

STRATEGIC ENVIRONMENTAL ASSESSMENT STATEMENT

FOR THE
TRANSPORT STRATEGY
FOR THE
GREATER DUBLIN AREA
2022-2042

for: National Transport Authority

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Section 1 Introduction

1.1 Introduction and Legislative Context

This is the Strategic Environmental Assessment (SEA) Statement for the Transport Strategy for the Greater Dublin Area 2022-2042 (referred to hereafter as the Strategy).

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 27th June 2001, on the Assessment of the Effects of Certain Plans and Programmes on the Environment, referred to hereafter as the SEA Directive, introduced the requirement that SEA be carried out on plans and programmes which are prepared for a number of sectors, including 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 21st July 2004. The Regulations have been amended by the European Communities (Environmental Assessment of Certain Plans and Programmes) (Amendment) Regulations 2011 (SI No. 200 of 2011) and the Planning and Development (Strategic Environmental Assessment) (Amendment) Regulations 2011 (SI No. 201 of 2011).

1.2 Content of the SEA Statement

Where SEA is undertaken, the Regulations require that a Statement is made available to the public and the competent environmental authorities after the making of the Plan.

This Statement is referred to as an SEA Statement.

The SEA Statement is required to include information summarising:

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

1.3 Implications of SEA for the Strategy

SEA identifies the likely significant environmental effects of implementing the Strategy, how environmental considerations were integrated into the Strategy and how alternatives for the Strategy were considered. 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 minor modifications made 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 Integration of Environmental Considerations into the Strategy

2.1 Overview

Environmental considerations were integrated into the Strategy through:

- Early work undertaken to ensure contribution towards environmental protection and sustainable development;
- Consideration of alternatives;
- Communication of environmental sensitivities; and
- Integration of individual measures into the Strategy.

2.2 Early work undertaken 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), Eastern and Midland Regional Spatial and Economic Strategy and the Statutory land use plans of planning authorities across the Strategy area.

The Strategy's Aim¹ and Objectives², to which sustainable development and environmental

¹ To provide a sustainable, accessible and effective transport system for the Greater Dublin Area which meets the region's climate change requirements, serves the needs of urban and rural communities, and supports the regional economy.

² **An Enhanced Natural and Built Environment**

To create a better environment and meet our environmental obligations by transitioning to a clean, low emission transport system, reducing car dependency, and increasing walking, cycling and public transport use.

Connected Communities and Better Quality of Life

protection and management are central, provide the basis for its detailed provisions.

2.3 Consideration of alternatives

Accommodating the scale of the growth provided for the Greater Dublin 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 Investment Scenarios as follows:

- Scenario 1: Business as Usual Scenario that incorporates committed investment in the road network and public transport only;
- Scenario 2: Improvements to Public Transport and Sustainable Travel – scenario this substantially increases public transport investment; and,
- Scenario 3: Improvements in Public Transport and Sustainable Travel, with complimentary Demand Management Measures – this scenario has elements of Scenario 2 but with the addition of demand management measures to influence the choice of travel.

The assessment of these scenarios is summarised in Section 4 of this report.

To enhance the health and quality of life of our society by improving connectivity between people and places, delivering safe and integrated transport options, and increasing opportunities for walking and cycling.

A Strong Sustainable Economy

To support sustainable economic activity and growth by improving the opportunity for people to travel for work or business where and when they need to, and facilitating the efficient movement of goods.

An Inclusive Transport System

To deliver a high quality, equitable and accessible transport system, which caters for the needs of all members of society.

2.4 Communication of 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 L_{den} (day, evening, night)
- Population Density
- Ecological designations, including European Sites³
- County Geological Sites
- Landslide Susceptibility
- WFD Surface Water Status
- WFD Groundwater Status
- WFD Register of Protected Areas
- Groundwater Vulnerability
- Groundwater Productivity
- Potential Water Sensitivity
- Potential Land Cover Sensitivity Mapping
- Archaeological Heritage
- Architectural Heritage

Some of these are indicated on Figure 2.2.

In addition to considering environmental components individually, some of the environmental information was been weighted and mapped to show overall potential environmental sensitivity (see Figure 2.3) and overall environmental potential opportunities (see Figure 2.3). This mapping indicates at a regional level where the main concentrations of sensitivities might occur.

Heightened areas of sensitivity within the GDA include those in the uplands and foothills of the Wicklow Mountains, in the bog areas of west Kildare, in river valleys (e.g. the River Boyne in central and North Meath, the River Barrow in West and South Kildare and Slaney in South Wicklow) and at lakes. Lands at the coastal margins and coastal waters adjacent to

the GDA are also sensitive, especially within and to the north of Dublin Bay. Lower levels of sensitivity occur elsewhere.

Heightened areas of robustness within the GDA include those within and surrounding the M50 motorway, in much of County Meath, especially south and south-east Meath, in much of County Kildare, especially north-east Kildare, and in County Wicklow, between the Mountains and the coast. Lower levels of robustness occur elsewhere.

2.5 Integration of individual measures into the Strategy

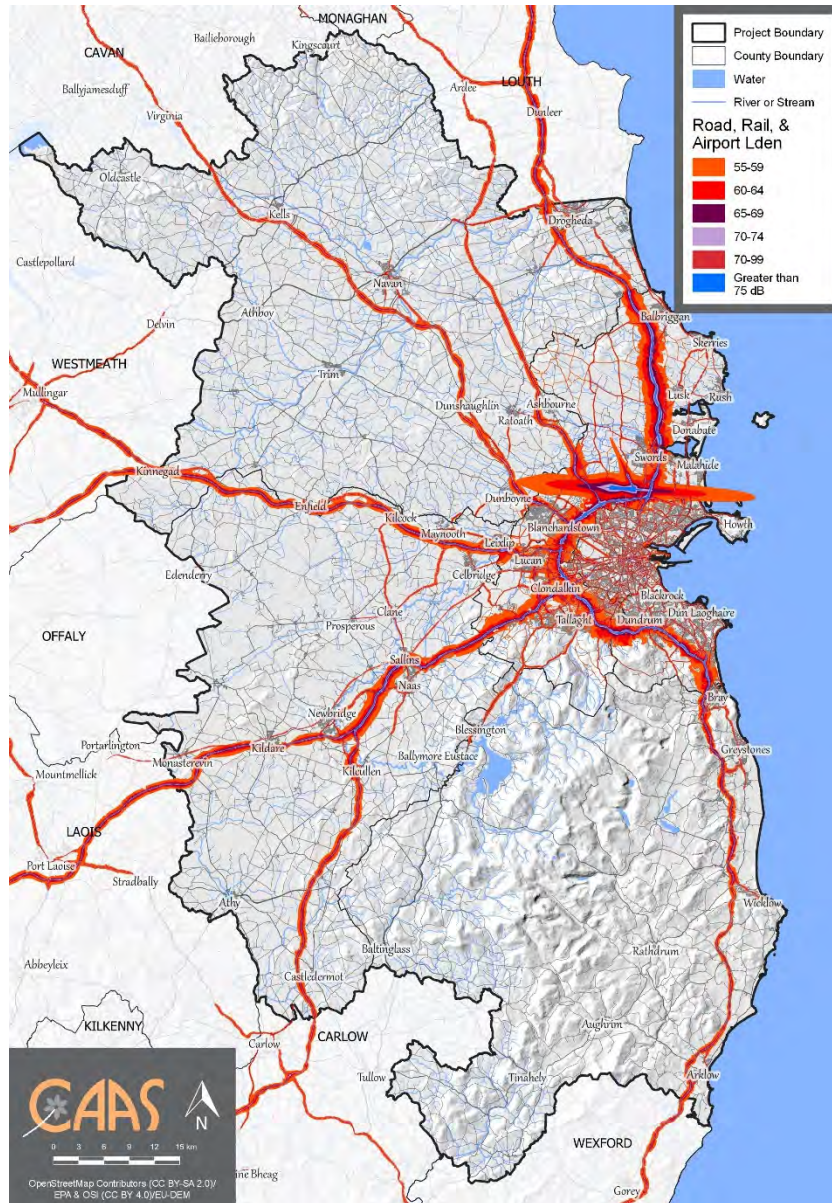
The SEA and AA processes that have been undertaken alongside the preparation of the Strategy have brought about changes to the emerging Strategy thereby enabling the mitigation of any potentially adverse environmental effects. Recommendations made by the SEA and AA processes have been integrated into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

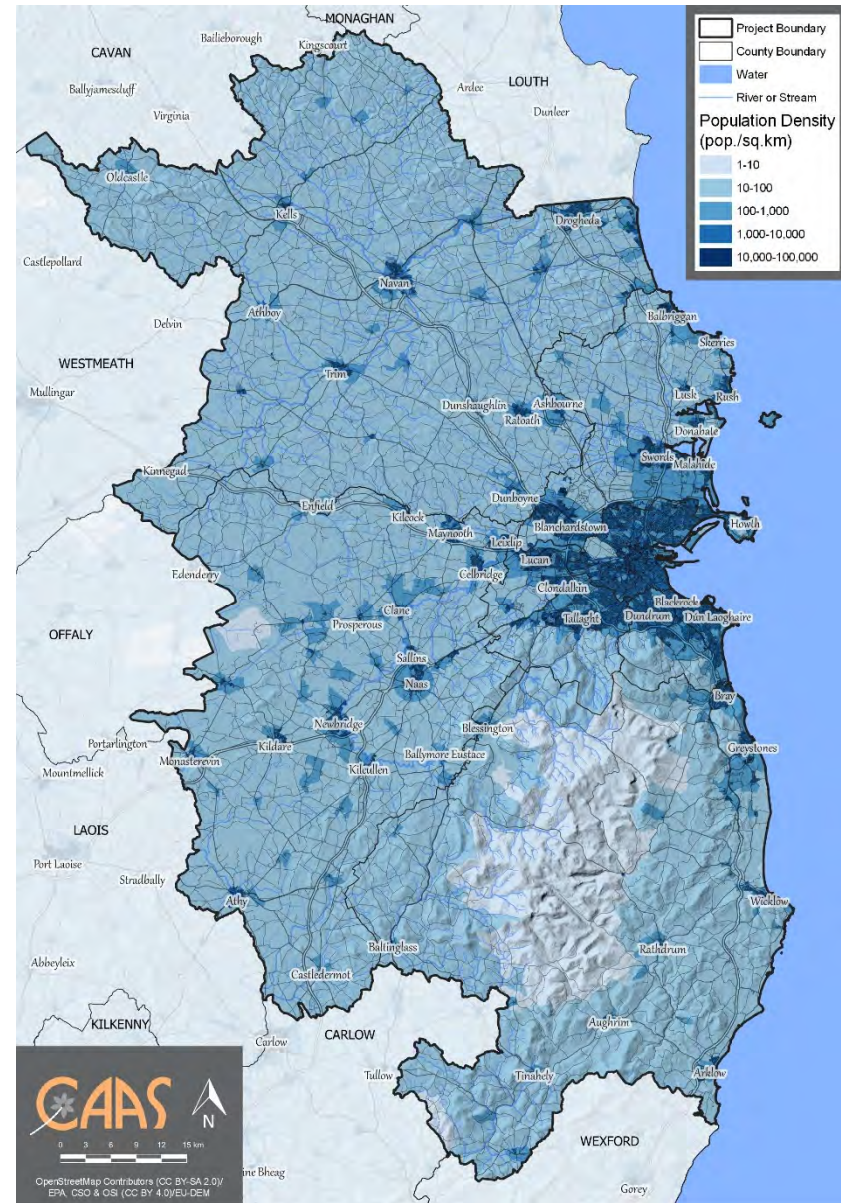
³ A Stage 2 Appropriate Assessment (AA) has been undertaken alongside the preparation of the Strategy.

The requirement for AA is provided under the EU Habitats Directive (Directive 1992/43/EEC). The conclusion of the AA is that the Strategy will not affect the integrity of the Natura 2000 network of European sites (except as provided for in Article 6(4) of the Habitats Directive).

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. All recommendations made by the AA have been integrated into the Strategy.

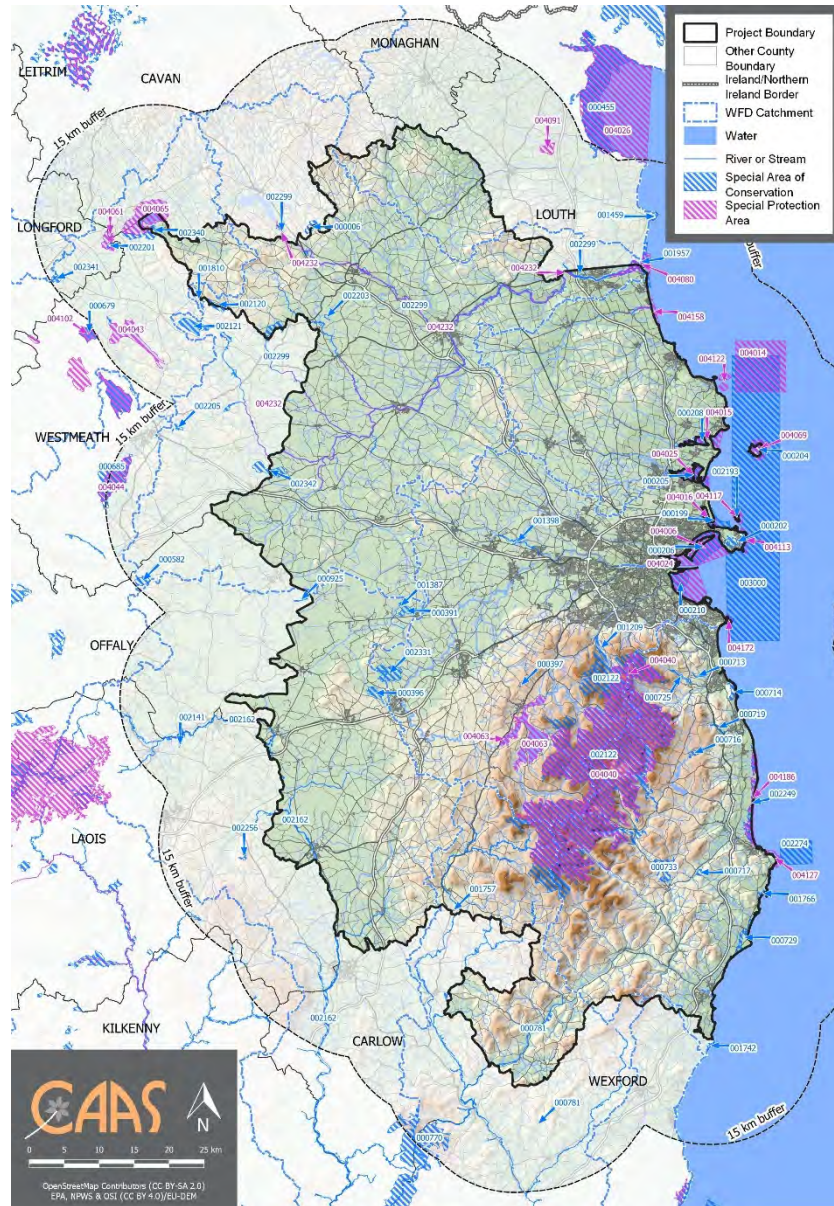


Noise Mapping Lden (day, evening, night)

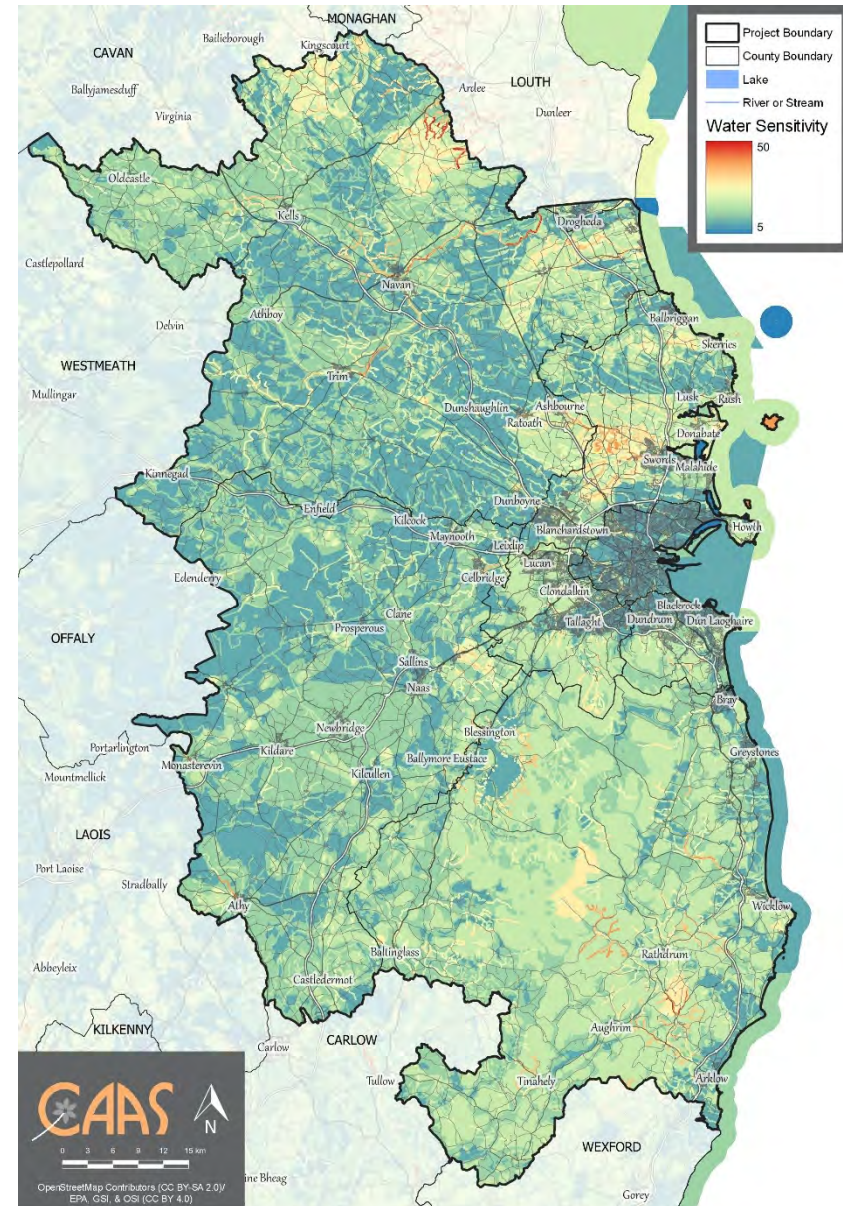


Population Density

Figure 2.1 Selection of Individual Environmental Sensitivities from SEA Environmental Report (1 of 2)



Ecologically designated European Sites



Overlay of Potential Water Sensitivity

Figure 2.2 Selection of Individual Environmental Sensitivities from SEA Environmental Report (2 of 2)

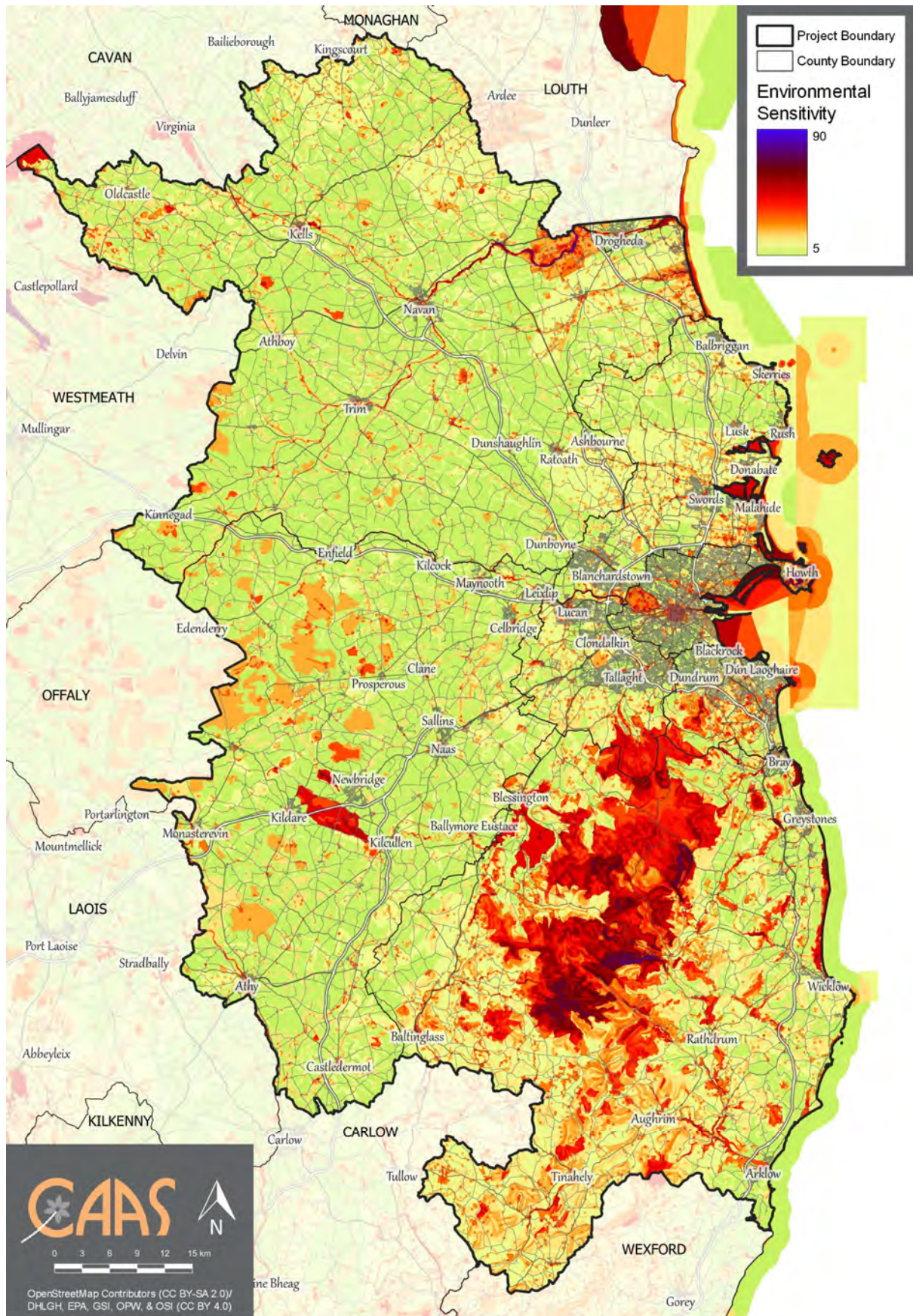


Figure 2.3 Overall Potential Environmental Sensitivity

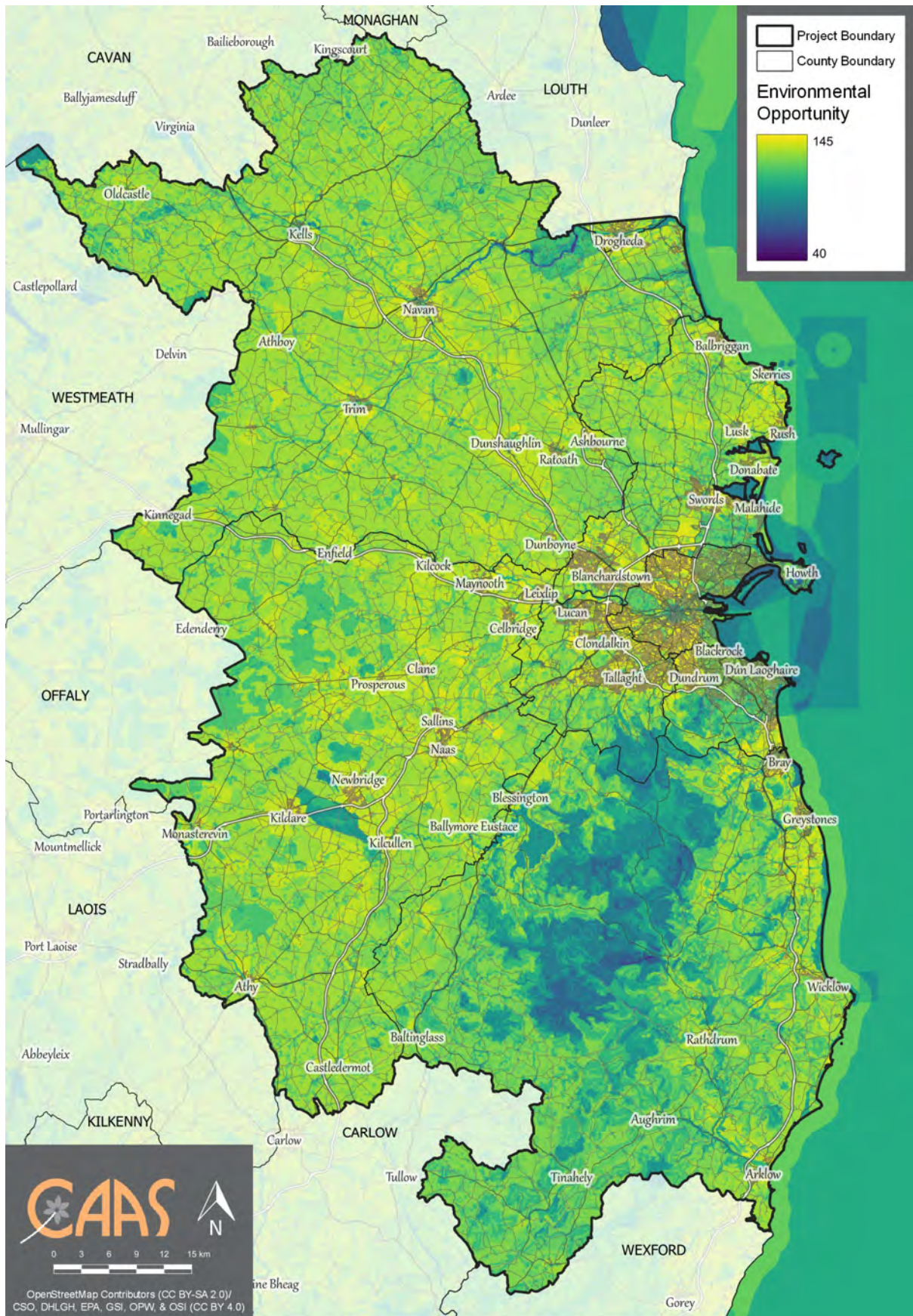


Figure 2.4 Overall Potential Environmental Opportunities/Robustness

Table 2.1 SEA/AA recommendations included within the Strategy

Strategy No.	Section	SEA/AA Recommended Text
7.4.1	Environmental Assessment	The alignments and details of proposed transport projects set out in the Transport Strategy, unless already provided for by plans or proposals that have been subject to environmental assessment, are indicative only and are subject to further development as the design and planning processes for individual projects progress. New projects will be required to be subject to lower-tier environmental assessment and detailed corridor and route selection processes as relevant (including those arising from SEA recommendation "Corridor and Route Selection Process" integrated into Chapter 18.
16.	Climate Action Management	<p>Climate 1 Additional demand management measures to achieve the GDA transport emissions target for 2030 will be implemented. The NTA will undertake a detailed assessment to establish the optimal framework of demand management measures, which is likely to include parking restraint, zonal charging, additional tolling / road pricing and/or further vehicle electrification.</p> <p>Climate 2 Through the implementation of the full measures set out in this strategy, in combination with the plans and programmes of Government, the NTA will contribute to a reduction in CO₂ emissions from transport in the GDA to below 1 MtCO₂eq by 2042.</p>
18.	Environmental Protection and Management	<p>Introduction Strategic Environmental Assessment (SEA) and Appropriate Assessment (AA) have both been undertaken alongside the preparation of the Strategy. All recommendations arising from the SEA and AA processes have been integrated into the Strategy. Many of these recommendations have been set out in the SEA Environmental Report; however, some of the more strategic recommendations are detailed below. Compliance with these measures will facilitate environmental protection and management.</p>
18.	Environmental Protection and Management	<p>Regulatory Framework for Environmental Protection and Management 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 and will ensure that plans, programmes and projects comply with EU Directives – including the Habitats Directive (92/43/EEC), 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>
18.	Environmental Protection and Management	<p>Lower-level Decision Making Lower levels of decision making and environmental assessment should consider the environmental sensitivities identified in Section 4 of the SEA Environmental Report, including the following:</p> <ul style="list-style-type: none"> • Special Areas of Conservation and Special Protection Areas; • Features of the landscape that provide linkages/connectivity to designated sites (e.g. watercourses and areas of semi-natural habitat, such as linear woodlands); • Salmonid Waters; • Shellfish Waters; • Freshwater Pearl Mussel catchments; • Nature Reserves; • Natural Heritage Areas and proposed Natural Heritage Areas; • Areas likely to contain a habitat listed in Annex 1 of the Habitats Directive; • Entries to the Record of Monuments and Places and Zones of Archaeological Potential; • Entries to the Record of Protected Structures; • Un-designated sites of importance to wintering or breeding bird species of conservation concern; • The National Biodiversity Action Plan; • Architectural Conservation Areas; and • Relevant landscape designations. <p>Where developments, arising from this strategy, do not require Environmental Impact Assessment, impacts to biodiversity will be assessed by the preparation of a non-statutory Ecological Impact Assessment (EclA).</p>
18.	Environmental Protection and Management	<p>Corridor and Route Selection Process The following Corridor and Route Selection Process will be undertaken for relevant infrastructure:</p> <p>Stage 1 – Route Corridor Identification, Evaluation and Selection</p> <ul style="list-style-type: none"> • 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; • 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 relevant specialists; and • In addition to the constraints identified above, site-specific field data may be required to identify the most appropriate corridors. <p>Stage 2 – Route Identification, Evaluation and Selection</p> <ul style="list-style-type: none"> • 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 relevant specialists, taking into account project level information and potential mitigation measures that are readily achievable; • In addition to the constraints identified above, site-specific field data may be required to identify the most appropriate routes; and • In addition to environmental considerations, the identification of route corridors and the refinement of the route lines is likely to be informed by other considerations. <p>European sites may be vulnerable to greenway/cycleway developments due to their location. As outlined in Appendix I to the AA Natura Impact Statement, amenity and leisure activities are already posing an existing level of threat and pressure to various European sites within the Greater Dublin Area. Some of these sites are in close proximity to a number of already proposed greenways as identified in the GDA Cycle Network Plan that accompanies this Strategy.</p> <p>Screening for AA, and subsequent stages of AA as relevant, will be required for all greenway/cycleway developments when implementing the Strategy.</p>

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Strategy No.	Section	SEA/AA Recommended Text
		The feasibility and determination of each route is subject to presenting no significant adverse effect(s) to the integrity of European sites, alone or in combination with other plans or projects, where projects do not meet the strict criteria for imperative reasons of overriding public interest and/or where alternative routes are identified.
18.	Environmental Protection and Management	<p>Appropriate Assessment</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> <ul style="list-style-type: none"> • The Plan or project will not give rise to adverse direct, indirect or secondary effects on the integrity of any European site (either individually or in combination with other plans or projects); or • 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 • 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 of 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.
18.	Environmental Protection and Management	<p>Protection of Natura 2000 Sites</p> <p>No plans or projects giving rise to adverse effects on the integrity of European sites (cumulatively, directly or indirectly) 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)^{4, 5}.</p>
18.	Environmental Protection and Management	<p>Climate Change, Emissions and Energy</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"> • Reductions in greenhouse gas emissions and associated achievement of legally binding targets; • Reductions in emissions to air and associated achievement of air quality objectives, thereby contributing towards improvement or air quality and protection of human health; • Reductions in consumption of non-renewable energy sources and achievement of legally binding renewable energy targets; and • Energy security. <p>In implementing the Strategy, the Authority will support relevant provisions contained in the National Energy and Climate Plan, the Climate Adaptation Strategies of planning authorities within the Greater Dublin Area, the Climate Action Plan, National Climate Change Adaptation Framework (2018), the National Mitigation Plan (2017), and the Department of Transport's Sectoral Adaptation Plan for Transport Infrastructure, which builds on the 2017 "Adaptation Planning – Developing Resilience to Climate Change in the Irish Transport Sector" and the sectoral adaptation plans of local authorities.</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>
18.	Environmental Protection and Management	<p>Other SEA/AA Recommendations</p> <p>In implementing the Strategy, the Authority will ensure that the measures included in Table 9.2 of the SEA Environmental Report are complied with - measures relating to the protection of European sites are referred to on Table 5.2 in the AA Natura Impact Statement.</p>

⁴ 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 project to proceed; and c) Adequate compensatory measures in place.

⁵ Various other measures within Section 18, including the requirements at Section 18.4 "Corridor and Route Selection Process", will contribute towards the protection of European sites. Mitigation measures relevant to the protection of European sites are identified in the AA Natura Impact Statement.

Table 2.2 Provisions to be referred to in the Strategy under “Other SEA/AA Recommendations”

Environmental component benefitting	Potential adverse effect mitigated	Requirement
Various	Various – see below	<p>Construction and Environmental Management Plans Construction Environment Management Plans (CEMPs) shall be prepared in advance of the construction of relevant 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"> location of the sites and materials compound(s) including area(s) identified for the storage of construction refuse, location of areas for construction site offices and staff facilities, details of site security fencing and hoardings, details of on-site car parking facilities for site workers during the course of construction, details of the timing and routing of construction traffic to and from the construction site and associated directional signage, measures to obviate queuing of construction traffic on the adjoining road network, measures to prevent the spillage or deposit of clay, rubble or other debris, 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, details of appropriate mitigation measures for noise, dust and vibration, and monitoring of such levels, 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, disposal of construction/demolition waste and details of how it is proposed to manage excavated soil, 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, details of a water quality monitoring and sampling plan. if peat is encountered - a peat storage, handling and reinstatement management plan. measures adopted during construction to prevent the spread of invasive species (such as Japanese Knotweed). appointment of an ecological clerk of works at site investigation, preparation and construction phases. details of appropriate mitigation measures for lighting specifically designed to minimise impacts to biodiversity and ecological functioning.
Various	Various – see below	<p>Maintenance Plan Lower tier assessments should examine the need for Maintenance Plans informed by environmental considerations to be prepared and implemented.</p> <p>Please refer to the overall approach and detail provided for by the Strategy, which focusses significant levels of investment in sustainable transport modes and addresses Climate Action Management at Chapter 16.</p>
Air and Climatic Factors	Emissions to air and associated issues	<p>Air and Energy Contribute towards: compliance and consistency with air quality legislation and the Air Quality Plan for Dublin; greenhouse gas emission targets; management of noise levels, including taking into account available noise maps and Noise Action Plans for the Dublin Agglomeration and surrounding parts of the Strategy area (including provisions relating to the preservation of Quiet Areas); and reductions in energy usage.</p>
		<p>Climate Adaptation and Resilience 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"> 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; Sea level rise and storm surge and associated implications including those relating to coastal erosion and coastal flooding; and Extreme temperatures and associated implications including those relating to the operation of transport and ancillary infrastructure and services.
		<p>Noise 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 Dublin Agglomeration and surrounding parts of the Strategy area (including provisions relating to the preservation of Quiet Areas); and reductions in energy usage.</p>
Population and human health	Potential interactions if effects upon environmental vectors such as air are not mitigated	<p>Human Health 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>
		<p>Green/Blueways and Existing Green Infrastructure Proposals for greenway/blueway development should contribute towards the protection or enhancement of existing green infrastructure and have regard to the EPA and HSE research and associated toolkits into the benefits of blue and green spaces.</p>

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Environmental component benefitting	Potential adverse effect mitigated	Requirement
Biodiversity and flora and fauna	<p>- 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.</p> <p>- Habitat loss, fragmentation and deterioration, including patch size and edge effects.</p> <p>- Disturbance (e.g. due to noise and lighting along transport corridors) and displacement of protected species and/or coastal squeeze.</p> <p>- Effects in riparian zones where new crossings of waters, if any, are progressed.</p> <p>- Potential effects on vegetation from transport emissions.</p>	<p>Protection of Biodiversity including Natura 2000 Network</p> <p>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 catchments; Flora Protection Order sites and species; Wildlife sites (including Nature Reserves); 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"> • EU Directives, including the Habitats Directive (92/43/EEC, as amended)⁶, the Birds Directive (2009/147/EC)⁷, the Environmental Liability Directive (2004/35/EC)⁸, 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). • 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 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 (as amended)⁹ and the Flora Protection Order 2015. • 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. • Catchment and water resource management Plans, including the relevant River Basin Management Plan and Flood Risk Management Plan (including any superseding versions of same). • Biodiversity Plans and guidelines, including the 3rd National Biodiversity Plan 2017-2023 (including its measures relating to ecological corridors and any superseding version of same) and the All Ireland Pollinator Plan. • Freshwater Pearl Mussel Regulations (S.I. 296 of 2009) (including any associated designated areas or management plans). • Ireland's Environment 2020 - An Assessment (EPA, 2020, including any superseding versions of same), and to make provision where appropriate to address the report's goals and challenges. <p>Where developments, arising from this strategy, do not require Environmental Impact Assessment, a non-statutory Ecological Impact Assessment may be required to assess potential impacts on biodiversity.</p>
		<p>NPWS & Integrated Management Plans</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>Coastal Zone Management</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>Biodiversity and Ecological Networks</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>Protection of Riparian Zone and Waterbodies and Watercourses</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>

⁶ Including Annex I habitats, Annex II species and their habitats and Annex IV species and their breeding sites and resting places (wherever they occur).

⁷ Including Annex I species and other regularly occurring migratory species, and their habitats (wherever they occur).

⁸ Including protected species and natural habitats.

⁹ Including protected species and natural habitats.

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Environmental component benefitting	Potential adverse effect mitigated	Requirement
		<p>Biodiversity including non-designated biodiversity 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. Where possible, to strive to achieve no net loss of these features as a result of new development granted permission under the Plan.</p> <p>Contribute towards the protection and management of fisheries¹⁰ as appropriate and take into account Inland Fisheries Ireland's "Planning for Watercourses in the Urban Environments" (2020) for developments along watercourses.</p> <p>Lighting Sensitive Species 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>Non-native invasive species 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>National Peatlands Strategy Support, as appropriate, any relevant recommendations contained in the National Peatlands Strategy 2015.</p>
Material Assets	<ul style="list-style-type: none"> - Generation of construction waste - Loss or damage to built/amenity assets and infrastructure including as a result of new or widened transport infrastructure 	<p>Also see Construction and Environmental Management Plans provision above</p> <p>Construction Waste 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>Waste Creation Support the minimisation of waste creation and promote a practice of reduce, reuse and recycle where possible.</p> <p>Waste Disposal Safeguard the environment by seeking to ensure that residual waste is disposed of appropriately.</p> <p>Public Assets and Infrastructure 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>
Water	<ul style="list-style-type: none"> - 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 - Increase in the risk of flooding 	<p>Also see Construction and Environmental Management Plans provision above and measures under soil above and material assets below</p> <p>Water Framework Directive and associated legislation 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>River Basin Management Plan Support the implementation of the relevant recommendations and measures as outlined in the most up to date River Basin Management Plan, and associated Programme of Measures. 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>Bathing Water Contribute towards the achievement of the requirements of the EU Bathing Water Directive and transposing Bathing Water Quality Regulations (SI No. 79 of 2008) and EU Mandatory Values, as a minimum, and EU Guide Values, where possible.</p> <p>Flood Risk Management Guidelines 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>

¹⁰ Including with regard to water quality, surface water hydrology, fish spawning and nursery areas, passage of migratory fish, ecosystem structure and functioning and sport and commercial fishing and angling resources.

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Environmental component benefitting	Potential adverse effect mitigated	Requirement
		Surface Water Drainage and Sustainable Drainage Systems (SuDs) Ensure that new development is adequately serviced with surface water drainage infrastructure and promote the use of Sustainable Drainage Systems as appropriate.
Landscape	Occurrence of adverse visual impacts and conflicts with the appropriate protection of statutory designations relating to the landscape	Landscape Designations 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. Amenity Contribute towards the protection of areas of amenity value and minimise losses, as a result of the development of new or widened infrastructure. Coastal Areas and Seascapes Contribute towards the protection of landscape character and the visual potential of the coast and conserve the character and quality of seascapes. National Landscape Strategy Support, as appropriate, any relevant recommendations contained in the National Landscape Strategy for Ireland 2015-2025.
Cultural Heritage	Potential effects on protected and unknown archaeology and protected architecture arising from construction and operation activities, including as a result of increasing traffic flows.	Archaeological Heritage 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). 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. Protection of Archaeological Sites 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. Consultation Consult with the National Monuments Service of the Department of Arts Heritage and the Gaeltacht in relation to proposed developments adjoining archaeological sites. Underwater Archaeological Sites Contribute, as appropriate, towards the protection and preservation of underwater archaeological sites in riverine, intertidal and sub-tidal locations. Architectural Heritage 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). 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.
Soil	- Adverse impacts on the hydrogeological and ecological function of the soil resource as a result of construction of transport and associated transport facilities/infrastructure. - Adverse impacts on features or areas of geological/geomorphological interest as a result of construction of transport and associated transport facilities/infrastructure. - Potential for increase in coastal/river bank erosion.	Also see requirements under other heading of water above. Soil Protection and Contamination 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. Areas of geological interest and GSI Datasets Contribute towards the appropriate protection and maintenance of the character, integrity and conservation value of features or areas of geological interest. Take GSI datasets into account as appropriate, including those relating to geoheritage, groundwater, geohazards, natural resources and coastal vulnerability. Land Take 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%."

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 and SEA.

3.2 Overview of Consultation on the Draft Strategy

The views and opinions of the public and stakeholders in the development of the draft Strategy was considered a central element of the process. Section 12 (8) of the Dublin Transport Authority Act sets out the requirement to engage with a number of stakeholders and members of the public at the outset during the preparation of the draft Strategy.

To this end, the NTA prepared a Pre-Draft Issues Paper in November 2020. This Issues Paper highlighted some of the main considerations and opportunities for the new Transport Strategy, and sought public and stakeholder input into its development at the inception stage.

A full Public Consultation then commenced from 23rd November 2020 to 22nd January 2021, and the public were asked to assist in the development of the strategy goals and objectives, and to help identify transport requirements and opportunities. Parallel to this a list of key stakeholders were contacted and asked for their views.

Due to the Covid-19 related restrictions it was not possible to undertake in-person events, and instead the consultation was run online with the public given an opportunity to submit commentary via a pre-prepared questionnaire and, if required, via a written submission portal. To best achieve accessibility for all members of the public, accessible versions of the Issues Paper were prepared, and direct

contact was made with various Disability Groups.

To ensure maximise exposure of the Strategy Consultation, an extensive publicity campaign was undertaken, with advertisements placed in national and local newspapers, on radio, on social media and also utilising outdoor advertising on bus shelters.

In total over 4,000 submissions were received, predominantly from the general public, with 92 submissions received from various stakeholders and groups. Almost half of respondents who gave a place of residence, were from County Meath, reflecting the scale of the campaign to deliver a rail service to Navan.

The responses to the consultation covered many different aspects of transport needs across the region, some with very local issues and others of a more strategic nature. The findings of the questionnaire demonstrated universal support for the reduction in reliance on the private car, with just under half stating it was the most important mode pre-pandemic.

In summary the main issues raised were as follows:

- Navan Rail Line;
- Metro to South West Dublin;
- Extension of DART;
- Improvements and expansion of the Luas network;
- Improvements to the cycling infrastructure;
- Improvements to the pedestrian environment;
- Matters related to various BusConnects schemes; and
- Electric bikes and scooters.

All of the submissions were carefully considered and taken into account in the development of the Transport Strategy, including in the development and finalisation environmental considerations that were integrated into the Strategy, including those identified on Tables 2.1 and 2.2 of this report.

The development of the Transport Strategy took account of the various area-based studies, scheme studies and sectoral studies, in addition to feedback from the public consultation process, in assembling the overall Transport Strategy. Use of the NTA's transport modelling system formed a key element in that work, allowing quantitative evaluation of individual components of the strategy and assessment of the performance of the combined measures.

A key driver in the development of the Transport Strategy has been the legislatively-based target to reduce overall greenhouse gas emission by 51% by the end of 2030, compared with 2018, with the achievement of such an ambitious target directing large elements of the strategy.

The following sets out the key steps in the development of the Transport Strategy:

- Determine 2042 Land Use Scenario
- Test an Idealised Public Transport Network (one in which there are no capacity or frequency limits) in order to determine Maximum Potential Demand for public transport each part of the GDA
- Develop a Package of Public Transport Measures to meet this Demand
- Test the Appropriateness of these Measures in terms of Capacity, Viability and Deliverability
- Incorporate the GDA Cycle Network Plan
- Develop a Package of Climate Action Measures
- Assemble and Assess the Final Draft Transport Strategy

3.3 SEA Scoping Submissions

Relevant environmental authorities¹¹ 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.

¹¹ Environmental authorities sent scoping notices as part of this process comprise: Environmental Protection Agency; Department of Environment, Climate and Communications; Department of Agriculture, Food and the Marine; Department of Tourism, Culture, Arts, Gaeltacht, Sport and Media; and Department of Housing, Local Government and Heritage.

Submissions made by the Environmental Protection Agency (EPA), the Geological Survey of Ireland (of the Department of Environment, Climate and Communications) and Inland Fisheries Ireland (of the Department of Environment, Climate and Communications) have been taken into account in undertaking the assessments and preparing the Strategy.

The issues raised in the submissions, as follow, informed the integration of environmental considerations into the Strategy, including through the development of Strategy provisions identified on Tables 2.1 and 2.2 of this report:

- Sustainable Development Goals and Key Actions for Ireland
- Transport Planning Hierarchy
- Integration of SEA and Strategy
- Monitoring, Review and Reporting
- Integration with other key Plans and Programmes
- Data and Knowledge Gaps
- Available Guidance and Resources
- Consultation with Environmental Authorities
- Geohazards
- Groundwater
- Geotechnical Database Resources and 3D Bedrock Geology Models
- Geohazards
- Natural Resources (Minerals/Aggregates)
- Geochemistry of soils, surface waters and sediments
- Geophysical data
- Marine and Coastal Unit
- Coastal Vulnerability Index
- Water Framework Directive
- Water Baseline
- Protection of Water and Aquatic Biodiversity including fisheries and salmonid system.

Submissions were made on the Draft Strategy, SEA Environmental Report and AA Natura Impact Statement while these documents were on public display and these resulted in updates being made to the documents. Updates made to the SEA Environmental Report and AA Natura Impact Statement on foot of these submissions include:

- To update all references in documents to Climate Action Plan 2019 to Climate Action Plan 2021 (and subsequent revisions).
- Amendments will be screened using an appropriate method that aligns with those used in the assessment of the Strategy.
- An SEA Statement summarising the relevant information requirements will be prepared following adoption of the

Strategy and circulated to the environmental authorities.

- To insert the following text into Section 4.6.2 “Population and Human Health” of the SEA Environmental Report: “Coastal transport infrastructure can be vulnerable to coastal erosion /severe weather conditions and associated storm damage.”
- To update Section 4.5.2 in the SEA Environmental Report to update reference to the EPA report Ireland’s Provisional Greenhouse Gas Emissions 1990-2017 (EPA, 2018), to reflect the latest published report for the period 1990-2020.
- To update the SEA Environmental Report to provide more detail on the various demand management measures set out in Approach 3.
- In the SEA Environmental Report to add CGSs Shenick’s Island (DF012) and Rockabill (DF019) within the Fingal CGSs to Appendix II.
- To amend Section 4.9.1 of the SEA Environmental Report to refer to 27 audits having been completed.
- To add the following text to the AA Natura Impact Statement: “European sites may be vulnerable to greenway/cycleway developments due to their location. As outlined in Appendix I to this Statement, amenity and leisure activities are already posing an existing level of threat and pressure to various European sites within the Greater Dublin Area (such as the Howth Cycle Route which runs through the North Dublin Bay SAC (NPWS site code: 000206) and Howth Head SAC (NPWS site code: 000202); and the Sally Gap to Dublin Route in the Wicklow Mountains, which runs through the Wicklow Mountains SAC (NPWS site code: 002122). Some of these sites are in close proximity to a number of already proposed greenways as identified in the GDA Cycle Network Plan that accompanies this Strategy (such as the Howth to Portmarnock Cycle route and the Dublin-Wicklow Greenway). Screening for AA, and subsequent stages of AA as relevant, will be required for all greenway/cycleway developments when implementing the Strategy. The feasibility and determination of each route is subject to presenting no significant adverse effect(s) to the integrity of European sites, alone or in combination with other plans or projects, where projects do not meet the strict criteria for imperative reasons of overriding public interest and/or where alternative routes are identified.”
- To list all proposed mitigation measures to protect Natura 2000 sites, as identified in Section 5 of the AA Natura Impact Statement, at Section 6 of the that report.

- To add the following example of a threshold at which corrective action will be considered to the monitoring programme: Impacts on the integrity of European sites as a result of Strategy projects that have not been granted permission following an assessment of imperative reasons of overriding public interest (IROPI).

3.4 SEA documents including SEA Environmental Report

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

The findings of the SEA are expressed in an Environmental Report, the first published version of which accompanied the Draft Strategy on public display.

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

The Environmental Report was updated in order to take account of: recommendations contained in submissions; and minor modifications made to the Draft Strategy that were made on foot of submissions.

Minor modifications were subject to Screening for SEA and AA and it was determined that, taking into account the measures that have been already integrated into the Draft Strategy, modifications would not be likely to result in either significant environmental effects or potential effects on any European site.

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 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

Under the Dublin Transport Authority Act, the National Transport Authority (NTA) must review its transport strategy every 6 years. Arising from the review of the 2016 plan, an updated strategy has been developed which sets out the framework for investment in transport infrastructure and services over the next two decades to 2042.

4.2 Existing provisions already in place

The Strategy aligns with legislation and documents setting out public policy for land use, transport and climate action and will be incorporated into the review and preparation of these documents. These include the National Planning Framework (and associated National Development Plan), the Strategic Investment Framework for Land Transport, the National Investment Framework for Transport in Ireland, the Regional Economic and Spatial Strategy for the Eastern and Midland Region (as adopted by the Eastern and Midland Regional Assembly, and finalised in January 2020) and associated Dublin Metropolitan Area Strategic Plan, the City and County Development Plans, Local Area Plans and Planning Schemes. Certain transport related proposals already provided for by these documents (and considered by their environmental assessments) are amongst those included within the Strategy. The Transport Strategy is based on national policies and legislation on sustainability and climate action.

4.3 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 and public transport only.

Choice 1 is the 'Business As Usual' scenario. This scenario is based on the continuation of the trend that investment in transport infrastructure in the GDA would be predominantly focussed on a mix of road capacity improvements and public transport schemes, such as BusConnects Network Redesign to accommodate the growth and changes in travel demand.

Committed improvements would be realised. However, investment in Strategic Public Transport, such as Metrolink would not be included. Investment in walking and cycling networks would remain static.

Land use policy within the GDA would continue in line with the RSES.

2. Improvements to Public Transport and Sustainable Travel - scenario this substantially increases public transport investment

Choice 2 is to prioritise investment in providing a comprehensive public transport network in line with the Strategy proposals.

New heavy rail, metro and luas infrastructure would be built, and frequencies on existing routes would be increased. Bus services would be significantly improved in line with the BusConnects Project, with the full implementation of the Network Redesign, Ticketing and Core Bus Corridor elements of the Programme.

The GDA Cycle Network would be delivered in full, and walking permeability prioritised.

Land use policy within the GDA would continue in line with the RSES.

3. Improvements in Public Transport and Sustainable Travel, with complimentary Demand Management Measures - this scenario has elements of Scenario 2 but with the addition of demand management measures to influence the choice of travel

Choice 3 builds upon Choice 2 and represents the optimal utilisation of the transport network in the GDA.

Measures such as parking restrictions, reduced accessibility and permeability for vehicular traffic, particularly in town centres and other destinations will be included.

In addition a network wide reduction in road speed limits for vehicular traffic, and reconfigured junction signal times in favour of pedestrian / cycle / public transport movement will be implemented.

Land use policy within the GDA would continue in line with the RSES.

4.4 Summary of Evaluation of Alternatives

Each of the Scenarios would help to contribute towards meeting the various Strategy challenges, with varying degrees of success. These challenges are detailed in the Strategy and comprise:

- Climate Change
- Recovery from the Covid-19 Pandemic
- Servicing the Legacy Development Patterns
- Revitalisation of the City Centre and Town Centres
- Transformation of the Urban Environment
- Ensuring Universal Access
- Serving Rural Development
- Improving Health and Equality
- Fostering Economic Development
- Delivering Transport Schemes

As Scenario 1 “Business as Usual” would progress sustainable mobility initiatives to a lesser extent than the other two scenarios, it would contribute towards meeting the various Strategy challenges the least. It would not be as successful as the other scenarios at addressing congestion, contributing towards climate action and revitalising urban areas.

A mix of road capacity improvements and public transport schemes would potentially conflict with the protection of the environment, however, by not progressing certain strategic public transport projects these potential direct conflicts with the environment would be avoided.

Indirectly, however, by not fully addressing the various Strategy challenges, this scenario would see greater demand for development in more dispersed settlements, making compact growth more difficult to achieve and increased levels of sprawl more likely. Such development, which would have higher levels of car dependency and result in more trips by car, would be likely to result in the following adverse environmental effects:

- Significant delays in reaching targets for lower emissions to air – including noise and pollutants – and this would be compounded by lower utilisation of public transportation;
- A failure to maximise contributions towards improving sustainable mobility and managing traffic flows;
- A reduced efficiency of energy resource utilisation;
- Reduction in the economic viability of services, such as water services, and heightened potential for adverse effects on the protection of waters - and associated interactions with ecology and human health;

- More frequent and severe conflicts with environmental components including biodiversity, air and water; and
- Reduction in potential placemaking in urban areas as a result of failing to replace motorised modes of transport with more sustainable and non-motorised modes.

Scenario 2 “Improvements to Public Transport and Sustainable Travel” would prioritise investment in providing a comprehensive public transport network:

- New heavy rail, metro and luas infrastructure would be built, and frequencies on existing routes would be increased.
- Bus services would be significantly improved in line with the BusConnects Project, with the full implementation of the Network Redesign, Ticketing and Core Bus Corridor elements of the Programme.
- The GDA Cycle Network would be delivered in full, and walking permeability prioritised.

In this way, Scenario 2 would significantly progress sustainable mobility initiatives and would make significant contributions towards meeting the various Strategy challenges listed above. It would be significantly more successful than Scenario 1 at addressing congestion, contributing towards climate action and revitalising urban areas, for example.

As Scenario 2 would provide for the construction of many new projects to provide a comprehensive public transport network, it would present potential direct conflicts with the environment, especially during the construction phase and there would be a requirement to mitigate these.

By making significant contributions in addressing the various Strategy challenges, this scenario would help to facilitate compact growth and reduce sprawl. Compact growth accompanied by a comprehensive public transport network would have lower levels of car dependency and result in fewer trips by car and would be likely to make significant contributions towards:

- Reaching targets for lower emissions to air – including noise and pollutants;
- Improving sustainable mobility and managing traffic flows;
- Increasing the efficiency of energy resource utilisation;
- Increasing in the economic viability of services, such as water services, and lowering the potential for adverse effects on the protection of waters - and associated interactions with ecology and human health;
- Reducing the frequency and severity of conflicts with environmental components, including biodiversity, air and water; and
- Increasing the potential of placemaking in urban areas as a result of replacing motorised with more sustainable and non-motorised modes of transport.

Notwithstanding the above, Scenario 2 would not incorporate Demand Management Measures. By incorporating Demand Management Measures, Scenario 3 “Improvements in Public Transport and Sustainable Travel, with complimentary Demand Management Measures” would optimise the utilisation of the transport network in the GDA. Demand Management Measures would encompass:

- Parking restrictions
- Reduced accessibility and permeability for vehicular traffic, particularly in town centres and other destinations
- Network wide reduction in road speed limits for vehicular traffic
- Reconfigured junction signal times in favour of pedestrian / cycle / public transport movement

Scenario 3 would progress sustainable mobility initiatives the most out of each of the three scenarios and would make the greatest contribution towards meeting the various Strategy challenges listed above. It would be more successful than both Scenarios 1 and 2 at addressing congestion, contributing towards climate action and revitalising urban areas, for example. Scenario 3 would build on Scenario 2 and the positive environmental effects of implementing a Transport Strategy under this scenario would be greater than under both Scenarios 1 and 2.

4.5 Reasons for Choosing the Selected Alternatives in light of Other Reasonable Alternatives Considered

Scenario 3 is the selected scenario for the Strategy having regard to both:

- The environmental effects which are identified by the SEA and are summarised above; and
- Planning - including social and economic - effects that also were considered by the Authority.

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 which will be used in order to monitor the likely significant effects of implementing the Strategy. It has been guided by the EPA guidance on this issue, "Guidance on SEA Statements and Monitoring" (2020).

Monitoring can both demonstrate the positive effects facilitated by the Plan and can enable, at an early stage, the identification of unforeseen adverse effects and the undertaking of appropriate remedial action.

The occurrence of significant adverse environmental effects not predicted and mitigated by this assessment, which are directly attributable to the implementation of the Plan, would necessitate consideration of these effects in the context of the Strategy and potential remediation action(s) and/or review of part(s) of the Strategy.

5.2 Indicators and Targets

Monitoring is based around indicators which allow quantitative measures of trends and progress over time relating to the Strategic Environmental Objectives used in the assessment (see also the SEA Environmental Report). Each indicator to be monitored is accompanied by the target(s) which were identified with regard to the relevant strategic actions. Monitoring measures chosen for the SEA of the Strategy align with those used in the SEA of the Eastern and Midland RSES and in the SEAs of other land use plans across the Region. This consistency across the hierarchy of land use/transport planning will improve the efficiency and effectiveness of future monitoring.

Table 5.1 shows the indicators and targets which 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

The Strategy forms part of the wider land use planning framework comprising a hierarchy of policies, plans, programmes, etc. This wider framework, including the National Planning Framework and the Eastern and Midland RSES, is subject to its own SEA (and associated monitoring) requirements. At lower tiers of the hierarchy, individual projects will be subject to their own monitoring requirements, as relevant.

In implementing the Monitoring Programme, the Authority will take into account this hierarchy of planning and environmental monitoring.

Sources for indicators may include existing monitoring databases (including those maintained by planning authorities and national/regional government departments and agencies) and the output of lower-tier environmental assessment and decision making (including a review of project approvals granted and associated documents and the output of any EIA monitoring programmes).

5.4 Reporting

A stand-alone Monitoring Report on the significant environmental effects of implementing the Strategy will be prepared in advance of the beginning of the review of the Strategy. This report will address the indicators set out on Table 5.1. The 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 remedial action.

Table 5.1 Indicators, Targets, Sources and Remedial Action

Environmental Component	SEO Code	Indicators	Targets	Sources	Remedial Action
Air	A	<ul style="list-style-type: none"> Proportion of journeys made by private fossil fuel-based car compared to previous National Travel Survey levels NO_x, SO_x, PM10 and PM2.5 as part of Ambient Air Quality Monitoring 	<ul style="list-style-type: none"> Decrease in proportion of journeys made by private fossil fuel-based car compared to previous National Travel Survey levels Improvement in Air Quality trends, particularly in relation to transport related emissions of NO_x and particulate matter 	<ul style="list-style-type: none"> CSO data Data from the National Travel Survey EPA Air Quality Monitoring Internal review of Strategy implementation 	<ul style="list-style-type: none"> Where proportion of population shows increase in private car use above previous CSO figures, the Authority will coordinate with the Regional Assembly, the DHLGH, DECC and other planning authorities to develop a tailored response.
Climatic Factors	C	<ul style="list-style-type: none"> Implementation of the Strategy, which will contribute towards and facilitate climate action A competitive, low-carbon, climate-resilient and environmentally sustainable economy Share of renewable energy in transport Carbon dioxide (CO₂) emissions across the transport sector Energy consumption, the uptake of renewable options and solid fuels for residential heating Proportion of journeys made by private fossil fuel-based car compared to previous levels Proportion of people reporting regular cycling / walking to school and work above previous CSO figures 	<ul style="list-style-type: none"> To implement the Strategy, which will contribute towards and facilitate climate action Contribute towards transition to a competitive, low-carbon, climate-resilient and environmentally sustainable economy by 2050 Contribute towards the target of the Renewable Energy Directive (2009/28/EC), for all Member States to reach a 10% share of renewable energy in transport by facilitating the development of electricity charging and transmission infrastructure, in compliance with the provisions of the Strategy Contribute towards the target of aggregate reduction in carbon dioxide (CO₂) emissions of at least 80% (compared to 1990 levels) by 2050 across the transport sector To promote reduced energy consumption and support the uptake of renewable options and a move away from solid fuels for residential heating Decrease in the proportion of journeys made by residents of the County using private fossil fuel-based car compared to previous levels Increase in the proportion of people reporting regular cycling / walking to school and work above previous CSO figures 	<ul style="list-style-type: none"> Internal review of Strategy implementation EPA Annual National Greenhouse Gas Emissions Inventory reporting Climate Action Regional Office Consultations with Department of Environment, Climate and Communications CSO data 	<ul style="list-style-type: none"> Review internal systems Where targets are not achieved, the Authority will liaise with the Regional Assembly and the Dublin Climate Action Regional Office to establish reasons and develop solutions. Where trends toward carbon reduction are not recorded, the Council will liaise with the Regional Assembly and the Dublin Climate Action Regional Office to establish reasons and develop solutions.

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Environmental Component	SEO Code	Indicators	Targets	Sources	Remedial Action
Population and Human Health	PHH	<ul style="list-style-type: none"> Implementation of the Strategy, which will contribute towards and facilitate economic growth 	<ul style="list-style-type: none"> To implement the Strategy, which will contribute towards and facilitate economic growth 	<ul style="list-style-type: none"> Internal review of Strategy implementation Consultations with the Health Service Executive and EPA CSO data Internal review of Strategy implementation 	<ul style="list-style-type: none"> Review internal systems Consultations with the Health Service Executive and EPA Where proportion of population shows increase in private car use above previous CSO 2016 figures, coordinate with the Regional Assembly, the DHLGH, DECC and other planning authorities to develop a tailored response Review internal systems
		<ul style="list-style-type: none"> Number of spatial concentrations of health problems arising from environmental factors resulting from development permitted under the Strategy 	<ul style="list-style-type: none"> No spatial concentrations of health problems arising from environmental factors as a result of implementing the Strategy 		
		<ul style="list-style-type: none"> Proportion of people reporting regular cycling / walking to school and work above previous CSO figures Access to sustainable modes of transport 	<ul style="list-style-type: none"> Increase in the proportion of people reporting regular cycling / walking to school and work above previous CSO figures To improve access to sustainable modes of transport 		
Biodiversity, Flora and Fauna	BFF	<ul style="list-style-type: none"> Condition of European sites 	<ul style="list-style-type: none"> Relevant projects to integrate considerations relating to European sites, other nature conservation sites, ecological networks, protected species and ecosystem services Relevant projects to have regard to the heritage and biodiversity plans of planning authorities 	<ul style="list-style-type: none"> Department of Housing, Local Government and Heritage report of the implementation of the measures contained in the Habitats Directive - as required by Article 17 of the Directive (every 6 years). Department of Housing, Local Government and Heritage's National Birds Directive Monitoring Report for the under Article 12 (every 3 years) Consultations with the NPWS Internal review of new projects 	<ul style="list-style-type: none"> Where condition of biodiversity and flora and fauna is found to be deteriorating this will be investigated with the DHLGH to establish if the pressures are related to Strategy actions / activities. A tailored response will be developed in consultation with these stakeholders in such a circumstance. Review internal systems
		<ul style="list-style-type: none"> Number of projects that have integrated ecosystem services considerations 			
		<ul style="list-style-type: none"> EIAs and AAs as relevant for new projects 	<ul style="list-style-type: none"> Screen for and undertake EIA and AA as relevant for new projects 		
		<ul style="list-style-type: none"> Compliance of planning permissions with Strategy measures providing for the protection of biodiversity and flora and fauna – see Chapter 18 of the Strategy 	<ul style="list-style-type: none"> For new projects only to be progressed where they demonstrate that they comply with all Strategy measures providing for the protection of biodiversity and flora and fauna – see Chapter 18 of the Strategy 		

Environmental Component	SEO Code	Indicators	Targets	Sources	Remedial Action
Water	W	<ul style="list-style-type: none"> • Status of water bodies as reported by the EPA Water Monitoring Programme for the WFD • Number of incompatible developments permitted within flood risk areas • Integration of sustainable water management solutions (such as SuDS, porous surfacing, etc.) into new projects 	<ul style="list-style-type: none"> • Not to cause deterioration in the status of any surface water or affect the ability of any surface water to achieve 'good status' • Implementation of the objectives of the River Basin Management Plan • Minimise developments granted permission on lands which pose - or are likely to pose in the future - a significant flood risk • Integrate sustainable water management solutions (such as SuDS, porous surfacing, etc.) into new projects as relevant 	<ul style="list-style-type: none"> • EPA Monitoring Programme for WFD compliance • Internal review of Strategy implementation 	<ul style="list-style-type: none"> • Where water bodies are failing to meet at least good status as a result of development under the Strategy, this will be investigated with the DHLGH Water Section, the EPA Catchment Unit, the Regional Assembly and, as relevant, Irish Water. A tailored response will be developed in consultation with these stakeholders in such a circumstance • Where marine water bodies are failing to meet good ecological status as a result of development under the Strategy, this will be interrogated with the Marine Institute and the DHLGH. A tailored response will be developed in consultation with the Marine Institute and DHLGH in such a circumstance • Where new projects are on flood zones, these should be implemented in compliance with the Flood Risk Management Guidelines and include appropriate flood risk mitigation and management measures
Landscape	L	<ul style="list-style-type: none"> • Number of developments permitted that result in avoidable adverse visual impacts on the landscape, especially with regard to landscape and amenity designations included in Land Use Plans, resulting from development which is granted permission under the Strategy 	<ul style="list-style-type: none"> • No developments permitted which result in avoidable adverse visual impacts on the landscape, especially with regard to landscape and amenity designations included in Land Use Plans, resulting from development which is granted permission under the Strategy 	<ul style="list-style-type: none"> • Internal review of Strategy implementation • 	<ul style="list-style-type: none"> • Where monitoring reveals developments permitted which result in avoidable adverse visual impacts on the landscape, the Authority will re-examine Strategy provisions and the effectiveness of their implementation
Cultural Heritage	CH	<ul style="list-style-type: none"> • Percentage of entries to the Record of Monuments and Places, and the context these entries within the surrounding landscape where relevant, protected from adverse effects resulting from development which is granted permission under the Strategy 	<ul style="list-style-type: none"> • Protect entries to the Record of Monuments and Places, and the context of these entries within the surrounding landscape where relevant, from adverse effects resulting from development which is granted permission under the Strategy 	<ul style="list-style-type: none"> • Internal review of Strategy implementation • Consultation with Department of Housing, Local Government and Heritage 	<ul style="list-style-type: none"> • Review internal systems • Find solutions in consultation with Department of Housing, Local Government and Heritage and planning authorities as relevant