management process. By documenting this determination (e.g. whether a proposed development will impact upon a

Environmental Protection Agency, the National Parks and Wildlife Service and the Central Statistics Office.

Internal monitoring of the environmental effects of grants of permission in the Council will provide monitoring of various indicators and targets on a grant of permission by grant of permission⁷⁶ basis. Where significant adverse effects - including positive, negative, cumulative and indirect - have the potential to occur upon, for example, entries to the RMP, entries to the RPS or ecological networks as a result of the undertaking of individual projects or multiple individual projects such instances should be identified and recorded and should feed into the monitoring evaluation.

10.4 Reporting

A stand-alone Monitoring Report on the significant environmental effects of implementing Proposed Variation No. 1 to the Kilkenny City Development Plan and the Masterplan will be prepared in 2017 and again in 2019. The Kilkenny City Development Plan will be reviewed in 2019-2020 and monitoring arrangements will be re-examined at this stage. Monitoring reports should address the indicators set out below.

The Council is responsible for the ongoing review of indicators and targets, collating existing relevant monitored data, the preparation of monitoring evaluation report(s), the publication of these reports and, if necessary, the carrying out of corrective action.

Protected Structure or whether a proposed development can be adequately served with water services) while granting permissions, or at a later date, the requirement to monitor the effects of implementing the Masterplan can be achieved.

10.5 Thresholds

Thresholds at which corrective action will be considered include:

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

Table 10.1 Selected Indicators, Targets and Monitoring Sources

Environmental Component	Selected Indicator(s)	Selected Target(s)	Source (Frequency)
Biodiversity, Flora and Fauna	B1: Conservation status of habitats and species as assessed under Article 17 of the Habitats Directive	B1: Maintenance of favourable conservation status for all habitats and species protected under national and international legislation to be unaffected by implementation of the Variation ⁷⁷	<ul style="list-style-type: none"> Internal monitoring of environmental effects of grants of permission (grant by grant). Department of Arts, Heritage and the Gaeltacht report of the implementation of the measures contained in the Habitats Directive - as required by Article 17 of the Directive (every 6 years). Consultations with the NPWS (at monitoring evaluation - see Section 10.4).
	B2: Percentage loss of functional connectivity without remediation resulting from development granted permission in the Masterplan area	B2: No significant ecological networks or parts thereof which provide functional connectivity to be lost without remediation resulting from development granted permission in the Masterplan area	<ul style="list-style-type: none"> Internal monitoring of environmental effects of grants of permission (grant by grant). CORINE mapping resurvey (every c. 5 years).
	<p>B3i: Number of significant impacts on relevant habitats, species, environmental features or other sustaining resources resulting from development granted permission in the Masterplan area</p> <p>B3ii: Number of significant impacts on the protection of species listed on Schedule 5 of the Wildlife Act 1976</p>	<p>B3i: Avoid significant impacts on relevant habitats, species, environmental features or other sustaining resources resulting from development granted permission in the Masterplan area</p> <p>B3ii: No significant impacts on the protection of species listed on Schedule 5 of the Wildlife Act 1976</p>	<ul style="list-style-type: none"> Internal monitoring of environmental effects of grants of permission (grant by grant). Consultations with the NPWS (at monitoring evaluation - see Section 10.4).
Population and Human Health	PHH1: Occurrence (any) of a spatially concentrated deterioration in human health arising from environmental factors resulting from development granted permission in the Masterplan area, as identified by the Health Service Executive and Environmental Protection Agency	PHH1: No spatial concentrations of health problems arising from environmental factors as a result of implementing the Variation	<ul style="list-style-type: none"> Consultations with EPA and Health Service Executive (at monitoring evaluation - see Section 10.4).
Soil	S1: Soil extent and hydraulic connectivity	S1: To minimise reductions in soil extent and hydraulic connectivity	<ul style="list-style-type: none"> Internal monitoring of environmental effects of grants of permission (grant by grant).

⁷⁷ Except as provided for in Section 6(4) of the Habitats Directive, viz. There must be:

(a) no alternative solution available;

(b) imperative reasons of overriding public interest for the plan/programme/project to proceed; and

(c) adequate compensatory measures in place.

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Environmental Component	Selected Indicator(s)	Selected Target(s)	Source (Frequency)
Water	W1: Classification of Overall Status (comprised of ecological and chemical status) under the European Communities Environmental Objectives (Surface Waters) Regulations 2009 (SI No. 272 of 2009)	W1: Not to cause deterioration in the status of any surface water or affect the ability of any surface water to achieve 'good status' ⁷⁸ by 2015	<ul style="list-style-type: none"> Internal monitoring of environmental effects of grants of permission (grant by grant). Data issued under the Water Framework Directive Monitoring Programme for Ireland.
	W2: Groundwater Quality Standards and Threshold Values under Directive 2006/118/EC	W2: Not to affect the ability of groundwaters to comply with Groundwater Quality Standards and Threshold Values under Directive 2006/118/EC	<ul style="list-style-type: none"> Internal monitoring of environmental effects of grants of permission (grant by grant). Data issued under the Water Framework Directive Monitoring Programme for Ireland (multi-annual).
	W3: Number of incompatible developments granted permission on lands which pose - or are likely to pose in the future - a significant flood risk	W3: Minimise developments granted permission on lands which pose - or are likely to pose in the future - a significant flood risk in compliance with The Planning System and Flood Risk Management Guidelines for Planning Authorities	<ul style="list-style-type: none"> Internal monitoring of environmental effects of grants of permission (grant by grant).
Material Assets	M1: Number of new developments granted permission which can be adequately and appropriately served with waste water treatment infrastructure over the lifetime of the Masterplan	M1: All new developments granted permission to be connected to and adequately and appropriately served by waste water treatment infrastructure over the lifetime of the Masterplan	<ul style="list-style-type: none"> Internal monitoring of environmental effects of grants of permission (grant by grant).
	M2: Number of non-compliances with the 48 parameters identified in the European Communities (Drinking Water) Regulations (No. 2) 2007 which present a potential danger to human health as a result of implementing the Variation	M2: No non-compliances with the 48 parameters identified in the European Communities (Drinking Water) Regulations (No. 2) 2007 which present a potential danger to human health as a result of implementing the Variation	<ul style="list-style-type: none"> EPA The Provision and Quality of Drinking Water in Ireland reports (multi-annual). EPA Remedial Action List (every quarter).
	M3: Preparation and implementation of construction and environmental management plans	M3: For construction and environmental management plans to be prepared and implemented for relevant projects	<ul style="list-style-type: none"> EPA National Waste Reports Internal monitoring of environmental effects of grants of permission (grant by grant).
Air and Climatic Factors	C1: Percentage of the City's population travelling to work, school or college by public transport or non-mechanical means	C1: An increase in the percentage of the City's population travelling to work, school or college by public transport or non-mechanical means	<ul style="list-style-type: none"> CSO Population Data (every c. 5 years).

⁷⁸ Good status as defined by the WFD equates to approximately Q4 in the current national biological classification of rivers.

SEA Environmental Report for the Draft Masterplan for Abbey Creative Quarter 2015

Environmental Component	Selected Indicator(s)	Selected Target(s)	Source (Frequency)
Cultural Heritage	CH1: Percentage of entries to the Record of Monuments and Places - including Zones of Archaeological Potential (and the context of the above within the surrounding landscape where relevant) – protected from adverse effects resulting from development which is granted permission in the Masterplan area	CH1: Protect entries to the Record of Monuments and Places - including Zones of Archaeological Potential (and their context of the above within the surrounding landscape where relevant) from adverse effects resulting from development which is granted permission in the Masterplan area	<ul style="list-style-type: none"> • Internal monitoring of environmental effects of grants of permission (grant by grant). • Consultation with Department of Arts, Heritage and the Gaeltacht (at monitoring evaluation - see Section 10.4).
	CH2: Percentage of entries to the Record of Protected Structures and Architectural Conservation Areas and their context protected from adverse effects resulting from development which is granted permission in the Masterplan area	CH2: Protect entries to the Record of Protected Structures and Architectural Conservation Areas and their context from adverse effects resulting from development which is granted permission in the Masterplan area	<ul style="list-style-type: none"> • Internal monitoring of environmental effects of grants of permission (grant by grant). • Consultation with Department of Arts, Heritage and the Gaeltacht (at monitoring evaluation - see Section 10.4).
Landscape	L1: Number of complaints received from statutory consultees regarding avoidable impacts on the landscape - especially with regard to protected views - resulting from development which is granted permission in the Masterplan area	L1: No developments permitted which result in avoidable impacts on the landscape - especially with regard to protected views - resulting from development which is granted permission in the Masterplan area	<ul style="list-style-type: none"> • Internal monitoring of environmental effects of grants of permission (grant by grant).