

# STRATEGIC ENVIRONMENTAL ASSESSMENT ENVIRONMENTAL REPORT

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FOR THE

## DUBLIN TO GALWAY GREENWAY PLAN

**for: Department of Transport, Tourism and Sport**  
44 Kildare Street  
Dublin 2



**An Roinn Iompair  
Turasóireachta agus Spóirt**

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## List of Abbreviations

<b>AA</b>	Appropriate Assessment
<b>ACA</b>	Architectural Conservation Area
<b>ATSEBI</b>	Assessment of Trophic Status of Estuaries and Bays in Ireland
<b>CFRAM</b>	Catchment Flood Risk Assessment and Management
<b>CSO</b>	Central Statistics Office
<b>DAHG</b>	Department of Arts, Heritage and the Gaeltacht
<b>DCENR</b>	Department of Communications, Energy and Natural Resources
<b>DEHLG</b>	Department of the Environment, Heritage and Local Government
<b>DECLG</b>	Department of the Environment, Community and Local Government
<b>EIA</b>	Environmental Impact Assessment
<b>EPA</b>	Environmental Protection Agency
<b>EQS</b>	Environmental Quality Standard
<b>EU</b>	European Union
<b>GSi</b>	Geological Survey of Ireland
<b>NHA</b>	Natural Heritage Area
<b>NIAH</b>	National Inventory of Architectural Heritage
<b>NRA</b>	National Roads Authority
<b>NSS</b>	National Spatial Strategy
<b>OPW</b>	Office of Public Works
<b>PAS</b>	Priority Action Substance
<b>RAL</b>	Remedial Action List
<b>RBD</b>	River Basin District
<b>RMP</b>	Record of Monuments and Places
<b>RPA</b>	Register of Protected Areas
<b>RPS</b>	Record of Protected Structures
<b>RPGs</b>	Regional Planning Guidelines
<b>RBMP</b>	River Basin Management Plan
<b>SAC</b>	Special Area of Conservation
<b>SEA</b>	Strategic Environmental Assessment
<b>SEO</b>	Strategic Environmental Objective
<b>SFRA</b>	Strategic Flood Risk Assessment
<b>SI No.</b>	Statutory Instrument Number
<b>SPA</b>	Special Protection Area
<b>UCD</b>	University College Dublin
<b>WFD</b>	Water Framework Directive
<b>WMU</b>	Water Management Unit
<b>WSSP</b>	Water Services Strategic Plan

# 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 (such as a plan or programme) 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.

## Biotic Index Values (Q Values)

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

## Environmental Problems

Annex I of Directive 2001/42/EC of the European Parliament and of the Council of Ministers, of 27<sup>th</sup> 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 2000 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.

Consideration of potential land ownership rights/private property rights/land acquisition issues/constitutional issues/social effects/economic effects/political effects are not appropriate to Strategic Environmental Assessment, which evaluates the likely significant environmental effects of implementing the Plan. Environmental effects as a result of providing for a greenway on land (including private and public land and agricultural and non-agricultural land) are considered under the relevant environmental components.



## **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 Plan 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 Dublin to Galway Greenway Plan. It has been undertaken by CAAS Ltd. on behalf of the Department of Transport, Tourism and Sport.

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 Plan. The SEA is carried out in order to comply with the provisions of the European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations 2004 (Statutory Instrument Number (SI No. 435 of 2004) as amended. This report should be read in conjunction with the Plan.

## 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 insure 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

27<sup>th</sup> June 2001, on the Assessment of the Effects of Certain Plans and Programmes on the Environment, referred to hereafter as the SEA Directive, introduced the requirement that SEA be carried out on plans and programmes which are prepared for a number of sectors, including land use planning.

The SEA Directive was transposed into Irish Law through the European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations 2004 (Statutory Instrument Number (SI No. 435 of 2004) and the Planning and Development (Strategic Environmental Assessment) Regulations 2004 (SI No. 436 of 2004). Both sets of Regulations became operational on 21<sup>st</sup> 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 Plan and the Department

Article 9 of the European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations 2004, as amended, sets out criteria for determining whether SEA should be undertaken on certain types of plans. Considering these criteria, SEA is required to be undertaken on the Dublin to Galway Greenway Plan as it:

- Sets part of the framework for future development consent of projects listed in Annexes I and II to the Environmental Impact Assessment Directive; and
- Is not directly connected with or necessary to the management of European sites but, either individually or in combination with other plans, may have a significant effect on such sites, if unmitigated.

The findings of the SEA are expressed in this Environmental Report, an earlier version of which accompanied the Draft Plan on public display and was be altered in order to take account of recommendations contained in submissions and in order to take account of minor changes which were made to the Draft Plan on foot of submissions. The Department has taken into account the findings of this Report and other related SEA output during their consideration and finalisation of the Draft Plan. When the Plan is finalised, an SEA Statement is prepared which summarises, inter alia, how environmental considerations have been integrated into the Plan.

## Section 2 The Plan

### 2.1 Content of the Plan

The Plan sets out the Department's high level vision, policy and objectives for the development of a greenway between Dublin City to Clifden, Galway via Galway City.

The Plan document is text based and does not identify a route for the greenway (please refer to Section 2.2 for further detail). The greenway will be developed at project level at which Environmental Impact Assessment (EIA) and Appropriate Assessment (AA) will be undertaken as relevant.

All SEA and AA recommendations have been integrated into the Plan. The content of the main Plan document is as follows (SEA and AA recommendations in **green**):

#### Vision

Develop a segregated cycling and walking trail to international standards, extending from Dublin City to Galway which is of a scale that will allow Ireland to harness the potential of an identified growing tourism market for cycling. This route will form part of an interconnected National Cycle Network of high quality, substantially traffic free, inter urban routes, which will establish Ireland as a quality international tourism destination for a broad range of associated recreational activities and pursuits.

#### Policy

To provide a segregated, substantially off road cycle route from Dublin City to Clifden via Galway City, maximising the use of - where feasible - existing and approved routes and disused railway line corridors and to also use existing plans and/or permitted projects where these have been subject to a consent process that has previously included the carrying out or screening for Strategic Environmental Assessment (SEA)/ Environmental Impact Assessment (EIA) and/or Appropriate Assessment (AA).

The development of this route shall be subject to the requirements of Habitats and EIA Directives **and shall comply with the provisions detailed in Appendix I 'Environmental Management and Sustainable Development' to this Plan**<sup>1</sup>. Where State lands are not available, land will be acquired in order to secure the use of the infrastructure for future years, thereby securing the State's investment.

#### Objectives

- Establish a cycleway route connecting Dublin to Clifden via Galway City which is substantially segregated from vehicular traffic and is safe, attractive and comfortable.
- Maximise the value of existing infrastructure including canal towpaths, disused railway lines and state owned lands.
- Secure permanent access to the entire route through land acquisition if required.
- Develop a tourism experience that caters for a broad range of users in key tourism markets.
- Route to be designed and built to international best practice and in accordance with adopted standards.
- Maximise the value of existing and proposed investment in key tourism destinations.
- Facilitate regular access to visitor attractions and services along the corridor.
- Facilitate connections with public transport hubs which will provide access to the route from bus and rail.
- Provide frequent connections to towns, tourism facilities, natural amenities and other attractions in proximity to the route in collaboration with local communities and tourism providers.
- To generate ongoing economic benefits for rural and urban areas along the route.

<sup>1</sup> The detailed content of Plan Appendix I is reproduced in Section 9 of this report

- To maximise the number of potential commuter, leisure and tourist users.
- To facilitate the achievement of Smarter Travel targets for sustainable travel.
- To market and promote the cycleway internationally.
- To provide comprehensive route signage, mapping and distinct branding to international standards.
- To provide for maintenance of the route and monitoring of patterns of use.
- To create and economic stimulus for growth in the national and local economy, providing opportunities for new and existing businesses and communities.
- **To implement the provisions detailed in Appendix I 'Environmental Management and Sustainable Development' to this Plan<sup>2</sup>.**

## 2.2 Relationship with other relevant Plans and Programmes

The Greenway Plan is a high-level, strategic, text based document which does not identify the design, route or possible route corridors for the greenway. Details of the project(s) which will emanate from the Plan will allow for a more detailed consideration of environmental effects – including in-combination/cumulative effects – by project level assessments i.e. EIA and AA.

The Greenway Plan constitutes an assemblage of elements – some will be new, some exist already, some are being developed as parts of existing local initiatives. Furthermore the Greenway contains elements that have already been adopted – following consultation and assessment - into County and Local Plans.

Finally, some parts of the final scheme may consist of elements that emerge from new and emerging local plans and initiatives.

The Plan sits within a hierarchy of strategic actions such as plans and programmes,

including those detailed on Table 2.1 below<sup>3</sup> (see also Section 4, Section 5 and Section 9). The Plan must comply with relevant higher level strategic actions and may, in turn, guide lower level strategic actions.

The Plan 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.

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<sup>2</sup> The detailed content of Plan Appendix I is reproduced in Section 9 of this report

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<sup>3</sup> 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.

**Table 2.1 Relationship with Legislation and Other Plans and Programmes<sup>4</sup>**

<b>European</b>				
<b>Directive/ Plan/ Programme</b>	<b>Highest Level Aim/ Purpose/ Objective</b>	<b>Lower level objectives, actions etc.</b>	<b>Relevant legislation in Ireland</b>	<b>Relevance to the Greenway Plan</b>
UN Kyoto Protocol (2 <sup>ND</sup> Kyoto Period), the Second European Climate Change Programme (ECCP II), Paris climate conference (COP21) 2015	<p>The UN Kyoto Protocol set of policy measures to reduce greenhouse gas emissions</p> <p>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</p> <p>At the Paris climate conference (COP21) in December 2015, 195 countries adopted the first-ever universal, legally binding global climate deal. The agreement sets out a global action plan to put the world on track to avoid dangerous climate change by limiting global warming to well below 2°C.</p>	<ul style="list-style-type: none"> <li>The Kyoto Protocol is implemented through the European Climate Change Programme (ECCP II)</li> <li>EU member states implement measures to improve on or complement the specified measures and policies arising from the ECCP</li> </ul> <p>Under COP21, governments agreed to come together every 5 years to set more ambitious targets as required by science; report to each other and the public on how well they are doing to implement their targets; track progress towards the long-term goal through a robust transparency and accountability system</p>	National Policy Position and final Heads of the Climate Action and Low-Carbon Development Act	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"> <li>Binding legislation which aims to ensure the European Union meets its climate and energy targets for 2020</li> <li>Aims to achieve a 20% reduction in EU greenhouse gas emissions from 1990 levels</li> <li>Aims to raise the share of EU energy consumption produced from renewable resources to 20%</li> <li>Achieve a 20% improvement in the EU's energy efficiency</li> </ul>	<p>Four pieces of complimentary legislation:</p> <ul style="list-style-type: none"> <li>Reform of the EU Emissions Trading System (EU ETS) to include a cap on emission allowances in addition to existing system of national caps</li> <li>Member States have agreed national targets for non-EU ETS emissions from countries outside the EU</li> <li>Meet the national renewable energy targets of 16% for Ireland by 2020</li> <li>Preparing a legal framework for technologies in carbon capture and storage</li> </ul>	<p>Climate Action and Low-Carbon Development National Policy Position Ireland</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"> <li>Promote the preservation, protection and improvement of the quality of the environment, including the conservation of natural habitats and of wild fauna and flora</li> <li>Contribute towards ensuring biodiversity through the conservation of natural habitats and of wild fauna and flora</li> <li>Maintain or restore to favourable conservation status, natural habitats and species of wild fauna and flora of Community interest</li> <li>Promote the maintenance of biodiversity, taking account of economic, social, cultural and regional requirements.</li> </ul>	<ul style="list-style-type: none"> <li>Propose and protect sites of importance to habitats, plant and animal species</li> <li>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</li> <li>Carry out comprehensive assessment of habitat types and species present</li> <li>Establish a system of strict protection for the animal species and plant species listed in Annex IV</li> </ul>	<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 Department is obliged to comply with, as relevant and appropriate, the requirements of the Directive and transposing regulations

<sup>4</sup> 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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Birds Directive (2009/147/EC)	<ul style="list-style-type: none"> <li>Conserve all species of naturally occurring birds in the wild state including their eggs, nests and habitats</li> <li>Protect, manage and control these species and comply with regulations relating to their exploitation</li> <li>The species included in Annex I shall be the subject of special conservation measures concerning their habitat in order to ensure their survival and reproduction in their area of distribution</li> </ul>	<ul style="list-style-type: none"> <li>Preserve, maintain or re-establish a sufficient diversity and area of habitats for all the species of birds referred to in Annex 1.</li> <li>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 inside and outside the protected zones, re-establish destroyed biotopes and creation of biotopes</li> <li>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.</li> </ul>	European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477/2011)	The Department is obliged to comply with, as relevant and appropriate, the requirements of the Directive and transposing regulations
European Union Biodiversity Strategy to 2020	<ul style="list-style-type: none"> <li>Aims to halt or reverse biodiversity loss and speed up the EU's transition towards a resource efficient and green economy</li> <li>Halting the loss of biodiversity and the degradation of ecosystem services in the EU by 2020, and restoring them in so far as feasible</li> </ul>	<ul style="list-style-type: none"> <li>Outlines six targets and twenty actions to aid European in halting the loss to biodiversity and eco-system services</li> <li>The six targets cover: <ul style="list-style-type: none"> <li>Full implementation of EU nature legislation to protect biodiversity</li> <li>Maintaining, enhancing and protecting for ecosystems, and green infrastructure</li> <li>Ensuring sustainable agriculture, and forestry</li> <li>Sustainable management of fish stocks</li> <li>Reducing invasive alien species</li> <li>Addressing the global need to contribute towards averting global biodiversity loss</li> </ul> </li> </ul>	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
<p>The Clean Air for Europe Directive (2008/50/EC)</p> <p>Fourth Daughter Directive (2004/107/EC)</p>	<ul style="list-style-type: none"> <li>The CAFE Directive merges existing legislation into a single directive (except for the fourth daughter directive)</li> <li>Sets new air quality objectives for PM2.5 (fine particles) including the limit value and exposure related objectives</li> <li>Accounts for the possibility to discount natural sources of pollution when assessing compliance against limit values</li> <li>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.</li> <li>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</li> </ul>	<ul style="list-style-type: none"> <li>Sets objectives for ambient air quality</li> <li>designed to avoid, prevent or reduce harmful effects on human health and the environment as a whole</li> <li>Aims to assess the ambient air quality in Member States on the basis of common methods and criteria;</li> <li>Obtains information on ambient air quality in order to help combat air pollution and nuisance and to monitor long-term</li> <li>trends and improvements resulting from national and Community</li> <li>measures;</li> <li>Ensures that such information on ambient air quality is made available to the public;</li> <li>Aims to maintain air quality where it is good and improving it in other cases;</li> <li>Aims to promote increased cooperation between the Member States in reducing air pollution.</li> </ul>	<p>Air Quality Standards Regulations 2011 (S.I. No. 180 of 2011)</p> <p>Arsenic, Cadmium, Mercury, Nickel and Polycyclic Aromatic Hydrocarbons in Ambient Air Regulations 2009 (S.I. No. 58 of 2009)</p>	The Department is obliged to comply with, as relevant and appropriate, the requirements of the Directive and transposing regulations

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Noise Directive 2002/49/EC	<ul style="list-style-type: none"> <li>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.</li> </ul>	<p>The Directive requires competent authorities in Member States to:</p> <ul style="list-style-type: none"> <li>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;</li> <li>Draw up action plans to reduce noise where necessary and maintain environmental noise quality where it is good; and</li> <li>Inform and consult the public about noise exposure, its effects, and the measures considered to address noise.</li> <li>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.</li> </ul>	Environmental Noise Regulations 2006 (S.I. No. 140 of 2006)	The NTA is obliged to comply with, as relevant and appropriate, the requirements of the Directive and transposing regulations
Flood Directive (2007/60/EC)	<ul style="list-style-type: none"> <li>Establishes a framework for the assessment and management of flood risks</li> <li>Reduce adverse consequences for human health, the environment, cultural heritage and economic activity associated with floods in the Community</li> </ul>	<ul style="list-style-type: none"> <li>Assess all water courses and coast lines at risk from flooding through Flood Risk Assessment</li> <li>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</li> <li>Implement flood risk management plans and take adequate and coordinated measures to reduce flood risk for the areas covered by the Articles listed above</li> <li>Inform the public and allow the public to participate in planning process</li> </ul>	<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 Department 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"> <li>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</li> <li>Preserve and prevent the deterioration of water status and where necessary improve and maintain "good status" of water bodies</li> <li>Promote sustainable water usage</li> <li>The Water Framework Directive repealed the following Directives: <ul style="list-style-type: none"> <li>The Drinking Water Abstraction Directive</li> <li>Sampling Drinking Water Directive</li> <li>Exchange of Information on Quality of Surface Freshwater Directive</li> <li>Shellfish Directive</li> <li>Freshwater Fish Directive</li> <li>Groundwater (Dangerous Substances) Directive</li> <li>Dangerous Substances Directive</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Protect, enhance and restore all water bodies and meet the environmental objectives outlined in Article 4 of the Directive</li> <li>Achieve "good status" for all waters by December 2015</li> <li>Manage water bodies based on identifying and establishing river basins districts</li> <li>Involve the public and streamline legislation</li> <li>Prepare and implement a River Basin Management Plan for each river basin districts identified and a Register of Protected Areas</li> <li>Establish a programme of monitoring for surface water status, ground water status and protected areas</li> <li>Recover costs for water services</li> </ul>	European Communities (Water Policy) Regulations 2003 (S.I. No. 722 of 2003) (as amended)	The Department is obliged to comply with, as relevant and appropriate, the requirements of the Directive and transposing regulations



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Groundwater Directive (2006/118/EC)	<ul style="list-style-type: none"> <li>Protect, control and conserve groundwater</li> <li>Prevent the deterioration of the status of all bodies of groundwater</li> <li>Implements measures to prevent and control groundwater pollution, including 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.</li> </ul>	<ul style="list-style-type: none"> <li>Meet minimum groundwater standards listed in Annex 1 of Directive</li> <li>Meet threshold values adopted by national legislation for the pollutants, groups of pollutants and indicators of pollution which have been identified as contributing to the characterisation of bodies or groups of bodies of groundwater as being at risk, also taking into account Part B of Annex II</li> </ul>	European Communities Environmental Objectives (Groundwater) Regulations 2010 (S.I. No. 9/2010) (as amended)	The Department is obliged to comply with, as relevant and appropriate, the requirements of the Directive and transposing regulations
Bathing Water Directive (2006/7/EC)	<ul style="list-style-type: none"> <li>Preserve, protect and improve the quality of the environment and to protect human health by complementing the Water Framework Directive 2000/60/EC</li> </ul>	<ul style="list-style-type: none"> <li>Identify all bathing waters and define the length of the bathing season</li> <li>Monitor bathing water quality as per Annex 1, Column A at the frequency outlined in Annex IV of the Directive</li> <li>Determine the quality status of the bathing water</li> <li>Achieve at least 'sufficient' standard by 2015 with the aim increase the standard to 'excellent' or 'good'</li> <li>Prepare, review and update a bathing water profile of each in accordance with Annex III</li> <li>Manage bathing water areas in exceptional circumstances to prevent an adverse impact on bathing water quality and on bathers' health</li> <li>Provide public information on bathing water quality</li> </ul>	Bathing Water Quality (Amendment) Regulations 2008 (S.I. No. 79 of 2008) (as amended)	The Department 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"> <li>Improve and maintain the quality of water intended for human consumption</li> <li>Protect human health from the adverse effects of any contamination of water intended for human consumption by ensuring that it is wholesome and clean</li> </ul>	<ul style="list-style-type: none"> <li>Set values applicable to water intended for human consumption for the parameters set out in Annex I</li> <li>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)</li> <li>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</li> <li>Ensure that any failure to meet the parametric values set in accordance with Article 5 is immediately investigated in order to identify the cause</li> <li>Ensure that the necessary remedial action is taken as soon as possible to restore its quality and shall give priority to their enforcement action</li> <li>Undertake remedial action to restore the quality of the water where necessary to protect human health</li> <li>Notify consumers when remedial action is being undertaken except where the competent authorities consider the non-compliance with the parametric value to be trivial</li> </ul>	<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 Department is obliged to comply with, as relevant and appropriate, the requirements of the Directive and transposing regulations

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Urban Waste Water Treatment Directive (91/271/EEC)	<ul style="list-style-type: none"> <li>This Directive concerns the collection, treatment and discharge of urban waste water and the treatment and discharge of waste water from certain industrial sectors</li> <li>The objective of the Directive is to protect the environment from the adverse effects of waste water discharges</li> </ul>	<ul style="list-style-type: none"> <li>Urban waste water entering collecting systems shall before discharge, be subject to secondary treatment</li> <li>Annex II requires the designation of areas sensitive to eutrophication which receive water discharges</li> <li>Establishes minimum requirements for urban waste water collection and treatment systems in specified agglomerations to include special requirements for sensitive areas and certain industrial sectors</li> </ul>	European Communities (Urban Waste Water Treatment) Regulations 2001 (S.I. No. 254/2001)	The Department is obliged to comply with, as relevant and appropriate, the requirements of the Directive and transposing regulations
Environmental Liability Directive (2004/35/EC)	<ul style="list-style-type: none"> <li>Establish a framework of environmental liability based on the 'polluter-pays' principle, to prevent and remedy environmental damage</li> </ul>	<ul style="list-style-type: none"> <li>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</li> <li>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</li> <li>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.</li> <li>The operator shall bear the costs for the preventive and remedial actions taken pursuant to this Directive</li> <li>The competent authority shall be entitled to initiate cost recovery proceedings against the operator</li> <li>The operator may be required to provide financial security guarantees to ensure their responsibilities under the directive are met</li> </ul>	European Communities (Environmental Liability) Regulations, 2008	The Department 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"> <li>Contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes with a view to promoting sustainable development</li> <li>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</li> </ul>	<ul style="list-style-type: none"> <li>Carry out and environmental assessment for plans or programmes referred to in Articles 2 to 4 of the Directive</li> <li>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</li> <li>Consult with relevant authorities, stakeholders and public allowing sufficient time to make a submission</li> </ul>	European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations 2004 (S.I. No. 435/ 2004) (as amended)  Planning and Development (Strategic Environmental	The Department 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"> <li>Consult other Member States where the implementation of a plan or programme is likely to have transboundary environmental effects</li> <li>Inform relevant authorities and stakeholders on the decision to implement the plan or programme</li> <li>Issue a statement to include requirements detailed in Article 9 of the Directive</li> <li>Monitor and mitigate significant environmental effects identified by the assessment</li> </ul>	Assessment) Regulations 2004 (S.I. No. 436/2004) (as amended)	
EIA Directive (2011/92/EU as amended by 2014/52/EU )	<ul style="list-style-type: none"> <li>Requires the assessment of the environmental effects of public and private projects which are likely to have significant effects on the environment</li> <li>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</li> </ul>	<ul style="list-style-type: none"> <li>All projects listed in Annex I are considered as having significant effects on the environment and require an EIA</li> <li>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.</li> <li>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</li> <li>Consult with relevant authorities, stakeholders and public allowing sufficient time to make a submission before a decision is made</li> <li>The information to be provided by the developer in accordance with paragraph 1 shall include at least: <ul style="list-style-type: none"> <li>a description of the project comprising information on the site, design and size of the project;</li> <li>a description of the measures envisaged in order to avoid, reduce and, if possible, remedy significant adverse effects;</li> <li>the data required to identify and assess the main effects which the project is likely to have on the environment;</li> <li>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;</li> <li>a non-technical summary of the information referred to each of the above.</li> </ul> </li> </ul>	<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>	The Department is obliged to comply with, as relevant and appropriate, the requirements of the Directive and transposing regulations

<b>National/Regional</b>				
<b>Plan/Programme</b>	<b>Highest Level Aim/ Purpose/ Objective</b>	<b>Lower level relevant objectives , actions etc.</b>	<b>Relevant legislation</b>	<b>Relevance to the Greenway Plan</b>
National Recovery Plan 2011-2014	<ul style="list-style-type: none"> <li>The Plan aims to restore public finances for a return to sustainable growth in the Irish economy</li> <li>Aims to restore confidence in economy, restore jobs and drive recovery</li> </ul>	<ul style="list-style-type: none"> <li>Sets out the measures that will be taken to restore order to our public finances</li> <li>Identifies the areas of economic activity which will provide growth and employment in the recovery</li> <li>Specifies the reforms the Government will implement to accelerate growth in those key sectors</li> </ul>	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
Infrastructure and Capital Investment 2012-16: Medium Term Exchequer Framework	<ul style="list-style-type: none"> <li>Reviews infrastructure and capital spending over a medium timeframe to ensure investment is made in the best areas</li> <li>Identifies gaps in existing infrastructure that require addressing to aid economic recovery, social cohesion and environmental sustainability</li> </ul>	<p>The approach identifies four main components of the investment strategy as follows:</p> <ul style="list-style-type: none"> <li>Economic infrastructure – encompassing transport networks, energy provision and telecommunications capacity</li> <li>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</li> <li>Environmental infrastructure – including our waste and water systems and investment for environmental sustainability</li> <li>Critical social investment – such as the health service and social housing programmes</li> </ul>	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
Investing in our Transport Future – A Strategic Investment Framework for Land Transport	<p>The Framework establishes:</p> <ul style="list-style-type: none"> <li>High level priorities for future investment in land transport; and</li> </ul> <p>Key principles, reflective of those priorities, to which transport investment proposals will be required to adhere.</p>	<p>The Overarching Priority for future transport infrastructure investment is to attain funding levels consistent with maintaining, renewing and improving an appropriate transport network that can efficiently support the economic and social needs of the country. In order to maintain the transport network and provide for some limited investment to address additional demand, capital investment in land transport should, at a minimum, be restored to, and maintained at, its long run average level of 1.1% to 1.15% of GDP per annum. This represents an average target to be achieved over an economic cycle. Therefore, to redress the period of underfunding experienced, funding in excess of the average will be required to begin with, followed by a convergence towards the recommended average long run investment level.</p> <p>Other key priorities are to: achieve steady state maintenance; address urban congestion; and maximise the contribution of land transport networks to our national development.</p>	not applicable	In combination with this Framework the Greenway Plan will contribute towards smarter travel and associated positive environmental effects.
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 Greenway Plan will contribute towards smarter travel and associated positive environmental effects.

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Smarter Travel – A Sustainable Transport Future – A New Transport Policy for Ireland 2009 – 2020 (2009)	<ul style="list-style-type: none"> <li>• Outlines a policy for how a sustainable travel and transport system can be achieved</li> <li>• Sets out five key goals: <ul style="list-style-type: none"> <li>○ To reduce overall travel demand.</li> <li>○ To maximise the efficiency of the transport network.</li> <li>○ To reduce reliance on fossil fuels.</li> <li>○ To reduce transport emissions.</li> <li>○ To improve accessibility to transport.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Others lower level aims include: <ul style="list-style-type: none"> <li>○ 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</li> <li>○ 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</li> <li>○ improving the fuel efficiency of motorised transport through improved fleet structure, energy efficient driving and alternative technologies</li> <li>○ strengthening institutional arrangements to deliver the targets</li> </ul> </li> </ul>	not applicable	In combination with this Policy the Greenway Plan will contribute towards smarter travel and associated positive environmental effects.
National Cycle Network Scoping Study 2010	<ul style="list-style-type: none"> <li>• Outlines objectives and actions aimed at developing a strong cycle network in Ireland</li> <li>• Sets out 19 specific objectives, and details the 109 actions, aimed at ensuring that a cycling culture is developed</li> </ul>	<ul style="list-style-type: none"> <li>• Sets a target where 10% of all journeys will be made by bike by 2020</li> <li>• Proposes the planning, infrastructure, communication, education and stakeholder participations measures required to implement the initiative</li> </ul>	not applicable	In combination with this Framework the Greenway Plan will contribute towards smarter travel and associated positive environmental effects.
Climate Action and Low Carbon Development Act 2015	<ul style="list-style-type: none"> <li>• Ireland's national policy in response to climate change is determined, in part, by legislation.</li> </ul>	<p>In particular, Ireland's first-ever dedicated climate change law, the Climate Action and Low Carbon Development Act 2015, provides for the making of:</p> <ul style="list-style-type: none"> <li>• five-yearly National Mitigation Plans to specify the policy measures to reduce greenhouse gas emissions</li> <li>• a National Adaptation Framework to specify the national strategy for the application of adaptation measures in different sectors and by local authorities to reduce the vulnerability of the State to the negative effects of climate change.</li> </ul> <p>The Act also establishes the Climate Change Advisory Council to advise ministers and the government on climate change matters.</p>	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 Climate Change Strategy 2007 – 2012 (2007)	<ul style="list-style-type: none"> <li>• Outlines measures to be undertaken to meet the commitments under the Kyoto Protocol</li> <li>• Identifies specific measures to meet the commitment up to 2012 and further measures to meet the 2020 target</li> </ul>	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"> <li>• White paper setting out a framework for delivering a sustainable energy future in Ireland</li> <li>• Outlines strategic Goals for: <ul style="list-style-type: none"> <li>○ Security of Supply</li> <li>○ Sustainability of Energy</li> <li>○ Competitiveness of Energy Supply</li> </ul> </li> </ul>	<p>The underpinning Strategic Goals are:</p> <ul style="list-style-type: none"> <li>• Ensuring that electricity supply consistently meets demand</li> <li>• Ensuring the physical security and reliability of gas supplies to Ireland</li> <li>• Enhancing the diversity of fuels used for power generation</li> </ul>	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

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		<ul style="list-style-type: none"> <li>Delivering electricity and gas to homes and businesses over efficient, reliable and secure networks</li> <li>Creating a stable attractive environment for hydrocarbon exploration and production</li> <li>Being prepared for energy supply disruptions</li> </ul>		
National Renewable Energy Action Plan	<ul style="list-style-type: none"> <li>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</li> </ul>	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"> <li>This is the second National Energy Efficiency Action Plan for Ireland</li> </ul>	<ul style="list-style-type: none"> <li>The Plan reviews the original 90 actions outlined in the first Plan and updates/renews/removes them as appropriate</li> </ul>	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 Policy Framework for Alternative Fuel Infrastructure	<ul style="list-style-type: none"> <li>National Policy Framework to support the deployment of alternative fuels in Ireland arising from obligations associated with EU Alternative Fuels Infrastructure Directive (2014/94/EU)</li> </ul>	<ul style="list-style-type: none"> <li>Contains provisions relating to coverage and timings for alternative fuels including electricity, Liquefied Natural Gas (LNG), Compressed Natural Gas (CNG) and Hydrogen.</li> </ul>	EU Alternative Fuels Infrastructure Directive (2014/94/EU)	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"> <li>Provides an analysis and a strategic framework for sustainable development in Ireland</li> <li>Identifies the approaches required to support sustainable development</li> </ul>	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"> <li>The act provides protection and conservation of wild flora and fauna</li> </ul>	<ul style="list-style-type: none"> <li>Provides protection for certain species, their habitats and important ecosystems</li> <li>Give statutory protection to NHAs</li> <li>Enhances wildlife species and their habitats</li> <li>Includes more species for protection</li> </ul>	not applicable	The Department is obliged to comply with, as relevant and appropriate, the requirements of this legislation
Actions for Biodiversity 2011-2016 Ireland's National Biodiversity Plan, 2011	<ul style="list-style-type: none"> <li>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</li> </ul>	<ul style="list-style-type: none"> <li>To mainstream biodiversity in the decision making process across all sectors</li> <li>To substantially strengthen the knowledge base for conservation, management and sustainable use of biodiversity</li> <li>To increase awareness and appreciation of biodiversity and ecosystems services</li> <li>To conserve and restore biodiversity and ecosystem services in the wider countryside</li> <li>To conserve and restore biodiversity and ecosystem services in the marine environment</li> </ul>	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

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		<ul style="list-style-type: none"> <li>To expand and improve on the management of protected areas and legally protected species</li> <li>To substantially strengthen the effectiveness of international governance for biodiversity and ecosystem services</li> </ul>		
The Planning System and Flood Risk Management – Guidelines for Planning Authorities (2009)	<ul style="list-style-type: none"> <li>Sets out comprehensive mechanisms for the incorporation of flood risk identification, assessment and management into the planning process</li> <li>Ensures flood risk is a key consideration in preparing development plans and local area plans and in the assessment of planning applications</li> <li>Implementation of the Guidelines is through actions at national, regional, local authority and site-specific levels</li> </ul>	<ul style="list-style-type: none"> <li>Avoid inappropriate development in areas at risk of flooding</li> <li>Avoid new developments increasing flood risk elsewhere, including that which may arise from surface water run-off</li> <li>Ensure effective management of residual risks for development permitted in floodplains</li> <li>Avoid unnecessary restriction of national, regional or local economic and social growth</li> <li>Improve the understanding of flood risk among relevant stakeholders</li> <li>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.</li> </ul>	<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>	The Department is obliged to comply with, as relevant and appropriate, the requirements of these Guidelines
<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"> <li>Transposes the Water Framework Directive into legislation</li> <li>Outlines the general duty of public authorities in relation to water</li> <li>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</li> </ul>	<ul style="list-style-type: none"> <li>Implements River basin districts and characterisation of RBDs and River Basin Management Plans</li> <li>Requires the public to be informed and consulted on the Plan and for progress reports to be published on RBDs</li> <li>Implements a Register of protected areas, Classification systems and Monitoring programmes for water bodies</li> <li>Allows the competent authority to recover the cost of damage/destruction of status of water body</li> <li>Outlines environmental objectives and programme of measures and environmental quality standards for priority substances</li> <li>Outlines criteria for assessment of groundwater</li> </ul>	Water Framework Directive 2000/60/EC	The Department is obliged to comply with, as relevant and appropriate, the requirements of this legislation
European Communities Environmental Objectives (Surface waters) Regulations of 2009 (SI 272 of 2009)	<p>Transposes the requirements of the Water Framework Directive into Irish Legislation</p> <p>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.</p>	<p>These Regulations provide, inter alia, for:</p> <ul style="list-style-type: none"> <li>The establishment of legally binding quality objectives for all surface waters and environmental quality standards for pollutants;</li> <li>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;</li> <li>The classification of surface water bodies by the EPA for the purposes of the Water Framework Directive;</li> <li>The establishment of inventories of priority substances by the EPA; and</li> <li>The drawing up of pollution reduction plans by coordinating local authorities (in consultation with the</li> </ul>	Water Framework Directive 2000/60/EC	The Department is obliged to comply with, as relevant and appropriate, the requirements of this legislation

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		EPA) to reduce pollution by priority substances and to cease and/or phase out discharges, emissions or losses of priority hazardous substances.		
European Communities Environmental Objectives (Groundwater) Regulations of 2010 (SI 9 of 2010)	<ul style="list-style-type: none"> <li>Transposes the requirements of the Groundwater Directive 2006/118/EC into Irish Legislation</li> </ul>	<ul style="list-style-type: none"> <li>Outlines environmental objectives to be achieved for groundwater bodies of groundwater against pollution and deterioration in quality</li> <li>Sets groundwater quality standards</li> <li>Outlines threshold values for the classification and protection of groundwater</li> </ul>	<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 Department 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"> <li>The Water Pollution Acts allow Local Authorities the authority regulate and supervise actions relating to water in their division</li> </ul>	<p>The Water Pollution Acts enable local authorities to:</p> <ul style="list-style-type: none"> <li>prosecute for water pollution offences;</li> <li>attach appropriate pollution control conditions in the licensing of effluent discharges from industry, etc., made to waters;</li> <li>issue notices ("section 12 notices") to farmers, etc., specifying measures to be taken within a prescribed period to prevent water pollution;</li> <li>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;</li> <li>seek court orders, including High Court injunctions, to prevent, terminate, mitigate or remedy pollution/its effects;</li> <li>prepare water quality management plans for any waters in or adjoining their functional areas</li> </ul>	Water Services Act 2013	The Department is obliged to comply with, as relevant and appropriate, the requirements of this legislation
Groundwater Protection Schemes	<ul style="list-style-type: none"> <li>Aims to maintain and improve the quantity and quality of groundwater, by using a risk assessment-based approach to groundwater protection and sustainable development.</li> </ul>	<ul style="list-style-type: none"> <li>Provides a system that brings together land surface zoning and groundwater protection responses</li> <li>Provides a framework to guide relevant Authorities in undertaking functions, decision making</li> </ul>	<p>Groundwater Directive (2006/118/EC)</p> <p>European Communities Environmental Objectives (Groundwater) Regulations 2010 (S.I. No. 9/2010) (as amended)</p>	The Department is obliged to comply with, as relevant and appropriate, the requirements of this legislation
Water Quality Management Plans	<ul style="list-style-type: none"> <li>Ensure that the quality of waters covered by the plan is maintained</li> <li>Maintain and improve the quantity and quality of water included in the Plan scope</li> </ul>	<ul style="list-style-type: none"> <li>Monitoring of water bodies against quality standards</li> <li>Outlines management programmes for water catchments</li> <li>Purpose is to maintain and improve the quantity and quality of groundwater</li> </ul>	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



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European Communities (Urban Waste Water Treatment) Regulations 2001 (S.I. No. 254/2001)	<ul style="list-style-type: none"> <li>• Transposes the Urban Waste Water Treatment Directive into Irish Legislation</li> <li>• Aims to protect receiving waters from environmental damage arising from Urban Wastewater</li> </ul>	<ul style="list-style-type: none"> <li>• Sets out the legislative requirements for urban waste water collection and treatment systems</li> <li>• Provides for monitoring programmes of discharges</li> <li>• Specifies threshold values and minimum standards for water quality</li> </ul>	Urban Waste Water Treatment Directive (91/271/EEC)	The Department is obliged to comply with, as relevant and appropriate, the requirements of this legislation
Water Services Act 2007  Water Services (Amendment) Act 2012  Water Services Act 2013	<ul style="list-style-type: none"> <li>• Provides the water services infrastructure</li> <li>• Outlines the responsibilities involved in delivering and managing water services</li> <li>• Identifies the authority in charge of provision of water and waste water supply</li> <li>• 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</li> </ul>	<p>Key strategic objectives include:</p> <ul style="list-style-type: none"> <li>• Ensuring Irish Water delivers infrastructural projects that meet key public health, environmental and economic objectives in the water services sector.</li> <li>• 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.</li> <li>• 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</li> <li>• 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.</li> <li>• Promoting water conservation through Irish Water's Capital Investment Plan, the Rural Water Programme and other measures.</li> <li>• Monitoring the on-going implementation of septic tanks inspection regime and the National Inspection Plan for Domestic Waste Water Treatment Systems.</li> <li>• Ensuring a fair funding model to deliver water services.</li> <li>• Overseeing the establishment of an economic regulation function under the CER.</li> </ul>	not applicable	The Department is obliged to comply with, as relevant and appropriate, the requirements of this legislation
National Spatial Strategy 2002-2020 (2002)	<ul style="list-style-type: none"> <li>• Planning framework for Ireland</li> <li>• Aims to achieve a better balance of social, economic and physical development across Ireland, supported by effective planning</li> </ul>	<ul style="list-style-type: none"> <li>• Proposes that areas of sufficient scale and critical mass will be built up through a network of gateways, hubs and key town</li> </ul>	<p>Local Government (Planning and Development) Act, 1963 (as amended)</p> <p>Requirement of the Planning and Development (Amendment) Act (2010)</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
Grid25 Implementation Programme	<ul style="list-style-type: none"> <li>• 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</li> </ul>	<ul style="list-style-type: none"> <li>• 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</li> </ul>	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

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National Landscape Strategy 2015	<ul style="list-style-type: none"> <li>Aims to implement the European Landscape Convention in Ireland by providing for specific measures to promote the protection, management and planning of the landscape.</li> </ul>	<p>The objectives of the National Landscape Strategy are to:</p> <ul style="list-style-type: none"> <li>Recognise landscapes in law</li> <li>Develop a National Landscape Character Assessment;</li> <li>Develop Landscape Policies;</li> <li>Increase Landscape Awareness;</li> <li>Identity Education, Research and Training Needs; and</li> <li>Strengthen Public Participation.</li> </ul>	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 Rural Development Programme (draft/in preparation)	<ul style="list-style-type: none"> <li>The National Rural Development Programme, prepared by the Department of Agriculture, Fisheries and Food, sets out a national programme based on the EU framework for rural development and prioritises improving the competitiveness of agriculture, improving the environment and improving the quality of life in rural areas</li> </ul>	<p>At a more detailed level, the programme also:</p> <ul style="list-style-type: none"> <li>Supports structural change at farm level including training young farmers and encouraging early retirement, support for restructuring, development and innovation;</li> <li>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</li> <li>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</li> </ul>	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 Forestry Programme 2014-2020 (draft/in preparation)	<ul style="list-style-type: none"> <li>The Draft National Forestry Programme 2014-2020, <i>Forests, Products and People. Ireland's Forest Policy - A Renewed Vision</i>, is currently being prepared by the Department of Agriculture, Food and the Marine and views of stakeholders are now being sought on the composition of the new proposed forestry measures. These proposed measures represent a continuation of the previous Forestry Programme 2007-2013 which has been effective in supporting the growth and development of the forestry sector and rural economies.</li> </ul>	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
National Peatlands Strategy (draft/in preparation)	<ul style="list-style-type: none"> <li>This Draft Plan, 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.</li> </ul>	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
National Biodiversity Action Plan	<ul style="list-style-type: none"> <li>'Actions for Biodiversity 2011-2016', Ireland's 2<sup>nd</sup> National Biodiversity Plan, builds upon the achievements of the first National Biodiversity Plan and focuses on actions that were not fully completed and</li> </ul>	<ul style="list-style-type: none"> <li>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</li> </ul>	not applicable	To cumulatively contribute towards – in combination with other users and bodies – the achievement of the objectives of the regulatory framework

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	<ul style="list-style-type: none"> <li>addresses emerging issues.</li> <li>The Plan has been developed in line with the EU and International Biodiversity strategies and policies.</li> </ul>	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.		for environmental protection and management
Flood Risk Management Plans arising from National Catchment Flood Risk Assessment and Management Programme (draft/in preparation)	<ul style="list-style-type: none"> <li>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.</li> </ul>	<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. Flood Maps have been published and Draft Flood Risk Management Plans are being consulted on.</p>	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
<b>Regional, County and Local</b>				
<b>Plan/Programme</b>	<b>Highest Level Aim/ Purpose/ Objective</b>	<b>Lower level relevant objectives , actions etc.</b>	<b>Relevant legislation in Ireland</b>	<b>Relevance to the Greenway</b>
Transport Strategy for the Greater Dublin Area 2016-2035	The Strategy Purpose is to contribute to the economic, social and cultural progress of the Greater Dublin Area by providing for the efficient, effective and sustainable movement of people and goods.	The objective of the strategy is to provide a long-term strategic planning framework for the integrated development of transport infrastructure and services in the GDA.	not applicable	In combination with this Policy the Greenway Plan will contribute towards smarter travel and associated positive environmental effects.
Greater Dublin Area Cycle Network Plan	<ul style="list-style-type: none"> <li>Sets out a ten year cycling strategy for Counties Dublin, Kildare, Meath and Wicklow</li> <li>Plan to increase regions cycle network dramatically</li> <li>The Plan refers to the EuroVelo International Cycle Route Network of the European Cyclists Federation is a network of 15 long distance cycle routes connecting and uniting the whole European continent. Two of these routes are in Ireland including EV2 from Galway through Dublin to London, Berlin, Warsaw and Moscow.</li> </ul>	<p>Aims to identify and determine:</p> <ul style="list-style-type: none"> <li>The Urban Cycle Network at the Primary, Secondary and Feeder level</li> <li>The Inter-Urban Cycle Network linking the relevant sections of the Urban Network including the elements of the National Cycle Network within the GDA including linkages to key transport locations outside of urban areas such as airports and ports</li> <li>The Green Route Network being cycle routes for development of tourist, recreational and leisure purposes.</li> </ul>	not applicable	In combination with this Plan the Greenway Plan will contribute towards smarter travel and associated positive environmental effects.
Regional & County Green Infrastructure Plans/Strategies – including any relevant Waterways Ireland plans/programmes	<ul style="list-style-type: none"> <li>Promote the maintenance and improvement of green infrastructure in an area</li> <li>Aim to protect and enhance biodiversity and habitats</li> </ul>	not applicable	not applicable	In combination with these plans/strategies / programmes the Plan will contribute towards smarter travel and associated positive environmental effects.

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Wild Atlantic Way (WAW)	The WAW is a new tourism brand for the west of Ireland. The most tangible expression of the brand is a long-distance touring route, stretching approximately 2,500km along the Atlantic coast from Donegal to West Cork. An Operational Programme is currently in preparation for the WAW and is currently unavailable.	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
River Basin Management Plans and associated Programmes of Measures	<ul style="list-style-type: none"> <li>Establish a framework for the protection of water bodies at River Basin District (RBD) level</li> <li>Preserve, prevent the deterioration of water status and where necessary improve and maintain “good status” of water bodies in that RBD before 2015</li> <li>Promote sustainable water usage</li> </ul>	<ul style="list-style-type: none"> <li>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</li> <li>Identifies and manages water bodies in the RBD</li> <li>Establishes a programme of measures for monitoring and improving water quality in the RBD</li> <li>Involves the public through consultations</li> </ul>	<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
Regional Planning Guidelines	<ul style="list-style-type: none"> <li>Provides a long-term strategic planning framework for the development of regions</li> </ul>	<ul style="list-style-type: none"> <li>Aim to give regional effect to the National Spatial Strategy</li> <li>Guide the Development Plans and lower tier plans of planning authorities</li> </ul>	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
Development Plans including those for Dublin City, Galway City, Fingal, Dún Laoghaire-Rathdown, South Dublin and Counties Meath, Kildare, Westmeath, Offaly, Longford, Roscommon and Galway	<ul style="list-style-type: none"> <li>Outlines planning objectives for County/Town development over six year lifespan (including greenway and other transport objectives)</li> <li>Strategic framework for planning and sustainable development including those set out in National Spatial Strategy and Regional Planning Guidelines</li> </ul>	<ul style="list-style-type: none"> <li>Identifies future infrastructure, development and zoning required</li> <li>Protects and enhances amenities and environment</li> <li>Guides planning authority in assessing proposals</li> </ul>	Requirement of the Planning and 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

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<p>Tullamore Town and Environs LAP (2010-2022); Edenderry LAP (2011-2017); Maynooth LAP (2013-2019); Kilcock LAP (2015-2021); Athlone LAP (2014-2020); Ballinasloe LAP (2015-2021); Loughrea LAP (2012-2018)</p> <p>Athlone Waterfront Study 2010</p> <p>Athlone Canal Study 2013.</p>	<ul style="list-style-type: none"> <li>Statutory document which provides detailed planning policies to ensure proper planning and sustainable development of area</li> <li>Sets out objectives for future planning and development</li> <li>These plans provide for the development of various infrastructure including walkways, cycleways, greenways, blueways and associated infrastructure and facilities.</li> </ul> <ul style="list-style-type: none"> <li>The Draft Athlone Waterfront Study has been published and adopted by councillors. The Study outlines a strategic framework for regeneration of the waterfront taking into account waterfront management, amenity, environmental awareness, and interaction including the Dublin to Greenway Plan if adopted.</li> <li>The Athlone Canal Study is complimentary to the Draft Athlone Waterfront Study. It explores the integration and regeneration of the Canal</li> </ul>	<ul style="list-style-type: none"> <li>Identifies issues of relevance to the area and outlines principles for future development of area</li> <li>Is consistent with relevant County/Town Development Plans, National Spatial Strategy and Regional Planning Guidelines</li> <li>These plans provide for the development of various infrastructure including walkways, cycleways, greenways, blueways and associated infrastructure and facilities.</li> </ul>	<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>Planning Schemes for Strategic Development Zones</p>	<ul style="list-style-type: none"> <li>An area of land designated by the Government to contain specified developments of economic or social importance to the State</li> <li>Aims to create sustainable communities under a master plan to facilitate the requirements by which it was acquired by the State</li> </ul>	<ul style="list-style-type: none"> <li>Development includes necessary infrastructural and community facilities and services</li> </ul>	<p>Local Government (Planning and Development) Act, 1963 (as amended)</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>Biodiversity Action Plans</p>	<ul style="list-style-type: none"> <li>Aims to protect, conserve, enhance and restore biodiversity and ecosystem services across all spectrums</li> </ul>	<ul style="list-style-type: none"> <li>Outlines the status of biodiversity and identifies species of importance</li> <li>Outlines objectives and targets to be met to maintain and improve biodiversity</li> <li>Aims increase awareness</li> </ul>	<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>County Heritage Plans and Waterways Ireland Draft Heritage Plan</p>	<ul style="list-style-type: none"> <li>Aims to highlight the importance of heritage at a strategic level</li> </ul>	<ul style="list-style-type: none"> <li>Manage and promote heritage as well as increase awareness</li> <li>Aim to conserve and protect heritage</li> </ul>	<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>

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County Landscape Character Assessments	<ul style="list-style-type: none"> <li>Characterises the geographical dimension of the landscape</li> </ul>	<ul style="list-style-type: none"> <li>Identifies the quality, value, sensitivity and capacity of the landscape area</li> <li>Guides strategies and guidelines for the future development of the landscape</li> </ul>	<p>Requirement of the Planning and Development) Act, 2000 (as amended)</p> <p>Landscape and Landscape Assessment Guidelines</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
Special Amenity Area Orders	<ul style="list-style-type: none"> <li>Aims to protect special areas of landscape, environmental or amenity value</li> </ul>	not applicable	<p>Local Government (Planning and Development) Act, 1963 (as amended)</p> <p>Requirement of the Planning and Development Act 1963 (as amended)</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
Freshwater Pearl Mussel Sub-Basin Management Plans	<ul style="list-style-type: none"> <li>Identifies the current status of the species and the reason for loss or decline</li> <li>Identifies measure required to improve or restore current status</li> </ul>	<ul style="list-style-type: none"> <li>Identifies pressures on Freshwater Pearl Mussels for each of the designated populations in Ireland</li> <li>Outlines restoration measures required to ensure favourable conservation status</li> </ul>	<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
Local Catchment Flood Risk Management Plans	<ul style="list-style-type: none"> <li>Produced by Local Authorities</li> <li>Outlines areas local flood risk</li> <li>Sets out measures to manage and prevent flood risk at a local level</li> </ul>	not applicable	<p>Floods Directive 2007/60/EC</p> <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>	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

Figure 3.1 provides an overview of the integrated Plan preparation, SEA and AA processes. The preparation of the Plan, SEA and AA are taking place concurrently and the findings of the SEA and AA will inform the Plan.

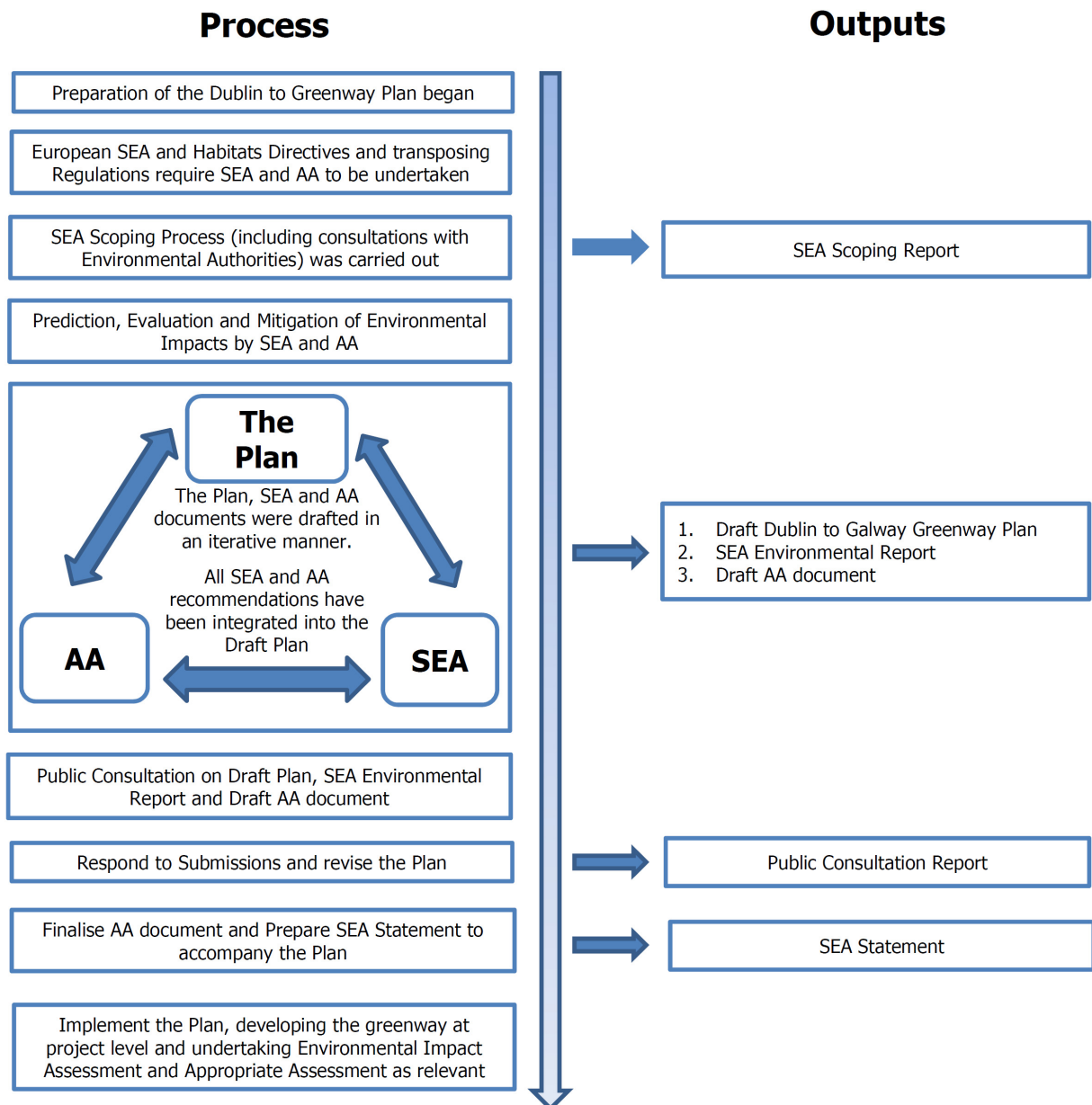
The process is currently at a stage where this SEA Environmental Report has been prepared.

Taking into account the content of the previously prepared SEA Scoping Report, scoping submissions from environmental authorities and continuous scoping of the SEA, environmental impacts have been predicted, evaluated and mitigated. The findings of this assessment is presented in this SEA Environmental Report, an earlier version of which accompanied the draft Plan on public display as part of the required statutory public consultation.

A Stage 2 Appropriate Assessment (AA) Natura Impact Report also accompanies the Plan. The Plan and associated SEA and AA documents were prepared in an iterative manner whereby multiple revisions of each document were prepared, each informing subsequent iterations of the others.

Submissions made on the Plan will be responded to and the Plan will be revised as appropriate. When the Plan is finalised, the AA and SEA documents will be finalised and an SEA Statement, which will include information on how environmental considerations were integrated into the Plan, will be prepared. The Plan will be implemented and environmental monitoring will be undertaken.

Implementation will involve the development of the greenway at project level including the undertaking of EIA and AA.



**Figure 3.1 Overview of Plan/SEA/AA Process**



## 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 Plan.

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

The AA concluded that the Plan will not affect the integrity of the Natura 2000 network<sup>5</sup>.

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

### 3.2.2 Integrated Biodiversity Impact Assessment

Many elements of Integrated Biodiversity Impact Assessment as detailed in the EPA's (2013) Practitioner's Manual have been aligned with in the undertaking of the SEA for the Plan. These include:

#### Scoping

- Biodiversity-relevant issues were identified for consideration at scoping stage and these are now detailed in Section 4.6.

#### Current State of the Environment

- Biodiversity data sources relevant for this national level assessment have been identified.
- Designated sites and other habitats and species of ecological value are identified.
- AA information has been incorporated into the SEA.

#### Alternatives

- Impacts upon biodiversity are considered under each of the alternatives and certain potential conflicts can be mitigated.

#### Impact assessment

- Effects on biodiversity are identified and assessed and the AA gives consideration to the

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<sup>5</sup> 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.

interrelationship between biodiversity and potential effects on European sites.

#### Mitigation and monitoring

- Taking into account all measures contained within the Plan, all the proposed mitigation measures deriving from the various processes were generally consistent and compatible.
- Indicators and associated targets have been included in SEA for monitoring European sites.

#### Reporting

- This SEA ER addresses all biodiversity-related considerations relevant for this level of assessment.
- This SEA ER contains all biodiversity-relevant information, data, figures and maps relevant for this level of assessment.
- This SEA ER has been informed by the AA findings.

#### Communication and consultation

- Submissions from various environmental authorities have been taken on board.
- The preparation of the Plan, SEA and AA has taken place concurrently and the findings of the AA have informed both the Plan and the SEA.

## 3.3 Scoping

### 3.3.1 Introduction

The scope of environmental issues to be dealt with by the SEA together with the level of detail to which they are addressed was decided upon taking into account the level of detail included in the Plan and submissions from environmental authorities. Scoping allowed the SEA to become focused upon key issues relevant to the environmental components which are specified under the SEA Directive<sup>6</sup>.

As the Plan 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.

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<sup>6</sup> 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.

### 3.3.2 Scoping Notices

Relevant environmental authorities<sup>7</sup> identified under the European Communities (Environmental Assessment of Certain Plans and Programmes), as amended, were all sent SEA scoping notices by the Department 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 Department.

### 3.3.3 Submissions

Submissions were made by the following environmental authorities:

1. Longford County Council
2. Environmental Protection Agency
3. Roscommon County Council
4. Department of Arts, Heritage and the Gaeltacht
5. Galway City Council
6. Kildare County Council
7. Westmeath County Council
8. Offaly County Council

These submissions influenced the scope of the assessment as detailed in the final SEA Scoping Report.

## 3.4 Environmental Report

In this SEA Environmental Report, which is placed on public display alongside the Plan, the likely environmental effects of the Plan and the alternatives are predicted and their significance evaluated. The Environmental Report provides the Department, stakeholders and the public with a clear understanding of the likely environmental consequences of the Plan.

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<sup>7</sup> These comprise: 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; Dublin City Council; Fingal County Council; Dún Laoghaire-Rathdown County Council; South Dublin County Council; Meath County Council; Kildare County Council; Westmeath County Council; Offaly County Council; Longford County Council; Roscommon County Council; Galway County Council; and Galway City Council.

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

The Environmental Report has been updated in order to take account of recommendations contained in submissions and in order to take account of minor changes which were made to the original, Draft Plan that was placed on public display.

The Environmental Report contains the information specified in Schedule 2 of the European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations 2004 (SI No. 435 of 2004), as amended (see Table 3.1).

## 3.5 SEA Statement

When the Plan is finalised, an SEA Statement will be prepared which will include information on:

- How environmental considerations have been integrated into the Plan, highlighting the changes to the Plan 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 Plan in the light of the other alternatives, identifying the other alternatives considered, commenting on their potential effects and explaining why the Plan as adopted was selected; and
- The measures decided upon to monitor the significant environmental effects of implementing of the Plan.

## 3.6 Difficulties Encountered

A potential challenge to future route selection processes of lower tier environmental assessments is the lack of a centralised database that could make all environmental baseline data readily available and in a consistent format.

**Table 3.1 Checklist of Information included in this Environmental Report**

<b>Information Required to be included in the Environmental Report</b>	<b>Corresponding Section of this Report</b>
(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 8
(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, 7 and 8
(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, 7, 8 and 9
(F) Describe the likely significant effects on the environment	Sections 7 and 8
(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 9
(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 6, 7 and 8
(I) A description of proposed monitoring measures	Section 10
(J) A non-technical summary of the above information	Non-Technical Summary
(K) Interrelationships between each environmental topic	Addressed as it arises within each Section

## Section 4 Relevant aspects of the current state of the Environment

### 4.1 Introduction

Reflecting the specifications in the SEA Directive, the relevant aspects of the current state of the environment for the following environmental components are identified in this section: biodiversity and flora and fauna, population and human health, soil, water, air and climatic factors, material assets, cultural heritage including architectural and archaeological heritage, landscape and the interrelationship between the above factors.

Information which is relevant to lower tier project planning and development and associated environmental assessments is identified (note that Article 5 of the SEA Directive, in accordance with the established European principle of subsidiarity, requires that the Environmental Report includes the information that may reasonably be required taking into account, inter alia, the extent to which certain matters are more appropriately assessed at different levels in that process in order to avoid duplication of the assessment).

When compiled for relevant areas at project level, the information specified will be made available for use in the identification of Opportunity Corridors and will provide an indication of the areas that: are most sensitive with respect to the development of a greenway; and those that are most suited.

As the Plan will not provide a route, the compilation of detailed information at Plan level would be inappropriate as:

- It could not be used in the assessment of effects of the Plan or the alternatives (this is because the route is not spatially specific); and,
- It would unnecessarily duplicate what will be done at project level (in conflict with the established European principle of subsidiarity, see Article 5 of the SEA Directive).

An indicative study area for the Plan and the SEA has been selected between and within Dublin and Galway as shown on Figure 3.1 overleaf. This area includes part of the

administrative areas of ten County Councils and two City Councils.

### 4.2 Likely Evolution of the Environment in the Absence of a new Plan

In the presence of the new Plan, the following effects would occur:

Likely Positive effects:

- Improvements in air quality and reductions in greenhouse gas emissions resulting from: reduced car usage and increases in levels of cycling and walking;
- Contributions towards climate adaptation and flood risk management arising from the preservation of natural floodplains;
- Increases in the use of existing underutilised or disused infrastructure e.g. towpaths and railway lines;
- Contribution towards the protection of human health as a result of improving the quality in environmental vectors (e.g. improvements in air quality as a result of contributions towards sustainable mobility);
- Research by Fáilte Ireland in the Burren has shown improved environmental outcomes (improved attainment of conservation objectives) in areas with visitor management strategies. A visitor management strategy during the implementation of the Greenway project could contribute positively to advancing the attainment of conservation objectives along and adjacent to the route, thereby benefitting the management of designated sites.
- Continuation of and further contribution towards the protection of biodiversity and flora and fauna;
- Enhancement of ecological connectivity by protecting certain areas from the encroachment of development;

- Continuation of and further contribution towards the protection of water resources along greenway route by protecting certain areas from the encroachment of development;
- Preservation of hydrogeological and ecological function of the soil resource by protecting certain areas from the encroachment of development;
- Continuation of and further contribution towards the protection from development of cultural heritage structures which are located within and adjacent to the greenway corridor; and
- Continuation of and further contribution towards the protection from development of landscape designations which are located within and adjacent to the greenway corridor.

#### Residual adverse effects:

- Residual wastes to be disposed of in line with higher level waste management policies;
- Loss of an extent of non-protected habitats arising from the replacement of semi-natural land covers with artificial surfaces;
- Loss of an extent of soil function arising from the replacement of semi-natural land covers with artificial surfaces;
- Flood related risks remain due to uncertainty with regard to extreme weather events;
- Potential alteration to the context and setting of architectural heritage (Protected Structures) however these will occur in compliance with legislation;
- Potential alteration to the context and setting of archaeological heritage (Recorded Monuments) however this will occur in compliance with legislation;
- Potential loss of unknown archaeology however this loss will be mitigated by measures integrated into the Plan.

In the absence of a new Plan, none of the adverse effects detailed above would result due to the implementation of the Plan. With regard to the beneficial effects on sustainable development and the protection and management of the environment that would be provided for by the Plan, these are already

provided for by other legislation, plans and programmes.

In the absence of a new Plan, it is uncertain whether all of the greenway would be developed under either locally coordinated (under local plans) or uncoordinated individual projects. If such development were to occur, compliance with the mitigation measures outlined under Section 9 of this report would be necessary in order to ensure that the following significant environmental effects do not occur:

- Increases in waste levels;
- Interactions with human health arising from effects upon environmental vectors;
- Arising from both construction and operation of the greenway and associated facilities/infrastructure: loss of/damage to biodiversity in designated sites, ecological connectivity and non-designated habitats; and disturbance to biodiversity and flora and fauna;
- Habitat loss, fragmentation and deterioration, including patch size and edge effects;
- Disturbance and displacement of protected species and coastal squeeze
- Effects in riparian zones where new crossings of waters, if any, are progressed
- Potential interactions with the status of water bodies and entries to the WFD Register of Protected Areas, arising from:
  - Changes in quality, flow and/or morphology at construction stage (including of greenway and associated facilities/infrastructure); and
  - Increases in outflow at waste water treatment plants as a result of increases in numbers of visitors to settlements along the route.
- Increase in the risk of flooding;
- Adverse impacts on the hydrogeological and ecological function of the soil resource as a result of construction of associated facilities/infrastructure;
- Effects on protected and unknown archaeology and protected architecture arising from construction activities (for both greenway and associated facilities/infrastructure); and

- Occurrence of adverse visual impacts and conflicts with the appropriate protection of statutory designations relating to the landscape.



**Figure 4.1 Indicative Study Area**

## 4.3 Air and Climatic Factors

### 4.3.1 Climatic Factors

The key issue involving the assessment of the effects of implementing the Plan on climatic factors relates to greenhouse gas emissions arising from transport. The Plan improves options for sustainable mobility (cycling and walking), thereby reducing and limiting increases in greenhouse gas emissions, noise emissions and other emissions to air.

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)<sup>8</sup>.

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<sup>9</sup>.

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 population with a high reliance on private car travel as well as rapidly increasing road freight transport<sup>10</sup>.

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 CO<sub>2</sub>eq 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.

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 greenway has the potential to achieve objectives and 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.

### 4.3.2 Ambient Air Quality

In order to protect human health, vegetation and ecosystems, EU Directives set down air quality standards in Ireland and the other

<sup>8</sup> Sustainable Energy Ireland (2014) *Energy in Ireland 1990 – 2012*

<sup>9</sup> EPA (2013) Ireland's Greenhouse Gas Emissions in 2012

<sup>10</sup> EPA (2014) Ireland's Provisional Greenhouse Gas Emissions in 2013



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 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).

In order to comply with the directives mentioned above, the EPA measures the levels of a number of atmospheric pollutants. For the purposes of monitoring in Ireland, four zones are defined in the Air Quality Standards Regulations 2002 (SI No. 271 of 2002). Portlaoise is located within Zone C while the rest of County Laois is located within Zone D.

The EPA's (2015) *Air Quality in Ireland 2014* 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.

The Plan facilitates improvements in sustainable mobility, thereby facilitating reductions in and limiting increases of emissions to air including noise. Such emissions would occur otherwise with higher levels of motorised transport and associated traffic.

### 4.3.3 Existing Problems

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

## 4.4 Material Assets

### 4.4.1 Introduction

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

- Settlements;
- Existing linear infrastructure;
- State owned lands (note ownership is a planning issue); and
- Water services.

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 water<sup>11</sup> (see Sections 4.3 and 4.8).

Material assets also include all land (including private and public land and agricultural and non-agricultural land).

Consideration of potential land ownership rights/private property rights/land acquisition issues/constitutional issues/social effects/economic effects/political effects are not appropriate to Strategic Environmental Assessment, which evaluates the likely significant environmental effects of implementing the Plan. Environmental effects as a result of providing for a greenway on land (including private and public land and agricultural and non-agricultural land) are considered under the relevant environmental components.

### 4.4.2 Settlements

Local users of the greenway will reside in and commute to and from established settlements and their environs. Tourists will use facilities and services within these settlements. Urbanised areas can be identified on the most recent OSI 1:50,000 Discovery Series of maps.

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<sup>11</sup> Including water bodies identified in Fáilte Ireland's (2009) report *Determination of Waters of National Tourism Significance and Associated Water Quality Status*.

### 4.4.3 Existing Linear Infrastructure

Existing linear infrastructure provides opportunities for the development of the greenway or parts thereof.

Existing linear infrastructure includes canal rights of way, river corridor rights of way, railway rights of way, motorways/roads, cycle networks along roads and through parks and tracks on state owned lands (see Section 4.4.4 below). A comparative evaluation of the effects arising from the use of each of various types of infrastructure for facilitating development is provided in Section 7.

### 4.4.4 State Owned Lands

State owned lands such as those owned by Bord na Móna and An Coillte provide opportunities for the development of the greenway or parts thereof. These lands are often in rural areas and can include existing tracks (see Section 4.4.3 above).

### 4.4.5 Water Services

#### 4.4.5.1 Irish Water

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. 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.

#### 4.4.5.2 Planning and Permitting

Water services infrastructure and services are planned and permitted through specific processes which are informed by, inter alia, the needs of land use plans including County Development Plans and Local Area Plans which are required to take into account fluctuating needs, such as those that may arise as a result of existing and future numbers of residents and tourists.

### 4.4.5.3 Waste Water Compliance

Key findings of the EPA's recent assessment of waste water treatment capacity in urban areas<sup>12</sup> relating to infrastructure and effluent quality include:

#### **Infrastructure**

- *10 of our 171 large urban areas did not meet national and EU requirements to provide secondary treatment, which is a biological treatment process that significantly reduces the risk of pollution by organic matter.*
- *7 towns and cities did not meet the additional requirement to provide treatment to reduce nutrients (nitrogen and/or phosphorus) and created a risk to sensitive areas by discharging effluent that exceeded nutrient quality standards.*
- *Untreated waste water from 43 areas was routinely discharged into our rivers, estuaries and coastal waters.*
- *There has been an average slippage of almost 2 years in the planned dates for provision of treatment at 22 of the areas where the discharge of untreated waste water was previously expected to cease by 2017.*
- *13 collection networks fail to meet EU requirements, resulting in the loss of waste water into the environment.*
- *The annual rate of capital investment in infrastructure since 2014 is approximately 40% lower than annual investment levels during the previous decade.*
- *Works completed in 2015 as a result of EPA requirements include the provision of new treatment plants at Cavan, Ardmore, Dunmore East, Clifden and Hacketstown.*

#### **Effluent quality**

- *142 of our 171 large urban areas complied with all the applicable effluent quality standards in the Urban Waste Water Treatment Directive.*
- *51% of the national waste water load (by population equivalent) complied with the basic quality standards and just 25% of the national waste water load discharged into nutrient sensitive areas complied with the additional nutrient quality standards. This*

<sup>12</sup> EPA (2016) *Urban Waste Water Treatment in 2015*

*compares with EU compliance rates of 92% and 88% respectively.*

In most rural areas the majority of the population use on-site wastewater treatment systems such as septic tanks. If poorly sited and/or not properly maintained, these systems can pollute groundwater, surface water and drinking water supplies and impact on human health. The EPA's 2010 revised code of practice for wastewater treatment and disposal systems in unsewered areas is applicable for all new builds. Under the Water Services (Amendment) Act 2012, the EPA has put in place national inspection plan for septic tanks which is being implemented at present.

#### **4.4.5.4 Drinking Water**

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 compliance with the Regulations mentioned above.

The EPA's most recent (2016) report on the provision and quality of drinking water in Ireland<sup>13</sup> identifies that, inter alia:

- *Overall compliance of microbiological and chemical parameters remains consistent with 2014 figures.*

- *99.92% of samples comply with microbiological parameters and 99.39 % of samples comply with chemical parameters.*
- *E. coli was detected at least once in 7 supplies, down 1 on 2014.*
- *Trihalomethanes and Lead exceedances remain high with limits exceeded in 59 and 28 supplies respectively.*
- *Exceedances of the Pesticides - Total limit increased from 4 supplies in 2014 to 14 supplies in 2015. Exceedances were primarily MCPA, a herbicide used to control the growth of rushes.*

The EPA updates and publishes the RAL on a quarterly basis. 108 supplies remain on the RAL at the end of October 2016, which collectively supply water to 832,639 consumers. The Remedial Action List identifies measures solving the issues at these supplies.

#### **4.4.6 Waste Management**

Any construction waste arising from the development of infrastructure is required to be dealt with in compliance with relevant EU and National waste management policy, including that relating to 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.

#### **4.4.7 Existing Problems**

There are a number of challenges with respect to water services which are outlined under Section 4.4.5.

### **4.5 Population and Human Health**

#### **4.5.1 Population**

Local users of the greenway (commuters and recreational users) will reside in and commute to and from established settlements and their environs. Tourists will use facilities and services within these settlements. Urbanised areas can be identified on the most recent OSI 1:50,000 Discovery Series of maps.

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<sup>13</sup> EPA (2016) *Drinking Water Report for Public Water Supplies 2015*

Higher populations and population densities closer to the greenway would indicate higher amounts of services and higher amounts of potential local users.

## 4.5.2 Human Health

With regard to human health, impacts relevant to the SEA are those which arise as a result of interactions with 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.

## 4.5.3 Existing Problems

There is historic and predictive evidence of flooding in various locations across the country (see Section 4.8.3). Compliance issues in relation to water services are detailed under Section 4.4.5.

## 4.6 Biodiversity and Flora and Fauna

Information on biodiversity and flora and fauna which is relevant to lower tier project planning and development of the greenway and associated environmental assessments includes available information on designated ecological sites and protected species, ecological connectivity (including stepping stones and corridors) and non-designated habitats.

Ecological designations include:

- Candidate Special Areas of Conservation<sup>14</sup> (cSACs) and Special Protection Areas<sup>15</sup> (SPAs);

<sup>14</sup> 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 DECLG due to their conservation value for habitats and species of importance in the European Union. The sites are *candidate* sites because they are currently under consideration by the Commission of the European Union. The Habitats Directive seeks to establish Natura 2000, a network of protected areas throughout the EU. It is the responsibility of each member state to designate SACs to protect habitats and species, which, together with the

- UNESCO World Heritage and UNESCO Biosphere sites<sup>16</sup>;
- Ramsar Sites<sup>17</sup>;
- Salmonid Waters<sup>18</sup>;
- Shellfish Waters<sup>19</sup>;
- Freshwater Pearl Mussel catchments<sup>20</sup>;
- Flora Protection Order<sup>21</sup> sites;
- Wildlife Sites<sup>22</sup> (including Nature Reserves<sup>23</sup>);

SPAs designated under the 1979 Birds Directive, form Natura 2000.

<sup>15</sup> SPAs have been selected for protection under the 1979 European Council Directive on the Conservation of Wild Birds (79/409/EEC) - referred to as the Birds Directive - by the DECLG due to their conservation value for birds of importance in the European Union.

<sup>16</sup> United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage List comprises sites of outstanding universal value: cultural, natural or mixed. The UNESCO Biosphere Reserves List comprises areas of terrestrial and coastal ecosystems promoting solutions to reconcile the conservation of biodiversity with its sustainable use.

<sup>17</sup> Ramsar sites are designated and protected under the Convention of Wetlands of International Importance, especially as Water Fowl Habitat, which was established at Ramsar in 1971 and ratified by Ireland in 1984. Ireland presently has 45 sites designated as Wetlands of International Importance, with surface areas of 66,994 hectares. The objective of a Ramsar site is the conservation of wetlands for wildfowl. While Ireland ratified the Ramsar Convention in 1984 there is no legal backing for Ramsar sites unless they are also Nature Reserves or SPAs and as such are protected by the Wildlife Acts 1976 and 2000 or the Birds or Habitats Directives.

<sup>18</sup> Salmonid waters are designated and protected as under the European Communities (Quality of Salmonid Waters) Regulations 1988 (SI No. 293 of 1988). Designated Salmonid Waters are capable of supporting salmon (*Salmo salar*), trout (*Salmo trutta*), char (*Salvelinus*) and whitefish (*Coregonus*).

<sup>19</sup> In order to protect existing shellfish waters and to ensure the future protection of these areas, the European Union introduced the Shellfish Waters Directive (2006/113/EC). The purpose of this Directive is to put in place concrete measures to protect waters, including shellfish waters, against pollution and to safeguard certain shellfish populations from various harmful consequences, resulting from the discharge of pollutant substances into the sea. The Directive applies to the aquatic habitat of bivalve and gastropod molluscs only (includes oysters, mussels, cockles, scallops and clams). It does not include crustaceans such as lobsters, crabs and crayfish.

<sup>20</sup> Freshwater pearl mussel is a globally threatened, long-lived and extremely sensitive species that can be impacted by many forms of pollution, particularly sediment and nutrient pollution and by hydrological and morphological changes, which may arise from developments, activities or changes in any part of the catchment.

<sup>21</sup> The current list of plant species protected by Section 21 of the Wildlife Act, 1976 is set out in the Flora (Protection) Order, 1999.

<sup>22</sup> The Planning and Development Act 2010 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

- Certain entries to the Water Framework Directive Register of Protected Areas<sup>24</sup>;
- Natural Heritage Areas (NHAs) and proposed Natural Heritage Areas (pNHAs)<sup>25</sup>;
- Wildfowl Sanctuaries (see S.I. 192 of 1979)<sup>26</sup>; and
- Tree Preservation Orders (TPOs)<sup>27</sup>.

#### Protected Species include:

- Annex IV (Habitats Directive) species of flora and fauna, and their key habitats (i.e. breeding sites and resting places), which are strictly protected wherever they occur, whether inside or outside the above sites, e.g. Otter and bats;
- Other species of flora and fauna and their key habitats which are protected

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.

<sup>23</sup> A Nature Reserve is an area of importance to wildlife, which is protected under Ministerial order. There are currently 78 Statutory Nature Reserves. Most are owned by the State but some are owned by organisations or private landowners.

<sup>24</sup> In response to the requirements of the Water Framework Directive a number of water bodies or parts of water bodies which must have extra controls on their quality by virtue of how their waters are used by wildlife have been listed on Registers of Protected Areas (RPAs). RPAs include those for Protected Habitats or Species, Shellfish, Salmonid, Nutrient Sensitive Areas, Recreational Waters and Drinking Water.

<sup>25</sup> 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. pNHAs were published on a non-statutory basis in 1995, but have not since been statutorily proposed or designated. These sites are of significance for wildlife and habitats.

<sup>26</sup> Wildfowl Sanctuaries are areas that have been excluded from the 'Open Season Order' so that game birds can rest and feed undisturbed. There are 68 sanctuaries in the State. Shooting of game birds is not allowed in these sanctuaries.

<sup>27</sup> TPOs are a planning mechanism whereby individual trees or groups of trees can be identified as important and protected by a TPO.

- under the Wildlife Acts, 1976-2000, wherever they occur; and
- 'Protected species and natural habitats' as defined in the European Liability Directive (2004/35/EC) and European Communities (Environmental Liability) Regulations, 2008, including: Birds Directive – Annex I species and other regularly occurring migratory species, and their habitats (wherever they occur) and Habitats Directive – Annex I habitats, Annex II species and their habitats, and Annex IV species and their breeding sites and resting places (wherever they occur).

The following information is relevant to ecological networks and connectivity and non-designated habitats:

- CORINE land cover mapping (including areas likely to contain a habitat listed in Annex 1 of the Habitats Directive)<sup>28</sup>;
- Watercourses, wetlands and peatlands;
- Other relevant County Development Plan designations;
- The EPA's Framework National Ecological Network for Ireland<sup>29</sup>; and
- Other sites of high biodiversity value or ecological importance as identified by, for example, the Department of Agriculture, Food and the Marine (badger sets), relevant datasets from the National Biodiversity Data Centre and BirdWatch Ireland's 'Important Bird Areas' (Crowe et al., 2009).

Ecological networks are important in connecting areas of local biodiversity with each other and with nearby designated sites so as to prevent ecological resources from being isolated entities. They are composed of

<sup>28</sup> The CORINE land cover mapping classifies land cover under various headings. This dataset allows for the identification of lands that are likely to be most valuable to biodiversity including those which are likely to contain a habitat listed in Annex 1 of the Habitats Directive e.g. natural grasslands, peat bogs, salt marshes. CORINE Land Cover (CLC) is a map of the European environmental landscape based on interpretation of satellite images. Land cover is the observed physical cover, as seen from the ground or through remote sensing, including for example natural or planted vegetation, water and human constructions which cover the earth's surface.

<sup>29</sup> The EPA's Framework National Ecological Network provides a classification of the relative importance of areas by virtue of the biodiversity and flora that they contain and the connectivity they provide. Many of the areas identified are corridors.

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 flora and fauna species, 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 urban areas.

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 Natura 2000 network of designated ecological sites are maintained.

Ecological islands or areas of habitat that are not connected to surrounding ecologically valuable habitats can also be important.

#### **4.6.1 Existing Problems**

Previous changes in land uses arising from human development have resulted in a loss of biodiversity and flora and fauna however legislative objectives governing biodiversity and fauna were not identified as being conflicted with.

The Department of Arts, Heritage and the Gaeltacht's Article 17 report on the Status of EU Protected Habitats and Species in Ireland (2013) identifies many Irish habitats to be of unfavourable status and many to be still declining, although it also identifies that a range of positive actions are underway. The report identifies that the majority of EU-protected species are, however, in "Favourable" status in Ireland, and stable, although a small number are considered to be in "Bad" status and continue to require concerted efforts to protect them.

The Greenway Plan includes robust measures to contribute towards the protection of biodiversity and flora and fauna.

### **4.7 Soil**

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 legislation 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.

Information sources relevant to the environmental component of soil which may be used in lower tier planning and environmental assessments includes:

- Soil types (2006) published by Teagasc, Geological Survey of Ireland (GSI), Forest Service & EPA;
- Soils and Subsoils Class (2006) published by Teagasc, GSI, Forest Service & EPA (2006);
- Sites of Geological Interest which have been published for some counties and provisional information on same for other counties (both available from GSI);
- Other datasets published by and available from GSI including those relating to Bedrock Geology, Quaternary Geology, Mineral deposits, Groundwater Resources and Landslides; and
- Datasets on contaminated soils which may be kept by planning authorities (these occur most often in urban areas).

#### **4.7.1 Existing Problems**

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

## **4.8 Water**

### **4.8.1 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.

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

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 indicative study area for the Greenway Plan covers part of four of the eight WFD RBDs on the island of Ireland: the Western RBD; the Shannon International RBD; the Eastern RBD; and 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.

### **4.8.2 Sources of Information**

#### **4.8.2.1 Status of surface and ground waters**

The first official WFD Monitoring Programme which is undertaken by the EPA became operational in 2006. A current overview of status for monitored waterbodies is published by the EPA. Further overviews will be published which will allow trends in status to be identified.

For surface water, the WFD defines '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.

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.

#### **4.8.2.2 Integrated Water Quality Assessment 2013**

The EPA undertook an assessment of the 2013 water quality monitoring data in Ireland. This assessment covers the entire Western and South Eastern River Basin Districts (RBDs) and the parts of the North Western and Neagh-Bann RBDs that are in the Republic of Ireland. It also includes overall national statistics.

This assessment presents the latest monitoring data, an assessment of the data and a focus on key issues that affect water quality in each of the four RBDs studied. The assessment of water quality is presented using four Key Indicators:

1. Physico-Chemical Quality
2. Biological Quality
3. Pressures
4. Overall (Integrated) Quality

#### **4.8.2.3 Detailed Monitoring Data**

In addition to providing overviews on the overall status of waters, the EPA monitors the quality of surface and groundwater across the country and periodically publishes reports on the findings this monitoring on [www.epa.ie](http://www.epa.ie).

The EPA conducts an ongoing monitoring programme by which river water quality and trends are assessed with respect to ecological criteria and to physico-chemical water quality standards. All of the major rivers and their more important tributaries are included in the programme.

The Assessment of Trophic Status of Estuaries and Bays in Ireland (ATSEBI) System is used by the EPA in order to classify the quality status of transitional and coastal waters. Good status as defined by the WFD equates to approximately *Unpolluted* status in the Assessment of Trophic Status of Estuaries and Bays in Ireland (ATSEBI).

For bathing waters, Mandatory and Guide Values are set out for bathing waters in the 2006 EU Bathing Water Directive and transposing Regulations. Mandatory Values are values which must be observed if the bathing area is to be deemed compliant with the Directive. Compliance with Guide Values exceeds guidance with Mandatory Values and can be regarded as quality objectives which bathing sites should endeavour to achieve.

The EPA also monitor groundwater quality at locations across the country. This monitoring informs the classification of groundwater status.

In addition, the GSI rates groundwaters according to both their productivity (the value of the groundwater resource) and vulnerability (the intrinsic geological and hydrogeological characteristics that determine the ease with which groundwater may be contaminated by human activities).

#### **4.8.2.4 WFD Registers of Protected Areas**

The WFD requires that Registers of Protected Areas (RPAs) are compiled for a number of water bodies or part of water bodies which must have extra controls on their quality by virtue of how their waters are used by people and by wildlife. The WFD requires that these RPAs contain: areas from which waters are taken for public or private water supply schemes; designated shellfish production areas; bathing waters; areas which are affected by high levels of substances most commonly found in fertilizers, animal and human wastes - these areas are considered nutrient sensitive; areas designated for the protection of habitats or species e.g. Salmonid areas; Special Areas of Conservation (SACs); and, Special Protection Areas (SPAs).

### **4.8.3 Flooding**

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. The existence of flood risk across the country is illustrated by the mapping of locations of historical flooding events - accessible from the Office of Public Works' (OPW), the lead Authority on flooding in the country, National Flood Hazard Mapping website. In addition to this historic mapping there is predictive, modelled Preliminary Flood Risk Assessment mapping available from the OPW.

The OPW commenced a National Catchment Flood Risk Assessment and Management (CFRAM) programme in 2011. CFRAM studies are currently being carried out for all River Basin Districts and predictive, modelled CFRAM flood risk maps have been made available with Flood Risk Management Plans currently being finalised.



## 4.8.4 Existing Problems

Subject to exemptions provided for by Article 4 of the WFD<sup>30</sup>, based on available water data, certain surface and groundwater bodies will need improvement in order to comply with the objectives of the WFD.

Preliminary results for 2013-2015 and key findings in the EPA water quality report (2010-2012) included:

- There has been a gradual decline in high-status river sites across Ireland. Numbers halved in the 22-year period between 1987 and 2015 (Figure 5.5) with the most dramatic losses occurring in the highest quality sites (Q5 sites).
- These sites represent the best-quality rivers across Ireland, and therefore their continuing loss is a very significant concern. 3 For this figure river water quality is solely based on Q values. Lake data only covers monitored lakes.
- Seriously pollution of rivers has fallen to just over 6 km compared to 17 km in 2010-2012 and 53 km 2007-2009.
- Reported fish kills have declined to an all-time low of 70 between 2010 and 2012 (EPA, 2015b).
- Water quality in canals remains very high, with over 90% of canals rated satisfactory in 2012.
- The south and south-east of the country continue to have the largest proportion of groundwater and rivers with elevated nitrate concentrations over 10 mg/l NO<sub>3</sub>. This contributes to eutrophication in certain downstream estuaries.
- In 2012, 18% of monitored rivers and 27% of monitored lakes were less than good status due to fish status. Preliminary assessment suggests that barriers to fish migration and physical deterioration of habitats may be partly to blame.

<sup>30</sup> 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.

- In 35% of designated shellfish waters with elevated faecal contamination, additional measures to improve quality and achieve higher objectives are required.

There is historic and predictive evidence of flooding in various locations across the country.

## 4.9 Cultural Heritage

### 4.9.1 Archaeological Heritage

Archaeology is the study of past societies through the material remains left by those societies and the evidence of their environment. Archaeological sites and monuments vary greatly in form and date; examples include earthworks of different types and periods, (e.g. early historic ringforts and prehistoric burial mounds), megalithic tombs from the Prehistoric period, medieval buildings, urban archaeological deposits and underwater features.

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, put on a statutory basis by amendment to the National Monuments Act 1994, of sites and areas of archaeological significance, numbered and mapped. It is available from the National Monuments Service and at [archaeology.ie](http://archaeology.ie).

The term 'monument' includes all man-made structures of whatever form or date except buildings habitually used for ecclesiastical purposes. All monuments in existence before 1700 A.D. are automatically considered to be historic monuments within the meaning of the Acts. Monuments of architectural and historical interest also come within the scope of the Acts. Monuments include: any artificial or partly artificial building, structure or erection or group of such buildings, structures or erections; any cave, stone or other natural product, whether or not forming part of the ground, that has been artificially carved, sculptured or worked upon or which (where it does not form part of the place where it is) appears to have been purposely put or arranged in position; any, or any part of any,

prehistoric or ancient tomb, grave or burial deposit, or, ritual, industrial or habitation site; and any place comprising the remains or traces of any such building, structure or erection, any such cave, stone or natural product or any such tomb, grave, burial deposit or ritual, industrial or habitation site, situated on land or in the territorial waters of the State', but excludes 'any building or part of any building, that is habitually used for ecclesiastical purposes' (National Monuments Acts 1930-2004).

A recorded monument is a monument included in the list and marked on the map which comprises the 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.

## 4.9.2 Architectural Heritage

The term architectural heritage is defined in the Architectural Heritage (National Inventory) and Historic Monuments Act 1999 as meaning all: structures and buildings together with their settings and attendant grounds, fixtures and fittings; groups of structures and buildings; and, sites which are of technical, historical, archaeological, artistic, cultural, scientific, social, or technical interest.

Records of Protected Structures are legislated for under Section 12 and Section 51 of the Planning and Development Act 2000 as amended. Protected Structures are defined in the Planning and Development Act 2000 as amended as structures, or parts of structures that are of special interest from an architectural, historical, archaeological, artistic, cultural, scientific, social or technical point of view.

In relation to a protected structure or proposed protected structure, the following are encompassed:

- (i) The interior of the structure;
- (ii) The land lying within the curtilage<sup>31</sup> of the structure;

<sup>31</sup> Curtilage is normally taken to be the parcel of ground immediately associated with the Protected Structure, or in use for the purposes of the structure. Protection extends to the buildings and land lying within the curtilage. While the curtilage sometimes coincides with the present property boundary, it can originally have included lands,

- (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).

In addition to Protected Structures, the Planning and Development Act, 2000 provides the legislative basis for the protection of Architectural Conservation Areas (ACAs). An ACA is a place, area or group of structures or townscape which is of special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest or value, or contributes to the appreciation of protected structures, whose character it is an objective to preserve in a development plan. 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.

Entries from to the Records of Protected Structures and ACAs are identified in the relevant planning authority Development Plan and at [myplan.ie](http://myplan.ie).

## 4.9.3 Existing Problems

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

## 4.10 Landscape

Landscapes are areas which are perceived by people and are made up of a number of layers: landform, which results from geological and geomorphological history; 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.

features or even buildings now in separate ownership, e.g. the lodge of a former country house, or the garden features located in land subsequently sold off. Such lands are described as being attendant grounds, and the protection extends to them just as if they were still within the curtilage of the Protected Structure.

The importance of landscape and visual amenity and the role of its protection are recognised in the Planning and Development Act 2000 as amended, which requires that Development Plans include objectives for the preservation of the landscape, views and the amenities of places and features of natural beauty. These objectives and associated plan content often designate different aspects of the landscape such as the following:

- Landscape character areas;
- Landscape sensitivity and value areas;
- High amenity zones;
- Scenic views and prospects; and
- Land use objectives relating to landscape protection.

Such designations, which vary from local authority to local authority and change over time, should be taken into account by lower tier planning and environmental assessments.

In addition to the aforementioned landscape designations, planning authorities are empowered (under section 202 of the Planning and Development Act 2000), to make a Special Amenity Area Order for reasons of outstanding natural beauty or an area's special recreational value and having regard to any benefits for nature conservation. The purpose of these Orders is to preserve/enhance landscape character and to prevent/limit development. Such areas should also be taken into account by lower tier planning and environmental assessments where/if relevant.

#### **4.10.1 Existing Environmental Problems**

New developments have resulted in changes to the visual appearance of lands across the country however legislative objectives governing landscape and visual appearance were not identified as being conflicted with.

## **Section 5 Strategic Environmental Objectives**

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.

The SEOs are set out under a range of topics and are used as standards against which the provisions of the Strategy 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.

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

All SEOs, indicators and targets are provided on Table 5.1 overleaf while background to these measures is provided in the subsections below.

Further detail on legislation, plans and programmes are provided under Section 2 (and associated Appendix I "Relationship with Legislation and Other Plans and Programmes") and Section 4.

**Table 5.1 Strategic Environmental Objectives, Indicators and Targets**

<b>Environmental Component</b>	<b>Strategic Environmental Objectives</b>	<b>Indicators</b>	<b>Targets</b>
<b>Air and climatic factors</b>	C1: To reduce travel related emissions to air and to encourage modal change from car to more sustainable forms of transport	C1: Percentage of population in catchment area travelling to and from work and school by non-mechanical means	C1: To contribute towards an increase in the percentage of the population in catchment area travelling to and from work and school by non-mechanical means
<b>Material Assets</b>	<p>M1: For new development to be served with adequate and appropriate waste water treatment</p> <p>M2: For new development to be served with adequate drinking water that is both wholesome and clean</p> <p>M3: To reduce waste volumes, minimise waste to landfill and increase recycling and reuse</p> <p>M4: To maximise the use of existing linear infrastructure</p>	<p>M1: Number of new developments granted permission under the Greenway Plan and the land use plans of planning authorities which can be adequately and appropriately served with waste water treatment, if required</p> <p>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 Plan</p> <p>M3: Preparation and implementation of a construction and environmental management plan</p> <p>M4: Percentage length of the greenway aligned to existing linear infrastructure</p>	<p>M1: All new developments granted permission under the Greenway Plan and the land use plans of planning authorities to be connected to and adequately and appropriately served by waste water treatment, if required</p> <p>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 Plan</p> <p>M3: For one or more construction and environmental management plans to be prepared and implemented for development of the Greenway project</p> <p>M4: To maximise the length of greenway developed along existing linear infrastructure, taking into account other factors such as environmental protection and planning considerations</p>
<b>Population and human health</b>	<p>P1: To develop the greenway close to existing settlements</p> <p>HH1: To protect populations and human health from exposure to incompatible landuses</p>	<p>P1: Number of settlements within the greenway's catchment area</p> <p>HH1: Occurrence (any) of a spatially concentrated deterioration in human health arising from environmental factors resulting from development provided for by the Plan, as identified by the Health Service Executive and Environmental Protection Agency</p>	<p>P1: To maximise the number of settlements within the greenway's catchment area, taking into account other factors such as environmental protection and planning considerations</p> <p>HH1: No spatial concentrations of health problems arising from environmental factors as a result of implementing the Plan</p>
<b>Biodiversity and flora and fauna</b>	<p>B1: To ensure compliance with the Habitats and Birds Directives with regard to the protection of Natura 2000 Sites and Annexed habitats and species<sup>32</sup></p> <p>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</p> <p>B3: To avoid significant impacts on relevant habitats, species,</p>	<p>B1: Conservation status of habitats and species as assessed under Article 17 of the Habitats Directive</p> <p>B2: Number of significant impacts on relevant habitats, species, environmental features or other sustaining resources in designated sites including Wildlife Sites resulting from development provided for by the Plan</p> <p>B3i: Number of significant impacts on the protection of listed species</p> <p>B3ii: Percentage loss of functional connectivity without remediation resulting from</p>	<p>B1: Maintenance of favourable conservation status for all habitats and species protected under National and International legislation to be unaffected by implementation of the Plan<sup>34</sup></p> <p>B2: No significant ecological networks or parts thereof which provide functional connectivity to be lost without remediation resulting from development provided for by the Plan</p> <p>B3i: Avoid significant impacts on relevant habitats, species, environmental features or other sustaining resources in designated sites including Wildlife Sites resulting from development provided for by the Plan</p>

<sup>32</sup> '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.

	environmental features or other sustaining resources in designated sites including Wildlife Sites <sup>33</sup> and to ensure compliance with the Wildlife Acts 1976-2010 with regard to the protection of listed species	development provided for by the Plan	B3ii: No significant impacts on the protection of listed species
<b>Soil</b>	S1: To avoid damage to the hydrogeological and ecological function of the soil resource	S1: Soil extent and hydraulic connectivity	S1: To minimise reductions in soil extent and hydraulic connectivity W1i: Not to cause deterioration in the status of any surface water or affect the ability of any surface water to achieve 'good status' by 2015
<b>Water</b>	W1: To maintain and improve, where possible, the quality and status of surface waters  W2: To prevent pollution and contamination of groundwater  W3: To comply as appropriate with the provisions of the Planning System and Flood Risk Management: Guidelines for Planning Authorities	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)  W1ii: Mandatory and Guide values as set by the EU Bathing Water Directive and transposing Bathing Water Quality Regulations (SI No. 79 of 2008) Groundwater Quality Standards and Threshold Values under Directive 2006/118/EC  W3: Compliance of development of greenway with the Flood Risk Management Guidelines	W1ii: To achieve - as a minimum - Mandatory values and, where possible, to achieve Guide values as set by the EU Bathing Water Directive and transposing Bathing Water Quality Regulations (SI No. 79 of 2008)  W2: Not to affect the ability of groundwaters to comply with Groundwater Quality Standards and Threshold Values under Directive 2006/118/EC  W3: For all greenway projects to comply with the Flood Risk Management Guidelines
<b>Cultural Heritage</b>	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 Records of Protected Structures and Architectural Conservation Areas and their context	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 significant adverse effects arising from development of the Greenway  Percentage of entries to the Records of Protected Structures and Architectural Conservation Areas and their context protected from significant adverse effects arising from development of the Greenway	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 significant adverse effects arising from development of the Greenway]  CH2: Protect entries to the Records of Protected Structures and Architectural Conservation Areas and their context from significant adverse effects arising from development of the Greenway
<b>Landscape</b>	L1: To avoid conflicts with the appropriate protection of statutory designations relating to the landscape, including those included in the Development Plans of planning authorities	L1: Number of unmitigated conflicts with the appropriate protection of statutory designations relating to the landscape, including those included in the Development Plans of planning authorities	L1: No unmitigated conflicts with the appropriate protection of statutory designations relating to the landscape, including those included in the Development Plans of planning authorities

<sup>34</sup> 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.

<sup>33</sup> The Planning and Development Act 2000 as amended defines a 'wildlife site'. See Section 4.6.

## Section 6 Description of Alternatives

### 6.1 Introduction

As per the requirements of the SEA Directive, this SEA considers reasonable alternatives, which are capable of being implemented for the Greenway Plan, taking into account the objectives and the geographical scope of the Plan. The vision of the Plan is to:

*Develop a segregated cycling and walking trail to international standards, extending from Dublin City to Galway which is of a scale that will allow Ireland to harness the potential of an identified growing tourism market for cycling. This route will form part of an interconnected National Cycle Network of high quality, substantially traffic free, inter urban routes, which will establish Ireland as a quality international tourism destination for a broad range of associated recreational activities and pursuits.*

The alternatives are evaluated in Section 7 resulting in the identification of potential effects and informing the development of the Greenway Plan. The evaluation of alternatives will inform the decision-making framework for future projects.

The detail included in the Plan's policies and objectives are evaluated in Section 8.

### 6.2 Rational

The assessment of alternatives will be limited by the content of the Plan which will not specify a route or a route corridor.

As the plan will not provide a route the consideration of alternative routes would be inappropriate. Alternatives will centre on how the greenway could be developed using both, to varying extents, existing infrastructure (such as roads, canal towpaths and disused railway lines) and new greenfield development.

### 6.3 Strategic Alternatives

The final Greenway will consist of a combination of a number of existing and new components. Not all of these elements can be foreseen at this time. 'Scenarios' that describe different alternative combinations of elements are often used to consider the effects of a range of possible outcomes and their associated environmental effects.

In this instance it appears that three main scenarios that could occur.

**Scenario One:** *Maximum use of existing and previously permitted components.*

In this scenario, existing pathways along canals, rivers and publically accessible rural lands would be used. This scenario would also use existing public roads and pathways in both urban and rural areas.

This scenario would use the least number of new projects that have not yet been permitted or included in existing, assessed plans.

This scenario would also use existing plans and/or permitted projects where these have been subject to a consent process that has previously included the carrying out or screening for SEA/EIA and/or AA.

**Scenario Two:** *Substantial use of existing and some use of new projects*

In this scenario, the above-mentioned existing components would be augmented in places by more optimal routes that would involve new works – such as additional paths, routes and crossings of streams, rivers, canals, road, rail or bog.

It is anticipated that all such components would be subject to relevant assessment including SEA, EIA, and AA etc.

**Scenario Three:** *Use of existing and substantial new elements*

In this scenario, the Greenway would involve the development of substantial new

components. This may involve bypassing and or duplicating existing and/or permitted elements.

It is anticipated that all such components would be subject to relevant assessment including SEA, EIA, and AA etc.

## **6.4 Routing Alternatives**

Alternatives for the development of the greenway comprise:

### **Canal**

1. Along existing canal right of way
2. Outside of canal right of way

### **River**

3. Within the River Corridor
4. Outside of the River Corridor

### **Railway**

5. Within the Railway right of way
6. Outside of the Railway right of way

### **Roads**

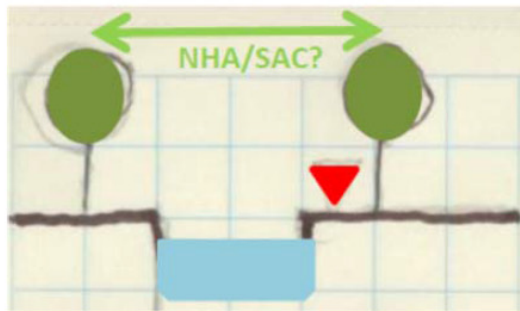
7. Along road (shared on smaller roads, for shorter distances)
8. Along roadside (cycleways)
9. Outside of road right of way

### **Tracks on State owned lands**

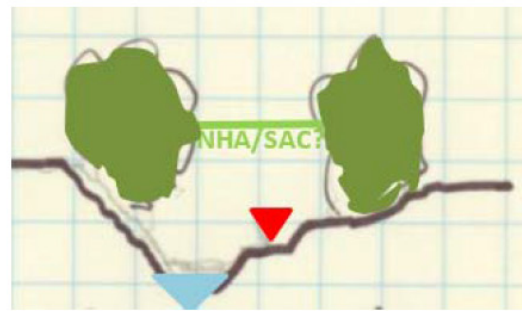
10. Tracks on Forestry lands
11. Tracks on Peatland lands

Sketches for alternatives 1 to 10 are provided on Figure 6.1.

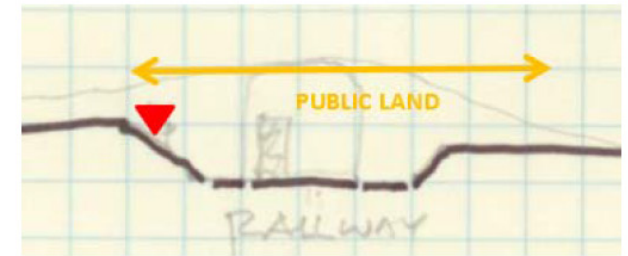




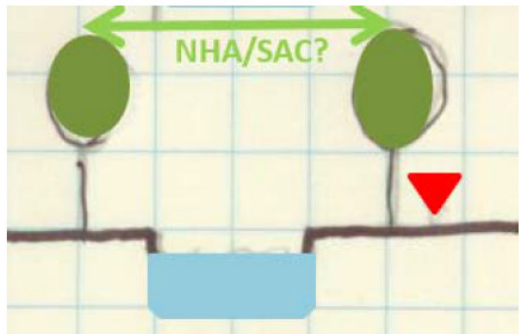
1. Within Canal right of way



3. Within River Corridor



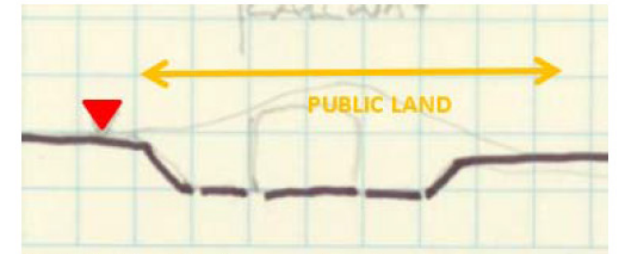
5. Within Railway right of way



2. Outside of Canal right of way



4. Outside of River Corridor



6. Outside of Railway right of way



7. Along road (shared on smaller roads)



8. Fringe to road right of way (cycleways)



9. Outside of road right of way

**Figure 6.1 Sketches of Alternatives**

## Section 7 Evaluation of Alternatives

### 7.1 Introduction

This section provides a comparative evaluation of the environmental effects of implementing the 11 alternatives. 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'<sup>35</sup>.

The interactions identified are reflective of likely significant environmental effects<sup>36</sup>:

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.

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 could be mitigated (for the chosen alternative these effects will be mitigated by measures which have been integrated into the Plan).

The degree to which effects can be determined is limited by a number of considerations:

- The Greenway Plan is a high-level, strategic, text based document which does not identify the design, route or possible route corridors for the greenway. Details of the project(s) which will emanate from the Plan will allow for a more detailed consideration of environmental effects – including in-combination/cumulative effects – by project level assessments i.e. EIA and AA.
- The Greenway Plan constitutes an assemblage of elements – some will be new, some exist already, some are being developed as parts of existing local initiatives. Furthermore the Greenway contains elements that have already been adopted – following consultation and assessment - into County and Local Plans.
- Finally, some parts of the final scheme may consist of elements that emerge from new and emerging local plans and initiatives.
- Thus, this strategic level of Greenway planning will be assessed in the context of other, subsidiary, consenting processes that will themselves include assessment and consultation – in conformity with relevant impact assessment (SEA or EIA) as well as the assessment of the effects on European Sites.

<sup>35</sup> '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.

<sup>36</sup> These effects include secondary, cumulative, synergistic, short, medium and long-term permanent and temporary, positive and negative effects.

**Table 7.1 Strategic Environmental Objectives<sup>39</sup>**

<b>SEO Code</b>	<b>SEO</b>
<b>C1</b>	To reduce travel related emissions to air and to encourage modal change from car to more sustainable forms of transport
<b>M1</b>	For new development to be served with adequate and appropriate waste water treatment
<b>M2</b>	For new development to be served with adequate drinking water that is both wholesome and clean
<b>M3</b>	To reduce waste volumes, minimise waste to landfill and increase recycling and reuse
<b>M4</b>	To maximise the use of existing linear infrastructure
<b>P1</b>	To develop the greenway close to existing settlements
<b>HH1</b>	To protect populations and human health from exposure to incompatible landuses
<b>B1</b>	To ensure compliance with the Habitats and Birds Directives with regard to the protection of Natura 2000 Sites and Annexed habitats and species <sup>37</sup>
<b>B2</b>	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
<b>B3</b>	To avoid significant impacts on relevant habitats, species, environmental features or other sustaining resources in designated sites including Wildlife Sites <sup>38</sup> and to ensure compliance with the Wildlife Acts 1976-2010 with regard to the protection of listed species
<b>S1</b>	To avoid damage to the hydrogeological and ecological function of the soil resource
<b>W1</b>	To maintain and improve, where possible, the quality and status of surface waters
<b>W2</b>	To prevent pollution and contamination of groundwater
<b>W3</b>	To comply as appropriate with the provisions of the <i>Planning System and Flood Risk Management: Guidelines for Planning Authorities</i>
<b>CH1</b>	To protect archaeological heritage including entries to the Record of Monuments and Places and/or their context
<b>CH2</b>	To protect architectural heritage including entries to the Records of Protected Structures and Architectural Conservation Areas and their context
<b>L1</b>	To avoid conflicts with the appropriate protection of statutory designations relating to the landscape, including those included in the Development Plans of planning authorities

**Table 7.2 Criteria for appraising the effect of Alternatives on SEOs**

Likely to <b>Improve</b> status of SEOs	Probable <b>Conflict</b> with status of SEOs- unlikely to be mitigated	Potential <b>Conflict</b> with status of SEOs- likely to be mitigated
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<sup>37</sup> '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.

<sup>38</sup> The Planning and Development Act 2000 as amended defines a 'wildlife site'. See Section 4.6.

<sup>39</sup> See Section 5 for a description of Strategic Environmental Objectives.

## 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 in Section 8 e.g. interrelationships between: human health and water quality; human health and air 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, developments, etc.

Effects that may arise as a result of implementing the Plan have been mitigated to the extent that the only residual adverse effects likely to occur as a result of implementation of the Plan are those which are identified under Section 8.3.

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 2.2, 4 and 5.

The SEA undertaken for the Plan has taken account of the Department's obligation 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 Plan will be implemented within areas that have 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 Local] that are already subject to more specific higher and lower tier 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. The assessment is limited in this instance as there has been limited assessment of the likely types of developments provided for by other policies, plans and programmes that could occur in combination with the implementation of the Greenway.

Cumulative/in-combination effects include:

- Positive effects upon objectives relating to sustainable mobility (cycling and walking), thereby reducing and limiting increases in greenhouse gas emissions, noise emissions and other emissions to air (in combination with plans including the Smarter Travel Initiative 2012-2016, Smarter Travel – A Sustainable Transport Future – A New Transport Policy for Ireland 2009 – 2020, the National Cycle Network Scoping Study 2010, the Transport Strategy for the Greater Dublin Area 2016-2035 and the National Transport Authority Greater Dublin Area Cycle Network Plan). Also potential adverse effects with respect to pressures upon ecology of greenways as a result of encouraging alternative methods of transport along alternative routes (in combination with the aforementioned plans).
- The need to provide adequate and appropriate water services (the greenway will comprise one of many types of infrastructure and services which will support existing populations and

facilitate new populations in combination with land use plans for the distribution of populations and other sectoral plans such as for the provision of water services). It is the function of Irish Water to provide for such needs.

- With respect to the various tiers of land use planning (e.g. National Spatial Strategy 2002-2020, Regional Planning Guidelines, Development Plans, including greenway and other transport objectives), potential adverse effects upon various environmental components (such as ecology, water and cultural heritage) may arise, if unmitigated, where there is a requirement to provide for new infrastructure.
- Potential effects on water quantity and quality (and associated interactions), if unmitigated, with drainage issues associated with afforestation under the National Forestry Programme 2014 - 2020 (DAFM).
- Potential effects on ecology, drainage, cultural heritage where there is a requirement to provide for new infrastructure such as flood walls or flood defences under the Catchment Flood Risk Assessment Management studies.

## 7.4 Evaluation of Strategic Alternatives

The final Greenway will consist of a combination of a number of existing and new components. Not all of these elements can be foreseen at this time.

**Scenario One:** *Maximum use of existing and previously permitted components.*

By using existing pathways along canals, rivers and publically accessible rural lands and using existing public roads and pathways in both urban and rural areas, this scenario would minimise potential adverse environmental effects (these effects are as detailed under Section 7.5) arising from developing new projects that have not yet been permitted or included in existing, assessed plans.

By using existing plans and/or permitted projects where these have been subject to a consent process that has previously included the carrying out or screening for SEA/EIA and/or AA, this scenario would further contribute towards minimising potential adverse environmental effects arising from developing new projects that have not yet been permitted or included in existing, assessed plans.

**Scenario Two:** *Substantial use of existing and some use of new projects*

Augmenting the above-mentioned existing components would in places by more optimal routes that would involve new works – such as additional paths, routes and crossings of streams, rivers, canals, road, rail or bog – that would present a variety of potentially adverse environmental effects (these effects are as detailed under Section 7.5).

It is anticipated that all such components would be subject to relevant assessment including SEA, EIA, and AA etc.

**Scenario Three:** *Use of existing and substantial new elements*

The development of substantial new components under this scenario – including possible bypassing and or duplicating existing and/or permitted elements – would involve the greatest amount of potentially adverse environmental effects (these effects are as detailed under Section 7.5).

It is anticipated that all such components would be subject to relevant assessment including SEA, EIA and AA etc.

The content of the Plan mainly reflects scenarios 1 and 2. The Greenway Plan constitutes an assemblage of elements – some will be new, some exist already, some are being developed as parts of existing local initiatives. Furthermore the Greenway contains elements that have already been adopted – following consultation and assessment - into County and Local Plans. Finally, some parts of the final scheme may consist of elements that emerge from new and emerging local plans and initiatives.

## 7.5 Detailed Evaluation of Routing Alternatives<sup>40</sup>

### 7.5.1 Air and Climatic Factors and Human Health

**All alternatives** would be likely to result in significant positive effects upon objectives relating to air and climatic factors as they would improve options for sustainable mobility (cycling and walking), thereby reducing and limiting increases in greenhouse gas emissions, noise emissions and other emissions to air<sup>41</sup>.

By reducing and limiting increases in noise emissions and other emissions to air, **all alternatives** would be likely to contribute towards the protection of human health<sup>42</sup>.

### 7.5.2 Population

**All alternatives** provide opportunities to route the greenway close to populations resident in settlements across the country<sup>43</sup>.

### 7.5.3 Water Services

The greenway will comprise one of many types of infrastructure and services which will support existing populations and facilitate new populations. Consequently, **each of the alternatives** would, in combination with land use plans for the distribution of populations and other sectoral plans such as for the provision of water services, potentially interact with the need to provide adequate and appropriate water services (waste water and drinking water). It is the function of Irish Water to provide for these needs<sup>44</sup>.

### 7.5.4 Existing Linear Infrastructure and Waste

The use of existing linear infrastructure varies across the alternatives. Developing the greenway along existing canal right of ways, within existing railway rights of way, along roads or the roadside and along existing tracks on forestry and peatland lands (**Alternatives 1, 5, 7, 8, 10 and 11**) would make most use of existing infrastructure and routes<sup>45</sup>.

Developing the greenway outside of the canal right of way, within or outside of river corridors and outside of railway and road right of ways (**Alternatives 2, 3, 4, 6 and 9**) would be likely to require the most amount of new infrastructure<sup>46</sup> and result amounts of associated potential wastes<sup>47</sup> (from materials and excavations).

Development of the greenway along existing linear infrastructure would be unlikely to affect flood risk management issues<sup>48</sup> while drainage would be taken into account into the design of new infrastructure thereby mitigating<sup>49</sup> or enhancing any interaction with flood risk issues<sup>50</sup>. By protecting certain areas from the encroachment of development, the greenway could make contributions towards climate adaptation and flood risk management.

<sup>40</sup> 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 7.3.

<sup>41</sup> **SEO C1**

<sup>42</sup> **SEO HHI**

<sup>43</sup> **SEO P1**

<sup>44</sup> **SEOs M1 M2**

<sup>45</sup> **SEO M4**

<sup>46</sup> **SEO M4**

<sup>47</sup> **SEO M3**

<sup>48</sup> **SEO W3**

<sup>49</sup> **SEO W3**

<sup>50</sup> **SEO W3**

### 7.5.5 Biodiversity, Flora and Fauna, Water, Soil and Human Health

By protecting certain areas from the encroachment of development, all alternatives would provide for a continuation of (and further contribution towards) the protection of ecological, water and soil resources along the greenway route<sup>51</sup>.

Research by Fáilte Ireland in the Burren has shown improved environmental outcomes (improved attainment of conservation objectives) in areas with visitor management strategies. A visitor management strategy during the implementation of the Greenway project could contribute positively to advancing the attainment of conservation objectives along and adjacent to the route, thereby benefitting the management of designated sites<sup>52</sup>.

By reusing existing linear infrastructure and reducing the need for new construction, **Alternatives 1, 5, 7, 8, 10 and 11**, would avoid some potentially adverse effects upon ecology (e.g. habitat loss/fragmentation, species disturbance/displacement and effects in riparian zones where new crossings of waters, if any, are progressed<sup>53</sup>), water (e.g. adverse effects upon status of waters arising from changes in quality, flow and/or morphology at construction stage or increases in outflow at waste water treatment plants<sup>54</sup>), soil (e.g. loss of hydrogeological and ecological function as a result of construction of associated facilities/infrastructure on greenfield lands<sup>55</sup>) and human health (interactions with environmental vectors<sup>56</sup>).

Nonetheless there would be potential for adverse effects to arise, if unmitigated, as a result of, for example, new signage and route maintenance and use. As with other issues, detailed project level examination would be required, especially with respect to: **Alternative 1** 'Within Canal right of way', as the Royal and Grand Canals are designated as proposed Natural Heritage Areas (pNHAs) and traverse a number of candidate Special Areas of Conservation (cSACs); and **Alternative 11** 'Tracks on Peatland lands', due to the protection afforded by the Habitats Directive to certain peatlands.

**Alternatives 2, 3, 4, 6 and 9** comprise the development of new routes for the greenway and would require the most amount of new infrastructure and construction. Consequently these alternatives would present the potential for significant adverse effects upon ecology, water, soil and human health, generally to a greater extent than Alternatives 1, 5, 7, 8, 10 and 11. **Alternative 3** 'Within River Corridor' poses the greatest potential for the occurrence of significant effects upon ecology, water and soil resources due to the concentration of designations and sensitivities which can occur within river corridors.

### 7.5.6 Cultural Heritage and Landscape

**All alternatives** would provide opportunities for the continuation of (and further contribution towards) the protection from development of cultural heritage structures and landscape designations which are located within and adjacent to the greenway corridor<sup>57</sup>.

By reusing existing linear infrastructure and reducing the need for new construction, **Alternatives 1, 5, 7, 8, 10 and 11**, would avoid some potentially significant adverse effects upon archaeological and architectural heritage<sup>58</sup>, including context, and landscape designations<sup>59</sup>. Nonetheless there would be potential for adverse effects to arise (if unmitigated) as a result of, for example, minor construction or new signage.

<sup>51</sup> SEOs B1 B2 B3 W1 W2 S1

<sup>52</sup> SEOs B1 B2 B3

<sup>53</sup> SEOs B1 B2 B3

<sup>54</sup> SEOs W1 W2

<sup>55</sup> SEO S1

<sup>56</sup> SEO HHI

<sup>57</sup> SEO CH1 CH2 L1

<sup>58</sup> SEOs CH1 CH2

<sup>59</sup> SEO L1



Due to the need to construct new routes for the greenway, **Alternatives 2, 3, 4, 6 and 9** would have the potential to result in significant adverse effects upon archaeological heritage<sup>60</sup> (e.g. disturbance of unknown archaeology or effects upon the context of archaeology) and architectural heritage<sup>61</sup> (e.g. effects upon the context of architectural heritage) and landscape designations<sup>62</sup>. Higher concentrations of landscape designations and cultural heritage would be likely to occur within or adjacent to river corridors (see **Alternative 3** 'Within River Corridor' and **Alternative 4** 'Outside of River Corridor').

## 7.6 Comparative Evaluation against SEOs

Table 7.3 provides a comparative evaluation of alternatives against the SEOs.

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<sup>60</sup> SEO CH1

<sup>61</sup> SEO CH2

<sup>62</sup> SEO L1



**Table 7.3 Evaluation of Alternatives against SEOs**

	Likely to <b>Improve</b> status of SEOs	Probable <b>Conflict</b> with status of SEOs- unlikely to be mitigated	<b>Least Potential Conflict</b> with status of SEOs- likely to be mitigated	<b>Potential Conflict</b> with status of SEOs- likely to be mitigated	<b>Most Potential Conflict</b> with status of SEOs- likely to be mitigated	<b>No significant interaction</b> with status of SEOs
1. Along existing canal right of way	<b>C1 HH1 P1 W3 M4 CH1 CH2 L1</b>		<b>W1 W2 S1 CH1 CH2 L1</b>	<b>M1 M2 B1 B2 B3</b>		<b>M3</b>
2. Outside of canal right of way	<b>C1 HH1 P1 W3 CH1 CH2 L1</b>			<b>M1 M2 M3 M4 W3 B1 B2 B3 W1 W2 S1 CH1 CH2 L1</b>		
3. Within the River Corridor	<b>C1 HH1 P1 W3 CH1 CH2 L1</b>			<b>M1 M2 M3 M4 W3</b>	<b>B1 B2 B3 W1 W2 S1 CH1 CH2 L1</b>	
4. Outside of the River Corridor	<b>C1 HH1 P1 W3 CH1 CH2 L1</b>			<b>M1 M2 M3 M4 W3 B1 B2 B3 W1 W2 S1</b>	<b>CH1 CH2 L1</b>	
5. Within the Railway right of way	<b>C1 HH1 P1 M4 W3 CH1 CH2 L1</b>		<b>B1 B2 B3 W1 W2 S1 CH1 CH2 L1</b>	<b>M1 M2</b>		<b>M3</b>
6. Outside of the Railway right of way	<b>C1 HH1 P1 W3 CH1 CH2 L1</b>			<b>M1 M2 M3 M4 W3 B1 B2 B3 W1 W2 S1 CH1 CH2 L1</b>		
7. Along road (shared on smaller roads, for shorter distances)	<b>C1 HH1 P1 W3 M4 CH1 CH2 L1</b>		<b>B1 B2 B3 W1 W2 S1 CH1 CH2 L1</b>	<b>M1 M2</b>		<b>M3</b>
8. Along roadside (cycleways)	<b>C1 HH1 P1 W3 M4 CH1 CH2 L1</b>		<b>B1 B2 B3 W1 W2 S1 CH1 CH2 L1</b>	<b>M1 M2</b>		<b>M3</b>
9. Outside of road right of way	<b>C1 HH1 P1 W3 CH1 CH2 L1</b>			<b>M1 M2 M3 M4 W3 B1 B2 B3 W1 W2 S1 CH1 CH2 L1</b>		
10. Tracks on Forestry lands	<b>C1 HH1 P1 W3 M4 CH1 CH2 L1</b>		<b>B1 B2 B3 W1 W2 S1 CH1 CH2 L1</b>	<b>M1 M2</b>		<b>M3</b>
11. Tracks on Peatland lands	<b>C1 HH1 P1 W3 M4 CH1 CH2 L1</b>		<b>W1 W2 S1 CH1 CH2 L1</b>	<b>M1 M2 B1 B2 B3</b>		<b>M3</b>

## **7.7 The Selected Combination of Routing Alternatives**

The Greenway Plan encompasses all of the alternatives considered. Detailed route selection will inform the final project. The evaluation of alternatives will inform the decision-making framework for future projects.

The identification of route corridors and the refinement of the route line is likely to be informed by other considerations such as access to lands, perceptions of safety and attractiveness, costs and benefits and ease of maintenance.

The effects of implementing the selected combination of alternatives are detailed on Table 7.4 overleaf.

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

## **7.8 Note on Minor Changes made to the Draft Plan after public display, before adoption**

This section was added to the SEA Environmental Report that was originally placed on public display alongside the Draft Plan.

Submissions on the Draft Plan resulted in two minor changes to the Draft Plan before adoption (the insertion of the word 'substantial' in two locations). These changes provide clarification and internal consistency within the Draft Plan and would not result in any additional environmental effects to those already foreseen by the SEA of the Draft Plan; they are not considered as being material. Furthermore the selected combination of routing alternatives for the Draft Plan that was identified as part of the SEA process (see Section 7.7 above) does not change in any way.

**Table 7.4 Effects Arising from the Selected Combination of Alternatives**

<b>Environmental Component</b>	<b>Likely Positive effect</b>	<b>Potentially Significant Adverse effect, if unmitigated (these effects will be mitigated)</b>
Air and climatic factors	<ul style="list-style-type: none"> <li>Improvements in air quality and reductions in greenhouse gas emissions resulting from: reduced car usage and increases in levels of cycling and walking</li> <li>Contributions towards climate adaptation and flood risk management arising from the preservation of natural floodplains</li> </ul>	<ul style="list-style-type: none"> <li>None</li> </ul>
Material Assets	<ul style="list-style-type: none"> <li>Increases in the use of existing underutilised or disused infrastructure e.g. towpaths and railway lines</li> </ul>	<ul style="list-style-type: none"> <li>The need to provide adequate and appropriate water services (it is the function of Irish Water to provide for such needs)</li> <li>Increases in waste levels</li> </ul>
Population and human health	<ul style="list-style-type: none"> <li>Contribution towards the protection of human health as a result of improving the quality in environmental vectors (e.g. improvements in air quality as a result of contributions towards sustainable mobility)</li> </ul>	<ul style="list-style-type: none"> <li>Potential interactions if effects upon environmental vectors such as water are not mitigated</li> </ul>
Biodiversity and flora and fauna	<ul style="list-style-type: none"> <li>A visitor management strategy during the implementation of the Greenway project could contribute positively to advancing the attainment of conservation objectives along and adjacent to the route, thereby benefitting the management of designated sites.</li> <li>Continuation of and further contribution towards the protection of biodiversity and flora and fauna</li> <li>Enhancement of ecological connectivity by protecting certain areas from the encroachment of development</li> </ul>	<ul style="list-style-type: none"> <li>Arising from both construction and operation of the greenway and associated facilities/infrastructure: loss of/damage to biodiversity in designated sites, ecological connectivity and non-designated habitats; and disturbance to biodiversity and flora and fauna</li> <li>Habitat loss, fragmentation and deterioration, including patch size and edge effects</li> <li>Disturbance and displacement of protected species and coastal squeeze</li> <li>Effects in riparian zones where new crossings of waters, if any, are progressed</li> </ul>
Water	<ul style="list-style-type: none"> <li>Continuation of and further contribution towards the protection of water resources along greenway route by protecting certain areas from the encroachment of development</li> </ul>	<ul style="list-style-type: none"> <li>Potential interactions with the status of water bodies and entries to the WFD Register of Protected Areas, arising from: <ul style="list-style-type: none"> <li>- Changes in quality, flow and/or morphology at construction stage (including of greenway and associated facilities/infrastructure); and</li> <li>- Increases in outflow at waste water treatment plants as a result of increases in numbers of visitors to settlements along the route.</li> </ul> </li> <li>Increase in the risk of flooding</li> </ul>
Soil	<ul style="list-style-type: none"> <li>Preservation of hydrogeological and ecological function of the soil resource by protecting certain areas from the encroachment of development</li> </ul>	<ul style="list-style-type: none"> <li>Adverse impacts on the hydrogeological and ecological function of the soil resource as a result of construction of associated facilities/infrastructure</li> </ul>
Cultural Heritage	<ul style="list-style-type: none"> <li>Continuation of and further contribution towards the protection from development of cultural heritage structures which are located within and adjacent to the greenway corridor</li> </ul>	<ul style="list-style-type: none"> <li>Potential effects on protected and unknown archaeology and protected architecture arising from construction activities (for both greenway and associated facilities/infrastructure)</li> </ul>
Landscape	<ul style="list-style-type: none"> <li>Continuation of and further contribution towards the protection from development of landscape designations which are located within and adjacent to the greenway corridor</li> </ul>	<ul style="list-style-type: none"> <li>Occurrence of adverse visual impacts and conflicts with the appropriate protection of statutory designations relating to the landscape</li> </ul>

## Section 8 Evaluation of Plan Provisions

### 8.1 Methodology

The relevant aspects of the current state of the environment (see Section 4) and the Strategic Environmental Objectives (see Section 5 and Table 8.2) are used in the evaluation of alternatives.

The provisions 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 Plan provisions 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'<sup>63</sup>.

The interactions identified are reflective of likely significant environmental effects<sup>64</sup>:

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.
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 will be mitigated by measures which have been integrated into the Plan (see Section 9).

The degree to which effects can be determined is limited as the Greenway Plan is a text based document which does not identify the design, route or possible route corridors for the greenway. Details of the project(s) which will emanate from the Plan will allow for a more detailed consideration of environmental effects – including in-combination/cumulative effects – by project level assessments i.e. EIA and AA.

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<sup>63</sup> '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.

<sup>64</sup> These effects include secondary, cumulative, synergistic, short, medium and long-term permanent and temporary, positive and negative effects.

**Table 8.1 Criteria for appraising the effect of Plan provisions on SEOs**

Likely to <b>Improve</b> status of SEOs	Probable <b>Conflict</b> with status of SEOs- unlikely to be mitigated	Potential <b>Conflict</b> with status of SEOs- likely to be mitigated	<b>No Likely</b> interaction with status of SEOs
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**Table 8.2 Strategic Environmental Objectives<sup>65</sup>**

SEO Code	SEO
<b>C1</b>	To reduce travel related emissions to air and to encourage modal change from car to more sustainable forms of transport
<b>M1</b>	For new development to be served with adequate and appropriate waste water treatment
<b>M2</b>	For new development to be served with adequate drinking water that is both wholesome and clean
<b>M3</b>	To reduce waste volumes, minimise waste to landfill and increase recycling and reuse
<b>M4</b>	To maximise the use of existing linear infrastructure
<b>P1</b>	To develop the greenway close to existing settlements
<b>HH1</b>	To protect populations and human health from exposure to incompatible landuses
<b>B1</b>	To ensure compliance with the Habitats and Birds Directives with regard to the protection of Natura 2000 Sites and Annexed habitats and species <sup>66</sup>
<b>B2</b>	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
<b>B3</b>	To avoid significant impacts on relevant habitats, species, environmental features or other sustaining resources in designated sites including Wildlife Sites <sup>67</sup> and to ensure compliance with the Wildlife Acts 1976-2010 with regard to the protection of listed species
<b>S1</b>	To avoid damage to the hydrogeological and ecological function of the soil resource
<b>W1</b>	To maintain and improve, where possible, the quality and status of surface waters
<b>W2</b>	To prevent pollution and contamination of groundwater
<b>W3</b>	To comply as appropriate with the provisions of the <i>Planning System and Flood Risk Management: Guidelines for Planning Authorities</i>
<b>CH1</b>	To protect archaeological heritage including entries to the Record of Monuments and Places and/or their context
<b>CH2</b>	To protect architectural heritage including entries to the Records of Protected Structures and Architectural Conservation Areas and their context
<b>L1</b>	To avoid conflicts with the appropriate protection of statutory designations relating to the landscape, including those included in the Development Plans of planning authorities

<sup>65</sup> See Section 5 for a description of Strategic Environmental Objectives.

<sup>66</sup> '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.

<sup>67</sup> The Planning and Development Act 2000 as amended defines a 'wildlife site'. See Section 4.6.

## 8.2 Appropriate Assessment

Stage 2 Appropriate Assessment (AA) has been undertaken alongside the Plan. The requirement for AA is provided under the EU Habitats Directive (Directive 1992/43/EEC).

The AA concluded that the Plan, having integrated all recommendations made by the AA, will not affect the integrity of the Natura 2000 network.

Various content has been integrated into the Plan through the SEA and AA processes (see Section 9). The preparation of the Plan, SEA and AA has taken place concurrently and the findings of the AA have informed both the Plan and the SEA.

## 8.3 Potential and Residual Adverse Effects

Environmental impacts which occur, if any, will be determined by the nature and extent of multiple or individual projects and site specific environmental factors. The potentially significant adverse environmental effects arising from implementation of the chosen alternative for the Plan are detailed in Table 7.4 while further detail for each of the Plan's provisions are provided under Section 8.5 below.

Avoidance of significant adverse environmental effects, and associated conflict with SEOs, is dependent upon compliance with the mitigation measures which have emerged through the SEA and AA processes and which have been integrated into the Plan (see Section 9).

Residual adverse effects likely to occur - considering the extent of detail provided by the Plan and assuming that all mitigation measures are complied with by development - are identified for each of the environmental components on Table 8.3.

**Table 8.3 Residual Adverse Effects**

<b>Environmental Component</b>	<b>Residual Adverse Effects</b>
Air and Climatic Factors	Minimal residual adverse effects
Material Assets	Residual wastes to be disposed of in line with higher level waste management policies
Population and Human Health	Minimal residual adverse effects
Biodiversity and Flora and Fauna	Loss of an extent of non-protected habitats arising from the replacement of semi-natural land covers with artificial surfaces
Soil	Loss of an extent of soil function arising from the replacement of semi-natural land covers with artificial surfaces
Water	Flood related risks remain due to uncertainty with regard to extreme weather events
Architectural Heritage	Potential alteration to the context and setting of architectural heritage (Protected Structures) however these will occur in compliance with legislation
Archaeological Heritage	Potential alteration to the context and setting of archaeological heritage (Recorded Monuments) however this will occur in compliance with legislation Potential loss of unknown archaeology however this loss will be mitigated by measures integrated into the Plan
Landscape Designations	Minimal residual adverse effects

## **8.4 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 Plan will not affect the interrelationships between these components. The presence of significant interrelationships between environmental components is identified on Table 8.4.

**Table 8.4 Presence of Interrelationships between Environmental Components**

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



## 8.5 Detailed Evaluation of Plan Provisions

### 8.5.1 Overall Findings

The overall findings are that:

- The Department have integrated all recommendations arising from the SEA and AA processes into the Plan (see Section 9);
- Some Plan provisions would be likely to result in significantly positive effects upon environmental management and protection and sustainable mobility; and
- Some provisions would have the potential to result in significant negative environmental effects (these are described below) however these effects will be mitigated by the measures which have been integrated into the Plan (see Section 9).

### 8.5.2 The Plan's Vision

Notes:

- For an explanation of SEO codes e.g. **B1**, **B2**, **B3**, **PHH1**, etc. refer to Table 8.2 on page 60.
- SEA and AA recommendations which have been integrated into the Plan text are shown in **green**

	Likely to <b>Improve</b> status of SEOs	Probable <b>Conflict</b> with status of SEOs - unlikely to be mitigated	Potential <b>Conflict</b> with status of SEOs- likely to be mitigated	<b>No Likely</b> interaction with status of SEOs
Develop a segregated cycling and walking trail to international standards, extending from Dublin City to Galway which is of a scale that will allow Ireland to harness the potential of an identified growing tourism market for cycling. This route will form part of an interconnected National Cycle Network of high quality, substantially traffic free, inter urban routes, which will establish Ireland as a quality international tourism destination for a broad range of associated recreational activities and pursuits.	<b>C1 HH1 P1 W3 M4 CH1 CH2 L1</b>		<b>M1 M2 M3 B1 B2 B3 W1 W2 W3 S1 CH1 CH2 L1</b>	
<p><b>Commentary:</b></p> <p><i>The evaluation against SEOs provided for the Plan's Vision reflects the combination of selected alternatives for the Plan and is consistent with the evaluation of these provided under Section 7 and at Table 7.4.</i></p>				

### 8.5.3 The Plan's Policy

Notes:

- For an explanation of SEO codes e.g. **B1**, **B2**, **B3**, **PHH1**, etc. refer to Table 8.2 on page 60.
- SEA and AA recommendations which have been integrated into the Plan text are shown in **green**

	Likely to <b>Improve</b> status of SEOs	Probable <b>Conflict</b> with status of SEOs - unlikely to be mitigated	Potential <b>Conflict</b> with status of SEOs - likely to be mitigated	<b>No Likely</b> interaction with status of SEOs
<p>To provide a segregated, substantially off road cycle route from Dublin City to Clifden via Galway City, maximising the use of - where feasible - existing and approved routes and disused railway line corridors and to also use existing plans and/or permitted projects where these have been subject to a consent process that has previously included the carrying out or screening for Strategic Environmental Assessment (SEA)/ Environmental Impact Assessment (EIA) and/or Appropriate Assessment (AA).</p> <p>The development of this route shall be subject to the requirements of Habitats and EIA Directives <b>and shall comply with the provisions detailed in Appendix I 'Environmental Management and Sustainable Development' to this Plan.</b> Where State lands are not available, land will be acquired in order to secure the use of the infrastructure for future years, thereby securing the State's investment.</p>	<b>C1 HH1 P1 W3 M4 CH1 CH2 L1 M1 M2 M3 B1 B2 B3 W1 W2 S1</b>		<b>M1 M2 M3 B1 B2 B3 W1 W2 W3 S1 CH1 CH2 L1</b>	
<p><b>Commentary:</b></p> <p><i>The evaluation against SEOs provided for the Plan's Policy reflects the combination of selected alternatives for the Plan and is consistent with the evaluation of these provided under Section 7 and at Table 7.4.</i></p> <p><i>In addition, the inclusion of Appendix I 'Environmental Management and Sustainable Development' in the Plan on foot of an SEA and AA recommendation would benefit all environmental components. The content of this Appendix is detailed under Section 9 'Mitigation Measures'.</i></p>				

### 8.5.4 The Plan's Objectives

Notes:

- For an explanation of SEO codes e.g. **B1**, **B2**, **B3**, **PHH1**, etc. refer to Table 8.2 on page 60.
- SEA and AA recommendations which have been integrated into the Plan text are shown in **green**

	Likely to <b>Improve</b> status of SEOs	Probable <b>Conflict</b> with status of SEOs - unlikely to be mitigated	Potential <b>Conflict</b> with status of SEOs - likely to be mitigated	<b>No Likely</b> interaction with status of SEOs
1. Establish a cycleway route connecting Dublin to Clifden via Galway City which is substantially segregated from vehicular traffic and is safe, attractive and comfortable.	<b>C1 HH1 P1 W3 M4 CH1 CH2 L1</b>		<b>M1 M2 M3 B1 B2 B3 W1 W2 W3 S1 CH1 CH2 L1</b>	
2. Maximise the value of existing infrastructure including canal towpaths, disused railway lines and state owned lands.	<b>C1 B1 B2 B3 W1 W2 S1 HH1 P1 W3 M4 CH1 CH2 L1</b>		<b>B1 B2 B3 W1 W2 S1 CH1 CH2 L1 M1 M2</b>	<b>M3</b>
3. Secure permanent access to the entire route through land acquisition if required.	<b>C1 HH1 P1 W3 M4 CH1 CH2 L1</b>		<b>M1 M2 M3 B1 B2 B3 W1 W2 W3 S1 CH1 CH2 L1</b>	
4. Develop a tourism experience that caters for a broad range of users in key tourism markets.	<b>C1 HH1 P1 W3 M4 CH1 CH2 L1</b>		<b>M1 M2 M3 B1 B2 B3 W1 W2 W3 S1 CH1 CH2 L1</b>	
5. Route to be designed and built to international best practice and in accordance with adopted standards.	<b>C1 HH1 P1 W3 M4 CH1 CH2 L1 M1 M2 M3 B1 B2 B3 W1 W2 S1</b>		<b>M1 M2 M3 B1 B2 B3 W1 W2 W3 S1 CH1 CH2 L1</b>	
6. Maximise the value of existing and proposed investment in key tourism destinations.	<b>C1 HH1 P1 W3 M4 CH1 CH2 L1</b>		<b>M1 M2 M3 B1 B2 B3 W1 W2 W3 S1 CH1 CH2 L1</b>	

7. Facilitate regular access to visitor attractions and services along the corridor.	C1 HH1 P1 W3 M4 CH1 CH2 L1		M1 M2 M3 B1 B2 B3 W1 W2 W3 S1 CH1 CH2 L1	
8. Facilitate connections with public transport hubs which will provide access to the route from bus and rail.	C1 HH1 P1 W3 M4 CH1 CH2 L1		M1 M2 M3 B1 B2 B3 W1 W2 W3 S1 CH1 CH2 L1	
9. Provide frequent connections to towns, tourism facilities, natural amenities and other attractions in proximity to the route in collaboration with local communities and tourism providers.	C1 HH1 P1 W3 M4 CH1 CH2 L1		M1 M2 M3 B1 B2 B3 W1 W2 W3 S1 CH1 CH2 L1	
10. To generate ongoing economic benefits for rural and urban areas along the route.	C1 HH1 P1 W3 M4 CH1 CH2 L1		M1 M2 M3 B1 B2 B3 W1 W2 W3 S1 CH1 CH2 L1	
11. To maximise the number of potential commuter, leisure and tourist users.	C1 HH1 P1 W3 M4 CH1 CH2 L1		M1 M2 M3 B1 B2 B3 W1 W2 W3 S1 CH1 CH2 L1	
12. To facilitate the achievement of Smarter Travel targets for sustainable travel.	C1 HH1 P1 W3 M4 CH1 CH2 L1		M1 M2 M3 B1 B2 B3 W1 W2 W3 S1 CH1 CH2 L1	
13. To market and promote the cycleway internationally.	C1 HH1 P1 W3 M4 CH1 CH2 L1		M1 M2 M3 B1 B2 B3 W1 W2 W3 S1 CH1 CH2 L1	
14. To provide comprehensive route signage, mapping and distinct branding to international standards.	C1 HH1 P1 W3 M4 CH1 CH2 L1		M1 M2 M3 B1 B2 B3 W1 W2 W3 S1 CH1 CH2 L1	
15. To provide for maintenance of the route and monitoring of patterns of use.	C1 HH1 P1 W3 M4 CH1 CH2 L1		M1 M2 M3 B1 B2 B3 W1 W2 W3 S1 CH1 CH2 L1	

16. To create and economic stimulus for growth in the national and local economy, providing opportunities for new and existing businesses and communities.	C1 HH1 P1 W3 M4 CH1 CH2 L1		M1 M2 M3 B1 B2 B3 W1 W2 W3 S1 CH1 CH2 L1	
17. To implement the provisions detailed in Appendix I 'Environmental Management and Sustainable Development' to this Plan <sup>68</sup> .	C1 M1 M2 M3 M4 P1 HH1 B1 B2 B3 S1 W1 W2 W3 CH1 CH2 L1			
<p><b>Commentary:</b></p> <p>1. The evaluation against SEOs provided for this Objective reflects the combination of selected alternatives for the Plan and is consistent with the evaluation of these provided under Section 7 and at Table 7.4.</p> <p>2. Maximising the value of existing infrastructure would help to avoid some potentially adverse effects upon ecology (e.g. habitat loss/fragmentation, species disturbance/displacement and effects in riparian zones where new crossings of waters, if any, are progressed), water (e.g. adverse effects upon status of waters arising from changes in quality, flow and/or morphology at construction stage or increases in outflow at waste water treatment plants), soil (e.g. loss of hydrogeological and ecological function as a result of construction of associated facilities/infrastructure on greenfield lands) and human health (interactions with environmental vectors). Nonetheless there would be potential for adverse effects to arise, if unmitigated, as a result of, for example, new signage and route maintenance and use. As with other issues, detailed project level examination would be required, especially with respect to: maximising the value of existing infrastructure of canal towpaths, as the Royal and Grand Canals are designated as proposed Natural Heritage Areas (pNHAs) and traverse a number of candidate Special Areas of Conservation (cSACs); and state owned peatlands, due to the protection afforded by the Habitats Directive to certain peatlands.</p> <p>3. Securing permanent access would help to facilitate the achievement of the Plan's Vision – consequently the evaluation of this objective is consistent with the evaluation of the Vision provided under Section 8.5.2.</p> <p>4. The tourism experience referred here comprises the Greenway and associated development. The evaluation against SEOs provided for this Objective reflects the combination of selected alternatives for the Plan and is consistent with the evaluation of these provided under Section 7 and at Table 7.4.</p> <p>5. The evaluation against SEOs provided for this Objective – which provides for, inter alia, building the greenway reflects the combination of selected alternatives for the Plan and is consistent with the evaluation of these provided under Section 7 and at Table 7.4. In addition, designing it to best practice could have further benefits on the protection and management of environmental components.</p> <p>6 to 16 - All of these objectives would require development of the greenway and would also contribute towards other development. The evaluation against SEOs provided for these Objectives therefore reflects the combination of selected alternatives for the Plan and is consistent with the evaluation of these provided under Section 7 and at Table 7.4.</p> <p>17. The provisions contained within Plan Appendix I 'Environmental Management and Sustainable Development' are detailed under Section 9 of this report. These provisions would be likely to have beneficial effects on sustainable development and the protection and management of the environment. The provisions would also facilitate a cumulative contribution towards – in combination with other users and bodies – the achievement of the objectives of the regulatory framework for environmental protection and management.</p>				

<sup>68</sup> The detailed content of Plan Appendix I is reproduced in Section 9 of this report

## **Section 9 Mitigation Measures**

### **9.1 Introduction**

The development of the Greenway will result in various positive environmental effects including those relating to sustainable mobility and associated benefits with respect to reductions in greenhouse gas emissions, noise emissions and other emissions to air and human health.

Mitigation measures have been devised for inclusion into the Plan by the SEA and AA processes to ensure that the potentially significant adverse environmental effects of implementing the Plan will be avoided, reduced and, as fully as possible, offset.

Various environmental sensitivities and issues have been communicated to the Department through the SEA and Appropriate Assessment (AA) processes. By integrating all related recommendations into the Plan, the Department have ensured that the beneficial environmental effects of implementing the Plan will be maximised and that potential adverse effects will be avoided, reduced or offset.

### **9.2 Changes to the main Plan document**

A number of changes were recommended by the SEA and AA processes with respect to the main Plan document. These changes are flagged (in green) at Sections 2.1 and 8.5 of this report. The changes primarily relate to the addition of a commitment to comply with provisions detailed in a new Appendix to the Plan. This Appendix, entitled 'Environmental Management and Sustainable Development' has been recommended for inclusion in the Plan by the SEA and AA and its content is detailed under Section 9.3 below.

### **9.3 Addition of Plan Appendix I 'Environmental Management and Sustainable Development'**

In response to a recommendation by the SEA and AA processes, the Department added a new Appendix to the Plan document – Appendix I 'Environmental Management and Sustainable Development'. This appendix includes various provisions which will be complied at lower levels of decision making, including during project level Environmental Impact Assessment (EIA) and Appropriate Assessment (AA), as appropriate.

Two of the main provisions included in the Appendix are 'Environmental Constraints and Opportunity Mapping' and 'Corridor and Routeway Selection Process'. Other supporting, more detailed measures are also included.

The identification of route corridors and the refinement of the route line is likely to be informed by other considerations such as access to lands, perceptions of safety and attractiveness, costs and benefits and ease of maintenance.

Table 9.1 links the provisions contained in Plan Appendix I to relevant environmental components and potential adverse effects.

Provisions generally benefit multiple environmental components i.e. a measure providing for the protection of biodiversity, flora and fauna could beneficially impact upon the minimisation of flood risk and the protection of human health, for example.

**Table 9.1 Provisions contained in Plan Appendix I 'Environmental Management and Sustainable Development'**

Environmental Component	Potentially Significant Adverse effect, if unmitigated	Mitigating Provision included in Appendix I
All	Various below	<p><b>Key Measure: Environmental Constraints and Opportunity Mapping</b></p> <p>Environmental Constraints and Opportunity mapping will be prepared at project level as part of lower tier planning and environmental assessment. The mapping will allow the identification of the areas that are most sensitive with respect to the development of a greenway and those that are most suited. Opportunities and constraints will be overlain upon each other using a Geographical Information System, allowing for the identification of Opportunity Corridors. Planning/Environmental Assessment teams may augment the datasets to be included to ensure that they are appropriate to the parts of the project being considered and differentiation in the weighting of certain layers may be applied. Additional datasets including those detailed under Sections 4.3 to 4.10 of the SEA Environmental Report may be considered for inclusion in the mapping where relevant/appropriate or during further detailed refinement of the route. It is emphasised that the occurrence of constraints does not necessarily preclude development; rather it flags where specific mitigation measures may be required to ensure that adverse effects do not occur. Some components, such as a cultural heritage, for example, are included as both constraints and opportunities as these would be both attractive to greenway users and potentially sensitive to the construction of a greenway and associated development.</p> <p>The following datasets will be used by constraints mapping:</p> <ul style="list-style-type: none"> <li>• Candidate Special Areas of Conservation and Special Protection Areas;</li> <li>• Features of the landscape that provide linkages/connectivity to designated sites (e.g. watercourses, areas of semi-natural habitat such as linear woodlands etc)</li> <li>• Salmonid Waters;</li> <li>• Shellfish Waters;</li> <li>• Freshwater Pearl Mussel catchments;</li> <li>• Nature Reserves;</li> <li>• Natural Heritage Areas and proposed Natural Heritage Areas;</li> <li>• Areas likely to contain a habitat listed in annex 1 of the Habitats Directive (from CORINE land cover mapping);</li> <li>• Information on badger sets from the Department of Agriculture, Food and the Marine, relevant datasets from the National Biodiversity Data Centre and BirdWatch Ireland's 'Important Bird Areas';</li> <li>• Entries to the Record of Monuments and Places and Zones of Archaeological Potential;</li> <li>• Entries to the Record of Protected Structures;</li> <li>• Un-designated sites of importance to wintering or breeding bird species of conservation concern;</li> <li>• Architectural Conservation Areas; and</li> <li>• Relevant landscape designations.</li> </ul> <p>The following datasets will be used by opportunities mapping:</p> <ul style="list-style-type: none"> <li>• Proximity to settlements (400m<sup>69</sup> buffer to be applied around towns and villages);</li> <li>• Existing linear infrastructure (canal rights of way, river corridor rights of way, railway rights of way, motorways/roads, cycle networks along roads and through parks and tracks on state owned lands);</li> <li>• Entries to the Record of Monuments and Places;</li> <li>• Zones of Archaeological Potential;</li> <li>• Entries to the Record of Protected Structures;</li> <li>• Architectural Conservation Areas;</li> <li>• Relevant landscape designations; and</li> <li>• Slope<sup>70</sup>.</li> </ul>

<sup>69</sup> 400m is the typical accepted walking catchment in urban design e.g. referenced in Department of Transport, Tourism and Sport and Department of Environment, Community and Local Government (2013) *Design Manual for Urban Roads and Streets*

<sup>70</sup> Generally a maximum gradient of 3% is preferred where possible (steep inclines and difficult to climb and may exclude some users) and a minimum gradient of 0.5% (to facilitate drainage)

[Manton & Clifford (2011) 'Rural cycle route design' in *Proceedings of the ITRN2011 31<sup>st</sup> August – 1<sup>st</sup> September*, University College Cork]

All	Various below	<p><b>Key Measure: Corridor and Routeway Selection Process</b>  The following Corridor and Routeway Selection Process will be undertaken for the greenway as follows:</p> <p>Stage 1 Route Corridor Identification, Evaluation and Selection</p> <p>The environmental constraints and opportunities will assist in the identification of possible route corridor options.</p> <p>Potentially feasible corridors within which a greenway could be accommodated will be identified and these corridors assessed. The selection of the preferred route corridor will avoid constraints and meet opportunities to the optimum extent, as determined by the relevant specialists.</p> <p>In addition to the constraints identified above, site specific field data may be required to identify the most appropriate corridor.</p> <p>Stage 2 Routeway Identification, Evaluation and Selection</p> <p>Potentially feasible routeways within the preferred corridor will be identified and assessed. The selection of the preferred routeway will avoid constraints and meet opportunities to the optimum extent, as determined by the relevant specialists, taking into account project level information and potential mitigation measures.</p> <p>In addition to the constraint identified above, site specific field data may be required to identify the most appropriate route.</p> <p>In addition to environmental considerations, the identification of route corridors and the refinement of the route line is likely to be informed by other considerations such as access to lands, perceptions of safety and attractiveness, costs and benefits and ease of maintenance.</p>
All	Various below	<p><b>Regulatory framework for environmental protection and management</b>  The Department is committed to cumulatively contributing towards – in combination with other users and bodies – the achievement of the objectives of the regulatory framework for environmental protection and management. The Department will ensure, as appropriate, that plans, programmes and projects comply with EU Directives - including the Habitats Directive (92/43/EEC, as amended), the Birds Directive (2009/147/EC), the Environmental Impact Assessment Directive (85/337/EEC, as amended) and the Strategic Environmental Assessment Directive (2001/42/EC) – and relevant transposing Regulations.</p>
All	Various below	<p><b>Construction and Environmental Management Plan</b>  A Construction Environment Management Plan (CEMP) shall be prepared in advance of the construction of the project and implemented throughout. This plan shall incorporate relevant mitigation measures indicated in the SEA Environmental Report and any lower tier Environmental Impact Statement or Appropriate Assessment. CEMPs typically provide details of intended construction practice for the proposed development, including:</p> <ol style="list-style-type: none"> <li>location of the sites and materials compound(s) including area(s) identified for the storage of construction refuse,</li> <li>location of areas for construction site offices and staff facilities,</li> <li>details of site security fencing and hoardings,</li> <li>details of on-site car parking facilities for site workers during the course of construction,</li> <li>details of the timing and routing of construction traffic to and from the construction site and associated directional signage,</li> <li>measures to obviate queuing of construction traffic on the adjoining road network,</li> <li>measures to prevent the spillage or deposit of clay, rubble or other debris,</li> <li>alternative arrangements to be put in place for pedestrians and vehicles in the case of the closure of any public right of way during the course of site development works,</li> <li>details of appropriate mitigation measures for noise, dust and vibration, and monitoring of such levels,</li> <li>containment of all construction-related fuel and oil within specially constructed bunds to ensure that fuel spillages are fully contained; such bunds shall be roofed to exclude rainwater,</li> <li>disposal of construction/demolition waste and details of how it is proposed to manage excavated soil,</li> <li>a water and sediment management plan, providing for means to ensure that surface water runoff is controlled such that no silt or other pollutants enter local water courses or drains,</li> <li>details of a water quality monitoring and sampling plan.</li> <li>if peat is encountered - a peat storage, handling and reinstatement management plan.</li> <li>measures adopted during construction to prevent the spread of invasive species (such as Japanese Knotweed).</li> <li>appointment of an ecological clerk of works at site investigation, preparation and construction phases.</li> <li>details of appropriate mitigation measures for lighting specifically designed to minimise impacts to biodiversity.</li> </ol>



<b>All</b>	Various below	<b>Maintenance Plan</b> Lower tier assessments should examine the need for Maintenance Plans informed by environmental considerations to be prepared and implemented.
<b>Air and climatic factors</b>	None	<b>Maximising positive effects on sustainable mobility</b> In order to maximise positive effects on sustainable mobility (and associated benefits regarding greenhouse gas emissions, noise emissions and other emissions to air and human health), the Department will seek to, taking into account other factors such as environmental protection and planning considerations: <ul style="list-style-type: none"> <li>• Maximise the length of greenway developed along existing linear infrastructure, taking into account other factors such as environmental protection and planning considerations; and</li> <li>• Maximise the number of settlements within the greenway's catchment area.</li> </ul>
<b>Material Assets</b>	<ul style="list-style-type: none"> <li>- The need to provide adequate and appropriate water services (it is the function of Irish Water to provide for such needs)</li> <li>- Increases in waste levels</li> </ul>	<b>Construction Waste</b> All waste arising during the construction phase will be managed and disposed of in a way that ensures the provisions of the Waste Management Acts and regulations and any of the relevant Local Authorities Waste Management Plans. A Construction Waste Management Plan will be implemented to minimise waste and ensure correct handling and disposal of construction waste streams in accordance with the Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects, Department of the Environment, July 2006. <b>Waste Creation</b> Support the minimisation of waste creation and promote a practice of reduce, reuse and recycle where possible. <b>Waste Disposal</b> Safeguard the environment by seeking to ensure that residual waste is disposed of appropriately. <b>Irish Water</b> Co-operate with and support, as relevant and appropriate, Irish Water in its new role as the lead authority for water services.
<b>Population and human health</b>	<ul style="list-style-type: none"> <li>-Potential interactions if effects upon environmental vectors such as water are not mitigated</li> </ul>	<b>Human Health</b> Proposals for development shall be assessed in terms of, inter alia, potential impact on existing adjacent developments, existing land uses and/or the surrounding landscape. Where proposed development would be likely to have a significant adverse effect on the amenities of the area through pollution by noise, fumes, odours, dust, grit or vibration, or cause pollution of air, water and/or soil, the Department shall ensure the introduction of mitigation measures in order to eliminate adverse environmental impacts or reduce them to an acceptable operating level. Also see measures related to soil, water quality, air quality, flooding, waste water treatment and drinking water supply and quality.
<b>Biodiversity and flora and fauna</b>	<ul style="list-style-type: none"> <li>- Arising from both construction and operation of the greenway and associated facilities/infrastructure: loss of/damage to biodiversity in designated sites, ecological connectivity and non-designated habitats; and disturbance to biodiversity and flora and fauna</li> <li>- Habitat loss, fragmentation and deterioration, including patch size and edge effects</li> <li>- Disturbance and displacement of</li> </ul>	<b>Visitor Management Strategy</b> <ul style="list-style-type: none"> <li>• Research by Fáilte Ireland in the Burren has shown improved environmental outcomes (improved attainment of conservation objectives) in areas with visitor management strategies. A visitor management strategy during the implementation of the Greenway project could contribute positively to advancing the attainment of conservation objectives along and adjacent to the route, thereby benefitting the management of designated sites. Based on existing Waterways Ireland and Office of Public Works visitor management strategy practices, the Department will ensure that a visitor management strategy informs the implementation of the Greenway project.</li> </ul> <b>Protection of Biodiversity including Natura 2000 Network</b> Contribute, as appropriate, towards the protection of designated ecological sites including candidate Special Areas of Conservation (cSACs) and Special Protection Areas (SPAs); UNESCO World Heritage and UNESCO Biosphere sites; Ramsar Sites; Salmonid Waters; Shellfish Waters; Freshwater Pearl Mussel catchments; Flora Protection Order sites; Wildlife Sites (including Nature Reserves); Certain entries to the Water Framework Directive Register of Protected Areas; Natural Heritage Areas (NHAs) and proposed Natural Heritage Areas (pNHAs); Wildfowl Sanctuaries (see S.I. 192 of 1979); and Tree Preservation Orders (TPOs). The protection of natural heritage and biodiversity, including European sites that form part of the Natura 2000 network, will be implemented in accordance with relevant EU Environmental Directives and applicable National Legislation, Policies, Plans and Guidelines, including the following and any updated/superseding documents): <ul style="list-style-type: none"> <li>• EU Directives, including the Habitats Directive (92/43/EEC, as amended), the Birds Directive (2009/147/EC), the Environmental Liability Directive (2004/35/EC), the Environmental Impact Assessment Directive (85/337/EEC, as amended), the Water Framework Directive (2000/60/EC) and the Strategic Environmental Assessment Directive (2001/42/EC).</li> <li>• National legislation, including the Wildlife Act 1976, the European Communities (Environmental Impact Assessment) Regulations 1989 (SI No. 349 of 1989) (as amended), the Wildlife (Amendment) Act 2000, the European Union (Water Policy) Regulations 2003 (as amended), the Planning and Development Act 2000 (as amended), the European Communities (Birds and Natural Habitats) Regulations 2011 (SI No. 477 of 2011), the European Communities (Environmental Liability) Regulations 2008 and the Flora Protection Order 1999.</li> <li>• National policy guidelines, including the Landscape and Landscape Assessment Draft Guidelines 2000, the Environmental Impact Assessment Sub-Threshold Development Guidelines 2003, Strategic Environmental Assessment Guidelines 2004 and the Appropriate Assessment Guidance 2010.</li> <li>• Catchment and water resource management Plans, including River Basin District Management Plans 2009-2015.</li> <li>• Biodiversity Plans and guidelines, including Actions for Biodiversity 2011-2016: and Ireland's National Biodiversity Plan.</li> </ul>

	<p>protected species and coastal squeeze</p> <p>- Effects in riparian zones where new crossings of waters, if any, are progressed</p>	<ul style="list-style-type: none"> <li>• Ireland's Environment 2015 (EPA, 2016), and to make provision where appropriate to address the report's goals and challenges.</li> </ul> <p><b>Appropriate Assessment</b></p> <p>All projects and plans arising from this plan 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 competent authority has ascertained, based on scientific evidence, Screening for Appropriate Assessment, and a Stage 2 Appropriate Assessment where necessary, that:</p> <ol style="list-style-type: none"> <li>1. 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</li> <li>2. 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</li> <li>3. 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 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.</li> </ol> <p><b>Protection of Natura 2000 Sites</b></p> <p>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 Plan (either individually or in combination with other plans or projects<sup>71</sup>).</p> <p><b>Areas of geological interest</b></p> <p>Contribute towards, as appropriate, the protection and maintenance of the character, integrity and conservation value of features or areas of geological interest.</p> <p><b>NPWS &amp; Integrated Management Plans</b></p> <p>The Department shall endeavour to engage with the National Parks &amp; Wildlife Service to ensure Integrated Management Plans are prepared for all Natura sites and ensure that plans are fully integrated with the Greenway Plan and other plans, with the intention that such plans are practical, achievable and sustainable and have regard to all relevant ecological, cultural, social and economic considerations and with special regard to local communities.</p> <p><b>Coastal Zone</b></p> <p>Works undertaken in coastal areas will be in accordance with best practice and the Department will, as appropriate, support measures to protect the coast, the coastal edge and coastal habitats. The Department will seek, as appropriate, to contribute towards an Integrated Coastal Zone Management approach to ensure the conservation, management and protection of man-made and natural resources of the coastal zone.</p> <p><b>National Peatlands Strategy</b></p> <p>To implement any relevant recommendations contained in the Department of Arts, Heritage and the Gaeltacht's National Peatlands Strategy, when finalised.</p> <p><b>Biodiversity and Ecological Networks</b></p> <p>Support, as appropriate, the protection and enhancement of biodiversity and ecological connectivity, including woodlands, trees, hedgerows, semi-natural grasslands, rivers, streams, natural springs, wetlands, geological and geo-morphological systems, other landscape features, natural lighting conditions and associated wildlife where these form part of the ecological network and/or may be considered as ecological corridors or stepping stones in the context of Article 10 of the Habitats Directive.</p> <p><b>Waters</b></p> <p>Contribute towards, as appropriate, the protection of the water resources, including rivers, streams, wetlands, groundwater, coastal waters and associated habitats and species in accordance with the requirements and guidance in the EU Water Framework Directive 2000 (2000/60/EC), the European Union (Water Policy) Regulations 2003 (as amended), the relevant River Basin Management Plans and other relevant EU Directives, including associated national legislation and policy guidance (including any superseding versions of same). Support the application and implementation of a catchment planning and management approach to development and conservation, including the implementation of Sustainable Drainage System techniques for new development.</p> <p><b>Protection of Riparian Zone and Waterbodies and Watercourses</b></p> <p>Protect waterbodies and watercourses from inappropriate development, including rivers, streams, associated undeveloped riparian strips, wetlands and natural floodplains. This will include protection buffers in riverine, wetland and coastal areas as appropriate, especially between designated sites and cycle lanes and associated infrastructure.</p>
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<sup>71</sup> 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.

		<p><b>Non-Designated Sites</b> Recognise that nature conservation is not just confined to designated sites and acknowledge the need to protect non-designated habitats and landscapes and to conserve the biological diversity.</p> <p><b>Non-native invasive species</b> Support, as appropriate, the National Parks and Wildlife Service's efforts to seek to control the spread of non-native invasive species on land and water.</p>
<b>Water</b>	<p>- Potential interactions with the status of water bodies and entries to the WFD Register of Protected Areas, arising from:</p> <ul style="list-style-type: none"> <li>- Changes in quality, flow and/or morphology at construction stage (including of greenway and associated facilities/infrastructure); and</li> <li>- Increases in outflow at waste water treatment plants as a result of increases in numbers of visitors to settlements along the route.</li> <li>- Increase in the risk of flooding</li> </ul>	<p><b>Directives and Regulations</b> Contribute towards, as appropriate, the protection of existing and potential water resources, and their use by humans and wildlife, in accordance with the EU Water Framework Directive, the European Communities Environmental Objectives (Surface Waters) Regulations 2009 (SI No. 272 of 2009), the Groundwater Directive 2006/118/EC and the European Communities Environmental Objectives (groundwater) Regulations, 2010 (S.I. No. 9 of 2010) or any updated legislation.</p> <p><b>River Basin Management Plan</b> Support the implementation of the relevant recommendations and measures as outlined in the various relevant River Basin Management Plans, and associated Programmes of Measures, or any such plans that may supersede same during the lifetime of the Greenway Plan, as well as relevant recommendations contained in the Water Quality in Ireland 2010-2012 (EPA, 2015, and any updated/superseding document). The Department will seek to demonstrate that proposals for development would not have an unacceptable impact on the water environment, including surface waters, groundwater quality and quantity, river corridors and associated woodlands and coastal waters. Also the Department will have cognisance of, where relevant, the EU's Common Implementation Strategy Guidance Document No. 20 which provides guidance on exemptions to the environmental objectives of the Water Framework Directive.</p> <p><b>Bathing Water</b> Contribute towards the achievement of the requirements of the EU Bathing Water Directive and transposing Bathing Water Quality Regulations (SI No. 79 of 2008) and EU Mandatory Values, as a minimum, and EU Guide Values, where possible.</p> <p><b>Flood Risk Management Guidelines</b> Support, as appropriate, in co-operation with the OPW and planning authorities, the implementation of the EU Flood Risk Directive (2007/60/EC), the Flood Risk Regulations (SI No. 122 of 2010), the DEHLG/OPW publication <i>The Planning System and Flood Risk Management Guidelines</i> (2009) (and any updated/superseding legislation or policy guidance) and relevant outputs of the Catchment and Flood Risk Assessment and Management Studies (CFRAMS).</p> <p><b>Improvement and/or Restoration of Natural Flood Risk Management Functions</b> Support, subject to compliance with the Habitats and Birds Directives, the improvement and/or restoration of the natural flood risk management functions of flood plains.</p> <p><b>Surface Water Drainage and Sustainable Drainage Systems (SuDs)</b> Ensure that new development is adequately serviced with surface water drainage infrastructure and promote the use of Sustainable Drainage Systems as appropriate. Also see measures related to water quality and waste water treatment.</p>
<b>Soil</b>	<p>Adverse impacts on the hydrogeological and ecological function of the soil resource as a result of construction of associated facilities/infrastructure</p>	<p><b>Soil Protection and Contamination</b> The Department shall ensure that adequate soil protection measures are undertaken where appropriate. Adequate and appropriate investigations shall be carried out into the nature and extent of any soil and groundwater contamination and the risks associated with site development work, where brownfield development is proposed.</p>

<b>Cultural Heritage</b>	Potential effects on protected and unknown archaeology and protected architecture arising from construction activities (for both greenway and associated facilities/infrastructure)	<p><b>Archaeological Heritage</b> Contribute, as appropriate, towards the protection and sympathetic enhancement of archaeological heritage, in particular by implementing the relevant provisions of the Planning and Development Act 2000 (as amended) and the National Monuments Act, 1930 (as amended).</p> <p><b>Protection of Archaeological Sites</b> Contribute, as appropriate, towards the protection of archaeological sites and monuments and their settings, archaeological objects and underwater archaeological sites that are listed in the Record of Monuments and Places, in the ownership/guardianship of the State, or that are subject of Preservation Orders or have been registered in the Register of Historic Monuments. Contribute, as appropriate, towards the protection and preservation of archaeological sites, which have been identified subsequent to the publication of the Record of Monuments and Places.</p> <p><b>Consultation</b> Consult with the National Monuments Service of the Department of Arts Heritage and the Gaeltacht in relation to proposed developments adjoining archaeological sites.</p> <p><b>Underwater Archaeological Sites</b> Contribute, as appropriate, towards the protection and preservation of underwater archaeological sites in riverine, intertidal and sub-tidal locations.</p> <p><b>Architectural Heritage</b> Ensure the appropriate protection of architectural heritage by complying, as appropriate, with the legislative provisions of the Planning and Development Act 2000 (as amended) in relation to architectural heritage and the policy guidance contained in the Architectural Heritage Protection Guidelines 2011 (and any updated/superseding document).</p>
<b>Landscape</b>	Occurrence of adverse visual impacts and conflicts with the appropriate protection of statutory designations relating to the landscape	<p><b>Landscape Designations</b> Contribute, as appropriate, towards the protection of county and local level landscape designations and Special Amenity Area Order designations from incompatible developments. Proposals for development that have the potential to significantly adversely impact upon these designations shall be accompanied by an assessment of the potential landscape and visual impacts of the proposed development - demonstrating that landscape impacts have been anticipated and avoided to a level consistent with the sensitivity of the landscape and the nature of the designation.</p> <p><b>Coastal Areas and Seascapes</b> Protect the character and visual potential of the coast and conserve the character and quality of seascapes.</p> <p><b>National Landscape Strategy</b> Support, as appropriate, any relevant recommendations contained in the Department of Arts, Heritage and the Gaeltacht's National Landscape Strategy for Ireland.</p>

## 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. This section details the measures which will be used in order to monitor the likely significant effects of implementing the Greenway Plan.

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 5 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 Plan, if unmitigated.

Monitoring is an ongoing process and some of these targets and indicators will be further refined when the routeway and associated user catchments are defined at project level. The Monitoring Programme may also be updated to deal with specific environmental issues - including unforeseen effects - as they arise.

### 10.3 Sources

Measurements for indicators generally come from existing monitoring sources. Existing monitoring sources include those maintained by the relevant authorities e.g. planning authorities, the Environmental Protection Agency, the National Parks and Wildlife Service and the Central Statistics Office.

Where significant effects - including positive, negative, cumulative and indirect - have the potential to occur upon, for example, ecological networks or landscape designations 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 the Plan will be prepared on a multi-annual basis. This report should address the indicators set out below. The Department 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, in combination with the relevant authorities.

### 10.5 Thresholds

Thresholds at which corrective action will be considered include:

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

**Table 10.1 Selected Indicators, Targets and Monitoring Sources**

<b>Environmental Component</b>	<b>Selected Indicator(s)</b>	<b>Selected Target(s)</b>	<b>Source (Frequency)</b>
<b>Air and Climatic Factors</b>	C1: Percentage of population in catchment area travelling to and from work and school by non-mechanical means	C1: To contribute towards an increase in the percentage of the population in catchment area travelling to and from work and school by non-mechanical means	<ul style="list-style-type: none"> <li>CSO Population Data (every c. 5 years)</li> </ul>
<b>Material Assets</b>	M1: Number of new developments granted permission under the Greenway Plan and the land use plans of planning authorities which can be adequately and appropriately served with waste water treatment, if required	M1: All new developments granted permission under the Greenway Plan and the land use plans of planning authorities to be connected to and adequately and appropriately served by waste water treatment, if required	<ul style="list-style-type: none"> <li>Review of permissions granted and the SEA Monitoring Programme reports for the land use plans of relevant planning authorities (as required, monitoring reports published on various timescales and frequencies)</li> </ul>
	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 Plan	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 Plan	<ul style="list-style-type: none"> <li>EPA The Provision and Quality of Drinking Water in Ireland reports (multi-annual)</li> <li>EPA Remedial Action List (every quarter)</li> </ul>
	M3: Preparation and implementation of a construction and environmental management plan	M3: For one or more construction and environmental management plans to be prepared and implemented for development of the Greenway project	<ul style="list-style-type: none"> <li>Internal examination of compliance with SEA and lower tier assessment mitigation measures infrastructure (ongoing to project completion)</li> </ul>
	M4: Percentage length of the greenway aligned to existing linear infrastructure	M4: To maximise the length of greenway developed along existing linear infrastructure, taking into account other factors such as environmental protection and planning considerations	<ul style="list-style-type: none"> <li>Internal examination of length of greenway developed along existing linear infrastructure (ongoing to project completion)</li> </ul>
<b>Population and Human Health</b>	P1: Number of settlements within the greenway's catchment area	P1: To maximise the number of settlements within the greenway's catchment area, taking into account other factors such as environmental protection and planning considerations	<ul style="list-style-type: none"> <li>Internal examination of number of settlements within the greenway's catchment area infrastructure (ongoing to project completion)</li> </ul>
	HH1: Occurrence (any) of a spatially concentrated deterioration in human health arising from environmental factors resulting from development provided for by the Plan, as identified by the Health Service Executive and Environmental Protection Agency	HH1: No spatial concentrations of health problems arising from environmental factors as a result of implementing the Plan	<ul style="list-style-type: none"> <li>Consultations with EPA and Health Service Executive (at monitoring evaluation - see Section 10.4)</li> </ul>

Environmental Component	Selected Indicator(s)	Selected Target(s)	Source (Frequency)
<b>Biodiversity, Flora and Fauna</b>	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 Plan <sup>72</sup>	<ul style="list-style-type: none"> <li>Review of permissions granted and the SEA Monitoring Programme reports for the land use plans of relevant planning authorities (as required, monitoring reports published on various timescales and frequencies)</li> <li>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)</li> <li>Department of Arts, Heritage and the Gaeltacht's National Monitoring Report for the Birds Directive under Article 12 (every 3 years)</li> <li>Consultations with the NPWS (at monitoring evaluation - see Section 10.4)</li> </ul>
	B2: Percentage loss of functional connectivity without remediation resulting from development provided for by the Plan	B2: No significant ecological networks or parts thereof which provide functional connectivity to be lost without remediation resulting from development provided for by the Plan	<ul style="list-style-type: none"> <li>Review of permissions granted and the SEA Monitoring Programme reports for the land use plans of relevant planning authorities (as required, monitoring reports published on various timescales and frequencies)</li> <li>CORINE mapping resurvey (every c. 5 years)</li> <li>Review of EPA Ecological Network Mapping (if available)</li> </ul>
	B3i: Number of significant impacts on relevant habitats, species, environmental features or other sustaining resources in designated sites including Wildlife Sites resulting from development provided for by the Plan  B3ii: Number of significant impacts on the protection of listed species	B3i: Avoid significant impacts on relevant habitats, species, environmental features or other sustaining resources in designated sites including Wildlife Sites resulting from development provided for by the Plan  B3ii: No significant impacts on the protection of listed species	<ul style="list-style-type: none"> <li>Review of permissions granted and the SEA Monitoring Programme reports for the land use plans of relevant planning authorities (as required, monitoring reports published on various timescales and frequencies)</li> <li>Consultations with the NPWS (at monitoring evaluation - see Section 10.4)</li> </ul>

<sup>72</sup> 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.

Environmental Component	Selected Indicator(s)	Selected Target(s)	Source (Frequency)
<b>Soil</b>	S1: Soil extent and hydraulic connectivity	S1: To minimise reductions in soil extent and hydraulic connectivity	<ul style="list-style-type: none"> <li>Review of permissions granted and the SEA Monitoring Programme reports for the land use plans of relevant planning authorities (as required, monitoring reports published on various timescales and frequencies)</li> </ul>
<b>Water</b>	<p>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)</p> <p>W1ii: Mandatory and Guide values as set by the EU Bathing Water Directive and transposing Bathing Water Quality Regulations (SI No. 79 of 2008)</p>	<p>W1i: Not to cause deterioration in the status of any surface water or affect the ability of any surface water to achieve 'good status'<sup>73</sup> by 2015</p> <p>W1ii: To achieve - as a minimum - Mandatory values and, where possible, to achieve Guide values as set by the EU Bathing Water Directive and transposing Bathing Water Quality Regulations (SI No. 79 of 2008)</p>	<ul style="list-style-type: none"> <li>Review of permissions granted and the SEA Monitoring Programme reports for the land use plans of relevant planning authorities (as required, monitoring reports published on various timescales and frequencies)</li> <li>Data issued under the Water Framework Directive Monitoring Programme for Ireland (multi-annual)</li> <li>EPA <i>The Quality of Bathing Water in Ireland</i> reports</li> </ul>
	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"> <li>Review of permissions granted and the SEA Monitoring Programme reports for the land use plans of relevant planning authorities (as required, monitoring reports published on various timescales and frequencies)</li> <li>Data issued under the Water Framework Directive Monitoring Programme for Ireland (multi-annual).</li> </ul>
	W3: Compliance of development of greenway with the Flood Risk Management Guidelines	W3: For all greenway projects to comply with the Flood Risk Management Guidelines	<ul style="list-style-type: none"> <li>Review of permissions granted and the SEA Monitoring Programme reports for the land use plans of relevant planning authorities (as required, monitoring reports published on various timescales and frequencies)</li> </ul>

<sup>73</sup> Good status as defined by the WFD equates to approximately the following in the current national schemes of classification as set out by the EPA:

- *Q4* in the biological classification of *rivers*; and
- *Unpolluted status* in the Assessment of Trophic Status of Estuaries and Bays in Ireland (ATSEBI).



Environmental Component	Selected Indicator(s)	Selected Target(s)	Source (Frequency)
<b>Cultural Heritage</b>	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 significant adverse effects arising from development of the Greenway	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 significant adverse effects arising from development of the Greenway	<ul style="list-style-type: none"> <li>Review of permissions granted and the SEA Monitoring Programme reports for the land use plans of relevant planning authorities (as required, monitoring reports published on various timescales and frequencies)</li> <li>Consultation with Department of Arts, Heritage and the Gaeltacht (at monitoring evaluation - see Section 10.4)</li> </ul>
	CH2: Percentage of entries to the Records of Protected Structures and Architectural Conservation Areas and their context protected from significant adverse effects arising from development of the Greenway	CH2: Protect entries to the Records of Protected Structures and Architectural Conservation Areas and their context from significant adverse effects arising from development of the Greenway	<ul style="list-style-type: none"> <li>Review of permissions granted and the SEA Monitoring Programme reports for the land use plans of relevant planning authorities (as required, monitoring reports published on various timescales and frequencies)</li> <li>Consultation with Department of Arts, Heritage and the Gaeltacht (at monitoring evaluation - see Section 10.4)</li> </ul>
<b>Landscape</b>	L1: Number of unmitigated conflicts with the appropriate protection of statutory designations relating to the landscape, including those included in the Development Plans of planning authorities	L1: No unmitigated conflicts with the appropriate protection of statutory designations relating to the landscape, including those included in the Development Plans of planning authorities	<ul style="list-style-type: none"> <li>Review of permissions granted and the SEA Monitoring Programme reports for the land use plans of relevant planning authorities (as required, monitoring reports published on various timescales and frequencies)</li> </ul>

## Section 11 SEA Summary Table

Below is a summary table outlining how potential significant effects are linked to relevant mitigation measures and indicators for monitoring.

**Table 11.1 SEA Summary Table: Potentially Significant Effects, Mitigation Measures and Indicators for Monitoring**

Potentially Significant Effect	Mitigation Measure Reference(s) from the Plan	Primary Indicator(s) for Monitoring
All – see below	<ul style="list-style-type: none"> <li>Key Measure: Environmental Constraints and Opportunity Mapping</li> <li>Key Measure: Corridor and Routeway Selection Process</li> <li>Regulatory framework for environmental protection and management</li> <li>Construction and Environmental Management Plan</li> <li>Maintenance Plan</li> </ul>	All – see below
Contribution towards sustainable transport and associated impacts	<ul style="list-style-type: none"> <li>Maximising positive effects on sustainable mobility</li> </ul>	Percentage of population in catchment area travelling to and from work and school by non-mechanical means
The need to provide adequate and appropriate water services (it is the function of Irish Water to provide for such needs).	<ul style="list-style-type: none"> <li>Irish Water</li> </ul>	<p>Number of new developments granted permission under the Greenway Plan and the land use plans of planning authorities which can be adequately and appropriately served with waste water treatment, if required</p> <p>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 Plan</p>
Increases in waste levels	<ul style="list-style-type: none"> <li>Construction Waste</li> <li>Waste Creation</li> <li>Waste Disposal</li> </ul>	Preparation and implementation of a construction and environmental management plan
Maximise the use of existing linear infrastructure	<ul style="list-style-type: none"> <li>Key Measure: Environmental Constraints and Opportunity Mapping</li> <li>Key Measure: Corridor and Routeway Selection Process</li> </ul>	Percentage length of the greenway aligned to existing linear infrastructure
Developing the greenway close to existing settlements	<ul style="list-style-type: none"> <li>Key Measure: Environmental Constraints and Opportunity Mapping</li> <li>Key Measure: Corridor and Routeway Selection Process</li> </ul>	Number of settlements within the greenway's catchment area
Spatially concentrated deterioration in human health	<ul style="list-style-type: none"> <li>Human Health</li> </ul>	Occurrence (any) of a spatially concentrated deterioration in human health arising from environmental factors resulting from development provided for by the Plan, as identified by the Health Service Executive and Environmental Protection Agency

Potentially Significant Effect	Mitigation Measure Reference(s) from the Plan	Primary Indicator(s) for Monitoring
Arising from both construction and operation of the greenway and associated facilities/infrastructure: loss of/damage to biodiversity in designated sites, ecological connectivity and non-designated habitats; and disturbance to biodiversity and flora and fauna Habitat loss, fragmentation and deterioration, including patch size and edge effects; Disturbance and displacement of protected species and coastal squeeze Effects in riparian zones where new crossings of waters, if any, are progressed	<ul style="list-style-type: none"> <li>Visitor Management Strategy</li> <li>Protection of Biodiversity including Natura 2000 Network</li> <li>Appropriate Assessment</li> <li>Protection of Natura 2000 Sites</li> <li>Areas of geological interest</li> <li>NPWS &amp; Integrated Management Plans</li> <li>Coastal Zone</li> <li>National Peatlands Strategy</li> <li>Biodiversity and Ecological Networks</li> <li>Waters</li> <li>Protection of Riparian Zone and Waterbodies and Watercourses</li> <li>Non-Designated Sites</li> <li>Non-native invasive species</li> </ul>	<p>Conservation status of habitats and species as assessed under Article 17 of the Habitats Directive</p> <p>Number of significant impacts on relevant habitats, species, environmental features or other sustaining resources in designated sites including Wildlife Sites resulting from development provided for by the Plan</p> <p>Number of significant impacts on the protection of listed species</p> <p>Percentage loss of functional connectivity without remediation resulting from development provided for by the Plan</p>
Damage to the hydrogeological and ecological function of the soil resource	<ul style="list-style-type: none"> <li>Soil Protection and Contamination</li> </ul>	Soil extent and hydraulic connectivity
Adverse impacts upon the status and quality of water bodies, including bathing waters	<ul style="list-style-type: none"> <li>Directives and Regulations</li> <li>River Basin Management Plan</li> <li>Bathing Water</li> </ul>	<p>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)</p> <p>Mandatory and Guide values as set by the EU Bathing Water Directive and transposing Bathing Water Quality Regulations (SI No. 79 of 2008)</p> <p>Groundwater Quality Standards and Threshold Values under Directive 2006/118/EC</p>
Increase in the risk of flooding	<ul style="list-style-type: none"> <li>Flood Risk Management Guidelines</li> <li>Improvement and/or Restoration of Natural Flood Risk Management Functions</li> <li>Surface Water Drainage and Sustainable Drainage Systems (SuDs)</li> </ul>	Compliance of development of greenway with the Flood Risk Management Guidelines
Effects on entries to the Record of Monuments and Places and other archaeological heritage	<ul style="list-style-type: none"> <li>Archaeological Heritage</li> <li>Protection of Archaeological Sites</li> <li>Consultation</li> </ul>	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 significant adverse effects arising from development of the Greenway
Effects on entries to the Records of Protected Structures, Architectural Conservation Areas and other architectural heritage	<ul style="list-style-type: none"> <li>Underwater Archaeological Sites</li> <li>Architectural Heritage</li> </ul>	Percentage of entries to the Records of Protected Structures and Architectural Conservation Areas and their context protected from significant adverse effects arising from development of the Greenway
Occurrence of adverse visual impacts and conflicts with the appropriate protection of statutory designations relating to the landscape	<ul style="list-style-type: none"> <li>Landscape Designations</li> <li>Coastal Areas and Seascapes</li> <li>National Landscape Strategy</li> </ul>	Number of unmitigated conflicts with the appropriate protection of statutory designations relating to the landscape, including those included in the Development Plans of planning authorities