

SEA ENVIRONMENTAL REPORT

APPENDIX II: NON-TECHNICAL SUMMARY

FOR THE

CORK METROPOLITAN AREA

TRANSPORT STRATEGY 2040

for: National Transport Authority

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Section 1 Introduction and Terms of Reference

This is the Non-Technical Summary of the Strategic Environmental Assessment (SEA) Environmental Report for the Transport Strategy for the Cork Metropolitan Area 2019-2040 (referred to hereafter as the "Strategy"). The purpose of the Environmental Report is to comply with SEA legislation and provide a clear understanding of the likely environmental consequences of decisions regarding the adoption and implementation of the Strategy.

What is an SEA?

SEA is a systematic process of predicting and evaluating the likely environmental effects of implementing a proposed 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, social and other considerations.

Why is it needed?

The SEA was carried out in order to comply with the provisions of the SEA Regulations, as amended, and in order to contribute towards environmental management and sustainable development. The output of the process is an Environmental Report and an SEA Statement, both of which should be read in conjunction with the Strategy.

How does it work?

Relevant aspects of the current state of the environment were assembled and presented to the team who prepared the Strategy. This helped them to devise a Strategy that protects whatever is sensitive in the environment. To decide how best to make a Plan that helps to protect the environment as much as possible, the National Transport Authority (NTA) examined different alternatives for the Strategy. This helped to highlight where conflicts could occur and facilitated the development of mitigation measures which will help to avoid/reduce adverse environmental effects.

What is included in the Environmental Report that accompanies the Strategy?

The Environmental Report contains the following information:

- A description of the relevant aspects of the current state of the environment;
- A description and assessment of alternatives;
- An assessment of the Strategy provisions; and,
- Mitigation measures which set out to aid compliance with important environmental protection legislation - e.g. the Water Framework Directive, the Habitats Directive - and which will help to avoid/reduce the adverse environmental effects of implementing the Strategy.

What happens at the end of the process?

On finalisation of the Strategy, an SEA Statement is prepared and made available. The SEA Statement includes information on how environmental considerations were integrated into the Strategy and why the preferred alternative was chosen for the Strategy.

Section 2 The Strategy

2.1 Introduction

The Cork Metropolitan Area Transport Strategy 2019-2040 has been developed by the National Transport Authority (NTA) in collaboration with Cork City Council and Cork County Council. It sets out a framework for the planning and delivery of transport infrastructure and services to support the development of the Cork Metropolitan Area¹ (CMA), as shown on Figure 2.1 in the period up to 2040.

2.2 Content of the Strategy

The Strategy takes its lead at national level from the National Planning Framework 2040 and the National Development Plan 2018-2027 and builds upon previous transport studies including Cork City Centre Movement Strategy, Cork Area Strategic Plan (CASP) and the Cork Metropolitan Cycle Network Plan.

The Strategy will provide a coherent transport planning policy framework and implementation plan around which other agencies involved in land use planning, environmental protection, and delivery of other infrastructure such as housing and water can align their investment priorities.

The Strategy will deliver an integrated transport network that addresses the needs of all modes of transport, offering better transport choices, resulting in better overall network performance and providing capacity to meet travel demand and support economic growth.

The Strategy consists of the following chapter headings under which investment priorities are provided:

1. Introduction
2. Policy Context
3. Existing Transport Context
4. CMATS² 2040 Land Use
5. Strategy Development and Outcomes
6. Walking
7. Cycling
8. BusConnects
9. Suburban Rail
10. Light Rail
11. Parking
12. Public Transport Interchange and Integration
13. Roads
14. Freight, Delivery and Servicing
15. Supporting Measures
16. Implementation
17. Environmental Protection and Management
18. Strategy Outcomes
19. Public Consultation

Many proposals included within the Strategy have already been included in documents outlining public policy that have been subject to their own SEA including 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.

¹ The study area for the Strategy includes Cork City, its suburbs and the towns and rural areas in the immediate hinterland of the City.

² Cork Metropolitan Area Transport Strategy

2.3 Relationship with other relevant Plans and Programmes

The Strategy sits within a hierarchy of strategic actions such as plans and programmes, including those listed and detailed in Appendix I of main Environmental Report.

The Strategy must comply with relevant higher-level strategic actions and may, in turn, guide lower level strategic actions.

The 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 National Planning Framework (and associated National Development Plan), the Strategic Investment Framework for Land Transport, the Regional Economic and Spatial Strategy for the Southern Region and associated Metropolitan Area Strategic Plan, 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.

The **National Planning Framework** (NPF) sets out Ireland's planning policy direction for the next 22 years. Cork is projected to grow significantly with at least an additional 125,000 people by 2040 to support a minimum population of 315,000 within the City and Suburbs alone. The Framework identifies key transport growth enablers relevant to the development of the Strategy.

The **National Development Plan** (NDP) sets out a ten year investment plan to underpin the NPF's ten National Strategic Outcomes (NSOs), many of which relate to the content of the Strategy.

The **National Mitigation Plan** represents an initial step to set Ireland on a pathway to achieve the level of decarbonisation required to reduce greenhouse gas emissions in line with our international commitments under the Paris Agreement as well as to meet our more immediate EU obligations. Decarbonising Transport is a key tenet of the Plan. The Plan sets out the various measures already helping to contain the level of emissions associated with the transport sector and identifies a range of potential additional measures that can help to intensify mitigation efforts within the sector.

At regional level, the **Regional Spatial and Economic Strategy for the Southern Region** and associated **Metropolitan Area Strategic Plan** are subject to SEA and AA requirements as relevant. The RSES for the Southern Region sets out Investment Priorities for transport in the Cork Metropolitan Area.

The Strategy is subject to a number of high level environmental protection policies and objectives with which they must comply, including those which have been identified as Strategic Environmental Objectives (please refer to Section 3.13 of this Non-Technical Summary).

Examples of Environmental Protection Objectives include the aim of the EU Habitats Directive - which is to contribute towards ensuring biodiversity through the conservation of natural habitats and of wild fauna and flora in the European territory of Member States - and the purpose of the Water Framework Directive - which is to establish a framework for the protection of inland surface waters, transitional waters, coastal waters and groundwater which, among other things, prevents deterioration in the status of all water bodies and protects, enhances and restores all waters with the aim of achieving *good status*.

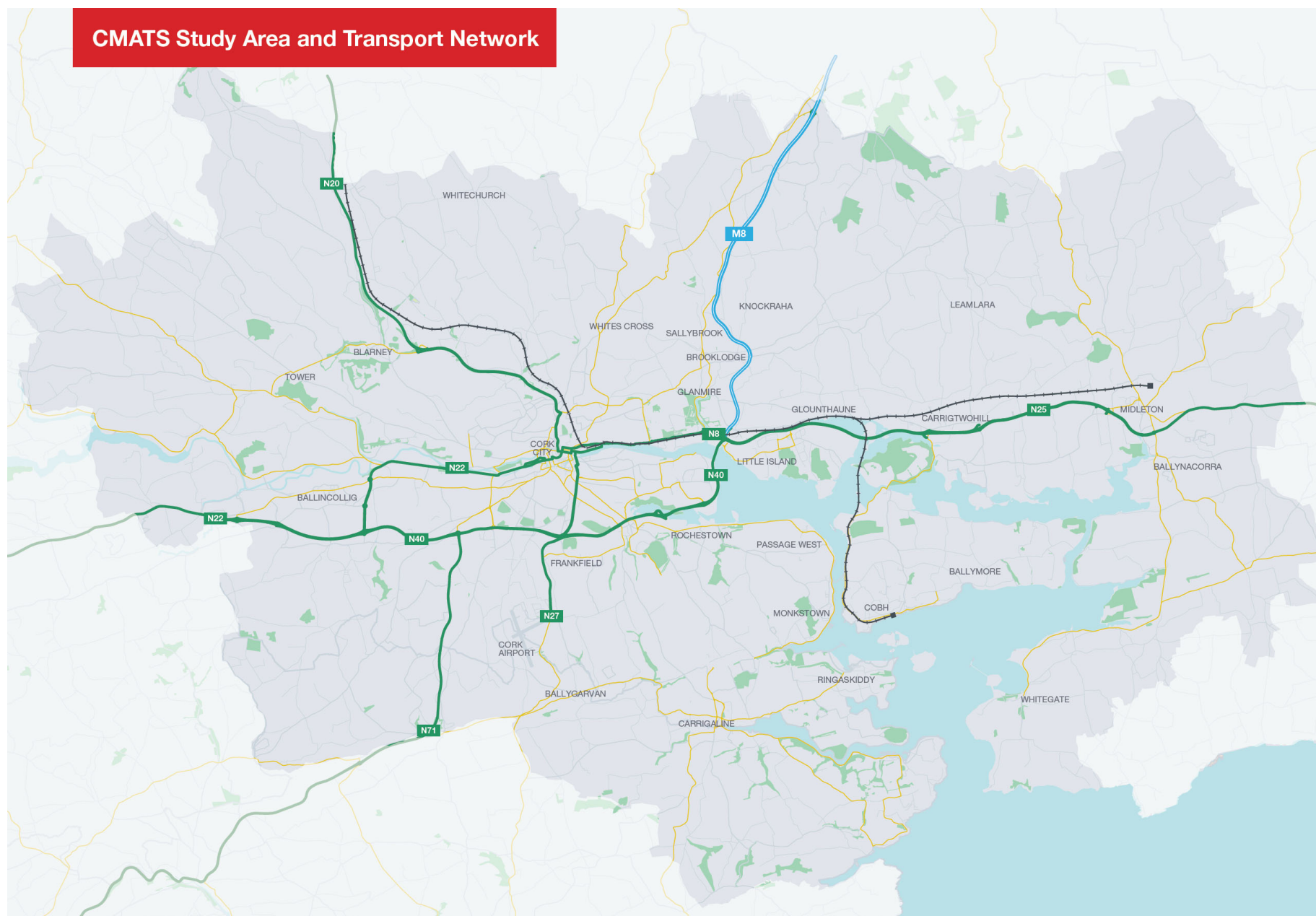


Figure 2.1 Strategy Map showing the Cork Metropolitan Area Transport Strategy Study Area and the Road and Rail Network

Section 3 Relevant aspects of the current state of the environment

3.1 Introduction

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

3.2 Likely Evolution of the Environment in the Absence of the Strategy

The implementation of the Strategy is likely to give rise to the following residual adverse environmental effects identified on Table 5.1. In the absence of the Strategy, none of these effects would result due to the implementation of the Strategy. However lower-tier Plans would continue to be reviewed and implemented and applications for permission for new projects would continue to be made. Compliance with the mitigation measures would be necessary in order to help ensure that the potentially significant adverse environmental effects identified on Table 5.1 do not occur. In the absence of the Strategy, it is uncertain as to whether the investment proposed (including that relating to public transport, walking and cycling developments) would be made and it is uncertain as to which projects would be progressed or prioritised. Lower-tier plans and projects would be less coordinated. It is uncertain as to whether the positive effects identified on Table 5.1 (that would be facilitated by implementation of the Strategy) would be achieved.

3.3 Air and Climatic Factors

Introduction

The key issue involving the assessment of the effects of implementing the Strategy on climatic factors relates to greenhouse gas emissions arising from transport. Interactions are also present with flooding (see Section 3.8).

Greenhouse Gas Emissions

The EPA 2018 publication *Ireland's Greenhouse Gas Emission Projections 2017-2035* provides an assessment of Ireland's progress towards achieving its emission reduction targets. Latest EPA greenhouse gas emissions projections indicate an overall increase in greenhouse gas emissions from most sectors. The positive impact on emissions of existing and planned policies and measures is tempered by the strong economic outlook and associated increase in energy demand. Ireland is not projected to meet 2020 emissions reduction targets and is not on the right trajectory to meet longer term EU and national emission reduction commitments. The contribution by the transport sector to Ireland's greenhouse gas emissions highlights the need for a concerted effort to reduce transport emissions. In the transport sector, emissions are projected to increase from current levels by 14-15% by 2020, peaking at 24-26% in 2025, and falling to by 18-21% by 2030. The projected decline in emissions from 2025 to 2030 is due to the assumption of an acceleration in the number of electric vehicles on Irish roads. After 2030, emissions from transport are projected to start increasing again.

Alternative Fuels and Renewable Electricity Generation Targets

The use of alternative fuels, including electricity, forms a significant part of government policy to reduce transport emissions. The Plan facilitates a mode shift away from the private car to public transport, walking and cycling and provisions relating to electric vehicles. This will contribute towards reductions in the consumption of non-renewable energy sources and achievement of legally binding renewable energy targets. The Draft Bio Energy Plan commitment to continuation of the Biofuels

Obligation Scheme is relevant to the Plan and will remain a key means by which Ireland's 2020 10% renewable transport target is likely to be met.

Journeys by Car and Mode Share³

There is in the region of 820,000 trips originating within the Cork Metropolitan Area (CMA) on average each weekday (over 24 hours) with the morning peak and late afternoon being the busiest periods. The late afternoon trip intensity is due to the prominence of education trips as well as retail and leisure trip purposes. Trips to places of education make up the highest percentage of trips in the morning peak - representing 36% of the total. Whilst the volume of commute trips is also significant at 29%, 'other trip' purposes make up a greater proportion of 35%. These trips comprise of shopping, leisure, business and visiting friends or family representing 50% of all trips over the course of the whole day. There is a dispersed pattern for journeys to work generally within the Metropolitan area. The private car tends to be used for radial trips into/out of the City as well as for trips on orbital routes between employment centres, such as along the N40. The current limitations of the public transport provision in the CMA are reflected in the low mode share for public transport of 5% across the whole day and all trip purposes. Only 7% of journeys to work in Cork City are undertaken by public transport, whereas across the whole Metropolitan area, the equivalent figure is 3%. By comparison, walking has a 20% mode share, while the dominant mode is car which is used for 74% of trips throughout the region. Cycling makes up the remainder of trips over the course of the day, with 1% of all trips made by bike. Approximately 86% of trips to work in the Metropolitan area outside of the urban area are by car, with the car mode share reducing to 65% within the City boundary. This reflects the very high rate of car dependency in the non-urban areas of the CMA.

Ambient Air Quality

In order to protect human health, vegetation and ecosystems, EU Directives set down air quality standards in Ireland and the other Member States for a wide variety of pollutants. These pollutants are generated through fuel combustion, in space heating, traffic, electricity generation and industry and, in sufficient amounts, could affect the well-being of the areas inhabitants. The EU Directives include details regarding how ambient air quality should be monitored, assessed and managed. In order to comply with the directives mentioned above, the EPA measures the levels of a number of atmospheric pollutants. For the purposes of monitoring in Ireland, four zones are defined in the Air Quality Standards Regulations 2002 (SI No. 271 of 2002).

The EPA's (2018) *Air Quality in Ireland 2017* identifies that:

- No levels above the EU limit value were recorded at any of the ambient air quality network monitoring sites in Ireland in 2017;
- The tighter World Health Organisation (WHO) guideline values were exceeded at a number of monitoring sites for particulate matter (PM₁₀ and PM_{2.5}), ozone and NO₂; and
- 2017 dioxin survey shows that concentrations of dioxins and similar pollutants remain at a consistently low level in the Irish environment.

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

Noise

Noise is unwanted sound. The Noise Directive - Directive 2002/49/EC relating to the assessment and management of environmental noise - is part of an EU strategy setting out to reduce the number of people affected by noise in the longer term and to provide a framework for developing existing EU policy on noise reduction from source. In compliance with the Directive and transposing Environmental Noise Regulations (S.I. No. 140 of 2006), Noise Action Plans have been prepared for each local authority area within the country. These action plans address the agglomeration of Dublin and major roads, railways and airports. The Action Plans include noise mapping and are required to include measures to manage noise issues and effects, including noise reduction if necessary. Noise maps identify and prioritise cluster areas which will require further assessment and may require mitigation measures to be put in place. Roads are the dominant noise source within the Cork Agglomeration.

³ CMATS, *Chapter 3: Existing Transport Context*

Existing problems

Legislative objectives governing air and climatic factors were not identified as being conflicted with. However, the Climate Change Advisory Council's Annual Review 2018 has identified that Ireland will miss 2020 and 2030 emissions reduction targets unless urgent action that leads to tangible and substantial reductions in greenhouse gas emissions is taken. The Integrated Implementation Plan will, in combination with various plans and programmes from the transport sector and from other sectors, contribute towards reducing greenhouse gas emissions and moving in the direction of these targets.

With regard to air quality, it is the transport sector which has the greatest impact on NO₂ concentrations, particularly in urban areas where the WHO guideline value, approaching the EU limit value and could face exceedances of this EU limit in the future if vehicle numbers continue to rise. The Transport Plan will help to facilitate reductions in emissions and a transition from dependence on fossil fuel combustion powered transport.

3.4 Population and Human Health**Population**

Most users of transport infrastructure and services will reside in and commute to and from urban/suburban areas. The most populous electoral divisions in Cork City are generally concentrated within urban areas comprising of Cork City, its environs, and the surrounding settlements. There is a higher residential population within the south of Cork City compared to the north. The distribution of the population within the south of the City extends further east-west than north-south (roughly 10km east-west from Mahon to Bishopstown and 5km north-south from the City Centre to the City boundary). The most populated area outside the City boundary is within the south environs including Douglas. There are significant employment centres within the current City Council administrative area particularly in Mahon, the City Centre, Model Farm Road and southwest of the City at Cork University Hospital and Wilton. Outside the City, there are notable employment clusters at Cork Airport, along the N25 corridor and within Ringaskiddy, Ballincollig and Little Island.

Human Health

With regard to human health, impacts relevant to the SEA are those which arise as a result of interactions with environmental vectors (i.e. environmental components such as air, water or soil through which contaminants or pollutants, which have the potential to cause harm, can be transported so that they come into contact with human beings). Hazards or nuisances to human health can arise as a result of exposure to these vectors e.g. interactions with human health that could occur in urban locations that experience high levels of traffic congestion and associated particulate matter and noise emissions to air.

Transport issues that present potential interactions with human health include emissions to air including noise and other emissions. These issues are identified under the relevant environmental component and potential interactions have been taken into account by the provisions contained within the Strategy.

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

Existing Problems

There is historic and predictive evidence of flooding within the area.

Cork City is very vulnerable to adverse effects from small changes in sea level combined with changes in the occurrence of severe rainfall events and associated flooding of the River Lee and a number of smaller urban streams such as the River Bride. Flooding in certain circumstances could pose a risk to human health.

3.5 Biodiversity and Flora and Fauna

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

There are a number of designated sites located within or adjacent to the CMA. Areas containing the greatest extent of sensitive ecological features include coastal habitats (comprising salt marshes, intertidal mudflats, reedbeds, islands and sand dunes), located within the wider Cork Harbour Area. In addition to coastal waters there are a number of rivers and lakes draining the area which provide habitats for sensitive species (such as bird populations).

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

Article 10 of the Habitats Directive recognises the importance of ecological networks as corridors and stepping stones for wildlife, including for migration, dispersal and genetic exchange of species of flora and fauna. The Directive requires that ecological connectivity and areas of ecological value outside the Natura 2000 network of designated ecological sites are maintained.

Man-made habitats within the CMA area can also include important biodiversity features. Gardens provide habitats for a range of wildlife including various bird species, invertebrates such as bees and butterflies and mammals such as hedgehogs, mice, rats and foxes. These species move around between gardens using hedgerows and vegetated areas. These urban green spaces are of importance as they form part of a network of green spaces across the CMA area including gardens, parks, graveyards, amenity walks, old railway lines and patches of woodland and scrub within which animals and plants continue to thrive. Ecological islands or areas of habitat that are not connected to surrounding ecologically valuable habitats can also be important.

Figure 3.1 maps European Sites within 15km of the Cork Metropolitan Area (CMA). The greatest extent of area designated within the CMA comprises the Cork Harbour. Lands at the coastal margins and coastal waters are also designated. Other European Sites designations include river systems (such as River Lee and River Douglas and Blackwater) and lakes (such as Lough Mahon and Lough Beg).

Existing Problems

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

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

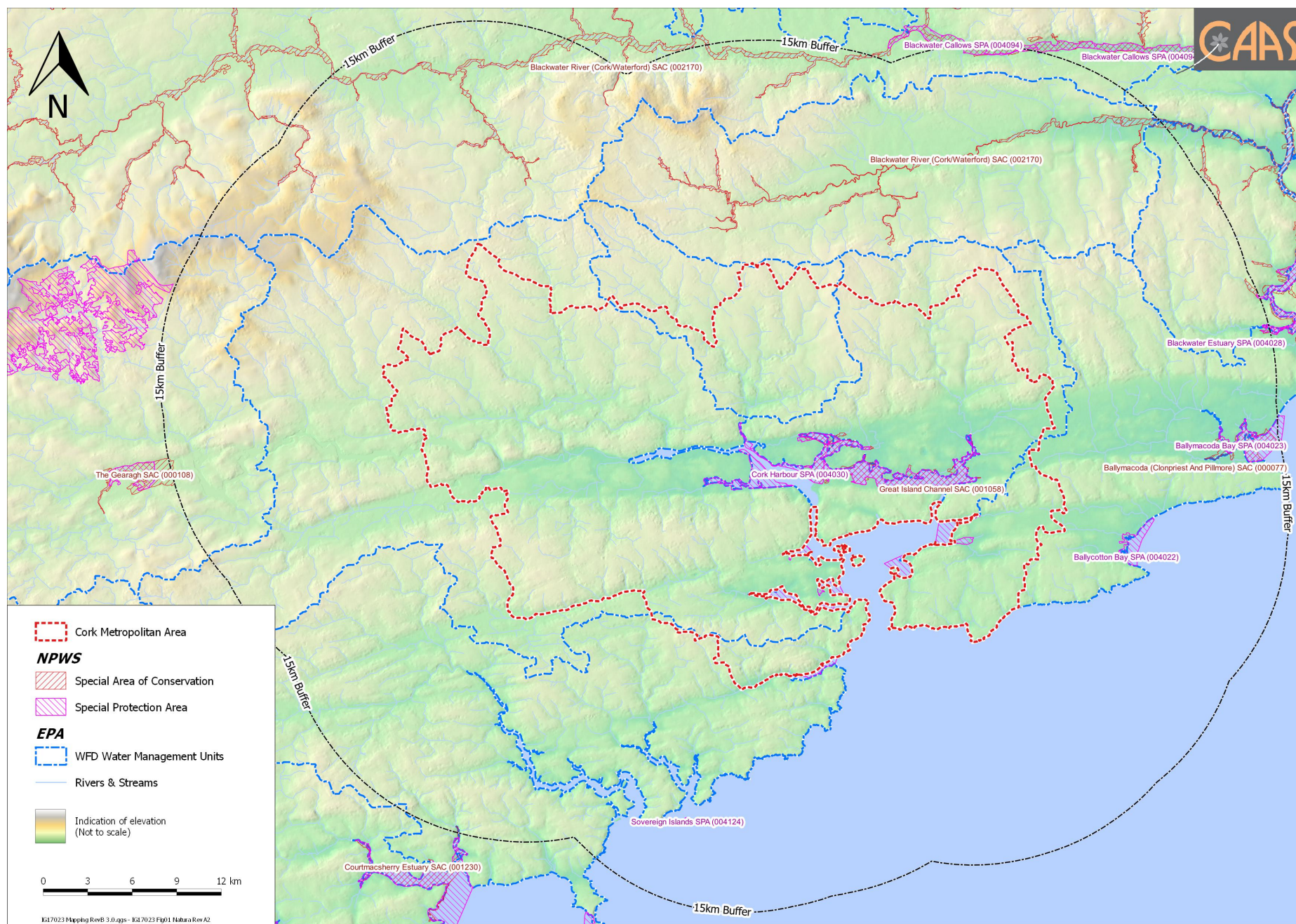


Figure 3.1 Ecologically Designated European Sites

3.6 Material Assets

Introduction

Resources that are valued and that are intrinsic to specific places are called 'material assets'.

Material Assets relevant to this SEA include:

- Built/amenity assets and infrastructure;
- Land; and
- Waste management.

Material assets other than those detailed below that are covered by this SEA include archaeological and architectural heritage (see Section 3.10) natural resources of economic value, such as water and air (see Sections 3.8 and 3.3)

Public Assets and Infrastructure

Public assets and infrastructure which have the potential to be impacted upon by the development of transport infrastructure, if unmitigated, include 'on the ground' resources such as public open spaces, parks and recreational areas; public buildings and services; utility infrastructure (electricity, gas, telecommunications, water supply, wastewater infrastructure etc.). These resources are generally located within the immediate outskirts of urban/suburban areas.

Land

The development of transport infrastructure and services has the potential to enable the reuse and regeneration of brownfield sites thereby contributing towards sustainable mobility and reducing the need to develop greenfield lands and associated adverse environmental effects. Brownfield lands are generally located within urban/suburban areas.

Waste Management

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

For the purposes of waste management planning, Ireland is now divided into three regions: Southern, Eastern-Midlands and Connacht-Ulster. Waste management plans for each waste management region were published in 2015.

The 2016 EPA Report "*Ireland's Environment - An Assessment 2016*" identifies that 11.91 Mt of waste was generated in Ireland during 2014. Of this total, 23% was generated by municipal sources, 28% by construction and demolition sources and 49% by other sources such as industry and agriculture. The bulk of construction and demolition waste is made up of uncontaminated soil and stones, with the remainder segregated wastes such as rubble, concrete, bricks, glass, plastic, wood, metals and mixed construction and demolition waste.

Existing Problems

No existing problems relevant to the SEA relating to material assets were identified by the assessment.

3.7 Soil

Information sources relevant to the environmental component of soil which may be used in lower tier assessments and decision making by local authorities and others includes:

- Soil types (2006) published by Teagasc, Geological Survey of Ireland (GSI), Forest Service & EPA;
- Soils and Subsoils Class (2006) published by Teagasc, GSI, Forest Service & EPA (2006);

- Sites of Geological Interest which have been published for some counties and provisional information on same for other counties (both available from GSI);
- Other datasets published by and available from GSI including those relating to Bedrock Geology, Quaternary Geology, Mineral deposits, Groundwater Resources and Landslides; and
- Datasets on contaminated soils which may be kept by local authorities (these occur most often in urban areas).

County Geological Sites

Sites that are appraised, but which are not selected for NHA designation, are classified as 'County Geological Sites' (CGS), as recognised in the National Heritage Plan (2002). This enables their integration into County Development Plans. All sites of geological heritage importance are currently classified as CGS until such time that the most significant sites can be designated as geological NHAs. Nationally, audits of geological sites in 19 counties have been completed to date.

3.8 Water

Water Framework Directive

Since 2000, Water Management in the EU has been directed by the Water Framework Directive 2000/60/EC (WFD). The WFD requires that all Member States implement the necessary measures to prevent deterioration of the status of all waters - surface, ground, estuarine and coastal - and protect, enhance and restore all waters with the aim of achieving *good status*.

For the purpose of assessment, reporting and management, water is divided into groundwater, rivers, lakes, estuarine waters and coastal waters which are in turn divided into specific, clearly defined water bodies.

Status of surface and ground waters

WFD Monitoring Programmes are undertaken in Ireland by the Environmental Protection Agency and in Northern Ireland by the Department of the Environment's Northern Ireland Environmental Agency. Overviews of the status for monitored waterbodies are published and made available online. The WFD defines surface water status as the general expression of the status of a body of surface water, determined by the poorer of its ecological status and its chemical status.

The most recent EPA assessment of water quality monitoring data in Ireland was undertaken for 2013-2015⁴. Waterbodies, including rivers, lakes, coastal and transitional waters, within the CMA as shown on Figure 3.2 and are generally of *high*, *good* and *moderate* status, with some areas of *poor* status.

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

Transitional waters are bodies of surface water in the vicinity of river mouths which are partly saline in character as a result of their proximity to coastal waters but which are substantially influenced by freshwater flows.

The River Lee flows through Cork City from west to east and into Cork Harbour and enters the Atlantic Sea south of Roches Point, and is transitional up to Sunday's Well in the west of the City. A number of small urban streams also flow into the River Lee. River Lee (Cork), which is used as a source of drinking water for the Cork City and northern suburbs, is of *moderate* status. Inniscarra (Reservoir), which serves as a water supply for the eastern, western, and southern suburbs is of *moderate* status.

⁴ Other sources of information from the EPA that are available for use in lower tier assessments include the Geoportal and Envision websites and reports including Water Quality in Ireland (various), Integrated Water Quality Reports (various) and Quality of Estuarine and Coastal Waters (various).

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

Groundwater status, as shown on Figure 3.3 within the CMA is generally identified as being of *good* status however there are two areas which are identified as being of poor status:

- Area underlying Waste Facility (W0012-03), near Tramore Valley Park; and
- Area underlying Industrial Facility (P00028 – 01), near Cobh Golf Club

Groundwater Source Protection Areas

Groundwater Source Protection Area delineation provides an assessment of the land that contributes groundwater to a borehole or spring. There are two Source Protection Areas located within the CMA.

Bathing Waters

For bathing waters, Mandatory and Guide Values are set out for bathing waters in the 2006 EU Bathing Water Directive and transposing Regulations. Mandatory Values are values which must be observed if the bathing area is to be deemed compliant with the Directive. Compliance with Guide Values exceeds guidance with Mandatory Values and can be regarded as quality objectives which bathing sites should endeavour to achieve. The most recent available data from the EPA shows that bathing waters within the CMA (bathing location at Fountainstown) are of “excellent water quality”.

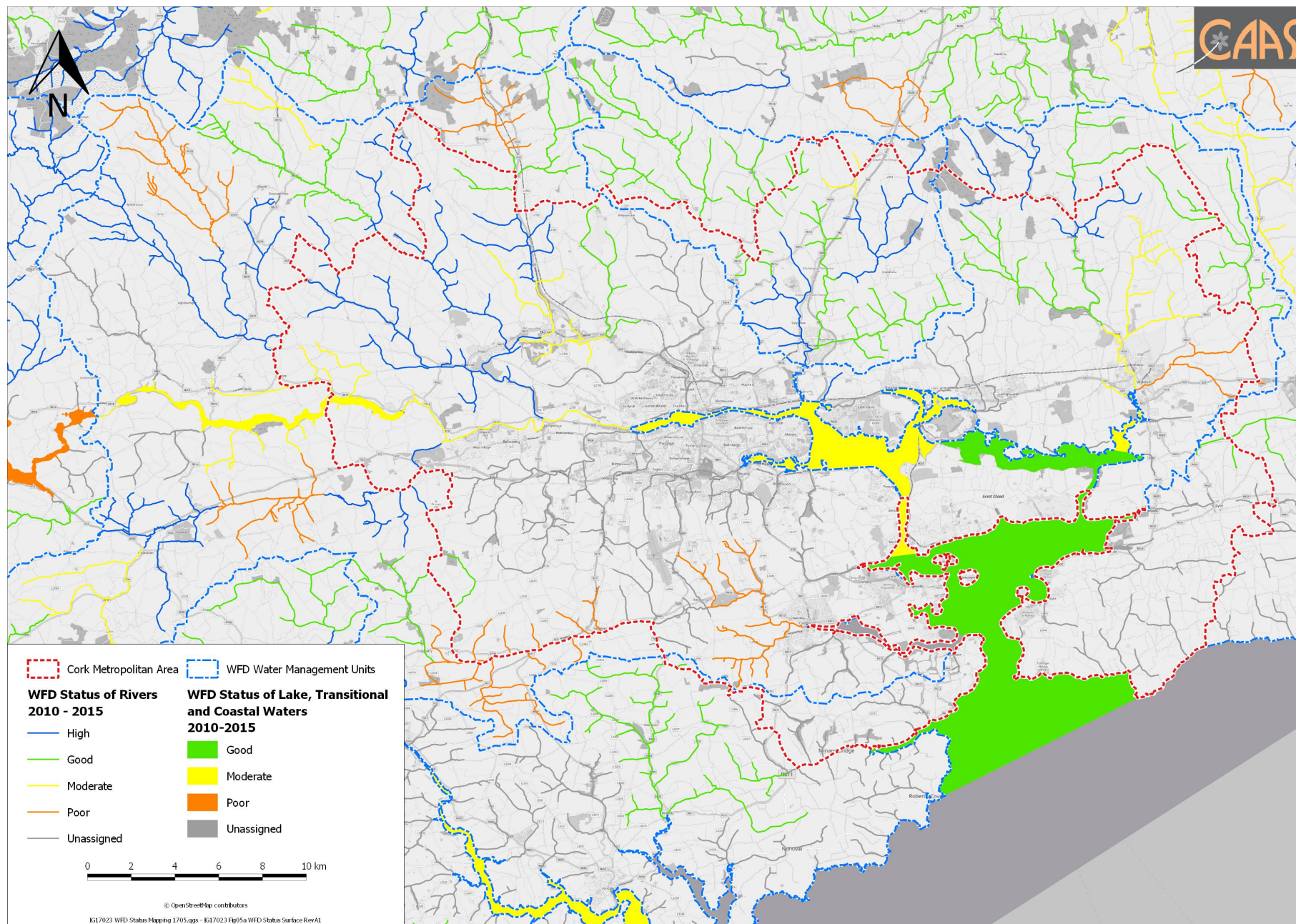
Flooding

Flooding is an environmental phenomenon which, as well as causing economic and social impacts, could in certain circumstances pose a risk to human health. The existence of flood risk across the country is illustrated by various sources of information on historical flooding events – including those available from the Office of Public Works, the lead Authority on flooding in the country, National Flood Hazard Mapping website. In addition to this historic mapping there is predictive, modelled Preliminary Flood Risk Assessment and Flood Risk and Hazard mapping available from the OPW including through the National Catchment Flood Risk Management Programme (CFRAM). These mapping sources identify flood risk from various sources, including fluvial, pluvial, coastal and groundwater.

Existing Problems

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

There is historic and predictive evidence of flooding in locations within the CMA.

**Figure 3.2 WFD Surface Water Status**

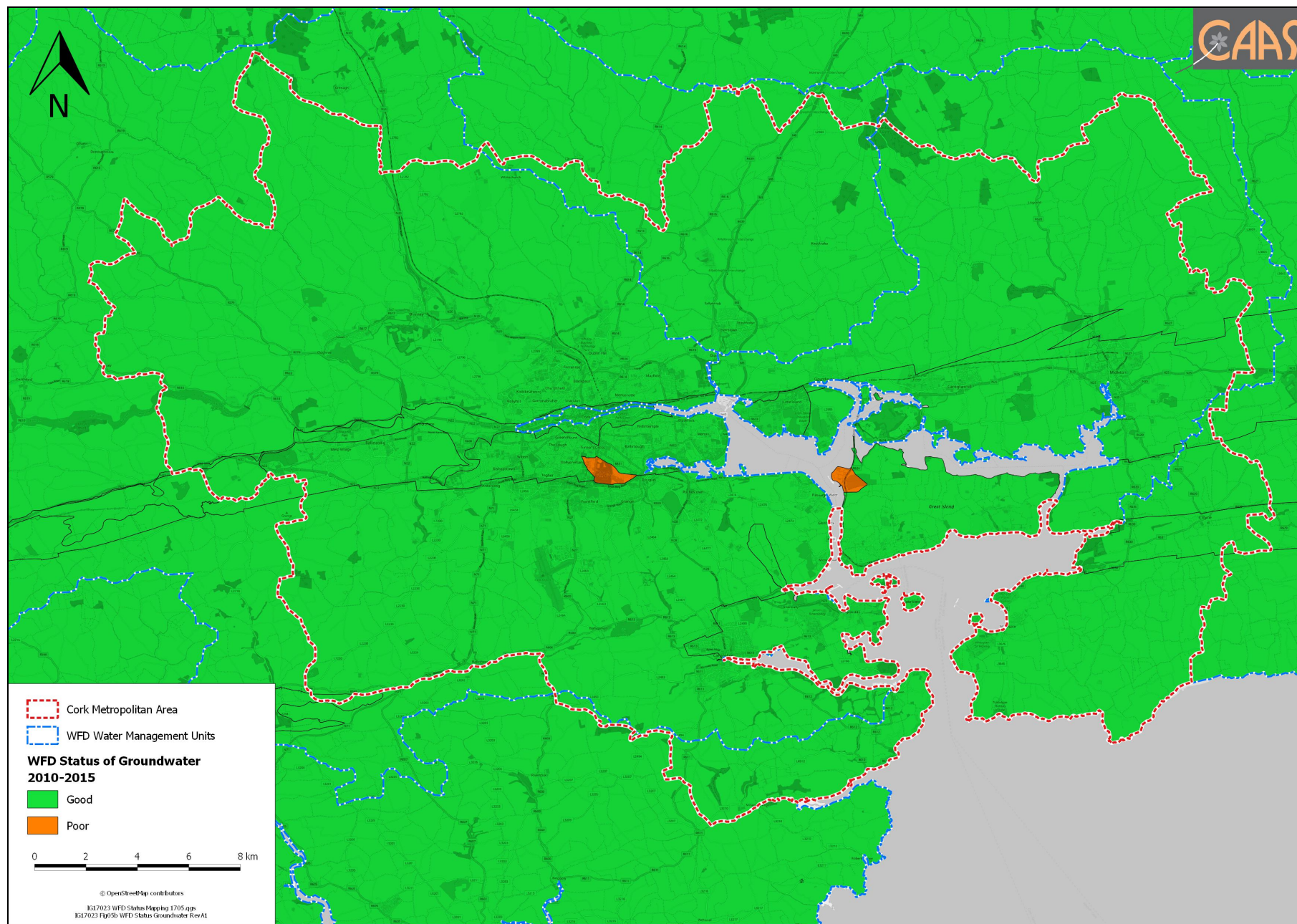


Figure 3.3 WFD Groundwater Status

3.9 Landscape

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

Land cover is the observed physical cover, as seen from the ground or through remote sensing, including for example natural or planted vegetation, water and human constructions which cover the earth's surface.

Artificial surfaces in Ireland account for just under 2.46% of the land surface, significantly below the European Union average of 4.2% (European Environment Agency 2012 CORINE mapping).

The CORINE Land Cover map is based on interpretation of satellite images. Three categories of potential land cover sensitivity (normal, robust and sensitive) have been identified on Figure 3.4.

The area subject to the Strategy encompasses Cork Harbour and the Port of Cork. The River Lee runs directly from the harbour through the centre of the Metropolitan Area, splitting into two channels which form the centre island of Cork City. The area is characterised by hilly, steep terrain to the north and south of the City.

Land Cover

CORINE land cover mapping classifies land cover under various headings. This dataset allows for the identification of areas that are likely to be most visually sensitive and robust.

Land cover is the observed physical cover, as seen from the ground or through remote sensing, including for example natural or planted vegetation, water and human constructions which cover the earth's surface.

The CORINE Land Cover map is based on interpretation of satellite images.

Three categories of potential landcover sensitivity have been identified on Figure 3.4. Normal landcover is the predominant landcover type and is generally found throughout much of the CMA. Robust landcover is found within and surrounding the Cork City and suburban areas. Sensitive landcover are most common along the River Lee (Cork), Inniscarra Reservoir, North Channel Great Island (transitional waters), Cork Harbour and in smaller pockets around waterbodies and parklands throughout the CMA.

Existing Problems

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

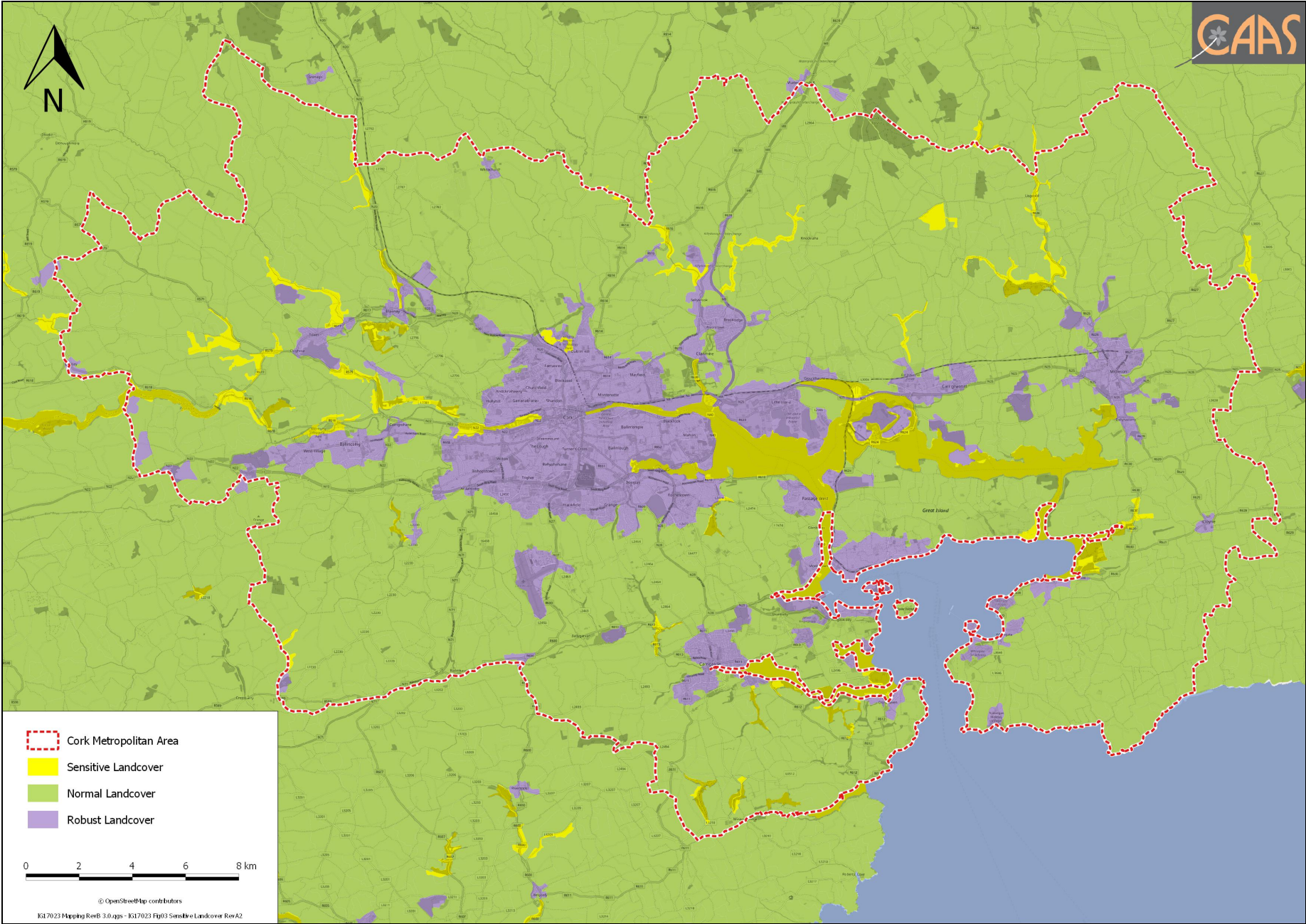


Figure 3.4 Potential Landcover Sensitivity Mapping

3.10 Cultural Heritage

Archaeological Heritage

Archaeology is the study of past societies through the material remains left by those societies and the evidence of their environment. Archaeological sites and monuments vary greatly in form and date; examples include earthworks of different types and periods, (e.g. early historic ringforts and prehistoric burial mounds), megalithic tombs from the Prehistoric period, medieval buildings, urban archaeological deposits and underwater features. Archaeological heritage is protected under the National Monuments Acts (1930-2004), Natural Cultural Institutions Act 1997 and the Planning Acts. There are thousands of known Recorded Monuments in Ireland.

Entries to the Record of Monuments and Places are shown on Figure 3.5. Monuments are concentrated within urban/suburban areas and are less common in areas which are not settled.

Cork was built on estuarine islands in the marshy valley of the River Lee at a point where it formed a number of waterways. It is possible that archaeological riverine-related features may survive in these areas and they may take the form of walkways, fish-traps, timber jetties or simple mooring posts. Under the National Monuments (Amendment) Act 1930-2004 all shipwrecks over one hundred years, underwater archaeological structures, features and objects are protected.

Architectural Heritage

The term architectural heritage is defined in the Architectural Heritage (National Inventory) and Historic Monuments Act 1999 as meaning all: structures and buildings together with their settings and attendant grounds, fixtures and fittings; groups of structures and buildings; and, sites which are of technical, historical, archaeological, artistic, cultural, scientific, social, or technical interest. Records of Protected Structures are legislated for under Section 12 and Section 51 of the Planning and Development Act 2000 as amended. In addition to Protected Structures, the Planning and Development Act, 2000 provides the legislative basis for the protection of Architectural Conservation Areas (ACAs). An ACA is a place, area or group of structures or townscape which is of special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest or value, or contributes to the appreciation of protected structures, whose character it is an objective to preserve in a development plan.

The National Inventory of Architectural Heritage (NIAH) is a State initiative under the administration of the Department of Arts, Heritage and the Gaeltacht and was established on a statutory basis under the provisions of the Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act 1999. The purpose of the NIAH is to identify, record, and evaluate the post-1700 architectural heritage of Ireland, uniformly and consistently as an aid in the protection and conservation of the built heritage. NIAH surveys provide the basis for the recommendations of the Minister for the Environment, Heritage and Local Government to the local authorities for the inclusion of particular structures in their Record of Protected Structures (RPS). The NIAH encompasses a survey of Historic Gardens and Designed Landscapes. Similar to the general spatial spread of archaeological heritage, clusters of architectural heritage are indicated within already developed urban and suburban areas.

Entries from the Records of Protected Structures are shown on Figure 3.5. A buffer of 250m (radius) has been applied to make these designations noticeable at the regional scale of the mapping produced. Similar to the general spatial spread of monuments, Protected Structures are concentrated within urban/suburban areas and are less common in areas which are not settled.

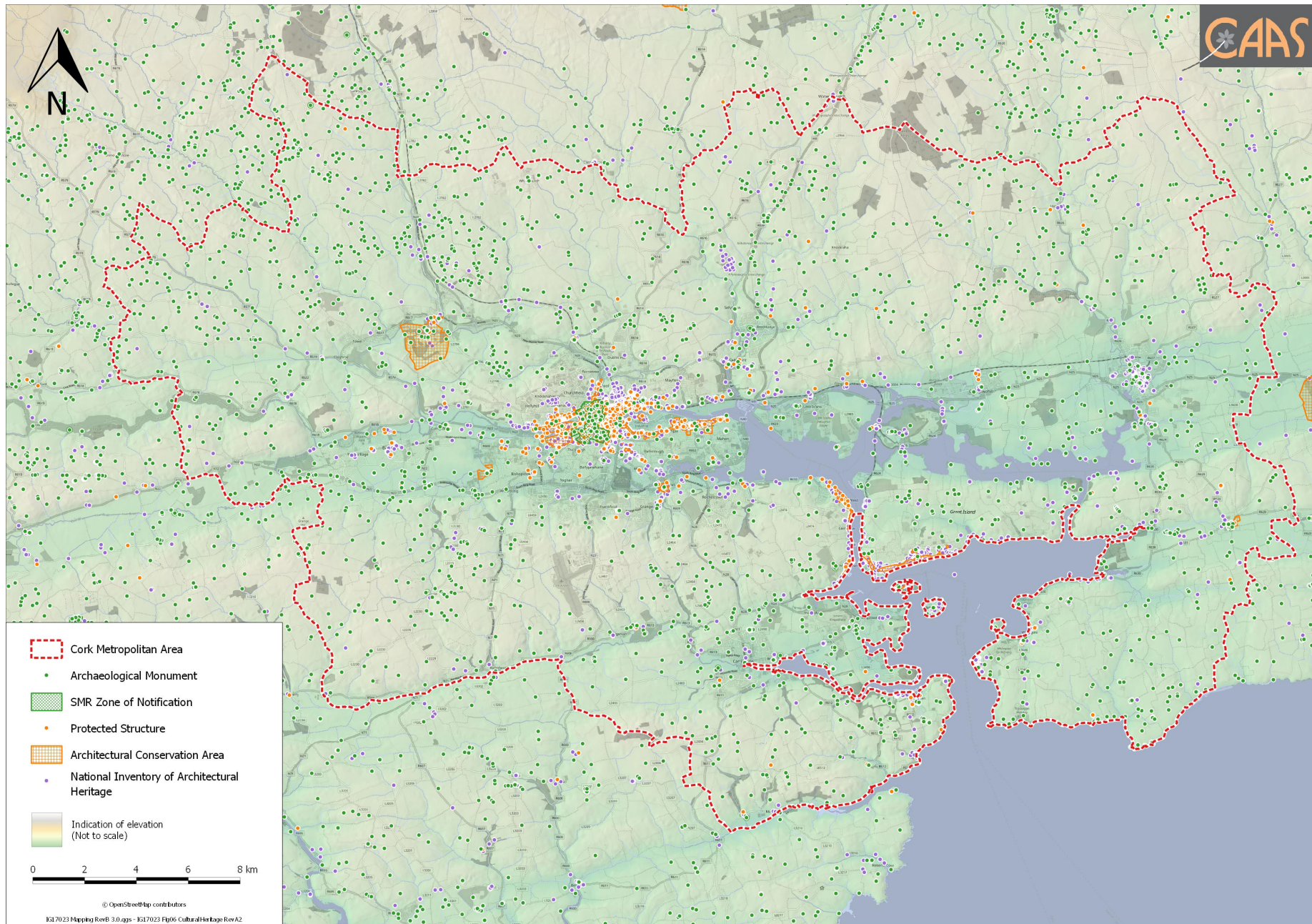


Figure 3.5 Potential Cultural Heritage Sensitivity

3.11 Overall Environmental Sensitivities and Opportunities/Robustness

Some of the environmental information for detailed under previous subsections has been weighted and mapped to show overall environmental sensitivity (see Figure 3.6) and overall environmental opportunities/robustness (see Figure 3.7) with regard to the development of transport projects. The purpose of the mapping is to indicate at a regional level where the main concentrations of sensitivities might occur.

The maps are prepared at the regional scale and different layers or weightings would produce different map outputs. Where the sensitivity mapping shows a concentration of environmental sensitivities there is an increased likelihood that development will conflict with these sensitivities and cause environmental deterioration, if mitigation is not applied. It is emphasised that the occurrence of environmental sensitivities does not preclude development; rather it flags at a strategic level that the mitigation measures - which have already been integrated into the Strategy - will need to be adhered to at lower tiers of decision making in order to ensure that the implementation of the Plan contributes towards environmental protection.

Where the robustness mapping shows a concentration of environmental opportunities there is a decreased likelihood that development will conflict with the environment.

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.

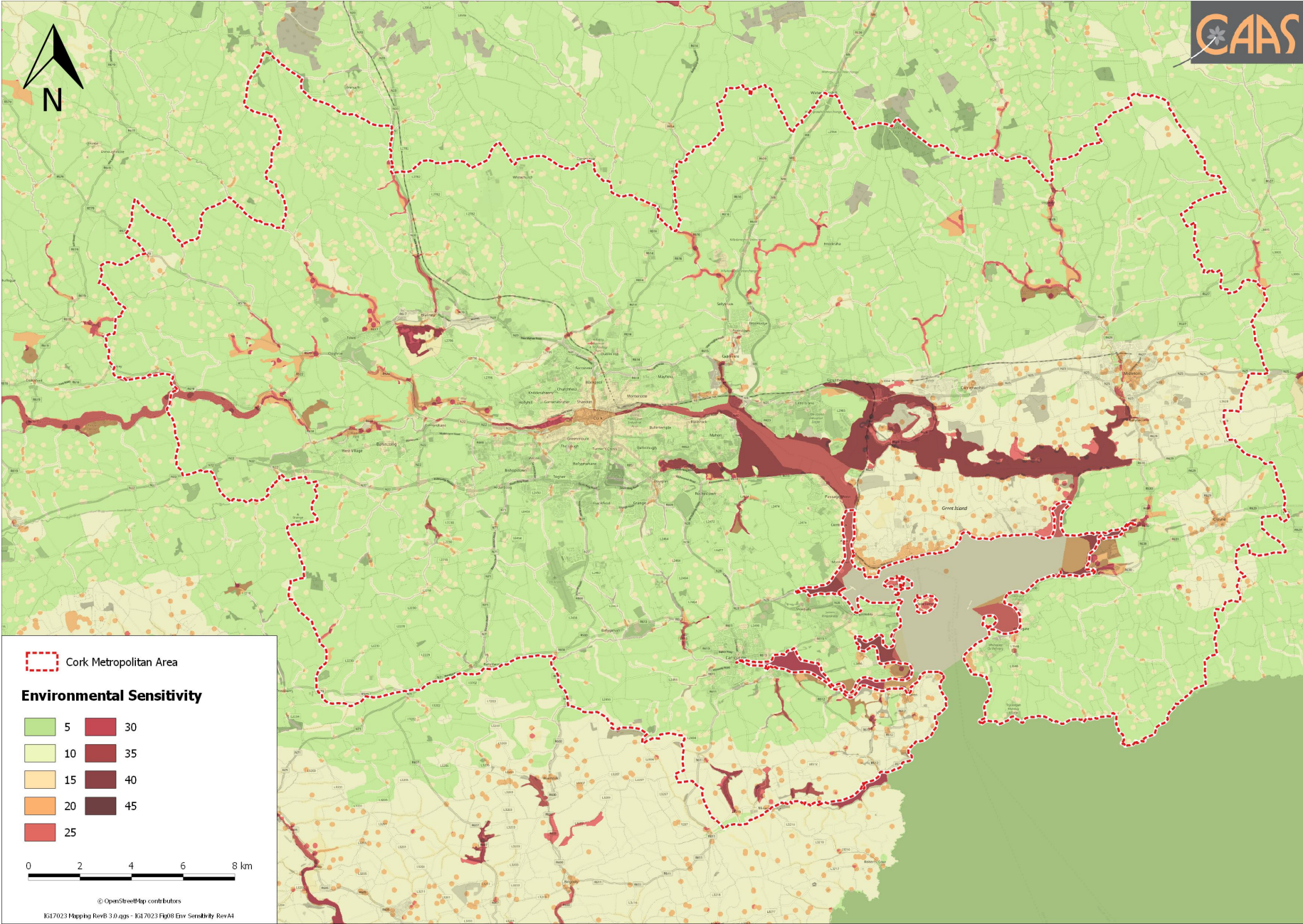


Figure 3.6 Overall Potential Environmental Sensitivity

CAAS for the National Transport Authority

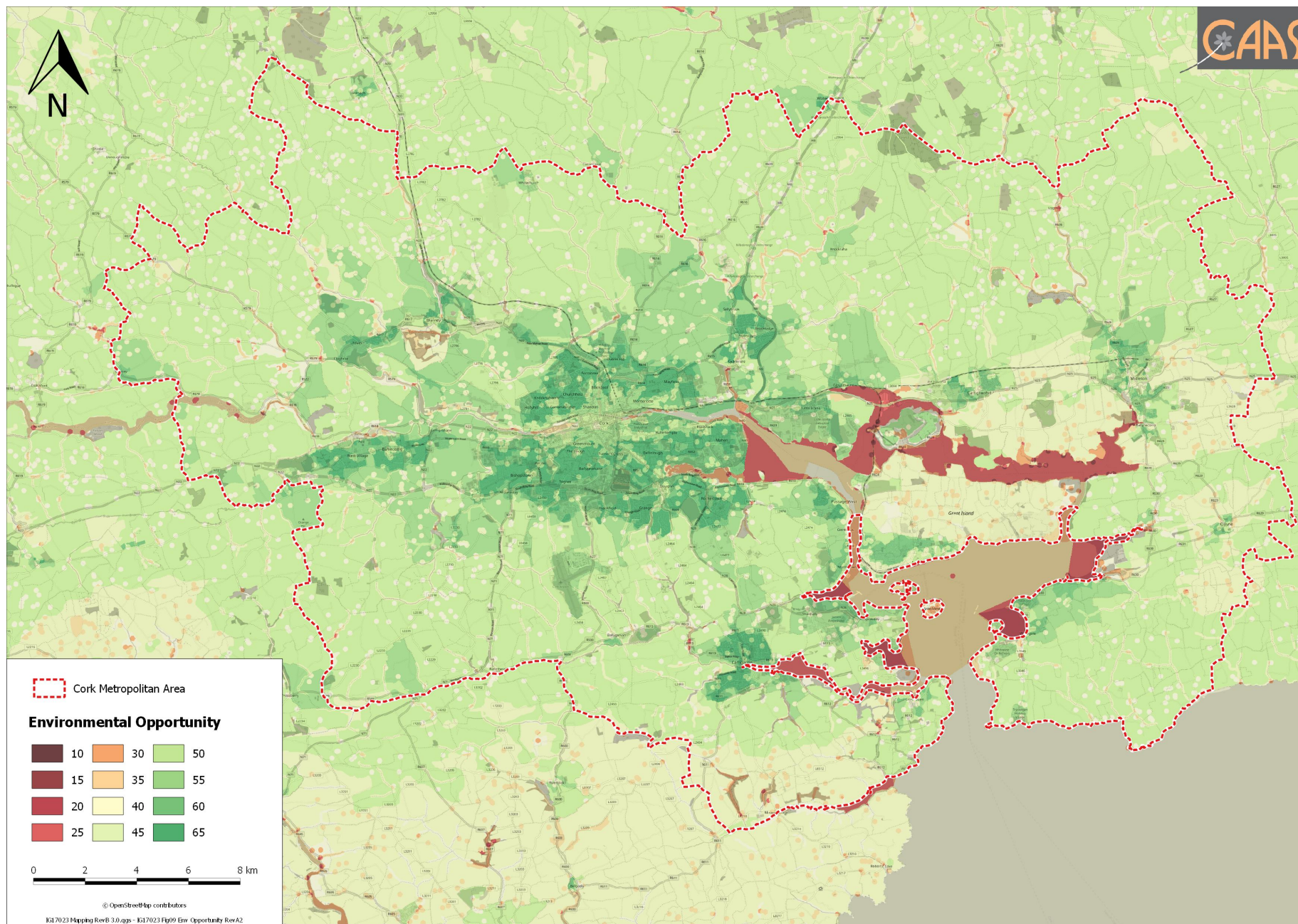


Figure 3.7 Overall Potential Environmental Opportunities/Robustness

3.12 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 network⁵. Various content has been integrated into the Strategy through the SEA and AA processes (see Section 6). 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.

3.13 Strategic Environmental Objectives

Strategic Environmental Objectives (SEOs) are methodological measures developed from policies which generally govern environmental protection objectives established at international, Community or Member State level and are used as standards against which the provisions of the Strategy and the alternatives can be evaluated in order to help identify significant environmental effects. SEOs are shown on the table below.

Table 3.1 Strategic Environmental Objectives

Environmental Component	Code	SEO
Air and Climatic Factors	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
Population and Human Health	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
Biodiversity, Flora and Fauna	B1	To contribute towards compliance with the Habitats and Birds Directives with regard to the protection of European Sites and Annexed habitats and species ⁶
	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
Material Assets	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
Water	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
Landscape	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
Cultural Heritage	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
Soil	S1	To minimise land take and loss to extent of soil resource

⁵ 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.

⁶ 'Annexed habitats and species' refer to those listed under Annex I, II & IV of the EU Habitats Directive and Annex I of the EU Birds Directive.

Section 4 Consideration of Alternatives

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 the Strategic Environmental Objectives (SEOs) that are provided at Table 3.1 of this Non-Technical Summary.

Table 4.1 Comparative Evaluation of Investment Scenarios against SEOs

Alternative	Likely to <u>Improve</u> status of SEOs to a <u>greater</u> degree	Likely to <u>Improve</u> status of SEOs	Likely to <u>Improve</u> status of SEOs to a <u>lesser</u> degree	<u>Least Potential Conflict</u> with status of SEOs - likely to be mitigated	<u>Potential Conflict</u> with status of SEOs - likely to be mitigated	<u>Probable Conflict</u> with status of SEOs - less likely to be mitigated
Scenario 1: Business as Usual			✓ ⁷			✓ ⁸
Scenario 2: Improvements to Public Transport and Sustainable Travel		✓ ⁹			✓ ¹⁰	
Scenario 3: Better Integration of Land Use with Public Transport and Sustainable Travel	✓ ¹¹			✓ ¹²		

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

⁷ 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.

⁸ 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.

⁹ As a result of contributing towards the integration of land use development with sustainable transport provision and contributing towards sustainable mobility.

¹⁰ 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.

¹¹ As a result of fully integrating land use development with sustainable transport provision and contributing towards sustainable mobility.

¹² 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.

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 6 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 the Strategic Environmental Objectives (SEOs) that are provided at Table 3.1 of this Non-Technical Summary.

Table 4.2 Comparative Evaluation of Strategic Rail Corridor Options against SEOs

Alternative	Likely to <u>Improve</u> status of SEOs to a <u>greater</u> degree	Likely to <u>Improve</u> status of SEOs	Likely to <u>Improve</u> status of SEOs to a <u>lesser</u> degree	<u>Least Potential Conflict</u> with status of SEOs - likely to be mitigated	<u>Potential Conflict</u> with status of SEOs - likely to be mitigated	<u>Probable Conflict</u> 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	✓			✓		

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) that are provided at Table 3.1 of this Non-Technical Summary.

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

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

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 the Strategic Environmental Objectives (SEOs) that are provided at Table 3.1 of this Non-Technical Summary.

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

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) that are provided at Table 3.1 of this Non-Technical Summary.

Table 4.5 Comparative Evaluation of Road Network Options against SEOs

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

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 Evaluation of Strategy Provisions

5.1 Overall Findings

The National Transport Authority has undertaken detailed assessment for proposed transport measures across all modes (public transport, walking, cycling, car and freight) under the headings of safety, physical activity, environment, integration, accessibility and social inclusion and economy. The findings of this modelling are included in the "*Transport Modelling Assessment Report*" that accompanies the Strategy. For the purpose of a baseline against which the impacts of the Strategy ('Do-Something' option) can be compared, a 'Do-Minimum'¹³ scenario is used.

The modelling assessment identifies that:

- A substantial proportion of projected growth in travel demand in the CMA will be accommodated by sustainable transport modes;
- The Strategy is forecast to provide an increase in mode share for sustainable transport modes and a reduction in the demand to travel by private car;
- The public transport network is forecast to have very high usage with a significant increase in total passenger boardings;
- The Strategy is forecast to result in significant reductions in the levels of casualties on the road network and savings in collision costs;
- The Strategy is forecast to result in positive effects on physical activity through an increase in cycling (due to the increase in cycling mode share) while the Strategy is forecast to result in negative effects on physical activity through a decrease in walking (due to the large mode shift from walking to public transport and cycling modes due to the improved infrastructure for these modes provided by the Strategy);
- Travel times on the road network are forecast to reduce as a result of the Strategy – compared to the Do-Minimum;
- The Strategy is forecast to reduce transport related emissions;
- The Strategy is forecast to improve accessibility by reducing severance and increasing the accessibility to public transport, particularly from socially deprived areas across the CMA;
- A more integrated public transport network provided by the Strategy results in an increased level of public transport interchange; and
- The Strategy represents a worthwhile investment with transport user benefits forecast to exceed the outline estimate cost of delivering the Strategy.

Expanding on the reduction forecast for transport emissions, the implementation of the Strategy are forecasted to reduce the following environmental emissions in the range of 2 to 5%: nitrogen oxide and dioxide (reduction of 3.1%); particulate emissions (reduction of 2.4%); hydrocarbon (reduction of 3.0%); carbon monoxide and dioxide (reduction of 2.1%); benzene (reduction of 3.6%); methane (reduction of 5.0%); and butadiene (reduction of 3.4%). The 2.4% reduction in particulate emissions is particularly beneficial as this is considered to be particularly harmful to the health of people in close proximity to the emitted particulate.

As detailed in Chapter 5 ("*Strategy Development and Outcomes*") of the Strategy, the Strategy:

- Provides a scalable transport network framework to better manage the increased demand for travel resulting from significant population growth;

¹³ The 'Do-Minimum' network includes forecast transport demand (for the design year of 2040) and additional transport schemes (public transport, cycling and road) that are already built, under construction or are committed in terms of planning approval and allocation of funds. The list of schemes included in the Do-Minimum scenario is as follows:

- M28 Cork to Ringaskiddy: As part of the 2030 cork TEN-T network this scheme is assumed to be in place by 2040;
- Dunkettle Interchange Upgrade: As included in the Government's 'Building on Recovery: Infrastructure and Capital Investment 2016-2021'; and
- Cork City Centre Movement Strategy: The first phases of this strategy have been implemented and are included in the Do-Minimum scenario.

- Prioritises public transport, walking and cycling in urban areas across the Cork Metropolitan Area;
- Supports social inclusion objectives through the provision of a more equitable transport system and wider public transport accessibility to more areas of deprivation;
- Provides a safer transport network where investment is priority focussed and data led;
- The overall reduction in car use promotes better physical and mental health and wellbeing by incorporating more active travel and incidental exercise in the transport network, either as walking and cycling trips in their own right or as part of linked trips with public transport, and improving local air quality;
- Enhances the region's liveability and attractiveness from a tourism, cultural and economic perspective;
- Supports the actions of the Climate Action Plan 2019 in reducing transport-related emissions through a provision of a cleaner, greener public transport fleet, a reduction in private car use and promotion of sustainable and active travel; and
- Provides a robust economic case for transport investment in the Cork Metropolitan Area producing a significant benefit cost ratio of approximately 2.5:1.

The overall findings of the SEA are that:

- **Compliance with Legislation and Guidelines – Environmental Protection and Sustainable Development**

The National Transport Authority are integrating all recommendations arising from the SEA and AA processes into the Strategy (see Section 9 of this report), facilitating compliance of the Strategy with various European and National legislation and Guidelines relating to the protection of the environment and the achievement of sustainable development.

Implementation of the Strategy will contribute towards efforts to achieve a number of the 17 Sustainable Development Goals¹⁴ 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.

- **Improvements in Sustainable Mobility and Associated Effects (emissions, noise and energy usage)**

The Strategy facilitates improvements in sustainable mobility, including a shift from car to more sustainable and non-motorised transport modes, through the development of transport infrastructure and services and transitioning to lower emission vehicles. Improvements in sustainable mobility will result in the following positive effects:

- Reductions in/limits in increases of greenhouse gas emissions and associated achievement of legally binding greenhouse gas emissions targets;
- Reductions in/limits in increases of all emissions to air and associated achievement of air quality objectives, thereby contributing towards improvement or air quality and protection of human health;
- Reductions in/limits in increases of consumption of non-renewable energy sources and achievement of legally binding renewable energy targets; and
- Energy security.

¹⁴ 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 industrialisation 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.

- **Positive Effects in Urban Areas**

In combination with other plans and programmes, including those from the land use sector, the Strategy facilitates more consolidated urban areas, reuse and regeneration of brownfield lands and reductions in sprawl. In this way the Strategy would facilitate a higher efficiency of land utilisation, increases in sustainable mobility and a reduction in the need to develop greenfield lands. The reduced need to develop greenfield lands further away from existing urban areas would result in lower adverse effects upon ecology, landscape designations, architectural and archaeological heritage and soil.

Among other positive environmental effects, the Strategy facilitates the enhancement of the public realm (including cultural heritage and its context) in urban areas by facilitating the replacement of motorised transport modes with more sustainable and non-motorised modes including light rail/metro, cycling and walking.

- **Potentially Significant Adverse Effects to be mitigated**

Potentially significant adverse environmental effects arising from the Strategy are detailed on Table 5.1. These effects will be mitigated by the various provisions which have been integrated into the Strategy including those that have arisen through the SEA and AA processes (see Section 6). These mitigating provisions together with the contribution that the Strategy will make to sustainable mobility means that the Strategy facilitates various significant positive effects upon the protection and management of environmental components.

Table 5.1 details the various types of environmental effects likely to arise with respect to the Strategy (as developed from the selected alternatives – see Section 4) as a direct result of development and activities under the Strategy and in combination with the wider planning framework. Environmental impacts which occur will be determined by the nature and extent of multiple or individual projects and site specific environmental factors. By complying with appropriate mitigation measures - including those which have been integrated into the Strategy - potentially significant adverse environmental effects which could arise as a result of implementing the Strategy would be likely to be avoided, reduced or offset

5.2 Transboundary Effects (Northern Ireland)

Taking into account the geographical scope of Strategy provisions (that apply to the Cork Metropolitan Area) and the detailed Strategy provisions relating to environmental protection and management, it is determined that significant environmental effects will not occur in Northern Ireland.

Table 5.1 Overall Effects Arising from the Integrated Implementation Plan

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 Effect¹⁵	
Air and climatic factors	<ul style="list-style-type: none"> 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. 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). Contributions towards managing traffic flows (and associated management of adverse effects as a result of traffic on air quality and noise levels). 	<ul style="list-style-type: none"> Emissions to air and associated issues. 	<ul style="list-style-type: none"> 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. 	AC1 AC2 AC3
Population and human health	<ul style="list-style-type: none"> Provides for the development of transport infrastructure and services in locations which will facilitate use by those living and working in urban/suburban areas. Facilitates contribution towards the protection of human health as a result of contributing towards the protection of environmental vectors, especially air. 	<ul style="list-style-type: none"> Potential interactions if effects upon environmental vectors such as air are not mitigated. 	<ul style="list-style-type: none"> 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. 	PHH1 PHH2
Biodiversity and flora and fauna	<ul style="list-style-type: none"> 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. Contributions towards the protection of vegetation as a result of contributing towards the protection of environmental vectors, especially air. Potential ecological enhancement interventions along transport corridors. 	<ul style="list-style-type: none"> 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. Habitat loss, fragmentation and deterioration, including patch size and edge effects. Disturbance (e.g. due to noise and lighting along transport corridors) and displacement of protected species and/or coastal squeeze. Effects in riparian zones where new crossings of waters, if any, are progressed. Potential effects on vegetation from transport emissions. 	<ul style="list-style-type: none"> 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 Losses or damage to ecology (these would be in compliance with relevant legislation) 	B1 B2 B3
Material Assets	<ul style="list-style-type: none"> 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. Contributions towards a mode shift away from the private car to public transport, walking and cycling and associated 	<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. 	<ul style="list-style-type: none"> Residual wastes (these would be disposed of in line with higher level waste management policies) Potential residual losses to built/amenity assets and infrastructure including as a result of new or widened transport infrastructure 	MA1 MA2

¹⁵ Residual adverse environmental effects would be generally non-significant. Significant residual adverse effects would be in compliance with the relevant environmental protection legislation.

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 ¹⁵	
	<ul style="list-style-type: none"> enhancement of the public realm. Contributions towards the protection of built/amenity assets and infrastructure. 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. Contributions towards appropriate waste management. 			
Water	<ul style="list-style-type: none"> 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. Contributions towards compliance with the Flood Risk Management Guidelines. 	<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. 	<ul style="list-style-type: none"> Flood related risks remain due to uncertainty with regard to extreme weather events. 	W1 W2 W3
Landscape	<ul style="list-style-type: none"> Contributions towards the protection of landscape designations as a result of facilitating compliance with relevant plans. 	<ul style="list-style-type: none"> Occurrence of adverse visual impacts and conflicts with the appropriate protection of statutory designations relating to the landscape. 	<ul style="list-style-type: none"> Residual visual effects (these would be in compliance with landscape designation provisions). 	L1
Cultural Heritage	<ul style="list-style-type: none"> Contributions towards the protection of cultural heritage (archaeological and architectural) as a result of facilitating compliance with relevant legislation. 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. 	<ul style="list-style-type: none"> Potential effects on protected and unknown archaeology and protected architecture arising from construction and operation activities, including as a result of increasing traffic flows. 	<ul style="list-style-type: none"> 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. 	CH1 CH2
Soil	<ul style="list-style-type: none"> 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. Contributions towards the protection of the environment from contamination arising from brownfield development. Contributions towards the protection of features or areas of geological / geomorphological interest. 	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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. 	S1

Section 6 Mitigation and Monitoring Measures

Mitigation measures are measures envisaged to prevent, reduce and, as fully as possible, offset any significant adverse impacts on the environment of implementing the Strategy. Various environmental sensitivities and issues have been communicated to the Authority through the SEA and Appropriate Assessment (AA) processes.

By integrating all SEA and AA recommendations into the Strategy, the Authority is helping to ensure that: the potential significant adverse effects of implementing the Strategy are avoided, reduced or offset; and the beneficial environmental effects of implementing the Strategy are maximised.

Mitigation was achieved through the following: early work undertaken to ensure contribution towards environmental protection and sustainable development; consideration of alternatives; and integration of individual measures into the Strategy. A selection of the measures that have/are being integrated into the Strategy are shown on Table 6.1.

The Environmental Report contains proposals for **monitoring** the potential significant effects of implementing the Strategy, if unmitigated, which are adopted alongside the preparation of the Strategy. 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.

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. A stand-alone Monitoring Report on the significant environmental effects of implementing the Strategy will be prepared during the implementation of the Strategy, in advance of the review of the Strategy. This report will address the following indicators set out below.

- AC1i: Compliance with Ambient Air Quality and Cleaner Air for Europe (CAFE) Directive and associated legislation
- AC1ii: Greenhouse gas emissions from transport
- AC2: Percentage of population travelling to work, school or college by public transport or non-mechanical means
- AC3i: Energy use by the transport sector as a percentage of Total Final Energy Consumption
- AC3ii: Proportion of energy from renewable sources
- PHH1: Extent of urban/suburban areas within the catchment of transport infrastructure and services
- PHH2: Occurrence (any) of a spatially concentrated deterioration in human health arising from environmental factors resulting from development provided for by the Strategy, as identified by the Health Service Executive and Environmental Protection Agency
- B1: Conservation status of habitats and species as assessed under Article 17 of the Habitats Directive
- B2: Percentage loss of functional connectivity without remediation resulting from development provided for by the Strategy
- B3i: Number of significant impacts on relevant habitats, species, environmental features or other sustaining resources in designated sites including Wildlife Sites resulting from development provided for by the Strategy
- B3ii: Number of significant impacts on the protection of listed species resulting from development provided for by the Strategy
- MA1: Protection of built/amenity assets and infrastructure
- MA2: Extent of brownfield land reused and regenerated which has been facilitated by the Strategy
- MA3: Preparation and implementation of construction and environmental management plans
- W1i: Interactions with classification of Overall Status (comprised of ecological and chemical status) under the European Communities Environmental Objectives (Surface Waters) Regulations 2009 (SI No. 272 of 2009) resulting from development provided for by the Strategy
- W1ii: Mandatory and Guide values as set by the EU Bathing Water Directive and transposing Bathing Water Quality Regulations (SI No. 79 of 2008)
- W2: Interactions with Groundwater Quality Standards and Threshold Values under Directive 2006/118/EC resulting from wind energy development (including associated development) permitted by planning authorities adhering to the Guidelines
- W3: Compliance of relevant lower tier assessments and decision making with the Flood Risk Management Guidelines
- L1: Number of unmitigated conflicts with the appropriate protection of statutory designations relating to the landscape, including those included in the land use plans of planning authorities, resulting from development provided for by the Strategy
- CH1: Percentage of entries to the Record of Monuments and Places - including Zones of Archaeological Potential (and the context of the above within the surrounding landscape where relevant) - protected from significant adverse effects resulting from development provided for by the Strategy
- CH2: Percentage of entries to the Record of Protected Structures and Architectural Conservation Areas and their context protected from significant adverse effects resulting from development provided for by the Strategy
- S1: Artificial surfaces land cover extent

Table 6.1 SEA/AA recommendations included within the Strategy

Strategy Section No.	SEA/AA Recommended Text
1. Introduction Strategic Environmental Assessment and Appropriate Assessment	<p>SEA 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"> • Air and Climatic Factors; • Population and Human Health; • Biodiversity, Flora and Fauna; • Material Assets; • Soil; • Water; • Cultural Heritage; and • Landscape. <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"> • Relevant aspects of the current state of the Environment; • Evaluation of Alternatives; • Evaluation of Strategy provisions; • Mitigation Measures; and • Monitoring Programme. <p>The overall findings of the SEA are that:</p> <ul style="list-style-type: none"> • All of the recommendations arising from the SEA process have been incorporated into the Strategy; • 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"> ○ Contributions towards reductions in greenhouse gas emissions and associated achievement of legally binding targets; ○ 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 ○ Contributions towards reductions in consumption of non-renewable energy sources and achievement of legally binding renewable energy targets; ○ Energy security; and ○ Enhancing the public realm. • Certain Strategy provisions would be likely to result in significant positive effects upon environmental management and protection; and • 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. <p>The SEA identifies that implementation of the Strategy will contribute towards efforts to achieve a number of the 17 Sustainable Development Goals¹⁶ 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>

¹⁶ 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>AA</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 sites¹⁷. 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>Regulatory framework for environmental protection and management</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>Lower-level Decision Making</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"> • Special Areas of Conservation and Special Protection Areas; • Features of the landscape that provide linkages/connectivity to designated sites (e.g. watercourses, areas of semi-natural habitat such as linear woodlands etc); • Salmonid waters; • Shellfish waters; • Freshwater pearl mussel catchments; • Natural Heritage Areas and proposed Natural Heritage Areas; • Areas likely to contain a habitat listed in Annex 1 of the Habitats Directive; • Un-designated sites of importance to wintering or breeding bird species of conservation concern; • Entries to the Record of Monuments and Places and Zones of Archaeological Potential; • Entries to the Record of Protected Structures; • Architectural Conservation Areas; and • Relevant landscape designations.
17. Environmental Protection and Management	<p>Corridor and Route Selection Process for relevant new infrastructure</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"> • 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 the 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 the 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 route lines is likely to be informed by other considerations.

¹⁷ 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>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> <ol style="list-style-type: none"> 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 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 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.
17. Environmental Protection and Management	<p>Protection of European Sites</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 projects¹⁸).</p>
17. 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 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>Other SEA Recommendations</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>

¹⁸ 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.