

# SEA STATEMENT

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FOR THE

## CORK METROPOLITAN AREA TRANSPORT STRATEGY 2040

### STRATEGIC ENVIRONMENTAL ASSESSMENT

**for: National Transport Authority**

Dún Scéine  
Iveagh Court  
Harcourt Lane  
Dublin 2



**by: CAAS Ltd.**

1<sup>st</sup> Floor  
24-26 Ormond Quay Upper  
Dublin 7



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# Section 1 Introduction

## 1.1 Introduction and Legislative Context

This is the Strategic Environmental Assessment (SEA) Statement for the Cork Metropolitan Area Transport Strategy 2040.

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

Directive 2001/42/EC of the European Parliament and of the Council of Ministers, of 27<sup>th</sup> June 2001, on the Assessment of the Effects of Certain Plans and Programmes on the Environment, referred to hereafter as the SEA Directive, introduced the requirement that SEA be carried out on plans and programmes which are prepared for a number of sectors, including transport.

The SEA Directive was transposed into Irish Law through the European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations 2004 (Statutory Instrument Number (SI No. 435 of 2004) and the Planning and Development (Strategic Environmental Assessment) Regulations 2004 (SI No. 436 of 2004). Both sets of Regulations became operational on 21<sup>st</sup> July 2004. The Regulations have been amended by the European Communities (Environmental Assessment of Certain Plans and Programmes) (Amendment) Regulations 2011 (SI No. 200 of 2011) and the Planning and Development (Strategic Environmental Assessment) (Amendment) Regulations 2011 (SI No. 201 of 2011).

## 1.2 Content of the SEA Statement

Where SEA is undertaken, the Regulations require that "information on the decision" is made available to the public and the competent environmental authorities after the finalisation of the Strategy (referred to as an SEA Statement).

The SEA Statement is required to include information summarising:

- a) how environmental considerations have been integrated into the Strategy;
- b) how the following have been taken into account during the preparation of the Strategy:
  - the environmental report,
  - submissions and observations made to the planning authority on the Draft Strategy and Environmental Report, and
  - any transboundary consultations.
- c) the reasons for choosing the Strategy in the light of the other reasonable alternatives dealt with; and
- d) the measures decided upon to monitor the significant environmental effects of implementation of the Strategy.

## 1.3 Implications of SEA for the Strategy

Article 9 of the European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations 2004, as amended, sets out criteria for determining whether SEA should be undertaken on certain types of plans. Considering these criteria, the National Transport Authority concluded that an SEA was required for the Strategy, as it comprises a 'plan or programme' as defined by the SEA Directive which is likely to have significant environmental effects.

SEA has been undertaken and the findings of the SEA are expressed in an Environmental Report, the first published version of which accompanied the Draft Strategy on public display. The Environmental Report was updated in order to take account of:

- Recommendations contained in submissions; and
- Changes to the Draft Strategy that were made on foot of submissions.

The NTA have taken into account the findings of all relevant SEA output during their consideration of the Draft Strategy and before the Strategy was adopted.

## **Section 2 How Environmental Considerations were integrated into the Strategy**

### **2.1 Introduction**

Environmental considerations were integrated into the Strategy through:

1. Early work undertaken by the Authority to ensure contribution towards environmental protection and sustainable development;
2. Consultations;
3. Consideration of alternatives;
4. Communication of environmental sensitivities throughout the SEA process;
5. Integration of individual measures into the Strategy.

### **2.2 Early work undertaken by the Authority to ensure contribution towards environmental protection and sustainable development**

Far in advance of the placing of the Strategy (and associated SEA and AA) on public display, the National Transport Authority undertook early work that has helped to ensure that the Strategy contributes towards environmental protection and sustainable development.

Many proposals included within the Strategy have been already included within the National Planning Framework (and associated National Development Plan), Regional Spatial and Economic Strategy for the Southern Region and Cork City and County Development Plans.

### **2.3 Consultations**

Relevant environmental authorities identified under the European Communities (Environmental Assessment of Certain Plans and Programmes), as amended, were sent SEA scoping notices by the National Transport Authority indicating that submissions or

observations in relation to the scope and level of detail of the information to be included in the environmental report could be made to the Authority.

Further detail on submissions made on foot of the SEA scoping notice is provided under Section 3.2.

Furthermore, submissions were made on the Draft Strategy and SEA Environmental Report while they were on public display and these resulted in updates being made to the SEA documents (see Section 3.3).

### **2.4 Consideration of alternatives**

Accommodating the scale of the growth provided for the Cork Metropolitan Area in other policies and plans would mean increasing pressure on the existing transport network.

The Strategy was developed and assessed in the context of three notional scenarios as follows:

1. Business as Usual Scenario that incorporates committed investment in the road network only;
2. Improvements to Public Transport and Sustainable Travel – scenario this substantially increases public transport investment; and
3. Better Integration of Land Use with Public Transport and Sustainable Travel – this scenario has elements of Scenario 2 and involves better integration of land-use with public transport and sustainable transport.

These three scenarios were considered by the SEA and the findings are summarised in Section 4 of this SEA Statement.

The scenario selected for the Strategy is Scenario 3, which represents the optimal case of full integration of land-use development with sustainable transport provision. This scenario would facilitate the greatest improvement in sustainable mobility of all alternatives (reducing

and limiting increases in the number of journeys by car taken as a percentage of all journeys taken), thereby facilitating the greatest reduction and limit of increases in greenhouse gas emissions, noise emissions and other emissions to air (with associated effects on human health). This scenario would also facilitate various benefits with respect to environmental protection and management.

In addition to the consideration of the above scenarios, Corridor Specific Public Transport Network Options were considered in the preparation of the Strategy – the consideration of these options is also summarised in Section 4 of this report.

## **2.5 Communication of environmental sensitivities throughout the SEA process**

### **2.5.1 Individual Environmental Sensitivities**

Environmental considerations were integrated into the Draft Strategy before it was placed on public display. Individual sensitivities which were mapped by the SEA and considered by the Team preparing the Transport Strategy included the following:

- Noise Mapping Lden (day, evening, night)
- European Sites
- Potential Habitat Sensitivity
- WFD Surface Water Status
- WFD Groundwater Status
- Groundwater Vulnerability
- Groundwater Productivity
- WFD Register of Protected Area
- Potential Land Cover Sensitivity Mapping
- Potential Cultural Heritage Sensitivity
- County Geological Sites

Some of these are indicated on Figure 2.1.

In addition to considering environmental components individually, some of the environmental information was been weighted and mapped to show overall environmental sensitivity (see Figure 2.2) and overall environmental opportunities/robustness (see Figure 2.3). This mapping indicates at a regional

level where the main concentrations of sensitivities might occur.

Heightened areas of sensitivity include those in river valleys (e.g. the River Lee within the CMA) and at lakes (e.g. Inniscarra Reservoir to the west of the CMA). Lands at the coastal margins and coastal waters are also sensitive, especially within and to the north of Cork Harbour. Lower levels of sensitivity occur elsewhere.

Heightened areas of robustness include those within and surrounding the River Lee, Cork City and surrounding suburban areas. Lower levels of robustness occur within and around Cork Harbour, transitional waters of River Lee and coastal areas, where there is a greater concentration of environmental designations.

### **2.5.2 Appropriate Assessment**

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

The requirement for AA is provided under the EU Habitats Directive (Directive 1992/43/EEC). The AA concluded that the Strategy will not affect the integrity of the Natura 2000 network<sup>1</sup>.

Various content has been integrated into the Strategy through the SEA and AA processes. The preparation of the Strategy, SEA and AA has taken place concurrently and the findings of the AA have informed both the Strategy and the SEA.

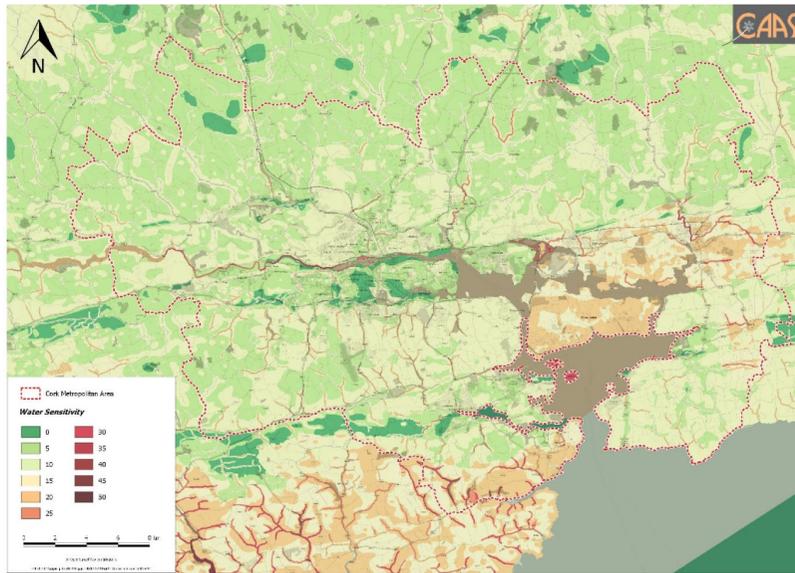
## **2.6 Integration of individual measures into the Strategy**

The SEA and AA processes that have been undertaken alongside the preparation of the Strategy have brought about changes to the emerging Strategy thereby enabling the mitigation of any potentially adverse environmental effects. Recommendations made by the SEA and AA processes have been integrated into the Strategy. All recommendations made by the SEA and AA processes are identified on Tables 2.1 and 2.2

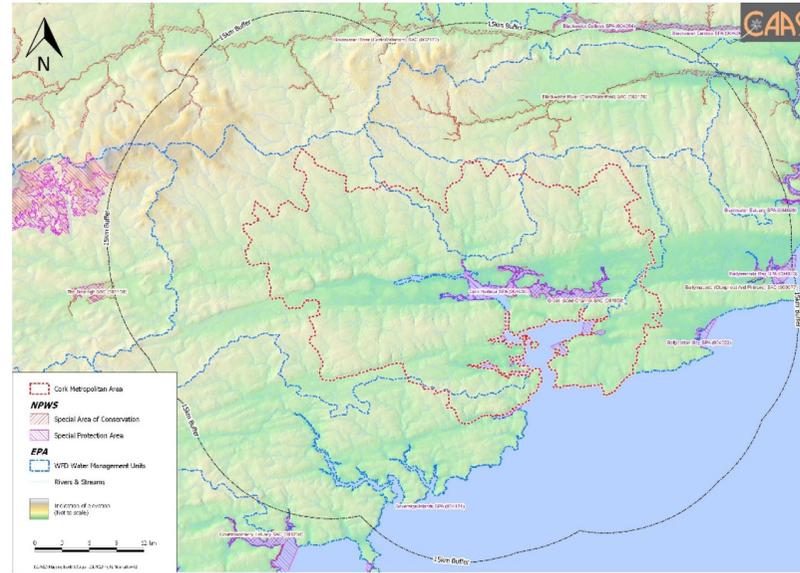
<sup>1</sup> Except as provided for in Article 6(4) of the Habitats Directive, viz. There must be: (a) no alternative solution available; (b) imperative reasons of overriding public interest for the plan/programme/project to proceed; and (c) adequate compensatory measures in place.

below and have been integrated into the Strategy.

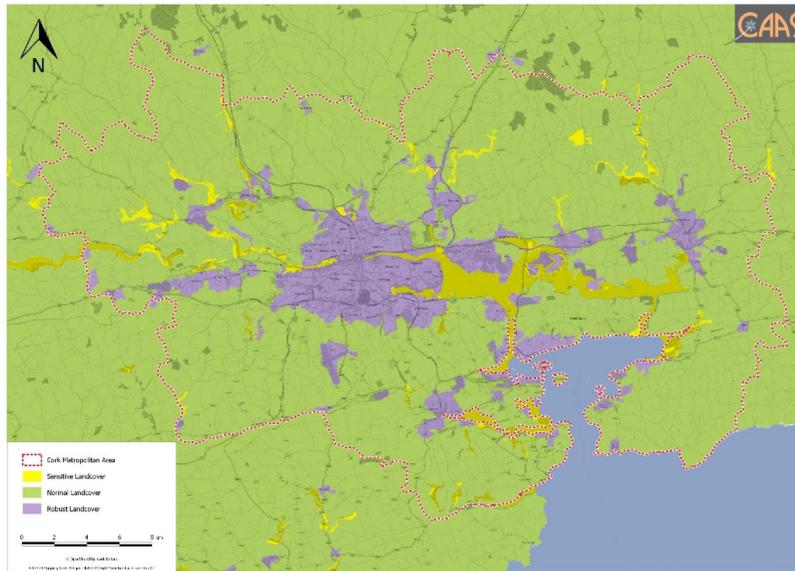
These tables also link the various mitigation measures to specific environmental components and the potential adverse effects that would be present if the changes were not made. The measures generally benefit multiple environmental components i.e. a measure providing for the protection of biodiversity, flora and fauna could beneficially impact upon the minimisation of flood risk and the protection of human health, for example



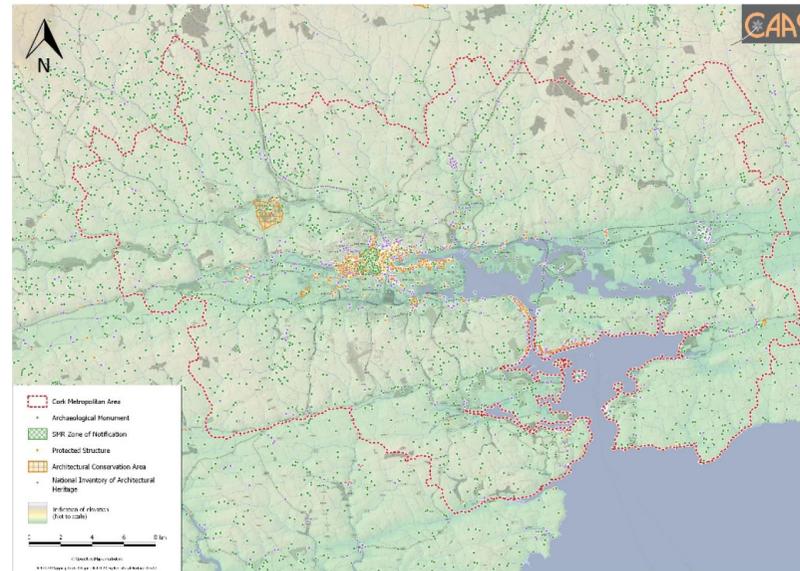
Overlay of Potential Water Sensitivity



European Sites

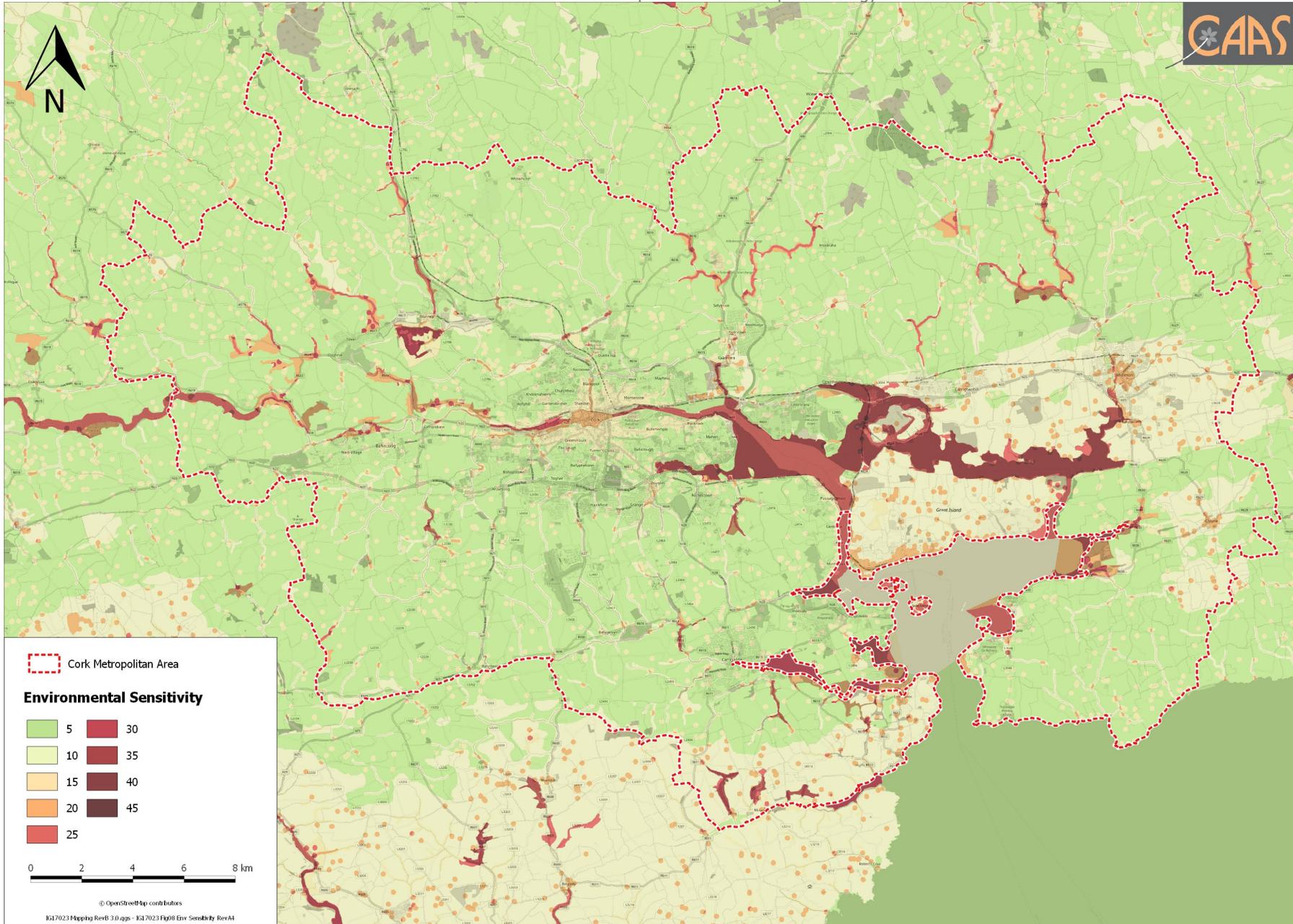


Potential Land Cover Sensitivity

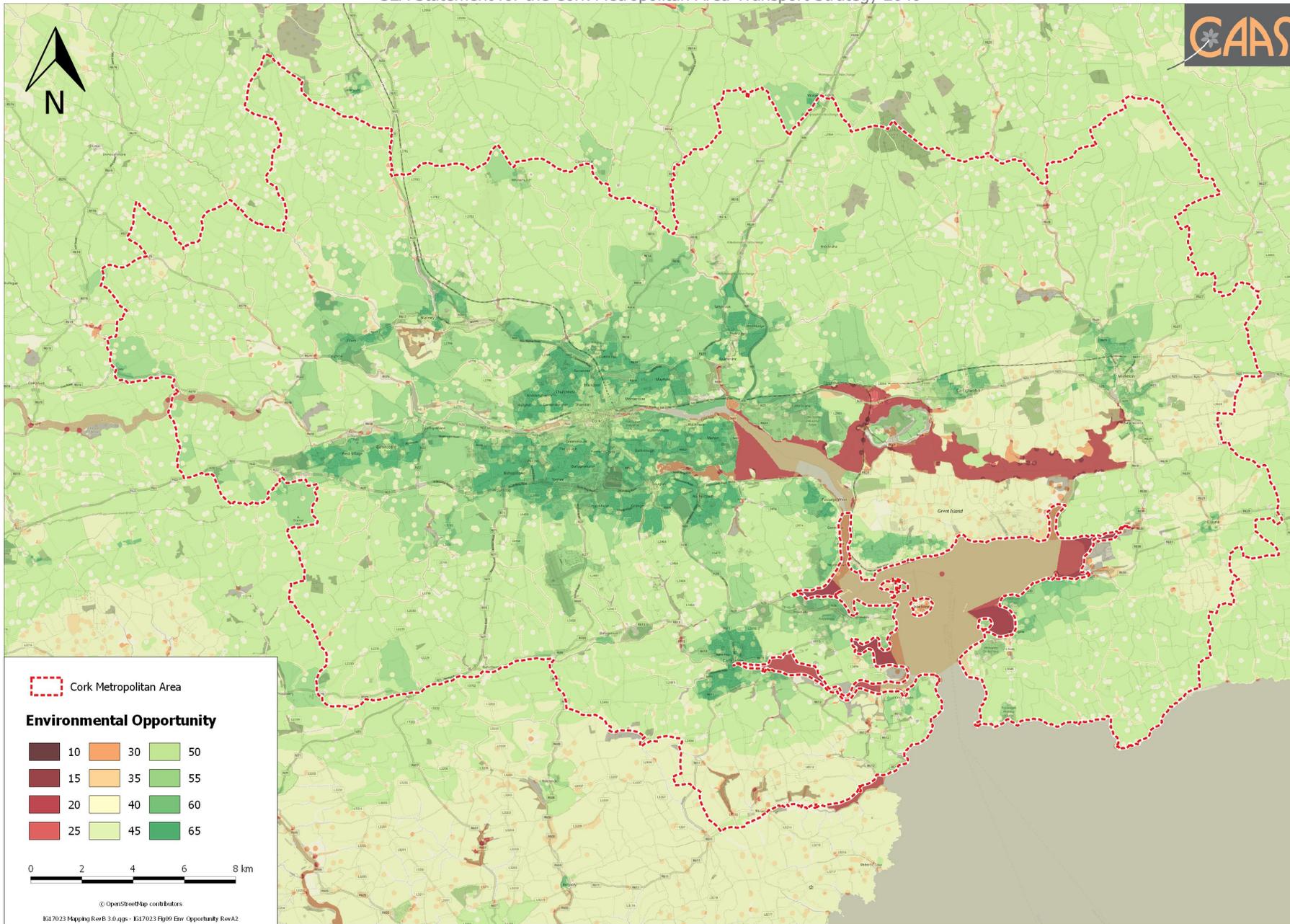


Potential Cultural Heritage Sensitivity

Figure 2.1 Selection of Individual Environmental Sensitivities from SEA Environmental Report



**Figure 2.2 Overall Potential Environmental Sensitivity**



**Figure 2.3 Overall Potential Environmental Opportunities/Robustness**

**Table 2.1 SEA/AA recommendations included within the Strategy**

Strategy Section No.	SEA/AA Recommended Text
1. Introduction  Strategic Environmental Assessment and Appropriate Assessment	<p><b>SEA</b></p> <p>SEA is required to be undertaken on the transport plan as it contributes towards the framework for future development consent of projects listed in Annexes I and II to Directive 2011/92/EU, as amended by 2014/52/EC.</p> <p>The provisions of the Strategy have been evaluated for potential significant effects, and measures have been integrated into the Strategy on foot of SEA recommendations in order to ensure that potential adverse effects are mitigated. The environmental topics (including interrelationships) which are considered by the SEA are as follows:</p> <ul style="list-style-type: none"> <li>• Air and Climatic Factors;</li> <li>• Population and Human Health;</li> <li>• Biodiversity, Flora and Fauna;</li> <li>• Material Assets;</li> <li>• Soil;</li> <li>• Water;</li> <li>• Cultural Heritage; and</li> <li>• Landscape.</li> </ul> <p>The SEA Environmental Report, which should be read and considered in parallel with the Strategy sets out the findings of the assessment under headings including the following:</p> <ul style="list-style-type: none"> <li>• Relevant aspects of the current state of the Environment;</li> <li>• Evaluation of Alternatives;</li> <li>• Evaluation of Strategy provisions;</li> <li>• Mitigation Measures; and</li> <li>• Monitoring Programme.</li> </ul> <p>The overall findings of the SEA are that:</p> <ul style="list-style-type: none"> <li>• All of the recommendations arising from the SEA process have been incorporated into the Strategy;</li> <li>• The Strategy facilitates a mode shift away from the private car to public transport, walking and cycling and associated positive effects, including those relating to:               <ul style="list-style-type: none"> <li>○ Contributions towards reductions in greenhouse gas emissions and associated achievement of legally binding targets;</li> <li>○ Contributions towards reductions in emissions to air and associated achievement of air quality objectives, thereby contributing towards improvement or air quality and protection of human health</li> <li>○ Contributions towards reductions in consumption of non-renewable energy sources and achievement of legally binding renewable energy targets;</li> <li>○ Energy security; and</li> <li>○ Enhancing the public realm.</li> </ul> </li> <li>• Certain Strategy provisions would be likely to result in significant positive effects upon environmental management and protection; and</li> <li>• Certain Strategy provisions would have the potential to result in significant negative environmental effects upon the environment. The integration of detailed mitigation into the Strategy has ensured that these effects are mitigated.</li> </ul> <p>The SEA identifies that implementation of the Strategy will contribute towards efforts to achieve a number of the 17 Sustainable Development Goals<sup>2</sup> of the 2030 Agenda for Sustainable Development, which were adopted by world leaders in 2015 at a United Nations Summit and came into force in 2016.</p>

<sup>2</sup> Including:

- Goal 3. Ensure healthy lives and promote well-being for all at all ages
- Goal 8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all
- Goal 9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation
- Goal 11. Make cities and human settlements inclusive, safe, resilient and sustainable
- Goal 12. Ensure sustainable consumption and production patterns
- Goal 13. Take urgent action to combat climate change and its impacts
- Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development
- Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

Strategy Section No.	SEA/AA Recommended Text
	<p><b>AA</b></p> <p>The AA concludes that it is considered that the Strategy will not have a significant adverse effect on the integrity of the Natura 2000 network of sites<sup>3</sup>. The details of the approach to the AA and the findings are set out in the AA Natura Impact Report that accompanies the Strategy. In a similar manner to the Environmental Report of the SEA, this separate document should be read and considered in parallel with the Strategy.</p>
7. Cycling	Insertion of footnote: "Subject to compliance with the EU Habitats and/or Birds Directives."
9. Suburban Rail	Insertion of footnote: "Subject to compliance with the EU Habitats and/or Birds Directives."
13. Roads	Insertion of footnote: "Subject to compliance with the EU Habitats and/or Birds Directives."
17. Environmental Protection and Management	<p>Recommend insertion of new Section entitled "Environmental Protection and Management" which integrates the measures detailed below into the Transportation Strategy.</p> <p><b>Regulatory framework for environmental protection and management</b></p> <p>In implementing this Strategy, the Authority will cumulatively contribute towards – in combination with other users and bodies – the achievement of the objectives of the regulatory framework for environmental protection and management, including compliance with EU Directives - including the Habitats Directive (92/43/EEC, as amended), the Birds Directive (2009/147/EC), the Environmental Impact Assessment Directive (2011/92/EU, as amended by 2014/52/EC) and the Strategic Environmental Assessment Directive (2001/42/EC) – and relevant transposing Regulations.</p>
17. Environmental Protection and Management	<p><b>Lower-level Decision Making</b></p> <p>Lower levels of decision making and environmental assessment should consider the sensitivities identified in Section 4 of the SEA Environmental Report, including the following:</p> <ul style="list-style-type: none"> <li>• Special Areas of Conservation and Special Protection Areas;</li> <li>• Features of the landscape that provide linkages/connectivity to designated sites (e.g. watercourses, areas of semi-natural habitat such as linear woodlands etc);</li> <li>• Salmonid waters;</li> <li>• Shellfish waters;</li> <li>• Freshwater pearl mussel catchments;</li> <li>• Natural Heritage Areas and proposed Natural Heritage Areas;</li> <li>• Areas likely to contain a habitat listed in Annex 1 of the Habitats Directive;</li> <li>• Un-designated sites of importance to wintering or breeding bird species of conservation concern;</li> <li>• Entries to the Record of Monuments and Places and Zones of Archaeological Potential;</li> <li>• Entries to the Record of Protected Structures;</li> <li>• Architectural Conservation Areas; and</li> <li>• Relevant landscape designations.</li> </ul>
17. Environmental Protection and Management	<p><b>Corridor and Route Selection Process for relevant new infrastructure</b></p> <p>The following Corridor and Route Selection Process will be undertaken for relevant new infrastructure:</p> <p>Stage 1 – Route Corridor Identification, Evaluation and Selection</p> <ul style="list-style-type: none"> <li>• Environmental constraints (including those identified in Section 4 of the SEA Environmental Report) and opportunities (such as existing linear infrastructure) will assist in the identification of possible route corridor options;</li> <li>• Potentially feasible corridors within which infrastructure could be accommodated will be identified and these corridors assessed. The selection of the preferred route corridor will avoid constraints and meet opportunities to the optimum extent, as advised by the relevant specialists; and</li> <li>• In addition to the constraints identified above, site-specific field data may be required to identify the most appropriate corridors.</li> </ul> <p>Stage 2 – Route Identification, Evaluation and Selection</p> <ul style="list-style-type: none"> <li>• Potentially feasible routes within the preferred corridor will be identified and assessed. The selection of preferred routes will avoid constraints and meet opportunities to the optimum extent, as advised by the relevant specialists, taking into account project level information and potential mitigation measures that are readily achievable;</li> <li>• In addition to the constraints identified above, site specific field data may be required to identify the most appropriate routes; and</li> <li>• In addition to environmental considerations, the identification of route corridors and the refinement of route lines is likely to be informed by other considerations.</li> </ul>

<sup>3</sup> Except as provided for in Article 6(4) of the Habitats Directive, viz. There must be:

a) no alternative solution available;

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

c) Adequate compensatory measures in place

Strategy Section No.	SEA/AA Recommended Text
17. Environmental Protection and Management	<p><b>Appropriate Assessment</b></p> <p>All projects and plans arising from this Strategy will be screened for the need to undertake Appropriate Assessment under Article 6 of the Habitats Directive. A plan or project will only be authorised after the competent authority has ascertained, based on scientific evidence, Screening for Appropriate Assessment, and subsequent Appropriate Assessment where necessary, that:</p> <ol style="list-style-type: none"> <li>1. The plan or project will not give rise to significant adverse direct, indirect or secondary effects on the integrity of any European site (either individually or in combination with other plans or projects); or</li> <li>2. The plan or project will have significant adverse effects on the integrity of any European site (that does not host a priority natural habitat type/and or a priority species) but there are no alternative solutions and the plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of a social or economic nature. In this case, it will be a requirement to follow procedures set out in legislation and agree and undertake all compensatory measures necessary to ensure the protection of the overall coherence of Natura 2000; or</li> <li>3. The plan or project will have a significant adverse effect on the integrity of any European site (that hosts a natural habitat type and/or a priority species) but there are no alternative solutions and the plan or project must nevertheless be carried out for imperative reasons for overriding public interest, restricted to reasons of human health or public safety, to beneficial consequences of primary importance for the environment or, further to an opinion from the Commission, to other imperative reasons of overriding public interest. In this case, it will be a requirement to follow procedures set out in legislation and agree and undertake all compensatory measures necessary to ensure the protection of the overall coherence of Natura 2000.</li> </ol>
17. Environmental Protection and Management	<p><b>Protection of European Sites</b></p> <p>No plans or projects giving rise to significant cumulative, direct, indirect or secondary impacts on European sites arising from their size or scale, land take, proximity, resource requirements, emissions (disposal to land, water or air), transportation requirements, duration of construction, operation, decommissioning or from any other effects shall be permitted on the basis of this Strategy (either individually or in combination with other plans or projects<sup>4</sup>).</p>
17. Environmental Protection and Management	<p><b>Climate Change, Emissions and Energy</b></p> <p>As identified in the SEA Environmental Report that accompanies this Strategy, the Strategy facilitates sustainable mobility and associated positive effects, including those relating to:</p> <ul style="list-style-type: none"> <li>• Reductions in greenhouse gas emissions and associated achievement of legally binding targets;</li> <li>• Reductions in emissions to air and associated achievement of air quality objectives, thereby contributing towards improvement or air quality and protection of human health;</li> <li>• Reductions in consumption of non-renewable energy sources and achievement of legally binding renewable energy targets; and</li> <li>• Energy security.</li> </ul> <p>In implementing the Strategy, the Authority will support relevant provisions contained in the Draft National Energy and Climate Plan (when adopted), the Cork County and City Council Climate Adaptation Strategies, the Climate Action Plan (2019), National Climate Change Adaptation Framework (2018), the National Mitigation Plan (2017) and the Department of Transport, Tourism and Sport's 2017 "Adaptation Planning – Developing Resilience to Climate Change in the Irish Transport Sector".</p> <p>The implementation of the Strategy will incorporate relevant targets and actions arising from the sectoral adaptation plan for transport that will be prepared to comply the requirements of the Climate Action and Low Carbon Development Act 2015.</p> <p>Cognisant of the imperative to reduce emissions the Authority will seek to ensure primacy for transport options that provide for unit reductions in carbon emissions. This can most effectively be done by promoting public transport, walking and cycling, and by actively seeking to reduce car use in circumstances where alternative options are available.</p> <p>During the preparation and/or review of policies and plans relating to climate change, carbon emissions and energy usage, the Authority will seek to integrate Strategy objectives, as appropriate.</p>
17. Environmental Protection and Management	<p><b>Other SEA Recommendations</b></p> <p>In implementing the Strategy, the Authority will ensure that the mitigation measures included in Table 9.3 of the SEA Environmental Report are complied with.</p>

<sup>4</sup> Except as provided for in Article 6(4) of the Habitats Directive, viz. There must be:

a) no alternative solution available,

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

c) Adequate compensatory measures in place.

**Table 2.2 Provisions to be referred to in the Strategy under "Other SEA Recommendations"**

<b>Environmental component benefitting</b>	<b>Potential adverse effect mitigated</b>	<b>Requirement</b>
<b>Various</b>	Various – see below	<p><b>Construction and Environmental Management Plans</b>  Construction Environment Management Plans (CEMPs) shall be prepared in advance of the construction of larger projects and implemented throughout. Such plans shall incorporate relevant mitigation measures which have been integrated into the Strategy and any lower tier Environmental Impact Statement or Appropriate Assessment. CEMPs typically provide details of intended construction practice for the proposed development, including:</p> <ol style="list-style-type: none"> <li>location of the sites and materials compound(s) including area(s) identified for the storage of construction refuse,</li> <li>location of areas for construction site offices and staff facilities,</li> <li>details of site security fencing and hoardings,</li> <li>details of on-site car parking facilities for site workers during the course of construction,</li> <li>details of the timing and routing of construction traffic to and from the construction site and associated directional signage,</li> <li>measures to obviate queuing of construction traffic on the adjoining road network,</li> <li>measures to prevent the spillage or deposit of clay, rubble or other debris,</li> <li>alternative arrangements to be put in place for pedestrians and vehicles in the case of the closure of any public right of way during the course of site development works,</li> <li>details of appropriate mitigation measures for noise, dust and vibration, and monitoring of such levels,</li> <li>containment of all construction-related fuel and oil within specially constructed bunds to ensure that fuel spillages are fully contained; such bunds shall be roofed to exclude rainwater,</li> <li>disposal of construction/demolition waste and details of how it is proposed to manage excavated soil,</li> <li>a water and sediment management plan, providing for means to ensure that surface water runoff is controlled such that no silt or other pollutants enter local water courses or drains,</li> <li>details of a water quality monitoring and sampling plan.</li> <li>if peat is encountered - a peat storage, handling and reinstatement management plan.</li> <li>measures adopted during construction to prevent the spread of invasive species (such as Japanese Knotweed).</li> <li>appointment of an ecological clerk of works at site investigation, preparation and construction phases.</li> <li>details of appropriate mitigation measures for lighting specifically designed to minimise impacts to biodiversity, including bats.</li> </ol>
<b>Various</b>	Various – see below	<p><b>Maintenance Plan</b>  Lower tier assessments should examine the need for Maintenance Plans informed by environmental considerations to be prepared and implemented.</p>
<b>Air and Climatic Factors</b>	Emissions to air and associated issues	<p>Please refer to the overall approach and detail provided for by the Strategy focusses significant levels of investment in sustainable transport modes and other climate related provisions integrated into the Strategy.</p> <p><b>Air and Energy</b>  Contribute towards: compliance with air quality legislation; greenhouse gas emission targets; management of noise levels, including taking into account available noise maps and Noise Action Plans for the Cork Agglomeration and Major Roads in the Cork County Area (including provisions relating to the preservation of Quiet Areas); and reductions in energy usage.</p> <p><b>Climate Adaptation and Resilience</b>  Improve resilience and adaptation to climate change by taking into account issues including the following in the siting and design of projects:</p> <ul style="list-style-type: none"> <li>Extreme precipitation and risk of high river flows and associated implications including those relating to pluvial and fluvial flooding, bridge scour, soil erosion and landslides;</li> <li>Sea level rise and storm surge and associated implications including those relating to coastal erosion and coastal flooding; and</li> <li>Extreme temperatures and associated implications including those relating to the operation of transport and ancillary infrastructure and services.</li> </ul>
<b>Population and human health</b>	Potential interactions if effects upon environmental vectors such as air are not mitigated	<p><b>Human Health</b>  Assess proposals for development in terms of, inter alia, potential impact on existing adjacent developments, existing land uses and/or the surrounding landscape. Where proposed developments would be likely to have a significant adverse effect on the amenities of the area through pollution by noise, fumes, odours, dust, grit or vibration, or cause pollution of air, water and/or soil, mitigation measures shall be introduced in order to eliminate adverse environmental impacts or reduce them to an acceptable operating level.</p>
<b>Biodiversity and flora and fauna</b>	- Arising from both construction and operation of transport	<p><b>Protection of Biodiversity including Natura 2000 Network</b>  Contribute, as appropriate, towards the protection of designated ecological sites including Special Areas of Conservation (SACs) and Special Protection Areas (SPAs); UNESCO World Heritage and UNESCO Biosphere sites; Ramsar Sites; Salmonid Waters; Shellfish Waters; Freshwater Pearl Mussel</p>

Environmental component benefitting	Potential adverse effect mitigated	Requirement
	<p>infrastructure and services and associated facilities/infrastructure: loss of/damage to biodiversity in designated sites, ecological connectivity and non-designated habitats; and disturbance to biodiversity and flora and fauna.</p> <ul style="list-style-type: none"> <li>- Habitat loss, fragmentation and deterioration, including patch size and edge effects.</li> <li>- Disturbance (e.g. due to noise and lighting along transport corridors) and displacement of protected species and/or coastal squeeze.</li> <li>- Effects in riparian zones where new crossings of waters, if any, are progressed.</li> <li>- Potential effects on vegetation from transport emissions.</li> </ul>	<p>catchments; Flora Protection Order sites; Wildlife Sites (including Nature Reserves); Certain entries to the Water Framework Directive Register of Protected Areas; Natural Heritage Areas (NHAs) and proposed Natural Heritage Areas (pNHAs); Wildfowl Sanctuaries (see S.I. 192 of 1979) ; and Tree Preservation Orders (TPOs).</p> <p>Contribute towards compliance with relevant EU Environmental Directives and applicable National Legislation, Policies, Plans and Guidelines, including the following and any updated/superseding documents):</p> <ul style="list-style-type: none"> <li>• EU Directives, including the Habitats Directive (92/43/EEC, as amended)<sup>5</sup>, the Birds Directive (2009/147/EC)<sup>6</sup>, the Environmental Liability Directive (2004/35/EC)<sup>7</sup>, the Environmental Impact Assessment Directive (2011/92/EU, as amended by 2014/52/EC), the Water Framework Directive (2000/60/EC) and the Strategic Environmental Assessment Directive (2001/42/EC).</li> <li>• National legislation, including the Wildlife Acts 1976 and 2010 (as amended), the Planning and Development Act 2000 (as amended) and associated Regulations, Environmental Impact Assessment Regulations, the Wildlife (Amendment) Act 2000, the European Union (Water Policy) Regulations 2003 (as amended), the European Communities (Birds and Natural Habitats) Regulations 2011 (as amended), the European Communities (Environmental Liability) Regulations 2008<sup>8</sup> and the Flora Protection Order 2015.</li> <li>• National policy guidelines (including any clarifying Circulars or superseding versions of same), including the “Landscape and Landscape Assessment” Draft Guidelines 2000, the Environmental Impact Assessment Sub-Threshold Development Guidelines 2003, Strategic Environmental Assessment Guidelines 2004 and the Appropriate Assessment Guidance 2010.</li> <li>• Catchment and water resource management Plans, including the relevant River Basin Management Plan and Flood Risk Management Plan (including any superseding versions of same).</li> <li>• Biodiversity Plans and guidelines, including the 3<sup>rd</sup> National Biodiversity Plan 2017-2023 (including any superseding version of same).</li> <li>• Freshwater Pearl Mussel Regulations (S.I. 296 of 2009) (including any associated designated areas or management plans).</li> <li>• Ireland’s Environment 2016 - An Assessment (EPA, 2016, including any superseding versions of same), and to make provision where appropriate to address the report’s goals and challenges.</li> </ul> <p><b>NPWS &amp; Integrated Management Plans</b></p> <p>Article 6(1) of the Habitats Directive requires that Member States establish the necessary conservation measures for European sites involving, if need be, appropriate management plans specifically designed for the sites or integrated into other development plans. The NPWS’s current priority is to identify site specific conservation objectives; management plans may be considered after this is done.</p> <p>Where Integrated Management Plans are being prepared for European sites (or parts thereof), the National Parks and Wildlife Service shall be engaged with in order to ensure that plans are fully integrated with the Strategy and other plans and programmes, with the intention that such plans are practical, achievable and sustainable and have regard to all relevant ecological, cultural, social and economic considerations, including those of local communities.</p> <p><b>Coastal Zone Management</b></p> <p>Support measures to protect the coast, the coastal edge and coastal habitats; and facilitate an Integrated Coastal Zone Management approach to ensure the conservation, management and projection of man-made and natural resources of the coastal zone.</p> <p><b>Biodiversity and Ecological Networks</b></p> <p>Contribute towards the protection and enhancement of biodiversity and ecological connectivity, including woodlands, trees, hedgerows, semi-natural grasslands, rivers, streams, natural springs, wetlands, geological and geo-morphological systems, other landscape features, natural lighting conditions, and associated wildlife where these form part of the ecological network and/or may be considered as ecological corridors or stepping stones in the context of Article 10 of the Habitats Directive.</p> <p><b>Protection of Riparian Zone and Waterbodies and Watercourses</b></p> <p>Help to ensure that waterbodies and watercourses are protected from inappropriate development, including rivers, streams, associated undeveloped riparian strips, wetlands and natural floodplains. This will include the preservation habitat features/structure, such as treeline density, and protection buffers in riverine, wetland and coastal areas, as appropriate.</p>

<sup>5</sup> Including Annex I habitats, Annex II species and their habitats and Annex IV species and their breeding sites and resting places (wherever they occur).

<sup>6</sup> Including Annex I species and other regularly occurring migratory species, and their habitats (wherever they occur).

<sup>7</sup> Including protected species and natural habitats.

<sup>8</sup> Including protected species and natural habitats.

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Environmental component benefitting	Potential adverse effect mitigated	Requirement
		<p><b>Biodiversity including non-designated biodiversity</b> Ensure the undertaking of appropriately detailed surveying and assessment at project/EIA level and minimisation of loss of biodiversity, including old trees or tree lines or areas of vegetation, as a result of the development of new or widened infrastructure.</p> <p>Help to ensure the appropriate protection of non-designated habitat features, landscapes and biological diversity.</p> <p>Proposals for development under the Strategy will seek to avoid impacts on the Atlantic Pond (off The Marina) and immediate surrounding area.</p> <p><b>Lighting Sensitive Species</b> Lighting fixtures should provide only the amount of light necessary for personal safety and should be designed so as to avoid creating glare or emitting light above a horizontal plane. Lighting fixtures should have minimum environmental impact, thereby contributing towards the protection of amenity and the protection of light sensitive species such as bats.</p> <p><b>Non-native invasive species</b> Support, as appropriate, the National Parks and Wildlife Service's efforts to seek to control and manage the spread of non-native invasive species on land and water. Where the presence of non-native invasive species is identified at the site of any proposed development or where the proposed activity has an elevated risk of resulting in the presence of these species, details of how these species will be managed and controlled will be required.</p> <p><b>National Peatlands Strategy</b> Support, as appropriate, any relevant recommendations contained in the National Peatlands Strategy 2015.</p>
<p><b>Material Assets</b></p>	<ul style="list-style-type: none"> <li>- Generation of construction waste</li> <li>- Loss or damage to built/amenity assets and infrastructure including as a result of new or widened transport infrastructure</li> </ul>	<p>Also see Construction and Environmental Management Plans provision above</p> <p><b>Construction Waste</b> Demonstrate that all waste arising during construction phase will be managed and disposed of in a way that ensures the provisions of the Waste Management Acts and regulations and any of the relevant Local Authorities Waste Management Plans. Construction Waste Management Plans will be implemented to minimise waste and ensure correct handling and disposal of construction waste streams in accordance with the Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects, Department of the Environment, July 2006.</p> <p><b>Waste Creation</b> Support the minimisation of waste creation and promote a practice of reduce, reuse and recycle where possible.</p> <p><b>Waste Disposal</b> Safeguard the environment by seeking to ensure that residual waste is disposed of appropriately.</p> <p><b>Public Assets and Infrastructure</b> Contribute towards the protection of public assets and infrastructure including resources such as: public open spaces, parks and recreational areas; public buildings and services; and utility infrastructure (electricity, gas, telecommunications, water supply, wastewater infrastructure etc.)</p>
<p><b>Water</b></p>	<ul style="list-style-type: none"> <li>- Adverse impacts upon the status of water bodies and entries to the WFD Register of Protected Areas, arising from changes in quality, flow and/or morphology</li> <li>- Increase in the risk of flooding</li> </ul>	<p>Also see Construction and Environmental Management Plans provision above and measures under soil above and material assets below</p> <p><b>Water Framework Directive and associated legislation</b> Contribute towards, as appropriate, the protection of existing and potential water resources, and their use by humans and wildlife, including rivers, streams, wetlands, groundwater, coastal waters and associated habitats and species in accordance with the requirements and guidance in the EU Water Framework Directive 2000 (2000/60/EC), the European Union (Water Policy) Regulations 2003 (as amended), the European Communities Environmental Objectives (Surface Waters) Regulations 2009 (SI No. 272 of 2009), the Groundwater Directive 2006/118/EC and the European Communities Environmental Objectives (groundwater) Regulations, 2010 (S.I. No. 9 of 2010) and other relevant EU Directives, including associated national legislation and policy guidance (including any superseding versions of same). To support the application and implementation of a catchment planning and management approach to development and conservation, including the implementation of Sustainable Drainage System techniques for new development.</p> <p><b>River Basin Management Plan</b> Support the implementation of the relevant recommendations and measures as outlined in the River Basin Management Plan 2018-2021, and associated Programme of Measures, or any such plans that may supersede same during the lifetime of the Strategy. Proposed plans, programmes and projects shall not have an unacceptable impact on the water environment, including surface waters, groundwater quality and quantity, river corridors and associated woodlands. Also to have cognisance of, where relevant, the EU's Common Implementation Strategy Guidance Document No. 20 and 36 which provide guidance on exemptions to the environmental objectives of the Water Framework Directive.</p> <p><b>Bathing Water</b> Contribute towards the achievement of the requirements of the EU Bathing Water Directive and transposing Bathing Water Quality Regulations (SI No.</p>

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Environmental component benefitting	Potential adverse effect mitigated	Requirement
		<p>79 of 2008) and EU Mandatory Values, as a minimum, and EU Guide Values, where possible.</p> <p><b>Flood Risk Management Guidelines</b> Comply with the Planning System and Flood Risk Management Guidelines (2009, DEHLG/OPW) (including any clarifying Circulars or superseding versions of same) and relevant outputs of the Catchment and Flood Risk Assessment and Management Studies.</p> <p><b>Surface Water Drainage and Sustainable Drainage Systems (SuDs)</b> Ensure that new development is adequately serviced with surface water drainage infrastructure and promote the use of Sustainable Drainage Systems as appropriate.</p>
<b>Landscape</b>	Occurrence of adverse visual impacts and conflicts with the appropriate protection of statutory designations relating to the landscape	<p><b>Landscape Designations</b> Contribute, as appropriate, towards the protection of county and local level landscape designations from incompatible developments. Proposals for development that have the potential to significantly adversely impact upon these designations shall be accompanied by an assessment of the potential landscape and visual impacts of the proposed development - demonstrating that landscape impacts have been anticipated and avoided to a level consistent with the sensitivity of the landscape and the nature of the designation.</p> <p><b>Amenity</b> Contribute towards the protection of areas of amenity value and minimise losses, as a result of the development of new or widened infrastructure.</p> <p><b>Coastal Areas and Seascapes</b> Contribute towards the protection of landscape character and the visual potential of the coast and conserve the character and quality of seascapes.</p> <p><b>National Landscape Strategy</b> Support, as appropriate, any relevant recommendations contained in the National Landscape Strategy for Ireland 2015-2025.</p>
<b>Cultural Heritage</b>	Potential effects on protected and unknown archaeology and protected architecture arising from construction and operation activities, including as a result of increasing traffic flows.	<p><b>Archaeological Heritage</b> Contribute, as appropriate, towards the protection and sympathetic enhancement of archaeological heritage, in particular by implementing the relevant provisions of the Planning and Development Act 2000 (as amended) and the National Monuments Act, 1930 (as amended).</p> <p>Any alterations to archaeological heritage or its context, including that which may arise as a result of the development of new or widened infrastructure, shall be in compliance with relevant legislation.</p> <p><b>Protection of Archaeological Sites</b> Contribute, as appropriate, towards the protection of archaeological sites and monuments and their settings, archaeological objects and underwater archaeological sites that are listed in the Record of Monuments and Places, in the ownership/guardianship of the State, or that are the subject of Preservation Orders or have been registered in the Register of Historic Monuments. Contribute, as appropriate, towards the protection and preservation of archaeological sites, which have been identified subsequent to the publication of the Record of Monuments and Places.</p> <p><b>Consultation</b> Consult with the National Monuments Service of the Department of Arts Heritage and the Gaeltacht in relation to proposed developments adjoining archaeological sites.</p> <p><b>Underwater Archaeological Sites</b> Contribute, as appropriate, towards the protection and preservation of underwater archaeological sites in riverine, intertidal and sub-tidal locations.</p> <p><b>Architectural Heritage</b> Contribute towards the protection of architectural heritage by complying, as appropriate, with the legislative provisions of the Planning and Development Act 2000 (as amended) in relation to architectural heritage and the policy guidance contained in the Architectural Heritage Protection Guidelines 2011 (and any updated/superseding document).</p> <p>Any alterations to architectural heritage or its context, including that which may arise as a result of the development of new or widened infrastructure, shall be in compliance with relevant legislation.</p>

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Environmental component benefitting	Potential adverse effect mitigated	Requirement
Soil	<p>- Adverse impacts on the hydrogeological and ecological function of the soil resource as a result of construction of transport and associated transport facilities/ infrastructure.</p> <p>- Adverse impacts on features or areas of geological / geomorphological interest as a result of construction of transport and associated transport facilities/ infrastructure.</p> <p>- Potential for increase in coastal /river bank erosion.</p>	<p>Also see requirements under other heading of water above.</p> <p><b>Soil Protection and Contamination</b> Ensure that adequate soil protection measures are undertaken where appropriate. Adequate and appropriate investigations shall be carried out into the nature and extent of any soil and groundwater contamination and the risks associated with site development work, where brownfield development is proposed.</p> <p><b>Areas of geological interest</b> Contribute towards the appropriate protection and maintenance of the character, integrity and conservation value of features or areas of geological interest.</p> <p><b>Land Take</b> Contribute towards the target of the National Planning Framework's (2018) SEA to "Maintain built surface cover nationally to below the EU average of 4%."</p>

## Section 3 Environmental Report and Submissions/Observations

### 3.1 Introduction

This section details how both the Environmental Report and submissions and observations made to the NTA on the Environmental Report and SEA process have been taken into account during the preparation of the Strategy.

### 3.2 SEA Scoping Submissions

Submissions were made by two environmental authorities, the environmental Protection Agency (EPA) and the Department of Culture, Heritage and the Gaeltacht.

The submission from the Environmental Protection Agency provided information/suggestions on topics including the following, which informed the preparation of the Strategy and SEA:

- *Ireland's Environment - An Assessment 2016* (EPA, 2016);
- Road Transport;
- Air Pollution and Transport;
- Climate Change Mitigation;
- Alternative Fuels, BioFuels Obligation Scheme /Smarter Travel);
- Climate Change Adaptation;
- Southern Regional Assembly's Regional Spatial and Economic Strategy;
- Noise Pollution;
- Lighting associated with transport corridors;
- Biodiversity;
- Key Plans and Programmes;
- Scoping Process Guidance;
- SEA WebGIS Search and Reporting Tool;
- Scenario/Alternative Development and Assessment; and
- Environmental Authorities.

The submission from the Department of Culture, Heritage and the Gaeltacht provided information and suggestions on the topics of archaeology and archaeological assessments, which informed the preparation of the Strategy and SEA.

### 3.3 Submissions on the Environmental Report

Furthermore, submissions were made on the Draft Strategy, SEA Environmental Report and AA Natura Impact Report while these documents were on public display and these resulted in updates being made to the documents. Submissions included those made by the Environmental Protection Agency and the Cork Nature Network. Updates made to the SEA Environmental Report on foot of these submissions include those detailed at Table 3.1.

**Table 3.1 Updates to SEA mitigation and Strategy requirements arising from Submissions**

Source of Submission	Updates to SEA and Strategy
Environmental Protection Agency	<p>New text in <b>bold</b></p> <p>To update the following measure from Table 9.2 in the SEA Environmental Report for integration into the Strategy:</p> <p><i>Climate Change, Emissions and Energy</i>  <i>As identified in the SEA Environmental Report that accompanies this Strategy, the Strategy facilitates sustainable mobility and associated positive effects, including those relating to:</i></p> <ul style="list-style-type: none"> <li>• <i>Reductions in greenhouse gas emissions and associated achievement of legally binding targets;</i></li> <li>• <i>Reductions in emissions to air and associated achievement of air quality objectives, thereby contributing towards improvement or air quality and protection of human health;</i></li> <li>• <i>Reductions in consumption of non-renewable energy sources and achievement of legally binding renewable energy targets; and</i></li> <li>• <i>Energy security.</i></li> </ul> <p><i>In implementing the Strategy, the Authority will support relevant provisions contained in the <b>Draft National Energy and Climate Plan (when adopted), the Cork County and City Council climate adaptation strategies (when adopted), the Climate Action Plan (2019), National Climate Change Adaptation Framework (2018), the National Mitigation Plan (2017) and the Department of Transport, Tourism and Sport's 2017 "Adaptation Planning – Developing Resilience to Climate Change in the Irish Transport Sector".</b></i></p> <p><i>The implementation of the Strategy will incorporate relevant targets and actions arising from the sectoral adaptation plan for transport that will be prepared to comply the requirements of the Climate Action and Low Carbon Development Act 2015.</i></p> <p><i>Cognisant of the imperative to reduce emissions the Authority will seek to ensure primacy for transport options that provide for unit reductions in carbon emissions. This can most effectively be done by promoting public transport, walking and cycling, and by actively seeking to reduce car use in circumstances where alternative options are available.</i></p> <p><i>During the preparation and/or review of policies and plans relating to climate change, carbon emissions and energy usage, the Authority will seek to integrate Strategy objectives, as appropriate.</i></p> <p>To add the following measure to Table 9.3 in the SEA Environmental Report for integration into the Strategy:</p> <p><b>Climate Adaptation and Resilience</b>  <b>Improve resilience and adaptation to climate change by taking into account issues including the following in the siting and design of projects:</b></p> <ul style="list-style-type: none"> <li>• <b>Extreme precipitation and risk of high river flows and associated implications including those relating to pluvial and fluvial flooding, bridge scour, soil erosion and landslides;</b></li> <li>• <b>Sea level rise and storm surge and associated implications including those relating to coastal erosion and coastal flooding;</b></li> <li>• <b>Extreme temperatures and associated implications including those relating to the operation of transport and ancillary infrastructure and services.</b></li> </ul> <p>To update the following measure from the Table 9.3 in the SEA Environmental Report for integration into the Strategy:</p> <p><i>Air and Energy</i>  <i>Contribute towards: compliance with air quality legislation; greenhouse gas emission targets; management of noise levels, <b>including taking into account available noise maps and Noise Action Plans for the Cork Agglomeration and Major Roads in the Cork County Area (including provisions relating to the preservation of Quiet Areas); and reductions in energy usage.</b></i></p>
Cork Nature Network	<p>To add the following requirement to Mitigation Measures in Table 9.3 of the SEA Environmental Report:</p> <p><b>Proposals for development under the Strategy will seek to avoid impacts on the Atlantic Pond (off The Marina) and immediate surrounding area.</b></p>

### **3.4 Environmental Report**

The Draft Strategy and accompanying documents (including SEA Environmental Report and AA Natura Impact Report) were placed on public display, having integrated various recommendations arising from the SEA and AA processes.

Responses to submissions made on the Environmental Report during the period of public display were integrated into a Report on Submissions and considered by the National Transport Authority.

Changes to the original Draft Strategy that was placed on public display would not result in additional environmental effects to those already considered by and identified in the SEA Environmental Report for the original Draft Strategy (as a result of the Strategy, alone and in combination with other plans and programmes).

The SEA Environmental Report was updated in order to take account of:

- Recommendations contained in submissions; and
- Changes to the Draft Strategy that were made on foot of submissions.

The National Transport Authority have taken into account the findings of all relevant SEA output during their consideration of the Draft Strategy and before the Strategy was adopted.

## **Section 4 Reasons for choosing the selected alternative in light of other alternatives considered**

As per the requirements of the SEA Directive, the SEA considered reasonable alternatives, which are capable of being implemented for the Strategy.

### **4.1 Need for the Strategy**

The growth of the Cork Metropolitan Area that is provided for by the National Planning Framework (NPF) and associated National Development Plan (NDP), the Regional Spatial and Economic Strategy for the Southern Region (RSES), Cork City and County Development Plans and Local Area Plans presents a need for a supporting framework for the planning and delivery of transport infrastructure and services.

Furthermore, the emergence of increasing road congestion in recent years has underlined the need to provide an enhanced level of public transport provision to provide an alternative to car-based commuting. Congestion is a challenge that must be addressed by the transport system in a context where significant population growth, and associated economic activity and social, cultural and recreational activity is being planned for.

Furthermore, the significance of the need for action to reduce the use of fossil fuels and diminish the generation of greenhouse gases is recognised and required by legislation. The National Transport Authority is required to adhere to the National Climate Change Adaptation Framework, which was published by the Minister for Communications, Climate Action and Environment in 2018, and the Department of Transport, Tourism and Sport's Sectoral Adaptation Plan, published in 2017.

### **4.2 Existing provisions already in place**

The Cork Metropolitan Area Transport Strategy aligns with documents setting out public policy for land use and/or transport and will be incorporated into the review and preparation of these documents. These include the NPF and associated NDP, the Strategic Investment Framework for Land Transport, the RSES, the City and County Development Plans and Local Area Plans. Certain transport related proposals already provided for by these documents (and considered by their environmental assessments) are amongst those included within the Strategy.

### **4.3 Overview of Alternatives Considered**

The various elements of the Strategy are at different stages in the planning/environmental process. Furthermore, different elements of the Strategy will be developed by different agencies, at different times, according to different funding allocations.

Transportation is highly integrated with both land-use planning and the provision of other public infrastructure, such as water services. Different alternative scenarios will give rise to different land-use patterns, resulting in different environmental effects.

The Strategy was developed and assessed in the context of three notional **Investment Scenarios** as follows:

1. Business as Usual Scenario that incorporates committed investment in the road network only;
2. Improvements to Public Transport and Sustainable Travel – scenario this substantially increases public transport investment; and

3. Better Integration of Land Use with Public Transport and Sustainable Travel – this scenario has elements of Scenario 2 and involves better integration of land-use with public transport and sustainable transport.

In addition to the consideration of the above scenarios, **Corridor Specific Public Transport Network Options** were considered in the preparation of the Strategy for the following corridors:

- Strategic Rail Corridor
- Strategic East-West Corridor
- Public Transport Corridors Mode Capacities and Route Alignment

Improvements for the **national road network** that are proposed as part of the Strategy are already provided for by other plans, policies etc. and they are at different stages of the planning process. As such, SEA consideration of alternatives at this Strategy level is not relevant. SEA Alternatives relating to Road Network Options focus on the **road network to the north of the Cork City**.

## 4.4 Summary of Evaluation of Alternatives

### 4.4.1 Investment Scenario Alternatives

A summary of the comparative evaluation of investment scenarios that is provided in the SEA Environmental Report is provided on Table 4.1 below, with reference to Strategic Environmental Objectives<sup>9</sup> (SEOs).

**Table 4.1 Comparative Evaluation of Investment Scenarios against SEOs**

Alternative	Likely to <b>Improve</b> status of SEOs to a <b>greater</b> degree	Likely to <b>Improve</b> status of SEOs	Likely to <b>Improve</b> status of SEOs to a <b>lesser</b> degree	<b>Least Potential Conflict</b> with status of SEOs - likely to be mitigated	<b>Potential Conflict</b> with status of SEOs - likely to be mitigated	<b>Probable Conflict</b> with status of SEOs - less likely to be mitigated
<b>Scenario 1: Business as Usual</b>			✓ <sup>10</sup>			✓ <sup>11</sup>
<b>Scenario 2: Improvements to Public Transport and Sustainable Travel</b>		✓ <sup>12</sup>			✓ <sup>13</sup>	
<b>Scenario 3: Better Integration of Land Use with Public Transport and Sustainable Travel</b>	✓ <sup>14</sup>			✓ <sup>15</sup>		

<sup>9</sup> Strategic Environmental Objectives (SEOs) are methodological measures developed from policies which generally govern environmental protection objectives established at international, Community or Member State level and are used as standards against which the provisions of the Strategy and the alternatives can be evaluated in order to help identify which provisions would be likely to result in significant environmental effects and where such effects would be likely to occur, if - in the case of adverse effects - unmitigated. They are: AC1 To contribute towards reductions in travel related emissions (including pollutants, noise and greenhouse gas emissions) to air; AC2 To encourage modal change from car to more sustainable forms of transport; AC3 To facilitate a reduction in energy use by the transport sector and an increase in the proportion of energy from renewable sources by the transport sector; PHH1 To develop transport infrastructure and services closer to urban/suburban areas thereby facilitating consolidation of growth and limiting urban sprawl; PHH2 To contribute towards the protection of populations and human health from exposure to incompatible land uses; B1 To contribute towards compliance with the Habitats and Birds Directives with regard to the protection of European Sites and Annexed habitats and species; B2 To contribute towards compliance with Article 10 of the Habitats Directive with regard to the management of features of the landscape which - by virtue of their linear and continuous structure or their function as stepping stones (designated or not) - are of major importance for wild fauna and flora and essential for the migration, dispersal and genetic exchange of wild species; B3 To contribute towards avoidance of significant impacts on relevant habitats, species, environmental features or other sustaining resources in designated sites including Wildlife Sites and to contribute towards compliance with the Wildlife Acts 1976-2012 with regard to the protection of listed species; M1 To contribute towards the protection of built/amenity assets and infrastructure; M2 To contribute towards the reuse and regeneration of brownfield sites; M3 To reduce waste volumes, minimise waste to landfill and increase recycling and reuse; W1 To contribute towards the maintenance and improvement, where possible, of the quality and status of surface waters; W2 To contribute towards maintaining and improving, where possible, the chemical and quantitative status of groundwaters; W3 To contribute towards compliance with the provisions of the Flood Risk Management Guidelines; L1 To contribute towards avoidance or, where infeasible, minimisation of conflicts with the appropriate protection of statutory designations relating to the landscape, including those included in the land use plans of planning authorities; CH1; To contribute towards the protection of archaeological heritage (including entries to the Record of Monuments and Places) and its context; CH2 To contribute towards the protection of architectural heritage (including entries to the Record of Protected Structures, entries to the National Inventory of Architectural Heritage and Architectural Conservation Areas) and its context; and S1 To minimise land take and loss to extent of soil resource.

<sup>10</sup> Orderly development would be facilitated in some (dispersed) locations, including lands that have been zoned and subject to SEA, AA and SFRA. Also, an extent of potential increases in walking and cycling levels in urban areas as a means of avoiding congestion.

<sup>11</sup> As a result of construction and operation of development provided for by the Strategy and other plans and programmes including those relating to land use.

<sup>12</sup> As a result of contributing towards the integration of land use development with sustainable transport provision and contributing towards sustainable mobility.

<sup>13</sup> As a result of construction and operation of development provided for by the Strategy and other plans and programmes including those relating to land use.

<sup>14</sup> As a result of fully integrating land use development with sustainable transport provision and contributing towards sustainable mobility.

<sup>15</sup> As a result of construction and operation of development provided for by the Strategy and other plans and programmes including those relating to land use.

### Reasons for choosing the selected alternative in light of other alternatives considered

The most preferable outcome from the environmental assessment of alternative investment scenarios is Scenario 3 "Better Integration of Land Use with Public Transport and Sustainable Travel". This is the investment scenario from which the sustainable transport measures proposed in the Strategy have been developed.

This alternative scenario represents the optimal case of full integration of land-use development with sustainable transport provision and would largely restrict one-off housing and under-planned greenfield development. Growth would be consolidated and intensified around suburban rail, light rail and high frequency bus corridors. This scenario would facilitate the greatest improvement in sustainable mobility of all alternatives, thereby facilitating the greatest reduction and limit of increases in greenhouse gas emissions, noise emissions and other emissions to air (with associated effects on human health).

Potentially significant adverse environmental effects would be mitigated by the various provisions that have been integrated into the Strategy (see Section 2 of this report).

## 4.4.2 Other Options Considered

### 4.4.2.1 Strategic Rail Corridor

A summary of the comparative evaluation of alternatives for the Strategic Rail Corridor that is provided in the SEA Environmental Report is provided on Table 4.2 below, with reference to Strategic Environmental Objectives (SEOs).

**Table 4.2 Comparative Evaluation of Strategic Rail Corridor Options against SEOs**

Alternative	Likely to <b>Improve</b> status of SEOs to a <b>greater</b> degree	Likely to <b>Improve</b> status of SEOs	Likely to <b>Improve</b> status of SEOs to a <b>lesser</b> degree	<b>Least Potential Conflict</b> with status of SEOs - likely to be mitigated	<b>Potential Conflict</b> with status of SEOs - likely to be mitigated	<b>Probable Conflict</b> with status of SEOs - less likely to be mitigated
Option 1: Improvements to existing rail line and increase in services	✓	✓		✓	✓	
Option 2: Convert rail line to pedestrian and cycle path		✓	✓		✓	✓
Option 3: Cater for demand growth by car and increased road provision			✓			✓
Option 4: Cater for demand growth by car and increased bus service provision		✓			✓	
Option 5: Convert rail line and services to Light Rail Transit	✓			✓		

### Reasons for choosing the selected alternative in light of other alternatives considered

Taking into account the multi-criteria assessment for Strategic Rail Corridor Options (which was undertaken during the preparation of the Strategy) and the comparative evaluation

against SEOs provided on Table 4.2, Option 1 “Improvements to existing rail line and increase in services” was considered to be the preferred option for the Strategy, providing the most benefits overall while maximising the economic benefits.

#### 4.4.2.2 Strategic East-West Corridor

A summary of the comparative evaluation of alternatives for the Strategic East-West Corridor that is provided in the SEA Environmental Report is provided on Table 4.3 below, with reference to the Strategic Environmental Objectives (SEOs).

**Table 4.3 Comparative Evaluation of Strategic East-West Corridor Options against SEOs**

Alternative	Likely to <b>Improve</b> status of SEOs to a <b>greater</b> degree	Likely to <b>Improve</b> status of SEOs	Likely to <b>Improve</b> status of SEOs to a <b>lesser</b> degree	<b>Least Potential Conflict</b> with status of SEOs - likely to be mitigated	<b>Potential Conflict</b> with status of SEOs - likely to be mitigated	<b>Probable Conflict</b> with status of SEOs - less likely to be mitigated
<b>Option 1: Bus services</b>			✓			✓
<b>Option 2: Bus Rapid Transit</b>		✓			✓	
<b>Option 3: Light Rail Transit</b>	✓			✓		
<b>Option 4: Suburban Rail</b>		✓	✓		✓	
<b>Option 5: Metro</b>	✓		✓	✓	✓	

#### Reasons for choosing the selected alternative in light of other alternatives considered

Taking into account the multi-criteria assessment for Strategic East-West Corridor Options (which was undertaken during the preparation of the Strategy) and the comparative evaluation against SEOs provided on Table 4.3, both “Option 2 Bus Rapid Transit” and “Option 3 Light Rail Transit” rank well, with “Option 3 Light Rail Transit” coming out highest across all criteria. On this basis the “Option 3 Light Rail Transit” is considered the preferred option, however, this would ultimately require further demand and patronage analysis, and cost benefit analysis to confirm this.

#### 4.4.2.3 Public Transport Corridors Mode Capacities and Route Alignment

A summary of the comparative evaluation of alternatives for the Public Transport Corridors Mode Capacities and Route Alignment that is provided in the SEA Environmental Report is provided on Table 4.4 below, with reference to Strategic Environmental Objectives (SEOs).

#### Reasons for choosing the selected alternative in light of other alternatives considered

Taking into account the multi-criteria assessment for Public Transport Corridors Mode Capacities and Route Alignment Options (which was undertaken during the preparation of the Strategy) and the comparative evaluation against SEOs provided on Table 4.4, “Option 1 Bus Services” and Option 2 “Bus Rapid Transit” are considered to be the preferential options, providing the most benefits overall while maximising the economic benefits. Both provide consistent benefits in general. The difference between the two however, can only really be determined through further demand and patronage analysis and cost benefit analysis.

**Table 4.4 Comparative Evaluation of Public Transport Corridors Mode Capacities and Route Alignment Options against SEOs**

Alternative	Likely to <b>Improve</b> status of SEOs to a <b>greater</b> degree	Likely to <b>Improve</b> status of SEOs	Likely to <b>Improve</b> status of SEOs to a <b>lesser</b> degree	<b>Least Potential Conflict</b> with status of SEOs - likely to be mitigated	<b>Potential Conflict</b> with status of SEOs - likely to be mitigated	<b>Probable Conflict</b> with status of SEOs - less likely to be mitigated
<b>Option 1: Bus services</b>			✓		✓	
<b>Option 2: Bus Rapid Transit</b>		✓			✓	
<b>Option 3: Light Rail Transit</b>	✓			✓		

#### 4.4.2.4 Road Network Options

A summary of the comparative evaluation of alternatives for the Road Network Options that is provided in the SEA Environmental Report is provided on Table 4.5 below, with reference to the Strategic Environmental Objectives (SEOs).

**Table 4.5 Comparative Evaluation of Road Network Options against SEOs**

Alternative	Likely to <b>Improve</b> status of SEOs to a <b>greater</b> degree	Likely to <b>Improve</b> status of SEOs	Likely to <b>Improve</b> status of SEOs to a <b>lesser</b> degree	<b>Least Potential Conflict</b> with status of SEOs - likely to be mitigated	<b>Potential Conflict</b> with status of SEOs - likely to be mitigated	<b>Probable Conflict</b> with status of SEOs - less likely to be mitigated
<b>Option 1A: Linkage from N20 to M8</b>		✓			✓	
<b>Option 1B: Combined Strategic and Local Linkage</b>			✓		✓	
<b>Option 2A: Direct linkage from N20 and N40</b>		✓			✓	
<b>Option 2B: Combined Strategic and Local Linkage from N20 to N40</b>			✓		✓	
<b>Option 3: Local Linkage from N20 to N8</b>	✓	✓		✓		
<b>Option 4: Linkage from N20 to Lee Road</b>	✓	✓		✓		

#### Reasons for choosing the selected alternative in light of other alternatives considered

Reviewing the multi-criteria assessment for these options, it was recommended the local distributor type Cork Northern Distributor Road catering for the northeast and northwest quadrants of Cork City, a combination of Options 3 and 4. This Cork Northern Distributor Road would provide for local transport needs, multi-modal requirements, and enable the accommodation of strategic traffic away from Cork City Centre.

However, it is understood that the NDP has identified the M20 Cork – Limerick Motorway and the Cork Northern Ring Road linkage from the M20 to Dunkettle Interchange. Taking the requirements of the NDP into consideration would require a Strategic Direct link from the M20 to the M8, similar in form and function to Option 1 identified above. In this context both the

Strategic Cork Northern Ring Road and Local Cork Northern Distributor Road networks would be provided, one to cater for the local requirements and the other to cater for the strategic requirements. Both routes would provide complementary functions, in keeping with 'Spatial Planning and National Roads' guidance.

As detailed in the Strategy, as part of the N/M20 Cork to Limerick Road Improvement Scheme, Transport Infrastructure Ireland will examine the inclusion of the Cork Northern Ring Road linking the N20 to Dunkettle Interchange. The National Development Plan indicates that the Cork Northern Ring Road is a complementary but independent scheme to the N/M20 corridor scheme. However, its requirements, scale (based on demand levels) and justification will be considered and assessed as part of the appraisal process for the overall M20 scheme. Whilst it is envisaged that the Cork Northern Ring Road would not be delivered in advance of the substantive public transport elements of the Strategy, the appraisal process for the N/M20 Scheme will consider implementation and delivery in great detail. In line with the National Development Plan, the requirement for the Cork Northern Ring Road will be determined in accordance with DTTAS Guidance for scheme appraisal and Transport Infrastructure Ireland Project Appraisal Guidelines for National Roads (PAG) including a Route Options Assessment and Business Case. This Assessment should include the examination of a potential link from the N22 to the M8 and if required, designed in such a fashion that prioritises and safeguards the strategic traffic function of the route. Subject to the appraisal outcomes of the N/M20 Cork to Limerick Road Improvement Scheme, it is expected that the Cork Northern Ring Road project will be planned for implementation during the latter period of the Strategy. The finalisation of a route corridor and its protection from development intrusion is an objective of the Strategy to allow for changing circumstances including potentially an earlier project delivery requirement.

## Section 5 Monitoring Measures

### 5.1 Introduction

The SEA Directive requires that the significant environmental effects of the implementation of plans and programmes are monitored. This section details the measures that will be used in order to monitor the likely and potential significant effects of implementing the Strategy.

Monitoring can both demonstrate the positive effects facilitated by the Strategy including those relating to sustainable mobility and can enable, at an early stage, the identification of unforeseen adverse effects and the undertaking of appropriate remedial action.

### 5.2 Indicators and Targets

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

Table 5.1 shows the indicators and targets that have been selected for monitoring the likely significant environmental effects of implementing the Strategy, if unmitigated.

Monitoring is an ongoing process and the programme allows for flexibility and the further refinement of indicators and targets. The Monitoring Programme may also be updated to deal with specific environmental issues - including unforeseen effects - as they arise.

### 5.3 Sources

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

The output of lower-tier environmental assessment and decision making – including a review of project approvals granted and associated documents – will also be utilised as part of the Monitoring Programme.

Where significant effects - including positive, negative, cumulative and indirect - have the potential to occur as a result of the undertaking of individual projects or multiple individual projects such instances should be identified and recorded and should feed into the monitoring evaluation.

### 5.4 Reporting

A stand-alone Monitoring Report on the significant environmental effects of implementing the Strategy will be prepared in advance of the review of the Strategy. This report will address the indicators set out below. The National Transport Authority is responsible for the ongoing review of indicators and targets, collating existing relevant monitored data, the preparation of monitoring evaluation report(s), the publication of these reports and, if necessary, the carrying out of corrective action, in combination with the relevant authorities.

The hierarchy of planning and environmental assessment - including associated environmental monitoring requirements - in which the Transport Strategy is situated is noted.

### 5.5 Thresholds

Thresholds at which corrective action will be considered include:

- Complaints received from statutory consultees regarding avoidable impacts on any environmental components resulting from development which is granted permission under the Strategy;
- Court cases taken by the Department of Culture, Heritage and the Gaeltacht regarding impacts upon archaeological heritage from development which is provided for by the Strategy;
- Fish kills directly attributable to development which is provided for by the Strategy; and
- The occurrence of flood events that are directly attributable to development that is provided for by the Strategy.

**Table 5.1 Selected Indicators, Targets and Monitoring Sources**

Environmental Component	Likely Environmental Effects, as a direct result of development and activities under the Strategy and in combination with the wider planning framework			SEOs
	Significant Positive Effect likely to occur	Potentially Significant Adverse Effect, if unmitigated	Residual Adverse Effect <sup>16</sup>	
<b>Air and climatic factors</b>	<ul style="list-style-type: none"> <li>Contributions towards reductions in greenhouse gas and other emissions to air and associated achievement of legally binding targets (in combination with plans and programmes from all sectors, including energy, transport and land use planning) as a result of: facilitating a shift from car to more sustainable and non-motorised transport modes; and facilitating more consolidated urban areas and reductions in sprawl.</li> <li>Contributions towards reductions in consumption from non-renewables and associated achievement of legally binding renewable energy targets, including sectoral targets for transport (in combination with plans and programmes from all sectors, including energy, transport and land use planning).</li> <li>Contributions towards managing traffic flows (and associated management of adverse effects as a result of traffic on air quality and noise levels).</li> </ul>	<ul style="list-style-type: none"> <li>Emissions to air and associated issues.</li> </ul>	<ul style="list-style-type: none"> <li>An extent of travel related greenhouse gas and other emissions to air. This has been mitigated by provisions which have been integrated into the Strategy, including those relating to sustainable mobility.</li> </ul>	AC1 AC2 AC3
<b>Population and human health</b>	<ul style="list-style-type: none"> <li>Provides for the development of transport infrastructure and services in locations which will facilitate use by those living and working in urban/suburban areas.</li> <li>Facilitates contribution towards the protection of human health as a result of contributing towards the protection of environmental vectors, especially air.</li> </ul>	<ul style="list-style-type: none"> <li>Potential interactions if effects upon environmental vectors such as air are not mitigated.</li> </ul>	<ul style="list-style-type: none"> <li>An extent of travel related greenhouse gas and other emissions to air. This has been mitigated by provisions which have been integrated into the Strategy, including those relating to sustainable mobility.</li> </ul>	PHH1 PHH2
<b>Biodiversity and flora and fauna</b>	<ul style="list-style-type: none"> <li>Facilitates lower overall effects on ecology (including designated sites, ecological connectivity and habitats) – due to increased utilisation of lands within existing development boundaries and use of existing utilities and brownfield sites.</li> <li>Contributions towards the protection of vegetation as a result of contributing towards the protection of environmental vectors, especially air.</li> <li>Potential ecological enhancement interventions along transport corridors.</li> </ul>	<ul style="list-style-type: none"> <li>Arising from both construction and operation of transport infrastructure and services and associated facilities/ infrastructure: loss of/damage to biodiversity in designated sites, ecological connectivity and non-designated habitats; and disturbance to biodiversity and flora and fauna.</li> <li>Habitat loss, fragmentation and deterioration, including patch size and edge effects.</li> <li>Disturbance (e.g. due to noise and lighting along transport corridors) and displacement of protected species and/or coastal squeeze.</li> <li>Effects in riparian zones where new crossings of waters, if any, are progressed.</li> <li>Potential effects on vegetation from transport emissions.</li> </ul>	<ul style="list-style-type: none"> <li>Loss of an extent of non-protected habitats as a result of new or widened transport infrastructure that involves the replacement of semi-natural land covers with artificial surfaces</li> <li>Losses or damage to ecology (these would be in compliance with relevant legislation)</li> </ul>	B1 B2 B3
<b>Material Assets</b>	<ul style="list-style-type: none"> <li>Contributions towards energy security (in combination with plans and programmes from all sectors, including energy, transport and land use planning) as a result of reducing traffic flows and associated energy use.</li> <li>Contributions towards a mode shift away from the private car to public transport, walking and cycling and associated</li> </ul>	<ul style="list-style-type: none"> <li>Generation of construction waste.</li> <li>Loss or damage to built/amenity assets and infrastructure including as a result of new or widened transport infrastructure.</li> </ul>	<ul style="list-style-type: none"> <li>Residual wastes (these would be disposed of in line with higher level waste management policies)</li> <li>Potential residual losses to built/amenity assets and infrastructure including as a result of new or widened transport infrastructure</li> </ul>	MA1 MA2

<sup>16</sup> Residual adverse environmental effects would be generally non-significant. Significant residual adverse effects would be in compliance with the relevant environmental protection legislation.

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Environmental Component	Likely Environmental Effects, as a direct result of development and activities under the Strategy and in combination with the wider planning framework			SEOs
	Significant Positive Effect likely to occur	Potentially Significant Adverse Effect, if unmitigated	Residual Adverse Effect <sup>6</sup>	
	<ul style="list-style-type: none"> <li>enhancement of the public realm.</li> <li>Contributions towards the protection of built/amenity assets and infrastructure.</li> <li>Contributions towards the reuse and regeneration of brownfield lands thereby contributing towards a higher efficiency of land utilisation, sustainable mobility and a reduction in the need to develop greenfield lands. By facilitating increased utilisation of lands within existing development boundaries and use of existing utilities and brownfield sites there will be lower adverse effects upon ecology, landscape designations, architectural and archaeological heritage and soil.</li> <li>Contributions towards appropriate waste management.</li> </ul>			
<b>Water</b>	<ul style="list-style-type: none"> <li>Contributions towards lower effects on ground and surface waters due to higher levels of development within established and serviced settlement centres that have installed/upgraded water services capable of delivering Water Framework Directive targets.</li> <li>Contributions towards compliance with the Flood Risk Management Guidelines.</li> </ul>	<ul style="list-style-type: none"> <li>Adverse impacts upon the status of water bodies and entries to the WFD Register of Protected Areas, arising from changes in quality, flow and/or morphology.</li> <li>Increase in the risk of flooding.</li> </ul>	<ul style="list-style-type: none"> <li>Flood related risks remain due to uncertainty with regard to extreme weather events.</li> </ul>	W1 W2 W3
<b>Landscape</b>	<ul style="list-style-type: none"> <li>Contributions towards the protection of landscape designations as a result of facilitating compliance with relevant plans.</li> </ul>	<ul style="list-style-type: none"> <li>Occurrence of adverse visual impacts and conflicts with the appropriate protection of statutory designations relating to the landscape.</li> </ul>	<ul style="list-style-type: none"> <li>Residual visual effects (these would be in compliance with landscape designation provisions).</li> </ul>	L1
<b>Cultural Heritage</b>	<ul style="list-style-type: none"> <li>Contributions towards the protection of cultural heritage (archaeological and architectural) as a result of facilitating compliance with relevant legislation.</li> <li>Contributions towards the enhancement of cultural heritage and its context in urban areas and their surrounds as a result of replacing motorised modes with more sustainable and non-motorised modes of transport such as walking, cycling and light rail/metro.</li> </ul>	<ul style="list-style-type: none"> <li>Potential effects on protected and unknown archaeology and protected architecture arising from construction and operation activities, including as a result of increasing traffic flows.</li> </ul>	<ul style="list-style-type: none"> <li>Potential alteration to the context and setting of designated cultural heritage however these will occur in compliance with legislation. Potential loss of unknown archaeology however this loss will be mitigated by measures integrated into the Strategy.</li> </ul>	CH1 CH2
<b>Soil</b>	<ul style="list-style-type: none"> <li>Minimises land-take and loss of extent of soil resource – as a result of facilitating increased utilisation of lands within existing development boundaries and use of existing utilities and brownfield sites.</li> <li>Contributions towards the protection of the environment from contamination arising from brownfield development.</li> <li>Contributions towards the protection of features or areas of geological / geomorphological interest.</li> </ul>	<ul style="list-style-type: none"> <li>Adverse impacts on the hydrogeological and ecological function of the soil resource as a result of construction of transport and associated transport facilities/ infrastructure.</li> <li>Adverse impacts on features or areas of geological / geomorphological interest as a result of construction of transport and associated transport facilities/ infrastructure.</li> <li>Potential for increase in coastal /river bank erosion.</li> </ul>	<ul style="list-style-type: none"> <li>Loss of an extent of soil function arising from the replacement of semi-natural land covers with artificial surfaces and from sea level rise/coastal erosion.</li> </ul>	S1