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National Roads 2040

Updated Strategic Environment Assessment
Environmental Report

of the draft National Roads 2040 Strategy

April 2023



Tionscaldal Éireann
Project Ireland
2040



FIROD
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AECOM

Draft NR2040 SEA Environmental Report

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Non-Technical Summary

NON-TECHNICAL SUMMARY

Introduction

Transport Infrastructure Ireland (TII) is preparing Ireland's National Roads 2040 (NR2040) Strategy with the aim of publishing a long-term Strategy for the National Roads network which can be used to inform government capital investment plans and assist in the implementation of a range of National and European Union (EU) policies.

This Non-Technical Summary of the Strategic Environmental Assessment (SEA) Environmental Report (ER) has been prepared independently by Roughan & O'Donovan (ROD) as a subconsultant to AECOM on behalf of Transport Infrastructure Ireland (TII). The Strategic Environmental Assessment (SEA) of the National Roads 2040 Strategy (referred to hereafter as the 'draft NR2040' or "draft Strategy") is being undertaken in accordance with the requirements of the EU and National legislation on the assessment of the effects of certain plans and programmes on the environment. The SEA process ensures that the preparation of the draft NR2040 is informed by environmental considerations from the outset.

The Non-Technical Summary (NTS) of the SEA Environmental Report (ER) forms part of the draft Strategy documentation. The purpose of the NTS is to summarise in Non-Technical language the SEA ER. The purpose of the SEA ER is to systematically identify and evaluate the likely significant environmental effects on the Strategy area due to the implementation of the draft NR2040. The SEA process informs TII during the Strategy making process of the likely and significant environmental effects as a result of implementing the draft NR2040.

The aim of the ER is to:

- Inform the development of the draft NR2040;
- Identify, describe, evaluate the likely significant effects on the environment resulting from implementation of the draft NR2040 and its alternatives;
- Provide mitigation measures envisaged to prevent, reduce and as fully as possible offset any significant adverse effects on the environment of implementing the draft NR2040; and
- Through consultation, provide an opportunity for the statutory authorities and the public to make submissions on the draft NR2040 and the SEA process.

This 'Updated SEA ER' includes updates to key policy documents and addresses consultation feedback including updates to sections of the baseline environment.

Contents and Main Objectives of the Strategy

Following the publication of 'Project Ireland 2040' which includes the *National Planning Framework* (NPF) and *National Development Plan* (NDP), the Department of Transport (DoT) published 'The National Investment Framework for Transport in Ireland' (NIFTI) which sets out DoT Strategy for the development and management of Ireland's land transport network over the next two decades. Draft National Roads 2040 is prepared by TII to ensure alignment between the departmental investment framework and the operational and functional needs of National Roads in Ireland.

The draft NR2040 is presented in the format shown in **Table 0.1** and provides an overview of the contents of each section.

Table 0.1 Content of the draft NR2040

Section	Summary of contents
Chapter 1	Introduction Introduces NR2040, the Scope and role of National Roads and the structure of the Strategy.
Chapter 2	Policy Context Reviews some of the key government policies and plans that have influenced the development of NR2040.
Chapter 3	Long-term strategic Issues for National Roads Presents a brief evidence-based review of the context of how roads are currently used and projected future trends identifying key strategic issues facing the National Roads network.
Chapter 4	NR2040 Vision and Key Objectives Presents TII's Vision and key objectives in the development of the Strategy, considering National policy context and strategic issues.
Chapter 5	National Roads Investment Priorities and Portfolios Presents TII's four priority investment priorities namely: Decarbonisation, Protection and Renewal, Mobility of People and Goods in urban areas, and Enhanced regional and rural connectivity.
Chapter 6	Implementation Sets out NR2040 Commitments and Implementation structure. It also summarises guidance to sponsoring agencies and Local Authorities in developing projects/ interventions that align with NR2040.
Appendix A	National Planning Framework actions for National Roads (Excerpts from the NPF)

The draft NR2040 being rolled out in the context of an evolving policy context which includes greater environmental protection ambition set out in European and National policy frameworks influencing road transport particularly greater focus towards integrated compact sustainable development, protecting biodiversity and responding to the effects of climate change (adaptation and mitigation plans) and other sectoral policies which influence road-based transport and vice-versa.

TII conducted analysis to understand differing functions of the National Roads network and to identify how to realise the policy ambitions of Project Ireland 2040.

NR2040 identifies the key strategic issues facing the National Roads network. It outlines the investment priorities and portfolios and provides guidance to sponsoring agencies and local authorities, as to the types of investments and areas where these will be made across National Roads, in the face of fiscal, social, and environmental change.

Vision and Key Objectives of NR2040

Draft NR2040 is to achieve the following vision for National Roads in Ireland to 2040: *'An evolving sustainable transport system focused on safety, innovation, accessibility and mobility of people, goods and services'*

The key objectives for the draft NR2040 are for the National Roads network to be:

- Safe and efficient transport network for people and goods;
- Environmentally, socially and economically sustainable;
- Tailored for different customers in different places; and

- Managed and improved as a key public asset.

National Roads Investment Priorities and Portfolios

NR2040's four investment priorities are consistent with the four NIFTI Investment priorities and aligned with the NPF.

- Decarbonisation
- Protection and renewal
- Mobility of people and goods in urban areas
- Enhanced regional and rural connectivity

The measures under each are described and assessed in detail in **Section 9** of this report.

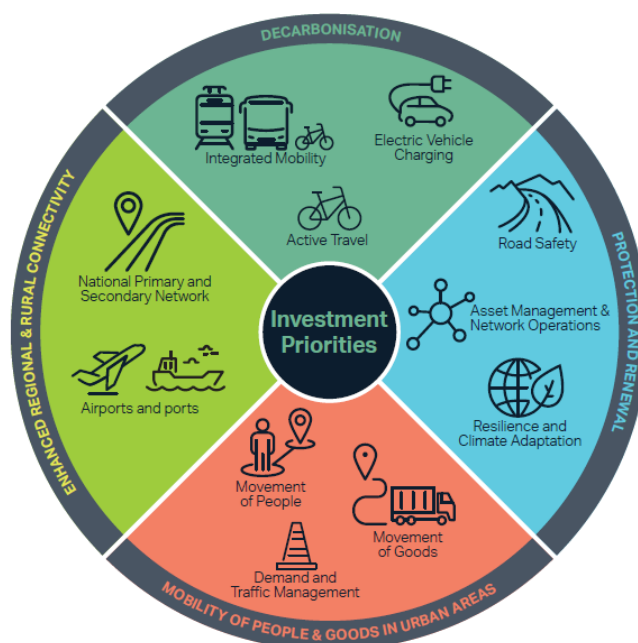


Figure 0-1 NR2040 Four Investment Priorities and Portfolios (draft NR2040,2022)

Implementation

NR2040 is TII's Strategy for the National Roads network, identifying the function and investment priorities for different parts of the National Roads network, providing for TII's aspiration to:

- Enable Project Ireland 2040 (NPF and NDP)
- Support the realisation of several National Strategic Objectives (NSOs)
- Align with NIFTI and other Government policy

The implementation chapter of the Strategy provides NR2040's summary guidance to Sponsoring Agencies and Local Authorities. It:

- Outlines TII commitments to addressing strategic issues.
- Provides a means of filtering future interventions.
- Defines TII investment portfolios.
- Concludes with TII's emphasis on collaboration, recognised throughout the Strategy as a necessary means for the successful implementation of identified interventions and achievement of National targets.

Commitments

The NR2040 Investment Priorities are reinforced by a series of TII commitments, further addressing the strategic issues identified for the National Roads network in coming years. Policy obligations, including NPF/ NIFTI/ Road Safety Strategy, and internal TII analysis and plans inform these commitments. These commitments can also be used to influence the scope of projects on National Roads developed by local authorities or other agencies. The commitments are detailed and assessed in Section 6.1 in the Strategy and are replicated and assessed in **Section 9** of this report.

Strategic Environmental Assessment Methodology

Strategic Environmental Assessment (SEA) is the formal, systematic evaluation of the likely significant environmental effects of implementing a plan or programme or in this case the draft Strategy) before a decision is made to adopt the plan or programme, in this case draft NR2040.

The SEA process is recognised as a central mechanism in promoting sustainable development, in raising awareness of the significant environmental issues experienced by an area and ensuring that these issues are addressed within the capacity of the planning system.

Legal Context

Strategic Environmental Assessment Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment requires that an environmental assessment be carried out of all plans and programmes that are prepared for certain specified sectors.

Under Article 9 of the SEA Regulations (S.I. 435 of 2004, as amended) an environmental assessment shall be carried out for all plans and programmes which are prepared for agriculture, forestry, fisheries, energy, industry, transport, waste management, water management, telecommunications and tourism, which set the framework for future development consent of projects listed in Annexes I and II to the Environmental Impact Assessment Directive, or which are not directly connected with or necessary to the management of a European site but, either individually or in combination with other plans, are likely to have a significant effect on any such site. Therefore, an SEA has been prepared for NR2040.

Key Stages in the SEA Process

There are a number of clearly defined SEA stages. These are illustrated in **Figure 3-1** and discussed as they relate to the draft NR2040 in **Table 3.1**.

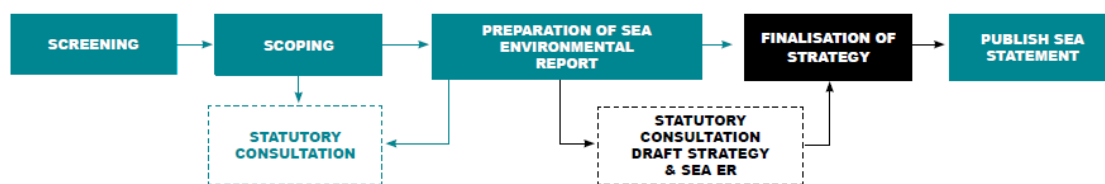


Figure 0-2 Key Stages of the SEA Process (Source: EPA Strategic Environmental Assessment Process Overview)

The draft NR2040 is a National Strategy and as such the assessment has been focussed on the National level. Based on the requirements of the SEA legislation and guidance, the information provided in the Environmental Report is outlined in **Table 0.2**

Table 0.2 Key Stages of the SEA Process and the draft NR2040

SEA Stage	Role within the SEA Process	Status
Screening	<p>Determines whether there would be likely to have significant environmental effects and if an SEA is required to be undertaken.</p> <p>In accordance with the requirements of the SEA Directive and transposing Regulations S.I. 435 of 2004 (as amended), TII undertook an SEA Screening having regard to the criteria in Schedule 1 <i>“Criteria for determining whether a plan is likely to have significant effects on the environment”</i>.</p>	<p>Screening for SEA was undertaken by TII in 2018 having regard to Schedule 1 Criteria. While NR2040 is not a ‘plan’ it will influence other plans including those in a hierarchy. It will provide a framework for guiding future development and decision-making for the National Roads network and associated activities for the period 2040 and beyond. Based on characteristics of the Strategy it has been determined that the implementation of the NR2040 has the potential to result in environmental effects and accordingly an SEA is required to be prepared.</p>
Scoping & Consultation	<p>The purpose of Scoping is to scope the environmental factors that will be assessed and consult with the relevant environmental authorities to draw an opinion on the scope and level of detail of the environmental information to be included in this Environmental Report that will inform the preparation of the draft NR2040.</p>	<p>While scoping is a continuous process there were two rounds of formal Scoping consultations undertaken to inform the SEA.</p> <p>The first round of scoping and consultation with environmental authorities took place on the 3rd December 2019.</p> <p>Due to evolving government and environmental policy, a second Scoping exercise was undertaken with a revised Scoping Report was issued to the environmental authorities on the 20th May 2020.</p> <p>Both rounds of scoping have informed the SEA and preparation of the draft Strategy. The summary submission and responses are presented in Appendix B of this ER.</p>
Alternatives	<p>The SEA Directive requires that reasonable alternatives, taking into account the objectives and the geographical scope of the plan or programme are identified, described and evaluated for their likely significant effects on the environment.</p>	<p>The alternatives considered are presented in Section 7 of this report.</p>
Environmental Report	<p>The Environmental Report identifies, describes and evaluates the likely significant effects of implementing the draft NR2040.</p>	<p>The Environmental Report was prepared in tandem with the draft Strategy in August 2022 for consultation.</p>
Statutory Consultation –	<p>Issuance of the Environmental Report and NTS and the draft Plan for a period of no less than 4 weeks.</p>	<p>Statutory Consultation on the draft NR2040 and associated environmental report including a Non-Technical Summary (NTS) and any other assessment(s) deemed to be required.</p>

SEA Stage	Role within the SEA Process	Status
SEA Statement	Issuance of SEA Statement identifying how environmental considerations and consultation feedback has been taken account in the final NR2040 and SEA including finalisation of the SEA monitoring programme.	Current Stage in the SEA process. The SEA Statement will be published with the Final NR2040 Strategy. The SEA ER is also updated and republished as an ' updated ER ' with relevant updates made to the policy context and baseline sections (the subject of this report).

Consultation with environmental authorities as part of SEA Scoping process was carried out in development of the Scoping Report. All of the environmental factors listed in the SEA Directive were scoped in.

Table 0.3 is a reproduction of the checklist of information required to be contained in the Environmental Report (in accordance with Schedule 2 of S.I.435, as amended) and includes the corresponding sections of this report which deal with these requirements.

Table 0.3 Information to be Contained in the Environmental Report (Schedule 2B S.I 435 of 2004, as amended)

Information Required to be included in the Environmental Report	Corresponding Section of this Report
(A) Outline of the contents and main objectives of the Strategy and of its relationship with other relevant plans and programmes	Section 2, Section 4 and Appendix A
(B) Description of relevant aspects of the current state of the environment and the likely evolution of that environment without implementation of the Strategy	Section 5
(C) Description of the environmental characteristics of areas likely to be significantly affected	Section 5
(D) Identification of any existing environmental problems which are relevant to the Strategy, particularly those relating to areas of particular environmental importance such as European protected sites, etc.	Section 5
(E) List environmental protection objectives (EPOs), established at international, EU or National level, which are relevant to the Strategy and describe how those objectives and any environmental considerations have been taken into account when preparing the Strategy	Section 4 & Appendix A
(F) Describe the likely significant effects on the environment	Section 8
(G) Describe any measures envisaged to prevent, reduce and as fully as possible offset any significant adverse environmental effects of implementing the Strategy	Section 9
(H) Give an outline of the reasons for selecting the alternatives considered, and a description of how the assessment was undertaken (including any difficulties)	Section 7
(I) A description of proposed monitoring measures	Section 10
(J) A non-technical summary of the above information	Non-Technical Summary

Integration of other Environmental Assessments

SEA legislation sets out the requirements for integration between the preparation of draft NR2040 and the other processes. The SEA is being prepared in parallel with Appropriate Assessment (AA) and Strategic Flood Risk Assessment (SFRA) processes.

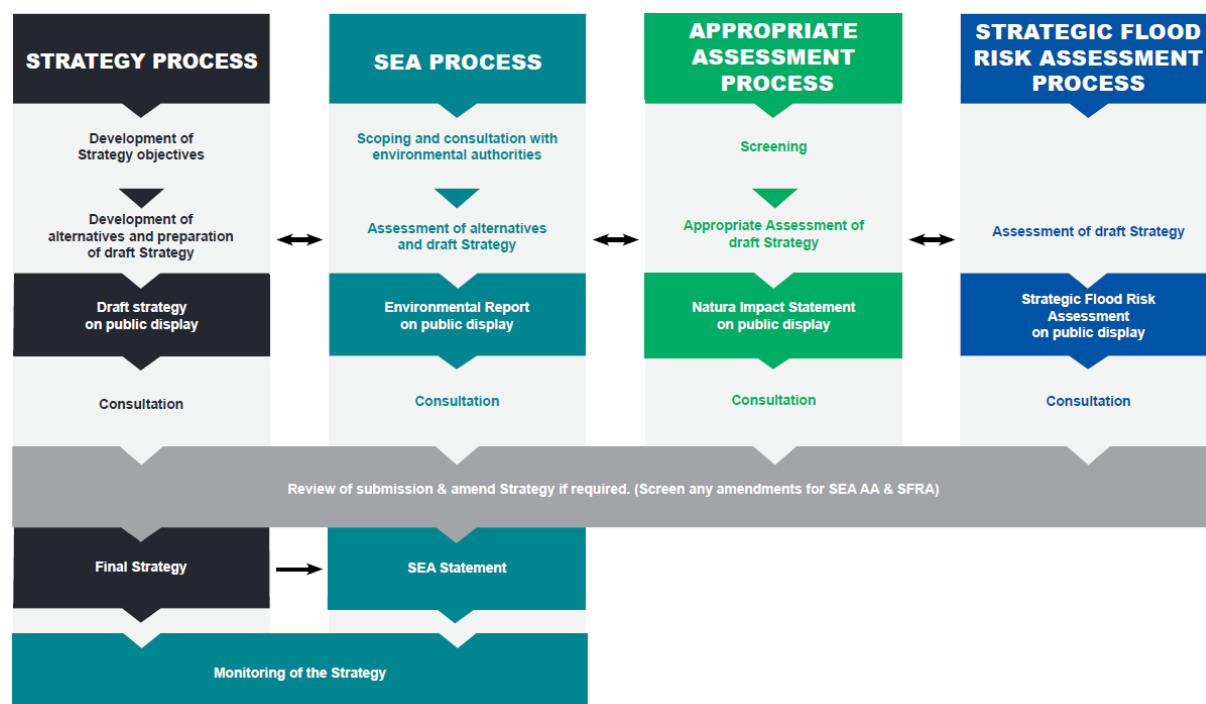


Figure 0-3 Integration of the Strategy development process with key stages of SEA, AA and SFRA processes

Iterative Process

The SEA process is iterative and has been used to inform the development of draft NR2040 including highlighting intended as well as unintended significant adverse effects that may result in the implementation of the draft NR2040 on the environmental factors. It may also include recommendations for clarifications/changes to wording contained in the draft NR2040.

Data gaps and difficulties encountered

No significant information gaps or difficulties have been encountered while undertaking this assessment.

Review of Relevant Plans and Programmes

In line with the requirements of the SEA Directive, the SEA identifies and considers the key relevant plans and programmes relating to transport, sustainability, biodiversity, air emissions, land use and climate. As the draft NR2040 is a national plan, key plans and programmes at international, European and National level were considered.

The key consideration was with regards to

1. How the NR2040 contributes to the implementation of the environmental protection objectives of other plans and programmes, and
2. How the environmental protection objectives of other plans and programmes are impacted by the NR2040.

At international level, the NR2040 National Roads Strategy aligns with the UN Sustainable Development Goals (SDGs), where sustainability is at the heart of long-term planning which is integrated into the Strategy.

At the EU level, the NR2040 Strategy supports the implementation of the Trans-European Transport Network (TEN-T) policy which aims to improve the use of infrastructure, reduce the environmental impact of transport, enhance energy efficiency, and increase safety whilst implementing and developing a Europe-wide transport network. Other EU planning policy instruments of significance to the NR2040 is the European Green Deal that has an overarching aim to make the EU climate neutral by 2050.

Draft NR2040 is TII's long-term Strategy for the planning, operating and maintaining the National Roads network to 2040. It has been developed to support the delivery of Project Ireland 2040 objectives which includes the *National Planning Framework (NPF) and National Development Plan (NDP)* and to align with the Investment Priorities of DoT's *National Investment Framework for Transport in Ireland (NIFTI)*. It also aligns with commitments in wider legislation and policy including the 'Climate Act 2021' *Climate Action Plan (CAP)* and the DoT's *National Sustainable Mobility policy*.

Other key influencing National plans and programmes include: the draft Transport Strategies for the major cities across the county namely: The Greater Dublin Area, Limerick, Cork, Galway and Waterford, Realising our Rural Potential - Action Plan for Rural Development; (Connecting Ireland Rural Mobility Plan (in preparation) and the three Regional Spatial and Economic Strategies for the Eastern, Midland, Southern, Northern and Western regions.

Relevant Aspects of the Current State of Environment

This section of the Environmental Report examines the relevant significant issues of the current state of the environment in relation to the SEA environmental topics namely: biodiversity, population and human health, noise and vibration, water, air quality, climatic factors, land and soils, material assets, cultural heritage, the landscape, transboundary issues and the interrelationships between these factors.

The environmental baseline has been composed using current available datasets developed through a scoping and a review of relevant documentation. However, it must be noted that NR2040 is a National level Strategy and subsequently the assessment is tailored towards a National strategic level of detail. The baseline primarily summarises the status of the environmental factors in the Republic of Ireland but also considers transboundary impacts with Northern Ireland due to the interconnected nature of both jurisdictions. Some of the key issues relating to the development, operation and maintenance of the National Roads network, together with the existing environmental problems and likely future challenges are discussed under each of the SEA environmental factors in the following sections.

State of the Environment Report

Ireland's environment and natural resources are coming under growing pressure. Though the general environment is of good quality the 7th and most recent State of the Environment entitled '*Ireland's Environment An Integrated Assessment 2020*', highlights the dominant environmental issues that Ireland must tackle while trying to achieve a balance between economic development and environmental protection. Biodiversity is currently experiencing extinction at unprecedented rates. Population is projected to increase significantly into the future which will increase the pressure on all other environmental receptors. Noise and vibration are a factor that are significantly linked to human development such as transport infrastructure and exposure to noise is significant along the National Roads network and noise complaints from the public have grown in recent years.

Ireland has experienced a decline in the quality of waterbodies nationally, nutrient pollution from agriculture and wastewater are deemed to be the most significant sources that require addressing. Similarly, air quality in Ireland requires changes particularly in regard to road transport and the burning of solid fuel. Air quality must improve to ensure no further exceedances of air quality limits occur in the future. Ireland's climate is changing, similar to the trend experienced worldwide, Ireland is experiencing more frequent storm events, warmer temperatures, and more droughts than before. Greenhouse gas emissions are the primary driver of climate change and the transport and agricultural sectors in Ireland are the most significant contributors to emissions nationally.

Land and soils change over a vast period of time; however, both need to be managed better nationally to provide greater carbon sequestration than is currently present. Land use change is a significant pressure on Irish environments. Land use change has had an impact on material assets which must now provide for a growing population, the transport network as a material asset has a significant impact on the environment, representing the source of approximately 20% of Ireland's greenhouse gas emissions. Cultural heritage and landscape and visual aspects experience similar pressures largely those arising from increased developments in line with a growing population and economy. National Roads have the potential to impact upon broad environmental receptors and similarly interrelationships between factors are common, for example the link between transport emissions, with air quality, human health, and further effects on biodiversity, climatic factors, and water quality etc. Transboundary impacts in areas such as biodiversity, air quality, and water quality are likely to persist between Ireland and Northern Ireland due to the interconnected nature of both countries. However, National Roads and subsequent developments to such can also have transboundary impacts in the neighbouring jurisdiction whereby population settlement patterns, traffic levels and the economy can all be impacted.

Biodiversity

Biodiversity includes EU Designated Sites, protected habitats and species and details their existing and potential interface with National Roads. Biodiversity in Ireland is currently facing several threats, the biggest of which is habitat loss. Climate change and balancing economic development with environmental protection are also significant pressures. Only 15% of Annex I habitats in Ireland are in favourable condition while 57% of Annex II species populations are in favourable condition (EPA, 2020a). The development and expansion of National Road infrastructures represents one of the most widespread forms of modification of the natural landscape over the past century which has had broad implications on biodiversity such as impacts from direct collisions from vehicles, habitat fragmentation, habitat loss, impacts to migration, displacement of species, and impacts upon breeding and feeding sites.

Population and Human Health

Population in Ireland is reported to have increased to over 5 million people in the Preliminary Census 2022 results. The NPF estimates that "the population of Ireland will increase by around one million people or by 20% over 2016 levels, to almost 5.7 million people by 2040. In the 2011-2016 Census period, approximately 80% of the population growth occurred in urban areas. The 2011 the density average for urban areas was 1,736 people per km², rising to 2,008 per km² in 2016, while in rural areas the average population density was 26 people per km², rising slightly to 27 people per km² in 2016. The population of Ireland has a high dependency on the private car, where according to the 2016 Census, 61.4% of the people use the private car to travel to work school or college. The transport sector including road transport will be required to respond to the additional travel demand required over time, in a sustainable manner, while also addressing the related congestion and human health issues such as safety, air, noise, and water quality issues.

The self-reported health of the Irish population is generally deemed 'very good'. According to the World Health Organisation (WHO), noise is the second greatest environmental cause of

health problems, after air pollution. Road transport is recognised as one of the main sources of environmental noise and air pollution. Climate adaptation, resilience, and the direct and indirect effects on society are key issues that will affect communities into the future.

Noise and Vibration

Transport is a significant contributor to noise pollution. The WHO estimate that approximately 40% of the population in the EU is exposed to road traffic noise at levels exceeding 55 dB(A), and that more than 30% is exposed to level exceeding 55 dB(A) during the night. Environmental noise can affect health particularly when combined with other stressors such as vibration, air pollution, etc. TII is responsible for the development of strategic noise mapping for all National Roads carrying in excess of 3 million vehicles a year and for major railways which carry more than 30,000 passengers per year. The National Road network is a considerable source of environmental noise pollution in Ireland during both the day and night with levels exceeding 70dB in some locations during the day and over 55dB during the night. The Environmental Noise Regulations require the relevant Local Authority to prepare and public Noise Action Plans every 5 years. The Noise Action Plans are required under the Fourth Schedule of the Regulations to give an evaluation of the estimated number of people exposed to noise and the identification of problems and situations that need to be improved. As the population increases, and the demand on the National Road network is likely to increase. Noise levels are likely to increase unless significant demand management measures are introduced. There are opportunities for noise reductions due to greater use of quieter vehicles (EVs) or greater roll out of low noise road surfacing along the network. TII will continue to work with all local authorities as part of the project development process including considerations relating to reducing noise impacts from National Roads network.

Water

This section examines the status and quality of waterbodies in Ireland, including surface waterbodies, groundwater bodies, and marine areas as well the key pressures impacting the water environment. In Ireland, out of a total of 4,829 water bodies, only 53% percent of water bodies meet the required ecological status. Therefore, nearly half of all water bodies in Ireland are failing to meet the objectives set by the European Union Water Framework Directive (WFD). The EU Water Framework Directive (2000/60/EC) establishes a framework for the protection of both surface and groundwater. Transposing legislation outlines the water protection and water management measures required in Ireland to maintain the high status of waters where it exists and to prevent any deterioration in existing water status.

Over the past 20 years trends in water quality have continued to be mixed, with improvements in certain areas and deterioration in others. There has been an overall decline in the number of “high” quality water bodies, most notably in rivers. Nutrient enrichment in waterbodies continues to be the most prevalent issue and is expected to remain problematic due to the growing population and intensive agriculture. The primary pressures on the water environment at the moment are coming from:

- Agriculture
- Hydromorphological changes
- Urban wastewater
- Forestry (EPA, 2020a).

Poorly maintained road drainage is recognised as a potential pollution source. Changes to precipitation levels and frequency of extreme weather events due to climate change may also affect runoff cycles to receiving waterbodies, potentially causing adverse effects on water quality (Bruen. M, 2006). Road run-off can contain various contaminants which pose potentially negative impacts on the function and structure of both aquatic and terrestrial ecosystems (TII, 2015).

Air Quality

Air pollution is the single biggest environmental health risk in Europe. Air quality in Ireland is of a high standard across the country, meeting all European Union air quality standards, according to the Environmental Protection Authority. The latest estimates from the European Environment Agency identified that more than 1300 premature deaths occur in Ireland each year because of poor air quality. Roads and road transport can have a significant impact on air quality, hence monitoring sites are critical to identify and address trends. A key focus of TII is to ensure that air quality for communities adjoining National Roads light rail and metro projects is not significantly impacted. TII commenced a measurement campaign in 2018 of Nitrogen Dioxide (NO₂) at locations adjacent the M50. The most recent 'Air Quality in Ireland 2020' report stated that despite the reduction in traffic related pollutants due to Covid-19 travel restrictions, Ireland exceeded the World Health Organisation's air quality guidelines for particulate matter, ozone and sulphur dioxide at 52 monitoring sites. This exceedance can largely be attributed to solid fuel burning in towns, cities, and villages. Nitrogen dioxide arising from traffic-related emissions declined at monitoring stations in urban areas, where emissions fell by up to 50% - this is considered to be as a result of Covid 19 travel restrictions and not reflective of the norm.

The transport system in Ireland is highly fossil fuel dependent (diesel & petrol), which results in significant emissions of GHGs and air pollutants that are contained in exhaust fumes to the environment. Particulate matter (PM), nitrogen dioxide (NO₂) are notable emissions from exhaust fumes which can lead to issues such as cardiovascular disease, lung disease, and heart attacks (EPA,2016). The EPA predict that the transport sector will continue to dominate in emissions of nitrogen dioxide (NO_x) for the 2020 and 2030 period meaning transport will continue to be one of the most significant contributors to air pollution in Ireland.

In terms of transboundary emissions, Ireland is failing to meet European Union targets on ammonia emissions under the National Emissions Ceiling Directive, of which agriculture is the main source.

Climatic Factors

The Government of Ireland (GoI) declared a climate and biodiversity emergency in 2019. It is recognised that global efforts are required to combat the causes and consequences of climate change. Impacts from climate change are clearly evident with natural systems experiencing diverse changes, and large-scale adaptation planning is now required to manage current and future climate impacts. The transport sector is the second largest contributor to total greenhouse gas emissions (17.8%) after agriculture (37.1%) in 2020 in Ireland. Road transport accounted for 94% of transport emissions in 2021.

The Climate Action and Low Carbon Development (Amendment) Act 2021 was signed into law and commits Ireland on a legally binding path to net-zero emissions no later than 2050, and to a 51% reduction in emissions relative to 2018 levels by 2030. The Act also commits Ireland to establish limits on GHG emissions for set periods (carbon budgets) and impose sectoral emissions ceilings. In October 2021, the Climate Change Advisory Council published the first draft Carbon budget which will be debated and agreed by Government.

Road transport in 2020 represented 94% of the total transport emissions emitted nationally (EPA, 2021b). The EU is committed to reducing fuel consumption from road vehicles in the effort to reduce GHG emissions from transport and improve energy security. The decarbonisation of the transport sector is a key measure that will be pursued to reduce emissions from the transport sector as part of the Governments Climate Action Plan. Actions include supporting a reduction in transport demand and mode switching from private car to public and active modes of transport. These measures could also reduce the costs of transition as well as having important co-benefits related to improving health (reducing

emissions to air & noise) and easing congestion. Land use planning, the provision of sustainable transport infrastructure and its integration with the National Roads network will have an important role to play in this.

The road network is at risk from a range of projected climate change threats including sea level rise, increasing temperatures, changing rainfall patterns and extreme weather events. The road network is critical infrastructure, and these changes may cause disruption or even closure of National Roads which would adversely impact on society and the economy. These events may also result in premature deterioration or damage of infrastructure, which has fiscal and safety implications. Climate change may also affect routine maintenance programmes of structures and require management of increasing volumes of surface water runoff or changes in biodiversity e.g., spread of non-native invasive species.

TII's *Sustainability Implementation Plan* includes a sustainability principle to Transition to Net Zero, which aims to "Reduce the carbon impact of construction, operation and use of the transport network through responsible use of resources, reuse and repurposing, as well as driving the net-zero transition and enabling customers to make more sustainable choices".

Land and Soils

Land and soils are an important natural resource that are key to agriculture, food production and forestry whilst playing a key role in natural ecosystem cycles such as carbon and water cycles, storing carbon, filtering our water and managing flood waters. Ireland has a relatively small land area covering 70,000km², however it comprises diverse soils and geological makeup. The CORINE 2018 landcover survey shows that agriculture is the primary land use type within Ireland (68%), followed by wetlands (15%) and forestry (10%). The EPA State of the Environment Report 2020 states that the dominant causes of deterioration in land and soils are: soil sealing, erosion, organic matter decline, compaction, salination and landslides. Irish soil quality is deemed to be good but pressures such as population growth and land use changes such as agriculture, erosion, afforestation, and overgrazing has resulted in increased strain on Irish soil.

Nationally, the predominant rock type is carboniferous limestone, stretching over approximately half of the country, particularly in the lowlands of the midland counties. Karst limestone features pose unique challenges for engineers when designing projects in these locations. The Geological Survey of Ireland (GSI) documented Irish Geological Heritage Sites currently there are in excess of 900 sites. The construction of roads can result in surface sealing, the removal of geological resources, and compaction and soil sealing.

Material Assets

Material Assets are deemed to be the natural and man-made (built assets) essential to society, to support a settlement's functionality as a place to efficiently live and work, in giving them material value. Built material assets are taken to include infrastructure and utilities including rail, road, water supply, energy generation/distribution network, gas network, wastewater treatment facilities and waste management facilities in addition to residential sectors and social infrastructure such as housing, healthcare facilities, schools, greenspace, and cycle paths.

The National Roads network is a significant part of Ireland's National public infrastructure-built assets. It enables the movement of both strategic and local traffic across Ireland, supports development and enables access and mobility. The National Roads network consists of approximately 5,300km of roads forming a nationwide network catering for approximately 45% of the country's total road traffic and most of Ireland's freight transport (DTTAS, 2017). The National Roads network consists of two classifications of road: National Primary roads (including motorways) and National Secondary roads. There was in excess of 36.2 billion vehicle kilometres driven on Ireland's roads in 2020, this represents a decrease of 24.6%

compared with 2019 (this reduction is largely attributed to Covid-19 travel restrictions) (CSO, 2021).

Transport demand has grown over recent years. Car ownership has grown from approx. 1.3 million in 1999 to 2.8 million in 2019, of which approximately 2.2 million (77.5%) were private cars. The ownership of commercial vehicles more than doubled from the 1999 to 2019 figures. Congestion is currently a major impact upon the National Roads Network which results in broad, quality, of life and economic impacts for affected areas.

Natural material assets include economic assets such as lands, coastal and water resources which support fisheries and the tourism industry. Agriculture represents around two-thirds of Ireland's land cover. Peatlands and wetlands represent the second most common land cover type covering almost 20% of Ireland. There has been a general positive trend in the percentage of forested land area since 1990. In 2018, forestry accounted for 9.5% of the National land area.

Archaeological, Architectural and Cultural Heritage

Ireland is rich in architectural, archaeological, and cultural heritage with sites located across the breadth of the country. The development of road infrastructure can potentially impact on sites or features of architectural, archaeological or cultural heritage interest these can include Record of Protected Structures, Record of Monuments and Places, the National Inventory of Architectural Heritage, the Sites and Monuments Record, UNESCO World Heritage Sites, and archaeological remains. Heritage is at risk from competing land uses and development pressures including road infrastructure development. Not all County Councils have documented formal and specific Landscape Character Areas (LCAs).

The Landscape

Ireland's landscape has been moulded by years of natural processes and human development including urban development and agricultural practices. Article 1a of the European Landscape Convention (ELC) states, landscape is "an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors" (COE,2000). It aims to aims to balance spatial planning, development and landscape protection. The ELC addresses natural, urban, peri-urban and rural areas, encompassing land, inland water, coastal and marine areas of all types, not just those that are considered for scenic or amenity value. The '*National Landscape Strategy for Ireland 2015-2025*' ensures compliance with the ELC and provides a framework for the State, public authorities, stakeholder, communities to work together for the protection of the many cultural, social, economic, and environmental values embedded in the landscape.

The EPA CORINE 2018 land cover data series demonstrates that agricultural land is the dominant land cover in Ireland, covering approximately 68% of the landmass. Wetlands are the second largest land cover type nationally, comprising approximately 14.9%. Road and Rail networks and associated land comprise 0.06%.

One of the most significant current pressures on landscape is the siting of infrastructure that can impact on landscape character, create visual effects on sensitive receptors, and result in land use changes. Roads and road transport infrastructure permanently impact and alter the landscape.

Interactions

The interactions between the SEA environmental topics described above is an important consideration for an environmental assessment. With regards to the operation of the National Roads network significant interactions occur between air quality, climate and human health. The increase of road-based transport will result in increased levels of emissions including nitrogen dioxide and particulate matter arising from road transport vehicles which can result

in direct and indirect impacts on air quality affecting the environment, human health and climate change.

Transboundary

Draft NR2040 is a roads Strategy of National scale and therefore has the potential to result in transboundary impacts with all aspects of the Northern Irish environment, due to the sharing of a common island and the interconnected geographical, social, cultural, and historical ties of both countries. Transboundary effects are shared between the Republic of Ireland and Northern Ireland in areas such as air quality, noise, water quality (especially where hydrological pathways or shared waterbodies exist), biodiversity (cross-border designations), and landscape and visual aspects. Transboundary impacts regarding traffic and settlements are common due to the interconnected nature of both jurisdictions, for example, the M1 stretches from Dublin the border with Northern Ireland in Co Louth, where the road becomes the A1 and of the Baseline in the Absence of the Strategy.

Evolution of the Baseline in the Absence of the Strategy

Population and Human Health: Ireland's population is likely to continue to grow along the existing trends. The NPF projects the population of Ireland will increase by 1 million by 2040 from the 2016 figures to reach 5.7 million. 25% of this is forecast for the Dublin area with another 25% projected across the other four main cities of Cork, Limerick, Galway, and Waterford. This population growth is likely to exacerbate pressure on land use as well as water, wastewater and transport services to meet the demands of the growing population. In the absence of the NR2040 Strategy, there is a risk that the integration of the road transport related policies including Project Ireland 2040 and the three Regional Spatial and Economic Strategies will not be achieved, and the continued pressure on the road transport network will persist. This would also mean that private car will continue to be the dominant mode of travel, with continued poor integration with sustainable modes of travel.

Air Quality: In absence of the introduction of the NR2040 Strategy, there is a risk that air quality will likely experience similar trends to those occurring currently. Vehicle related air pollutants (such as NO₂ and PM) will continue to climb which will likely lead to future air quality impacts.

Biodiversity: In absence of the NR2040 Strategy, biodiversity is likely to continue along the same trajectory whereby pressures from habitat loss, land use change (i.e., urban sprawl or intensification of agricultural practices) and habitat fragmentation strain biodiversity nationally. The Habitats Directive, the Birds Directive, and the National Biodiversity Action Plan (which includes biodiversity no net loss) will continue to be implemented and provide some protection to biodiversity resources. Biodiversity may be further impacted from climate change induced impacts such as storms, flooding, and drought which can affect the ranges of native species and habitats, while providing suitable conditions for the spread of invasive alien species.

Population and Human Health: Ireland's population is likely to continue to grow along the existing trends. The NPF projects the population of Ireland will increase by 1 million by 2040 from the 2016 figures to reach 5.7 million. 25% of this is forecast for the Dublin area with another 25% projected across the other four main cities of Cork, Limerick, Galway, and Waterford. This population growth is likely to exacerbate pressure on land use as well as water, wastewater and transport services to meet the demands of the growing population. In the absence of the NR2040 Strategy, there is a risk that the integration of the road transport related policies including Project Ireland 2040 and the three Regional Spatial and Economic Strategies will not be achieved, and the continued pressure on the road transport network will persist. This would also mean that private car will continue to be the dominant mode of travel, with continued poor integration with sustainable modes of travel.

Noise and Vibration: The Environmental Noise Regulations will continue to require the relevant Planning Authorities to prepare noise action plans which are designed to manage

environmental noise through land use planning, traffic management and control of noise at source. Noise impacts from road transport is likely to persist and increase in line with the population growth if the reliance on private car-based transport continues.

Water: In the absence of the NR2040 Strategy, the existing Directives outlined under Water Framework Directive along with the 3rd cycle of the River Basin Management Plan will continue to be implemented and enforced to improve water quality in Ireland. However, there has been an overall decline in the number of “high” quality Irish water bodies in recent years, most notably in rivers. Nutrient enrichment in waterbodies continues to be the most prevalent issue and is expected to remain problematic due to the growing population and intensive agriculture rates evident in Ireland. Emissions from road transport from hydrocarbons and spillages as well as land use changes associated with the continued development of the road network would continue to influence the deterioration of water quality.

Air Quality: In absence of the introduction of the NR2040 Strategy, there is a risk that air quality will likely experience similar trends to those occurring currently. Vehicle related air pollutants (such as NO₂ and PM₁₀) will continue to climb which will likely lead to future air quality impacts.

Climatic factors: In absence of the NR2040 Strategy, climatic factors will continue. The Climate Action and Low Carbon Development (Amendment) Act 2021 commits Ireland to reach a legally binding target of net-zero emissions no later than 2050. The Act also commits Ireland to reduce its GHG emissions by 51% reduction relative to 2018 levels by 2030. The transport sector is a significant contributor to greenhouse gas emissions and due to the anticipated increases in population, employment and economic growth over the next two decades, it is likely that this will result in greater transport activity and demand and subsequently greater increases in emissions. Climatic factors such as increased storm prevalence and intensity, drought and flooding currently pose a risk to the operation and maintenance activities of the National Road network and other critical infrastructure which would likely intensify if investments were not made to ensure network resilience.

Land and Soils: The current key pressures on land use are population growth, land use changes, agriculture, erosion, afforestation, and overgrazing will likely continue. Continued development of National Roads will likely have localised impacts and result in increased soil sealing, soil compaction and wider geological and hydrological impacts particularly in karst sensitive areas.

Material Assets: In absence of the NR2040 Strategy, congestion on the National Road network will likely continue to worsen particularly as the population grows and result in worsening congestion particularly in urban areas. Such impacts will also be contingent on the development of alternative transport modes and traffic demand and management measures. Pressure on the provision of utilities, particularly renewable energy is likely to grow in order to meet decarbonisation targets.

Archaeological, Architectural and Cultural Heritage: In absence of the NR2040 Strategy, archaeological, architectural, and cultural heritage would continue to be under pressure from development due to land use change and further road developments potentially impacting both known and unknown features of cultural heritage.

Landscape and Visual Amenity: Landscape and visual concerns would remain as a result of continued development particularly those associated with large infrastructure projects such as road development result in changes to the landscape and visual environment. These would continue to be dealt with as part of the planning processes and related environmental assessments at lower planning tiers and at the project level.

Inter-relationships: In the absence of the NR2040 Strategy, inter-relationships between different environmental factors are likely to continue. The interaction between the transport sector as a material asset with climatic factors, air quality, noise and the subsequent impacts on human health, water quality, biodiversity etc will persist in absence of the NR2040 Strategy.

Transboundary: In the absence of the NR2040 Strategy, transboundary impacts will continue to impact both Northern Ireland and the Republic of Ireland due to the nature of sharing an island. Similar transport and settlement patterns are likely to continue on both sides of the border with associated environmental impacts to air quality, water, landscape & visual climate and settlement patterns. Impacts will be relevant to the types of developments arising.

Assessment Methodology

SEA seeks to improve the quality of the plan/policy making process (in this case the draft Strategy) by:

- Raising awareness of the environmental impacts of the draft Strategy. While it will not always be possible to eliminate all potentially significant negative effects in balancing policy options, SEA at least helps to clarify the likely consequences of such choices and makes specific provision for mitigation measures where some negative impacts cannot be avoided.
- Encouraging the inclusion of measurable targets and indicators to facilitate effective monitoring of implementation of the draft Strategy, and thus make a positive contribution to subsequent reviews.

Environmental Protection Objectives

The SEA Framework details the methodology and criteria (Environmental Protection Objectives (EPOs)) used to assess the draft Strategy and identify the potential significant effects on the EPOs as a result of implementing the draft Strategy. The development of the EPOs started at the SEA scoping stage. The EPOs are informed by relevant international and National policy/plans, and their respective EPOs or Strategic Environmental Objectives (SEOs) (terms are interchangeable). The key plans used when formulating the EPOs include: The National Planning Framework (NPF) and the National Investment Framework for Transport in Ireland (NIFTI) and their respective SEAs.

Table 0.4 Environmental Protection Objectives

Environmental Receptor	Environmental Protection Objectives
Biodiversity (BFF)	Protect, actively conserve, prevent damage and enhance biodiversity, particularly European designated sites, other nature conservation sites (and areas supporting them), protected and threatened habitats and species, and support ecological corridors.
Population and Human Health (PHH)	Protect and enhance the population and human health by increasing accessibility to the economy including employment, recreation and community facilities through an integrated, safe and efficient National Roads network and contribute to reduced harmful transport emissions.
Noise (N)	Reduce, and contribute to mitigation of noise pollution from road transport on National Roads.
Water (W)	Prevent deterioration and continue to support the achievement of good water quality status of all water bodies as required by the Water Framework Directive and avoid increasing flood risk associated with National Roads.

Environmental Receptor	Environmental Protection Objectives
Air Quality (AQ)	Contribute to the reduction of air pollution and improvement in air quality resulting from transport, through the effective design, maintenance and operation of the National Road network.
Climate Change Mitigation (CCM)	Contribute to the reduction in greenhouse gas emissions through design and supporting the decarbonisation of the road transport network.
Climate Change Adaptation (CCA)	Ensure resilience to climate change is incorporated into the National Road network construction, operation and maintenance activities.
Land and Soils (L&S)	Conserve and sensitively use soils and geological resources and protect geological sites of value.
Material Assets (MA)	Ensure the effective use of existing infrastructure and support the circular economy particularly the use and reuse of existing resources, waste and energy across the network and TII assets.
Archaeological, Architectural and Cultural heritage (AACH)	Avoid, protect and/or minimise impacts to designated archaeological, architectural, and cultural heritage resources.
Landscape (L)	Protect designated and sensitive features of note in landscapes and sensitively manage landscape change.

The EPOs are used as part of the objective-led assessment of the commitments that are contained in draft Strategy and in the assessment of the alternatives, see **Section 7** for more detail. The objectives led assessment helps to identify potential environmental effects (positive, negative or neutral) which are reported in this ER.

Approach

The assessment of the likely significant effects on the environment of implementing the draft NR2040 was carried out using an accepted and commonly used methodology of creating an assessment matrix, see **Table 0.6** below. The assessment matrix comprises the text from the measures contained in the draft Strategy and the Environmental Protection Objectives (EPOs) developed earlier in the SEA process.

Table 0.5 Criteria for the potential effect

Description of Potential Effect	Effect
The draft NR2040* is likely to have a positive effect on the environmental protection objective.	+
The draft NR2040* is likely to have a negative effect on the environmental protection objective.	-
The draft NR2040* the effect is uncertain and/or there is insufficient information on which to determine the effect on the environmental protection objective.	?
The draft NR2040* is likely to have a neutral effect on the environmental protection objective.	0
The draft NR2040* is likely to have mixed positive and negative effects on the environmental protection objective	+/-
The draft NR2040* is likely to have negative or neutral effects on the environmental protection objective.	-/0
The draft NR2040* is likely to have a positive or neutral effect on the environmental protection objective.	+/0

Description of Potential Effect	Effect
*Refers to the provision(s) that is being assessed in the draft Strategy i.e., objectives or commitments, etc.	

EPO Abbreviations
The following notation is used in the assessment tables: BFF (Biodiversity, Flora and Fauna); PHH (Population and Human Health); N (Noise), W (Water including flooding), AQ (Air Quality), CCM (Climate Change Mitigation), CCA (Climate Change Adaptation), LS (Land & Soils), MA (Material Assets), ACCH (Architectural, Archaeological and Cultural Heritage), and L (landscape).

Assessment of Alternatives

Article 5 of the SEA Directive requires the SEA process to identify, describe and evaluate “reasonable alternatives” of achieving the objectives of NR2040. The alternatives are required to be reasonable, realistic, capable of implementation and set at the appropriate level at which NR2040 will be implemented, operating within the planning hierarchy i.e., the higher the level of the plan the more strategic the options which are available.

Three main alternatives were considered during the development of the draft NR2040:

- Alternative 1: Do Nothing Scenario
- Alternative 2: Predict and Provide Scenario
- Alternative 3: Policy-Led Scenario

Comparative assessment of alternatives with regards to their potential effects on EPO’s is presented in **Table 0.6** below.

Table 0.6 Comparative Assessment of Alternatives

NR2040 Assessment of Alternatives	Environmental Protection Objectives										
	Biodiversity	PHH	Noise	Water	Air Quality	CC- Mitigation	CC - Adaptation	Land and Soils	Material Assets	AACH	Landscape
Alternative 1: Do-Nothing	-/0	+/-	-/0	-/0	-/0	-	-	-/0	-/0	-/0	-/0
Alternative 2: Predict and Provide	-/0	+/-	-/0	-/0	-/0	-/+	+/-	-/0	-	-/0	-/0
Alternative 3: Decide and Provide	+/-	+/0	+/-	+/-	+	+	+	+/-	+	-/0	-/0

Summary assessment of alternatives considered is presented in **Table 0.7** below.

Table 0.7 Summary Assessment of Alternatives Considered

Alternative Scenario	Summary Description of alternative	Outcome
<p>Alternative 1- Do-Nothing</p>	<p>Strategic Investment Framework for Land Transport (SIFLT) would remain the Department of Transport's/TII's current strategic framework that guides and informs investment decision making in land transport. It had set out three ranked priorities:</p> <ul style="list-style-type: none"> • Achieve Steady State Maintenance, • Address Urban Congestion; And • Maximising the Value of Land Transport Networks. <p>Does not take account of changing policy context namely, NPF, NIFTI, CAP 2021. It also does not consider the changing fiscal or post Covid-19 context and technological change.</p>	<p>The outcome with continuing with the Do-Nothing Scenario would mean that TII's investment priorities for National Roads would not be in line with current government policy and would not support the delivery of the NPFs NSO.</p> <p>Although there is likely to be reduction in some urban congestion it would not go far enough in terms of supporting decarbonisation and creating a resilient network in face of climate change.</p>
<p>Alternative 2 – Predict and Provide</p>	<p>Similar to Alternative 1 it would be a continuation with a Predict and Provide model. It also includes the four NIFTI interventions as part of a ranked approach to investment priorities on National Roads.</p> <p>Decades of poor planning has resulted in low density communities reliant on private car use with little or no integration or possibility of integrating with public transport. The significant investment in the motorway network has facilitated economic growth but has also resulted in significant car dependency with little chance of sustainable modes of transport being viable or attractive particularly in more rural areas.</p>	<p>Continuing with a Predict and Provide Strategy would not fully address the changed policy and fiscal context.</p> <p>The outcome is likely to lead to too much investment focused on the construction of new infrastructure projects and a continued investment on protection and renewal to the detriment of the other priorities such as sustainable mobility, demand management and influencing behaviour change. It would exacerbate current road transport trends and would not provide a holistic approach to address decarbonisation and meet climate targets. This scenario would continue to undermine the NPF vision for compact sustainable development and climate action.</p>
<p>Alternative 3 – Policy Led (Decide & Provide) Scenario</p>	<p>This is a policy led approach that will provide for National Roads investments based on the government policy to support increased population growth in line with the NPF which is supported by NIFTI investment and modal hierarchies, it takes a holistic approach to investments which considers also supporting (rather than undermining) investment in public transport options and sustainable travel.</p> <p>NIFTI Investment Intervention hierarchies:</p> <ol style="list-style-type: none"> 1. Maintain 2. Optimise 3. Improve 	<p>It is designed to be adaptable to different futures and has been designed to support the National Planning Framework growth targets including road transport activity in 2040. It has fewer negative effects on EPOs when compared with other options in recognition for the focus to deliver on NIFTI intervention and Modal Hierarchy which places the construction of new roads at the bottom of the hierarchy.</p> <p>The option aligns with current and emerging international and National policy in terms of supporting an integrated transportation network which will result in fewer negative</p>

Alternative Scenario	Summary Description of alternative	Outcome
	4. New It also recognises there will be unique alternatives at Project Level and is adaptable to alternative futures.	impacts on the EPOs when compared with the other options. This option was decided to be the Preferred Option and is assessed in detail in Section 9 of this Report.

Assessment of the Draft NR2040

The part of the SEA process evaluates the environmental effects of the draft NR2040, this includes the proposed Investment Priorities & Portfolios identified in the draft NR2040. It also includes the list of Commitments and the implementation structure. The SEA team put forward mitigation measures to prevent, reduce and as far as possible, offset any likely significant adverse effects on the environment resulting from the implementation of NR2040, this includes measures to be considered at the project level assessment.

Each Investment Priority, Portfolio Themes and the Commitments have been assessed against the environmental protection objectives (EPO) (See **Table 0.4**). The assessment compares the likely effects on the environmental protection objectives to see which Investment Priorities, Portfolio Themes and Commitments meet (benefit) the environmental protection objectives and which, if any, contradict them. The same SEA framework (described in **Section 6**) is used to assess the contents of the draft Strategy.

The draft Strategy is a high-level document and is required to comply with all relevant environmental and planning legislation. Therefore, this is embedded mitigation within the draft Strategy that all plans and projects arising from NR2040, and the development of National Road network infrastructure are required to have regard to all planning and environmental legal requirements including the protection of European Sites.

Table 0.8 Summary assessment of Vision and Key Objectives.

NR2040 – Vision and Key Objectives	Environmental Protection Objectives										
	Biodiversity	PHH	Noise	Water	Air Quality	CC-Mitigation	CC –Adaptation	Land and Soils	Material Assets	AACH	Landscape
An evolving sustainable transport system focused on: safety; innovation; accessibility; mobility of people, goods, and services. Key objectives:	+/-	+	+/-	+/-	+/-	+/-	+/-	+	+	+/-	+/-
• Safe and efficient transport network for people and goods	+/-	+	+/0	+/-	+/0	+/0	+/-	+/0	+	0	0
• Environmentally, socially, and economically sustainable	+/-	+	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-

NR2040 – Vision and Key Objectives	Environmental Protection Objectives											
• Tailored for different customers in different places	+/-	+	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-
• Managed and improved as a key public asset	+/-	+	0/-	+/0	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-

Table 0.9 Summary assessment of NR2040 Investment Priorities

NR2040- Investment Priorities	Environmental Protection Objectives										
Overall Assessment of NR2040 Investment Priorities (Chapter 5)	Biodiversity	PHH	Noise & Vibration	Water	Air Quality	CC- Mitigation	CC – Adaptation	Land and Soils	Material Assets	AACH	Landscape
Decarbonisation	+/-	+	+/0	+/-	+	+	+	+/-	0/+	0/-	0/-
Protection and Renewal	+/-	+	+/-	+/-	+/-	+/-	+/0	+/0	+/0	+/-	+/-
Mobility of People and Goods in Urban Areas	+/-	+	+/-	+/-	+	+	+/0	+/-	+/-	-/0	-/0
Enhanced regional and rural connectivity	+/-	+	+/-	-	-	+/0	0	-	+	+/-	+/-

Summary of the SEA Assessment

The SEA assessment identified a number of potential environmental effects associated with the investment priorities, portfolio themes and commitments of the draft NR2040 Strategy. These potential effects include, but are not limited to, the following:

Potential negative effects associated with NR2040:

- Potential for interaction with Habitats Directive and wider biodiversity issues and negative effects due to development of new infrastructure, ongoing maintenance, operation of roads on or close to protected areas: European (e.g., SACs, SPAs, Ramsar sites) and National (e.g. (p)NHAs).
- Wider biodiversity issues and landscape changes including impacts on habitats and species of ecological value including local biodiversity, e.g., due to disturbance and/ or fragmentation of ecological networks/ corridors due and increases in levels of road traffic.
- Effects on noise environment and air quality and rise in harmful pollutants i.e., particulate matter. nitrogen dioxide, benzene, etc.
- Effects on water quality arising from, new infrastructure, upgrades, maintenance, and operation activities.
- Potential effects due to road-based transport not decarbonising rapidly resulting in failure to decarbonise the road transport sector and meet climate targets.
- Potential for transboundary effects affecting on all environmental receptors depending on the specifics of the plan/project.

Potential positive effects associated with NR2040:

- Greater focus on the provision of safe, sustainable and active modes and integrated mobility on/adjacent to National Roads which is likely to have positive health effects on populations and contribute to meeting climate targets.
- Positive impacts to population and human health due to ongoing focus on improving safety, reducing severance, delivering integrated mobility, and efficiency of the transport network.
- Benefits on economy and society by embracing National Roads to become part of a 'sustainable transport system' recognising the important role of integrated travel and transportation focused on delivering accessibility that supports the mobility of people, goods and services.
- Reduction of noise and vibration at local level through the development of sustainable and active travel infrastructure and support infrastructure for EVs.
- Carbon emission reductions and improvements to air quality by switching to low carbon energy sources and through development in active travel and public transport services on National Roads.
- Greater investment in resilience of the road network in the face of climate change particularly in 'life-line routes' for which individuals and communities depend.
- Support for investments that align with the National Investment Framework for Transport in Ireland (NIFTI) interventions and modal hierarchies and therefore supporting the National Planning Framework.
- Potential for improvements in transboundary effects affecting on all environmental receptors depending on the specifics of the plan/project.

See **Section 8** of the SEA ER for detailed assessment of the provisions of the draft NR2040 Strategy.

Mitigation

In accordance with the SEA Directive mitigation measures are introduced to prevent, reduce and, as fully as possible, offset any significant adverse impacts on the environment of implementing the Strategy. **Section 5** of the ER has reported on the key environmental considerations including the existing environmental problems and trends under each of the environmental factors that are associated with National Roads associated with the construction, operation and maintenance activities. These have been communicated to TII through this SEA as well as the results of the AA and SFRA processes.

By integrating the SEA, AA and SFRA mitigation recommendations into the Strategy, TII is helping to ensure that future plans or projects stemming from the Strategy consider the potential significant negative effects of implementing the Strategy and maximise the potential beneficial environmental effects.

Mitigation measures have been identified through the following stages:

- Early work undertaken to ensure contribution towards environmental protection and sustainable development as part of the Strategy making process;
- Consideration of alternatives; and
- Collaboration between the SEA and Strategy teams in workshops as part of the iterative process of the development of the Strategy resulting in amendments to the Strategy text or integration of relevant sustainable development issues.

A number of additional recommendations are identified for consideration in as part of the finalisation of the Strategy.

Monitoring

Article 10 of the SEA Directive requires monitoring of the likely significant environmental effects of the implementation of plans/programmes in order to identify at an early-stage unforeseen effects and to undertake appropriate remedial action. This section sets out the proposed draft monitoring framework proposed to be implemented after the finalisation of the draft Strategy.

The final SEA monitoring framework will be presented as part of the next stage in the SEA process in the SEA Statement. The framework can be amended to consider feedback received from the public and the environmental authorities.

A number of targets and indicators are identified under each EPO in **Table 0.10** following, which will allow quantitative measures of trends and significant environmental effects over of the duration of NR2040. The indicators selected for measurement are generally based on existing monitoring sources and the information sources and frequency for each target are identified. The future monitoring will be led by TII and undertaken with a view to better understand the effects on the environment of the implementation of the Strategy and will feed in the review of the Strategy.

Table 0.10 Proposed SEA Monitoring Programme

Environmental Protection Objective	Environmental Target	Indicator(s)	Lead & Stakeholders & Source	Frequency
Biodiversity: Protect, actively conserve, prevent damage and enhance biodiversity, particularly European designated sites, other nature conservation sites (and areas supporting them), protected, natural and semi-natural habitats and species, and support ecological corridors.	Maintenance or restoration of the favourable conservation status for all habitats and species protected under European and National legislation through the implementation of NR2040 as required under the Habitats Directive and Birds Directive.	The conservation status of habitats and species as assessed under Article 17 of the Habitats Directive, Article 12 of the Birds Directive, Birds of Conservation Concern in Ireland (2020-2026) and red lists published by the NPWS.	Department of Housing, Local Government and Heritage report of the implementation of the measures contained in the Habitats Directive as required by Article 17 of the Directive (every 6 years), and National Monitoring Report for the Birds Directive under Article 12.	Every 3 years in line with DHLG reporting requirements.
	Avoid and reduce significant negative impacts on protected and threatened habitats and species for EU Designated Sites through the implementation of NR2040.	<ul style="list-style-type: none"> Number of Natura 2000 sites in Ireland listing road-related impacts as pressures and threats (refer to Natura Impact Statement of NR2040 for baseline). Number of derogation licences granted on the National Roads network. 	TII - through NPWS data and through project-level assessments, requirements of Contract documents, Projects progression NPWS, local Authorities, etc.	Every 3 years in line with DHLG/(NPWS). reporting and Project level assessments (AA/NIS results)
	Reduction in Roadkill	<ul style="list-style-type: none"> Total number of roadkill reported. Reported to TII Number of Road Traffic Accidents that mention wild animals as a cause. 	<ul style="list-style-type: none"> TII NPWS National Biodiversity Data Centre	Annually
	Support Biodiversity Net Gain (BNG) measures as appropriate.	<ul style="list-style-type: none"> Publication and subsequent implementation of guidance on Biodiversity Net Gain in Ireland. 	<ul style="list-style-type: none"> Department of Housing, Local Government and Heritage and TII 	N/A

Environmental Protection Objective	Environmental Target	Indicator(s)	Lead & Stakeholders & Source	Frequency
	Quantify, maintain, improve and/or increase the quantity and quality of ecological corridors or 'steppingstones' along National Roads supporting local biodiversity.	<ul style="list-style-type: none"> The total area of TII controlled vegetation/ecological corridors on National Roads. Ecological- enhancement of lands within the curtilage of National Roads Maintenance of semi-natural habitats. 	TII- project-level assessments, requirements of contract documents, project appraisal process. (Other sources of data: NPWS, National Biodiversity Data Centre, local Authorities, google maps, etc.)	Ongoing through Project appraisal process.
Population & Human Health: Protect and enhance the population and human health by increasing accessibility to the economy including employment, recreation and community facilities through an integrated, safe and efficient National Roads network and contribute to reduced harmful transport emissions.	Support measures to reduce car dependency and increase sustainable mobility on or adjacent to the National Roads and increase in the number of active travel journeys and capacity of sustainable travel on National Roads as appropriate to their function.	<ul style="list-style-type: none"> Share of investment in active travel and sustainable transport. Total number of Vehicle kilometres travelled on National Roads. % Of investment in active travel and sustainable transport. Continued decrease in number of Vehicle kilometres travelled on National Roads. Total number of kilometres of safe walking, cycling and bus transport infrastructure on or adjacent to National Roads. National Cycle Network roll out. Numbers of users on greenways. 	<ul style="list-style-type: none"> All indicators are reported by TII in conjunction with Sponsoring Agency/ Road Authorities and published in the TII National Roads Indicators Report Census and NTA: National Housing Travel Survey <ul style="list-style-type: none"> NTA TII 	Annually Every 3/5 years. Annually Annually
		<ul style="list-style-type: none"> Public transport demand on National Roads. 	(TII + COS NHTS, Canal Cordon, Greenways monitoring, etc.)	Annually

Environmental Protection Objective	Environmental Target	Indicator(s)	Lead & Stakeholders & Source	Frequency
		<ul style="list-style-type: none"> Buses and coaches on National Roads. Total number of prioritised bus lanes Total number of park and ride, and park & share facilities at transport interchanges. Number of car-sharing journeys on National Roads 	TII National Roads Indicators Report (through AADT + CSO, NCT reports) <ul style="list-style-type: none"> CSO & NTA NHTS 	Annually
	Maintain and improve the Level of Service on National Roads as appropriate to function.	Level of Service on National Roads.	All indicators are reported by TII in conjunction with Sponsoring Agency/ Road Authorities and published in the TII National Roads Indicators Report	
	Maintain the Volume to Capacity ¹ Ratio on National Primary and Secondary Roads as appropriate to their corridor/function.	Volume to capacity ratio on National Primary and Secondary Roads.		
	Halt fatalities and collisions on National Roads in line with Vision Zero.	Total number of fatalities and collisions on National Roads.	Reported in National Roads Indicators Report) - TII through statistics from Road Safety Authority (RSA) & An Garda Síochána:	Annually
	Prevent and reduce severance resulting from National Roads.	<ul style="list-style-type: none"> Total number. of schemes delivered to address severance issues. No of new schemes introducing severance. 	TII with Sponsoring agency or Roads Authority.	Annually/ project appraisal process.

¹ The Volume to Capacity (V/C) Ratio relates the AADT volume carried on a section of road to its daily operational capacity (The Volume to Capacity (V/C) Ratio relates the AADT volume carried on a section of road to its daily operational capacity)

Environmental Protection Objective	Environmental Target	Indicator(s)	Lead & Stakeholders & Source	Frequency
Noise: Reduce and contribute to mitigation of noise pollution from road transport on National Roads.	Decrease noise pollution affecting people/communities from National Roads.	<ul style="list-style-type: none"> Total number of people/households affected by noise exposures greater than 55dB Lden and 50 dB Lnight along National Roads network. Progress on Implementation of Noise Action Plans on National Roads. 	Noise mapping from TII + Local authorities noise monitoring for roads and light rail.	Ongoing
Water: Prevent deterioration and continue to support the achievement of good water quality status of all water bodies as required by the Water Framework Directive and manage flood risk affecting the National Roads network.	Avoid flooding on National Roads.	Percentage of the National Roads network assets affected by flooding events and any remedial measures applied.	TII & Local authorities, OPW	Annually/Ongoing
	Support the achievement of good water quality status of all water bodies as required by the Water Framework Directive and Marine Spatial Planning Directive (MSPD).	<ul style="list-style-type: none"> Status of water bodies / catchments in compliance with the environmental objectives under WFD and MSFD. Total number of waterbodies where road/ transport infrastructure related development is identified as a pressure on water quality. 	EPA and Marine Institute, Irish Water, Local Authorities, LAWPRO. Project level assessments.	Ongoing
Air Quality: Contribute to the reduction of air pollution and improvement in air quality resulting from transport. through the effective design, maintenance and operation of the National Road network	Improve air quality and ensure no air quality exceedances arising from National Roads. network	Total number of air quality emission exceedances on the National Roads network associated with road transport (i.e., Particulate Matter (PM ₁₀ PM _{2.5}), nitrogen dioxide (NO ₂).	TII Road Emissions Tool and Emission Factor Tool Kit (CSO, EFT emissions factor, alternative fuels, EPA monitoring and publications on air quality and climate emissions.	Ongoing – Annually
Climate Change – Mitigation: Contribute to the reduction in greenhouse gas emissions	Reduce GHGs arising from National Road transport and projects.	<ul style="list-style-type: none"> Total GHG emissions calculated from the construction (incl. embodied carbon), operation and 	TII and SEAI Energy in Ireland reports. TII Road Emissions Tool and Emission Factor Tool Kit	Frequency: (Post project review: 5 years after opening)

Environmental Protection Objective	Environmental Target	Indicator(s)	Lead & Stakeholders & Source	Frequency
through design and support the decarbonisation of road transport.		maintenance of the National Roads network	(CSO, COPERT, EPA monitoring, etc) TII with Sponsoring Agency / Roads Authority. Project level assessment (Planning and post project review)	
		<ul style="list-style-type: none"> Total number of EV charging infrastructure including fast charge on National Roads. % Change in number and fuel type of vehicles (car and commercial) i.e. breakdown petrol, diesel, EV, alternative fuel in Ireland. 	ZEVI, CSO, COPERT, alternative fuels, DoT, CSO	Annually
	Increase in frequency of sustainable public transport services on National Roads network.	Type, Location, and frequency of transport services on National Roads (Bus, P&R, etc.)	NTA: NAPTAN (BUS) dataset, General Transport Feed Specification (GTFS) etc.	Annually
	Improve quantification of GHGs arising from National Road transport.	<ul style="list-style-type: none"> Results from Carbon Tool and Road Emissions Tool Model Improvements in TII quantification of carbon emissions methods associated with the planning, construction, and operation phases of all projects. 	TII	Ongoing – Annually
	Climate mitigation is a cross-cutting theme and refers to measures across other EPOs such as Population and Human Health, Material Assets, etc.	Indicators referenced in this environmental monitoring programme (under PHH, MA.	TII and NTA, DoT - Climate Change Advisory Council (CCAC)	Annually

Environmental Protection Objective	Environmental Target	Indicator(s)	Lead & Stakeholders & Source	Frequency
Climate Change – Adaptation (CCA): Ensure resilience to climate change is incorporated into the National Road network construction, operation and maintenance activities.	Ensure National Roads are resilient to the effects of climate change throughout their design life.	<ul style="list-style-type: none"> Total number of extreme weather events impacting service of National Roads. 	TII – incident reports	Ongoing – Annually
	This EPO relates have cross overs with other EPO targets and indicators.	Refer to Population and Human Health, and Water EPO indicators.	N/A	N/A
Land & Soils (S&G): Conserve and sensitively use soils and geological resources and protect geological sites of value.	Avoid using finite soil and geological resources.	<ul style="list-style-type: none"> Inclusion of circular economy principles and practices as part of all projects and contract documents, as appropriate. 	TII with Sponsoring Agency / Roads Authority – investment portfolios and project specific contract documents. Project appraisal process.	Ongoing – Annually
Material Assets Ensure the effective use of existing infrastructure and support the circular economy particularly the use of existing resources, waste and energy across the network and TII assets.	Where no feasible alternative exists to serve the required function, deliver new road infrastructure with green procurement and circular economy practices.	<ul style="list-style-type: none"> Total share of investment allocated for across the different portfolios. Implementation of <i>Green Tenders An Action Plan on Green Public Procurement</i> in contracts. 	TII – Capital Investment Plan and Annual Reports	Annually
	National Roads are a material asset therefore this EPO relates to all other targets and indicators in this SEA.	National Roads are a material asset – cross reference with all indicators in this SEA Environmental. Monitoring Framework.	TII	Annually
	Ensure all roads are ‘fit for purpose’. Support protection and renewal of existing assets to maintain and/or improve performance of existing assets as appropriate.	<ul style="list-style-type: none"> % Of legacy roads on the National Roads network. Total number of traffic management measures on National Roads. 	TII investment and project approvals process	Annually

Environmental Protection Objective	Environmental Target	Indicator(s)	Lead & Stakeholders & Source	Frequency
	Reduce and manage congestion on National Roads.	Location and duration of congestion and any remedial measures taken to address issue.	TII - National Roads Indicators Report	Annually
	Support the increase the number of rail freight and multi-modal distribution centres on or near National Roads.	The number of rail freight and multi-modal distribution centres developed on or near National Roads.	CIE and/or Sponsoring agency	Annually
	Support the delivery of new road technologies and provide for vehicle innovation.	TII Investment in Smart Motorways, C-ITS, Modern asset management systems.	TII with Sponsoring Agency with Roads Authority/PPP (TII National Roads Indicators Report)	Annually
Archaeological, Architectural and Cultural heritage (AACH) Avoid, protect and/or minimise impacts to designated archaeological, architectural, and cultural heritage resources.	Avoid, reduce and/or mitigate plan/project level impacts on AACH.	No. of significant impacts identified at plan/project level assessments	TII with Sponsoring Agency with Roads Authority	Plan/Project level assessments
Landscape: Protect designated and sensitive features of note in landscapes and sensitively manage landscape change.	Avoid, reduce, or mitigate plan/project level impacts on landscape.	No. of significant impacts identified at plan/project level assessments.	TII with Sponsoring Agency with Roads Authority.	Plan/Project level assessments

Consultation on the Draft Strategy and Environmental Assessments

This is the 'Updated SEA ER' – consultation is now closed.

~~Have your Say~~

~~TII is seeking feedback on the draft NR2040 Strategy, this SEA ER, NIS and SFRA.~~

~~TII is interested to hear your view on whether NR2040 promotes greater sustainability in the planning, development, and maintenance of the National Roads network. The SEA ER is seeking feedback on the assessment of the Strategy and specifically the proposed SEA Monitoring Programme detailed in **Section 10** of the ER.~~

~~The consultation period shall begin **5th August and ends on Friday 30th of September 2022.** For a period of 8 weeks.~~

~~A written submission or observation with respect to the draft NR2040 Strategy and the associated SEA Environmental Report, NIS and SFRA may be made to TII **in writing** at the below address or electronically via email, through the public consultation website or at the postal address below.~~

~~Submissions should be clearly marked '**NR2040 submission**' in the subject line.~~

~~**Email:** _____ NR2040@tii.ie~~

~~**Website:** _____ nr2040.consultation.ai~~

~~**Postal address:** _____ Transport Infrastructure Ireland, Parkgate Business Centre, Parkgate Street, Dublin 8, D08 DK10.~~

Next Steps

The feedback from the consultation process will feed in the next stage of the Strategy development and SEA process and will be reported in the SEA Statement and the finalisation of NR2040. Following the publication of the NR2040 and SEA Statement, the final SEA phase is the implementation of the monitoring plan to monitor the environmental effects of NR2040 on the environment and allow for additional mitigation measures to be implemented if necessary. This includes monitoring progress on the SEA proposed recommendations.

1 INTRODUCTION

Transport Infrastructure Ireland (TII) is preparing Ireland's National Roads 2040 (NR2040) Strategy with the aim of publishing a long-term Strategy for the National Roads network which can be used to inform government capital investment plans and assist in the implementation of a range of national and European Union (EU) policies.

This updated Environmental Report (ER) has been prepared independently by Roughan & O'Donovan as sub-consultant to AECOM on behalf of TII as part of the Strategic Environmental Assessment (SEA) of the National Roads 2040 Strategy (referred to hereafter as the 'draft NR2040') in accordance with the requirements of the EU and national legislation on the assessment of the effects of certain plans and programmes on the environment. The SEA process ensures that the preparation of the draft NR2040 is informed by environmental considerations from the outset.

This SEA ER has been updated to take account of public consultation feedback on the baseline environment and policy updates that occurred since public consultation.

It forms part of the draft Strategy documentation. The purpose of the SEA ER is to systematically identify and evaluate the likely significant environmental effects on the Strategy area and its environs due to the implementation of the draft NR2040. The SEA process informs TII during the Strategy making process of the likely and significant environmental effects as a result of implementing the draft NR2040.

The aim of the ER is to:

- Inform the development of the draft NR2040;
- Identify, describe, evaluate the likely significant effects on the environment resulting from implementation of the draft NR2040 and its alternatives;
- Provide mitigation measures envisaged to prevent, reduce and as fully as possible offset any significant adverse effects on the environment of implementing the draft NR2040; and
- Through consultation, provide an opportunity for the statutory authorities and the public to make submissions on the draft NR2040 and the SEA process.

This 'Updated SEA ER' includes updates to key policy documents (Section 2) and addresses consultation feedback including updates to sections of the baseline environment (Section 5).

1.1 TII Role and Function

TII's primary functions are to:

- Operate and maintain and extend the life of National Roads and light railway infrastructure to ensure the safety and efficiency of the transport networks;
- Deliver National Roads, light rail, metro and active travel infrastructure (including greenways);
- Operate TII's light rail, tolling and traffic control systems and contribute to the electrification and digitalisation of transport.

TII's legislative remit is defined in the Roads Act 1993 (as amended). Under the Roads Act 1993 (as amended) it is a function of the Minister for Transport to classify National and Regional Roads whereas for Local Roads it is a function of the Local Authority which is the Road Authority for its area.

Overall, responsibility for the planning and supervision of construction and maintenance works on National Roads lies with TII. Priorities within the roads improvement programme are determined by TII taking account of the overall policy for national roads as decided by Government. TII was established through a merger of the National Roads Authority and the Railway Procurement Agency under the Roads Act 2015, with effect from 01/08/15.

Local Authorities, in their role as statutory road authorities, undertake the detailed planning of individual road projects and are responsible for compliance with legal requirements and procedures as regards to land acquisition, appropriate assessment and environmental impact assessment. The procedures followed by TII and local authorities in the planning, design and implementation of road schemes are specified in the Roads Act 1993 (as amended) and supported by TII's National Roads Project Management Guidelines and construction guidance documents.

National Roads have a multi-modal integrated future that must be delivered by TII in collaboration with other government agencies and transport stakeholders. Some of TII's key collaborators are: Local Authorities; Department of Transport; Road Safety Authority; National Transport Authority; Department of the Environment, Climate and Communications and other government departments (e.g., Department of Housing, Local Government and Heritage).

1.1.1 Funding for National Roads

As NR2040 is primarily concerned with investment priorities the SEA has considered the current procedures relating to investment in National Roads. Investment on behalf of the taxpayer in the National Roads networks has attributed to reducing travel times, improving road safety and supporting sustainable travel options and reducing congestion. Approximately €616m of Exchequer funds have been provided for National Roads through TII to local authorities in 2022² (regional and local roads are allocated separately). The 2022 funding allocations in the National Development Plan 2021-2030 (NDP), are made having regard to the National Planning Framework (NPF) which balances investment in transport against other priorities of Government such as on housing and health over the lifetime of the Plan. The Government has stated it is a priority to advance safe, clean, liveable towns and communities and investment in National Roads will contribute to this including removing heavy traffic from towns and villages via bypasses, supporting active travel options in urban areas and development of greenways.

The **Common Appraisal Framework (CAF)** for transport projects and programmes and Interim National Investment Framework for Transport in Ireland (NIFTI) Alignment Appendix is designed for appraising transport investments using a common framework in accordance with the Public Spending Code. It is also designed to help assist and guide Sponsoring Agencies when developing transport business cases for proposed public investment which must demonstrate alignment with NIFTI Priorities and Modal Hierarchies (Government of Ireland, 2021).

The TII **Project Appraisal Guidelines** for National Roads translate the requirements of the Department of Expenditure and Reform (DEPR) Public Spending Code (PSC) and the Department of Transport (DoT) Common Appraisal Framework (CAF) for Transport Projects and Programmes for National Road projects.

² Government of Ireland. 2022. Available online at: <https://www.gov.ie/en/press-release/9b8cf-over-two-thirds-of-a-billion-euro-allocated-to-irelands-national-roads-and-greenways-for-2022/#:~:text=Approximately%20%E2%82%AC616m%20of%20Exchequer,local%20roads%20are%20allocated%20separately>

2 CONTENTS AND OBJECTIVES OF THE NATIONAL ROADS 2040

2.1 Content of the draft NR2040

NR2040 is TII's long-term Strategy for the planning, operating and maintaining the National Roads network to 2040. It has been developed to support the delivery of Project Ireland 2040 objectives and to align with the DoT's *National Investment Framework for Transport in Ireland* (NIFTI). It also aligns with commitments in wider policy including the *Climate Action Plan 2021* (CAP) and the DoT's *National Sustainable Mobility policy*. The draft NR2040 issued for consultation is presented in the format shown in **Table 2.1** and provides an overview of the contents of each section.

Table 2.1 Content of the draft NR2040

Section	Summary of contents
Chapter 1	Introduction Introduces NR2040, the Scope and role of National Roads and the structure of the Strategy.
Chapter 2	Policy Context Reviews some of the key government policies and plans that have influenced the development of NR2040.
Chapter 3	Long-term strategic Issues for National Roads Presents a brief evidence-based review of the context of how roads are currently used and projected future trends identifying key strategic issues facing the National Roads network.
Chapter 4	NR2040 Vision and Key Objectives Presents TII's Vision and key objectives in the development of the Strategy, considering national policy context and strategic issues.
Chapter 5	National Roads Investment Priorities and Portfolios Presents TII's four priority investment priorities namely: Decarbonisation, Protection and Renewal, Mobility of People and Goods in urban areas, and Enhanced Regional and Rural Connectivity.
Chapter 6	Implementation Sets out NR2040 Commitments and Implementation structure. It also summarises guidance to Sponsoring Agencies and Local Authorities in developing projects/ interventions that align with NR2040.
Appendix A	National Planning Framework actions for National Roads (Excerpts from the NPF)

The following sections provides an overview of the background and context of the draft NR2040, draft NR2040 including and its investment priorities and proposed commitments.

2.2 Background and Context

NR2040 is TII's response for National Roads to recently published Government policies, plans and planning/investment frameworks:

- Project Ireland 2040 – National Planning Framework and National Development Plan 2021-2030.

- National Investment Framework for Transport in Ireland.
- National Sustainable Mobility Policy.
- Climate Action Plan 2021.

The draft NR2040 has been in development since 2019 and is being rolled out in the context of this evolving policy context which includes greater environmental ambition set out in European and national policy frameworks influencing road transport particularly greater focus towards integrated compact sustainable development, protecting biodiversity and responding to the effects of climate change (adaptation and mitigation plans) and other sectoral policies which influence road-based transport and vice-versa.

TII conducted analysis to understand differing functions of the National Roads network and to identify how to realise the policy ambitions of Project Ireland 2040.

NR2040 identifies the key issues facing the current and future road network. It outlines the investment priorities and provides guidance to Sponsoring Agencies and local authorities, as to the types of investments and areas where these will be made across National Roads, in the face of fiscal, social, and environmental change.

The National Roads network consists of 5,300 km of roads: National Primary roads (including motorways) and National Secondary roads, across Ireland. The boundary with Northern Ireland is linked by various National Roads, therefore, the geographic scope of this SEA includes the consideration of transboundary effects with Northern Ireland. The network provides regional and international accessibility for vital transport infrastructure for all sectors of society. It facilitates movement of people and goods and a wide range of trip purposes including health, education, employment, tourism and access to services.

The National Roads network is illustrated in **Figure 2-1**.

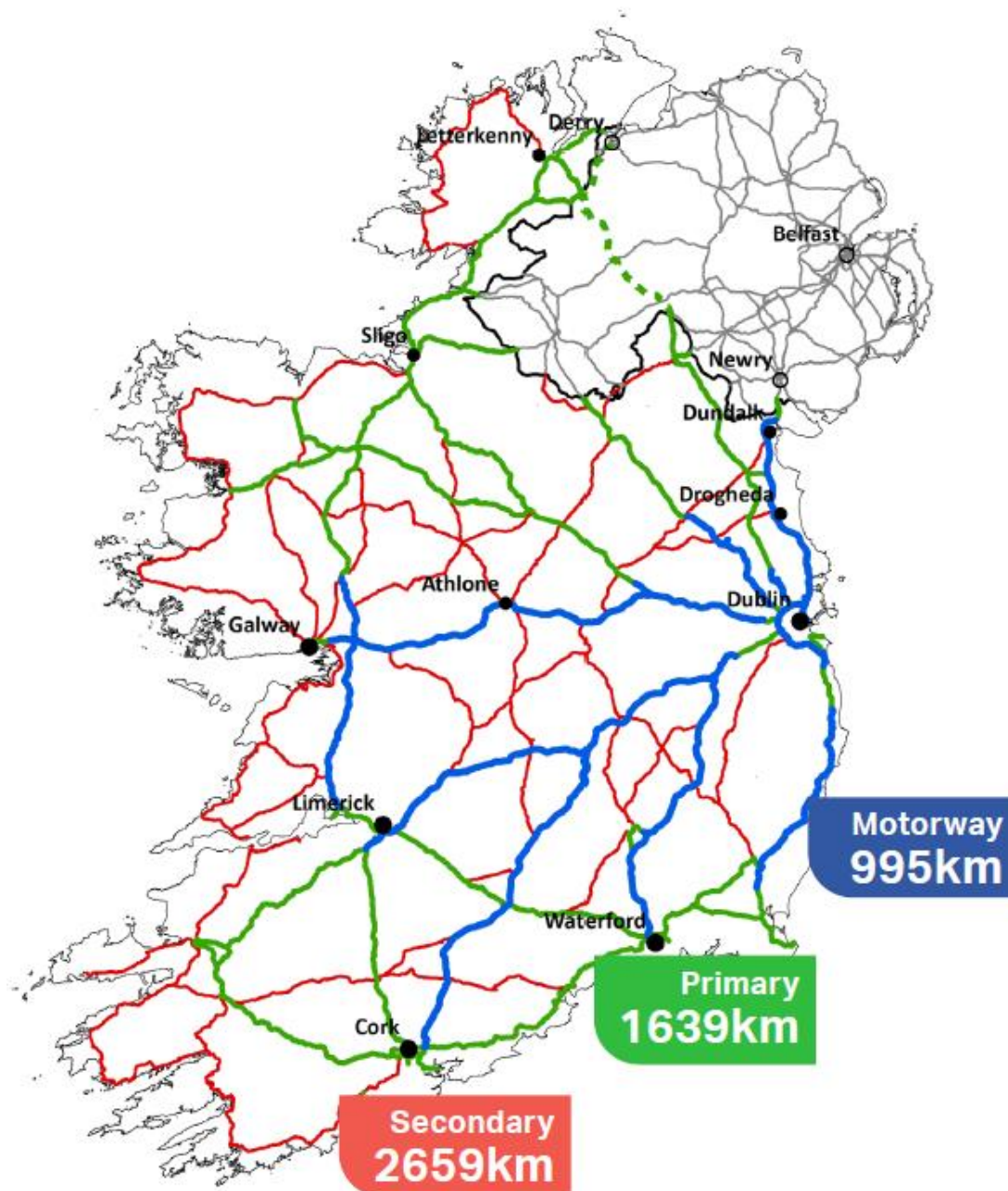


Figure 2-1 National Roads in Ireland (Source: draft NR2040,2022)

2.2.1 National Planning Framework

Project Ireland 2040: National Planning Framework (NPF), is the government's high level strategic plan for shaping the future growth and development of the country out to 2040. It is a long term spatial strategy for accommodating projected population growth in a sustainable manner considering social, economic and environmental considerations. It also addresses land use planning issues relating to climate change and the need to for a coherent plan ensuring long-term sustainable development. The NPF contains National Policy Objectives (NPOs) and National Strategic Outcomes (NSOs) representing a shared set of goals for the development of the country including supporting: compact growth, enhanced regional accessibility, access to services and opportunities, strong rural communities, sustainable mobility, and the transition to a low carbon and climate resilient society, among other strategic issues. Within the NPF, there are various objectives directly related to National Roads set out under several of the NPOs and NSOs.

The NPF is structured under national policy objectives (NPOs) which will help realise the national strategic outcomes (NSOs). Relevant NPOs to the National Roads/Road transport include, but are not limited to the following:

- NPO 22 - Facilitating tourism development and in particular national greenways, blueways, etc. achieving connectivity at national and regional level;
- NPO 26 – supporting the National Physical Activity Plan as it relates to planning policy;
- NPO 27 - Ensure the integration of safe and convenient alternatives to the car into the design of communities, by prioritising walking and cycling accessibility to both existing and proposed developments, and integrating physical activity facilities for all ages;
- NPO 28 - Plan for a more diverse and socially inclusive society that targets equality of opportunity and a better quality of life for all citizens, through improved integration and greater accessibility in the delivery of sustainable communities and the provision of associated services;
- NPO 30 - Local planning, housing, transport/ accessibility and leisure policies will be developed with a focus on meeting the needs and opportunities of an ageing population along with the inclusion of specific projections, supported by clear proposals in respect of ageing communities as part of the core strategy of city and county development plans;
- NPO 33 - prioritise provision of new homes at locations that can support sustainable development;
- NPO 38 - Regional, metropolitan and local development plans will take account of and integrate relevant maritime spatial planning issues;
- NPO 40 - Ensure that the strategic development requirements of Tier 1 and Tier 2 Ports, ports of regional significance and smaller harbours are addressed as part of Regional Spatial and Economic Strategies, metropolitan area and city/county development plans, to ensure the effective growth and sustainable development of the city regions and regional and rural areas.
- NPO 41b - In line with the collective aims of national policy regarding climate adaptation, to address the effects of sea level changes and coastal flooding and erosion and to support the implementation of adaptation responses in vulnerable areas.
- NPO 43 - Work with the relevant Departments in Northern Ireland for mutual advantage in areas such as spatial planning, economic development and promotion, co-ordination of social and physical infrastructure provision and environmental protection and management; and
- NPO 46 - In co-operation with relevant Departments in Northern Ireland, enhanced transport connectivity between Ireland and Northern Ireland, to include cross-border road and rail, cycling and walking routes, as well as blueways, greenways and peatways;
- NPO 52 -The planning system will be responsive to our national environmental challenges and ensure that development occurs within environmental limits, having regard to the requirements of all relevant environmental legislation and the sustainable management of our natural capital;
- NPO 54 - Reduce carbon footprint by integrating climate action into the planning system in support of national targets for climate policy mitigation and adaptation objectives, as well as targets for greenhouse gas emissions reductions;

- NPO 55 - Promote renewable energy use and generation at appropriate locations within the built and natural environment to meet national objectives towards achieving a low carbon economy by 2050;
- NPO 64 - Improve air quality through integrated land use and spatial planning that supports public transport, walking and cycling as more favourable modes of transport to the private car, green infrastructure planning and innovative design solutions; and
- NPO 65 - Promote the pro-active management of noise where it is likely to have significant adverse impacts on health and quality of life and support the aims of the Environmental Noise Regulations through national planning guidance and Noise Action Plans; and
- The various other NPOs relating to sustainable population growth, growing the regions, housing etc. as it relates to National Roads network and national road transport requirements.



Figure 2-2 NPF National Strategic Outcomes

2.2.2 National Development Plan 2021-2030

In October 2021 Government launched the revised National Development Plan (NDP) 2021-2030. The NDP identified several National Roads schemes ‘currently under construction’ and several to ‘start construction’ in the near future; it also includes 31 National Roads schemes that are ‘subject to further approvals’. The NDP gives an overview of transport strategy and subsequent strategic investment priorities across each of the ten NSOs, are set out in the Draft Report for Public Consultation.

A mid-term review of NDP (2021-2030) will be undertaken in 2025, to allow Government to: take stock of progress in terms of delivery of the planned projects and programmes and to review and reaffirm the investment priorities of Government.

2.2.3 National Investment Framework for Transport

The National Investment Framework for Transport in Ireland (NIFTI) is the Department of Transport's framework for prioritising future investment in the land transport network to support the delivery of the NSOs.

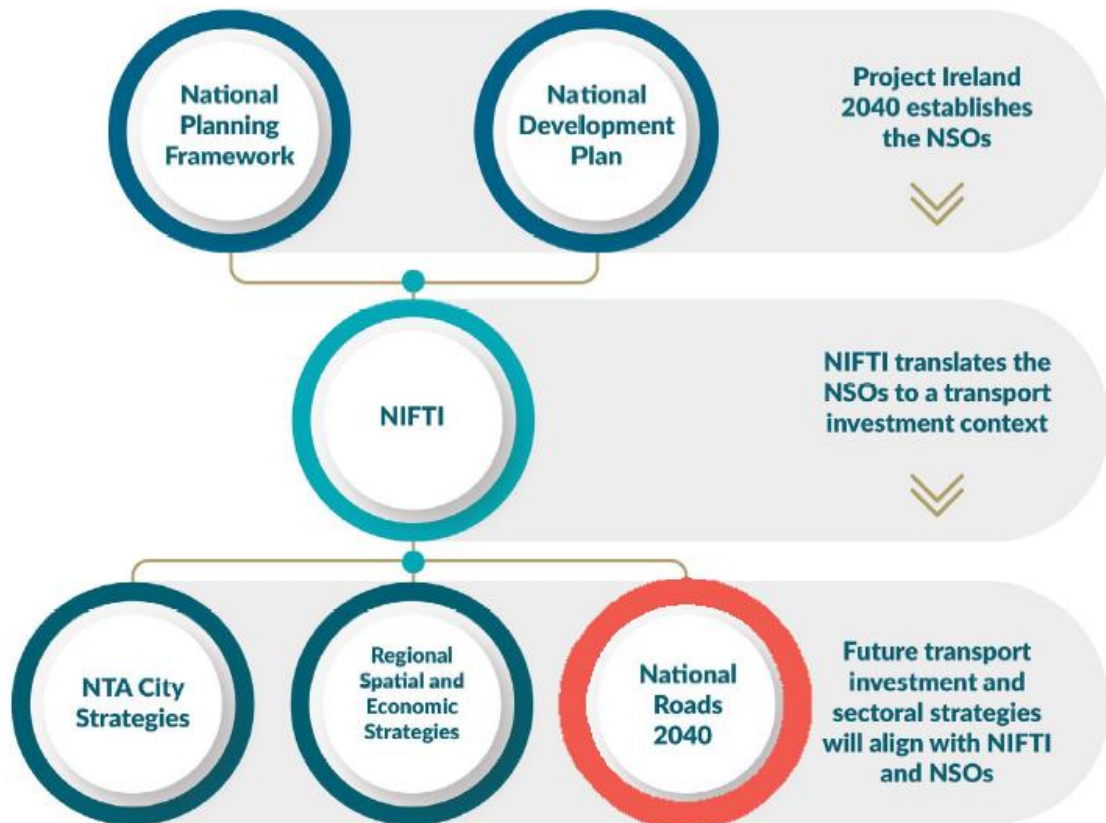


Figure 2-3 Project Ireland 2040 Hierarchy of Strategies and Plans (DoT (NIFTI), 2021)

2.2.4 NIFTI Investment Priorities

NIFTI translates the ten NPF NSOs to a land transport specific context, developing four Investment Priorities that will ensure that the transport sector plays its part in delivering the NPF. NIFTI also considers and incorporates the requirements of the Climate Action Plan with respect to transport.

Future transport projects must align with one or more of NIFTI's four Investment Priorities: Decarbonisation; Protection and Renewal; Mobility of People and Goods in Urban Areas; Enhanced Regional and Rural Connectivity; and set out how potential negative impacts against them will be mitigated, to be considered for funding.

As the NSOs are embedded in NIFTI, future National Roads investment that is in accordance with these priorities will support the delivery of the National Planning Framework over the coming decades to 2040.

2.2.5 NIFTI Modal and Intervention Hierarchies

Well-managed National Roads (now and into the future) will support the achievement of various Project Ireland 2040 NSOs. For instance, enhancing regional accessibility by reducing congestion on the National Roads, allowing people and goods to move freely between the five cities and five regional centres in Ireland (as defined in the

NPF)³. NIFTI also establishes Modal and Intervention Hierarchies to further guide transport investment; and ensure appropriate transport solutions are developed.



Figure 2-4 NIFTI Modal Hierarchy (DoT, 2021)



Figure 2-5 NIFTI Intervention Hierarchy (DoT, 2021)

These Modal and Intervention Hierarchies are also incorporated within NR2040; and any future investment on National Roads will have to be developed in accordance with them.

2.2.6 National Sustainable Mobility policy

The National Sustainable Mobility policy, published in April 2022, sets out a strategic framework to 2030 for active travel and public transport, to support Ireland’s overall requirement to achieve a 51% reduction in carbon emissions by the end of this decade. The policy targets the delivery of at least 500,000 additional daily active travel and public transport journeys and a 10% reduction in kilometres driven by fossil fuelled cars by 2030, in line with targets for transport set out in the Climate Action Plan 2021. Actions for TII relating to National Roads focus on improving road safety and provision of infrastructure to support sustainable mobility.

2.2.7 Climate Action Plan 2023

The Climate Action Plan 2023 (CAP), published in December 2022, is the second annual update to Ireland’s Climate Action Plan 2019. It sets out a roadmap of actions in various sectors, including transport to reduce greenhouse gas emissions by 51%

³ Cities – Dublin, Cork, Limerick, Galway and Waterford. Regional Centres – Athlone, Drogheda, Dundalk, Letterkenny and Sligo.

percent by 2030 (relative to 2018 levels) and reach net zero emissions no later than 2050. The 2023 plan is the first to be prepared under the Climate Action and Low Carbon Development (Amendment) Act 2021 hereafter referred to as the “Climate Act 2021”, following the introduction of economy-wide carbon budgets and sectoral emissions ceilings approved by Government in 2022. Under the Climate Act 2021, Ireland’s national climate objective requires the State to “pursue and achieve, by no later than the end of the year 2050, the transition to a climate-resilient, biodiversity rich, environmentally sustainable and climate-neutral economy”.

The Transport sector required to reduce emissions by 50 percent by 2030. Under CAP23 the greatest share of emissions abatement in the medium term is proposed to be in fleet electrification and use of biofuels. EV targets, while unchanged, have been reframed as a percentage share of total fleet and new registrations, to better embed our vehicle strategy within the wider Sustainable Mobility Policy.

The transport sector has been the fastest growing source of GHG emissions, showing a 112 per cent increase between 1990 and 2021 (Source: CAP23).

It is recognised that there is transformational and unprecedented systems and behavioural change required to deliver transport sector emissions reductions. CAP supports policies to transform how society travel and reduce transport emissions by adopting the Avoid-Shift-Improve approach i.e., reducing or avoiding the need to travel in the first place, shifting to sustainable modes of travel, and improving the energy efficiency of vehicles.

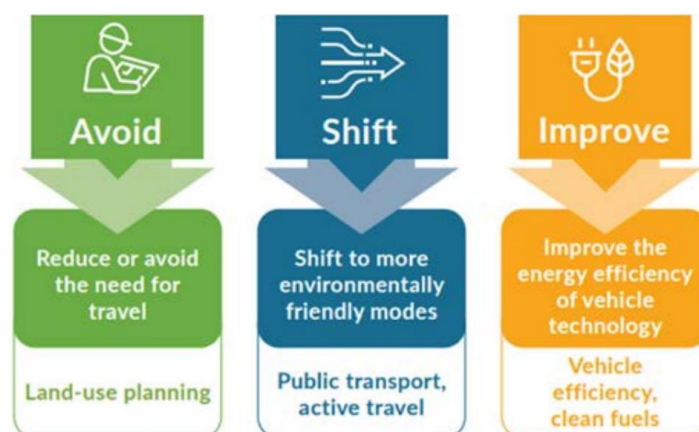


Figure 2-6 Avoid Shift Improve Approach to transport decarbonisation (CAP 2023)

The transport emissions reductions pathway is focused on the electrification of road transport, the use of biofuels, and a modal shift from private car use to public transport and active travel modes. CAP 2023 specifies numerous measures and actions required to support the Avoid Shift Improve approach. These range from developing updated standards, support for active travel projects, greenways, working collaboratively with other stakeholders and engaging the public on climate action and sustainable mobility. Some of the actions relevant to road transport include:

- Change the way road space is used (i.e., reallocation to sustainable modes);
- Reduce demand/the total distance driven across all car journeys by 20 per cent;
- Increase walking, cycling and public transport to account of 50 per cent of all journeys;
- Support for nearly 1 in 3 private vehicles to be electric vehicles by 2030;
- Increasing the walking and cycling network; and

- Increase rural transport bus services.

NR2040 has been developed to align with CAP and contribute to the required reduction in emissions from the National Roads network.

2.3 NR2040 Long-term strategic issues

NR2040 presents the 12 key strategic issues facing the National Roads network, which are identified as follows:

- **Future Demographic Growth Trends** - Demographic growth poses a challenge to maintaining and improving levels of service in road transport.
- **Road Transport Decarbonisation** - Adherence to Ireland's decarbonisation goals poses a significant challenge for the road transport sector, including the National Roads network.
- **Climate Adaptation and Resilience** - The road network, and the people who rely on it, are vulnerable to a range of possible climate change effects.
- **Sustainability** - Striking the appropriate balance between investment in transport and sustainability impacts requires a continued effort.
- **Road Safety** - Road Safety is at the heart of every aspect of management of the National Roads network, on the way towards achieving Vision Zero.
- **Movement of People** - The operation, maintenance, renewal, and development of National Roads must focus on the movement of people, rather than vehicles.
- **Movement of Goods and Services** - On National Roads a balance must be found between the movement of people and the movement of goods.
- **Urban Congestion** - We cannot build our way out of urban congestion challenges- the management of National Roads must balance increasing mobility demands and finite road space.
- **Technological Change** - The management and operation of National Roads must evolve to support and manage the uptake in developing technologies to the benefit of customers.
- **Asset Management and Operations** - The National Roads network is a valued state asset that requires extensive investment for ongoing management and operations.
- **Integrated Mobility** - is key to an inclusive, well connected, and sustainable transport system and must be facilitated through the National Roads network.
- **Customer Experience** - TII recognises the need for a customer-centric approach when planning for the National Roads network.

2.4 Vision and Key Objectives of NR2040

The draft NR2040 is to achieve the following vision for National Roads in Ireland to 2040.

'An evolving sustainable transport system focused on safety, innovation, accessibility and mobility of people, goods and services'

The key objectives for the draft NR2040 are for the National Roads network to be:

- Safe and efficient transport network for people and goods;
- Environmentally, socially and economically sustainable;
- Tailored for different customers in different places; and

- Managed and improved as a key public asset.

2.5 National Roads Investment Priorities and Portfolios

NR2040's four investment priorities are consistent with the four NIFTI Investment priorities and aligned with the NPF.

- Decarbonisation;
- Protection and renewal;
- Mobility of people and goods in urban areas; and
- Enhanced regional and rural connectivity.

The measures under each are described and assessed in detail in **Section 9** of this report.

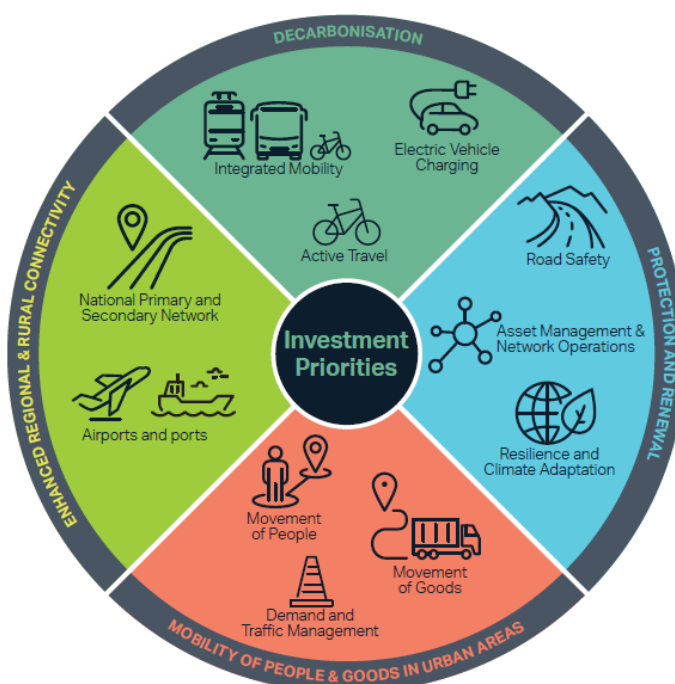


Figure 2-7 NR2040 Four Investment Priorities and Portfolios (draft NR2040,2022)

2.6 Implementation

NR2040 is TII's Strategy for the National Roads network, identifying the function and investment priorities for different parts of the National Roads network, providing for TII's aspiration to:

- Enable Project Ireland 2040 (National Planning Framework and NDPs);
- Support the realisation of several National Strategic Objectives (NSOs);and
- Align with NIFTI and other Government policy.

The implementation chapter of the Strategy provides NR2040's summary guidance to Sponsoring Agencies and Local Authorities. It includes:

- TII commitments to addressing strategic issues;
- Provides a means of filtering future interventions; and
- Defines TII investment portfolios.

- Concludes with TII's emphasis on collaboration, recognised throughout the Strategy as a necessary means for the successful implementation of identified interventions and achievement of national targets.

2.6.1 Commitments

The NR2040 Investment Priorities are reinforced by a series of TII commitments, further addressing the strategic issues identified for the National Roads network in coming years. Policy obligations, including NPF/ NIFTI/ Road Safety Strategy, and internal TII analysis and plans inform these commitments. These commitments can also be used to influence the scope of projects on National Roads developed by Sponsoring Agencies or other agencies. The commitments are detailed in Section 6.1 in the Strategy and are replicated and assessed in **Section 9** of this report.

3 STRATEGIC ENVIRONMENTAL ASSESSMENT METHODOLOGY

Strategic Environmental Assessment (SEA) is the formal, systematic evaluation of the likely significant environmental effects of implementing a plan or programme before a decision is made to adopt the plan or programme, in this case draft NR2040.

Article 1 of the SEA Directive states: The objective of this Directive is to provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes with a view to promoting sustainable development, by ensuring that, in accordance with this Directive, an environmental assessment is carried out of certain plans and programmes which are likely to have significant effects on the environment.

The SEA process is recognised as a central mechanism in promoting sustainable development, in raising awareness of the significant environmental issues experienced by an area and ensuring that these issues are addressed at the policy making stage.

3.1 Legal Context for SEA

Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment (the SEA Directive) requires an environmental assessment be carried out of all plans and programmes that are prepared for certain specified sectors including transport. This requirement is transposed into Irish law by the following regulations:

- European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations, 2004 (SI No. 435/2004) (as amended by the European Communities (Environmental Assessment of Certain Plans and Programmes) (Amendment) Regulations, 2011 (SI No. 200/2011)); and,
- Planning and Development (Strategic Environmental Assessment) Regulations, 2004 (SI No. 436/2004) (as amended by the Planning and Development (Strategic Environmental Assessment) (Amendment) Regulations, 2011 (SI No. 201/2011)).

Under Article 9 of the SEA Regulations an environmental assessment shall be carried out for all plans and programmes which are prepared for agriculture, forestry, fisheries, energy, industry, transport, waste management, water management, telecommunications and tourism, and which set the framework for future development consent of projects listed in Annexes I and II to the Environmental Impact Assessment Directive, or which are not directly connected with or necessary to the management of a European site but, either individually or in combination with other plans, are likely to have a significant effect on any such site.

The European Communities (Environmental Assessment of Certain Plan and Programmes) Regulations 2004 (S.I. No. 435 of 2004) as amended by the European Communities (Environmental Assessment of Certain Plans and Programmes) (Amendment) Regulations, 2011 (S.I 200 of 2011) (hereafter referred to as 'the SEA Regulations'), require the screening of individual plans or programmes, based on the criteria in Schedule 1 of the SEA Regulations. These criteria must be taken into account in determining whether or not significant effects on the environment would be likely to arise.

3.2 Guidance

This SEA Environmental Report has been prepared having regard to the following documents:

- *SEA Guidelines for Regional Assemblies and Planning Authorities* (2022) Department of Housing, Local Government and Heritage

Resources:

- *SEA of Local Authority Land Use Plans EPA Recommendations and Resources* (2022) EPA
- *SEA Spatial Information Sources* (2022) Environmental Protection Agency.
- *SEA Pack* (Updated September 2021), Environmental Protection Agency.
- *Tiering of Environmental Assessment – The Influence of Strategic Environmental Assessment on Project-level Environmental Impact Assessment* (2021) Environmental Protection Agency.
- *Good Practice Note on Strategic Environmental Assessment for the Energy Sector* (2021) Environmental Protection Agency.
- *Guidance on Strategic Environmental Assessment (SEA) Statements and Monitoring* (2020) Environmental Protection Agency.
- *Good Practice Guidance on Cumulative Effects Assessment in Strategic Environmental Assessment* (2020) Environmental Protection Agency.
- *Integrating Climatic Factors into the Strategic Environmental Assessment Process in Ireland - A Guidance Note* (updated June 2019) (2019) Environmental Protection Agency.
- *GISEA Manual – Improving the Evidence Base in SEA* (2017) EPA.
- *SEA Resource Manual for Local and Regional Planning Authorities – Integration of SEA Legislation and Procedures for Land use Plans* (2013) Environmental Protection Agency & Mid-West Regional Authority.
- *Integrated Biodiversity Impact Assessment Streamlining AA, SEA and EIA Processes, Best Practice Guidance* (2012) EPA, Strive Programme 2007-2013
- *Integrated Biodiversity Impact Assessment - Streamlining AA, SEA and EIA Processes: Practitioner's Manual* (2013) Environmental Protection Agency.
- *Developing and Assessing Alternatives in Strategic Environmental Assessment* (2015) Environmental Protection Agency.
- *Review of Effectiveness in SEA in Ireland* (2012) EPA, DEHLG, DCENR, DAFM, DAHG.
- *Development of Strategic Environmental Assessment (SEA) Methodologies for Plans & Programmes in Ireland - Synthesis Report* (2003) Environmental Protection Agency.

Department Circulars

In addition, several relevant circulars were considered during the SEA. Department of the Environment, Community and Local Government Circulars, as follows:

- PSSP 6/2011: 'Further Transposition of the EU Directive 2001/42/EC on Strategic Environmental Assessment (SEA)'.
- Circular PL 9 of 2013: 'Article 8 (Decision Making) of EU Directive 2001/42/EC on Strategic Environmental Assessment (SEA) as amended'.

3.3 Stages in the SEA Process

There are a number of clearly defined SEA stages. These are illustrated in **Figure 3-1** and discussed as they relate to the draft NR2040 in **Table 3.1**.

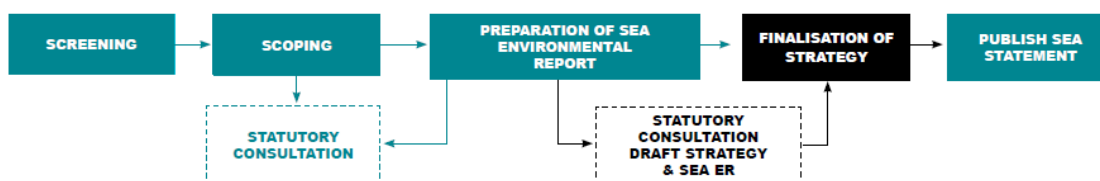


Figure 3-1 Key Stages of the SEA Process

Table 3.1 Key Stages of the SEA Process and the draft NR2040

SEA Stage	Role within the SEA Process	Status
Screening	<p>Determines whether there would be likely to have significant environmental effects and if an SEA is required to be undertaken.</p> <p>In accordance with the requirements of the SEA Directive and transposing Regulations S.I. 435 of 2004 (as amended), TII undertook an SEA Screening having regard to the criteria in Schedule 1 “<i>Criteria for determining whether a plan is likely to have significant effects on the environment</i>”.</p>	<p>Screening for SEA was undertaken by TII in 2018 having regard to Schedule 1 Criteria. While NR2040 is not a ‘plan’ it will influence other plans including those in a hierarchy. It will provide a framework for guiding future development and decision-making for the National Roads network and associated activities for the period 2040 and beyond. Based on characteristics of the Strategy it has been determined that the implementation of the NR2040 has the potential to result in environmental effects and accordingly an SEA is required to be prepared.</p>
Scoping & Consultation	<p>The purpose of Scoping is to scope the environmental factors that will be assessed and consult with the relevant environmental authorities to draw an opinion on the scope and level of detail of the environmental information to be included in this Environmental Report that will inform the preparation of the draft NR2040.</p>	<p>While scoping is a continuous process there were two rounds of formal Scoping consultations undertaken to inform the SEA.</p> <p>The first round of scoping and consultation with environmental authorities (listed in Table 3.2) took place on the 3rd of December 2019.</p> <p>Due to evolving government and environmental policy, a second Scoping exercise was undertaken with a revised Scoping Report was issued to the environmental authorities on the 20th May 2020.</p> <p>Both rounds of scoping have informed the SEA and preparation of the draft Strategy. The summary submission and responses are presented in Appendix B of this ER.</p>
Alternatives	<p>The SEA Directive requires that reasonable alternatives, taking into account the objectives and the geographical scope of the plan or programme are identified, described</p>	<p>The alternatives considered are presented in Section 7 of this report.</p>

SEA Stage	Role within the SEA Process	Status
	and evaluated for their likely significant effects on the environment.	
Environmental Report	The Environmental Report identifies, describes and evaluates the likely significant effects of implementing the draft NR2040;	The Environmental Report was prepared in tandem with the draft Strategy and is issued for consultation in August 2022.
Statutory Consultation –	Issuance of the Environmental Report and NTS and the draft Plan for a period of no less than 4 weeks.	Statutory Consultation on the draft NR2040 and associated environmental reports including a non-technical summary (NTS) and the draft NIS and SFRA.
SEA Statement	Issuance of SEA Statement identifying how environmental considerations and consultation feedback has been taken account in the final NR2040 and SEA including finalisation of the SEA monitoring programme.	<p>Current Stage in the SEA process. The SEA Statement will be published with the Final NR2040 Strategy in April 2023.</p> <p>The draft strategy is amended and updated for finalisation. It includes updates including addressing consultation feedback, as appropriate.</p> <p>The key policy context and baseline sections of the ER are updated and presented in an updated SEA Environmental Report (the subject of this report) which also addresses consultation feedback as appropriate.</p>

3.3.1 Screening

Screening was carried out to establish if SEA was required to be undertaken as part of the preparation of the draft Strategy. Such a determination is required to take account of relevant criteria set out in Schedule 1 of the SEA Regulations (as amended) detailing the '*Criteria for determining whether a plan is likely to have significant effects on the environment*'. Under Article 9 of S.I. 435 of the SEA Regulations (as amended) the requirement to carry out environmental assessment for all plans and programmes, inter alia:

- Which are prepared for plans or projects prepared for agriculture, forestry, fisheries, energy, water management, telecommunications and tourism, and which set the framework for future development consent of projects listed in Annex I and Annex II of the Environmental Impact Assessment Directive;
- Which are not directly connected with or necessary to the management of a European site but, either individually or in combination with other plans, are likely to have a significant effect on any such site; and
- Furthermore, the competent authority shall determine on a case-by-case basis whether a plan or programme or in this case, the draft NR2040, would or would not be likely to have significant effects on the environment, taking account of the criteria set out in Schedule 1.

In accordance with the requirement of the SEA Directive and transposing Regulations (S.I. 435 of 2004 as amended) TII undertook an SEA Screening having regard, to the criteria for determining whether the Strategy is likely to have significant effects. It has been determined that the implementation of the draft Strategy has the potential, if unmitigated, to result in environmental effects and accordingly an SEA is being prepared.

3.3.2 Scoping

The purpose of the Scoping report was to consult with the relevant environmental authorities and to draw an opinion on the scope and level of detail of the environmental information to be included in this Environmental Report and as part of the draft Strategy. Scoping is an on-going activity that is re-activated at key stages in the policy making process as new information or available alternatives are narrowed to a preferred approach.

The SEA Scoping exercise was concerned with the 'likely' and 'significant' strategic environmental effects that the proposed draft Strategy is likely to have on the environment as a result of their implementation. Scoping is undertaken to ensure that the relevant environmental issues are identified allowing them to be addressed appropriately in the ER and considered as part of the preparation of the draft Strategy.

The Scoping Report set out the baseline environmental issues to be considered in the ER, the draft EPOs and the assessment framework. Statutory consultation was carried out with the relevant environmental authorities. All comments have been taken into consideration as part of this SEA process. The details of the responses and how they are addressed within this Environmental Report are contained in **Appendix B** of this Environmental Report.

3.3.2.1 Temporal scope

NR2040 is being prepared with the aim of providing a long-term Strategy for the National Roads network to 2040. As already stated, the Strategy will be used to inform Government Capital Investment Plans and assist in the implementation of a range of Government policies affected by transport including the NPF. Therefore, NR2040 is likely to influence plans/ projects over a longer outlook and may take more than 20 years to be implemented and/ or for behavioural change to occur. In accordance with the SEA Directive, short, medium and long-term impacts, (including reference to secondary, cumulative, synergistic, permanent and temporary, positive and negative effects) will be considered during the assessment in the SEA ER.

3.3.3 Scoping Consultation with Statutory Authorities

Article 6(3) of the SEA Directive and the Planning and Development (Strategic Environmental Assessment) Regulations 2004 (as amended) requires that TII gives notice to prescribed environmental authorities on the scope and level of details to be included in the Environmental Report

The need for transboundary consultation has been identified and this scoping documentation will, therefore, be sent to the relevant authority for SEA in Northern Ireland: Department of Agriculture, Environment and Rural Affairs (DAERA). The environmental authorities that have been consulted in the scoping stage are listed in **Table 3.2**.

Table 3.2 Statutory Environmental Authorities for SEA

Name	Address
Environmental Protection Agency	Environmental Protection Agency SEA Section, Office of Environmental Assessment, EPA Regional Inspectorate, Inniscarra, Co. Cork
Minister for Housing, Local Government and Heritage Department of the Housing, Planning, Community and Local Government (DHPCLG)	Planning System and Spatial Policy, Department of Housing, Planning, Community and Local Government, Custom House, Custom House Quay, Dublin 1, D01 W6X0
Minister for Agriculture, Food and the Marine, Department of Agriculture, Food and the Marine (DAFM)	Environmental Co-ordination Unit, Climate Change and Bio Energy Division, Department of Agriculture, Food and the Marine Pavilion A, Grattan Business Park, Portlaoise, Co. Laois
Minister for Arts, Heritage, Regional, Rural and Gaeltacht Affairs, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs (DAHRRGA)	Department of Culture, Heritage and the Gaeltacht Built Heritage and Architectural Policy, Custom House, Dublin 1, D01 W6X0
Minister for Communications, Climate Action and Environment, Department of Communications, Climate Action and the Environment (DCCAE)	Corporate Support Unit, Department of Communications, Energy and Natural Resources, Elm House, Earlsvale Road, Cavan
Development Applications Unit	The Manager, Development Applications Unit, Department of Arts, Heritage Regional, Rural and Gaeltacht Affairs Newtown Road, Wexford

3.3.4 Alternatives

The SEA Directive requires that reasonable alternatives, taking into account the objectives and the geographical scope of the plan or programme are identified, described and evaluated for their likely significant effects on the environment. The alternatives considered are presented in **Section 8** of this report.

3.3.5 Environmental Report

The SEA Directive requires that information on the baseline environment be focused upon the relevant aspects of the environmental characteristics of areas likely to be significantly affected and the likely evolution of the current environment in the absence of the strategic action i.e., the draft NR2040. Any information that does not focus upon this is surplus to requirements; therefore, the SEA focuses on the significant issues, disregarding the less significant ones. In addition, the SEA Directive aims to avoid duplication of the assessment whereby a strategic action forms part of a hierarchy in the decision-making process. Furthermore, if certain matters are more appropriately assessed at different levels of the decision-making process in which the draft NR2040 is positioned, or, if certain matters have already been assessed by a different level of the hierarchy, then additional assessment is not required during the SEA process as they are more appropriately assessed at that level in the decision making process e.g. at project level planning application/ Environmental Impact Assessment (EIA) stage.

The SEA Environmental (ER) is to be placed on public display alongside the draft NR2040. The likely significant environmental effects of the draft NR2040 are identified

and their significance evaluated with regard to the environmental baseline. The ER provides relevant information to the policy-making team/decision-makers, as well as to the public, providing a clear explanation of the likely significant environmental effects of the draft NR2040.

If any modifications to the draft NR2040 are made after this consultation period, these are screened by the SEA team, and presented in the SEA Statement.

An environmental report shall include the information that may reasonably be required taking into account:

- Current knowledge and methods of assessment,
- The contents and level of detail in the draft NR2040;
- The stage of the draft Strategy is in the decision-making process, and
- The extent to which certain matters are more appropriately assessed at different levels in the decision-making process in order to avoid duplication of environmental assessment.

This SEA ER complies with the provisions of the SEA Regulations and is prepared in accordance with Schedule 2B of the Planning and Development (Strategic Environmental Assessment) Regulations 2004 (S.I. No. 435 of 2004) as amended.

Table 3.3 is a reproduction of the checklist of information required to be contained in the Environmental Report as required under Schedule 2 of S.I.435, as amended and includes the corresponding sections of this report which deal with these requirements.

Table 3.3 Information to be Contained in the Environmental Report (Schedule 2. S.I.435)

Information Required to be included in the Environmental Report	Corresponding Section of this Report
(A) Outline of the contents and main objectives of the Strategy and of its relationship with other relevant plans and programmes	Section 2, Section 4 and Appendix A
(B) Description of relevant aspects of the current state of the environment and the likely evolution of that environment without implementation of the Strategy	Section 5
(C) Description of the environmental characteristics of areas likely to be significantly affected	Section 5
(D) Identification of any existing environmental problems which are relevant to the Strategy, particularly those relating to areas of particular environmental importance such as European protected sites, etc.	Section 5
(E) List environmental protection objectives (EPOs), established at international, EU or national level, which are relevant to the Strategy and describe how those objectives and any environmental considerations have been taken into account when preparing the Strategy	Section 4 and Appendix A
(F) Describe the likely significant effects on the environment	Section 8
(G) Describe any measures envisaged to prevent, reduce and as fully as possible offset any significant adverse environmental effects of implementing the Strategy	Section 9

Information Required to be included in the Environmental Report	Corresponding Section of this Report
(H) Give an outline of the reasons for selecting the alternatives considered, and a description of how the assessment was undertaken (including any difficulties)	Section 7
(I) A description of proposed monitoring measures	Section 10
(J) A non-technical summary of the above information	Non-Technical Summary

3.3.6 Iterative Process

The SEA process is iterative and has been used to inform the development of draft NR2040 including highlighting intended as well as unintended significant adverse effects that may result in the implementation of the draft NR2040 on the environmental factors. It may also include recommendations for clarifications/changes to wording contained in the draft NR2040.

3.3.7 Updated SEA Environmental Report

As a result of the consultation feedback, amendments were made to the SEA ER. These changes were relating to comments received and changes in relevant policy context. The edits were made to the following sections:

- Section 2 Policy Context
- Section 5 Baseline environment:
 - Climate
 - Heritage
 - Noise
 - Landscape

3.3.8 SEA Statement

The SEA Statement provides information on the decision-making process and documents how environmental considerations have been taken into account in the draft NR2040. The SEA Statement is required to report on:

- How environmental considerations have been integrated into the Planning Scheme - highlighting the main changes to the Planning Scheme which resulted from the SEA process;
- How the Environmental Report and consultations have been taken into account - summarising the key issues raised in consultations and in the Environmental Report, indicating what action, if any, was taken in response; and
- The reasons for choosing the draft NR2040 in the light of other reasonable alternatives.

3.4 Data gaps and difficulties encountered

The EPA Guidelines (2004) state that SEA process involves “collating currently available, relevant environmental data, it does not require major new research”. Where data deficiencies or gaps exist, these are acknowledged in the ER. No significant difficulties have been encountered while undertaking this assessment.

3.5 Integration of other Environmental Assessments

SEA legislation sets out the requirements for integration between the preparation of draft NR2040 and the other processes. The SEA is being prepared in parallel with

Appropriate Assessment (AA) and Strategic Flood Risk Assessment (SFRA) processes. **Figure 3-2** outlines the key stages as part of the integration of the processes and the consultation periods as part of the Strategy development process.

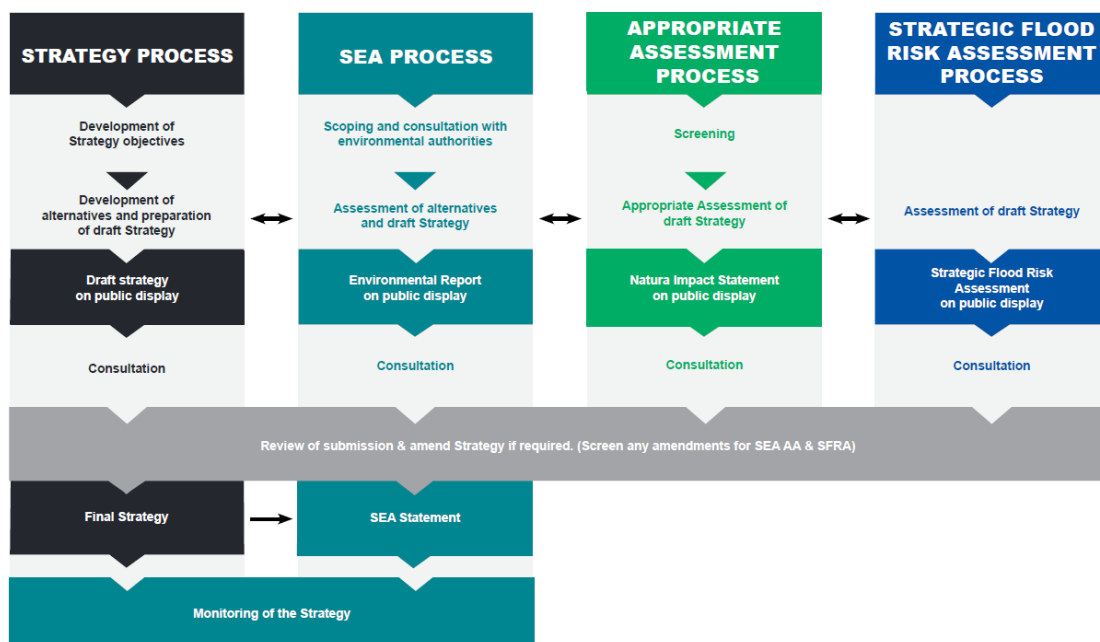


Figure 3-2 Integration of the Strategy development process with key stages of SEA, AA and SFRA processes

3.5.1 Appropriate Assessment

There is a requirement under the EU Directive 92/43/EEC (on the Conservation of Natural Habitats and of Wild Fauna and Flora, as amended (commonly referred to as the Habitats Directive)) to assess whether the draft NR2040 has the potential to adversely affect the integrity of a European Site. These sites include areas designated for the conservation and protection of habitats and wild fauna and flora and include Special Areas of Conservation (SAC) and Special Protection Areas (SPA).

The Habitats Directive and Birds Directives are transposed into Irish law by the European Communities (Birds and Natural Habitats) Regulations 2011 to 2015 (S.I. No. 477 of 2011, S.I. No. 499 of 2013 and S.I. No. 255 of 2015), as amended, and requires that any plan or project not directly connected with or necessary to the management of a European Site but likely to have a significant effect on such a site must undergo an Appropriate Assessment (AA) in view of best scientific knowledge and in view of the conservation objectives of the site.

An Appropriate Assessment Screening was undertaken and determined that adverse effects could not be ruled out on Designated Sites and therefore a Natura Impact Statement is prepared. The findings of the AA process have fed into the preparation of this SEA and the draft NR2040.

There is a degree of overlap between the requirements of the AA and SEA processes. In accordance with best practice an integrated process of information sharing, and assessment is carried out such as sharing of baseline data and mapping of European Sites. Furthermore, there are issues relevant to the Habitats Directive that are not strictly related to AA, including those identified in Article 10, 12 and 13 of the Directive. These issues, as appropriate will be incorporated into the SEA as part of the biodiversity section. These include:

- Requirements of the Birds and Habitats Directives e.g., Annex IV species as per Articles 12 and 13 of the Habitats Directive,
- Landscape features outside designated sites which are of major importance for wild flora and fauna as per Article 10 of the Habitats Directive; and
- Disturbance and deterioration of bird habitats as per Article 4(4) of the Birds Directive) and these will be addressed in the SEA as appropriate.

3.5.2 Strategic Flood Risk Assessment

The EU Directive on the assessment and management of flood risks 2007/60/EC, referred to hereafter as the 'Floods' Directive, came into force late in 2007. It was transposed into Irish law by the EC (Assessment and Management of Flood Risk) Regulations 2010 (SI 122/2010). The Regulations set out the responsibilities of the Office of Public Works (OPW) and other public bodies in the implementation of the Directive, on consultation, and details the process for implementation of the measures set out in the flood risk management plans.

The SEA process provides a good practice framework for considering a range of planning and environmental issues, including flooding. The requirement for Strategic Flood Risk Assessment (SFRA) is provided under '*The Planning System and Flood Risk Management Guidelines for Planning Authorities*' (DEHLG, 2009). Each SFRA is designed individually to match the availability of data, scale and nature of the flood risk issues, the type of development planned. As with SEA, it will be important to incorporate the SFRA into the development of NR2040 and the findings of the SEA as it develops and provide a coherent and transparent approach as to how it has been considered in making spatial planning decisions.

4 KEY RELEVANT PLANS AND PROGRAMMES

In line with the requirements of the SEA Directive, this section of the ER identifies and considers the environmental protection objectives from other key plans and programmes. The main considerations within this section are on relevant plans and programmes relating to transport, sustainability, biodiversity, air emissions, land use and climate. Plans and programmes from other key sectors and topics relevant to the draft NR2040 are discussed in Appendix A of this report.

4.1 International Policy relevant to National Roads

In 2015, the United Nations (UN) adopted the Global Goals (GG) for Sustainable Development, commonly referred to as UN Sustainable Development Goals (SDGs). These SDGs are the framework for EU and national agendas and policies to 2030 and emphasise sustainable and inclusive growth. Sustainability is at the heart of long-term planning therefore it is important that the SDGs are integrated into the policy making process. The SDGs are identified in **Figure 4-1** and the UN SDGs and targets relevant to the draft NR2040 are outlined in **Table 4.1**.














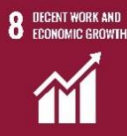







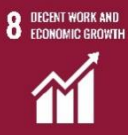


Figure 4-1 UN Sustainable Development Goals (SDGs)

Through TII’s Sustainability Implementation Plan a roadmap has been developed to apply the UN SDGs sustainability principles in developing and operating the National Road network. TII recognises that ‘sustainability’ is complex and far reaching but are committed to integrating it into everything they do.

TII’s sustainability statement and implementation plan lay out six core principles and two overarching principles. The six principles are set out below; these broadly align with the UN Sustainable Development Goals and have been developed to reflect TII’s organisational ambitions.

Table 4.1 TII Sustainability Principles & alignment with the UN SDGs

	TII Sustainability Principles	Corresponding Sustainable Development Goals
1	Provide effective, efficient, and equitable mobility	  

	TII Sustainability Principles	Corresponding Sustainable Development Goals
2	Enable safe and resilient networks and services:	     
3	Collaborate for a holistic approach	    
4	Deliver end-to-end improvements	   
5	Transition to net zero	   
6	Create total value for society	     

TII recognises that to truly deliver on sustainability it requires all of society to get involved, and as such the six principles are tied together with two overarching principles:

- Leadership, Collaboration and Partnership; and
- Working together and enabling people

These overarching principles ensure connectivity across the six core principles and are supported in NR2040 commitments.

4.2 European Policy relevant to Transport

The **European Green Deal**, with the **European Climate Law**, is a set of policy initiatives by the European Commission with the overarching aim of making the European Union (EU) climate neutral by 2050 and to meet EUs commitment to global actions under the **Paris Agreement**. This requires substantial greenhouse gas emission reductions in the next decades across many different sectors, including transport, energy, etc. As an intermediate step towards climate neutrality, the EU has raised its 2030 climate ambition, committing to cutting emissions by at least 55% by 2030. The EU is working on the revision of its climate, energy and transport-related legislation under the so-called '**Fit for 55 package**' in order to align current laws with the 2030 and 2050 ambitions.

The **Directive 2008/96/EC on road infrastructure safety management (RISM)** was amended by the Directive (EU) 2019/1936. It is transposed into Irish Law through S.I. No. 472 of 2011, as amended. The Directive provides a system for managing the safety of the National Road network. The amended Directive includes the strategic goal to move close to zero fatalities by 2050.

The **Trans-European Transport Network (TEN-T)** policy, based on Regulation (EU) No 1315/2013, supports the implementation and development of a network of railway lines, roads, inland waterways, maritime shipping routes, ports, airports, and railroad terminals across the European Union. The objective of the TEN-T policy is to improve the use of infrastructure, reduce the environmental impact of transport, enhance energy efficiency, and increase safety whilst implementing and developing a Europe-wide transport network. Besides the construction of new physical infrastructure, the TEN-T policy supports the application of innovation, new technologies and digital solutions to all modes of transport.

TEN-T consists of two network 'layers':

- The Core Network, subset of the comprehensive network, to be completed by 2030. Part of Ireland's National Roads network comprises the Ten-T network.
- The Comprehensive Network covers all European regions and is to be completed by 2050.

The TEN-T policy provides both opportunity for funding alongside obligation to comply, and align with, EU policy standards and requirements such as: National Roads' connectivity to ports that act as a gateway to other EU Member States, for the movement of both people and goods; Innovative solutions for leveraging existing capacity prior to investment in new infrastructure. NR2040 Strategy continues to support the implementation of the TEN-T policy.

There are a number of regulations which will influence the types of vehicles and fuels being used on National Roads. These have the potential to influence the type of vehicles and associated impact/emissions and supporting infrastructure required from the road transport network including National Roads network.

Some of these Regulations include the following:

On 1 January 2020, **Regulation (EU) 2019/631** entered into force, setting CO₂ emission performance standards for new passenger cars and vans. It replaced and repealed the former Regulations (EC) 443/2009 (cars) and (EU) 510/2011 (vans). The Regulation sets EU fleet-wide CO₂ emission targets applying from 2020, 2025 and 2030 and includes a mechanism to incentivise the uptake of zero- and low-emission vehicles.

The revised **Clean Vehicles Directive 2019/11610** promotes clean mobility solutions in public procurement tenders, providing a solid boost to the demand and further deployment of low- and zero-emission vehicles. The new Directive defines "clean vehicles" and sets national targets for their public procurement. It applies to different means of public procurement, including purchase, lease, rent and relevant services contracts.

The **Fuel Quality Directive 2009/30/EC** updates the provisions under Directive 98/70/EC concerning the quality of petrol and diesel fuels. It widens the application scope of that Directive, which shall include: (a) technical specifications on health and environmental grounds for fuels to be used with positive ignition and compression-ignition engines, taking account of the technical requirements of those engines; and (b) a target for the reduction of life cycle greenhouse gas emissions.

4.3 National and Regional Plans and Programmes relevant to Transport

Project Ireland 2040 is the government's long-term overarching spatial Strategy to make Ireland a better country for all and to build a more resilient and sustainable future. It incorporates both the **National Planning Framework (NPF)** and the **National Development Plan (NDP)**. The NPF vision is encapsulated with the National Strategic Outcomes (NSOs) representing a shared set of goals, which include compact growth, enhanced regional accessibility, access to services and opportunities, strong rural communities, sustainable mobility, and the transition to a low carbon and climate resilient society, among others.

The revised NDP 2021-2030 was launched in October 2021. It sets out the investment in sustainable transport infrastructure for this same period. The NDP identified several National Roads schemes 'currently under construction' and several to 'start construction' in the near future; it also includes 31 National Roads schemes that are 'subject to further approvals.' The NDP gives an overview of transport Strategy and subsequent strategic investment priorities across each of the ten NSOs. A mid-term review of NDP (2021-2030) will be undertaken in 2025, to allow Government to: take stock of progress in terms of delivery of the planned projects and programmes and to review and reaffirm the investment priorities of Government.

A number of actions have been identified in the NPF and the NDP for National Roads which have been included under the following NSOs:

- NSO 1 Compact Growth.
- NSO 2 Enhanced Regional Accessibility.
- NSO 3 Strengthened Rural Economies and Communities.
- NSO 4 Sustainable Mobility.
- NSO 6 High Quality International Connectivity.
- NSO 8 Transition to a Climate-Neutral and Climate-Resilient Society.

The draft NR2040 has been developed to support the implementation of these NSOs and the future National Roads investment that is in accordance with these priorities will support the delivery of the National Planning Framework over the coming decades to 2040.

The **Climate Action Plan (CAP)** sets out a roadmap of specific actions in various sectors including road transport. It supports the **Climate Action and Low Carbon Development (Amendment) Act 2021**, referred to hereafter as the "Climate Act 2021", which commits Ireland to legally binding targets of net-zero greenhouse gas emissions no later than 2050 and a reduction of 51% by 2030. It is required to be updated annually.

Transport is identified in the CAP as a sector required to reduce emissions by 51% by 2030. There are numerous actions for TII, both as the lead and a stakeholder that will affect positive climate action. These range from developing updating standards, support for active travel projects, greenways and working collaboratively with other stakeholders. Many of the actions identified for transport will be more challenging in a rural context, where opportunities for safe active travel are currently more limited and public transport services operate at low frequency or not at all. NR2040 supports the delivery of a number of actions outlined in the Climate Action Plan 2021 such as:

- Action 232: Development of a coherent and connected National Cycle Network Strategy

- Action 233: Construct an additional 1,000km of cycling and walking infrastructure.
- Action 259: Explore potential of road-user charging measures through the Better Road User Charging Evaluation (BRUCE) study.
- Action 261: Deliver public transport corridors providing prioritised bus lanes on relevant national radial routes to the M50.
- Action 262: Deliver sustainable bus priority measures on the National Road Network.

The **National Investment Framework for Transport in Ireland (NIFTI)** is the Department of Transport's (DoT) high level strategic framework to support the consideration and prioritisation of future investment in land transport. NIFTI replaces the Strategic Investment Framework for Land Transport (SFILT) following the launch of Project Ireland 2040 in February 2018. NIFTI provides a framework to guide transport investment and deliver the infrastructure and services, aligning with the NPF and its National Strategic Outcomes (NSOs) to provide a consistent approach to investment across Government. Through the transport investment priorities and Modal Hierarchies identified it will contribute to Ireland's decarbonisation efforts, support vibrant and successful communities, deliver high performing transport systems, and promote a strong and balanced economy.

NIFTI translates the ten NPF NSOs to a land transport specific context, developing four Investment Priorities that will ensure that the transport sector plays its part in delivering the NPF. NIFTI also considers and incorporates the requirements of the Climate Action Plan with respect to transport.

Future transport projects must align with one or more of NIFTI's four Investment Priorities:

1. Decarbonisation.
2. Protection and Renewal.
3. Mobility of People and Goods in Urban Areas.
4. Enhanced Regional and Rural Connectivity.

As the NSOs are embedded in NIFTI, future National Roads investment that is in accordance with these priorities will support the delivery of the National Planning Framework over the coming decades to 2040.

NR2040 is prepared in succession to NIFTI to ensure alignment between the departmental investment priorities framework and the operational and functional needs of National Roads. Similarly, the investment portfolio themes of the draft NR2040 are guided by the modal and intervention hierarchies. Collaboration has taken place between DoT and TII, ensuring a common understanding of National Roads functions, current and future users and national road needs to enable Project Ireland 2040.

The Department of Transport's **National Sustainable Mobility Policy**, published in April 2022, sets out a strategic framework to 2030 for active travel and public transport to support Ireland's overall requirement to achieve a 51% reduction in carbon emissions by the end of this decade. The policy targets the delivery of at least 500,000 additional daily active travel and public transport journeys and a 10% reduction in kilometres driven by fossil fuelled cars by 2030, in line with targets for transport set out in the Climate Action Plan 2021. The Policy identifies ten high level goals to enable the implementation of the following three key principles:

- Safe and Green Mobility.
- People Focused Mobility.
- Better Integrated Mobility.

The NR2040 aligns with the principles and goals of the Sustainable Mobility Policy by providing an environmentally, socially, and economically sustainable National Roads network.

National Policy Framework on Alternative Fuels Infrastructure for Transport in Ireland represents the first step in communicating the government's longer term national vision for decarbonising transport by 2050, the cornerstone of which is the ambition that by 2030 all new cars and vans sold in Ireland will be zero-emissions capable. The commitment of the energy sector to do the same is reflected in The White Paper: Ireland's Transition to a Low Carbon Energy Future 2015-2030. Transport, as part of the energy sector, will make its contribution to this transition.

Public consultation on the Electrical Vehicle Charging Infrastructure Strategy 2022-2025 (currently at public consultation) The Strategy is a pathway for delivery of electric vehicle (EV) charge point infrastructure to support delivery of the Climate Action Plan ambition of almost **one million EVs on Irish roads by 2030**, and to ensure that EV charge point infrastructure provision remains ahead of demand. The Strategy reflects the urgent need for action to address decarbonisation of the transport sector to tackle climate change and the need for a strategic and Just Transition to sustainable ways of travelling. As the majority of charging is currently done at home (c.80%) the focus of the Strategy is to support the provision of publicly accessible charging infrastructure for cars and light duty vehicles including supporting infrastructure along National Roads. Which will include both:

- Destination charging (DC fast); and
- Motorway/enroute charging (DC high powered (c. > 100 kW) charging at highest charge power capacities) to cater for drivers making longer journeys, such as between cities or along the national roads network.

The Strategy also sets out a plan for the delivery of each of these categories of charging infrastructure over the coming years. One of the main actions to co-ordinate and oversee the delivery of this Strategy will involve the establishment of an office for low or zero emission vehicles called Zero Emission Vehicles Ireland (ZEVl)⁴ within the Department of Transport.

Under the Local Government Reform Act 2014, the Regional Assemblies assumed several new functions - chief among these is the preparation and implementation of a **Regional Spatial and Economic Strategy (RSES)** for the respective Regions of Ireland; Eastern, Midland, Southern, Northern and Western regions. The RSES sets out the strategic regional development framework for each Region, with a primary aim to implement Project Ireland 2040 - the National Planning Framework, at the regional tier of Government and to support the achievement of balanced regional development. The Planning and Development Act 2000, (as amended) requires that all **City & County Development Plans** and variations are consistent with the RSES and relevant national policy, with draft development plans or proposed variations to development plans referred by the relevant local authority to the Regional Assembly. The RSES for each Region and the NR2040 are both aligned and support the implementation of Project Ireland 2040. Such alignment supports mutual implementation.

⁴ To coordinate the provision of EV supports and grants and the delivery of charging infrastructure, the Government will establish an office of Zero Emission Vehicles Ireland (ZEVl) within the Department of Transport.

Realising our Rural Potential - Action Plan for Rural Development prepared by the Department of Rural and Community Development is an overarching plan for the coordination and implementation of initiatives across the governmental departments to support the economic and social development in rural Ireland. This Action Plan provides a cohesive structure across a range of policy areas to help support communities in rural Ireland to maximise their assets and realise their potential, leading to a better quality of life for those living in rural communities. The actions are broken down across five thematic pillars:

- Pillar 1: Supporting Sustainable Communities
- Pillar 2: Supporting Enterprise and Employment
- Pillar 3: Maximizing Rural Tourism and Recreation Potential
- Pillar 4: Fostering Culture and Creativity in rural communities
- Pillar 5: Improving Rural Infrastructure and Connectivity.

Draft NR2040 recognises that integrated mobility is key to an inclusive, well connected, and sustainable transport system and must be facilitated through the National Roads network. As a result, the NR2040 aligns with actions identified under the thematic pillars within the Action Plan.

The **Transport Strategy for the Greater Dublin Area 2016 – 2035 (TSGDA)** provides a framework for the planning and delivery of transport infrastructure and services in the Greater Dublin Area (GDA) over the next two decades. It has been an essential component, along with investment programmes in other sectors, for the development of the Greater Dublin Area, which cover Dublin, Meath, Kildare and Wicklow. The purpose of the Strategy is to contribute to the economic, social and cultural progress of the Greater Dublin Area by providing for the efficient, effective and sustainable movement of people and goods. The principles for road development identified in the Strategy are as follows:

- That there will be no significant increase in road capacity for private vehicles on radial roads inside the M50 motorway.
- That each proposed road scheme is consistent with this Strategy and with Government policies related to transport.
- That the travel demand or the development needs giving rise to the road proposal are in accordance with regional and national policies related to land use and development planning.
- That the development of the road scheme does not diminish in any significant way the expected beneficial outcomes of the Strategy.
- That the road scheme, other than a motorway or an express road proposal, will be designed to provide safe and appropriate arrangements to facilitate walking, cycling and public transport provision.
- Those alternative solutions, such as public transport provision, traffic management or demand management measures, cannot effectively and satisfactorily address the particular circumstances prompting the road proposal or are not applicable or appropriate.

The **draft Transport Strategy for the Greater Dublin Area 2022-2042** has been developed and once, adopted will succeed the current 2016 – 2035 Strategy. The overall aim of the draft Strategy is to provide a sustainable, accessible and effective transport system for the Greater Dublin Area which meets the region's climate change requirements, serves the needs of urban and rural communities, and supports

economic growth. Four Strategy Objectives have been developed to achieve this overall aim:

- **An Enhanced Natural and Built Environment:** To create a better environment and meet our environmental obligations by transitioning to a clean, low emission transport system, reducing car dependency, and increasing walking, cycling and public transport use.
- **Connected Communities and Better Quality of Life:** To enhance the health and quality of life of our society by improving connectivity between people and places, delivering safe and integrated transport options, and increasing opportunities for walking and cycling.
- **A Strong Sustainable Economy:** To support economic activity and growth by improving the opportunity for people to travel for work or business where and when they need to and facilitating the efficient movement of goods.
- **An Inclusive Transport System:** To deliver a high quality, equitable and accessible transport system, which caters for the needs of all members of society.

Galway City Council & Galway County Council, in partnership with the National Transport Authority, have developed the **Galway Transport Strategy (GTS)**, an Integrated Transport Strategy for Galway City & Environs which was published in 2016. The GTS sets out a series of actions and measures, covering infrastructural, operational and policy elements to be implemented in Galway over the next 20 years and sets out a framework to deliver the projects in a phased manner based on priority needs. The Vision of the GTS is to shift towards sustainable travel, reducing the dependence on the private car and to take action to make Galway more accessible and connected, improving the public realm and generally enhancing quality of life for all. Seven guiding principles have been developed to achieve this vision:

- **Principle 1:** To promote and encourage sustainable transport, and in particular to make it convenient and attractive to walk, cycle or use public transport.
- **Principle 2:** To improve accessibility and permeability to, and within the city centre for pedestrians, cyclists and public transport uses, while also maintaining an appropriate level of access for vehicular traffic for commercial and retail purposes.
- **Principle 3:** To maximise the safety and security of pedestrians, cyclists and other transport users, particularly within the core city centre.
- **Principle 4:** To manage and increase transport capacity (where necessary), for the efficient movement of people and goods into and within the city.
- **Principle 5:** To provide opportunities to enhance the city centre public realm through traffic management and transport interventions.
- **Principle 6:** To maintain and develop transport infrastructure and services to a high degree of quality and resilience.
- **Principle 7:** To adopt a 'smarter technology' approach to all transport interventions, whereby transport infrastructure and services are future proofed.

The **Cork Metropolitan Area Transport Strategy 2040 (CMATS)** has been developed by the National Transport Authority (NTA) in collaboration with TII, Cork City Council and Cork County Council. The recently published National Planning Framework (NPF) 2040 anticipates that Cork will become the fastest-growing city region in Ireland with a projected 50% to 60% increase of its population by 2040. The Vision of the Strategy is to deliver an accessible, integrated transport network that enables the sustainable growth of the Cork Metropolitan Area as a dynamic,

connected, and internationally competitive European city region. Six guiding principles have been developed to achieve this vision:

- Principle 1: To support the future growth of the CMA through the provision of an efficient and safe transport network.
- Principle 2: To prioritise sustainable and active travel and reduce car dependency within the CMA.
- Principle 3: To provide a high level of public transport connectivity to key destinations within high demand corridors
- Principle 4: To identify and protect key strategic routes for the movement of freight and services including the provision of a high level of freight access to the Port of Cork.
- Principle 5: To enhance the public realm through traffic management and transport interventions.
- Principle 6: To increase public transport capacity and frequencies where needed to achieve the Strategy outcomes.

The revised draft **Limerick-Shannon Metropolitan Area Transport Strategy 2040 (LSMATS)** developed by the National Transport Authority in collaboration with Limerick City and County Council, Clare County Council and TII was displayed for public consultation in 2022. The vision of the Strategy is for the delivery of the transport system required to further the development of the Limerick Shannon Metropolitan Area as a hub of cultural and social development and regeneration; as the economic core for the Mid-West; as an environmentally sustainable and unified metropolitan unit; as a place where people of all ages can travel conveniently and safely; and a place that attracts people, jobs and activity from all over Ireland and beyond. To achieve this vision, seven Strategic Transport Objectives have been identified in the LSMA TS:

1. To prioritise investment in sustainable transport in order to reduce the reliance on the private car.
2. To provide a high level of public transport connectivity to key destinations.
3. To facilitate higher density housing a part of Transit-Oriented Developments at key points of high public transport accessibility.
4. To deliver a fully accessible and inclusive transport system.
5. To identify and protect key strategic routes for the movement of freight traffic and to improve access to Shannon-Foynes Port and Shannon Airport.
6. To improve road safety, public health and personal security.
7. To minimise the impact of motorised traffic in urban centres.

The draft **Waterford City Metropolitan Area Transport Strategy (WMATS)** developed by the National Transport Authority in collaboration with Waterford City & County Council, Kilkenny County Council, Southern Regional Assembly (SRA) and TII was displayed for public consultation in June 2022. The Strategy includes the framework for investment in transport for the Waterford Metropolitan Area up to 2040 and includes proposals for the significant enhancement of bus services and infrastructure, the development of a cycle network, and a range of other measures related to walking, roads and streets, parking and the enhancement of the public realm.

The vision of the draft WMATS is for an accessible, high-quality and integrated transport network that provides for the travel demand and supports the sustainable growth of the Waterford Metropolitan Area as the major growth engine of the South-

East Region, and an internationally competitive European city region. To achieve this vision, eight Strategy Objectives have been identified in the WMATS:

1. To meet the demand generated by the future growth of the WMA through the provision of an efficient sustainable transport network.
2. To prioritise sustainable transport and active travel to reduce car dependency.
3. The provision of a high frequency and attractive, citywide public transport system connecting to key destinations within high demand corridors.
4. To increase transport capacity where needed to achieve the Strategy outcomes.
5. To deliver a fully accessible and inclusive transport system.
6. To enhance the public realm of the WMA through demand management measures and transport interventions.
7. To minimise the impact of motorised traffic in urban centres.
8. To identify and protect key strategic routes for the movement of freight traffic.

The draft NR2040 supports the Transport Strategies developed for the five cities of Dublin, Cork, Galway, Limerick, and Waterford by developing a National Roads network that facilitates the safe and efficient movement of people, goods and services.

There is a strong policy for National Roads and the wider transport sector. Due to the complexity of the transport network in Ireland, there are a number of departments involved in the strategic delivery and operation of the transport network, including TII and the Department of Transport (DoT). Any activities implemented under the draft NR2040 that constitute 'development' will be subject to the relevant national, regional, and local planning policies and the sustainability and environmental protection measures contained within these policies.




4.4 Other Supporting Plans and Programmes



Other supporting plans, programme and policies relevant to the draft NR2040 and the individual environmental factors are summarised and assessed for cumulative effects in Appendix A of this report.






5 RELEVANT ASPECTS OF THE CURRENT STATE OF THE ENVIRONMENT









The seventh State of the Environment Report published by the EPA (2020) - Ireland's Environment - An Integrated Assessment 2020, supports that Ireland's environment is not in peak condition. The report documents the environmental challenges that Ireland must tackle across a broad environmental spectrum including topics, such as climate, air quality, soil, water, biodiversity and land use. Areas harbouring significant natural value are under pressure. Similarly, Ireland's quantity of high-quality waters and biodiversity supporting habitats are in decline. Climate change is an enduring pressure which is impacting the established economic, social, and natural structures of the world.

Table 5.1 Overview of the Environment - Ireland

Policy Area	Current Assessment & Outlook	Relationship to the draft NR2040
Nature	<p>Current Assessment:  Overall, current assessment is very poor. Deteriorating trends dominate, especially EU protected habitats, with 85% of EU protected habitats having an unfavourable status. The picture for EU protected species is missed but 15% are in decline, with freshwater species most at risk. Agricultural practices are a key pressure. Habitat changes point towards a deteriorating trend in overall biodiversity. Some species, such as the curlew and some freshwater species, are under threat; measures are needed to halt their decline. Climate change adds to the challenge.</p> <p>Outlook:  Largely not on track to meet policy objectives. The outlook for biodiversity is challenging unless there are fundamental changes. Climate change adds to the challenge. Transformative change is needed to achieve the vision in the National Biodiversity Action Plan 2017-2021.</p>	<p>A key aim of the NR2040 and the accompanying environmental assessments is to ensure that European and National designated sites are protected as required under EU and Irish law and not adversely affected, NR2040 also supports to the protection and enhancement of biodiversity on the National Roads network.</p> <p>Any activities implemented under the draft NR2040 that constitute 'development' will be subject to the relevant national, regional, and local planning policies and the sustainability and environmental protection measures contained within these policies.</p>
Water	<p>Current Assessment:  Overall, the current assessment is poor. Trends are mixed with serious declines in pristine river sites. Just over 50% of surface water is in a satisfactory ecological condition. This means that almost half fails to meet the legal requirements of the Water Framework Directive (2000/60/EC). There have been deteriorating water quality trends over the past 20 years, especially for rivers, where there have been major decreases in the numbers of the cleanest and best quality river. Progress remains slow in improving urban wastewater treatment, eliminating untreated sewage</p>	<p>A key aim of NR2040 is to respond to the additional travel demand required over time, in a sustainable manner, while also addressing the related congestion and human health issues such as safety, air, noise, and water quality issues and supporting Ireland's and the European Union's transition to net-zero greenhouse gas emissions.</p> <p>Any activities implemented under NR2040 that constitute 'development' will be subject to the relevant national, regional, and local planning policies and the</p>

Policy Area	Current Assessment & Outlook	Relationship to the draft NR2040
	<p>discharges and reducing nutrient loss from agriculture.</p> <p>Outlook: </p> <p>Outlook for water is mixed, and significant challenges remain to achieving full compliance and meeting policy objectives. Extensive targeted action on water catchments, enforcement of existing legislation and implementation of best practice policies could potentially turn around deteriorating trends.</p>	<p>sustainability and environmental protection measures contained within these policies.</p>
<p>Air Quality & Emissions</p>	<p>Current Assessment: </p> <p>While overall air quality in Ireland is good, there was an exceedance of nitrogen dioxide at one Dublin monitoring site in 2019. This exceedance is a warning about not being complacent in tackling air pollution. On occasions, air quality is not meeting all World Health Organization (WHO) guideline values for some air pollutants (mainly particulates) that have some serious potential health impacts. Ireland is not meeting EU targets on emissions of ammonia to air under the National Emissions Ceiling Directive (2016/2284/EU).</p> <p><i>Air Quality</i></p> <p>The EPA's most recent Air Quality in Ireland in 2021 report (EPA, 2022) shows that nitrogen dioxide, mainly from road transport remains the key threat to air quality. EPA monitoring shows air quality is currently within EU legal limits however the levels of pollutants exceed the World Health Organisation (WHO) Air Quality Guidelines for health.</p> <p>The EPA is currently doubling the national ambient air monitoring network across Ireland, which will provide enhanced real-time air quality information and provide air quality forecasting and modelling.</p> <p><i>Emissions</i></p> <p>The EPA state that Ireland meet its non-Emission Trading Scheme (ETS) EU targets of a 30% emission reduction by 2030 (compared to 2005), assuming implementation of planned policies and measures and the use of the flexibilities available all take place. Flexibilities include a land use flexibility using the Climate Action Plan 2021 afforestation rate of 8,000 hectares per annum.</p>	<p>A key aim of the NR2040 is to respond to the additional travel demand required over time, in a sustainable manner, while also addressing the related congestion and human health issues such as safety, air, noise, and water quality issues. TII collects air quality data and will also have regard to the latest ambient air quality data as well as National Inventory and sectoral emissions ceilings for GHG emissions in Ireland. This data will support Ireland's transition to net-zero greenhouse gas emissions by 2050.</p>

Policy Area	Current Assessment & Outlook	Relationship to the draft NR2040
	<p>Outlook: </p> <p>There is a risk of further exceedances of emissions targets set in the National Emissions Ceiling (NEC) Directive. Also, there is a risk of local exceedances of air quality standards if reductions are not made in home heating emissions from burning solid fuels and in transport emissions from vehicles in urban areas. The exceedance of the NEC Directive for ammonia will continue unless measures are adopted at farm level. The prospect of meeting air quality targets is heavily dependent on national measures being implemented.</p>	
Climate	<p>Current Assessment: </p> <p>Continuing high emissions result in a 'very poor' current assessment, despite progress on renewable energy, ambitious climate action and adaptation plans and strategies, and new governance structures (e.g., Climate Action Regional Offices).</p> <p>Outlook: </p> <p>Major transitions and system change is needed to become a climate-neutral economy and society by 2050. The Climate Action Plan is the first step in the right direction, but accelerating implementation is needed to meet longer term (2050) targets. A focus is also needed on delivering on the ambitions outlined in the climate adaptation plans and strategies.</p>	<p>The EPA National Inventory for GHG emissions for Ireland (2021) identify transport as the second largest contributor to GHG emissions (17.7%) after the agricultural sector (35.5%). The NR2040 supports emissions reductions in the road transport sector through support for the decarbonisation of the transport. This will be realised through greater integration of land use and transport planning including compact sustainable development that supports sustainable mobility measures. The strategy also supports the circular economy and will work to support the Government's transition to net-zero by 2050.</p>
Waste and the Circular Economy	<p>Current Assessment: </p> <p>While Ireland is meeting current targets, recycling rates have levelled off for municipal waste and packaging and in some cases declined. Waste generation remains high and linked to economic activity, while circular use of material remains very low. Most of the environmental complaints from the public relate to waste and litter, which means that waste enforcement work is still a key function for local authorities. There have been improvements in waste management brought about through the introduction of waste licensing and producer responsibility legislation and the amount of waste to landfill has decreased in favour of energy recovery.</p> <p>Outlook: </p> <p>Work is needed to move towards a life-cycle-driven 'circular' economy, preventing waste, maximising use of resources during</p>	<p>NR2040, through TII's Sustainability Implementation Plan, supports TII's current activities and ambitions relating to the circular economy. TII wants to deliver value in terms of the circular economy, which will also result in enhanced air quality and biodiversity, reduced noise impact, and wider societal value and cohesion. This will be realised for example through improved procurement models emerging for infrastructure projects addressing sustainability standards and supporting the Circular Economy and Miscellaneous Provisions Act 2022.</p>

Policy Area	Current Assessment & Outlook	Relationship to the draft NR2040
	<p>their life cycle and, where waste is generated increasing the amount that is recycled. Illegal dumping, littering and the level of plastic waste in our seas are concerns that demand solutions. Achieving future EU recycling targets, dealing with capacity challenges and achieving the circular economy goals will be dependent on the implementation of waste legislation, policy initiatives and related measures.</p>	
Legend:		
<p>Current Assessment:</p> <ul style="list-style-type: none">  Very poor/significant environmental and/or compliance challenges to address  Poor/environmental and/or compliance challenges to address  Moderate/on track generally/local or occasional challenges  Good/mainly achieving objectives  Very good/fully achieving objectives 		
<p>Outlook:</p> <ul style="list-style-type: none">  Largely not on track to meet policy objectives and targets. Significant challenges remain to achieving full compliance. Systemic and transformative change needed.  Partially on track to achieving full compliance or measures in place or planned that will improve the situation. However, the outlook is dependent on existing and planned actions, measures and plans being fully implemented and effective.  Largely on track to achieving full compliance. Measures in place provide prospect of meeting policy objectives and targets. 		
<p>Source: adapted from EPA Integrated Assessment Report 2020.⁵</p>		

The report proposes 13 key State of the Environment (SOE) messages that necessitate comprehensive implementation to achieve protection and improvement to the environment, health, and wellbeing of the population which are studied in this SEA.

The 13 key messages within the State of the Environment report which strive to address the subsequent pressures are as follows:

- SOE1: Environmental Policy Position: A national policy position for Ireland’s environment.
- SOE2: Full Implementation: Full implementation of existing environmental legislation and a review of the governance around the coordination on environmental protection across public bodies.
- SOE3: Health and Wellbeing: Protecting the Environment is an Investment in Our Health and Wellbeing.
- SOE4: Climate: Systemic change is required for Ireland to become the climate-neutral and climate resilient society and economy that it aspires to be.
- SOE5: Air Quality: Adoption of measures to meet the World Health Organization air quality guideline values should be the target to aim for in the Clean Air Strategy.

⁵ Ireland’s Environment – An Integrated Assessment 2020, EPA, 2021.

- SOE6: Nature: Safeguard nature and wild places as a national priority and to leave a legacy for future generations.
- SOE7: Water Quality: Improve the water environment and tackle water pollution locally at a water catchment level.
- SOE8: Marine: Reduce the human-induced pressures on the marine environment.
- SOE9: Clean Energy: Ireland needs to move rapidly away from the extensive use of fossil fuels to the use of clean energy systems.
- SOE10: Environmentally Sustainable Agriculture: An agriculture and food sector that demonstrates validated performance around producing food with a low environmental footprint.
- SOE11: Water Services: Drinking water and wastewater infrastructure must meet the needs of our society.
- SOE12: Circular Economy: Move to a less wasteful and circular economy where the priority is waste prevention, reuse, repair and recycling.
- SOE13: Land Use: Promote integrated land-mapping approaches to support decision making on sustainable land use.

These 13 key messages are considered in the assessment of draft NR2040 in this ER. An effort is made to link the draft Strategy priorities of TII and its stakeholders so that it addresses these national environmental issues as it relates to the National Roads network. This will ensure that the draft Strategy works towards embedding sustainability into the development and management of the National Roads network and works towards sustainability including delivering on the Governments' national climate objective to transition to a climate resilient, biodiversity-rich, environmental-sustainable and climate-neutral economy by 2050.

Some of the key issues relating to the development, operation and maintenance of the National Roads network, together with the existing environmental problems and likely future challenges are discussed under each of the SEA environmental factors in the following sections.

5.1 Likely evolution of the baseline in the absence of the Strategy

Biodiversity: In absence of the NR2040 Strategy, biodiversity is likely to continue along the same trajectory whereby pressures from habitat loss, land use change (i.e., urban sprawl or intensification of agricultural practices) and habitat fragmentation strain biodiversity nationally. The Habitats Directive, the Birds Directive, and the National Biodiversity Action Plan (which includes biodiversity no net loss) will continue to be implemented and provide some protection to biodiversity resources. Biodiversity may be further impacted from climate change induced impacts such as storms, flooding, and drought which can affect the ranges of native species and habitats, while providing suitable conditions for the spread of invasive alien species.

Population and Human Health: Ireland's population is likely to continue to grow along the existing trends. The NPF projects the population of Ireland will increase by 1 million by 2040 from the 2016 figures to reach 5.7 million. 25% of this is forecast for the Dublin area with another 25% projected across the other four main cities of Cork, Limerick, Galway, and Waterford. This population growth is likely to exacerbate pressure on land use as well as water, wastewater and transport services to meet the demands of the growing population. In the absence of the NR2040 Strategy, there is a risk that the integration of the road transport related policies including Project Ireland 2040 and the

three Regional Spatial and Economic Strategies will not be achieved, and the continued pressure on the road transport network will persist. This would also mean that private car will continue to be the dominant mode of travel, with continued poor integration with sustainable modes of travel.

Noise and Vibration: The Environmental Noise Regulations will continue to require the relevant Planning Authorities to prepare noise action plans which are designed to manage environmental noise through land use planning, traffic management and control of noise at source. Noise impacts from road transport is likely to persist and increase in line with the population growth if the reliance on private car-based transport continues.

Water: In the absence of the NR2040 Strategy, the existing Directives outlined under Water Framework Directive along with the 3rd cycle of the River Basin Management Plan will continue to be implemented and enforced to improve water quality in Ireland. However, there has been an overall decline in the number of “high” quality Irish water bodies in recent years, most notably in rivers. Nutrient enrichment in waterbodies continues to be the most prevalent issue and is expected to remain problematic due to the growing population and intensive agriculture rates evident in Ireland. Emissions from road transport from hydrocarbons and spillages as well as land use changes associated with the continued development of the road network would continue to influence the deterioration of water quality.

Air Quality: In absence of the introduction of the NR2040 Strategy, there is a risk that air quality will likely experience similar trends to those occurring currently. Vehicle related air pollutants (such as Nox and PM₁₀) will continue to climb which will likely lead to future air quality impacts.

Climatic factors: In absence of the NR2040 Strategy, climatic factors will continue. The Climate Action and Low Carbon Development (Amendment) Act 2021 commits Ireland to reach a legally binding target of net-zero emissions no later than 2050. The Act also commits Ireland to reduce its GHG emissions by 51% reduction relative to 2018 levels by 2030. The transport sector is a significant contributor to greenhouse gas emissions and due to the anticipated increases in population, employment and economic growth over the next two decades, it is likely that this will result in greater transport activity and demand and subsequently greater increases in emissions. Climatic factors such as increased storm prevalence and intensity, drought and flooding currently pose a risk to the operation and maintenance activities of the National Road network and other critical infrastructure which would likely intensify if investment were not made.

Land and Soils: The current key pressures on land use are population growth, land use changes, agriculture, erosion, afforestation, and overgrazing will likely continue. Continued development of National Roads will likely have localised impacts and result in increased soil sealing, soil compaction and wider geological and hydrological impacts particularly in karst sensitive areas.

Material Assets: In absence of the NR2040 Strategy, congestion on the National Road network will likely continue to worsen particularly as the population grows and result in worsening congestion particularly in urban areas. Such impacts will also be contingent on the development of alternative transport modes and traffic demand and management measures. Pressure on the provision of utilities, particularly renewable energy is likely to grow in order to meet decarbonisation targets.

Archaeological, Architectural and Cultural Heritage: In absence of the NR2040 Strategy, archaeological, architectural, and cultural heritage would continue to be

under pressure from development due to land use change and further road developments potentially impacting both known and unknown features of cultural heritage.

Landscape and Visual Amenity: Landscape and visual concerns would remain as a result of continued development particularly those associated with large infrastructure projects such as road development result in changes to the landscape and visual environment. These would continue to be dealt with as part of the planning processes and related environmental assessments at lower planning tiers and at the project level.

Inter-relationships: In the absence of the NR2040 Strategy, inter relationships between different environmental factors are likely to continue. The interaction between the transport sector as a material asset with climatic factors, air quality, noise and the subsequent impacts on human health, water quality, biodiversity etc will persist in absence of the NR2040 Strategy.

Transboundary: In the absence of the NR2040 Strategy, transboundary impacts will continue to impact both Northern Ireland and the Republic of Ireland due to the nature of sharing an island. Similar transport and settlement patterns are likely to continue on both sides of the border with associated environmental impacts to air quality, water, landscape & visual climate and settlement patterns. Impacts will be relevant to the types of developments arising.

5.2 Biodiversity

Biodiversity in Ireland is currently facing several threats, the biggest of which is habitat loss. Climate change is a significant pressure along with balancing economic development with environmental protection. While the pressure from road building reduced during the 2007-2013 period in comparison to the previous reporting period (2001-2006), the growing economy and future development of new road schemes are likely to increase this pressure once more (NPWS, 2013). There is potential for biodiversity to be impacted by NR2040, through the loss of habitat and/or spread of invasive species as a result of construction and maintenance activities. Habitat loss may be direct or result from fragmentation or deterioration. Biodiversity may also be impacted by direct species mortality and disturbance from construction works. The development and expansion of road infrastructures represents one of the most widespread forms of modification of the natural landscape over the past century. Roads have altered ecosystems and directly and indirectly effect a wide range of wildlife species (TII, 2021). Similarly, road construction may act as a barrier to movement, dispersal or migration of biodiversity in an affected area. However, the expansion, ongoing maintenance, and operation of the National Roads network as a transport system have the potential to have both positive as well as negative effects on biodiversity (NPWS, 2019). An example of a positive effect would be the value of roadside habitats and the provision of an ecological corridor along these linear habitats.

This section examines the biodiversity baseline including EU Designated Sites, protected habitats and species and their existing and potential interface with National Roads.

5.2.1 Biodiversity Strategy 2030 and National Biodiversity Action Plans

The EU's biodiversity Strategy for 2030 is a comprehensive, ambitious and long-term plan to protect nature and reverse the degradation of ecosystems. The Strategy aims to put Europe's biodiversity on a path to recovery by 2030 and contains specific actions and commitments. It is the proposal for the EU's contribution to the upcoming

international negotiations on the global post-2020 biodiversity framework. The 3rd National Biodiversity Action Plan, 2017 – 2021 sets out several strategic objectives and in excess of 100 actions geared towards achieving these objectives. The 2015 Interim Review of the Actions for Biodiversity, 2011-2016 stated that most strategic targets had either been achieved or were being worked towards. Select targets which necessitated greater attention were brought forward to the 3rd National Biodiversity Plan 2017-2021 which was published in 2017. The respective Biodiversity Plans are sequential and build on the actions not achieved in the earlier plans. The 4th Plan is currently in preparation and will run from 2022 to 2026.

The requirement for developments to move towards No Net Loss of biodiversity is set out in Action 1.1.3 of the National Biodiversity Action Plan 2017-2021 which states that “All Public Authorities and private sector bodies move towards no net loss of biodiversity through strategies, planning, mitigation measures, appropriate offsetting and/or investment in Blue-Green infrastructure”.

5.2.2 Designated Sites

There are several nature conservation designations in Ireland, protected at international, European, and national level, as follows:

International designations:

- UNESCO (United Nations Educational, Scientific and Cultural Organisation) World Heritage and Biosphere sites. Currently there are 2 designated UNESCO World Heritage Sites (Archaeological Ensemble of the Bend of the Boyne and Sceilg Mhichíl) and a further seven heritage sites currently listed as tentative, but yet to be officially designated (UNESCO, 2022); and
- Sites designated as wetlands of international importance or RAMSAR sites. 45 sites are currently designated as RAMSAR sites (RAMSAR, 2022).

European designated sites:

- Special Areas of Conservation (SACs); and
- Special Protection Areas (SPAs).

National designations:

- National Heritage Areas (NHAs) and proposed National Heritage Areas (pNHAs);
- Other designations including for example: - Salmonid Waters, Freshwater Pearl Mussel (FWPM) catchments, etc.

European Designated Sites

The European Communities (Natural Habitats) Regulations, S.I. 94 of 1997 transposed the Habitats Directive (92/43/EEC) into Irish law in 1997. However, the Regulations were subsequently revised and consolidated in the European Communities (Birds and Natural Habitats) Regulations 2011, S.I. 477 of 2011. The main purpose of the Habitats Directive is to ensure the appropriate conservation of natural habitats and of wild fauna and flora. Under the directive, Ireland like other Member States was required to establish an ecological network of SACs (sites which host a range of natural habitats and species listed in Annex I and II of the Directive) and SPAs as designated under the Birds Directive (2009/147/EC). In Northern Ireland, the Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995 (as amended) transposed the Habitats Directive and the Birds Directive into Northern Irish law. Consideration is given towards European sites in Northern Ireland due to the connectivity of the

respective road networks and the potential of effects of the Strategy on European Sites north of the border.

There are 439 SACs in Ireland, covering 13,500km². Roughly 53% are land-based designations, the remainder being marine environments or large lakes (NPWS, 2022a). There are approximately 165 SPAs encompassing over 5,700km² of marine and terrestrial habitats (NPWS, 2022b). In Northern Ireland there are 58 SACs and 16 SPAs. In Ireland, these European sites occur in greatest concentrations in the west of Ireland and particularly along the western, north-western, and south-western coasts. The National Parks and Wildlife Service (NPWS) monitor and assess the status of habitats (Annex I) and species (Annex II) listed in the Habitats Directive for which Special Areas of Conservation (SACs) must be established. Similarly, the Birds Directive lists of important bird species (Annex I), other migratory bird species and waterfowl, for which Special Protection Areas (SPAs) must be established. This considers the status of the range, area, structure and functions and future prospects of each species/habitat before defining an overall status for each. A total of 59 different habitats and 61 species are listed.

The overall status of Annex I habitats in Ireland as of 2019 are as follows (EPA, 2020a):

- 15% as 'Favourable'.
- 46% as 'Inadequate'; and
- 39% as 'Bad'.

The overall status of Annex II species in Ireland as of 2019 is as follows (EPA, 2020a):

- 57% as 'Favourable'.
- 15% as 'Inadequate'.
- 15% as 'Bad'; and
- 13% as 'Unknown'.

Figure 5-1 below illustrates the (p)NHAs and onshore and offshore SACs and SPAs and NHAs for both Ireland and Northern Ireland.

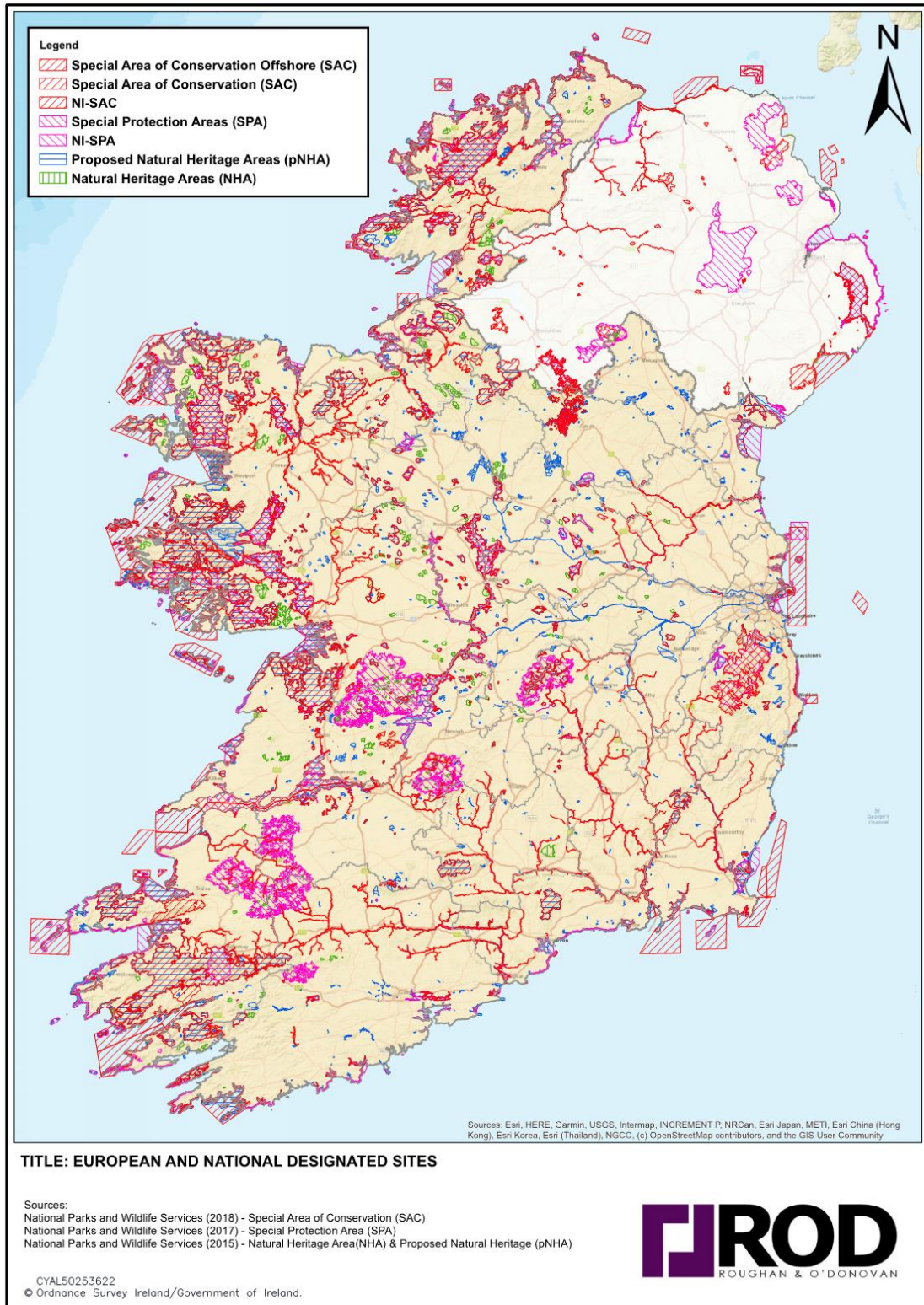


Figure 5-1 European and National Designated Sites

Nationally Designated Sites

The Wildlife (Amendment) Act 2000 makes legal provision for the designation and protection of a national network of Natural Heritage Areas (NHAs). The designation is currently used by the National Parks and Wildlife Service (NPWS) to protect wildlife habitats, such as raised bogs. There are 155 NHAs across the country, the majority

of which are bog-related, and 1089 pNHAs which have yet to be statutorily proposed or designated (NPWS, 2022c). Other ecological designations across Ireland include:

- 6 National Parks.
- Protected sites such as Nature Reserves or Wildlife Refuges identified in County Development Plans.

Figure 5-2 is illustrated below and displays International and National Protected Sites within Ireland and Northern Ireland (excluding EU Designated sites).

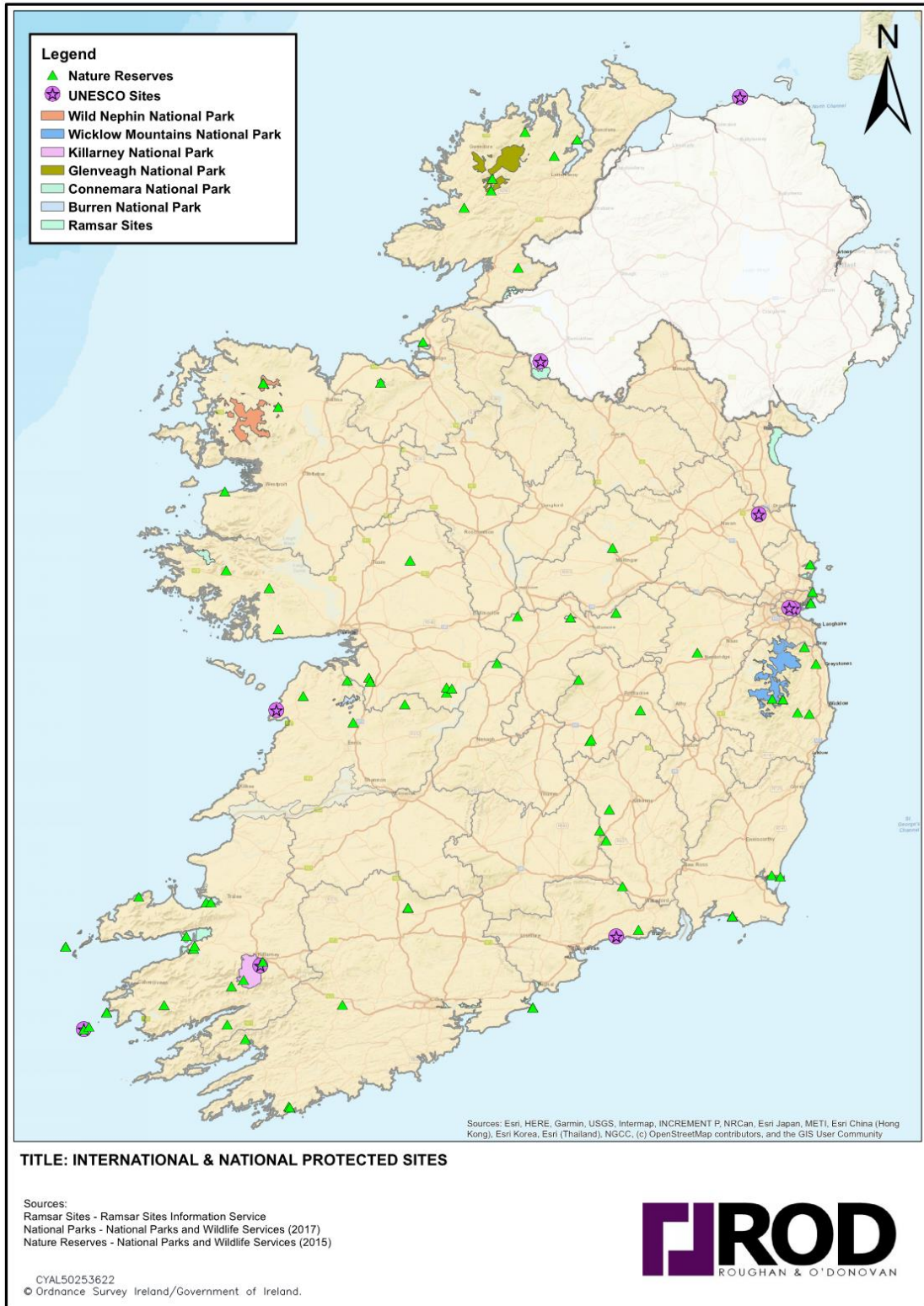


Figure 5-2 International and National Protected Sites

Key Considerations regarding Designated Sites

Road projects can impact on designated sites in a number of ways during both construction and operational phases. During construction, road projects can remove habitat and cause deterioration of remaining habitats which support various species of flora and fauna. Road developments can create barriers and cause fragmentation within designated or protected sites due to the linear nature of these projects. Existing

hedgerows and treelines, apart from their direct habitat value, provide multiple benefits to biodiversity, critically they function as corridors for movement and connectivity within the landscape for all types of fauna. The fragmentation of this network by road developments without appropriate mitigation can have profound implications for many species. Construction can also cause disturbance to habitats and species which may be located in the zone of influence surrounding a project, through physical disturbance of their habitat or through noise or visual impacts. The effects of noise pollution on wildlife have only recently received increased scrutiny. For example, Parris and Schneider (2009) conducted a study which identified that traffic noise can negatively impact the distance over which acoustic signals such as song can be detected, an effect known as acoustic interference or masking making it more difficult for birds to establish and maintain territories, attract mates, and maintain pair bonds, and possibly leading to reduced breeding success in noisy roadside habitats (Parris and Schneider, 2009).

The operation of road projects can lead to water quality impacts, disturbance effects and collision risks. In addition to this, the operation of road projects can give rise to atmospheric pollution which can result in harmful effects on nearby peatlands. Atmospheric pollutants are deposited onto peatlands as gases and particles. Sulphur and nitrogen compounds released in car emissions can have direct effects on peatland vegetation as well as causing unnatural increases in acidity.

Future trends are likely to be contingent on to the development of designated sites (either additions or alterations of existing environments) in the form of SAC's, SPA's or NHAs. Similarly, pNHAs could be confirmed as NHAs and sites listed as tentative on the UNESCO Heritage list may be promoted to designated heritage sites. As referenced above habitat loss is the greatest biodiversity threat in Ireland. The development of road infrastructure could lead to the loss, fragmentation and deterioration of important habitat. Subsequently, the expanding emergence of land use shifts such as urbanisation and afforestation together with their subsequent management techniques impose both quantitative and qualitative risks to aquatic and terrestrial habitats as well as protected sites. The NPWS are currently progressing Conservation Management Plans and accompanying conservation objectives for designated European sites. Similarly, management plans for threatened and declining species are also being drafted. Such species management plans will help to conserve national and localised biodiversity. However, conservation management plans and conservation objectives are unlikely to be developed for every site.

5.2.3 Terrestrial Biodiversity

5.2.3.1 Plants

An important piece of national legislation for the protection of wild flora, i.e., vascular plants, mosses, liverworts, lichens and stoneworts, is the Flora (Protection) Order, 2015, which makes it illegal to cut, uproot or damage listed species in any way or to alter, damage or interfere in any way with their habitats. Additionally, Annex II and/or IV of the Habitats Directive offers additional protection to a small number of plant species, namely Floating Water-plantain (*Luronium natans*), Slender Naiad (*Najas flexilis*), Marsh Saxifrage (*Saxifraga hirculus*), Killarney Fern (*Trichomanes speciosum*), Slender Green-Feather Moss (*Hamatocaulis vernicosus*), and Petalwort (*Petalophyllum ralfsii*).

Plants may be directly removed during the construction of national roads. In addition to this, air quality impacts can have a negative effect on all plant species. Nitrogen and sulphur-based emissions can have toxic effects on peatland species and dust and sediment can settle on the surfaces of both terrestrial and aquatic based plants which

may inhibit their ability to photosynthesis. Air quality impacts can arise during both the construction and operation of national roads.

5.2.3.2 Mammals

Almost all native Irish mammal species are protected under the Wildlife Act 1976 (as amended). Additionally, Annex II and IV of the Habitats Directive offers certain mammals additional protection status, namely Otter (*Lutra lutra*) and Lesser Horseshoe Bat (*Rhinolophus hipposideros*). All bat species are protected under Annex IV of the Habitats Directive. In the most recent Red List of Irish Mammals (NPWS, 2019), all native Irish terrestrial mammals fell into the category of “Least Concern” with the exception of the Black Rat (*Rattus rattus*) which was classified as “Vulnerable” (NPWs, 2019).

Road developments can have direct and indirect impacts on populations of mammals in the local vicinity. Direct effects may include risks such as collision during both the operation and construction stage and the destruction of critical habitat. However indirect effects may also arise such as habitat fragmentation creating ecological damage and roads acting as barriers to migration or severance from important ecological resources e.g., water, prey, shelter etc. Any such impacts may be emphasized if impacts occur during sensitive time periods for mammals such as breeding seasons, this can result in significant population impacts on a species. Lusby et.al. (2019) confirmed that motorway verge habitats provide an important refuge for small mammal populations in intensive agricultural landscapes in Ireland. Motorway verges were found to support a similar abundance and greater diversity of small mammal species than hedgerow networks in pastoral farmland in Ireland. The findings provide evidence of the behavioural response of small mammal populations to motorway verges in grassland-dominated landscapes and demonstrate the potential for road infrastructures to contribute to maintaining and enhancing biodiversity in heavily modified landscapes. During the operational phase, nocturnal species such as bats may be impacted by exposure to the artificial light often present along road corridors. Nocturnal animals can become disorientated and experience miscues and interruptions to their circadian rhythm because of artificial lighting.

5.2.3.3 Birds

Annex I of the Birds Directive lists 193 species and sub-species of birds in Europe which are in danger of extinction, vulnerable to specific changes in their habitat, considered rare because of small populations or restricted local distribution and/or require particular attention for reasons of the specific nature of habitats. The populations trends of relevant Irish Annex I bird species according to the most recent Article 12 National Summary reporting (2008 – 2012) are detailed in **Table 5.2** and **Table 5.3** below.

Table 5.2 Short-term population trends of Annex I species (% of species)

Trend	Breeding	Wintering
Increasing	38%	25%
Stable	24%	12%
Fluctuating	0%	16%
Decreasing	27%	24%
Unknown	11%	23%

Table 5.3 Long-term population trends of Annex I species (% of species)

Trend	Breeding	Wintering
Increasing	19%	19%
Stable	7%	4%
Fluctuating	0%	0%
Decreasing	18%	16%
Unknown	56%	61%

BirdWatch Ireland and the Royal Society for the Protection of Birds (RSPB) in Northern Ireland provides a list of priority bird species for conservation on the island of Ireland. This list is referred to as the Birds of Conservation Concern in Ireland BoCCI List. In this list, birds which breed and/or winter in Ireland are classified into three separate lists (Red, Amber and Green), based on the conservation status of the bird and hence conservation priority. Birds on the Red List are those of highest conservation concern, Amber List birds are of medium conservation concern and the Green List birds are not considered threatened (BirdWatch Ireland, 2022).

The number and breakdown of bird species on the red list is as follows:

- 27 Breeding birds;
- 3 Passage birds;
- 13 Wintering birds; and
- 11 Breeding and Wintering birds.

The number and breakdown of bird species on the amber list is as follows:

- 42 Breeding birds;
- 8 Passage birds;
- 11 Wintering birds; and
- 18 Breeding and Wintering birds (Birdwatch Ireland, 2022).

The primary direct effects on breeding birds as a result of National Road projects is the loss of nesting and foraging habitats through the removal of vegetation including hedgerows and treelines. The provision of replacement landscaping along the margins of road projects however can provide future habitats for birds. The concept of ensuring No Net Loss of habitat should provide replacement habitat for breeding birds, and the provision of new ecological corridors if linear landscaping is provided alongside road projects (IEEP, 2020).

Road construction and operation can have direct impacts on wintering birds through the removal of feeding grounds used by wintering bird species. The presence of humans in an area is unlikely to illicit a response in waterfowl beyond 300 m (Cutts et al, 2009). The noise levels from typical construction activity, as set out in BS 5228: Part 1, are generally less than 100 dBA. Put into practice, this will mean that if the noise generated was 100 dBA at 1.0 m from the source, this sound will be 70 dBA at 32 m away. The threshold for noise to have an impact on waterbirds is 70 dBA at receptor (Cutts et al., 2013). Regular noise above this level is likely to illicit a response.

Roads can result in the mortality of bird species from collisions. Waterfowl that commute along river corridors are at risk of colliding with bridge structures. Passerines (songbirds) and species that forage on roads are more likely to be killed by vehicle

collision (Husby, 2016). An investigation on the effects of road developments on Barn Owl behaviour and mortality patterns in Ireland was undertaken by BirdWatch Ireland and Transport Infrastructure Ireland to determine the impacts of road networks on Barn Owl populations and to identify mitigation requirements (Lusby et al. 2021). The findings of the BWI study indicate that the main negative effects of major roads on Barn Owl populations in Ireland are from direct mortality through vehicle collisions and not by other means such as displacement, disturbance, or through a reduction of breeding range or suitable habitat. Barn Owls were found to be the most susceptible bird to vehicle collisions on Irish roads based on number of road fatalities recorded and population densities per species. The study found that Barn Owls spent more time hunting along or in close proximity to major roads than elsewhere in their home range. This confirms that major roads can provide some benefits to Barn Owls in the form of the provision of suitable foraging habitat for Barn Owls in Ireland along roadside verges. Based on the findings of the study, a series of mitigation strategies to be incorporated into the design of future road projects are provided in the TII publication to minimise mortality and the effects of major road infrastructures on Barn Owl populations in the Republic of Ireland.

5.2.3.4 Invertebrates

Invertebrates make up a large portion of Ireland's biodiversity and are essential to ecosystem functioning. An important function of terrestrial invertebrates is their role as pollinators. Irish pollinators are in serious decline primarily due to the loss of natural and semi-natural habitats. Land use management has an effect on the welfare of pollinator populations and the widespread use of pesticides is also having detrimental effects on their populations. The construction of national roads has the potential to contribute to the loss of these habitats. However there are also opportunities for national roads to benefit invertebrate populations in Ireland during both construction and operational phases of national roads. The *All-Ireland Pollinator Plan 2021-2025* (NBDC, 2021) is a national plan of action which sets out a list of objectives with the overall aim to halt the decline of pollinators in Ireland. There are opportunities to implement actions during the construction and operation of national roads that will benefit pollinators and support the objectives outlined in this plan.

5.2.4 Aquatic Biodiversity

Ireland has vast marine environments under its jurisdiction. These areas harbour significant marine biodiversity including 24 species of whales and dolphins, 35 species of sharks, 2 species of seal, 24 species of sea birds. Similarly, there are in excess of 250 species of marine plants and hundreds of fish species and invertebrates (An Taisce, 2022). In freshwater environments, aquatic biodiversity and ecosystems are supported by rivers, lakes, ponds, wetlands, reservoirs, streams, and groundwater environments support freshwater ecosystems and aquatic biodiversity. Clean and adequate water flows are a prerequisite for aquatic macro-invertebrates, species of fish such as Atlantic Salmon (*Salmo salar*), White-Clawed Crayfish (*Austropotamobius pallipes*), Lamprey species and Freshwater Pearl Mussel (*Margaritifera margaritifera*) require such conditions to survive. In addition to the designation of SACs for the protection of these species, certain watercourses have been designated as "Salmonid Waters" under S.I. No. 293/1988 European Communities (Quality of Salmonid Waters) Regulations, 1988 and Margaritifera Sensitive Areas. Subsequently the presence or absence of such species can be useful water quality indicators. Furthermore, protected terrestrial species such as Otter and Kingfisher (*Alcedo atthis*) depend on freshwater environments for a source of food.

Alterations to aquatic habitats can impose deleterious impacts on water environments. Alterations may be represented by bank protection, channel straightening, river diversions and the provision of additional river crossings as part of road construction.

River crossings are likely designed to support NR2040 as a National Roads Strategy. However, modifications may impact on the physico-chemical and ecological quality of the aquatic environment (Cocchiglia, et. Al, 2012). During the construction phase, impacts on water quality in adjacent watercourses such as siltation can cause direct and indirect impacts on aquatic biodiversity. Watercourses and their fauna are vulnerable to pollution from hydrocarbons, cement laitance, water-proofing substances and other pollutants associated with the construction phase. Similarly, noise impacts on hearing specialist species such as Twaite Shad (*Alosa fallax*) and marine mammals more generally may arise where road developments traverse or interact with marine environments.

Impacts on water quality during the operation stages of road projects can also have impacts on aquatic biodiversity through polluted runoff or spillages. The extent and magnitude of impacts on water quality would relate directly to the scale and duration of any pollution event. While a catastrophic event could result in a significant local impact (e.g., an oil spillage) the more likely risk would be associated with lower magnitude events such as siltation, and the potential for ingress of hydrocarbons. Such impacts could, in the absence of appropriate design and mitigation, result in impacts on watercourses and aquatic biodiversity present.

5.2.5 Invasive Species

The spread of invasive species can have considerable negative impacts on wildlife and habitats. For this reason, the significant risks posed are detailed in Ireland's National Biodiversity Plan (2017-2021) as well as the recent European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011). Species categorised as invasive are done so based on their scoring from risk assessments or listing under relevant regulations. Of the 377 recorded non-native species in Ireland that were risk assessed, the majority (66%) are at risk of low impact, 21% ranked with a risk of medium impact and 13% ranked as having a risk of high impact. The percentage of high impact species in Ireland is similar to other European countries that have undertaken risk assessments. The main regulations influencing Ireland's invasive species lists are:

- The Third Schedule list of the European Communities (Birds and Natural Habitats) Regulations 2011 [S.I.477/2011] – 76 listed species;
- The Invasive Alien Species of Union concern listed under the EU IAS Regulation [1143/2014] – 66 species;
- The European Union (Invasive Alien Species) (Freshwater Crayfish) Regulations 2018 [SI 354/2018] – 5 listed species

Highly invasive species included in the Third Schedule in Ireland include species such as:

- Giant Hogweed (*Heracleum mantegazzianum*);
- Giant Rhubarb (*Gunnera manicata*);
- Himalayan Balsam (*Impatiens glandulifera*);
- Japanese Knotweed (*Fallopia japonica*);
- Rhododendron (*Rhododendron ponticum*).

Currently, there are 130 established and potential invasive species in Ireland. Potential invasive species may become established in Ireland and spread nationally. The EPA's Report on Alien Invasive Species and the continuing improvement of the National Biodiversity Data Centre's National Invasive Species Database will aid in documenting the broad distribution of invasive species in Ireland. The reports and datasets aid

and support the implementation of tailored European legislation to halt the spread of invasive species (Regulation 1143/2014, entered into force on 1 January 2015). The importation of soils and material for the construction of roads should be carefully managed so as to ensure that invasive species are not introduced into construction sites.

5.2.6 Climate Change

Irish biodiversity is highly vulnerable to the impacts of climate change and has a low adaptable capacity compared to other vulnerable sectors. Climate change has major indirect impacts on Irish biodiversity through its interactions with other stressors, in particular habitat fragmentation and loss; over-exploitation; pollution of air, water and soil; and spread of invasive species. The construction and operation of national roads will give rise to emissions that will contribute to the growth of climate change.

5.2.7 Key Considerations Relating to the draft NR2040

The key considerations including environmental problems and trends in relation to Biodiversity are as follows:

- The construction of National Roads has the potential to cause direct loss and fragmentation of ecologically significant habitats as well as contributing to the ongoing degradation and deterioration of these habitats during both construction and operational phases of these developments.
- The construction and operation of National Roads has the potential to give rise to impacts on the water quality of rivers, lakes and estuarine habitats as well as impacting air quality through the production and facilitation of emissions.
- The development and operation of National Roads have the potential facilitate the spread of invasive species along National Road corridors
- The construction and operation of National Roads has the potential to disturb and displace rare and protected species through noise and vibration effects as well as the provision of artificial lighting.
- The operation of National Roads has the potential to cause direct mortality of rare and protected species due to a collision risk with moving vehicles and by obstructing commuting corridors of birds and bats with bridge structures.
- Potential for known and unknown impacts on biodiversity along National Roads due to climate change impacts.
- NR2040 and its subsequent developments have the potential to impact protected areas including European Sites (SAC, SPA and RAMSAR, and National Sites (NHAs, pNHAs) and other sites of regional or local importance (Areas of Special Scientific Interest (ASSI), Areas of Outstanding Natural Beauty (AONBs), Nature Reserves, National Heritage Sites, Wildlife Reserves) through the mechanisms listed above.
- Potential positive effects resulting from enhancements to support biodiversity, e.g. provision of ecological corridors and connectivity for wildlife within the wider landscape.
- Implementation of the actions stemming from 3rd National Biodiversity Plan 2017-2021 and 4th plan (2022-2026, in preparation) namely a greater focus on Biodiversity Net Gain (BNG) or No Net Loss (NNL) of Biodiversity on projects.
- No Net Loss is achieved when the negative impacts of the project on biodiversity are outweighed by avoidance measures, mitigation, and enhancements. Projects stemming from the Strategy should consider incorporating No Net Loss principles whereby if a development results in the removal, damage or loss of

biodiversity, alternate provision or accommodation will be created to mitigate against any such loss.

5.3 Population and Human Health

The population of Ireland is reliant on good quality road transport links to provide access to key services around the State, of which the National Roads network is a key component. It is projected in the National Planning Framework that there will be one million extra people in Ireland by 2040. Population growth and demographic change can put pressure on the environment and NR2040 has been drafted to align and support the delivery of the NPF ensuring the National Roads network is managed to deliver safe, efficient access to goods and services and support compact sustainable development. This section outlines the existing situation regarding population and human health and how they relate or interact with the draft National Roads 2040.

As population trends shift, the National Roads network must adapt to provide adequately for the populations of both urban and rural areas of the country, to support sustainable settlements and communities to achieve compact growth in line with the NPF and to support the rejuvenation and revitalisation of urban centres in line with the NDP. The National Roads network must also maintain its strategic capacity and safety including planning for the future movement of people and goods, improving certain inter-urban journey times and the strengthening of public transport connectivity between cities.

5.3.1 Population and Demographics

The preliminary 2022 Census results report that the population of Ireland is current 5,123,536 persons, which represents an increase of 361,671 people since 2016 (7.06%). This is the first time the population has risen above 5 million since the 1851 Census (CSO, 2022a). The complete set of final results from the 2022 Census (when published) will provide an accurate figure and analysis of where Ireland now stands in a post pandemic environment with regards to the population, demographics and will further inform pressures and trends on the National Road network.

Population Density

Population density is increasing steadily in Ireland, reaching 70 people per km² by 2016, up from 62 persons per km² in 2006 (CSO, 2016a). The largest growth is arising in urban areas. Approximately 63% of the population resided in urban areas in 2016 in comparison to 37% who resided in rural areas (37% accounts for 7% of people in rural settlements and the 30% who do not reside in a settlement of any sort) (CSO, 2016a). How people travel is also influenced by the density of an area with public transport being more viable in densely populated areas than in rural areas.

In the 2011-2016 period, approximately 80% of the population growth occurred in urban areas. The 2011 density average for urban areas was 1,736 people per km², rising to 2,008 per km² in 2016, while in rural areas the average population density was 26 people per km², rising slightly to 27 people per km² in 2016 (EPA, 2016). As urban populations increase there is continued pressure on the transport network to support the movement of people and goods in affected areas. Similarly, as the population in rural areas declines and becomes more dispersed the transport network is challenged to link these isolated communities with surrounding urban areas.

Means of Travel

The private car is the primary means of travelling to work, school or college for 61.4% of the population.

The transport demand has increased significantly in Ireland in alignment with economic and population growth. Vehicle ownership has grown from approximately 1.3 million in 1999 to 2.8 million in 2019, of which approximately 2.2 million (77.5%) were private cars. The ownership of commercial vehicles more than doubled from the 1999 to 2019 figures. The levels of traffic growth have risen across all regions and types of National Roads between 2020 and 2021, with Motorways experiencing the majority of traffic growth at 15.7%. The west of Ireland experiencing the highest levels of traffic growth at 14.9% compared to the rest of the country. However, it should be noted that these increases are not representative of 'normal' trends which were influenced due to Covid-19 pandemic. Therefore, figures for 2019 are likely to be more representative of 'normal' traffic conditions with traffic growth more constrained across the network at 2.5% while Motorways, National Primary and National Secondary roads experienced growth of 3%, 2.2% and 2.1% respectively (TII, 2020).

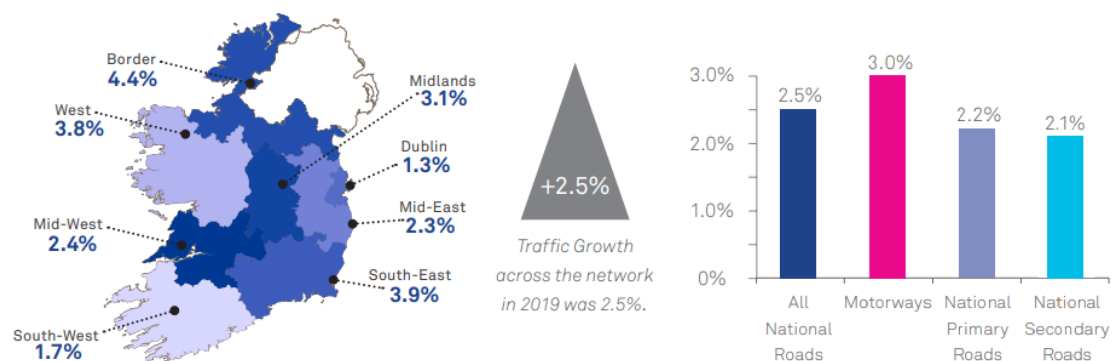


Figure 5-3 Traffic Growth 2019 (TII, 2020)

In 2016, 82% of Irish households owned at least one car (CSO, 2016d). According to the National Household travel survey, journeys by car accounted for 73.7% of all journeys in 2019, while walking accounted for 13.5% and 4.8% were made by bus (CSO, 2019b).

How people travel is also influenced by the density of an area. In sparsely populated areas, over eight of every ten (83.8%) journeys were made by car. In comparison, people residing in densely populated areas completed six of every ten (61.7%) journeys by car (CSO, 2019b). In line with this trend, NSO 1 Compact Growth of the National Planning Framework aims to focus 50% of population growth in the main cities and urban centre which would be supported by integrated transport, promoting regeneration and revitalisation of urban areas, which will secure a more sustainable future for settlements and for communities (Government of Ireland, 2018).

10 minute Town Concept

The “10 Minute Town” is a concept that is being introduced into regional policy in Ireland, which seeks to have all community facilities and services accessible within a 10 minute walk or cycle from homes, or accessible by public transport services connecting people to larger scaled settlements. To support this the Southern Regional Assembly has developed a 10 Minute Towns Accessibility & Framework Report having joined the Interreg Europe MATCH-UP project in 2018 to learn from other European regions on how to improve regional policies to increase the use of sustainable transport modes and reduce carbon emissions. This report will be used to assist the Local Authorities in the Southern Region in fully integrating the “10 Minute Town Concept” into to future Local Development Plans and increase the use of sustainable transport and reduce carbon emissions in the Southern Region (Southern Regional Assembly, 2020).

The CSO publication titled 'Measuring Distance to Everyday Services in Ireland' shows the average distance of residential dwellings to the primary and secondary road network. The distances were calculated based on the Census of Population 2016 residential dwellings. It shows that in most counties average distance from residential dwellings to the National primary and secondary road network range from between 3-5km. Some of the border counties are above this range with Leitrim, Cavan and Donegal averaging between 7-9km distances. Dublin has the shortest distance averaging 3.5km (CSO, 2016e).

A breakdown of the distance to main roads at local level is indicated in **Figure 5-4**, which shows the average distance to the main road network at electoral division (ED) level across Ireland. The highest number of EDs were within the distance range of between 2 and 5 kms from a main road.

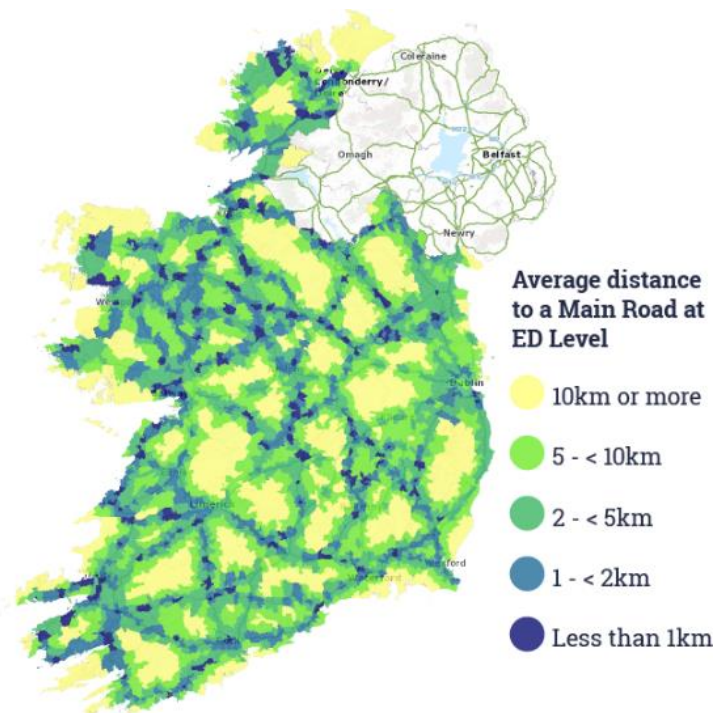


Figure 5-4 Average Distance to a Main Road at Electoral Division (CSO, 2021b)

5.3.2 Population Trends and Development

Population Distribution

The NPF has been developed on the basis that the population of Ireland will increase by 1 million over 2016 levels by 2040 to reach 5.7 million. 25% of this is forecast for the Dublin area with another 25% projected across the other four main cities (Cork, Limerick, Galway, and Waterford). The remaining 50% of growth is projected to occur in the regional towns, villages and rural areas as set out in the Regional Spatial and Economic Plans (RSEs) (CSO, 2016a). The overall percentage of people living in urban areas is projected to rise from approximately 63% to 73.5% by 2040. Similarly, population density is projected to grow from 70 persons per km² to approximately 80 persons per km² by 2040 (CSO, 2016b). **Figure 5-5** below illustrates the change in population density between 2011 and 2016. The figure illustrates that a decrease in population within EDs is more common in the west of Ireland, however this trend is soon to be further updated when the comprehensive Census 2022 results are released. The greater acceptance of remote working coupled with expensive rents or lack of housing availability in many of main cities and towns may have an impact on the population distribution. Anecdotally there appears to be more of a shift to

population moving out of Dublin and cities to more regional or rural areas in recent years.

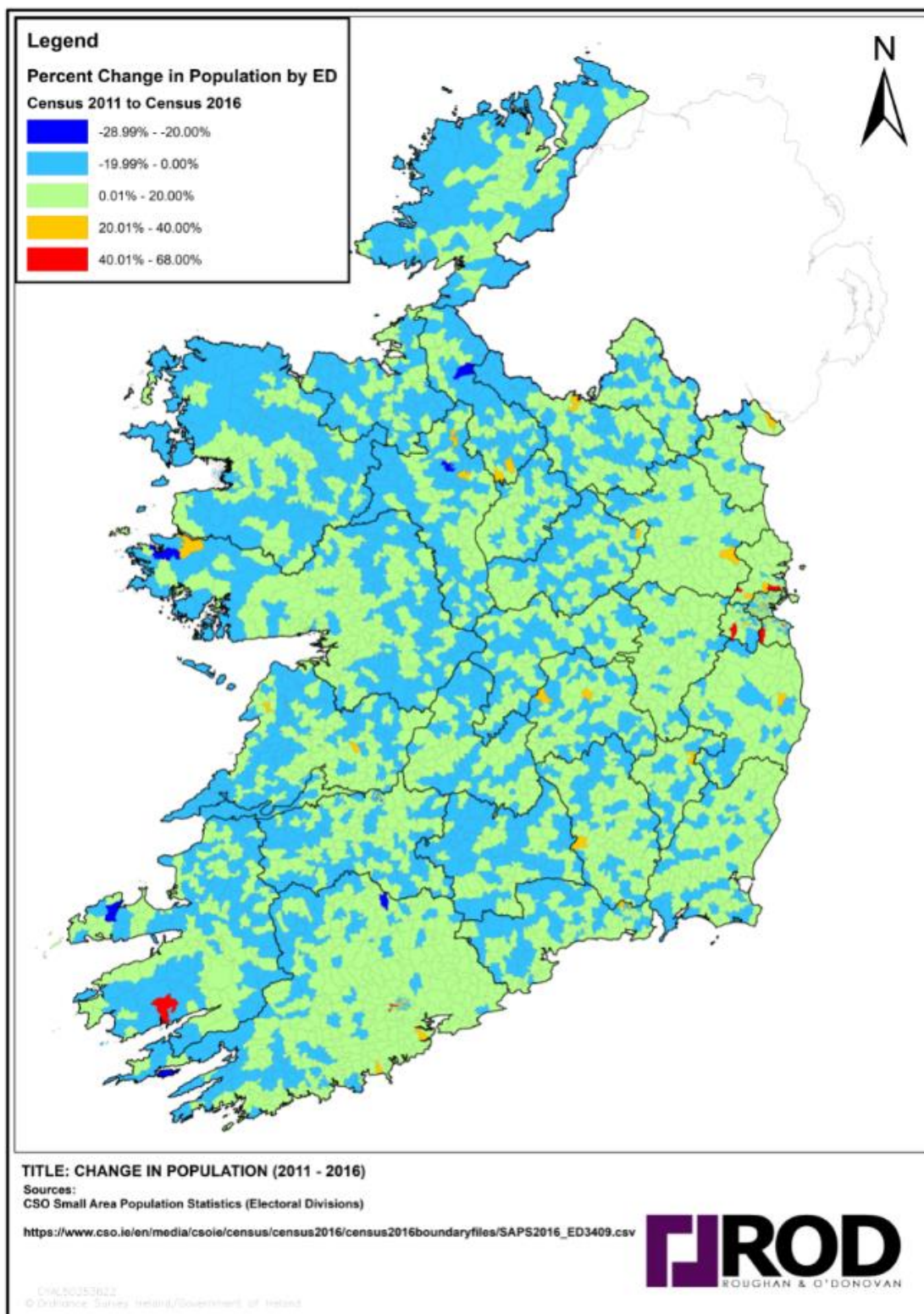


Figure 5-5 Percentage Change in Population by Electoral Division 2011-2016

Sustainable Travel

Ireland is becoming increasingly more urbanised with 75% of Ireland's population residing in urban areas, with 26% of the national population residing in the Dublin area

(CSO, 2016a). The 5 major cities are linked via the National Road network. NIFTI advocates for a greater focus on sustainable mobility including public transport, and active travel (walking and cycling). Providing the supporting transport infrastructure to meet the demands of rising population and continuously changing society will require considerable co-ordination and investment in National Roads infrastructure and integration with other transport infrastructure including sustainable mobility. The transport sector including road transport will be required to respond to the additional travel demand required over time, in a sustainable manner, while also addressing the related congestion and human health issues such as safety, air, noise, and water quality issues.

Projected population growth and decarbonisation targets support the need for more efficient use of road space. The proposed re-allocation of road space to more sustainable modes of transport will help to promote and enable a sustainable modal-shift will also reducing environmental impact. The greater availability of active travel infrastructure and public transport services will enable transport system users to choose the most sustainable and efficient transport modes and routes.

Aging Population

Ireland's population is 'aging', with over 65s expected to represent 22.4% of the population by 2041. Personal mobility generally declines with age, which underlines the requirement for both adequate public transport supports and the continued need to allow for road or car-based transport (taxi, etc.) which are often preferential or indeed necessary for the elderly and those with limited mobility or disabilities. The population's mobility will be an important factor in determining their capacity to engage with services and the National Roads network.

5.3.3 Economic Trends

In recent years, the Irish economy has grown and is projected to continue at least in the medium term, according to the Department of Finance forecasts. The post Brexit period soon coincided with the onset of the Covid-19 pandemic and as such, the impacts on the global economy have been obscured by these events and its subsequent impacts on the Irish economy are not yet fully comprehended. As the national population grows in alignment with economic growth, increased capacity and demand management of the National Road network will be necessary to cater for this growth. It is likely that the urban areas will experience the greatest proportion of this growth. The ability to provide an effective and efficient National Road network is vital to ensuring that investment supports future populations and economic activity. The National Road network will continue to be important in providing the access to employment, goods, services as well as a source of recreational amenity.

The National Road network, and associated GHG emissions from road transport have in the past been intrinsically linked to economic development. One of the biggest challenges the economy faces over the next number of years is the reduction of greenhouse gas emissions across all sectors to meet 2030 and 2050 targets as set out in the Climate Action Plan 2021 (Government of Ireland, 2021). Ireland's economy and society must become cleaner and greener while ensuring a just transition across all sectors. The Just Transition Fund is a European Union framework to assist communities across the EU to meet the challenges of the green transition. Key components of the European Green Deal centre around decoupling economic growth and carbon emissions. As populations grow, Ireland must provide the National Roads infrastructure and services needed without compromising on climate commitments.

With increase of cars and economic growth, increasing congestion is likely to be one of the key trends to influence the National Roads network. When the number of vehicles on a section of the National Road network is higher than economically desirable it is deemed 'aggravated congestion', which results in lower travel speeds, more frequent delays and costs arising from lost time, higher emissions, and increased vehicle operating costs. Aggravated congestion has a damaging impact on the economy (by increasing business and transport costs) and reducing the attractiveness of an area in which to do business and also impact quality of life factors (DTTAS, 2017b).

5.3.4 Tourism & Recreation

A broad range of influences impact tourism and recreation in Ireland, the primary one is the ease of accessibility which is most often facilitated through the National Roads network. In 2019 around 32.9 million and 1.7 million passengers travelled via Dublin Airport and Shannon Airport respectively, their subsequent onward travel is on the National Roads network. These numbers represented a total annual growth of 4.4% in the number of passengers travelling via Irish airports in 2019 (2019 tourism statistics are likely the most relevant to 2022 as due to the Covid-19 pandemic dramatically skewing travel metrics in 2020, 2021 and a portion of 2022). In 2019, 315 cruise vessels transporting approximately 432,443 passengers arrived in Irish ports (CSO, 2019). Tourism and recreation contribute to both local economies and the national economy and influence the National Roads network particularly during peak/seasonal periods or for accessing festivals or events across the country via the National Road network.

Congestion during these times can detract from the tourism experience, repeat business and associated economic development. For example, 11.2 million foreign tourists came to Ireland spending approximately €5.8 billion in 2019 (and this was during a period of Covid-19 travel restrictions). The industry also provides significant employment across the year including seasonal workers.

The National Roads is a key mode of transport to many tourism assets across the country, it is in itself part of the tourism and recreation experience with visitor being able to appreciate the varying landscapes from the road network or indeed visit the many tourism sites that are signposted along the National Road network. It is important that the National Roads network continues to support and facilitate tourism and recreation activities. NR2040 acknowledges tourism's reliance on access to external markets via ports and airports as many are facilitated by the National Roads network. Tourism and rural development are also reliant on the National Roads network to connect tourists with rural and remote tourism locations. Ensuring the network is managed and maintained so that continued development does not affect the tourism assets will be a key factor to consider. However, NR2040 must consider the continued growth of the tourism industry in Ireland, whilst also protecting the environment.

5.3.5 Human Health

The self-reported health of the Irish population is predominantly reported as 'Good' to 'Very Good' based on the Healthy Ireland Survey 2021, published by the Department of Health. 84% of the population (aged 15 or older) felt that their health was very good, whereas 3% deemed their health to be bad or very bad (Department of Health, 2021). The 2016 Census reports that 13.5% of the Irish population have a disability, with a considerable majority of those identifying as having a disability being above 85 years old.

The population of Ireland has a high dependency on the private car as a means of travelling to work school or college. Access to public transport or the capacity to engage in active travel can often be curtailed for users, due to health inequalities or disabilities, resulting in a reliance on the private car. The importance of National Roads is particularly evidenced in rural areas where they provide lifeline routes to communities where there are no alternatives to the private car, which emphasises that there will always be the need for the private car for certain groups in society. Where public transport is available in rural areas, the sometimes-limited services offered, unreliability and poor supporting infrastructure (bus stops shelters etc) means that the perception of it is often poor and a reliance on the private car persists. The reliance on the private car is likely to persist in locations where there are limited transport options and for certain groups in society such as the elderly or people with disabilities.

Road Safety and Traffic Accidents

Traffic injuries or fatalities due to road incidents are the most apparent and immediate link between road transport and human health. As shown in **Figure 5-6** in 2021, 49 fatal collisions occurred on the National Road network. As a result of these collisions, 58 people lost their lives, 13 of these were classified as vulnerable road users (motorcyclists, cyclists or pedestrians) and 5 identified as non-motorised road users (i.e., walkers or cyclists). Further breakdown is provided in **Figure 5-7** (TII, 2022).

FATAL COLLISIONS ON THE NATIONAL ROADS NETWORK 2016 - 2021:

Total fatal collisions on National Roads:



Figure 5-6 Fatal Collisions on the National Road Network 2016-2021 (TII, 2022)

271 people experienced serious injuries from collisions across the National Road network in 2021, of which 79 were vulnerable road users (TII, 2022). Road traffic collisions can also have an indirect influence on the greater surrounding community, through changing the public's perceptions of safety by creating a hostile or dangerous for communities including walkers and cyclists. Roads can also introduce severance effects particularly in busy urban locations where people find it hard to crossroads due to lack of, or poor safe crossing facilities. Addressing these severance effects caused by National Roads and the potential for new severance should be considered as part of project development and appraisals and appropriate solutions developed to remedy such effects.

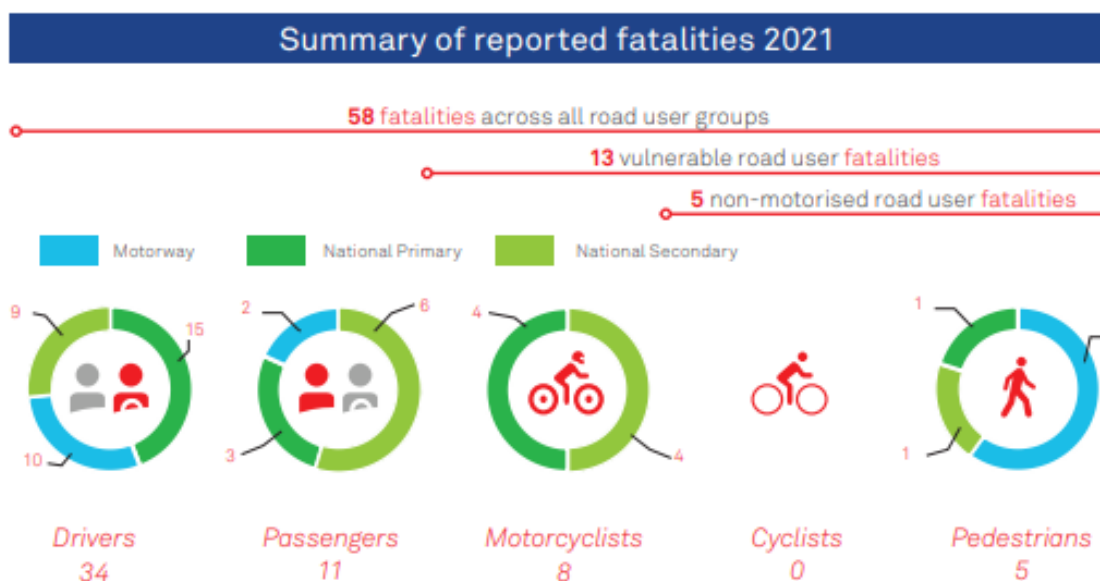


Figure 5-7 Summary of Reported Road Related Fatalities 2021 (TII, 2022)

The Road Safety Authority’s Road Safety Strategy for 2021-2030 aims to reduce deaths and serious injuries on Ireland roads by 50% or lower by 2030. It also aims to achieve Ireland’s long-term goal of Vision Zero, i.e. zero road deaths or serious injuries by 2050 (RSA, 2021). The Strategy outlines a Safe Systems Approach, with seven priority areas outlined, which include the provision of safe roads and roadsides; and the provision of safe and healthy modes of travel of which TII has an important role in delivering.

Congestion and Commuting

Apart from road traffic injuries and deaths, road transport interacts with human health as a contributory factor to stress and anxiety conditions, by increasing the risk of accident, and imposing limitations to mobility (Institute of Public Health in Ireland, 2011). Road transport is often associated with rush hour commuting and congestion, which can pose a significant negative impact upon health and wellbeing. Research has shown that commutes can diminish mental health, physical health, and wellbeing through contributing to high blood pressure along with other negative lifestyle impacts such as limiting free time (Institute of Public Health in Ireland, 2011). Subsequently, the Institute of Public Health in Ireland are supporting active travel (walking and cycling), which present diverse benefits including improved physical health, a decrease in mortality rates, death from obesity and obesity related diseases (including cardiovascular diseases, and certain cancers) while also enhancing mood and quality of life (Institute of Public Health in Ireland, 2011). The changing pattern of transport and commuting along with climate considerations means that the National Roads network will need to consider the incorporation of active travel modes in existing and future development to support a modal shift.

Noise and Air Pollution

Air and noise pollution are just some of the many impacts of the transport system on human health (Institute of Public Health in Ireland, 2011). The major health effects arising from air quality emissions as a result of the road transport sector are due to particulate matter and nitrogen oxides emissions, which have a proven contributory impact on cardiovascular disease, lung disease, and heart attacks, which outlines the urgent need to reduce transport-related pollution emissions. Road transport is recognised as one of the main sources of environmental noise pollution and exposure to intense or extreme noise levels can significantly impact on both physical and mental

human health. The impact of Noise and Air Quality pollution on Human Health is further discussed in **Section 5.4** Noise and Vibration and **Section 5.6** Air Quality.

Psychological Health

A population's health is inherently linked to their surrounding environment and can be influenced due to exposure to a source including roads and road traffic. Psychological health effects such as anxiety, depression, cognitive decline due to the development and operation of roads and road transport can be difficult to assign to individual health outcomes.

The Institute of Public Health in Ireland (2011) reported that road traffic injuries can result in long term psychological outcomes for the individuals involved. Congestion, noise and vibration from road traffic can also impact mental health, including increased stress levels, disruption to concentration levels, sleep disturbance, etc.

Severance caused by road infrastructure including National Roads can result in both physical and social severance. Conversely, roads can also result in positive psychological effects where improvement in accessibility permits greater ease of movement, reduces isolation/ geographic peripherality and promotes social integration.

The development of new road infrastructure can cause stress and disruption to people's lives due to impacts on property owners who are affected by compulsory purchase orders (CPO).

Exposure to the outdoors and similarly activity in an outdoor environment can support general wellbeing across a population (EPA, 2016). National Roads provide an important function in facilitating access to recreation and nature assets which has been shown to result in benefits to health including an individual's capacity to deal with stress and fatigue levels.

5.3.6 Key Considerations Relating to the draft NR2040

The key considerations including environmental problems and trends in relation to Population and Human Health are as follows:

- Population growth, including certain trends such as a maturing population and economic growth will boost the demand for road infrastructure within Ireland and may impact traffic and settlement patterns.
- Without appropriate planning and investment in availability and attractiveness of alternatives to the car, increasing populations will lead to higher levels of traffic and congestion on national roads.
- The National Road network will need to be improved to accommodate the increase in demand due to a growing population, while simultaneously trying to reduce emissions from road transport that affect Human Health.
- A greater focus on sustainable mobility and urban mobility is needed to encourage modal shift, which will change and improve the quality of the built environment in urban centres along National Roads (due to incorporation of walking and cycling infrastructure including soft landscaping & urban design benefits), working towards more compact settlement patterns, and bringing benefits to the local economy and quality of life factors.
- Changes to the National Road network to accommodate increased demand and modal shift, will need to accommodate road users with health inequalities or disabilities.

- The development and operation of road infrastructure is likely to result in both temporary and permanent impacts on individuals and communities for example, due to property impacts (CPO), road transport related impacts such as air quality, noise pollution but will also lead to improved National Road infrastructure facilitating greater connectivity to settlements, services, and economic opportunities.
- The reduction of air and noise pollution and GHG emissions will be a challenge as population numbers and the associated increased demand across the National Roads network continues to increase. The Just Transition and the Green Deal currently incentivise a greater uptake of EVs and more integrated land use and transport infrastructure planning across urban and rural environments. These changes will need to be accommodated within the National Roads network.

5.4 Noise and Vibration

Environmental noise from major infrastructure including roads, railways and airports is governed by the Environmental Noise Directive 2002/42/EC. The Directive relates to the assessment and management of environmental noise and is the key EU instrument to identify noise pollution levels and to trigger the necessary action both at Member State and at EU level. In Ireland, the Directive is transposed into Irish Law by the European Communities (Environmental Noise) Regulations 2018 (S.I. No. 549 of 2018). Under the regulations, TII is responsible for the development of strategic noise mapping for all National Roads carrying in excess of 3 million vehicles a year and for major railways which carry more than 30,000 passengers per year. Local Authorities are responsible for preparing Noise Action Plan.

Transport from roads is one of the main sources of environmental noise. Other transport sources that are significant contributors to environmental noise, include railways, airports and port activity. The WHO estimate that approximately 40% of the EU population is exposed to road traffic noise at levels exceeding 55 dB(A), and that more than 30% is exposed to level exceeding 55 dB(A) during the night. Environmental noise can affect health particularly when combined with other stressors such as vibration, air pollution, etc. **Figure 5-8** below illustrates the noise levels recorded from the current (Round 3) strategic noise mapping along Major roads (greater than 3 million vehicle movements per year). Noise contours are shown to illustrate the average daytime (Lden) noise levels. **Figure 5-9** illustrates the night-time (Lnight) noise levels, representing the average decibel (dB) range experienced during night-time hours.

These indicators are based on year-long averages of: Day (7am-7pm), Evening (7pm-11pm); and Night (11pm-7am).

As can be seen from below results, the National Road network is a considerable source of environmental noise pollution in Ireland during both the day and night with levels exceeding 70dB in some locations during the day and over 55dB during the night.

The Environmental Noise Regulations require the relevant Local Authority to prepare and public Noise Action Plans every 5 years. Noise Action Plans are designed to manage environmental noise through land use planning, traffic management and control of noise at source. The Noise Action Plans are required under the Fourth Schedule of the Regulations to give an evaluation of the estimated number of people exposed to noise and the identification of problems and situations that need to be improved.

Noise Action Plans following the EPA's Guidance Note for Noise Action Planning (EPA, 2009) and the Updated Sections (EPA June 2018a, Draft) aim to identify a short list of potential areas for action based on the results of the strategic noise mapping, using a noise scoring decision matrix. Clusters or hot spots are established where the population are exposed to existing levels of environmental noise from National Roads or other transport sources, and the potential for noise mitigation measures is investigated.

As the population increases, and the demand on the National Roads is likely to increase. Noise levels are likely to increase unless significant demand management measures are introduced. There are opportunities for noise reductions due to greater use of quieter vehicles (EVs) and greater roll out of low noise road surfacing along the network.

5.4.1 Noise Impacts on Human Health

According to the World Health Organisation (WHO), noise is the second greatest environmental cause of health problems, after air quality. Road transport is recognised as one of the main sources of environmental noise pollution in Europe (EPA, 2020a). Depending on the proximity of receptors, there is potential for significant construction noise from National Road projects and for long term operational noise impacts impacting upon human health.

Exposure to intense or extreme noise levels can significantly impact on both physical and mental health. Noise can impede and alter daily activities at school, at work, at home and during leisure time. In Europe, noise pollution is a significant health concern that impacts upon health, overall wellbeing and the quality of life experienced by Europeans. Environmental noise exposure is contributory to a broad range of health outcomes, including enhanced risk of ischaemic heart disease, sleep disturbance, cognitive impairment among children, annoyance, stress-related mental health, and tinnitus (WHO, 2011).

5.4.2 Noise and Land Use

Noise impacts can affect land use planning. Quiet areas can bring environmental health benefits and provide a natural soundscape for local citizens as well as supporting biodiversity, such natural areas are particularly important in urban areas (Peris, 2020). Green and blue infrastructure in the form of public parks or rivers/canal systems etc. provide tranquil environments that can function as urban noise buffers while supporting other health and wellbeing benefits such as attenuating air pollution, reducing flood risk, and reducing excessive temperatures (EPA, 2020a). The NPF states that 'as we seek to promote more compact and efficient forms of development within our settlements, it is important to more proactively manage noise'. In expansive urban areas, the enhanced significance of 'quiet areas' is similarly stated to be a key priority.

The Environmental Noise Regulations 2018 provide that an action planning authority can delimit quiet areas in agglomerations where particular requirements on exposure to environmental noise shall apply and can delimit quiet areas in open country that are undisturbed by noise from traffic, industry or recreational activities. Action Plans developed in line with the regulations must have an objective to protect quiet areas in an agglomeration and quiet areas in open country and can include measures for same.

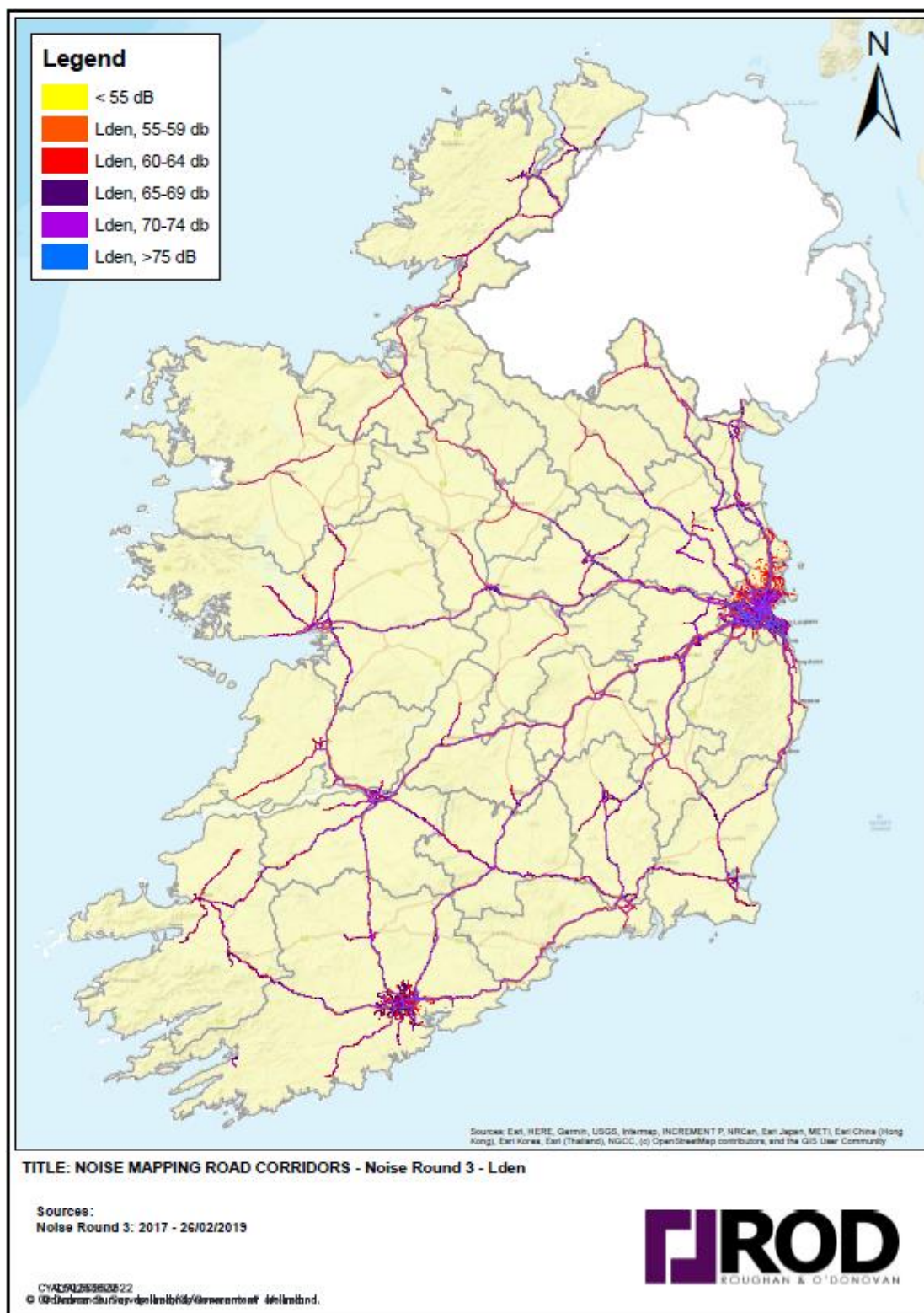


Figure 5-8 Strategic Noise Mapping for Roads daytime (Lden) Round 3



Figure 5-9 Strategic Noise Mapping for Roads night (Lnight) Round 3

5.4.3 Vibration

Vibration may be defined as regularly repeated movement of a physical object about a fixed point. As a vehicle travels along a road, vibration can be generated in the road and subsequently propagate towards nearby buildings and people. It has been found that ground vibrations produced by road traffic are unlikely to cause perceptible structural vibration in properties located near to well-maintained and smooth road surfaces (NRA, 2004). The Authority does not therefore consider it necessary to set

limits for vibration during the operational phase of a road scheme. There is no published Irish guidance relating to vibration during construction activities. Common practice in Ireland has been to use guidance from internationally recognised standards. Vibration standards come in two varieties: those dealing with human comfort and those dealing with cosmetic or structural damage to buildings. There is potential for generation of vibration during construction particularly during piling and blasting activities (NRA, 2004).

5.4.4 Noise from vehicles

Legislation limiting the sound levels allowed from motor vehicles and of replacement silencing systems was adopted by the EU (Regulation 2014/5409). Its main elements are:

- New international testing methods to better reflect driving behaviour;
- Limit values for passenger cars, buses and light trucks, and for heavy-duty vehicles;
- Additional sound emission provisions in the vehicle type approval procedure and revision of existing derogations for certain vehicle types;
- A minimum noise level ('Approaching Vehicle Audible Systems') for electric and hybrid electric vehicles; and
- Requiring provision of information on noise levels at vehicle dealerships.

5.4.5 Key Considerations Relating to the draft NR2040

The key considerations including environmental problems and trends in relation to noise and vibration are as follows:

- Many properties located beside the National Roads network are currently subject to high noise levels, which can impact on human health. Recommendations within Noise Action Plans need to be implemented across the National Road network to mitigate the effects within current hotspots and clusters.
- The construction or upgrade of the National Roads network infrastructure will likely result in the temporary generation of noise pollution and vibration effects.
- A greater amount of people may be exposed to transport related noise pollution and vibration due the expansion or adaptation of the National Roads network.
- Shifting traffic patterns and changing traffic levels arising from a proportion of the population working from home and the subsequent transitioning of transport modes with an uptake in active travel combined with an advancement of technology will likely positively impact upon the noise environment.
- Developments along the National Roads network are likely to increase the noise impacts from the National Road network on the population, regardless of the switch to electric vehicles.

5.5 Water

This section examines the status and quality of waterbodies in Ireland, including surface waterbodies, groundwater bodies, and marine areas as well the key pressures impacting the water environment.

5.5.1 WFD Status

In Ireland there is a total of 4,829 water bodies and only 53% percent of these water bodies meet the required ecological status (EPA, 2020a). WFD classification consists of chemical and ecological status. There are five classes of status for surface water bodies, and the status is determined by that of the poorest quality element.

Therefore, nearly half of all surface water in Ireland are failing to meet the objectives set by the EU Water Framework Directive. Coastal waters have the highest percentage of waters in good or high ecological status with 80% meeting the approved standard. 53% of rivers were deemed to be of good or high ecological status while lakes only had 51%. Estuaries had the worst water quality with only 38% meeting the minimum ecological standard (EPA, 2020). The status of waterbodies as of the Water Quality in Ireland 2013-2018 report is displayed in **Figure 5-10** below.

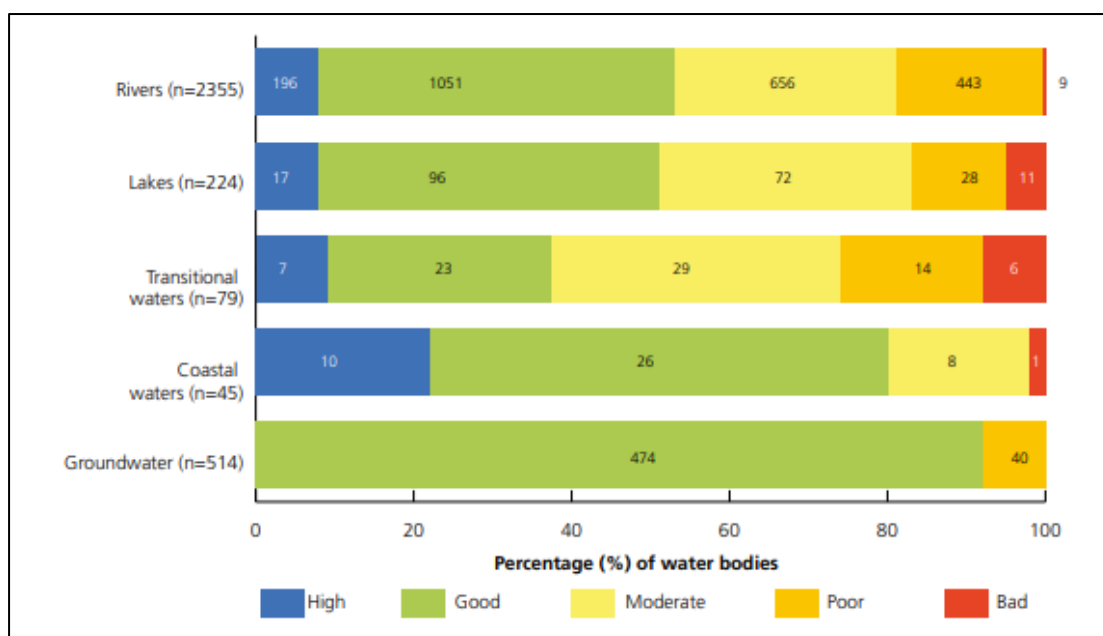


Figure 5-10 Waterbody status (EPA, 2019)

The introduction and application of the WFD granted Ireland insight into both localised and national sources of water pollution. Developments proposed in the future must attain the standards set by the WFD, maintain water quality in the short term and provide a platform for progression of good water status in the future. The EPA will fulfil a monitoring role regarding the status of surface and groundwater bodies, during the implementation course of the third cycle of River Basin Management Plan.

5.5.2 River Basin Management Plan

The River Basin Management Plan (RBMP) is produced as part of the WFD requirements and is key to the protection of the water environment in Ireland. The third cycle of the RBMP 2022-2025 recently outlined the updated figures regarding water bodies at risk.

The third cycle RBMP 2022- 2027 outlined that of the water bodies assessed to date:

- 44% are “Not at Risk”.
- 30% are “At Risk” of not meeting their environmental objective of good or high status; and
- 26% are currently under review.

A number of significant pressures causing the ‘At Risk’ status of water bodies has been identified and outlined in the RBMP, one of which was Urban Run-off. Other pressures include agriculture, urban wastewater, domestic wastewater, forestry, and extractive industries. Significant pressures have been classified into 14 categories and eight categories of measures to address the significant pressures were identified, each with

a specific programme of measures or actions to address the pressure category (Government of Ireland, 2018).

Figure 5-11 below illustrates the status of surface waterbodies across Ireland and their respective location.

Figure 5-12 below illustrates the ground waterbodies across Ireland that are currently maintaining either a good or poor status. The status of groundwater is linked to the vulnerability of the subject aquifer. **Figure 5-13** below illustrates groundwater vulnerability zones across Ireland with the inclusion of Karst features which often increase susceptibility to contamination.

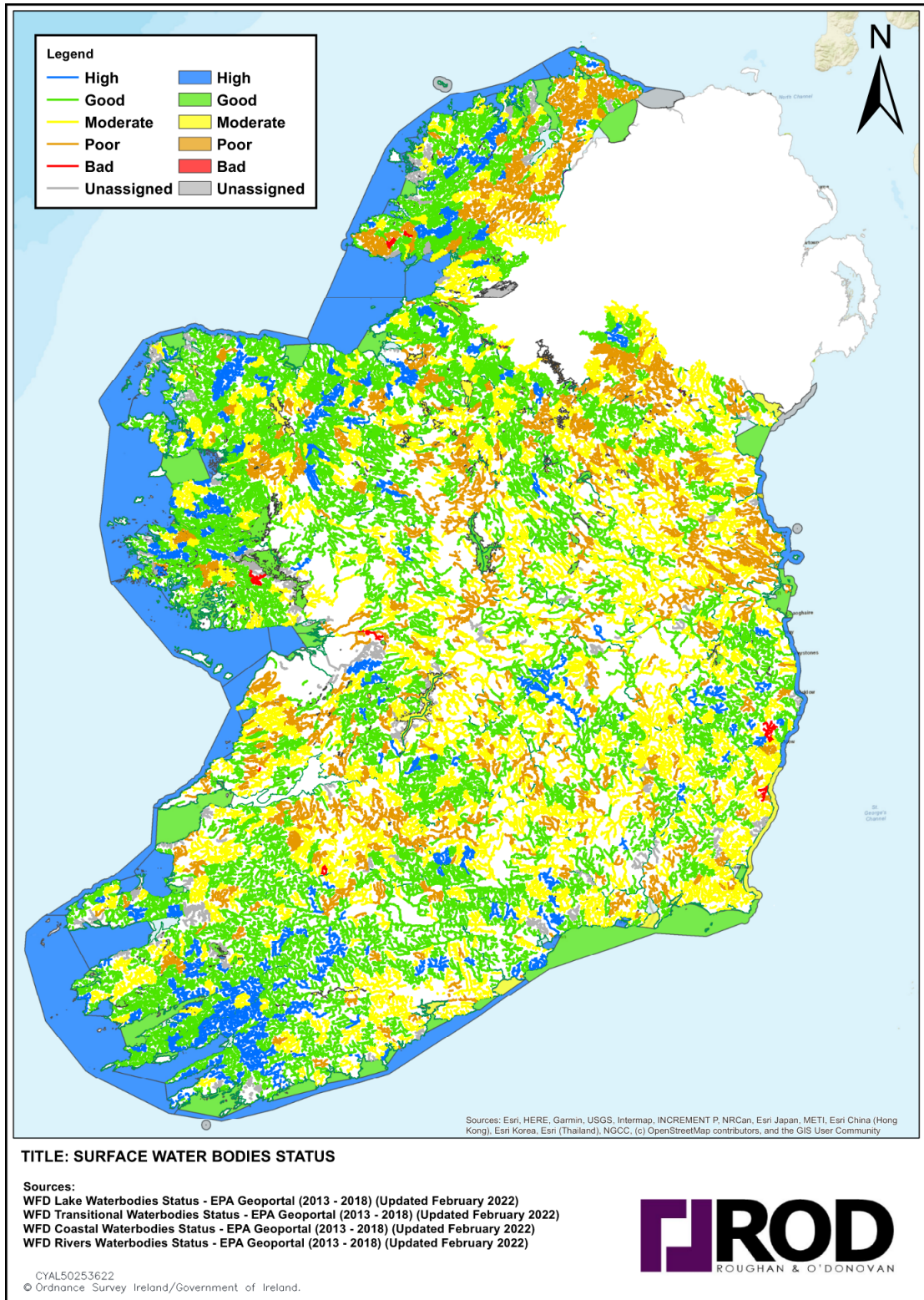


Figure 5-11 Surface Water Bodies Status

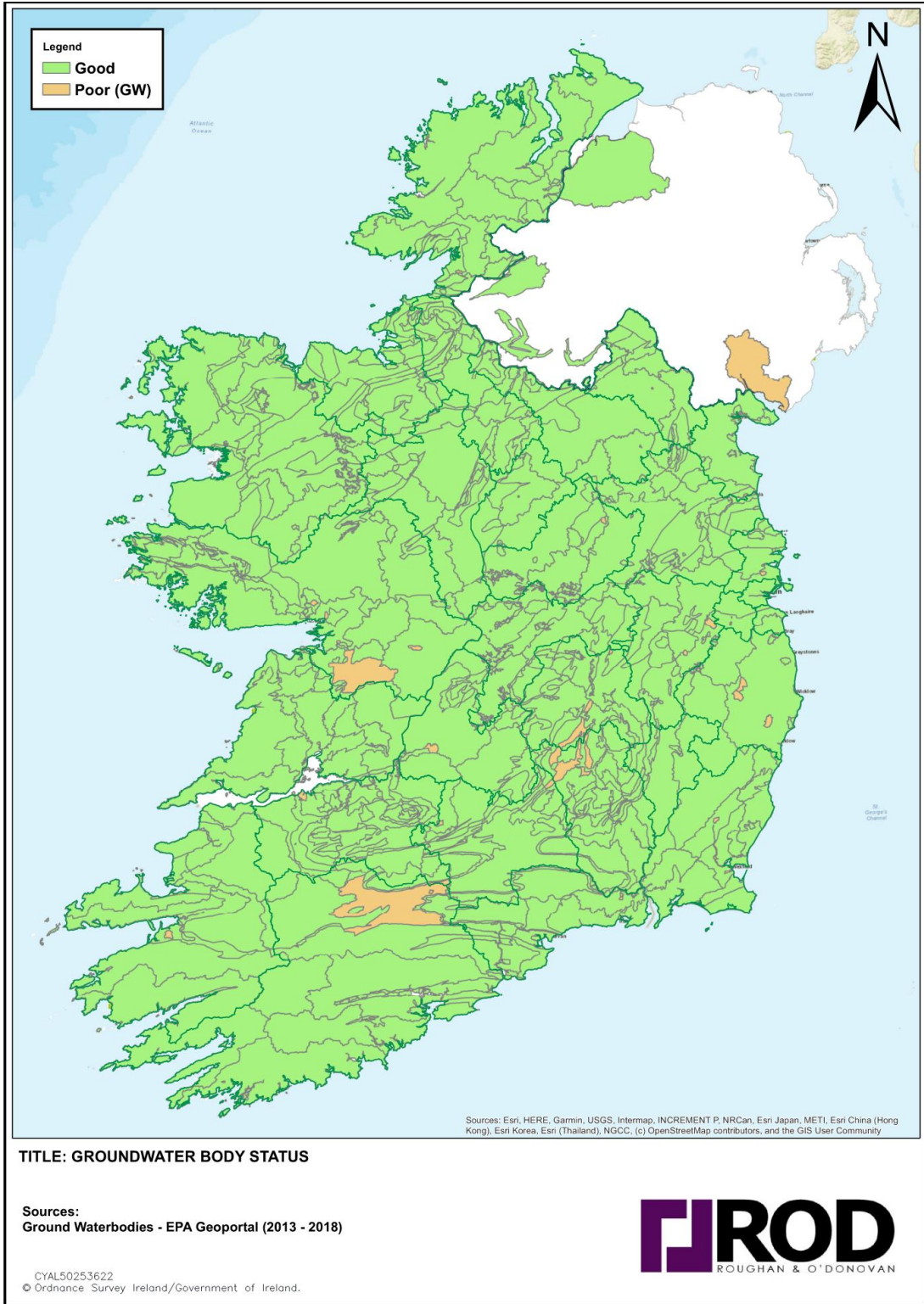


Figure 5-12 Groundwater Body Status

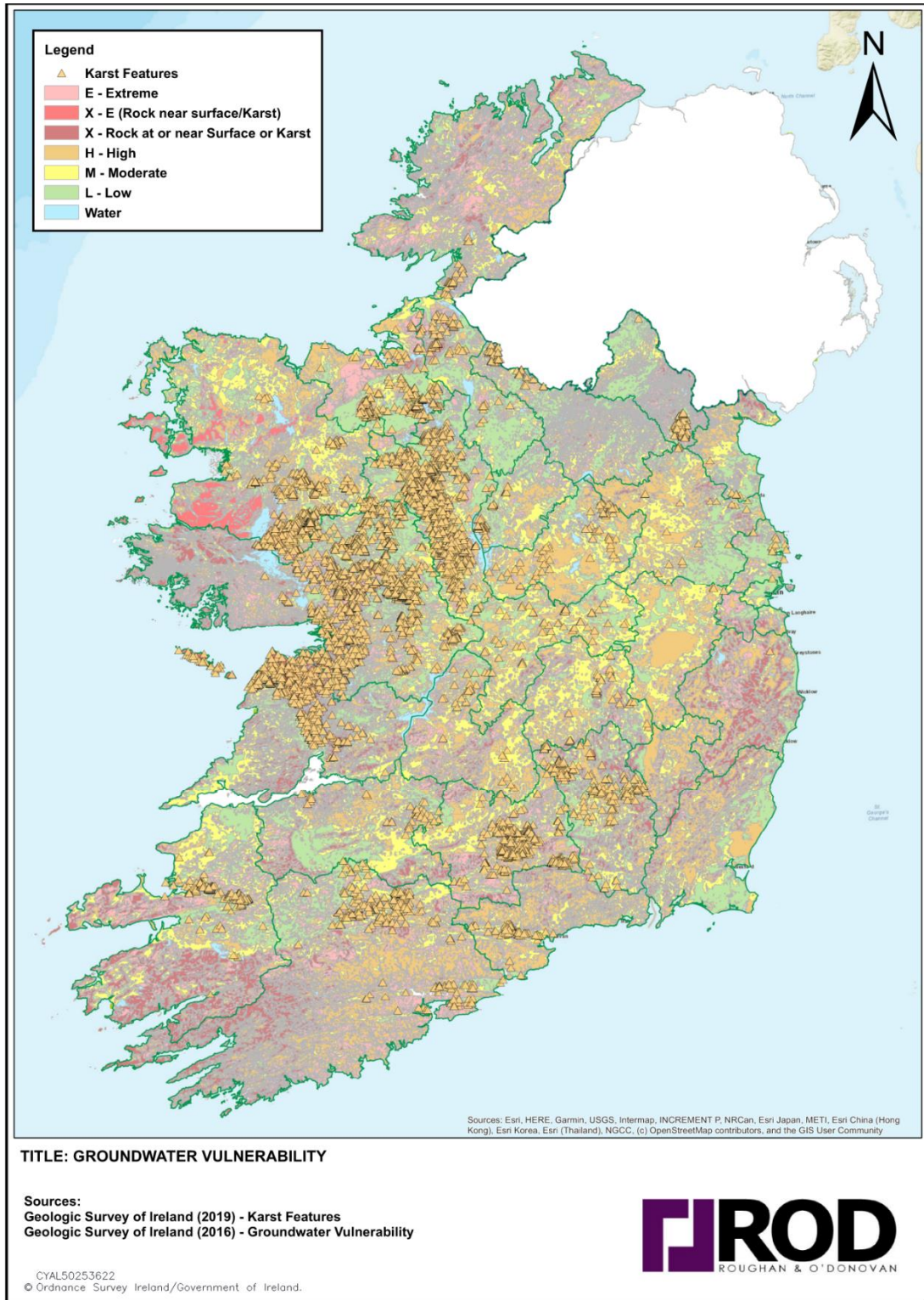


Figure 5-13 Groundwater Vulnerability Status

5.5.3 Trends in Water Quality

Over the past 20 years trends in water quality have continued to be mixed, with improvements in certain areas and deterioration in others. There has been an overall decline in the number of “high” quality water bodies, most notably in rivers. Nutrient enrichment in waterbodies continues to be the most prevalent issue and is expected to remain problematic due to the growing population and intensive agriculture. Hydromorphology is the second most significant pressure on water quality in Ireland

resulting in damage to habitat and natural river or lake processes through physical modification. The EPA (EPA, 2020a) identify the primary pressures on water quality to include:

- Agriculture;
- Hydromorphological changes;
- Urban wastewater; and
- Forestry.

Road Construction and the Water Environment

Pollution derived from the National Roads network is also recognised as a source of pollution negatively affecting water bodies and their water dependent ecological communities (Bruen M, 2006). Poorly maintained road drainage is recognised as a potential pollution source. Changes to precipitation levels and frequency of extreme weather events due to climate change may also affect runoff cycles to receiving waterbodies, potentially causing adverse effects on water quality (Bruen. M, 2006). Runoff may take the form of routine runoff where standard runoff results in noticeable impacts or chronic/creeping pollution whereby low levels of pollutants accumulate over time to create impacts of a significant or acute nature (TII, 2015).

The construction of the National Road network and its subsequent operation may potentially impact waterbodies' ecological status. Water pollution for example arising from suspended solids may pose potentially significant problems when infrastructure is either adapted or constructed adjacent to or over watercourses. This risk is heightened when the development works include in-stream works, the construction of culverts or the diversion of rivers (TII, 2015). The future development of the National Road network has the potential to impact on surface and groundwater resources during both construction and operation stages via processes such as eutrophication and sedimentation. Plans or projects arising from the NR2040 will have potential transboundary effects on water catchments and river basins located in Ireland and Northern Ireland.

The EU Water Framework Directive (2000/60/EC) establishes a framework for the protection of both surface and groundwater. Transposing legislation outlines the water protection and water management measures required in Ireland to maintain the high status of waters where it exists and to prevent any deterioration in existing water status. TII is required to comply with the requirements of the WFD.

Figure 5-14 below illustrates the water protected areas in both freshwater and marine areas in Ireland. Bathing locations, nutrient sensitive areas such as shellfish areas are also illustrated.

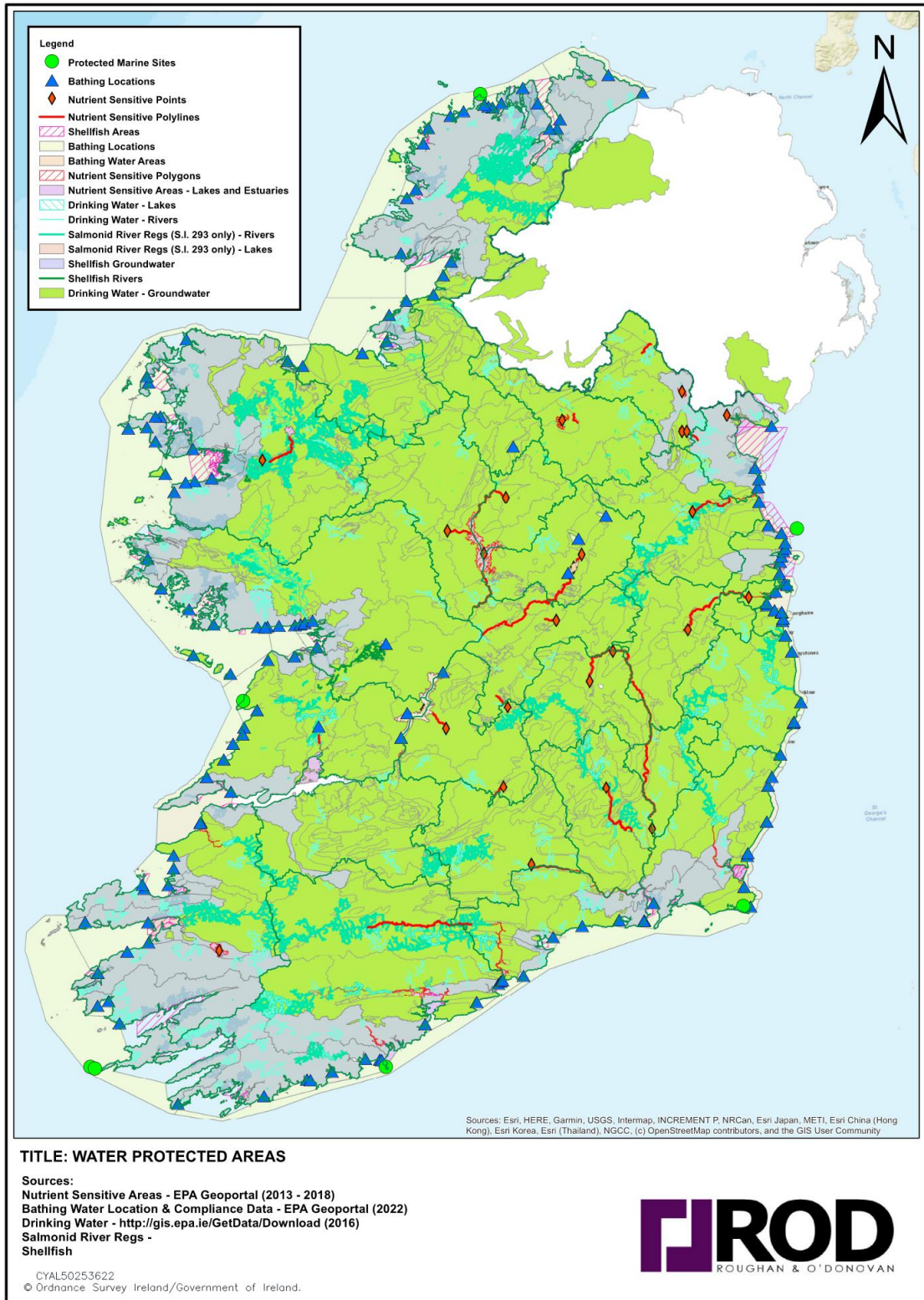


Figure 5-14 Water Protected Areas

5.5.4 Floods Directive

The issue of flooding in Ireland has become increasingly significant in recent years, as the impacts of climate change have become more prevalent. The frequency of flood events has increased. Flood events can prevent access to, and the operation of National Roads and transport systems. Similarly, the same events can cause damage including structural damage, and risk to infrastructure networks.

Flood Risk Management Plans

Flood Risk Management Plans (FRMP) that identified areas of significant present and future risk were required to be developed by member states as per the obligations instilled by the EU Floods Directive (2007/60/EC). The EU (Assessment and Management of Flood Risks) Regulations 2010 transposed The Floods Directive into Irish Law and details the Office of Public Works (OPW) responsibilities. The OPW deployed the Catchment Flood Risk Assessment and Management (CFRAMS) programme to implement the Directive. 29 draft FRMPs have been developed as part of the CFRAMs programme as well as approximately 300 Areas for Further Assessment (AFAs). A scope of reductionist measures geared towards the management of flood risk were similarly drafted within each catchment. CRFAMS mapping for all AFAs is available to view on the CFRAMS website.

As a result of the OPW FRMPs, flood management projects will be rolled out across the country in the coming years. Both the FRMPs and the RBMP, will be updated on a five-year cycle.

The National Road Network and Flooding

Road infrastructure can also be impacted by flooding pressures. Flooding events in recent years have resulted in road closures, rail line closures and long-term damage to infrastructure such as bridges being removed, and roads being left unpassable. Impacts on road infrastructure interrupt their service and the journeys of those travelling along the route, however flooding events can also have subsequent effects beyond the immediately affected area. For example, flooded roads can inhibit access to vast areas outside of those directly impacted by the rising water levels, causing severance and disruption for the duration of the flood event. More severe flooding events and rising sea levels are likely to put areas at risk of flooding, that have never been affected before. Planning for the effects of climate change therefore requires that the risk of flooding into the future is integrated into the planning process, first through the spatial planning process, and also in the assessment of road development proposals by planning authorities.

The Office of Public Works, *The Planning System and Flood Risk Management Guidelines* therefore require the planning system at national, regional and local levels to:

- Avoid development in areas at risk of flooding, particularly floodplains, unless there are proven wider sustainability grounds that justify appropriate development and where the flood risk can be reduced or managed to an acceptable level without increasing flood risk elsewhere;
- Adopt a sequential approach to flood risk management when assessing the location for new development based on avoidance, reduction and mitigation of flood risk; and
- Incorporate flood risk assessment into the process of making decisions on planning applications and planning appeals (OPW), 2009).

5.5.5 Key Considerations Relating to the draft NR2040:

The key considerations including environmental problems and trends in relation to Water are as follows:

- Impacts on water quality (including seascapes and marine sites) and water body status from road infrastructure construction, upgrades, maintenance, and operation activities i.e., the potential for increased sedimentation, accidental spillages, or creeping pollution and the culverting and diverting of streams.

- Potential for water body statuses to be impacted from new road transport infrastructure operation via processes such as unintentional fuel spills, increased road run-off, hydromorphology changes and creeping/chronic pollution.
- Possible negative impacts on hydrological processes and biodiversity as an indirect effect arising from water quality impacts.
- Impacts on the successful implementation of the WFD, RBMP and Flood Directive.
- Climate change and subsequent effects (e.g.: enhanced flood risk) negating access to National Road network or damaging associated infrastructure.

5.6 Air Quality

Air pollution is the single biggest environmental health risk in Europe. While Ireland's air quality is generally reported as good (largely attributable to the prevailing Atlantic airflow in combination with the relative absence of large cities and heavy industries), the latest estimates from the European Environment Agency (EEA) calculate that more than 1300 premature deaths occur in Ireland each year because of poor air quality (EEA, 2020).

Under the Clean Air for Europe Directive, EU member states must designate "Zones" for the purpose of managing air quality. For Ireland, four zones were defined in the Air Quality Standards Regulations (2011). The zones were amended on 1 January 2013 to take account of population counts from the 2011 CSO Census and to align with the coal restricted areas in the 2012 Regulations (S.I. No. 326 of 2012).

The main areas defined in each zone are:

- Zone A: Dublin.
- Zone B: Cork.
- Zone C: Other cities and large towns in Ireland; and
- Zone D: Rural Ireland i.e., the remainder of the State excluding Zones A, B and C.

The EPA is responsible for monitoring levels of air pollutants in Ireland. **Figure 5-15** below illustrates the national air quality zones (A-D) together with the location of the national air monitoring sites overlayed with the National Road network (Motorways, National primary and secondary roads). Roads and road transport can have a significant impact on air quality, hence monitoring sites are critical to identify and address trends.

A key focus of TII is to ensure that air quality for communities adjoining National Roads light rail and metro projects is not significantly impacted. TII continues to work with stakeholders and partners to explore opportunities to manage the operation of major roads and to provide a road network that will allow a more flexible approach to the adoption of Ultra Low Emission Vehicles and new emerging vehicle technologies. TII commenced a measurement campaign in 2018 of Nitrogen Dioxide (NO₂) at locations adjacent the M50 where measurements were made using diffusion tubes. Whilst the diffusion tube method is useful, they are 'indicative' only. This means that they only give an estimate of longer-term average nitrogen dioxide concentrations.



Figure 5-15 Air Quality Zones in Ireland and Monitoring Sites

In 2011, the National Roads Authority (NRA) published the Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Schemes (Revision 1). The revised guideline document provides a step-by-step approach for the integration of air quality considerations into the various planning phases of the 2010 National Roads Project Management Guidelines (NRPMG). These Guidelines also provide information on the Air Quality Standards Regulations (S.I. No.

180 of 2011). The Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Schemes (Revision 1).

Trends in Air Quality

The most recent 'Air Quality in Ireland 2020' (EPA) report stated that despite the reduction in traffic related pollutants due to Covid-19 travel restrictions, Ireland exceeded the WHO's air quality guidelines for particulate matter, ozone and sulphur dioxide at 52 monitoring sites. This exceedance can largely be attributed to solid fuel burning in towns, cities, and villages. Air pollution from traffic related nitrogen dioxide (NO₂) declined at monitoring stations in urban areas whereby emissions fell by up to 50%. This is likely due to reduced congestion due to many working from home. Although Ireland records air quality in compliance with EU limits, Irish measurements exceed WHO Guidelines. Air pollution even at permissible limit values monitored in Ireland has the potential to have a causal relationship to health outcomes associated with changes in road transport volumes (Quintyne (2021), and EPA, (2021).

Evidence from increased monitoring and modelling, coupled with new research on the health impacts at lower levels of exposure to particulate matter, raises questions about the status of Ireland 'good' Air Quality (EPA,2020).

National Road network and Air Quality

The transport system in Ireland is highly fossil fuel dependent (diesel & petrol), which results in significant emissions of GHGs and air pollutants that are contained in exhaust fumes to the environment. Particulate matter (PM), nitrogen dioxide (NO₂) are notable emissions from exhaust fumes which can lead to issues such as cardiovascular disease, lung disease, and heart attacks (EPA,2016). The EPA predict that the transport sector will continue to dominate in emissions of NO_x for the 2020 and 2030 period meaning transport will continue to be one of the most significant contributors to air pollution in Ireland.

5.6.1 Pollutants Emitted by Vehicles

Road vehicles emit a variety of greenhouse gases and air pollutants. As well as being emitted from vehicle exhausts, certain pollutants are also released from brake wear and from the evaporation of fuel. A number of different air pollutants and GHGs are emitted by road vehicles. These can be split into two groups: those that are regulated under EU road transport legislation and those that presently are not.

Regulated pollutants include:

Carbon dioxide (CO₂), which is the main product of fuel combustion in vehicle engines, along with water. CO₂ is the most significant GHG influencing climate change, posing a threat to public health and the environment.

Hydrocarbons (HCs), which are produced from either incomplete or partial combustion, and which are toxic to human health. HCs, and particularly the volatile organic compounds (VOCs), contribute to the formation of ground-level ozone and photochemical smog in the atmosphere. Ozone irritates the eyes, damages the lungs and aggravates respiratory problems.

Carbon monoxide (CO), a product of incomplete combustion, which occurs when the carbon in the fuel is only partially oxidised, forming CO and not CO₂. It is colourless and odourless but highly toxic. Direct exposure to CO reduces the flow of oxygen in the bloodstream and is particularly dangerous to people with heart disease. Like HCs, CO also contributes to the formation of ground-level ozone and smog.

Particulate matter (PM), which is a product of incomplete combustion and a complex mixture of both primary and secondary PM. 'Primary' PM is the fraction of PM that is emitted directly into the atmosphere, whereas 'secondary' PM forms in the atmosphere following the release of precursor gases (mainly sulphur dioxide (SO₂), nitrogen oxides (NO_x), ammonia (NH₃) and some VOCs). In terms of its potential to harm human health, PM is one of the most important pollutants, as it penetrates into sensitive regions of the respiratory system and can cause or aggravate cardiovascular and lung diseases and cancers.

Nitrogen Dioxide (NO₂) is one of a group of highly reactive gases known as oxides of nitrogen or nitrogen oxides (NO_x). Other nitrogen oxides include nitrous acid and nitric acid. NO₂ is used as the indicator for the larger group of nitrogen oxides.

NO₂ primarily gets in the air from the burning of fuel. NO₂ forms from emissions from cars, trucks and buses, power plants, and off-road equipment.

NO_x emissions also lead to the subsequent formation of 'secondary' PM and ground-level ozone in the atmosphere, and cause harm to the environment by contributing to the acidification and eutrophication of waters and soils, tropospheric ozone formation and nitrogen saturation in terrestrial ecosystems.

Breathing air with a high concentration of NO₂ can irritate airways in the human respiratory system. Such exposures over short periods can aggravate respiratory diseases, particularly asthma, leading to respiratory symptoms. Longer exposures to elevated concentrations of NO₂ may contribute to the development of asthma and potentially increase susceptibility to respiratory infections.

Other emissions from vehicles include exhaust fumes, abrasion emissions and evaporative emissions. 'In a conventional vehicle, only about 18 to 25 % of the energy available from the fuel is used to move it on the road, depending on the driving conditions. The rest of the energy is lost to engine and drivetrain inefficiencies. A small proportion of the energy produced is used to power vehicle accessories (e.g., radio, air conditioning). Therefore, the potential to further improve fuel efficiency using advanced technologies remains significant. While newer diesel engines remain more fuel efficient than petrol engines, their impact on air pollution is worse because of the higher levels of NO_x and PM that they emit.' (EEA, 2016)

There is potential for air quality impacts arising from road developments due road construction (e.g.: dust and emissions from construction traffic) and indirectly in the form of emissions from vehicles that use development during the operational phase. These activities can have potential effects to human health and biodiversity. TII has developed a Road Emissions Model to quantify emissions from road transport to help answer key questions facing Ireland concerning Greenhouse Gas Emissions and Air Quality Emissions and how these will change in the future. The tool draws together information on the vehicle fleet, considers how this vehicle fleet may change over time and uses vehicle emission rates combined with the number, composition and speed of vehicles projected on the roads network to make predictions on total emissions (TII, 2022).

5.6.2 The Transport System and Emissions Limits

The EPA's Transboundary Gas Emissions Report found that Ireland was 42.3 kilotonnes over the 2010-2019 emission ceiling for NO_x in 2016 (EPA, 2018b). The ceiling target is 65 kt for NO_x. Addressing transport's contribution of 41% to this target has been arduous even with the development and use of new technologies. Despite the 18.6% decrease in road transport emissions from 2008 to 2016, largely due to the

economic downturn, emissions from the transport sector experienced a 7.5% increase from 2015-2016 due to a renewed increase in vehicle numbers and overall mileage travelled (EPA, 2018b).

The Ambient Air Quality Directives set standards for 13 air quality pollutants that have an impact on human health and vegetation. The EPA warn that “If we return to these pre-Covid-19 traffic levels in 2022 we will face exceedances of the nitrogen dioxide EU limit value in our cities” (EPA, 2021b). A nitrogen dioxide exceedance occurred on St. Johns Road West in Dublin in 2019. The four Dublin Local Authorities have drafted a new Dublin Region Air Quality Action Plan in response to this exceedance. The plan must be submitted to the European Commission and the EPA and should detail the measures that the Member State will take to force pollutant levels back under the limit value (DCC, 2021). Such procedures are detailed in the CAFÉ Directive 2008/50/EC. The councils are being assisted by the Department of Transport (DOT) and Department of the Environment, Climate and Communications. Both departments have combined to establish a joint working group the Urban Transport Related Air Pollution (UTRAP) which are dedicated to combatting this matter.

The monitoring of ambient air quality conducted by the EPA throughout 2020 identifies that although Ireland has met the legal requirements established under the CAFÉ directive, Irish air quality does not meet the WHO health recommendations of limit values for good air quality. The transport sector collectively had a significant impact on Ireland's emissions. In 2018 Ireland's vehicle use accounted for 20.1% of the national CO₂ emissions. However, the vehicular transport sector was the source of approximately 41% of the national nitrogen oxide emissions in 2018 (UTRAP, 2021).

The national Emissions Ceilings Directive mandates the preparation and subsequent publishing of an Irish Air Pollution Control Programme by the Department of Communications, Climate Action, and the Environment (DCCAE). Records allow for progress towards national emission ceiling targets and develops future projections based on this data. Subsequently the programme assesses the functionality of policy and the measures in contributory sectors. For example, transport is the sector with the fastest rising GHG emissions, mitigation measures will be required as a responsive action to this rise in deleterious emissions. Electric vehicles are a key policy tool utilised in the Climate Action Plan (CAP) to address the issue of emissions from the transport sector. The CAP sets an action to increase the number of electric vehicles to 1 million by 2030 as well providing the complimentary infrastructure required for EV functionality and uptake to be maximized. Supporting infrastructure on the National Roads network will be crucial for meeting these targets (EPA, 2020a).

The composition of the Irish vehicle fleet plays a significant role in local ambient air pollution levels. The number of Irish vehicles on the roads has grown consistently in line with population growth and economic growth. In 2019, 57% of the taxed cars in Ireland were diesel powered. Diesel is a more harmful fuel than petrol in terms of both emission of GHG and its respective contribution to air quality pollutants. **Figure 5-16** displays the annual percentage change in both NO_x and PM₁₀ regarding total vehicle emissions. The figure presents the trend that vehicle related air pollutants that dropped during the Covid-19 pandemic restrictions have begun to climb again now that society has reopened which will likely lead to impacts on air quality into the future.

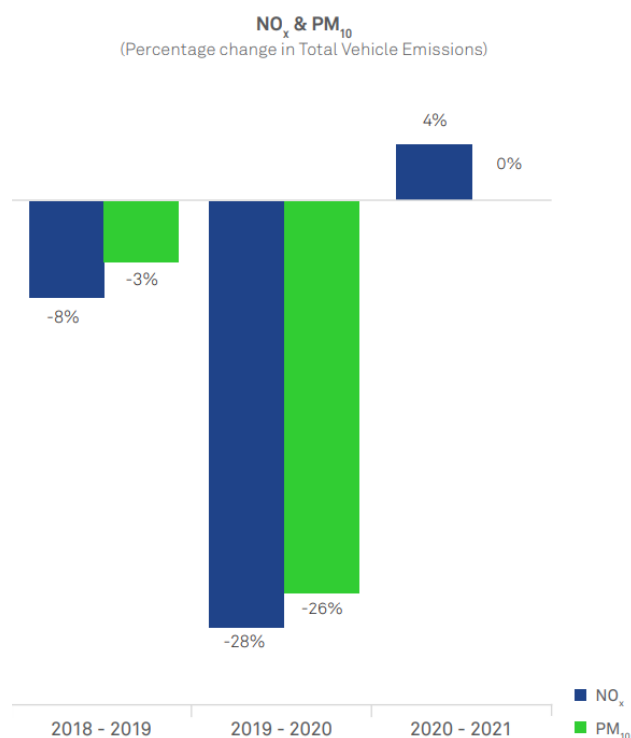


Figure 5-16 Annual Air Pollutants Levels Arising from Vehicular Transport (TII, 2022)

SUV sales are also growing rapidly in Ireland with 55,000 sold in 2021 (nearly 55% of all new cars). By contrast, only 8,600 fully electric vehicles were sold that year (SIMI Motorstats, 2021). SUVs' greater weight and height mean that they emit around 20% more carbon dioxide than medium-sized cars, and far more than electric vehicles. There are opportunities for improvement in air quality through road transport due to an increase in EVs, alternative fuels, greater focus on sustainable mobility and compact sustainable development and improvements in demand management measures which reduce congestion on National Roads.

5.6.3 Trends

The impact that air pollution can have on human health and an ecosystem's services has become progressively concerning. For example, deposits of nitrogen oxides in water forms acid rain which poses adverse risk water quality, vegetated areas and soils. Such negative impacts interfere and cap the provision of ecosystem services via process interference (e.g., nutrient and carbon cycling) (UNECE, no date).

Key contributors to climate change and air quality emissions are the transport and agricultural sectors which also have the potential to contribute to the exceedance of pollutant limits in the future. The report titled '*Ireland's Air Pollutant Emissions – 1990-2030*' (EPA) stresses challenges for Ireland regarding the sustained compliance with its national obligations under the National Emissions Ceiling Directive. Although, Ireland currently complies with the international limits for most gases, the emerging trends and projections emphasize that Ireland will have to undertake substantial mitigation measures to continue complying in the period to 2030. The report emphasised that "implementing the measures announced in the Climate Action Plan will be important but not sufficient to meet all future ceilings".

Important to the achievement of air quality and associated climate emissions targets for the transport sector will include the implementation of the Climate Action Plan to make Ireland carbon neutral by 2050. Key to this will be the decarbonisation of the

transport sector which includes the electrification of the fleet which will need to be supported by cleaner sources. Key policy documents/plans to support this ambition include the draft National Energy and Climate Plan 2021-2030, the Renewable Electricity Policy Development Plan. These include actions such as to:

- achieving a 7% annual average reduction in greenhouse gas emissions between 2021 and 2030; and
- support electricity generation from renewable over fossil fuel sources from 30% to up to 80% by 2030.

In addition to these the National Mitigation Plan which is being redrafted will also be important for the road transport sector and will result in indirect positive effects on air quality across Ireland particularly in urban areas. The National Clean Air Strategy (once developed by the DCCA) is also likely to result in more concerted efforts to address air quality issues across Ireland including those from the transport sector.

5.6.4 Key Considerations Relating to the draft NR2040

The key considerations including environmental problems and trends in relation to air quality are as follows:

- Emissions of air pollutants from the National Road network especially PM₁₀ and PM_{2.5} as well as transport emissions from movement, and export of material.
- Road infrastructure development, alteration and maintenance resulting in the temporary generation of air pollution.
- The expansion or adaptation of the National Roads network may result in a greater number of communities' people being exposed to air pollution.
- Shifting traffic levels due to adjusted work life patterns and transitioning transport modes due to an uptake in active travel and combined with an advancement of technology will likely reduce air pollution levels.
- Measures such as the uptake in EV and alternative fuels, will help to tackle the emission of air pollutants. The uptake in EVs and alternative fuel can lead to positive indirect effects for air quality through the displacement of fossil fuel combustion in the sector.

5.7 Climatic Factors

Climate change is undoubtedly the most important challenge of this century as its effects are being felt around the globe. The Government of Ireland declared a climate and biodiversity emergency in 2019. It is recognised that collective efforts to combat the causes and consequences of climate change are required internationally. Impacts from climate change are evident with natural systems experiencing diverse changes. Large-scale adaptation planning is required to manage current and future climate impacts. The EPA state that the earlier we reduce our greenhouse gas (GHG) emissions, the lesser the impact of any future changes, and the more manageable and less costly they will be (EPA, 2020a).

Factors such as more extreme and frequent weather events, sea level rise, shifting rainfall patterns, drought, and landslides, river and lakeland flooding, and shifts in wind speeds and direction are all projected impacts of climate change that can impact the National Roads network. The EPA's *Climate Status Report for Ireland 2020* describes the current trends in the Irish climate. It states that the average surface air temperature has risen by 9°C over the last 120 years with temperature rise evident in all months. Precipitation levels are on average 6% higher from 1989-2018 versus the period 1961-1990. Sea level rise and increased ocean temperatures are also impacting Irish waters (EPA, 2021a).

Sea level rise occurred globally at approximately 3mm annually between 1980-2010, it is envisaged that the rise will continue at least at this rate if not greater. In Ireland between 2006-2015 sea levels displayed a 3.6mm annual rise (EPA, 2022). The CSO report that 40% of Ireland's population live within 5km of the coast and are therefore particularly susceptible to the impacts of sea level rise (CSO, 2016). These factors will be required to be considered in the planning, management and operation of the National Road network.

In July 2021, the Climate Action and Low Carbon Development (Amendment) Act 2021⁶ (referred to hereafter as the "Climate Act") was signed into law and commits Ireland on a legally binding path to net-zero emissions no later than 2050, and to a 51% reduction in emissions relative to 2018 levels by 2030. The amendments provide for the establishment of a national framework regarding climate action and low carbon development. The Climate Act aims to reduce the extent of further global warming and to "*pursue and achieve the transition to a climate-resilient, biodiversity rich, environmentally sustainable and climate neutral economy by 2050*" (referred to as the "national transition objective"). The Climate Act commits Ireland to establish limits on GHG emissions for set periods (carbon budgets) and impose sectoral emissions ceilings.

Carbon Budgets

A carbon budgets represents the total amount of emissions, measured in tonnes of CO₂ equivalent, that may be emitted by a country, region, etc. during a specific period of time.

The Carbon budget agreed by Government in February 2022 and subsequently adopted by Government in April 2022 is as follows:

- **2021-2025:** 295 Mt CO₂ eq. (representing an average reduction of 4.8% for the first budget period).
- **2026-2030:** 200 Mt CO₂ eq. (representing an average reduction of 8.3% for the second budget period).
- **2031-2035:** 151 Mt CO₂ eq. (representing an average reduction of 3.5% for the third provisional⁷ budget).

Sectoral Emissions Ceiling

The Climate Act 2021 provides for the preparation of Sectoral Emissions Ceilings which set out the maximum amount of greenhouse gas emissions that are permitted in different sectors of the Irish economy. Sectoral Emissions Ceilings refer to the total amount of permitted greenhouse gas emissions that each sector of the economy can produce during a specific time period.

Sectoral Emissions Ceilings have been developed and agreed by Government for each sector in September 2022⁸ and are illustrated in **Figure 5-17**.

⁶ Amending the Climate Action and Low Carbon Development Act 2015

⁷ It is necessary to consider how emissions might develop in the period post 2030 in order to establish a basis for proposals for the provisional third carbon budget for the period 2031-2035.

⁸ Sectoral Emissions Ceiling Accessed 04/04/2023 Available At: gov.ie - Sectoral Emissions Ceilings (www.gov.ie)

Table - Sectoral Emission Ceilings³

(Figures for MtCO₂eq for 2018 and 2030 have been rounded. This may lead to some discrepancies)

Sector	2018 Baseline (MtCO ₂ eq.) ⁴	Sectoral Emission Ceilings for each 5-year carbon budget period (MtCO ₂ eq.)		Indicative Emissions in Final Year of 2021- 2025 carbon budget period (MtCO ₂ eq)	Indicative Reduction in Emissions in Final Year of 2021-2025 budget period compared to 2018	Emissions in final year of 2026-2030 carbon budget period (MtCO ₂ eq)	Reduction in Emissions final year of 2026-2030 carbon budget period compared to 2018	Agreed CAP21 Ranges
	2018	2021-2025	2026-2030	2025	2025	2030	2030	2030
Electricity	10	40	20	6	~40%	3	~75%	60 – 80%
Transport	12	54	37	10	~20%	6	~50%	40 – 50%
Built Environment - Residential	7	29	23	5	~20%	4	~40%	45 – 55% ⁵
Built Environment - Commercial	2	7	5	1	~20%	1	~45%	
Industry	7	30	24	6	~20%	4	~35%	30 – 40%
Agriculture	23	106	96	20	~10%	17.25	~25%	20 – 30%
LULUCF ⁶	5	XXX	XXX	XXX	XXX	XXX	XXX	40 – 60%
Other (F-Gases, Waste & Petroleum refining)	2	9	8	2	~25%	1	~50%	N/A
Unallocated Savings ⁷			-26			-5.25		
TOTAL⁸	68	XXX	XXX	XXX	XXX	XXX	XXX	N/A
Legally binding Carbon Budgets and 2030 Emission Reduction Targets ⁹	-	295	200	-	-	34	51%	-

³ Table reflects what was agreed by Government on 28 July 2022

⁴ Million tonnes of carbon dioxide equivalent.

⁵ CAP21 outlined 45-55% range for all buildings i.e. it did not split out residential and commercial buildings

⁶ Finalising the Sectoral Emissions Ceiling for the Land-Use, Land-Use Change and Forestry (LULUCF) sector has been deferred for up to 18 months to allow for the completion of the Land-Use Strategy

⁷ Unallocated savings on an economy-wide basis in the second 5-year carbon budget period from 2026-2030, before factoring in net LULUCF sector emissions

⁸ Following finalisation of the Sectoral Emissions Ceiling for the Land-Use, Land-Use Change and Forestry (LULUCF) sector, total figures will be available

⁹ As provided by section 6A(5) of the Climate Action and Low Carbon Development (Amendment) Act 2021

Figure 5-17 Sectoral Emissions Ceilings

The sectoral emissions ceilings indicate that significant reductions are required across all sectors but particularly in the agricultural sector, transport and electricity sectors as show in **Figure 5-17**. The transport emission ceiling is summarised below.

- 2021 – 2025: carbon budget of 54 Mt CO₂eq., emissions reduction of 4.1% per annum;
- 2026 – 2030: carbon budget of 37 Mt CO₂eq., emissions reduction of 9.4% per annum;
- 2031 – 2035 - indicative only.

The EPA's provisional 1990-2021 GHG inventory states that road transport emissions increased from 9.7 Mt CO₂eq in 2020 to 10.3 Mt CO₂eq in 2021⁹. The impact of the Covid-19 pandemic and the relevant travel restrictions are estimated to have had a reduction of 16% in transport emissions (excluding aviation) compared to 2019 levels. Lifting of Covid-19 travel restrictions in 2021 resulted in a 6.1% rise in transport emissions. This illustrates that while large scale behavioural change is achievable, the level of ambition and supporting actions must be increased and the rate of change significantly hastened across the population for the target of a 51% GHG emission reduction by 2030 to be reached.

Climate Emissions and Transport

The transport sector is a significant contributor to harmful GHG emissions. With increases in population, employment and economic growth anticipated over the next two decades, it is likely that this will result in greater transport activity and demand.

Road transport requires a substantial and swift transition to decarbonisation, with road transport in 2020 representing 94% of the total transport emissions nationally (EPA, 2021b). **Figure 5-18** shows that after agriculture (37.5%) that the transport sector accounted for the second highest emissions (17.7%) in 2021. However, this figure likely reduced from previous levels due to the Covid-19 travel restrictions imposed during much of 2020 and 2021. The transport share of GHG emissions in 2018 was

⁹ Provisional 1990-2021 GHG Inventory Data, EPA, 2022

20.1% which is relevant for comparative purposes, as a business as usual/ pre-pandemic year level.

Transport sector share in 2021

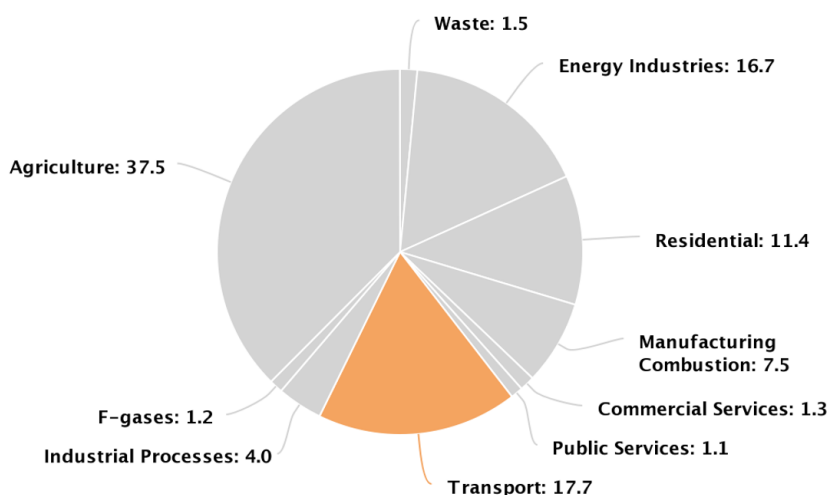


Figure 5-18 Transport Sector Share in 2021 (EPA, 2022c)

Vehicle emissions associated with travel on the National Roads network from 2018 onwards can be estimated using the TII Road Emissions Model. The key factors affecting emissions from year to year are the make-up of the vehicle fleet, e.g., proportions of light and heavy vehicles, the emissions standards of vehicles in the fleet, the type of fuel consumed, the total vehicle kilometres travelled and the speed at which these vehicles travel on the network (TII, 2022a).

The change in personal travel in 2020 led to a reduction of 23% in greenhouse gas emissions represented by carbon dioxide equivalent (CO₂e), but an increased in 2021 by 9% as the economy recovered and Covid 19 travel restrictions lifted. TII state that the changes in CO₂e emissions year to year primarily reflect the changes in vehicle kilometres (vkm) travelled and to a lesser extent fleet turnover.

In 2021, light vehicles (i.e., cars and vans) represent 65% of the total CO₂e emissions on the National Roads Network. Demonstrating the rising importance of HGV emissions on CO₂, which can be observed in emissions from 2018 onwards.

Figure 5-19 displays trends for the estimated total vehicle emissions on National Roads network.

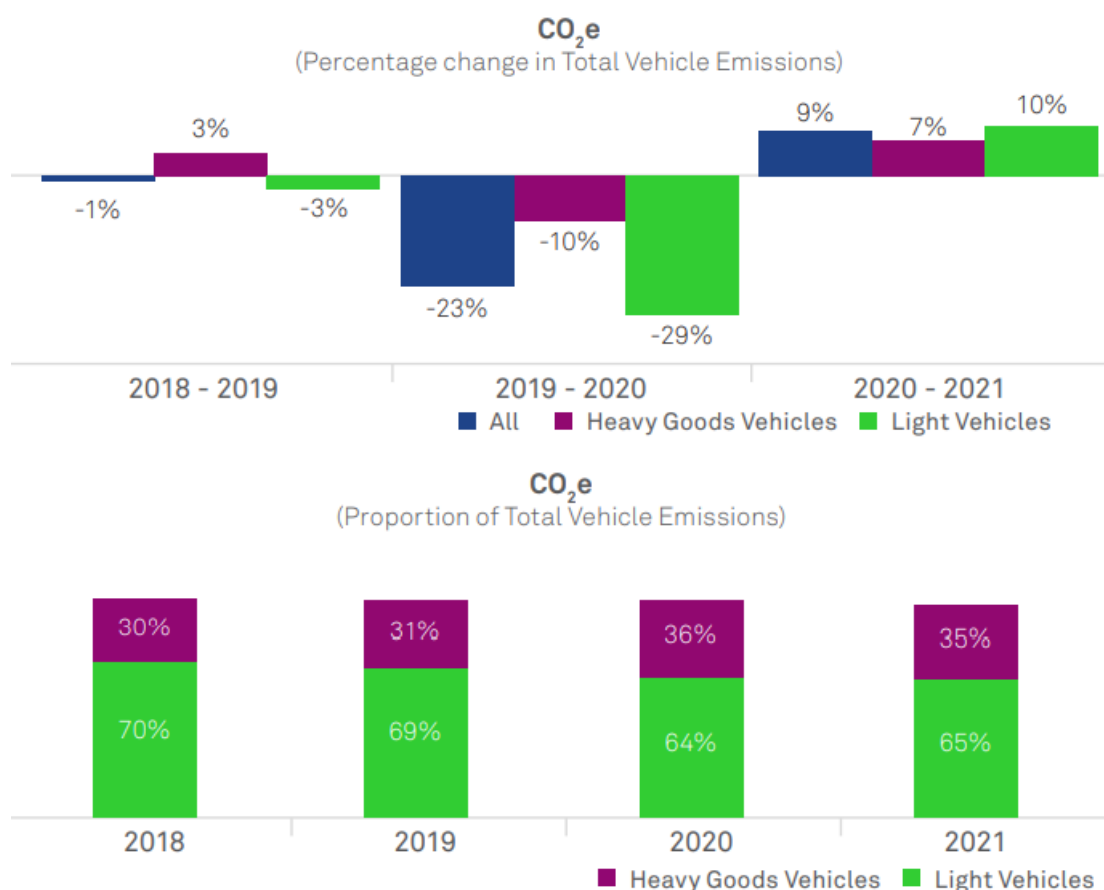


Figure 5-19 Estimated Total Vehicle Emissions on National Roads 2018-2021 (TII, 2022)

Climate Action Plan

The decarbonisation of the transport sector is the key measure that will be pursued under the CAP. It will reduce emissions from the transport sector through the 'avoid, shift and improve' framework which will influence how the National Roads network is planned, management and operated.

The transport sector is required to generate a substantial reduction in its GHG emissions in the region of 42-50% by 2030. The Climate Action Plan sets out a series of actions across all sectors to support emissions reductions. These actions include delivering sustainable mobility and providing options over private car use, improving system efficiency and demand management on the road network, decarbonisation including ramping up fleet electrification and the provision of supporting infrastructure for charging and capitalising on benefits from emerging technologies and fuels. Specific Actions identified which relate to the National Roads network, as set out in the CAP21 include:

- Continue the rollout of variable speed limits/dynamic traffic management infrastructure on the M50 Motorway to increase safety and reduce congestion;
- Advance Demand Management Measures;
- Increase provision of park and ride/share at transport interchanges;
- Deliver public transport corridors providing prioritised bus lands on relevant national radial routes to the M50;
- Deliver sustainable bus priority measures on the National Road network; and

- Enable greater EV infrastructure roll-out for passenger cars and vans.

The role of the National Roads network in achieving the targets outlined in the CAP is not limited to the above actions, as there are opportunities across sectors which incorporate a large range of the actions relevant to the use of the National Roads network.

In CAP23 the transport sector continues to focus on reducing the use of private passenger cars, a modal shift to transport modes with lower energy consumption (e.g., public transport, walking and cycling) while accelerating the electrification of road transport (e.g., increased use of electric and low-emission vehicles) and increasing biofuel blend rates. CAP states policies providing the infrastructure and incentives to use public transport, coupled with changes in behaviour are required to reduce passenger car use. It states a 20% reduction in vehicle kilometres travelled is required, and significant increases to the level of additional public transport and active travel journeys per day, as set out in **Figure 5-20**. The uptake of electric vehicles will also require a step change with 30% of the private car fleet to be electrified by 2030, and all new car registrations to be electric for subsequent years.

It is recognised that transformative behavioural and systemic change will be required to achieve the emissions abatement ambition in the transport sector, not just for 2030 but also for 2050.

The National Sustainable Mobility Policy (SMP) vision encompasses the OECD's 'well-being lens' approach to the design of net-zero transport strategies:

“To connect people and places with sustainable mobility that is safe, green, accessible and efficient.”

This wider concept of a future transport system will not only reduce GHG emissions but also serve to enhance societal well-being. The CAP will be revised annually to review progress on actions and specify the policies, measures and further actions to deliver the carbon budgets and comply with the sectoral emissions ceilings. CAP is supported NIFTI and NR2040 priorities including facilitating mobility of people and goods in urban areas and enhancing regional and rural connectivity. The provision of high quality multi modal transport infrastructure has an important role in enabling and encouraging a modal shift to support a reduction in carbon emissions. The TII Sustainability Implementation Plan (SIP) outlines TII's principles in implementing sustainable development, which include examining how to enable people to make more sustainable travel choices in the planning process, develop and operate TII services, and how to work with other service providers for these shared outcomes. This involves consideration of how to avoid the need to travel by car in the first instance, reducing vehicles on the network, enabling public transport services, walking and cycling to become the preferred options for the majority of the population and also ensuring the network is ready for low and zero-emission vehicles.

Theme	2025 Abatement/KPI	2030 Abatement/KPI
Avoid (encompassing a range of behavioural change and sustainable transport measures)		
	Total abatement -0.72 MtCO₂eq.	Total abatement -2.09 MtCO₂eq.
Vehicle Kilometres	n/a	20% reduction in total vehicle kms 20% reduction in total car kms 20% reduction in 'commuting' car kms
Fuel Usage		50% reduction in fuel usage
Shift (encompassing a range of behavioural change and sustainable transport measures)		
	Total abatement -0.72 MtCO₂eq.	Total abatement -2.09 MtCO₂eq.
Sustainable Transport Trips	<ul style="list-style-type: none"> Additional 125,000 sustainable journeys Roll-out of sustainable demand management measures informed by National Demand Strategy Delivery of Pathfinder Programmes 	<ul style="list-style-type: none"> 50% increase in daily active travel journeys 130% increase in daily public transport journeys. 25% reduction in daily car journeys.
Daily Journeys Modal Share		<ul style="list-style-type: none"> Shift in Daily Mode Share 2018: 72% (car), 8% (PT), 20% (AT) 2030: 53% (car), 19% (PT), 28% (AT)
Escort to Education Journeys		<ul style="list-style-type: none"> 30% shift of all E-to-E car journeys to sustainable modes
Improve		
	Total abatement -1.96 MtCO₂eq.	Total abatement -4.74 MtCO₂eq.
Fleet Electrification	<ul style="list-style-type: none"> 175,000 passenger EVs 20,000 commercial vans 700 low-emission HGV 300 EV buses in PSO bus fleet Expansion of electrified rail services 	<p>Private Car Fleet EV share of total passenger car fleet (30%) EV share of new registrations (100%) 845,000 Private EVs⁴⁶</p> <p>Commercial Fleet 20% EV share of total LGV fleet. 95,000 commercial EVs 30% ZE share of new heavy duty vehicle registrations 3,500 HGVs</p> <p>PT Services 1,500 EV buses in PSO bus fleet; Expansion of electrified rail services.</p>
	Total abatement -0.53 MtCO₂eq	Total abatement -1.08 MtCO₂eq
Biofuels Blend Rate	E10:B12	E10:B20

Figure 5-20 Key measure to deliver abatement in the transport sector (CAP23)

Construction and Maintenance on National Roads

In addition to the operational stage of the National Roads network, the construction and maintenance phases of National Roads projects require significant quantities of both energy and materials. As discussed in the Land and Soils section (Section 5.8) of this ER, the extraction and processing of the materials required for the construction of National Roads can deplete natural resources and release carbon into the atmosphere.

National Road projects are also required to assess the impact of the design/planning, construction and operation stages of the project on the Climate, including assessing

the embodied carbon. This can be calculated using the TII Carbon Tool which is now being utilised on projects at the planning stage.

TII's SIP includes a sustainability principle to Transition to Net Zero, which aims to "Reduce the carbon impact of construction, operation and use of the transport network through responsible use of resources, reuse and repurposing, as well as driving the net-zero transition and enabling customers to make more sustainable choices". The implementation plan acknowledges that TII needs to reduce its resource consumption alongside committing to net zero emissions. The plan aims to do this by re-thinking how existing infrastructure is used, re-engineering systems to optimise material use, and through better maintenance, repair and refurbishment, increase the lifetime of existing assets (TII, 2021.). NR2040 supports the implementation of SIP.

5.7.1 Climate Adaptation in the Transport System

The National Roads network will continue to be required to be maintained and managed including addressing the impacts associated with climate impacts and adapting and becoming more resilient to such effects. Increases in weather events such as storm prevalence and intensity are likely to be one such factor. For example, Storm Ophelia in 2017 and Storm Emma in 2018 resulted in severe disruptions, delays and in some places closure of the National Road network.

These events may also result in the premature deterioration or damage of infrastructure, which has fiscal and safety implications. Climate change may also inhibit routine maintenance programmes of structures and require the management of increasing volumes of surface water runoff or changes in biodiversity e.g., spread of non-native invasive species. TII is responsible for the maintenance of the National Road network and is already planning for the adaptation of the National Road network to Climate Change through its 'Strategy for Adapting to Climate Change on Ireland's Light Rail and National Road Network', 2017 which is currently being revised.

Traditionally the growth of both the population and the economy have been synonymous with fossil fuel use and GHG emissions which ultimately impact upon the climate. Road developments are necessary to provide a connected and accessible country however, the objective at this point is not to encourage further uptake of car transport. Private cars display directly links to the high emissions levels in the road transport sector.

5.7.2 Key Considerations Relating to the draft NR2040

The key considerations including environmental problems and trends in relation to climatic factors are as follows:

- An increasing population and economic growth are likely to see increased demand among the National Road network.
- Increased car ownership and usage could result in significant contributions to GHG emissions.
- Ireland must reduce the emissions of the transport sector by between 42% and 50% by 2030 in line with the Carbon Action Plan 2021.
- The Climate Action Plan requires a significant increase in the proportion of Electric Vehicles (EVs) in the car fleet to transition away from internal combustion engines. To achieve the required uptake, barriers must be addressed, particularly in the areas of range anxiety and the widespread availability of charging infrastructure.

- The construction and maintenance phases of National Road projects require significant quantities of both energy and materials, the extraction and processing of which deplete natural resources and release carbon into the atmosphere.
- More frequent storms and rainfall events of greater intensity are resulting in greater damage and pressure on the National Road network and supporting infrastructure.
- Enhanced risk of flooding due to rising sea levels and increased rainfall can restrict access to and on the National Road network.
- The risk posed by sea level rise and increased flooding may result in long term impacts on the National Road network infrastructure.
- Both the current road network and subsequent developments of same may be in a flood risk zone.

5.8 Land and Soils

The land and soils section of this ER examines the soil status in Ireland as well as the key land uses, trends and the significant causes of deterioration in Irish land and soils. Land and soils are an important natural resource that are key to agriculture, food production and forestry whilst playing a key role in natural ecosystem cycles such as carbon and water cycles, storing carbon, filtering our water and managing flood waters. Land and soils are a vital resource in protecting and developing national biodiversity in addition to providing landscape and amenity functions. Land and soils support many important roles for our ecosystem and therefore need to be carefully managed and protected as they are affected by natural processes and human interventions such as the development of infrastructure including the National Road network.

Ireland has a relatively small land area covering 70,000km², however it possesses a diverse geology and soil make up (GSI, 2022a). The CORINE 2018 landcover survey shows that agriculture is the primary land use type within Ireland (68%), followed by wetlands (15%) and forestry (10%). Teagasc have identified an extensive range of soil types across Ireland as part of their Irish Soils Information System project, each of them different in properties, with different environmental and agronomic responses.

The EPA State of the Environment Report 2020 states that the dominant causes of deterioration in land and soils are: soil sealing, erosion, organic matter decline, compaction, salination and landslides.

5.8.1 Geology

Irish geology is diverse and is shaped by its respective topography, landscape, soils, and water environment (GSI, 2022a). Nationally, the predominant rock type is carboniferous limestone, stretching over approximately half of the country, particularly in the lowlands of the midland counties (GSI, 2022b). Subsequently, limestone pavement has been identified as a habitat requiring priority conservation status as per the EU Habitats Directive. This need arises from habitat's common reliance on hydrological, hydrogeological, and geological conditions. The Burren of County Clare and the East Galway area is home to the area with the most extensive limestone pavement. These areas are particularly vulnerable to karstification due to the nature of limestone, e.g., limestones permeability (GSI, 2022a). Karst areas in Ireland give rise to several of the emerging springs in Ireland, these karst springs are available sources of drinking water that are highly susceptible to contamination.

Karst limestone features pose unique challenges for engineers when designing projects in these locations. Karst bedrock is highly permeable, contains large voids and facilitates rapid underground drainage. Subsequent adaptations must be made in

the design and construction phases of development projects in karst limestone areas to ensure the development's safety both in regards, to stability and to drainage/flooding risks. Groundwater in karst areas is also highly susceptible to contamination when developments do not sufficiently consider runoff and hydrological pathways (GSI, 2022b). The highly permeable nature of limestone combined with common voids in the bedrock result in little opportunity for water filtration or attenuation.

The coastal and mountainous regions in Ireland that surround this area are varied. The west coast of Ireland including counties such as Donegal, Mayo and Galway host the most varied bedrock in Ireland. Precambrian Dalradian rocks and Quartzites, along with deposits of Ordovician, Silurian and Granite are common in this region. The mountainous regions of the east generally consist of Ordovician and Granite, while Old Red Sandstone is the dominant bedrock in southern Ireland (GSI, 2022a).

The Geological Survey of Ireland (GSI) documented Irish Geological Heritage Sites (IGHS) currently there are in excess of 900 sites in Ireland.

5.8.2 Soils

International legislation regarding soils is sparse when compared to other areas of environmental protection. Subsequently Ireland does not possess any legislation tailored primarily towards protecting soils domestically. The EU published a Thematic Strategy for Soil Protection in 2006 which recommended the introduction of a Soil Framework Directive. However, this was withdrawn in 2014.

Irish soils are a finite natural resource and must be protected. Due to its slow formation time, damage to soils can take considerable periods of time to recover. Soil is biologically active and comprises an intricate combination of weathered minerals (sand, silt, and clay), organic matter, organisms, air, and water that deliver the medium for life in terrestrial ecosystems. Podzols, Brown Podzolics, Brown Earths, Grey Brown Podzolics, Blanket Peats, Gleys, Basin Peats, Rendzinas, Lithosols and Regosols represent the 10 great soil groups in Ireland (EPA, 2014). Irish subsoils are composed of glacial and post-glacial sediments. Glacial till represents most of the subsoil, while other commonly found Irish subsoils include sand and gravel, lake deposits, alluvium and peat.

Irish soil quality is deemed to be good but pressures such as population growth and land use changes such as agriculture, erosion, afforestation, and overgrazing has resulted in increased strain on Irish soil (EPA, 2020a). Irish soil is significantly impacted by agriculture and its subsequent activities, for example, excessive nutrient spreading (such as nitrogen and phosphorus) poses impacts upon water quality when soils are overburdened and cannot remove the excess nutrients from water. Leaks from industry, old mining sites and leachate from landfills can give rise to soil contamination. Diffuse pollution generally arises from primary activities such as agriculture, forestry, and horticulture. Soil nutrient status can also be impacted by developments such as road construction.

Peatland areas cover 20.6% of the total national land area (NPWS, 2015). Peatlands vary in character and range from blanket bogs, raised bogs, fens, and wet and dry heath. Peat extraction, habitat changes, invasive alien species, nutrient pollution and climate change pose the primary threats to Irish peatland areas (Teagasc, 2016). The degradation of peatlands and the potential loss can affect biodiversity, flooding, and climate change via the reduced capacity to sequester carbon.

Shifts in geological patterns occur over a significant period and therefore baseline recording, and the forecasting of geological patterns is not urgent for the draft NR2040.

However, the NPWS are currently evaluating proposed IGH sites and, there is potential for some of these sites to achieve designated status as NHAs and subsequently gain statutory protection in the future.

There are 6 predominant degradation processes that impact the quality of Irish soils (EPA, 2020a):

- Soil sealing;
- Erosion;
- Organic matter decline;
- Compaction;
- Salination; and
- Landslides.

The construction of roads can result in surface sealing, the removal of geological resources, and compaction. The likelihood of other interactions such as increased risk of landslides and contamination (run-off, water quality or interference of contaminated lands) arising can also increase from road construction. Road planning undertaken in accordance with the TII Project Appraisal Guidelines (PAG) ensures efficient and effective land management is integrated into all road planning. At a project level, the EIA process in combination with PAG ensure that project level issues are identified and addressed accordingly.

5.8.3 Key Considerations Relating to the draft NR2040

The key considerations including environmental problems and trends in relation to Geology and Soils are as follows:

- Potential impacts upon geological resources (usually as a result of karst environments). Similarly, geological conditions may prove problematic throughout the construction of new road or adapted road network links.
- The draft NR2040 may impose potential impacts on geological designations.
- Potential impacts on soil resources, particularly those soils vulnerable to erosion.
- There is a potential for construction or alternation works to unearth contaminated material.

5.9 Materials Assets

Materials assets examines assets from both the perspective of built assets and natural assets and their relevance to the National Road network. Material Assets are deemed to be the natural and man-made (built assets) essential to society, to support a settlement's functionality as a place to efficiently live and work, in giving them material value. The use of land as a material asset for agricultural use, peatlands and forestry is also included under the topic.

Built material assets to include infrastructure and utilities including rail, road, water supply, energy generation/distribution network, gas network, wastewater treatment facilities and waste management facilities in addition to residential sectors and social infrastructure such as housing, healthcare facilities, schools, greenspace, and cycle paths. Natural material assets also include economic assets such as lands, coastal and water resources which support fisheries and the tourism industry.

National Roads are a material asset of great significance, being the primary mode of transport between our towns, cities, ports and airports. The National Road network is

often interlinked with other essential infrastructure which falls under the heading of Material Assets and therefore must consider existing infrastructure such as water treatment plants, water main networks, electricity grid networks, etc. It is important that current and planned land uses provide adequate transport links nationally, to ensure access to employment, health service, education, and other amenities while also protecting the natural and built material assets.

5.9.1 Land Use

The CORINE Land Cover inventory details land use in Ireland. Ireland's total land area amounts to almost 7 million hectares. Some of the land uses assets include Agriculture, peatlands and forestry.

Agriculture

Agriculture represents around two-thirds of Ireland's land cover. National Road projects often impact on agricultural land holdings through the compulsory purchase of lands for the development of motorways or national roads through greenfield, rural environments, in bypassing towns and villages or connecting people and places through new routes. While the purchase of lands can be compensated monetarily, National Road projects often result in impacts such as severance or impacts on the operation of farm holdings. The construction stage of National Road projects can also have temporary or short term impacts on landholdings or farms through temporary loss of lands.

Peatlands

Peatlands and wetlands represent the second most populous land cover type covering almost 20% of Ireland. Bord na Mona own 7.5% of all Irish bogs. Ireland is internationally significant regarding peatlands, with Irish raised bogs the most sizeable of those remaining in Europe. Similarly, Ireland's blanket bogs are equally significant at a European scale with 8% of the world's blanket bogs being present in Ireland. There are three primary types of peatlands in Ireland; these are fens, raised bogs and blanket bogs (IPCC, n.d.). Currently, a total of 75 raised bogs have been granted legal protection under the Wildlife Acts, these are now designated as NHAs protecting approximately 23,000 hectares. The raised bogs are generally located in the midlands which are transitioning to other sources of income in an effort to protect the peatlands.

73 other sites are home to blanket bog habitats, which stretch some 37,000 hectares. These areas are generally on the western side of Ireland and are also designated as NHAs (NPWS, n.d.). Ireland's peatlands are a valuable natural asset and are susceptible to external development pressures. The degradation or exploitation of peatlands can have a negative effect on biodiversity (they support critical ecosystems and support diverse habitats), water quality and also climate change, primarily through their capacity to sequester carbon.

Consideration of the value of peatlands and the potential long-term negative effects of building on such resources will be an important factor for the future development of road infrastructure and also the existing management in these areas. Peatlands / boglands have significant implications on landslide susceptibility and subsequently on the construction of national roads.

Forestry

There has been a general positive trend in the percentage of forested land area since 1990. In 2018, forestry accounted for 9.5% of the national land area representing a 0.02% increase since 2012 largely attributable to an increase in coniferous plantations. The national objective is to grow forest cover to at least 18% of the total land area by

2050 (EPA, 2020a). Ireland's forests are young, up to 40% of (approximately 260,000 ha) the total forest area has been planted post 1990 (EPA, 2016). Since 1990, Ireland has experienced the fastest growth in forested area of any EU member state while also possessing one of the poorest total afforestation levels (EPA, 2020a). This increase is positive in combatting climate change, due to the annual carbon store in afforestation, actively offsetting carbon emissions from resource heavy sectors such as transport.

5.9.2 Land Use change

Throughout the past thirty years, the predominant changes to national land use have been a reduction in the total area covered by both agricultural land and peatland areas and an increase in both forested areas and artificial land (EPA, 2014). The development of the National Roads network has also increased significantly during this period and any future development must ensure that land use is considered in the assessment of National Road projects and that impacts on land use are minimised where possible. Alternatives must be considered to ensure that natural assets such as bogs are protected and managed correctly to facilitate carbon sequestration.

The Irish Government's objective for future development is to improve the efficiency of land use for agriculture, business, and society. Government policy strives to grow the national forest cover to 17% by 2030 and further to 20% by 2050, with the Department of Agriculture, Food, and the Marine (DAFM) having organised several schemes tailored towards achieving the overall "Afforestation and Creation of Woodland" measures outlined in the National Forestry Programme 2014-2020.

A renewed approach to land use planning and investment was introduced by the Project Ireland 2040 (NPF & NDP) which prioritises sustainable land management and resource efficiency. The NPF aims to adopt the principles of the circular economy to enable more sustainable planning and land use management of our natural resources and assets e.g., the use of infill and brownfield sites so that greenfield sites can be maintained. The NPF states: "If Ireland is to make up for lost ground in relation to carbon reduction targets and move towards the objective of a low carbon and climate resilient Ireland by 2050, it is necessary to make choices about how we balance growth with more sustainable approaches to development and land use and to examine how planning policy can help shape national infrastructural decisions." It is National Policy Objective 53 states to "Support the circular and bio economy including in particular through greater efficiency in land management, greater use of renewable resources and by reducing the rate of land use change from urban sprawl and new development." The National Roads network will be required to support NPO 53 and including the role the land use management has for existing and future National Road projects.

Successful application of the NPF will necessitate significantly better integration between the land zoning and existing infrastructure including National Roads. The adoption of the land use approach will need to be evidenced at regional and county levels through the regional and county plans which will in aid in identifying suitable areas for development with the least investment required.

5.9.3 Built Assets

5.9.3.1 National Roads

The National Roads network is a significant part of Ireland's national public infrastructure built assets. It enables the movement of both strategic and local traffic across Ireland, supports development and enables access and mobility. The National Roads network consists of approximately 5,300km of roads forming a nationwide network catering for approximately 45% of the country's total road traffic and most of

Ireland's freight transport (DTTAS, 2017). The National Roads network (as shown in **Figure 5-21**) consists of two classifications of road: National Primary roads (including motorways) and National Secondary roads.

There was in excess of 36.2 billion vehicle kilometres driven on Ireland's roads in 2020, this represents a decrease of 24.6% compared with 2019 (this reduction is largely attributed to Covid-19 travel restrictions) (CSO, 2021).

The National Roads network provides transport links for all settlement types, including urban areas, low-density population centres and dispersed/ one-off housing. The network currently facilitates linear clusters along roads which is a pattern relatively unique to Ireland. The National Roads network supports strategic transport access to, and between, significant population bases, ports and airports. The critical challenge in developing the road transport network is to support integrated sustainable settlements whereby urban sprawl is halted.

The NDP 2021-2030 sets out to align with the NPF in relation to the development of the National Road network, with a particular focus on ensuring that our regional cities are enabled to become centres of appropriate scale and that their growth is compact and sustainable. The NDP identifies the National Road projects that have recently been constructed, those that are or will soon be constructed and those that are proposed, subject to further approvals. The prioritisation of this list will be required to be in line with the 2:1 Programme for Government commitment on new public transport and new roads, NIFTI, the NPF and requirements of the climate legislation and associated commitments.



Figure 5-21 National Road Network (TII, 2022)

Transport Demand

Transport demand has increased significantly in Ireland in alignment with economic and population growth from the 1990s to 2009, with commuter levels nearly doubling during this period. Car ownership has grown from approx. 1.3 million in 1999 to 2.8 million in 2019, of which approximately 2.2 million (77.5%) were private cars. The ownership of commercial vehicles more than doubled from the 1999 to 2019 figures. Investment in infrastructure significantly improved and centred on the national motorway network (National Primary roads). In 2021, TII modelled the Volume to

Capacity (V/C) Ratio for National Primary and Secondary roads (TII, 2022) which relates to the AADT volume carried on a section of road to its daily operational capacity. The V/C Ratio indicates that over 80% of the National Primary roads network is operating at or below 80% of its daily capacity. For the National Secondary roads, the V/C Ratio identified that 55% of the network is operating at or below 80% of its daily capacity. For comparison purpose, in 2019 the last year with pre-Covid-19 traffic data, on National primary roads 70% of the network was operating at 80% or below of its daily capacity while for National secondary roads, just under 50% of the network was operating at or below 80% of its daily capacity (TII, 2020).

The population on the outskirts of urban zones has grown, and as a result the geographic disparity from urban centres has increased the significance of National Roads network for those who commute. The rise of dispersed commuter belts has given rise to an increase in car use and ownership and a subsequent decline in public transport and active travel uptake (DTTAS, 2015a). Providing quality urban public transport is dependent on population density. Subsequently, low rural population density trends have weakened the initiative for delivering this service. Consequently, a growing number of urban dwellers have become dependent on private cars as the most suitable transport mode, exacerbated congestion (DoT, 2018a).

Transport trends from 2020 show that longer journeys are far more likely to be travelled by car, where 84.6% of journeys of 8km or greater are completed by private car. For short journeys less than 2km, car use decreases to 57% and active travel modes rise in prominence, 38.1% of journeys within 2km are achieved via active travel (DOT, 2021). Evidently, despite the growth of public transport and active travel methods, there is still a reliance on private car use particularly for longer journeys. Based on the existing transport patterns the existing land transport system cannot sustainably provide for the projected increase in population of 1 million people by 2040. To deliver more sustainable patterns the transport system will need significant sustainable travel investment to satisfy increased demand, if not the urban centers will likely be impacted with severe congestion which will constrict and constrain future economic development and impact quality of life factors. Investment in a multi-modal transport system is vital to guarantee the adequate provision of transport and infrastructural needs for the next generation. Such development is crucial to sustain sustainable economic growth and competitiveness (DTTAS, 2015a). The National Roads network will be required to consider the diverse modes of sustainable transport and the potential for the shared use of the National Roads network by multiple modes.

Congestion

Efficient use of the National Roads network provides benefits to road passengers, bus users and road freight users in the form of shorter journey times, reduced congestion and reductions in the cost of operating vehicles. Society as a whole benefits from increased economic productivity, reduced energy consumption and a better environment. If the National Roads network is operated to a high standard, then road users will enjoy safe journeys with predictable journey times (TII, 2021).

Congestion on Irish roads is a considerable source of environmental emissions resulting in negative climatic impacts. Congestion mostly occurs on the approaches to towns and city centres at peak times throughout the day. Congestion on the National Road network results in vehicles not operating effectively or efficiently and increases the emissions released proportionally per vehicle. To date, the approach to congestion has been to build new roads or provide alternative routes or bypasses around urban centres to remove through traffic from the congested area. More recently other

demand management options have been explored such as the provision of bus priority corridors, sustainable travel facilities and traffic management systems such as the Variable Speed Limits on the M50 as part of the Dynamic Traffic Management Project. The future development and management of National Roads will be required to balance increasing mobility demands and finite road space. Ongoing demand analysis will enable identification of necessary interventions, such as road space repurposing.

5.9.3.2 Ports

Ireland's Tier 1 Ports include Dublin Port Company, Port of Cork and Shannon Foynes Port Company, having been categorised as being responsible for 15% to 20% of overall tonnage through Irish ports, and demonstrating a clear potential to lead the development of future port capacity in the medium and long term (IMDO, n.d.). Waterford and Rosslare Europort are categorized as Tier 2 Ports, responsible for at least 2.5% of overall tonnage through Irish Ports (IMDO, n.d.). From both a tourism and trading perspective, the primary Irish ports are Dublin Port, Rosslare Port and Cork Port. Dublin Port has been enhanced significantly through the development of the Dublin Port Tunnel which connects Dublin Port to the M50 which distributes the vast majority of Ireland's freight. Irish Ports handled 12.8 million tonnes of goods in Q3 2021, this represents an increase of 0.5% compared to Q3 2020 (CSO, 2022). A key issue for freight is congestion on the land transport network adjacent to strategic links such as the M50 and Dublin tunnel. Strengthening access routes to Ireland's ports through investment to upgrade and enhance the road and rail transport network to improve journey times remains a government priority in the NDP. National Road network connectivity with Irish ports in line with the Trans European Transport Network (TEN-T) Regulations through the provision of Core and Comprehensive network corridors is also a priority.

The direct trade impacts of Brexit at Irish ports and airports may also pose indirect impacts on land transport networks and patterns to and from ports and airports. Tier 2 ports such as Waterford and Rosslare may rise in significance as a result Brexit, due to their proximity to continental Europe. This may result in increased demand and congestion and delays along the road network. Such impacts would result in greater travel time to and from ports in the South-East region of Ireland (DoT, 2018b).

5.9.3.3 Airports

International air travel is an important asset for an island nation, it is also a driver of inward direct investment National Roads service many of the airports which is essential for arriving and departing passengers as well those employed or servicing airports including freight transport. There are three main airports servicing the country are Dublin, Cork and Shannon. Regional airports include Donegal, Galway, Kerry, Knock, Sligo and Waterford.

5.9.3.4 Utilities

Utilities such as electrical communications infrastructure, public water and wastewater mains have historically been provided along the side of roads and within the foundations of roads in Ireland. In recent years, roadside ducting has been installed as part of the construction of new motorway and dual carriageway sections of the network. This ducting is primarily intended for current and future road-related purposes, e.g., traffic route lighting, variable message signs, information technology I.T. applications for traffic and road network management, etc. However, limited spare capacity exists in some of these ducts which may allow usage of the ducts for non-road-related uses such as electronic communications cabling. These ducts provide opportunities for facilitating utilities within the National Road corridor, improving connectivity and provision of services in more rural areas. Where improvements are

made to roads, careful consideration of existing utilities will be necessary to avoid impacts on existing infrastructure.

To meet Ireland decarbonisation targets and energy needs Ireland has developed a number of plans regarding the delivery of renewable energy including the Government's *White Paper Ireland's Transition to a Low Carbon Energy Future 2015-2030 the implementation and development of the necessary onshore and off-shore renewable energy* will be required to help service the growing EVs energy requirements to service the road transport sector's needs.

5.9.4 National Cycle Network

TII is currently finalising a public consultation on the proposed development of National Cycle Network (NCN) which will stretch 3,500km connecting over 200 towns, cities, and villages. The NCN is proposed to integrate with existing infrastructure where possible and such is likely to interact with the National Road network in certain locations.

Figure 5-22 below illustrates the existing and proposed National Cycle Network. It includes the Northern Ireland Greenway Network, EuroVelo 1 and 2 and TII proposed greenways. The roll out of this infrastructure has the potential to change how people travel not only for recreation purposes but also for short commutes offering dedicated safer routes which will benefit social integration and result in direct health benefits to those who regularly use these routes of the population benefits committing along with other significant cycle routes. The proposed or existing cycling infrastructure in regard to the major population centres in Ireland for which they must cater.



Figure 5-22 The Existing and proposed National Cycle network and EuroVelo routes

**5.9.5 Public transport
Rail**

Iarnród Éireann rail network has approximately 2,400 km of railway track. The network includes intercity heavy rail and the Dublin suburban and commuter passenger routes, together with freight-only routes and cross-border connection to Northern Ireland between Dundalk and Newry. The NDP identifies significant investment in rail infrastructure in Ireland. The plan sets out a number of aims and details projects for development throughout the plan period including the DART+ Programme, BusConnects Programme, MetroLink and LUAS Green Line Capacity Enhancement.

Bus

There are a number of different bus operators within the public transport network. Bus Éireann, Dublin Bus, Go-Ahead Ireland, Transport For Ireland (TfI) Local Link. There are also bus services that are operated by commercial operators on behalf of TfI.

The Connecting Ireland Rural Mobility Plan is a major national public transport initiative developed by the National Transport Authority (NTA), with the aim of increasing connectivity, particularly for people living outside our major cities and towns.

5.9.6 Changes in Road Transport trends & Covid-19

The impact of the Covid-19 pandemic and the resulting decline in transport demand is a modern example of the impact that an unexpected change in transport patterns can have on long established norms concerning travel demand and rates of public transport usage. During the peak of the travel restrictions in early 2020, public health efforts to manage the pandemic, resulted in restrictions and subsequently traffic volumes fell to approximately 30% of pre pandemic levels (DoT, 2020). In a post-pandemic environment, with somewhat sustained levels of remote working for some workers in the short to medium term, and potentially longer, there is potential for:

- Less peak hour trips, resulting in the potential for a greater distribution spread of trips throughout the day.
- A change in the distances travelled if people permanently relocate out of urban areas.
- An increase in the use of private cars and localised active travel modes with a subsequent decline in public transport peak time use.
- A decrease in trips to and from urban centres and a resulting increase in regional trips.
- A fluctuation in carbon emissions as a result of potential transport pattern shifts.

The impacts of the Covid-19 have shown the need for transport planning to account for low-probability, high-impact events. Furthermore, the intricate interactions between transport, land use planning and technological connectivity have also led to increased uncertainty about society's future accessibility needs and how the transport system should be designed to address them (DoT, 2020). Currently, it could be said that there is considerable ambiguity about long-term transport trends but there is certainty that there needs to be a reduction in emissions from the road transport.

5.9.7 Key Considerations Relating to the draft NR2040

The key considerations including environmental problems and trends relating to material assets are as follows:

- The increase in population is likely to increase the road transport demand.
- The current over-reliance on the private car and subsequently continued pressure on supporting infrastructure particularly in urban locations on the National Roads network.
- Planned increase in urban populations and the capacity to deliver quality public transport and sustainable modes to cater for additional capacity.
- Economic growth and subsequent increased of freight on the National Road network.
- The construction, maintenance and operation of the National Road network requires the manufacture, management and disposal of significant quantities of building materials which releases carbon and depletes natural resources.

- The development of the National Roads network during the construction or operation stage results in impacts such as the temporary or permanent loss and severance of valuable natural assets (e.g.: agricultural land, forests, and peatlands that support renewable energy developments).
- The impact of Brexit on Irish Ports is likely to result in increased demand on the National Road networks.
- Road developments have the potential to impact on utility provisions.
- Energy and supporting infrastructure requirements to cater for changing fleet and the transition to a carbon neutral economy by 2050.

5.10 Archaeological, Architectural and Cultural Heritage

Ireland is rich in architectural, archaeological, and cultural heritage with sites located across the breadth of the country. Heritage is at risk from competing land uses and development pressures including road infrastructure development. The development of road infrastructure can potentially impact on sites or features of architectural, archaeological or cultural heritage interest. Effects can include total or partial loss of structures or grounds, disturbance to recorded and unrecorded buildings / structures / features deemed to be of archaeological, architectural or cultural heritage significance and their setting.

The NRA (now TII) *Guidelines for the Assessment of Archaeological Heritage Impacts of National Road Schemes and the Guidelines for the Assessment of Architectural Heritage Impacts of National Road Schemes* are currently used to assess the impact of National Road Schemes on the archaeological, architectural and cultural heritage environment which is being updated. The designations considered as part of the archaeological, architecture and cultural heritage baseline are:

- Record of Protected Structures (RPSs);
- Record of Monuments and Places (RMPs);
- National Inventory of Architectural Heritage (NIAH);
- UNESCO World Heritage Sites; and
- Archaeological resources including Sites and Monuments Record (SMR).

5.10.1 Record of Protected Structures

Under the Planning and Development Act 2000, (as amended) planning authorities must ensure the compilation and maintenance of a Record of Protected Structures (RPS) which in turn is incorporated into the respective planning authority's development plan. The RPS strives to protect structures in their entirety or parts of structures that represent architectural heritage, and which are of significant, 'historical, archaeological, artistic, cultural, scientific, social or technical interest'. Sites, structures and groups thereof that receive a NIAH ranking of greater or equal to regional importance are subsequently recommended by the Minister for inclusion in the RPS. The RPS affords statutory protection as objects of Irish architectural heritage. Though the RPS strives to protect structures and their respective setting, the precise restoration, expansion and modification of protected structures is encouraged upon application submitted to the relevant Planning Authority.

5.10.2 Record of Monuments and Places

The Record of Monuments and Places (RMP) is a statutory list of recorded monuments and places and accompanying maps on which such monuments and places are shown for each county. RMP monuments are granted legal protection under the National Monuments Act 1930 – 2004. Proposed development works that may impact a

recorded monument are required to be notified in writing to the Minister prior to commencing the work for consideration. The National Monuments Act 1930-2004 was enacted to safeguard the protection and conservation of national monuments, archaeological objects, archaeological sites, portable archaeological heritage while overseeing the regulation of archaeological works.

5.10.3 National Inventory of Architectural Heritage

The National Inventory of Architectural Heritage (NIAH) was established 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. The Act states that “architectural heritage” means all structures and buildings together with their settings and attendant grounds, and fixtures and fittings, groups of such structures and buildings and sites, which are of architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest. Structures are afforded a rating i.e., international, national, regional, local or record only. Structures which are considered of International, National, and regional significance are recommended by the Minister to the relevant planning authority for inclusion in their Record of Protected Structures.

5.10.4 Architectural Conservation Areas

Local Authorities are required under the Planning and Development Act 2000, (as amended), to include an objective to preserve the character of a place, area, group of structures or townscape, taking account of building lines and heights, that – (a) is of special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest or value, or (b) contributes to the appreciation of protected structures, if the planning authority is of the opinion that its inclusion is necessary for the preservation of the character of the place, area, group of structures or townscape concerned. External works, including new development, which would affect the character of the area will likely require planning permission by the respective Local Authority to ensure the special characteristics of the area or distinctive features are protected.

5.10.5 UNESCO World Heritage Sites

Ireland currently has two registered United Nations Educational, Scientific and Cultural Organisation otherwise known as UNESCO World Heritage Sites; Brú na Bóinne – Archaeological Ensemble of the Bend of the Boyne in Co. Meath and Skellig Michael off the coast of Co. Kerry. Since 2010, several sites including the Burren and the historic city of Dublin have been on the UNESCO tentative list and may be included on the official list in the future.

5.10.6 Archaeological Resources

The Archaeological Survey of Ireland (ASI) was established to compile an inventory of the known archaeological monuments in the State. The National Monuments Service provides an interactive mapping search facility maintained by the Archaeological Survey of Ireland which has access to all records relevant to the archaeological heritage of Ireland. This extensive body of records stores a list of recorded archaeological monuments for each county. The information is stored on a database and in a series of paper files that collectively form the ASI Sites and Monuments Record (SMR). The SMR holds documentary evidence and records of field inspections of all known archaeological sites and monuments. Inclusion on the SMR does not by default confer statutory legal protection. Shipwrecks are not included in the SMR as this dataset is maintained separately by the Underwater Archaeology Unit of the National Monuments Service.

There is also potential for unknown, undesignated archaeological and architectural remains including underwater archaeology existing throughout Ireland's marine and terrestrial environment. The future development of the National Roads network, in particular in greenfield sites, have the potential to unearth historical remains during construction.

5.10.7 Key Considerations Relating to the draft NR2040

The key considerations including environmental problems and trends in relation to Architectural, Archaeological and Cultural Heritage are as follows:

- The potential for the construction of roads infrastructure to negatively impact RMPs, RPSs, NIAH and UNESCO protected sites either directly or indirectly during the construction and or operation phase of the development.
- Undiscovered objects of cultural significance, undesignated remains, and underwater archaeology may be discovered or negatively impacted by the construction of the National Road network.
- Development, alteration or maintenance of the National Roads network could be inhibited by the need to protect the respective character of areas.
- Opportunities for the tourism industry and allowing a greater appreciation of Ireland's architectural, archaeological and cultural heritage.
- National Roads offers a means of travel to many heritage sites along the National Road network as well as access to cultural heritage festivals.

5.11 The Landscape

Article 1a of the European Landscape Convention (ELC) states landscape is "an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors" (COE,2000). It aims to balance spatial planning, development and landscape protection. The ELC addresses natural, urban, peri-urban and rural areas, encompassing land, inland water, coastal and marine areas of all types, not just those that are considered for scenic or amenity value.

Ireland's landscape has been moulded by years of natural processes and human development including agricultural practices.

Policy Background

The ELC represents the first international treaty to concentrate exclusively on landscape. The Convention was ratified by the Irish Government in 2002 and supports the protection, management, and planning of European landscapes. Subsequently, the Department of Arts, Heritage and the Gaeltacht published the National Landscape Strategy 2015-2025 in 2015.

The '*National Landscape Strategy for Ireland 2015-2025*' ensures compliance with the ELC and provides a framework for the State, public authorities, stakeholder, communities to work together for the protection of the many cultural, social, economic, and environmental values embedded in the landscape. The strategy aims to inform future decision-making including planning decisions and achieve a balance between the protection, management and planning of the landscape by way of supporting actions. A key action of the strategy is to develop a National Landscape Character Assessment (LCA). A national LCA has not been developed to date, however local authority development plans must include objectives providing for the preservation of the character of the landscape including the preservation of views and prospects and the amenities of places and features of natural beauty or interest.

Corine Land Cover

The CORINE land cover survey is from 2018 and is the EU geospatial dataset describing what is visible on the land surface. It is a key data set informing environmental and planning policy across Ireland regarding land use and land cover and can also be used to inform landscape designations.

The EPA CORINE 2018 land cover data series demonstrates that agricultural land is the dominant land cover in Ireland, covering approximately 68% of the landmass. Wetlands are the second largest land cover type nationally, comprising approximately 14.9%. Road and Rail networks and associated land comprise 0.06%.

Forestry and semi-natural areas cover approximately 9.5% and 3.8% respectively. The low-lying areas of the midlands are home to vast areas of raised peat bogs, while blanket bogs are prevalent in upland areas and in western coastal counties. Both boglands represent significant aspects of Ireland’s landscape character. Construction of infrastructure in bogland areas can be susceptible to landslides and can also result in loss of natural carbon sinks. **Figure 5-23** displays the Corine Land Cover survey of Ireland 2018.

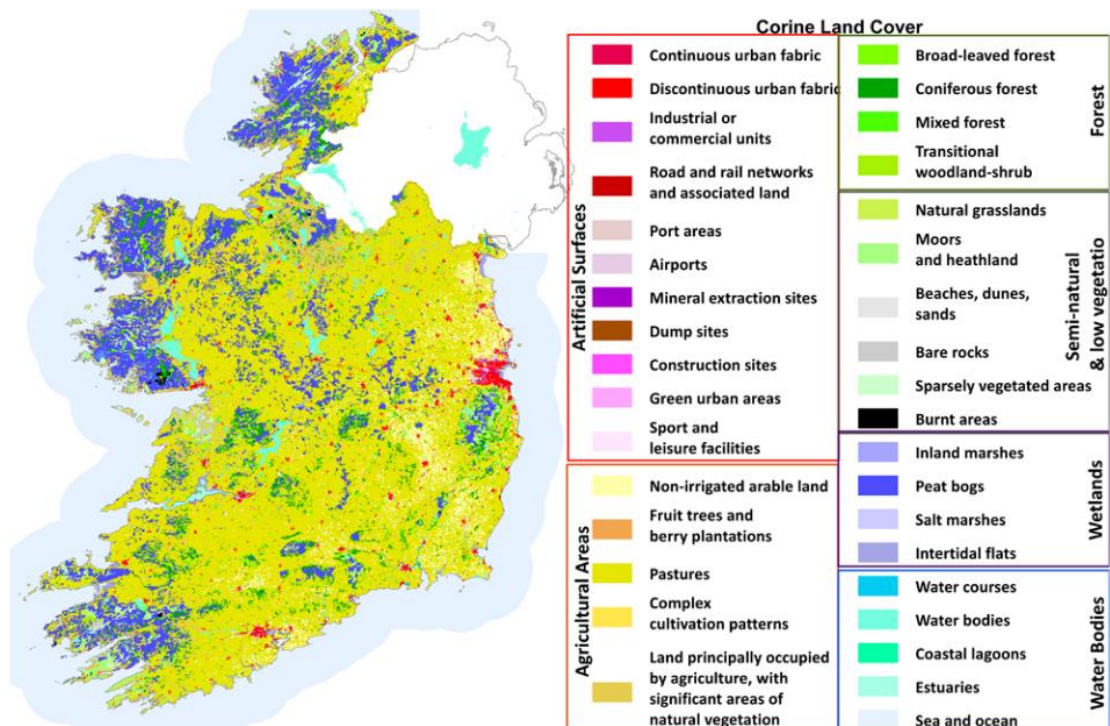


Figure 5-23 CORINE land cover survey of Ireland 2018 (EPA, 2021a)

Spatial Planning

The National Planning Framework includes the spatial planning direction for the state. It provides support policy direction addressing alternatives to urban sprawl and one-off housing which is influencing changes in the landscape including the associated transport networks. The NPF recognises the importance of green and blue spaces, areas of amenity including landscapes for tourism as well as health and wellbeing and the benefits to society and biodiversity. The importance of nature-based solutions including natural water retention measures provide solutions in flood risk management. These measures can also provide solutions for landscape mitigation ‘softening’ the effects of hard engineering including those associated with National Roads.

Coastal and Marine Landscape

The 'National Marine Planning Framework' (NMPF) outlines the government's vision, objectives and marine planning policies for each marine activity. In a time of increasing spatial pressure of marine resources the NMPF is intended to ensure sustainable development and use of marine resources to 2040 including consideration of landscape objectives particularly seascapes. The NMPF defines seascape as "landscapes with views of the coast or seas, and coastal areas and the adjacent marine environment with cultural, historical and archaeological links with each other". This can include the visual resource or marine character. Seascape consists of both visual resources and marine character.

5.11.1 Key Considerations Relating to the draft NR2040

The most significant current pressure on landscape is the siting of infrastructure that can impact on landscape character, create visual effects, and result in land use changes. National Roads and ancillary infrastructure have the potential to cause a significant permanent impact and alter the landscape. Road developments in greenfield sites change the landscape and have the potential to alter views from sensitive receptors. Landscape mitigation plans can help to reduce impacts on the landscape including on visual receptors and can assist with integrating roads infrastructure into the landscape.

The key considerations including environmental problems and trends in relation to the National Roads network and landscape and visual amenity include:

- Potential for permanent impacts upon landscape character and visual amenity throughout operation.
- Potential to affect designated landscapes or change the landscape character, and both temporarily during the construction stage and permanently during operation;
- Effects on general landscape character and sensitive receptors including seascapes, marine sites, and species due to the National Roads and ancillary infrastructure including signage, lighting and visual display units/signs which can have different impacts during day and night.

5.12 Interactions

The interactions between the SEA environmental topics are an important consideration for environmental assessment. The draft NR2040 will guide the full range of TII's National Roads activities over the years to 2040 and beyond. The Strategy include a greater focus on management and operation of the network in order to serve the projected growth of population and the economy.

In accordance with the SEA Directive consideration is given to the likely positive and negative significant environmental effects that may arise from the draft NR2040. The environmental baseline and aims of the Strategy have informed the following:

- Interactions across environmental topics (e.g., population and human health and climate change impacts, flooding, emissions to air, etc.)
- Cumulative impacts with other strategic plans or programmes (refer to Appendix A). Detailed assessments with other plans and programmes will be required as part of the environmental assessment process as part of the project development and consenting process to ensure that negative cumulative impacts are avoided and/or minimised or mitigated. Positive cumulative effects should be maximised.
- Interactions between air quality, climate, biodiversity and human health, for example, the increase of NO_x and particulate matter arising from road transport

emissions can result in direct and indirect impacts on greenhouse gas emissions affecting climate change as well as negative health effects.

- Indirect and secondary effects for a plan of this strategic nature will be assessment at that specific plan/ project level.

Table 5.4 below illustrates a matrix with the interactions between the environmental factors identified as being likely or not likely to occur. The matrix is symmetric, with each environmental factor addressed in the previous **Sections 5.2 to 5.10** of this SEA being placed on both axes of the matrix, and therefore, each potential interaction is identified twice. The potential for interaction is identified in this assessment, the significance and types of impact (positive or negative) will be determined based on the specifics of the plan and/or project which be developed as part of the implementation of NR2040 and the associated specific environmental assessments, as appropriate.

Table 5.4 Interactions between Environmental Factors

	Biodiversity	Population and Human Health	Noise	Land and Soils	Water Quality	Air Quality	Climatic Factors	Material Assets	AAC Heritage	Landscape and Visual
Biodiversity		✓	✓	✓	✓	✓	✓	✓	✓	✓
Population and Human Health	✓		✓	✓	✓	✓	✓	✓	✓	✓
Noise	✓	✓		☒	☒	☒	☒	☒	☒	☒
Land and Soils	✓	✓	☒		✓	✓	✓	✓	✓	✓
Water Quality	✓	✓	☒	✓		✓	✓	✓	✓	✓
Air Quality	✓	✓	☒	✓	✓		✓	✓	✓	✓
Climatic Factors	✓	✓	☒	✓	✓	✓		✓	✓	✓
Material Assets	✓	✓	✓	✓	✓	✓	✓		✓	✓
AAC Heritage	✓	✓	☒	✓	✓	✓	✓	✓		✓
Landscape and Visual	✓	✓	✓	✓	✓	✓	✓	✓	✓	

5.13 Transboundary

The draft NR2040 is a roads Strategy of national scale and therefore has the potential to result in transboundary impacts with all aspects of the Northern Irish environment, due to the sharing of a common island and the interconnected geographical, social, cultural, and historical ties of both countries. There are several transboundary roads between both jurisdictions for example the capitals of both jurisdictions are linked by a motorway, the M1 stretches from Dublin until the border with Northern Ireland in Co. Louth, where the road becomes the A1 and continues to Belfast. The potential infrastructure works that may arise from the draft NR2040 Strategy along, near or adjacent to the border may result in traffic and congestion impacts in Northern Ireland.

The National Planning Framework and the Regional Development Strategy for Northern Ireland provide a foundation for strategic integration of long-term planning in areas such as transport and community infrastructure. Under National Strategic

Outcome 2 'Enhanced Regional Accessibility' of the National Planning Framework, it is proposed to 'strengthen public transport connectivity between cities and large growth towns in Ireland and Northern Ireland with improved services and reliable journey times.' National Policy Objective 46 of the NPF details that 'in co-operation with relevant Departments in Northern Ireland, enhanced transport connectivity between Ireland and Northern Ireland, to include cross-border road and rail, cycling and walking routes, as well as blueways, greenways and peatways.'

Transboundary impacts can affect all environmental receptors depending on the specifics of future plans/projects. Key transboundary issues could include:

- Northern Ireland – Appropriate Assessment issues. (EU Designated sites in Northern Ireland adjacent to or with pathways to/from the Republic of Ireland cross);
- Transport and settlement patterns;
- Potential effects on priority habitats, mobile species, water quality impacts to river basins;
- Noise, air quality and climate impacts; and
- Landscape and visual impacts.

As an example, Ireland and Northern Ireland share water bodies which can provide hydrological pathways for the spread of pollution, contamination and/or invasive species across catchments. Impacts may be direct or indirect. For example, impacts to aquatic species present in the Republic of Ireland could potential impact on the respective population if present in Northern Ireland. Transboundary indirect impacts may occur on the landscape from the development of infrastructure in the Republic of Ireland impacting landscape and visual amenities in Northern Ireland.

5.14 Key environmental considerations

A summary of some of the key environmental considerations as a result of the implementation of the draft NR2040 on the SEA environmental factors is provided in **Table 5.5**. These issues will inform the assessment and ongoing monitoring of the draft NR2040.

Table 5.5 Summary of key environmental considerations (positive / negative) on environmental factors

Environmental Receptor	Issues to be considered in the implementation of the draft NR2040:
Biodiversity, Flora and Fauna	<ul style="list-style-type: none"> • Effects on protected sites: Special Areas of Conservation, Special Protection Areas (Birds Directive), Natural Heritage Areas (NHAs), proposed NHAs, Ramsar sites, National parks. • Potential for interaction with Habitats Directive and particularly effects due to development of new infrastructure, ongoing maintenance, operation of roads on or close to protected areas: European (e.g. SACs, SPAs, Ramsar sites) and National (e.g. (p)NHAs). • Effects on protected species: e.g. birds, mammals (including bats), and aquatic species (including freshwater pearl mussel, salmonids, other protected fish and invertebrate species) as appropriate. • Potential known or unknown effects on biodiversity along National Roads due to climate change impacts.

Environmental Receptor	Issues to be considered in the implementation of the draft NR2040:
	<ul style="list-style-type: none"> • Wider biodiversity issues including impacts on habitats and species of ecological value, e.g. disturbance and/ or fragmentation of ecological networks/ corridors. • Potential positive effects resulting from enhancements to support biodiversity, e.g. provision of ecological corridors and connectivity for wildlife within the wider landscape. • Potential to affect both aquatic and terrestrial aquatic biodiversity in non-designated areas. • Risk of invasive species spread during construction and along road corridors. • Implementation of the actions stemming from 3rd National Biodiversity Plan 2017-2021 and 4th plan (2022-2026, in preparation) namely a greater focus on Biodiversity Net Gain (BNG) or No Net Loss (NNL) of Biodiversity on projects.
Population	<ul style="list-style-type: none"> • Effects on population and economy due to improved access and connectivity associated with the delivery of an integrated safe and efficient National Roads network. • Effects on settlement patterns and supporting compact sustainable development in line with the NSOs of the NPF. • Demographic changes including ageing population and continued reliance on private car travel, taxis, etc. for certain trips. • Changes in how the population use National Roads due to range of alternative futures. (Covid-19, technological change, climate change, etc.) • Likely increase in mobility as a service into future e.g., car sharing, etc. • Potential for loss/gain effects on recreational, tourism and amenity resources • Effects on National Roads due to the economic activity, and vice versa
Human Health	<ul style="list-style-type: none"> • Effects on air quality from transport sector (harmful pollutants i.e., carbon monoxide, particulate matter, nitrogen dioxide, benzene, etc.). • Effects due to potentially harmful noise emissions from transport affecting communities. • Effects on quality of life including travel demand (levels of congestion/demand management), safety and mode of travel on/adjacent to National Roads (walking, cycling, public transport and related potential positive and negative health effects). • Greater focus of on provision of sustainable/ active modes and integrated mobility on National Roads will have positive health effects on populations. • Potential for human health effects due to poor air quality arising from both construction activities and operational phase (traffic emissions). • Interactions with other environmental receptors including but not limited to air, water quality, climate change, etc.
Noise	<ul style="list-style-type: none"> • Continuing negative effects from road transport affecting the noise environment (human health and disturbance to fauna)

Environmental Receptor	Issues to be considered in the implementation of the draft NR2040:
	<ul style="list-style-type: none"> • Temporary noise pollution from road infrastructure during construction. • Potential for any expansions of the road network increasing exposure to noise impacts or impacting designated quiet areas. • Potential to reduce noise pollution from road transport affecting communities due to remedial measures, technological advancements and/or implementation of Noise Action Plans.
Water	<ul style="list-style-type: none"> • Effects on the objectives of the Water Framework Directive and Marine Strategy Framework Directive and ecological status of water bodies. • Effects on water quality including seascapes and marine sites arising from, new infrastructure, upgrades, maintenance, and operation activities. • Development effects increasing flood risk.
Land and Soils	<ul style="list-style-type: none"> • Land use changes and impacts on soil and geological resources due to development of new infrastructure. • Potential for significant impact on the geology of karst areas and soils in areas vulnerable to erosion. • Opportunities to reduce waste by implementing Circular economy principles.
Air	<ul style="list-style-type: none"> • Temporary generation of air pollution throughout infrastructure creation. • Air quality impacts (positive or negative) emissions to air from road-based transport.
Climatic Factors	<ul style="list-style-type: none"> • Effects due to greenhouse gas emissions (Increase or decrease) from road-based transport and contribution to climate change (and associated targets). • Effects on the asset and communities due to extreme weather events (i.e. flood risk from heavy rainfall, sea level rise, extreme heat, storms, etc. and associated investment in the asset). • Effects on the National Roads due to climate change including adaptation measures required to become resilient to climate change. • Potential for climatic factors to have direct or indirect effects on several environmental receptors including but not limited to population and human health, water, soil, biodiversity, air, material assets.
Material Assets	<ul style="list-style-type: none"> • Effects on traffic and transport networks due to increase population and associated demand for travel. • Effects due to need to deliver quality public transport and sustainable modes to cater for additional capacity to support the decarbonisation of the transport sector. • Effects due economic growth and increase in freight requirements. • Effects on infrastructure (utilities, broadband etc). • Indirect effects due to energy consumption of transport sector. • Effects on natural resources use due to requirements of constructing roads of new roads.

Environmental Receptor	Issues to be considered in the implementation of the draft NR2040:
Architectural, Archaeological and Cultural Heritage	<ul style="list-style-type: none"> • Potential effects on Record of Monuments and Places (RMPs) and Record of Protected Structures (RPSs) and National Inventory of Architectural Heritage (NIAH). • Potential effects to previously undiscovered archaeological remains. • Effects to cultural heritage.
Landscape	<ul style="list-style-type: none"> • Effects on designated landscapes/ landscape character. • Temporary disruption of visual amenities throughout construction phase. • Effects on general landscape character and sensitive receptors including seascapes, marine sites, and species.
Interrelationship	<ul style="list-style-type: none"> • Cumulative impacts across other environmental topics (e.g., population and human health and climate change impacts, flooding, emissions to air, etc.) • Cumulative impacts with other strategic plans primarily NIFTI and NPF at local level the County Development plans. • Interactions between air quality, climate and human health, the increase of NO_x and particulate matter (PM₁₀ and PM_{2.5}) arising from transport emissions can result in direct and indirect impacts on climate change as well as negative human health and air quality effects. • Indirect and secondary effects are likely on projects of such broad scale which are widespread and varied across the construction and operational and maintenance phases of projects which is required to be assessed at project level EIA & AA.
Transboundary Impacts	<p>Transboundary effects can impact on all environmental receptors depending on the specifics of the plan/project. Key transboundary issues could include:</p> <ul style="list-style-type: none"> • Northern Ireland – Appropriate Assessment issues. (EU Designated sites in Northern Ireland adjacent to or with pathways to/from the Republic of Ireland cross); • Transport and settlement patterns; • Potential effects on priority habitats, mobile species, water quality impacts to river basins; • Air quality and climate impacts; • Landscape and visual impacts

5.15 Environmental Sensitivity Mapping

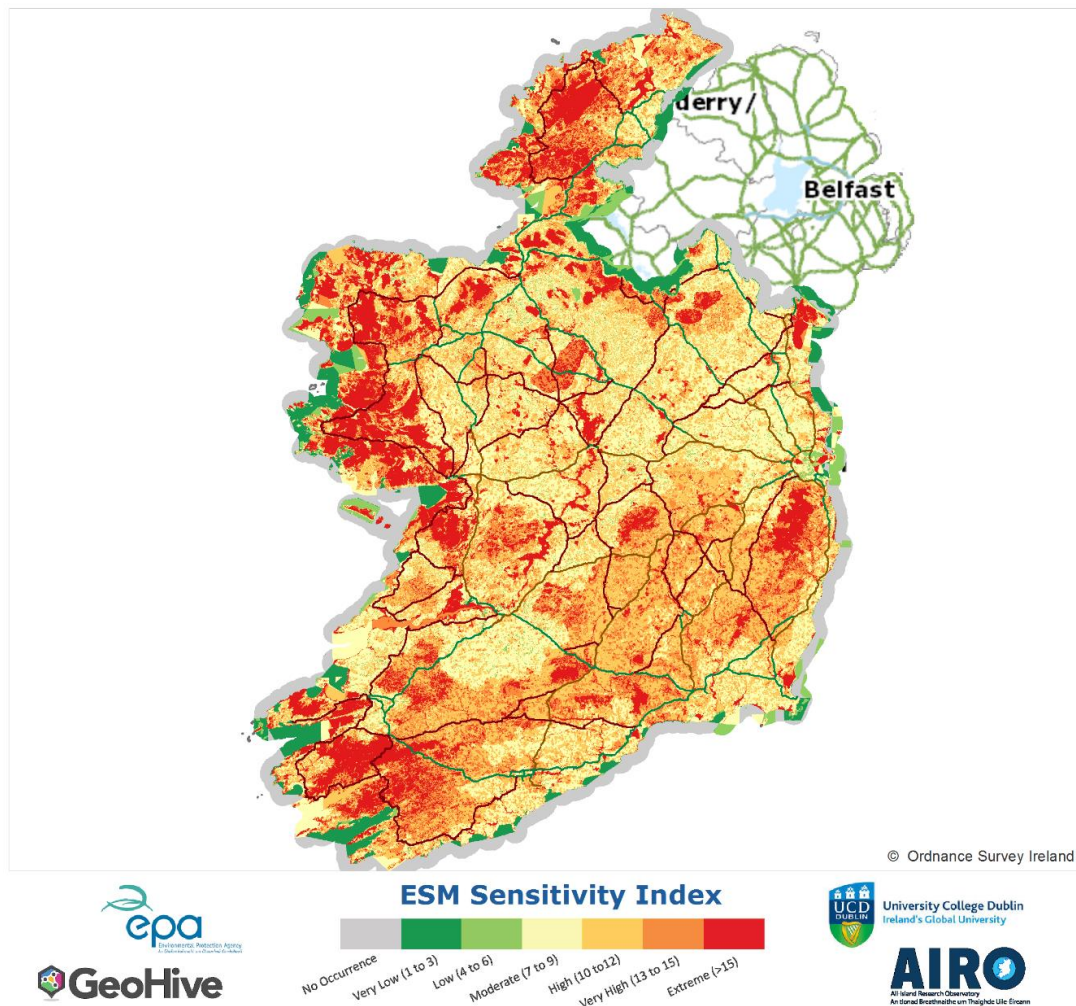
AIRO has developed an online environmental sensitivity mapping (ESM) Webtool, funded by the EPA under the STRIVE Programme for use in SEA and environmental assessments. The ESM Webtool is a decision support tool to assist SEA and planning processes in Ireland. The tool brings together over 100 datasets and allows users to explore environmental considerations within a particular area and create plan-specific environmental sensitivity maps. The ESM process identifies environmentally sensitive areas at a strategic level, helping to inform the assessment of cumulative and in-combination effects on the environment. The production of these maps is based on the principles of SEA and presents a visual overview of the relative sensitivity of areas, particularly where they overlap, in order to provide a more strategic and informed approach to planning. These maps can help planners anticipate potential land-use

conflicts and help identify suitable development locations, while also protecting the environment.

ESM mapping was produced to inform this SEA. ESM has been generated for the whole of Ireland with the variables used to generate the environmental sensitivity maps. The ESM overlays environmental baseline data sets these include EU Designated Sites, nationally protected sites, river corridors, flood extents, coastal areas and upland areas, drinking water quality sources, etc (detailed in each figure). When overlaid the environmental sensitivity of an area which is illustrated in the figure as the darkest red colour. For example, EU Designated sites (e.g., SAC, SPA) and other protected sites/areas are more sensitive due to the uniqueness of the habitats and species equally environmental assets such as drinking water supplies are also sensitive to change, etc.

In **Figure 5-24** the ESM is overlaid together with the existing National Road Network (comprising Motorways, National Primary Roads and National Secondary Roads). It shows areas of greatest environmental sensitivity a sliding scale with those in from red being most sensitive to in green least sensitive.

ESM Results - National Road Network



Date: 7/26/2022 Time: 12:52:01 PM Author: Roughan & O'Donovan

*This map is an aggregate result based on the variables and user defined weights listed below.

Warning: Please note that weights are only to be used to emphasize the relative significance of an environmental aspect - applying weights to more than two themes would magnify, and possibly overstate, the overall sensitivity.

Air & Climactic Weight: 1 Variables: Flood Extents Current Scenarios (Coastal and fluvial) (High), Flood Extents Current Scenarios (Coastal and fluvial) (Medium), Flood Extents Current Scenarios (Coastal and fluvial) (Low), Historical Flood Extents

Biodiversity, flora and fauna Weight: 1 Variables: Ancient Woodlands, Annex I Habitats, Coastal Habitats-Saltmarshes, Contribution to Potential Ecological Networks, Forest Inventory, Margaritifera Sensitive Areas, Natural Heritage Areas, Proposed Natural Heritage Areas, Salmonid Waters (S.I 293 Only), Special Areas of Conservation, Special Protection Areas, Woodland Habitats

Cultural Heritage Weight: 1 Variables: National Inventory of Architectural Heritage (NIAH), Sites and Monuments Record

Population and Human Health Weight: 1 Variables: WFD RPA Groundwater Drinking Water, WFD RPA Surface Water Drinking Water (Lakes), WFD RPA Surface Water Drinking Water (Rivers)

Soils and Geology Weight: 1 Variables: County Geological Sites, Geoparks and Geosites, Landslide Susceptibility, Outcrops, Peat Bogs, Soil Permeability

Water Weight: 1 Variables: Aquifer Vulnerability, Groundwater Source Protection Areas, Wetlands, WFD RPA Nutrient Sensitive Areas (Lakes, Coastal and Transitional Water Bodies), WFD RPA Nutrient Sensitive Areas (Rivers), WFD RPA Recreational Waters (Coastal and Transitional Water Bodies), WFD RPA Recreational Waters (Lakes), WFD RPA Shellfish Areas, WFD RPA Water Dependant Habitats (SACs), WFD RPA Water Dependant Habitats (SPAs)

Figure 5-24 Environmental Sensitivity Mapping and Variables – National Road Network

6 ASSESSMENT METHODOLOGY

SEA seeks to improve the quality of the plan/policy making process (in this case the draft Strategy) by:

- Raising awareness of the environmental impacts of the draft Strategy. While it will not always be possible to eliminate all potentially significant negative effects in balancing policy options, SEA at least helps to clarify the likely consequences of such choices and makes specific provision for mitigation measures where some negative impacts cannot be avoided.
- Encouraging the inclusion of measurable targets and indicators to facilitate effective monitoring of implementation of the draft Strategy, and thus make a positive contribution to subsequent reviews.

The SEA Framework described below details the methodology and criteria (Environmental Protection Objectives) used to assess the draft Strategy and identify the potential significant effects on the EPOs as a result of implementing the draft Strategy.

6.1 Environmental Protection Objectives

The relevant characteristics of the receiving environment presented in **Section 5** of this ER summarises the baseline condition of the SEA environmental factors and the existing problems, issues or threats as required under the SEA Directive. Those issues that are likely to influence or interact with NR2040 have informed the assessment as detailed in **Table 5.5**. The key policy requirements of other plans, policies or programmes are discussed in **Section 4** and in Appendix A of this ER and have informed the development of the Environmental Protection Objectives (EPOs) which are used as the criteria for the assessment of the potential effects of the draft Strategy.

The development of the EPOs started at the SEA scoping stage. The EPOs are informed by relevant international, European and national policy/plans, and their respective EPOs or Strategic Environmental Objectives (SEOs) (terms are interchangeable). The key plans used when formulating the EPOs include: The National Planning Framework (NPF) and the National Investment Framework for Transport in Ireland (NIFTI) and their respective SEAs. The EPOs in the existing SEAs have been used as a building block to inform the development of NR2040 specific EPOs. The close connection with existing EPOs facilitates working towards shared environmental and sustainability objectives, as well as ease of monitoring throughout the lifetime of the implementation of the Strategy.

The EPOs presented at the Scoping Stage have been amended slightly to reflect feedback from the environmental authorities along with consideration of the characteristics of the environment and significant environmental issues as a result of the implementation of the draft Strategy.

The EPOs presented in **Table 6.1** are used as part of the objectives-led assessment of the commitments that are contained in the draft Strategy and in the assessment of the alternatives (**Section 7**). The objectives led assessment helps to identify potential environmental effects (positive, negative or neutral or a combination) which are reported in this ER.

Table 6.1 Environmental Protection Objectives

Environmental Receptor	Environmental Protection Objectives
Biodiversity (BFF)	Protect, actively conserve, prevent damage and enhance biodiversity, particularly European designated sites, other nature conservation sites (and areas supporting them), protected and threatened habitats and species, and support ecological corridors.
Population and Human Health (PHH)	Protect and enhance the population and human health by increasing accessibility to the economy including employment, recreation and community facilities through an integrated, safe and efficient National Roads network and contribute to reduced harmful transport emissions.
Noise (N)	Reduce, and contribute to mitigation of noise pollution from road transport on National Roads.
Water (W)	Prevent deterioration and continue to support the achievement of good water quality status of all water bodies as required by the Water Framework Directive and avoid increasing flood risk associated with National Roads.
Air Quality (AQ)	Contribute to the reduction of air pollution and improvement in air quality resulting from transport, through the effective design, maintenance and operation of the National Road network.
Climate Change Mitigation (CCM)	Contribute to the reduction in greenhouse gas emissions through design and supporting the decarbonisation of the road transport network.
Climate Change Adaptation (CCA)	Ensure resilience to climate change is incorporated into the National Road network construction, operation and maintenance activities.
Land and Soils (L&S)	Conserve and sensitively use soils and geological resources and protect geological sites of value.
Material Assets (MA)	Ensure the effective use of existing infrastructure and support the circular economy particularly the use and reuse of existing resources, waste and energy across the network and TII assets.
Archaeological, Architectural and Cultural heritage (AACH)	Avoid, protect and/or minimise impacts to designated archaeological, architectural, and cultural heritage resources.
Landscape (L)	Protect designated and sensitive features of note in landscapes and sensitively manage landscape change.

The assessment of the likely significant effects on the environment of implementing the draft NR2040 was carried out using an accepted and commonly used methodology of creating an assessment matrix. The assessment matrix comprises the text from the measures contained in the draft Strategy and the Environmental Protection Objectives (EPOs) developed earlier in the SEA process (**Table 6.1**).

The contents of draft Strategy contained in the various chapters are considered by the assessment team. EPO Assessment Framework and assessed against compliance with the EPOs. The EPOs are used as standards against which the provisions of the draft NR2040 can be evaluated in order to help identify areas in which likely significant effects are likely to occur.

When testing the draft NR2040 against each of the EPOs the measures contained could be rated as having potential positive, negative effects and/or a combination of effects as listed in **Table 6.2**.

For example, where there is potential for predominantly positive effects to occur but also neutral effect on that EPO, the effect is rated as +/0. This criteria is used throughout the SEA for all assessments (**Section 7** Assessment of Alternatives and **Section 8** Assessment of the draft NR2040).

A commentary relating to the assessment is provided under each assessment to aid the reader in understanding the rationale for assigning the potential effects. This approach allows the assessment team to explicitly test the likely significant effects across each of the EPOs to see which objectives/commitments/ investments are likely to support them (positive effects) and which, if any, contradict them (negative effects).

While there are no projects or plans specifically identified in the Strategy, the assessment considers and predicts likely effects that subsequent plans/projects stemming from the investment priorities or portfolios may have on the EPO. It is recognised that while the impact on the EPOs or the environmental factor will be dependent on the specifics of the plan or project and the level of intervention required, there is overall assessment carried out to capture potential effects. Specific plans or project level stemming from the Strategy which will be determined at the required level of the environmental assessment process i.e., SEA/ EIA/AA, as appropriate.

Table 6.2 Criteria for the potential effect

Description of Potential Effect	Effect
The draft NR2040* is likely to have a positive effect on the environmental protection objective.	+
The draft NR2040* is likely to have a negative effect on the environmental protection objective.	-
The draft NR2040* the effect is uncertain and/or there is insufficient information on which to determine the effect on the environmental protection objective.	?
The draft NR2040* is likely to have a neutral effect on the environmental protection objective.	0
The draft NR2040* is likely to have mixed positive and negative effects on the environmental protection objective	+/-
The draft NR2040* is likely to have negative or neutral effects on the environmental protection objective.	-/0
The draft NR2040* is likely to have a positive or neutral effect on the environmental protection objective.	+/0
*Refers to the provision(s) that is being assessed in the draft Strategy i.e., objectives or commitments, etc.	

EPO Abbreviations

The following notation is used in the assessment tables:

BFF (Biodiversity, Flora and Fauna); **PHH** (Population and Human Health); **N&V** (Noise and Vibration), **W** (Water including flooding), **AQ** (Air Quality), **CCM** (Climate Change Mitigation), **CCA** (Climate Change Adaptation), **LS** (Land & Soils), **MA** (Material Assets), **ACCH** (Architectural, Archaeological and Cultural Heritage), and **L** (landscape).

Proposed Mitigation

Where likely significant effects on the environment are identified as part of the iterative process, additional mitigation measures are recommended in this SEA ER for consideration by TII. Mitigation measures are proposed in order to prevent, reduce and as fully as possible offset any potential significant effects on the environment. These are detailed in **Section 8** and **9** of this SEA ER.

It is important to note that many of the Provisions contained within the draft NR2040 will be directly aimed at seeking improvements in the National Roads transport network therefore, we would expect to see many compatible objectives across PHH and MA EPOs. However, there is also likely to be tensions due to the nature of road transport and new road infrastructure which can be foreseen or result in unintended effects on the EPOs and the natural environment. These include direct and indirect effects on biodiversity, including EU designated sites or protected species, built heritage features, landscapes, noise environment, air quality and climate. Where these potential tensions are identified in the SEA ER appropriate mitigation and or monitoring will be identified.

6.2 Extent to which certain matters are more appropriately assessed

There is a recognition as part of the SEA process that certain strategic planning issues have and/or will be determined at a national level, whereas more detailed/ site specific issues will be left for consideration at regional and/or county/ local level as part of the appropriate (plan and/ or project level) decision-making process. This SEA process is concerned with the likely significant and strategic effects that the proposed draft Strategy is likely to have on the environment as a result of its implementation. Where likely significant environmental effects on environmental receptors are identified, it is brought to the attention of the Strategy team through proposed amendments to the draft Strategy and/or mitigation in the form of amendments to processes or procedures will be presented, if deemed necessary. As such, when more detailed information is available for the specific plan or project it will be possible to determine more precisely the likely significant environmental impacts as part of those statutory procedures and consent processes i.e., SEA, EIA, AA, SFRA, etc. These processes will ensure that issues are mainstreamed from the strategic planning level to the relevant plan/project level, as appropriate.

7 ASSESSMENT OF ALTERNATIVES

7.1 Background

Article 5 of the SEA Directive requires the SEA process to identify, describe and evaluate “reasonable alternatives” of achieving the objectives of NR2040. As stated in the Directive;

“an environmental report shall be prepared in which the likely significant effects on the environment of implementing the plan, and reasonable alternatives taking into account the objectives and the geographical scope of the plan or programme, are identified, described and evaluated”.

Article 13 of the SEA Regulations 2004 require the identification, description and evaluation of the significant effects on the implementation of the plan, and reasonable alternatives and, in accordance with Schedule 2 an outline of the reasons for selecting the alternatives.

The alternatives are required to be reasonable, realistic, capable of implementation and set at the appropriate level at which NR2040 will be implemented, operating within the planning hierarchy i.e., the higher the level of the plan the more strategic the options which are available. The assessment of the alternatives will be included as part of the SEA ER.

7.2 NR2040 Alternatives

Three main alternatives were considered during the development of the draft NR2040:

- Alternative 1: Do Nothing Scenario
- Alternative 2: Predict and Provide Scenario
- Alternative 3: Policy-Led Scenario

The assessment of alternatives is undertaken in the sections below, individually. Then the environmental assessment against the EPOs is presented for the alternatives in a table to facilitate a comparison of the alternatives from an environmental perspective, leading to the identification of a preferred alternative.

7.2.1 Alternative 1: Do Nothing Scenario

A ‘Do Nothing’ scenario is the baseline or existing situation, referencing 2018 when NR2040 development was initiated as the ‘base year’. This approach does not involve any additional investment or changes to the National Roads network. Furthermore, the ‘Do Nothing’ scenario also assumes continued economic growth in line with normal cycles i.e. It does not take into account potential recession or increasing energy/fuel prices.

Based on these exclusions, transport planning would continue to be guided primarily by the 2015 Strategic Investment Framework for Land Transport (SIFLT). SIFLT established three, ranked priorities that include:

1. Achieve steady state maintenance;
2. Address urban congestion; and
3. Maximise the value of existing land transport networks

The Do-Nothing Scenario assumes population growth would continue with an additional 1 million people in Ireland by 2040 meaning a likely continuation in the increase in transport demand, car ownership, and continued growth in transport of freight via the National Roads network. Land use patterns would also likely continue

developing similar to past trends, with the majority of the population living in urbanised areas highly dependent on cars as the primary mode of travelling to work, school or college as well as other trip purposes. There would also be an increase in the population in rural areas which would continue to result in dispersed settlement patterns across the country (rather than a move towards compact sustainable development) and a continuation of a high reliance on the private car. In 2018, the majority of commuter trips (61.4%) were by car (CSO, 2016). 39% of these trips were less than or equal to 15 mins and 61% greater than 15 mins (TII Indicators Report 2018). Therefore, it is likely that the increase of private car use would prevail with limited investment in sustainable modes of travel particularly in urban areas. There would be more cars on the road which would likely increase congestion particularly in urban areas resulting in effects on air quality and quality of life factors.

The Do-Nothing scenario includes continued investment in protection and renewal programmes and to a degree demand management measures particularly in urban areas. However, this scenario is likely to lead to more new roads being constructed rather than providing integrated transport and planning solutions. New roads require substantially greater investment than maintaining or optimising existing assets resulting in additional investment over the long-term; this could comprise the protection and renewal programme or investment technology, behaviour change etc. required to support decarbonisation.

This alternative also assumes there would be a continuation in the delivery of the previous NDP roads building programme and a failure to examine other solutions / interventions offered by sustainable Modal Hierarchies or combinations of interventions that are less intrusive to the environment. Whilst there would be benefits to travel times, new road construction would likely undermine any investments made in public transport and indeed increase private car, induced demand and longer journeys due to improved road transport networks. New road construction also has the potential to negatively impact all EPOs during the construction and operation stages to some degree or another.

The assessment in the Table below identifies that the majority of EPOs have the potential to be impacted in a negative and/or neutral manner depending on the location, characteristics and nature of the intervention being developed. Climate Mitigation (CCM) and CCA adaptation would be negatively affected as the Do-Nothing scenario would not include any measures to support integrated sustainable mobility required to support the decarbonisation of the transport sector.

NR2040 Assessment of Alternatives	Environmental Protection Objectives										
	Biodiversity (B)	PHH	Noise	Water	Air Quality	CC- Mitigation	CC – Adaptation	Land and Soils	Material Assets	AACH	Landscape
Alternative 1: Do-Nothing	+/-	+/-	0/-	0/-	0/-	-	-	+/-	+/-	0/-	0/-

The Do-Nothing scenario fails to address the NSOs of the NPF and would not address the current policy framework contained in the NDP, Sustainable Mobility Policy and decarbonisation efforts required under the 'Climate Amendment Act 2021' and associated CAP.

In the absence of a long-term vision, TII would be reacting to proposals of others, be they from local authorities or special interest groups. This would inevitably lead to a bottom-up generation of the pipeline of National Roads activities without a strategic vision or top-down framework for assessment or prioritisation resulting in:

- Increase in GHG emissions affecting climate change and failure to meet transport emissions reductions.
- Compromise compact growth and development of sustainable travel.
- Continued urban sprawl and dispersed settlement patterns particularly in commuter belt areas from urban generated travel.
- Increase in congestion and impacts on the environment (air and noise) and quality of life factors.
- It would not address EV charging infrastructure requirements.

The assessment identifies that there are likely to be negative and/or neutral effects either directly or indirectly on all EPOs if the “Do Nothing” approach is adopted, therefore Alternative 1 is discounted.

7.2.2 Alternative 2: Predict and Provide Scenario

A “Predict and Provide” approach for accommodating future transport needs, focuses on predicting future demand for travel and providing the necessary infrastructure / services to meet that demand. This effectively would be similar to SIFLT, but an updated version based on similar principles. This option would also involve opportunities for sustainable travel and protection and renewal portfolios.

Drawing on the lessons learned from SIFLT, the predict and provide model has not served to deliver compact sustainable development but has exacerbated and facilitated people travelling longer and further from urban centres resulting in unsustainable planning and transport patterns and increasing greenhouse gas emissions. This scenario would also continue to support new infrastructure projects to provide for the increased demand predicted due to projected population growth.

Continuing with a Predict and Provide model that includes the four NIFTI interventions and modal hierarchies as part of a ranked approach to investment priorities on the National Roads network would still not fully address the changed policy and fiscal context. The outcome is likely to lead to over investment in the construction of new infrastructure projects and a continued investment on protection and renewal to the detriment of the other priorities such as sustainable mobility, demand management and influencing behaviour change. It would exacerbate road transport trends and the need for a holistic approach to address decarbonisation and meet climate targets. This scenario would continue to undermine the NPF vision for compact sustainable development.

Similar to the Do-Nothing scenario, this scenario assumes land use development and travel patterns continue in line with past trends, including continuation of urban sprawl and the ongoing shift in population and jobs towards Dublin and its surrounding counties.

This would not support the internationally recognised standard “avoid, shift, improve”. This standard aims to reduce emissions from the road transport sector and achieve decarbonisation targets by 2050 thus supporting current government policy including the NPF, Climate Action Plan and Sustainable Mobility policy.

1. **Avoid** – Reduce the need to travel.
2. **Shift** – Move travel to more environmentally-friendly/ sustainable modes.
3. **Improve** – Improve efficiency of transport modes to reduce emissions.

Decades of poor planning has resulted in low density communities reliant on private car use with little or no integration or possibility of integrating with public transport. The significant investment in the motorway network has facilitated economic growth but has also contributed to significant car dependency with little chance of alternative modes of transport being viable or attractive particularly in more rural areas.

This scenario would likely result in provision of more road capacity i.e., construction of roads, in a ‘predict and provide’ manner that would not be consistent with the NIFTI approach. Aside from the emissions (from both the construction and operation process), more roads result in increased capacity therefore supports and encourages car dependency, increases driving speeds, and results in induced traffic over the long-term.

NR2040 Assessment of Alternatives	Environmental Protection Objectives										
	Biodiversity	PHH	Noise	Water	Air Quality	CC- Mitigation	CC – Adaptation	Land and Soils	Material Assets	AACH	Landscape
Alternative 2: Predict and Provide	-/0	+/-	-/0	-/0	-/0	-/+	+/-	-/0	-	-/0	-/0

Given the changing policy and likely significant negative impacts on the environment across many of the EPOs, including BFF, PHH, CCM, CCA and L&S (use of finite resources) and poor resource efficiency due to the likely development of more roads, the “predict and provide”, single point forecast approach, was not determined to be the preferred approach for NR2040.

7.2.3 Alternative 3: Policy Led (Decide & Provide) Scenario

The “Policy Led (Decide & Provide)” approach includes a strategic vision for National Roads that recognises this evolving environment and responds to policy change while contributing to policy development at the national, regional and local levels as well as across sectors of the economy.

TII conducted analysis to understand differing functions of the National Roads network and to identify how to realise the policy ambitions of Project Ireland 2040. This analysis has enabled the identification of the key strategic issues facing the National Roads network both now and into the future. This information was shared in the development of NIFTI and informed NIFTI’s four investment priorities. This third alternative includes two interrelated strands:

1. Project level alternatives.
2. Incorporating a range of plausible future scenarios.

This third alternative was prepared to support the NPF NSOs and consequently NIFTI. It guarantees alignment between government policies and the operational and functional requirements of National Roads.

The Policy Led (Decide & Provide) Scenario considers the future of the National Roads in a more complex and evolving environment than before which is directed to support Project Ireland 2040 NSOs while also remaining adaptable to a range of plausible futures.

The Policy led approach will result in TII 'providing' for National Roads investments adhering to the national policy requirements to support increased population, half of which is planned for targeted growth in five urban regions, and the economy. It requires taking a holistic approach to investments including consideration and support (rather than undermining) of investment in public transport options, sustainable travel and land use planning. NR2040 incorporates the NIFTI Investment Intervention hierarchies of:

1. Maintain
2. Optimise
3. Improve
4. New

The policy led approach moves away from the current system of transport and land use planning in order to address continuing urban sprawl, longer journey times and increasing emissions. It supports the internationally recognised 'Avoid, Shift and Improve' policy approach and supports sustainable mobility.

The policy led approach also supports the NPF, and in turn will support Roads Authorities and Sponsoring Agencies and other stakeholders to work collaboratively in addressing the previous poor integration between planning and road transport and also address the contribution that road transport has to patterns of development, climate change, sedentary lifestyles, air and noise emissions issues. The approach supports decarbonisation in the road transport sector. This is evident through support for EV infrastructure along National Roads to address fuel range anxiety and ensure safe and efficient trips can be made in EVs and continue to support their role out to reach government decarbonisation targets.

Integration of multiple modes will limit growth in vehicle kilometres. Bus and truck priority will be deployed where it can provide for more efficient movement of people and goods. Provision of walking, cycling infrastructure, in particular where it addresses severance, will reduce unnecessary car travel. All investments will be carried out with NIFTI modal hierarchy. In addition, this approach prioritises utilisation of existing assets, in line with NIFTI intervention hierarchy, prior to the development of new roads.

NR2040 Assessment of Alternatives	Environmental Protection Objectives										
	Biodiversity	PHH	Noise	Water	Air Quality	CC- Mitigation	CC – Adaptation	Land and Soils	Material Assets	AACH	Landscape
Alternative 3: Decide and Provide	+/-	+/0	+	+/-	+	+	+	+/-	+	-/0	-/0

The implementation of Alternative 3 has the potential to result in some positive and negative impacts on biodiversity and the water environment in terms of the potential to improve and enhance existing assets as part of renewal and improvement works but could also result in positive and negative impacts due to new construction works. Effects on PHH would likely improve due to greater focus on facilitating other travel options over the private car particularly in urban areas and ensuring investment is maintained in regional and rural areas to ensure continued safe and efficient accessibility to goods and services.

Effects on L, AACH, L&S are rated as potential neutral or negative impacts due to likely changes in the environment which would be dependent on the nature of intervention or new infrastructure and the sensitivity of the environment.

There is likely to be positive effects on National Roads as a material asset under Alternative 3 but there could be land-take and therefore negative impacts on land use as an economic asset as well as soil sealing. There is likely to be a positive effect on Climate adaptation and mitigation (CCA) (CCM) due to a focus on sustainable mobility, indirectly supporting decarbonisation and assisting in meeting Ireland’s emissions reduction targets. This should in turn have positive impacts on AQ. The shift to sustainable transport modes could result in positive and negative impacts on Noise; however, with newer vehicles being quieter and low noise road surfacing being applied across more National Roads there is potential for likely decreases in noise emissions in localised areas.

Alternative 3 would, over time deliver a more comprehensive integrated transport network that connects National Roads seamlessly with rail, bus priority measures, and walking and cycling infrastructure allowing urban and rural areas to function more efficiently with the capacity to adapt and become resilient to climate change effects. It also supports the use of technology and user data to help plan and manage the asset more effectively.

This policy led scenario includes investment priorities and provides guidance to Sponsoring Agencies and local authorities, as to the types of investments and associated interventions across National Roads, in the face of fiscal, social, and environmental change. It also recognises there will be unique alternatives at Project Level and is adaptable to alternative futures.

7.2.4 Comparative assessment of Alternatives

Comparative assessment of alternatives with regards to their potential effects on EPO’s is presented below.

Alternatives 1 and 2 are both broadly based around similar policy and fiscal context which favour the construction of new roads and fail to adequately consider the long-term social, economic and environmental benefits for integrated and sustainable transport and land use planning system. In environmental terms, the assessment of alternatives has identified that for the most part Alternatives 1 and 2 have a relatively even performance with few EPOs being identified as having a positive effect. PHH is identified as positive or negative in recognition that the development of roads generally supports personal mobility, connectivity and economic development but it is recognised that there is potential negative effect on health from maintaining high car dependency, supporting sedentary lifestyles, air and noise pollution and also effects due to contributions to climate change. The remaining EPOs are rated as potential negative and/or neutral as a result of continued focus on physical construction works. Both Alternatives 1 and 2 don't go far enough to addressing climate mitigation. However, an alternative 2 would predict and provide in terms of planning for resilience as part of the protection and renewal portfolio and may therefore contribute positively to climate adaptation. However, these options fail to adequately address or support the decarbonisation of the road transport, or any other sustainable mode interventions required to avoid GHG emissions in the first place.

Alternative 3 approach is more positive in terms of protecting and enhancing biodiversity, positive in terms of social and economic promotion of sustainable travel patterns and thereby supporting long-term economic growth and addresses social inequalities by facilitating access to safe, sustainable and cheaper modes of transport particularly in urban areas and reducing congestion.

NR2040 Assessment of Alternatives	Environmental Protection Objectives										
	Biodiversity	PHH	Noise	Water	Air Quality	CC- Mitigation	CC – Adaptation	Land and Soils	Material Assets	AACH	Landscape
Alternative 1: Do-Nothing	-/0	+/-	-/0	-/0	-/0	-	-	-/0	-/0	-/0	-/0
Alternative 2: Predict and Provide	-/0	+/-	-/0	-/0	-/0	-/+	+/-	-/0	-	-/0	-/0
Alternative 3: Decide and Provide	+/-	+/0	+/-	+/-	+	+	+	+/-	+	-/0	-/0

Alternative 3 performs better across some EPOs when compared against Alternatives 1 and 2. However, there are potential positive and negative effects across many EPOs. The potential negative effects across the EPOs is in recognition that all alternatives allow for some limited road construction, which must be considered lastly in accordance with the NIFTI Intervention and Modal Hierarchies. The NIFTI modal supports the development of sustainable modes of travel as appropriate on the National Roads network. They also support the protection and renewal of existing assets. Alternative 3 makes the greatest potential contribution to delivering on sustainable mobility initiatives and meets the strategic key issues addressing urban

congestion, historically poor integration with land use planning and transport needs and indirectly addressing climate mitigation and resilience across the network.

This option recognises that there may, as a last resort, the need to develop new roads as part of the intervention mix and therefore there is potential for negative impacts across many EPOs due to infrastructure development.

NR2040 is designed to be adaptable to different futures supporting the National Planning Framework growth targets including National Road transport activity to 2040. The ability of the Strategy to be adaptable to a variety of futures is desirable due to its unpredictability as evidenced by the changed travel patterns imposed by travel restrictions during Covid-19 or effects on fuel prices arising from the Russia-Ukraine War affecting societal travel patterns and other global impacts.

Alternative 3 is designed to focus on four key Investment Priorities namely: Decarbonisation; Protection and Renewal; Mobility of People & Goods in Urban Areas; and Enhanced Regional and Rural connectivity. The investment priorities align with NIFTI's Modal Hierarchy in terms of investing more in high quality public transport, walking and cycling facilities with improved frequency and comfort instead of expensive, intrusive and environmentally damaging heavy road projects with the associated environmental effects continuing to influence unsustainable land use and travel patterns focused on the growing use of National Roads long into the future. Continuing to invest in road construction results in little incentive for people to change their behaviour and the reliance on the private car over other modes of travel continues. Alternative 3 also recognises that public transport and active modes will not always be available to everyone everywhere and that the role of the National Roads network is likely to remain as critical infrastructure particularly for 'lifeline routes' where there is no other viable transport infrastructure available. Measures such as road pricing and congestion charges and the use of technology are also considered in this alternative. These measures will have to be balanced with the availability of alternatives to ensure accessibility and social inclusion is maintained for all communities particularly for deprived geographical areas and vulnerable groups¹⁰ in accordance with the Project Appraisal Guidelines.

The Strategy also attempts to align with other Government policies including climate commitments. It recognises and responds to the differing challenges and issues across diverse parts of the National Roads network, which are all linked to common appraisal guidelines. This will ensure a responsive Strategy that respects the natural and built environment, society and the economy.

The reason for choosing the Policy Led (Decide and Provide) alternative is that it is aligned with current and emerging international and national policy in terms of supporting an integrated transportation network that will result in fewer negative effects on the EPOs when compared against the other options.

¹⁰ Vulnerable groups can include women, children, young people, older people, people with disabilities, ethnic minorities, lower-income socio-economic groups and identified deprived areas. (TII – PAG Unit 7.0)

Table 7.1 Summary assessment of Alternatives Considered

Alternative Scenario	Summary Description of alternative	Outcome
<p>Alternative 1- Do-Nothing</p>	<p>Strategic Investment Framework for Land Transport (SIFLT) would remain the Department of Transport's/TII's current strategic framework that guides and informs investment decision making in land transport. It had set out three ranked priorities:</p> <ul style="list-style-type: none"> • Achieve Steady State Maintenance, • Address Urban Congestion; And • Maximising the Value of Land Transport Networks. <p>Does not take account of changing policy context namely, NPF, NIFTI, CAP 2021. It also does not consider the changing fiscal or post Covid-19 context and technological change.</p>	<p>The outcome with continuing with the Do-Nothing Scenario would mean that TII's investment priorities for National Roads would not be in line with current government policy and would not support the delivery of the NPFs NSO. Although there is likely to be reduction in some urban congestion it would not go far enough in terms of supporting decarbonisation and creating a resilient network in face of climate change.</p>
<p>Alternative 2 – Predict and Provide</p>	<p>Similar to Alternative 1 it would be a continuation with a Predict and Provide model. It also includes the four NIFTI interventions as part of a ranked approach to investment priorities on National Roads.</p> <p>Decades of poor planning has resulted in low density communities reliant on private car use with little or no integration or possibility of integrating with public transport. The significant investment in the motorway network has facilitated economic growth but has also resulted in significant car dependency with little chance of sustainable modes of transport being viable or attractive particularly in more rural areas.</p>	<p>Continuing with a Predict and Provide strategy would not fully address the changed policy and fiscal context.</p> <p>The outcome is likely to lead to too much investment focused on the construction of new infrastructure projects and a continued investment on protection and renewal to the detriment of the other priorities such as sustainable mobility, demand management and influencing behaviour change. It would exacerbate current road transport trends and would not provide a holistic approach to address decarbonisation and meet climate targets. This scenario would continue to undermine the NPF vision for compact sustainable development and climate action.</p>
<p>Alternative 3 – Policy Led (Decide & Provide) Scenario</p>	<p>This is a policy led approach that will provide for National Roads investments based on the government policy to support increased population growth in line with the NPF which is supported by NIFTI investment and modal hierarchies, It takes a holistic approach to investments which considers also supporting (rather than undermining) investment in public transport options and sustainable travel.</p>	<p>It is designed to be adaptable to different futures and has been designed to support the National Planning Framework growth targets including road transport activity in 2040. It has fewer negative effects on EPOs when compared with other options in recognition for the focus to deliver on NIFTI intervention and Modal Hierarchy which places the</p>

Alternative Scenario	Summary Description of alternative	Outcome
	<p>NIFTI Investment Intervention hierarchies:</p> <ol style="list-style-type: none"> 1. Maintain 2. Optimise 3. Improve 4. New <p>It also recognises there will be unique alternatives at Project Level and is adaptable to alternative futures.</p>	<p>construction of new roads at the bottom of the hierarchy.</p> <p>The option aligns with current and emerging international and national policy in terms of supporting an integrated transportation network which will result in fewer negative impacts on the EPOs when compared with the other options. This option was decided to be the Preferred Option and is assessed in detail in Section 9 of this Report.</p>

8 ASSESSMENT OF THE DRAFT NR2040

This part of the SEA process evaluates the environmental effects of the draft NR2040, which includes the proposed Investment Priorities & Portfolios. The assessment includes the list of Commitments and the implementation structure. The SEA team put forward mitigation measures to prevent, reduce, and as far as possible, offset any likely significant adverse effects on the environment resulting from the implementation of the draft NR2040. This includes measures to be considered at the project level assessment.

Each Investment Priority, Portfolio Themes and the Commitments have been assessed against the environmental protection objectives (EPO) (See **Section 6** of this Report). The assessment compares the likely effects on the environment to see which Investment Priorities, Portfolio Themes and Commitments meet (benefit) the environmental protection objectives and which, if any, contradict them. The same SEA framework (described in **Section 6** of this Report) is used to assess the contents of the draft Strategy.

The draft Strategy is a high-level document and is required to comply with all relevant environmental and planning legislation. Therefore, the embedded mitigation within the draft Strategy requires all plans and projects arising from NR2040 and the development of National Road network infrastructure to have regard to all planning and environmental legal requirements including the protection of European Sites.

Additional Mitigation is suggested by the SEA team as part of the assessment of the provisions of the draft Strategy which shall be used to inform the finalisation of the Strategy.

8.1 Vision and Key Objectives

NR2040 – Vision and Key Objectives	Environmental Protection Objectives										
NR2040 Vision and Key Objectives	Biodiversity	PHH	Noise	Water	Air Quality	CC-Mitigation	CC –Adaptation	Land and Soils	Material Assets	AACH	Landscape
An evolving sustainable transport system focused on: safety; innovation; accessibility; mobility of people, goods, and services. Key objectives:	+/-	+	+/-	+/-	+/-	+/-	+/-	+	+	+/-	+/-
<ul style="list-style-type: none"> Safe and efficient transport network for people and goods 	+/-	+	+0	+/-	+0	+0	+/-	+0	+	0	0
<ul style="list-style-type: none"> Environmentally, socially, and economically sustainable 	+/-	+	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-

NR2040 – Vision and Key Objectives	Environmental Protection Objectives										
<ul style="list-style-type: none"> Tailored for different customers in different places 	+/-	+	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-
<ul style="list-style-type: none"> Managed and improved as a key public asset 	+/-	+	0/-	+0	+/-	+/-	+/-	+/-	+/-	+/-	+/-
<p>Assessment Commentary:</p> <p>TII’s overall vision for National Roads network recognises that the road transport system is evolving, influenced by changing EU and national policy including a focus on sustainable travel and emissions reductions to tackle climate change. The network is required to accommodate changing demographics/ population growth and capitalise on technological development opportunities.</p> <p>The vision embraces the National Roads network to become part of a ‘sustainable transport system’ recognising the important role of integrated travel and road-transport focused on safety, embracing innovation, delivering accessibility to support the mobility of people, goods and services. A safer and more efficient transport network will have benefits for society, the environment, and the economy.</p> <p>The four key objectives capture the differing roles and functions of the National Roads network across the State and TII’s role in supporting balanced regional development and lifeline communities, who rely on National Roads as their primary travel infrastructure.</p> <p>Sustainability is identified as a key objective for TII and as a result will support many of the EPOs. However, the assessment recognises that road transport development and operation is also responsible for significant environmental impacts (across many EPOs). Therefore, there are likely to be continued trade-offs and impacts on many EPOs related to investment decisions, which will impact specific locations in different ways. The assessment has therefore considered these potential positive and negative effects as part of this strategic objective. Furthermore, it is not clear how this objective will be delivered as part of the project development or appraisal process as it will depend on implementation at plan/project level.</p> <p>The draft Strategy recognises that it must tailor investments for different customers in different places, particularly supporting sustainable mobility, freight along continued maintenance of the network for car-based transport, particularly in areas that have no viable options. In accordance with TII Project Appraisal Guidelines it shall also consider social inclusion issues associated with measures stemming from the Strategy.</p> <p>Mitigation: Refer to Section 9 of this ER.</p>											

8.2 National Roads Investment Priorities

TII defines four investment priorities which are consistent with the four NIFTI Investment priorities and are aligned with the NPF. These are assessed in the tables below.

- Decarbonisation;
- Protection and Renewal;
- Mobility of People and Goods in Urban Areas; and
- Enhanced regional and rural connectivity.

NR2040- Investment Priorities	Environmental Protection Objectives										
	Biodiversity	PHH	Noise	Water	Air Quality	CC- Mitigation	CC - Adaptation	Land and Soils	Material Assets	AACH	Landscape
Overall Assessment of NR2040 Investment Priorities (Chapter 5)											
Decarbonisation	+/-	+	+/0	+/-	+	+	+	+/-	0/+	0/-	0/-
Protection and Renewal	+/-	+	+/-	+/-	+/-	+/-	+/0	+/0	+/0	+/-	+/-
Mobility of People and Goods in Urban Areas	+/-	+	+/-	+/-	+	+	+/0	+/-	+/-	-/0	-/0
Enhanced regional and rural connectivity	+/-	+	+/-	-	-	+/0	0	-	+	+/-	+/-

8.2.1 Investment Priority – Decarbonisation

The Decarbonisation Investment Priority for TII contains three investment portfolios. The assessment of this investment priority and its portfolios against the EPOs is provided below.

- Integrated Mobility;
- Electric Vehicle Charging; and
- Active Travel.

NR2040 Investment Priorities	Environmental Protection Objectives										
	Biodiversity	PHH	Noise	Water	Air Quality	CC- Mitigation	CC – Adaptation	Land and Soils	Material Assets	AACH	Landscape
NR2040 Investment Priority Decarbonisation											
Decarbonisation	+/-	+	+/0	+/-	+	+	+	+/-	0/+	0/-	0/-

Assessment Commentary: Decarbonisation is the term used for the reduction of carbon dioxide (CO₂), a greenhouse gas (GHG) emission, into the atmosphere achieved by switching to use of low carbon energy sources to attain lower output emissions into the atmosphere. The transport sector is the fastest growing source of GHG emissions.

According to the Climate Action Plan 2021 (CAP), the proposed pathways to decarbonisation in Ireland include rapid build-out of renewable generation capacity (wind and solar power generation technologies), increased storage, and the deployment of zero emissions gas all of which will have an influence on the future of road transport. The proposed pathway for decarbonising the transport sector is focused on accelerating the electrification of road transport, the use of biofuels, and a modal shift to transport modes with lower energy consumption (e.g., public transport and active travel)¹¹. This can have positive effects across all the

¹¹ Climate Action Plan 2021

NR2040 Investment Priorities	Environmental Protection Objectives										
<p>environmental factors through the displacement of fossil fuel combustion. EVs cannot decarbonise the sector entirely and the demand for road-based travel will also need to be addressed through integrated mobility and planning which is recognised by TII as part of this Investment Priority and other investment priorities.</p> <p>Decarbonisation as a Priority Investment will have positive effects for economy and employment (PHH, MA) due to diversified energy supply and greater renewable infrastructure development. Ramping up the provision of such infrastructure has potential for negative effects on the environment during construction stage on: AQ, N&V, W, BFF, L&S, AACH, L&S. These effects are potentially offset by secondary positive effects when the end use is contributing to the green economy. Existing planning and environmental processes require environmental assessments from the outset and any significant impacts are likely to be mitigated. The implementation of the 'Green Tenders An Action Plan on Green Public Procurement' as part of all projects and contract documents would assist with support of wider decarbonisation efforts and support the circular economy principles.</p>											
EPO	BFF	PHH	N	W	AQ	CCM	CCA	L&S	MA	AACH	J
1.1 Integrated Mobility	+/-	+	+	+/-	+	+/-	+	+/-0	+/-0	0	+/-
Integrated Mobility TII will contribute to integrated mobility by investing in measures such as Park and Ride / Share and bus prioritisation, where feasible on National Roads. Improving connections to major public transport hubs, e.g., active travel infrastructure within the commuting locus of rail stations, could also form part of this portfolio of investment	<p>Assessment Commentary: The Programme for Government (PfG) sets out a commitment to review public transport policy 'to ensure services are sustainable into the future and are meeting the needs of a modern economy.' The draft NR2040 sets out measures for investment in Park and Ride / Share and Bus prioritisation that will help to increase asset utilisation and reduce the number of car journeys, increase safety and improve the level of service on the National Roads network. Such measures will support the overall decarbonisation targets associated with the transport sector which in turn will potentially have positive direct and indirect effects for PHH, MA, AQ and CM. Effects on all other EPOs will be determined at the specific project level assessments.</p>										
EPO	BFF	PHH	N	W	AQ	CCM	CCA	L&S	MA	AACH	J
1.2 Electric Vehicles	+/-	+/-	+	0	+	+	+/-0	0	+	0	0
TII will work with the Department of Transport's Zero Emissions Vehicles office to support the delivery of the national EV charging infrastructure in line with its EV Charging Infrastructure Strategy, currently under development.	<p>Assessment Commentary: The portfolio relates to the supporting EV infrastructure. EVs have the potential to contribute to decarbonisation in the transport sector. The main air quality issues from the transport sector are pollutants from vehicles, Nitrogen oxides (NO_x), primarily NO₂, and Particulate matter (PM₁₀ and PM_{2.5}). Road transport is a major source of NO₂ emissions (40.6%) especially in urban areas. EVs do not emit NO₂, they do produce small particles as a result of wearing brakes and tyres but overall, EVs produce less PM₁₀ and PM_{2.5} than diesel or petrol vehicles. An uptake in EVs is likely to improve air quality (AQ) and positively influence human health (PHH). EVs are considerably quieter than combustion engine vehicles, EVs have the potential to reduce noise (N) pollution from National Roads. New electric vehicles must have an acoustic alerting system onboard to mitigate the potential risk of inaudible vehicles to vulnerable road user (VRUs) therefore ensuring safety (PHH).</p> <p>At the end of 2021, there were just under 47,000 battery electric (BEVs) and plug-in hybrid electric (PHEVs) vehicles in Ireland. This represents approximately 24% (compared to 14% in 2020). The volatility in the energy market and Irish policy measures that incentivise the purchase of more efficient vehicles through varying tax rates have contributed to the growth of the EV market.</p>										

NR2040 Investment Priorities	Environmental Protection Objectives										
	<p>EV ownership was marginally higher in densely populated and intermediate populated areas, where 1.6% of persons living in these areas own an EV, compared to 1.3% of persons residing in thinly populated areas.¹² There is a requirement for increased provision of publicly accessible high-powered (c. > 100 kW) charge points to cater for drivers of EVs making longer journeys and reduce range anxiety particularly along National Roads. Even with the deliverance of publicly accessible EV charging, nighttime charging of EVs remains the optimum charging mechanism in relation to electricity demand and supply. Technological developments, such as smart integrated electric charging solutions that allow for energy monitoring and demand load management are likely to become increasingly common as the number of EVs increase and are likely to mitigate some of the demand pressure on the grid and electricity network.</p> <p>The transition to a decarbonised transport sector requires a technological transformation reliant on raw materials, metals, and minerals. There is potential for indirect negative effects associated with EV roll out but secondary positive indirect effects when the end use is contributing to the emissions reductions and the green economy. Support from other Government policies will be needed to ensure that EV roll out continues and battery end-of-life treatment fully contribute to sustainability and CO₂ emission reduction objectives.</p>										
EPO	BFF	PHH	N	W	AQ	CCM	CCA	L&S	MA	AACH	J
1.3 Active Travel	+/-	+	+	+	+	+	+	+/-	+/-	+/-	+/-
<p>TII is committed to delivering more on active travel modes in all its projects, such as improving the safety of National Roads for active travel users and reducing the severance caused by some National Roads in urban areas. TII will collaborate with other stakeholders to implement the National Cycle Network plan to cater for more active trips and expand the Greenway network nationwide, on behalf of the Department of Transport.</p>	<p>Assessment Commentary: This portfolio relates to the delivery of more active travel infrastructure on or adjacent to the National Roads network. The provision of active travel infrastructure across the National Roads network will encourage active travel to be incorporated more into everyday life and will reduce car journeys on National Roads.</p> <p>Active travel generally means walking (including all users of footpaths), wheeling (non-motorised scooters, skateboards) or cycling as part of a purposeful journey. Ireland's Sustainability Mobility Policy aims to deliver at least 500,000 additional daily active travel and public transport journeys by 2030 and a 10% reduction in the number of kilometres driven by fossil fuelled cars.</p> <p>According to the National Travel Survey, nearly 40% of fuel used in passenger journeys is for journeys under 8km, some of these on National Roads. More people would undertake these journeys actively if road design allowed. In the same survey, 50% of respondents identified safer cycling routes, or more cycling specific routes would encourage them to cycle.</p> <p>Active travel journey will not only reduce GHG emissions but has positive effects for the population by encouraging active movement and reducing vehicles on the National Roads network. Increasing the amount of active travel journeys has potential for positive direct effects for PHH and MA. Positive indirect effects are likely for AQ, N, W, CCA and MA. Additional infrastructure and lighting have potential for negative effects to Landscape and BFF.</p> <p>Construction activities for active travel infrastructure will have mixed environmental impacts across the National Roads network. The projects are primarily linear and challenges of BFF, L&S, Waste management, land acquisition (MA) are common. The scale and spatial extent of the infrastructure projects can vary enormously. Active travel developments arising from the NR2040 will be subject to the relevant national, regional, and local planning policies and the sustainability and environmental protection measures contained within these policies.</p>										

8.2.2 Investment Priority – Protection and Renewal

Protection and Renewal Investment Priority encompasses three investment portfolios:

- Road Safety

¹² National Travel Survey (NTS) 2020.

- Asset Management & Network Operations
- Resilience & Climate Adaptation

The assessment of this Investment Priority and its portfolios against the EPOs is provided below.

NR2040 Investment Priorities	Environmental Protection Objectives										
Investment Priority Protection and Renewal	Biodiversity	PHH	Noise	Water	Air Quality	CC- Mitigation	CC – Adaptation	Land and Soils	Material Assets	AACH	Landscape
Protection and Renewal	+/-	+	+/-	+/-	+/-	+/-	+/0	+/0	+/0	+/-	+/-
<p>Assessment Commentary: The Protection and Renewal Investment Priority represents the largest area of expenditure on National Roads. It will continue to deliver Safety and Minor Works portfolios in addition to Network Resilience and Asset Management of infrastructure, including pavements; structures; motorways and tunnels; signs and lines; as well as Network Operations of motorways and tunnel operations; PPP; control centres and ITS; winter operations. Protection and renewal of the National Road network is a complex task involving a number of bodies. Funding for this Investment Priority is diverse and includes the several financing sources including the Exchequer and the EU (Ten-T).</p> <p>Protection and renewal of the National Roads network will potentially have positive direct effects to PHH (safety and employment) and the National Road network. As much of this is existing asset construction works are not likely to be significant however there is potential for both positive (enhancement measures i.e., SuDS, etc.) and/ or negative temporary environmental effects across other environmental factors during construction activities. These potential effects are mitigated by existing planning and environmental policy that requires environmental assessments from the outset and/or best practice construction methods. The end use of the National Road developments, such as active travel interventions and asset management will improve the overall operation of the asset with potential co-benefits for all environment factors.</p>											
EPO	BFF	PHH	N	W	AQ	CCM	CCA	L&S	MA	AACH	L
1.1 Road safety	+/-	+	0	0/-	0/-	0	0	+/-	+/-	0	0
TII will deliver on its actions in the Road Safety Strategy (2021-2030) and collaborate with partners to deliver on supporting actions. In line with the European Union Road Infrastructure Safety Management (RISM) directive, TII will target investment on sections of National Roads with the highest risk of	<p>Assessment Commentary: This portfolio relates to the provision of a safe and efficient National Roads network. Ireland's Government Road Safety Strategy 2021-2030 outlines the road safety priorities for the next decade. The Road Safety Strategy's primary aim is to reduce the number of deaths and serious injuries on Irish roads by 50% over the next 10 years. There is also a long-term goal of achieving zero road deaths or serious injuries by 2050 under the Vision Zero Strategy.</p> <p>Road Safety Inspection (RSI) is a safety procedure that was introduced by TII to comply with the EU Directive 2008/96/EC on Road Infrastructure Safety Management (EU RISM). These inspections identify any safety related items that require further review and may potentially require a design solution. These inspections exclude routine maintenance items which are identified and remedied through other TII processes. Each route is to be inspected at least once every five years. These inspections inform the annual safety programme of works undertaken by TII primarily implementing the actions that arise from the safety procedures, and to meet asset protection and renewal requirements. TII's road safety programme ensures the safety of the users (PHH), and</p>										

NR2040 Investment Priorities	Environmental Protection Objectives										
Investment Priority Protection and Renewal	Biodiversity	PHH	Noise	Water	Air Quality	CC- Mitigation	CC – Adaptation	Land and Soils	Material Assets	AACH	Landscape
fatal or serious injury. In line with NIFTI, TII will meet asset protection and renewal requirements to help to ensure the safety of the network. TII's road safety programme will focus on achieving safe roadsides and a safe environment for vulnerable road users in line with the safe systems approach	vulnerable road users (VRUs) in line with the safe systems approach. There is potential for negative environmental effects across the EPOs during maintenance such as salting roads and construction works associated with resurfacing or realignment. These effects are potentially mitigated by TII's planning and environmental policy that requires environmental assessments from the outset.										
EPO	BFF	PHH	N	W	AQ	CCM	CCA	L&S	MA	AACH	L
1.2 Asset Management & Network Operations	+/-	+	0	0/-	0/-	0	0	+/-	+/-	0	0
A key priority for TII is to maintain the existing National Roads network to a robust and safe standard. TII will use asset management principles to manage national roads assets safely, sustainably, efficiently, and effectively over their useful life.	Assessment Commentary: TII's 2021 Indicators Report identifies significant variation across the National Roads network under a variety of headings, including pavement construction, pavement age, carriage width, lane width, geometric design, and traffic volumes. The portfolio to manage assets will potentially have positive direct effects for PHH (safety and employment) and MA and neutral direct effects for the other EPOs. There is potential for localised negative environmental effects for a number of EPOs, namely BFF, AQ, L&S and MA during asset management activities, but all asset management activities will comply with planning and environmental policy of TII.										
EPO	BFF	PHH	N	W	AQ	CCM	CCA	L&S	MA	AACH	L
1.3 Resilience and Climate Adaptation	+/-	+	0	0/-	0/-	0	0	+	+	0	0
TII is updating its 'Strategy for Adapting to Climate Change on Ireland's Light Rail and National Road	Assessment Commentary: Resilience of the National Road infrastructure to extreme weather and climate changes will be required into the future which will also need to balance challenges posed by population growth, increased demand and decarbonisation in line with the net zero target by 2050. The main risks to the road surface associated with climate change are dependent on the climate zone, extreme heat and insolation, higher										

NR2040 Investment Priorities	Environmental Protection Objectives										
Investment Priority Protection and Renewal	Biodiversity	PHH	Noise	Water	Air Quality	CC- Mitigation	CC – Adaptation	Land and Soils	Material Assets	AACH	Landscape
<p>Network¹⁶. Examining the impacts of climatic events on surface, groundwater resources and environmental measures is an integral part of the climate adaptation strategy.</p>	<p>occurrence of heavy rain and temperature fluctuation around freezing point. Damage to infrastructure from extreme weather events can have a significant impact on functioning of society and the economy. The impact of extreme events and climate change thus poses a significant threat to the functioning of the National Roads network. This Investment Priority will work towards planning for necessary maintenance, potential decrease in lifespan (MA) and associated societal effects (PHH).</p> <p>The portfolio to update the ‘<i>Strategy for Adapting to Climate Change on Ireland’s Light Rail and National Road Network</i>’ will have a mostly neutral effects across the EPOs. There is potential for positive indirect effects where the climate adaption strategy informs the continuous improvement of the National Roads network. Any climate infrastructure projects will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/ AA/SFRA, as appropriate.</p> <p>Mitigation: Refer to Section 9</p>										

8.2.3 Investment Priority – Mobility of People & Goods in Urban Areas

Investment Priority Mobility of People & Goods in Urban Areas includes three portfolios:

- Movement of People
- Movement of Goods
- Demand and traffic management

The assessment of this Investment Priority’s portfolios against the EPOs is provided below.

NR2040 Investment Priorities	Environmental Protection Objectives										
Investment Priority: Mobility of People & Goods in Urban Areas	Biodiversity	PHH	Noise	Water	Air Quality	CC- Mitigation	CC--- Adaptation	Land and Soils	Material Assets	AACH	Landscape
1.1 Movement of People	+/-	+/0	+/-	0	+	+/0	0	+/-	+	0	+/-

NR2040 Investment Priorities	Environmental Protection Objectives										
Investment Priority: Mobility of People & Goods in Urban Areas	Biodiversity	PHH	Noise	Water	Air Quality	CC- Mitigation	CC--- Adaptation	Land and Soils	Material Assets	AACH	Landscape
<p>Where National Roads present a hostile or dangerous environment for cyclists and pedestrians, TII will work to provide segregated facilities adjacent to National Roads.</p> <p>TII will identify and address severance associated with busy urban National Roads through provision of safe crossing infrastructure for cyclists and pedestrians.</p>	<p>Assessment Commentary: Movement of People and Goods in Urban Areas will include programmes and projects encompassing traffic and demand management measures; technology solutions; and infrastructure interventions in and around cities and towns.</p> <p>This portfolio is directly linked to TII's vision to deliver an evolving transport system, which is safe, efficient and innovative. It supports the provision of safe segregated facilities for pedestrians and cyclists, or interventions, as appropriate, particularly in busy urban locations. It aims to address severance on the National Roads network. This has potential positive effects on PHH through improved social integration and safety by reducing potential for conflict between road transport, particularly vulnerable road users, working towards 'Vision Zero'.</p> <p>There is potential to enhance the urban environment and public realm in these locations through innovative design which promotes a sense of place and reduces the dominance of the car. The <i>Design Manual for Urban Roads and Streets</i> could be considered along with TII guidance and standards in developing such proposals in urban areas.</p> <p>Siting of segregated facilities follows data collection, analysis and planning to develop feasible options. TII's National Roads active travel technical publication (PE-PMG-02045) sets out the 'avoid-shift-improve' approach to transport and mobility infrastructure planning. A key element of this approach is an objective to shift carbon-intensive journeys to zero carbon modes such as walking, wheeling, and cycling.</p> <p>Construction activities arising from development has potential for short term negative environmental effects on biodiversity, landscape and visual, however as these are proposed in existing busy urban environments, impacts should be minimal.</p>										
EPO	BFF	PHH	N	W	AQ	CCM	CCA	L&S	MA	AACH	L
1.2 Movement of Goods	0/-	+0	0/-	0/-	+/-	+/-	-	0/-	+/-	0/-	0/-
<p>The Department of Transport is currently developing its Ten-Year Strategy for the Haulage Sector; TII will implement actions arising for National Roads.</p> <p>TII will work with the Department of Transport and partner agencies to explore traffic and demand management measures to improve the journey time reliability required for the efficient movement of imports and exports.</p>	<p>Assessment Commentary: TII has committed to work with the Department of Transport and partner agencies to explore traffic and demand management measures to improve the journey time reliability required for the efficient movement of imports and exports. Draft NR2040 identifies congestion as a key issue for freight on the land transport network adjacent to strategic links such as the M50 and the Dublin tunnel.</p> <p>As a management measure, it potentially has positive direct effects for safety (PHH) by reducing congestion. Efficient movement of goods reduces costs in many economic sectors (MA), while inefficient transportation increases the costs. This Investment Priority requires flexibility in the Modal Hierarchy when considering the strategic function of the National Roads network this includes traffic and demand management measures including re-allocation for mode specific priorities; increasing supply chain vehicle efficiency; and freight specific transport management schemes such as the</p>										

NR2040 Investment Priorities	Environmental Protection Objectives										
Investment Priority: Mobility of People & Goods in Urban Areas	Biodiversity	PHH	Noise	Water	Air Quality	CC- Mitigation	CC--- Adaptation	Land and Soils	Material Assets	AACH	Landscape
EPO	BFF	PHH	N	W	AQ	CCM	CCA	L&S	MA	AACH	L
TII will support the development of rail freight and multi-modal distribution centres on or near National Roads.	multimodal distribution centres on or near National Roads. Import and exports is likely to continue to increase emissions for an island nation and therefore will potentially have negative effects on CCM and CCA. Across other environmental factors, the effects are likely to be neutral and/or negative effects which will be determined at project level.										
1.3 Demand and Traffic Management:	0	+	+	0	+	+	+	0	0	0	0
TII will support travel demand management measures for National Roads in the five cities (Dublin, Cork, Galway, Limerick, and Waterford) and implement other government policy on demand management on national roads. It will explore the potential of demand management measures, including road-user charging. TII will expand traffic management measures in congested sections of national roads to ensure optimal vehicle flow to minimise carbon emissions, particularly from freight.	Assessment Commentary: This portfolio relates to the implementation of measures to reduce travel demand or redistribute traffic demand on the National Roads network. Such measures include exploring fiscal charging, which sees motorists pay for use in congested sections of National Roads to ensure optimal vehicle flow and minimise carbon emissions, particularly from freight. This portfolio can directly alleviate congestion. This in turn will ensure optimal vehicle flow, positively effecting PHH and MA, and reducing carbon emissions with likely positive effects on AQ, N, W, L&S, and CCA.										

8.2.4 Investment Priority - Enhanced Regional and Rural Connectivity

Investment Priority of Enhanced Regional and Rural Connectivity includes two portfolios:

- National Primary Network relates to:
 - Interurban connectivity
 - Regional Connectivity
 - International Connectivity
- National Secondary Network relates to:
 - Lifeline Roads
 - Arterial Roads
 - Collector Roads

The assessment of the Portfolios supporting this Investment Priority against the EPOs is provided below. There are no specific provisions identified for the National Secondary Road therefore, there are no provision to assess this SEA.

NR2040 Investment Priorities	Environmental Protection Objectives										
Investment Priority: Enhanced Regional and Rural Connectivity	Biodiversity	PHH	Noise	Water	Air Quality	CC- Mitigation	CC-- Adaptation	Land and Soils	Material Assets	AACH	Landscape
Enhanced Regional and Rural Connectivity	+/-	+	+/-	+/-	+/-	+/-	0	-	+	+/-	+/-

Assessment Commentary: The Enhanced Regional and Rural Connectivity Investment Priority focuses on National Primary and National Secondary Roads portfolios. Interurban, regional, and international connectivity are sub-portfolios for National Primary Roads, while sub-portfolios for National Secondary Roads divide up the road network into three functions, namely lifeline, arterial and collector to guide investment.

The draft NR2040 intervention hierarchy (aligned with NIFTI) will inform the necessary investment. It is likely that this Investment Priority will require construction works or demand management measures across the National Primary and Secondary Roads where capacity issues restricting connections exist e.g., road realignments, bypass, or upgrades, etc. As a result of construction works, there is likely to be negative effects across several EPOs such as BFF, N, W, L&S, AACH and Landscape which will be determined at later project level assessments.

Enhancing connectivity will support rural communities and future development in these areas. These communities rely on the National Road network as their only mode of transport to other centres for their daily services including employment, education, medical needs etc. NR2040 describes these routes as lifeline routes and are prioritised for investment to ensure access is maintained. This Investment Portfolio is likely to lead to improved local and regional economy with positive effects for employment (PHH). This Investment Priority has potential to improve efficiency on the National Roads network resulting in reduced congestion and sub-standard roads with positive effects for AQ, N and CCA.

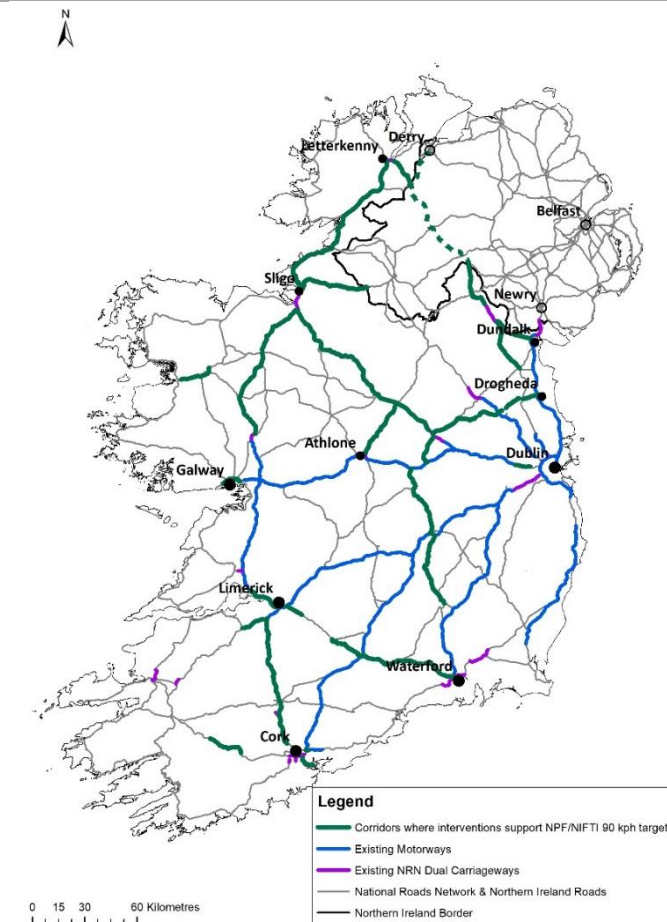
EPO	BFF	PHH	N	W	AQ	CCM	CCA	L&S	MA	AACH	L
1.1 National Primary Network	+	+/-	+/-	+/-	+/-	+/-	-	-	+	+/-	+/-

Assessment Commentary: The draft NR2040 supports the NPF (NSO-2) which highlights the need to improve accessibility to the South, North-West and North-East and identifies the sections of National Roads that are prioritised for improvement. These aim to reduce journey times between the five cities (Dublin, Cork, Galway, Limerick, and Waterford) and five centres of scale, Sligo, Letterkenny, Dundalk, Drogheda and Athlone. It sets a target for an average inter-urban speed of 90kph, in accordance with NIFTI directive.

TII analysis, using its National Transport Model, has identified National Roads corridors where this target is not currently achieved and where additional interventions would support the achievement of an average inter-urban speed of approximately 90 kph, between the five cities and five centres of scale. These corridors are mainly National Primary roads as shown in the Figure below.

**NR2040 Investment
Priorities**

Environmental Protection Objectives



Targeted interventions along sections of these corridors may include:

- road upgrades
- enhancements; and/or
- town bypasses.

Any interventions proposed must be developed in accordance with NIFTI's Investment Priorities and its modal and intervention hierarchies.

Improved road sections where significant infrastructure upgrades have taken place in recent times are shown in magenta/blue, while those in green are corridors where interventions would support the 90kph NPF target.

Therefore, for the purposes of this SEA it is assumed that there is likely to be physical construction works required in some form or another and therefore there is potential for temporary/ short-term effects associated with the construction activities on all EPOs for example, due to land-take, property impacts, impacts to biodiversity, Water quality, AQ.

Corridors where interventions support 90kph (The draft NR2040)

However, long-term positive effects are likely on PHH, MA and to some degree on climate mitigation as it should reduce travel times, reduce congestion associated with bottlenecks, poor road alignment or gradients etc., associated with these key inter-urban connections. This would support the economy, tourism and enhance connectivity across the regions. Depending on the intervention, which is determined at project level, any improvements may also result in induced demand and undermine public transport options which will be required to be considered as part of the NIFTI and NR2040 project development process.

8.2.4.1 90kph Interventions and Environmental Sensitivity Mapping Assessment

In order to provide a more strategic and informed approach to planning, the Environmental Sensitivity Mapping (ESM) tool has been used to identify environmentally sensitive areas at a strategic level and to present a visual overview of the relative sensitivity of the area, particularly where they overlap. This tool has been used on the inter-urban connectivity/ intervention identified in the draft NR2040 for the locations that are required to achieve 90kph. These interventions could be any of the four interventions identified in NIFTI and in the Draft NR2040 Strategy. This sensitivity map along with detailed analysis of the problem and options development and assessment process will help planners, engineers and environmental specialists examine and determine preferred options in accordance with the project appraisal process and sustainability principles. Site surveys will further inform locations that are most sensitive and help inform potential land-use conflicts, informed by future trends. The surveys will also help to identify suitable development solutions in the least sensitive locations to protect the environment.

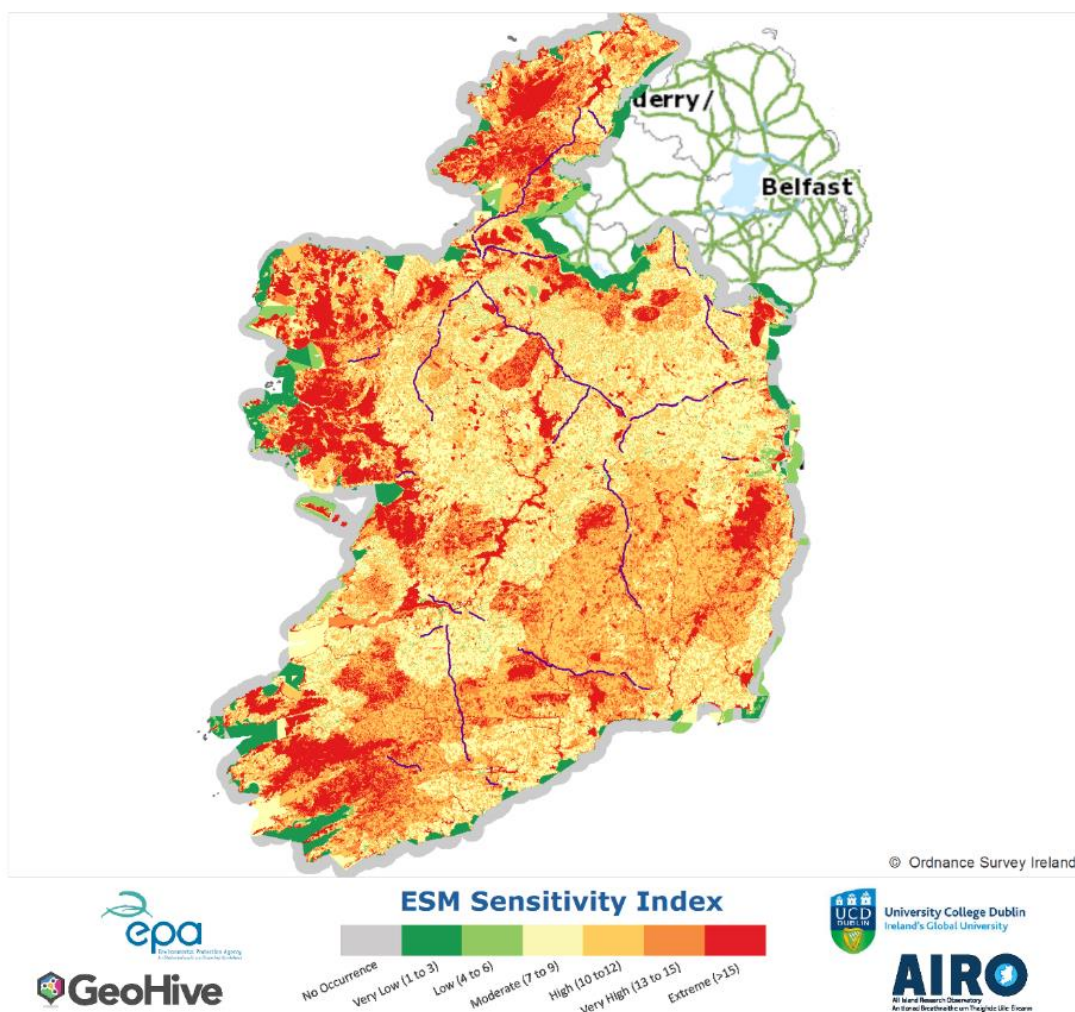
ESM mapping produced in **Figure 8-1** below informs this SEA. ESM has been generated for the whole of Ireland with the variables used to generate the environmental sensitivity maps. The ESM overlays environmental baseline data sets. These include EU Designated Sites, nationally protected sites, river corridors, flood extents, coastal areas and upland areas, drinking water quality sources, etc (detailed in each figure). When overlaid, the highest environmental sensitivity is presented as the darkest red colour as illustrated in **Figure 8-1** below. For example, EU Designated sites (e.g., SAC, SPA) etc.) protected areas are more sensitive due to the uniqueness of the habitats and species. Environmental assets such as drinking water, and heritage features are also important.

In **Figure 8-1** the ESM is overlaid together with the existing National Road Network (as shown in **Figure 8-1** below, comprising Motorways, National Primary Roads and National Secondary Roads). It shows areas of greatest environmental sensitivity in red with those in green of least sensitivity.

Targeted interventions along sections of these corridors may include road upgrades, enhancements and/or town bypasses. Any interventions proposed must be developed in accordance with NIFTI's Investment Priorities and its modal and intervention hierarchies.

From the map below we can see that the intervention corridors are located in or adjacent to sensitive areas. TII's Project Appraisal Guidelines and DoT Common Appraisal Framework (CAF) and supporting NIFTI appendices will inform the project appraisal and development process until such time the CAF is updated.

ESM Results - 90kph Interventions



Date: 7/26/2022 Time: 12:55:26 PM Author: Roughan & O'Donovan

*This map is an aggregate result based on the variables and user defined weights listed below.
Warning: Please note that weights are only to be used to emphasize the relative significance of an environmental aspect - applying weights to more than two themes would magnify, and possibly overstate, the overall sensitivity.

Air & Climactic Weight: 1 Variables: Flood Extents Current Scenarios (Coastal and fluvial) (High), Flood Extents Current Scenarios (Coastal and fluvial) (Medium), Flood Extents Current Scenarios (Coastal and fluvial) (Low), Historical Flood Extents

Biodiversity, flora and fauna Weight: 1 Variables: Ancient Woodlands, Annex I Habitats, Coastal Habitats-Saltmarshes, Contribution to Potential Ecological Networks, Forest Inventory, Margaritifera Sensitive Areas, Natural Heritage Areas, Proposed Natural Heritage Areas, Salmonid Waters (S.I 293 Only), Special Areas of Conservation, Special Protection Areas, Woodland Habitats

Cultural Heritage Weight: 1 Variables: National Inventory of Architectural Heritage (NIAH), Sites and Monuments Record

Population and Human Health Weight: 1 Variables: WFD RPA Groundwater Drinking Water, WFD RPA Surface Water Drinking Water (Lakes), WFD RPA Surface Water Drinking Water (Rivers)

Soils and Geology Weight: 1 Variables: County Geological Sites, Geoparks and Geosites, Landslide Susceptibility, Outcrops, Peat Bogs, Soil Permeability

Water Weight: 1 Variables: Aquifer Vulnerability, Groundwater Source Protection Areas, Wetlands, WFD RPA Nutrient Sensitive Areas (Lakes, Coastal and Transitional Water Bodies), WFD RPA Nutrient Sensitive Areas (Rivers), WFD RPA Recreational Waters (Coastal and Transitional Water Bodies), WFD RPA Recreational Waters (Lakes), WFD RPA Shellfish Areas, WFD RPA Water Dependant Habitats (SACs), WFD RPA Water Dependant Habitats (SPAs)

Figure 8-1 Environmental Sensitivity Mapping and Variables on the draft NR2040 90kph Intervention corridors

8.2.5 Commitments

To address the 12 strategic issues facing National Roads, NR2040 presents a set of commitments in Chapter 6 of the draft Strategy. The Strategic Issues are as follows:

- Future Demographic Growth Trends
- Decarbonisation
- Climate Adaptation & Resilience

- Sustainability
- Road Safety
- Movement of People
- Movement of Goods & Services
- Urban Congestion

The commitments under each strategic issue are assessed in the tables below. There is cross over between the four Investment Priorities and the commitments (i.e., decarbonisation, Mobility of People, mobility of goods, etc) were this exists the assessment undertaken early is not replicated but further informs the assessment of the commitments.

Where mitigation is deemed to be required, it is included as a recommendation at the end of the assessment commentary details of which are included in **Section 9** of this ER under the respective subject heading.

8.2.5.1 Future Demographic Growth Trends

Chapter 6	Environmental Protection Objectives										
NR2040 Commitments: Future Demographic Growth Trends	Biodiversity	PHH	Noise	Water	Air Quality	CC- Mitigation	CC- Adaptation	Land and Soils	Material Assets	AACH	Landscape
Assessment	0/-	+/-	0	0	0	+/0	0	0	+	0	0
<p>Assessment Commentary: These commitments are based on data collection and analysis and will facilitate TII and Sponsoring Agencies to monitor changes in demographics and inform plans and projects accordingly. These commitments will likely have positive effects on PHH and MA and have potential to inform climate mitigation efforts. However, overall, they will have a neutral effect on all other EPOs. Specific impacts will be determined at the relevant project level assessment.</p>											
<ul style="list-style-type: none"> • TII will continue to analyse possible growth in travel demand, reflecting Project Ireland 2040 population targets. • TII will continue to develop and plan for multiple future demand scenarios that factor in possible behavioural and technological change. • TII will ensure that the potential for induced travel demand will be estimated for all major projects. 	<p>Assessment Commentary: The collation of data and analysis will inform National Roads planning which will influence transport investments. It will have neutral effects across most of the EPOs. It has the potential for positive indirect effects across the EPOs where it informs the continuous improvement of the National Roads network. This commitment will benefit future roads planning and wider land use planning which would benefit society and inform plan making across various sectors. It recommended that the result of this work is disseminated to Local authorities and Sponsoring Agencies, as appropriate. Induced demand for road travel can be broadly defined as <i>“the increment in new vehicle traffic that would not have occurred without the improvement of the network capacity”</i>¹³. Transport infrastructure resulting in induced travel demand creates environmental costs as well as safety issues and can also undermine public transport operators and land use change associated with changes to unplanned car-based travel patterns. The SEA recommends that the analysis for induced travel demand is completed for all projects including those in the planning system or at construction.</p>										

¹³ DoT (UK) Latest evidence on induced travel demand: An Evidence Review

Chapter 6	Environmental Protection Objectives										
NR2040 Commitments: Future Demographic Growth Trends	Biodiversity	PHH	Noise	Water	Air Quality	CC- Mitigation	CC-- Adaptation	Land and Soils	Material Assets	AACH	Landscape
<ul style="list-style-type: none"> TII will implement government policy on demand management. NIFTI sets out the importance of the provision of alternative transport options, such as cycle infrastructure and public transport services before demand-side measures are implemented. TII will ensure that any future implementation of demand management proposals on the National Roads network aligns with NIFTI modal and intervention hierarchies. TII will explore the potential of road-user charging measures through the Better Road User Charging Evaluation (BRUCE) study 	<p>This commitment sets to implement government policy on demand management and prioritise alternative transport options in line with the intervention hierarchy (Chapter 6 of the draft NR2040). The provision of segregated facilities and public transport services will likely have positive direct effects for safety (PHH) and asset management (MA) by reducing the demand on the National Roads network. There is potential for positive indirect effects across the environmental factors where it supports environmental management and protection and the continuous improvement of the operation of the National Roads network. Recommendation: Refer to Section 9.</p> <p>This measure to explore fiscal charging, which sees motorists pay for use in congested sections. This can alleviate congestion resulting in positive effects on the economy (MA) and communities (PHH) and ensure optimal vehicle flow there are also positive indirect effects with the reduction in emissions to air, reduce stop start/braking and resulting reduction in carbon emissions which would have a positive effect on: AQ, N, BFF, W, CCA EPOs.</p>										

8.2.5.2 Decarbonisation

Chapter 6	Environmental Protection Objectives										
NR2040 Commitments: Decarbonisation	Biodiversity	PHH	Noise	Water	Air Quality	CC- Mitigation	CC-- Adaptation	Land and Soils	Material Assets	AACH	Landscape
Assessment	+/-	+	+/0	+/-	+	+	+	+/-	0/+	0/-	0/-
<ul style="list-style-type: none"> To reduce emissions, TII will prioritise traffic management investment in freight corridors and where congestion results in high levels of GHG emissions. 	<p>Assessment Commentary: These actions will support maintaining the strategic function of the National Roads network and support the decarbonisation of the road transport emissions. The investment in traffic management measures will likely have positive indirect effects across the environmental objectives by helping plan and manage demand, particularly in high emission areas.</p>										

Chapter 6	Environmental Protection Objectives										
NR2040 Commitments: Decarbonisation	Biodiversity	PHH	Noise	Water	Air Quality	CC- Mitigation	CC--- Adaptation	Land and Soils	Material Assets	AACH	Landscape
<ul style="list-style-type: none"> National Road projects will be appraised in the context of compliance with Ireland’s climate change targets, in line with the Governments Climate Action Plan, NIFTI and in accordance with the Department of Transport’s Common Appraisal Framework. Predicted changes and/or targets associated with the levels of usage of each mode (e.g., bicycle, car, public transport, truck, van) will inform this. TII will continue to develop and enhance its Road Emissions Model to explore the emissions impact of changes in transport demand, supply of transport networks/services and changes in vehicle fleet technology. TII will reduce its emissions and environmental impacts from maintenance and operations of existing National Road infrastructure. TII will reduce carbon emissions associated with the development, construction and operation of new infrastructure. TII will support Department of Transport to increase the provision of electric vehicle charging 	<p>Positive indirect effects across the environmental objectives where sustainable alternatives are provided to achieve compliance with Ireland’s climate change targets.</p> <p>Development and enhancing the Road Emissions Model will likely have positive indirect effects across the environmental protection objectives where it informs the continuous improvement of the National Roads network and supports wider Government policy on climate change.</p> <p>This measure will have a positive direct effect through the reduction in emissions and environmental impacts associated with the maintenance and operations of the existing National Roads network. However, it is recommended that TII expresses a commitment to reduce carbon emission and environmental impacts for <u>all</u> activities and infrastructure arising from NR2040.</p> <p>In the first instance, TII will align with the NIFTI intervention hierarchy when considering the provision of new infrastructure. Where new infrastructure is required, this measure will have a positive direct effect through the reduction in carbon emissions.</p> <p>Regarding supporting an increased in EV charging infrastructure this measure is considered to have positive effects for PHH and MA. Positive indirect effects are likely on AQ, N, BFF, W, and L&S where there is reduced emissions on the National Roads network.</p>										

Chapter 6	Environmental Protection Objectives										
NR2040 Commitments: Decarbonisation	Biodiversity	PHH	Noise	Water	Air Quality	CC- Mitigation	CC--- Adaptation	Land and Soils	Material Assets	AACH	Landscape
<p>infrastructure nationwide.</p> <ul style="list-style-type: none"> TII will continue to participate in wider efforts to decarbonise road transport through the provision of appropriate infrastructure and technology, and support of policy instruments and behaviour change measures. 	<p>Participation in wider decarbonisation of road transport is considered to have positive effects for PHH (employment & health effects) and MA where public transport and safe active travel alternatives are provided. Positive indirect effects are likely on AQ, N, BFF, W, and L&S where decarbonisation may result in reduction to demand reducing emissions on the National Roads network. There is potential for temporary/short-term negative effects associated with construction activities. This will be mitigated by the existing planning and environmental policies and TII Guidance documents.</p>										

8.2.5.3 Climate Adaption and Resilience

Chapter 6	Environmental Protection Objectives										
NR2040 Commitments: Climate Adaption & Resilience	Biodiversity	PHH	Noise	Water	Air Quality	CC- Mitigation	CC--- Adaptation	Land and Soils	Material Assets	AACH	Landscape
Assessment	+/-	+	+/-	+/-	+	+	+	+/-	+	0/-	0/-
TII will enhance resilience of National Roads, in particular sections of the rural national secondary road network, that provide lifeline links to individuals and communities.	<p>Assessment Commentary: Enhancing the resilience of 'lifeline links' to individuals and communities will likely have direct positive effects on PHH and MA. Resilience of the asset in these locations is critical to the viability of these communities, many of which are in rural or peripheral locations with only one way in and out which is by road. There may be temporary or short-term effects on the local environment during construction works which will be informed by the intervention required to adapt to climate change. All climate infrastructure projects will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SSFRA as appropriate.</p>										
TII will update and implement its Strategy for Adaption to Climate Change (TII action in the Climate Action Plan 2021).	<p>Updating and implementation of TII's 'Adaption to Climate Change' will ensure the latest research and evidence is applied in planning and adapting to the effects of Climate Change. This action will likely have positive environmental effects on many of the EPOs, particularly on protection and renewal and climate resilience, which will positively influence populations. This action will have positive indirect effects across the environmental objectives where the continued research will inform physical interventions on the National Roads network, ensuring continued functionality in the face of climate change and preparedness.</p>										

8.2.5.4 Sustainability

		Environmental Protection Objectives										
NR2040 Commitments: Sustainability		Biodiversity	PHH	Noise	Water	Air Quality	CC- Mitigation	CC- Adaptation	Land and Soils	Material Assets	AACH	Landscape
Assessment		+	+	+	+	+	+	+	+	+	+	+
<ul style="list-style-type: none"> TII will work with government agencies and stakeholders to support the Climate Action Plan and government's <u>national climate objective to "transition to a climate resilient, biodiversity rich, environmentally sustainable and climate neutral economy by 2050."</u> TII will incorporate economic, social and environmental sustainability objectives and goals in all decisions, policies, projects and processes. TII will promote inter-modal solutions that maximise overall transport efficiency in terms of infrastructure and resource use. For example, facilitating safe active travel along national road corridors that connect with rail and bus stations. TII will minimise the impact of road infrastructure on the environment and support the development and maintenance of ecological corridors along National Roads. TII will prioritise online improvements and avoid delivering high 	<p>Assessment Commentary: TII is committed to working with government agencies to transition 'a <i>climate resilient, biodiversity rich, environmentally sustainable and climate neutral economy by 2050</i>'. This commitment supports the 'Climate (Amendment) Act 2021. Direct and indirect effects and improvements to biodiversity, PHH and all other EPOs are likely over the long-term including contribution to (CCM and CCM) and associated emissions reductions stemming from TII's activities.</p> <p>TII has committed to incorporate social and environmental sustainability objectives and goals in all decisions, policies, projects, and processes. Draft Mitigation: Refer to Section 9.</p> <p>TII will work to promote inter-modal solutions which will support a number of investment priorities including decarbonisation, mobility of people, and enhanced regional and rural accessibility supporting compact sustainable development / growth patterns and contributing to protecting the environment. Draft Mitigation: Refer to Section 9.</p> <p>TII commitment to minimise the impact on the environment and deliver support to the development and maintenance of ecological corridors will help promote the benefits of green infrastructure which will have positive effects on a range of EPOs including biodiversity, landscape, water quality, air quality (absorption of pollutants). Through the National Road network, TII has the capacity to create a strategically planned network of natural and semi-natural areas with other environmental features designed and managed to deliver a wide range of ecosystem services. This could also incorporate blue spaces (if aquatic ecosystems are concerned) and other physical features in terrestrial (including coastal) and marine areas.</p>											

		Environmental Protection Objectives										
NR2040 Commitments:	Sustainability	Biodiversity	PHH	Noise	Water	Air Quality	CC- Mitigation	CC-- Adaptation	Land and Soils	Material Assets	AACH	Landscape
Assessment		+	+	+	+	+	+	+	+	+	+	+
<p>levels of excess capacity.</p> <ul style="list-style-type: none"> TII will support measures to reduce air quality and noise impacts from road transport. Continue to support TII's Sustainability Implementation Plan (and subsequent revisions) to integrate all aspects of sustainability in to TII's core activities. 		<p>Linked together, these planned networks have the capacity to provide multiple benefits in the form of supporting a green economy, improving quality of life, protecting biodiversity, and enhancing the ability of ecosystems to deliver services such as disaster risk reduction, water purification, air quality, space for recreation, landscape enhancements and climate change mitigation and adaption, thereby positively effecting all EPOs.</p> <p>TII's Sustainability Implementation Plan (SIP) is linked with the UN SDGs and comprises 6 overarching principles developed to reflect the organisational ambitions which are supported in NR2040. SIP connects the 6 principles with outcomes which relate to all activities and actions across the organisation from research, operation and project delivery, education & upskilling, new and updated standards, sustainable procurement and supply chain, stakeholder engagement, setting targets, strategic planning, project appraisal and pilot schemes. The plan has a timeline and outcomes of what success looks like, which includes: a more resilient transport network with more enhanced environmental benefits, greening electricity supply for use in buildings. Bringing nature back into our lives in accordance with the EU Biodiversity Strategy, active travel measures, increase collaboration, etc. These measures are holistic and if implemented, will create a truly sustainable organisation. Draft Mitigation: Refer to Section 9.</p>										

8.2.5.5 Road Safety

Chapter 6		Environmental Protection Objectives										
NR2040 Commitments:	Road Safety	Biodiversity	PHH	Noise	Water	Air Quality	CC- Mitigation	CC – Adaptation	Land and Soils	Material Assets	AACH	Landscape
Assessment		+/0	+	+/0	0	+/0	+/0	0	+	+	0	0/+
<ul style="list-style-type: none"> TII will deliver on its actions in the Government's Road Safety Strategy 2021-2030 'Our Journey towards Vision Zero' and collaborate with 		<p>Delivering on the Government's Road Safety Strategy 2021-2030 'Our Journey towards Vision Zero' has potential positive direct effects on PHH and MA. There is potential for positive effects where safety and continuous improvement better informs the development of the National Road network.</p>										

Chapter 6	Environmental Protection Objectives										
NR2040 Commitments: Road Safety	Biodiversity	PHH	Noise	Water	Air Quality	CC- Mitigation	CC – Adaptation	Land and Soils	Material Assets	AACH	Landscape
Assessment	+/0	+	+/0	0	+/0	+/0	0	+	+	0	0/+
<p>partners to deliver on supporting actions.</p> <ul style="list-style-type: none"> • TII will prioritise delivery of high quality, suitable infrastructure to create forgiving roadsides, self-explaining roads and a safe environment for vulnerable road users. • In line with NIFTI, TII will meet asset protection and renewal requirements to help to ensure the safety of the network. • In line with the European Union’s Road Infrastructure Safety Management (RISM) Directive, TII will target investment on sections of national roads with the highest risk of fatal or serious injury. 	<p>This measure to prioritise delivery of suitable infrastructure for vulnerable road users has positive effects for PHH and MA. This measure is considered to have mixed impacts across the environmental objectives where construction activity is required, and where safe active travel alternative are provided as part of the National Road network.</p>										

8.2.5.6 Movement of People

Chapter 6	Environmental Protection Objectives										
NR2040 Commitments: Movement of People	Biodiversity	PHH	Noise	Water	Air Quality	CC- Mitigation	CC – Adaptation	Land and Soils	Material Assets	AACH	Landscape
Assessment	+/0	+	+	+/0	+	+	0	+	+	0	0
<ul style="list-style-type: none"> TII will support Connecting Ireland and prioritisation measures such as dedicated bus lanes where such prioritisation results in greater transport efficiency. TII will consider the needs of all road users for all projects. On urban dual carriageways and motorways approaching cities, TII will work with partner agencies to enable public transport and safe active travel alternatives for car users. TII will continue to support reductions in car dependency and levels of car usage nationally while recognising the important role that private mobility plays for many transport system users. TII recognises that busy urban motorways, ring roads and town bypasses can be hostile environments for pedestrians and cyclists wishing to cross. TII will identify and remedy severance impacts from National Roads. 	<p><i>Connecting Ireland Rural Mobility Plan</i> (once published) and its associated prioritisation measures will have positive effects for PHH (particularly rural populations) and MA where greater transport efficiency is achieved. The implementation of this action would result in greater resource efficiency and protection of existing finite resources resulting in indirect positive or neutral effects on many EPOs. It would also have positive social and community effects.</p> <p>Considering all roads users for all projects aligns with PAGs and social inclusion and accessibility assessment. It will have positive effects for PHH and MA by working with partners to deliver public transport and safe active travel alternatives to the private car. Positive indirect effects are likely on emissions which will have positive effects on: AQ, N, BFF, W, and L&S.</p> <p>National Roads play an important role in private mobility across the State and must continue to be supported to maintain access, social inclusion and integration between goods and services. Supporting greater sustainable mobility across the State will also continue to support social inclusion and should go some way to address safety concerns on these roads. This is particularly important for rural communities and where no viable alternatives currently exist. This action will have positive effects across PHH and MA. This measure will have positive effects across the environmental objectives where it results in improvements to safety for all road users and is likely to reduce severance effects associated with the existing National Roads network.</p> <p>TII will identify and remedy severance impacts which will have a positive direct effect for PHH and MA by identifying and addressing the impacts of severance. Potential for negative indirect effects for AQ, N, LS, W, BFF, CH, L&S where construction activity is required. These adverse effects are mitigated by national, regional and local environmental policy. Draft Mitigation: Refer to Section 9.</p>										

8.2.5.7 Movement of Goods and services

Chapter 6	Environmental Protection Objectives										
NR2040 Commitments: Movement of Goods and services	Biodiversity	PHH	Noise	Water	Air Quality	CC- Mitigation	CC – Adaptation	Land and Soils	Material Assets	AACH	Landscape
Assessment	+/-	+	0	+/-	+/-	+	-/0	+/-	+	+/-	+/-
<ul style="list-style-type: none"> In line with the NPF and NIFTI, TII will work to achieve average inter-urban speeds of 90km/h on National Road corridors between Ireland's five cities (Dublin, Cork, Galway, Limerick, and Waterford) and five regional centres (Letterkenny, Drogheda, Dundalk, Sligo and Athlone). In some instances, this will mean the development of new infrastructure or upgrading of existing infrastructure to deliver on this NPF and NIFTI inter-urban accessibility objective. TII will work towards improving regional and rural accessibility in line with the NPF and NIFTI objectives. TII will protect access to ports and airports and improve access where required. TII will provide/ consider prioritisation measures such as dedicated freight lanes where such prioritisation results in greater transport efficiency. TII supports the development of rail freight and multi-modal freight distribution centres on or near National Roads. 	<p>Assessment Commentary: An objective of Project Ireland is to deliver average journey time speeds of 90kp/h or better between Ireland's cities and major settlements. This may include new infrastructure or upgrading of existing infrastructure to improve reliability. Using the NIFTI intervention hierarchy, TII will seek to address transport challenges using existing infrastructure before considering provision of new infrastructure. Investment in interurban public transport and integrated mobility services (e.g., park and ride / car share) can ensure accessibility between the five cities. It will also help to reduce demand requirements and support asset protection which can help to ensure the safe and efficient movement of people and goods between the NPF settlements.</p> <p>Depending on the interventions at local level, construction activities may have localised positive and/or negative effects on all environmental factors. The long-term effect is to support the NPF and NIFTI which will result in prioritising compact sustainable development and continuing to support rural economies and communities. The measure to protect and improve access to ports and airports to ensure their strategic function is maintained. This prioritisation measure has positive direct effects for MA and for the remaining environmental factors.</p> <p>The prioritisation of measures which result in greater efficiency have potential for positive direct effects for MA. Efficiency in freight will have positive effects on AQ, however it could also have negative effects due to increases in heavy freight.</p> <p>A key issue for freight is congestion on the land transport network adjacent to strategic links. Addressing congestion through demand management measures and the development of rail freight and multi-modal freight distribution centres on or near National Roads will facilitate the reliable and efficient movement of imports and exports. Positive direct effects are likely for PHH (employment, safety). Positive indirect effects are likely on MA by reducing demand and km travelled on National Roads.</p>										

8.2.5.8 Urban Congestion

Chapter 6	Environmental Protection Objectives										
NR2040 Commitments: Urban Congestion	Biodiversity	PHH	Noise	Water	Air Quality	CC- Mitigation	CC – Adaptation	Land and Soils	Material Assets	AACH	Landscape
Assessment	+/-	+	+	+	+	+/0	0	+	+	+/-	+/-
<ul style="list-style-type: none"> TII will promote traffic management interventions that help optimise traffic movement on urban National Roads. TII will support the use of public transport on or adjacent to urban National Roads. TII will support the provision of segregated or offline active travel infrastructure adjacent to national roads. 	<p>Assessment Commentary: The commitment relates to traffic management interventions that help optimise traffic movement on urban roads and reduce congestion having positive effects on the economy and environmental emissions (N, AQ CCM). Support for the use of public transport and segregated offline active travel infrastructure will result in reallocation of road space which will result in positive effects on the environment across a range of EPOs –PHH, N, AQ, W, CCM, MA due to greater transport efficiency and integration on the network.</p> <p>There is potential for negative effects on BFF, AQ, N, W, L&S, AACH and L&S during the construction stages. Changes in land use may have more long-term effects on BFF, however opportunities for enhancements should be sought in line with the <i>National Biodiversity Action Plan</i> particularly along active travel infrastructure which will enhance the overall attractiveness of active travel and promote greater use of this type of transport infrastructure.</p>										

8.2.6 Implementation Structure

The draft NR2040 sets out the implementation chapter which provides summary guidance to Sponsoring Agencies and Local Authorities. It outlines:

- TII commitments to addressing strategic issues;
- Provides a means of filtering future interventions;
- Defines TII investment portfolios; and
- Concludes with TII’s commitment to collaboration, recognised throughout the Strategy as a necessary means for the successful implementation of identified interventions and achievement of National targets.

Figure 8-2 below illustrates the investment Priorities and Portfolios together with the non-infrastructure projects which will support all portfolios of investment.

Figure 6.1 NR2040 Implementation Structure

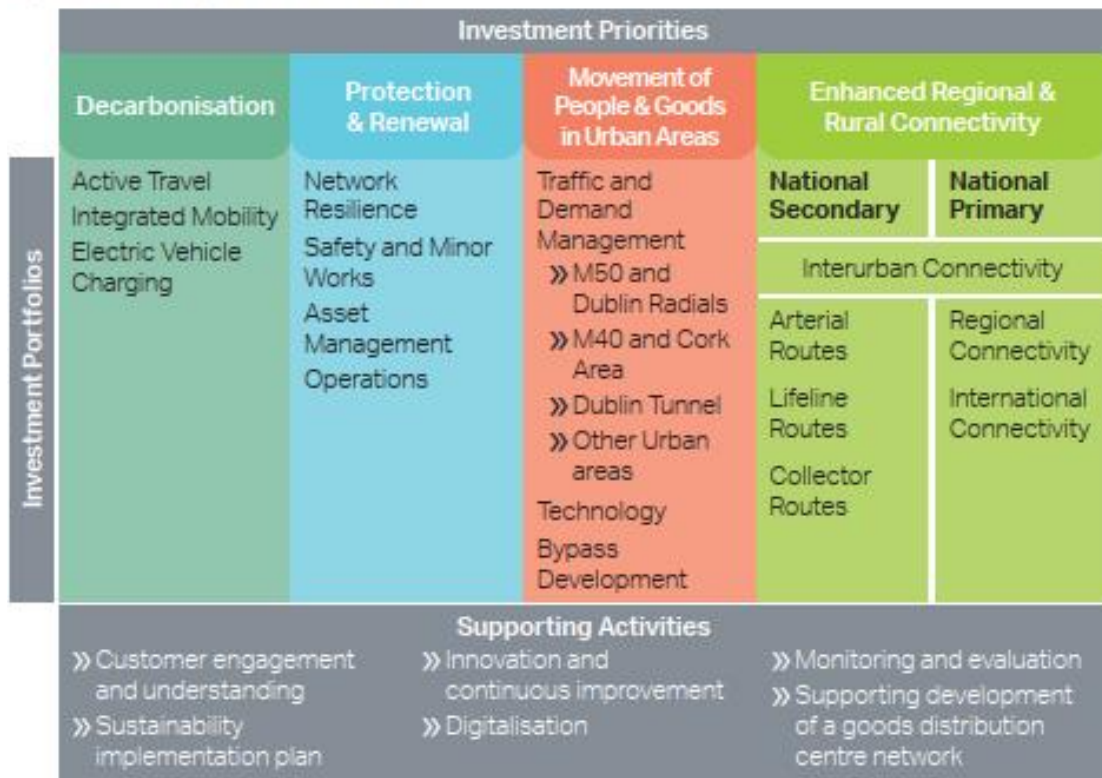


Figure 8-2 NR2040 Implementation Structure (The draft NR2040, 2022)

The assessment has already considered the four key Investment Priorities and Portfolios in the previous section. The focus in this section is on the Non-Infrastructure Projects which is detailed in the assessment table below.

NR2040 Implementation Structure	Environmental Protection Objectives										
	Biodiversity	PHH	Noise	Water	Air Quality	CC- Mitigation	CC – Adaptation	Land and Soils	Material Assets	AACH	Landscape
Non-infrastructure programmes											
Assessment	0	0/+	0	0	0/+	0/+	0/+	0	0	0	0
Customer engagement and understanding Developing and delivering practices and processes to improve TII's engagement with, and understanding of, all road customers.	Assessment Commentary: This measure relates to customer engagement and understanding. As a customer engagement and awareness theme, there are neutral direct effects on the environment but there is potential for wider positive indirect effects through greater engagement and transparency in the sector. Draft Mitigation: Refer to Section 9 .										
Sustainability implementation plan Integrating sustainable practices and processes into every aspect of National Roads	TII Sustainability Implementation Plan (SIP) aligns with the SDGs and influences infrastructure and non-infrastructure plans and programmes. It is recommended that SIP be integrated into all activities of the organization in accordance with SIP with the necessary training and support given to embed sustainability into all decisions.										

NR2040 Implementation Structure	Environmental Protection Objectives										
Non-infrastructure programmes	Biodiversity	PHH	Noise	Water	Air Quality	CC- Mitigation	CC – Adaptation	Land and Soils	Material Assets	AACH	Landscape
Assessment	0	0/+	0	0	0/+	0/+	0/+	0	0	0	0
<p>development and management, and ensuring sustainability is the bedrock of all decision making, as articulated in TII's Sustainability Implementation Plan. It requires new ways of thinking; reviewing all corporate policies, standards and specifications; engaging with the wider supply chain and construction</p>	<p>Non-infrastructure projects – some of these measures will involve physical works to the environment and changes in work practices as detailed the SIMP. Project level environmental assessment will be required as appropriate to each of these workstreams.</p> <p>Draft Mitigation: Refer to Section 9.</p>										
<p>Innovation and continuous improvement TII's track record is one of continuous improvement for example effective implementation of the motorways programme and innovation; early adopters of free flow tolling – M50 and interoperable tolling. This tradition must be maintained in the new policy context of decarbonisation, multi-modality and technological change.</p>	<p>The measure relates to continued innovation and continuous improvement and has potential for indirect positive effects on PHH and MA, CCM and CCA as well as other policy areas as appropriate.</p> <p>This measure is considered to have positive indirect effects across the environmental protection objectives where the innovation and continuous improvement better informs TII policy and the development of the National Road network, the environment, society and supports the economy.</p>										
<p>Digitalisation Including embedding a 'digital-by-design' philosophy, creating a digital twin of National Roads assets, C-ITS integration, and delivery of digital platforms. Digitalisation will improve NR2040's communication and interaction with stakeholders. It will involve changes to skills,</p>	<p>The digitalisation programme will help support smart asset management of National Roads including C-ITS integration, and delivery of digital platforms. Digitalisation has opportunities to affect all EPOs depending on the measure being deployed i.e., managing congestion flows, understanding climate change impacts on the asset and adaptation to changes in a timely manner. Indirectly, it could also offer TII new business opportunities (MA) and provides new and more efficient ways to achieve goals for road safety (PHH), traffic efficiency (N, AQ, CF), the environment (BFF, W) and customer service.</p>										

NR2040 Implementation Structure	Environmental Protection Objectives										
Non-infrastructure programmes	Biodiversity	PHH	Noise	Water	Air Quality	CC- Mitigation	CC – Adaptation	Land and Soils	Material Assets	AACH	Landscape
Assessment	0	0/+	0	0	0/+	0/+	0/+	0	0	0	0
resources, organisation and activities.											
Monitoring and Evaluation of investment programmes and projects is a key requirement of the Public Spending Code for capital and operating expenditure. NR2040 and its supporting environmental assessments provides the framework for monitoring and evaluation activity.	<p>This measure is a management priority based around the monitoring and the evaluation of the investment programmes and projects which promote a high level of protection of the environment. The implementation of the SEA environmental monitoring programme and annual review will monitor the environmental effects of the Strategy over the course of the strategy period. With ongoing policy changes at EU level, such as climate change, biodiversity and energy policy, this is a rapidly evolving sector. The draft NR2040 Strategy and associated monitoring framework needs to be suitably dynamic and open to modification and implementation of remedial measures to address significant effects or unintended effects.</p> <p>Draft Mitigation: Refer to Section 9.</p>										
Supporting development of a goods distribution centre network on or near National Roads (developed by third parties) to play a significant part in the creation of a more efficient, lower emission, haulage industry.	<p>TII will support the development of rail freight and multi-modal distribution centres on or near National Roads.</p> <p>Draft Mitigation: Refer to Section 9.</p>										

8.3 Project Development Process

TII, through the draft NR2040, aligns with the NIFTI intervention hierarchy (1. Maintain 2. Optimise 3. Improve 4. New). The intervention hierarchy seeks to address transport challenges through the use of existing infrastructure before considering provision of new infrastructure.

The draft NR2040 provides interpretation and further detail to streamline the project development process. The interventions are assessed at a strategic level below. Project level assessment will determine the likely significant impacts on the environment at the relevant project level assessments i.e., EIA/AA/ SFRA, as appropriate.

NR2040 Project Development process	Environmental Protection Objectives										
Intervention types and examples	Biodiversity	PHH	Noise	Water	Air Quality	CC- Mitigation	CC – Adaptation	Land and Soils	Material Assets	AACH	Landscape
Priority of public transport, walking, cycling and goods	+/-	+	+/0	+/0	+	+	+	+/-	+/-	+/-	+/-
New transport and road technologies	+	+	+	+	+	+	+?	0/+	0/+	0	?
Demand management	+	+	+	+/?	+	+	+/0	+	+	+	+
Resilience and capacity via local reconstruction	+/-	+	+/-	+/-	+	+	+/-	+/-	+	+/-	+/-
Road construction	-	+/-	+/-	+/-	-/0	+/-	-	-	+	-/0	-/0
Overall Commentary on interventions	For all of the interventions there is potential for positive and negative effects across all EPOs to some extent or another. The significance of the effect will be informed by the location, characteristics, nature and extent of the works required to deliver the project which will be determined at project level assessment stage.										
Priority of public transport, walking, cycling and goods											
<p>The intervention type includes:</p> <ul style="list-style-type: none"> National Cycling Network active mode collaboration and interchange Building pedestrian and cycle bridges to reduce severance <p>The intervention would enable a sustainable transport system through coordination with partner organisations. Reduce the reliance on private vehicles by coordinating access and priority on National Roads for public transport, goods vehicles, walking and cycling.</p> <p>It will support sustainability by reducing reliance on private use of vehicles by building pedestrian and cycle infrastructure. While there is potential for environmental effects as a result of the construction and operation process of this infrastructure it would not be as intrusive as road building and would support long-term sustainable modes of transport which would have positive effects across PHH, AQ, CCM, and CCA.</p>											
New transport and road technologies											
<p>The intervention type includes:</p> <p>A smart motorway is a section of a motorway that uses traffic management methods to increase capacity and reduce congestion in particularly busy areas. They can help manage traffic and also reduce environmental impact, cost and time to construct by avoiding the need to build additional infrastructure/lanes.</p> <p>Cooperative- Intelligent Systems (C-ITS) refers to transport systems where cooperation between two or more ITS subsystems (personal, vehicle, roadside and central) enables and provide an ITS service that offers better quality and an enhanced service level, compared to the same ITS service provided by one of the ITS sub-systems. It is linked to improving safety of vulnerable road users, driving comfort, traffic efficiency and reduce air quality, noise, and emission from transport.</p> <p>Development and deployment of smart infrastructure is anticipated in the future, both physically and digitally. This smart infrastructure can improve road capacity, safety, efficiency and network performance. Emerging and mature technologies that enable these benefits include C-ITS (Cooperative Intelligent Transport Systems), variable speed limits, connected and coordinated traffic signals, connected maintenance sensors, weigh-in-motion technology, and more.</p>											

Integration with new road technologies can provide for quicker vehicle innovation and uptake and changes in road user behaviour, greater efficiency of the asset having positive or neutral indirect effects on all EPOS.

It can incentivise and promote quicker, easier and lower-carbon travel emissions associated with having real-life information and informing travel decisions accordingly.

Demand management:

This demand management intervention could include:

Providing **high occupancy vehicle (HOV)** priority on National Roads via:

- Hard shoulder running (on motorways and often in collaboration with Park & Share)
- Specific HOV or bus lanes
- Creating bespoke public transport corridors by either repurposing old infrastructure or building new.

Managing access to National Roads through development control, **ramp metering**, lane control or road user charging can support demand management.

Restricting the use of the network by time, location, trip purpose, vehicle type or other criteria necessary to balance the needs of the community, environment and economy are also options for consideration as part of this intervention.

These demand management measures may support decarbonisation and thus reduce emissions from road transport.

Resilience and capacity via local reconstruction

The intervention option includes examples such as construction of roads as town bypasses, building new to reduce net carbon and building better (including new multi-modal links). While it addresses a transport problem there is likely to be negative effects across all EPOs depending on the extent of works required. The significance of the negative effects will depend on the location, characteristic, nature, and extent of the intervention. There is also potential for positive effects on the material assets, the economy and personal travel.

These interventions will be in line with the NIFTI hierarchy as set out above. Where no feasible alternative exists to address the issue, the delivery of any new road infrastructure shall be in accordance with TII best practices and Green Tenders An Action Plan on Green Public Procurement and the Circular Economy Strategy (to be published) and associated practices.

Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation and guidance at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate.

8.4 Cumulative Effects

Cumulative effects result from a combination of two or more individual effects on a receptor. Such effects can occur as a result of plans, programmes, projects and other actions in the past, present and the reasonably foreseeable future. They can result from impacts that may be individually insignificant, but collectively significant. (EPA,2020c). There are two types of cumulative effects that have been considered, namely at project and plan level.

Project level: these effects can arise from the interactions between different types of environmental effects resulting from a project. For example, these could include interrelationships between air quality and human health, air quality and climatic factors, flood risk and human health, water quality and biodiversity effects. The interrelationships between environmental factors that assist in determining these effects are identified on **Table 5.4 (Section 5)**. The implementation of the draft NR2040 Strategy will not affect the interrelationships between these factors. The cumulative impacts could occur as a result of two future development occurring within the same time frame, for example development adjacent to an EU Designated Sites and an increase in road transport and associated emissions network upgrades. Without specific proposed projects identified, there is insufficient information to

conduct a cumulative impact assessment on the Investment Priorities and Intervention Hierarchy.

However, it can be expected that cumulative effects are possible where there are inter-relationships between environmental factors. The types of effects will depend on the project specifics.

Plan level: These arise when the effects of the implementation of one plan/programme occur in combination with those of other plans, programmes. Inter-Plan cumulative environmental effects, these occur as a result of the combination of environmental effects which are identified by the assessment; and the effects arising from other policies, plans and programmes. Other legislation, plans and programmes have been considered in **Section 4** and the cumulative assessment included in Appendix A - Relationship with key plans and programmes. Full and detailed cumulative environmental assessments should be conducted as part of the consenting process to ensure that cumulative impacts are avoided where possible and otherwise minimised and mitigated.

In summary policies, plans and programmes from various sectors will interact with the draft Strategy, particularly including those relating to transport and land use planning. A high level assessment is undertaken in Appendix A. The determination of specific cumulative effects or impacts will depend on the specific projects or plans which will be required to undertake their own environmental assessments as appropriate e.g., SEA, EIA, AA and FRA, Various measures have been integrated into the Strategy to ensure as far as practicable positive cumulative effects at this strategic level. The draft NR2040 is aligned with the NPF NIFTI, CAP 2021, etc. and the requirement for lower-level plans to align with these higher-level plans and vice-versa.

Key potential positive cumulative/in-combination effects include:

- Contributions towards shift to more sustainable modes of travel and management of traffic in combination with plans and programmes from various sectors, including transport and land use planning, CAP, etc.
- Contributions towards decarbonisation of the transport sector associated with the achievement of legally binding targets (in combination with plans and programmes from all sectors, including energy, transport, agriculture and land use planning):
- Improvement in travel modes on the National Roads network (priority bus lanes, segregated walking and cycling infrastructure, reducing severance);
- EV infrastructure charging along the National Roads network and multi-modal distribution centres to help transition to lower EVs; and
- Compact sustainable development and growth particularly in urban areas and reductions in sprawl.

The SEA has considered the requirement for the implementation of the Strategy to comply with all environmental legislation and cumulatively contribute towards – in combination with other plans and programmes and projects the achievement of the objectives of the regulatory framework for environmental protection and management.

9 MITIGATION

In accordance with the SEA Directive mitigation measures are introduced to prevent, reduce and, as fully as possible, offset any significant adverse impacts on the environment of implementing the Strategy. **Section 5** of this ER has documented the key environmental considerations including the existing environmental problems and trends under each of the environmental factors that are associated with National Roads associated with the construction, operation and maintenance activities. These have been communicated to TII through this SEA as well as the results of the AA and SFRA processes.

By integrating the SEA, AA and SFRA mitigation recommendations into the Strategy TII is helping to ensure that future plans or projects stemming from the Strategy consider the potential significant negative effects of implementing the Strategy and maximise the potential beneficial environmental effects.

Mitigation measures have been identified through the following stages:

- Early work undertaken to ensure contribution towards environmental protection and sustainable development as part of the Strategy making process;
- Consideration of alternatives; and
- Collaboration between the SEA and Strategy teams in workshops as part of the iterative process of the development of the Strategy resulting in amendments to the Strategy text or integration of relevant sustainable development issues.

9.1 Integration of Individual measures into the Strategy

The SEA process has been undertaken in parallel with the Strategy development process and has brought about changes to the emerging Strategy vision, key objectives and commitments thereby enabling the mitigation. These specific changes will be reported as part of the SEA Statement.

The AA and SFRA process have separately recommended mitigation which is recommended to be incorporated and or referred to as part of the final draft Strategy text. It is recommended that the following mitigation measures are incorporated into the final Strategy.

9.2 Proposed Recommendations

The proposed recommendations are for consideration as part of the next stage in the SEA and finalisation of the Strategy and have not yet been confirmed by TII.

The following recommendations are proposed for consideration by TII as part of the finalisation of the Strategy and will further support the environmental protection objectives and embed sustainable development as part of the Strategy implementation.

Table 9.1 Draft Mitigation proposed as part of the SEA process

NR2040	Proposed Mitigation
Incorporation of the Environmental Assessments - SEA, AA and SFRA	It is recommended in order to explicitly address the results of the environmental assessments in the Strategy that the mitigation proposed in the SEA ER, AA and SFRA processes be incorporated as part of the final Strategy.

NR2040	Proposed Mitigation
Vision and Key Objectives	It is recommended that the Vision and key objectives are linked to the investment priorities and portfolios to ensure that the vision is achieved across all portfolios and associated investments – i.e., development of Key Performance Indicators, etc.
Decarbonisation	It is recommended that TII calculates emissions from <i>all</i> activities thereby helping to inform a reduction in carbon associated with of the construction and maintenance of the transport network through responsible use of resources, reuse and repurposing, as well as driving the net-zero transition and enabling customers to make more sustainable choices.
	Work with partners to deliver on the Climate Action Plan actions as appropriate e.g., associated with fleet electrification, modal shift to walking, cycling and public transport, and an overall reduction in vehicle-km travelled to reduce transport sector emissions.
	TII and Sponsoring Agencies should support positive behaviour change through the provision and/or improvement of necessary supporting infrastructure e.g., provision of safe and comfortable bus stop infrastructure and pick up/drop off on National Roads, improved signage on/ off National Roads to safe walking and cycling.
Behaviour change	It is suggested that TII continues to work with partners and government agencies to support decarbonisation and positive personal behaviour changes relating to use of road transport. For example, this could include ZEVI, SEAI, e.g., awareness raising campaigns associated with the effects of private car use for short trips, increased freight on roads due to increase in online personal shopping, increasing SUV sales all of which influences investment required to maintain the public asset.
Mobility of People	It is recommended that TII continues to liaise with NTA and other stakeholders to improve information and data collection associated with the investment Priorities to ensure changing demographic and travel patterns are monitored to more accurately inform project appraisal process.
Investment Priority: Enhanced regional and rural connectivity	
Corridor interventions	As part of the project development process, corridor interventions will be required to consider the commitments contained in NR2040, demonstrate the use of up-to-date transport surveys to inform transport modelling and shall consider likely future trends in demographics required to support compact sustainable development, and how the interventions will contribute to meeting climate targets, in line with the NIFTI intervention hierarchy.
Sustainability	In the draft NR2040, TII has committed to <i>“incorporate social and environmental sustainability objectives and goals in all decisions, policies, projects and processes.”</i> It is recommended that the process for integrating sustainability across the decision hierarchy be developed and communicated (internally and externally) to ensure greater transparency as part of the decision-making process.
Commitments	
General	It is recommended that the commitments are given timeframes if possible and any analysis stemming from commitments/ actions is shared with the Sponsoring Agencies and Roads Authorities as appropriate in order to better understand the evidence base and support project development and decision at local level.
Decarbonisation	TII states: “National Road projects will be appraised in the context of compliance with Ireland’s climate change targets, in line with the Governments Climate Action Plan, NIFTI and in accordance with the Department of Transport’s Common Appraisal Framework. Predicted changes and/or targets

NR2040	Proposed Mitigation
	associated with the levels of usage of each mode (e.g., bicycle, car, public transport, truck, van) will inform this.” It is recommended that TII shall develop the project appraisal guidelines to support this action following the publication of the final NR2040 Strategy.
Induced demand	It is recommended that the analysis as part of the commitments in Future demographic growth trends relating to induced travel demand is completed for all projects including those in the planning process to ensure traffic effects are appropriately assessed prior to project progression/construction and remedial action taken to address any potential induced demand effects.
Commitments: Sustainability Implementation Plan	It is recommended that the Sustainability Implementation Plan (SIP) publish its annual review so as to improve transparency and drive organisation change. Ensuring the organisation is appropriately staffed to drive the change and embedded sustainability into all activities should also be determined.
Multi-modal distribution centres	TII will collaborate with Local Authorities and CIÉ/Iarnród Éireann as appropriate as part of the statutory planning process with regards to rail freight and/or multi-modal distribution centres on or near National Roads.
Movement of People	Consideration of the appropriate application of Design Manual for Urban Roads and Streets (DMURS) in certain urban locations and incorporation of Universal Design principles together with biodiversity and public realm enhancements would help integrate new structures into the existing landscapes, in line with TII Standard.
Chapter 6 Implementation	
Project development process	It is recommended that the Project Appraisal Guidelines (PAG) be updated to strengthen the appraisal of proposed transport investments in line with the NR2040 Strategy investment priorities and NIFTI intervention hierarchy. Where possible, the updates should integrate the EPOs developed as part of the SEA process: <ul style="list-style-type: none"> • Integrate the requirement for data collection of indicators at project level assessments to support reporting requirements related to projects identified in the NR2040 SEA environmental monitoring framework. • Provide greater clarity on the application of the PAGs for strategic options comparison assessment to ensure consistent application of the methodology across the sector. The updated PAG shall be published following the NR2040's publication.
Intervention hierarchy	It is recommended that the TII works with the Sponsoring Agencies to ensure it understands the NIFTI modal and intervention which is supported in NR2040 with appropriate guidance developed if required on how it should be applied on projects derived from NR2040.
Implementation Structure	The 'Non-infrastructure programme' includes TII Sustainability Implementation Plan (SIP) which relates to, and influences infrastructure plans projects and all TII activities. It is recommended that the SIP is applicable to all portfolios and TII activities in accordance with the intent of the Plan.
Protection and Renewal: Resilience and Climate Adaptation	TII is updating its 'Strategy for Adapting to Climate Change on Ireland's Light Rail and National Road Network'. Examining the impacts of climatic events on surface, groundwater resources and environmental measures is an integral part of the climate adaptation strategy. It is recommended that TII and Sponsoring Agency shall have regard to the existing and updated Strategy (once published) during the project appraisal process.

NR2040	Proposed Mitigation
Option development process	<p>When developing plans/projects on National Roads, the relevant Local Authority, third party and / or TII department will need to show that the proposed investment aligns with NIFTI and address how potential negative impacts, against one or more of the NR2040 Investment Priorities, will be mitigated.</p> <p>Option development will also be considered within the investment hierarchies, with justification required regarding sustainability, for example, if more seemingly cost-effective or environmentally sustainable solutions are judged as inappropriate.</p> <p>This analysis will be required to be revised and updated throughout the project and programme lifecycles in line with advances in techniques, data collection and technology.</p>

10 MONITORING

Article 10 of the SEA Directive requires monitoring of the likely significant environmental effects of the implementation of plans/programmes in order to identify at an early-stage unforeseen effects and undertake appropriate remedial action. This section sets out the proposed draft SEA monitoring framework proposed to be implemented after the finalisation of the draft Strategy.

The final SEA monitoring framework will be presented as part of the next stage in the SEA process in the SEA Statement. The framework can be amended to consider feedback from the public and the environmental authorities.

A number of targets and indicators are identified under each EPO in **Table 10.1** below, which will allow quantitative measures of trends and significant environmental effects over of the duration of NR2040. The indicators selected for measurement are generally based on existing monitoring sources and the information sources and frequency for each target are identified. The future monitoring will be led by TII and undertaken with a view to better understand the effects on the environment of the implementation of the Strategy and will feed in the review of the Strategy.

10.1 NR2040 project development process

NR2040 aligns with the NIFTI intervention hierarchy and seeks to address transport challenges through optimising the use of existing infrastructure before considering the construction of new infrastructure. When developing plans/projects on National Roads, the relevant Sponsoring Agency/Local Authority, third party and / or TII department will need to show that the proposed investment aligns with NIFTI and address how potential negative impacts, against one or more of the NIFTI Investment Priorities, will be mitigated.

NR2040 provides interpretation and further detail to streamline the project development process and associated investment, by requiring all projects to indicate:

- How the project objectives align with one or more of NIFTI investment priorities;
- Specific strategic issue(s) facing National Roads that the project resolves;
- The spatial context through guidance on the types of intervention for different regions and types of National Roads;
- How the project aligns to one or more of TII's commitments; and
- Identification of the portfolio and programme that would accommodate the project.

This process is consistent with existing TII Project Appraisal Guidelines, DoT Common Appraisal Framework and DoT NIFTI investment priorities and hierarchies. It also aligns with the Department of Expenditure and Reform (DEPR) Public Spending Code (PSC) requirements to demonstrate the strategic rationale for significant, publicly funded investments.

Table 10.1 Draft SEA Monitoring Programme

Environmental Protection Objective	Environmental Target	Indicator(s)	Lead & Stakeholders & Source	Frequency
Biodiversity: Protect, actively conserve, prevent damage and enhance biodiversity, particularly European designated sites, other nature conservation sites (and areas supporting them), protected, natural and semi-natural habitats and species, and support ecological corridors.	Maintenance or restoration of the favourable conservation status for all habitats and species protected under European and National legislation through the implementation of NR2040 as required under the Habitats Directive and Birds Directive.	The conservation status of habitats and species as assessed under Article 17 of the Habitats Directive, Article 12 of the Birds Directive, Birds of Conservation Concern in Ireland (2020-2026) and red lists published by the NPWS.	Department of Housing, Local Government and Heritage report of the implementation of the measures contained in the Habitats Directive as required by Article 17 of the Directive (every 6 years), and National Monitoring Report for the Birds Directive under Article 12.	Every 3 years in line with DHLG reporting requirements.
	Avoid and reduce significant negative impacts on protected and threatened habitats and species for EU Designated Sites through the implementation of NR2040.	<ul style="list-style-type: none"> Number of Natura 2000 sites in Ireland listing road-related impacts as pressures and threats (refer to Natura Impact Statement of NR2040 for baseline). Number of derogation licences granted on the National Roads network. 	TII - through NPWS data and through project-level assessments, requirements of Contract documents, Projects progression NPWS, local Authorities, etc.	Every 3 years in line with DHLG/(NPWS). reporting and Project level assessments (AA/NIS results)
	Reduction in Roadkill	<ul style="list-style-type: none"> Total number of roadkill reported. Reported to TII Number of Road Traffic Accidents that mention wild animals as a cause. 	<ul style="list-style-type: none"> TII NPWS National Biodiversity Data Centre	Annually
	Support Biodiversity Net Gain (BNG) measures as appropriate.	<ul style="list-style-type: none"> Publication and subsequent implementation of guidance on Biodiversity Net Gain in Ireland. 	<ul style="list-style-type: none"> Department of Housing, Local Government and Heritage and TII 	N/A

Environmental Protection Objective	Environmental Target	Indicator(s)	Lead & Stakeholders & Source	Frequency
	Quantify, maintain, improve and/or increase the quantity and quality of ecological corridors or 'steppingstones' along National Roads supporting local biodiversity.	<ul style="list-style-type: none"> The total area of TII controlled vegetation/ecological corridors on National Roads. Ecological- enhancement of lands within the curtilage of National Roads Maintenance of semi-natural habitats. 	TII- project-level assessments, requirements of contract documents, project appraisal process. (Other sources of data: NPWS, National Biodiversity Data Centre, local Authorities, google maps, etc.)	Ongoing through Project appraisal process.
Population & Human Health: Protect and enhance the population and human health by increasing accessibility to the economy including employment, recreation and community facilities through an integrated, safe and efficient National Roads network and contribute to reduced harmful transport emissions.	Support measures to reduce car dependency and increase sustainable mobility on or adjacent to the National Roads and increase in the number of active travel journeys and capacity of sustainable travel on National Roads as appropriate to their function.	<ul style="list-style-type: none"> Share of investment in active travel and sustainable transport. Total number of Vehicle kilometres travelled on National Roads. % Of investment in active travel and sustainable transport. Continued decrease in number of Vehicle kilometres travelled on National Roads. Total number of kilometres of safe walking, cycling and bus transport infrastructure on or adjacent to National Roads. National Cycle Network roll out. Numbers of users on greenways. 	<ul style="list-style-type: none"> All indicators are reported by TII in conjunction with Sponsoring Agency/ Road Authorities and published in the TII National Roads Indicators Report Census and NTA: National Housing Travel Survey <ul style="list-style-type: none"> NTA TII 	Annually Every 3/5 years. Annually Annually
		<ul style="list-style-type: none"> Public transport demand on National Roads. 	(TII + COS NHTS, Canal Cordon, Greenways monitoring, etc.)	Annually

Environmental Protection Objective	Environmental Target	Indicator(s)	Lead & Stakeholders & Source	Frequency
		<ul style="list-style-type: none"> Buses and coaches on National Roads. Total number of prioritised bus lanes Total number of park and ride, and park & share facilities at transport interchanges. Number of car-sharing journeys on National Roads 	TII National Roads Indicators Report (through AADT + CSO, NCT reports) <ul style="list-style-type: none"> CSO & NTA NHTS 	Annually
	Maintain and improve the Level of Service on National Roads as appropriate to function.	Level of Service on National Roads.	All indicators are reported by TII in conjunction with Sponsoring Agency/ Road Authorities and published in the TII National Roads Indicators Report	
	Maintain the Volume to Capacity ¹⁴ Ratio on National Primary and Secondary Roads as appropriate to their corridor/function.	Volume to capacity ratio on National Primary and Secondary Roads.		
	Halt fatalities and collisions on National Roads in line with Vision Zero.	Total number of fatalities and collisions on National Roads.	Reported in National Roads Indicators Report) - TII through statistics from Road Safety Authority (RSA) & An Garda Síochána:	Annually
	Prevent and reduce severance resulting from National Roads.	<ul style="list-style-type: none"> Total number. of schemes delivered to address severance issues. No of new schemes introducing severance. 	TII with Sponsoring agency or Roads Authority.	Annually/ project appraisal process.

¹⁴ The Volume to Capacity (V/C) Ratio relates the AADT volume carried on a section of road to its daily operational capacity (The Volume to Capacity (V/C) Ratio relates the AADT volume carried on a section of road to its daily operational capacity)

Environmental Protection Objective	Environmental Target	Indicator(s)	Lead & Stakeholders & Source	Frequency
Noise: Reduce and contribute to mitigation of noise pollution from road transport on National Roads.	Decrease noise pollution affecting people/communities from National Roads.	<ul style="list-style-type: none"> Total number of people/households affected by noise exposures greater than 55dB Lden and 50 dB Lnight along National Roads network. Progress on Implementation of Noise Action Plans on National Roads. 	Noise mapping from TII + Local authorities noise monitoring for roads and light rail.	Ongoing
Water: Prevent deterioration and continue to support the achievement of good water quality status of all water bodies as required by the Water Framework Directive and manage flood risk affecting the National Roads network.	Avoid flooding on National Roads.	Percentage of the National Roads network assets affected by flooding events and any remedial measures applied.	TII & Local authorities, OPW	Annually/Ongoing
	Support the achievement of good water quality status of all water bodies as required by the Water Framework Directive and Marine Spatial Planning Directive (MSPD).	<ul style="list-style-type: none"> Status of water bodies / catchments in compliance with the environmental objectives under WFD and MSFD. Total number of waterbodies where road/ transport infrastructure related development is identified as a pressure on water quality. 	EPA and Marine Institute, Irish Water, Local Authorities, LAWPRO. Project level assessments.	Ongoing
Air Quality: Contribute to the reduction of air pollution and improvement in air quality resulting from transport. through the effective design, maintenance and operation of the National Road network	Improve air quality and ensure no air quality exceedances arising from National Roads. network	Total number of air quality emission exceedances on the National Roads network associated with road transport (i.e., Particulate Matter (PM ₁₀ PM _{2.5}), nitrogen dioxide (NO ₂).	TII Road Emissions Tool and Emission Factor Tool Kit (CSO, EFT emissions factor, alternative fuels, EPA monitoring and publications on air quality and climate emissions.	Ongoing – Annually
Climate Change – Mitigation: Contribute to the reduction in greenhouse gas emissions	Reduce GHGs arising from National Road transport and projects.	<ul style="list-style-type: none"> Total GHG emissions calculated from the construction (incl. embodied carbon), operation and 	TII and SEAI Energy in Ireland reports. TII Road Emissions Tool and Emission Factor Tool Kit	Frequency: (Post project review: 5 years after opening)

Environmental Protection Objective	Environmental Target	Indicator(s)	Lead & Stakeholders & Source	Frequency
through design and support the decarbonisation of road transport.		maintenance of the National Roads network	(CSO, COPERT, EPA monitoring, etc) TII with Sponsoring Agency / Roads Authority. Project level assessment (Planning and post project review)	
		<ul style="list-style-type: none"> Total number of EV charging infrastructure including fast charge on National Roads. % Change in number and fuel type of vehicles (car and commercial) i.e. breakdown petrol, diesel, EV, alternative fuel in Ireland. 	ZEVI, CSO, COPERT, alternative fuels, DoT, CSO	Annually
	Increase in frequency of sustainable public transport services on National Roads network.	Type, Location, and frequency of transport services on National Roads (Bus, P&R, etc.)	NTA: NAPTAN (BUS) dataset, General Transport Feed Specification (GTFS) etc.	Annually
	Improve quantification of GHGs arising from National Road transport.	<ul style="list-style-type: none"> Results from Carbon Tool and Road Emissions Tool Model Improvements in TII quantification of carbon emissions methods associated with the planning, construction, and operation phases of all projects. 	TII	Ongoing – Annually
	Climate mitigation is a cross-cutting theme and refers to measures across other EPOs such as Population and Human Health, Material Assets, etc.	Indicators referenced in this environmental monitoring programme (under PHH, MA.	TII and NTA, DoT - Climate Change Advisory Council (CCAC)	Annually

Environmental Protection Objective	Environmental Target	Indicator(s)	Lead & Stakeholders & Source	Frequency
Climate Change – Adaptation (CCA): Ensure resilience to climate change is incorporated into the National Road network construction, operation and maintenance activities.	Ensure National Roads are resilient to the effects of climate change throughout their design life.	<ul style="list-style-type: none"> Total number of extreme weather events impacting service of National Roads. 	TII – incident reports	Ongoing – Annually
	This EPO relates have cross overs with other EPO targets and indicators.	Refer to Population and Human Health, and Water EPO indicators.	N/A	N/A
Land & Soils (S&G): Conserve and sensitively use soils and geological resources and protect geological sites of value.	Avoid using finite soil and geological resources.	<ul style="list-style-type: none"> Inclusion of circular economy principles and practices as part of all projects and contract documents, as appropriate. 	TII with Sponsoring Agency / Roads Authority – investment portfolios and project specific contract documents. Project appraisal process.	Ongoing – Annually
Material Assets Ensure the effective use of existing infrastructure and support the circular economy particularly the use of existing resources, waste and energy across the network and TII assets.	Where no feasible alternative exists to serve the required function, deliver new road infrastructure with green procurement and circular economy practices.	<ul style="list-style-type: none"> Total share of investment allocated for across the different portfolios. Implementation of <i>Green Tenders An Action Plan on Green Public Procurement</i> in contracts. 	TII – Capital Investment Plan and Annual Reports	Annually
	National Roads are a material asset therefore this EPO relates to all other targets and indicators in this SEA.	National Roads are a material asset – cross reference with all indicators in this SEA Environmental. Monitoring Framework.	TII	Annually
	Ensure all roads are ‘fit for purpose’. Support protection and renewal of existing assets to maintain and/or improve performance of existing assets as appropriate.	<ul style="list-style-type: none"> % Of legacy roads on the National Roads network. Total number of traffic management measures on National Roads. 	TII investment and project approvals process	Annually

Environmental Protection Objective	Environmental Target	Indicator(s)	Lead & Stakeholders & Source	Frequency
	Reduce and manage congestion on National Roads.	Location and duration of congestion and any remedial measures taken to address issue.	TII - National Roads Indicators Report	Annually
	Support the increase the number of rail freight and multi-modal distribution centres on or near National Roads.	The number of rail freight and multi-modal distribution centres developed on or near National Roads.	CIE and/or Sponsoring agency	Annually
	Support the delivery of new road technologies and provide for vehicle innovation.	TII Investment in Smart Motorways, C-ITS, Modern asset management systems.	TII with Sponsoring Agency with Roads Authority/PPP (TII National Roads Indicators Report)	Annually
Archaeological, Architectural and Cultural heritage (AACH) Avoid, protect and/or minimise impacts to designated archaeological, architectural, and cultural heritage resources.	Avoid, reduce and/or mitigate plan/project level impacts on AACH.	No. of significant impacts identified at plan/project level assessments	TII with Sponsoring Agency with Roads Authority	Plan/Project level assessments
Landscape: Protect designated and sensitive features of note in landscapes and sensitively manage landscape change.	Avoid, reduce, or mitigate plan/project level impacts on landscape.	No. of significant impacts identified at plan/project level assessments.	TII with Sponsoring Agency with Roads Authority.	Plan/Project level assessments

11 CONSULTATION ON THE DRAFT STRATEGY AND ENVIRONMENTAL ASSESSMENTS

In accordance with EU Directive 2001/42/EC and the European Communities (EC) (Environmental Assessment of Certain Plans and Programmes) Regulations 2004 (S.I. 435 of 2004), as amended by the EC (Environmental Assessment of Certain Plans and Programmes) (Amendment) Regulations 2011 (S.I. No. 200 of 2011) a Strategic Environmental Assessment (SEA) is required and is being undertaken on the draft NR2040 Strategy.

TII as the competent authority gives notice pursuant to Article 13(1) of the Regulations that the draft NR2040 Strategy and associated SEA Environmental Report may be inspected, and are available at the offices of TII, at the address below, during office hours (8.30-17.15) and are available online website nr2040.consultation.ai.

A Natura Impact Statement (NIS) has also been prepared pursuant to Article 6 of Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora as transposed into Irish law by S.I. the European Communities (Birds and Natural Habitats) Regulations 2011 (477/2011) as amended.

A Strategic Flood Risk Assessment (SFRA) has also been prepared in accordance with the Planning System and Flood Risk Management Guidelines for Planning Authorities and Technical Appendices 2009 issued under the Planning and Development Act 2000 (as amended).

11.1 Have your Say

This is the 'Updated SEA ER' – consultation is now closed.

~~TII is seeking feedback on the NR2040 Strategy, this SEA ER, NIS and SFRA. The consultation period shall begin **05th August and ends on Friday 30th of September 2022.** For a period of 8 weeks.~~

~~A written submission or observation with respect to the draft NR2040 Strategy and the associated SEA Environmental Report, NIS and SFRA may be made to TII **in writing** at the below address or electronically via email, through the public consultation website or at the postal address below. Submissions should be clearly marked '**NR2040 submission**' in the subject line.~~

~~**Email:** _____ NR2040@tii.ie~~

~~**Website:** _____ nr2040.consultation.ai~~

~~**Postal address:** Transport Infrastructure Ireland, Parkgate Business Centre,
Parkgate Street, Dublin 8, D08 DK10.~~

11.2 Next Steps

The feedback from the consultation process will inform the finalisation of the Strategy and the SEA process. Following the publication of the NR2040 and SEA Statement, the final SEA phase is the implementation of the monitoring plan to monitor the environmental effects of NR2040 on the environment and allow for additional mitigation measures to be implemented if necessary. This includes monitoring progress on the SEA proposed recommendations.

12 LIST OF ACRONYMS

AA	Appropriate Assessment
ACA	Architectural Conservation Area
App	Application - online
BAU	Business as Usual
BOS	Biofuels Obligation Scheme
BRT	Bus Rapid Transit
C&D	Construction and Demolition
CAFÉ	Clean Air for Europe
CO	carbon monoxide
CO	Carbon Monoxide
CSO	Central Statistics Office
DAFM	Department of the Agriculture, Food & Marine
DAHG	Department of the Arts, Heritage & the Gaeltacht
DAHRRGA	Department of Arts Heritage, Regional, Rural and Gaeltacht Affairs (now DCHG)
DCCA	Department of Communication, Climate Action and Environment
DCENR	Department of Communications, Energy & Natural Resources
DCHG	Department of Culture, Heritage and the Gaeltacht
DECLG	Department of the Environment, Community & Local Government
DEHLG	Department of the Environment, Heritage & Local Government
DoT	Department of Transport
DPHLG	Department of Planning, Housing and Local Government
DTTaS	Department of Transport, Tourism and Sport
EC	European Commission
EEA	European Environment Agency
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
EPO	Environmental Protection Objective
ESB	Electricity Supply Board
ETS	Emissions Trading System
EU	European Union
EV	Electric Vehicle
FRA	Flood Risk Assessment
FRA	Flood Risk Assessment
GHG	Green-house Gas
GHG	Greenhouse gas

GI	Green Infrastructure
GSI	Geological Survey of Ireland
HDA	Habitats Directive Assessment
HSA	Health and Safety Authority
IFI	Inland Fisheries Ireland
ITM	Irish Transverse Mercator
ITS	Intelligent Transport System
IUCN	International Union for Conservation of Nature
Mt	Metric tonne
NATURA 2000	Network of SPAs and SACs
NCCAF	National Climate Change Adaptation Framework
NDP	National Development Plan
NEC	National Emissions Ceiling
NGO	Non-Governmental Organisation
NH ₃	ammonia
NHA/ pNHA	Natural Heritage Area/ proposed Natural Heritage Area
NIA	Natura Impact Assessment
NIAH	National Inventory of Architectural Heritage
NIFTI	National Investment Framework for Transport in Ireland
NIR	Natura Impact Report
NIS	Natura Impact Statement
NMP	National Mitigation Plan
NMVOC	Non-methane volatile organic compounds
NO _x	Nitrogen Dioxide
NPF	National Planning Framework
NPWS	National Parks & Wildlife Service
NSS	National Spatial Strategy
O ₃	ground level ozone
OECD	Organisation for Economic Co-operation and Development
OPW	Office of Public Works
PAHs	Polycyclic aromatic hydrocarbons
PDA 2000	Planning and Development Act 2000, as amended (No. 30 of 2000)
PM ₁₀ and PM _{2.5}	Particulate matter
PM _{2.5}	Fine particulate matter
RA	Regional Authority or Regional Assembly
RBD	River Basin District
RBMP	River Basin Management Plan
RES-T	Renewable Energy Share – Transport
RFRA	Regional Flood Risk Appraisal

RMP	Record of Monuments and Places
RPGs	Regional Planning Guidelines
RPS	Record of Protected Structures
RSES	Regional Spatial and Economic Strategy
S.I.	Statutory Instrument
SAC/cSAC	Special Area of Conservation (designated by EU Habitats Directive)/ candidate)
SEA	Strategic Environmental Assessment
SEO	Strategic Environmental Objective
SFRA	Strategic Flood Risk Assessment
SO ₂	Sulphur Dioxide
SPA/pSPA	Special Protection Area (designated under EU Birds Directive)/ proposed
TII	Transport Infrastructure Ireland
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UWWT	Urban Waste Water Treatment
VOCs	Volatile Organic Compounds
VRT	Vehicle Registration Tax
WFD	Water Framework Directive
WHO	World Health Organisation

Units of Measure

ktoe	kilo-tonnes of oil equivalent
Ktonnes	kilotonnes
Mt CO ₂ eq.	Metric tons of carbon dioxide equivalent
µm	micrometre

13 GLOSSARY OF KEY TERMS

Appropriate Assessment	The obligation to undertake Appropriate Assessment derives from Article 6(3) and 6(4) of the Habitats Directive 92/43/EEC. AA is a focused and detailed impact assessment of the implications of a strategic action (such as a plan or programme) or project, alone and in combination with other strategic actions and projects, on the integrity of a European Site in view of its conservation objectives. An AA can consist of two Stages: Stage 1 AA Screening and depending on the result of Stage one a Stage 2 Natura Impact Statement may be required.
Mitigation Measures	Mitigation measures are measures envisaged to prevent, reduce and, as fully as possible, offset any significant adverse impacts on the environment of implementing a human action, be it a plan, programme or project. Mitigation involves ameliorating significant negative effects. Where there are significant negative effects, consideration should be given in the first instance to preventing such effects or, where this is not possible, to lessening or offsetting those effects. Mitigation measures can be roughly divided into those that: avoid effects; reduce the magnitude or extent, probability and/or severity of effects; repair effects after they have occurred; and compensate for effects, balancing out negative impacts with other positive ones.
Strategic Environmental Assessment	Strategic Environmental Assessment (SEA) is the formal, systematic evaluation of the likely significant environmental effects of implementing a plan or programme before a decision is made to make/adopt it.
Environmental Protection Objectives	Environmental Protection Objectives (EPOs) are methodological measures developed from policies which generally govern environmental protection objectives established at international, Community or Member State level and are used as standards against which the provisions of the Strategy and the alternatives can be evaluated in order to help identify which provisions would be likely to result in significant environmental effects and where such effects would be likely to occur, if - in the case of adverse effects - unmitigated.
Sponsoring Agency or Authority	The Sponsoring Agency/ Authority is the Government Department, Local Authority, or other public body or agency that requires the Project to be undertaken. It has overall responsibility for the proper appraisal, planning and management of Projects (including current expenditure) and for ensuring that the project proceeds along the lines approved by the Sanctioning Authority. Sponsoring Agencies are also responsible for post-project review. In some cases, TII may act as both the Sanctioning Authority and the Sponsoring Agency such as Projects delivered as Public Private Partnership (PPP) Projects.
Project Management Guidelines	Project Management Guidelines (PMGs) provide a framework for a phased approach to the management of the development and delivery of National Road and Public Transport Capital Projects. They are applicable to Projects which are funded through Transport Infrastructure Ireland (TII) and/or TII is the Sanctioning Authority, unless otherwise instructed by TII.

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Appendix A

Relationship with Key Policy, Plan, Programmes

1.0 Introduction

NR2040 sits within a hierarchy of international, EU, national, regional policy, plans and programmes. This section of the SEA assesses the cumulative effects of NR2040 with these key plans and programmes. Cumulative effects are those that arise when the effects of the implementation of one plan occur in combination with those of other plans or programmes. This cumulative assessment is not intended to be a full and comprehensive review or summary of EU Directives, the transposing legislation or the regulatory framework for environmental protection and management. Instead, it provides an overview of the key plans and programmes under each environmental factor.

Table A.1 below lists the key relevant legislation, plans and programmes from International, EU, national and regional level relating to each environmental factor. This SEA and the preparation of the Strategy has been prepared with due consideration to the policy direction provided in these plans and programmes. The review informs the sequence of assessment that informs the development and assessment of environmental protection objectives set at higher level and assesses the potential cumulative effects as a result of implementing NR2040.

NR2040 is a strategic document and is developed to support existing higher level plans/policy/programmes therefore NR2040 is likely to have positive cumulative effects with many of these policy documents at a strategic level. This assessment includes an examination of all likely significant effects including secondary, cumulative, synergistic, short, medium, and long-term permanent and temporary, positive, and negative effects as appropriate.

The investment priorities and any subsequent developments which may arise can include both physical infrastructure work and/or non-infrastructure measures which will be required to be assessed at project level as appropriate. For example, physical infrastructure works could include: construction of walking and cycling infrastructure, bypasses, new roads, etc which may require screening for environmental impacts for EIA and AA. Non-infrastructure works could include interventions such as demand management measures, e.g., tolling, digitisation, etc. which in turn could influence behaviour on the National Road network and emissions from vehicles change that will arise after NR2040 is published. Therefore, it could be considered to be premature to undertake any meaningful cumulative assessment at this strategic level stage to assess the likely effects of the types of developments that could occur in combination with the implementation of NR2040. Any future projects stemming from NR2040 will be required to comply with the relevant EU Directives, transposing legislation and government policies relating to environmental protection including the assessment of potential cumulative effects which is required to be assessed during the respective planning process/project level assessments, as appropriate.

Table A.2 contains a summary of the key relevant legislation, plans and programmes from International, EU, national and regional level relating to each environmental factor and summarises the relevance to NR2040 together with the assessment of likely significant cumulative effects.

Table A.1 Summary of the relevant Plans, Policy, Programme, legislation relevant to NR2040

Plan, Policy, Programme, Legislation¹
All Aspects
<u>International</u>
<ul style="list-style-type: none"> • 2030 Agenda for Sustainable Development
<ul style="list-style-type: none"> • Rio Declaration and the UN Sustainable Development Goals (1992)
<ul style="list-style-type: none"> • Local Agenda 21
<ul style="list-style-type: none"> • Kyiv (SEA) Protocol
<u>EU</u>
<ul style="list-style-type: none"> • EIA Directive (2011/92/EU as amended by 2014/52/EU)
<ul style="list-style-type: none"> • SEA Directive (2001/42/EC)
<ul style="list-style-type: none"> • Environmental Liability Directive (2004/35/EC)
<ul style="list-style-type: none"> • EU Sustainable Development Strategy 2006
<ul style="list-style-type: none"> • Europe 2020: A Strategy for Smart, Sustainable and Inclusive Growth
<ul style="list-style-type: none"> • European Transport Policy for 2010: Time to Decide - White Paper. COM (2001) 370 final, 12 September 2001
<ul style="list-style-type: none"> • European Green Deal (European Commission, 2020)
<ul style="list-style-type: none"> • EU 8th Environmental Action Programme 2020-2030
<ul style="list-style-type: none"> • The EU Zero Pollution Action Plan
<u>National</u>
<ul style="list-style-type: none"> • Planning and Development Act 2000 (as amended) and the Planning and Development Regulations 2001 (as amended)
<ul style="list-style-type: none"> • Our Sustainable Future, a Framework for Sustainable Development for Ireland (2012)
<ul style="list-style-type: none"> • Building on Recovery: Infrastructure and Capital Investment 2016-2021
<ul style="list-style-type: none"> • 'Project Ireland 2040': The National Planning Framework 2040 (2018) and The National Development Plan 2021-2030 (2021)
<ul style="list-style-type: none"> • Green Tenders: An Action Plan on Green Public Procurement 2021
<ul style="list-style-type: none"> • Green Public Procurement Guidance for the Public Sector 2021
<u>Regional</u>
<ul style="list-style-type: none"> • Eastern and Midland Regional Spatial and Economic Strategy 2019-2031
<ul style="list-style-type: none"> • Regional Spatial and Economic Strategy for the Southern Region 2020-2032
<ul style="list-style-type: none"> • Northern and Western Regional Spatial and Economic Strategy 2020-2032
<ul style="list-style-type: none"> • Realising our Rural Potential - Action plan for Rural Development (2018)
<ul style="list-style-type: none"> • County Development Plans
<ul style="list-style-type: none"> • Rural Development Programme 2014-2022
Biodiversity
<u>International</u>
<ul style="list-style-type: none"> • Convention on Biological Diversity (1992)

¹ Not an exhaustive list

Plan, Policy, Programme, Legislation¹
<ul style="list-style-type: none"> Bonn Convention on the Conservation of Migratory Species of Wild Animals (1983)
<ul style="list-style-type: none"> Convention on Wetlands of International Importance (Ramsar Convention) 1971
<ul style="list-style-type: none"> Bern Convention on the Conservation of European Wildlife and Natural Habitats (1979)
<ul style="list-style-type: none"> Convention for the Conservation of Salmon in the North Atlantic Implementation Plan for the period 2019 – 2024
<u>EU</u>
<ul style="list-style-type: none"> Habitats Directive (92/43/EEC) and the Birds Directive (2009/147/EC)
<ul style="list-style-type: none"> European Union Biodiversity Strategy for 2030
<u>National</u>
<ul style="list-style-type: none"> Wildlife (Amendment) Act 2000
<ul style="list-style-type: none"> European Communities (Quality of Salmonid Waters) Regulations, 1988. (S.I. No. 293/1988)
<ul style="list-style-type: none"> National Biodiversity Action Plan 2017-2021 (and subsequent update due in 2022)
<ul style="list-style-type: none"> Prioritised Action Framework 2021-2027 (NPWS)
<ul style="list-style-type: none"> National Raised Bog SAC Management Plan 2017-2022
<ul style="list-style-type: none"> Biodiversity Climate Change Sectoral Adaptation Plan (2019)
<ul style="list-style-type: none"> Guidelines for Assessment of Ecological Impacts of National Roads Schemes (TII)
<ul style="list-style-type: none"> Appropriate Assessment of Plans and Projects in Ireland. Guidelines for Planning Authorities 2009
<ul style="list-style-type: none"> Management plans for Natura 2000 sites
<ul style="list-style-type: none"> All-Ireland Pollinator Plan 2021-2025
Population and Human Health²
<u>International</u>
<ul style="list-style-type: none"> Johannesburg Plan of Implementation 2002
<ul style="list-style-type: none"> Healthy Cities Project (WHO)
<u>National</u>
<ul style="list-style-type: none"> Healthy Ireland: A Framework for Improved Health and Wellbeing 2013 – 2025
<ul style="list-style-type: none"> Healthy Ireland Strategic Action Plan 2021-2025
<ul style="list-style-type: none"> Tourism policy statement “People, Place and Policy – Growing Tourism to 2025
<ul style="list-style-type: none"> Roadmap for Social Inclusion 2020-2025
<ul style="list-style-type: none"> Creating a Green Infrastructure for Ireland- Enhancing Natural Capital for Human Wellbeing 2010
<u>Regional</u>
<ul style="list-style-type: none"> Regional Tourism Strategies
<ul style="list-style-type: none"> Fáilte Ireland Visitor Experience Development Plans
Noise
<u>International</u>
<ul style="list-style-type: none"> WHO Environmental Noise Guidelines 2018

² Interactions across all environmental factors

Plan, Policy, Programme, Legislation¹
<u>EU</u>
<ul style="list-style-type: none"> • Environmental Noise Directive (2002/49/EC)
<u>National</u>
<ul style="list-style-type: none"> • Transport Infrastructure Ireland (TII) Guidelines for the Treatment of Noise and Vibration in National Road Schemes, Revision 1 (TII 2004) • Good Practice Guide for the Treatment of Noise during the Planning of National Road Schemes (hereafter referred to as the TII Noise Guidelines 2014) (TII 2014)
<u>Regional/Local</u>
<ul style="list-style-type: none"> • Noise Action Plans developed by the local authorities across Ireland
Water
<u>International</u>
<ul style="list-style-type: none"> • OSPAR Convention
<u>EU</u>
<ul style="list-style-type: none"> • Water Framework Directive (2000/60/EC) • Marine Strategy Framework Directive (2008/56/EC) • Floods Directive (2007/60/EC) • Urban Wastewater Treatment Directive (91/271/EEC) • Groundwater Directive (2006/118/EC) • Drinking Water Directive (98/83/EC) • Drinking Water Directive Recast (2020/2184) • Surface Water Directive (75/440/EEC) • Shellfish Waters Directive (2006/113/EC) • Bathing Water Directive (2006/7/EC)
<u>National</u>
<ul style="list-style-type: none"> • River Basin Management Plans and Programme of Measures (3rd Cycle DCCAE) 2022-2027 • Project Ireland 2040 - National Marine Planning Framework (2021) • Water Services Strategic Plan A Plan for the Future of Water Services 2015 • National Wastewater Sludge Management Plan • The Planning System and Flood Risk Management, Guidelines for Planning Authorities (2009) • Planning for Watercourses in the Urban Environment - Guidelines (IFI, 2020) • Environmental Guidance: Drainage Maintenance & Construction (OPW, 2019) • Catchment Flood Risk Assessment and Management Programme • Guidelines for the Crossing of Watercourses during the construction of National Road Schemes (NRA/TII) • National Strategic Plan for Sustainable Aquaculture Development to 2020 • National Water Resources Plan - Framework Plan • Capital Investment Plan 2020-2024

Plan, Policy, Programme, Legislation¹
Air Quality
<u>International</u>
<ul style="list-style-type: none"> • WHO Global Air Quality Guidelines 2021
<u>EU</u>
<ul style="list-style-type: none"> • Air Quality Framework Directive 96/62/EC • Ambient Air Quality and Cleaner Air for Europe (CAFÉ) (2008/50/EC) • National Emissions Reduction Commitments (NEC) Directive (2016/2284/EU). Ceilings Regulations 2018 • Industrial Emissions Directive (2010/75/EU) • Commission Regulation (EU) 2017/1151 (regarding Euro 5 and Euro 6 emissions)
<u>National</u>
<ul style="list-style-type: none"> • Air Pollution Act 1987 • Air Pollution Act 1987 (Solid Fuels) Regulations 2022 (S.I. No. 529/2022) • Draft Clean Air Strategy • National Air Pollution Control Programme (NAPCP 2021) • Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Schemes (NRA/TII)
<u>Regional</u>
<ul style="list-style-type: none"> • Dublin Region Air Quality Plan 2021- Air Quality Plan to Improve Nitrogen Dioxide Levels in Dublin Region
Climate
<u>International</u>
<ul style="list-style-type: none"> • The Kyoto Protocol 1997 and the Climate Change Programme (ECCP II) 2005 • Paris Agreement (UNFCCC) 2015 • IPCC Sixth Assessment Report
<u>EU</u>
<ul style="list-style-type: none"> • European Climate Law (Regulation 2021/1119) • LULUCF Regulation (Regulation 2018/841) • Forging a Climate Resilient Europe – A new EU Strategy on Adaption to Climate Change 2021 • The 2030 Climate and Energy Framework
<u>National</u>
<ul style="list-style-type: none"> • Climate Action and Low Carbon Development (Amendment) Act 2021 • The Climate Action Plan 2023 • Developing Resilience to Climate Change in the Irish Transport Sector (DTTAS) 2017 • Ireland's National Energy and Climate Plan 2021-2030 (and subsequent revisions)

Plan, Policy, Programme, Legislation¹
<ul style="list-style-type: none"> National Adaptation Framework (2018)
<u>Regional</u>
<ul style="list-style-type: none"> Just Transition Fourth and Final Progress Report 2021 – December 2021
Material Assets: Waste
<u>EU</u>
<ul style="list-style-type: none"> Waste Framework Directive (2008/98/EC)
<u>National</u>
<ul style="list-style-type: none"> Waste Management Acts 1996-2021 (as amended) Circular Economy, Waste Management (Amendment) and Minerals Development (Amendment) Bill 2022 Waste Action Plan for a Circular Economy – Ireland's National Waste Policy (DECC, 2020) Whole of Government Circular Economy Strategy 2022-2023
<u>Regional</u>
<ul style="list-style-type: none"> Regional Waste Management Plans 2015-2021
Material Assets: Transport
<u>EU</u>
<ul style="list-style-type: none"> The Clean Vehicles Directive (2019/11610) The Fuel Quality Directive (2009/30/EC) Road Infrastructure Safety Management Directive (2008/96/EC) Eurovignette Directive (1999/62/EC) and subsequent revisions Intelligent Transport Systems Directive (2010/40/EU) Trans-European Transport Network (TEN-T) Policy: Regulation (EU) (1315/2013) Ports 2030 – Gateways for the Trans European Transport Network 2014 Sustainable and Smart Mobility Strategy – putting European transport on track for the future 2020 EU White Paper, Roadmap to a Single European Transport Area – Towards a Competitive and Resource Efficient Transport System 2011
<u>National</u>
<ul style="list-style-type: none"> The Roads Act 1993 (as amended) National Investment Framework for Transport in Ireland Integrated Implementation Plan 2019-2024 National Policy Framework on Alternative Fuels Infrastructure for Transport in Ireland 2017-2030 Common Appraisal Framework (DoT) and the Interim NIFTI Alignment Appendix (DoT, 2022) 2030 Rail Network Strategy Rail Freight 2040 Strategy Strategy for the Future Development of National and Regional Greenways 2018 National Ports Policy (DTTAS) 2013 National Sustainable Mobility Policy

Plan, Policy, Programme, Legislation¹
<ul style="list-style-type: none"> National Cycle Manual (NTA) 2011
<ul style="list-style-type: none"> Draft Cycle Connects – Ireland's Cycle Network plan
<ul style="list-style-type: none"> Sectoral Plan for Accessible Transport; Transport Access for All 2012
<ul style="list-style-type: none"> Road Safety Strategy 2021- 2030
<ul style="list-style-type: none"> Spatial Planning and National Roads: Guidelines for Planning Authorities (TII) 2012
<ul style="list-style-type: none"> Urban Design Manual: A Best Practice Guide Design Manual for Urban Roads and Streets (Government of Ireland, 2019)
<ul style="list-style-type: none"> Permeability: A Best Practice Guide (NTA) 2013
<ul style="list-style-type: none"> Achieving Effective Workplace Travel Plans: Guidance for Local Authorities (NTA)
<ul style="list-style-type: none"> Sustainability Implementation Plan Our Future (TII, 2021)
<ul style="list-style-type: none"> Sustainable Mobility TII Position Paper November 2020
<ul style="list-style-type: none"> Strategy for Adapting to Climate Change on Ireland's Light Rail and National Road Network (TII 2017)
<ul style="list-style-type: none"> Climate Adaptation Strategy (TII, 2022)
<ul style="list-style-type: none"> Electrical Vehicle Charging Infrastructure Strategy 2022-2025
<ul style="list-style-type: none"> Environmental Impact Assessment of National Road Schemes – A Practical Guide (TII, 2008)
<ul style="list-style-type: none"> Project Management Guidelines (TII, 2017)
<ul style="list-style-type: none"> Project Manager's Manual for Greenway Projects (TII, 2022)
<u>Regional</u>
<ul style="list-style-type: none"> The Connecting Ireland Rural Mobility Plan
<ul style="list-style-type: none"> Transport Strategy for the Greater Dublin Area 2016-2035
<ul style="list-style-type: none"> Galway Transport Strategy (2016)
<ul style="list-style-type: none"> Cork Metropolitan Area Transport Strategy 2040 (2019)
<ul style="list-style-type: none"> Limerick Shannon Metropolitan Area Transport Strategy 2040
<ul style="list-style-type: none"> Draft Waterford Metropolitan Area Transport Strategy 2020
Material Assets: Energy
<u>EU</u>
<ul style="list-style-type: none"> EU Renewable Energy Directive (2018/2001/EU) and The EU Renewable Energy Directive on the promotion of the use of energy from renewable sources directive (2009/28/EC)
<u>National</u>
<ul style="list-style-type: none"> National Energy Efficiency Action Plan (Fourth) 2017-2020 (DCCAIE)
<ul style="list-style-type: none"> National Renewable Energy Action Plan 2010
<ul style="list-style-type: none"> Draft Bioenergy Plan 2014
<ul style="list-style-type: none"> Towards Nearly Zero Energy Buildings In Ireland - Planning for 2020 and beyond
<ul style="list-style-type: none"> Renewable Energy Plan
<ul style="list-style-type: none"> Renewable Electricity Plan
Material Assets: Agriculture/Forestry

Plan, Policy, Programme, Legislation¹
<u>EU</u>
<ul style="list-style-type: none"> • The Common Agricultural Policy 2023-2027
<u>National</u>
<ul style="list-style-type: none"> • National Peatlands Strategy • Forests, Products and People - Ireland's Forest Policy, a Renewed Vision (2014)
Cultural Heritage including Archaeological and Architectural Heritage
<u>EU</u>
<ul style="list-style-type: none"> • European Convention on the Protection of the Archaeological Heritage, 1992 (the Valletta Convention) • Convention for the Protection of the Architectural Heritage of Europe (Granada 1985)
<u>National</u>
<ul style="list-style-type: none"> • Heritage Act 1995 (as amended) • Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act 1999 • National Monuments Act 1930-2004 • Heritage Ireland 2030 • Places for People the National Policy on Architecture (2022) • Guidelines for Planning Authorities: Architectural Heritage Protection (2004) • Guidelines for the Assessment of Architectural Heritage Impacts of National Road Schemes (NRA/TII, 2005) – under review
Landscape and Visual
<u>EU</u>
<ul style="list-style-type: none"> • European Landscape Convention 2000
<u>National</u>
<ul style="list-style-type: none"> • National Landscape Strategy for Ireland 2015-2025 • Landscape and Landscape Assessment Guidelines 2000 • A Guide to Landscape Treatments for National Road Schemes in Ireland (TII)
Transboundary
<u>International</u>
<ul style="list-style-type: none"> • The Espoo (EIA) Convention
<u>National</u>
<ul style="list-style-type: none"> • Climate Change Act (Northern Ireland) 2022 • Wildlife and Natural Environment Act (NI) 2011 • The Marine and Coastal Access Act 2009 • The Marine Act (Northern Ireland) 2013 • The Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995 (as amended) • The Planning (Environmental Impact Assessment) Regulations (Northern Ireland) 2017

Plan, Policy, Programme, Legislation¹
• The Private Water Supplies Regulations (Northern Ireland) 2017
• The Water and Sewerage Services (Northern Ireland) Order 2006
• The Environment (NI) Order 2002
• The Wildlife (NI) Order 1985 (as amended)
• Biodiversity Strategy for NI to 2020
• Draft Environment Strategy
• The Draft Green Growth Strategy
• Northern Ireland Energy Strategy 2050
• An Integrated Coastal Zone Management Strategy for Northern Ireland 2006- 2026 (2006)
• UK Marine Policy Statement (2011)
• Draft Marine Plan for Northern Ireland (2018)
• Regional Development Strategy: Building a Better Future, 2035
• Strategic Planning Policy Statement for Northern Ireland (SPPS); Planning for Sustainable Development (2015)
• The Draft Northern Ireland Peatland Strategy 2021-2040
• Planning Policy Statements (PPS)
• Draft 3 rd Cycle River Basin Management Plan 2021-2027 Northern Ireland
• Northern Ireland Regional Seascape Character Assessment (2014)
• Climate Risk Independent Assessment 2021

Table A.2 Assessment of cumulative effects with relevant policy/plan/programmes

Plan/Policy Name	Summary of the policy/plan/programme and relevance to NR2040	Assessment of Cumulative Effects
All Aspects/Sustainability		
International		
<p>2030 Agenda for Sustainable Development</p> <p>Rio Declaration and the UN Sustainable Development Goals (1992)</p>	<p>In Rio, Member States launched a process to develop the UN Sustainable Development Goals (SDGs). The 2030 Agenda for Sustainable Development, adopted by all United Nations Member States in 2015, provides a shared blueprint for peace and prosperity for people and the planet, now and into the future. At its heart are the 17 SDGs. These goals represent the UN's policy position regarding sustainable development.</p> <p>Relevance to NR2040:</p> <p>NR2040 aligns with the UN SDGs. Interactions are likely across all SDGs and are identified within the Strategy. NR2040 will support the following SDGs:</p> <p>SDG9: Industry innovation and infrastructure (Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation).</p> <p>SDG 11: Sustainable cities and communities (Make cities and human settlements inclusive, safe, resilient, and sustainable).</p> <p>SDG 13: Climate action (Take urgent action to combat climate change and its impacts).</p>	<p>NR2040 incorporates sustainability into the development of the strategy, likely positive cumulative effects at this strategic level.</p>
<p>Local Agenda 21</p>	<p>Local Agenda 21 aims to promote sustainable development at local and regional levels.</p> <p>Relevance to NR2040:</p> <p>NR2040 incorporates sustainability as a commitment, this includes environmental social and economic sustainability. As a result, this aligns with the sustainable development principles established by Agenda 21.</p>	
<p>Kyiv (SEA) Protocol</p>	<p>The Kyiv Protocol entered into force in July 2010 and develops further from the Espoo Convention (which sets out the obligations of Parties to assess the environmental impact of certain activities at an early stage of planning) to ensure that individual parties integrate environmental assessment into respective plans and programmes at the earliest stage. The Protocol requires its Parties to evaluate the environmental consequences of their official draft plans and programmes.</p>	<p>An SEA is being undertaken on NR2040. Any subsequent plans/projects arising from NR2040 will be required to comply with all relevant EU Directives and transposing legislation as required. Therefore, no likely significant cumulative effects are perceived at this strategic level.</p>
EU		
<p>EIA Directive (2011/92/EU as amended by 2014/52/EU)</p>	<p>EIA Directive 2014/52/EU amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment (Environmental Impact Assessment Directive) transposed by European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018</p>	<p>Any subsequent projects arising from NR2040 will be required to comply with all relevant EU Directives and</p>

Plan/Policy Name	Summary of the policy/plan/programme and relevance to NR2040	Assessment of Cumulative Effects
	<p>(S.I. No. 296 of 2018). The EIA Directive aims to ensure a high level of environmental protection and that environmental considerations are integrated into the preparation and consideration of projects at planning stage.</p> <p>It applies to a wide range of defined public and private projects, which are defined in Annexes I and II of the EIA Directive: All projects listed in Annex I require a mandatory EIA due to their potential to have significant effects on the environment (e.g., long-distance railway lines, motorways and express roads, airports, nuclear installations, wastewater treatment plants, etc.). For projects listed in Annex II, the national authorities must decide whether an EIA is needed. This is achieved by the "screening procedure", which determines the effects of projects on the basis of thresholds/criteria or a case by case examination. However, the national authorities must take into account the criteria laid down in Annex III of the EIA Directive.</p>	<p>transposing legislation as required at project level. Therefore, no likely significant cumulative effects are perceived at this strategic level.</p>
SEA Directive (2001/42/EC)	<p>The SEA Directive - Directive 2001/42/EC on the Assessment of the Effects of Certain Plans and Programmes on the Environment transposed by: European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations 2004, S.I. No. 435 of 2004 and Planning and Development (Strategic Environmental Assessment) Regulations 2004, S.I. No. 436 of 2004, requires an environmental assessment to be carried out of certain plans and programmes which are likely to have significant effects on the environment. Eleven sectors are specified in the SEA Directive namely:</p> <ul style="list-style-type: none"> Plans prepared for agriculture, forestry, fisheries, energy, industry, transport, waste/ water management, telecommunications, tourism, town & country planning or land use and which set the framework for future development consent of projects listed in the EIA Directive; or, <p>For plans and programmes not included above, competent authorities shall carry out a screening procedure which is based on criteria set out in Annex II of the SEA Directive to determine whether the plans and programmes are likely to have significant environmental effects.</p>	<p>An SEA is being undertaken on NR2040. Any subsequent plans/projects arising from NR2040 will be required to comply with all relevant EU Directives and transposing legislation as required. Therefore, no likely significant cumulative effects are perceived at this strategic level.</p>
Environmental Liability Directive (2004/35/EC)	<p>Environmental Liability Directive on Environmental Liability with regard to the Prevention and Remedying of Environmental Damage (ELD) (2004/35/EC) transposed by The European Communities (Environmental Liability) Regulations, 2008 (S.I. No. 547 of 2008) establishes a framework of environmental liability, based on the "polluter-pays" principle, to prevent and remedy environmental damage. The Directive defines "environmental damage" as damage to protected species and natural habitats, damage to water and damage to soil which poses a threat to human health.</p>	<p>NR2040 will be required to comply with all relevant EU Directives and transposing legislation as required. Therefore, no likely significant cumulative effects are perceived at this strategic level.</p>
<p>EU Sustainable Development Strategy 2006</p> <p>Europe 2020: A strategy for smart, sustainable and inclusive growth</p>	<p>The EU Sustainable Development Strategy 2006 and Europe 2020: A strategy for smart, sustainable and inclusive growth are key EU sustainable development strategies guiding sustainable development in Member States. The EU Sustainable Development Strategy 2006 integrates guiding principles for sustainable development into a single framework. It aims to tackle the principal sustainable development challenges facing the EU such as climate change and green energy, sustainable transport, and sustainable consumption and production.</p> <p>Europe 2020 sets out a vision of Europe's social market economy for the 21st century aiming to turn EU into a smart, sustainable and inclusive economy delivering high levels of employment, productivity and social cohesion.</p>	<p>There is potential for positive cumulative effects resulting from implementation of NR2040 and these strategies. No likely significant negative cumulative effects are perceived at this strategic level.</p>

Plan/Policy Name	Summary of the policy/plan/programme and relevance to NR2040	Assessment of Cumulative Effects
	<p>Relevance to NR2040: NR2040 incorporates sustainability and aligns with the EU's Sustainable Development Strategy and Europe 2020: A strategy for smart, sustainable and inclusive growth.</p>	
<p>European Transport Policy for 2010: Time to Decide - White Paper. COM (2001) 370 final, 12 September 2001</p>	<p>In September 2001, the European Commission adopted the Transport Policy White Paper [COM (2001)370], proposing an action plan aimed at substantial improvements in the quality and efficiency of transport in Europe by 2010. The White Paper aims to shift the balance between modes of transport to an environment-friendly mix and the removal of bottlenecks by revitalising the railways, promoting maritime and inland-waterway transport, and linking up the different modes of transport. Modal shares should be restored to 1998 levels by 2010. The White Paper proposes approximately 60 specific measures, to be implemented at community level under the transport policy some of which would lead to substantial reductions in energy consumption and CO₂ emissions.</p> <p>Relevance to NR2040: NR2040 incorporates safe and efficient transport networks and sustainability into the Strategy which aligns with 'Time to Decide' through the focus on sustainable and efficient transport.</p>	<p>There is potential for positive cumulative effects resulting from implementation of NR2040 and this White Paper. No likely significant negative cumulative effects are perceived at this strategic level.</p>
<p>European Green Deal (European Commission, 2020)</p>	<p>The European Green Deal is a set of policy initiatives by the European Commission with the overarching aim of making the European Union (EU) climate neutral by 2050. The European Green Deal covers all sectors of the economy, notably transport, energy, agriculture, buildings, and industries such as steel, cement, ICT, textiles and chemicals.</p> <p>Transport in the EU contributes roughly 5% to the EU GDP and currently, transport emissions represent around 25% of the EU's total greenhouse gas emissions. While being critical, transport must adapt to become far more efficient in its resource use as per the 2030 climate & energy framework. The EU aims to reduce the transport related emissions by 90% from 1990 levels by the year 2050. The intermediary target of a 55% reduction by the year 2030 was also set.</p> <p>The European Green Deal commits to review each existing law on its climate merits, and introduce new legislation on the circular economy, building renovation, biodiversity, farming, and innovation. The overarching aim of the European Green Deal is for the EU to become the world's first "<i>climate-neutral bloc</i>" by 2050. It aims to transform the EU into a modern, resource-efficient, and competitive economy, ensuring:</p> <ul style="list-style-type: none"> • No net emissions of greenhouse gases by 2050. • Economic growth decoupled from resource use. • No person and no place left behind. <p>Relevance to NR2040: Transport policy areas in the European Green Deal include sustainable mobility which commits to a reduction in transport emissions and support for the adoption of alternative transport solutions including alternative fuels, smart traffic management systems and the single European sky initiative. NR2040 aligns with these transport and climate policies.</p>	<p>There is potential for positive cumulative effects resulting from implementation of NR2040 and the European Green Deal. No likely significant negative cumulative effects are perceived at this strategic level.</p>

Plan/Policy Name	Summary of the policy/plan/programme and relevance to NR2040	Assessment of Cumulative Effects
<p>EU 8th Environmental Action Programme 2020-2030</p>	<p>The European Commission published its 8th Environmental Action Programme (EAP) in 2020 which will guide environmental policy to 2030 and builds on the long-term objective identified in the 7th EAP to “<i>live well, within the planetary boundaries</i>” by 2050 at the latest. The proposal for an 8th EAP aims to accelerate the transition to a climate-neutral, resource-efficient, and regenerative economy, which gives back to the planet more than it takes. It recognises that human wellbeing and prosperity depend on the healthy ecosystems within which we operate. Building on the European Green Deal, it has the following six priority objectives: for the period up to 2030:</p> <ol style="list-style-type: none"> 1. Achieving the 2030 greenhouse gas emission reduction targets, in line with the Union’s climate and environment objectives. 2. Enhancing and mainstreaming adaptive capacity, strengthening resilience and adaptation, and reducing the vulnerability of the environment, society and all sectors of the economy to climate change. 3. Advancing towards a well-being economy, accelerating the transition to circular economy, where growth is regenerative, resources are used efficiently and sustainably, and the waste hierarchy is applied. 4. Pursuing a zero-pollution ambition, including for air, water and soil, and protecting the health and well-being of people, animals and ecosystems from environment-related risks and negative impacts. 5. Protecting, preserving, and restoring marine and terrestrial biodiversity, and improving the state of the environment (notably air, water, soil, and forest, freshwater, wetland, and marine ecosystems). 6. Promoting environmental aspects of sustainability and significantly reducing key environmental and climate pressures related to the Union’s production and consumption (particularly in the areas of energy, industrial development, buildings, and infrastructure, mobility, and the food system). <p>Relevance to NR2040: NR2040 supports the 8th EAP through targeting areas of decarbonisation, sustainability climate resilience, etc.</p>	<p>There is potential for positive cumulative effects resulting from implementation of NR2040 and this programme. No likely significant negative cumulative effects are perceived at this strategic level.</p>
<p>The EU Zero Pollution Action Plan</p>	<p>The Zero Pollution Action Plan was adopted in May 2021 and focuses on supporting a key deliverable of the European Green Deal, which is the achieving of zero pollution for air, water, and soil by 2050. Key targets to be achieved by 2030 have been set which include:</p> <ul style="list-style-type: none"> • improving air quality to reduce the number of premature deaths caused by air pollution by 55%; • reducing the share of people chronically disturbed by transport noise by 30%; and, • improving water quality by reducing waste, plastic litter at sea (by 50%) and microplastics released into the environment (by 30%). <p>Relevance to NR2040: NR2040 supports the EU Zero Pollution Action Plan through targeting areas of decarbonisation, sustainability climate resilience, etc.</p>	<p>There is potential for positive cumulative effects resulting from implementation of NR2040 and this programme. No likely significant negative cumulative effects are perceived at this strategic level.</p>
<p>National</p>		

Plan/Policy Name	Summary of the policy/plan/programme and relevance to NR2040	Assessment of Cumulative Effects
<p>Planning and Development Act 2000 (as amended) and the Planning and Development Regulations 2001 (as amended)</p>	<p>The Planning and Development Act 2000 (as amended) forms the foundations of planning in Ireland. The Act covers a wide range of planning-related issues and combines a wide range of legislation in one place. It establishes a hierarchy in relation to planning system both in the forward planning and development management (development consent) processes. It provides a statutory basis for protecting the natural and built environment. It sets out details regarding the considerations for making of the national, regional (RSES), and Development Plans and Local Area Plans including the requirements for SEA, EIA, and AA, as appropriate. The County Development Plans represent the county planning policy which must be consistent with higher level plans in the planning policy hierarchy.</p> <p>The principal regulations underpinning the Planning and Development Act is the Planning and Development Regulations 2001 (as amended).</p>	<p>NR2040 will be required to comply with all relevant legislation, as required. No likely significant cumulative effects are perceived at this strategic level.</p>
<p>Our Sustainable Future, a Framework for Sustainable Development for Ireland (2012)</p>	<p>The Framework for Sustainable Development for Ireland sets out 70 measures to improve the quality of life in Ireland for the current and future generations. The Framework sets out clear measures, responsibilities, and timelines in an implementation plan. These include areas such as the sustainability of public finances and economic resilience, natural resources, agriculture, climate change, transport, public health, education, innovation and research, education, skills and training, and global poverty.</p> <p>Relevance to NR2040: NR2040 promotes sustainability and aligns with the Framework for Sustainable Development.</p>	<p>There is potential for positive cumulative effects resulting from implementation of NR2040 and this framework.</p> <p>No likely significant negative cumulative effects are perceived at this strategic level.</p>
<p>Building on Recovery; Infrastructure and Capital Investment 2016-2021</p>	<p>The Infrastructure and Capital Investment Plan presents the Government's framework for infrastructure investment in Ireland over the period 2016-2021. The Plan prioritises spending on those areas of greatest need as the economy continues its strong recovery. The Infrastructure and Capital Investment plan provides for investment in 'vital services' such as 'public transport' and is striving to manage the <i>"increasing public expenditure in a sustainable manner, in line with economic growth"</i>.</p> <p>Relevance to NR2040: NR2040 is aligned with the Infrastructure and Capital Investment Plan</p>	<p>There is potential for positive cumulative effects resulting from implementation of NR2040 and this plan.</p> <p>No likely significant negative cumulative effects are perceived at this strategic level.</p>
<p>'Project Ireland 2040': The National Planning Framework 2040 (2018) The National Development Plan 2021-2030 (2021)</p>	<p>Project Ireland 2040 is the government's long-term overarching strategy to make Ireland a better country for all and to build a more resilient and sustainable future. Project Ireland 2040 incorporates both the National Planning Framework (NPF) and the National Development Plan (NDP). The NPF succeeds the National Spatial Strategy and unlike its predecessor will have a statutory basis. This Government's long-term strategic planning framework will guide national, regional, and local planning and investment decisions to 2040. The major public investment approved by Government and detailed in the NDP will play a significant role in addressing the opportunities and challenges faced by Ireland over the coming years from issues such as Covid-19, Brexit, housing, health, climate action and the population projected to grow by one million people between 2016 and 2040.</p> <p>Relevance to NR2040: A number of actions have been identified in the NPF and the NDP for National Roads which have been included under the following NSOs:</p> <ul style="list-style-type: none"> • NSO 1 Compact Growth. 	<p>Project Ireland 2040 and NR2040 are strategic planning documents, any subsequent projects arising from these plans will be required to comply with all relevant legislation at project level, including any required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate and these assessments will consider cumulative effects at that level. No likely significant cumulative effects are perceived at this strategic level.</p>

Plan/Policy Name	Summary of the policy/plan/programme and relevance to NR2040	Assessment of Cumulative Effects
	<ul style="list-style-type: none"> • NSO 2 Enhanced Regional Accessibility. • NSO 3 Strengthened Rural Economies and Communities. • NSO 4 Sustainable Mobility. • NSO 6 High Quality International Connectivity. • NSO 8 Transition to a Climate-Neutral and Climate-Resilient Society. <p>NR2040 is aligned with the NPF and support its delivery as appropriate.</p>	
<p>Green Tenders: An Action Plan on Green Public Procurement 2021</p>	<p>Green Tenders, an Action Plan on Green Public Procurement (GPP), is the first such Action Plan to be introduced in Ireland. Its overall objective is to assist public authorities to successfully plan and implement GPP by highlighting existing best-practice and outlining further actions to boost green public procurement. GPP is a process where public authorities seek to source goods, services or works with a reduced environmental impact. The Government of Ireland's annual public sector purchasing accounts for 10% to 12% of Ireland's GDP, a large part of economic activity and demand. This provides Ireland's public sector with significant influence to stimulate the provision of more resource-efficient, less polluting goods, services and works within the marketplace.</p> <p>Relevance to NR2040:</p> <p>Construction and transport were two of the eight priority product/service groups for green public procurement identified in Green Tenders: An Action Plan for Green Public Procurement. Both product/service group areas are relevant to NR2040 as a National Roads strategy.</p>	<p>No likely significant cumulative effects are perceived at this strategic level.</p>
<p>Green Public Procurement Guidance for the Public Sector 2021</p>	<p>Ireland has committed to implementing Green Public Procurement (GPP) in all tenders using public funds by 2023. This will require a major shift in the practices of public bodies and the businesses they contract with. The second edition of the EPA Green Public Procurement Guidance supports this transition by providing:</p> <ul style="list-style-type: none"> • Clear summaries of the policy and legislation underlying GPP in Ireland and the EU. • Explanation of the links between GPP and the circular economy, including under Ireland's Waste Action Plan for a Circular Economy 2020-2025. • Detailed information on the legal and organisational context for GPP, including the EU Procurement Directives and best practice from across Europe. • Step-by-step advice for each stage of the procurement process, from needs assessment and market engagement through to contract management. • Overviews of the GPP approach for ten priority sectors which account for the largest environmental and economic impacts of public procurement. • Links to further resources and legislation for each of the priority sectors; and • Checklists to assist with GPP implementation. • Road transport, vehicles, and services represent a priority sector identified in the guidance document. <p>Relevance to NR2040:</p>	<p>No likely significant cumulative effects are perceived at this strategic level.</p>

Plan/Policy Name	Summary of the policy/plan/programme and relevance to NR2040	Assessment of Cumulative Effects
	Road transport vehicles and services were identified as one of the ten Green Public Procurement priority sectors for investment. Similarly, the guidance has implications for construction and the management of waste which is relevant to the NR2040 strategy and its subsequent projects.	
Regional		
Eastern and Midland Regional Spatial and Economic Strategy 2019-2031	Under the Local Government Reform Act 2014, the Regional Assemblies assumed several new functions - chief among these is the preparation and implementation of a Regional Spatial and Economic Strategy (RSES) for the respective Regions of Ireland; Eastern, Midland, Southern, Northern and Western regions. The RSES sets out the strategic regional development framework for the Region, with a primary aim to implement Project Ireland 2040 - the National Planning Framework, at the regional tier of Government and to support the achievement of balanced regional development. The Planning and Development Act 2000 (as amended) requires that all City & County Development Plans and variations are consistent with the RSES and relevant national policy, with draft development plans or proposed variations to development plans referred by the relevant local authority to the Regional Assembly. Relevance to NR2040: RSES and NR2040 are both aligned and support the implementation of Project Ireland 2040. Such alignment supports mutual implementation.	Any subsequent projects arising out of NR2040 and the RSESs will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/ AA/SFRA as appropriate and those assessments will be required to consider cumulative effects at that level. No likely significant cumulative effects are perceived at this strategic level.
Regional Spatial and Economic Strategy for the Southern Region 2020-2032		
Northern and Western Regional Spatial and Economic Strategy 2020-2032		
Realising our Rural Potential - Action Plan for Rural Development (2018)	This Action Plan for Sustainable Rural Development prepared by the Department of Rural and Community Development includes the need to protect and improve vital services in rural Ireland by improving rural transport provision. The actions are broken down across five thematic pillars: <ul style="list-style-type: none"> • Pillar 1: Supporting Sustainable Communities • Pillar 2: Supporting Enterprise and Employment • Pillar 3: Maximizing Rural Tourism and Recreation Potential • Pillar 4: Fostering Culture and Creativity in rural communities • Pillar 5: Improving Rural Infrastructure and Connectivity. This Fourth Progress Report outlines the progress which has taken place in relation to all the actions in the Plan, focusing on activity between July and December 2018. Of the 277 actions reported on, 269 have been completed or are substantially advanced, and 5 actions were closed. 3 actions due for delivery are delayed. Relevance to NR2040: NR2040 recognises that integrated mobility is key to an inclusive, well connected, and sustainable transport system and must be facilitated through the National Roads network. As a result, the NR2040 aligns with actions identified in the Realising our Rural Potential - Action Plan for Rural Development.	There is potential for positive cumulative effects resulting from implementation of NR2040 and this plan. No likely significant negative cumulative effects are perceived at this strategic level.
County Development Plans	The County Development Plans set out policies and objectives for the development of each county over the six year plan period. Development plans are required to be compatible with higher level national and	There is potential for positive and negative cumulative effects affecting all EPS particularly on biodiversity,

Plan/Policy Name	Summary of the policy/plan/programme and relevance to NR2040	Assessment of Cumulative Effects
	<p>regional planning strategies (most notably with the NPF, RSES). The Development Plans contain policies and objectives related to many environmental aspects including road transport.</p> <p>Relevance to NR2040: County Development plans represent the strategic level planning mechanism for implementing strategies such as NR2040.</p>	<p>landscape, cultural heritage, geological features, air quality, climate, noise and water quality arising from infrastructure development works impacting upon the same receptors or occurring at the same time.</p> <p>Projects stemming from NR2040 will be required to comply with all relevant EU Directives, transposing legislation and local planning policy as required at project level. Therefore, no likely significant cumulative effects are perceived at this strategic level.</p>
<p>Rural Development Programme 2014-2022</p>	<p>The Rural Development Programme for Ireland was formally adopted by the European Commission in 2015 and is part of the Common Agricultural Policy. The programme details how funds will be allocated over the 9-year period to support development in rural areas.</p> <p>Relevance to NR2040: Agriculture, energy and transport sectors are the biggest contributors to greenhouse gas emissions. The Programme recognises that there are particular viability challenges for the rural and particularly agricultural sector due to transport costs, isolation and high infrastructure costs which affects rural development and viability of staying on farms in the countryside. NR2040 recognises that supporting rural mobility is key to an inclusive, well connected, and sustainable transport system and must be maintained through the National Roads network. NR2040 aligns with the Rural Development Programme.</p>	<p>There is potential for positive cumulative effects resulting from implementation of NR2040 and this programme. No likely significant negative cumulative effects are perceived at this strategic level.</p>
Biodiversity		
International		
<p>Convention on Biological Diversity (1992)</p>	<p>The Convention on Biological Diversity (CBD) stems from the growing recognition that biological diversity is an asset of tremendous value to present and future generations across the world. The United Nations Environment Programme (UNEP) tasked experts to prepare an international legal instrument for the conservation and sustainable use of biological diversity. They were to consider <i>"the need to share costs and benefits between developed and developing countries"</i> as well as <i>"ways and means to support innovation by local people"</i>. The text of the Convention was adopted on 22 May 1992 in Nairobi and was opened to signature on 5 June 1992, during the Rio "Earth Summit". Within a year, it had received 168 signatures. It entered into force on 29 December 1993. The CBD meets every two years. Its website offers more information about the CBD and how it works, as well as all the available documents, for every meeting since the first Conference of the Parties. In accordance with Article 6 of the Convention, parties have to develop national biodiversity strategies or action plans (NBSAPs).</p>	<p>NR2040 will be required to comply with all relevant legislation, as required. No likely significant cumulative effects are perceived at this strategic level.</p>

Plan/Policy Name	Summary of the policy/plan/programme and relevance to NR2040	Assessment of Cumulative Effects
Bonn Convention on the Conservation of Migratory Species of Wild Animals (1983)	The Convention on the Conservation of Migratory Species of Wild Animals (also known as CMS or the Bonn Convention) aims to conserve terrestrial, marine and avian migratory species throughout their range. It is one of a small number of intergovernmental treaties concerned with the conservation of wildlife and wildlife habitats on a global scale. Since the Convention entered into force on 1 November 1983, its membership has grown steadily to include 80 (as of 1 September 2002) Parties from Africa, Central and South America, Asia, Europe, and Oceania.	NR2040 will be required to comply with all relevant legislation, as required. No likely significant cumulative effects are perceived at this strategic level.
Convention on Wetlands of International Importance (Ramsar Convention) 1971	The Convention on Wetlands, signed in Ramsar, Iran, in 1971, is an intergovernmental treaty, which provides the framework for national action and international cooperation for the conservation and appropriate use of wetlands and their resources.	NR2040 will be required to comply with all relevant legislation, as required. No likely significant cumulative effects are perceived at this strategic level.
Bern Convention on the Conservation of European Wildlife and Natural Habitats (1979)	The Bern Convention aims to ensure conservation of wild flora and fauna species and their habitats. Special attention is given to endangered and vulnerable species, including endangered and vulnerable migratory species specified in appendices to the Convention. The Parties commit to take all appropriate measures to ensure the conservation of the habitats of the wild flora and fauna species. Such measures should be included in the parties' planning and development policies and pollution control, with particular attention to the conservation of wild flora and fauna. The Parties undertake to promote education and disseminate general information concerning the need to conserve species of wild flora and fauna and their habitats. The Convention establishes a Standing Committee on which the parties are represented by their delegates. The Committee's principal task is to monitor the provisions of this Convention in the light of development of the wild flora and the assessment of its needs. For this purpose, the Standing Committee is especially competent to make recommendations to the Parties and amendments to the appendices where these protected species are specified.	NR2040 will be required to comply with all relevant legislation, as required. No likely significant cumulative effects are perceived at this strategic level.
Convention for the Conservation of Salmon in the North Atlantic Implementation Plan for the period 2019 – 2024	The North Atlantic Salmon Conservation Organisation (NASCO) was established by the Convention for the Conservation of Salmon in the North Atlantic Ocean in 1984. NASCO's objective is to conserve, restore, enhance and rationally manage Atlantic salmon through cooperation of six Governments and the European Union. Implementation plans are prepared by each jurisdiction to demonstrate what actions are being taken by the parties to implement NASCO's resolutions, agreements and guidelines.	NR2040 will be required to comply with all relevant legislation, as required. No likely significant cumulative effects are perceived at this strategic level.
EU		
Habitats Directive (92/43/EEC) and the Birds Directive (2009/147/EC)	The Habitats Directive (92/43/EEC) and The Birds Directive (2009/147/EC) transposed through Part XAB of the Planning and Development Act 2000 (as amended) and the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011) as amended. Adopted in 1992, the Habitats Directive on the conservation of natural habitats and of wild fauna and flora aims to promote the maintenance of biodiversity, taking account of economic, social, cultural, and regional requirements. It forms the cornerstone of Europe's nature conservation policy with the Birds Directive and establishes the EU wide Natura 2000 ecological network of protected areas, safeguarded against potentially damaging developments.	Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate. No likely significant cumulative effects are perceived at this strategic level.

Plan/Policy Name	Summary of the policy/plan/programme and relevance to NR2040	Assessment of Cumulative Effects
	<p>Concerned with the decline of migratory and wild birds, Member States unanimously adopted Directive 79/409/EEC (Bird Directive) in April 1979. It is the oldest piece of EU legislation on the environment. Habitat loss and degradation are the most serious threats to the conservation of wild birds. The Birds Directive therefore places great emphasis on the protection of habitats for endangered and migratory species. It establishes a network of Special Protection Areas (SPAs) including the most suitable territories for these species. Since 1994, all SPAs are included in the Natura 2000 ecological network, set up under the Habitats Directive 92/43/EEC. The Birds and Habitats Directives have had to evolve to reflect successive enlargements of the European Union. The Birds Directive provides a common framework for the conservation of naturally occurring species of wild birds and their habitats throughout the EU. It obligates EU states to preserve, maintain and re-establish sufficient areas in order to safeguard the habitats of listed migratory and wetland species in order to ensure their survival and reproduction in their area of distribution.</p>	
<p>European Union Biodiversity Strategy for 2030</p>	<p>The EU's Biodiversity Strategy for 2030 is a comprehensive, ambitious, and long-term plan to protect nature and reverse the degradation of ecosystems. The Strategy aims to put Europe's biodiversity on a path to recovery by 2030 and contains specific actions and commitments. It is the proposal for the EU's contribution to the upcoming international negotiations on the global post-2020 biodiversity framework. A core part of the European Green Deal, it will also support a green recovery following the Covid-19 pandemic.</p> <p>Relevance to NR2040</p> <p>There is potential for some of the projects arising from the NR2040 to impact on sites of biodiversity significance. These projects will consider the specific actions and commitments from the Strategy as appropriate. Projects will also be required to undertake the required environmental assessments as appropriate.</p>	<p>No likely significant cumulative effects are perceived at this strategic level.</p>
National		
<p>Wildlife (Amendment) Act 2000</p>	<p>The Wildlife (Amendment) Act 2000 supersedes the Wildlife Act 1976 as the principal National legislation provided for the protection of wildlife and the control of activities that may adversely affect wildlife.</p>	<p>NR2040 will be required to comply with all relevant legislation, as required. No likely significant cumulative effects are perceived at this strategic level.</p>
<p>European Communities (Quality of Salmonid Waters) Regulations, 1988. (S.I. No. 293/1988)</p>	<p>The European Communities (Quality of Salmonid Waters) regulations, S.I. No 84 of 1988 defines freshwaters as being waters capable of supporting Salmon (<i>Salmo Salar</i>), Trout (<i>Salmo trutta</i>), Char (<i>Salvelinus</i>) and whitefish (<i>Coregonus</i>) and are hereby designated as Salmonid waters. A local authority shall carry out or cause to be carried out, sampling of Salmonid waters in its functional area in respect of the parameters specified in the second schedule of the 1988 regulation. The European commission oversees Member State's policies in this area. In Ireland the Department of the Environment and local Government is responsible for making designations which the local authorities implement.</p>	<p>NR2040 will be required to comply with all relevant legislation, as required. No likely significant cumulative effects are perceived at this strategic level.</p>

Plan/Policy Name	Summary of the policy/plan/programme and relevance to NR2040	Assessment of Cumulative Effects
<p>National Biodiversity Action Plan 2017-2021 (and subsequent update due in 2022)</p>	<p>This 2017-2021 Biodiversity Action Plan is the 3rd edition of the Biodiversity Action Plan and establishes actions that can aid in achieving Ireland's vision for biodiversity. There are 7 strategic objectives included in the plan such as:</p> <ol style="list-style-type: none"> 1. Mainstreaming biodiversity across the decision-making process in the State. 2. Strengthening the knowledge base underpinning work on biodiversity issues. 3. Increasing public awareness and participation. 4. Ensuring conservation of biodiversity in the wider countryside. 5. Ensuring conservation of biodiversity in the marine environment. 6. Expanding and improving on the management of protected areas and protected species. 7. Enhancing the contribution to international biodiversity issues. <p>The next edition of the Biodiversity Action Plan is currently being reviewed.</p> <p>Relevance to NR2040:</p> <p>There is potential for projects arising from the implementation of NR2040 to impact on biodiversity. These projects will undergo the required environmental assessments as appropriate.</p>	<p>There is potential positive and/or negative cumulative effects on biodiversity that may arise from the implementation of NR2040 with the Action Plan. Projects stemming from NR2040. Impacts on biodiversity may result due to the construction, operation and/or maintenance of the National Roads network which may affect biodiversity due to direct and/or indirect effects resulting in habitats loss, fragmentation, or disturbance to species. Biodiversity may also be impacted due to indirect effects such as changes in traffic (increase or decrease) which may influence collision rates e.g. birds, mammals, etc. and indirect effects due to impacts on water quality, noise and air quality on which could affect habitats and species along the network.</p> <p>Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate. No likely significant cumulative effects are perceived at this strategic level.</p>
<p>Prioritised Action Framework 2021-2027 (NPWS)</p>	<p>The Prioritised Action Framework 2021-2027 for Ireland has been informed by reports on: the 'Status of EU Protected Habitats and Species in Ireland' submitted in 2019 to the European Commission, under Article 17 of the Habitats Directive, and on the 'Status of Birds in Ireland', submitted in 2019 to the European Commission, under Article 12 of the Birds Directive. Prioritised Action Frameworks (PAFs) are strategic multiannual planning tools, aimed at providing a comprehensive overview of the measures that are needed to implement the EU-wide Natura 2000 network and its associated green infrastructure, specifying the financing needs for these measures and linking them to the corresponding EU funding programmes.</p>	<p>Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate. No likely significant cumulative effects are perceived at this strategic level.</p>

Plan/Policy Name	Summary of the policy/plan/programme and relevance to NR2040	Assessment of Cumulative Effects
National Raised Bog SAC Management Plan 2017-2022	<p>The National Raised Bog Special Areas of Conservation (SACs) Management Plan 2017 - 2022 sets out a roadmap for the long-term management, restoration, and conservation of protected raised bogs in Ireland. This Plan was published on 21 December 2017. The Plan strikes an appropriate balance between the need to conserve and restore Ireland's raised bog network and the needs of stakeholders and gives recognition to the important role that communities must play in the conservation and restoration of raised bogs. The National Raised Bog Special Areas of Conservation (SACs) Management Plan 2017-2022 is part of the measures being implemented in response to the on-going infringement action against Ireland in relation to the implementation of the EU Habitats Directive, regarding the regulation of turf cutting on the SACs and on foot of the recommendation of Mr. Justice Quirke that a National Raised Bog SAC Management Plan be drawn up, arising from the Peatlands Forum (2012). Subsequently, Dáil Éireann unanimously supported the recommendation for a national plan to be put in place for Ireland's protected raised bogs.</p>	<p>No likely significant cumulative effects are perceived at this strategic level.</p> <p>Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate. No likely significant cumulative effects are perceived at this strategic level.</p>
Biodiversity Climate Change Sectoral Adaptation Plan (2019)	<p>The Biodiversity Climate Change Sectoral Adaptation Plan considers terrestrial, freshwater, and marine biodiversity and ecosystem services. The goal is to protect biodiversity from the effects of climate change and to conserve and manage ecosystems so that they deliver services that increase the adaptive capacity of people and biodiversity. This is achieved by identifying adaptation options that will help to protect biodiversity and ecosystem services from the effects of changing climate.</p> <p>Relevance to NR2040:</p> <p>There is potential for NR2040 to influence climate change and in turn affect biodiversity. The Plan can help inform projects adaptation options that will help protect biodiversity and ecosystem services from the effects of changing climate. These projects will undergo the required environmental assessments as appropriate.</p>	<p>There are potential positive or negative cumulative effects on biodiversity, water quality, climate and air quality.</p> <p>Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate. No likely significant cumulative effects are perceived at this strategic level.</p>
Guidelines for Assessment of Ecological Impacts of National Roads Schemes (TII)	<p>The aim of the Guidelines for Assessment of Ecological Impacts of National Road Schemes is to provide guidance on the assessment of impacts on the natural environment during the planning and design of national road schemes. It elaborates on the references to ecology (habitats, flora and fauna) contained in the National Roads Project Management Guidelines, which provides the overall framework for managing the planning and design of national road schemes. In particular, the guidelines expand on the ecological work to be undertaken at the Constraints Study phase, Route Corridor Selection phase and the subsequent preparation of the Environmental Impact Statement (EIS). This document was revised in 2009 to align it with changes in legislative, best practice and policy requirements with regard to Ecological Impact Assessment arising since the previous revision in March, 2006. With regard to best practice and policy requirements the revisions take account of the procedure for the ecological component of EIA laid down in the Institute of Ecology and Environmental Management's (IEEM) (2006) Guidelines for Ecological Impact Assessment in the United Kingdom. These Guidelines have also been revised to synchronise them with the supplementary guidance document: the NRA's Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes published in 2008. With regard to legislative requirements, the Guidelines provide more detailed information on certain</p>	<p>Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate. No likely significant cumulative effects are perceived at this strategic level.</p>

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	<p>relevant environmental law provisions, including: Regulations 25 and 30/33 of the Habitats Regulations, 1997; Articles 6(3) and 6(4) of the Habitats Directive; and the Environmental Liability Directive.</p> <p>Relevance to NR2040:</p> <p>Projects arising from the NR2040 will be required to have regard to the Guidelines for Assessment of Ecological Impacts of National Roads Schemes (TII) as appropriate.</p>	
<p>Appropriate Assessment of Plans and Projects in Ireland. Guidelines for Planning Authorities 2009</p>	<p>The Guidelines are intended to assist and guide local and planning authorities in the application of Article 6(3) and 6(4) of the Habitats Directive as it relates to their roles, functions, and responsibilities in undertaking AA of plans and projects. It explains the concepts, tests and steps involved in the assessment procedure, the provisions of which are the primary mechanism for ensuring the protection of Natura 2000 sites and their conservation objectives when considering whether to authorise or adopt a plan or project. Natura 2000 sites in Ireland are European sites, including SPAs, and SACs.</p> <p>Relevance to NR2040:</p> <p>Projects arising from the NR2040 will be required to have regard to have regard to the Appropriate Assessment of Plans and Projects in Ireland. Guidelines for Planning Authorities 2009 as appropriate.</p>	<p>Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate. No likely significant cumulative effects are perceived at this strategic level.</p>
<p>Management Plans for Natura 2000 sites</p>	<p>Natura 2000 sites are designated sites that receive protection due to the biodiversity that they support. To ensure the survival, support the enhancement and protect against deleterious impacts on Natura 2000 sites, management plans and conservation objectives for respective natura 2000 sites must be developed to ensure ecological protection.</p> <p>Relevance to NR2040:</p> <p>There is potential for some of the projects arising from the NR2040 to impact on Natura 2000 site. These projects will undertake AA Screening and any other required environmental assessments as appropriate.</p>	<p>Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate. No likely significant cumulative effects are perceived at this strategic level.</p>
<p>All-Ireland Pollinator Plan 2021-2025</p>	<p>The All-Ireland Pollinator Plan (AIPP) 2021-2025 is a five year road map developed to build on the successful delivery of the 81 actions in the first Plan prepared for the 2015 to 2020 period. It aims to take steps to restore pollinator populations to health levels in Ireland. It creates a framework to bring together pollinator initiatives across Ireland, so that through coordination and cooperation to overarching goal can be achieved. The AIPP 2021-2025 has 186 actions spread across the following six objectives:</p> <ul style="list-style-type: none"> • Objective 1: Making farmland pollinator friendly. • Objective 2: Making public land pollinator friendly. • Objective 3: Making private land pollinator friendly. • Objective 4: All-Ireland Honeybee Strategy. • Objective 5: Conserving rare pollinators. • Objective 6: Strategic coordination of the Plan. <p>Relevance to NR2040:</p> <p>NR2040 incorporates sustainability into the Strategy which includes environmental, social and economic sustainability. Projects arising from the NR2040 will be required to have regard to the AIPP 2021 -2025, namely Objective 2 which aims, <i>“by working together with Councils, Transport Authorities, Local</i></p>	<p>There is potential for positive cumulative effects resulting from implementation of NR2040 and this Plan.</p> <p>Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate. No likely significant cumulative effects are perceived at this strategic level.</p>

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	<i>Communities and others</i> , to <i>“better coexist with biodiversity and help return food and shelter for pollinators to our island”</i> .	
Population and Human Health		
International		
Johannesburg Plan of Implementation 2002	<p>This international policy initiative sets out an action plan for the implementation of the activities adopted at the World Summit on Sustainable Development in 2002. It covers topics such as poverty eradication, changing unsustainable patterns of production and consumption, managing natural resources, sustainable development, and other aspects of the implementation of Agenda 21. In relation to sustainability in the transport sector, the Plan calls to promote an integrated approach to policy-making at the national, regional, and local levels for transport services and systems to promote sustainable development, including policies and planning for land use, infrastructure, public transport systems and goods delivery networks, with a view to providing safe, affordable, and efficient transportation, increasing energy efficiency, reducing pollution, congestion and adverse health effects and limiting urban sprawl, taking into account national priorities and circumstances.</p> <p>Relevance to NR2040: NR2040 incorporates sustainability into the Strategy, this includes environmental social and economic sustainability. As a result, this aligns with the Johannesburg Plan of Implementation.</p>	No likely significant cumulative effects are perceived at this strategic level.
Healthy Cities Project (WHO)	<p>The Healthy Cities Project is a global World Health Organization (WHO) movement, set up initially in 1987 with eleven individual cities. The concept is based on the importance of local action and the key role of local governments and Local Authorities in health and sustainable development. As the WHO Healthy Cities programme expanded, National Networks were established. National Networks connect and support all cities and counties within their country. The National Healthy Cities and Counties of Ireland Network received accreditation from the WHO in 2016.</p> <p>The aim of the National Healthy Cities and Counties of Ireland Network is to develop a structure to support Local Authorities to implement the Healthy Ireland Framework. A healthy city or county works to:</p> <ul style="list-style-type: none"> • Improve health and wellbeing by creating and continually improving its physical and social environments. • Develop community resources that help people to support each other and achieve their potential. • The National Healthy Cities and Counties of Ireland Network. <p>The Network currently has 7 members. These are:</p> <ul style="list-style-type: none"> • Mayo County Council • Limerick City Council • Waterford City and County Council 	There is potential for positive cumulative effects resulting from implementation of NR2040 and this Project. No likely significant negative cumulative effects are perceived at this strategic level.

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	<ul style="list-style-type: none"> • South Dublin County Council • Offaly County Council • Cork City Council • Galway City Council <p>Relevance to NR2040: NR2040 incorporates sustainability into the Strategy. This includes environmental social and economic sustainability. As a result, NR2040 aligns with the Healthy Cities Project.</p>	
National		
<p>Healthy Ireland: A Framework for Improved Health and Wellbeing 2013 – 2025</p> <p>Healthy Ireland Strategic Action Plan 2021-2025</p>	<p>The Healthy Ireland Framework 2019-2025 is the Department of Health's roadmap for building a healthier Ireland. It is based around four key goals:</p> <ul style="list-style-type: none"> • To increase the proportion of people who are healthy at all stages of life. • To reduce health inequalities. • To protect the public from threats to health and wellbeing. • To create an environment where every individual and sector of society can play their part in achieving a healthy Ireland. <p>The Healthy Ireland Strategic Action Plan 2021-2025 provides a clear roadmap of how we can continue to work together to bring about good health, access to services, healthy environments, and the promotion of resilience and to ensure that everyone can enjoy physical and mental health and wellbeing, to their full potential. This action plan will build on the work and progress made to date and focus on the remaining years of the Healthy Ireland Framework from 2021-2025.</p> <p>Relevance to NR2040: NR2040 incorporates sustainability into the Strategy. This includes environmental social and economic sustainability. As a result, NR2040 aligns with Healthy Ireland: A Framework for Improved Health and Wellbeing 2013 – 2025 and Healthy Ireland Strategic Action Plan 2021-2025.</p>	<p>There is potential for positive cumulative effects resulting from implementation of NR2040 and this Framework and Action Plan.</p> <p>No likely significant negative cumulative effects are perceived at this strategic level</p>
<p>Tourism policy statement "People, Place and Policy – Growing Tourism to 2025"</p>	<p>This policy statement is centred on Ireland achieving its full potential as a destination for overseas tourism. However, it is recognised that the domestic tourism market underpins the range of visitor accommodation and services that provide competitive advantage to Ireland in the international market and many of the measures contained in this statement will similarly benefit the domestic tourism sector. This statement represents the Tourism Policy Statement for Ireland which intends to grow the industry up to 2025 in terms of revenue and employment. The overall tourism goal of Government is that: by 2025, revenue from overseas visitors, excluding carrier receipts, will increase to 5 billion in real terms (i.e., excluding the effects of inflation). Employment in the tourism sector will be 250,000 by 2025, compared with around 200,000 at present. There will be 10 million visits to Ireland annually by 2025.</p> <p>Relevance to NR2040:</p>	<p>There is potential for positive cumulative effects resulting from implementation of NR2040 and this Policy statement.</p> <p>No likely significant negative cumulative effects are perceived at this strategic level</p>

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	<p>In developing the National Roads strategy, cognisance was taken of the wide range of trip purposes on the road network completed by people, including tourism. As a result, the NR2040 aligns with the goals of Tourism policy statement "People, Place and Policy – Growing Tourism to 2025".</p>	
<p>Roadmap for Social Inclusion 2020-2025</p>	<p>The Roadmap presents 7 high-level goals, 22 targets and 66 unique commitments. The focus of the roadmap is on building social inclusion, using an expanded approach that moves beyond the traditional focus on income poverty. This strategy reaffirms the Government's long-held commitment to reduce the national consistent poverty rate to 2% or less and to do so over the period up to 2025. The Roadmap commits the Department of Employment Affairs and Social Protection to examine and develop proposals for Government to set a formal benchmark and institute a process whereby future changes in pension rates of payment are explicitly linked to changes in the consumer price index and average wages. Finally, the Roadmap establishes a robust framework for monitoring and reporting progress that will hold Government to account and also informs the renewal of existing, and the development of future, sectoral strategies.</p> <p>Relevance to NR2040: NR2040 incorporates sustainability into the Strategy which includes environmental, social and economic sustainability. As a result, this aligns with the Roadmap for Social Inclusion 2020-2025.</p>	<p>There is potential for positive cumulative effects resulting from implementation of NR2040 and this Roadmap.</p> <p>No likely significant negative cumulative effects are perceived at this strategic level.</p>
<p>Creating a Green Infrastructure for Ireland- Enhancing Natural Capital for Human Wellbeing 2010</p>	<p>The guidance document sets out a broad definition of Green Infrastructure and explores and proposes an approach and a set of principles that should be followed in Green Infrastructure planning. Integration of the Green Infrastructure approach can be smart and strategic and offer potential ways of effectively integrating natural capital including biodiversity into spatial planning and sectoral considerations. This is a real challenge for biodiversity policy and its implementation, which is crucial in addressing biodiversity loss.</p> <p>Relevance to NR2040: Projects arising from the NR2040 shall consider the recommendations outlined in the Creating a Green Infrastructure for Ireland- Enhancing Natural Capital for Human Wellbeing as appropriate.</p>	<p>No likely significant cumulative effects are perceived at this strategic level.</p>
Regional		
<p>Regional Tourism Strategies</p>	<p>Regional Tourism Strategies are currently being developed by Fáilte Ireland. Fáilte Ireland unveiled its priorities for 2022 in February to support the recovery of the tourism industry. Four Regional Tourism Strategies are proposed to be developed respectively for: Ireland's Ancient East, Ireland's Hidden Heartlands, Dublin, and the Wild Atlantic Way</p> <p>Relevance to NR2040: The National Roads network is important for the tourism sector in Ireland. NR2040 supports economic growth and ensuring the mobility of goods and services including those related to the tourism sector. It supports enhanced regional and rural connectivity which apart from the major cities and county towns is where many of the tourism hot spots are located and rely on National Road connectivity.</p>	<p>There is potential for positive cumulative effects resulting from implementation of NR2040 and this Roadmap.</p> <p>No likely significant negative cumulative effects are perceived at this strategic level.</p>

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<p>Fáilte Ireland Visitor Experience Development Plans</p>	<p>The Visitor Experience Development Plans aim to create a sustainable tourism destination by extending the tourism season and spreading business across all parts of the respective locality.</p> <p>Relevance to NR2040:</p> <p>NR2040 supports the economy including the tourism sector. The strategy supports national and international connectivity and supports enhanced regional and rural accessibility which is important in facilitating tourism across Ireland.</p>	<p>There is potential for positive cumulative effects resulting from implementation of NR2040 and this Roadmap.</p> <p>No likely significant negative cumulative effects are perceived at this strategic level</p>
Noise		
International		
<p>WHO Environmental Noise Guidelines 2018</p>	<p>The EU Environmental Noise Directive (END), EC 2002/49/EC, was transposed into Irish law as Statutory Instrument: S.I. No. 140/2006 - Environmental Noise Regulations 2006.</p> <ul style="list-style-type: none"> • The Environmental Noise Directive (END) requires member states to prepare and publish strategic noise maps and noise management action plans, every five years. • The aim of the END is to provide a common framework to avoid, prevent or reduce, on a prioritised basis, the harmful effects of exposure to environmental noise. This can be done through the preparation of strategic noise maps and the development and implementation of action plans. <p>Although the END includes a requirement to report and publicise any noise limit values in place, it neither introduces noise limit values nor requires noise limits to be introduced within member states or by competent authorities.</p> <p>The EPA is the national authority for overseeing the implementation of the Environmental Noise Regulations</p> <p>Relevance to NR2040:</p> <p>Projects arising from the NR2040 will consider the requirements of the WHO Environmental Noise Guidelines 2018.</p>	<p>Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate. No likely significant cumulative effects are perceived at this strategic level</p>
EU		
<p>Environmental Noise Directive (2002/49/EC)</p>	<p>The Environmental Noise Directive transposed by Environmental Noise Regulations S.I 140 of 2006 as amended by S.I. No. 549 / 2018 is the main EU instrument to identify noise pollution levels and to trigger the necessary action both at Member State and at EU level. To pursue its stated aims, the Environmental Noise Directive focuses on three action areas:</p> <ul style="list-style-type: none"> • The determination of exposure to environmental noise • Ensuring that information on environmental noise and its effects is made available to the public 	<p>Any subsequent projects arising out of NR2040 will be required to comply with all relevant EU Directives and transposing legislation as required. Therefore, no likely significant cumulative effects are perceived at this strategic level.</p>

Plan/Policy Name	Summary of the policy/plan/programme and relevance to NR2040	Assessment of Cumulative Effects
	<ul style="list-style-type: none"> Preventing and reducing environmental noise where necessary and preserving environmental noise quality where it is good. <p>The Directive applies to noise to which humans are exposed, particularly in built-up areas, in public parks or other quiet areas in an agglomeration, in quiet areas in open country, near schools, hospitals and other noise-sensitive buildings and areas. It does not apply to noise that is caused by the exposed person, noise from domestic activities, noise created by neighbours, noise at workplaces or noise inside means of transport or due to military activities in military areas.</p>	
National		
<p>Transport Infrastructure Ireland (TII) Guidelines for the Treatment of Noise and Vibration in National Road Schemes, Revision 1 (TII 2004)</p>	<p>The purpose of the guidelines is to provide guidance on the treatment of noise and vibration during the planning and design of national road schemes. The guidelines are not mandatory but are recommended to achieve appropriate consistency with respect to the treatment of noise and vibration during the Constraints, Route Corridor Selection, Environmental Impact Assessment and construction phases of road scheme planning, and development undertaken in accordance with Authority's National Roads Project Management Guidelines (NRPMG).</p> <p>Relevance to NR2040: Projects arising from the NR2040 will be required to have regard to the Transport Infrastructure Ireland (TII) Guidelines for the Treatment of Noise and Vibration in National Road Schemes, Revision 1 (TII 2004) as appropriate.</p>	<p>Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate. No likely significant cumulative effects are perceived at this strategic level</p>
<p>Good Practice Guide for the Treatment of Noise during the Planning of National Road Schemes (hereafter referred to as the TII Noise Guidelines 2014) (TII 2014)</p>	<p>The NRA's Guidelines for the Treatment of Noise and Vibration in National Road Schemes, as revised by the National Roads Authority in October 2004, are based on the Authority's phased approach to road scheme planning and development. They cover the constraints, route corridor selection and EIA stages. The Guidelines also set out a "design goal" for noise to ensure that the current roads programme proceeds on a path of sustainable development. The current design goal is that all national road schemes should be designed, where feasible, to meet a day-evening-night sound level of 60 dB Lden (free-field residential façade criterion), to be met both in the year of opening and in the design year. The Authority accepts that it may not always be sustainable to provide adequate mitigation to achieve the design goal. Therefore, a structured approach should be taken to ameliorate, as far as is practicable within the particular circumstances of a given scheme, road traffic noise through the consideration of measures such as horizontal and vertical alignment, barriers, low noise road surfaces, etc. This Good Practice Guidance is intended to expand and supplement the advice already provided in the Guidelines on these matters.</p> <p>Relevance to NR2040: Projects arising from the NR2040 will be required to have regard to the Good practice guides as appropriate.</p>	<p>Any subsequent projects arising out of NR2040 will be required to comply with all relevant EU Directives and transposing legislation as required. Therefore, no likely significant cumulative effects are perceived at this strategic level.</p>
<p>Noise Action Plans developed by the respective local authorities</p>	<p>Following the preparation of the noise maps, Noise Action Plans are developed by Local Authorities to manage noise issues and effects. They involve the prevention and reduction of environmental noise, for the areas where the Lden (55 dB) and Lnight (50 dB) reporting thresholds have been exceeded. Each local authority identifies their noise-sensitive locations, which may involve drawing up a shortlist of</p>	<p>Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental</p>

Plan/Policy Name	Summary of the policy/plan/programme and relevance to NR2040	Assessment of Cumulative Effects
	<p>potential areas for action. This list can include areas that are above the recommended onset values for noise mitigation measures, and those that are below the recommended level for preservation (to help identify Quiet Areas –this refers to a space that is not affected by noise from transport, industrial activities or recreational noise). An annual Noise Action Plan progress report is to be submitted by each Local Authority by the 28th of February (each year).</p> <p>Relevance to NR2040:</p> <p>Projects arising from the NR2040 will be required to have regard to the Noise Action Plans developed by the respective local authorities as appropriate.</p>	<p>assessments, i.e., project level EIA/AA/SFRA as appropriate.</p>
Water		
International		
OSPAR Convention	<p>The Convention for the Protection of the Marine Environment of the North-East Atlantic (the 'OSPAR Convention') was open for signature at the Ministerial Meeting of the Oslo and Paris Commissions in Paris on 22 September 1992 and entered into force on 25 March 1998. It was adopted together with a Final Declaration and an Action Plan. In this decade, the Convention will be implemented through OSPAR's North-East Atlantic Environment Strategy 2030. The overall aim is to tackle marine pollution from all sources. Contained within the OSPAR Convention are Annexes which deal with the following areas: Prevention and elimination of pollution from land-based sources, prevention and elimination of pollution by dumping or incineration, prevention and elimination of pollution from offshore sources, assessment of the quality of the marine environment, on the protection and conservation of the ecosystems and biological diversity of the maritime area.</p>	<p>NR2040 will be required to comply with all relevant legislation, as required. No likely significant cumulative effects are perceived at this strategic level.</p>
EU		
Water Framework Directive (2000/60/EC)	<p>The European Union Water Framework Directive (WFD) was transposed by:</p> <ul style="list-style-type: none"> • Water Policy Regulations (S.I.722/2003) and Water Policy Regulations 2014 (S.I. No. 350 of 2014). • Technical Specifications for the Chemical Analysis and Monitoring of Water Status Regulations, 2011 (S.I. No. 489 of 2011). • Good Agricultural Practice for Protection of Waters) Regulations, 2022 (S.I. No. 113 of 2022). • Environmental Objectives (Groundwater) Regulations, 2010 (S.I. No. 9 of 2010). • Environmental Objectives (Surface Waters) Regulations, 2009 (S.I. No. 272 of 2009). • Water Quality (Dangerous Substances) Regulations 2001. <p>The WFD was signed into law in October 2000. It requires EU Member States to achieve water quality of at least 'good status' in rivers, lakes, groundwater, estuaries and coastal waters, by 2027 at the latest. The WFD has been a pioneering piece of legislation because it mandates public participation, recognising the value of local knowledge and community involvement in decision making processes.</p>	<p>NR2040 will be required to comply with all relevant EU Directives and transposing legislation as required. Therefore, no likely significant cumulative effects are perceived at this strategic level.</p>

Plan/Policy Name	Summary of the policy/plan/programme and relevance to NR2040	Assessment of Cumulative Effects
	<p>The WFD is implemented through River Basin Management Plans (RBMPs) in three six-year cycles. Each cycle providing an opportunity to assess water conditions at different stages and set out actions to achieve water quality objectives.</p>	
<p>Marine Strategy Framework Directive (2008/56/EC)</p>	<p>The Marine Strategy Framework Directive transposed by European Communities (Marine Strategy Framework) Regulations (S.I. No. 249 of 2011) aims to achieve Good Environmental Status (GES) of the EU's marine waters by 2020 and to protect the resource base upon which marine-related economic and social activities depend. Good environmental status in the marine environment means that the seas are clean, healthy and productive and that human use of the marine environment is kept at a sustainable level.</p> <p>Under the Directive, marine waters must be assessed against an agreed set of standards across a number of important environmental areas (for example: biodiversity, fish stocks, and contaminants). Based on the assessment, appropriate environmental targets and indicators must be set and programmes of measures put in place to reach GES.</p>	<p>NR2040 will be required to comply with all relevant EU Directives and transposing legislation as required. Therefore, no likely significant cumulative effects are perceived at this strategic level.</p>
<p>Floods Directive (2007/60/EC)</p>	<p>The Floods Directive transposed by the European Communities Assessment and Management of Flood Risk Regulations, 2010 (SI 122/2010) applies to all kinds of floods (river, lakes, flash floods, urban floods, coastal floods, including storm surges and tsunamis), on all of the EU territory requires Member States to approach flood risk management in a three-stage process whereby: Member States will by 2011 undertake a preliminary flood risk assessment of their river basins and associated coastal zones, to identify areas where potential significant flood risk exists. Where real risks of flood damage exist, they must by 2013 develop flood hazard maps and flood risk maps for such areas. These maps will identify areas with a medium likelihood of flooding (at least a 1 in 100-year event) and extreme events or low likelihood events, in which expected water depths should be indicated. In the areas identified as being at risk the number of inhabitants potentially at risk, the economic activity and the environmental damage potential shall be indicated.</p> <p>Finally, by 2015 flood risk management plans must be drawn up for these zones. These plans are to include measures to reduce the probability of flooding and its potential consequences. They will address all phases of the flood risk management cycle but focus particularly on prevention (i.e. preventing damage caused by floods by avoiding construction of houses and industries in present and future flood-prone areas or by adapting future developments to the risk of flooding), protection (by taking measures to reduce the likelihood of floods and/or the impact of floods in a specific location such as restoring flood plains and wetlands) and preparedness (e.g. providing instructions to the public on what to do in the event of flooding). Due to the nature of flooding, much flexibility on objectives and measures are left to the Member States in view of subsidiarity.</p>	<p>NR2040 will be required to comply with all relevant EU Directives and transposing legislation as required. Therefore, no likely significant cumulative effects are perceived at this strategic level.</p>
<p>Urban Wastewater Treatment Directive (91/271/EEC)</p>	<p>The Urban Wastewater Framework Directive transposed by the S.I. No. 254/2001 - Urban Waste Water Treatment Regulations 2001 aims to protect inland surface waters by regulating collection and treatment of urban wastewater and discharge of certain biodegradable industrial wastewater. The Directive sets targets dates for the provision of specified level of collection and treatment facilities.</p>	<p>NR2040 will be required to comply with all relevant EU Directives and transposing legislation as required. Therefore, no likely significant</p>

Plan/Policy Name	Summary of the policy/plan/programme and relevance to NR2040	Assessment of Cumulative Effects
		cumulative effects are perceived at this strategic level.
Groundwater Directive (2006/118/EC)	The Groundwater Directive transposed by the European Communities Environmental Objectives (groundwater) Regulations 2010 S.I. No. 9 of 2010 requires Member States to ensure that groundwater is not polluted by dangerous substances. Member States must establish and apply quality standards to groundwater and while developing measures to minimise groundwater contamination from pollution.	NR2040 will be required to comply with all relevant EU Directives and transposing legislation as required. Therefore, no likely significant cumulative effects are perceived at this strategic level.
Drinking Water Directive (98/83/EC)	The Drinking Water Directive transposed by the European Communities (Drinking Water) Regulations 2007 establishes strict quality standards for water used for human consumption. The Directive sets out the maximum and guideline values for various different physical, bacteriological and chemical contaminants.	NR2040 will be required to comply with all relevant EU Directives and transposing legislation as required. Therefore, no likely significant cumulative effects are perceived at this strategic level.
Drinking Water Directive Recast (2020/2184)	Directive (EU) 2020/2184 of the European Parliament and of the Council of 16 December 2020 on the quality of water intended for human consumption (recast) was adopted by the European Parliament and the Council of the European Union on 16 December 2020 and entered into force on 12 January 2021. The European Union Member States will now have two years to transpose it into national legislation. The new Drinking Water Directive introduces the obligation for Member States to improve or maintain access to water intended for human consumption, with a focus on human health protection and improving access to water for all segments of the population.	NR2040 will be required to comply with all relevant EU Directives and transposing legislation as required. Therefore, no likely significant cumulative effects are perceived at this strategic level.
Surface Water Directive (75/440/EEC)	The Surface Water Directive transposed by the European Communities Environmental Objectives (Surface Waters) Regulations, 2009 (S.I. No. 272 of 2009) lays down nonbinding 'guide' values and binding 'imperative' values and requires Member States to monitor the quality of surface waters from which drinking water is abstracted and to take measures to ensure that it complies with the minimum quality standards.	NR2040 will be required to comply with all relevant EU Directives and transposing legislation as required. Therefore, no likely significant cumulative effects are perceived at this strategic level.
Shellfish Waters Directive (2006/113/EC)	The aim of the Shellfish Waters Directive transposed by European Communities (Quality of Shellfish Waters) Regulations 2006 (SI No 268 of 2006) is to protect or improve shellfish waters to support shellfish life and growth. It is designed to protect the aquatic habitat of bivalve and gastropod molluscs, which include oysters, mussels, cockles, scallops, and clams. The Directive requires Member States to designate waters that need protection to support shellfish life and growth. The Directive sets physical, chemical, and microbiological requirements that designated shellfish waters must either comply with or endeavour to improve. The Directive also provides for the establishment of pollution reduction programmes for the designated waters. Responsibility for the Shellfish Waters Directive in Ireland transferred from the Department of Agriculture, Fisheries and Food to the Department of the Environment, Heritage, and Local Government on 5 November 2008.	NR2040 will be required to comply with all relevant EU Directives and transposing legislation as required. Therefore, no likely significant cumulative effects are perceived at this strategic level.

Plan/Policy Name	Summary of the policy/plan/programme and relevance to NR2040	Assessment of Cumulative Effects
Bathing Waters Directive (2006/7/EC)	The overall objective of the Bathing Water Directive transposed by the Bathing Water Quality Regulations S.I. 84/1988 and amended by S.I. No. 79/2008 aims to protect public health whilst bathing, and also offers an opportunity to improve management practices at bathing waters and to standardise the information provided to bathers across Europe. Bathing waters are an important resource, and it is therefore essential that the standards within the Bathing Water Directive are adhered to.	NR2040 will be required to comply with all relevant EU Directives and transposing legislation as required. Therefore, no likely significant cumulative effects are perceived at this strategic level.
National		
River Basin Management Plans and Programme of Measures (3rd Cycle DCCAE) 2022-2027	<p>The 3rd cycle River Basin Management Plans (RBMPs) will cover the period 2022-2027. This 3rd cycle of the RBMP will set out the actions that Ireland will take to protect and restore rivers, lakes, estuaries, and coastal waters, building on the work done in the 1st and 2nd RBMP cycles and with a view to achieving the objectives of the WFD by 2027 and beyond. It should also be noted that the scope of these RBMP Guidelines is not limited to just WFD status; any assessment of compliance under WFD includes both consideration of status and consideration of protected areas as defined under Annex IV of the WFD i.e., the Register of Protected Areas, and their associated environmental objectives.</p> <p>Relevance to NR2040: Projects arising from the NR2040 will be required to have regard to the River Basin Management Plans and Programme of Measures as appropriate.</p>	Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate.
Project Ireland 2040 - National Marine Planning Framework (2021)	<p>The National Marine Planning Framework (NMPF) brings together all marine-based human activities for the first time, outlining the Government's vision, objectives and marine planning policies for each marine activity. The NMPF is a long-term strategy for the next 20 years which will set the groundwork for the development of the marine waters surrounding Ireland.</p> <p>The NMPF details how these marine activities will interact with each other in an ocean space that is under increasing spatial pressure, ensuring the sustainable use of our marine resources to 2040.</p> <p>The NMPF is intended as the marine equivalent to the National Planning Framework. This approach will enable the Government to:</p> <ul style="list-style-type: none"> • set a clear direction for managing our seas • clarify objectives and priorities • direct decision makers, users and stakeholders towards strategic, plan-led, and efficient use of our marine resources <p>The NMPF has been prepared with an ecosystem-based approach and informed by best available knowledge. As part of the preparation of the NMPF, a Strategic Environmental Assessment (SEA) and Appropriate Assessment (AA) have been carried out.</p> <p>Relevance to NR2040: Projects arising from the NR2040 will be required to have regard to the objectives and priorities of the NMPF as appropriate.</p>	NMPF NR2040 are strategic planning documents, any subsequent projects arising from these plans will be required to comply with all relevant legislation at project level, including any required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate and these assessments will consider cumulative effects at that level. No likely significant negative cumulative effects are perceived at this strategic level.

Plan/Policy Name	Summary of the policy/plan/programme and relevance to NR2040	Assessment of Cumulative Effects
<p>Water Services Strategic Plan, A Plan for the Future of Water Services 2015</p>	<p>The Water Services Strategic Plan prepared by Irish Water provides the opportunity to consider the way water services are delivered at a national level. Effective water services, including the delivery of a sustainable and reliable clean water supply and safe disposal of wastewater, are essential for a modern country. The plan takes a 25-year view towards the vision that <i>“Through responsible stewardship, efficient management and strong partnerships, Ireland has a world class water infrastructure that ensures secure and sustainable water services, essential for our health, our communities, the economy and the environment”</i>. The plan has been prepared to comply with Irish Water’s statutory obligation and as a basis for broad public and stakeholder engagement.</p> <p>Relevance to NR2040: Projects arising from the NR2040 will be required to have regard to the Water Services Strategic Plan 2015 as appropriate.</p>	<p>No likely significant cumulative effects are perceived at this strategic level.</p>
<p>National Wastewater Sludge Management Plan</p>	<p>Irish Water published the first National Wastewater Sludge Management Plan (NWSMP) outlining its strategy for managing wastewater sludge over the next 25 years. The NWSMP sets out a nationwide standardised approach to ensure that treated wastewater sludge across the country is effectively managed, stored, transported, and re-used or disposed of in a sustainable way, to the benefit of the public and the environment we all live in.</p> <p>Relevance to NR2040: Projects arising from the NR2040 will be required to have regard to the National Wastewater Sludge Management Plan as appropriate.</p>	<p>No likely significant cumulative effects are perceived at this strategic level.</p>
<p>The Planning System and Flood Risk Management, Guidelines for Planning Authorities (2009)</p>	<p>The Planning System and Flood Risk Management Guidelines (FRM Guidelines) arise from Ireland’s obligations under the Floods Directive (2007/60/EC). Under this Directive, Ireland must assess flood risk and actively take steps to reduce flood risk. The guidelines guide the integration of flood risk management with spatial planning.</p> <p>Relevance to NR2040: Projects arising from the NR2040 will be required to have regard to the 2009 Planning System and Flood Risk Management, Guidelines for Planning Authorities as appropriate.</p>	<p>Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate. No likely significant cumulative effects are perceived at this strategic level.</p>
<p>Planning for Watercourses in the Urban Environment - Guidelines (IFI, 2020)</p>	<p>The Planning for Watercourses in the Urban Environment - Guidelines developed by Inland Fisheries Ireland (IFI) outlines an integrated watercourse protection strategy through consultation with a wide range of experts in the area. Development management standards, policies and objectives are set per watercourse. These are mapped in County Development Plans, Local Area Plans & masterplans and integrated with flood risk, Natura 2000 designated sites, habitat, and amenities mapping. Implementation of this strategy not only protects watercourses and their associated riparian zones in urban areas, but also provides other benefits important for the well-being of people living nearby.</p> <p>Relevance to NR2040: Projects arising from the NR2040 will be required to have regard to the 2020 Planning for Watercourses in the Urban Environment - Guidelines as appropriate.</p>	<p>Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate. No likely significant cumulative effects are perceived at this strategic level.</p>

Plan/Policy Name	Summary of the policy/plan/programme and relevance to NR2040	Assessment of Cumulative Effects
<p>Environmental Guidance: Drainage Maintenance & Construction (OPW, 2019)</p>	<p>The aim of the Environmental Guidance is to help OPW Drainage Maintenance staff to carry out their activities in an environmentally sensitive and sustainable manner, and where relevant implement this guidance for construction works. The Environmental Procedures (EPs) contained, are the backbone of how the risk of environmental impact is reduced. The guidance sets out Procedures designed to limit potential impacts and to improve habitats for many species and assist all levels of staff to fulfil their environmental duties in an effective manner. Working in marine or river environments requires careful consideration of potential ecological impacts that can occur. The purpose of this guidance is to manage and substantially reduce potential impacts to the animals and plants that depend on the river corridors, estuaries, lakes, and catchments where drainage maintenance and construction works are carried out.</p> <p>Relevance to NR2040: Projects arising from the NR2040 will be required to have regard to the 2019 Environmental Guidance: Drainage Maintenance & Construction as appropriate.</p>	<p>Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate. No likely significant cumulative effects are perceived at this strategic level.</p>
<p>Catchment Flood Risk Assessment and Management Programme</p>	<p>The OPW undertook the National Catchment Flood Risk Assessment and Management (CFRAM) Programme in consultation with the Local Authorities and supported by external engineering consultants. One of the key objectives of CFRAM was to identify and map the existing and potential future flood hazard and flood risk in the areas at potentially significant risk from flooding, called Areas for Further Assessment (AFAs). These areas and associated sources of flood risk were identified through the Preliminary Flood Risk Assessment (PFRA), which was a nationwide screening of flood risk. The final report of the PFRA and designation of the AFAs was published in March 2012. The OPW designated 300 areas (AFAs) at potentially significant risk from flooding.</p> <p>The CFRAM Programme studied 80% of Ireland's primary flood risk and included a detailed study of the flood risk for 300 communities, including 90 coastal. These were areas deemed in 2012 to be potentially at risk from flooding and required further assessment through the CFRAM. The CFRAM was a point in time study. The OPW realises that flood risk can change and has an ongoing programme of work to continue to assess the flood risk across the country, from all flooding sources. As well as informing future measures and investment, this programme of work meets Ireland's requirements under the EU Floods Directive.</p> <p>Relevance to NR2040: Projects arising from the NR2040 will be required to have regard to the Catchment Flood Risk Assessment and Management Programme as appropriate.</p>	<p>Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate. No likely significant cumulative effects are perceived at this strategic level.</p>
<p>Guidelines for the Crossing of Watercourses during the construction of National Road Schemes (NRA/TII)</p>	<p>The construction of structures crossing watercourses (e.g., bridges and culverts) is one of the more common engineering activities undertaken during road scheme developments. Common effects on natural watercourses that can potentially result from the construction and operation of such structures include:</p> <ul style="list-style-type: none"> • Interference with fish migration and spawning, mammal movement, rare plants, and their habitats and with riparian and linear wildlife corridors, • Loss of aquatic and riparian habitat, 	<p>Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate. No likely significant cumulative effects are perceived at this strategic level.</p>

Plan/Policy Name	Summary of the policy/plan/programme and relevance to NR2040	Assessment of Cumulative Effects
	<ul style="list-style-type: none"> • Alteration of flow regime, • Harmful discharges during construction and operation, and • Interference with angling or obstruction of angler's movement along a channel. <p>These effects can, however, be minimised by applying sound design principles to the structures and by following good work practices during their construction. The measures outlined in the TII / NIRA Guidelines for the Crossing of Watercourses during the construction of National Road Schemes are aimed at minimising effects that can result from road scheme development and construction works on the general ecology of watercourses, with reference to protecting fish stocks, flora, angling amenity and providing for the passage of mammals.</p> <p>Relevance to NR2040: Projects arising from the NR2040 will be required to have regard to the TII / NRA Guidelines for the Crossing of Watercourses during the construction of National Road Schemes as appropriate.</p>	
National Strategic Plan for Sustainable Aquaculture Development to 2020	<p>Ireland's National Strategic Plan for Sustainable Aquaculture Development was finalised on 23 October 2015, following public consultation earlier in 2015. The Plan was submitted to the European Commission on 23 October 2015. The National Strategic Plan for Sustainable Aquaculture Development proposes 24 actions to be implemented over the period up to 2020. Actions address areas such as 'sustainable development' and 'environmental contribution'. The updated 2021-2030 version of the National Strategic Plan for Sustainable Aquaculture is currently in development.</p> <p>Relevance to NR2040: Projects arising from the NR2040 will be required to have regard to the National Strategic Plan for Sustainable Aquaculture to 2020 as appropriate.</p>	No likely significant cumulative effects are perceived at this strategic level.
National Water Resources Plan - Framework Plan	<p>A National Water Resources Plan is a strategic plan used to identify deficiencies and need across an entire water supply, and to develop plan level capital and operational solutions to address these issues. Irish Water's National Water Resources Plan (NWRP) will be the first such plan for the entire public water supply in Ireland. It will allow us to integrate Government Policy, Legislation and external factors including climate change that have the potential to impact our water supplies, into the planning and operation of our existing and future supply asset base. The objective of the NWRP is to manage customer and communities needs while meeting their requirements over the short, medium and long term, by ensuring safe, secure, sustainable and reliable water supplies.</p> <p>The NWRP will:</p> <ul style="list-style-type: none"> • Enable Irish Water to address need across our water supplies in the most effective way over time, through the regulated investment cycles; • Ensure that there is a transparent framework to develop the most appropriate projects/programmes to meet statutory obligations in relation to water supply; • Provide a framework to track outcomes, allowing interventions to be prioritised in order to bring the water supply up to the required standards in the shortest possible timeframe; and 	No likely significant cumulative effects are perceived at this strategic level.

Plan/Policy Name	Summary of the policy/plan/programme and relevance to NR2040	Assessment of Cumulative Effects
	<ul style="list-style-type: none"> Deliver a plan to ensure that all of our customers have access to safe, secure, reliable and sustainable water supplies, wherever they live. <p>Relevance to NR2040: Projects arising from the NR2040 will be required to have regard to the Irish Water's National Water Resources Framework Plan as appropriate.</p>	
Capital Investment Plan 2020-2024	<p>Capital Investment Plan 2020-2024 is Irish Water's 5 year investment plan which sets out the capital projects and programmes that it plans to progress and deliver during the period. It sets out the clearly defined outputs and outcomes to be delivered for the investment which are integral to maintaining and upgrading water and wastewater assets, to improving quality and compliance, to providing enhanced service levels to customers and to facilitating economic and social growth. Irish Water's Investment Plan contains a mix of:</p> <ul style="list-style-type: none"> Projects - These deliver new and upgraded assets at specific locations e.g., a new treatment plant. National programmes - These address known issues across the entire asset base e.g., the Disinfection Programme. Capital maintenance programmes - These are planned and reactive e.g., like-for-like replacements of assets such as repairs on a burst main. <p>Relevance to NR2040: Projects arising from the NR2040 will be required to have regard to the Irish Water's Capital Investment Plan 2020-2024 as appropriate.</p>	No likely significant cumulative effects are perceived at this strategic level.
Air Quality		
International		
WHO Global Air Quality Guidelines 2021	<p>The World Health Organization (WHO) has tightened its air quality guidelines on Wednesday, 22 September 2021. This was the WHO's first adjustment of its recommendations on particulate matter (PM_{2.5} and PM₁₀), ozone (O₃), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), and carbon monoxide (CO) since 2005. The new recommendations reflect the recent evidence of the significantly higher-than-thought impact of even lower concentrations of air pollution on human health and wellbeing. A recent study estimated the death toll of air pollution at 8.7 million per year. The European Union currently has air pollution standards that still allows for significantly higher pollution concentrations. Even then, some EU countries failed to keep average pollution concentrations below these legal limits in 2020 and were subsequently fined.</p> <p>Relevance to NR2040: Projects arising from the NR2040 will be required to have regard to Global Air Quality Guidelines 2021 as appropriate.</p>	No likely significant cumulative effects are perceived at this strategic level.
EU		

Plan/Policy Name	Summary of the policy/plan/programme and relevance to NR2040	Assessment of Cumulative Effects
<p>Air Quality Framework Directive 96/62/EC</p> <p>Ambient Air Quality and Cleaner Air for Europe (CAFÉ) (2008/50/EC)</p>	<p>The current Air Quality Standards are contained in the Directive on Ambient Air Quality and Cleaner Air for Europe (the CAFE Directive 2008/50/EC; and the fourth Daughter Directive 2004/107/EC). CAFE replaces the Air Framework Directive and the first three daughter directives - 2008/50/EC. These directives also include rules on how Member States should monitor, assess, and manage ambient air quality. The CAFE Directive was transposed into Irish legislation by the Air Quality Standards Regulations 2011 (S.I. No. 180 of 2011). It replaces the Air Quality Standards Regulations 2002 (S.I. No. 271 of 2002), the Ozone in Ambient Air Regulations 2004 (S.I. No. 53 of 2004) and S.I. No. 33 of 1999. The fourth Daughter Directive was transposed into Irish legislation by the Arsenic, Cadmium, Mercury, Nickel, and Polycyclic Aromatic Hydrocarbons in Ambient Air Regulations 2009 (S.I. No. 58 of 2009). It is the objective of new EU Directive to take a new approach to the monitoring, assessment, and management of air quality in recent years. The objectives include avoiding, preventing, and reducing the impact of harmful air emissions on human health and the environment.</p>	<p>NR2040 will be required to comply with all relevant EU Directives and transposing legislation as required. Therefore, no likely significant cumulative effects are perceived at this strategic level.</p>
<p>National Emissions Reduction Commitments (NEC) Directive (2016/2284/EU). Ceilings Regulations 2018</p>	<p>Directive (EU) 2016/2284 (replacing 2001/81/EC) 'on the reduction of national emissions of certain atmospheric pollutants' sets national emission reduction commitments for Member States and the EU for five important air pollutants: nitrogen oxides, non-methane volatile organic compounds, sulphur dioxide, ammonia, and fine particulate matter. The new National Emissions Reduction Commitments (NEC) Directive transposed by S.I. No. 232/2018- European Union (National Emission Ceilings) Regulations 2018, sets 2020 and 2030 emission reduction commitments for five main air pollutants. It also ensures that the emission ceilings for 2010 - set in the earlier directive - remain applicable for Member States until the end of 2019.</p>	<p>NR2040 will be required to comply with all relevant EU Directives and transposing legislation as required. Therefore, no likely significant cumulative effects are perceived at this strategic level.</p>
<p>Industrial Emissions Directive (2010/75/EU)</p>	<p>Directive 2010/75/EU of the European Parliament and the Council on industrial emissions (the Industrial Emissions Directive or IED) is the main EU instrument regulating pollutant emissions from industrial installations. The IED was adopted on 24 November 2010. It is based on a Commission proposal recasting 7 previously existing directives (including in particular the IPPC Directive) following an extensive review of the policy. The IED entered into force on 6 January 2011 and had to be transposed by Member States by 7 January 2013. The IED aims to achieve a high level of protection of human health and the environment taken as a whole by reducing harmful industrial emissions across the EU, in particular through better application of Best Available Techniques (BAT).</p>	<p>NR2040 will be required to comply with all relevant EU Directives and transposing legislation as required. Therefore, no likely significant cumulative effects are perceived at this strategic level.</p>
<p>Commission Regulation (EU) 2017/1151 (regarding Euro 5 and Euro 6 emissions)</p>	<p>Commission Regulation (EU) 2017/1151 of 1 June 2017 supplementing Regulation (EC) No 715/2007 of the European Parliament and of the Council on type-approval of motor vehicles with respect to emissions from light passenger and commercial vehicles (Euro 5 and Euro 6) and on access to vehicle repair and maintenance information, amending Directive 2007/46/EC of the European Parliament and of the Council, Commission Regulation (EC) No 692/2008 and Commission Regulation (EU) No 1230/2012 and repealing Commission Regulation (EC) No 692/2008. Euro 5/6 regulations introduced PM mass emission standards, equal to those for diesels, for positive ignition vehicles with DI engines. EU Member States may introduce tax incentives for early introduction of vehicles that comply with future emission standards.</p>	<p>NR2040 will be required to comply with all relevant EU Directives and transposing legislation as required. Therefore, no likely significant cumulative effects are perceived at this strategic level.</p>
National		
<p>Air Pollution Act 1987</p>	<p>The Air Pollution Act 1987, as amended on 31 October 2022, defines air pollution limits and enables Local Authorities to take measures to prevent or limit pollution. Under the Air Pollution Act, 1987, certain</p>	<p>NR2040 will be required to comply with all relevant EU Directives and</p>

Plan/Policy Name	Summary of the policy/plan/programme and relevance to NR2040	Assessment of Cumulative Effects
	<p>industrial processes have been identified as having a potential for major emissions and such industries are required under the 1987 Air Pollution Act to obtain a licence from their respective County Council. The Act itself puts a general obligation on the occupier of any premises, other than a private dwelling house, to use the best practicable means to limit and, if possible, to prevent an emission from such premises. It empowers County Councils to serve a notice on the occupier of any premises where complaints of air pollution are received. It is an offence to operate an industrial plant except under and in accordance with a licence. The licensing system applies to all existing and new industrial plant as defined by the 1987 Act.</p>	<p>transposing legislation as required. Therefore, no likely significant cumulative effects are perceived at this strategic level.</p>
<p>Air Pollution Act 1987 (Solid Fuels) Regulations 2022 (S.I. No. 529 of 2022)</p>	<p>The primary focus of the Solid Fuel Regulations is on the large-scale, commercial sale of smoky fuels, including smoky coal, turf and wet wood. These fuels are proven to be a major contributor to air pollution in Ireland.</p> <p>Under the regulations, the new health standards for solid fuels came into effect on 31 October 2022:</p> <ul style="list-style-type: none"> • Coal products and manufactured solid fuels must have a smoke emission rate of less than 10g/hour. • Manufactured part biomass products must have a smoke emission rate of less than 5g/hr. • Coal products and manufactured solid fuels, including manufactured part biomass products, must have a sulphur content of less than 2% by weight on a dry ash-free basis. Subject to a market assessment, this limit will be reduced to 1% with effect from 1 September 2025. • 100% biomass products, wood products and wood logs, supplies in units under 2m³, will be required to have a moisture content of 25% or less (moving to 20% with effect from 1 September 2025). Wood logs sold in larger volumes will be required to come with instructions for the purchaser on how to dry this wood. 	<p>NR2040 will be required to comply with all relevant EU Directives and transposing legislation as required. Therefore, no likely significant cumulative effects are perceived at this strategic level.</p>
<p>Draft Clean Air Strategy</p>	<p>The Department of Communications, Climate Action and Environment (DCCAE) is developing a national Clean Air Strategy with the aim of promoting clean air policies to enhance and protect the quality of the air we breathe. The Clean Air Strategy will provide the strategic policy framework necessary to identify and promote the integrated measures across government policy that are required to reduce air pollution and promote cleaner air while delivering on wider national objectives. At the time of writing the draft strategy was issued for public consultation in March 2022 and is considering consultation feedback.</p> <p>Relevance to NR2040:</p> <p>NR2040 recognises that road transport is a source of air pollution and includes cross cutting commitments to support the decarbonisation of the transport sector and reduce emissions to the environment. Commitments are wide ranging and will have interlinked benefits for public health, climate policy, sustainable communities, congestion-reduction and the economy.</p>	
<p>National Air Pollution Control Programme (NAPCP 2021)</p>	<p>The National Air Pollution Control Programme (NAPCP) is a technical document which outlines the pathway Ireland will follow to achieve compliance with its commitments under the National Emission Ceilings Directive (NEC Directive). The NEC Directive establishes emission ceilings for 2020 and 2030 for five specified pollutants: nitrogen oxides (NO_x), non-methane volatile organic compounds (NMVOCs), sulphur dioxide (SO₂), ammonia (NH₃) and fine particulate matter (PM_{2.5}). It also mandates the development of a NAPCP for each Member State. The format of the NAPCP is set down by the European</p>	<p>Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate.</p>

Plan/Policy Name	Summary of the policy/plan/programme and relevance to NR2040	Assessment of Cumulative Effects
	<p>Commission in implementing decision (EU) 2018/1522, which was adopted on 11 October 2018. The NAPCP includes:</p> <ul style="list-style-type: none"> • An overview of sectors and national policy frameworks in Ireland that impact on emissions of the five NEC pollutants. • An overview of the current outlook for compliance with NEC targets for each pollutant. Projections of relevant pollutant emissions to 2030. • Policy options, measures, and actions across sectors but in particular the residential, transport agricultural and energy sectors aimed at reducing emissions of the five specified air pollutants. <p>Relevance to NR2040: Projects arising from the NR2040 will be required to have regard to the National Air Pollution Control Programme as appropriate.</p>	
<p>Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Schemes (NRA/TII)</p>	<p>The NRA / TII Guidelines for the Treatment of Air Quality during the Planning and Construction of National Road Schemes provides a step-by-step approach for the integration of air quality considerations into the various planning phases of the 2010 National Roads Project Management Guidelines (NRPMG). This revised document incorporates new policies and best practice findings resulting from the post-EIA air quality evaluation research studies.</p> <p>Relevance to NR2040: Projects arising from the NR2040 will be required to have regard to the NRA / TII Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Schemes as appropriate.</p>	<p>Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate.</p>
Regional		
<p>Dublin Region Air Quality Plan 2021- Air Quality Plan to Improve Nitrogen Dioxide Levels in Dublin Region</p>	<p>The four Dublin Local Authorities – Dublin City Council, Dún Laoghaire-Rathdown County Council, Fingal County Council and South Dublin County Council are committed to protecting and enhancing air quality across the Dublin region. The exceedance of the EU limit value for nitrogen dioxide in the Dublin region in 2019 necessitated the preparation of the Dublin Region Air Quality Plan 2021 -Air Quality Plan to improve Nitrogen Dioxide levels in Dublin Region. This air quality plan sets out 14 broad measures and a number of associated actions to address the exceedance of the nitrogen dioxide annual limit value.</p> <p>Relevance to NR2040: Measures included in the Air Quality Plan of relevance to the NR2040 National Road strategy include:</p> <ul style="list-style-type: none"> • Continued Delivery of the Active Travel Programme. • Electrical Vehicle (EV) Charging Strategy. <p>Projects arising from the NR2040 will be required to have regard to Dublin Region Air Quality Plan 2021 as appropriate.</p>	<p>Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate.</p>
Climate		
International		

Plan/Policy Name	Summary of the policy/plan/programme and relevance to NR2040	Assessment of Cumulative Effects
The Kyoto Protocol 1997 and the Climate Change Programme (ECCP II) 2005	<p>The Kyoto Protocol is an international agreement which actions the United Nations Framework Convention on Climate Change. The Kyoto Protocol entered into force on 16 February 2005 and commits industrialised countries, including the EU in transition to limit and reduce greenhouse gas (GHG) emissions in accordance with agreed individual targets. The Convention itself only asks those countries to adopt policies and measures on mitigation and to report periodically.</p> <p>The Climate Change Programme (ECCP II) objectives seek to develop the necessary elements of a strategy to implement the Kyoto protocol.</p>	NR2040 will be required to comply with all relevant EU Directives and transposing legislation as required. Therefore, no likely significant cumulative effects are perceived at this strategic level.
Paris Agreement (UNFCCC) 2015	The Paris Agreement sets out a global action plan to put the world on track to avoid dangerous climate change by limiting global warming to well below 2°C by 2050. The Paris Agreement is a bridge between today's policies and climate-neutrality before the end of the century.	<p>NR2040 incorporates sustainability into the development of the strategy, likely positive cumulative effects at this strategic level.</p> <p>Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate.</p>
IPPC Sixth Assessment Report	The Intergovernmental Panel on Climate Change (IPCC) is currently in its Sixth Assessment cycle (AR6) which provides an overview of the state of knowledge on the science of climate change, emphasizing new results since the publication of the Fifth Assessment Report (AR5) in 2014. 2023 is when countries will review progress towards the Paris Agreement goals, including the goal of keeping global warming to well below 2°C while pursuing efforts to limit it to 1.5°C.	<p>NR2040 incorporates sustainability into the development of the strategy, likely positive cumulative effects at this strategic level.</p> <p>Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate.</p>
EU		
European Climate Law (Regulation 2021/1119)	Regulation 2021/1119 aims at achieving net zero greenhouse gas emissions for Member States by 2050, mainly by regulating union-wide greenhouse gas emissions and removals, investing in green technologies and protecting the natural environment. To this end, this Regulation sets out a binding objective of climate neutrality in the Union by 2050 in accordance with the long-term objectives of the Paris Agreement and establishes a framework for the irreversible and gradual reduction of anthropogenic greenhouse gas emissions by sources and enhancement of removals by sinks regulated in Union law. In addition, this Regulation sets out a binding Union target of a net domestic reduction in greenhouse gas emissions for 2030 and 2040.	NR2040 will be required to comply with all relevant EU Law as required. Therefore, no likely significant cumulative effects are perceived at this strategic level.

Plan/Policy Name	Summary of the policy/plan/programme and relevance to NR2040	Assessment of Cumulative Effects
LULUCF Regulation (Regulation 2018/841)	<p>Under current EU legislation, EU Member States have to ensure that accounted greenhouse gas emissions from land use, land use change or forestry are balanced by at least an equivalent accounted removal of CO₂ from the atmosphere in the period 2021 to 2030.</p> <p>The Land Use, Land Use Change and Forestry (LULUCF) Regulation (EU) 2018/841 implements the agreement between EU leaders in October 2014 that all sectors should contribute to the EU's 2030 emission reduction target, including the land use sector. The Commission is proposing to increase the carbon removals to -310 million of tonnes CO₂ equivalent by 2030 and to achieve climate neutrality in the combined land use, forestry and agriculture sector by 2035 at EU level.</p> <p>This is in line with its more ambitious target of achieving net emission reductions of at least 55% by 2030, compared to 1990 levels.</p> <p>The objective of the Regulation is to:</p> <ul style="list-style-type: none"> • To set ambitious but fair net removal targets for each Member State in order to reverse the trend of the decreasing carbon sink • To set the EU-wide climate neutrality objective in 2035 for the land use, forestry and agriculture sector and to provide a more integrated policy framework • To simplify the rules and to enhance the quality of monitoring 	NR2040 will be required to comply with all relevant EU Law as required. Therefore, no likely significant cumulative effects are perceived at this strategic level.
Forging a Climate Resilient Europe – A new EU Strategy on Adaption to Climate Change 2021	<p>This EU strategy on Adaptation to Climate Change proceeds with the establishing of a pathway to prepare for the unavoidable effects of climate change. While the EU does everything within its power to mitigate climate change, domestically and internationally, we must also get ready to face the unavoidable consequences of climate change.</p> <p>Relevance to NR2040:</p> <p>NR2040 strategy aligns with Project Ireland 2040 which is cognisant of Ireland's climate commitments and obligations. NR2040 sets out a strong commitment to provide a National Roads network that is environmentally, socially, and economically sustainable which will align with the Forging a Climate Resilient Europe – A new EU Strategy on Adaption to Climate Change 2021.</p>	Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate.
The 2030 Climate and Energy Framework	<p>The 2030 Climate and Energy Framework includes EU-wide targets and policy objectives to make the EU's economy and energy system more competitive, secure and sustainable for the 2020 to 2030 period. It includes targets for reducing greenhouse gas emissions and increasing use of renewable energies and proposes a new governance system and performance indicators.</p> <p>The key targets for 2030:</p> <ul style="list-style-type: none"> • At least 40% cuts in greenhouse gas emissions (from 1990 levels). • At least 32% share for renewable energy. • At least 32.5% improvement in energy efficiency. <p>Relevance to NR2040:</p> <p>The NR2040 aligns with Project Ireland 2040 which is cognisant and in compliance with Ireland's climate commitments and obligations. NR2040 sets out a strong commitment to provide a National Roads network</p>	NR2040 incorporates sustainability into the development of the strategy, likely positive cumulative effects are perceived at this strategic level. <p>Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate.</p>

Plan/Policy Name	Summary of the policy/plan/programme and relevance to NR2040	Assessment of Cumulative Effects
	that is environmentally, socially, and economically sustainable which aligns with the 2030 Climate and Energy Framework.	
National		
Climate Action and Low Carbon Development (Amendment) Act 2021	The Climate Action and Low Carbon Development Act established a legally binding commitment for Ireland to achieve net zero emissions no later than 2050 while achieving a 51% reduction in emissions by 2030. The act provides for certain changes to the Climate Change Advisory Council, namely to provide for carbon budgets and a sectoral emissions ceiling to apply to different sectors of the economy; to provide for reporting by Ministers of the Government to a joint committee of the Houses of the Oireachtas; to provide for local authority climate action plans; for those and other purposes to amend the Climate Action and Low Carbon Development Act 2015; to provide that local authorities shall, when making development plans, take account of their climate action plans.	NR2040 will be required to comply with all relevant EU Directives and transposing legislation as required. Therefore, no likely significant cumulative effects are perceived at this strategic level.
The Climate Action Plan 2023	<p>The Climate Action Plan 2023 (CAP), published in December 2022, is the second annual update to Ireland's Climate Action Plan 2019. It sets out a roadmap of actions in various sectors, including transport to reduce greenhouse gas emissions by 51 percent by 2030 (relative to 2018 levels) and reach net zero emissions no later than 2050. The 2023 plan is the first to be prepared under the Climate Action and Low Carbon Development (Amendment) Act 2021, following the introduction of economy-wide carbon budgets and sectoral emissions ceilings approved by Government in 2022.</p> <p>Government recognises that there is transformational and unprecedented systems and behavioural change required to deliver transport sector emissions reductions. Transport is identified in the CAP as a sector required to reduce emissions by 50 percent by 2030. CAP23 is aligned with the carbon budgets and sectoral emissions ceilings. It supports policies to transform how society travel, and reduce transport emissions by adopting the Avoid-Shift-Improve approach i.e. reducing or avoiding the need to travel, shifting to sustainable modes of travel and improving transport infrastructure including the energy efficiency of vehicles.</p> <p>Relevance to NR2040:</p> <p>CAP 2023 specifies numerous measures and actions required to support the Avoid Shift Improve approach. These range from developing updated standards, support for active travel projects, greenways, working collaboratively with other stakeholders and engaging the public on climate action and sustainable mobility. Some of the actions relevant to road transport include:</p> <ul style="list-style-type: none"> • TR/23/29: Advance roll-out of 1,000 km walking/cycling infrastructure. • TR/23/30: Advance roll-out of National Cycle and Greenway Networks. • TR/23/39: Advance PSO electric bus fleet procurement including depot charging upgrades. • TR/23/41: Prioritise and accelerate delivery of NTA Connecting Ireland and new town services, via conventional and non-conventional modes of public transport services. • TR/23/44: Develop strategy for the transition of long-distance PSO and commercial bus services to low-emission technologies. 	<p>NR2040 supports the implementation of the Climate Action Plan including the decarbonisation of the transport sector. There is likely to be positive and/or negative effects depending on the implementation of NR2040 at project level. The Strategy focus is in supporting decarbonisation, sustainable mobility while recognising that these options may not be suitable or available immediately for everyone everywhere. Overall, the change to policy led and not predict and provide model is likely to result in positive cumulative effects influencing climatic factors which is likely to result in indirect positive cumulative effects on biodiversity, air quality and human health.</p> <p>Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments which includes the assessment of climate impacts i.e., project level EIA/ AA/SFRA as appropriate.</p>

Plan/Policy Name	Summary of the policy/plan/programme and relevance to NR2040	Assessment of Cumulative Effects
<p>Developing Resilience to Climate Change in the Irish Transport Sector (DTTAS) 2017</p>	<ul style="list-style-type: none"> TR/23/49: Expand operation and availability of bike share schemes nationally. <p>Developing Resilience to Climate Change in the Irish Transport Sector considered the entirety of the national transport network, including land transport (road and rail), maritime (port) and aviation networks. The Plan outlines initial research and analysis on the likely effects of climate change on the Irish Transport Sector and proposes actions to develop climate resilience within the sector. It is a high-level plan endeavouring to identify where vulnerabilities lie at a broad level and, accordingly, is not infrastructure specific.</p> <p>Relevance to NR2040:</p> <p>The NR2040 is cognisant of Ireland's climate targets, commitments and obligations. NR2040 recognises the role it will play in the efforts required to support decarbonisation and ensuring the network is protected and renewed so that it can be resilient and adapt to the effects of climate change. This document will inform TII's activities and future research work in ensuring the network is resilient to climate change.</p>	<p>No likely significant cumulative effects are perceived at this strategic level.</p>
<p>Ireland's National Energy and Climate Plan 2021-2030 (and subsequent revisions)</p>	<p>In accordance with the Governance of the Energy Union and Climate Action Regulation, Ireland's draft National Energy & Climate Plan (NECP) 2021-2030 was submitted to the European Commission in December 2018. The draft NECP considered energy and climate policies developed up to that point, the levels of demographic and economic growth identified in the Project Ireland 2040 process and included all of the climate and energy measures set out in the National Development Plan 2018-2027. The 2019 NECP was prepared to incorporate all planned policies and measures that were identified up to the end of 2019, and which collectively deliver a 30% reduction by 2030 in non-emissions trading system greenhouse gas emissions (from 2005 levels). Under the Programme for Government, Our Shared Future, Ireland is committed to achieving a 7% annual average reduction in greenhouse gas emissions between 2021 and 2030. The NECP was drafted in line with the current EU effort-sharing approach, before the Government committed to this higher level of ambition, and therefore does not reflect this higher commitment. Ireland is currently developing those policies and measures and intends to integrate the revision of the NECP into the process which will be required for increasing the overall EU contribution under the Paris Agreement.</p> <p>Relevance to NR2040:</p> <p>The NR2040 is cognisant of Ireland's climate targets, commitments and obligations. NR2040 recognises the role it will play in the efforts required to support decarbonisation and ensuring the network is protected and renewed so that it can be resilient and adapt to the effects of climate change. This Plan and subsequent revisions will inform TII's activities and future research work in ensuring the network is resilient to climate change.</p>	<p>NR2040 incorporates sustainability into the development of the strategy, likely positive cumulative effects are perceived at this strategic level.</p>
<p>National Adaptation Framework (2018)</p>	<p>Ireland's first statutory National Adaptation Framework (NAF) was published on 19 January 2018. The NAF sets out the national strategy to reduce the vulnerability of the country to the negative effects of climate change and to avail of positive impacts. The NAF was developed under the Climate Action and Low Carbon Development Act 2015.</p> <p>The NAF builds on the work already carried out under the National Climate Change Adaptation Framework (NCCAF, 2012). The NAF outlines a whole of government and society approach to climate</p>	<p>NR2040 incorporates sustainability into the development of the strategy, likely positive cumulative effects are perceived at this strategic level.</p>

Plan/Policy Name	Summary of the policy/plan/programme and relevance to NR2040	Assessment of Cumulative Effects
	<p>adaptation in Ireland. It also aims to improve the enabling environment for adaptation through ongoing engagement with civil society, the private sector, and the research community.</p> <p>Relevance to NR2040:</p> <p>NR2040 promotes sustainability and aligns with the National Adaptation Framework through its pursuit of an environmentally, social and economically sustainable National Roads network.</p>	
Regional		
<p>Just Transition Fourth and Final Progress Report - December 2021</p>	<p>The Climate Action Plan commits to delivering a 'just transition', recognising the significant level of change required and that the burden must be as fairly distributed as possible. DECC has established a National Just Transition Fund to ensure that workers and the Midlands as a community are fully supported. The Wider Midlands is the first region in Ireland experiencing a concentrated transition away from carbon intensive activities. It is planned that the jobs in peat extraction will make way for jobs in renewable energy, bog rehabilitation and other new business opportunities. Designed to facilitate a just transition for the midlands area of Ireland, the Just Transition Progress Reports highlights 'strategic, structural, and targeted interventions in the region'. Decarbonising the economy presents significant challenges but also brings important opportunities to respond and create, learning on how best to deliver a just transition.</p> <p>Relevance to NR2040:</p> <p>'Regional Transport Initiatives' were highlighted as a recommendation and future action in the Just Transition progress Report. NR2040 supports decarbonisation efforts and also supports movement of people goods and services and enhanced regional and rural accessibility.</p>	<p>NR2040 incorporates sustainability into the development of the strategy, likely positive cumulative effects are perceived at this strategic level.</p>
Material Assets: Waste		
EU		
<p>Waste Framework Directive (2008/98/EC)</p>	<p>The Waste Framework Directive transposed by the European Union (Waste Directive) Regulations 2011-2020 sets out the definitions of waste and basic management principles for waste to ensure waste is managed to not impact the environment or human health. The Directive lays down some basic waste management principles: it requires that waste be managed without endangering human health and harming the environment, and without risk to water, air, soil, plants, or animals, without causing a nuisance through noise or odours, and without adversely affecting the countryside or places of special interest. The Directive requires that waste legislation and policy of EU Member States is applied according to a waste management hierarchy. The new Directive places responsibility on EU Member States to improve their waste management systems, to improve the efficiency of resource use, and to ensure that waste is valued as a resource.</p>	<p>NR2040 will be required to comply with all relevant EU Directives and transposing legislation as required. Therefore, no likely significant cumulative effects are perceived at this strategic level.</p>
National		
<p>Waste Management Acts 1996-2021 (as amended)</p>	<p>The Waste Management Acts provide for a general duty on everyone not to hold, transport, recover or dispose of waste in a manner that causes or is likely to cause environmental pollution.</p>	<p>NR2040 will be required to comply with all relevant EU Directives and transposing legislation as required. Therefore, no likely significant</p>

Plan/Policy Name	Summary of the policy/plan/programme and relevance to NR2040	Assessment of Cumulative Effects
		cumulative effects are perceived at this strategic level.
Circular Economy, Waste Management (Amendment) and Minerals Development (Amendment) Bill 2022	The purpose of the Circular Economy Bill is to facilitate a shift from the linear 'take-make-waste' model to a more sustainable model where waste and resource use are reduced, and materials and products are used and maintained for as long as possible and regenerated at the end of use. This means less waste. As well as providing a legal basis for the circular economy programme, strategy and fund, the Circular Economy Bill provides for a number of significant changes including the imposition of a waste recovery levy, and the use of CCTV and other recording devices for waste enforcement purposes.	NR2040 will be required to comply with all relevant EU Directives and transposing legislation as required. Therefore, no likely significant cumulative effects are perceived at this strategic level.
Waste Action Plan for a Circular Economy – Ireland's National Waste Policy (DECC, 2020)	<p>The Waste Action Plan for a Circular Economy is Ireland's new roadmap for waste planning and management. The plan emphasises the need to embed climate action in all strands of public policy. This Plan shifts focus away from waste disposal and looks instead to how we can preserve resources by creating a circular economy.</p> <p>Relevance to NR2040:</p> <p>Projects arising from NR2040 where the delivery of new road infrastructure is required, will be developed with green procurement and circular economy principles as appropriate which aligns with the Waste Action Plan for a Circular Economy – Ireland's National Waste Policy.</p>	There is potential for positive cumulative effects resulting from implementation of NR2040 and this policy.
Whole of Government Circular Economy Strategy 2022-2023	<p>The Whole of Government Circular Economy Strategy is Ireland's first national circular economy strategy. The Strategy is a key addition to Government's drive to achieve a 51% reduction in overall greenhouse gas emissions by 2030 and to get on a path to reach net-zero emissions by no later than 2050, as per commitments in the Programme for Government and the Climate Act 2021.</p> <p>Relevance to NR2040:</p> <p>Regarding transport, the Circular Economy Strategy outlines 4 preliminary actions for the circular economy roadmaps:</p> <ul style="list-style-type: none"> • Increased use of telecommuting, as well as of local and regional hubs • Prioritising resource efficient personal mobility, e.g., walking and cycling • Expanding public transport capacity and promoting shared mobility schemes • Efficient end-of-life vehicle waste management schemes. <p>Projects arising from NR2040 where the delivery of new road infrastructure is required, will be developed with green procurement and circular economy practices, as appropriate. NR2040 will have regard to the Whole of Government Circular Economy Strategy 2022-2023.</p>	There is potential for positive cumulative effects resulting from implementation of NR2040 and this strategy.
Regional		
Regional Waste Management Plans 2015-2021	Waste management planning is the responsibility of local authorities under Part II of the Waste Management Act, 1996. In line with a key objective in A Resource Opportunity – Waste Management Policy in Ireland, the three regions of Connacht-Ulster, Southern, and Eastern-Midlands were established in June 2013, and in May 2015, three waste management plans were published for each. The plans give	There is potential for positive cumulative effects resulting from implementation of NR2040 and these Plans.

Plan/Policy Name	Summary of the policy/plan/programme and relevance to NR2040	Assessment of Cumulative Effects
	<p>effect to national and EU waste policy, and address waste prevention and management (including generation, collection, and treatment) over the period 2015-2021.</p> <p>Relevance to NR2040:</p> <p>Projects arising from NR2040 where the delivery of new road infrastructure is required, will be developed with green procurement and circular economy principles as appropriate. NR2040 will have regard to the Regional Waste Management Plans.</p>	
Material Assets: Transport		
EU		
The Clean Vehicles Directive (2019/11610)	The revised Clean Vehicles Directive promotes clean mobility solutions in public procurement tenders, providing a solid boost to the demand and further deployment of low- and zero-emission vehicles. The new Directive defines "clean vehicles" and sets national targets for their public procurement. It applies to different means of public procurement, including purchase, lease, rent and relevant services contracts. Adopted by the European Parliament & Council in June 2019, the Directive needs to be transposed into national law by 2 August 2021.	NR2040 will be required to comply with all relevant EU Directives and transposing legislation as required. Therefore, no likely significant cumulative effects are perceived at this strategic level.
The Fuel Quality Directive (2009/30/EC)	The Fuel Quality Directive updates the provisions under Directive 98/70/EC concerning the quality of petrol and diesel fuels. Firstly, it widens the application scope of that Directive, which shall include: (a) technical specifications on health and environmental grounds for fuels to be used with positive ignition and compression-ignition engines, taking account of the technical requirements of those engines; and (b) a target for the reduction of life cycle greenhouse gas emissions. These specifications and Directive 2009/30/EC of the European Parliament and of the Council amending Directive 98/70/EC as regards the specification of petrol, diesel and gasoil and introducing a mechanism to monitor and reduce greenhouse gas emissions and amending Council Directive 1999/32/EC as regards the specification of fuel used by inland waterway vessels and repealing Directive 93/12/EEC.	NR2040 will be required to comply with all relevant EU Directives and transposing legislation as required. Therefore, no likely significant cumulative effects are perceived at this strategic level.
Road Infrastructure Safety Management Directive (2008/96/EC)	<p>The revision of the Directive on Road Infrastructure Safety Management is included in the third and last 'Europe on the Move' package that follows on the 2016 Low Emission Mobility Strategy and the previous Europe on the Move packages of May and November 2017. This third package focuses on the delivery of the September 2017 new industrial policy and includes initiatives whose purpose is to support the transition towards a safe, clean, automated, and connected mobility for all.</p> <p>The Commission adopted on 17 May 2018 the proposal for a Directive amending Directive 2008/96/EC on road infrastructure safety management together with other legislative and non-legislative initiatives. In order to promote a safe mobility, the Commission is proposing a common framework for road safety over the 2021-2030 period and two legislative proposals: one on vehicle and pedestrian safety (see related file on type-approval of motor vehicles as regards their general safety) and this one, on road infrastructure safety management.</p> <p>The objective of the legislative proposal is to improve road infrastructure safety management, to reduce both the number of accidents and their severity. The proposed revision of the existing legislation notably proposed to extend the scope of the Directive beyond the trans-European transport network (TEN-T) to</p>	NR2040 will be required to comply with all relevant EU Directives and transposing legislation as required. Therefore, no likely significant cumulative effects are perceived at this strategic level.

Plan/Policy Name	Summary of the policy/plan/programme and relevance to NR2040	Assessment of Cumulative Effects
	<p>motorways and primary roads outside the network as well as all roads outside urban areas that are built using EU funds. It improves transparency and the follow-up of infrastructure safety management procedures and introduces a network-wide road assessment to map the risks of accidents. It proposes to set general performance requirements for road markings and road signs making it easier for cooperative, connected and automated mobility systems, and proposes to systematically consider vulnerable users in all road safety management procedures.</p>	
<p>Eurovignette Directive (1999/62/EC) and subsequent revisions</p>	<p>Under the Eurovignette Directive, road charges for trucks travelling on Europe's main arteries will mostly move from time-based to actual kilometres driven-based charging by 2030. The shift to a more accurate distance charging system aims to enforce the polluter/user pays principle of EU law.</p>	<p>NR2040 will be required to comply with all relevant EU Directives and transposing legislation as required. Therefore, no likely significant cumulative effects are perceived at this strategic level.</p>
<p>Intelligent Transport Systems Directive (2010/40/EU)</p>	<p>The Intelligent Transport Systems Directive strived to improve the coordination between intelligent transport systems deployed so to enhance the functioning of road transport and its interfaces with other transport modes. This, in turn, was to reduce the air polluting and CO2 emissions from road transport, relieve congestion and improve road safety.</p>	<p>NR2040 will be required to comply with all relevant EU Directives and transposing legislation as required. Therefore, no likely significant cumulative effects are perceived at this strategic level.</p>
<p>Trans-European Transport Network (TEN-T) Policy: Regulation (EU) (1315/2013)</p>	<p>The Trans-European Transport Network (TEN-T) policy addresses the implementation and development of a Europe-wide network of railway lines, roads, inland waterways, maritime shipping routes, ports, airports, and railroad terminals. The ultimate objective is to close gaps, remove bottlenecks and technical barriers, as well as to strengthen social, economic, and territorial cohesion in the EU. Besides the construction of new physical infrastructure, the TEN-T policy supports the application of innovation, new technologies and digital solutions to all modes of transport. The objective is improved use of infrastructure, reduced environmental impact of transport, enhanced energy efficiency and increased safety.</p>	<p>NR2040 will be required to comply with all relevant EU Directives and transposing legislation as required. Therefore, no likely significant cumulative effects are perceived at this strategic level. .</p>
<p>Ports 2030 – Gateways for the Trans European Transport Network 2014</p>	<p>This Communication reviews the European Port Policy and builds on the progress achieved. It accompanies and supplements a proposal for a regulation of the European Parliament and of the Council establishing a framework on market access to port services and financial transparency of ports. It identifies eight additional set of EU actions needed to further unlock the potential of ports. This revised European Port Policy covers the trans-European transport network seaports, which account for 96% of freight and 93% of passengers transiting through ports in the Union. Ten-T ports must be connected with 'railway lines, roads and, where possible, inland waterways'.</p> <p>Relevance to NR2040:</p> <p>The key objectives of the NR2040 are to provide safe and efficient transport network for people and goods and to tailor for different customers in different places which aligns with the strategy set out in the Ports 2030 – Gateways for the Trans European Transport Network 2014.</p>	<p>There is potential for positive cumulative effects resulting from implementation of NR2040 and this strategy.</p>

Plan/Policy Name	Summary of the policy/plan/programme and relevance to NR2040	Assessment of Cumulative Effects
Sustainable and Smart Mobility Strategy – putting European transport on track for the future 2020	<p>In 2020, the European Commission presented its ‘Sustainable and Smart Mobility Strategy’ together with an Action Plan initiative that will guide the EU’s work for the next four years. This strategy lays the foundation for how the EU transport system can achieve its green and digital transformation and become more resilient to future crises. The result will be a 90% cut in emissions by 2050, delivered by a smart, competitive, safe, accessible, and affordable transport system. The three main objectives of the plan are:</p> <ol style="list-style-type: none"> 1. Sustainable mobility, 2. Smart mobility, and 3. Resilient mobility. <p>Relevance to NR2040: One of the key objectives of the NR2040 is to provide environmentally, socially, and economically sustainable network which aligns with the objectives of the Sustainable and Smart Mobility Strategy.</p>	There is potential for positive cumulative effects resulting from implementation of NR2040 and this strategy.
EU White Paper, Roadmap to a Single European Transport Area – Towards a Competitive and Resource Efficient Transport System 2011	<p>The European Commission adopted a roadmap of 40 concrete initiatives for the next decade to build a competitive transport system that will increase mobility, remove major barriers in key areas and fuel growth and employment. At the same time, the proposals will dramatically reduce Europe’s dependence on imported oil and cut carbon emissions in transport by 60% by 2050. By 2050, key goals will include:</p> <ul style="list-style-type: none"> • No more conventionally fuelled cars in cities. • 40% use of sustainable low carbon fuels in aviation; at least 40% cut in shipping emissions. • A 50% shift of medium distance intercity passenger and freight journeys from road to rail and waterborne transport. • All of which will contribute to a 60% cut in transport emissions by the middle of the century. <p>Relevance to NR2040: One of the key objectives of the NR2040 is to provide an environmentally, socially, and economically sustainable network which aligns with the EU White Paper, Roadmap to a Single European Transport Area – Towards a Competitive and Resource Efficient Transport System.</p>	There is potential for positive cumulative effects resulting from implementation of NR2040 and this White Paper. No likely significant negative cumulative effects are perceived at this strategic level.
National		
The Roads Act 1993 (as amended)	The Roads Act provides for the construction and maintenance of public roads. The Roads Act amendment of 2019 included provision for further categories to be included in the EIA of roads developments where applicable. Furthermore, the amendment stated that road developments that comprise of a motorway, a busway, a service area, or the construction of a public road or the improvement of same shall be subject to EIA. The 2006 and 2015 amendments had focused on the designation of national roads and of motorways.	NR2040 will be required to comply with all relevant legislation as required. Therefore, no likely significant cumulative effects are perceived at this strategic level.
National Investment Framework for Transport in Ireland	The Department of Transport prepared the National Investment Framework for Transport in Ireland (NIFTI) in 2021. NIFTI is the Department’s strategic framework to support the consideration and prioritisation of future investment in land transport. It represents the Department’s contribution to Project Ireland 2040, the Government’s long-term overarching strategy to make Ireland a better country for all	There is potential for positive cumulative effects resulting from implementation of NR2040 and NIFTI.

Plan/Policy Name	Summary of the policy/plan/programme and relevance to NR2040	Assessment of Cumulative Effects
	<p>and to build a more sustainable future. NIFTI has been developed to ensure sectoral investment is aligned with the NPF and supports the delivery of the ten National Strategic Outcomes (NSOs). NIFTI establishes a common lens through which to consider potential investment. In doing so, NIFTI sits alongside other Government priorities and policy objectives, such as the Programme for Government and Climate Action Plan.</p> <p>Relevance to NR2040: NR2040 supports the implementation of NIFTI as it relates to National Roads.</p>	<p>Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate.</p>
<p>Integrated Implementation Plan 2019-2024</p>	<p>The Integrated Implementation Plan 2019-2024 was created by the National Transport Authority. Section 13(1) of the Dublin Transport Authority Act 2008 requires the Authority, following the approval of a transport strategy for the region by the Minister for Transport, Tourism and Sport, to prepare an integrated implementation plan covering a six-year period. The Transport Strategy for the Greater Dublin Area 2016-2035 was approved in February 2016. The preparation of this Integrated Implementation Plan was aligned with the Government's review of capital spending which commenced in 2016 and culminated with the publication of the National Development Plan 2018-2027 in February 2018. The investment will be across four key areas which are:</p> <ul style="list-style-type: none"> • Cycling / Walking; • Traffic Management; • Safety; and • Integration. <p>Relevance to NR2040: The NR2040 investment priorities aligns with the integrated Implementation plan.</p>	<p>There is potential for positive cumulative effects resulting from implementation of NR2040 and this plan.</p> <p>Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate.</p>
<p>National Policy Framework on Alternative Fuels Infrastructure for Transport in Ireland 2017-2030</p>	<p>The National Policy Framework on Alternative Fuels Infrastructure for Transport in Ireland represents the first step in communicating the government's longer term national vision for decarbonising transport by 2050, the cornerstone of which is the ambition that by 2030 all new cars and vans sold in Ireland will be zero-emissions capable. The incorporation of climate targets into transport policies is likely to have broad effects on how our transport structure is designed and managed. Effects from a transport perspective to be assessed including road access, network, safety, and traffic patterns to and from the proposed facility in accordance with road design guidelines and/or relevant local authority guidelines in relation to roads. In addition to the foregoing, the development of any future refuelling and recharging infrastructure should assess the potential vulnerability of new infrastructure to the likely effects of climate change.</p> <p>Relevance to NR2040: One of the key objectives of the NR2040 is to provide environmentally, socially, and economically sustainable network and aims to increase the provision of electric vehicle charging infrastructure nationwide. NR2040 supports the National Policy Framework on Alternative Fuels Infrastructure for Transport in Ireland 2017-2030.</p>	<p>There is potential for positive cumulative effects resulting from implementation of NR2040 and this Framework.</p> <p>Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate.</p>

Plan/Policy Name	Summary of the policy/plan/programme and relevance to NR2040	Assessment of Cumulative Effects
<p>Common Appraisal Framework (DoT) and the Interim NIFTI Alignment Appendix (DoT, 2022)</p>	<p>The purpose of the Common Appraisal Framework is to develop a common framework for appraising transport investments in accordance with the Public Spending Code. Following the publication of the NIFTI, an additional appendix containing interim guidance on the alignment of land transport investment proposals with NIFTI was made available. This guidance takes effect immediately and should be followed by Sponsoring Agencies when submitting appraisal documentation to the appropriate Approving Authority.</p> <p>Relevance to NR2040: Projects arising from the NR2040 will be required to have regard to the Common Appraisal Framework as appropriate.</p>	<p>Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation and guidance including demonstrating alignment with NIFTI at project level. This will also include any required environmental assessments, i.e., project level EIA/ AA/SFRA as appropriate.</p>
<p>2030 Rail Network Strategy</p>	<p>Irish Rail produced their Network Rail Strategy following the publication of the National Development Plan for 2012 – 2019 and aims to <i>“To provide safe, accessible and integrated rail services that contribute to sustainable economic and regional development in an efficient manner”</i>. The National Spatial Strategy identified several key investment requirements in relation to the transport infrastructure. One of these requirements is the need to build on Ireland’s radial transport system of main roads and rail lines that connect Dublin to other regions, by developing an improved mesh or network of roads and public transport services.</p> <p>Relevance to NR2040: Projects arising from the NR2040 will be required to have regard to the 2030 Rail Network Strategy as appropriate.</p>	<p>There is potential for positive cumulative effects resulting from implementation of NR2040 and this strategy.</p> <p>Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/ AA/SFRA as appropriate.</p>
<p>Rail Freight 2040 Strategy</p>	<p>European and national objectives to reduce the impact of transport networks on the environment and transition to less impactful, low carbon modes of transporting freight underpins the development of the Rail Freight 2040 Strategy. A new approach to rail freight will ensure a long term sustainable future for the sector in Ireland. The Strategy includes 25 strategic initiatives with an estimated investment of €500 million over the next twenty years. These investments in conjunction with associated service developments and organisational change will transform rail freight infrastructure and enable Iarnród Éireann to better support businesses and modern supply chains.</p> <p>The strategy includes a plan to develop a network of intermodal freight facilities in collaboration with the freight and logistics industry, starting with strategic terminals in Limerick and Dublin, extending over time with smaller tactical terminals in Cork, Galway and Sligo. In addition, reconnecting the Ports of Foynes and Cork to the rail network while enhancing services at other Tier 1 Ports with targeted connection of some industrial sites and the modernisation of fleets, will deliver sustainable growth in volume.</p> <p>Relevance to NR2040: Projects arising from the NR2040 will be required to have regard to Rail Freight 2040 Strategy as appropriate.</p>	<p>There is potential for positive cumulative effects resulting from implementation of NR2040 and this strategy.</p> <p>Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/ AA/SFRA as appropriate.</p>
<p>Strategy for the Future Development of National and Regional Greenways 2018</p>	<p>The Department of Transport, Tourism and Sport recognises the benefits that can arise from the further development of Greenways in Ireland, as a tourism product with significant potential to attract overseas visitors, for local communities in terms of economic benefits, and for all users as an amenity for physical</p>	<p>There is potential for positive cumulative effects resulting from</p>

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	<p>activity and a contributor to health and wellbeing. The objective of this Strategy is to assist in the strategic development of nationally and regionally significant Greenways in appropriate locations constructed to an appropriate standard in order to deliver a quality experience for all Greenways users. It also aims to increase the number and geographical spread of Greenways of scale and quality around the country over the next 10 years with a consequent significant increase in the number of people using Greenways as a visitor experience and as a recreational amenity.</p> <p>Relevance to NR2040: Projects arising from the NR2040 will be required to have regard to the Strategy for the Future Development of National and Regional Greenways as appropriate.</p>	<p>implementation of NR2040 and this strategy.</p> <p>Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate</p>
National Ports Policy (DTTAS) 2013	<p>The National Ports Policy aims to support a competitive and effective market in the maritime transport sector. The policy designated Ports based on their % of overall tonnage processed in regard to the national total. Ports were deemed either nationally or regionally important. The Ports policy supports the development of resources to enable the further growth and efficiency of ports, particularly those that are state owned including the road network.</p> <p>Relevance to NR2040: All Ten-T core ports must be connected to Ten-T core road and rail networks. As a result, the interconnectivity of National Roads and ports is of significant importance.</p>	<p>Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate.</p>
National Sustainable Mobility Policy	<p>The National Sustainable Mobility Policy sets out a strategic framework to 2030 for active travel (walking and cycling) and public transport journeys to help Ireland meet its climate obligations. It is accompanied by an action plan to 2025 which contains actions to improve and expand sustainable mobility options across the country by providing safe, green, accessible, and efficient alternatives to car journeys. It also includes demand management and behavioural change measures to manage daily travel demand more efficiently and to reduce the journeys taken by private car.</p> <p>Relevance to NR2040: One of the key objectives of the NR2040 is to provide environmentally, socially, and economically sustainable network which aligns with the National Sustainable Mobility Policy.</p>	<p>There is potential for positive cumulative effects resulting from implementation of NR2040 and this policy.</p> <p>Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate.</p>
Draft Cycle Connects – Ireland’s Cycle Network plan (NTA, 2022)	<p>The Draft Cycle Connects: Ireland’s Cycle Network plan is comprised of 22 county networks and 57 urban networks, linking into the existing GDA Transport Strategy Plan (Meath Dublin Kildare and Wicklow as part of the GDA cycle network) and Northern Ireland cycle networks, to create a comprehensive cycle network for Ireland. The plan aims to improve sustainable travel by providing the potential for more trips on a safe, accessible and convenient cycling network, connecting more people to more places. Draft proposals for cycling links in key cities, towns and villages in each county are included in the plan, in addition to connections between the larger towns, villages and settlements. The proposed network plan is comprised of interurban routes that connect settlements of over 1,000 people. Any town with a population of over 5,000, as per the 2016 Census, has been developed further with a denser urban cycle network to cater for increased cycle demand. The network is comprised of a variety of routes including inter-urban, urban primary and urban secondary, existing and future greenways, feeder links and also</p>	<p>There is potential for positive and or negative cumulative effects resulting from implementation of NR2040 and this plan.</p> <p>Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate.</p>

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	<p>identifies potential junction upgrade locations. The draft routes are indicative only and subject to change/realignment pending further study, design, environmental assessments, and planning. At the time of writing the consultation period has closed on the draft plan and feedback is being considered by the NTA.</p> <p>Relevance to NR2040: The draft Cycle Connects network proposals extends across Ireland including on sections of the National Roads network. NR2040 promotes improvements in active travel infrastructure.</p>	
<p>Draft National Cycle Network (NCN) TII (2023)</p>	<p>The National Cycle Network (NCN) aims to link towns, cities and destinations across Ireland with a safe, connected and inviting cycle network; encouraging more people away from their cars and onto bicycles. The NCN has been designed to integrate with and complement other cycle infrastructure and networks – both existing and planned – to provide a comprehensive series of networks across Ireland. NCN will act as the core network connecting cities and towns with each other, key destinations and other cycle networks. The proposals are currently at public consultation stage.</p> <p>Relevance to NR2040: The NCN is included as a commitment in NR2040.</p>	<p>There is potential for positive and or negative cumulative effects resulting from implementation of NR2040 and this plan.</p> <p>Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate.</p>
<p>National Cycle Manual (NTA) 2011</p>	<p>The National Cycle Manual developed by the National Transport Authority embraces the Principles of Sustainable Safety as this will offer a safe traffic environment for all road users including cyclists. It offers guidance on integrating the bike in the design of urban areas. The Manual challenges planners and engineers to incorporate cycling within transport networks more proactively than before.</p> <p>Relevance to NR2040: NR2040 supports sustainable and integrated mobility including walking and cycling.</p>	<p>There is potential for positive cumulative effects resulting from implementation of NR2040 and this manual.</p> <p>Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate.</p>
<p>Sectoral Plan for Accessible Transport; Transport Access for All 2012</p>	<p>Transport Access for All, the Transport Sectoral Plan under the Disability Act 2005, was first published in July 2006 and contained a commitment that it would be reviewed on a regular basis. The second review, commenced in 2011, has followed the same process of an extensive consultation involving a wide range of stakeholders including the public, representative disability organisations and transport providers. One of the core principles of the Sectoral Plan developed by the Department of Transport, Tourism and Sport is that through accessibility improvements to the public transport system for people with disabilities, access for all people will be improved. The Department of Transport, Tourism and Sport's high level policy goal for accessible public transport is embodied in the concept „Transport Access for All“. This policy is based on the requirements of the Disability Act 2005 and related public policy and strategies. The Department will continue to promote the development and introduction of accessible public transport</p>	<p>There is potential for positive cumulative effects resulting from implementation of NR2040 and this manual.</p> <p>Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate.</p>

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	<p>services for the greatest number of people with mobility, sensory and cognitive impairments in the shortest possible time.</p> <p>Relevance to NR2040:</p> <p>One of the key objectives of the NR2040 is to tailor for different customers in different places. This places emphasis on catering for all road users by striving to enhance both urban and rural accessibility, supporting transport options for all sectors of society, particularly in hard-to-reach areas. NR2040 aligns with the Sectoral Plan for Accessible Transport; Transport Access for All 2012.</p>	
Road Safety Strategy 2021-2030	<p>Representing Ireland's fifth road safety strategy, this edition of the Roads Safety Strategy 2021-2030 aims to halve the number of serious injuries and deaths on Irish roads over the next decade. This strategy is aligned with Vision Zero, the goal of Ireland experiencing zero road deaths or serious injuries by 2050.</p> <p>Relevance to NR2040:</p> <p>One of the key objectives of the NR2040 is create a network which facilitates the safe and efficient movement of people, goods and services which aligns with the Road Safety Strategy 2021-2030 'Our Journey towards Vision Zero'. TII reaffirm their commitment to delivering on its action as part of NR2040.</p>	TII reaffirm their commitment to delivering on its their action as part of NR2040. There is potential for positive cumulative effects resulting from implementation of NR2040 and this strategy.
Spatial Planning and National Roads: Guidelines for Planning Authorities (TII) 2012	<p>The TII guidelines for Planning Authorities set out planning policy considerations relating to development affecting national primary and secondary roads, including motorways and associated junctions, outside the 50-60 km/h speed limit zones for cities, towns, and villages. The guidelines replace the document, Policy and Planning Framework for Roads, published by the Department in 1985, supplement other policy guidance on roads related matters in other Ministerial guidelines in relation to retail planning and sustainable rural housing and replace the National Roads Authority policy statement on national roads published in May 2006. The guidelines, which have been prepared in consultation with representatives from local authorities, the Department of Transport, Tourism and Sport, and the National Roads Authority, will assist road and planning authorities, the National Roads Authority, National Transport Authority and providers of public transport in relation to their involvement in the overall planning process.</p> <p>Relevance to NR2040:</p> <p>Projects arising from the NR2040 will be required to have regard to the finding of the TII Spatial Planning and National Roads: Guidelines for Planning Authorities as appropriate.</p>	Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate.
Urban Design Manual: A Best Practice Guide Design Manual for Urban Roads and Streets (Government of Ireland, 2019)	<p>This Manual seeks to address street design within urban areas (i.e., cities, towns, and villages). It sets out an integrated design approach. What this means is that the design must be:</p> <p>a) Influenced by the type of place in which the street is located, and b) Balance the needs of all users.</p> <p>A further aim of this Manual is to put well designed streets at the heart of sustainable communities. Well-designed streets can create connected physical, social and transport networks that promote real alternatives to car journeys, namely walking, cycling or public transport.</p> <p>Relevance to NR2040:</p> <p>Projects arising from the NR2040 will be required to have regard to the Urban Design Manual as appropriate.</p>	Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate.

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Permeability: A Best Practice Guide (NTA) 2013	<p>Among the priorities of the National Transport Authority (NTA) are to encourage the use of more sustainable modes of transport and to ensure that transport considerations are fully addressed as part of land use planning. With this in mind, and in order to help achieve the above priorities, the NTA funds transport infrastructure measures which facilitate and promote walking, cycling and public transport. As such, the NTA, in collaboration with South Dublin County Council and AECOM, have developed this guidance policy on how best to facilitate demand for walking and cycling in existing built-up areas. This relates to the retention and creation of linkages within the urban environment for people to walk and cycle from their homes to shops, schools, local services, places of work and public transport stops and stations. In the latter case, by providing connections to existing public transport services, access to these services will be improved and increased levels of use is expected. This in turn supports enhancement of these public transport services through increased frequency and improved stop facilities and can also make a key difference in decisions about service retentions.</p> <p>Relevance to NR2040: Projects arising from the NR2040 will be required to have regard to the NTA Permeability: A Best Practice Guide as appropriate.</p>	Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate.
Achieving Effective Workplace Travel Plans: Guidance for Local Authorities (NTA)	<p>This guidance for local authorities aims to promote a harmonisation of approaches which will result in a more consistent application of Workplace Travel Plans throughout the country which should ensure a level playing field for developers and should assist developers in packaging and promoting the accessibility of their sites to potential occupiers. It should also increase the potential for data sharing between local authorities. This guidance aims to assist local authorities in fully integrating the principles and practice of Workplace Travel Plans into both the development plan process and the development management process. The principle which underpins sustainable travel is the provision of appropriate development at the right scale in the correct location.</p> <p>Relevance to NR2040: Projects arising from the NR2040 will be required to have regard to the NTA Achieving Effective Workplace Travel Plans: Guidance for Local Authorities as appropriate.</p>	Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate.
Sustainability Implementation Plan Our Future (TII 2021)	<p>Transport Infrastructure Ireland has a vision to lead in the delivery and operation of sustainable transport, enabling our networks to drive inclusive growth, create job opportunities, enhance the well-being of all persons including vulnerable groups, strengthen our resilience to address climate change, maintain our commitment to the environment and continue to prioritise safety. This is the context in which the Sustainability Implementation Plan (SIP) is developed.</p> <p>Six key Sustainability Principles have been developed to reflect TII's organisational ambitions and the future TII envision delivering with their Sustainability Implementation Plan, these are:</p> <ul style="list-style-type: none"> • Provide effective, efficient, and equitable mobility; • Enable safe and resilient networks and services; • Collaborate for a holistic approach; • Deliver end-to-end improvements; 	<p>There is potential for positive cumulative effects resulting from implementation of NR2040 and SIP.</p> <p>Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate.</p>

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	<ul style="list-style-type: none"> • Transition to net zero; and • Create total value for society. <p>Relevance to NR2040: In NR2040 TII restate their commitment to the continuing to support SIP and integrate all aspects of sustainability into TII's core activities.</p>	
<p>Sustainable Mobility TII Position Paper November 2020</p>	<p>The purpose of this Sustainable Mobility Position paper is to outline TII's position on Sustainable Mobility, in terms of:</p> <ul style="list-style-type: none"> • The importance of sustainable mobility. • The current issues that need to be overcome to provide for sustainable mobility; and • The vision for what sustainable mobility can be and can deliver, and key themes through which it can be achieved. <p>TII's vision for sustainable mobility entails a sustainable transport system, that: Provides a truly multimodal transport network that enables trip-makers to choose the combination of modes that serves them best. Improves mobility and accessibility for all citizens, in a way which is much more sustainable, equitable and environmentally friendly. Reduces car dependency but retains an acceptable level of personal mobility.</p> <p>Relevance to NR2040: One of the key objectives of the NR2040 is to support sustainable mobility including walking and cycling as appropriate.</p>	<p>There is potential for positive cumulative effects resulting from implementation of NR2040 and this position paper. Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/ AA/SFRA as appropriate.</p>
<p>Strategy for Adapting to Climate Change on Ireland's Light Rail and National Road Network (TII 2017)</p>	<p>Over recent years, it has become apparent that TII's main climate change focus in the future will be on increased rainfall intensity, which has the potential to result in increased road flooding. It is not economically viable to construct a road network that is completely resilient to flood events as this would involve raising the level of the roads to a height that would entail excessive costs. Every effort is made during the planning phase to reduce the impacts of flood events and, where feasible, the roads are raised above flood plains. This means that for extreme storm events with intense rainfall, a certain level of flooding is inevitable. The Strategy for Adapting to Climate Change on Ireland's Light Rail and National Road Network, therefore, focuses on the effects of more intense rainfall and increased levels of groundwater, and how TII can develop action plans so that the incidence of road closures due to flooding can be minimised. The strategy for adapting to climate change on the national road network is based on the approach developed by the CEDR technical working group and it is developed under the following headings:</p> <ul style="list-style-type: none"> • Management • Improvement • Prevention • Cooperation. 	<p>Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/ AA/SFRA as appropriate.</p>

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	<p>Relevance to NR2040: NR2040 has had regard and is informed by the Strategy for Adapting to Climate Change on Ireland's Light Rail and National Road Network as appropriate.</p>	
<p>Electrical Vehicle Charging Infrastructure Strategy 2022-2025</p>	<p>The Strategy is a pathway for delivery of electric vehicle (EV) charge point infrastructure to support delivery of the Climate Action Plan ambition of almost one million EVs on Irish roads by 2030, and to ensure that EV charge point infrastructure provision remains ahead of demand. The Strategy reflects the urgent need for action to address decarbonisation of the transport sector to tackle climate change and the need for a strategic and Just Transition to sustainable ways of travelling. As the majority of charging is currently done at home (c.80%) the focus of the strategy is to support the provision of publicly accessible charging infrastructure for cars and light duty vehicles including supporting infrastructure along National Roads. Which will be include both:</p> <ul style="list-style-type: none"> • Destination charging (DC fast); and • Motorway/en route charging (DC high powered (c. > 100 kW) charging at highest charge power capacities) to cater for drivers making longer journeys, such as between cities or along the national roads network. <p>The Strategy also sets out a plan for the delivery of each of these categories of charging infrastructure over the coming years. One of the main actions to co-ordinate and oversee the delivery of this Strategy will involve the establishment of an office for low or zero emission vehicles called Zero Emission Vehicles Ireland (ZEVI)³ within the Department of Transport.</p>	<p>There is potential for positive cumulative effects resulting from implementation of NR2040 and this strategy.</p> <p>Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate.</p>
<p>Environmental Impact Assessment of National Road Schemes – A Practical Guide (TII, 2008)</p>	<p>The objective of the guidelines is to ensure that the EIA process for road schemes continues to follow correct statutory procedures while at the same time achieving quality and consistency in the assessment and mitigation of environmental impacts. This document was revised in November 2008 to align it with changes to legislation, best practice, and policy requirements with regard to EIA arising since its original publication in 2005. The revisions incorporate a number of relevant legislative changes, including those brought about through the Planning and Development (Strategic Infrastructure) Act, 2006; the Roads Act, 2007; the Road (Schemes) (Forms) Regulations, 2008 (S.I. No. 49 of 2008), and the Waste Management Act, 1996-2008.</p> <p>Relevance to NR2040: Projects arising from the NR2040 will be required to have regard to the TII's Environmental Impact Assessment of National Road Schemes – A Practical Guide as appropriate.</p>	<p>Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate.</p>
<p>Project Management Guidelines (TII, 2017)</p>	<p>The Project Management Guidelines (PMG) provide a framework for a phased approach to the management of the development and delivery of National Road and Public Transport Capital Projects. They are applicable to Projects which are funded through Transport Infrastructure Ireland (TII) and/or TII</p>	<p>Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental</p>

³ To coordinate the provision of EV supports and grants and the delivery of charging infrastructure, the Government will establish an office of Zero Emission Vehicles Ireland (ZEVI) within the Department of Transport.

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	<p>is the Sanctioning Authority, unless otherwise instructed by TII. The Guidelines shall be used by Project Managers and those responsible for the delivery of such Projects.</p> <p>The Guidelines divide the evolution and progression of a Project into an eight phase process (Phase 0 to Phase 7 inclusive) as follows:</p> <ul style="list-style-type: none"> • Phase 0: Scope and Pre-Appraisal • Phase 1: Concept and Feasibility • Phase 2: Options Selection • Phase 3: Design and Environmental Evaluation • Phase 4: Statutory Processes • Phase 5: Enabling and Procurement • Phase 6: Construction and Implementation • Phase 7: Close out and Review <p>For smaller, less complex Projects, some phases may be combined to provide a simplified process proportionate to Project size, with the agreement of TII.</p> <p>Relevance to NR2040: Projects arising from the NR2040 will be required to have regard to the TII's Project Management Guidelines as appropriate.</p>	<p>assessments, i.e., project level EIA/AA/SFRA as appropriate.</p>
<p>Project Manager's Manual for Greenway Projects (TII, 2022)</p>	<p>This Project Manager's Manual for Greenway Projects has been prepared to provide supporting details on the processes and deliverables outlined within the Project Management Guidelines (TII, 2017) to assist with ensuring consistency of approach in the delivery of Greenway Projects. This Manual is applicable to Greenway Projects which are funded through Transport Infrastructure Ireland (TII) as part of the TII Greenway Programme and / or where TII is the Approving Authority, unless otherwise instructed by TII.</p> <p>Relevance to NR2040: Projects arising from the NR2040 will be required to have regard to the TII's Project Management Guidelines as appropriate.</p>	<p>Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate.</p>
Regional		
<p>The Connecting Ireland Rural Mobility Plan</p>	<p>The Connecting Ireland Rural Mobility Plan is a major public transport initiative developed by the National Transport Authority (NTA) with the aim of increasing connectivity, particularly for people living outside our major cities and towns. The plan aims to improve mobility in rural areas, and it will do this by providing better connections between villages and towns by linking these areas with an enhanced regional network connecting cities and regional centres nationwide. Connecting Ireland seeks to make public transport for rural communities more useful for more people, and it will do this by improving existing services, adding new services and enhancing the current Demand Responsive Transport (DRT) network which meets the transport needs of people who live in remote locations.</p> <p>Relevance to NR2040:</p>	<p>There is potential for positive cumulative effects resulting from implementation of NR2040 and this Plan (once developed).</p> <p>Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate.</p>

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	<p>NR2040 supports sustainable travel on National Roads as appropriate. There are likely to be several significant areas of potential overlap. The plan has just finished the public consultation stage.</p>	
<p>Transport Strategy for the Greater Dublin Area 2016-2035</p>	<p>The Transport Strategy for the Greater Dublin Area provides a framework for the planning and delivery of transport infrastructure and services in the Greater Dublin Area (GDA) over the next two decades. It also provides a transport planning policy around which other agencies involved in land use planning, environmental protection, and delivery of other infrastructure such as housing, water, and power, can align their investment priorities. It is, therefore, an essential component, along with investment programmes in other sectors, for the orderly development of the Greater Dublin Area over the next 20 years.</p> <p>It sets out a number of core principles deriving from this strategic vision, which are:</p> <ul style="list-style-type: none"> • Dublin as the capital city of Ireland and a major European centre shall grow and progress, competing with other cities in the EU, and serving a wide range of international, national, regional, and local needs. • The Dublin and Mid-East Regions will be attractive, vibrant locations for industry, commerce, recreation, and tourism and will be a major focus for economic growth within the Country. • The GDA, through its ports and airport connections will continue to be the most important entry/exit point for the country, and as a Gateway between the European Union and the rest of the World. Access to and through the GDA will continue to be a matter of national importance. <p>Development in the GDA shall be directly related to investment in integrated high quality public transport services and focused on compact urban form. The Transport Strategy for the Greater Dublin Area 2022-2042 replaces the previous framework. as such, this Transport Strategy has been developed to be consistent with the spatial planning policies and objectives set out in the Regional Spatial and Economic Strategy (RSES) as adopted by the Eastern and Midland Regional Assembly and finalised in January 2020. These objectives in turn are consistent with the National Planning Framework and the National Development Plan as set out in Project Ireland 2040. This Transport Strategy is also based on national policies on sustainability as set out in climate action and low carbon legislation, and in climate action plans. The potential impacts of the on-going Covid-19 pandemic, beyond the short-term, have also been taken into account.</p> <p>Relevance to NR2040:</p> <p>Projects arising from the NR2040 will be required to have regard to the Transport Strategy for the Greater Dublin Area 2016-2035 as appropriate.</p>	<p>There is potential for positive cumulative effects resulting from implementation of NR2040 and this strategy.</p> <p>Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate.</p>
<p>Galway Transport Strategy (2016)</p>	<p>Galway City Council & Galway County Council, in partnership with the National Transport Authority, have developed the Galway Transport Strategy (GTS), an Integrated Transport Strategy for Galway City & Environs which was published in 2016. The GTS sets out a series of actions and measures, covering infrastructural, operational and policy elements to be implemented in Galway over the next 20 years and sets out a framework to deliver the projects in a phased manner.</p> <p>Galway City Council's strategic objectives for transport are:</p>	<p>There is potential for positive cumulative effects resulting from implementation of NR2040 and this strategy.</p> <p>Any subsequent projects arising out of NR2040 will be required to comply with</p>

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	<ul style="list-style-type: none"> • To promote and encourage sustainable transport. • To manage the traffic in a way which maximises mobility and safe movement. • To maintain and develop/upgrade Infrastructure. <p>Relevance to NR2040: Projects arising from the NR2040 will be required to have regard to the Galway Transport Strategy as appropriate.</p>	<p>all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate.</p>
Cork Metropolitan Area Transport Strategy 2040 (2019)	<p>The Cork Metropolitan Area Transport Strategy (CMATS) 2040 has been developed by the National Transport Authority (NTA) in collaboration with TII, Cork City Council and Cork County Council. The Cork Metropolitan Area (CMA) is in the midst of an exciting phase of development. The recently published National Planning Framework (NPF) 2040 anticipates that Cork will become the fastest-growing city region in Ireland with a projected 50% to 60% increase of its population by 2040. A key principle for CMATS is to reduce dependency on the private car within the CMA, while increasing the appeal of sustainable transport options. Another fundamental principle of the Strategy is to support the future growth of the CMA through the supply of an efficient transport network.</p> <p>Relevance to NR2040: Projects arising from the NR2040 will be required to have regard to the Cork Metropolitan Area Transport Strategy 2040 as appropriate.</p>	<p>There is potential for positive cumulative effects resulting from implementation of NR2040 and this strategy.</p> <p>Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate.</p>
Limerick Shannon Metropolitan Area Transport Strategy 2040	<p>The Limerick-Shannon Metropolitan Area Transport Strategy 2040 (LSMATS) has been developed by the National Transport Authority in collaboration with Limerick City and County Council, Clare County Council and TII and was published for consultation in 2020. The vision is:</p> <p>This Strategy sets out the framework for the delivery of the transport system required to further the development of the Limerick Shannon Metropolitan Area as a hub of cultural and social development and regeneration; as the economic core for the Mid-West; as an environmentally sustainable and unified metropolitan unit; as a place where people of all ages can travel conveniently and safely; and a place that attracts people, jobs and activity from all over Ireland and beyond The implementation of the LSMATS by the National Transport Authority, Transport Infrastructure Ireland, Limerick City and County Council and Clare County Council will transform this city-region.</p> <p>To achieve this vision, several transport objectives were created:</p> <ul style="list-style-type: none"> • To prioritise investment in sustainable transport in order to reduce the reliance on the private car; • To provide a high level of public transport connectivity to key destinations; • To facilitate higher density housing a part of Transit-Oriented Developments at key points of high public transport accessibility; • To deliver a fully accessible and inclusive transport system; • To identify and protect key strategic routes for the movement of freight traffic and to improve access to Shannon-Foynes Port and Shannon Airport; • To improve road safety, public health and personal security; and • To minimise the impact of motorised traffic in urban centres. 	<p>There is potential for positive cumulative effects resulting from implementation of NR2040 and this strategy.</p> <p>Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate.</p>

Plan/Policy Name	Summary of the policy/plan/programme and relevance to NR2040	Assessment of Cumulative Effects
	<p>The LSMATS is a 'live' document and will be subject to a periodic review every 6 years.</p> <p>Relevance to NR2040: Projects arising from the NR2040 will be required to have regard to the Limerick Shannon Metropolitan Area Transport Strategy 2040 as appropriate.</p>	
<p>Draft Waterford Metropolitan Area Transport Strategy 2020</p>	<p>The NTA is currently preparing a transport Strategy for Waterford which will see the development of sustainable travel options to support and facilitate improved access to Waterford City Centre, from the wider urban area, north and south of the river by walking, cycling and public transport including provision for Park and Ride facilities in tandem with the Green Route, and an additional cycle lane. As set out in the NTA's submission on the Issues Paper for the Waterford County Development Plan, Waterford Metropolitan Area Transport Strategy has a critical role to play in the integration of land use and transport planning in the Waterford Metropolitan Area, as provided for in the objective of Waterford Metropolitan Area Transport Strategy to provide a long-term strategic planning framework for the integrated development of transport infrastructure and services in the Waterford Metropolitan Area.</p> <p>Relevance to NR2040: Projects arising from the NR2040 will be required to have regard to the Waterford Metropolitan Area Transport Strategy 2020 as appropriate.</p>	<p>There is potential for positive cumulative effects resulting from implementation of NR2040 and this strategy.</p> <p>Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate.</p>
Material Assets: Energy		
EU		
<p>EU Renewable Energy Directive (2018/2001/EU) and The EU Renewable Energy Directive on the promotion of the use of energy from renewable sources directive (2009/28/EC)</p>	<p>The EU Renewable Energy Directive 2009 sets a target for Ireland to achieve 20% of its energy consumption from renewable sources by 2020 as a contributory factor in tackling climate change. The 2018 Renewable Energy Directive built upon the 20% target for 2020, it established a new binding renewable energy target for the EU for 2030 of at least 32%, with a clause for a possible upwards revision by 2023.</p>	<p>NR2040 will be required to comply with all relevant EU Directives and transposing legislation as required. Therefore, no likely significant cumulative effects are perceived at this strategic level.</p>
National		
<p>National Energy Efficiency Action Plan (Fourth) 2017-2020 (DCCAE)</p>	<p>Ireland submits updated National Energy Action Plans to the European Commission every 3 years. The plans which focus on improving Irelands energy efficiency is a vital part of Ireland's Energy Policy. This policy arises from EU obligations under the Energy Efficiency Directive.</p> <p>Relevance to NR2040: Projects arising from the NR2040 will have regard to the National Energy Efficiency Action Plan as appropriate.</p>	<p>Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate.</p>
<p>National Renewable Energy Action Plan 2010</p>	<p>This plan was largely enacted to work towards the achievement of 20-20-20 by 2020. This stands for a 20% reduction in greenhouse gasses, a 20% energy efficiency and 20% of the EUs energy consumption</p>	<p>There is potential for positive cumulative effects resulting from</p>

Plan/Policy Name	Summary of the policy/plan/programme and relevance to NR2040	Assessment of Cumulative Effects
	<p>to come from renewable energy sources. All goals were to be achieved by 2020. Similarly, the plan details the trajectory of Irelands industries regarding energy usage and targets.</p> <p>Relevance to NR2040:</p> <p>One of the key objectives of the NR2040 is to provide environmentally, socially, and economically sustainable network which aligns with the National Renewable Energy Action Plan.</p>	<p>implementation of NR2040 and this strategy.</p> <p>Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate.</p>
Draft Bioenergy Plan 2014	<p>The Draft Bioenergy Plan is born out of Ireland’s obligations under the EU Renewable Energy Directive and strives to ensure secure and sustainable supplies of competitively priced energy to all consumers. The draft Plan recognises that meeting the demand for biomass from indigenous sources could deliver significant economic and employment benefits.</p> <p>Relevance to NR2040:</p> <p>One of the key objectives of the NR2040 is to provide environmentally, socially, and economically sustainable network which aligns with the Draft Bioenergy Plan.</p>	<p>There is potential for positive cumulative effects resulting from implementation of NR2040 and this strategy.</p> <p>Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate.</p>
Towards Nearly Zero Energy Buildings In Ireland - Planning for 2020 and beyond	<p>Enacted by the Department of the Environment, Community and Local Government in 2012, Towards Nearly Zero Energy Buildings in Ireland - Planning for 2020 and beyond proposes improvements in energy efficiency within the buildings sector in tandem with the increased use of renewable energy technologies constitute important policy measures needed to facilitate a reduction in Ireland’s energy dependency on fossil fuels and associated greenhouse gas emissions over the period to 2020 and beyond.</p> <p>Relevance to NR2040:</p> <p>One of the key objectives of the NR2040 is to provide environmentally, socially, and economically sustainable network which aligns with the Towards Nearly Zero Energy Buildings In Ireland - Planning for 2020 and beyond.</p>	<p>There is potential for positive cumulative effects resulting from implementation of NR2040 and this strategy.</p> <p>Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate.</p>
Material Assets: Natural		
EU		
The Common Agricultural Policy 2023-2027	<p>The European Council has formally adopted the new common agricultural policy (CAP) which will apply for the period 2023-2027. The new CAP seeks to:</p> <ul style="list-style-type: none"> • Enhance the contribution of agriculture to EU environmental and climate goals. • Provide more targeted support to smaller farms. • Allow greater flexibility for Member States in adapting measures to local conditions. 	<p>Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate.</p>

Plan/Policy Name	Summary of the policy/plan/programme and relevance to NR2040	Assessment of Cumulative Effects
	<p>The three regulations that make up the CAP reform package were signed by both the Council and the Parliament and were published in the Official Journal on 6 December 2021. The new policy will apply in full in 2023.</p> <p>Relevance to NR2040: Projects arising from the NR2040 will be required to have regard to the objectives of the Common Agricultural Policy 2023-2027 as appropriate.</p>	
National		
National Peatlands Strategy	<p>The development of an overall National Peatlands Strategy arises from the need to take a broad strategic approach to the future management of Ireland's peatlands. Policy gaps and weaknesses in relation to the regulation of activity on Ireland's considerable peatlands (over 20% of the terrestrial area of the State) have resulted in difficulties in meeting EU legal obligations.</p> <p>The National Peatlands Strategy was published in 2015. This Strategy aims to provide a long-term framework within which all of the peatlands within the State can be managed responsibly in order to optimise their social, environmental and economic contribution to the well-being of this and future generations. This Strategy will guide the Government's approach to peatlands management and conservation in the future, taking into account current and potential uses of this key resource.</p> <p>Relevance to NR2040: Projects arising from the NR2040 will have regard to the National Peatlands Strategy as appropriate.</p>	Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate.
Forests, Products and People - Ireland's Forest Policy, a Renewed Vision (2014)	<p>This important renewed policy Forests, Products and People - Ireland's Forest Policy, a Renewed Vision (2014) composed by the Department of Agriculture, Food and the Marine sets out an updated national forest policy strategy which is fit for purpose, reflects and takes account of the substantial changes that have occurred in Irish forestry since the publication of its forerunner Growing for the Future in 1996; and which will steer and guide the expansion of the forest sector out to 2046 in a sustainable and cost efficient manner.</p> <p>Relevance to NR2040: Projects arising from the NR2040 will be required to have regard to the objectives of the Forests, Products and People - Ireland's Forest Policy, as appropriate.</p>	Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate.
Cultural Heritage including Archaeological and Architectural Heritage		
EU		
European Convention on the Protection of the Archaeological Heritage, 1992 (the Valletta Convention)	The aim of the Valetta Convention is to 'protect the archaeological heritage as a source of the European collective memory and as an instrument for historical and scientific study'. It requires that appropriate consideration be given to archaeological issues at all stages of the planning and development process.	NR2040 will be required to comply with all relevant EU Directives and transposing legislation as required. Therefore, no likely significant cumulative effects are perceived at this strategic level.

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Convention for the Protection of the Architectural Heritage of Europe (Granada 1985)	<p>The Granada Convention was adopted on 3 October 1985 in Granada (Spain) and came into force on 1 December 1987 (Council of Europe Treaty Series no. 121). It is open for signature by Member States and for accession by non-Member States and the European Community.</p> <p>The main purpose of the Convention is to reinforce and promote policies for the conservation and enhancement of Europe's heritage. It also affirms the need for European solidarity with regard to heritage conservation and is designed to foster practical co-operation among the Parties. It establishes the principles of "European co-ordination of conservation policies" including consultations regarding the thrust of the policies to be implemented.</p>	NR2040 will be required to comply with all relevant EU Law as required. Therefore, no likely significant cumulative effects are perceived at this strategic level.
National		
Heritage Act 1995 (as amended)	The Heritage Act established the Heritage Council as a statutory body. The council was established to propose policies and priorities for the identification, protection, preservation, and enhancement of national heritage. National heritage includes monuments archaeological objects, heritage objects such as art and industrial works, documents and genealogical records, architectural heritage, flora, fauna, wildlife habitats, landscapes, seascapes, wrecks, geology, heritage gardens, parks, and inland waterways.	NR2040 will be required to comply with all relevant EU Directives and transposing legislation as required. Therefore, no likely significant cumulative effects are perceived at this strategic level.
Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act 1999	The Architectural Heritage and Historic Monuments Act established the National Inventory of Architectural Heritage and imposes a greater protection in respect of registered historic monuments upon authorities in Ireland.	NR2040 will be required to comply with all relevant EU Directives and transposing legislation as required. Therefore, no likely significant cumulative effects are perceived at this strategic level.
National Monuments Act 1930-2004	<p>As a result of the National Monuments act amendment, regarding national monuments, it is illegal to:</p> <ul style="list-style-type: none"> • To demolish or remove it wholly or in part or to disfigure, deface, alter, or in any manner injure or interfere with it. • To excavate, dig, plough, or otherwise disturb the ground within, around, or in proximity to it, without consent. 	NR2040 will be required to comply with all relevant EU Directives and transposing legislation as required. Therefore, no likely significant cumulative effects are perceived at this strategic level.
Heritage Ireland 2030	<p>Ireland's national heritage plan legislated for the creation of a Heritage Framework to value and protect heritage under three themes:</p> <ul style="list-style-type: none"> • National Leadership and Heritage • Heritage Partnerships; and • Communities and Heritage. <p>Relevance to NR2040: Projects arising from the NR2040 will be required to have regard to the Heritage Ireland 2030 as appropriate.</p>	Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate.

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<p>Places for People the National Policy on Architecture (2022)</p>	<p>The National Policy on Architecture focuses on actions on five key themes:</p> <ul style="list-style-type: none"> • Designing for climate resilience and sustainability • Designing quality places for public benefit • Respecting our past, shaping our future • Leadership • Knowledge and Innovation. <p>Relevance to NR2040: Projects arising from the NR2040 will be required to have regard to the Places for People the National Policy on Architecture as appropriate.</p>	<p>Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate.</p>
<p>Guidelines for Planning Authorities: Architectural Heritage Protection (2004)</p>	<p>In December 2004, the Minister for the Environment, Heritage and Local Government published guidelines under S.52 (1) entitled Architectural Heritage Protection Guidelines for Planning Authorities which incorporated the S.52 (2) guidelines. The Architectural Heritage Protection Guidelines for Planning Authorities were formally issued to the planning authorities in February 2005. These include guidelines under S.52 (1) for the protection of structures, or parts of structures, and the preservation of the character of architectural conservation areas, and guidelines under S.52 (2) with respect to protected structures which are regularly used as places of public worship.</p> <p>Relevance to NR2040: Projects arising from the NR2040 will be required to have regard to the Guidelines for Planning Authorities: Architectural Heritage Protection as appropriate.</p>	<p>Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate.</p>
<p>Guidelines for the Assessment of Architectural Heritage Impacts of National Road Schemes (NRA/TII, 2005) – under review</p>	<p>The aim of the NRA / TII Guidelines for the Assessment of Archaeological Heritage Impacts of National Road Schemes is to provide a consistent approach to assessing the impacts of road schemes on archaeological heritage at the Constraints, Route Selection and EIA stages of road planning, and to designing and implementing mitigation proposals in a sustainable manner.</p> <p>Relevance to NR2040: Projects arising from the NR2040 will be required to have regard to the NRA / TII Guidelines for the Assessment of Architectural Heritage Impacts of National Road Schemes as appropriate.</p>	<p>Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate.</p>
Landscape and Visual		
EU		
<p>European Landscape Convention 2000</p>	<p>The European Landscape Convention established by Department of Housing, Local Government and Heritage is the first international treaty to provide for the protection, management, and planning of all landscapes in Europe. The convention applies to rural, urban, and semi urban areas. The convention provided the foundation for the Landscape Character Assessment (LCA) which focuses on identifying the features that give an area a sense of place and can help. The LCA is a planning tool aimed at protecting sustainable development and biodiversity.</p>	<p>NR2040 will be required to comply with all relevant EU Directives and transposing legislation as required. Therefore, no likely significant cumulative effects are perceived at this strategic level.</p>

Plan/Policy Name	Summary of the policy/plan/programme and relevance to NR2040	Assessment of Cumulative Effects
National		
National Landscape Strategy for Ireland 2015-2025	<p>The National Landscape Strategy established by The Department of Housing, Local Government and Heritage is used to ensure compliance with the European Landscape Convention as ratified by Ireland in 2002 and establishes principles for protecting and enhancing the landscape while positively managing its change. It provides a high-level policy framework to achieve balance between the management, planning and protection of the landscape by way of supporting actions.</p> <p>Relevance to NR2040: Projects arising from the NR2040 will be required to have regard to the National Landscape Strategy for Ireland 2015-2025 as appropriate.</p>	Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate.
Landscape and Landscape Assessment Guidelines 2000	<p>The Guidelines favour a method of characterisation which is the discernment of the character of the landscape based initially on land cover – trees, vegetation, settlement, water etc. and landform which results from geological and geomorphologic history and secondly, the value of the landscape is assessed in terms of historical, cultural, religious, and other understandings of the landscape. A Landscape Character Assessment allows for a proactive approach to landscape management. It aids the development management process as it gives indicators of development types which would be suited to certain locations using certain design criteria and consequently the character of the landscape remains intact.</p> <p>Relevance to NR2040: Projects arising from the NR2040 will be required to have regard to Landscape and Landscape Assessment Guidelines 2000 as appropriate.</p>	Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate.
A Guide to Landscape Treatments for National Road Schemes in Ireland (TII)	<p>This document outlines the approach that needs to be followed in relation to the design of roadside landscapes and the use of 'ecological landscape design' principles for national schemes, in order to 'fit' the road into the landscape.</p> <p>Relevance to NR2040: Projects arising from the NR2040 will be required to have regard to TII's Guide to Landscape Treatments for National Road Schemes in Ireland as appropriate.</p>	Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate.
Transboundary		
International		
The Espoo (EIA) Convention	<p>The Espoo (EIA) Convention sets out the obligations of Parties to assess the environmental impact of certain activities at an early stage of planning. It also lays down the general obligation of States to notify and consult each other on all major projects under consideration that are likely to have a significant adverse environmental impact across boundaries. Environmental threats do not respect national borders. Governments have realised that to avert this danger they must notify and consult each other on all major projects under consideration that might have adverse environmental impact across borders. The Espoo</p>	NR2040 will be required to comply with all relevant EU Law as required. Therefore, no likely significant cumulative effects at this strategic level.

Plan/Policy Name	Summary of the policy/plan/programme and relevance to NR2040	Assessment of Cumulative Effects
	Convention is a key instrument for bringing together all stakeholders to prevent environmental damage before it occurs. The Convention was adopted in 1991 and entered into force in 1997.	
National		
Climate Change Act (Northern Ireland) 2022	The Climate Change Act is designed to enable the mitigation of the impact of climate change in Northern Ireland; establish a legally binding net-zero carbon target for Northern Ireland; provide for the establishment and powers of the Northern Ireland Climate Commissioner and Northern Ireland Climate Office; guarantee existing environmental and climate protections; and for connected purposes.	Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate.
Wildlife and Natural Environment Act (NI) 2011	The Wildlife and Natural Environment Act (Northern Ireland) 2011 introduces new statutory duties upon government departments and public bodies to take action to further the conservation of biodiversity. Sections 4 to 28 of the Act relate to amendments to the Wildlife (Northern Ireland) Order 1985. Sections 29 to 34 relate to amendments to the Environment (Northern Ireland) Order 2002.	Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate.
The Marine and Coastal Access Act 2009	The Marine and Coastal Act introduces a new system of marine management which includes provisions changing the system for licensing the carrying on of activities in the marine environment. It also provides for the designation of conservation zones. It changes the way marine fisheries are managed at a national and a local level and modifies the way licensing, conservation and fisheries rules are enforced. It allows for designation of an Exclusive Economic Zone for the UK, and for the creation of a Welsh Zone in the sea adjacent to Wales. The Marine and Coastal Act also amends the system for managing migratory and freshwater fish and enables recreational access to the English and Welsh coast.	Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate.
The Marine Act (Northern Ireland) 2013	The Marine Act (Northern Ireland) 2013 requires DAERA to establish a network of MPAs in the Northern Ireland inshore region that, together with MPAs designated by the other UK administrations, contributes to the conservation and improvement of the marine environment in the UK marine area.	Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate.
The Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995 (as amended)	The Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995 (as amended) transpose the Habitats Directive in relation to Northern Ireland. Provide for the protection of sites in the UK that support habitats and species in need of conservation across Europe and full protection of species of European importance whether occurring within designated sites or not. As these Regulations have been amended several times, it is likely that a consolidated version 'The Conservation of Habitats and Species Regulations (Northern Ireland) 2015' will reach the statute book in the near future.	Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate.
The Planning (Environmental Impact Assessment)	The Planning (Environmental Impact Assessment) Regulations (Northern Ireland) 2017 revoke and replace the Planning (Environmental Impact Assessment) Regulations (Northern Ireland) 2015, as amended. The regulations transpose amendments to the Environmental Impact Assessment (EIA) regime	Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level,

Plan/Policy Name	Summary of the policy/plan/programme and relevance to NR2040	Assessment of Cumulative Effects
Regulations (Northern Ireland) 2017	by Directive 2014/52/EU. Changes made include extended criteria for consideration in screening and a further topic potentially requiring inclusion in environmental statements.	including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate.
The Private Water Supplies Regulations (Northern Ireland) 2017	The Private Water Supplies Regulations provide rules for private supply services in Northern Ireland of water intended for human consumption not provided by a water undertaker appointed under Article 13 of the Water and Sewerage Services (Northern Ireland) Order 2006. These Regulations do not apply in relation to— (a) water controlled by the Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015; or (b) water that is a medicinal product.	Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate.
The Water and Sewerage Services (Northern Ireland) Order 2006	The Water and Sewerage Services Order concerns the reform of the water industry in Northern Ireland. It transfers responsibility for delivery of water and sewerage services from the Department for Regional Development to a government owned company and places extensive general and specific duties on the company as a water and sewerage undertaker. It provides detailed statutory powers to enable water and sewerage undertakers to carry out their duties, with suitable safeguards for customers. The Order also establishes a regulator.	Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate.
The Environment (NI) Order 2002	Part II of this Order makes provision for implementing Council Directive 96/61/EC and for otherwise preventing and controlling pollution. It amends the transitional provisions in relation to waste management licenses in Article 47 of the Waste and Contaminated Land (Northern Ireland) Order 1997 and makes provision about certain expiring disposal licenses. Part III makes provision for implementing Council Directive 96/62 EC and for otherwise preventing and controlling air pollution. Part IV makes new provision with respect to areas of special scientific interest. An area of interest is declared as such by the Department of the Environment if it is of special interest by reason of any of its flora, fauna, or geological, physiographical or other features. It shall be the duty of the Department of the Environment and the District Council and any other body having functions under this Part in the exercise of such functions to have due regard to the needs of agriculture, forestry and fisheries.	Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate.
The Wildlife (NI) Order 1985 (as amended)	The Wildlife (Northern Ireland) Order 1985 (the Order) and amendment The Wildlife (Amendment) (Northern Ireland) Order 1995 prohibits the intentional killing, taking or injuring of certain wild birds and wild animals or the intentional destruction, uprooting or picking of certain wild plants.	Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate.
Biodiversity Strategy for NI to 2020	In July 2015, the Northern Ireland Executive published 'Valuing Nature: A Biodiversity Strategy for Northern Ireland to 2020'. This strategy sets out how Northern Ireland plans to meet its international obligations and local targets to protect biodiversity. The strategy has an accompanying Implementation Plan with a series of goals and time-bound actions to help ensure the strategy's ambitions are fully realised. The Department of Agriculture, Environment and Rural Affairs (DAERA) is the lead Department for ensuring implementation of the plan. This document represents Northern Ireland's national biodiversity strategy.	Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate.

Plan/Policy Name	Summary of the policy/plan/programme and relevance to NR2040	Assessment of Cumulative Effects
	<p>Relevance to NR2040: Projects arising from the NR2040 will be required to have regard to the Biodiversity Strategy for NI to 2020 as appropriate.</p>	
Draft Environment Strategy	<p>The Environment Strategy is intended to be an overarching document setting out Northern Ireland's environmental priorities for the coming decades and will form part of the Green Growth agenda (the Green Growth Strategy will provide more detail on actions in respect of climate change & greenhouse gas emissions). The Environment Strategy will form the basis for a coherent and effective set of interventions that can deliver real improvements in the quality of the environment and thereby improve the health and well-being of all who live and work in Northern Ireland; elevate Northern Ireland to an environmental leader; create opportunities to develop the economy.</p> <p>Relevance to NR2040: Projects arising from the NR2040 will be required to have regard to The Draft Environment Strategy as appropriate.</p>	Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate.
The Draft Green Growth Strategy	<p>The Green Growth Strategy is the Northern Ireland Executive's multi-decade strategy which balances climate, environment and the economy in Northern Ireland. It sets out the long-term vision and a solid framework for tackling the climate crisis in the right way. It will be delivered through a series of Climate Action Plans, which will set out the actions to meet sector-specific greenhouse gas emission targets leading to a cleaner environment, more efficient use of our resources within a circular economy and green jobs.</p> <p>Relevance to NR2040: Projects arising from the NR2040 will be required to have regard to The Draft Green Growth Strategy as appropriate.</p>	Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate.
Northern Ireland Energy Strategy 2050	<p>On 16 December 2021, the Department for the Economy published the Northern Ireland Energy Strategy - the Path to Net Zero Energy. The context for energy has changed substantially since the 2010 Strategic Energy Framework (SEF) was published. In June 2019 the UK became the first major economy to commit to a 100 per cent reduction in greenhouse gas emissions by 2050. This 'net zero' target represents a significant step-change in the commitment to addressing the climate crisis.</p> <p>Relevance to NR2040: Projects arising from the NR2040 will be required to have regard to the Northern Ireland Energy Strategy 2050 as appropriate.</p>	Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate.
An Integrated Coastal Zone Management Strategy for Northern Ireland 2006- 2026 (2006)	<p>Integrated Coastal Zone Management (ICZM) aims to establish sustainable levels of economic and social activity in Northern Ireland's coastal areas while protecting the coastal environment. ICZM seeks to reconcile the different policies that have an effect on the coast and to establish a framework that facilitates the integration of the interests and responsibilities of those involved in the development, management and use of the coast.</p> <p>Relevance to NR2040:</p>	Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate.

Plan/Policy Name	Summary of the policy/plan/programme and relevance to NR2040	Assessment of Cumulative Effects
	Projects arising from the NR2040 will be required to have regard to the Integrated Coastal Zone Management Strategy for Northern Ireland 2006- 2026 as appropriate.	
UK Marine Policy Statement (2011)	This Marine Policy Statement (MPS) is the framework for preparing Marine Plans and taking decisions affecting the marine environment. It will contribute to the achievement of sustainable development in the United Kingdom marine area. It has been prepared and adopted for the purposes of Section 44 of the Marine and Coastal Access Act 2009.	Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate.
Draft Marine Plan for Northern Ireland (2018)	<p>Across the UK, new systems of marine planning have been introduced. The Marine and Coastal Access Act 2009 (MCAA) and the Marine Act (Northern Ireland) 2013 (The Marine Act), require the Department of Agriculture, Environment and Rural Affairs (DAERA), as the Marine Plan Authority (MPA), to prepare marine plans, for the better management of the Northern Ireland marine area. This will facilitate the sustainable development of the marine area. Its vision is to create 'a healthy marine area which is managed sustainably for the economic, environmental and social prosperity of present and future generations'.</p> <p>Relevance to NR2040: Projects arising from the NR2040 will be required to have regard to the Draft Marine Plan for Northern Ireland as appropriate.</p>	Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate.
Regional Development Strategy: Building a Better Future, 2035	<p>Sets out the Regional Development Strategy (RDS) for the future development of Northern Ireland to 2035, addressing economic, social, and environmental issues aimed at achieving sustainable development and social cohesion. Provides an overarching strategic planning framework to facilitate and guide the public and private sectors. It takes account of key driving forces such as population growth and movement, demographic change, the increasing number of households, transportation needs, economic changes, climate change and the spatial implications of divisions that still exist in society.</p> <p>Relevance to NR2040: One of the key objectives of the NR2040 is to provide environmentally, socially, and economically sustainable network which aligns with the Regional Development Strategy.</p>	<p>There is potential for positive cumulative effects resulting from implementation of NR2040 and this strategy.</p> <p>Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate.</p>
Strategic Planning Policy Statement for Northern Ireland (SPPS); Planning for Sustainable Development (2015)	<p>The SPPS sets out the Department's regional planning policies for securing the orderly and consistent development of land in Northern Ireland under the reformed two-tier planning system. The SPPS was published in September 2015 following a period of extensive engagement with key planning stakeholders and Executive Committee agreement. The provisions of the SPPS must be considered in the preparation of Local Development Plans and are also material to all decisions on individual planning applications and appeals.</p> <p>Relevance to NR2040: Projects arising from the NR2040 will be required to have regard to the Strategic Planning Policy Statement for Northern Ireland (SPPS) and Planning for Sustainable Development as appropriate.</p>	Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate.

Plan/Policy Name	Summary of the policy/plan/programme and relevance to NR2040	Assessment of Cumulative Effects
The Draft Northern Ireland Peatland Strategy 2021-2040	<p>The draft Northern Ireland Peatland Strategy 2021-2040 Consultation Document provides an outline of:</p> <ul style="list-style-type: none"> • The policy drivers for the development of this strategy; • The ecosystem services that semi-natural peatlands in Northern Ireland provide; • Details the current factors affecting our semi-natural peatlands; • and sets out the objectives and actions which we consider necessary to ensure that our semi-natural peatlands are conserved and restored to functioning ecosystems. 	Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate.
Planning Policy Statements (PPS)	The existing suite of Planning Policy Statements (PPS) and the remaining provisions of 'A Planning Strategy for Rural Northern Ireland' are currently retained under the transitional arrangements of the SPPS. It should be noted that the PPS's will be superseded by Local Development Plans when they are adopted.	Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate.
Draft 3 rd Cycle River Basin Management Plan 2021-2027 Northern Ireland	<p>The Draft 3rd Cycle River Basin Management Plan 2021-2027 is a key element in implementing the <i>Water Environment (Water Framework Directive) Regulations (Northern Ireland) 2017</i>, taking an integrated approach to the protection, improvement, and sustainable use of the water environment. It applies to groundwater and to all surface water bodies, including rivers, lakes, transitional (estuarine) and coastal waters out to one nautical mile.</p> <p>Relevance to NR2040:</p> <p>Projects arising from the NR2040 with the potential for transboundary impacts across Northern Ireland will be required to have regard to the River Basin Management Plan and associated programme of measures, as appropriate.</p>	Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate.
Northern Ireland Regional Seascape Character Assessment (2014)	<p>The aim of the Seascape Character Assessment is to provide a strategic understanding of different areas of regional seascape character along the entire Northern Ireland coast, complementing similar assessments undertaken elsewhere in the UK. This will contribute to the aims of the European Landscape Convention through promoting the protection, management and planning of the seascape, and to support European cooperation on landscape issues. The objectives of the study are to:</p> <ul style="list-style-type: none"> • Identify and map the different regional seascape character areas; • Describe the key features and characteristics of each seascape character area; and • Relate the description of each seascape character area to its neighbouring terrestrial landscape character areas (as described in the Northern Ireland Landscape Character Assessment, 2000) and take account of boundaries identified in relation to neighbouring seascape areas for the British and Irish coastline. 	Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate.
Climate Risk Independent Assessment 2021	The UK Government is required, under the 2008 Climate Change Act, to publish a Climate Change Risk Assessment (CCRA) every five years which is published on the Government website. The assessment sets out the risks and opportunities facing the UK from climate change. The Climate Change Committee's Independent Advice Report informs the UK Government's third CCRA (known as CCRA3). This website hosts all of the outputs for the UK Climate Risk Independent Assessment (CCRA3), from a technical	There is potential for positive cumulative effects resulting from implementation of NR2040 and this strategy.

Plan/Policy Name	Summary of the policy/plan/programme and relevance to NR2040	Assessment of Cumulative Effects
	<p>report through to the research projects through to summaries of the advice. The UK Government and devolved administrations must then set out their response to the risks and opportunities in their national adaptation programmes.</p> <p>Relevance to NR2040: Projects arising from the NR2040 will be required to have regard to the Climate Risk Independent Assessment 2021 as appropriate.</p>	<p>Any subsequent projects arising out of NR2040 will be required to comply with all relevant legislation at project level, including required environmental assessments, i.e., project level EIA/AA/SFRA as appropriate.</p>

Appendix B

Responses to Environmental Authorities following SEA Scoping Consultation

Environmental Authority	Issue	Concern/Comments	Response / Action Proposed
Department of Environment, Climate and Communications response 16th June 2022			
Environment Protection Division	General comments	<ul style="list-style-type: none"> Refers the SEA team to various sources of information including those specifically relevant to transport. Recommend that the Strategy includes summary tables of the key findings of the SEA process. Integration of the SEA and the Strategy. Monitoring, review and reporting – recommended to include a commitment to reviewing the Plan every 5 years or aligning as part of cyclical review of NPF etc. Monitoring: SEA ER should include frequency and responsibility. Schematics showing alignment with the plan and other key plans and programmes 	<ul style="list-style-type: none"> Noted & referred to across the baseline sections. Noted – this will be included in the SEA Statement. Noted. Recommended as part of the Mitigation section for inclusion in Final Draft. Noted this will be included in the SEA Statement. High level alignment with NPF and transport plans included in Section 2 of the Strategy.
Environment Protection Division	Waste Management	<ul style="list-style-type: none"> In respect of waste within the documentation, we would be obliged if the Local Authority would consult directly with their respective Regional Waste Management Planning Office regarding development of the final plans. 	<ul style="list-style-type: none"> Noted. The draft Strategy will be issued for public consultation and all feedback will be Due to the strategic level of the Strategy, it is unlikely that consultation with individual Local Authorities or Planning Offices will occur.
Department of Housing, Local Government and Heritage response			
Department of Housing, Local	Need for SEA and other assessment	<ul style="list-style-type: none"> The requirements for Appropriate Assessment (AA) has been clearly defined in the SEA Scoping Report and its context set out within the SEA process which should facilitate the integration of environmental considerations into the Strategy. 	<ul style="list-style-type: none"> Included as part of the SEA Monitoring Framework .

Environmental Authority	Issue	Concern/Comments	Response / Action Proposed
Government and Heritage	processes to run in parallel	<p>However, it is noted that screening for AA has not been completed and it is suggested that this will take place during the preparation of NR2040. However if it is determined that an AA is required late in the process of preparing NR2040, any changes made to NR2040 as a result of the AA process should be fed back into the SEA process, in accordance with good practice. Also if it is determined that an AA is required then period of public consultation will required. It is not clear whether a Strategic Flood Risk Assessment (SFRA) will be undertaken. However, the Department recommends that nature-based surface water management should be planned for at the earliest opportunity and recommends that guidance outlined in the Department's recent publication 'Nature-based Solutions to the Management of Rainwater and Surface Water Runoff in Urban Areas' should be followed, where appropriate.</p>	<ul style="list-style-type: none"> • Noted, assessed but not referenced in baseline. • Noted and included as appropriate to the Strategic nature of the Strategy. • NR2040 is a national scale plan and does not identify projects however it does include areas where some form of 'intervention' will take place which are mapped as part of the ESM to show the sensitives of
	Relevant Plans and Programmes	<ul style="list-style-type: none"> • The list of relevant plans and programmes that should be taken into account when preparing the Environmental Report would appear to be largely comprehensive. However, the assessment of impacts may benefit from reference to European transport research projects such as the Infrastructure and Ecology Network Europe (https://www.iene.info/) and Biodiversity and Infrastructure Synergies and Opportunities for European Transport Networks (https://bison-transport.eu/). 	
	Integration of the SEA into NR2040	<ul style="list-style-type: none"> • NR2040 should be developed to integrate biodiversity considerations in a positive, proactive and precautionary way, and this should be reflected in its text and content, including its aims, objectives and policies. • The SEA scoping report is not clear in terms of the level of geographic specificity expected in the final version of the NR2040. For example, if NR2040 culminates in the identification of areas targeted for new or upgraded road networks, no areas should be identified without the availability of basic information on the ecological sensitivities of the lands in question provided at the correct scale. This will serve to ensure that strategy-making is robust, informed and evidence-based, and that the expectations or concerns of various parties are better managed, particularly in relation to the likely or realistic potential of certain areas to be included for future road networks or management/upgrading of existing networks. 	

Environmental Authority	Issue	Concern/Comments	Response / Action Proposed
	<p>Implications of NR2040 for Biodiversity, Flora and Fauna</p>	<ul style="list-style-type: none"> • The SEA Scoping Report includes a description of how NR2040 will influence subsequent plans and projects in the overall hierarchy of strategic decision-making regarding the road network in Ireland. Decisions made in the preparation of NR2040 may significantly affect nature conservation, biodiversity, flora and fauna in a number of ways, depending on the measures to be included and the methods of implementation. It should be considered whether the implementation of NR2040 will give rise to some or all of the impacts and effects listed below. This is not an exhaustive list and additional effects may arise that will need to be considered in the assessments required. This list reflects the nature of the effects described in Table 5.3 of the SEA Scoping Report. <ul style="list-style-type: none"> ○ Permanent and/or temporary habitat loss ○ Permanent and/or temporary habitat fragmentation ○ Habitat deterioration ○ Vegetation or community changes (e.g. through emissions, lighting etc.) ○ Changes to soil nutrient status ○ Changes to physical structure of habitats (e.g. changes to land drainage) ○ Disturbance or damage to breeding, roosting, feeding areas ○ Changes to distribution of species ○ Introduction or expansion of barriers to movement, dispersal, migration ○ Introduction or increase of collision risk ○ Other impacts that may affect productivity and breeding success ○ Changes to water quality, such as eutrophication, sedimentation etc. ○ Changes to natural processes of sedimentation and erosion ○ Changes to drainage, hydrology, hydromorphology, sub-surface flows, flooding regimes etc. ○ Changes to ecosystem services and functions, such as pollination, water attenuation and flood mitigation, climate change mitigation and adaption (such as carbon storage and sinks etc.) ○ Introduction or spread of invasive species. 	<p>these areas which will be required to be considered in more detail at the project level assessments.</p> <ul style="list-style-type: none"> • Noted and considered as part of in the assessment.

Environmental Authority	Issue	Concern/Comments	Response / Action Proposed
	<p>SEA Methodology</p> <p>Strategic Environmental Objectives</p>	<ul style="list-style-type: none"> • It is acknowledged that the strategic nature of NR2040 prevents some impact pathways being clearly identifiable. However, recognising the influence of implementing NR2040 at the project level will help to identify certain areas or scenarios where such impacts are more likely to occur. TII isare advised to undertake reviews of peer-reviewed and grey literature to enhance understanding of the implications for nature conservation of the Strategy and to ensure that the full range of potential effects that should be considered in the assessment have been identified. • The Biodiversity, Flora and Fauna section and related sections (such as water, soil etc.) of the Environmental Report should be undertaken by or in conjunction with a suitably qualified ecologist(s) and other specialists as necessary, and in conjunction with the Natura Impact Report, if one is deemed to be required. This will facilitate full integration of biodiversity issues and concerns, particularly in relation to nature conservation sites, protected species, and ecological corridors and stepping stones. The EPA's Integrated Biodiversity Impact Assessment Practitioner's Manual is of particular relevance in this regard. The Environmental Report is required by the SEA Directive (2001/42/EC) to contain information on the environmental characteristics of the areas likely to be significantly affected by the plan or programme, or modification thereof. • The Environmental Report is required to contain environmental protection objectives. For biodiversity, flora and fauna, these should integrate with the objectives and obligations of other Directives, legislation, plans and policies such as, but not only, the following: <ul style="list-style-type: none"> ○ Birds and Habitats Directives, ○ Water Framework Directive and the Floods Directive, ○ Environmental Liabilities Directive ○ Wildlife Acts, 1976-2021 ○ European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477/2011) and amendments (SI 290 of 2013, SI 499 of 2013, SI 355 of 2015 and SI 293 of 2021) ○ European Union Biodiversity Strategy 2030 	<ul style="list-style-type: none"> • Noted. Full range of effects are identified as far as practicable at this strategic level of assessment. • Noted. The biodiversity section has been completed by suitably qualified ecologist who has also prepared the NIS. • Noted. These plans/ programmes are considered and have influenced the development of the EPOs and are included in the Policy Review.

Environmental Authority	Issue	Concern/Comments	Response / Action Proposed
	<p>Scope of Biodiversity Issues to be addressed</p> <p>Data / information sources</p>	<ul style="list-style-type: none"> ○ National Biodiversity Action Plan 2017-2021 ○ National Peatlands Strategy ○ National Raised Bog SAC Management Plan 2017 - 2022 ○ All-Ireland Pollinator Plan 2021-2025. ○ National Greenway Strategy ○ Climate Action Plan ○ Regional Economic and Spatial Strategies ○ County Development Plans <ul style="list-style-type: none"> ● Strategic Environmental Objectives should be included for all nature conservation sites (not only European sites), protected species, and ecological corridors and stepping stones as outlined in this submission (Appendix 1), and to address key threats arising from NR2040, such as disturbance of protected bird and mammal species for example. ● Elements of biodiversity, flora and fauna of potential relevance to the SEA are set out in Appendix 1. The scope of the SEA should include data gathering, analysis and assessment of the implications for each of the elements listed, paying particular attention to the likely and realistic effects of the Strategy. ● NPWS website: ● The National Parks and Wildlife Service's website (www.npws.ie) is a key source of data, information and publications, including GIS datasets, on nature conservation sites and biodiversity issues of relevant to the Strategy and its associated environmental assessments. ● European sites: With respect to European sites², the website presents amongst other things: <ul style="list-style-type: none"> ○ maps of site boundaries, ○ site synopses, 	<ul style="list-style-type: none"> ● Noted. This is included as part of the biodiversity EPO. 'other nature conservation sites (and areas supporting them) ...ecological corridors.' ● Noted. Qualified ecologists have contributed to the preparation of the SEA ER. ● Noted these are considered in the preparation of the SEA ER. ● Noted.

Environmental Authority	Issue	Concern/Comments	Response / Action Proposed
		<ul style="list-style-type: none"> ○ Standard Data Forms, ○ the qualifying interests (for SACs) and special conservation interests (for SPAs), ○ the conservation objectives for the European sites. <ul style="list-style-type: none"> ● Conservation Objectives for European Sites: Site-specific conservation objectives are available for a number of sites, with associated supporting documents and GIS datasets. The limitations of the data should be taken into account in the assessment, as outlined under the “Notes/Guidelines”. For all other European sites, “generic” conservation objectives are available. Conservation objectives aim for the maintenance or restoration of the qualifying interests/special conservation interests to favourable conservation condition at the site level. ● Natural Heritage Areas: For NHAs, features of interest and dates of site designation are listed on the website; site boundaries, site synopses, and SIs are also available. ● Site Boundaries: Site boundaries of nature conservation sites may be subject to change, and additional information about sites, habitats and species will become available over time. The most up-to-date data and information available from the website should be accessed and used at each successive stage of the strategy-making process. ● NPWS Datasets and Data Requests: GIS datasets are available for download for certain habitats and species arising from various sources, including national surveys³. Other NPWS-held data and reports on habitats, species and specific sites may be requested by submitting a “Data Request Form”⁴. ● Other Data Sources: 	<ul style="list-style-type: none"> ● Noted. ● Noted. ● Noted. ● Noted. ● Noted.

Environmental Authority	Issue	Concern/Comments	Response / Action Proposed
		<p>Data and information on ecological interests and features in or near the plan area are or may be available from other sources, including:</p> <ul style="list-style-type: none"> ○ The National Biodiversity Data Centre (www.biodiversityireland.ie) ○ Non-governmental organisations such as BirdWatch Ireland, Bat Conservation Ireland etc. ○ Local Authority (e.g. county or sub-county habitat maps, wetland surveys, hedgerow surveys, Environmental Impact Statements and other assessments of plans and projects within the plan area, Environmental Monitoring Reports required as condition of some consented projects e.g. windfarms) ○ Environmental Protection Agency (e.g. data and information on water quality and SEA Spatial Information Sources 2016). <ul style="list-style-type: none"> ● Important Publications NPWS publishes documents and reports on an ongoing basis and these are made available on the website. The “Publications” Section of the website should be used to identify key publications that are particularly relevant to the Strategy and the impacts that may arise from it and will assist in identifying and understanding current environmental condition and problems in the receiving environment. These include conservation assessments, national species survey reports, monitoring reports for various habitats and species, threat response plans for species, national Red Lists and wildlife manuals relating to the conservation management of habitats and species in Ireland. ● Particularly significant publications in this regard include the following: <ul style="list-style-type: none"> ○ 2007, 2013 and 2019 Report on the Status of EU Protected Habitats and Species (also known as the Article 17 Report) ○ 2013 Article 12 (Birds Directive) Reports: Summary Report for the period 2008-2012 and Ireland’s bird species’ status and trends for the period 2008-2012. ○ 2014 Ireland’s Prioritised Action Framework (PAF) for the Implementation of the Birds and Habitats Directive. This framework, which has been approved by Government, identifies a range of actions needed to help improve the status of Ireland’s habitats and wildlife. The possible sources of funding for these actions, across the various operational programmes, are also identified. These include 	<ul style="list-style-type: none"> ● Noted. ● Noted.

Environmental Authority	Issue	Concern/Comments	Response / Action Proposed
	<p>Strategic Environmental Objective</p>	<p>short, medium and long term actions, such as conservation management strategies, more focused agri-environment schemes and habitat restoration. Action 6.1.9 of Ireland's 3rd National Biodiversity Action Plan is to "Review and update the Prioritised Action Framework for Natura 2000". This process is underway.</p> <ul style="list-style-type: none"> ○ Irish Wetland Bird Survey (I-WeBS) Trend Report 2022 https://birdwatchireland.ie/app/uploads/2022/04/iwebs_trends_report.html ○ Department of Housing, Local Government and Heritage (2021) Strict Protection of Animal Species Guidance for Public Authorities on the Application of Articles 12 and 16 of the EU Habitats Directive to development/works undertaken by or on behalf of a Public Authority National Parks and Wildlife Service Guidance Series 2. <ul style="list-style-type: none"> ● The Strategy should refer to the Peatlands Enhanced Decommissioning, Rehabilitation and Restoration Scheme (PCAS). Bord na Móna have identified a footprint of 33,000 ha (a subset of the BnM estate that has been used for energy production) as peatlands suitable for enhanced rehabilitation. Details of individual Bog Decommissioning and Rehabilitation Plans which can be found on Bord na Mona's website should be consulted and NR2040 must ensure that it does not undermine this scheme's objectives and actions. <p>A number of other peatland related projects are underway or have been recently completed in the Midlands including 'Care-Peat - Restoring the carbon storage capacity of peatlands', 'Peatlands and People' and 'The Living Bog' and should be consulted. The Hen Harrier Project European Innovation Partnership (EIP) is also underway in the midlands.</p> <ul style="list-style-type: none"> ● The Department welcomes the proposed draft SEO. We would recommend a slight amendment to the wording so that the assessment does not focus show unnecessary bias toward impact on designated areas but also respects the impacts on wider biodiversity. The requirement to protect against damage to European sites is inherent in the law underpinning planning and consent of road schemes but impacts on other biodiversity receptors also carry weight – either directly through habitat loss and fragmentation or via other impacts on air, water 	<ul style="list-style-type: none"> ● Noted. ● Noted. ● Noted and amendments incorporated into the EPO.

Environmental Authority	Issue	Concern/Comments	Response / Action Proposed
	SEA Monitoring	<p>quality and light for example. Suggested wording could follow: “Protect, preserve, prevent damage and enhance biodiversity in general, but particularly European designated sites, other nature conservation sites and protected habitats and species, and ecological corridors” [our emphasis].</p> <ul style="list-style-type: none"> The Department wish to highlight the requirement for TII to monitor the effects on the environment as a result of the implementation of NR2040. The monitoring programme should be clearly set out in the Environmental Report and developed in such a manner as to ensure it will identify the effects (both positive and negative) on the environment that are likely to arise, or will arise, and to monitor the effectiveness of any mitigation, if required, on which the assessment relies. Provision should be made to collect sufficient baseline information, as necessary, to devise an appropriate monitoring programme and assess impacts. 	<ul style="list-style-type: none"> Noted draft monitoring programme developed as part of the SEA ER & will be finalised at the SEA Statement stage.
Geological Survey Ireland response 16th June 2022			
Geological Survey Ireland	Use of Datasets	<ul style="list-style-type: none"> Concerning the SEA Scoping Report for the proposed National Roads 2040, Geological Survey Ireland would encourage use of and reference to our datasets. This data can add to the content and robustness of the SEA process. With this in mind please find attached a list of our publicly available datasets that may be useful to the environmental assessment and planning process. We recommend that you review this list and refer to any datasets you consider relevant to your assessment. The remainder of this letter and following sections provide more detail on some of these datasets. 	<ul style="list-style-type: none"> Noted. Many of these datasets are used to inform the SEA ER as appropriate.
	TII Site Investigation Reports	<ul style="list-style-type: none"> Geological Survey Ireland would much appreciate a copy of reports detailing any site investigations carried out of any TII infrastructure/road projects. The data would be added to Geological Survey Ireland’s national database of site investigation boreholes, implemented to provide a better service to the civil engineering sector. Data can be sent to the Geological Mapping Unit, at mailto:GeologicalMappingInfo@gsi.ie, 01-678 2795. 	<ul style="list-style-type: none"> Noted.
Department of Agriculture, Environment and Rural Affairs response 20th June 2022			
Department of Agriculture, Environment	Transboundary Impacts on	<ul style="list-style-type: none"> DAERA would like the SEA Environmental Report to contain a clear statement indicating the opinion about whether or not the implementation of the of the strategy is likely to have a significant effect on Northern Ireland, in combination 	<ul style="list-style-type: none"> NR2040 is a strategic document there is likely to be transboundary effects

Environmental Authority	Issue	Concern/Comments	Response / Action Proposed
and Rural Affairs	Northern Ireland	with any identified measures envisaged to prevent, reduce and as fully as possible offset any significant adverse effects on the environment.	as a result of the implementation of the Strategy however the significance and types of effects will be determined at the project level assessment stage as appropriate.
NIEA Natural Environment Division	Comments	<ul style="list-style-type: none"> • We note that it is proposed to integrate the network with Northern Ireland (NI) as appropriate and that some of the broadly identified corridors will reach the border with NI and have the potential to have an effect on NI. Transboundary issues don't appear to have been highlighted specifically within the scoping report. We advise that transboundary issues are taken into account in the Environmental report. We would highlight consideration of the following issues including the potential disturbance to/impact on NI/Rol migratory/mobile species such as salmon, for example within the Lough Melvin Special Area of Conservation which lies within both Northern Ireland and the Republic of Ireland. Cross border designated sites, European sites in Northern Ireland adjacent to or with pathways to/from the Republic of Ireland, priority habitats, river basins, and other landscape types also require special attention as ecological functionality and 'views' of landscape cross political boundaries. The SEA should consider all potential impacts including those which may impact Northern Ireland both directly and indirectly. • In addition, NI baseline conditions and relevant plans and programmes will need to be considered as part of the Environmental Report. • Other than the issues highlighted above NED are content with the overall approach to SEA and the issues that will be addressed including the consideration of how Environmental impacts will be addressed and mitigated, this should include potential impacts on NI. • NED are in agreement and welcome the completion of a Habitats Regulations Assessment as part of the SEA ER as appropriate and AA at project level as appropriate. 	<ul style="list-style-type: none"> • Noted, transboundary issues have been considered in the Environmental Report. • Noted, Northern Ireland Policy and Plans are considered in the SEA ER in Appendix A. • Noted. • Noted.

Environmental Authority	Issue	Concern/Comments	Response / Action Proposed
		<ul style="list-style-type: none"> • We welcome that mitigation and monitoring will be put in place in due course and look forward to the opportunity to comment further as the process develops. • It may be worth including in your considerations the following: <ul style="list-style-type: none"> ○ The Wildlife (NI) Order 1985 (as amended) ○ Wildlife and Natural Environment Act (NI) 2011 ○ The Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995 (as amended) ○ The Environment (NI) Order 2002 ○ The Planning (Environmental Impact Assessment) Regulations (Northern Ireland) 2017 ○ The Strategic Planning Policy Statement (SPPS) for Northern Ireland ○ Planning Policy Statements (PPS – in particular PPS2 and PPS18). It should be noted that the PPS's will be superseded by Local Development Plans when they are adopted. ○ Biodiversity Strategy for NI to 2020 https://www.daera-ni.gov.uk/publications/biodiversity-strategy-northern-ireland-2020-0 ○ Draft Environment Strategy https://www.daera-ni.gov.uk/consultations/esni-public-discussion-document ○ The Draft NI peatland policy: https://www.daera-ni.gov.uk/consultations/ni-peatland-strategy-consultation. ○ The Draft Green Growth Strategy Consultation on the draft Green Growth Strategy for Northern Ireland Department of Agriculture, Environment and Rural Affairs (daera-ni.gov.uk) ○ Northern Ireland Energy Strategy 2050 Northern Ireland Energy Strategy 2050 Department for the Economy (economy-ni.gov.uk) • A number of useful information sources that highlight the current state of the environment in Northern Ireland at a regional level and which could be referenced are: 	<ul style="list-style-type: none"> • Noted. • Noted. These are considered in SEA ER and are included in the SEA Appendix A Key relevant plans and programmes. • Noted. These have informed the baseline as appropriate.

Environmental Authority	Issue	Concern/Comments	Response / Action Proposed
		<ul style="list-style-type: none"> ○ Northern Ireland State of the Environment Reports: https://www.daera-ni.gov.uk/publications/state-environment-report-2013 ○ Northern Ireland Environmental Statistics Reports: https://www.daera-ni.gov.uk/articles/northern-ireland-environmental-statistics-report ● Other relevant web-links are; <ul style="list-style-type: none"> ○ Designated Scientific Sites: www.daera-ni.gov.uk/landing-pages/protected-areas ○ Regional Landscape Character Map viewer: https://www.daera-ni.gov.uk/services/regional-landscape-character-areas-map-viewer ○ DAERA have a map browser for NI protected sites and known priority habitat: www.daera-ni.gov.uk/services/natural-environment-map-viewer ○ Our natural environment datasets are available at the link below: www.daera-ni.gov.uk/articles/download-digital-datasets ○ Appropriate Assessments should refer to the status of habitats and species in the relevant reports available on the JNCC website as follows: UK Article 17 report for the Habitats Directive https://jncc.gov.uk/our-work/article-17-habitats-directive-report-2019/ and the UK Article 12 report for the Birds Directive https://jncc.gov.uk/our-work/european-reporting/#birds-directive-reporting ○ Historic Environment Division Digital Datasets ○ https://www.communities-ni.gov.uk/publications/historic-environment-digital-datasets ● Please note following the decision of the United Kingdom to leave the European Union, the collective term of “Natura 2000” sites the network of European protected sites are now known as “National Site Network” sites within the United Kingdom, and is including Northern Ireland. 	<ul style="list-style-type: none"> ● Noted. These have informed the baseline as appropriate. ● Noted. This information has informed the baseline and mapping as appropriate.
<p>NIEA Climate Change Unit</p>	<p>Comments</p>	<ul style="list-style-type: none"> ● Climate Change Mitigation Branch refers Transport Infrastructure Ireland to the recently passed Climate Change Act (Northern Ireland) 2022. ● The UK Climate Change Committee (CCC) recently published its Climate Risk Independent Assessment 2021 which identifies the risk and opportunities posed 	<ul style="list-style-type: none"> ● Noted and included where relevant. ● Noted.

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		<p>by climate change over the next five years. A summary for Northern Ireland can be found below. https://www.ukclimaterisk.org/independent-assessment-ccra3/national-summaries/</p>	
<p>NIEA Drinking Water Inspectorate</p>	<p>Scoping Question Responses</p>	<p>Scoping Question #1: Based on the list of plans, policies and programmes outlined in Table 4.1 of this SEA Scoping report are there any other relevant international, national or regional plans, policies or programmes that should be considered?</p> <ul style="list-style-type: none"> • DWI Response #1: The following is a list of additional documentation which we deem relevant to the scope of the Plan for inclusion, particularly in the consideration of transboundary issues: <ul style="list-style-type: none"> ○ The Private Water Supplies Regulations (Northern Ireland) 2017; ○ The Water and Sewerage Services (Northern Ireland) Order 2006; ○ The Water Supply (Water Quality) Regulations (Northern Ireland) 2017; ○ Drinking Water Directive Recast (2020/2184) which is due to come into force during the lifetime of the Plan. <p>Scoping Question #2: Table 5.1 presents the list of sources of information to be considered. Are there any other significant sources of information that should be considered as part of the ER?</p> <ul style="list-style-type: none"> • DWI Response #2: With respect to 'Human Health', the Public Health Agency (PHA) should be contacted. For 'Water Quality', the primary water undertaker for Northern Ireland (Northern Ireland Water Limited) should be contacted in addition to available data provided via Open Data NI: Datasets <p>Scoping Question #3: Table 5.3 presents a summary of the likely significant environmental effects that will be considered under each of the environmental topics in the ER. Are there any other likely significant effects that should be considered at this stage in the process?</p> <ul style="list-style-type: none"> • DWI Response #3: Within Table 5.3, Human Health and Water, it is appreciated that Water Quality is listed; however, we feel additional emphasis could be made with respect to drinking water. We suggest the addition of the following potential issues to be added to Table 5.3: 	<ul style="list-style-type: none"> • Noted. These are considered in the SEA ER. • Noted. • Noted.

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		<ul style="list-style-type: none"> ○ Impacts to Drinking Water Protected Areas; and, ○ Impacts to catchments and reservoirs used for Drinking Water supply. <p>Scoping Question #4: Do you have any comments regarding the draft EPOs and the proposed methodology presented in Table 6.1?</p> <ul style="list-style-type: none"> ● DWI Response #4: The DWI is content with the draft EPOs and the proposed methodology presented in Table 6.1 	<ul style="list-style-type: none"> ● Noted.
<p>NIEA Water Management Unit</p>	<p>Comments</p>	<ul style="list-style-type: none"> ● Water Management Unit notes the SEA Scoping Report recognises the potential for Transboundary Impacts in relation to water quality. ● The SEA should consider all potential transboundary issues in relation to the aquatic environment during all aspects / phases (construction, maintenance and operation) in relation to the implementation of the National Roads Network strategy, including (but not limited to) the potential disturbance to/impact on NI/RoI migratory/mobile species such as salmon. Such species rely on, and can be impacted by, water quality and water resource issues. ● Cross border river basins require special attention as ecological functionality cross jurisdictional boundaries. The SEA should consider all potential impacts including those which may impact Northern Ireland both directly and indirectly. ● DAERA has published the Draft River Basin Management Plan for the 3rd cycle period which runs from 2021-2027 which should also be considered as part of the assessment. The draft plan provides an update on the health of Northern Ireland's water environment (the status of water bodies) and sets out our targets (objectives) and actions (programme of measures) on how we want to improve our water environment in the next six years. The draft plan covers the North Western, Neagh Bann and North Eastern river basin districts (RBD) and includes detailed status updates on each RBD. The documents can be downloaded from the consultation webpage: https://www.daera-ni.gov.uk/consultations/consultation-draft-3rd-cycle-river-basin-management-plan-2021-2027 	<ul style="list-style-type: none"> ● Noted. ● Noted. ● Noted. ● Noted.

Environmental Authority	Issue	Concern/Comments	Response / Action Proposed
		<ul style="list-style-type: none"> It should be noted that the finalised 3rd Cycle River Basin Management Plans are due to be published later in 2022. A number of useful information sources are available that highlight the current state of the environment in Northern Ireland at a regional level which could be referenced including the Northern Ireland Environmental Statistics Report the latest of which currently is dated May 2021. (Water Management Unit notes the Scoping Report refers to Northern Ireland Environmental Statistics Report May 2018. The most up to date information should be utilised). Northern Ireland Environmental Statistics Reports: https://www.daera-ni.gov.uk/articles/northern-ireland-environmental-statistics-report 	<ul style="list-style-type: none"> Noted. Noted
<p>NIEA Marine and Fisheries</p>	<p>Marine Plan Team Advice</p>	<ul style="list-style-type: none"> The Marine Plan Team (MPT) DAERA – Marine & Fisheries Division welcome the opportunity to comment on the Transport Infrastructure Ireland (TII) National Roads 2040 (NR2040). The MPT notes that TII is preparing the NR2040 with the aim of publishing a long-term vision of the National Roads network which can be used to inform Government Capital Investment Plans and assist in the implementation of a range of Government policies affected by transport including the National Planning Framework (NPF). The MPT understand the NR2040 will set out TII's high level strategies for planning, operating and maintaining the National Roads network to serve the needs of its customers/people over a 20-year horizon. The MPT further understand the NR2040 will support the delivery of Project Ireland 2040 and the Department of Transport's (DoT's) National Investment Framework for Transport in Ireland (NIFTI) relating to the national road network. It will also align with wider government policy commitments including the Climate Action Plan 2021 and the DoT's National Sustainable Mobility policy. 	<ul style="list-style-type: none"> Noted. Noted. Noted. Noted.

Environmental Authority	Issue	Concern/Comments	Response / Action Proposed
		<ul style="list-style-type: none"> To assist, the following specific points are provided for consideration in progressing the scoping report. <p>Table 4.1 Relevant policy/plans/programmes Pg 14:</p> <ul style="list-style-type: none"> We note the inclusion of the Project Ireland 2040 - National Marine Planning Framework (2021) within Table 4.1 on pg. 16. We also note and welcome the specific Transboundary section within Table 4.1 on pg. 20 and the inclusion of the Draft Marine Plan for Northern Ireland (2018). To assist it is suggested that reference is made to the UK Marine Policy Statement (UK MPS). The UK MPS (2011) is a material consideration in all planning decisions where proposals will impact (directly or indirectly) or potentially impact (directly or indirectly) in the UK marine area. The MPS is the UK framework for taking decisions affecting the marine environment. It was prepared and adopted for the purposes of the Marine and Coastal Access Act 2009. UK Marine Policy Statement 2011 In addition, it is also suggested that consideration should also be given to including the Marine and Coastal Access Act 2009 and the Marine Act (Northern Ireland) 2013. 	<ul style="list-style-type: none"> Noted. Noted. Noted. Noted. These are considered in the SEA ER.
<p>NIEA Inland Fisheries</p>	<p>Inland Fisheries Advice</p>	<ul style="list-style-type: none"> DAERA Inland Fisheries, is a core branch within Marine and Fisheries Division of the Department of Agriculture Environment and Rural Affairs. It has a statutory remit for the conservation, protection, development and improvement of salmon and inland fisheries under the Fisheries Act (NI) 1966 (as amended). DAERA Inland Fisheries is the implementing authority under the Convention for the Conservation of Salmon in the North Atlantic. This treaty requires signatory states to develop programmes of work to conserve, rationally manage and improve Atlantic salmon populations and their habitats within their jurisdiction. This work is scrutinised by the North Atlantic Salmon Conservation Organisation (NASCO). DAERA Inland Fisheries welcomes the opportunity to comment on the NR2040 - SEA Scoping Consultation 	<ul style="list-style-type: none"> Noted.

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		<ul style="list-style-type: none"> • Within Table 4.1 Relevant policy/plans/programmes Inland Fisheries would recommend the inclusion of North Atlantic Salmon Conservation Organisation (NASCO), Convention for the Conservation of Salmon in the North Atlantic Implementation Plan for the period 2019 – 2024, this an international commitment for Northern Ireland (as part of the UK) the Republic of Ireland is also a signatory and this should be included as this policy has the potential to impact this species and the goals of this plan. • Inland Fisheries notes the Geographical Scope (5.1 Geographic Scope) of the SEA and particular reference made to the marine environment, it would be prudent to include reference to transboundary watercourses also. Table 5.1 Overview of sources of data to be consulted – Biodiversity and Table 5.3 Scoping of SEA issues - Biodiversity, implies that only potential impacts to SAC's and SPA's are to be considered, migratory salmonids, eels and lamprey should also be considered as significant and all Priority species and habitats as listed by NIEA within any potentially impacted transboundary watercourses. Inland Fisheries welcomes the statement within Table 6.1 Draft Environmental Protection Objectives – Biodiversity. • The Loughs Agency is the lead body for provision of advice regarding impacts to salmonid and inland fisheries interests within the catchments of Lough Foyle and Carlingford Lough. Consequently, said agency should also be consulted in relation to this SEA Scoping exercise. As a statutory consultee DAERA Inland Fisheries will continue to provide comment on any proposals put forward as a result of this plan through the normal planning process. 	<ul style="list-style-type: none"> • Noted, the Convention has been included in the review of Plans and Programmes in Appendix A. • Noted, consideration of transboundary water impacts are included in the SEA ER. • Noted
Department for Communities response 14th June 2022			
Historic Environment Division	Transboundary Impacts	<ul style="list-style-type: none"> • HED welcome that cultural heritage and other environmental factors are recognized as a transboundary concern in the scoping report. Given the intertwined nature of the historic environment with landscape and the natural environment, consideration of the potential for transboundary impacts in this topic area is relevant. The historic environment provides a central vein in the narrative of our landscape evolution, and through this influences aspects such as landscape character and biodiversity. A large number of heritage assets predate 	<ul style="list-style-type: none"> • Noted.

Environmental Authority	Issue	Concern/Comments	Response / Action Proposed
	<p>Scoping Question Responses</p>	<p>the border itself and correlate to other assets in either jurisdiction, with interweaving views and settings.</p> <p>Based on the list of plans, policies and programmes outlined in Table 4.1 of this SEA Scoping report are there any other relevant international, national or regional plans, policies or programmes that should be considered?</p> <ul style="list-style-type: none"> HED advise that it would be pertinent to include the Convention for the Protection of the Architectural Heritage of Europe (Granada 1985) on the international level. <p>Table 5.1 presents the list of sources of information to be considered. Are there any other significant sources of information that should be considered as part of the ER?</p> <ul style="list-style-type: none"> HED welcome the acknowledgement of the Historic Environment Division Map viewer as a resource here. We advise that the datasets displayed on the viewer are also available for download at Historic Environment Digital Datasets Department for Communities (communities-ni.gov.uk) <p>Table 5.3 presents a summary of the likely significant environmental effects that will be considered under each of the environmental topics in the ER. Are there any other likely significant effects that should be considered at this stage in the process?</p> <ul style="list-style-type: none"> In respect of cultural heritage HED consider that acknowledgement of the potential for impacts on the setting of assets is worthy of specific articulation in relation to potential effects. <p>Do you have any comments regarding the draft EPOs and the proposed methodology presented in Table 6.1?</p> <ul style="list-style-type: none"> HED consider that in addition to protection and minimizing impact the draft EPO for cultural heritage should also consider the potential to enhance and conserve heritage assets/and or their settings through the strategy. 	<ul style="list-style-type: none"> Noted and included. Noted. Noted. This is considered in the SEA ER. Noted. This is considered in the SEA ER.

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Environmental Protection Agency response 16th June 2022			
<p>Environmental Protection Agency</p> <p>General Comments</p>	<p>State of the Environment Report – Ireland’s Environment 2020</p> <p>Transition to a low carbon climate resilient economy and society</p>	<ul style="list-style-type: none"> • In preparing the Plan and SEA, the recommendations and challenges described within our State of the Environment Report (SOE) Ireland’s Environment – An Integrated Assessment 2020 (EPA, 2020) should be considered, in preparing the Plan and SEA as relevant and appropriate. • Chapter 11 of the SOE report relates to Environment and Transport. The transport sector has a significant impact on the environment, including being responsible for 20 per cent of Ireland’s greenhouse gas emissions. A sustainable mobility transformation is required, with the next decade crucial, whereby necessary journeys are made by sustainable modes such as walking, cycling and public transport, followed by using electric vehicles where unavoidable. For this transformation to happen the measures relating to transport in the Climate Action Plan, and other necessary measures, must be fast tracked. Long-term, integrated spatial and transport planning can achieve compact development and move trips to other modes of transport, including cycling and should be supported in the Plan. Shifting to these modes is an essential part of a sustainable and climate-neutral transition for the transport sector. • Chapter 14 of the report relates to Environment, Health and Wellbeing. Providing health-promoting environments is an essential requirement for healthy, thriving and inclusive communities. Providing integrated health-promoting environments in urban planning can promote more active travel, reduce air pollution through using fewer private vehicles journeys, act as quiet areas buffered from environmental noise and also improve the physical and mental health. • Other chapters in the report relating to Air Quality (Chapter 3) and Noise (Chapter 4) are also relevant to consider in the preparation of the SEA. • There is an urgent need to rapidly decarbonise the transport sector in order to reverse the current greenhouse gas emissions trends. The Plan should be aligned 	<ul style="list-style-type: none"> • Noted. The SOE report is considered in the preparation of the SEA and the Plan. • Noted. • Noted. • Noted. • Noted.

Environmental Authority	Issue	Concern/Comments	Response / Action Proposed
	<p>Integration of SEA and Plan</p> <p>Monitoring, Review & Reporting</p>	<p>with national commitments on climate change mitigation and adaptation, as well as any relevant sectoral regional and local adaptation plans.</p> <ul style="list-style-type: none"> All recommendations from the SEA process, including mitigation and monitoring measures, should be integrated in the Plan. We recommended that the Plan includes summary tables outlining the key findings of the SEA, including alternatives appraisal and preferred option(s) selection, and linking the significant environmental effects identified to the proposed mitigation measures, monitoring programme and Plan policies/measures. The Plan should include a commitment to implement the environmental monitoring programme and associated reporting. It would be useful to include a separate section on 'Monitoring, Review and Reporting' within the Plan, setting out the provisions for environmental monitoring and reporting on the implementation of the Plan and where relevant, any periodic reviews of the Plan. We note the temporal scale of the Plan. There would be merit in including a commitment to reviewing the Plan every 5 years, with, as appropriate, an Interim Review every 2-3 years. There may be merits in aligning the periodic reviews of the Plan with existing cyclical reporting e.g. Ireland's Environment, National Planning Framework, etc. In between review periods for the Plan, we recommend that Plan-related implementation reports are published annually, or biennially, as appropriate. We recommend aligning this Plan related monitoring/reporting with the environmental monitoring required under the SEA legislation. Doing so would enable the environmental performance of the Plan to be evaluated and would also provide for increased transparency during implementation. The SEA-related environmental monitoring should address positive, negative and cumulative effects where they are likely to occur and should include provision for on-going review to facilitate an early response to any environmental issues that may arise. The Environmental Report should specify the monitoring frequency and 	<ul style="list-style-type: none"> Noted and included in the SEA ER as Mitigation for the Final Strategy. Noted this is a recommendation of the SEA process and will be considered in the finalisation of the Strategy. Noted suggested as part of the SEA Mitigation. Noted and included as Mitigation in the SEA ER Noted. Monitoring is addressed and specified in the Environmental Report.

Environmental Authority	Issue	Concern/Comments	Response / Action Proposed
	<p>Data & Knowledge Gaps</p> <p>Environmental Authorities</p>	<p>responsibilities and include provisions for reporting on the monitoring. To avoid duplication in data collection, the same indicators should be used where possible for the plan-related and SEA-related monitoring.</p> <ul style="list-style-type: none"> • The Plan should identify any significant data and knowledge gaps and include commitments to help address these on a priority basis during the implementation phase of the Plan. This is with a view to strengthening the evidence base for future reviews and iterations of the Plan. • Under the SEA Regulations, you should consult with: <ul style="list-style-type: none"> ○ Environmental Protection Agency; ○ Minister for Housing, Local Government and Heritage; ○ Minister for Environment, Climate and Communications; ○ Minister for Agriculture, Food and the Marine. 	<ul style="list-style-type: none"> • Noted included in data gaps and limitation section in the SEA ER. • Noted these environmental authorities have been consulted with.
<p>Environmental Protection Agency</p>	<p>Responses to Scoping Questions</p>	<p>Q1- Based on the list of plans, policies and programmes outlined in Table 4.1 of this SEA Scoping report are there any other relevant international, national or regional plans, policies or programmes that should be considered?</p> <ul style="list-style-type: none"> • Consider also taking into account the Eirgrid's Grid 25 Implementation Plan, regarding possible infrastructure implications that need to be considered. For the Plans/ Programmes listed in Table 4.1, a column should be included outlining their relevance in the context of the Plan. <p>Q2- Table 5.1 presents the list of sources of information to be considered. Are there any other significant sources of information that should be considered as part of the ER?</p> <ul style="list-style-type: none"> • There is merit in reviewing the EPA's SEA Spatial Information Sources Inventory to determine whether some may be applicable to the SEA being prepared. It is available at: https://www.epa.ie/publications/monitoring--assessment/assessment/strategic-environmental-assessment/sea-spatial-information-sources-inventory-.php. 	<ul style="list-style-type: none"> • Noted. • Noted.

Environmental Authority	Issue	Concern/Comments	Response / Action Proposed
		<p>Additionally, the Environmental Sensitivity Mapping Webtool would also be useful to take into account in preparing the SEA and the Plan. It is available at www.enviromap.ie</p> <p>Q3- Table 5.3 presents a summary of the likely significant environmental effects that will be considered under each of the environmental topics in the ER. Are there any other likely significant effects that should be considered at this stage in the process?</p> <ul style="list-style-type: none"> The Good practice guidance on Cumulative Effects Assessment in SEA (EPA, 2020) may be useful to consider. This is available at: https://www.epa.ie/publications/monitoring--assessment/assessment/strategic-environmental-assessment/good-practice-guidance-on-cumulative-effects-assessment-in-sea.php <p>Q4- Do you have any comments regarding the draft EPOs and the proposed methodology presented in Table 6.1?</p> <ul style="list-style-type: none"> We acknowledge that consideration of other national level plan environmental protection (EPOs) objectives have been considered in preparing EPOs for the SEA, including the National Investment Framework for Transport in Ireland. This will assist in considering plan effectiveness and related monitoring environmental considerations across a range of national sectoral plans 	<ul style="list-style-type: none"> Noted. Noted.
<p>Environmental Protection Agency</p> <p>Comments on Scoping Report</p>	<p>Alignment with other key plans and programmes</p>	<ul style="list-style-type: none"> We recommend including schematics in the Plan and SEA Environmental Report, showing the links and key inter-relationships with other key relevant national, regional, sectoral and environmental plans. The relevant objectives and policy commitments of the National Planning Framework: Project Ireland 2040 and the Regional Spatial and Economic Strategies should be aligned with and considered, as appropriate. In particular, the Plan should take account of the National Strategic objective in the National Planning Framework on Sustainable Mobility where investment will be made to progressively put in place sustainable transport alternatives to those currently available. Furthermore, the Plan should show clear connectivity between the 	<ul style="list-style-type: none"> Noted. High level figure Included in Section 2. List of plans is detailed in Appendix A Noted. NR2040 is fully aligned and supports the implementation of the

Environmental Authority	Issue	Concern/Comments	Response / Action Proposed
		<p>objectives and goals of other national, regional and local transport strategies, e.g. metropolitan area transport strategies.</p> <ul style="list-style-type: none"> • In addition to the plans and programmes listed, it may also be useful to consider the following in the SEA: <ul style="list-style-type: none"> ○ Fáilte Ireland Visitor Experience Development Plans; ○ Regional Tourism Strategies (currently being developed by Fáilte Ireland); ○ Healthy Cities Project (WHO); ○ Clean Air Strategy ○ Proposed Solid Fuel Regulations ○ Dublin Action Plan for Nitrogen Dioxide (December 2021) ○ WHO Global Air Quality Guidelines 2021 (WHO global air quality guidelines: particulate matter (PM2.5 and PM10), ozone, nitrogen dioxide, sulphur dioxide and carbon monoxide) ○ Urban Transport Related Air Pollution (UTRAP) Working Group gov.ie - Urban Transport-Related Air Pollution (UTRAP) Working Group (www.gov.ie) • Research <ul style="list-style-type: none"> ○ Department of Transport - Demand Management Study, 2021 (gov.ie - Five Cities Demand Management Study (www.gov.ie)) – This study helps to better understand what drives transport demand and how a greater shift to more sustainable and healthier forms of travel can be encouraged in Ireland's five largest urban centres. ○ NEAR Health Research Project – Connecting with Nature for Health and Wellbeing The toolkit highlights (1) how people value and experience nature, health and wellbeing, (2) the barriers and bridges to nature connection, (3) what people want from their healthy future environment and (4) how nature-based activities can benefit people's health and wellbeing and enable them to develop a deeper connection with their wider community and with nature. Connecting with nature helps people to care more for the environment and promotes positive wellbeing. 	<ul style="list-style-type: none"> • Noted. These plans are considered in the development of the SEA. • Noted.

Environmental Authority	Issue	Concern/Comments	Response / Action Proposed
	<p>Biodiversity</p> <p>Scope of the SEA</p> <p>Available Guidance & Resources</p>	<ul style="list-style-type: none"> ○ Green and Blue Spaces and Health: A Health-led approach - Environment & Health Environmental Protection Agency (epa.ie) This was a 12-month desk study that modelled, for identified sample sites, the relationships between health indicators and the availability of green and blue infrastructure (GBI). ○ Eco-Health: Ecosystem Benefits of Greenspace for Health - Environment & Health Environmental Protection Agency (epa.ie) The Eco-Health project seeks to inform public health and spatial planning policy and the important interlinkages between environmental quality and health and well-being. ● The Plan should integrate available, appropriately scaled, habitat mapping and take account of important green infrastructure/ecological corridors. A commitment should be included in the Plan to protect designated national and European sites during Plan implementation. Aspects such as recognising the need to control and manage the potential spread of invasive species should also be considered. Additionally, the relevant aspects of the National Biodiversity Action Plan (currently being reviewed) and the All-Island Pollinator Plan should be integrated into the Plan. ● Flood Risk Assessment – Integration of Strategic Flood Risk Assessment with SEA Relevant Flood Risk Management Plans and associated SEA Environmental Reports and Appropriate Assessments should be considered, in undertaking the Strategic Flood Risk Assessment for the Plan. ● The SEA should clearly set out the scope of the Plan, remit and implementation related elements. These will have implications for the SEA, in terms of guiding the level of assessment applicable at the appropriate level for the Plan. Where it is envisaged that measures proposed in the Plan will be implemented via other plans, which themselves have been or will be subject to SEA, this should be explained in the Environmental Report and taken into account in the assessment. ● Our website contains various SEA resources and guidance, including: <ul style="list-style-type: none"> ○ SEA process guidance and checklists ○ Inventory of spatial datasets relevant to SEA 	<ul style="list-style-type: none"> ● Noted. This is considered in development of the SFRA. ● Noted. SEA is integrated with SFRA. ● Noted. ● Noted.

Environmental Authority	Issue	Concern/Comments	Response / Action Proposed
	<p>SEA Alternatives</p> <p>Environmental Sensitivity Mapping (ESM) Webtool</p> <p>EPA SEA Search and Reporting Tool</p>	<ul style="list-style-type: none"> ○ Topic specific SEA guidance (including Good practice note on Cumulative Effects Assessment (EPA, 2020), Guidance on SEA Statements and Monitoring (EPA, 2020), Integrating climatic factors into SEA (EPA, 2019), Developing and Assessing Alternatives in SEA (EPA, 2015), and Integrated Biodiversity Impact Assessment (EPA, 2012)). <p>You can access these guidance notes and other resources at: https://www.epa.ie/our-services/monitoring--assessment/assessment/strategic-environmental-assessment/sea-topic-and-sector-specific-guidance/</p> <ul style="list-style-type: none"> • You should describe the alternatives considered and how the selection and assessment of these has led to the selection of the preferred alternative. You should assess the alternatives against the 'Strategic Environmental Objectives' identified in the SEA ER. The EPA's good practice guidance note on Developing and Assessing Alternatives in Strategic Environmental Assessment (EPA, 2015) may be useful to consider in preparing and assessing alternatives. • The ESM Webtool is a decision support tool to assist SEA and planning processes in Ireland. The tool brings together over 100 datasets and allows users to explore environmental considerations within a particular area and create plan-specific environmental sensitivity maps. These maps can help planners anticipate potential landuse conflicts and help identify suitable development locations, while also protecting the environment. The ESM Webtool is available at www.enviromap.ie. • Our SEA Search and Reporting Tool has been updated recently and is now publicly available at https://gis.epa.ie/EPAMaps/SEA. It allows public authorities to produce an indicative report on key aspects of the environment in a specific geographic area. It is intended to assist public authorities in SEA screening and scoping exercises. 	<ul style="list-style-type: none"> • Noted. • Noted. An Alternatives selection assessment is provided in the SEA ER. • Noted. • Noted.

Environmental Authority	Issue	Concern/Comments	Response / Action Proposed
	<p>EPA WFD Application</p> <p>EPA Appropriate Assessment GeoTool</p>	<ul style="list-style-type: none"> • Our WFD Application provides a single point of access to water quality and catchment data from the national WFD monitoring programme. The Application is publicly available data can be accessed via www.Catchments.ie. • Our AA GeoTool application has been developed in partnership with the NPWS. It allows users to a select a location, specify a search area and gather available information for each European Site within the area. It is available at: https://gis.epa.ie/EPAMaps/AAGeoTool. 	<ul style="list-style-type: none"> • Noted. • Noted.

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