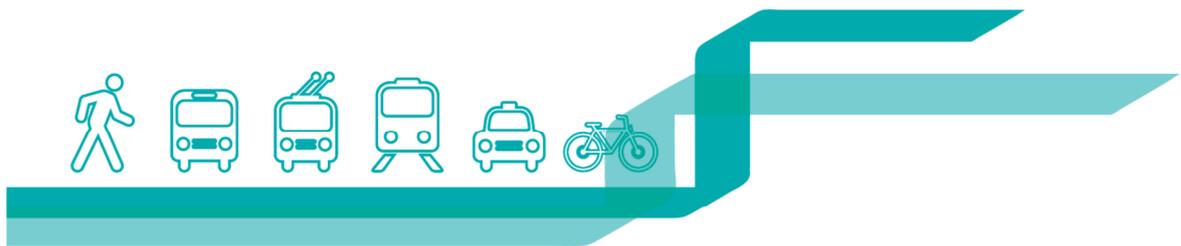


# NTA Integrated Implementation Plan 2013-2018



## SEA Environmental Report

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# 1. Introduction

This chapter provides a brief overview of the Environmental Report. It should be noted at the very outset, that the bulk of the methodology and knowledge base for this SEA and Environmental Report was derived directly from the work undertaken for the SEA of the Draft Transport Strategy for the Greater Dublin Area, also prepared by the NTA, in 2011. The following elements are common to both plans, and therefore a similar SEA process was undertaken:

- The spatial scope relates to the Greater Dublin Area;
- The main thrust of the plan relates to investment in transport infrastructure;
- The plan will also contain a number of policy and integration measures; and
- The plan will impact on a similar set of plans and programmes of other agencies.

The SEA of the Draft Transport Strategy went through an extensive consultation process at a number of stages. It was also subject to a rigorous peer review as part of a wider review of SEA in Ireland. For these reasons, it was deemed appropriate and prudent that it should form the basis for the approach to this SEA.

## 1.1 Purpose of This Document

This document has been prepared as part of the Strategic Environmental Assessment (SEA) of the NTA's short-term 6-year Integrated Implementation plan (the "Plan"). The Plan will set out a programme of investment in transport in the GDA over the period 2013-2018.

The requirement to undertake an SEA is based on Directive 2001/42/EC ('SEA Directive') which was transposed into Irish Law under two sets of Irish Regulations. These regulations require that the plans and programmes of certain sectors, including transport, which are likely to have significant effects on the environment, be subject to environmental assessment. This process is called SEA.

An Environmental Report is a legal requirement of the SEA process and it provides key information on the process and its findings, such as the likely significant effects on the environment as a result of implementing a plan or programme.

This draft Environmental Report is being published for public consultation alongside a draft Implementation Plan. It will also be formally submitted to a range of statutory and non-statutory public organisations, bodies and authorities and their views and observations on the documents will be invited. Following the conclusion of the consultation process, all submissions received will be reviewed and then a Final Implementation Plan will be prepared and sent to the Minister for Transport, Tourism and Sport for consideration.

## 1.2 Structure of this Report

The remainder of this draft Environmental Report is structured as follows:

- **Chapter 2** provides an overview of the Integrated Implementation Plan. In this section, the plan policies and measures are presented;
- **Chapter 3** presents a summary of the key stages of the SEA process. A brief summary of the legislative basis for SEA in Ireland is also provided;

- **Chapter 4** presents an overview of the scope of the SEA and a summary of the SEA Scoping stage;
- **Chapter 5** outlines the overall SEA methodology and the approach to the assessment;
- **Chapter 6** identifies the key policy, plans and programmes of relevance to the Plan and to the SEA process. Details are provided in Appendix A;
- **Chapter 7** presents the baseline environmental conditions in the GDA, highlights some of the relevant environmental issues and outlines the implications for the plan. Supplementary detail is provided in Appendix B.1 to B.4;
- **Chapter 8** contains a summary of the environmental assessment of the alternatives considered as part of the development of the Plan;
- **Chapter 9** presents an identification and evaluation of the likely significant effects on the environment from the implementation of the Plan;
- **Chapter 10** contains proposed mitigation measures which have been developed to address any effects on the environment;
- **Chapter 11** presents a draft monitoring programme;
- **Appendix A** provides detail on the key policy, plans and programmes of relevance to the Plan and to the SEA process; and
- **Appendix B** contains supplementary information on the Baseline Chapter.

## 2. The Integrated Implementation Plan

### 2.1 Overview

The Government published its capital programme in November 2011 titled *“Infrastructure and Capital Investment 2012 – 2016: Medium Term Exchequer Framework”*. That programme set out the Government’s capital investment priorities over the five years of the programme. The total public transport investment set out in the programme is €1,428 million over the period 2012 to 2016.

Under that capital investment framework, the amount allocated to public transport infrastructure in the GDA is €715 million to the end of 2016. Within this plan there may be yearly adjustments to reflect Government decisions, particular expenditure timings and other factors.

While the Government’s *“Infrastructure and Capital Investment 2012 – 2016”* sets out investment for the years to the end of 2016, it is required that this Plan will extend to a six year period, to the end of 2018. In line with the provisions of Section 13(4) of the Dublin Transport Authority Act 2008, guidance has been obtained from the Department of Transport, Tourism and Sport indicating that projected figures may be used for proposed capital expenditure for 2017 and 2018. While no commitment has been given in relation to funding in those later years, the Plan has assumed a similar level of funding for those years to that proposed for 2016.

Accordingly, the Authority has prepared this Plan on the basis of the following funding profile:

	2013	2014	2015	2016	2017	2018	Total
<b>Funding (€ m)</b>	<b>140.6</b>	<b>149.2</b>	<b>145</b>	<b>150</b>	<b>150</b>	<b>150</b>	<b>884.8</b>

### 2.2 Overall Programme Approach

The Infrastructure Investment Programme forms an integral and central part of the plan. Over the six year period of the plan, close to €900 million will be invested in public transport infrastructure and related cycling/walking infrastructure. The overall Infrastructure Investment Programme is divided into four sub-programmes. These are:

1. Bus;
2. Light Rail;
3. Heavy Rail; and
4. Integration Measures and Sustainable Transport.

The table below indicates the total Infrastructure Investment Programme sub-divided into its constituent sub-programmes.

<b>Sub-Programme</b>	<b>2013 (€m)</b>	<b>2014 (€m)</b>	<b>2015 (€m)</b>	<b>2016 (€m)</b>	<b>2017 (€m)</b>	<b>2018 (€m)</b>
Bus	43.6	39.0	40.0	39.0	42.0	42.0
Light Rail	27.3	30.2	43.5	75.0	65.0	65.0
Heavy Rail	32.1	41.7	26.0	10.5	15.0	15.0
Integration Measures & Sustainable Transport	37.6	38.3	35.5	25.5	28.0	28.0
<b>Yearly Totals</b>	<b>140.6</b>	<b>149.2</b>	<b>145</b>	<b>150</b>	<b>150</b>	<b>150</b>

Each of these sub-programmes is addressed in turn in the following sections, with details provided on the projects intended for delivery under that sub-programme.

## 2.3 Main Components of the Plan

### 2.3.1 Integration of Land Use and Transport

While the statutory responsibility for land use rests with the local authorities, transport planning can only be successful if it is integrated with land use planning. Transport policies aimed at reducing both the need to travel and distances travelled can only be delivered if there are complementary spatial policies locating future populations closer to their employment, education and shopping opportunities. The location of schools, jobs, shops, local services and other land uses relative to the location of residential development, is a critical determinant of the need to travel, the distances to be travelled and the modes of travel chosen.

Additionally, provision of high capacity public transport and walking and cycling infrastructure can only be effective if matched with appropriate development patterns which support and facilitate their use. Accordingly, it is vital that land use planning and transport planning are fully aligned, both spatially and over time. Land use policy, as such, will comprise a key determinant in transport investment decisions at both the strategic and local level over the lifetime of this plan.

As part of this plan, the Authority promotes and seeks to implement the following:

- High volume, trip intensive developments, such as offices and retail, should primarily be focussed into Dublin City Centre and the larger Regional Planning Guidelines higher order centres within the GDA;
- The role and function of district centres and neighbourhood centres should be supported and promoted in order to exploit the levels of accessibility offered by public transport, walking and cycling at these locations. This relates to providing for an appropriate scale of development in these centres which would not undermine development potential in Dublin City Centre or the larger Regional Planning Guidelines higher order centres;

- Except in limited circumstances such as specific physical requirements, trip intensive developments or significant levels of development should not occur in locations not well served by high quality public transport;
- All non-residential development proposals in the GDA should be subject to maximum parking standards. These should be set by the local authorities in the GDA in consultation with the Authority and should vary spatially on the basis of centrality and the level of public transport provision;
- In locations where the highest intensity of development occurs, an approach that caps car parking on an area-wide basis should be applied; and
- For all major employment developments and all schools, travel plans should be conditioned as part of planning permissions and be carried out in a manner consistent with existing guidance
- Residential development located proximate to high capacity public transport should be prioritised over development in less accessible locations in the GDA;
- To the extent practicable, residential development should be carried out sequentially, whereby lands which are, or will be, most accessible by walking, cycling and public transport – including infill and brownfield sites – are prioritised; and
- The strategic transport function of national roads, including motorways, should be maintained by limiting the extent of development that would give rise to the generation of local car traffic on the national road network
- Planning at the local level should promote walking, cycling and public transport by maximising the number of people living within walking and cycling distance of their neighbourhood or district centres and public transport services;
- New development areas should be fully permeable for walking and cycling and the retrofitting of walking and cycling facilities should be undertaken where practicable in existing neighbourhoods in order to give competitive advantage to these modes;
- Development proposals should exploit opportunities to enhance the effectiveness of transport investment;
- The density of employment development should maximise the potential for walking, cycling and public transport;
- Where possible, developments should provide for filtered permeability which provides for walking, cycling, public transport and private vehicle access but which restricts or discourages private car through trips; and
- To the extent practicable, proposals for right of way extinguishments should only be considered where these do not result in more circuitous trips for local residents accessing public transport or local destinations.

These principles are consistent with, and may be regarded as the extension of, prevailing national transport and planning policy. These are also given statutory footing via the Regional Planning Guidelines, Development Plans and Local Area Plans of the seven Local Authorities in the GDA. It is not the intention of this SEA to assess the impact of each of these principles in a specific spatial manner, as this is done via the Development Plan and Local Area Plan processes which zone land. Instead, this SEA will assume these principles as intrinsic to the plan and will assess them in an appropriately broad and generalised manner.

### 2.3.2 Bus

The proposals in relation to Bus investment are encompassed in four investment areas:

- Bus Fleet Investment;
- Bus Stop and Shelter Provision;
- General Bus Network Improvements; and
- Bus Rapid Transit Schemes.

The area of most concern for the SEA is Bus Rapid Transit as this will require investment in infrastructure and will potentially have significant environmental impacts. It is proposed to progress the development of three BRT routes as part of this Plan. These are:

- Swords / Airport to City Centre;
- Blanchardstown to N11 (UCD); and
- Clongriffin to Tallaght.

It is envisaged that planning consent will be achieved for each of these projects in the early years of the Plan. Subsequent implementation of these schemes will be progressed on an incremental basis in accordance with available funding.

### 2.3.3 Light Rail

The proposals in relation to light rail investment are encompassed in two investment areas:

- Luas Cross City; and
- Fleet and Network Enhancement.

The Luas Cross City scheme is the main focus of the SEA as it requires significant intervention in the environment of the City Centre and north west inner suburbs. This is the largest public transport project to be constructed during the period of the Plan. This scheme comprises a broadly north / south Luas line extending from St. Stephen's Green in the south to connect to the Maynooth Rail line at Broombridge in Cabra at its northern end. With an overall length of approximately 5.6km, it will have thirteen stops along its route, including serving the major new DIT campus at Grangegorman.

Luas Cross City was approved by An Bord Pleanála in 2012 and construction commenced in June 2013. It has been through the Environmental Impact Assessment and Appropriate Assessment processes and, while it has been incorporated into this plan and SEA process, it is not the intention to revisit the merits and demerits of this project, rather to highlight those aspects which contribute to the assessment of the plan's impact on the environment.

### 2.3.4 Heavy Rail

The proposals in relation to heavy rail investment are encompassed in seven investment areas:

- City Centre Resignalling Project;
- Phoenix Park Tunnel Link;
- Level Crossing Programme;
- Ticketing / Revenue Systems;

- Central Traffic Control;
- Station Improvement / Other Enhancements Programme
- Network Development.

Of these proposals, the critical ones in terms of environmental impact are the re-use of the Phoenix Park tunnel, construction of new stations and some network development projects. Enhancements such as the City Centre Resignalling programme and other developments in terms of the promotion of rail will be taken into account by the generalised assessment of the impact of increased rail frequency and associated potential increases in passenger numbers.

Under the current configuration of the Irish Rail network, rail services entering Dublin City on the Kildare line terminate in Heuston Station. These services include a mix of inter-city trains from Cork, Waterford, Limerick and Galway, as well as commuter services from Kildare, Carlow, Newbridge and Portlaoise. Heuston station lies some 3km from the commercial core of the city and in excess of 3km from the area of highest density employment in the south eastern quadrant of the city. Hence, passengers currently using the Kildare line and wishing to access the commercial core of the city by public transport must transfer to bus or to the Luas Red line at Heuston station.

A rail connection between Heuston and Connolly stations currently exists and the completion of the City Centre Resignalling project will provide extra train paths through Connolly Station. It is intended to utilise a portion of these additional train paths to facilitate the use of the Phoenix Park Tunnel for the running of through services from the Kildare line to Connolly and through to Grand Canal Dock. The completion of those major signalling works, together with other engineering works, is anticipated to allow commuter services to commence using the Phoenix Park Tunnel Link in late 2015 or early 2016.

New stations are to be opened at Heuston West – as part of the reopening of the Phoenix Park Tunnel, Kishoge and Pelletstown. Kishoge has already been constructed. Pelletstown is currently at planning application stage and Heuston West will be designed and planned as the tunnel project develops.

Given the funding needs of other investment areas in the overall programme, it is unlikely that any significant network development will be completed during the period of the Plan. However, planning and design work will be progressed on certain rail projects with a view to those projects being available for commencement should additional funding become available for such schemes.

The relevant projects are:

- Electrification and Resignalling from Malahide to Balbriggan; and
- Maynooth Line Electrification and Resignalling.

The electrification and resignalling of the northern line between Malahide and Balbriggan, together with a turnback facility at Balbriggan, would enable DART services to be extended northwards to Balbriggan. This is an integral project of the overall DART Underground programme.

In relation to the Maynooth Line Electrification and Resignalling project, this is a scheme which is also associated with the DART Underground programme. It would see the electrification of the Maynooth line from Connolly to Maynooth. Taken together, these improvements would allow through running of DART trains from Maynooth to Greystones on the South-Eastern Line, which is

a fundamental feature of the revised DART service following the completion of DART Underground.

### 2.3.5 Integration and Sustainable Transport Investment

This investment sub-programme spans the provision of walking, bus and cycling infrastructure to safety improvements and sophisticated traffic control systems. It also includes supporting initiatives for public transport customers such as travel information provision. Through all its elements it supports the use of the overall public transport system and enhances the accessibility, convenience, and attractiveness of the public transport offering as well as directly providing for cycling and walking.

The main objective is to encourage the continuation of modal shift to cycling, walking and public transport. Within that overall objective, key priorities include:

- Cycling/Walking:
  - Development of regional cycle network, including both commuting and recreational routes;
  - Provision of cycle parking facilities, including at public transport interchange points;
  - Expansion of bike sharing schemes;
  - Pedestrianisation and pedestrian improvement schemes; and
  - Pedestrian / cycle / tourist signage.
  
- Traffic Management:
  - Traffic management schemes;
  - Development of bus/cycling/walking transport corridors;
  - Traffic re-routing projects in urban areas, to enhance facilities for shoppers, pedestrians and cyclists; and
  - Traffic control and information schemes, including public transport prioritisation systems; and
  - Development of parking facilities.
  
- Safety;
  - Removal of accident black spots;
  - Provision of pedestrian crossings; and
  - Junction safety improvement schemes.
  
- Integration Projects:
  - Real Time Passenger Information ;
  - Integrated Ticketing ;
  - Integrated Journey Planner; and
  - Other transport Information systems.

### 2.3.6 An Integrated Service Plan

Over time and as the impacts of investment in the transport system are felt, the aim is that less people will use private motorised transport to access goods, services and amenity and more people will use public transport. An integrated service plan, identifying the key objectives and outputs to be pursued by the Authority in relation to public passenger transport services, is essential to influence decision-making and secure this modal shift.

An integrated network of public transport services needs to provide:

- Appropriate coverage of the area by the public transport network, so that an increasing proportion of the conurbation lives within a reasonable walking distance of public transport;
- Frequent, direct, easily understood and comfortable services to major travel destinations throughout the region, offering predictability to users throughout their daily activities; and
- Easy to use payment systems and information systems both to plan and to react en-route to unforeseen events.

This particular element of the plan will only lead to significant impacts on the environment in combination with the infrastructural elements outlined above and, as such, its assessment is implicit in the assessment of the plan in its entirety.

### 2.3.7 Integration and Accessibility

The Authority will seek the following improvements in terms of integration and accessibility:

- Expansion of Leap card;
- Further Real Time Passenger Information roll-out;
- On-going Journey Planner development;
- Restructuring of Fares;
- Optimising Interchange; and
- Further development of the Public Transport Brand.

These particular elements of the plan will only lead to significant impacts on the environment in combination with the infrastructural elements outlined above and, as such, their assessment is implicit in the assessment of the plan in its entirety.

## 3. Integrated Implementation Plan SEA: Process Overview and Progress to Date

### 3.1 Introduction

This chapter provides an overview of the requirements of the SEA process. Information is presented on the legal basis and legislative framework of SEA in Ireland, the key stages in the SEA process, and a brief summary of the key findings and outcomes of the Integrated Implementation Plan SEA process completed to date.

### 3.2 SEA Legislation and Guidance

#### 3.2.1 Legislation

SEA is defined as a formal, systematic evaluation of the likely significant environmental effects of implementing a plan or programme, before a decision is made to adopt the plan or programme. The legal basis of SEA in Ireland is Directive 2001/42/EC (Assessment of the Effects of Certain Plans and Programmes on the Environment), more commonly known as the 'SEA Directive'.

Article 1 of the SEA Directive notes that "the objective of this Directive is to provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes with a view to promoting sustainable development."

Directive 2001/42/EC came into force in Ireland in July 2004. The Directive has been transposed into Irish Law through two sets of Regulations:

- European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations 2004 (S.I. 435 of 2004); and
- Planning and Development (Strategic Environmental Assessment) Regulations 2004 (S.I. 436 of 2004).

Amending Regulations have been signed into Irish Law in 2011:

- European Communities (Environmental Assessment of Certain Plans and Programmes) (Amendment) Regulations 2011, (S.I. No. 200 of 2011), amending the European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations 2004 (S.I. 435 of 2004) to include town and country planning and land use plans among the plan/programme types to which SEA applies.
- Planning and Development (Strategic Environmental Assessment) (Amendment) Regulations 2011 (S.I. 201 of 2011), amending the Planning and Development (Strategic Environmental Assessment) Regulations 2004 (S.I. 436 of 2004) - sets thresholds as to the level of LAP to which SEA applies, and sets out the procedure for making a determination re same.

This SEA is being carried out in accordance with S.I. 435 of 2004, as amended, which is focused on a range of sectoral plans and programmes such as transport, water, waste, forestry and energy, whereas S.I. 436 of 2004 is focused on the assessment of various land use plans in Ireland such as City and County Development Plans and Local Area Plans.

### **3.2.2 Guidance**

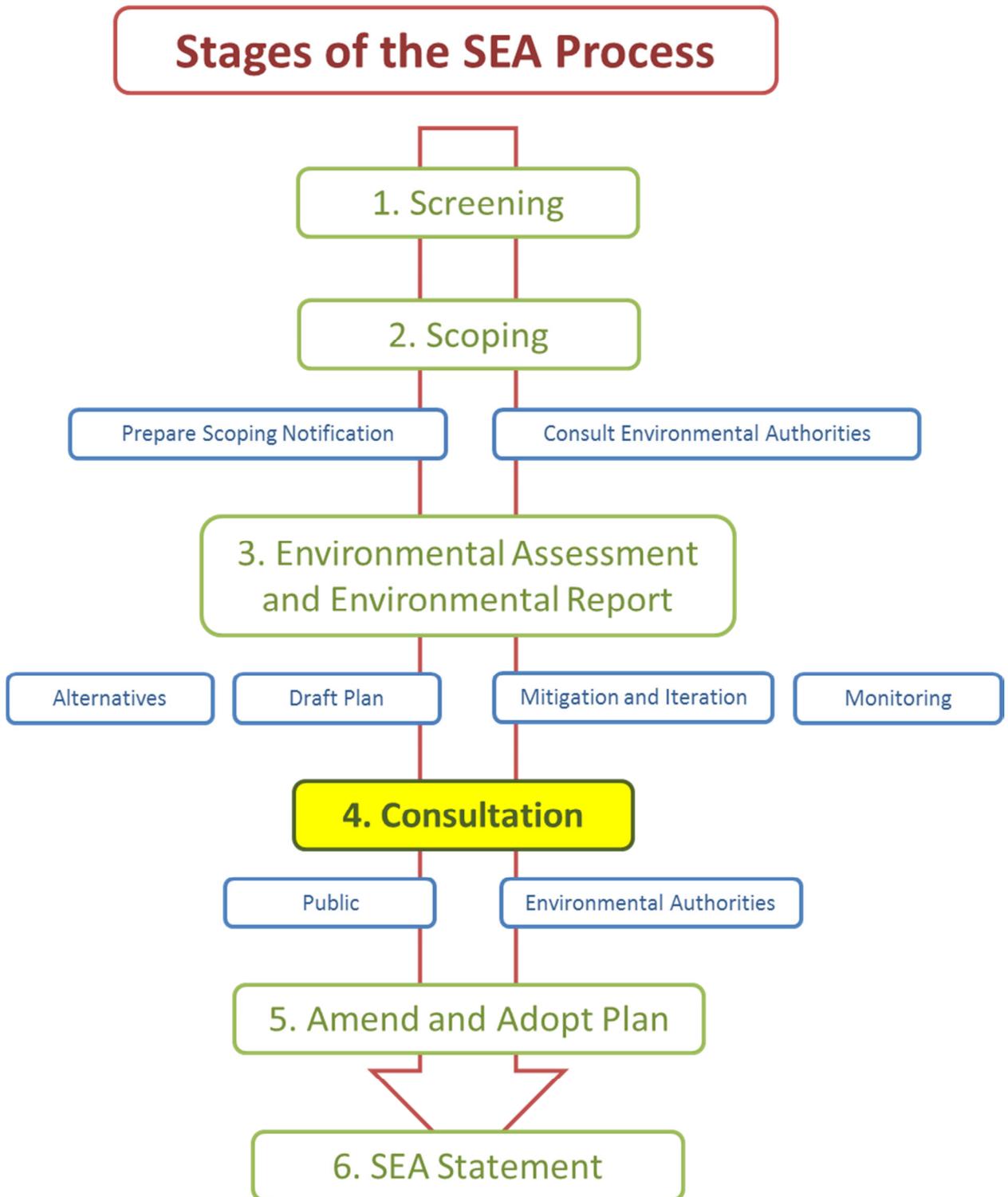
The SEA process for the Plan also considered SEA guidance provided by the Environmental Protection Agency (EPA): Development of Strategic Environmental Assessment (SEA) Methodologies for Plans and Programmes in Ireland (2003). This guidance document provided advice on the overall SEA process as well as specific advice on the SEA scoping process, preparation of the Environmental Report and on monitoring. Where the EPA SEA guidance was specifically used, it is referenced in this draft Environmental Report.

The Department of Environment, Community and Local Governments' SEA guidelines (Implementation of SEA Directive (2001/42/EC): Assessment of the Effects of Certain Plans and Programmes on the Environment Guidelines for Regional Authorities and Planning Authorities, 2004) were also used in this SEA process. Although these specific guidelines are focused on SEA of Regional Development Plans, County Development Plans and Local Area Plans, useful information and advice was provided on the SEA process generally.

## **3.3 SEA Process Summary**

The SEA process can be divided into six broad stages and these are summarised below. A brief summary of each of these stages in the SEA process is then provided. The current stage is highlighted in yellow.

### 3.3.1 Key stages in the SEA Process



### 3.3.2 SEA Screening

This is the first stage in the process and is the mechanism for determining whether and SEA is required for a plan or programme. The basis for this decision is whether significant effects on the environment are likely to arise as a result of the implementation of the plan or programme.

The Screening exercise concluded that the view of the NTA is that the Implementation Plan is likely to set a framework for the development consent of projects of a significant scale and is therefore likely to have significant environmental effects within the Plan area. The NTA, therefore, made a determination that a full SEA of the proposed Plan is required in keeping with a purposive interpretation of Directive 2001/42/2004.

### 3.3.3 SEA Scoping

The second stage in the SEA process is the determination of the key issues, which are to be addressed in the Environmental Report. Scoping ensures that the SEA is focused on the relevant environmental issues and examines issues at the appropriate level of detail.

To ensure that the SEA of the Plan was adequately scoped, a Scoping Notification was circulated to the relevant designated environmental authorities. In this case, the authorities comprised the Environmental Protection Agency (EPA), Department of the Environment, Community and Local Government (DECLG), Department of Arts, Heritage and the Gaeltacht (DAHG), Department of Agriculture, Forestry and the Marine (DAFM), and Department of Communications, Energy and Natural Resources (DCENR) so that they could make submissions on the scope of the SEA. A comprehensive submission was received 8 October 2012 from the EPA.

### 3.3.4 Environmental Assessment and Environmental Report

A two-part assessment was undertaken by the NTA as follows:

1. Alternatives Assessment; and
2. Draft Integrated Implementation Plan.

#### Alternatives Assessment

Alternatives were derived on the basis of how different approaches could be taken to achieve the objectives of the Plan. The overarching consideration was that they must be reasonable, particularly in terms of finance. These alternatives were subject to environmental assessment and the results of this can be found in Chapter 8. These results led to the development of the draft Integrated Implementation Plan.

#### Draft Integrated Implementation Plan Assessment

This stage involves the environmental assessment of Draft Integrated Implementation Plan. The results of this assessment can be found in Chapter 9.

The Environmental Report is the key document in the SEA process and it outlines, amongst other items, the likely significant effects on the environment and details the process through which mitigation measures to address the significant adverse effects have been considered and recommended (Chapter 10). In summary, the key objectives of an Environmental Report are to:

- identify, describe and evaluate the likely significant effects on the environment of implementing a plan or programme. or modifying a plan; and
- identify the reasonable alternatives, taking account of the objectives and the geographical scope of the plan or programme or modification.

### 3.3.5 Habitats Directive Assessment (HDA)

There is a requirement to undertake an assessment under the Habitats Directive (92/42/EEC) as the Plan may have the potential to significantly impact on the integrity of a SAC or SPA within the GDA. The screening assessment is a provisional assessment to determine if a more detailed assessment is required.

This assessment is in addition to the SEA process. However, there are links between both processes and the results of the HDA screening are considered and referenced in Chapter 9.

### 3.3.6 Consultation

Consultation on the draft Plan and the Environmental Report with the relevant designated environmental authorities and the public is required before the Plan can be approved by the Minister for Transport, Tourism and Sport. Both the draft plan and the Environmental Report must be publicly available for comment. Comments and submissions may be made on either, or both, documents by the designated environmental authorities and the public, including any public authority or body.

### 3.3.7 Consideration of Submissions

It is a formal requirement of the SEA Directive that all consultation submissions received must be considered and the Plan amended, if deemed necessary. Any amendments to the Plan may warrant the identification of additional significant environmental effects. If such additional significant effects do arise, then there is likely to be a need to develop additional mitigation measures.

Following consideration of the consultation submissions received and associated amendments to the Plan, the NTA may begin the formal plan adoption procedures.

### 3.3.10 Preparation of the SEA Statement

Following the formal adoption of the plan by the Minister for Transport, Tourism and Sport, the next stage in the SEA process is the preparation of the SEA Statement, which is a document summarising how environment considerations have been integrated into the adoption of the plan. It also summarises how the consultation submissions were considered and if these resulted in the draft plan being amended.

### 3.3.11 Monitoring

Monitoring of the implementation of the plan will be undertaken up until its review. The overall objective of this stage is to monitor the significant environmental effects of the implementation of the plan so as “to identify at an early stage unforeseen adverse effects and to be able to undertake appropriate remedial action” (Article 10/1; SEA Directive 2001/42/EC). The monitoring programme for the Plan can be found in Chapter 11.

## 4. Scope of the Integrated Implementation Plan SEA

### 4.1 Introduction

This chapter outlines the scope of the Integrated Implementation Plan SEA. Scoping identifies the key issues to be addressed in the Environmental Report. It ensures that the process is focussed on the relevant issues and carries out the assessment at the appropriate level. A short summary of scoping is presented in this chapter. The summary of the scope is presented under three headings: spatial, temporal and technical.

### 4.2 Overview of the Scoping Process for SEA

#### 4.2.1 SEA Scoping

The second stage in the SEA process is the determination of the key issues, which are to be addressed in the Environmental Report. Scoping ensures that the SEA is focused on the relevant environmental issues and examines issues at the appropriate level of detail.

To ensure that the SEA of the plan was adequately scoped, a Scoping Report was circulated to the relevant designated environmental authorities:

- Environmental Protection Agency (EPA)
- Department of the Environment, Community and Local Government (DECLG)
- Department of Arts, Heritage and the Gaeltacht (DAHG),
- Department of Agriculture, Food and Marine (DAFM),
- Department of Communications, Energy and Natural Resources (DCENR)

This enabled the authorities to make submissions on the scope of the SEA. A comprehensive submission was received on 8th October 2012 from the EPA.

The spatial scope of the plan corresponds to the jurisdictions of the 7 Local Authorities of the Greater Dublin Area – Dublin City, South Dublin, Dún Laoghaire-Rathdown, Fingal, Meath, Kildare and Wicklow. Approximately 40% of the population of Ireland live in the GDA. It is also the location of a range of services of national importance including a major port and airport, the seat of central government and a number of universities. Given the potential for impacts beyond the boundary of the GDA, the spatial scope of the SEA will take into account the area of influence of the plan. As such, the effects of the plan on the environment outside the boundary of the GDA will be highlighted where relevant.

The temporal scope will be from 2013-2018.

In relation to the technical issues that will be considered by the SEA and included in the environmental report, the range of environmental headings considered was based on the list of environmental topics as specified in S.I. 435 of 2004. These are as follows:

- Biodiversity, flora & fauna;
- Landscape;

- Population;
- Human health;
- Water;
- Air quality;
- Climatic factors & climate change;
- Soil & geology;
- Material assets;
- Cultural heritage (incl. architectural and archaeological heritage), and
- The inter-relationships between the above.

In identifying the likely significant effects on the environment of the Integrated Implementation Plan, the SEA will address positive and negative effects; direct and indirect effects; temporary and permanent effects; short, medium and long-term effects; and secondary, cumulative and synergistic effects.

The table below provides a list of environmental issues relevant to short term transport plan. It is these types of potential environmental issues that will require consideration in undertaking the SEA of the Integrated Implementation Plan. This helps to set a context for the identification of baseline environmental issues, the consideration of the interactions with other plans and programmes and the formulation of SEA Objectives.

**Table 4.1 Potential issues to be considered in the Integrated Implementation Plan SEA**

<b>Environmental topic</b>	<b>Potential effects</b>
Biodiversity, flora & fauna	<p>Potential adverse effects on the integrity of designated sites and on flora &amp; fauna due to land take for new or improved transport infrastructure.</p> <p>Potential effects on sensitive habitats from transport emissions.</p> <p>Potential beneficial effects through ecological enhancement interventions along new and existing transport corridors.</p> <p>Potential risk of disturbance to sensitive species due to noise and lighting along transport corridors.</p>
Landscape	<p>Potential adverse effects on the integrity of designated sites and landscape character due to land take for new or improved transport infrastructure.</p> <p>Potential beneficial effects on landscape and amenity arising from reductions in the presence of heavy traffic flows.</p> <p>Potential adverse effects arising from increases in traffic flows.</p> <p>Potential beneficial effects on townscape and amenity arising from reductions in traffic flows</p> <p>Potential beneficial effects through landscape enhancement interventions along new and existing transport corridors (these measures can be combined with ecological enhancement measures).</p> <p>Potential positive and negative effects on landscape due to changes in land use policy</p>

<b>Environmental topic</b>	<b>Potential effects</b>
Population	<p>Potential effects on the access to employment/economic, social and educational opportunities from transport projects and policy recommendations.</p> <p>Potential effects on people with physical mobility limitations from transport projects and policy recommendations.</p> <p>Potential community severance.</p>
Human health	<p>Effects arising from changes in physical fitness and the extent to which people are encouraged to walk and cycle on a regular basis.</p> <p>Effects arising from changes in transport-related accidents.</p> <p>Effects arising from changes in accessibility to employment/economic, social and educational opportunities which are key determinants of health.</p> <p>Potential effects on the quality of life arising from the Integrated Implementation Plan.</p>
Water	<p>Effects on surface water, groundwater, coastal and transitional systems from transport interventions.</p> <p>Potential compatibilities and conflicts with the policies and programmes in relevant River Basin Management Plans (RBMPs) under the Water Framework Directive (WFD) from transport projects and policy recommendations.</p> <p>Changes in the risk of flooding</p>
Air quality	<p>Potential beneficial effects on air quality arising from reductions in traffic flows.</p> <p>Potential adverse effects may arise in areas where there are any traffic flows increases.</p> <p>Potential effects on vegetation from transport emissions arising from increases and reductions in traffic flows.</p> <p>Potential benefits from the promotion of renewable fuel sources.</p>
Climatic factors & climate change	<p>Potential reductions in CO<sub>2</sub> from reductions in traffic flows</p> <p>Potential adverse effects may arise in areas where there are any traffic increases.</p>
Soil & geology	<p>Potential negative effects due to developments on important and vulnerable soil resources</p> <p>Potential adverse effects on the integrity of designated geological and geomorphological sites due to land take for new or improved transport infrastructure.</p> <p>Potential for increases in coastal erosion due to measures in the Integrated Implementation Plan.</p> <p>Potential positive impact on coastal protection.</p>
Material assets	<p>Potential positive and negative effects on public assets</p> <p>Potential positive effects regarding greater reuse of brownfield sites for development</p> <p>Potential reductions in fuel consumption from reductions in traffic flows contributing to an improved fuel security position.</p>

<b>Environmental topic</b>	<b>Potential effects</b>
Cultural heritage (incl. architectural and archaeological heritage)	Potential adverse effects on designated and important sites from land take for new or improved transport infrastructure.  Potential beneficial effects on setting of cultural heritage features (townscapes, Conservation Areas, heritage buildings etc.) arising from reductions in the presence of heavy traffic flows. Potential adverse effects may arise should traffic flows increase.

It can be seen from the table that there is potential for likely significant effects in relation to all of the environmental topics in the SEA Directive when developing the NTA Integrated Implementation Plan. On this basis, it is not intended to scope out any environmental topics at this early stage of the SEA. All the environmental topics set out in the table above will be covered in the SEA.

The walking and cycling sub-programme should be noted at this point. This programme will be given expression primarily via the GDA Cycle Network Plan, which was on public display at the time of writing. The proposed Cycle Network Plan consists of an “Urban Network”, an “Inter-urban Network” and a “Green Route Network”. The latter will comprise the focus of the environmental assessment.

These Greenway routes make up a combination of existing and proposed routes that are largely off road providing amenities as well as routes to be used for commuting and other purposes. Greenways are generally located in scenic areas, along coastal paths or riverine environments and due to the nature and location of these sites are most likely to have significant environmental effects.

Many of the proposed greenways are made up of existing amenity areas but will require upgrading, ranging from minor works to the provision of new pedestrian and cycle facilities. Other Greenways may be new routes and will provide an amenity that did not exist prior to the cycleway. There is potential for greenways to have environmental impacts through construction of new pathways or by providing a new or improved access to sites or habitats that may be sensitive to disturbance and visitor pressures.

The details of the proposed network are fully dealt with in the Strategic Environmental Assessment and Appropriate Assessment of the GDA Cycle Network Plan, which is ongoing at the time of writing. While it would be inappropriate to address the environmental impacts of the Cycle Network Plan in detail in this Environmental Report, the potential impacts in-combination with this Plan are highlighted where appropriate.

### **4.3 Habitats Directive Assessment**

A Habitats Directive Assessment of the Plan has been undertaken. This considered if potential significant effects on Natura 2000 sites in the GDA are likely. The assessment process included consultation with National Parks and Wildlife Service (NPWS) and the results have been made available to the public in the accompanying Natura Impact Statement.

### **4.4 SEA Objectives**

The SEA of the Plan is primarily an objectives-led exercise. The SEA Objectives are used in the initial environmental assessment of the proposed Measures contained in the Plan. The final SEA

Objectives are presented in Table 4.2 below, together with additional context information about each objective and associated indicators.

Information on the environmental assessment methodology and the actual use of the SEA Objectives is provided in Chapter 5.

**Table 4.2 Final SEA Objectives**

<b>SEA Topic</b>	<b>Proposed SEA Objective</b>	<b>Comments</b>	<b>Potential indicators</b>
Biodiversity, flora & fauna	1. To avoid impacts on the integrity of European Conservation Sites (SACs and SPAs) and nationally designated sites (NHAs).	This Objective is focused on the protection of Natura 2000 sites (SACs and SPAs). The focus is on significant impacts, as this is the threshold used in the Habitats Directive with regards to European-designated ecological sites.	Proximity to and land take from designated sites - derived from GIS analysis.
	2. To support the strategic objectives of the National Biodiversity Plan.	The strategic objectives are to mainstream biodiversity in the decision making process; to substantially strengthen the knowledge base for conservation, management and sustainable use of biodiversity; to increase awareness and appreciation of biodiversity and ecosystem services; to conserve and restore biodiversity and ecosystem services in the wider countryside; to conserve and restore biodiversity and ecosystem services in the marine environment; to expand and improve on the management of protected areas and legally protected species; to substantially strengthen the effectiveness of international governance for biodiversity and ecosystem services	Qualitative assessment against overall goal and key objectives in the National Biodiversity Plan.
	3. To minimise impacts on locally-important biodiversity in the Greater Dublin Area.	The focus for this Objective is local-level biodiversity. The basis for this Objective is that ecological sites can still be of value, even if they are not designated	Qualitative assessment of effects on wider biodiversity.
Landscape	4. To avoid or, where infeasible, minimise impacts on designated and protected landscapes and conservation areas.	This Objective is focused on the protection of designated and protected landscapes and landscape features such as Natural Heritage Areas. Also included are Conservation Areas, primarily in urban or townscape settings.	Proximity to and land take from designated landscapes and related features - derived from GIS analysis.
	5. To minimise impacts on undesignated landscape resources (townscapes, seascapes, riverscapes, general landscapes).	This Objective addresses the various undesignated landscape features and areas, which make up the majority of the GDA.	Qualitative assessment on undesignated landscapes and features.

SEA Topic	Proposed SEA Objective	Comments	Potential indicators
Population	6. To increase accessibility to economic and employment opportunities, in particular for those who are physically, economically or socially disadvantaged within the GDA.	This Objective is focused on increasing access to employment opportunities, especially for those who are physically, economically or socially disadvantaged.	A qualitative assessment of the likely potential impacts arising from changes to the transport network.
	7. To increase accessibility to public, cultural and community services, in particular, for those who are physically, economically or socially disadvantaged within the GDA.	The purpose of this Objective is to increase accessibility to the full range of education facilities, health and medical care facilities and services, public offices and community facilities, professional services, cultural and leisure facilities and retail and service areas.	A qualitative assessment of the likely potential impacts arising from changes to the transport network.
Human health	8. To contribute to improvements to transport-related aspects of quality of life for residents, workers and visitors to the GDA.	This Objective is concerned with the relevant aspects of quality of life (QoL) of the residents, workers and visitors in the GDA. Potential positive impacts include reduced travel times; more attractive and pleasant journeys through reduced overcrowding and delays and by providing modern transport infrastructure and reducing travel/commuting stress with more frequent, safer and reliable transport services.	A qualitative assessment of the likely potential impacts arising from changes to the transport network.
	9. To support the objectives of the Environmental Noise Directive in relation to transport-related noise.	The overall objective of this Directive is to provide a basis for developing EU-wide measures to reduce noise emitted by the major sources of noise, in particular road and rail vehicles and infrastructure, aircraft, outdoor and industrial equipment.	A qualitative assessment of the likely potential impacts arising from changes to the transport network.
	10. To minimise safety risks to human health arising from transport related activity.	This Objective is designed to address the risks to human safety and health from transport activities and infrastructure. This relates primarily to road traffic Accidents.	A qualitative assessment of the likely potential impacts arising from transport improvements.
	11. To support health improvements and benefits from transport-related activities.	This Objective is focused on potential health improvement and benefits, which could arise from transport-related activities, principally promoting and encouraging greater uptake of walking and cycling.	A qualitative assessment of the likely potential impacts from changes to the transport network.

SEA Topic	Proposed SEA Objective	Comments	Potential indicators
Water	12. To support the forthcoming River Basin Management Plans (RBMP) and Programme of Measures (POM). Where these are not available, the objective is to support the aims and objectives of the Water Framework Directive (WFD).	The fundamental objective of the WFD aims at maintaining 'high status' of waters where it exists, preventing any deterioration in the existing status of waters and achieving at least 'good status' in relation to all waters by 2015.	Qualitative assessment of likely conflicts with relevant elements of RBMPs and POMs.
	13. To minimise impacts to surfacewater systems and resources.	The aim of this Objective is to minimise impacts to surfacewater systems and resources, such as rivers, streams, lakes and surfacewater abstraction points.	Qualitative assessment of potential effects on surfacewater resources.
	14. To minimise impacts to groundwater systems and resources.	The purpose of this Objective is to minimise impacts to groundwater systems and resources, such as vulnerable aquifers and groundwater abstraction points.	Qualitative assessment of potential effects on groundwater resources.
	15. To minimise impacts to coastal systems and resources.	The purpose of this Objective is to minimise impacts to coastal systems and resources.	Qualitative assessment of potential effects on coastal resources.
	16. To minimise impacts to transitional systems and resources.	The purpose of this Objective is to minimise impacts to transitional systems and resources, such as estuarine and wetland systems.	Qualitative assessment of potential effects on transitional resources.
	17. To minimise the risk of flooding.	This Objective is focused on minimising the risk of flooding.	Qualitative assessment of potential effects on flood risk.
Air	18. To reduce negative air quality impacts arising from transport-related emissions.	The focus of this Objective is on reducing negative air quality impacts from transport-related emissions, such as traffic emissions (e.g. PM <sub>10s</sub> , NO <sub>2</sub> , etc.)	A qualitative assessment of the likely potential impacts arising from changes to transport provision.
	19. To ensure compliance with the Air Framework Directive and associated daughter Directives (and the transposing Regulations in Ireland).	This Objective is focused on the EU Air Quality Directives, which set down air quality standards in Ireland and the other member states for a wide variety of pollutants. The various thresholds in the Directives have been transposed into Irish Law via appropriate Irish Regulations.	A qualitative assessment of the likely potential impacts arising from transport improvements.

SEA Topic	Proposed SEA Objective	Comments	Potential indicators
Climatic factors & climate change	20. To contribute to the reduction of greenhouse gas emissions arising from transport-related activities.	The overall purpose of this Objective is to reduce the production of greenhouse gas emissions arising from transport-related activities and to reduce the overall carbon footprint of transport in the GDA. The Objective is focused on the fact that all forms of mechanised transport produce greenhouse gases and consume fossil fuels either directly or indirectly. Where there is a need to travel, the Plan will seek to cater for this need in an environmentally optimal manner. This would imply a higher percentage use of walking and cycling and public transport services such as bus, Luas, and DART. These more sustainable forms of travel have lower greenhouse gas production levels per capita and lower fossil fuel consumption levels in comparison to equivalent private-car based journeys.	A qualitative assessment of the likely potential impacts.
Soil & geology	21. To minimise negative impacts on important and vulnerable soils resources used for agricultural purposes.	This Objective is focused on the conservation of important and vulnerable soils which are used for agricultural production.	Qualitative assessment of effects on important agricultural soil resources.
	22. To reduce consumption of construction material and generation of construction waste as part of transport infrastructure projects.	This Objective is designed to reduce the overall need for new construction materials and to reduce the generation of construction wastes as part of the construction of transport infrastructure projects. Ways to achieve this Objective include greater reuse of demolition and construction materials reuse and recycling.	Qualitative assessment of construction resources saved due to recycling and reuse.
	23. To avoid or, where infeasible, minimise impacts to protected and designated geological and geomorphological sites.	The focus of this Objective is to minimise impacts to protected and designated geological and geomorphological sites, which may arise as a result of transport infrastructure projects.	Proximity to and land take from designated sites.

SEA Topic	Proposed SEA Objective	Comments	Potential indicators
Material assets	24. To protect public assets and infrastructure.	This Objective covers a wide-range of 'on the ground' resources, such as public open spaces, parks and recreational areas; public buildings and services; utility infrastructure (electricity, gas, telecommunications, water supply, wastewater infrastructure etc.). These may be impacted by the development of future transport infrastructure projects.	Qualitative assessment of effects on important material assets.
	25. To reduce the fossil fuel demand by the transport sector.	This Objective is focused on the rising demand for fossil fuels for transport-related proposals and activities. Fossil fuels are an important non-renewable asset from an economic, environmental and social point of view for the State. Reducing fossil fuel consumption will make a contribution to addressing the issue of fuel security, a significant issue as Ireland is heavily dependent on the importation of fossil fuels.	A qualitative assessment of the likely potential impacts from changes in travel behaviour.
	26. To assist with the reuse and regeneration of brownfield sites.	The basis for this Objective is to promote the reuse and regeneration of previously developed brownfield sites instead of undeveloped greenfield sites, especially those close to key transport corridors and large centres of population in the GDA.	Qualitative assessment on the potential to increase brownfield reuse.
Cultural heritage (inc. architectural and archaeological heritage)	27. To avoid or, where infeasible, minimise impacts to designated cultural, architectural and archaeological resources.	This Objective is focused on minimising impacts to designated cultural, architectural and archaeological resources (e.g. Protected Structures, Areas of Architectural Heritage, Areas of High Archaeological Potential), which may be affected by transport infrastructure projects or policy recommendations in the Plan.	Proximity to and land take from designated sites.

## **5. SEA Methodology**

### **5.1 Introduction**

This chapter explains the SEA methodology and assessment techniques used in the environmental assessment of the Integrated Implementation Plan. An overview of the overall approach and methodology is first provided. Greater detail on the SEA Objectives is then set out. This is followed by the assessment methodology for the Plan alternatives and the draft Plan.

### **5.2 Overall Approach and SEA Methodology**

This SEA uses an 'objectives-led' approach. The concept behind this approach is that the plan is tested to determine if it meets the objectives of the SEA. There are 27 objectives which were derived from the SEA of the Draft NTA Transport Strategy for the Greater Dublin Area. These cover all the environmental topics as specified in the SEA Regulations.

The three Alternatives were assessed using the SEA Objectives and the results are summarised in Chapter 8. The environmental assessment of the Alternatives is focused on the performance differences between each of the options, so that the various advantages and disadvantages of each can be highlighted and then considered in the development of the draft Plan.

The SEA Objectives were then used to assess the likely significant effects on the environment of the draft Plan. Following the identification and assessment of the likely significant effects on the environment (Chapter 9), mitigation measures were developed and these are reported in Chapter 10 of this Environmental Report.

## 5.3 SEA Objectives

Chapter 4 reports on the scope of the SEA, including the 27 SEA Objectives. In order to undertake the assessment, some of these objectives will rely on qualitative assessment data, and some on GIS-based data.

The various stages of the environmental assessment establish the significance of the effects on the environment through determining whether an Alternative or the draft Plan will alter the baseline environment and what the outcome of this change will be in relation to the SEA Objectives. The SEA also establishes whether the intervention is moving in a positive direction, a negative direction or has no effect (i.e. it is neutral).

To assist with the clarity of reporting, a seven-point rating scale is used at all levels of the assessment:

- 3 Major negative effect (significant);
- 2 Moderate negative effect (significant);
- 1 Minor negative effect (not significant);
- Neutral;
- + 1 Minor positive effect (not significant);
- + 2 Moderate positive effect (significant); and
- + 3 Major positive effect (significant).

A +/- 3 rating signifies a significant positive/negative effect and one that requires careful consideration and attention. For example, a clear breach of an international or national standard (e.g. air quality standards and limits) or legislation (e.g. significant effects under the Habitats Regulations) is typically representative of a – 3 rating. A +/-3 rating might also be applied to a lower magnitude impact but one that is arising across a very large spatial area.

A +/-2 rating also indicates a significant effect, but one that is of lower magnitude and significance.

A +/-1 rating is applied to minor effects which are not considered significant in the context of the regional study area as a whole. This rating does not imply that the effects are unimportant and that they should not be considered; only that they are likely to result in a smaller deviation from the baseline situation.

In addition to the rating scale, commentary text will also be provided, highlighting the key conclusions to emerge from the application of the SEA Objectives. This commentary will also outline the full range of effects i.e. if they are short-term, long-term, cumulative or in-combination.

## 5.4 Assessment of Integrated Implementation Plan Alternatives

Each of the Plan Alternatives is assessed as a stand-alone set of proposals against the 27 individual SEA Objectives. The assessment provides an overall rating on the - 3 to + 3 scale as outlined in Section 5.3 above for each of the Alternatives under each of the SEA Objectives. This approach allows the key performance differences (positive and negative) between the 3 Alternatives to be highlighted.

While the assessment focuses on the collective effect of all the proposals in each Plan Alternative, where there are specific proposals which have a significant impact this is drawn out in the reporting. For example, where a specific proposal results in important positive or negative impacts (such as impacting on Natura 2000 sites); this is highlighted in the matrix.

## **5.5 Assessment of Draft Integrated Implementation Plan**

The draft Plan is also assessed using the SEA Objectives. The focus of this stage of the environmental assessment is on the identification of likely significant effects on the environment of implementing the draft Plan against a Do-Minimum scenario.

The full range of likely significant effects on the environment of the draft Plan is identified. This is one of the key requirements of an Environmental Report. Mitigation measures are then developed to address the identified likely significant effects and these mitigation measures are integrated into the iterative process of plan refinement. The results of this stage of the assessment are presented in tabular format.

The results of the environmental assessment can be found in Chapter 9 and mitigation measures are presented in Chapter 10.

## **5.6 Consultation and Finalisation of the Plan**

Following consultation with the public and statutory environmental authorities, all submissions received will be considered and the draft Plan and the draft Environmental Report revised, where necessary.

The Final Integrated Implementation Plan will then be published and will be accompanied by a document which summarises the consultation process.

The Final Plan document will then be presented to the Minister for Transport for formal approval after which the SEA Statement will be prepared. Monitoring of the environmental impacts of the Plan will be on-going.

## 6. Plan and Programme Context

### 6.1 Introduction

This chapter of the draft Environmental Report provides an overview of the legislation, policies, plans and programmes (PPPs) that have been considered as part of the SEA. The consideration and review of the PPPs listed below was undertaken for two main objectives:

1. to assist the development of the Plan;
2. to input in the SEA scoping process and guide the development of SEA Objectives.

### 6.2 Overview of Legislation, Policy, Plan and Programme Context

The consideration of the PPP context was undertaken in a hierarchical manner as follows:

- International & European legislation and policy;
- National legislation and policy;
- Regional policy;
- County policy;
- Northern Ireland policy; and
- Other land use and transport policy.

The plans and programmes that have been considered as part of this SEA are presented according to this hierarchy below:

#### 6.2.1 International & European legislation and policy:

- United Nations (UN) Convention on Biological Diversity;
- UN Kyoto Protocol and the Second European Climate Change Programme (ECCP II);
- EU Birds Directive (Council Directive 79/409/EEC) and EU Habitats Directive (Council Directive 92/43/EEC);
- Water Framework Directive (2000/60/EC);
- Air Quality Framework Directive (1996/62/EC);
- Assessment and Management of Environmental Noise Directive (2002/49/EC);
- EU Sustainable Development Strategy (2006);
- Floods Directive (2007/60/EC); and
- Directive on the Protection of Groundwater against Pollution and Deterioration (2006/118/EC).

#### 6.2.2 National legislation and policy;

- Infrastructure and Capital Investment 2012-16: Medium Term Exchequer Framework
- Dublin Transport Authority Act (2008);
- Smarter Travel – A Sustainable Transport Future – A New Transport Policy for Ireland 2009 – 2020 (2009);
- Ireland’s First National Cycle Policy Framework (2009);
- Design Manual for Urban Roads and Streets (2013);

- National Cycle Manual (2012);
- Road Safety Strategy (2013-2020);
- Guidelines for Planning Authorities on Sustainable Residential Development in Urban Areas (Cities, Towns and Villages) (2009);
- Sustainable Rural Housing – Guidelines for Planning Authorities (2005);
- Retail Planning Guidelines for Planning Authorities (2005);
- National Spatial Strategy 2002-2020 (2002);
- Transport Access for All – The Sectoral Plan for Accessible Transport under the Disability Act 2005 (2008 Edition);
- National Climate Change Strategy 2007 – 2012 and emerging actions (2007);
- Delivering a Sustainable Energy Future for Ireland – The Energy Policy Framework 2007 – 2020 (2007);
- National Energy Efficiency Action Plan for Ireland 2007 – 2020 (2007);
- Sustainable Development – A Strategy for Ireland (1997);
- National Biodiversity Plan (2011);
- Bioenergy Action Plan for Ireland (2007);
- National Action Plan for Social Inclusion 2007 – 2016 (2007);
- National Hazardous Waste Management Plan 2008 – 2012 (2008);
- The Planning System and Flood Risk Management – Guidelines for Planning Authorities (2009);
- Water Services Act 2007;
- Wildlife Act of 1976 & 2000;
- European Communities (Water Policy) Regulations of 2003 (SI 722 of 2003);
- European Communities Environmental Objectives (Surface waters) Regulations of 2009 (SI 272 of 2009);
- European Communities Environmental Objectives (Groundwater) Regulations of 2010 (SI 9 of 2010); and
- Water Pollution Acts 1977 to 1990.

### **6.2.3 Regional legislation and policy:**

- Regional Planning Guidelines for the Greater Dublin Area 2010-2022 (2010);
- Greater Dublin Strategic Drainage Study (2005);
- Greater Dublin Water Supply Strategic Study – Meeting Dublin’s Needs into the 21<sup>st</sup> Century (1996); and
- Retail Strategy for the Greater Dublin Area 2008 – 2016 (2008).

### **6.2.4 County legislation and policy**

- The County Development Plans of the seven GDA local authorities;
- Strategic Development Zones Planning Schemes;
- Local Area Plans;

### **6.2.5 Northern Ireland policy;**

- Shaping Our Future – Regional Development Strategy for Northern Ireland, 2025 (2001);
- Regional Transport Strategy for Northern Ireland 2002-2012 (2002);

## 6.3 Summary

As such, the Plan will be influenced by European legislation and national and regional plans and programmes. It will also interact with and influence other regional, county, local and other plans and programmes.

The following central points emerge from the policy, plan and programme review:

- The transport sector has been responsible for the largest increase in greenhouse gas emissions. Transport-related emissions therefore need to be addressed;
- Land use planning is one of the key factors which influences transport and travel patterns in Ireland. Future growth and development needs to be undertaken in a sustainable manner which considers the subsequent transport patterns. In particular, the consolidation of development into higher-order urban centres in accordance with the Regional Planning Guidelines settlement hierarchy is key to reducing the need to travel.
- Development Plans and Local Area Plans may benefit from the adoption of a sequential approach to development whereby lands which are most accessible by public transport are prioritised. The plan should therefore support this;
- The increasing use of the private car needs to be addressed and a shift towards cycling and walking and public transport encouraged;
- Encouraging greater use of non-car modes of travel has wider benefits in the areas of economics, quality of life and social inclusion;
- The plan should seek to maximise the use of public transport for the large-scale movement of people, balancing the demand for car travel with other modes;
- Long-term biodiversity loss is one of the key challenges facing the State and recent development patterns have further impacted on biodiversity resources in the GDA;
- Energy and fossil fuel security are challenges for Ireland to address as the State currently imports the vast majority of its energy needs, primarily for the transport and power generation sectors. Reducing fossil fuel consumption (and thus dependence on fuel imports) in the transport sector is a requirement.

# 7. Baseline

## 7.1 Introduction

This chapter presents the existing environmental conditions in the Greater Dublin Area and the likely future conditions in the absence of the Implementation Plan. The baseline information is described under the following environmental topics:

- Biodiversity, flora & fauna;
- Landscape;
- Population;
- Human health;
- Noise;
- Water;
- Air;
- Climatic factors & climate change;
- Soils & geology;
- Cultural heritage (including architectural and archaeological heritage);
- Material assets; and
- Inter-relationships.

Within each environmental topic, a description of the baseline is provided and its likely future evolution is then discussed. Current issues and problems for each environmental topic are identified and specific implications for the Implementation Plan identified. A list of data sources and supplementary information is provided in Appendix B.5.

The purpose of describing the environmental baseline is two-fold:

1. To ensure that relevant environmental problems and issues are highlighted, so that they may be considered and addressed during the preparation of the Implementation Plan; and
2. To form a base-case from which future impacts can be predicted, evaluated and then mitigated.

It should be noted that this baseline description is not intended to be an exhaustive description of all baseline environmental data in the GDA; rather, it is focused on an appropriate scale and detail with regards to the regional-scale plan being prepared.

### 7.1.1 Overview of the GDA

The Greater Dublin Area consists of 2 regions, Dublin and the Mid-East, comprising the local authority areas of Dublin City, Fingal, South Dublin, Dún Laoghaire Rathdown, Meath, Kildare and Wicklow. The region contains Dublin City and suburbs and a number of large towns such as Naas, Navan, Swords and Bray

According to the 2011 Census, there were approximately 1.8 million people living in the GDA, of whom, approximately 750,000 stated 'At Work' as their Principal Economic Status. Employment in the GDA is diverse with an emphasis on service industries such as finance and retail. The GDA

contains a number of 3<sup>rd</sup> level educational institutions and key transport infrastructure such as Dublin Port and Airport.

The main topographical features of the GDA include the Wicklow Mountains, Dublin Bay, the coastline and a number of major rivers. The generally flat or rolling land of the GDA supports agriculture and associated industries.

## 7.2 Biodiversity, Flora & Fauna

This section provides a description of the biodiversity and ecology present within the GDA and details of their spatial distribution.

### 7.2.1 Natura 2000 Network in the GDA

The key biodiversity, flora and fauna resources in the GDA comprise the network of Natura 2000 sites consisting of Special Protection Areas (SPAs) and Special Area of Conservations (SACs). These are sites of international ecological importance protected by the European Union.

Below these European sites are nationally-protected sites, called Natural Heritage Areas. These can be divided into two main classifications: those that are fully designated (NHAs) and those that are awaiting formal and official designation (pNHAs). Table 7.1 below presents an overview of the key ecological designations with the GDA.

**Table 7.1** Total No. of SPAs, SACs, NHAs and pNHAs within the GDA

County	SPAs	SACs	NHAs	pNHAs
Dublin <sup>(1)</sup>	10	12	1	32
Kildare	1	7	2	24
Meath	3	8	3	27
Wicklow	4	14	0	35
GDA Total	18	41	6	118

Source: NPWS website [www.npws.ie/en/MapsData](http://www.npws.ie/en/MapsData)

### 7.2.2 Special Protection Areas (SPAs)

SPAs are designated under the EU Birds Directive (79/409/EEC) and protect areas where there are listed rare and vulnerable bird species present; where there are regularly occurring migratory species, such as ducks, geese and waders; and wetlands of international importance that attract large numbers of migratory birds each year. There are 135 SPAs in the Republic of Ireland, including 18 within the GDA, designated under the Birds Directive, and these are listed in Appendix B.1.

### 7.2.3 Special Areas of Conservation (SACs)

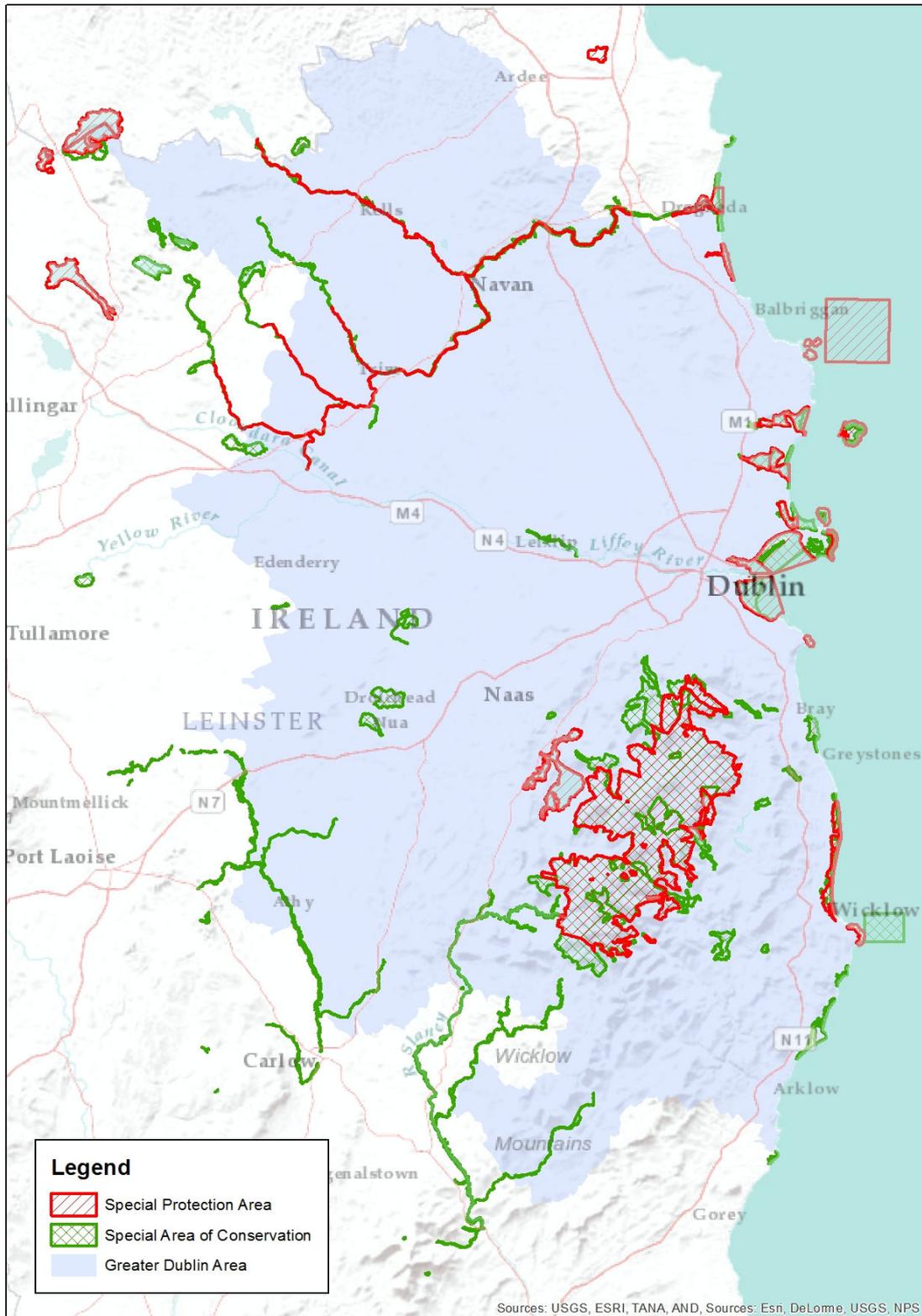
SACs, designated under the EU Habitats Directive, are prime wildlife conservation areas and are considered to be important on a European level. There are 424 SACs within the Republic of Ireland, in the process of being formally designated under the Habitats Directive (410 have been transmitted and formally adopted). 41 SACs have been designated within the GDA and these are listed in Appendix B.2 and also illustrated below in Figure 7.1.

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(1) Dublin refers to the four Local Authorities of Dublin City, Fingal, South Dublin and Dun Laoghaire-Rathdown County Councils.

SPAs and SACs are designated on the basis of having specific habitat types as designated in the Habitats Directive and the Birds Directive. In Ireland, there are 59 of these habitat types (spread across Ireland's Natura 2000 network) that the EU considers require particular protection because their global distribution largely falls within the EU and they are in danger of disappearance.

Figure 7.1 Natura 2000 Sites in the GDA

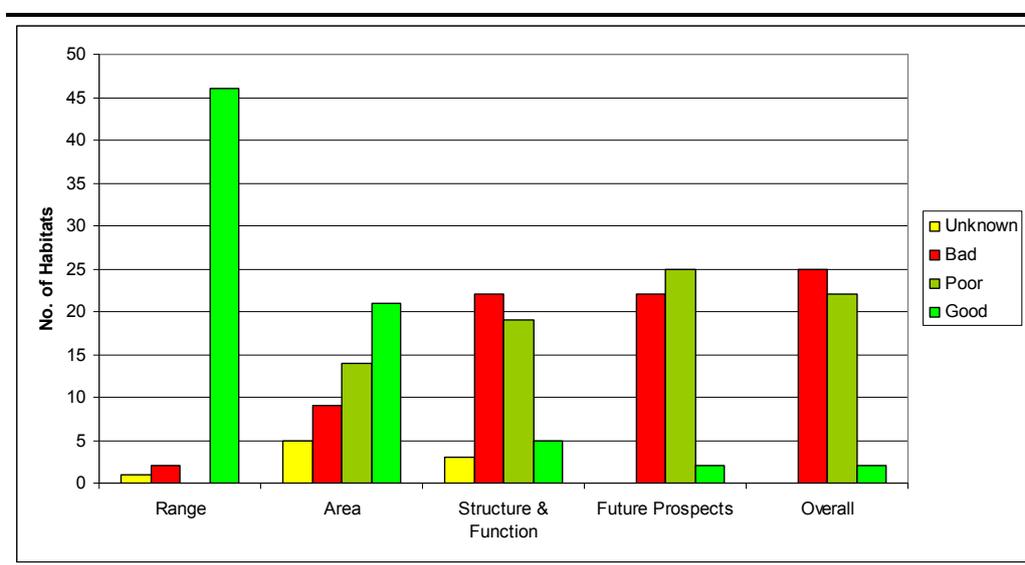


## 7.2.4 Designated species of plants and animals

The Habitats Directive also designates 26 species of plant and animal whose conservation requires the designation of SACs and 41 species of animal and plant present in the Ireland which are in need of strict protection.

NPWS has assessed the condition of each of the species and habitats listed in the Annexes of the Habitats Directive in its publication *The Status of EU Protected Habitats and Species in Ireland* (2008). These assessments were based on extensive research and were supported by detailed reporting from appropriate experts. Figures 7.2 to 7.4 summarise the findings of a national assessments undertaken by NPWS for the habitats, flora and fauna species. The terms 'Range', 'Area', 'Structure & Function', 'Future prospects' and 'Overall' are based on the various criteria under which NPWS assessed each of the designated habitats and species on a nationwide basis.

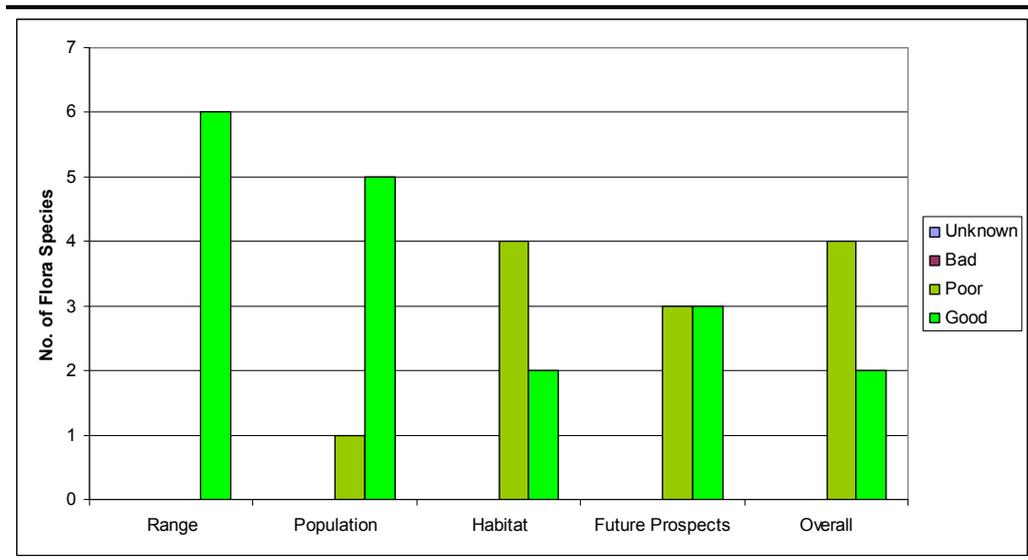
Figure 7.2 NPWS National Assessment of Habitats included in Annexes of Habitats Directive



Source: NPWS (2008) *The Status of EU Protected Habitats and species in Ireland*

It can be seen that the majority of Annex-listed habitats are either in a poor or bad condition (under the 'Overall' category) and this also applies to their future prospects. The reasons for this are discussed later in this section.

Figure 7.3 NPWS National Assessment of Flora Species included in Annexes of Habitats Directive

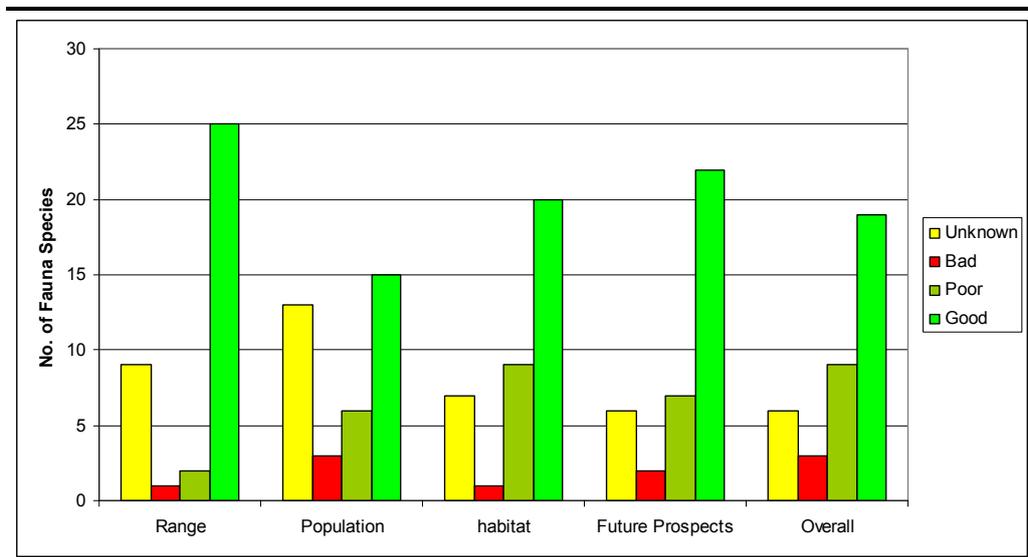


Source: NPWS (2008) The Status of EU Protected Habitats and species in Ireland

The GDA also contains many undesignated species of plant and these also provide some biodiversity value to the region.

Figure 7.3 shows that the overall condition of flora species is significantly better than that of habitats in general. However the overall prospects for the majority of designated flora species is poor. Figure 7.4 below presents data regarding fauna species.

Figure 7.4 NPWS National Assessment of Fauna Species included in the Annexes of the Habitats Directive



Source: NPWS (2008) The Status of EU Protected Habitats and species in Ireland

The national assessment of fauna species (Figure 7.4) shows that approximately half have good overall condition with the majority having good prospects. However, a proportion of fauna species is in poor or bad condition and has poor prospects.

### 7.2.5 Ramsar Sites

Ramsar sites are wetlands of international importance designated under the Ramsar Convention, an international treaty that provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources. There are six Ramsar sites within the GDA (these are also designated as SACs within the Natura 2000 network):

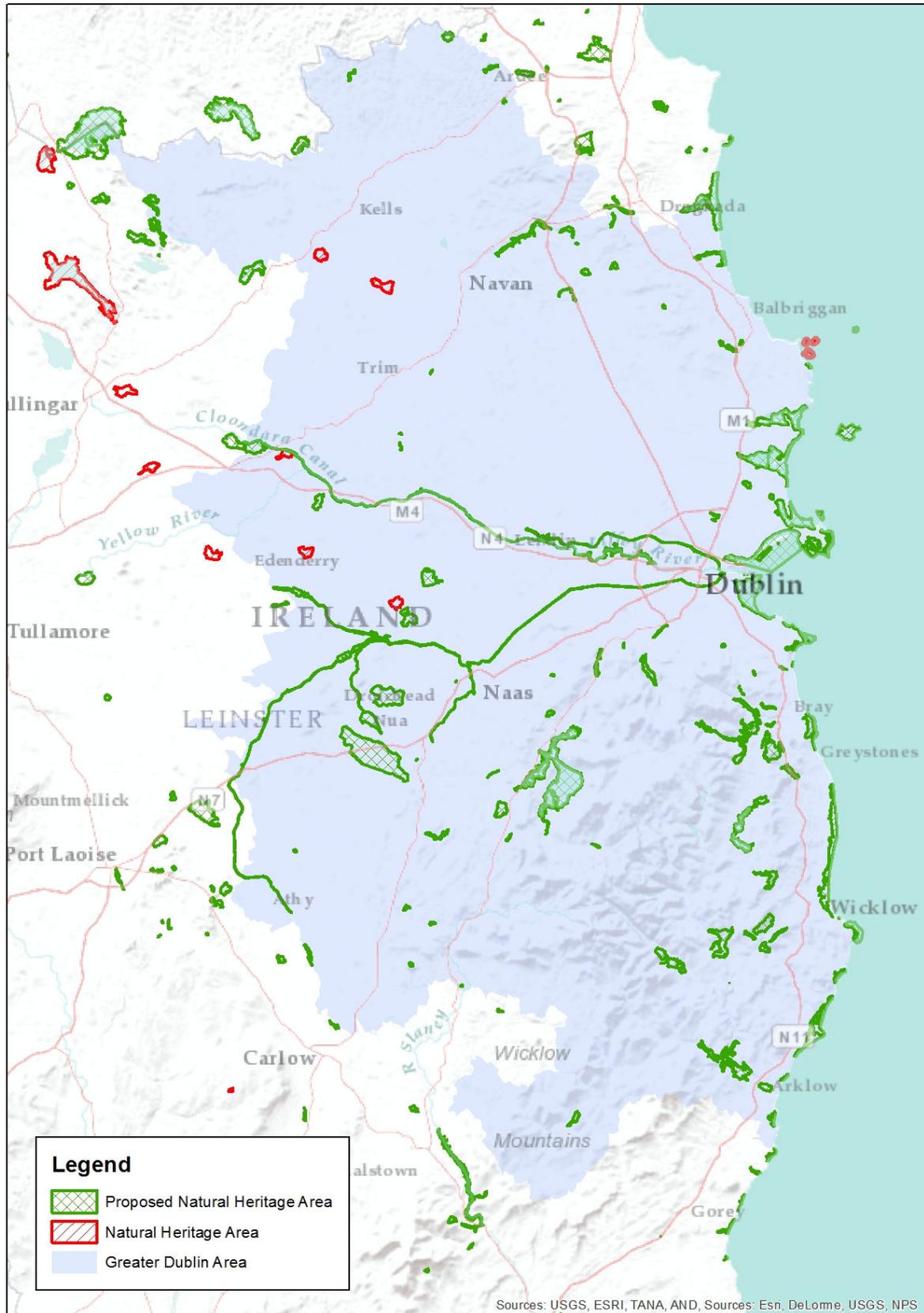
- Three within Fingal (Rogerstown Estuary, Broadmeadow Estuary and Baldoyle Bay);
- Two within Dublin City (North Bull Island and Sandymount Strand / Tolka Estuary);  
and
- One in Kildare (Pollardstown Fen).

### 7.2.6 Natural Heritage Areas (NHAs)

NHAs are ecological sites, which are protected on a national level under the Wildlife Amendment Act 1976 and the Wildlife Amendment Act 2000. They are legally protected against damage from the date on which they are formally proposed for designation as pNHAs. Within the GDA there are 6 designated NHAs and these are listed in Appendix B.3 and shown in Figure 7.5.

In addition, there are 118 proposed pNHAs in the GDA. The list was published on a non-statutory basis in 1995, but none have yet been formally proposed or designated. Prior to formal statutory designation, pNHAs are subject to limited protection through the Rural Environment Protection Scheme, Forestry service requirements and planning policies.

Figure 7.5 NHA and pNHAs in the GDA



## 7.2.7 UNESCO Biosphere Reserves

The biosphere reserve designation is an international conservation designation given by UNESCO under its Programme on Man and the Biosphere (MAB). Reserves are designated in order to promote and demonstrate a balanced relationship between humans and the biosphere. North Bull Island is a designated biosphere.

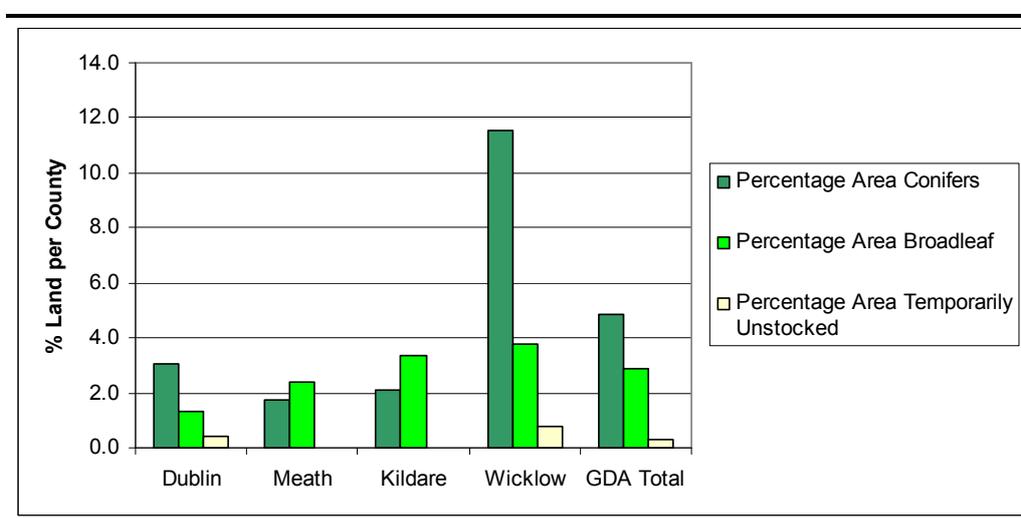
## 7.2.8 Other designations

Due to their importance to wildlife, Nature Reserves have been designated at Baldoyle Estuary, North Bull Island (both in Dublin), Pollardstown Fen (Kildare), Deputy's Pass, Glendalough, Glenealo Valley, Glen of the Downs, Knocksink Wood and the Vale of Clara (all Wicklow). The Wicklow Mountains are also designated as a National Park.

## 7.2.9 Forestry

The national forest estate is an important sink for carbon, at approximately 321 million tonnes. Also, 15% (88,000 hectares) of Coillte's estate is managed with the maintenance and promotion of biodiversity as the primary objective. While the total national growing stock is 70 million m<sup>2</sup> - mostly consisting of spruce and pine species - there is also a significant quantity of growing stock present in older broadleaf stands in natural or semi-natural woodlands. Wicklow has the highest percentage of forest cover nationally with approximately 18% of land covered in forestry, exceeding the national objective of 17%. Forestry coverage for all counties in the GDA is shown below in Figure 7.6.

Figure 7.6 Percentage Area of Each County under Forestry



Source: Forest Service (2007) National Forestry Inventory - Results

## 7.2.10 Fisheries

Inland Fisheries Ireland policy is aimed at maintaining a sustainable fisheries resource through preserving the productive capacity of fish habitat by avoiding habitat loss or mitigating harmful alterations to habitats. The prevailing guidelines "Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites" set out design principles and options for developments which include crossings of watercourses.

### 7.2.11 Biodiversity Action Plans

Some County Councils have prepared Biodiversity Action Plans (BAPs). BAPs outline a set of actions and policy objectives which will raise awareness of biodiversity and also promote data gathering, protection and enhancement of biodiversity, including those species protected under the Wildlife Acts 1976-2010. Baseline information on protected species and designated sites is also typically presented. BAPs have been adopted by Dublin City Council and Dún Laoghaire Rathdown County Council, while Fingal, Wicklow and Meath County Council have prepared drafts.

The EPA has also published a Biodiversity Action Plan and this provides more strategic policy objectives to enhance biodiversity and increase biodiversity data availability.

### 7.2.12 Current Issues and Problems

There was a 20% increase in artificial land from 2000 – 2006 in the GDA due to urban development in previously greenfield areas. Since then there has been further significant growth, but in recent years the rate and extent of this growth has slowed. The general trend over the last 15 years has increased pressures on habitats and species throughout the region, resulting in habitat and biodiversity loss and damage. According to The Status of EU Protected Habitats and Species in Ireland (NPWS, 2008) the most significant pressures on habitats are from:

- Grazing;
- Recreation;
- Peat extraction;
- Communication networks;
- Forestry; and
- Urbanisation.

The most significant pressures on flora and fauna species are:

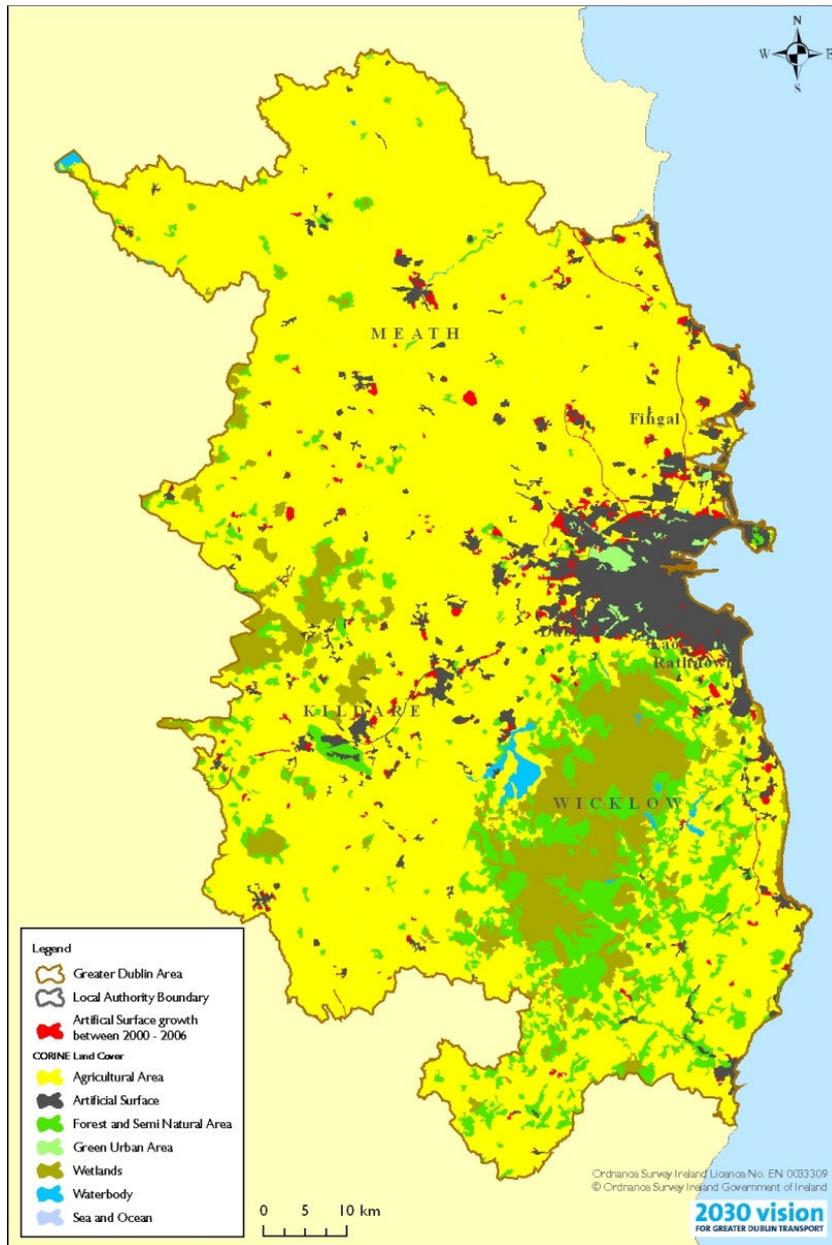
- Fishing;
- Drainage, pollution;
- Communication networks;
- Forestry; and
- Recreation.

Within the GDA, the main threats on biodiversity are:

- Loss of extent of biodiversity;
- Habitat fragmentation; and
- Presence of invasive species

There has been a significant impact on the vitality of habitats and species due to the considerable change in land use patterns in recent years. Due to changes in land cover, the amount of land within the GDA that is capable of supporting biodiversity has been reduced. Figure 7.7 and 7.8 present a summary of the key land use changes between 2000 and 2006. This trend is driven by the large increase in residential and commercial development during the period.

Figure 7.7 2006 Land Cover data (including key changes from 2000 – 2006)



Source: Environmental Report - NTA Draft Transport Strategy for the GDA, 2011

Figure 7.8 below shows respective levels of artificial land covering in the seven local authority areas of the GDA for both 2000 and 2006. The increases in artificial land cover over this six year period can be then determined. It can be seen that the counties with the greatest level of increased artificial land are Meath, Kildare and Wicklow and Fingal.

Figure 7.8 Artificial Land Use by County in the Greater Dublin Area (GDA), 2000 and 2006



Source: Data: JRC/UII; Analysis: EPA in EPA (2008) Ireland's Environment 2008

### 7.2.13 Likely Evolution in the Absence of the Implementation Plan

It is likely that the recent slowdown in the rate of urbanisation in the GDA will continue over the lifetime of the Implementation Plan as the economic recovery continues and take-up of vacant housing and commercial premises takes place in advance of any major new developments.

The NPWS Conservation Status Report (from which the data in Figure 7.2 and 7.3 was obtained) notes: "many Irish species of fauna and flora have a moderately satisfactory status, but a small number are in urgent need of concerted efforts to protect them. The assessments of habitats present a much bleaker picture with the majority being rated as having poor or bad overall status". This Report also notes the "enormous" national challenges, the following of which are of most relevance to the GDA:

- Sustainable management of coastal resources much valued for recreation and development;
- Improving water quality;

Climate change is also considered as a potential threat to the health and vitality of biodiversity throughout the GDA and may potentially lead to changes to native species.

### 7.2.14 Implications for the Implementation Plan

Natura 2000 sites make up 10.3% of the GDA (719 sq. kms.). The remaining areas of the GDA also provide some biodiversity value. However, in light of the poor condition of some SACs / SPAs and continuing loss of biodiversity, it is likely that care will be needed to ensure that the Implementation Plan does not unintentionally promote further biodiversity loss or damage.

The Implementation Plan will be a factor in influencing the locations of future development within the GDA and may have a role in influencing development patterns such that future urbanisation and growth of the GDA does not significantly impact on the region's biodiversity resources. Ways of achieving this include encouraging redevelopment of brownfield sites instead of greenfield development, especially those along key transport corridors, such as rail and bus rapid transit.

## **7.3 Landscape**

The landscape in the GDA is diverse and includes urban areas, rural areas, mountains and upland areas, plains, canals, valleys and coastal areas. Transport infrastructure (roads, rail-lines, etc.) has historically formed a key component and influence on the development and evolution of the landscape character of the GDA. Some key landscape features of the GDA include the Dublin/Wicklow Mountains and the coastline of the Irish Sea. The GDA also contains many urban areas which provide landscape features, particularly some of the historic centres and streets such as those in Georgian Dublin and the heritage towns of Kells, Trim and Dalkey.

Local Authorities are responsible for the conservation and protection of landscapes and visual amenities and the designation of certain landscapes as Areas of High Amenity, Areas of Outstanding Natural Beauty, Protected Views, Architectural Conservation Areas and Areas of Special Planning Control. The County and City Development Plans drawn up by each of the Local Authorities outline these designations. Appendix B.4 sets out examples of landscape classifications in the GDA.

In addition to the various designated and protected landscapes, the rest of the GDA can be considered as a series of undesignated landscapes ranging from urban areas (townscapes) to rural areas (agricultural lands). Impacts on the landscape generally are considered in the development management system which is the responsibility of local authorities.

In terms of land cover in the GDA, data from the Corine database shows that agriculture comprises 23% of all land cover, followed by wetlands (9.6%) and forestry (8.2%). This information is shown in Figure 7.7 above. The Department of Arts, Heritage and the Gaeltacht's Draft National Landscape Strategy was published in September 2011.

### **7.3.1 Current Issues and Problems**

Urban development patterns in the GDA in recent years have been notable for the spatial expansion of existing towns and villages into the surrounding countryside. Urban development has the potential to change all landscapes, both designated and undesignated. Unwelcome physical changes may result from new development occurring within such landscapes or from the increased recreational usage of landscapes as a result of increased urbanisation generally in the GDA.

### **7.3.2 Likely Evolution in the Absence of the Implementation Plan**

Given the on-going economic difficulties and the corresponding impact on the rate of urban development and expansion, it is likely that pressures on undesignated and designated landscapes will ease in the immediate to medium term.

### **7.3.3 Implications for the Implementation Plan**

The Implementation Plan will be a factor in influencing the broad locations of future development within the GDA, and thus, impacts on designated and undesignated landscapes.

Similar to the points raised under Biodiversity, the Implementation Plan should try to influence development patterns such that future urbanisation and growth in the GDA does not significantly impact on the region’s protected/designated landscape resources and the wider undesignated landscape.

Transport infrastructure may also positively contribute to local landscape quality through the provision of high-quality interchanges and stations, local streetscape improvements and associated traffic calming measures.

## 7.4 Population

The population of Ireland was recorded as approximately 4.57 million at the last census in April 2011, up from 4.24 million in 2006. In 2011, the population of the GDA was 1,804,156, an increase of over 8% since 2006. All local authority areas within the GDA experienced population between 2006 and 2011, as shown in Table 7.2 below.

**Table 7.2 Trends in population for counties within the GDA**

Local Authority	2006	2011	% Change 06-11
Meath	162,831	184,135	13.08
Kildare	186,335	210,312	12.87
Wicklow	126,194	136,640	8.28
Fingal	239,992	273,991	14.17
Dublin City	506,211	527,612	4.23
South Dublin	246,935	265,205	7.40
Dun Laoghaire – Rathdown	194,038	206,261	6.30
GDA Total	1,662,536	1,804,156	8.52
State	4,239,848	4,588,252	8.22

Source: Central Statistics Office website [www.cso.ie](http://www.cso.ie)

The most significant population increases over the period 2006 to 2011 were in Fingal, Meath and Kildare. This population growth was accommodated, primarily, by the growth of towns and villages in these counties, from where commuters travel to work in Dublin City and suburban employment centres in areas along the M50 Corridor such as Sandyford and Park West.

The population density of Dublin city (as defined by the City Council area) is broadly comparable to that of other major cities in the world, as shown in Table 7.3 below. This data has been obtained from the UN website (Population of capital cities and cities of 100 000 or more inhabitants: latest available year, 1988 – 2007).

**Table 7.3 City population densities**

City (Country)	Population	Surface area (km <sup>2</sup> )	Population/km <sup>2</sup>
Dhaka (Bangladesh) *	5,333,571	154	34,633.6
Paris (France)	2,125,017	105	20,238.3
New York (US)	8,274,527	786	10,527.4
Hong Kong (China)	6,925,900	1,104	6,273.5
Lisbon (Portugal)	504,726	85	5,937.9
Tokyo (Japan) *	12,576,601	2,187	5,750.6
Rio de Janeiro (Brazil)	6,136,652	1,256	4,885.9
Chicago (US)	2,836,658	589	4,816.1
Bangkok (Thailand) *	6,842,000	1,569	4,360.7
Stockholm (Sweden)	789,024	187	4,219.4
<b>Dublin City (2002)</b>	<b>495,781</b>	<b>118</b>	<b>4,201.5</b>
Zürich (Switzerland) *	348,680	87	4,007.8
Berlin (Germany)	3,386,667	891	3,801.0
Amsterdam (Netherlands) *	1,022,487	367	2,786.1
Rome (Italy)	2,626,640	1,308	2,008.1
Barcelona (Spain)	1,605,602	991	1,620.2
<b>Dublin Metropolitan Area (2006)</b>	<b>1,242,709</b>	<b>838</b>	<b>1,482.9</b>
Oslo (Norway)	554,551	426	1,301.8
Madrid (Spain)	3,128,600	6,058	516.4
Canberra (Australia)	339,573	810	419.2
Sydney (Australia)	4,336,374	12,140	357.2

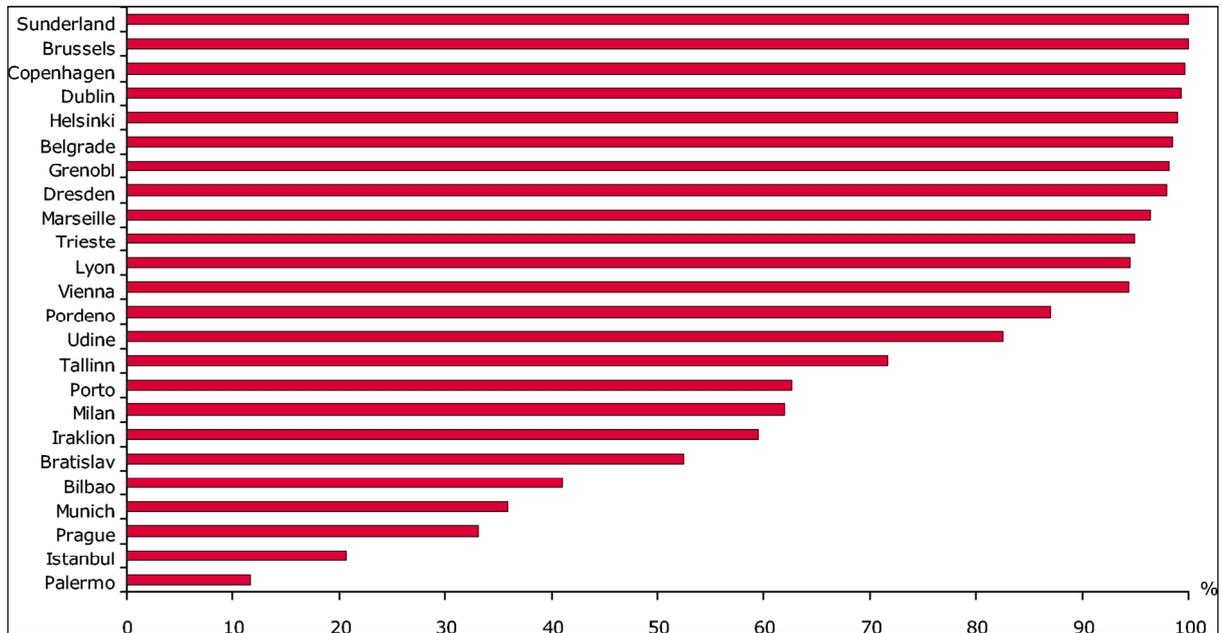
However, it should be noted that the data in Table 7.3 is comprised of a range of non-identical urban population and area measures. For example, data provided for some cities such as Dublin and Rio de Janeiro is based on the city boundaries, which excludes population growth and urban expansion in adjoining jurisdictions, whereas the data for other cities is based on the wider urban agglomeration such as Bangkok and Tokyo: these are marked with an ‘\*’ and therefore is a more accurate presentation of actual city population density.

As a comparison, the data for the Dublin Metropolitan Area in 2006, as defined by the Regional Planning Guidelines, is also provided in Table 7.6. When the urban agglomerations are compared it can be seen that Dublin is of a significantly lower density than comparable cities such as Zurich or Amsterdam. The most densely populated areas of Dublin are the areas located nearer the city centre (especially between the canals) and – to a lesser extent - in the older suburban areas. It should be noted also that many recent suburban developments in Dublin were of higher densities than those which pertained through most of the late 20<sup>th</sup> Century.

This finding is also noted in an EU research report on urban sprawl <sup>(2)</sup> published in 2006. Figure 7.9 below is taken from this report (figure 2, pg. 12) and provides information on low density residential development as a proportion of all residential areas built after the mid-1950s, in selected European cities, including Dublin.

(2) Urban sprawl in Europe - The ignored challenge [EEA Report No 10/2006]; European Environment Agency, November 2006.

Figure 7.9 Low density residential development as a proportion of all residential areas built after the mid-1950s

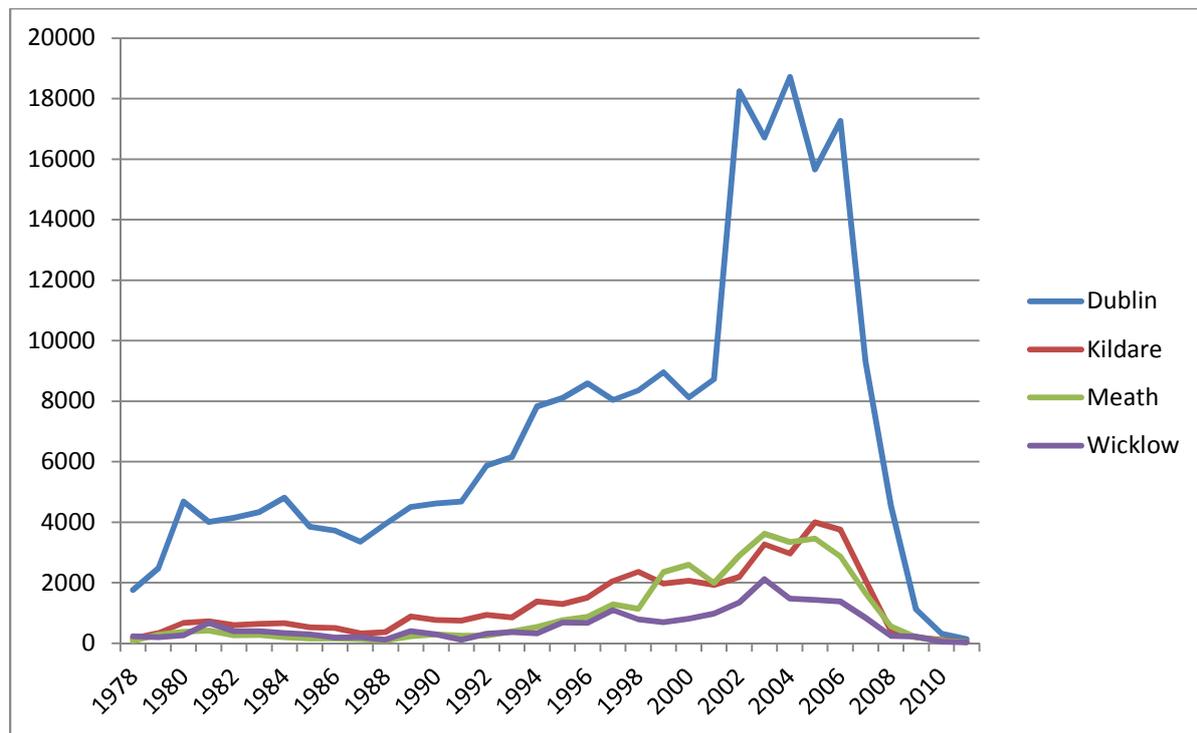


It can be seen that almost 100% of all post-1950 residential development in Dublin has been of low density. It should also be noted that this is not an exclusive development trend to Dublin and that majority of the cities studied also have substantial proportion of low density residential development over the same period of time.

### 7.4.1 Household Formation

The growth in population within the GDA and decreasing average household sizes is also reflected in the increase in the number of new households registered in the GDA, as shown in Figure 7.10 below. It can be seen that there was a substantial increase in the number of registrations (especially in the Dublin Region) in the period 2002 to 2007, quickly followed by a rapid tail-off in registration over 2007 and 2008. This is symptomatic of the general economic slow-down, a key factor of which is the substantial decline in the residential construction sector.

Figure 7.10 No. of New House Registrations by County in the GDA – 1978-2011



Source: Department of the Environment, Heritage and Local Government Statistics website: <http://www.cso.ie/px/doehlg/Dialog/Saveshow.asp>

### 7.4.2 Demographics

From 1996 to 2006, there was a large increase in the population in the 25 – 64 age group, especially in the Mid-East Region (+59%). There has also been a smaller increase in the Mid-East Region of those within the 15 – 24 age demographic (+16.5%). This is a reflection of the movement of people of family-forming age away from the Dublin Region to satellite towns in the Outer Counties of Meath, Kildare and Wicklow, primarily driven by the lack of affordable appropriate accommodation in areas of Dublin itself. Associated with this, parts of Dublin have seen some population decline. In these areas, the demographics are skewed toward an older, aging population, which is a reflection of the trend described above. The prevailing economic trends, including the substantial decrease in housing prices may reverse this pattern to an extent.

### 7.4.3 Employment

There had been a consistent growth in employment in the period from 1996 to 2007. However, the recession has resulted in a decrease in overall employment and a corresponding increase in unemployment. According to the 2011 Census, there were c.750,000 persons at work living in the GDA, down from 800,240 in 2006. The Quarterly National Household Survey from Q3 2012 revealed an unemployment rate of 13.2% for the GDA. Table 7.4 shows the Principal Economic Status of the 7 local authority areas in the GDA from the 2011 Census.

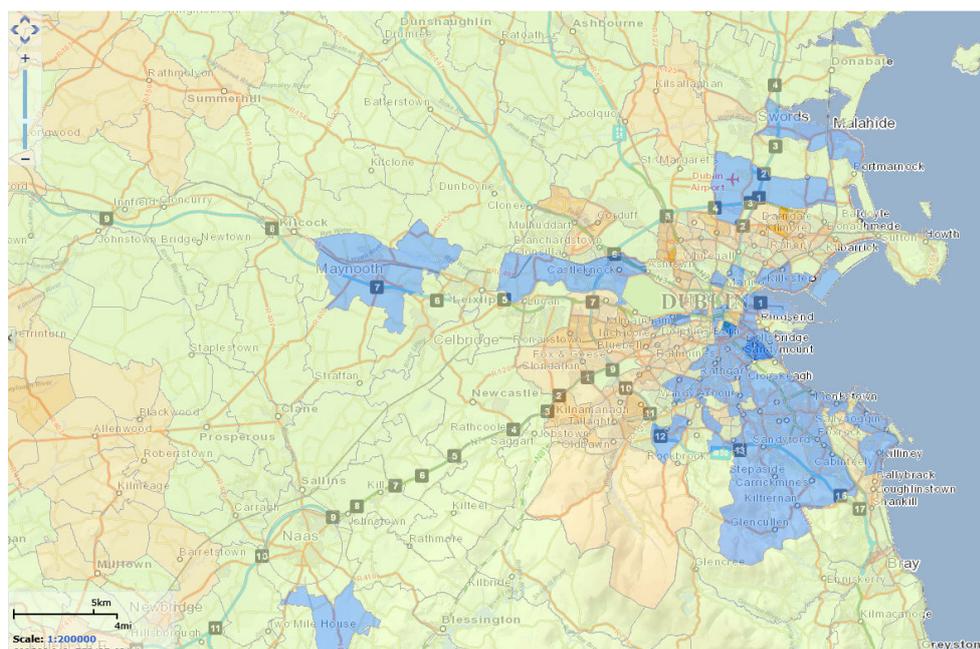
**Table7.4 Principal Socio-Economic Status 2011**

	Persons at work	Unemployed	Student or pupil	Looking after home/family	Retired
Dublin City	227,429	51,699	56,377	32,058	58,475
Dún Laoghaire-Rathdown	87,490	11,071	24,481	15,625	25,722
Fingal	119,276	22,640	21,762	18,759	18,370
South Dublin	106,534	26,039	22,307	19,362	20,611
Kildare	85,587	18,639	18,009	15,680	14,639
Meath	74,342	16,292	13,775	14,345	13,959
Wicklow	52,907	12,674	11,687	11,216	12,845
GDA	753,565	159,054	168,398	127,045	164,621

### 7.4.4 Deprivation

Deprivation data is provided in Figure 7.16 below. The data used to prepare this is based on the 2011 Census published by Pobal and Trutz Haase. The bluest areas are the most affluent while the darkest brown represent ‘very disadvantaged’ areas.

**Figure 7.11 Relative Social Deprivation Index for the Dublin Area**



Source: <http://maps.pobal.ie/#/Map>

This data shows that the most deprived areas in Dublin in 2011 were in Darndale, Coolock and Finglas. The most affluent areas were along the coast from Malahide to Dún Laoghaire and large parts of the southern suburbs.

The Department of Community, Rural and Gaeltacht Affairs has also designated a set of RAPID (Revitalising Areas by Planning Investment and Development) and CLÁR spatial areas. The RAPID Programme is a Government initiative which targets 45 of the most disadvantaged areas in Ireland. The Programme aims to ensure that priority attention is given to the 45 designated areas by focusing

State resources available under the National Development Plan. RAPID areas in the GDA are summarised in Table 7.5 below.

**Table 7.5 RAPID areas in the GDA**

County	Area	Sub-area
Dublin	Dublin Northside	Darndale, Belcamp, Bunratty Road Maisonettes
	Ballymun	Poppintree, Balcurris Gardens, Silogue Gardens, Shangan Gardens, Coultry Gardens
	Finglas	District Electoral Divisions of Finglas South A and Finglas North A
	North West Inner City	Kings Inns, Marmion Court/Queens St, O'Devaney Gardens, Hardwick Street Flats, Dominick Street Flats, Dorset Street Flats
	North East Inner City	Mountjoy Square, Alfie Byrne House/Hill St, Ballybough Road, the area around Sean McDermott St, Summerhill
	South Inner City	Mary Aikenhead House, Emmett Buildings, Bridgefoot St, Oliver Bond House, St Audeon's House, Braithwaite St/Summer St, Chamber Court/Weaver St, St Teresa's Gardens
	South West Inner City	Bluebell/Bernard Curtis House, St Michael's Estate/Tyrone Place, Rutland Avenue/Rutland Grove
	South East Inner City	Charlemont St/Tom Kelly Rd, Power's Court/Verschoye, Leo Fitzgerald House, St Andrews Court, Macken Villa's
	Tallaght- Fettercairn	District Electoral Division of Fettercairn
	Tallaght- Jobstown	District Electoral Division of Jobstown
	Clondalkin	Rowlagh, Shancastle, Greenfort, Harelawn, Neilstown Estate
	Blanchardstown	Tyrrelstown, Mulhuddart and Local Authority Housing Estates in Corduff
	Dun Laoghaire / Rathdown	Loughlinstown and Shanganagh
Bray	Fassaroe, Oldcourt, Kilbride Grove, Ballywaltrim Heights, Deerpark/Heatherwood	
Kildare	Athy	
Meath	Drogheda	Ballsgrrove, Marian Park, St Finians Park, Rathmullen, Pearse Park, Yellowbatter, Moneymore
	Navan	Claremont Estate, Woodview Estate, Clogherboy/Oaklawns Estate, Townspark Estate, Reask Estate, St. Columba's Crescent, St. Benildus Villas, Dean Cogan Place, McDermott Villas, Emmet Terrace, St Bridgids Villas, Parnell Park, Connolly Avenue, St Patrick's Terrace

The CLÁR programme (Ceantair Laga Árd-Riachtanais) is a targeted investment programme for deprived rural areas. CLÁR complements both the RAPID programme for disadvantaged urban areas and provincial towns. CLÁR provides funding and co-funding to Government Departments, State Agencies and Local Authorities and these investments support physical, economic and social infrastructure across a variety of measures. CLAR areas within the GDA are summarised in Table 7.6 below.

Table 7.6 CLAR areas in the GDA

County	DED
Meath	Ballinlough, Moybolgue, Crosskeys, Moylagh, Burry, Newcastle, Killallon, Stonefield, Castlekeeran, Trohanny, Killeagh, Kilskeer, Crossakeel and Knocklough
Wicklow	Ballinguile, Lugglass, Ballybeg, Kilpipe, Imeal North, Ballinacor and Coolballintaggart

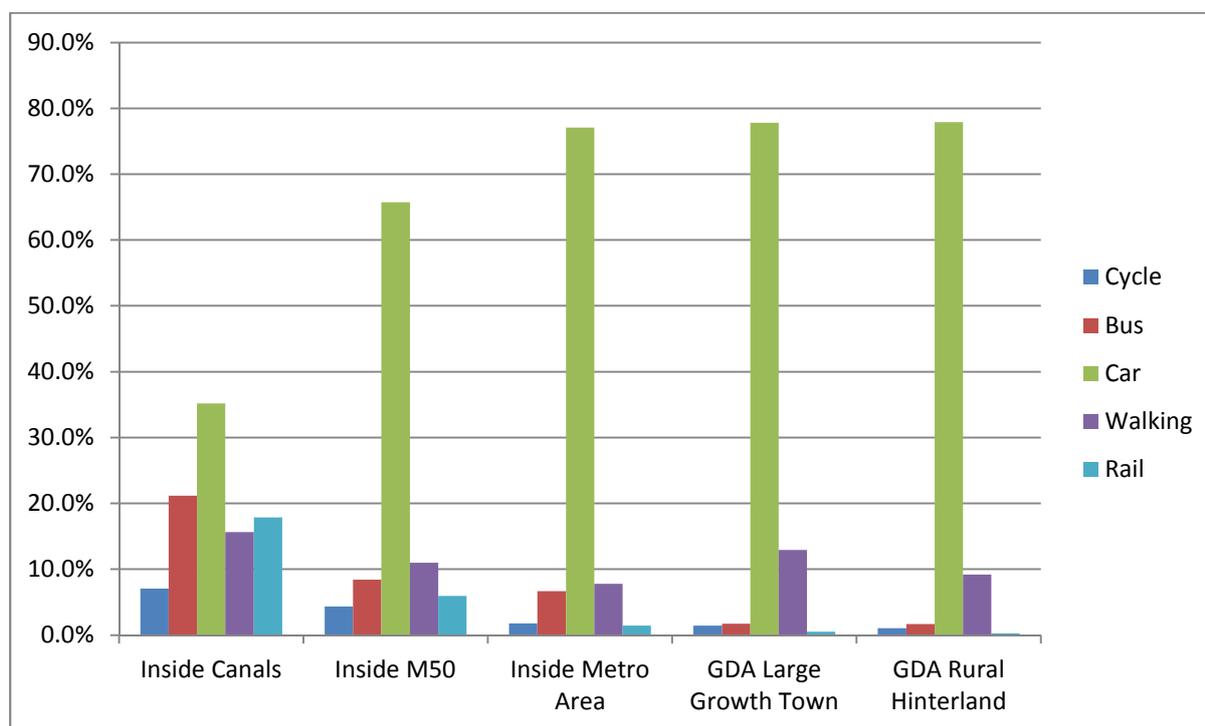
## 7.4.5 Transport Patterns

### Mode Split

With the large increase in overall population and employment from the late 1990's, and the pattern of urban development and expansion in the peripheral Local Authority areas, there has been an associated increase in travel demand in the GDA. The majority of this demand is being met by the private car as a mode of transport, accounting for just under 60% of work-related journeys in the GDA.

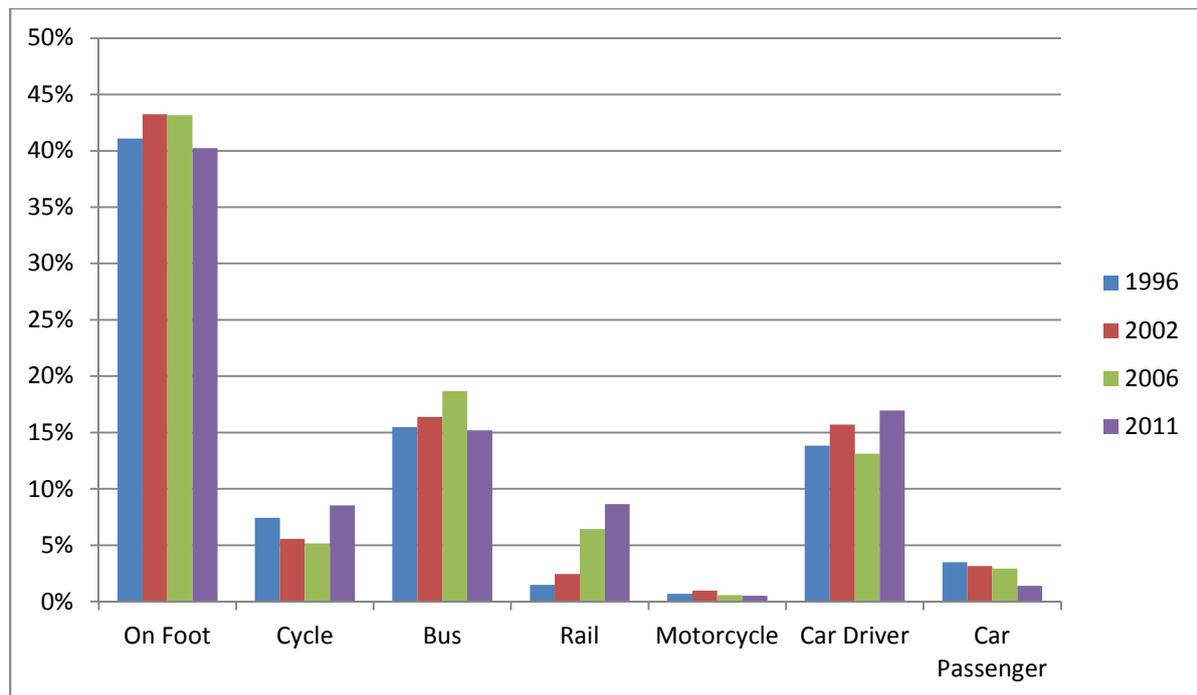
Figure 7.12 below shows a breakdown of the modes of transport to work for various spatial areas within the GDA and shows that as a person's place of work moves away from the city centre the more likely it is that people will drive to work. Dublin City Centre, as defined by the Canals, is the only part of the GDA to have a below average mode share for Car.

Figure 7.12 Persons at Work and Their Means of Travel to Work at Place of Work, 2011



Walking and cycling are also significant modes of transport for those living within the city centre, as defined by the canals, where approximately 50% of residents walk or cycle to work. Likewise, public transport is also significant for transport for those living within Dublin city centre. Indeed, travel data from the NTA shows that car use declined in the period 1996 - 2006 with an increase in walking for this area. Since 2006 this trend has reversed, but rail and cycling have both increased. This is illustrated in Figure 7.13 below.

Figure 7.13 Mode Splits for work trips for those resident Inside the Canals 1996-2011



Source: Central Statistics Office [POWCAR](#) database

#### 7.4.6 Current Issues and Problems

Based on 2011 data at place of work, car is the most popular mode of transport in Dublin city centre and is likely to remain so until the key pieces of public transport infrastructure are completed, such as Metro North and DART Underground. While the bus generally presents a very flexible and relatively cost-effective form of public transport, it does not offer the equivalent level of service offered by rail in relation to capacity, speed and reliability. This, in turn, impacts on its image as a viable alternative to the private car, even though it is more widely available than rail.

For those resident within Dublin city centre, considerably greater use is made of walking and cycling. The implementation of a city bicycle rental scheme in 2009 has increased the profile of this mode and facilitated short trips within this area.

#### 7.4.7 Likely Evolution in the Absence of the Implementation Plan

##### Population and Employment Distribution

The distribution of population and employment is likely to remain constant over the lifetime of this plan, with moderate growth in some developing areas. Over a longer period of time, the implementation plan would be expected to influence patterns of development, in that areas closest to public transport would be favoured locations for growth. Without the plan, this is less likely to occur and recent trends would be likely to persevere.

## Transport Patterns

Without the plan, it is likely that the transport patterns would remain unchanged. Car will continue to dominate to the extent it does at present. It is hoped that by improving transport infrastructure and by implementing the policies of the plan, public transport, walking and cycling would grow use for all trips.

### 7.4.8 Implications for the Implementation Plan

The Implementation Plan includes objectives to increase the overall capacity, reliability and frequency of transport infrastructure. Through providing high-quality, reliable and frequent public transport options, a greater proportion of the population is likely to regularly use public transport and cycling and walking over the private car.

Additionally transport-related expenditure and investment under the Implementation Plan may be best prioritised by targeting development at locations which will maximise the benefits of investment in the transport system and also provide the greatest use of public transport.

The Implementation Plan will aim to promote more efficient use of land, especially brownfield land close to urban centres or close to major transport routes.

Social inclusion is an objective of the Implementation Plan with access to employment and social, cultural and recreational facilities in the GDA a key concern, especially for areas which are socially deprived.

## 7.5 Human Health

The Human health environmental topic addresses general health and specific issues associated with human health and transport, including personal safety, mental and physical wellbeing and relevant quality of life issues.

### 7.5.1 General Health and Life Expectancy

According to the Survey of Lifestyle, Attitudes and Nutrition (SLAN) in Ireland in 2007, self-rated health was recorded as 'excellent' or 'very good' by approximately 58% of respondents, with only 3% rating their health as 'poor', an increase in those rating as 'excellent' or 'very good' from 1998 (45%) and 2002 (50%). Approximately 11% of respondents reported a long-term illness, health problem or disability that limited their daily activity. Lower social class groups showed higher than average long-term illnesses. Overall, 12% of respondents indicated that they had recently suffered from ill-health and limitations because of mental or physical health in the previous 30 days.

In the same survey, relatively high levels of positive mental health were reported. Approximately 6% of respondents reported suffering from major depression, while 3% suffered from generalised anxiety disorder. In general, men, younger people, and those in higher social class groups reported lower levels of mental health problems.

## 7.5.2 Physical activity and exercise

The National Guidelines for Physical Activity in Ireland (Department of Health and Children, Health Service Executive, 2009) quotes the National Survey of Lifestyles Attitudes and Nutrition (SLAN 2007) which showed that only 41% of Irish adults took part in moderate or strenuous physical activity for at least 20 minutes three or more times a week. The recommended level of physical activity from which adults start to get health benefits comprises at least 150 minutes a week of moderate physical activity (an average of 30 minutes of activity on five days a week).

The Health Behaviours in School Children (HBSC, 2006) survey revealed that over half of primary school age children did not achieve the recommended level of physical activity. The evidence shows that the majority of the Irish population is not getting sufficient exercise and this is causing long-term health impacts.

According to the Department of Health and Children, obesity is a major public health concern in Ireland. The 2007 SLAN report showed that 38% of Irish people were overweight and another 23% were obese. One in five Irish children and teenagers is overweight or obese (Irish Universities Nutrition Alliance, 2008). The trend of increasing incidents of obesity can be linked to a range of factors, but a key driver is an increase in sedentary lifestyles and higher calorie intake.

## 7.5.3 Road Safety

Data from the Road Safety Authority website notes that the number of Irish road deaths was 186 in 2011, the lowest level on record. The 186 who died consisted of 47 pedestrians, 9 cyclists, 95 car users and 18 bikers.

On the basis of road deaths per million population, in 2010, the latest year for which international comparative information is available, Ireland is ranked seventh out of the EU-27.

Table 7.7 below presents traffic accident data for 2011 for the GDA. It can be seen that the region accounts for 35.2% of all accidents in Ireland and 36% of all registered vehicles. The four Dublin Local Authorities account for 24.5% of all reported collisions and 24.4% of registered vehicles in the State. In relation to road fatalities, the four Dublin Local Authorities have a combined total of 5.9%, with the GDA having 17.7% of all road fatalities in Ireland.

**Table 7.7** Traffic Collisions and Casualties in the GDA, 2011

County	Reg. Vehicles	Motor Collisions	Fatal Collisions	Injurious Collisions	Total Collisions	Total Killed	Total Injured	Total Casualties
Dublin	595,000 (24.5%)	11	1,268	1,278 (24.4%)	11 (5.9%)	1,607	1,618 (21.8%)	
Kildare	109,000 (4.5%)	14	178	192 (3.7%)	15 (8.1%)	268	283 (3.8%)	
Meath	95,000 (3.9%)	3	194	197 (3.8%)	4 (2.1%)	279	283 (3.8%)	
Wicklow	75,000 (3.1%)	3	174	177 (3.4%)	3 (21.6%)	255	258 (3.5%)	
GDA	874,000 (36.0%)	31	1,814	1,844 (35.2%)	33 (17.7%)	2,409	2,442 (26.3%)	
<b>State</b>	<b>2,425,000 (100%)</b>	<b>172</b>	<b>5,058</b>	<b>5,230 (100%)</b>	<b>186 (100%)</b>	<b>7,235</b>	<b>7,421 (100%)</b>	

Source: Road Safety Authority (2011) Road Collision Facts Ireland 2010

### 7.5.4 Current Issues and Problems

In relation to human health, obesity is a considerable health risk for both adults and children, with incident rates rising continuously. A lack of exercise and activity is a key factor behind this growing health problem.

With regard to road safety, while the number of vehicles has been increasing in recent years it is also shown above that the number of fatal or injurious road collisions has been decreasing over time. This can be attributed to:

- on-going and high-profile road safety campaigns;
- implementation and enhancement of the penalty points system;
- regular road-side police checks (drink-driving etc.);
- improved vehicle conditioning as a result of the NCT regulations; and
- improvements to the national, regional and local road networks;

### 7.5.5 Likely Evolution in the Absence of the Implementation Plan

It has hard to predict the effect of various Government initiatives to encourage greater physical activity, but it is expected that encouraging and promoting greater levels of physical activity may partially address future levels of obesity and associated health problems.

The on-going implementation of the Road Safety Authority's plans to improve Ireland overall road accident performance, coupled with on-going improvements to the road network is likely to further reduce the overall level of accidents in the GDA.

### 7.5.6 Implications for the Implementation Plan

One of the key aims of the Implementation Plan is to promote walking and cycling and increase the general use of public transport. This must be managed in the context of (long-term) population growth within the GDA. Increased levels of walking and cycling will benefit people's health. It is essential that any increase in the use of these modes considers the wider health and accident risks and that appropriate infrastructure is carefully designed and located. However, it is acknowledged that in relation to cycling, there is a perceived 'safety in numbers' – i.e. the more people who cycle, the safer it is.

The Implementation Plan will seek to improve the overall health and fitness of the GDA's population through the promotion and facilitation of walking and cycling. This may increase long-term life expectancy and address some of the health issues associated with lack of exercise, especially for those portions of the population who make the modal shift from motorised transport to walking and cycling on a regular basis.

## 7.6 Noise

The main sources of available data on baseline noise are the Strategic Noise Maps and Noise Action Plans. The preparation of these is a requirement of the EU Noise Directive, which was transposed into Irish law by Environmental Regulations 2006 (S.I. 140 of 2006). These regulations require Local Authorities to prepare Noise Action Plans and undertake noise mapping if their administrative areas

meet certain criteria, such as traffic flows on key roads being above specific thresholds or rail lines having a certain volume of total train movements.

Within the GDA, the four Dublin Local Authorities are required to produce Noise maps and Noise Action Plans. They have jointly prepared a single Noise Action Plan, called Dublin Agglomeration Action Plan Relating to the Assessment & Management of Environmental Noise, October 2008 – November 2013 ('Dublin Noise Action Plan'). Kildare and Meath County Councils have also prepared Noise Action Plans.

The Dublin Noise Action Plan notes that road traffic is the main source of environmental noise in the four Local Authorities of County Dublin and that railway noise does not have a major impact on overall noise levels. Table 7.8 below shows the results from the strategic noise mapping. It provides the percentage breakdown for residential populations within specified noise bands for each of the four Dublin Local Authorities.

**Table 7.8 Residential population exposure to road traffic noise**

dB(A)	Dublin City		South Dublin		Fingal		Dun Laoghaire	
	Day % <sup>1</sup>	Night % <sup>2</sup>						
< 55	5.5	41.5	28.3	55.6	29.0	78.4	6.0	68.0
55 – 59	48.0	32.2	42.3	24.2	42.6	12.8	32.4	16.0
60 – 64	27.0	20.5	16.3	12.4	15.4	6.7	37.1	12.3
65 – 69	15.8	5.7	8.5	6.9	9.3	1.9	12.5	3.6
70 – 74	3.7	0.1	4.4	0.9	3.5	0.1	9.5	0.1
> 75	0.0	0.0	0.2	0.0	0.2	0.0	2.4	0.0

1: Day time (7am – 7pm) noise levels >70dB are considered undesirable (grey shading).

2: Night time (7pm - 7am) noise levels >55dB are considered undesirable (grey shading).

Source: South Dublin County Council (2008) Dublin Agglomeration Draft Action Plan Relating to the Assessment & Management of Environmental Noise

### 7.6.1 Current Issues and Problems

These results show that – broadly - the proportion of the population exposed to undesirable day time noise levels (>70dB) from traffic are relatively minor (3.7% in Dublin City Council to 9.5% in Dun Laoghaire-Rathdown County Council). However, the percentage of the population exposed to undesirable night time noise levels (>55dB) is considerably greater (58.5% in Dublin City Council to 21.6% in Fingal County Council).

Other results also reveal that the greatest source of road traffic noise exposure is not limited to 'Major roads' (defined as carrying more than 16,438 vehicles per 24 hours): these comprise 9.9% of the overall roads in the Dublin agglomeration), with all other roads being the greatest source of this exposure.

In relation to the Kildare and Meath Noise Action Plans, these note that major roads (national roads and motorways) are the main sources of environmental noise.

### 7.6.2 Likely Evolution in the Absence of the Implementation Plan

The review and implementation of the various Noise Action Plans is likely to reduce noise levels. The Local Authorities aim to reduce the levels of noise through the introduction of various measures including the reduction of traffic, promoting public transport, walking and cycling, traffic

management measures, restricting HGV access to certain areas and/or times, traffic calming and improved road surfaces. Despite this, significant reductions in the proportions of the population which are exposed to undesirable noise levels are not expected in the short-term.

### 7.6.3 Implications for the Implementation Plan

The promotion of transport options and choices other than the private car is likely to improve the day time noise characteristics of the GDA. However, bus can have the potential to exacerbate the day-time noise environment, depending on the vehicle type.

Night-time noise levels present a difficult challenge for the Implementation Plan. Road traffic is the main source of undesirable night-time levels for significant parts of the GDA. However, at night, public transport and walking and cycling are often less attractive from a road safety and personal security point of view. Thus the Implementation Plan should promote and assist the recommended actions to address night-time road traffic noise as proposed by the various Noise Action Plans.

## 7.7 Water

Water refers to all water-based resources in the GDA. These resources consist of surface waters (rivers, streams, lakes and canals), groundwaters (aquifers and public water sources), transitional waters (estuaries) and coastal waters.

The EPA's (2010) Water Quality in Ireland 2007 - 2009 report indicate that river water quality between 2007 to 2009 showed a small decline compared with the 2004 to 2006 period. It reports that throughout Ireland 68.9% of watercourses have been determined to be unpolluted, 20.7% slightly polluted, 10.0% moderately polluted and 0.5% seriously polluted. However, the Eastern River Basin District, which covers almost 75% of the GDA, despite the steady reduction in seriously polluted channel length, had the lowest percentage of unpolluted channel length in the 2007-2009 survey period. The percentage of unpolluted channel length has decreased from 52% to 46% since the 2004-06 period.

### 7.7.1 Water Framework Directive

Under the Water Framework Directive (WFD) (2000/60/EC) Ireland's various water resources are managed on a catchment basis. There are a total of 8 River Basin Districts (RBDs) across Ireland. The GDA contains all or parts of four RBDs: the Eastern River Basin District (ERBD), a proportion of the South-Eastern River Basin District (SERBD) and a small area of the Neagh Bann River Basin District (NERBD) and the Shannon International River Basin District (ShIRBD). These RBD's are shown in Figure 7.14.

Figure 7.14 River Basin District Boundaries within the GDA



Source: Environmental Report - NTA Draft Transport Strategy for the GDA, 2011

The key objective of the WFD is the attainment of good status by 2015 for all water bodies. Under the WFD, a 4-category risk assessment rating has been developed, based on the likelihood of a water body attaining good status. The risk assessment was initially completed in 2005. This was then replaced with interim status data which was determined as part of the preparation of draft River Basin Management Plans (RBMPs) published in 2010. .

### 7.7.2 Surface waters

Many of the rivers and surfacewater bodies of the GDA are under pressure and are at risk of not attaining the standards as required under the WFD. The key reason for this is that most of the surface water bodies in the GDA are at risk from point sources of pollution such as industrial and wastewater discharges and diffuse sources of pollution such as urban and agricultural runoff.

In the Eastern RBD (representing almost 75% of the GDA, including the majority of the urban and semi-urban areas) the percentage of Class A unpolluted length of river channel has increased from 42% (in 1998-2000) to 46% (in 2004-2006). However, this is still below the national average of 68.9%.

### 7.7.3 Groundwaters

Groundwater is an important source of drinking water but also makes an important contribution to river flows and lake levels. Status data regarding groundwaters in the ERBD is shown in Table 7.9 below.

Table 7.9 Groundwater Status in the ERBD

Groundwater	Good	Failing to achieve Good
Chemical Status (% of total area)	91%	9%
Quantitative Status (% of total area)	99%	1%

Groundwater sources, particularly public, group scheme and industrial supplies, are of critical importance in many regions. The objective of Groundwater Source Protection Zones is to provide protection by placing tighter controls on activities within all or part of the zone of contribution (ZOC) of the source.

Groundwater status in the ERBD has been found to be generally good with almost 91% of the groundwater area achieving good chemical status (chemical composition of groundwater) and 99% of the area achieving good quantitative status (groundwater flows).

### 7.7.4 Drinking water supplies

Approximately 26% of the total drinking water supplied in Ireland is directly from groundwater supplies (EPA, 2008). Drinking water compliance is not a significant issue in the GDA.

### 7.7.5 Flooding

Flooding is a regular occurrence at specific locations within the GDA. The onset of climate change is predicted to increase both the frequency and severity/magnitude of flooding in the GDA. Currently there is no flood risk mapping available for the GDA. However, the OPW has commissioned three sub-regional flooding and drainage studies (called Catchment Flood Risk Assessment and Management Studies or CFRAMS and one of these is in the GDA - the Fingal-East Meath CFRAMS).

The Tolka and the Dodder Rivers have been causes of historical flooding in parts of Dublin city. Coastal flooding has also occurred in the Docklands area of the city and other coastal areas. The Boyne River has also caused significant flooding within its catchment.

Inadequately designed or sized drainage infrastructure is also responsible for more localised flooding-events – these situations arise where the infrastructure cannot drain land faster than water is collecting on the surface. Serious flooding caused by severe rainfall occurred in several locations in metropolitan Dublin, including the City Centre, in October 2011.

Poor siting of new developments on land prone to flooding has also resulted in an increase in the physical and financial damage to property and infrastructure from flooding.

## 7.7.6 Current Issues and Problems

### Impacts on general water quality

Within the GDA, there has been a general problem of water pollution due to the inadequate treatment of effluents and spillages and leaks from sewerage networks. The issue of poor and inadequate treatment of wastewater is exacerbated by the large growth in the population and level of employment of the GDA up to 2008.

In the rural areas of the GDA, onsite water treatment systems can also cause contamination of surface and groundwaters. Pollution of waters can result in a restriction of downstream uses and negatively impact on sensitive and protected species, such as those designated under the Habitats Directive (e.g. freshwater pearl mussel).

The urban areas of the GDA are also the primary locations of industrial land uses which, through the discharge of dangerous substances, can result in negative impacts on drinking water sources.

The physical modification of watercourses, as is sometimes conducted in order to facilitate infrastructure and the increases in sealed surface areas can significantly affect surface run-off rates and lead to increased risks of flash flooding and over-spilling of rivers. The rapid development and expansion of the urban footprint of the GDA has been the driver for this water issue.

Climate change could also potentially lead to more frequent flood events due to an increase in the incidence of high-intensity rainfall, which in addition to potential summer droughts could affect the viability of drinking water supplies.

Groundwater resources under the urbanised areas of the GDA are at risk of not attaining the standards as required under the WFD. There is a range of identified risks, including potential impacts such as point and diffuse discharges (e.g. inadequate wastewater treatment and subsequent discharging, agricultural runoff), morphological factors (e.g. changes to river banks and streams) and impacts from dangerous substances.

It is hoped that the installation and upgrading of sewage treatment works funded by the Department of the Environment, Community and Local Government and the new Waste Water Discharge (Authorisation) Regulations 2007 (S.I. 684 of 2007) will assist in the elimination of untreated discharges in most of the affected areas in the future.

### Drinking water supply

It is essential to ensure that there is adequate water supply for the growing population of the GDA. The average water requirement, in 2007, for the Dublin Region was approx. 540 Mld (million litres per day). It is estimated that, as a result of forecast population growth, this figure will rise to approx. 800 Mld day by 2031. Peak requirements at 2031 are estimated at 880 Mld. The Dublin Region (Water Supply Area) is currently supplied with water from the Rivers Liffey, Vartry and Dodder and a number of groundwater sources in Fingal and north Kildare.

A major drinking water supply issue is the loss of water during transportation in the water network, prior to consumption. The Dublin Water Supply Plan noted that the average leakage in the Dublin region was approximately 30% in 2007.

### 7.7.7 Likely Evolution in the Absence of the Implementation Plan

The gradual implementation of the WFD is expected to improve the status of waters in Dublin. The publication of the ERBD's Draft River Basin Management Plan contains a Programme of Measures and mitigation measures designed to address potential negative effects and also assist the achievement of good status of waters by 2015.

Climate change is expected to lead to increased frequencies, extents and severity of flooding and this may be exacerbated in urban areas, which are less able to cope with the incoming sources of water. Sea-level rises may be a particular threat to populations living close to low lying coastal areas.

### 7.7.8 Implications for the Implementation Plan

It is the intention that any additional transport infrastructure envisaged will avoid significantly impacting on the key water resources of the GDA. The issue of wastewater treatment capacity and drinking water supply capacity cannot be addressed by the Implementation Plan, although encouraging brownfield development and higher population densities in Dublin and its transport network would contribute to efficient use of the existing water and wastewater networks, thereby reducing the need for excessive and additional pipe networks and pumping requirements.

In relation to flooding, it is important that the Implementation Plan does not encourage land uses to be developed on sites which are prone to flooding or that key transport infrastructure is exposed to flood risk.

## 7.8 Air

In comparison with other European countries, Ireland's air quality is generally good. This can be attributed to Ireland's general lack of old and heavy industry and to the meteorological systems which influence Ireland providing very good air mixing and dispersion. However there were exceedances in Dublin city centre of EU ambient air quality limit values in 2009.

Road traffic is one of the main sources of air pollution in Ireland. Common road traffic pollutants are nitrogen dioxide (NO<sub>2</sub>), particulate matter (PM), sulphur dioxide (SO<sub>2</sub>) and carbon monoxide (CO) causing harm to human health. These pollutants are taken as the key determinants of air quality in Ireland.

The Air Quality Framework Directive and its 'daughter' directives introduce measures to address issues of air quality in EU member States, and set out the approach for the management of air quality and the establishment of limit values for pollutants for the protection of humans and vegetation. The air quality limits for the main chemicals and methodologies for the measurement of these substances are detailed in the CAFÉ Directive (2008/50/EC).

Under the EU Framework Directive Member States are required to divide their territory into zones in order to facilitate the assessment and management of air quality. In Ireland those zones are as follows:

- Zone A – Dublin City and Environs;
- Zone B – Cork City and Environs;

- Zone C – 16 Urban Areas with populations greater than 15,000 (including Galway, Limerick, Waterford, Clonmel, Kilkenny, Sligo, Drogheda, Wexford, Athlone, Ennis, Bray, Naas, Carlow, Tralee and Dundalk); and
- Zone D – all other areas within the state excluding Zones A, B and C.

There are several zones present within the GDA. The majority of the area of the GDA is classed as either Zone A or Zone D, but with some Zone C areas, i.e. Bray and Naas. In Zone A the pollution levels are higher than average for Ireland due to the level of traffic on the road network of Dublin. However, monitoring of air quality shows that the air quality within Dublin is in compliance with the Air Quality limit values.

### 7.8.1 Current Issues and Problems

Generally, air quality in Ireland is good with pollutant levels below the EU limit values. However, the increase in traffic flows in Dublin city centre has resulted in the various air quality limit values almost being breached on a number of occasions. The pollutant of most concern in Ireland is PM<sub>10</sub>, daily mean levels of which are close to the EU limit value across the country. Levels of NOX in traffic-impacted city centre areas will also continue to be a problem due to the difficulty in achieving large-scale reductions in road traffic numbers, according to the EPA's "Air Quality in Ireland, 2011" report.

### 7.8.2 Likely Evolution in the Absence of the Implementation Plan

The levelling off and slight reductions in traffic levels in the GDA due to the economic downturn may arrest the recent trend of regular increases in total air quality pollutant emissions for the short term. In the long term, on-going improvement in engine and fuel technology will also compound this positive effect by reducing emissions on a per-vehicle basis.

This does not imply that there will be an overall reduction in emissions in future years. While stricter emission standards and improved fuel economy will make a positive contribution to addressing air quality challenges, there is a potential that continued growth in traffic, based on an overall population and employment growth in the GDA, if not actively managed, may offset the benefits of technology improvements. The effect of this is that air quality limit values may be exceeded in future years in the GDA, especially in locations such as Dublin city centre and also on key roads, such as the M50.

### 7.8.3 Implications for the Implementation Plan

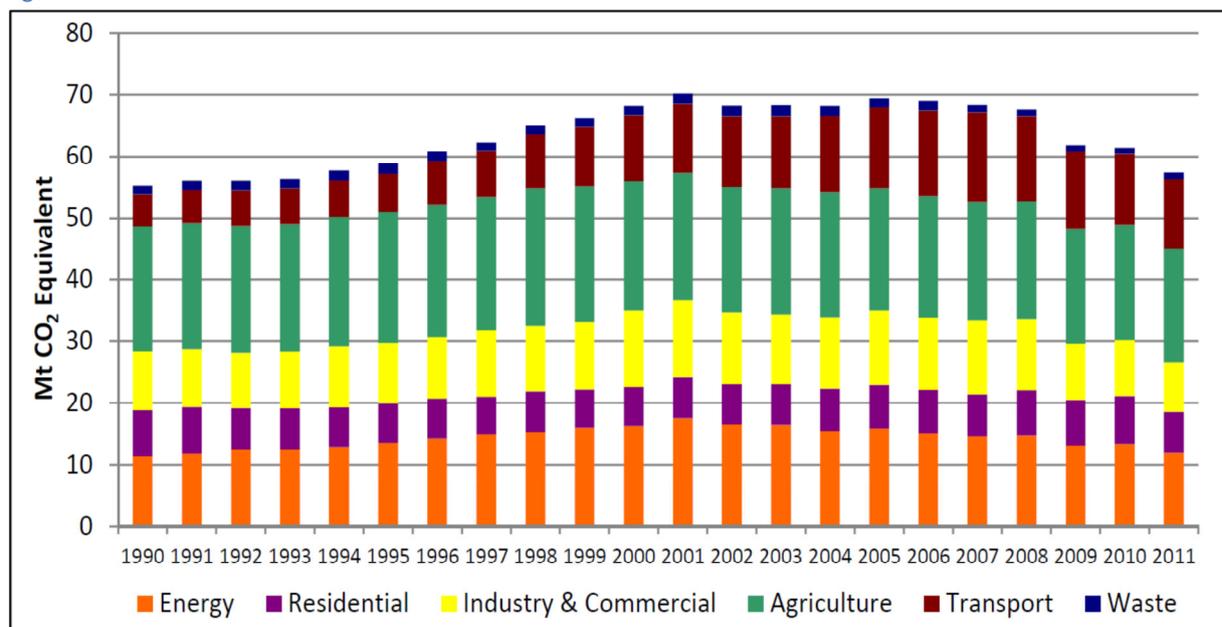
The EPA state that We must also reduce traffic emissions through implementing policies to reduce travel demand, increase the use of alternatives to the private car such as cycling, walking and public transport and improve the efficiencies of motorised transport. The Implementation Plan can play a role in addressing future air quality issues which may arise in the GDA as a result of transport by including objectives such as encouraging a region-wide modal shift away from use of the private car as the dominant mode of transport, thereby reducing one of the main cause of air quality impacts in Ireland.

## 7.9 Climatic Factors & Climate Change

### Greenhouse gas emissions

The use of fossil-fuelled transport results in the emission of greenhouse gases such as carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>) and nitrous oxide (N<sub>2</sub>O). Since 1990 Ireland's GHG emissions increased by from 55.5 million tonnes of carbon dioxide equivalent (ktCO<sub>2</sub>eq.) to a peak of 70.1 ktCO<sub>2</sub>eq. in 2001, but has since fallen to 57.3 ktCO<sub>2</sub>eq. This is shown in Figure 7.15 below.

Figure 7.15 Ireland's Greenhouse Gas Emission 1990 – 2011

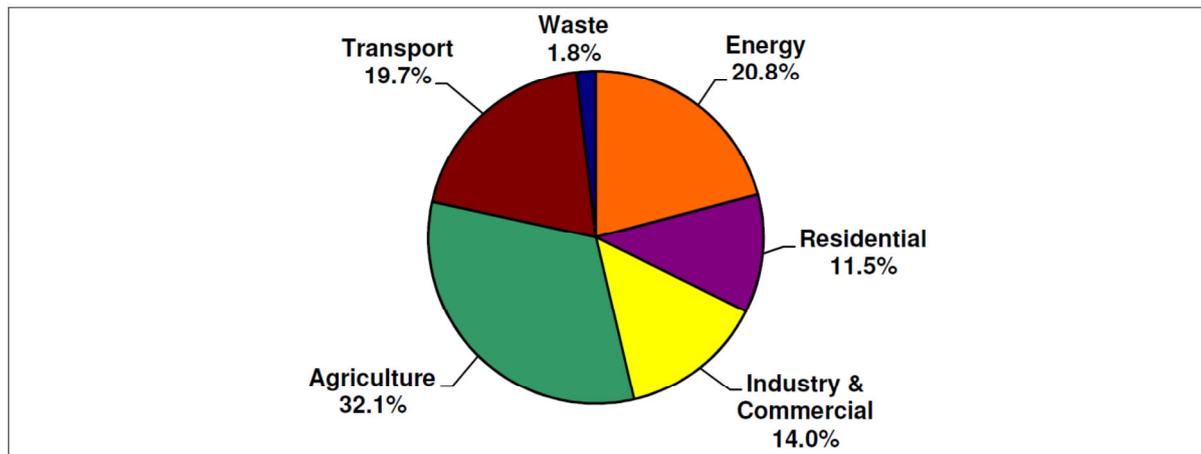


Source: Ireland's Greenhouse Gas Emissions 2011, Environmental Protection Agency

The EPA noted that between 1990 and 2011, the transport sector showed the greatest overall increase at 121%. However, transport emissions have decreased for four consecutive years and are now 22.0% below peak levels in 2007. This is primarily due to the economic downturn. 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.

Figure 7.16 below presents 2011 data showing the breakdown of the sources of Ireland's GHG emissions.

Figure 7.16 Breakdown of the Sources of Ireland's GHG emissions for 2011



Source: Ireland's Greenhouse Gas Emissions 2011, Environmental Protection Agency

It can be seen that transport represented 19.7% of the total emissions. No data is available for the GDA, although as this region has the largest population and the greatest volume of vehicles and car use, it is expected that the GDA is one of the largest contributors to the national transport-based GHG emissions.

### 7.9.1 Current Issues and Problems

Ireland faces a major challenge in meeting the EU's proposed reduction targets in the long term. Ireland has one of the highest national proportions of agricultural emissions within the EU and until the recession, saw significant on-going growth in transport-related emissions. Addressing the issue of transport emissions is likely to be particularly problematic.

### 7.9.2 Likely Evolution in the Absence of the Implementation Plan

The EPA notes that whilst the reduction in emissions is a positive outcome in terms of compliance with international agreements, this trend is, primarily, a direct result of the current economic situation. In order to meet future targets as economic growth returns, Ireland needs to develop as a low carbon economy.

### 7.9.3 Implications for the Implementation Plan

The Implementation Plan can influence the transport sector's contribution to the production of GHG in the GDA. Shifting travel patterns away from the private car and towards walking, cycling and public transport will reduce overall GHG production from the transport sector. The Implementation Plan can support this through enhancing and expanding the existing public transport network. It can also promote walking and cycling and place financial disincentives on modes of transport which have high per-capita GHG emissions.

The Implementation Plan could also promote and facilitate increased population densities adjacent to the major transport corridors and also consider additional transport measures to widen the catchment areas along these corridors, such as feeder buses and enhanced cycling and pedestrian facilities at stations and stops.

The Implementation Plan could also promote mixed and varied land uses such that new developments, infill and redevelopments provide a range of land uses such that some trips are not required or are minimised.

## 7.10 Soils & Geology

The environmental topic of soils and geology is concerned with vulnerable soil resources (e.g. prime agricultural land) and designated geological and geomorphological sites.

### Soils

There are a variety of soil types to be found in the GDA, the most commonly found being Grey Brown Podzolics, Gleys, Acid Brown Earths and Brown Podzolics. Grey Brown Podzolics, Gleys and Acid Brown Earths which are found in the lowlands are naturally fertile and well suited for productive agriculture. There are also numerous areas in the GDA where Basin Peats are present and High Level Blanket Peats and Lithosols are found on the mountain ridges, with Brown Podzolics and Peaty Podzolics on the upper flanks.

### Geology

The bedrock geology of the GDA is composed of igneous and sedimentary formations. Meath consists primarily of Dinantian Upper Impure Limestone and Dinantian Mixed Sandstone, Shale and Limestone. Dublin is comprised of mostly Dinantian Mixed Sandstone, Shale and Limestone. Kildare's bedrock consists of Dinantian Pure Bedded Limestone, Silurian Metasediments, Volcanics and Dinantian Early Sandstones, Shale and Limestone, whereas Wicklow's bedrock is primarily Granites and other igneous intrusive rocks, Ordovician Metasediments and Cambrian Metasediments.

### Soils drainage and agricultural classification

The GDA is dominated by soils with drainage properties considered to be good, moderate and imperfect (they retain water for a period of time and can be considered 'wet' and takes a while to 'dry out'). The majority of the landscape of the ERBD is considered to have a low risk of runoff (65% of the area), with 15% and 20% rated as having moderate and high risks of runoff, respectively. As noted previously, the ERBD does not cover all of the study area of this SEA. However, it does represent over 75% of the overall GDA and, thus, is a valid data source and highly representative of the GDA.

It can be expected that the majority of the most valuable soils (in relation to agricultural production) will be located in the rural areas of Fingal, Meath and Kildare. In relation to Wicklow, the mountains, present greater challenges to agricultural practices. The soils within the four Local Authorities of Dublin (especially Dublin City and South Dublin and Dun Laoghaire-Rathdown County Councils) are under more limited agricultural use, given that urban development is the dominant land use.

#### 7.10.1 Current Issues and Problems

The expansion of the urban footprint of Metropolitan Dublin and towns and villages in the GDA resulted in a loss of agricultural land over the last 20 or so years, especially in counties Meath, Kildare, Wicklow and Fingal. However, the economic downturn has greatly reduced the rate of expansion in recent years.

Recent economic trends have also resulted in a significant fall-off in demand for most forms of construction materials, which are primarily sourced from the geological environment. Demand for geological materials (primarily driven by the construction industry) in Ireland has greatly reduced and demand is likely to remain relatively low in the short term should activity in this sector remain at recent levels. In the medium to longer-term, demand would be expected to rise due to long-term rising population projections and associated development requirements.

Ireland does not have the same extent of historical contaminated sites, in comparison to the UK or the rest of Europe. There has been a general trend of re-developing such sites which are of economic value (e.g. Dublin Docklands and inner town/city sites), although the rate of remediation and subsequent redevelopment of these contaminated sites may be significantly reduced and may occur at a slower rate due to the economic climate.

### **7.10.2 Implications for the Implementation Plan**

The Implementation Plan should seek to reduce the extent of greenfield development, where feasible, and land consumption, especially where the lands being potentially developed are prime agricultural lands. Encouraging general brownfield development will go some way to maintaining existing greenfield resources.

The Implementation Plan could promote the reuse and recycling of construction and demolition waste for any of the transport projects which are proposed.

## **7.11 Material Assets**

Material assets consist of a range of assets of intrinsic, economic value. Three principal classes of assets are considered relevant for this SEA:

- Public assets and infrastructure: such as public open spaces; recreational assets/facilities; public buildings, services and facilities; cultural amenities and facilities; and infrastructural networks: electricity, gas, telecommunications, transport, water supply and wastewater;
- National fossil fuel supplies: such as petrol and diesel stores for the private car users, for public transport vehicles (bus and rail fleets), and for road-based transport and distribution network; and
- Previously developed land: such as brownfield development sites, especially those along transport corridors or in urban areas and greenfield areas.

### **Infrastructure**

Given that the GDA contains approximately 40% of Ireland's population, the region contains a high proportion of the above material assets relative to the other regions in Ireland. Dublin has more of Ireland's public transport network and is the hub of the national bus and rail networks. The M50 is the hub of Ireland's radial national road network and Dublin Port and Dublin Airport are the largest port and airport in Ireland, respectively. There is an extensive network of utilities (electricity, gas, telecommunications, water supply, wastewater network etc.) throughout the GDA, serving the various towns and urban areas.

Another key material asset class consists of the various public recreational amenities such as Phoenix Park, Wicklow National Park, Dublin Bay and Liffey Valley Park. There are also many town and village centres, providing a range of public and community facilities for their local, regional and national catchments. These range from the many small village and neighbourhood centres, to district centres, major town centres and to Dublin city centre which serves a national function.

### **Fossil fuel supplies**

The global focus on fossil fuel consumption and long-term reserves means that national fossil fuel supplies should be considered as a form of asset. The fact that the transport sector almost completely relies on fossil fuels further justifies this status.

EU Directive 68/414/EEC (as amended by Directive 98/93/EC) obliges Member States to maintain minimum stocks (90 days) of crude oil and/or petroleum products. For the period 2004 to 2006 (for which data was available), Ireland always maintained in-excess of 90 days oil supply (the lowest being 97 days' supply in January 2006 and the highest being 129 days' supply in December 2006).

Ireland's total unleaded petrol consumption rose by 18.8% during the period 2000-2006. The total consumption in 2006 stood at 1.73 million tonnes. In relation to diesel (and gasoil), this rose by over 22.9% over the same six-year period. 2006 consumption was 3.72 million tonnes. Ireland's overall oil consumption rose by over 10.5% over the period 2000-2006.

### **Contaminated brownfield sites**

The EPA notes that "the total area of brownfield land in Ireland is unknown; however, there are some 50-80 disused gasworks sites that pose a risk to soil and groundwater". The EPA published a Code of Practice in April 2007 which provides a framework for the identification of contaminated sites, the assessment of the potential risks associated with them and the identification of the appropriate remedial measures or corrective actions necessary to reduce the risk to human health. Local authorities have been trained in implementing this Code. However, a list of contaminated sites within the GDA is not centrally compiled.

#### **7.11.1 Current Issues and Problems**

The significant increase in the GDA's population during the period 2000 – 2006 resulted in considerable pressure on existing utility networks and also on existing infrastructure. However, the economic downturn has reduced this pressure.

Ireland's considerable reliance on fossil fuels imports is likely to remain for the foreseeable future, primarily driven by domestic energy, transport and agricultural demand. Notwithstanding the Government's aims to have renewable energy supplying 17% of Ireland's total energy supply by 2020, coal and gas will continue to fuel 72% of the total electricity demand by 2020, a significant amount of which will be imported.

#### **7.11.2 Implications for the Implementation Plan**

The plan is likely to improve the transport network both through direct investment and expansion of the network and through improving and enhancing the existing offer.

The Implementation Plan should look to identify ways in which it can make a contribution to reducing Ireland's dependence on imported fossil fuels and, where practical and feasible, attempt to reduce total fossil fuel consumption for the transport sector. This will become a greater requirement in the long-term as global concerns regarding security of fossil fuel supply attain a higher profile and focus.

The Implementation Plan should promote and encourage the development of brownfield sites, especially those adjacent to key transport corridors and those close to urban centres, town and villages.

## **7.12 Cultural Heritage (incl. Architectural Heritage & Archaeological Heritage)**

The Record of Monuments and Places, provided by the DEHLG, is a statutory list of all known National Monuments in Ireland. National Monuments are defined in Section 2 of the National Monuments Act (1930) as a feature, "the preservation of which is a matter of national importance by reason of the historical, architectural, traditional, artistic or archaeological interest attaching thereto". There are in-excess of 10,000 such monuments in the GDA.

The National Inventory of Architectural Heritage is a state initiative under the administration of the DECLG. Its purpose is to identify, record and evaluate the post-1700 architecture of Ireland, uniformly and consistently as an aid in the protection and conservation of the built heritage.

In addition to the monument registers, there are a number of properties and areas managed by cultural heritage groups within the GDA.

There are also a number of sites with international importance for heritage within the GDA area. Bull Island has been proposed as a UNESCO Biodiversity Site, and the Archaeological Ensemble of the Bend of the Boyne has been designated as a UNESCO world heritage site, and is Europe's largest and most important concentration of prehistoric megalithic art.

### **7.12.1 Current Issues and Problems**

The growth and urban expansion of the GDA in the last 10 years has resulted in considerable pressure being placed on the status and condition of the GDA's cultural heritage resources. Although these resources are protected via legislation and also through the planning system, it is widely regarded that damage and deterioration has occurred.

### **7.12.2 Implications for The Implementation Plan**

The Implementation Plan will facilitate and promote the consolidation of growth within the existing urban footprint of the GDA and direct future growth, expansion and development to brownfield sites or close to existing urban areas, town and villages. This may avoid impacting on additional cultural heritage resources on greenfield sites in the future. However, consolidation of the existing urban areas of the GDA may also impact on cultural heritage resources within these locations.

Any physical transport infrastructure which directly arises from the Implementation Plan may also result in site-specific cultural impacts.

## 7.13 Inter-Relationships and Interactions

Considering inter-relationships within the environment is an important aspect of SEA – i.e. where one environmental topic can also have both a direct or indirect effect on another environmental topic. Interrelationships are common through the environment and this is not surprising, given the interconnected nature of ecosystems and environmental cycles.

Table 7.10 summarises the various environmental topic interrelationships by way of a matrix. The matrix numbers each of the interactions – these numbers relate to where the interactions are discussed further in the sections which follow.

**Table 7.10 Environmental topic interactions matrix**

	Biodiversity, flora & fauna											
Biodiversity, flora & fauna												
Landscape	<b>1</b>		Population	Human health								
Population		<b>9</b>										
Human health			<b>13</b>		Noise							
Noise	<b>2</b>			<b>14</b>		Water						
Water	<b>3</b>			<b>15</b>			Air					
Air	<b>4</b>			<b>16</b>					Climatic factors & climate change			
Climatic factors & climate change	<b>5</b>						<b>17</b>	<b>19</b>		Soils & geology		
Soils & geology	<b>6</b>	<b>10</b>					<b>18</b>				Material assets	
Material assets	<b>7</b>	<b>11</b>							<b>20</b>	<b>21</b>		
Cultural heritage	<b>8</b>	<b>12</b>									<b>22</b>	

1. Biodiversity, flora & fauna and Landscape – Biodiversity, flora & fauna and landscape are closely linked as many landscapes are inherently dependent on the natural environment and the biodiversity within for its features, such as the Natura 2000 sites along the Dublin coast. Impacts to landscape will also result in impacts to biodiversity e.g., development of a greenfield site will change the landscape character and setting and also remove natural and semi-natural biodiversity resources. Additionally, landscaping along road and rail corridors can provide both biodiversity and landscape benefits.
2. Biodiversity, flora & fauna and Noise – Noise can impact on biodiversity, flora and fauna: impacts can affect bird populations and fauna. Examples of this include an increase in road noise which can impact on fauna, such as bats and birds.

3. Biodiversity, flora & fauna and Water - There are strong links between biodiversity, flora and fauna and water as these environmental components are often dependent on each other. For example, there are 32 water-dependent SACs and 14 water-dependent SPAs in the ERBD.
4. Biodiversity, flora & fauna and Air – Air quality impacts can have knock-on effects on animal and plant life and the success of ecosystems as a whole. The EU Air Quality Directives also prescribe specific standards for the protection of vegetation and ecosystems and these will be considered in this environmental assessment.
5. Biodiversity, flora & fauna and Climatic factors & climate change – Climatic changes and the consequences of climate change can fundamentally adjust a region’s existing biodiversity and associated flora and fauna assemblages. In relation to the GDA, it is possible that future warmer and wetter summers will result in previously uncommon plant and animal species becoming more prevalent but possibly at the expense of existing species. Water shortages – also a potential result of climate change – could have significant negative impacts on aquatic-based ecosystems and also on the region’s general biodiversity.
6. Biodiversity, flora & fauna and Soils & geology – Soils and geology form a fundamental component of biodiversity. Soils are often a key component of flora and also support associated fauna. Soil type and quality can also often be a key influence on the flora living in the soil. Geological conditions can dictate aquatic features and characteristics (e.g. ground regime) of an ecosystem.
7. Biodiversity, flora & fauna and Material assets – Parks and open spaces often contain important biodiversity resources, such as Phoenix Park.
8. Biodiversity, flora & fauna and Cultural heritage – Many historic cultural heritage resources can also be of biodiversity value, especially those in rural and isolated areas, such as hedgerows and field boundaries in rural areas and ‘grounds’ of historic properties.
9. Landscape and Population – There are inter-relationships between landscape and population as landscape and related effects are judged from a human perspective (e.g. particular sets of the population who may reside in a particular landscape may have a particular stance on its value or importance). Additionally, important townscapes are typically located close to or have high residential and working populations and there may be resistance to any perceived negative impacts.
10. Landscape and Soils & geology – Soils will often determine the type of surface flora, a key landscape characteristic.
11. Landscape and Material assets - Landscape is also related to material assets as it is the landscape characteristics of assets such as parks that is a key criteria for their designation as public open and recreational spaces, such as Phoenix Park and Liffey Valley Park. Even outside of ‘formal’ open and recreational spaces, an attractive landscape setting can enhance many aspects of a surrounding area.
12. Landscape and Cultural heritage – The importance of many cultural heritage resources – especially architectural heritage – is based on their historic setting and landscape is a key aspect of this. Additionally, historic landscapes themselves have a cultural heritage value.

13. Population and Human health – Population and human health are listed as separate receptors in the Directive, but they are interrelated and intertwined. For the purpose of this environmental assessment the focus under the population heading will be on broad, overarching socio-economic issues while more direct effects (such as risk of accidents and general health effects) will be the focus under Human Health.
14. Human health and Noise – Noise is not a specific topic listed in the SEA Directive and is covered under the human health topic. A noise-related SEA Objective is one of the four under the human health environmental topic. In particular, night-time road traffic noise is an issue in the GDA with consequent possible sleep disturbance in sensitive portions of the GDA's population.
15. Human health and Water – As water is a key human requirement, it is linked to human health via the potential to impact on the health of a population through pollution of drinking water supplies.
16. Human health and Air – Inter-relationships also exist between human health and air. The focus in relation to air is on compliance with the various Air Quality Standards and Regulations, which are based on the protection of human health.
17. Water and Climatic factors & climate change – Climate change could significantly impact on water resources of the GDA in future years, through changing precipitation patterns, increased evaporation and knock-on effects on the hydrological cycle. One of the main consequences of climate change is a likely increase in rainfall intensity and this may result in a greater incidence of flooding. Additionally, sea-level rise is a longer-term risk to the GDA.
18. Water and Soils & geology – There are clear links between soils & geology and water through aquifers and groundwater resources, which can be considered under either environmental topic. It was decided to consider groundwater resources under the Water topic.
19. Air and Climatic factors & climate change – There are significant inter-relationships between air and climatic factors & climate change. In relation to transport, one of the key sources of air pollution (motor vehicles) is also the primary source of emissions which contribute to climate change.
20. Climatic factors & climate change and Material assets – Inter-relationships exist between climatic factors & climate change and material assets with regard to fossil fuels. There is a direct link between fossil fuel consumption and climatic factors & climate change.
21. Soils & geology and Material assets – In this case, land is seen as a material asset rather than a component of Soils & geology. However, reuse of previously developed land may require contaminated lands to be remediated, a positive effect under Soils & geology.
22. Material assets and Cultural heritage – Many cultural heritage resources are often a material asset in that they comprise important cultural and recreational assets.

## 7.14 Data Gaps and Limitations

This baseline description is not intended to be an exhaustive description of all baseline environmental data in the GDA. Instead, it is focused on providing relevant baseline information at an appropriate scale and detail for the purposes of a regional transport plan.

Data presented in this chapter has been obtained from various publicly-available data sources as those listed in Appendix B.5. No site-specific surveys, field visits or specific investigations were undertaken.

A key data limitation was that some of the data was not available at a regional or local scale and that other data is really only 'spot data' at specific points in the GDA.

There is no national landscape designation or classification system and each local authority is responsible for its own set of designations.

Regarding the health and status of the region's Natura 2000 network, no site-specific information was available for the SACs and SPAs. Although useful information was available on a national basis, it did not provide information on specific sites.

Much of the data was taken from the period from 2006 to 2011. However, the on-going economic downturn from 2008 is likely to have had an impact on indicators beyond 2011 such as land use change and noise.

Notwithstanding the above data gaps and limitations, adequate baseline information was gathered to enable an assessment of the significant effects of the environment from the Implementation Plan.

## 8. Alternatives Assessment

### 8.1 Introduction

This chapter summarises the environmental assessment of the plan alternatives. These comprise three packages which have been defined on the basis of the prioritisation of a number of capital investment projects. The following should be noted at this point:

- The SEA focusses on those elements of the plan with the most significant likely environmental impacts, i.e. those contained within the Capital Investment Programme and Integration of Land-Use and Transport chapters;
- It is not proposed to examine alternative land use policies or principles as these are fixed statutorily by the local authorities;
- The cross-city Luas is included in all Alternatives and is a fixed element of the plan in terms of commitment, priority and in terms of phasing;
- Other infrastructural projects are also fixed in terms of commitment but their priority and phasing is not; and, as such
- The Alternatives have been defined by placing varying degrees of priority on these other infrastructural projects and will provide the basis for their phasing in the emerging preferred Draft Implementation Plan.

Each alternative will therefore include Luas Cross City and will focus on the differing levels of priority between BRT and Heavy Rail elements of the Capital Investment Programme. The general basis of the alternatives assessment consists of a comparison between each of the three themed packages. An assessment rating of – 3 (major negative) to +3 (major positive) and associated text commentary has been provided for the entire package against each of the individual SEA Objectives.

### 8.2 Overview of the Alternative Packages

1. Do-Minimum
2. Heavy Rail
3. BRT and Light Rail

#### 8.2.1 Do-Minimum

The Do-Minimum contains the following infrastructural elements:

- Luas Cross City – a light rail line from St. Stephen’s Green to Broadstone linking the Green Line to the Maynooth Commuter rail line via interchange with the Red Line at Abbey Street;
- The Sustainable Transport Measures Grants (STMG) Programme up to 2016 only;
- Completion of Phase 1 of City Centre Resignalling Programme; and
- Bus Stops Facilities Programme.

#### 8.2.2 Prioritisation of Heavy Rail

The Heavy Rail Alternative prioritises the following infrastructural elements:

- Luas Cross City;

- The STMG Programme up to 2018;
- Bus Stops Facilities Programme;
- Opening of Heuston West, Kishoge and Pelletstown Stations;
- Completion of all phases of City Centre Resignalling Programme;
- Closure of all level crossings on the Maynooth Line;
- Electrification of the Northern and Maynooth Lines;
- Re-opening of the Phoenix Park Tunnel; and
- Station Upgrade and Improvement Programme.

### 8.2.3 Prioritisation of Bus Rapid Transit

The Bus Rapid Transit Alternative prioritises the following infrastructural elements:

- Luas Cross City;
- The STMG Programme up to 2018;
- Completion of Phase 1 of City Centre Resignalling Programme;
- Bus Stops Facilities Programme;
- BRT from Swords to the City Centre;
- BRT from Blanchardstown to UCD via City Centre; and
- BRT from Clongriffin to Tallaght via City Centre.

### 8.2.4 Summary of Alternatives

As referred to earlier, the main thrust of the Alternatives assessment is to compare and contrast various fixed elements of the capital investment programme in order to determine the level of priority that should be given to each one in the emerging preferred Draft Implementation Plan. The core difference between them is therefore the focus of the expenditure of investment beyond the construction of the Cross City Luas. The Heavy Rail Alternative proposes significant enhancements to the rail network in the Dublin area in order to allow for a high level of service and to maximise the use of the existing asset. The BRT Alternative, while incorporating some elements of Heavy Rail investment, focusses instead on 5 radial BRT lines which converge in the City Centre.

## 8.3 Alternatives Assessment Results

Table 8.1 below presents the results for the alternatives assessment. The following key applies to the rating in Table 8.1 below.

+ 3	Major positive impacts
+ 2	Moderate Positive impacts
+ 1	Minor positive impacts
0	Neutral
- 1	Minor negative impacts
- 2	Moderate negative impacts
- 3	Major negative impacts

Table 8.1 SEA results for Alternative Strategies

Assessment Against SEA Objectives and Assessment Scores				
SEA Objective	Do-Minimum	Heavy Rail	Bus Rapid Transit	Summary of Relative Performance
<b>Biodiversity</b>				
1. To avoid impacts on the integrity of European Conservation Sites (SACs and SPAs).	0	0	0	The three alternatives perform in the same manner for this objective. GIS analysis of the Bus and Rail infrastructure proposed revealed no potential adverse impacts on designated sites, with the exception of the electrification of the Northern Rail line, which is dealt with in detail in the accompanying Natura Impact Statement. While there is no detail in the plan related to the Cycling and Walking programme (as part of STMG), it is assumed that these will be carried out in accordance with the Habitats Directive and that no significant impacts will accrue as a result of their implementation. Further detail is provided in the HDA Screening Report and Natura Impact Statement.
2. To support the strategic objectives of the National Biodiversity Plan (NBP).	0	0	0	Similar to the first objective, no significant impacts on a regional scale are anticipated as a result of BRT and Rail proposals as they generally comprise the use or re-use of existing assets.
3. To minimise impacts on locally-important biodiversity in the Greater Dublin Area.	0	0	0	Again, BRT and Rail proposals primarily use existing infrastructure and road space and therefore no significant impacts should arise in terms of locally important biodiversity. It must also be borne in mind when examining these objectives that the overall thrust of the plan is to promote public transport, walking and cycling, and that this will have the effect of reducing car use, with potential knock-on benefits for flora and fauna in the GDA generally.
<b>Landscape</b>				
4. To avoid or, where infeasible, minimise impacts on designated and protected landscapes and conservation areas.	+1	0	+1	<p>The primary area of concern in this regard was the city centre conservation areas and, while Luas Cross-City contributed equally to all alternatives, the BRT option scored more positively in this regard as it physically removes cars from key areas such as the south Georgian core. The Heavy Rail alternative, while potentially removing a similar level of traffic as BRT, does not directly contribute positively to the public realm at specific locations.</p> <p>While this plan does not set down specific alignments for a BRT network, potential adverse impacts have been identified along the Swords BRT at the Santry Demesne Proposed Natural Heritage Area, if this alignment is chosen.</p> <p>Minor localised impacts at Pelletstown Station have been identified in the Environmental Assessment for that project. While this was not deemed significant on a regional scale, and taking into account generally positive impacts arising from reduced traffic, the Heavy Rail alternative has been given a precautionary 0 as a result of this.</p>

**Assessment Against SEA Objectives and Assessment Scores**

<p>5. To minimise impacts on undesignated landscape resources (townscapes, seascapes, riverscapes, general landscapes).</p>	+1	+1	+2	<p>A positive score was given here for all alternatives as they equally contribute in terms of Cross-City Luas in the central core. The BRT option received a higher score than the Heavy Rail one due to the more noticeable impact in terms of the visual impact of traffic removal that would occur as a result of traffic lanes being converted to bus-only. This relates to several city centre locations as well as traditional village and district centres across the Metropolitan Area. In terms of undesignated natural landscapes, the differences between the 3 options are negligible due to the minimal land-take involved.</p>
<b>Population</b>				
<p>6. To increase accessibility to economic and employment opportunities, in particular for those who are physically, economically or socially disadvantaged within the GDA.</p>	+1	+2	+2	<p>All contribute positively to increased accessibility to employment for economically and socially disadvantaged people. In particular the reuse of the Phoenix Park Tunnel for passenger services will enhance accessibility to the city centre employment areas for many people in areas such as Ballyfermot, Cherry Orchard and Clondalkin, while BRT will serve Darndale, Coolock and parts of Tallaght not previously served by high-quality public transport, linking them to the city centre. Common to all options, Luas Cross-City will serve deprived parts of Cabra.</p> <p>Improved interchange and the development of a more closely linked transport network will enhance accessibility to other employment areas such as Sandyford, Park West etc. In terms of physically disadvantaged people, the better spread of services envisaged in Heavy Rail and BRT options mean they score higher than the do-minimum in this regard.</p>
<p>7. To increase accessibility to quality public, cultural and community services, in particular, for those who are physically, economically or socially disadvantaged within the GDA.</p>	+1	+2	+2	<p>The outcome of the assessment here is similar to that for #6. Many cultural and community outlets are located in the same areas as employment, e.g., major town centres such as Blanchardstown or Tallaght as well as Dublin City Centre.</p>
<b>Human Health</b>				
<p>8. To contribute to improvements to transport-related aspects of quality of life for residents, workers and visitors to the GDA.</p>	+1	+2	+2	<p>Both BRT and Rail alternatives have significant positive impacts on the coverage of the GDA in terms of public transport infrastructure and services. This will result in enhanced reliability and frequency of public transport. The implementation of the walking and cycling programmes, as part of STMG, will also contribute positively to this objective.</p>
<p>9. To support the objectives of the Environmental Noise Directive in relation to transport-related noise.</p>	+1	+1	+1	<p>All options will lead to a higher proportion of trips being undertaken by public transport, which will lead to lower traffic noise levels, particularly in key central locations such as College Green. While both Rail and BRT options allow for even greater use of public transport over a wider geographical area, it is unclear from a strategic, qualitative viewpoint whether they perform any better than the Do-Minimum, particularly in the most sensitive locations. It is clear, however, that they will potentially have positive effects and a +1 was deemed reasonable for this reason.</p>
<p>10. To minimise safety risks to human health arising from transport related activity.</p>	+1	+1	+1	<p>It can be predicted that a shift towards public transport in particular will remove some potential for accidents by reducing the numbers of cars on the road network, while the road safety schemes which will emerge through the STMG process will also lead to a positive impact against this objective.</p>

### Assessment Against SEA Objectives and Assessment Scores

11. To support health improvements and benefits from transport-related activities.	+1	+1	+1	The three alternatives promote walking and cycling to a more or less equal extent, with Rail and BRT extending the STMG programme out to 2018. It is not felt that this difference warranted a higher score for these two options in this regard. In terms of the public transport aspect of this objective, the differences between Rail and Bus were deemed negligible.
<b>Water</b>				
12. To support the forthcoming River Basin Management Plans (RBMP) and Programme of Measures (POM). Where these are not available, the objective is to support the aims and objectives of the Water Framework Directive (WFD)	0	0	0	All three alternatives were deemed to have no significant impact on this objective due to the small scale of new infrastructure proposed.
13. To minimise impacts to surfacewater systems and resources.	0	0	0	All three alternatives were deemed to have no significant impact on river systems in the GDA due to no new river crossings being proposed.
14. To minimise impacts to groundwater systems and resources.	0	0	0	Similar to 12 and 13, the extent of new infrastructure proposed in the three alternatives means no significant impacts on groundwater were predicted.
15. To minimise impacts to coastal systems and resources.	0	0	0	No significant impacts to coastal systems were predicted for any of the three alternatives.
16. To minimise impacts to transitional systems and resources.	0	0	0	No significant impacts to transitional systems were predicted for any of the three alternatives.
17. To minimise the risk of flooding.	0	0	0	Any infrastructure will be constructed in line with best practice and due to the use, in the main, of existing road space and rail lines, no significant impacts in relation to flooding are expected.
<b>Air</b>				
18. To reduce negative air quality impacts arising from transport-related emissions.	+1	+2	+2	All options will have a positive impact on air quality as they will all lead to greater numbers of public transport users and those choosing walking and cycling as modes of travel for all trip purposes. The wider spread of public transport as put forward by the Rail and BRT options will, it can be assumed, lead to greater positive impacts in this regard.
19. To ensure compliance with the Air Framework Directive and associated daughter Directives (and the transposing Regulations in Ireland).	0	+1	0	While an increase in public transport, walking and cycling – in a manner similar to #18 – can be predicted to enhance air quality and assist in compliance with the directives, thereby leading to a positive score for both Rail and BRT, there is potential for traffic re-routings arising from the implementation of BRT, to cause exceedances on the road network. In strictly applying the precautionary principle, a 0 score was given for BRT for this reason.
<b>Climatic Factors</b>				
20. To contribute to the reduction of greenhouse gas emissions arising from transport-related activities.	+1	+2	+2	Due to greater choice and associated use of public transport, walking and cycling, it can be reasonably concluded that CO2 emissions will decrease as a result of all 3 alternatives, with both Rail and BRT leading to greater positive impacts in relation to this objective.
<b>Soils &amp; Geology</b>				
21. To minimise negative impacts on important and vulnerable soils resources used for agricultural purposes.	0	0	0	By primarily exploiting existing road and rail infrastructure, the three alternatives minimise impacts on soil.

<b>Assessment Against SEA Objectives and Assessment Scores</b>				
22. To reduce consumption of construction material and generation of construction waste as part of transport infrastructure projects.	0	-1	-1	Both Heavy Rail and BRT options involve the construction of transport infrastructure projects and will therefore result in the generation of some waste and the consumption of some construction materials. Best practice standards will, however reduce the impact of each option on this objective but it was felt prudent to highlight the difference with a -1 for both options.
23. To avoid or, where infeasible, minimise impacts to protected and designated geological and geomorphological sites.	0	0	0	No impacts on geological or geomorphological sites have been identified as a result of the three alternatives.
<b>Material Assets</b>				
24. To protect public assets and infrastructure.	+1	+1	+1	All three alternatives are rated as positive for the protection of public assets and infrastructure as they generally increase regional accessibility in the GDA, thereby enhancing access to public assets and infrastructure. Enhancing and increasing access to these public assets (such as airports, ports, road network, rail network, recreational spaces and facilities, urban centres etc.) benefits them as they require certain levels of usage and therefore good accessibility to make then economically viable and to encourage on-going investment. It is assumed that utilities such as telecommunications networks, electricity transmissions network, gas network etc. will not be negatively impacted by any of the packages and that temporary loss in service will be minimised during construction.
25. To reduce the fossil fuel demand by the transport sector.	+1	+2	+2	All options will reduce the use of fossil fuels as they will all lead to greater numbers of public transport users and those choosing walking and cycling as modes of travel for all trip purposes. The wider spread of public transport as put forward by the Rail and BRT options will, it can be assumed, lead to greater positive impacts in this regard.
26. To assist with the reuse and regeneration of brownfield sites.	+1	+2	+2	The three alternatives facilitate the consolidation of development particularly as a result of Luas Cross City, but the BRT and Rail options score slightly higher, by virtue of bringing major development sites – such as the areas around Inchicore, Clondalkin/Cloverhill, and the South West quadrant of the city centre – into the high quality public transport network.
<b>Cultural Heritage</b>				
27. To avoid or, where infeasible, minimise impacts to designated cultural, architectural and archaeological resources.	0	0	0	Due to the re-use of existing road space and rail infrastructure across the three alternatives, it was deemed reasonable to conclude that no significant impacts on this objective would arise.

## 8.4 Summary of Alternatives Results

All three alternatives perform generally well against the SEA objectives. While there were no significant adverse impacts identified, there were several areas where a neutral impact is forecast, and other areas where positive impacts were identified. Overall the alternatives were assessed as positive generally.

In terms of those objectives related to land-take, the absence of negative scores is due to the fact that very little new infrastructure is being proposed and the associated land-take required is therefore minimal. The positive scores in these cases relates to the mode shift away from the private car anticipated as a result of each alternative and associated benefits, in the broadest sense, for flora and fauna in the GDA from enhanced air quality, for example.

In terms of the comparison of the three options, the do-minimum, while positive, does not emerge as a preferred approach as it has less positive impacts than the other two. The Heavy Rail and BRT alternatives both score very positively. There are two key SEA topics where the two alternatives differ –Air (19 and 20) and Landscape (4 and 5), with Rail being more positive on the former and BRT on the latter. Due to the fact that BRT’s weakness in terms of the Air Framework Directive is highly precautionary, the differences between the two alternatives in this regard are negligible. Similarly, the positive impact on undesignated landscapes arising from BRT is one which a Heavy Rail alternative simply cannot really achieve and the negative impact identified in Heavy Rail is precautionary. As such it would be unfair to differentiate between the two on this basis.

## 8.5 Development of Preferred Draft Integrated Implementation Plan

As this assessment was concerned primarily with the prioritisation of certain elements of the plan in order to assess which projects and proposals should be implemented first, the Authority is satisfied that both Heavy Rail and Bus Rapid Transit alternatives should be implemented in tandem with each other and that the impetus of the plan can be based on both. As such, the SEA process in relation to the assessment of alternatives has not chosen one particular option and the decision related to which proposals to prioritise will not relate solely to environmental impacts.

The next chapter sets out, in greater detail, the environmental impacts of a combined Heavy Rail and Bus Rapid Transit plan – together with an assumed STMG programme, a set of principles for land use and a whole suite of public transport passenger improvements for travel in the Greater Dublin Area.

## **9. Environmental Assessment of Integrated Implementation Plan**

### **9.1 Introduction**

This chapter presents the results of the environmental assessment of the Integrated Implementation Plan. The results are presented in a tabular format (Table 9.1) with a - 3 to + 3 rating and associated text provided for each SEA Objective. Individual elements of the plan which warrant specific commentary and assessment, by virtue of their specific impacts within the plan's overall cumulative impact, are addressed in the main text commentary under each SEA Objective. It should be reiterated at this point that the assessment focusses on those aspects of the plan which are predicted to have the most significant environmental impact, i.e. proposed infrastructural measures and supporting land use principles.

### **9.2 Strategic Environmental Assessment Results**

The results of the SEA of the Integrated Implementation Plan are set out in Table 9.1 overleaf.

Table 9.1 SEA results for Integrated Implementation Plan

SEA Objective	Rating	Assessment
Biodiversity		
<p>1. To avoid impacts on the integrity of European Conservation Sites (SACs and SPAs).</p>	0	<p>There is potential for likely significant effects arising from electrification of the Northern rail line and it is possible these could lead to effects on site integrity. In the absence of detailed information about how birds use the estuary, particularly in relation to flight paths, feeding and foraging areas there is uncertainty over whether such effects would be significant. Detailed survey work to inform an AA would be required once a fully worked up project design was developed. Mitigation, including looking at alternative methods of electrification, is available and evidence indicates that these can be effective in reducing impacts to below significant levels.</p> <p>As a consequence, the proposal for electrification of the Northern railway line should be included within the strategic plan as, with the application of mitigation, it is likely that significant adverse effects on site integrity can be avoided.</p> <p>At the EIA and planning application stage a further Appropriate Assessment will be required based on site specific survey information and consultation, and incorporating the mitigation measures provided in the accompanying NIS.</p> <p>The potential for in-combination effects have also been identified related to Fingal County Development Plan’s and the NTA Draft Cycle Network Plan’s identification of a cycle and walking route across or close to the estuaries, a Fingal proposal for a marina at Rogerstown, in addition to other rail proposals.</p> <p>When the impact of the above proposals are viewed in their totality as a number of schemes, the application of the precautionary principle necessitates that their potential impacts are highlighted at this stage. While there is currently insufficient project design detail available to assess potential impacts with certainty, the likely impacts and mitigation measures have been referenced here and an approach to their progress set out, in accordance with the content of the relevant plans.</p> <p>In relation to the electrification of the northern rail line itself, it is currently unknown whether or not impacts on these sites may be of significance in terms of their conservation objectives. This will be determined through project level Appropriate Assessment at a time when design proposals become available. While the NIS concludes that measures to satisfactorily mitigate any potential negative impacts of the electrification are likely to be found, there remains a possibility that mitigation may not be possible.</p> <p>If at project-level Appropriate Assessment it is deemed that there may be significant impacts on the integrity of any of these sites that cannot be mitigated, then in order for the project to proceed, alternative solutions must be examined. In the absence of such alternatives, Imperative Reasons of Over-riding Public Interest (IROPI) will need to be demonstrated and suitable compensatory measures, probably in the form of the provision of compensatory habitat, will need to be devised, in line with Articles 6.3 and 6.4 of the Habitats Directive. This will all be carried out in close consultation with National Parks and Wildlife Services and Irish Rail, as the ultimate implementing agency and owner of the railway.</p>

1. To avoid impacts on the integrity of European Conservation Sites (SACs and SPAs).	0	<p>The Authority does not foresee any indirect impacts arising out of the Integrated Implementation Plan which are of significance. In some areas, such as Swords/Broadmeadow and Rogerstown Estuaries, Rye Water Valley/Carton and South Dublin Bay, increased numbers of train services may lead to more trains passing through some Natura 2000 sites on existing rail lines. This would comprise the increased use of existing built infrastructure and may have an impact on the conservation objectives of those sites due to very minor increases in disturbance and some increased pollution from the passing of additional Diesel Multiple Units (DMUs). The Authority regards such impacts as insignificant and is therefore satisfied that the Integrated Implementation Plan will have no significant indirect impacts on the Natura 2000 network.</p> <p>A preliminary 0 score is therefore given, but it must be borne in mind that the level of detail which is available at present is not sufficient to make a definitive determination across all elements of the plan. The Authority, in conjunction with other agencies and the local authorities, will not pursue any schemes arising out of this plan, or in-combination with other plans, which will adversely affect the integrity of a Natura 2000 site, unless there are no alternative solutions and that it has been demonstrated that the project is of overriding public interest. Further information is contained in the accompanying Appropriate Assessment Screening Report and Natura Impact Statement.</p>
2. To support the strategic objectives of the National Biodiversity Plan (NBP).	0	The plan will have a neutral impact on biodiversity in the Greater Dublin Area. There is minimal land-take involved and where any is required, it will be undertaken in a manner which is consistent with the principles of proper planning and sustainable development. In line with the objectives of the NBP, this plan has taken full account of biodiversity in its development; it fully sets out the elements of the GDA ecosystem which needs to be considered – not only in this plan but in subsequent infrastructural proposals; and will help conserve and restore biodiversity in the GDA by promoting a mode shift away from the private car to public transport, walking and cycling, thereby reducing greenhouse gas emissions and improving air quality. Applying the precautionary principle, however, the SEA gives a rating of 0 as it cannot be definitively determined that a positive impact will accrue.
3. To minimise impacts on locally-important biodiversity in the Greater Dublin Area.	0	The reasoning and rationale for the 0 score for this SEA objective are identical to that set out for Objective no. 2.
Landscape		
4. To avoid or, where infeasible, minimise impacts on designated and protected landscapes and conservation areas.	+1	Due to the low level of intervention in the natural environment proposed by this plan, the main focus in terms of landscape was the city centre and urban conservation areas where the bulk of the plan’s transport proposals will be developed. In relation to Cross City Luas, the EIS concluded that there will be a permanent positive architectural heritage impact that will enhance the amenity value and future viability of the city. This relates primarily to the Architectural Conservation Areas (ACAs) at O’Connell Street, College Green and the south city retail core, including permanent positive public realm improvements at St. Stephen’s Green between Grafton Street and Dawson Street.

<p>4. To avoid or, where infeasible, minimise impacts on designated and protected landscapes and conservation areas.</p>	<p>+1</p>	<p>Cross City Luas will also traverse the Royal Canal pNHA for a very short distance, close to its terminus at Broombridge. This will lead to a permanent loss of a small area of dry meadow and grassy verge/scrub habitat. The EIS concluded that, as this habitat is of moderate ecological value and as its loss does not affect the conservation status of the designated area or the integrity of the site, it should not be considered as a significant adverse impact.</p> <p>While this plan does not set down specific alignments for a BRT network, potential permanent adverse impacts have been identified along the Swords BRT at the Santry Demesne Proposed Natural Heritage Area, if this alignment is chosen. At this stage it cannot be definitively concluded that such impacts will in fact arise. Where BRT runs through the city centre, it is predicted to have similar effects to Cross City Luas but this will depend on the precise nature of the infrastructure. If BRT involves the complete removal of general traffic lanes and conventional buses from streets through conservation areas such as the south Georgian core, it will result in a more positive permanent impact than if traffic remained.</p> <p>In other locations potentially served by BRT such as Tallaght village and Rathfarnham – both ACAs – the same general permanent positive impacts may potentially arise, with benefits accruing from the removal of general traffic at these sensitive locations.</p> <p>Where new infrastructure is proposed and construction is required – even within the curtilage of the existing carriageway – it is assumed for the purposes of this SEA that best practice methods will ensure that no permanent adverse impacts on conservation areas related to the rivers and canals in the GDA will arise. This relates mainly to any works to the carriageways at river and canal bridges.</p> <p>While there is no detail in the plan related to the Cycling and Walking programme (as part of STMG), it is assumed that this programme will be undertaken in accordance with the all relevant environmental directives, and planning legislation and guidance, and that no significant impacts will accrue as a result of their implementation.</p> <p>As part of the Implementation Plan, a 2<sup>nd</sup> train station is to be built at Pelletstown. This is located at the Royal Canal pNHA and will involve a degree of land take from this designated site. The project is the subject of a current planning application and the Environmental Report states that following implementation of a suite of mitigation measures, there will be minor residual impacts at a local level to Treeline and Woodland habitats, and fauna including nesting birds, Pygmy shrew, Hedgehog, and foraging bats (short-term). This localised minor impact is not deemed significant on a regional scale.</p> <p>Overall, due to the minimal extent of intervention required in the natural and built environment as a result of this plan, i.e. minimal land-take, demolition etc. – and when viewed in the context of the anticipated direct removal of general traffic within a number of conservation areas, a general decrease arising from an anticipated mode shift away from the private car on a regional basis, and the policies of existing Development Plans and Local Area plans in this regard, a minor positive score has been given for the plan against this SEA objective.</p>
<p>5. To minimise impacts on undesignated landscape resources (townscapes, seascapes, riverscapes, general landscapes).</p>	<p>+1</p>	<p>In a similar manner to Objective #4, in combination with the plans of the relevant local authorities, the impacts on undesignated landscapes can be deemed to be minor positive due to the direct impacts in terms of traffic removal at urban locations and the overall reduction in traffic regionally brought about by the anticipated mode shift away from the private car.</p>

Population		
<p>6. To increase accessibility to economic and employment opportunities, in particular for those who are physically, economically or socially disadvantaged within the GDA.</p>	+2	<p>The plan is predicted to contribute positively to accessibility to employment for those who are economically and socially disadvantaged on a permanent basis across the entire Greater Dublin Area. In particular the reuse of the Phoenix Park Tunnel for passenger services will permanently enhance accessibility to the city centre employment areas for many people in areas such as Ballyfermot, Cherry Orchard and Clondalkin, while BRT will serve Darndale, Coolock and parts of Tallaght not previously served by high-quality public transport, linking them to the city centre. Luas Cross-City will serve parts of Cabra and link this area directly to the city centre. All of these areas are characterised by a certain level of disadvantage in some locations. Improved interchange and the development of a more closely linked transport network will enhance accessibility to other employment areas such as Sandyford, Park West etc.</p> <p>The Plan's impact on this objective can be viewed in combination with the emerging GDA Cycle Network Plan, which is intended to facilitate safe and convenient access by bicycle from people's places of residence to potential places of work and other social services. As cycling is a highly efficient mode in terms of costs, speed and reliability, the promotion of it as a means of travel should have major benefits in terms of accessibility for those who are economically and socially disadvantaged. This is of particular relevance for trips up to 10km in length.</p> <p>In terms of those who are physically disadvantaged, the better spread of services proposed by the creation of a high quality public transport network is a positive development. The Implementation plan includes proposals for accessibility for all persons with reduced mobility incorporating the design of vehicles, stations and platforms.</p> <p>It is reasonable therefore, particularly when the above impacts are viewed in combination with those arising from the National Action Plan for Social Inclusion, to give a moderate positive score of +2 for this objective.</p>
<p>7. To increase accessibility to quality public, cultural and community services, in particular, for those who are physically, economically or socially disadvantaged within the GDA.</p>	+2	<p>The outcome of the assessment here is similar to that for Objective #6. Many cultural and community outlets are located in the same areas as employment, e.g., major town centres such as Blanchardstown or Tallaght as well as Dublin City Centre. As such a permanent positive impact score on this objective is given.</p>
Human Health		
<p>8. To contribute to improvements to transport-related aspects of quality of life for residents, workers and visitors to the GDA.</p>	+2	<p>The plan is predicted to have significant positive impacts on the coverage of the GDA in terms of public transport infrastructure and services. This will result in enhanced reliability and frequency of public transport leading to less transport associated stress for residents, workers and visitors. The plan also includes improvements to travel information, which is a key factor in terms of this objective.</p> <p>In combination with the implementation of the walking and cycling programmes, the Plan will also contribute positively to this objective in terms of costs and the reliability of these modes. Overall, a permanent, region-wide moderate positive impact can be predicted and a +2 score was deemed appropriate.</p> <p>When the Implementation Plan is viewed in combination with other plans of both central and local government, for example, the Development Plan, the RSA's Road Safety Strategy and the National Action Plan for Social Inclusion 2007 – 2016, this score is enhanced.</p>

9. To support the objectives of the Environmental Noise Directive in relation to transport-related noise.	+1	The plan will lead to a higher proportion of trips being undertaken by public transport than by private car, which will permanently lead to lower traffic noise levels, particularly in key central locations. There is potential, however, for increased levels of car traffic in some locations where traffic has been diverted as a result of the implementation of BRT and Luas Cross City. Due to the possibility of these localised adverse impacts, and when balanced with an overall mode shift to non-car modes on a regional basis, a minor positive score of +1 was deemed to be reasonable against this objective.
10. To minimise safety risks to human health arising from transport related activity.	+1	It can be predicted that the further development of an integrated public transport network and a high quality and safe walking and cycling network will make the transport environment in the GDA safer, particularly in combination with on-going road safety programmes and measures emerging from the Road Safety Strategy. The plan is also anticipated to engender a shift towards these modes and will remove some potential for accidents by reducing the numbers of cars on the road network. A minor positive assessment has been given for this objective.
11. To support health improvements and benefits from transport-related activities.	+1	The plan facilitates the development of a regional walking and cycling network, together with a suite of policy measures which are intended to deliver a mode shift towards these active modes of travel for all trip purposes. As the extent of this shift is not fully evident at this point, a precautionary +1 has been given. This positive impact will be permanent and should accrue across the Greater Dublin Area.
<b>Water</b>		
12. To support the forthcoming River Basin Management Plans (RBMP) and Programme of Measures (POM). Where these are not available, the objective is to support the aims and objectives of the Water Framework Directive (WFD)	0	The plan is rated as having a neutral effect on the relevant RBMPs and the overall objectives of the WFD, the primary focus of which is to achieve 'good' ecological status for all waters by 2015. The plan does have the potential to directly impact on water resources in the GDA, but these are actually relatively limited in their occurrence (and discussed in SEA Objectives #13 to #17).
13. To minimise impacts to surfacewater systems and resources.	0	GIS analysis shows BRT lines crossing a number of rivers – Tolka, Dodder, Liffey, and Santry. It is anticipated that these lines will be constructed primarily within the curtilage of the existing roadways and that relevant design standards, good construction practice and management will apply in the implementation of all infrastructural schemes. All of these schemes will also require development consent and in some cases, project-level EIA. These 'lower-tier' processes will also assist in reducing, managing and limiting negative impacts. As such, a neutral 0 score was considered appropriate.
14. To minimise impacts to groundwater systems and resources.	0	GIS analysis shows that no schemes proposed will have direct impacts on Groundwater Source Protection Areas. It is also assumed that transport schemes in the Plan will comply with relevant design standards and good construction practice and management will apply in the implementation of all schemes. As such, a neutral score is given for this objective.
15. To minimise impacts to coastal systems and resources.	0	The only potential impacts identified related to coastal walking and cycling routes which may emerge as the regional networks are developed for these two modes. In line with the commentary on SEA Objective #1, it is assumed that as projects are developed via the Part VIII or EIS process, as appropriate, principles of proper planning and sustainable development will apply and impacts to coastal systems will be minimised. At the level of a regional plan assessment, a neutral impact and a score of 0 has therefore been given against this objective.
16. To minimise impacts to transitional systems and resources.	0	BRT routes are likely to cross the River Liffey Estuary in the city centre and one option may also cross the Tolka Estuary. Luas Cross City also crosses River Liffey Estuary in the city centre. The limited scale of the infrastructure proposed for the former means no impacts should accrue. In the case of the latter, residual impacts of low magnitude and slight significance were identified in the EIS. On a regional scale – the level at which this plan applies – it was deemed unreasonable to allow such a minor impact lead to a negative score. As such, and similar to the rest of the Water theme, a neutral rating has been deemed appropriate here.

17. To minimise the risk of flooding.	0	In assessing the potential for impacts in relation to this objective, it is taken to be the case that any schemes will not be allowed to proceed unless they meet design standards which avoid undue increases to the risk of flooding. On this basis, and taking into account the limited level of intervention in the environment proposed, it is considered unlikely that there would be significant impacts arising from flooding as a consequence of the plan.
<b>Air</b>		
18. To reduce negative air quality impacts arising from transport-related emissions.	+2	The anticipated mode shift from the private car to public transport, cycling and walking, as a result of this plan will lead to a reduction in transport-related emissions. Certain traffic management re-routings may increase the numbers of cars using certain links, but overall, at the regional scale, it is reasonable to conclude that the integration of the transport network to provide much greater choice in terms of linking origins to destinations, through the development of 5 BRT routes, Luas Cross City and the roll-out of a walking and cycling programme, will lead to a reduced number of cars on the road in the GDA leading to a significant permanent reduction in transport emissions overall at the regional level. A +2 is therefore regarded as appropriate.  When one views the Implementation Plan in combination with other plans, such as Smarter Travel, the National Climate Change Strategy and its emerging outcomes, the potential to reduce negative air quality impacts is increased.
19. To ensure compliance with the Air Framework Directive and associated daughter Directives (and the transposing Regulations in Ireland).	0	A highly precautionary approach has been taken in the assessment of the plan against this objective. This relates to the above point on the potential to increase traffic on certain routes, which, in exceptional circumstances, may lead to exceedances of the standards set out in the directive. As this is a localised impact, it must be balanced against the regional-level positive impacts that are anticipated to occur on a permanent basis. It was deemed prudent, however, to conclude a neutral impact rather than a positive one.
<b>Climatic Factors</b>		
20. To contribute to the reduction of greenhouse gas emissions arising from transport-related activities.	+2	A similar logic applies here as to Objective #18. Taking a regional-level view, the enhancements to the public transport network and the walking and cycling networks, by engendering a shift towards these modes away from the private car, will lead to a reduction in greenhouse gas emissions from transport. When viewed in combination with actions on renewable energy and fuel economy in Smarter Travel, a +2 score was deemed appropriate.
<b>Soils &amp; Geology</b>		
21. To minimise negative impacts on important and vulnerable soils resources used for agricultural purposes.	0	As the level of land-take proposed is minimal and confined to the urban area, no impact on soils is anticipated.
22. To reduce consumption of construction material and generation of construction waste as part of transport infrastructure projects.	-1	Taking a precautionary approach, a -1 score has been given here. There will be a degree of construction required as part of this plan but the potential for impacts will be reduced where the principles of sustainable development are applied to construction and procurement of materials, i.e. the re-use and recycling of materials.
23. To avoid or, where infeasible, minimise impacts to protected and designated geological and geomorphological sites.	0	The transport schemes included within the plan may have the potential to impact on geological and geomorphological sites. However, there is no national designation for such sites. Potential direct impacts are considered unlikely given the quantum of new infrastructure proposed and given that much of this is in urban areas which have already been developed. As such, a neutral rating is deemed reasonable for this SEA Objective.
<b>Material Assets</b>		

24. To protect public assets and infrastructure.	+1	<p>The plan scores positively against this objective as it increases regional accessibility to public assets and infrastructure. The construction of Luas Cross City, the BRT Network and a number of new rail stations will enable more people to access Dublin Airport, major open spaces and key urban centres more efficiently. Access to transport itself will also be enhanced by bringing high-quality public transport to a greater number of people across a wider geographical area.</p> <p>This benefits public assets and infrastructure as they require certain levels of usage and therefore good accessibility to make them more economically and socially viable and to encourage on-going investment. It is assumed that utilities such as telecommunications networks, electricity transmissions network, gas network etc. will not be negatively impacted by the plan and that temporary loss in service will be minimised during implementation of the plan. A minor positive score has been given on this basis.</p>
25. To reduce the fossil fuel demand by the transport sector.	+2	<p>By securing a mode shift away from the private car towards walking, cycling and public transport, and in combination with Smarter Travel, the plan's delivery should contribute to a reduction in fossil fuel demand on a permanent basis across the region. A moderate positive +2 was seen as appropriate here as it is anticipated that a significant number of car trips would transfer to BRT and rail due to the integration of the high quality public transport network in a manner that creates choice for many trips that heretofore did not exist. In terms of walking, and cycling in particular, the development of the networks should engender a shift towards these modes as well.</p> <p>In relation to those trips by car and goods vehicles that will still be undertaken with the plan in place, it is anticipated that the efficiency of these trips will be greatly enhanced as a result of the removal of unnecessary journeys from the network. This will have the effect of easing congestion and reducing the amount of fuel wasted in stationary traffic.</p>
26. To assist with the reuse and regeneration of brownfield sites.	+3	<p>The clear focus of this plan is on the existing urban areas of the GDA and, in particular, Dublin City Centre. All of the proposed BRT routes converge on the city centre, while the construction of Luas Cross City and the re-use of the Phoenix park Tunnel will greatly enhance access to the very centre of the city where potential to meet this objective is greatest. Examples of this include key sites on O'Connell Street, Grangegorman DIT Campus, Georges Quay, Dublin Docklands, and areas in the west of the city centre which are not served by high-quality public transport at present, where in combination with the Development Plans, Local Area Plans and Strategic Development Zone Planning Schemes of the local authorities, the reuse and regeneration of brownfield sites will be assisted and promoted as a central desired outcome of the plan. At many inner and outer suburban locations along the proposed network, there will also be one-off former employment, industrial or institutional sites, the potential for whose redevelopment may benefit from the arrival of new transport services.</p> <p>In addition, while this plan seeks to support and feed into land use decisions by local authorities rather than direct them, the planning principles contained within the plan, if implemented, will also contribute to meeting this SEA objective. Overall, it was deemed reasonable to give a +3 major positive score against this objective.</p>

Cultural Heritage		
27. To avoid or, where infeasible, minimise impacts to designated cultural, architectural and archaeological resources.	0	<p>The level of land-take required in this plan should ensure that there will be no significant impact on this SEA Objective, apart from that associated with Luas Cross City. The EIS for that particular project did outline a number of adverse impacts of varying significance on archaeology and cultural heritage, many of which were highly significant. Further mitigation and monitoring of these impacts will continue throughout the construction period. In terms of architecture, the Luas Cross City EIS concluded that there will be a permanent positive impact.</p> <p>It is assumed that all future transport projects will be constructed in accordance with the required design standards; in accordance with all required planning and environmental regulations and that standard mitigation measures are incorporated into the design and construction. Potential disturbance of archaeological resources during scheme development will generally be mitigated by preservation in-situ where possible and preservation by recording, similar to Luas Cross City. The various measures which will result in town and streetscape improvements can also be expected to potentially enhance the setting of the urban architectural and cultural heritage resources.</p> <p>Taking all of the above into account, the adverse impacts on archaeology, coupled with the potentially positive impacts on architecture mean a neutral score is reasonable for this objective.</p>
Cumulative impacts and impact interactions	0	<p>Section 7.13 presented a set of baseline impact interactions and interrelationships. These also apply to the environmental assessment results of the Integrated Implementation Plan. However, a consideration of these impacts is that they will not cumulatively interact with the various impacts identified above in this table. Additionally, the potential for cumulative impacts and impact interactions was also directly considered when undertaking the assessment against each of the 27 SEA Objectives and any areas where common impacts were identified were generally expressed in such a manner, e.g. Objectives 2 and 3. The methodology and information used to undertake the assessment also considered impact interactions (e.g. the reduction in traffic volume provided a cross-topic basis for air quality, noise, climate change and fossil fuel consumption and GIS information on the various schemes provided a basis for biodiversity, landscape, water and cultural heritage).</p> <p>As referred to under Objective #26, the Implementation plan will not directly determine land use in the GDA. It will, however, have a major bearing on such decisions and the Authority will seek to influence development in a manner which exploits investment in transport infrastructure and services to the maximum extent possible. As such, there is a potential cumulative impact in how the plan will work in-combination with the Regional Planning Guidelines for the Greater Dublin Area, the County and City Development Plans, Local Area Plans and Strategic Development Zone Planning Schemes across the region. It can be concluded, having reviewed these documents in the context of transport investment in the region, that a positive impact will accrue as a result of their cumulative effects. This relates to the consolidation of development into the existing urban area and a focussing of any greenfield development into locations along high quality public transport corridors.</p> <p>Overall, it is not expected that interactions/interrelations between environmental topics and subsequent cumulative effects will lead to significant impacts over and above those identified already with respect to the SEA objectives and a neutral score has been given.</p>

# 10. Mitigation Measures

## 10.1 Introduction

This section discusses the mitigation measures identified as necessary for the plan to address its potential negative impacts and also to enhance some of the positive impacts.

As no significant adverse impacts have been identified through the SEA process, it was not necessary to derive a comprehensive set of mitigation measures for each piece of infrastructure proposed, for example. As a high-level regional plan with little land-take and other negative environmental impacts anticipated, it is the view of the Authority that a policy statement insert which covers all proposals will suffice.

At the project-level Environmental Impact Assessment and Habitat Directive Assessment stage, detailed mitigation measures for all projects will be developed. The Luas Cross City project, for example, identifies a suite of measures aimed at reducing the adverse impacts of that scheme on environmental topics such as Archaeology and Cultural Heritage, Architectural Heritage and Landscape & Visual. It is assumed that similar sets of measures will be identified when any BRT lines are progressed to planning application stage, the Northern Rail line scheme is designed, or any new stations proposed are built.

The Authority is therefore satisfied that this SEA has highlighted any potential adverse impacts that may arise in the delivery of the Integrated Implementation Plan at the regional level, and that it is appropriate to mitigate in this manner. As such, following public consultation and taking into account the views of the environmental authorities, the following policy statement has been inserted into the section 5 of the Integrated Implementation Plan as a means of ensuring that environmental impacts arising from the progress of the plan into the future are fully and comprehensively considered, minimised and mitigated to the greatest extent possible:

“The development of the Plan has been accompanied by consideration of environmental issues through, in particular, the Strategic Environmental Assessment process and the Habitats Directive Assessment process. These processes have fed back into the making of the Plan, in particular in relation to those locations where impacts have been identified as a result of the proposed development of transport infrastructure. Details of the environmental analysis and mitigation measures identified are presented in the accompanying Environmental Report and Natura Impact Statement.

The assessments identified a number of schemes which may have potential negative impacts on the environment. These mainly relate to the BRT and Cycle networks and the electrification of the Northern Rail line. Potential impacts identified include land-take, habitat loss and disturbance. The risk of flooding as a result of new infrastructure is also a key consideration and ongoing studies in this regard will be taken into account as the Plan is implemented. Mitigation measures such as choosing alignments of least impact, minimising land-take, best practice construction methods and timing, replacement of lost habitats etc. will all be examined as projects progress.

Notwithstanding the above, it must also be borne in mind that the Plan is likely to have significant positive impacts on the environment as a result of the anticipated

mode shift away from the private car to public transport, walking and cycling. Positive impacts identified include reduction in greenhouse gas emissions, improved air quality and health, and enhancements to the public realm. As such, a view of the Plan which takes both positive and negative impacts of the proposed schemes and policies into account in a balanced manner is appropriate.

In general, the process of environmental assessment will continue through the project development stage for individual schemes forming part of the Plan. In delivering the Plan, the Authority will, in collaboration with the relevant agencies, actively address the protection and enhancement, where practicable, of the natural, built and historic environment associated with these schemes. Projects which are taken forward to development consent stage will be supported by environmental appraisal, Habitats Directive Assessment and Environmental Impact Assessment (EIA) where appropriate. All transport projects will be constructed in accordance with applicable design standards and environmental regulations and mitigation measures in accordance with good practice will be incorporated into the design and construction of these schemes.”

Due to the identification of a potential significant effect arising out of the inclusion of the electrification of the Northern Rail line in the Plan, a specific additional statement addressing its potential impacts, and its potential effects in combination with other plans and programmes has been addressed by way of the following statement in section 8.10 of the Plan:

“The Appropriate Assessment of the Plan identified the possibility of potential significant effects on the conservation objectives of Malahide and Rogerstown Estuaries due to the electrification of the rail line north of Malahide. The potential for in-combination effects have also been identified related to Fingal County Development Plan’s identification of a cycle and walking route across the estuaries and a proposed marina at Rogerstown in addition to other rail proposals.

When the impact of the above proposals are viewed in their totality as a number of schemes, the application of the precautionary principle necessitates that their potential impacts are highlighted at this stage. While there is currently insufficient project design detail available to assess potential impacts with certainty, the likely impacts and potential mitigation measures are highlighted in the accompanying Natura Impact Statement and an approach to its progress set out.”

# 11. Monitoring

## 11.1 Introduction

This chapter sets out the proposed monitoring programme to be implemented with the adoption of the Integrated Implementation Plan. The SEA Directive states that monitoring of the likely significant environmental effects of the implementation of plans and programmes must be undertaken in order to identify at an early stage unforeseen effects and be able to undertake appropriate remedial measures. This programme is based on that proposed for the monitoring of the Draft Transport Strategy for the Greater Dublin Area 2011-2030 and, in essence, replaces it. As such, in the event of a new long-term Transport Strategy being developed, it is likely that the same programme, incorporating relevant updates, will apply.

## 11.2 Proposed Monitoring Programme

The SEA monitoring programme for the plan is set-out below in Table 11.1. Monitoring has been proposed for all 27 SEA Objectives and not limited to topics for which more significant effects are predicted. This was undertaken with a view to better understanding the effects of the plan's implementation across all environmental topics.

The intention when developing the monitoring programme was to build upon the existing data collected by the NTA and the other agencies in the Greater Dublin Area. The role of the Regional Planning Guidelines for the GDA will be of specific relevance in this regard.

It is recommended that a bi-annual Monitoring Report is prepared to report on the progress of the SEA monitoring programme and that a summary of key actions required to address both predicted and also unforeseen significant environmental effects included.

If monitoring identifies a regular frequency of a negative significant environmental effect, then more frequent monitoring and reporting may be required to determine if remedial action is effective in addressing the negative effect.

The availability of data and the development of new or more detailed data sets are likely to be important issues and should be noted in all Monitoring Reports.

The suite of monitoring measures below should also be reviewed on an annual basis with new monitoring measures included should new and relevant data sets become available.

**Table 11.1**

**Implementation Plan Monitoring Programme**

<b>SEA Objective</b>	<b>SEA Monitoring Indicator</b>	<b>Source</b>	<b>Authority</b>
1. To avoid impacts on the integrity of European Conservation Sites (SACs and SPAs) and nationally designated sites (NHAs).	<ul style="list-style-type: none"> <li>▪ Area of direct impacts on Natura 2000 network affected by implementation of Implementation Plan.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Project level HDA (where applicable for projects)</li> <li>▪ NPWS Reporting</li> <li>▪ County and City Development Plan Reporting (relevant to Natura 2000 Network)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Irish Rail</li> <li>▪ RPA</li> <li>▪ NRA</li> <li>▪ Local Authorities</li> <li>▪ National Parks and Wildlife Service</li> </ul>
2. To support the overall goal of the National Biodiversity Plan.	<ul style="list-style-type: none"> <li>▪ Key findings and reporting of the National Biodiversity Plan</li> </ul>	<ul style="list-style-type: none"> <li>▪ Updates and Reviews of National Biodiversity Plan</li> </ul>	<ul style="list-style-type: none"> <li>▪ Department of Arts, Heritage and the Gaeltacht</li> </ul>
3. To minimise impacts on locally-important biodiversity in the Greater Dublin Area.	<ul style="list-style-type: none"> <li>▪ Impact on biodiversity from Implementation Plan transport schemes;</li> <li>▪ Area of greenfield land zoned for development;</li> <li>▪ Region-wide biodiversity impacts</li> </ul>	<ul style="list-style-type: none"> <li>▪ Project level EIA</li> <li>▪ County and City Development Plan Reporting (relevant to biodiversity);</li> <li>▪ Biodiversity Action Plan Reporting</li> </ul>	<ul style="list-style-type: none"> <li>▪ Irish Rail</li> <li>▪ RPA</li> <li>▪ NRA</li> <li>▪ Local Authorities</li> </ul>
4. To avoid or, where infeasible, minimise impacts on designated and protected landscapes and conservation areas.	<ul style="list-style-type: none"> <li>▪ Impact on designated landscapes (when/if developed) by Implementation Plan transport schemes</li> <li>▪ Biodiversity Action Plan reporting</li> <li>▪ Impacts on Protected Structures from Implementation Plan transport schemes</li> </ul>	<ul style="list-style-type: none"> <li>▪ Project level EIA</li> <li>▪ County and City Development Plan Reporting (relevant to biodiversity);</li> <li>▪ Biodiversity Action Plan Reporting</li> </ul>	<ul style="list-style-type: none"> <li>▪ Irish Rail</li> <li>▪ RPA</li> <li>▪ NRA</li> <li>▪ Local Authorities</li> </ul>
5. To minimise impacts on undesignated landscape resources (townscapes, seascapes, riverscapes, general landscapes).	<ul style="list-style-type: none"> <li>▪ Localised landscape impacts</li> </ul>	<ul style="list-style-type: none"> <li>▪ Project level EIA</li> </ul>	<ul style="list-style-type: none"> <li>▪ Irish Rail</li> <li>▪ RPA</li> <li>▪ NRA</li> <li>▪ Local Authorities</li> </ul>
6. To increase accessibility to economic and employment opportunities, in particular for those who are physically, economically or socially disadvantaged within the GDA.	<ul style="list-style-type: none"> <li>▪ Time taken to travel to work, including for disadvantaged</li> <li>▪ Rates of Unemployment by ED in GDA</li> <li>▪ Specific monitoring of accessibility (travel times, frequency of PT, alternative PT options etc.)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Analysis of Censuses of Population</li> <li>▪ Live Register</li> <li>▪ Quarterly National Household Survey</li> <li>▪ NTA specialist monitoring</li> </ul>	<ul style="list-style-type: none"> <li>▪ Central Statistics Office</li> <li>▪ NTA</li> </ul>
7. To increase accessibility to quality public, cultural and community services, in particular, for those who are physically, economically or socially disadvantaged within the GDA.	<ul style="list-style-type: none"> <li>▪ Time taken to travel to schools, colleges, retail, cultural facilities and services, including for disadvantaged</li> <li>▪ Specific monitoring of accessibility (travel times, frequency of PT, alternative PT options etc.)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Analysis of Censuses of Population</li> <li>▪ NTA Household Surveys</li> <li>▪ NTA specialist monitoring</li> </ul>	<ul style="list-style-type: none"> <li>▪ Central Statistics Office</li> <li>▪ NTA</li> </ul>
8. To contribute to improvements to transport-related aspects of quality of life for residents, workers and visitors to the GDA.	<ul style="list-style-type: none"> <li>▪ Transport mode split</li> <li>▪ Extent and Quality of bus corridors (Km)</li> <li>▪ Extent of walking/cycling networks delivered (km)</li> <li>▪ Mean Travel Times</li> </ul>	<ul style="list-style-type: none"> <li>▪ Analysis of Censuses of Population</li> <li>▪ NTA Travel and Household Surveys</li> <li>▪ Reporting requirements of PSO Contracts and Licences</li> <li>▪ Bus Monitoring</li> </ul>	<ul style="list-style-type: none"> <li>▪ Central Statistics Office</li> <li>▪ NTA</li> <li>▪ RPA</li> <li>▪ NRA</li> </ul>

	<ul style="list-style-type: none"> <li>▪ Customer satisfaction surveys</li> </ul>	<ul style="list-style-type: none"> <li>▪ Dublin City Canal Cordon Counts</li> </ul>	<ul style="list-style-type: none"> <li>▪ Irish Rail</li> <li>▪ Dublin Bus</li> <li>▪ Bus Éireann</li> <li>▪ Dublin City Council</li> </ul>
9. To support the objectives of the Environmental Noise Directive in relation to transport-related noise.	<ul style="list-style-type: none"> <li>▪ Monitoring and reporting associated with the Noise Action Plan</li> <li>▪ Number of transport projects-related noise complaints</li> </ul>	<ul style="list-style-type: none"> <li>▪ Noise Action Plan Monitoring and Implementation</li> </ul>	<ul style="list-style-type: none"> <li>▪ Local Authorities</li> </ul>
10. To minimise safety risks to human health arising from transport related activity.	<ul style="list-style-type: none"> <li>▪ Number Injured and killed in the GDA in Road Accidents</li> </ul>	<ul style="list-style-type: none"> <li>▪ Annual Road Collision Handbook</li> </ul>	<ul style="list-style-type: none"> <li>▪ Road Safety Authority</li> </ul>
11. To support health improvements and benefits from transport-related activities.	<ul style="list-style-type: none"> <li>▪ Mode split for cycling and walking</li> <li>▪ Incidence or prevalence of heart disease or obesity</li> <li>▪ Self-reported health statistics</li> </ul>	<ul style="list-style-type: none"> <li>▪ Health Atlas</li> <li>▪ Analysis of Censuses of Population</li> <li>▪ Dublin City Canal Cordon Counts</li> <li>▪ NTA Household Survey</li> </ul>	<ul style="list-style-type: none"> <li>▪ Health Service Executive</li> <li>▪ Dublin City Council</li> <li>▪ Central Statistics Office</li> </ul>
12. To support the forthcoming River Basin Management Plans (RBMP) and Programme of Measures (POM). Where these are not available, the objective is to support the aims and objectives of the Water Framework Directive (WFD).	<ul style="list-style-type: none"> <li>▪ Direct and indirect impacts on POMs</li> <li>▪ Applicable monitoring data</li> </ul>	<ul style="list-style-type: none"> <li>▪ WFD monitoring programme reports</li> </ul>	<ul style="list-style-type: none"> <li>▪ Relevant River Basin Districts</li> <li>▪ EPA</li> </ul>
13. To minimise impacts to surfacewater systems and resources.	<ul style="list-style-type: none"> <li>▪ Extent of surfacewater bodies directly affected by implementation of Plan</li> <li>▪ Change in surface water quality status classification</li> </ul>	<ul style="list-style-type: none"> <li>▪ Project level EIA</li> <li>▪ Development Plans</li> <li>▪ WFD monitoring programme reports</li> </ul>	<ul style="list-style-type: none"> <li>▪ Irish Rail</li> <li>▪ RPA</li> <li>▪ NRA</li> <li>▪ Local Authorities</li> <li>▪ EPA</li> </ul>
14. To minimise impacts to groundwater systems and resources	<ul style="list-style-type: none"> <li>▪ Extent of groundwater bodies directly affected by implementation of Plan</li> <li>▪ Change in groundwater quality status classification</li> </ul>	<ul style="list-style-type: none"> <li>▪ Project level EIA</li> <li>▪ Development Plans (incl. SEA monitoring)</li> <li>▪ WFD monitoring programme reports</li> </ul>	<ul style="list-style-type: none"> <li>▪ Irish Rail</li> <li>▪ RPA</li> <li>▪ NRA</li> <li>▪ Local Authorities</li> <li>▪ EPA</li> </ul>
15. To minimise impacts to coastal systems and resources.	<ul style="list-style-type: none"> <li>▪ Extent of coastal systems directly affected by implementation of Plan</li> </ul>	<ul style="list-style-type: none"> <li>▪ Project level EIA</li> <li>▪ Development Plans (incl. SEA monitoring)</li> <li>▪ WFD monitoring programme reports</li> </ul>	<ul style="list-style-type: none"> <li>▪ Irish Rail</li> <li>▪ RPA</li> <li>▪ NRA</li> <li>▪ Local Authorities</li> <li>▪ EPA</li> </ul>
16. To minimise impacts to	<ul style="list-style-type: none"> <li>▪ Extent of transitional systems directly affected by implementation of</li> </ul>	<ul style="list-style-type: none"> <li>▪ Project level EIA</li> </ul>	<ul style="list-style-type: none"> <li>▪ Irish Rail</li> </ul>

transitional systems and resources.	Plan	<ul style="list-style-type: none"> <li>▪ Development Plans (incl. SEA monitoring)</li> <li>▪ WFD monitoring programme reports</li> </ul>	<ul style="list-style-type: none"> <li>▪ RPA</li> <li>▪ NRA</li> <li>▪ Local Authorities</li> <li>▪ EPA</li> </ul>
17. To minimise the risk of flooding.	<ul style="list-style-type: none"> <li>▪ Flood risk</li> <li>▪ Number, extent and location of flood events in the GDA</li> </ul>	<ul style="list-style-type: none"> <li>▪ Project level EIA</li> <li>▪ Flood Mapping</li> </ul>	<ul style="list-style-type: none"> <li>▪ Irish Rail</li> <li>▪ RPA</li> <li>▪ NRA</li> <li>▪ Local Authorities</li> <li>▪ Office of Public Works</li> </ul>
18. To reduce negative air quality impacts arising from transport-related emissions.  and  19. To ensure compliance with the Air Framework Directive and associated daughter Directives (and the transposing Regulations in Ireland).	<ul style="list-style-type: none"> <li>▪ Air quality monitoring reports</li> <li>▪ Changes to air quality from transport-related sources</li> </ul>	<ul style="list-style-type: none"> <li>▪ EPA Air Quality Reports</li> <li>▪ Local Authority Annual Reports</li> </ul>	<ul style="list-style-type: none"> <li>▪ EPA</li> <li>▪ Local Authorities</li> </ul>
20. To contribute to the reduction of greenhouse gas emissions arising from transport-related activities.	<ul style="list-style-type: none"> <li>▪ Sectoral GHG emissions</li> <li>▪ Atmospheric Carbon Dioxide Levels</li> </ul>	<ul style="list-style-type: none"> <li>▪ EPA Reporting (Indicators)</li> </ul>	<ul style="list-style-type: none"> <li>▪ EPA</li> </ul>
21. To minimise negative impacts on important and vulnerable soils resources used for agricultural purposes.	<ul style="list-style-type: none"> <li>▪ Land cover changes in the GDA</li> </ul>	<ul style="list-style-type: none"> <li>▪ CORINE Land Cover data changes</li> <li>▪ Development Plan data (incl. SEA monitoring)</li> </ul>	<ul style="list-style-type: none"> <li>▪ EPA</li> <li>▪ Local planning authorities</li> </ul>
22. To reduce consumption of construction material and generation of construction waste as part of transport infrastructure projects.	<ul style="list-style-type: none"> <li>▪ Estimated level of construction waste recovered during major transport schemes</li> </ul>	<ul style="list-style-type: none"> <li>▪ Information on Major Transport Infrastructure Projects</li> </ul>	<ul style="list-style-type: none"> <li>▪ National Roads Authority</li> <li>▪ RPA</li> <li>▪ Irish Rail</li> </ul>
23. To avoid or, where infeasible, minimise impacts to protected and designated geological and geomorphological sites.	<ul style="list-style-type: none"> <li>▪ Impacts on designated geological and geomorphological sites (when/if developed) by Implementation Plan transport schemes</li> </ul>	<ul style="list-style-type: none"> <li>▪ Project level EIA</li> <li>▪ NPWS Reporting</li> </ul>	<ul style="list-style-type: none"> <li>▪ National Roads Authority</li> <li>▪ RPA</li> <li>▪ Irish Rail</li> <li>▪ NPWS</li> </ul>
24. To protect public assets and infrastructure.	<ul style="list-style-type: none"> <li>▪ Passenger numbers at GDA Ports and Airports</li> <li>▪ Public transport use and modal share</li> <li>▪ Occupancy rates of Bus and Rail</li> <li>▪ Condition of Public Transport Infrastructure and Quality of Services</li> </ul>	<ul style="list-style-type: none"> <li>▪ Public Transport Statistics (all modes of transport)</li> <li>▪ Census data (transport info)</li> <li>▪ Reporting requirements of PSO Contracts and Licences</li> <li>▪ Annual Departmental Budgets</li> </ul>	<ul style="list-style-type: none"> <li>▪ NTA</li> <li>▪ Central Statistics Office</li> <li>▪ Dublin Bus</li> <li>▪ Bus Éireann</li> </ul>

	<ul style="list-style-type: none"> <li>▪ Road, Footpath and Cycle Facility Maintenance Budget</li> </ul>		<ul style="list-style-type: none"> <li>▪ National Roads Authority</li> <li>▪ RPA</li> <li>▪ Irish Rail</li> <li>▪ Dublin Airport Authority</li> <li>▪ Dublin Port</li> <li>▪ Local planning authorities</li> <li>▪ Department of Transport</li> </ul>
25. To reduce the fossil fuel demand by the transport sector.	<ul style="list-style-type: none"> <li>▪ Public transport use and modal share</li> <li>▪ Sales of Petrol and Diesel</li> </ul>	<ul style="list-style-type: none"> <li>▪ Public Transport Statistics (all modes of transport)</li> <li>▪ Census data (transport info)</li> <li>▪ Revenue returns</li> </ul>	<ul style="list-style-type: none"> <li>▪ Central Statistics Office</li> <li>▪ Revenue</li> </ul>
26. To assist with the reuse and regeneration of brownfield sites.	<ul style="list-style-type: none"> <li>▪ Proportion of development occurring on brownfield sites</li> </ul>	<ul style="list-style-type: none"> <li>▪ Development Plans</li> <li>▪ Local Area Plans</li> <li>▪ Analysis of Planning Permissions and Local Authority Projects</li> <li>▪ Geo-Directory</li> </ul>	<ul style="list-style-type: none"> <li>▪ Local Authorities</li> <li>▪ An Post</li> <li>▪ Central Statistics Office</li> </ul>
27. To avoid or, where infeasible, minimise impacts to designated cultural, architectural and archaeological resources.	<ul style="list-style-type: none"> <li>▪ Sites affected by implementation of Implementation Plan</li> </ul>	<ul style="list-style-type: none"> <li>▪ Project level EIA</li> </ul>	<ul style="list-style-type: none"> <li>▪ Irish Rail</li> <li>▪ RPA</li> <li>▪ NRA</li> <li>▪ Local Authorities</li> </ul>

## Appendix A – Plan and Programme Policy Context

## Appendix A - Plan and Programme Policy Context

Policy or legislation instrument	Summary and likely influence & links/relationship to NTA Integrated Implementation Plan for the GDA	Influence on SEA process
<b>International and European legislation and policy</b>		
United Nations (UN) Convention on Biological Diversity	<p>The objectives of this Convention is the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies.</p> <p>The Plan has the potential to impact on the regional biodiversity of the GDA, especially through transport interventions, which may arise.</p>	Two SEA Objectives ( <i>Table 7.3</i> ) have been included with regards to the protection and conservation of biodiversity. A third SEA Objectives has been included regarding the protection of designated sites.
UN Kyoto Protocol and the Second European Climate Change Programme (ECCP II)	<p>The overall objective of the Kyoto Protocol is that it sets binding targets for 37 industrialized countries and the European Community for reducing greenhouse gas (GHG) emissions. This amounts to an average of five per cent against 1990 levels over the five-year period 2008-2012. ECCP II was launched in October 2005 and is a key EU climate change instrument) focused on several aspects of climate change, including aviation, CO2 and cars, carbon capture and storage, adaptation and EU Emission Trading Scheme.</p> <p>Ireland's National Climate Change Strategy 2007 – 2012 has been based around these international and European climate change policy instruments. The transport sector is one of the largest contributors to overall greenhouse gas (GHG) emissions in the world. In Ireland, transport accounts for approximately 20% of overall GHG emissions. Thus, climate change and its links to transport is a key issue for the NTA's Plan for the GDA.</p>	An SEA Objective has been developed which aims to contribute to the reduction of greenhouse gas emissions arising from transport-related activities.
EU Birds Directive (Council Directive 79/409/EEC) and EU Habitats Directive (Council Directive 92/43/EEC)	<p>The Habitats Directive aims to ensure the protection and restoration at a favourable conservation status of habitats and species listed or to be listed under Annexes to the Directive. Natura 2000 is the network of protected sites established and comprises SACs (designated under the Habitats Directive) and SPAs (established under the Birds Directive).</p> <p>These Directives have created a network of European Designated (Natura 2000) sites, which may be impacted upon due to transport interventions which might arise from the Plan.</p>	An SEA Objective has been defined which is focused on the avoidance of impacts on the integrity of Natura 2000 sites.
European Communities (Birds and Natural Habitats) Regulations 2011	<p>The European Communities (Birds and Natural Habitats) Regulations 2011 consolidate the European Communities (Natural Habitats) Regulations 1997 to 2005 and the European Communities (Birds and Natural Habitats)(Control of Recreational Activities) Regulations 2010, as well as addressing transposition failures identified in judgments of the Court of Justice of the European Union (CJEU).</p> <p>The Regulations have been prepared to address several judgments of the CJEU against Ireland, notably cases C-418/04 and C-183/05, in respect of failure to transpose elements of the Birds Directive and the Habitats Directive into Irish law.</p>	An SEA Objective has been defined which is focused on the avoidance of impacts on the integrity of Natura 2000 sites.

Policy or legislation instrument	Summary and likely influence & links/relationship to NTA Integrated Implementation Plan for the GDA	Influence on SEA process
Wildlife Acts 1976-2010	<p>The aims of the Wildlife Acts are to provide for the protection and conservation of wild fauna and flora, to conserve a representative sample of important ecosystems, to provide for the development and protection of game resources and to regulate their exploitation, and to provide the services necessary to accomplish such aims.</p>	<p>While no specific SEA objective has been derived based on this Act, the objectives related to the protection of biodiversity would be supportive of the aims of the Wildlife Acts.</p>
<p>Water Framework Directive (2000/60/EC)</p>	<p>The Directive requires the attainment of good quality (“good status”) in all inland surface waters, estuarine and coastal waters (to a distance of one nautical mile) and groundwater by 2015. The Directive requires that waters be managed as hydrological units, i.e. as individual river catchments or groups of contiguous catchments, termed river basin districts (RBDs). Some of the key overall objectives of the WFD include:</p> <ul style="list-style-type: none"> <li>• to protect and enhance the status of aquatic ecosystems (and terrestrial ecosystems and wetlands directly dependent on aquatic ecosystems);</li> <li>• to promote sustainable water use based on long-term protection of available water resources;</li> <li>• to provide for enhanced protection and improvement of the aquatic environment by reducing/phasing out of discharges, emissions and losses of priority substances;</li> <li>• to contribute to mitigating the effects of floods and droughts; and</li> <li>• to establish a register of 'protected areas' e.g. areas designated for protection of habitats or species.</li> </ul>	<p>A specific SEA Objective has been developed which is aimed at supporting RBMPs and POMs.</p>
	<p>A key requirement of the WFD is that all eight RBDs will be required to each prepare a River Basin Management Plan (RBMP) and associated Programme of Measures (POMs), based on the above WFD objectives. It is important that in undertaking the SEA and preparing the plan that the requirements of the WFD are taken into account.</p>	

Policy or legislation instrument	Summary and likely influence & links/relationship to NTA Integrated Implementation Plan for the GDA	Influence on SEA process
Air Quality Framework Directive (1996/62/EC)	<p>This Directive set's down air quality standards in Member States for a wide variety of pollutants. The Directive outlines how ambient air quality should be monitored, assessed and managed. Four 'daughter' directives have been developed, each focusing on a specific range of air quality pollutants.</p> <p>The various above Directives (and transposing Irish Regulations) set various air quality thresholds for the protection of human health, vegetation and ecosystems, above which action must be taken. Various thresholds are set for the following pollutants:</p> <ul style="list-style-type: none"> <li>• Sulphur dioxide (SO<sub>2</sub>);</li> <li>• Nitrogen dioxide (NO<sub>2</sub>);</li> <li>• Particular matter (PM<sub>10</sub> and PM<sub>2.5</sub>);</li> <li>• Lead (Pb);</li> <li>• Carbon monoxide (CO);</li> <li>• Benzene;</li> <li>• Arsenic;</li> <li>• Cadmium;</li> <li>• Nickel; and</li> <li>• Benzo(a)prylene.</li> </ul> <p>The relevance of these air quality Directives and legislation to the NTA Plan for the GDA is that the majority of the above pollutants are emitted by motor vehicles through the combustion of fossil fuels; nitrogen dioxide and particulate matter in particular are pollutants closely associated with road traffic and poor air quality. One of the key potential effects from the Plan is change in the overall level of vehicle usage (and emission of pollution) in the GDA.</p>	<p>With the Air Quality Framework in mind, the SEA includes an Objective to reduce pollution emissions from fossil fuel-based transport.</p>
Assessment and Management of Environmental Noise Directive (2002/49/EC)	<p>The Directive is aimed at providing a basis for developing EU-wide measures to reduce noise emitted by the major sources, in particular road and rail vehicles and infrastructure, aircraft, outdoor and industrial equipment. The Directive applies to environmental noise to which humans are exposed, in particular in built-up areas, in public parks or other quiet areas in an agglomeration, in quiet areas in open country, near schools, hospitals and other noise sensitive buildings and areas.</p> <p>The link between this Environmental Noise Directive and the Plan is that traffic noise is one of the major sources of environmental noise. Potential changes in the level of traffic in the GDA may result in environmental improvements, if the level of vehicle-based travel is reduced.</p>	<p>Reducing the negative effects of transport-related noise has been included as an SEA Objective (Human health).</p>

<b>Policy or legislation instrument</b>	<b>Summary and likely influence &amp; links/relationship to NTA Integrated Implementation Plan for the GDA</b>	<b>Influence on SEA process</b>
EU Sustainable Development Strategy (2006)	<p>The overall aim of the EU Sustainable Development Strategy is to “identify and develop actions to enable the EU to achieve a continuous long-term improvement of quality of life through the creation of sustainable communities able to manage and use resources efficiently, able to tap the ecological and social innovation potential of the economy and in the end able to ensure prosperity, environmental protection and social cohesion”. This Strategy focuses on areas such as climate change and clean energy; sustainable transport; sustainable consumption &amp; production; and conservation and management of natural resources.</p> <p>Ireland’s first National Sustainable Development Strategy, Sustainable Development – A Strategy for Ireland, was published in 1997 and followed on from the EU’s previous versions of the European Sustainable Development Strategy. This document was reviewed in 2002 and the findings published in the document Making Ireland’s Development Sustainable. The EU’s latest Sustainable Development Strategy, which was published in 2006, was also reviewed in 2009.</p>	The SEA is one component of sustainability. The sustainability of the Plan will be assessed through the monitoring programme.
Floods Directive (2007/60/EC)	<p>Directive 2007/60/EC on the assessment and management of flood risks entered into force on 26 November 2007. This Directive requires Member States to assess if all water courses and coast lines are at risk from flooding, to map the flood extent and assets and humans at risk in these areas and to take adequate and coordinated measures to reduce this flood risk. The Floods Directive shall be carried out in coordination with the Water Framework Directive (see above), notably by flood risk management plans and RBMPs being coordinated, and through coordination of the public participation procedures in the preparation of these plans. All assessments, maps and plans prepared shall be made available to the public.</p>	Minimising the risk of flooding has been included as an SEA Objective (Water).
Directive on the Protection of Groundwater Against Pollution and Deterioration (2006/118/EC)	<p>Directive 2006/118/EC on the protection of groundwater against pollution and deterioration and the Water Framework Directive are the relevant pieces of EU legislation relating specifically to groundwater. The Directive is designed to prevent and combat groundwater pollution. It includes the following provisions:</p> <ul style="list-style-type: none"> <li>• Criteria for assessing the chemical status of groundwater;</li> <li>• Criteria for identifying significant and sustained upward trends in groundwater pollution levels, and for defining starting points for reversing these trends; and</li> </ul> <p>Preventing and limiting indirect discharges (after percolation through soil or subsoils) of pollutants into groundwater.</p>	Minimising impacts to groundwater systems and resources has been included as an SEA Objective (Water).
<b>National legislation and policy</b>		
Infrastructure and Capital Investment Framework 2012-2016	<p>The Government published its capital programme in November 2011 titled “Infrastructure and Capital Investment 2012 – 2016: Medium Term Exchequer Framework”. That programme set out the Government’s capital investment priorities over the five years of the programme. The total public transport investment set out in the programme is €1,428 million over the period 2012 to 2016.</p>	This forms the basis for the plan in its entirety and while no specific SEA objectives emerged from this framework, it has shaped the potential of the Plan in terms of environmental benefits.
Dublin Transport Authority Act (2008)	<p>This act provides the statutory framework for the functions of the National Transport Authority, including the making of the Integrated Implementation Plan.</p>	No specific SEA objective has been derived from this.

Policy or legislation instrument	Summary and likely influence & links/relationship to NTA Integrated Implementation Plan for the GDA	Influence on SEA process
Smarter Travel – A Sustainable Transport Future – A New Transport Policy for Ireland 2009 – 2020 (2009)	<p>This is an Action Plan, developed by the Government and designed to show how we can reverse current unsustainable transport and travel patterns and reduce the health and environmental impacts of current trends and improve our quality of life.</p> <p>It sets out five key goals:</p> <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; and</li> <li>• to improve accessibility to transport.</li> </ul> <p>In order to achieve these goals the policy establishes targets, outlines the forty nine actions which must be undertaken and details the funding which must be secured.</p> <p>The recommendations and outcomes in this Plan are likely to be very relevant to the Plan. Additionally, the overall objectives of both the Plan and the Plan are very similar.</p>	<p>Although, no specific SEA Objective has been developed from Smarter Travel, the overall aim of this Action Plan (encouraging more sustainable travel patterns) is consistent with the SEA Objectives.</p>
Ireland’s First National Cycle Policy Framework (2009)	<p>The objective of the National Cycle Policy Framework is to help create a strong cycling culture in Ireland and to make all cities, towns, villages and rural areas bicycle friendly. It recognises the fact that cycling contributes to improved quality of life and quality of public realm, a stronger economy and business environment, and an enhanced environment. It aims to achieve a level of 10% of all trips to be taken by bicycle in 2020.</p> <p>The most important factors in ensuring that the National Cycle Policy Framework is successful are:</p> <ul style="list-style-type: none"> <li>• The participation of many stakeholders across several government departments, many agencies, all local authorities and other non-governmental organisations and institutions;</li> <li>• Appropriate levels of, and timely funding for the initiatives;</li> <li>• The knowledge and human resources available to implement the policies; and</li> <li>• Legislation and enforcement.</li> </ul> <p>It details the interventions (planning and infrastructure, and communications and education) that will be implemented to improve conditions for cycling and help increase the number of trips made by bicycle. It also details instruments needed to meet its objective. These include financial resources, legislation and enforcement as well as personnel responsible for co-ordination, training and guidance. This policy framework also assigns responsibility for various interventions and instruments to government departments, agencies, local authorities and other stakeholders.</p> <p>The National Cycle Policy Framework is of direct relevance to the Plan as it will strongly influence how cycling will be developed within the GDA over the coming years.</p>	<p>Although, no specific SEA Objective has been developed from First National Cycle Policy Framework the overall aim of encouraging more sustainable travel patterns is consistent with the SEA Objectives, especially those under Human Health.</p>

<b>Policy or legislation instrument</b>	<b>Summary and likely influence &amp; links/relationship to NTA Integrated Implementation Plan for the GDA</b>	<b>Influence on SEA process</b>
Design Manual for Urban Roads and Streets (2012)	<p>This Manual seeks to address street design within urban areas (i.e. cities, towns and villages). It sets out an integrated design approach. What this means is that the design must be:</p> <p>a) Influenced by the type of place in which the street is located, and  b) Balance the needs of all users.</p> <p>A further aim of this Manual is to put well-designed streets at the heart of sustainable communities. Well-designed streets can create connected physical, social and transport networks that promote real alternatives to car journeys, namely walking, cycling or public transport.</p>	No specific SEA Objective has been developed from the DMURS. However, one of the overall objectives of more sustainable travel patterns is inherent in many of the SEA Objectives.
National Cycle Manual (2011)	This manual sets out how best to plan and design for cyclists. It embraces the Principles of Sustainable Safety as this will offer a safe traffic environment for all road users including cyclists. It offers guidance on integrating the bike in the design of urban areas and challenges planners and engineers to incorporate cycling within transport networks more proactively than before.	No specific SEA Objective has been developed from the NCM. However, one of the overall objectives of more sustainable travel patterns is inherent in many of the SEA Objectives (such as Climatic factors & climate change, Air and Population).
Road Safety Strategy (2013-2020)	<p>The latest Road Safety Strategy was published in 2013 and its overarching targets are:</p> <ul style="list-style-type: none"> <li>• A reduction of road collision fatalities on Irish roads to 25 per million or 124 persons by 2020</li> <li>• A provisional target for the reduction of serious injuries by 30% from 472 in 2011 to 330 by 2020</li> </ul> <p>The Road Safety Strategy has clear links to the Implementation Plan as safety is one of the key objectives.</p>	The minimisation of safety risks to human health from transportation is one of the SEA Objectives.

Policy or legislation instrument	Summary and likely influence & links/relationship to NTA Integrated Implementation Plan for the GDA	Influence on SEA process
Guidelines for Planning Authorities on Sustainable Residential Development in Urban Areas (Cities, Towns and Villages) (2009)	<p>These Guidelines (published in 2009) provide guidance for residential development in urban areas. One of the key aims is to achieve the most efficient use of urban land through housing densities that are appropriate to the location involved and availability of supporting services and infrastructure, particularly transport. The Guidelines make the following key statements in relation to sustainable travel patterns:</p> <ul style="list-style-type: none"> <li>• Good pedestrian and cycle facilities within residential areas (including adequate public lighting) can facilitate higher levels of physical activity among young people, particularly in relation to school trips, where perceptions about traffic safety among parents and children are a key factor.</li> <li>• Higher residential densities within walking distance of public transport facilities can help to sustain the economic viability of such transport.</li> <li>• No substantial residential development in the larger settlements, where public transport is available, should proceed without either adequate existing public transport provision, which should be planned at a strategic level in advance of development.</li> </ul> <p>Guidance is provided for larger towns and cities (populations in excess of 5,000) on matters such as public transport corridors, infill sites, brownfield development and development densities.</p> <p>These Guidelines will play a key role in the development of the Plan as they shall be a key influence on the future planning and development of the GDA. In particular, the promotion of increased residential and development densities around key transport corridors and nodes will be a key feature of the Plan.</p>	<p>No specific SEA Objective has been developed from the Residential Development guidelines. However, one of the overall objectives of more sustainable travel patterns is inherent in many of the SEA Objectives (such as Climatic factors &amp; climate change, Air and Population).</p>
Sustainable Rural Housing – Guidelines for Planning Authorities (2005)	<p>These Guidelines (published in 2005) set out in detail how the Government’s policies on rural housing are to be implemented by local authorities. The Guidelines are to be used by local authorities when preparing the development plan policies and in their operation of the development control systems. The overall goal of these guidelines is to steer local authorities towards sustaining and renewing established rural communities and strengthening rural villages and towns in accordance with the National Spatial Strategy.</p> <p>In terms of transport the Guidelines aim to strengthen the established structure of villages and smaller settlements in order to support local economies and to accommodate additional populations in a way that supports the viability of public transport and local infrastructure and services such as schools and water services.</p> <p>The guidance provided within this document will influence future development plans and development control as applied within rural settings. The rural settlement pattern, which will be significantly influenced by this document, is of direct relevance to the Plan.</p>	<p>No specific SEA Objective has been developed from the Sustainable Rural Housing Guidelines for Planning Authorities. However, the aim of providing more sustainable patterns of future development is inherent in many of the SEA Objectives (such as Biodiversity, Flora and Fauna, Landscape, Population, Climate and Water)</p>

Policy or legislation instrument	Summary and likely influence & links/relationship to NTA Integrated Implementation Plan for the GDA	Influence on SEA process
Retail Planning Guidelines for Planning Authorities (2012)	<p>The Guidelines have five key policy objectives:</p> <ul style="list-style-type: none"> <li>- Ensuring that retail development is plan-led;</li> <li>- Promoting city/town centre vitality through a sequential approach to development;</li> <li>- Securing competitiveness in the retail sector by actively enabling good quality development proposals to come forward in suitable locations;</li> <li>- Facilitating a shift towards increased access to retailing by public transport, cycling and walking in accordance with the Smarter Travel strategy; and</li> <li>- Delivering quality urban design outcomes.</li> </ul>	<p>No specific SEA Objective has been developed from the retail guidelines. However, one of the overall objectives of more sustainable travel patterns is inherent in many of the SEA Objectives (such as Climatic factors &amp; climate change, Air and Population).</p>
National Spatial Strategy (2002)	<p>The National Spatial Strategy 2002 - 2020 (NSS) is the national planning framework for Ireland for the next 10 years. The NSS aims to achieve a better balance of social, economic and physical development across Ireland, supported by more effective planning. Five key policy areas are identified:</p> <ul style="list-style-type: none"> <li>• Economic role of Dublin and of other regions;</li> <li>• Quality of life;</li> <li>• Settlement;</li> <li>• Planning; and</li> <li>• Implementation.</li> </ul> <p>The NSS is of direct relevance to the Plan in that it aims to re-balance planning and development patterns on a national-basis to avoid the disproportional growth of the GDA in favour of more balanced development in identified urban areas. Additionally, some of the key objectives of the NSS (improving the quality of life for residents; consolidated development patterns and the minimisation of urban sprawl; accommodation of growth in existing urban areas; promotion of sustainable development) are at the heart of the Plan's objectives and sub-objectives.</p>	<p>No specific SEA Objectives have been developed on the NSS. However, the broad objectives of the NSS have featured in the development of the Plan.</p>
Transport Access for All – The Sectoral Plan for Accessible Transport under the Disability Act 2005 (2008 Edition)	<p>The National Disability Strategy, which was launched by the Government in September 2004, emphasises the importance of the inclusion of people with disabilities in Irish society, and builds on existing policy and legislation. Under Part 3 of the Disability Act 2005 Ministers of various Government Departments, including the Department of Transport are required to implement Sectoral Plans. The Department of Transport's Sectoral Plan (2008 Edition, which builds on the 2006 Edition) describes how the Department intends to implement a comprehensive programme of accessible transport across various transport modes. There are various measures, which it details, that will be implemented in order to increase accessibility and address the accessibility needs of people with disabilities. The Sectoral Plan establishes the policies and objectives with regards to accessible transport that are to be pursued and defines the concept of '<i>Transport for All</i>'.</p> <p>This Plan is of relevance to the plan as it aims to improve the accessibility for persons with disabilities, a key objective of the Plan.</p>	<p>Two SEA Objectives have been developed which address accessibility to employment opportunities and to cultural and community services and facilities, especially for people with disabilities.</p>

Policy or legislation instrument	Summary and likely influence & links/relationship to NTA Integrated Implementation Plan for the GDA	Influence on SEA process
National Climate Change Strategy 2007 – 2012 (2007) and emerging outcomes	<p>This Climate Change Strategy is the Government’s response to the global issue of climate change. The key aim of this Strategy is to set out a framework for action (practical measures) that will ensure Ireland will meet its 2008-2012 Kyoto commitment – to limit growth in emissions to 13% above the 1990.</p> <p>The 2011 Programme for Government includes a commitment to publish climate legislation to give certainty and clarity in relation to the reduction in greenhouse gas emissions to be achieved by Ireland in line with EU targets. In November 2011 the Minister for Environment, Community and Local Government announced a review of National Climate Policy in order to develop the necessary policy mix to support an ambitious but realistic national mitigation agenda.</p> <p>On 23 January 2012, the Minister issued a work programme setting out the steps and milestones for the development of national climate policy and legislation. A public consultation process was subsequently launched in spring 2012, the results of which were announced the following August. In its report (published in February 2013), the NESC Secretariat provide a long term vision (to 2050) on the options available to Ireland in meeting the long term target of a carbon-neutral society. In conjunction with the conclusion of the NESC Secretariat analysis, the Minister released outline Heads of a Climate Action and Low-Carbon Development Bill 2013 with the aim of finalising climate legislation in the second half of 2013.</p>	An SEA Objective has been defined which aims to reduce the greenhouse gas contributions from the transport sector.
Delivering a Sustainable Energy Future for Ireland – The Energy Policy Framework 2007 – 2020 (2007)	<p>The White Paper describes the actions and targets for the energy policy framework to 2020, to support economic growth and meet the needs of all consumers. The Paper outlines the Government’s three overall goals:</p> <ul style="list-style-type: none"> <li>• Ensuring safe and secure energy supplies;</li> <li>• Promoting a sustainable energy future; and</li> <li>• Supporting competitiveness.</li> </ul> <p>One of the Strategic Goals (“Promoting the Sustainable Use of Energy in Transport”) and some of the measures in the Energy White Paper are of direct relevance and are likely to feature in the Plan. The Paper notes “it is imperative that growth in energy consumption in the transport sector is decoupled from economic growth in order for the transport sector to move along a more sustainable trajectory”. Some of the Paper’s measures which are likely to be included in the Plan include:</p> <ul style="list-style-type: none"> <li>• Better integrated land use &amp; transport planning;</li> <li>• Traffic demand mgmt. (when alternative public transport provided);</li> <li>• Support for greater efficiency, e.g. car sharing, work place travel plans; and</li> <li>• Public awareness campaigns e.g., eco-driving.</li> </ul>	The development of the Climate factors & climate change SEA Objective is strongly based on one of the Strategy Goals of the Energy White Paper.

Policy or legislation instrument	Summary and likely influence & links/relationship to NTA Integrated Implementation Plan for the GDA	Influence on SEA process
National Energy Efficiency Action Plan for Ireland 2007-2020 (2007)	<p>The National Energy Efficiency Action Plan has a twofold purpose:</p> <ul style="list-style-type: none"> <li>• Its aim is to reach a 20% reduction in energy demand by the 2020 horizon. This objective is based on the Governments other commitments in the Energy White Paper and the Programme for Government as well as EU Energy Efficiency Action Plan.</li> <li>• This Action Plan was necessary under the requirements of the Energy End-se Efficiency and Energy Services Directive, stipulating that Member States must report on how they propose they will achieve energy savings of 9% by 2016.</li> </ul> <p>This Action Plan details the how Ireland will implement measures in order to achieve the national energy efficiency targets. Achieving these targets will have a large effect on climate change and the fossil fuel demand.</p>	SEA Objectives have been defined which aim to reduce the effect of transport on climate change, reduce greenhouse gas emissions and reduce the fossil fuel demand.
Sustainable Development – A Strategy for Ireland (1997)	<p>The aim of the Strategy is "to ensure that economy and society in Ireland can develop to their full potential within a well-protected environment, without compromising the quality of that environment and with responsibility towards present and future generations and the wider international community". In relation to transport, the Sustainable Development Strategy sets out an agenda to 'green' Irish transport, focusing on making transport more efficient and reducing the environmental impact and the intensity of transport.</p> <p>A review of this Strategy (Making Ireland's Development Sustainable, 2002) outlined a series of actions required to meet the overall objective of sustainable development, including the implementation of many of the national policy instruments and strategies discussed above. The second sustainable development strategy for Ireland, which was due to be published in 2008, has been delayed until mid-2010.</p>	There is no specific SEA Objective for sustainable development, as the subject is encompassed by the whole magnitude of environmental, social, economic and equality-related topics and many of these are reflected in the SEA Objectives.
National Biodiversity Plan (2002)	<p>The National Biodiversity Plan 2002 - 2006 is one of Ireland's key commitments under the convention on Biological Diversity. The Plan was approved by Government and published in 2002. The National Biodiversity Plan contains 91 Actions aimed at securing the conservation and sustainable use of biodiversity in Ireland, and where possible its enhancement, and also to contribute to the conservation and sustainable use of biodiversity globally. The National Biodiversity Plan was reviewed in 2005 and a Draft National Biodiversity plan covering the period 2008 – 2012 was submitted to the Government in 2009 and is yet to be published.</p> <p>The main links between the National Biodiversity Plan and the Plan is the potential for actions arising from the plan (especially transport infrastructure projects) to impact both on local biodiversity and also on designated sites and protected species, and the associated legislation.</p>	Two SEA Objectives have been included with regards to the protection and conservation of biodiversity.

<b>Policy or legislation instrument</b>	<b>Summary and likely influence &amp; links/relationship to NTA Integrated Implementation Plan for the GDA</b>	<b>Influence on SEA process</b>
Bioenergy Action Plan for Ireland (2007)	<p>The Action Plan sets out an integrated strategy for collective delivery of the potential benefits of bioenergy resources across the agriculture, enterprise, transport, environment and energy sectors. It is a key component of the Government’s objectives under the Energy White Paper (Energy Policy Framework 2007 – 2020). The Plan contains many actions across various Government Departments and a significant amount of these relate to increasing the use of biofuels in public transport and public sector vehicle fleets.</p> <p>The actions in this Plan are all of direct relevance to the NTA plan for the GDA in that they will reduce the potential fossil fuel consumption with regards to road and rail-based transport. Some of the key transport agencies (e.g. Dublin Bus, Bus Éireann, and Irish Rail) operate within the GDA and actions from this Plan may feature in the Plan and may influence these agencies.</p>	<p>Although no specific SEA Objectives have been developed from the Bioenergy Action Plan for Ireland, the broad aims of the Bioenergy Action Plan (decreasing the usage of fossil fuels in favour of biofuels) is addressed in the Air and Climatic Factors SEA Objectives.</p>
National Action Plan for Social Inclusion 2007 – 2016 (2007)	<p>Under the Social Partnership Agreement 2006 – 2015 the Government is committed to developing a coherent strategy for social inclusion. In conjunction with the National Development Plan, the National Action Plan for Social Inclusion 2007 – 2016 sets out how the social inclusion strategy will be achieved over the period. The National Action Plan for Social Inclusion will facilitate greater co-ordination and integration of structures and procedures across Government at national and local levels, as well as improving reporting and monitoring mechanisms.</p> <p>The Plan clearly defines actions and targets to address poverty and social exclusion. The overall goal of the plan is to reduce the number of those experiencing consistent poverty to between 2% and 4% by 2012, with the aim of eliminating consistent poverty by 2016, under the revised definition.</p> <p>The National Action Plan for Social Inclusion is of significant relevance to the Plan as both have a common goal of increasing access to employment and increasing social inclusion.</p>	<p>Two SEA Objectives have been developed which address accessibility to employment opportunities and to cultural and community services and facilities, especially for the disadvantaged members of society.</p>

Policy or legislation instrument	Summary and likely influence & links/relationship to NTA Integrated Implementation Plan for the GDA	Influence on SEA process
National Hazardous Waste Management Plan 2008-2012 (2008)	<p>The National Hazardous Waste Management Plan 2008-2012, prepared and published by the Environmental Protection Agency, was required under Article 6 of Directive 91/689/EC on hazardous waste that stipulates that each Member State must draft plans for the management of hazardous waste. The objectives of the plan are:</p> <ul style="list-style-type: none"> <li>• To reduce the generation of hazardous waste by industry and society generally;</li> <li>• To minimise unreported hazardous waste with a view to reducing the environmental impact of this unregulated waste stream;</li> <li>• To strive for increased self-sufficiency in the management of hazardous waste and to reduce hazardous waste export; and</li> <li>• To minimise the environmental, social and economic impacts of hazardous waste generation and management.</li> </ul> <p>The plan makes 29 recommendations on how best these objectives can be achieved over the period 2008 – 2012 and beyond. The recommendations made were based on an analysis of statistical data, current policy and the business environment of hazardous waste management. The plan also indicates which Government body/agency is responsible for implementing each recommendation.</p> <p>The National Hazardous Waste Management Plan will be relevant when developing the Plan due to the fact that a large proportion of hazardous waste is produced within the transport sector and that the successful management of hazardous waste is reliant upon an operating transport network.</p>	<p>No specific SEA Objective has been developed from the National Hazardous Waste Management Plan 2008-2012. However, the overall objective of more sustainable waste management is inherent in many of the SEA Objectives (such as Biodiversity, flora &amp; fauna, Landscape, Water and Soils &amp; geology).</p>
The Planning System and Flood Risk Management – Guidelines for Planning Authorities (2009)	<p>The Planning System and Flood Risk Management – Guidelines for Planning Authorities, published November 2009, stipulates that the risk of flooding should be comprehensively considered when preparing regional plans, development plans and local area plans, as well as during the determination of applications for planning permission. The guidelines take account of environmental considerations as well as the EU Directives on Flooding and the Water Framework Directive. In accordance with the new guidelines, planning systems at national, regional and local levels must:</p> <ul style="list-style-type: none"> <li>• Avoid development in areas at risk of flooding, such as particularly floodplains, unless there are proven wider sustainability grounds that justify appropriate development and where the flood risk can be reduced or managed to an acceptable level without increasing flood risk elsewhere;</li> <li>• Adopt a sequential approach to flood risk management when assessing the location for new development based on avoidance, reduction and mitigation of flood risk; and</li> <li>• Incorporate flood risk assessment into the process of making decisions on planning applications and planning appeals.</li> </ul>	<p>Minimising the risk of flooding has been included as an SEA Objective (Water).</p>
<p>Due to the relationship of the Plan on the land uses within the GDA, these guidelines will be of relevance.</p>		

<b>Policy or legislation instrument</b>	<b>Summary and likely influence &amp; links/relationship to NTA Integrated Implementation Plan for the GDA</b>	<b>Influence on SEA process</b>
Water Services Act 2007	<p>The Water Services Act 2007 incorporates a review, update and consolidation of the existing water services legislation. It establishes a legislative code governing functions, standards, obligations and practice with regards to the planning, management, and delivery of water supplies as well as wastewater collection and treatment. Under this Act the legislative code concerning water services is consolidated and modernised. This Act is wholly concerned with water supply and wastewater collection and treatment, water “in the pipe”, and is not so much concerned with other issues, such as water pollution, river water quality, etc. Under this Act a licensing system has been introduced in order to regulate the operations of group water services schemes. It also places the duty of care on the users of the water services, in relation to water conservation, protection of collection and distribution networks, and the prevention of risk to people’s health and the environment.</p>	<p>No specific SEA Objective has been developed from the Water Services Act. However, minimising the risk of flooding has been included as an SEA Objective (Water).</p>

Policy or legislation instrument	Summary and likely influence & links/relationship to NTA Plan for the GDA	Influence on SEA process
<b>Regional legislation and policy</b>		
Regional Planning Guidelines for the Greater Dublin Area 2010 – 2022	The aim of the RPG is set out a long-term strategic planning framework for the development of the GDA. The key objectives of the RPG relate to consolidation of the urban centres located within the Metropolitan Area based on provision and facilitation of an integrated public transport system. The RPG also promotes greater use of sustainable transport modes through the integration of land use and transport planning.	No SEA Objectives have been developed specifically from the RPG. However, the SEA of the RPG has been consulted and data from both the RPG and the SEA Environmental Report has been used. Additionally, many of the RPG’s SEA Objectives overlap with those of this SEA.
Greater Dublin Strategic Drainage Study (2005)	<p>The Greater Dublin Strategic Drainage Study addresses the issues of drainage in the GDA, especially concerning the future housing needs in the region up until 2031. The Study concludes that:</p> <ul style="list-style-type: none"> <li>• A new Wastewater treatment Plant is required along the North Dublin Coastline;</li> <li>• A new 22km long orbital trunk sewer is necessary to connect the North Dublin plant with the South and West areas of Dublin;</li> <li>• Essential upgrading work is necessary of all existing Wastewater Treatment plants;</li> <li>• There is a need for infrastructural improvements throughout the region;</li> <li>• Developers must adopt new practices to drainage.</li> </ul>	No specific SEA Objective has been developed from this study. However, issues of drainage are of direct relevance to the objectives regarding water.
Greater Dublin Water Supply Strategic Study – Meeting Dublin’s Needs into the 21 <sup>st</sup> Century (1996)	This Study establishes the investment programme in water supply up until 2016 for the GDA. The study highlighted the need to increase water supply in order to cater for a growing population and increased industrial development, as well as conserving the existing infrastructure and its supply.	No specific SEA Objective has been developed from this study. However, issues of water supply are of direct relevance to the objectives regarding water.
Eastern Regional Fisheries Board - Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites	These Guidance Notes are aimed to identify the likely impact on fisheries habitat in the course of construction and development work, and to outline practical measures for the avoidance and mitigation of damage.	Two SEA Objectives have been included with regards to the protection and conservation of biodiversity.

Policy or legislation instrument	Summary and likely influence & links/relationship to NTA Plan for the GDA	Influence on SEA process
Retail Strategy for the Greater Dublin Area 2008-2016 (2008)	<p>The purpose of the Retail Strategy is to guide the activities and policies for retail planning across the GDA. The policy recommendations which the Strategy makes are based on quantitative analysis undertaken as part of the review of the previous retail strategy. The Strategy aims to set out a co-ordinated, sustainable approach to the assessment and provision of retail within the GDA so that:</p> <ul style="list-style-type: none"> <li>• Adequate and suitable provision is made to meet the needs of the growing and changing population, both overall and locally, and provide for healthy competition and consumer choice;</li> <li>• Retail in suitable locations is provided, integrated within existing growth areas and public transport investment; and</li> <li>• Significant overprovision, which would place more marginal locations under severe pressure and undermine sustainability driven policies aimed at revitalising town centres is avoided.</li> </ul> <p>The Strategy recognises that through the strategic siting of retail can enhance the sustainability of the region through encouraging local shopping, reducing the length of trip generation and the linking of retail to public transport nodes.</p> <p>The Retail Strategy is of significant relevance to the Plan, in that it will influence the siting and development of trip generating retail throughout the GDA. The aims of the Retail Strategy are in keeping with the overall vision, objectives and sub-objectives of the Plan.</p>	<p>No specific SEA Objective has been developed from the Retail Strategy. However, the objective of providing better PT accessibility to economic and employment opportunities is included within SEA Objectives for Population</p>
<b>County legislation and policy</b>		
Seven County Development Plans	<p>The seven County Development Plans are in a tier below the this Plan spatially. Thus, there will be a direct relationship this Plan and the development plans with regards to settlement patterns, land use mixes, development densities, key transport corridors, key/strategic development sites, and transport infrastructure requirements and projects.</p> <p>Generally, the seven County Development Plans support more sustainable forms of transport, the location of higher densities of development along key transport corridors and the consolidation of existing urban centres and infill development . As such, there is consistency between the Plan and the Development Plans.</p> <p>There is a legal requirement for the various regional, local and other relevant state authorities and agencies to formally consult with the NTA during the preparation of each of their respective plans and strategies. Additionally, the NTA shall have the powers to submit reports to each of these authorities during the preparation of each of their respective plans and strategies. How the Plan influences and informs future versions of the seven County Development Plans will be one of its key outputs.</p>	<p>No specific SEA Objective has been developed from the seven County Development Plans.</p>
Strategic Development Zones Planning Schemes and Local Area Plans	<p>This class of development planning documents are another tier below the Plan and will be directly influenced by the Plan with regards to their content and policy direction (in the same way as the County Development Plans).</p>	<p>No specific SEA Objective has been developed from the various Planning Schemes and Local Area Plans.</p>

Policy or legislation instrument	Summary and likely influence & links/relationship to NTA Plan for the GDA	Influence on SEA process
<b>Northern-Ireland policy</b>		
Shaping Our Future – Regional Development Strategy for Northern Ireland, 2025 (2001)	<p>This strategy guides future development in Northern Ireland until 2025 and will ensure that the needs of the population are met. The Regional Development Strategy provides an overarching strategic framework, to help achieve a strong spatially balanced economy, a healthy environment and an inclusive society and contains the spatial development strategy and the associated strategic planning guidelines that will direct long-term policy. It has a strong influence over the planning of development in order to maximise the economic and social benefits. In order to deliver on the objectives of achieving sustainable development and social cohesion it takes account of the key driving forces present in the region, including population growth, the rise in the number of households, transport needs, changes to the economic system and the spatial implications of a divided society.</p> <p>Due to the proximity of the GDA to Northern Ireland it is likely that the Plan adopted will have some impact on Northern Ireland. It is therefore advisable that the Regional Development Strategy for Northern Ireland be considered during the designing and development of the Plan.</p>	No specific SEA Objective has been developed from Shaping Our Future – Regional Development Strategy for Northern Ireland, 2025.
Regional Plan for Northern Ireland 2002-2012 (2002)	<p>The Regional Plan for Northern Ireland identifies strategic transportation investment priorities and considers potential funding sources and affordability of planned initiatives over the period 2002 – 2012. It is a ‘daughter document’ of the Regional Development Strategy and its purpose is to support the Regional Development Strategy by making a significant contribution towards achieving the long-term vision for transportation. The objectives of the Regional Plan are being progressed through the implementation of the Regional Strategic Transport Network Transport Plan, the Belfast Metropolitan Transport Plan and the Sub-Regional Transport Plan.</p> <p>The plan will be cognisant of the Regional Plan for Northern Ireland in order to ensure the efficient implementation of both strategies, where appropriate.</p>	No specific SEA Objective has been developed from the Regional Plan for Northern Ireland 2002-2012.

## Appendix B – Supplementary Baseline Data and Sources

## Appendix B.1 – SPAs within the GDA

County	Site Code	Site Name
Dublin	004016	Baldoyle Bay
Dublin	004025	Broadmeadow/Swords Estuary
Dublin	004113	Howth Head Coast
Dublin	004117	Ireland's Eye
Dublin	004069	Lambay Island
Dublin	004006	North Bull Island
Dublin	004014	Rockabill
Dublin	004015	Rogerstown
Dublin	004122	Skerries Islands
Dublin	004024	South Dublin Bay and River Tolka Estuary
Kildare	004063	Poulaphoouca Reservoir
Meath	004065	Lough Sheelin
Meath	004080	Boyne Estuary
Meath	004158	River Nanny Estuary and Shore
Wicklow	004063	Poulaphoouca Reservoir
Wicklow	004186	The Murrough
Wicklow	004127	Wicklow Head
Wicklow	004040	Wicklow Mountains

Source: NPWS website [www.npws.ie/en/MapsData](http://www.npws.ie/en/MapsData)

## Appendix B.2 - SACs within the GDA

County	Site Code	Site Name
Dublin	000208	Rogerstown Estuary
Dublin	000204	Lambay Island
Dublin	000205	Malahide Estuary
Dublin	000199	Baldoyle Bay
Dublin	002193	Ireland's Eye
Dublin	000202	Howth Head
Dublin	000206	North Dublin Bay
Dublin	000210	South Dublin Bay
Dublin	001209	Glenasmole Valley
Dublin	002122	Wicklow Mountains
Dublin	000725	Knocksink Wood
Dublin	000713	Ballyman Glen
Kildare	001398	Rye Water Valley/Carton
Kildare	001387	Ballynafagh Lake
Kildare	000391	Ballynafagh Bog
Kildare	002331	Mouds Bog
Kildare	000397	Red Bog
Kildare	000396	Pollardstown Fen
Kildare	002162	River Barrow And River Nore
Meath	000006	Killyconny Bog (Cloghbally)
Meath	002340	Moneybeg and Clareisland Bogs
Meath	002299	River Boyne And River Blackwater
Meath	001957	Boyne Coast And Estuary
Meath	001810	White Lough, Ben Loughs And Lough Doo
Meath	002120	Lough Bane And Lough Glass
Meath	002342	Mount Hevey Bog
Meath	001398	Rye Water Valley/Carton

County	Site Code	Site Name
Wicklow	000713	Ballyman Glen
Wicklow	000714	Bray Head
Wicklow	000729	Buckrone-y-Brittis Dunes and Fen
Wicklow	000716	Carriggower Bog
Wicklow	000717	Deputy's Pass Nature Reserve
Wicklow	000719	Glen of the Downs
Wicklow	001757	Holdenstown Bog
Wicklow	000725	Knocksink Wood
Wicklow	001766	Magherabeg Dunes
Wicklow	000781	Slaney River Valley
Wicklow	002249	The Murrough Wetlands
Wicklow	000733	Vale of Clara (Rathdrum Wood)
Wicklow	002122	Wicklow Mountains
Wicklow	002274	Wicklow Reef

Source: NPWS website [www.npws.ie/en/MapsData](http://www.npws.ie/en/MapsData)

### Appendix B.3 - NHAs within the GDA

County	Site Code	Site Name
Dublin	001218	Skerries Islands
Kildare	001388	Carbury Bog
Kildare	001393	Hodgestown Bog
Meath	001580	Girley Bog
Meath	001324	Jamesown Bog
Meath	001582	Molerick Bog

Source: NPWS website [www.npws.ie/en/MapsData](http://www.npws.ie/en/MapsData)

### Appendix B.4 Examples of Landscape Classifications in the GDA

Local Authority	Landscape designation
Dublin City	<b>SAAO</b>
	Liffey Valley
	North Bull Island
	Sandymount Strand, Merrion Strand & Irishtown Nature Park
	<b>Landscape Conservation Areas</b>
	Phoenix Park
	North Bull Island
	Botanic Gardens
	St. Anne's Park
	Fingal County
Howth	
Tolka River	
Lambay Island	
Liffey Valley	
Naul Hills	
Portrane-Donabate Peninsula	
Portmarnock Peninsula	
Ward River	
South Dublin	<b>SAAO</b>
	Liffey Valley
	<b>High Amenity Zones/Areas of Outstanding Natural Beauty</b>

<b>Local Authority</b>	<b>Landscape designation</b>
	Dodder Valley Liffey Valley Dublin Mountain areas
Dun Laoghaire-Rathdown	<b><u>SAAO</u></b> Dalkey Hill Killiney Hill Roches Hill <b><u>High Amenity Areas</u></b> Kilmashogue Valley Glendoo Valley Glencullen Valley Carrickgollogan Hill
Meath	<b><u>Landscapes of Exceptional Value</u></b> Tara Skryne Hill <b><u>Sensitive Landscapes</u></b> Tara Skryne Hills Coastal Plains Ward Lowlands
Kildare	<b><u>SAAO</u></b> River Liffey Valley Grand Canal <b><u>Special Landscape Areas</u></b> Allen Remnant Bog Pollardstown Fen
Wicklow	<b><u>SAAO</u></b> Bray Head Little Sugar Loaf Great Sugar loaf Dargle Glen <b><u>Areas of Outstanding Natural Beauty</u></b> Glencullen Valley Bray Head Great Sugar Loaf Little Sugar Loaf

## Appendix B.5 Data Sources for Baseline Chapter

### 7.2 Biodiversity

Data regarding the Natura 2000 sites was obtained from the NPWS website, [www.npws.ie](http://www.npws.ie). However, detailed individual Conservation Management Plans are not available for the majority of sites in Ireland.

NPWS (2008) The Status of EU Protected Habitats and species in Ireland.

Ramsar Convention Website: [www.ramsar.org](http://www.ramsar.org).

Information on the UNESCO Biosphere Reserves was obtained from:  
<http://www.unesco.org/mab/doc/brs/Eur.pdf> and  
[http://whc.unesco.org/en/list/659/multiple=1&unique\\_number=780](http://whc.unesco.org/en/list/659/multiple=1&unique_number=780).

Information on the Wicklow National Park was obtained from the NPWS website [www.npws.ie](http://www.npws.ie).

Data on areas covered by forestry was provided by the Forest Inventory and Planning System (FIPS) Unit of the Department of Agriculture, Fisheries and Food.

The EPA website provided information on protected species, [www.epa.ie/environment/biodiversity/protectedspecies/](http://www.epa.ie/environment/biodiversity/protectedspecies/)

Department of Arts, Heritage, Gaeltacht and the Islands (2002) National Biodiversity Action Plan.

Dublin City Council (2008) Dublin City Biodiversity Action Plan 2008 – 2012.

Forest Service (2007) National Forestry Inventory – Results.

Corrine land cover database.

### **7.3 Landscape**

Dublin City Council (2011) Dublin City Development Plan 2011 – 2017.

Fingal County Council (2011) Fingal Development Plan 2011 – 2017.

South Dublin County Council (2010) South Dublin County Development Plan 2010 – 2016.

Dun Laoghaire – Rathdown County Council (2010) Dun Laoghaire Rathdown County Development Plan 2010 – 2016.

Kildare County Council (2011) Kildare County Development Plan 2011 – 2017.

Meath County Council (2007) County Meath Development Plan 2007 – 2013.

Wicklow County Council (2010) Wicklow County Development Plan 2010 – 2016.

### **7.4 Population**

Small Area Population Statistics (SAPS), which present Census results at place of enumeration. This data is available for 1996, 2002, 2006 and 2011 Census.

Place of Work and Schools or College – Census Anonymised Records (POWSCAR).

Department of Environment, Heritage and Local Government, Regional Planning Guidelines Review – Gateway and Hub Population Targets. August 2009.

Quarterly National Household Surveys, CSO.

Trutz Haase / Pobal, Irish Measures of Deprivation.

Urban sprawl in Europe - The ignored challenge [EEA Report No 10/2006]; European Environment Agency, November 2006.

## **7.5 Human Health**

Road Safety Authority (2007) Road Safety the Implementation Plan 2007 – 2012.

Road Safety Authority (2011) Road Collision Facts Ireland 2010.

Department of Health & Children (2007) Health in Ireland – Key Trends.

Department of Health & Children (2008) SLÁN 2007 – Survey of Lifestyle, Attitudes and Nutrition in Ireland.

National Guidelines for Physical Activity in Ireland (Department of Health and Children, Health Service Executive, 2009)

European Commission (2007) Road Safety: how is your country doing?

## **7.6 Noise**

Dublin City Council (2008) Dublin Agglomeration Action Plan Relating to the Assessment & Management of Environmental Noise.

Dublin City Council (2008) Dublin Agglomeration Action Plan Relating to the Assessment & Management of Environmental Noise (Summary).

South Dublin County Council (2008) Dublin Agglomeration Draft Action Plan Relating to the Assessment & Management of Environmental Noise.

Meath County Council and Navan Town Council (2008) Noise Action Plan.

Kildare Local Authorities (2009) Noise Action Plan.

## **7.7 Water**

EPA (2008) Irelands Environment 2008.

EPA (2010) Water Quality in Ireland 2007 - 2009

WFD Characterisation Reports ([www.wfdireland.ie](http://www.wfdireland.ie)).

EPA Website [www.epa.ie](http://www.epa.ie).

Water Supply Project - Dublin Region 2010.

## **7.8 Air**

Draft Dublin Regional Air Quality Management Plan 2008 – 2012.

EPA Website [www.epa.ie](http://www.epa.ie).

EPA (2008) Air Quality in Ireland 2007 – Key Indicators of Ambient Air Quality.

Draft Dublin Regional Air Quality Management Plan 2008 – 2012.

## **7.9 Climatic Factors and Climate Change**

Met Éireann [www.met.ie/climate](http://www.met.ie/climate).

EPA (2008a) Ireland's Environment 2008.

EPA (2008b) EPA Annual Highlights 2008.

EPA (2006) Environment in Focus 2006.

European Environment Agency (2006) Greenhouse gas emission trends and projections in Europe 2006

## **7.10 Soils and Geology**

GSI website

Teagasc

## **7.11 Material Assets**

Central Statistics Office (2007) Measuring Ireland's Progress 2006.

Central Statistical Office (2007) Statistical Yearbook of Ireland.

EPA (2008) Ireland's Environment 2008.

EPA (2006) National Waste Report.

DCENR (2008) Handbook On Oil Supply Disruption Contingency Measures.

Sustainable Energy Ireland (2007) Energy in Ireland 1990 – 2007.

National Monuments Service [www.archaeology.ie](http://www.archaeology.ie).

National Inventory of Architectural Heritage [www.buildingsofireland.ie](http://www.buildingsofireland.ie).

OPW – Heritage Sites under the management of OPW.