STRATEGIC **TRANSPORT** PROJECTS REVIEW

PROTECTING OUR CLIMATE AND IMPROVING LIVES

STPR2 Draft Technical Report

January 2022

Jacobs AECOM

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Introduction

In 2019, Transport Scotland commenced the second Strategic Transport Projects Review (STPR2) to help inform transport investment in Scotland for the next 20 years. The output from STPR2 will help to deliver the vision, priorities and outcomes for transport set out in the National Transport Strategy (NTS2), aligning with other national plans such as the Climate Change Plan and the fourth National Planning Framework (NPF4).

STPR2 involved conducting an evidence-based review of the performance of Scotland's strategic transport network across active travel, bus, ferry, rail and the trunk road network. The outcomes from STPR2 will:

- enhance accessibility across Scotland for residents, visitors and businesses;
- create better connectivity with sustainable, smart and cleaner transport options;
- highlight the vital contribution that transport investment can play in enabling and sustaining Scotland's economic growth.

For the purpose of STPR2, Scotland has been split into regional groupings: Argyll & Bute, Ayrshire & Arran, Edinburgh & South East Scotland, Forth Valley, Glasgow City Region, Highlands & Islands, North East Scotland, Scottish Borders, South West Scotland, Tay Cities, and Shetland Islands.

The overall approach taken during the review is presented in Figure i below.

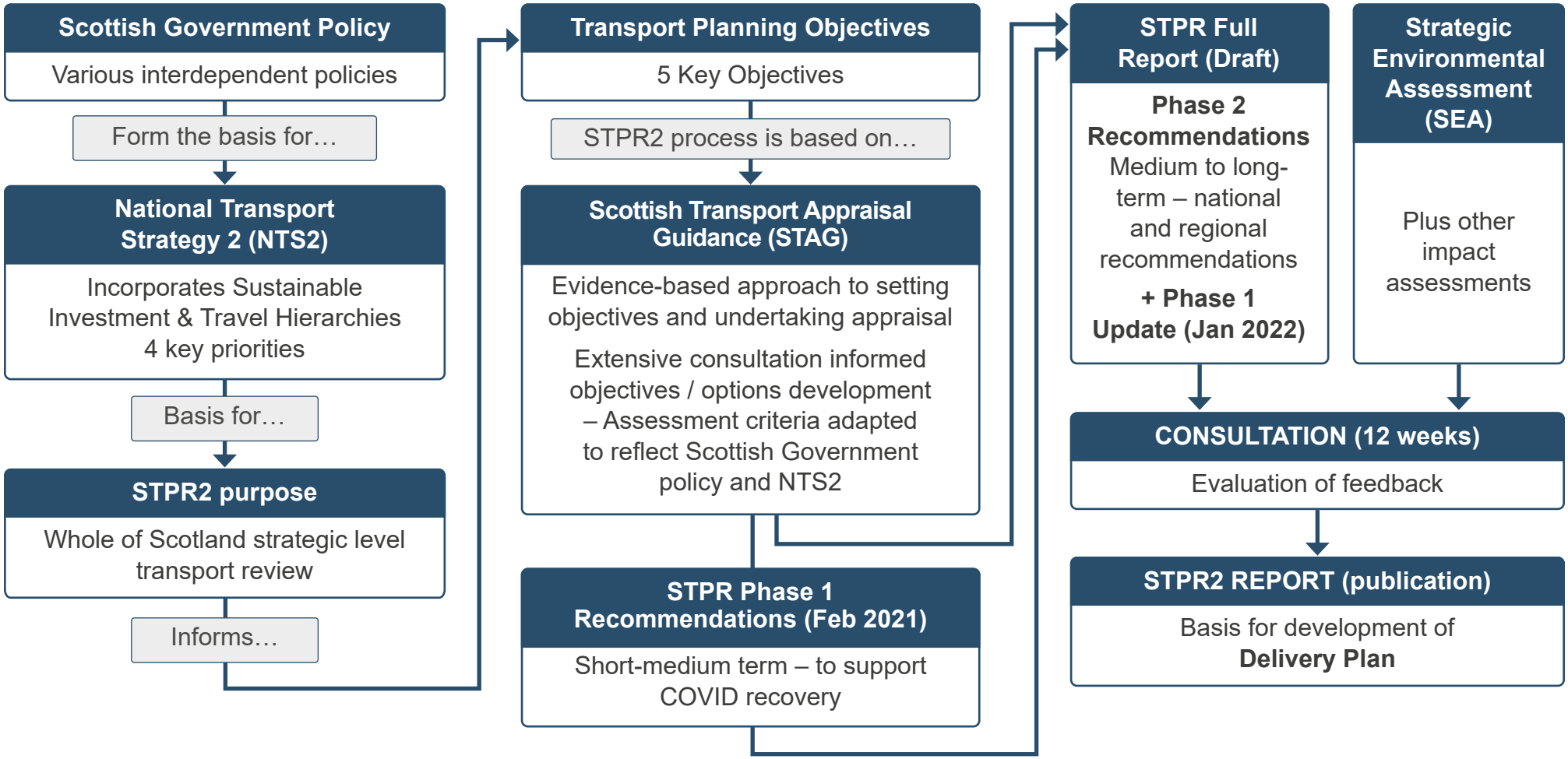

Figure i – STPR2 Development Process Summary

It should be noted that transport interventions not recommended by STPR2 may still be appropriate to be taken forward at regional and local levels, however any request for funding from the Scottish Government will require demonstration of the benefits and impacts of the transport proposal through the usual business case and transport appraisal process required by Transport Scotland.

Setting the Policy Context

Given the cross cutting nature of transport, there are a number of relevant policy documents which have been considered, to ensure that the aims and objectives of STPR2 are complementary to these and contribute to their delivery. The key policies are listed below.

The **National Transport Strategy 2 (NTS2)** sets the vision for the country's transport system over the next 20 years. The vision is underpinned by four priorities: Reduces Inequalities, Takes Climate Action, Helps Deliver Inclusive Economic Growth and Improves our Health and Wellbeing, each with three associated outcomes. At the heart of the Strategy is the recognition that we need to deliver a step-change in behaviour and provision of attractive, affordable, accessible and sustainable travel options. Embedded within the Strategy are the Sustainable Travel Hierarchy and Sustainable Investment Hierarchy to manage the demand for transport and support the creation of successful places in the future. The actions to take forward the new National Transport Strategy are outlined in the **Delivery Plan 2020-22**, published in December 2020.

As well as outlining the role of STPR2, it also highlights other parallel workstreams that will deliver on the NTS2 vision, priorities and outcomes. This includes the Island Connectivity Plan (ICP), being prepared as the successor to the Ferries Plan 2013-22 and will be closely linked to the outcomes of the STPR2.

In December 2020, the Scottish Government produced its **Update to the Climate Change Plan (CCP)**, which sets out the approach to delivering a green recovery, with a focus on the period up to 2032. The transport-related components of the Plan build upon NTS2, with a specific commitment to reduce car kilometres by 20% by 2030. The Scottish Government **Route Map**, published in January 2022, sets out a suite of policies from across Government that will be implemented to support car-use reduction in order to both address climate change and deliver a healthier, fairer and more prosperous Scotland, and recognises the role of STPR2 in setting out recommendations for future investment decisions.

The **Infrastructure Investment Plan (IIP)** for Scotland 2021 to 2026, published in February 2021, provides additional detail on expenditure in the next few years to support the commitments made within the Programme for Government and sets the context of future investment in transport to deliver an effective response to the COVID-19 pandemic and also an inclusive net zero carbon economy. It highlights that future transport investment decisions will be assessed through the second Strategic Transport Projects Review; embedding the NTS2 priorities and outcomes and the Sustainable Investment Hierarchy. The IIP also sets out the Scottish Government Investment Hierarchy which aligns with that within NTS2.

By aligning strategy, project and programme funding, the **Capital Spending Review (CSR)**, published in February 2021, provides confidence that the announced plans are affordable and fully funded. The Review also sends a strong signal on the future need to adjust the balance of investment in favour of renewing and extending the life of existing infrastructure, both on environmental and value-for-money grounds.

In July 2021, the Scottish Government published **Cleaner Air For Scotland 2: Towards A Better Place For Everyone** and an associated Delivery Plan, setting out how the Scottish Government will deliver further air quality improvements over the next five years to secure the vision of Scotland having the best air quality in Europe – a quality of air that aims to protect and enhance health, wellbeing and the environment. It recognises the role of STPR2 in contributing to a reduction in the need to travel unsustainably, making the most of existing transport strategic systems and supporting strategic investments in sustainable, smart and cleaner transport options.

In August 2021, the Scottish Government and the Scottish Green Party Parliamentary Group agreed to work together over the next five years to build a green economic recovery from COVID-19, respond to the climate emergency and create a fairer country. This agreement, along with the shared policy programme, referred to as **The Bute House Agreement**, details collaboration on the climate emergency, economic recovery, child poverty, the natural environment, energy and the constitution. It sets out a number of commitments to support the priorities and outcomes set out in NTS2, including to reduce car kilometres by 20% by 2030; increase the proportion of Transport Scotland's budget spent on active travel initiatives; invest in the maintenance, improvement and decarbonisation of Scotland's rail network; commission a Fair Fares Review; and progress the on-going review of transport governance in Scotland. These commitments will complement STPR2 and the shared policy programme acknowledges the role of STPR2 in directing future transport infrastructure investment.

The fourth **National Planning Framework 4 (NPF4)** is being developed alongside IIP and STPR2 and a Draft was laid in the Scottish Parliament on 10 November 2021. The National Planning Framework (NPF) is a long-term plan for Scotland that sets out where development and infrastructure is needed. NPF4 looks to 2045 and will guide spatial development, set out national planning policies, designate national developments and highlight regional spatial priorities. STPR2, and the Islands Connectivity Plan, represent the national transport investment needed to support NPF4. In turn some draft NPF4 national developments are STPR2 recommendations.

This presents the opportunity to embed the importance of "place" across land-use planning and transport. It will also set the context for developing an investment programme that is aligned with the Sustainable Travel Hierarchy presented in the NTS2.

The policy, plan and investment landscape is complex and multi-layered. There is an overarching and urgent imperative to address climate change and to achieve net zero carbon by 2045. Alongside this are the needs to improve our health and wellbeing. There is also a clear need to deliver inclusive economic growth and to reduce inequalities.

Challenges for Transport and Infrastructure

Transport's contribution to the climate emergency and net zero targets means that there is a need to reduce unsustainable travel and deliver modal shift towards walking, cycling and public transport. If we continue as we are now, forecasts suggest a 40% increase in vehicular travel by 2037. However, recent work by the Committee on Climate Change set out the need for a 10% reduction in car kilometres with a modal shift from car to walking, cycling and public transport and the Scottish Government has gone further in the recent update to the Climate Change Plan, setting a target of 20% reduction in total car kilometres across Scotland.

To achieve a modal shift of the scale required to address the climate emergency will require significant changes to the complex travel behaviours of users, operators, and the public and private sectors. In accordance with the Sustainable Travel Hierarchy, STPR2 aims to prioritise interventions that increase the modal share of shorter everyday trips by walking, wheeling and cycling; short- to medium-length trips by public transport and longer trips by rail and low emission vehicles.

The **COVID-19 pandemic** has directly led to a restructuring of STPR2. Recognising this, the Phase 1 report published in February 2021 focused on short- to medium- term measures that could support and extend the increase in travel by sustainable travel modes, and those that could be brought forward to support economic recovery. This Draft Technical Report combines the previous Phase 1 recommendations published in February 2021, which are the short-term priorities, with the longer-term recommendations. This, therefore, provides the full suite of recommendations for transport investment for the next 20 years, for consultation. Lasting responses to the COVID-19 pandemic such as increased working from home do, however, create an element of uncertainty with regards to future travel patterns, but also opportunities for increased use of sustainable travel. The review has recognised this uncertainty and has ensured that there is an element of flexibility and agility to allow specific recommendations to be reviewed or amended as travel patterns become clearer.

Generation and Sifting of Options

An extensive process of generating and sifting options has been undertaken, involving input from extensive stakeholder engagement and from the public through earlier feedback exercises. Initially, approximately 14,000 options and ideas were collated. These were subsequently reviewed and cleaned to remove duplicates, to create a long list of approximately 2,800 options. Following an extensive sifting process, a further review was undertaken, which resulted in approximately 1,400 standalone options, which were combined in to 80 Groupings (similar types of interventions) taken forward within the appraisal process.

Appraisal Approach

The methodology followed Scottish Transport Appraisal Guidance (STAG) and forms the Strategic Case for the recommendations. It has been developed to incorporate new and emerging areas of appraisal research, guided by discussions with Transport Scotland, wider Scottish Government, and other stakeholders. This has included:

- inclusion of additional components within the approach to Option Sifting;
- inclusion of the Sustainable Investment Hierarchy in the option development and appraisal processes;
- the adoption of future Planning Scenarios that capture uncertainty rather than a typical fixed Do-Minimum Scenario;
- clearer links to NTS2, including supporting the net zero carbon emission targets;
- the approach to capturing and appraising factors of Inclusive Growth;
- inclusion of the Place Principle in the development and assessment of options;
- embedding statutory and duty impact assessments into the appraisal process, ensuring impacts on the environment, island communities and different societal groups are captured;
- the adoption of guidance around valuing the health and economic benefits of active travel;
- improving the presentation and reporting of appraisal outcomes to aid understanding.

A number of approaches have been adopted to strengthen the appraisal undertaken for STPR2, with a particular focus on embedding the Sustainable Investment Hierarchy. The approach taken ensures that interventions emerging from STPR2 will contribute to delivering NTS2 outcomes and support wider net zero commitments.

The Detailed Appraisal has taken cognisance of updated guidance, as set out within the Scottish Transport Appraisal Guidance - Managers Guide published in January 2022. This includes the new criterion of ‘Climate Change’, against which all Packages have been appraised.

Statutory Impact Assessments

Details of the parallel assessments that have been undertaken on STPR2 are set out below:

- **Strategic Environmental Assessment (SEA)** – an SEA is required under European Union Directive 2001/42/EC and a key objective of the SEA process is to afford a high level of protection to the environment and to ensure environmental considerations feature in the decision-making process.
- **Equalities Impact Assessment (EqIA)** – identifies and assesses any likely disproportionate or differential effects on people with characteristics protected by the Equality Act 2010. This includes sex, age, disability, race, religion/belief, gender reassignment, sexual orientation, pregnancy & maternity and marriage & civil partnership.
- T**he Fairer Scotland Duty Assessment (FSDA)** – identifies and assesses how to reduce inequalities of outcome caused by socio-economic disadvantage when making strategic decisions. In broad terms, 'socio-economic disadvantage' means living on a low income compared to others in Scotland, with little or no accumulated wealth, leading to greater material deprivation, restricting the ability to access basic goods and services.
- **Child Rights and Wellbeing Impact Assessment (CRWIA)** – considers impacts on children and young people. It covers individual children, groups of children, and all children up to age 18. It also considers young people up to the age of 24.
- **Island Communities Impact Assessment (ICIA)** – considers likely impacts on an island community which is significantly different from its effect on other communities (including other island communities).
- **Habitat Regulations Appraisal (HRA)** – considers potential impacts on European Union-designated 'Natura 2000' sites. These sites include Special Areas of Conservation (SACs) designated under the Habitats Directive (92/43/EEC) and Special Protection Areas (SPAs) designated under the Birds Directive (2009/147/EEC), together with candidate and possible SACs, potential SPAs and Ramsar wetlands.

Final Recommendations

The STPR2 recommendations are grouped under six themes:

- improving active travel infrastructure;
- influencing travel choices and behaviours;
- enhancing access to affordable public transport;
- decarbonising transport;
- increasing safety and resilience on the strategic transport network; and
- strengthening strategic connections.

Summaries of each theme and related recommendations are provided within this report. Figure ii, below, provides a snapshot of the benefits related to the recommendations.

STPR2 objectives ▶	Protecting our Climate and Improving Lives									
	Net-Zero Emissions		Affordable and Accessible Public Transport		Places, Health and Wellbeing		Sustainable Inclusive Growth		Safe and Resilient	
Key themes and recommendations ▼	Benefits to Individuals, Communities and Organisations									
	More green transport options	Less pollution	More choice	Easier access	Better community environments	More healthier options	Access to key services and jobs	Connections to key markets	Safer travel	More reliable journeys
Improving active travel infrastructure	✓	✓	✓	✓	✓	✓	✓		✓	✓
(1) Connected neighbourhoods	✓	✓	✓	✓	✓	✓	✓		✓	✓
(2) Active freeways	✓	✓	✓		✓	✓	✓		✓	✓
(3) Village-town active travel connections	✓	✓	✓	✓	✓	✓	✓		✓	✓
(4) Connecting towns by active travel	✓	✓	✓	✓	✓	✓	✓		✓	✓
(5) Long distance active travel network	✓	✓			✓	✓	✓		✓	
Influencing travel choices and behaviours	✓	✓	✓	✓	✓	✓	✓		✓	✓
(6) Behaviour change initiatives	✓	✓	✓		✓	✓				✓
(7) Changing road user behaviour		✓			✓				✓	✓
(8) Increasing active travel to school	✓	✓		✓	✓	✓	✓		✓	✓
(9) Improving access to bikes	✓	✓			✓	✓				
(10) Expansion of 20mph limits and zones		✓		✓	✓	✓			✓	

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	More green transport options	Less pollution	More choice	Easier access	Better community environments	More healthier options	Access to key services and jobs	Connections to key markets	Safer travel	More reliable journeys
Enhancing access to affordable public transport	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
(11) Clyde Metro	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
(12) Edinburgh & South East Scotland Mass Transit	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
(13) Aberdeen Rapid Transit	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
(14) Provision of strategic bus priority measures	✓	✓		✓	✓	✓	✓	✓		✓
(15) Highland Mainline rail corridor enhancements	✓	✓	✓			✓	✓	✓	✓	✓
(16) Perth-Dundee-Aberdeen rail corridor enhancements	✓	✓	✓			✓	✓	✓	✓	✓
(17) Edinburgh/Glasgow–Perth/Dundee rail corridor enhancements	✓	✓	✓			✓	✓	✓	✓	✓
(18) Supporting integrated journeys at ferry terminals	✓	✓	✓	✓	✓	✓	✓	✓		✓
(19) Infrastructure to provide access for all at railway stations	✓		✓	✓	✓		✓		✓	

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Key themes and recommendations ▼	Benefits to Individuals, Communities and Organisations									
	More green transport options	Less pollution	More choice	Easier access	Better community environments	More healthier options	Access to key services and jobs	Connections to key markets	Safer travel	More reliable journeys
(20) Investment in DRT and MaaS	✓	✓	✓		✓	✓	✓			
(21) Improved public transport passenger interchange facilities	✓	✓	✓	✓	✓	✓	✓	✓	✓	
(22) Framework for delivery of mobility hubs	✓	✓	✓	✓	✓	✓	✓		✓	
(23) Smart, integrated public transport ticketing	✓		✓	✓		✓	✓			
Decarbonising transport	✓	✓		✓	✓	✓		✓		
(24) Ferry vessel renewal and replacement and progressive decarbonisation	✓	✓		✓	✓	✓	✓	✓		✓
(25) Rail decarbonisation	✓	✓		✓	✓	✓				
(26) Decarbonisation of bus network	✓	✓		✓	✓	✓				
(27) Behaviour change and modal shift for freight	✓	✓			✓	✓		✓		✓
(28) Zero emissions vehicles and infrastructure transition	✓	✓			✓	✓				

STPR2 objectives ▶	Protecting our Climate and Improving Lives									
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Key themes and recommendations ▼	Benefits to Individuals, Communities and Organisations									
	More green transport options	Less pollution	More choice	Easier access	Better community environments	More healthier options	Access to key services and jobs	Connections to key markets	Safer travel	More reliable journeys
Increasing safety and resilience on the strategic transport network	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
(29) Access to Argyll A83		✓					✓	✓	✓	✓
(30) Trunk road and motorway safety Improvements					✓		✓	✓	✓	✓
(31) Trunk road and motorway climate change adaptation and resilience							✓	✓	✓	✓
(32) Trunk road and motorway renewal for reliability, resilience and safety					✓		✓	✓	✓	✓
(33, 34, 35) Enhancing Intelligent Transport Systems		✓	✓		✓		✓	✓	✓	✓
(36) Strategy for improving rest and welfare facilities for hauliers					✓		✓	✓	✓	

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Key themes and recommendations ▼	Benefits to Individuals, Communities and Organisations									
	More green transport options	Less pollution	More choice	Easier access	Better community environments	More healthier options	Access to key services and jobs	Connections to key markets	Safer travel	More reliable journeys
(37) Improving active travel on trunk roads through communities	✓	✓		✓	✓	✓			✓	
(38) Speed management plan		✓			✓		✓		✓	✓
Strengthen strategic connections	✓	✓	✓		✓	✓	✓	✓	✓	✓
(39) Sustainable access to Grangemouth Investment Zone	✓	✓	✓	✓	✓	✓	✓	✓		✓
(40) Access to Stranraer and ports at Cairnryan	✓			✓	✓		✓	✓	✓	✓
(41) Potential fixed links in Outer Hebrides and Mull				✓			✓	✓		✓
(42) Investment in port infrastructure	✓	✓		✓	✓		✓	✓		
(43) Major station masterplans				✓	✓	✓	✓	✓	✓	
(44) Rail freight terminals and facilities	✓	✓					✓	✓	✓	✓
(45) High speed and cross border rail enhancements	✓	✓	✓			✓	✓	✓	✓	✓

Figure ii – STPR2 Recommendations and Key Benefits

The STPR2 recommendations do not constitute the full transport investment programme of Scottish Government. They should be considered alongside the overall Government spending commitments on transport outlined in the above documents, within Scottish Government budgets or funded by Government e.g. Growth Deals. Some of the other Scottish Government transport spending commitments are out of scope for STPR2. For example:

- asset management of the motorway and trunk road (e.g. routine and cyclic maintenance);
- measures to improve resilience of the rail network (e.g. operations, maintenance and renewal);
- revenue-based spending on public transport including bus, ferries and air services (e.g. subsides for operations and fares).

It should also be noted that transport interventions not recommended by STPR2 may still be appropriate to be taken forward at regional and local levels, however any request for funding from the Scottish Government will require demonstration of the benefits and impacts of the transport proposal through the usual business case and transport appraisal process required by Transport Scotland.

Next Steps

Following publication of this Draft Technical Report, a consultation process will be undertaken to gather feedback from stakeholders and the public on the recommendations to encourage a genuine change in transport provision. The consultation process is expected to commence on 20 January for a minimum 12 week period.

The consultation process will seek the views of statutory consultees, wider stakeholders and the public on the processes, findings and recommendations.

This Draft Technical Report is part of a series of materials including:

- the Summary Report;
- the Strategic Environmental Assessment (SEA) Draft Environmental Report;
- Equality Impact Assessment Draft Report;
- Island Communities Impact Assessment Draft Report;
- Fairer Scotland Duty Assessment Draft Report;
- Child Rights and Wellbeing Impact Assessment Draft Report;
- Habitats Regulations Appraisal Draft Report;
- online story maps which allow users to access information which has informed the draft recommendations.

It should be noted that at this stage the findings and recommendations set out within this report are not committed to by the Scottish Government. Subject to the statutory consultation period, the recommendations will be finalised and commitment will be subject to prioritisation of available budgets. Throughout this process there will be further opportunities for the public and stakeholders to contribute to, and comment on, the detail of the interventions as they develop.

Neither are the interventions contained within the findings and recommendations the sole responsibility of Transport Scotland to deliver, indeed many will rely on working together with local authorities, regional transport partnerships and other stakeholders to take forward. Following the statutory consultation process, all feedback received will be collated and reviewed and used to inform a Delivery Plan which is expected to consider issues including the prioritisation and programming of the STPR2 recommendations; the approach to partnership working; proposals for delivery; proposals for funding; and future review process and timescales.

In addition, the feedback received will be used to inform and finalise the SEA and Impact Assessments and this is discussed in more detail in the Environmental Report[1].

1 STPR2 Strategic Environmental Assessment Draft Environmental Report, Jacobs / AECOM, January 2022

1. Introduction

1.1. Background

In early 2019, Transport Scotland commenced the second Strategic Transport Projects Review (STPR2) to help inform transport investment in Scotland for the next 20 years. STPR2 will help to deliver the vision, priorities and outcomes for transport set out in the **National Transport Strategy (NTS2)**, aligning with other national plans such as the Climate Change Plan, the second Cleaner Air For Scotland strategy and the National Planning Framework (NPF4).

STPR2 involves conducting an evidence-based review of the performance of Scotland's strategic transport network across active travel, bus, ferry, rail and the trunk road network. The outcomes from STPR2 will:

- enhance accessibility across Scotland for residents, visitors and businesses;
- create better connectivity with sustainable, smart and cleaner transport options;
- highlight the vital contribution that transport investment can play in enabling and sustaining Scotland's economic growth.

The review will help inform Scottish Ministers on a programme of potential transport investment opportunities for the period 2022-2042.

A number of approaches have been adopted to strengthen the STAG-based appraisal undertaken for STPR2, with a particular focus on ensuring the identification of sustainable transport interventions that support the NTS2 priority "Takes Climate Action". The approach taken ensures that interventions emerging from STPR2 will contribute to delivering NTS2 outcomes and support wider net zero commitments.

1.2. Scope of the Second Strategic Transport Projects Review

STPR2 will guide the Scottish Government's transport investment programme in Scotland for the next 20 years and help to deliver the vision, priorities and outcomes that are set out in NTS2. The aim of STPR2 is:

> **To conduct a Scotland-wide, evidence-based review of the performance of the strategic transport system, against multiple criteria including safety, environment, economy, integration, accessibility and social inclusion and, fundamentally, to support the Scottish Government's aims, including sustainable inclusive growth and the move to a low carbon transport system.**

It is recognised that Scotland's geography is unique and varied, ranging from rural lowlands to remote uplands, and from large cities to sparsely inhabited islands, meaning no two parts of Scotland are the same, nor are their travel patterns and demands. For that reason, STPR2 considered both national and regional issues in order to appraise options in the context of place.

The national focus considered the strategic links between the cities and key ports, international gateways and cross-border links, whilst the regional focus considered the role of the strategic network in the context of regional economic geographies and changes emanating from, for example, the Planning Review, Enterprise and Skills Review, and City and Regional Growth Deals. This approach enabled examination of regional issues which would have significant effects on the national strategic network, to deliver national investment priorities.

A total of 11 regions have been established for STPR2: Argyll & Bute, Ayrshire & Arran, Edinburgh & South East Scotland, Forth Valley, Glasgow City Region, Highlands & Islands, North East Scotland, Tay Cities, Scottish Borders, Shetland Islands, and South West Scotland. Within North East Scotland, Scottish Borders and South West Scotland work was carried out in advance of the STPR2 commission, and collectively these are referred to as the STPR2 Advanced Studies. Further details of the regional structure are set out in the **National Case for Change Report** and the 11 regions are shown in Figure 1, below.

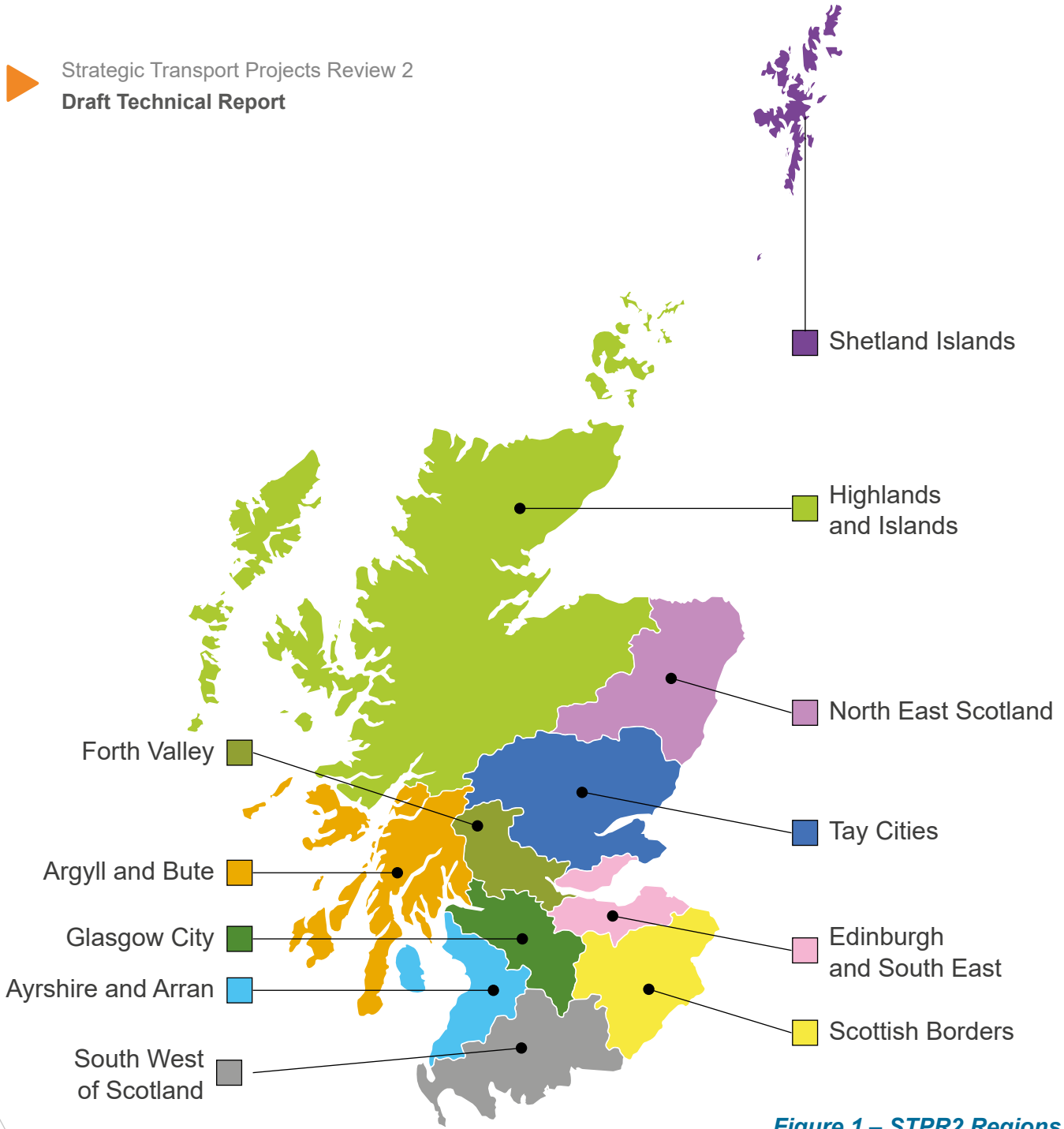


Figure 1 – STPR2 Regions

STPR2 specifically focusses on Scotland's key strategic transport assets. In this context, a strategic transport project is defined as:

- any transport project that plays a significant part in supporting the NTS2 priorities and related outcomes;
- projects or groups of projects related to transport networks owned, operated and funded directly by Transport Scotland;
- passenger and freight access to major ports and airports;
- the inter-urban bus and active travel networks and principal corridors within urban areas.

Some of the additional transport investments not covered by STPR2 include routine day to day motorway and trunk road maintenance and committed improvements; rail network operations, maintenance and renewal; and revenue funding for public transport services.

A full list of options that are out of scope is included in Appendix A.

Figure 2, below, summarises the steps in the STPR2 process and how these align to current Scottish Government policy:

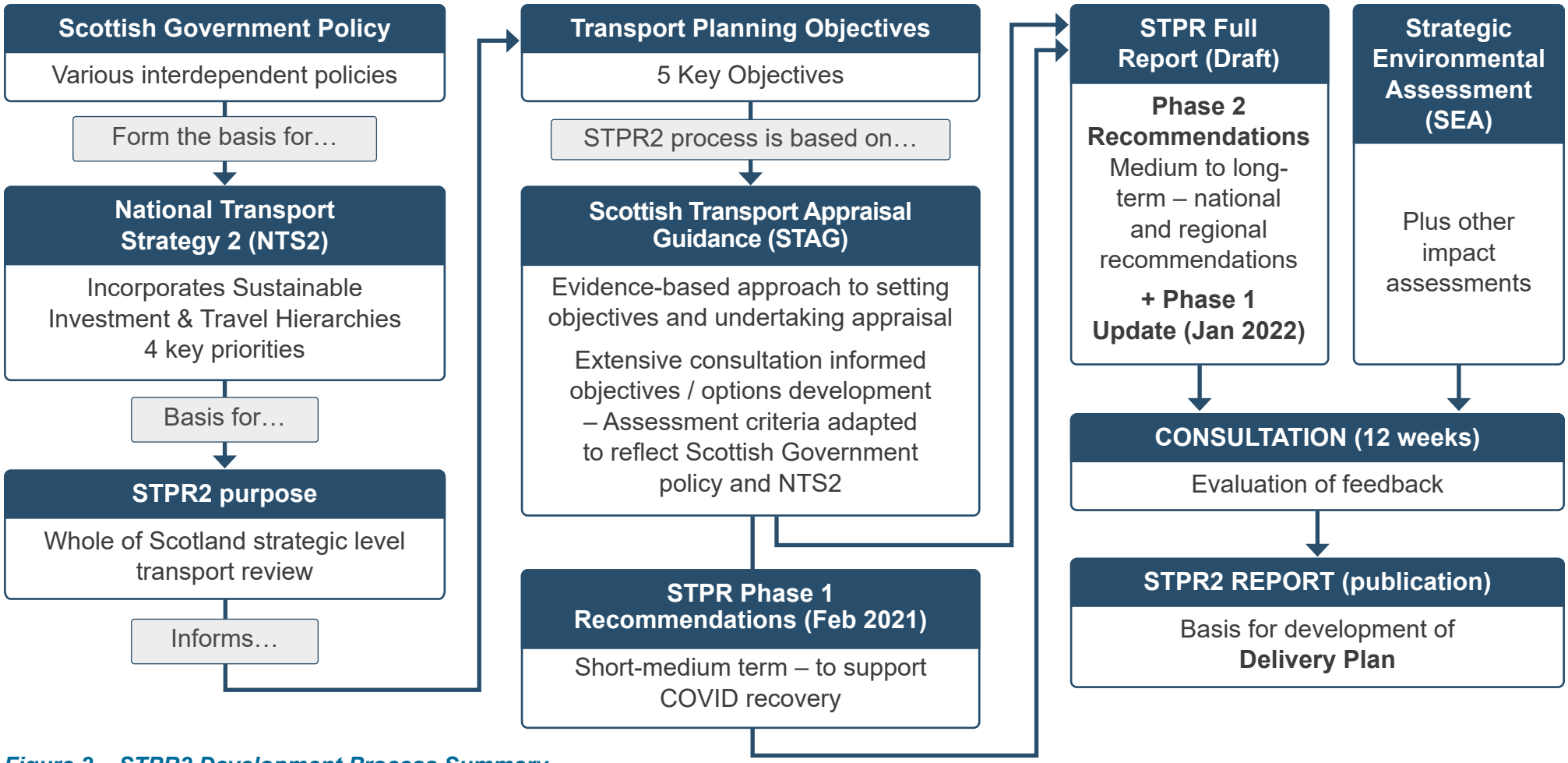


Figure 2 – STPR2 Development Process Summary

It should be noted that transport interventions not recommended by STPR2 may still be appropriate to be taken forward at regional and local levels, however any request for funding from the Scottish Government will require demonstration of the benefits and impacts of the transport proposal through the usual business case and transport appraisal process required by Transport Scotland.

1.3. Phased Delivery

As a result of the COVID-19 pandemic, STPR2 has adopted a two-phased approach. Phase 1 was introduced in order to help expedite the development of interventions that could embed, support and extend the increase in travel by sustainable travel modes, and those that could be brought forward to support economic recovery. Phase 1 reported in February 2021. This Draft Technical Report combines the previous Phase 1 recommendations published in February 2021, which are the short-term priorities, with the longer-term recommendations. This, therefore, provides the full suite of recommendations for transport investment for the next 20 years, for consultation. The scenarios considered for the medium and longer-term (next 20 years) and do not specific consider the immediate impacts of the COVID-19 crisis as it is assumed that some effective means of managing coronavirus will be found.

Lasting responses to the crisis do, however, need to be taken into account, a most obvious example being that a major part of the economy has carried out a very large-scale experiment into the feasibility of consistent working at home.

This approach was confirmed in the **Programme for Government** published in September 2020[2], where it stated "public transport demand remains impacted by the need for physical distancing and a drop in public confidence. Working from home, the move to more shopping online and impacts on the tourism sector have seen major reductions in demand. Given the levels of uncertainty it is only right that we consider the implications for transport and how we re-start the second Strategic Transport Projects Review to ensure that this will help identify interventions that would aid or help accelerate economic recovery. We will take a phased approach to STPR2, with Phase 1 focusing on recommendations which "lock in" the benefits and travel behaviours of individuals and provide a step change in investment which supports the priorities and outcomes of the National Transport Strategy."

2 It is noted that an updated Programme for Government was published in September 2021 whereby the importance of STPR2 is recognised to help deliver net zero and just transition ambitions.

1.4. Supporting Documents

This report draws together all the key findings from the individual tasks and activities that have been undertaken during the review to form a succinct and accurate record of STPR2 as a whole. It sets out the process undertaken to inform the Scottish Government's future investment plans and spending reviews. Further details of the STPR2 process and Outcomes can be found in the following documents:

- STPR2: National Case for Change Report, Jacobs / AECOM, February 2021;
- STPR2: Regional Case for Change Reports (8. No), February 2021;
- STPR2: Update and Phase 1 Recommendations, Jacobs / AECOM, February 2021;
- STPR2: Summary Report, Jacobs / AECOM, January 2022;
- STPR2: Summary Report (Easy Read Version), Jacobs / AECOM, January 2022;
- STPR2: Summary Report (Gaelic Version), Jacobs / AECOM, January 2022;
- STPR2: Strategic Environmental Assessment Draft Environmental Report, Jacobs / AECOM, January 2022;
- STPR2 Equality Impact Assessment Draft Report, Jacobs / AECOM, January 2022;
- STPR2 Island Communities Impact Assessment Draft Report, Jacobs / AECOM, January 2022;
- STPR2 Fairer Scotland Duty Assessment Draft Report, Jacobs/ AECOM, January 2022;
- STPR2 Child Rights and Wellbeing Impact Assessment Draft Report, Jacobs / AECOM, January 2022;
- STPR2 Habitats Regulations Appraisal Draft Report, Jacobs/ AECOM, January 2022.

Web-based **STPR2 Project Pages** have also been developed as a reporting tool for the commission. The Project Pages provide functionality to enable end-users to navigate and search for areas of interest using filters. The Project Pages include an interactive STPR2 story mapping feature which has been created to enable end-users to review the latest information and data which has informed the STPR2 process.

1.5. Report Structure

Following this introduction, the remainder of the report is structured as follows:

- Chapter Two sets out the Policy Context for STPR2 and includes an overview of existing funding commitments;
- Chapter Three sets out the STPR2 study approach and provides an overview of the STAG process, Strategic Environmental Assessment (SEA), Impact Assessments and stakeholder engagement;
- Chapter Four provides details of the National Case for Change, including the challenges for transport and infrastructure, the implications of the COVID-19 pandemic and dealing with uncertainty;
- Chapter Five provides details of how Transport Planning Objectives (TPOs) have been established, both at a national and regional level;
- Chapter Six sets out the approach to option generation and sifting and the output from this process;
- Chapter Seven provides a summary of the approach to Phase 1;
- Chapter Eight explains the approach and outcomes of the appraisal process;
- Chapter Nine sets out the final recommendations;
- Chapter Ten provides details of the next steps, including the statutory consultation process, post-consultation Delivery Plan and Monitoring and Evaluation Framework.

The report also includes the following appendices:

- Appendix A – Out of Scope Options;
- Appendix B – Draft NPF4 National Developments;
- Appendix C – Impact Assessment Objectives;
- Appendix D – Engagement Details;
- Appendix E – Appraisal Approach and Criterion Descriptions;
- Appendix F – Scenario Definitions and Purpose Paper;
- Appendix G – Case for Change Groupings Related to Recommendations;
- Appendix H – Detailed (Regional) Packaging - Appraisal Summary Tables (ASTs);
- Appendix I – A96 Review – Technical Note.

2. Policy Context

2.1. Introduction

A number of government policies, strategies and commitments set the overall context for STPR2. It is therefore important to highlight the key issues of direct relevance to this review and outline how these have influenced and shaped STPR2. This includes, but is not limited to, NTS2 and associated Delivery Plan; Climate Change Plan Update; the second Cleaner Air for Scotland strategy; NPF4; and The Bute House Agreement. This Chapter provides an overview of these policies and strategies. Consideration is also given to existing funding commitments.

2.2. NTS2 and Delivery Plan

2.2.1. Introduction

NTS2 provides the national transport policy framework, setting out a clear vision of a sustainable, inclusive, safe and accessible transport system which helps deliver a healthier, fairer and more prosperous Scotland for communities, businesses and visitors. It sets out key priorities to support that vision: reducing inequality; taking climate action; helping deliver inclusive economic growth; and improving health and wellbeing.

NTS2 is set within the context of a Climate Emergency, with the Scottish Government committed to transitioning our transport system to one that is net zero in carbon emissions by 2045. Set against a backdrop of increasing amounts of travel in Scotland over recent years, particularly vehicular travel, NTS2 clearly articulates the need for change in transport provision in Scotland. STPR2 has a key part to play in supporting the delivery of the priorities and outcomes by outlining a range of targeted measures to achieve fundamental change in overall travel demand, a shift to more sustainable modes such as walking, cycling and public transport, and in transitioning to a net zero economy.

2.2.2. The Vision, Priorities and Outcomes

The Strategy presents the vision for Scotland's transport system over the next 20 years, which is: "We will have a sustainable, inclusive, safe and accessible transport system, helping deliver a healthier, fairer and more prosperous Scotland for communities, businesses and visitors."

The overall vision of NTS2 is underpinned by four priorities and each priority is expressed through a set of three outcomes which helps to explain the effect the policy is seeking to achieve, as shown in Figure 3.

Figure 3 – The National Transport Strategy 2 Priorities and Outcomes

The development of NTS2 has involved a comprehensive review of the key transport challenges facing Scotland and has included extensive engagement with a network of partners and authorities across the country comprising individuals, businesses and third sector organisations, to gather the views of a wide range of users of the transport system. Through this process, it has been identified that Scotland's transport system continues to face a number of challenges: many people encounter problems when trying to access the services they need; vehicles continue to emit greenhouse gases and pollute the places residents live and work; businesses still face congestion and delays when reaching their customers; and people still face barriers when wanting to cycle or walk to their destination.

Figure 4 illustrates how each of the 27 key challenges identified within NTS2 align with the four key priorities. It demonstrates that the key challenges are interlinked and can be grouped under several, if not all, of the four NTS2 priority areas.

Figure 4 – NTS2 Priorities and Associated Challenges

2.2.3. Embedding NTS2

Important context is provided by the Sustainable Travel Hierarchy and Sustainable Investment Hierarchy set out in the NTS2 (see Figure 5) to manage the demand for transport and support the creation of successful places in the future.

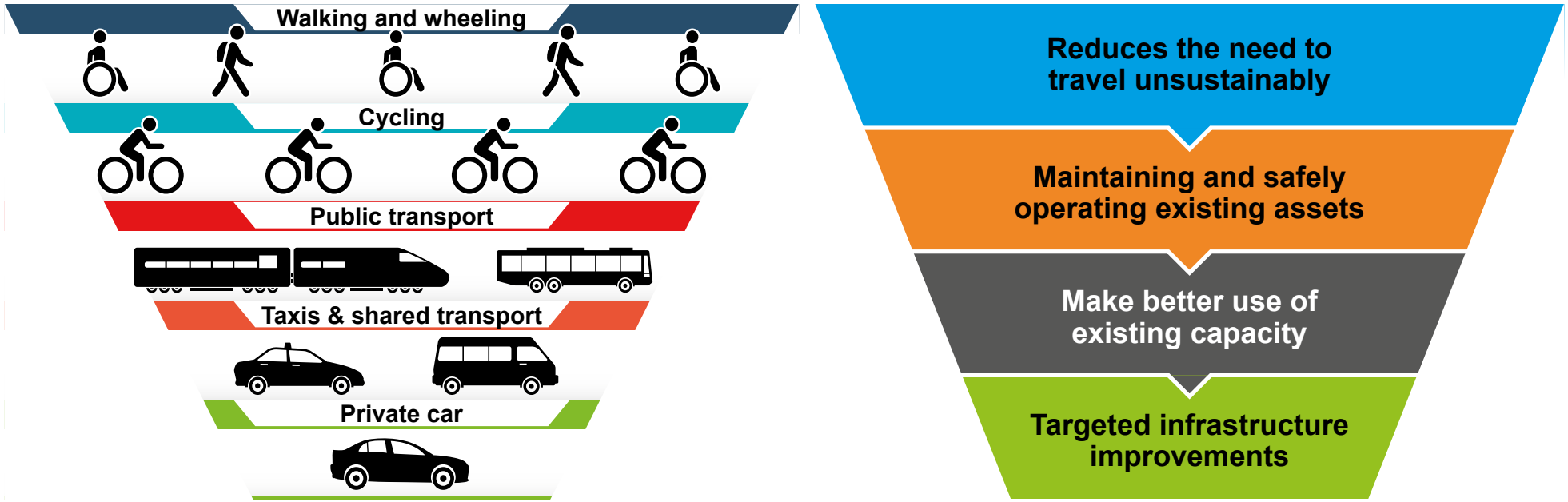


Figure 5 – Sustainable Travel Hierarchy and Sustainable Investment Hierarchy

NTS2 states that the Sustainable Travel Hierarchy should be embedded in decision making; promoting walking, wheeling, cycling, public transport and shared transport options in preference to single occupancy private car use. At a national level the Sustainable Investment Hierarchy should be used to inform investment decisions, considering: investment aimed at reducing the need to travel unsustainably; investment aimed at maintaining and safely operating existing assets taking due consideration of the need to adapt to the impacts of climate change; investment promoting a range of measures, including innovative solutions, to make better use of existing capacity, ensuring that existing transport networks and systems are fully optimised (these may include technology-based, regulatory, fiscal or value engineering solutions to asset renewals); and investment involving targeted infrastructure improvements. In other words, there is an expectation that STPR2 should not bring forward recommendations for infrastructure improvements without first considering the requirement for, and effectiveness of, interventions in the first three categories.

At the Option Generation and Sifting stage of STPR2 (discussed further in Chapter Six), the Sustainable Travel Hierarchy has been applied to promote interventions that prioritise walking, wheeling, cycling and public transport-based modes ahead of private car trips, and to ensure that interventions that reduce the need to travel unsustainably are prioritised over targeted infrastructure measures. In addition, each option considered within STPR2 has been assessed in terms of its position within the Sustainable Investment Hierarchy, in order to ensure that budgetary decisions are informed with sustainability in mind, in line with the approach promoted in the NTS2. Consideration has been given to whether each option being assessed is either the only option available to address the identified problems and/or opportunities or is the option that best aligns with the Sustainable Investment Hierarchy.

2.2.4. NTS2 Delivery Plan

The first **NTS2 Delivery Plan** covers the period to March 2022, after which there will be annual delivery plans. It updates on three initial areas around (i) increasing accountability, where, amongst other initiatives, the NTS2 Delivery Board has been established - chaired by the Cabinet Secretary for Transport, Infrastructure and Connectivity and bringing together senior transport sector representatives; (ii) strengthening evidence, which focuses on the process and mechanisms being utilised to deliver STPR2 alongside work on monitoring and evaluation frameworks; and (iii) managing demand, which focuses on place-based initiatives and working with local authority partners.

When the NTS2 was published in February 2020 it recognised the need for its implementation to be flexible to adapt to emerging and changing evidence. This is particularly relevant in light of the COVID-19 pandemic and Government response, and the impact of this on Scotland's economy and society. As a result, the NTS2 vision and outcomes remain valid in terms of a long-term strategy setting the framework for decision making on transport in Scotland. However, given the impacts from the pandemic, it is pertinent to take account of the emerging evidence of the impact of COVID-19 on travel demand and behaviour, and its impact in terms of exacerbating existing inequalities, including around access to and affordability of transport, particularly for those already experiencing disadvantage.

This first Delivery Plan does this and sets out a series of commitments and actions under each of the four priorities. Whilst many of these elements are relevant to the development of STPR2, those referencing it specifically are:

- Strengthening Evidence - We continue to embed the Sustainable Travel Hierarchy and Sustainable Investment Hierarchy in decision-making, Scottish Transport Appraisal Guidance (STAG) and the second Strategic Transport Projects Review (STPR2).
- The Appraisal Framework and investment decision-making for STPR2 will have the Sustainable Investment Hierarchy at its heart.
- For STPR2, we have adopted a two-stage process. Phase 1 will involve considering the impacts associated with the COVID-19 pandemic and outline a transport investment plan for the next one to three years, to be published this winter. A completed STPR2 will be published later in 2021, setting out a transport investment plan for the next 20 years.
- We are taking a collaborative engagement approach for STPR2, working with the ten regional working groups and a range of stakeholders during the various stages of the appraisal process, while recognising the critical role of local transport and regional connections to the success of diverse towns and places, supporting thriving town centres, resilient communities and 20-minute neighbourhoods.

- In 2021/22, we will complete the development and appraisal of options and interventions, and publish the final STPR2 appraisal report and Strategic Environmental Assessment (SEA) along with the accompanying Island Communities Impact, Children's Rights, Equality Impact and Fairer Scotland Duty Assessments for consultation".

NTS2 sets the vision for the country's transport system over the next 20 years. At the heart of the strategy is the recognition that we need to deliver a step-change in behaviour and provision of attractive, affordable and accessible sustainable travel options. This is echoed in the NTS Delivery Plan covering the period to March 2022.

2.3. Climate Change Considerations

The STPR2 approach has ensured that interventions emerging from STPR2 will contribute to delivering NTS2 outcomes and support wider net zero commitments.

2.3.1. Climate Change Plan

The Scottish Government published **Securing a Green Recovery on a Path to Net Zero: Climate Change Plan 2018–2032 – update"**, in December 2020 , which reflects the ambition of the new targets set in the Climate Change (Emissions Reduction Targets) (Scotland) Act 2019. These comprise the reduction of Scotland's greenhouse gas emissions to net zero by 2045 at the latest, with interim targets of at least:

- 56% by 2020;
- 75% by 2030;
- 90% by 2040.

The transport chapter of the Plan sets out context around the current situation and how the shift to home working may become a longer-term trend. Coupled with the focus on 20-minute neighbourhoods, the Plan notes the opportunity to capitalise on these to reduce the need to travel, and, when travel occurs, for it to be focused on more sustainable modes.

The Plan includes the following statement in relation to transport: "By 2032 our roads will contain no new petrol and diesel cars and vans; we will have decarbonised our passenger railways; and we will have begun work to decarbonise challenging transport modes such as HGVs, ferries and aviation. Car kilometres will have reduced by 20%, and sustainable transport will be the instinctive first choice for people."

This statement is accompanied by a timeline to 2032 that sets out the key milestones in the intervening years:

- 2024 – majority of new buses are zero emissions.
- 2025 – need for any new petrol and diesel light commercial vehicles in public bodies phased out. Delivery of first Active Freeways: segregated active travel routes on main travel corridors.
- 2030 – conditions created to phase out the need for all new petrol and diesel vehicles in Scotland's public sector fleet. Need for new petrol and diesel cars and vans phased out. Car kilometres reduced by 20%.
- 2032 – Scotland's passenger rail services considerably decarbonised, with just a few years to go until they are fully decarbonised.

2.3.2. Climate Change Route Map

In January 2022 the Scottish Government and the Convention of Scottish Local Authorities (COSLA) developed a **Route Map** to deliver the shift in travel behaviours required to meet the 20% reduction target, recognising the need for ongoing collaboration and partnership working between national, regional and local government as well as public, private and third sector partners. The Route Map sets out the suite of policies from across Government that will be implemented to support car-use reduction in order to both address climate change and deliver a healthier, fairer and more prosperous Scotland, and recognises the role of STPR2 in setting out recommendations for future investment decisions.

Successful implementation of the actions set out in the Route Map are expected to lead to a transformational way of living in Scotland, where a new localism thrives in villages, towns and city neighbourhoods; where streets become places that are safe for people of all ages to travel by walking and cycling whilst maintaining private vehicle access for those with disabilities; where longer journeys are made by convenient and affordable public or shared transport; and with greater use of on-line access to key services and opportunities. This future will both enable statutory climate change targets to be met, whilst at the same time creating better ways of living, improved health and wellbeing and the associated social and economic benefits of a society less dominated by private cars.

Relevance for STPR2

Transport remains Scotland's biggest emitting sector (35.5% of emissions) with cars accounting for around 40% of emissions, and therefore significant action is required. It is also acknowledged that technological advances to green vehicles will not be enough and managing demand and behavioural change will be needed. Therefore, STPR2 will be required to develop a programme of interventions to establish conditions that work towards a reduction in car kilometres of 20% by 2032.

2.3.3. Cleaner Air for Scotland 2: Towards A Better Place for Everyone

In July 2021, the Scottish Government published **Cleaner Air For Scotland 2: Towards A Better Place For Everyone** and an associated Delivery Plan. It sets out how the Scottish Government will deliver further air quality improvements over the next five years. This is considered necessary to secure the vision of Scotland having the best air quality in Europe – a quality of air that aims to protect and enhance health, wellbeing and the environment.

The Delivery Plan is structured around ten priorities, including transport, which reflect the ten high-level themes from the review of Cleaner Air for Scotland completed in 2019. Specifically relating to Transport, the Plan notes "We support a modal shift to active travel and public transport. This will mean, amongst other objectives, providing a transport system that facilitates active travel choices, better public transport provision and constraints upon private vehicle use, especially in urban centres where pollution and congestion are most acute."

The Delivery Plan makes reference to the Sustainable Investment Hierarchy and the role of STPR2 in contributing to a reduction in the need to travel unsustainably, making the most of existing transport strategic systems and supporting strategic investments in sustainable, smart and cleaner transport options, in accordance with **Just Transition principles**[3].

STPR2 will align with the Transport Priority of the Delivery Plan and will indirectly align with several other priorities, including Integrated Policy, Placemaking and Behaviour Change.

Relevance for STPR2

The Scottish Government has set ambitious targets for air quality improvements to secure the vision of Scotland having the best air quality in Scotland. Amongst other objectives, it supports a transport system that facilitates active travel choices, better public transport provision and constraints upon private vehicle use, especially in urban centres where pollution and congestion are most acute. STPR2 will have an important role to play in contributing to a reduction in the need to travel unsustainably, making the most of existing transport strategic systems and supporting strategic investments in sustainable, smart and cleaner transport options.

3 Just Transition is both the outcome – a fairer, greener future for all – and the process that must be undertaken in partnership with those impacted by the transition to net zero. It supports a net zero and climate resilient economy in a way that delivers fairness and tackles inequality and injustice

2.4. National Planning Framework 4

The Scottish Government's **Programme for Government** highlights the significance of the National Planning Framework to put planning at the heart of delivering green, inclusive and long-term sustainable development in Scotland. The National Planning Framework (NPF) is a long-term plan for Scotland that sets out where development and infrastructure is needed. Scotland's fourth National Planning Framework (NPF4) will be a long-term plan looking to 2045 that will guide spatial development, set out national planning policies, designate national developments and highlight regional spatial priorities.

On 10 November 2021, the **Draft NPF4** was laid in the Scottish Parliament. Once approved by the Scottish Parliament and adopted by the Scottish Ministers (expected during 2022), NPF4 will become part of the statutory development plan and will directly influence planning decisions. NPF4 sets out a need to "embrace and deliver radical change to tackle and adapt to climate change, restore biodiversity loss, improve health and wellbeing, build a wellbeing economy and create great places." In this context NPF4 recognises the need to plan our places in a way that reduces the need to travel.

To support the spatial strategy a number of policy changes are set out within NPF4, such as embedding the NTS2 Sustainable Travel Hierarchy and Sustainable Investment Hierarchy into the appraisal and assessment of development proposals. The new spatial strategy also sets out an approach whereby future places, homes and neighbourhoods will be better, healthier and more vibrant places to live, by reducing the overall volume of travel by building quality places that work for everyone through the concept of 20-minute neighbourhoods.

To meet many of the future needs of society it is crucial that services and facilities are easily and affordably accessed. Therefore, Draft NPF4 advocates the infrastructure-first approach in planning for future development to provide communities with the opportunity to travel in a sustainable manner from the outset. STPR2, and the Islands Connectivity Plan, represent the national transport investment needed to support NPF4. In turn some draft NPF4 national developments are STPR2 recommendations.

The proposed national developments identified within the draft NPF4 are set out within Appendix B.

Relevance for STPR2

As the draft NPF4 has been developed alongside the Infrastructure Investment Plan and STPR2, it embeds the importance of "place" across land-use planning and transport. NPF4 also sets the context for developing a spatial strategy that is aligned with the Sustainable Travel Hierarchy presented in the NTS2. The draft NPF4 recognises that a collaborative approach that aligns interests will play a central role in delivering the spatial strategy and acknowledges the important role of STPR2 in generating national programmes and projects to deliver improved outcomes for our places. STPR2, and the Islands Connectivity Plan, represent the national transport investment needed to support NPF4. In turn some draft NPF4 national developments are STPR2 recommendations.

2.5. The Bute House Agreement

In August 2021, the Scottish Government and the Scottish Green Party Parliamentary Group agreed to work together over the next five years to build a green economic recovery from COVID-19, respond to the climate emergency and create a fairer country. A shared policy programme, known as **The Bute House Agreement**, details collaboration on the climate emergency, economic recovery, child poverty, the natural environment, energy and the constitution. It is recognised that bold action is needed to increase the pace of change and the scale of investment to support the priorities and outcomes set out in NTS2, including ambitious climate goals.

In terms of transport, it is agreed that in the face of the climate emergency there is a need to shift away from spending money on new road projects that encourage more people to drive, and instead focus money and effort on maintaining roads, improving safety and providing a realistic and affordable alternative through investing in public transport and active travel.

The agreement sets out a number of commitments which will complement STPR2, including to:

- align transport policy with climate targets and the goal of reducing car/km by 20% by 2030;
- increase the proportion of Transport Scotland's budget spent on Active Travel initiatives so that by 2024-25 at least £320m or 10% of the total transport budget will be allocated to active travel;

- during this parliamentary session, invest over £5 billion in maintaining, improving and decarbonising Scotland's rail network;
- commission a Fair Fares Review to ensure a sustainable and integrated approach to public transport fares. This will look at the range of discounts and concessionary schemes which are available on all modes including bus, rail and ferry. The review will consider options against a background where the costs of car travel are declining and public transport costs are increasing, exacerbating the impact on those living in poverty;
- progress the on-going review of transport governance in Scotland to ensure it is fully aligned with the climate and traffic reduction targets, and to ensure that the national and local capacity is in place to deliver active travel goals.

It is also agreed that new roads projects will normally only be taken forward where they reduce the maintenance backlog; address road safety concerns or adapt the network to deal with the impacts of climate change or benefit communities such as bypassing settlements. Furthermore, it is agreed that road infrastructure will not be built to cater for forecast unconstrained increases in traffic volumes.

The shared policy programme acknowledges the role of STPR2 to direct future transport infrastructure investment.

Relevance for STPR2

The shared draft policy programme acknowledges the role of STPR2 to direct future transport infrastructure investment. It is agreed that in the face of the climate emergency there is a need to shift away from new road projects that encourage more people to drive, and instead focus money and effort on maintaining roads, improving safety and providing a realistic and affordable alternative through investing in public transport and active travel.

The agreement sets out a number of commitments which will complement STPR2, including to reduce car kilometres by 20% by 2030; increase the proportion of Transport Scotland's budget spent on active travel initiatives; invest in the maintenance, improvement and decarbonisation of Scotland's rail network; commission a Fair Fares Review; and progress the on-going review of transport governance in Scotland.

New roads projects will normally only be taken forward where they reduce the maintenance backlog; address road safety concerns or adapt the network to deal with the impacts of climate change or benefit communities such as bypassing settlements. Furthermore, it is agreed that road infrastructure will not be built to cater for forecast unconstrained increases in traffic volumes.

2.5.1. Infrastructure Investment Plan for Scotland

The **Infrastructure Investment Plan 2021-22 to 2025-26**, published on 4 February 2021, focuses on three core strategic themes for guiding investment decisions in Scotland:

- enabling the transition to net zero emissions and environmental sustainability;
- driving inclusive economic growth;
- building resilient and sustainable places.

The Infrastructure Investment Plan also introduces the Common Investment Hierarchy, which is aligned to Transport Scotland's Sustainable Investment Hierarchy. This thereby provides overall alignment between the outcomes of STPR2 and the Scottish Governments; investment priorities.

The investment in infrastructure is targeted to maximise wider economic benefits and the delivery of the National Outcomes. The investment is often made by the Scottish Government or in partnership with Local Government. Where possible, however, the Scottish Government looks to create opportunities and the right conditions to leverage additional private sector investment across Scotland.

Relevance for STPR2

The IIP provides additional detail on expenditure in the next few years to support the commitments made within the Programme for Government and sets the context of future investment in transport to deliver an effective response to the COVID-19 pandemic. The themes have a good strategic fit with the STPR2 objectives. The IIP recognises the need to invest in the areas of the transport sector being considered through STPR2, including both an effective response to COVID-19 and the key longer-term trends of climate change, technological developments and demographic change.

2.5.2. Capital Spending Review

The Scottish Government's **Capital Spending Review (CSR)**, published in February 2021, underpins the five-year Infrastructure Investment Plan and sets out a five-year budget and vision for all infrastructure investment choices.

The Capital Spending Review, alongside the Infrastructure Investment Plan, delivers the National Infrastructure Mission commitment to boost economic growth by increasing annual investment in infrastructure by 1% of 2017 Scottish Gross Domestic Product (GDP) by 2025-26. The economic rationale for the National Infrastructure Mission is founded on the important role that infrastructure investment plays in improving the productive capacity of the economy and delivering long-term economic benefits.

At the time of the CSR publication, there was uncertainty around UK allocations; OBR forecast figures were therefore used as the basis for future planning for portfolio allocations throughout the CSR period. The UK Spending Review, published on 27 October 2021, has confirmed capital allocations that are considerably lower than the latest modelling, and will therefore reduce the level of capital investment Scottish is able to deliver. Between 2021-22 and 2022-23 the Scottish Government's capital budget is decreasing in real terms by 9.7%, and the trajectory of Scotland's capital grant allocation (including Financial Transactions) shows no change between 2022-23 and 2023-24 and a reduction between 2023-24 and 2024-25.

Figure 6 – The Capital Spending Review Outcomes and Benefits: Key Themes

Relevance for STPR2

The Review sends a strong signal on the future need to adjust the balance of investment in favour of renewing and extending the life of existing infrastructure, both on environmental and value-for-money grounds. This can be used as an evidence base for transport investment through the Government's capital spending review processes.

2.5.3. Existing Funding Commitments

The STPR2 recommendations set out within this report do not constitute the full investment programme of Transport Scotland. They should be considered with the overall Government spending commitments on transport outlined in the above documents and Scottish Government budgets. Some of the other Scottish Government transport spending commitments are out of scope for STPR2 (see Appendix A). For example:

Asset management of the motorway and trunk road network – Transport Scotland is the roads authority for the Scottish Trunk Road and Motorway network. It is Scottish Ministers' single biggest asset. With a gross asset value of over £20 billion it represents 6% of the total Scottish road network. It carries 35% of all traffic and 60% of heavy goods vehicles. In FY21-22 the Scottish Government will spend around £500 million on managing and maintaining the asset. Transport Scotland set out their **asset management policy and strategy** on their website .

Measures to improve resilience of the rail network – Transport Scotland is committed to measures to improve the resilience of the rail network. In Control Period 6 (2019 to 2024), it will invest over £3.8 billion in the operation, maintenance and sustainable renewal of a high performing rail network for passengers and freight. The investment of this funding is prescribed by the Office of Rail and Road and therefore it is out with the scope of STPR2 to make recommendations on this investment.

However, evidence gathered throughout the course of the Review, and in setting the themes for STPR2, has demonstrated the importance of this investment and provided rationale.

Investment in public transport subsidies – Transport Scotland invests in public transport services through various forms of subsidy and states in the NTS2 Delivery Plan that it will continue to consider additional support required for public transport and keep this under review in light of the uncertainty and other challenges presented by COVID-19. Support of over £1 billion has been provided to support public transport operators during the pandemic to ensure that services remained in place for those who depend on them.

2.5.4. Summary

The current policy, plan and investment landscape is complex and multi-layered. There is an overarching and urgent imperative to address climate change and to achieve net zero carbon by 2045. A number of approaches have been adopted to strengthen the STAG-based appraisal undertaken for STPR2, with a particular focus on ensuring the identification of sustainable transport interventions that support the draft NPF4, priorities of NTS2, including the priority "Takes Climate Action', and to achieve the 20% reduction in car kilometres supportive of the Climate Change Plan. Alongside this are the needs to improve our health and wellbeing. There is also a clear need to deliver inclusive economic growth and to reduce inequalities.

The STPR2 process has taken cognisance of the constraints to funding and presents an ambitious, but realistic, set of recommendations which will set the strategic direction of transport investment in the next 20 years.

The following Chapter will set out the STPR2 approach.

3. STPR2 Approach

3.1. Introduction

This Section provides a summary of the STPR2 approach. It sets out how STAG has been used to conduct a whole-Scotland, evidence-based review of the performance of the strategic transport network across all transport modes to identify problems and opportunities; set objectives; generate, sift and package options; and undertake the preliminary and detailed appraisals to identify recommended options. Due cognisance has been given to new and emerging areas of appraisal research and the emerging STAG updates. An overview of the approach taken to integrating the SEA and Impact Assessments is also provided.

The STAG process is firmly founded on participation and consultation. Accordingly, stakeholder participation and engagement has been pivotal to informing STPR2 at all key stages. A comprehensive stakeholder engagement plan was developed at an early stage in the STPR2 process and has been carefully devised to ensure general inclusivity and representation of key sectors. Further details regarding the approach to stakeholder engagement are set out in Section 3.4 below.

3.2. Application of the STAG Process

As noted above, the STPR2 process has been developed to be consistent with STAG. STAG is Transport Scotland's formal option appraisal toolkit and methodology to guide the development and assessment of transport options in Scotland, and is compliant with **UK Government's Green Book**. It provides an evidence-based and objective-led framework for: identifying transport problems and/or opportunities in a study area; setting objectives to address the transport problems/opportunities; and identifying and appraising options in a consistent manner with the potential to meet the objectives. STAG is integral to the investment decision making process at the Strategic Business Case stage. The four stages of STAG are: Initial Appraisal Case for Change (formerly Pre-Appraisal), Preliminary Options Appraisal (formerly Part 1), Detailed Options Appraisal (formerly Part 2) and Post-Appraisal (Monitoring and Evaluation).

Whilst consistent with the version of **STAG** at the commencement of STPR2[4], the STPR2 approach, where appropriate, has sought to supplement the appraisal process by:

- reflecting Transport Scotland's current policy position by embedding the new NTS2 vision, priorities and outcomes;
- taking on board new and emerging areas of appraisal research, including research into inclusive growth and valuing the health benefits of schemes which increase active travel;
- ensuring the outcomes from the wider suite of impact assessments being undertaken are fully integrated into the STPR2 appraisal process.

Figure 7, overleaf, presents an overview of the STPR2 appraisal framework, reinforcing that the appraisal has been undertaken using STAG, albeit a number of areas are highlighted where this tried and tested methodology have been strengthened and supported by the adoption of updated tools and appraisal criteria, as well as improved forms of reporting.

4 The version of STAG dated 2008, incorporating periodic updates to the STAG Technical Database, the last of which was dated January 2018.

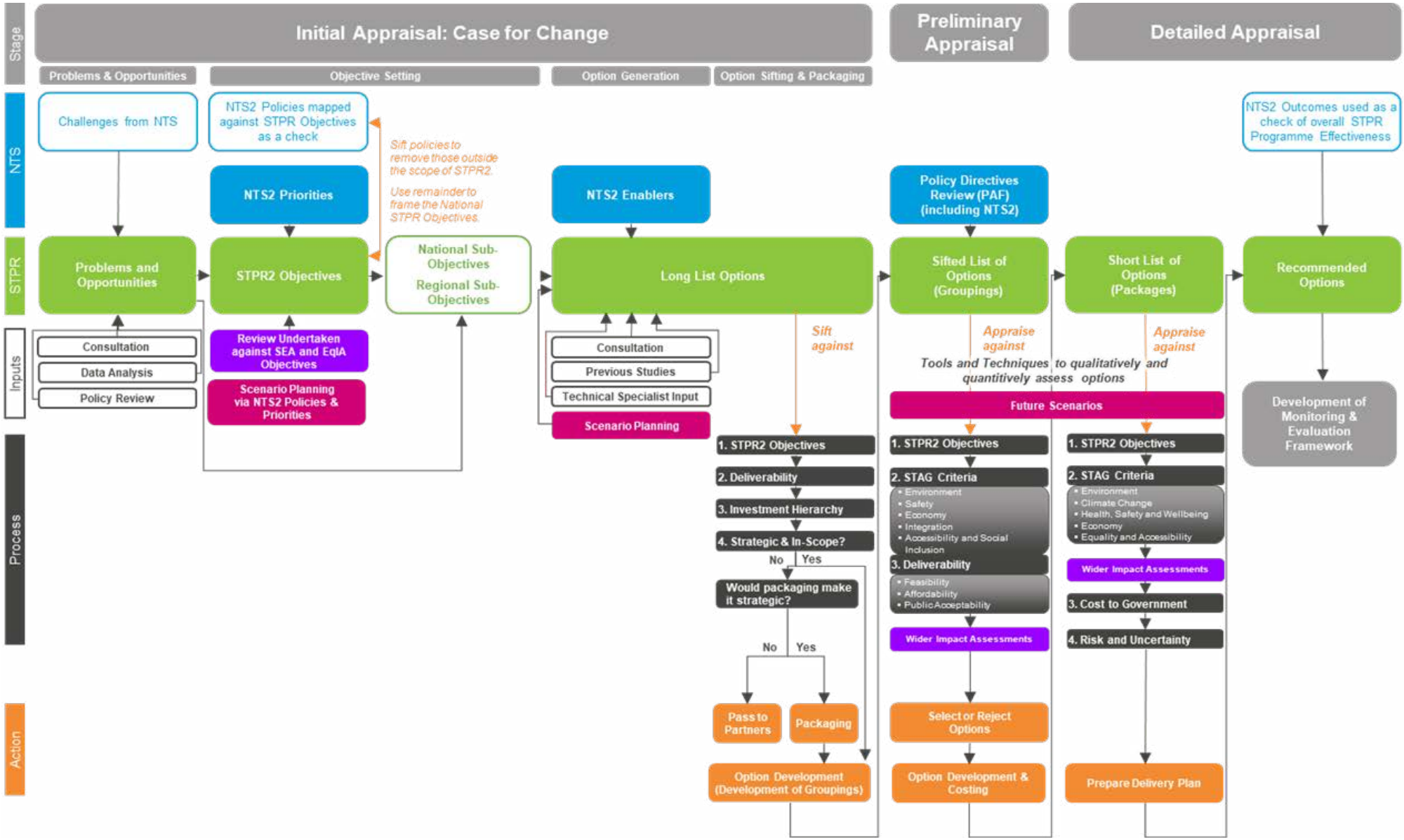


Figure 7 – STPR2: Appraisal Framework and Linkage to STAG

As shown in Figure 7, the methodology follows STAG but has been developed to incorporate new and emerging areas of appraisal research, guided by discussions with Transport Scotland, wider Scottish Government, and other stakeholders. This includes research and discussions around:

- a more robust approach to Option Sifting;
- inclusion of the Sustainable Investment Hierarchy in the option development and appraisal processes;
- the adoption of future Planning Scenarios that capture uncertainty rather than a typical fixed Do-Minimum Scenario;
- clearer links to NTS2, including supporting the net zero carbon emission targets;
- the approach to capturing and appraising factors of Inclusive Growth;
- inclusion of the Place Principle in the development and assessment of options;
- embedding statutory and duty impact assessments into the appraisal process, ensuring impacts on the environment, island communities and different societal groups are captured;
- the adoption of guidance around valuing the health and economic benefits of active travel;
- improving the presentation and reporting of appraisal outcomes.

The above approach aligns with the latest STAG updates designed to address the key challenges identified since the last substantial update to STAG in 2008. A specific example is the use of the new revised criteria in the detailed appraisal. See Chapter Eight for further details.

3.3. Integration of SEA and Impact Assessments

Parallel to the STAG process, an Strategic Environmental Assessment (SEA), Habitat Regulations Appraisal and Impact Assessments have been undertaken. Further details can be found within the STPR2 SEA Draft Environmental Report[5], STPR2 Impact Assessment Draft Non-Technical Summary[6], STPR2 Equality Impact Assessment Draft Report[7], STPR2 Island Communities Impact

5 STPR2 Strategic Environmental Assessment Draft Environmental Report, Jacobs / AECOM, January 2022
6 STPR2 Impact Assessment Draft Non-Technical Summary, Jacobs / AECOM, January 2022
7 STPR2 Equality Impact Assessment Draft Report, Jacobs / AECOM, January 2022

Assessment Draft Report[8], STPR2 Fairer Scotland Duty Assessment Draft Report[9], STPR2 Child Rights and Wellbeing Impact Assessment Draft Report[10] and STPR2 Habitat Regulations Appraisal Draft Report. Figure 8 shows the relationship between the SEA, Impact Assessments and STAG assessment. These assessments have been undertaken to further inform the STAG process for STPR2 and to ensure that the impact of STPR2 transport interventions on the environment is minimised; opportunities for environmental enhancement are identified for implementation; and options have a positive impact on different groups in society, including groups with protected characteristics, as defined by the 2010 Equality Act (see Figure 9), children and young people, island communities and those experiencing inequalities as a result of socio-economic disadvantage.

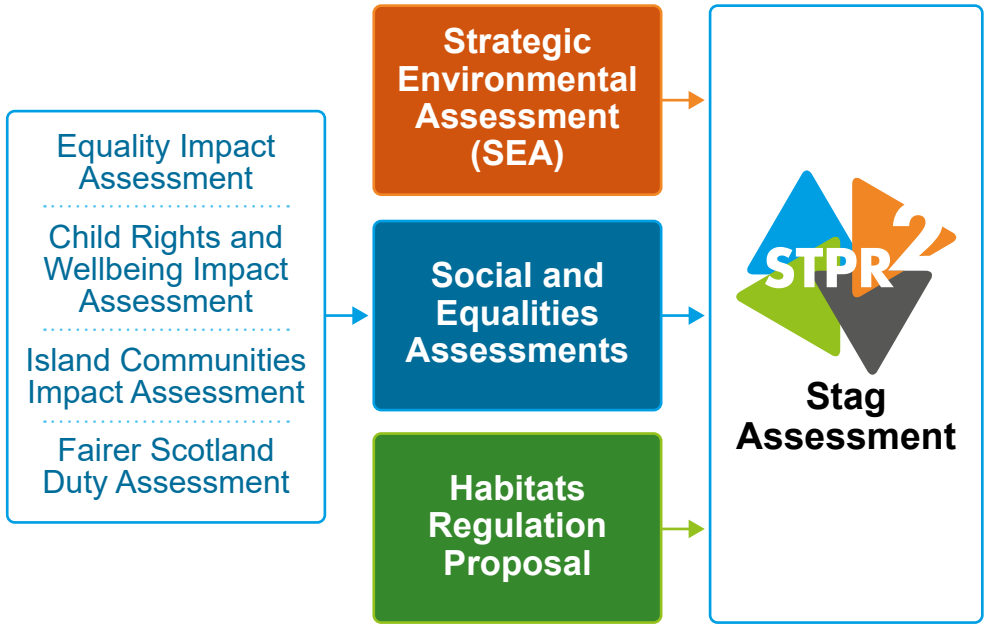


Figure 8 – Relationship Between Impact Assessments, SEA and STAG

8 STPR2 Island Communities Impact Assessment Draft Report, Jacobs / AECOM, January 2022
9 STPR2 Fairer Scotland Duty Assessment Draft Report, Jacobs / AECOM, January 2022
10 STPR2 Child Rights and Wellbeing Impact Assessment Draft Report, Jacobs / AECOM, January 2022

It should be noted that the Equality Impact Assessment (EqIA) is just one of the Duty Impact Assessments and that the 'EqIA' has been used as an umbrella term for the various equalities-based assessments. Details of the parallel assessments that have been undertaken on STPR2 are set out below:

- **Strategic Environmental Assessment (SEA)** – an SEA is required under European Union Directive 2001/42/EC and a key objective of the SEA process is to afford a high level of protection to the environment and to ensure environmental considerations feature in the decision-making process.
- **Equalities Impact Assessment (EqIA)** – identifies and assesses any likely disproportionate or differential effects on people with characteristics protected by the Equality Act 2010. This includes sex, age, disability, race, religion/belief, gender reassignment, sexual orientation, pregnancy & maternity and marriage & civil partnership.
- **The Fairer Scotland Duty Assessment (FSDA)** – identifies and assesses how to reduce inequalities of outcome caused by socio-economic disadvantage when making strategic decisions. In broad terms, 'socio-economic disadvantage' means living on a low income compared to others in Scotland, with little or no accumulated wealth, leading to greater material deprivation, restricting the ability to access basic goods and services.
- **Child Rights and Wellbeing Impact Assessment (CRWIA)** – considers impacts on children and young people. It covers individual children, groups of children, and all children up to age 18. It also considers young people up to the age of 24.
- **Island Communities Impact Assessment (ICIA)** – considers likely impacts on an island community which is significantly different from its effect on other communities (including other island communities).
- **Habitat Regulations Appraisal (HRA)** – considers potential impacts on European Union-designated 'Natura 2000' sites. These sites include Special Areas of Conservation (SACs) designated under the Habitats Directive (92/43/EEC) and Special Protection Areas (SPAs) designated under the Birds Directive (2009/147/EEC), together with candidate and possible SACs, potential SPAs and Ramsar wetlands.

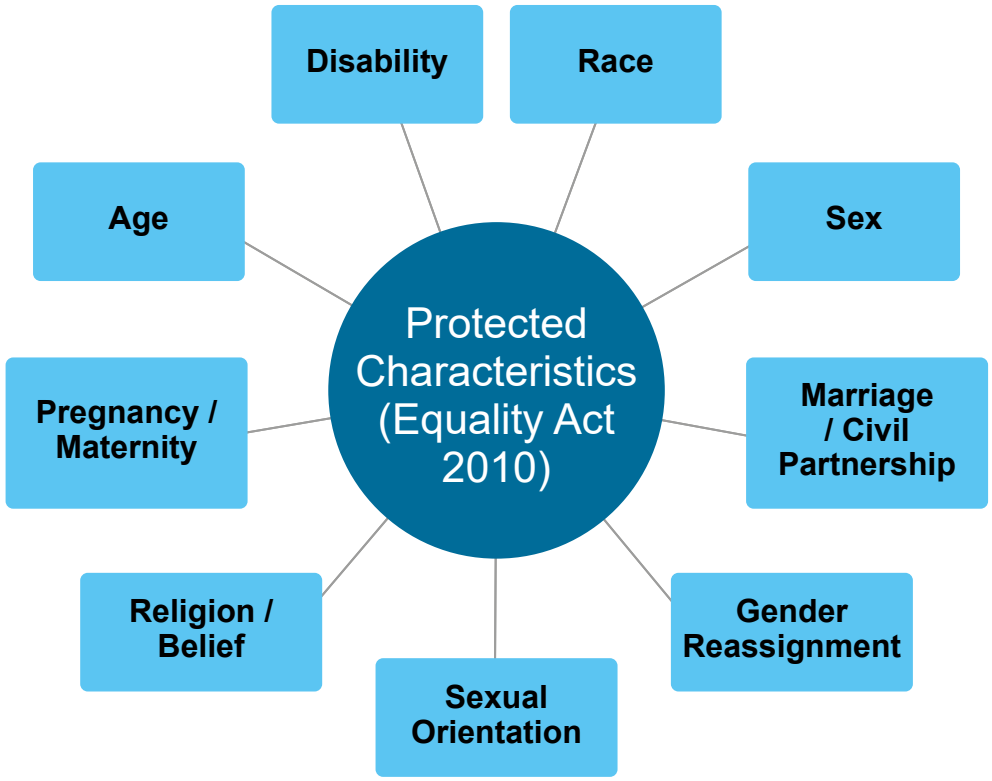


Figure 9 – Equality Act: Protected Characteristics

Whilst the legislation and guidance around SEA and Impact Assessments is well-established, STPR2 has provided an opportunity to demonstrate how value can be added and efficiencies gained from early consideration and integration of SEA/Impact Assessment outputs into the STAG appraisal of transport projects. Indeed, whilst these Duties involve completion of their own independent assessments, including against specific SEA and Impact Assessment objectives (see Appendix C), these assessments also interact and complement each other, and have been fed into the STAG process to ensure that STPR2 is environmentally sustainable and socially equitable.

Key influence points of the SEA and Impact Assessments on the STPR2 appraisal process are as follows:

At **Preliminary Appraisal** stage, high-level assessments of options against STAG criteria, SEA Objectives and Impact Assessment objectives have been undertaken. These objectives are listed in Appendix C. The SEA Objectives used in the option assessment were developed to incorporate the STAG environment criterion and sub-criteria. The SEA topics generally map well against the STAG environmental criteria and therefore provided an opportunity for appraisal efficiency, although the opportunity was also taken to strengthen the STAG environment appraisal by incorporating added value from the SEA. For example, the SEA Objectives used in the environmental assessment include detailed underlying assessment guide questions across all of the SEA topics. These allow for a more comprehensive environmental assessment than an appraisal using the STAG environment criterion and sub-criteria would provide.

At **Detailed Appraisal** stage, an assessment of interventions and packages of interventions across all environmental topic areas using the SEA Objectives was undertaken. This included providing inputs to the Appraisal Summary Tables (ASTs). The SEA and Impact Assessment objectives have been used to assess interventions and packages of interventions and develop mitigation and enhancement measures tailored to meet or exceed legislative requirements and policy aspirations, particularly in the context of achieving an 'inclusive net zero carbon economy'.

These findings have been used to provide robust and bespoke inputs to the 'Environment', 'Climate Change' and 'Equality and Accessibility' criteria within the Detailed STAG appraisal.

At **Detailed Appraisal** stage, the Impact Assessments fed into the appraisal of Equality and Accessibility and the Economy, as summarised below:

- Within the Equality and Accessibility appraisal, emphasis has been given to the 'accessibility impacts' on different societal groups resulting from transport changes including groups with protected characteristics, children and young people, island communities and socio-economically disadvantaged groups. Specifically, this includes: access to work, education, health services and food shops, as well 'assessing opportunities' for such groups to walk or cycle to local services, such as: post offices, health centres, shops and leisure facilities. Moving beyond appraising how proposed transport changes impact on the ability of different societal groups and island communities to simply reach core services, the appraisal has gone beyond this and considered the issues people face when interacting with transport infrastructure and services.
- For Equality, the purpose of the Impact Assessment involvement has been to demonstrate that the implications for all people have been considered in STPR2, and that interventions are consistent with policies for Equality. This has been done by identifying high-level positive and negative impacts on groups with protected characteristics, children and young people, island communities and socio-economically disadvantaged groups and potential mitigation to minimise or enhance impacts.
- In the Economy appraisal, consideration has been given to how socio-economic impacts from transport schemes fall to different groups of the population.

The commonly used quantitative approach (for example mapping and economic analysis) in Detailed Appraisal has limitations for appraising certain factors such as interaction of different societal groups with infrastructure. However, by considering the SEA and Impact Assessment processes as an embedded process to the development of STPR2, the appraisal process moves beyond standard STAG appraisal and can support delivery of improved environmental and equalities outcomes.

3.4. Stakeholder Engagement

Effective collaboration with stakeholders and engagement with the public has been vital to STPR2 and a considerable programme of activities has been undertaken at a national and regional level throughout the STPR2 process. A comprehensive Engagement Plan was developed during the inception phase to guide engagement and communications with the following principles agreed to set the tone of the message portrayed to key stakeholders and ensure the project team adhere to best practice and offer a consistent approach across the regions as well as nationally in all engagement activities. The principles agreed are as follows:

- a fully transparent and auditable approach to capturing engagement through promotion of fair access - an equal opportunity to become involved - using a range of engagement and communications approaches;
- a proactive approach to elicit responses from diverse stakeholders, including hard to reach groups;
- a consistent approach whilst responding to the diverse geography of Scotland;
- an efficient approach to make best use of finite resources and timescales and minimise engagement/consultation fatigue;
- an integrated approach between engagement on NTS2, STPR2 and NPF4 where possible and appropriate.

As part of Transport Scotland's commitment to collaborative working, Regional Transport Working Groups (RTWGs) were established across Scotland with local authorities, National Park authorities, Regional Transport Partnerships (RTPs) and other regional stakeholders, such as Enterprise Agencies and Growth Deal representatives, to inform and guide the review in their respective areas. RTWGs feature representatives covering a variety of remits, including transportation, planning and economic development. The STPR2 RTWGs and the STPR2 regions they cover are as follows:

- Argyll & Bute RTWG – Argyll & Bute Region;
- Ayrshire & Arran RTWG – Ayrshire & Arran Region;
- Edinburgh & South East Scotland RTWG - Edinburgh & South East Scotland Region;
- Forth Valley RTWG – Forth Valley Region;
- Glasgow City Region RTWG – Glasgow City Region;
- Highlands and Islands RTWG – Highlands and Islands Region;
- North East RTWG – North East Region;
- Tay Cities RTWG – Tay Cities;
- Shetland Islands RTWG – Shetland Islands Region;
- South of Scotland RTWG – South West Scotland Region & Borders Region.

Before the pandemic, the engagement with the RTWGs was complemented by a comprehensive programme of stakeholder and public engagement activities building on the engagement work undertaken for NTS2. Regional workshops played a very important role bringing together transport users, business, equality and other representative groups to provide their input on problems and opportunities in the first round of sessions and into potential interventions in the second round of sessions. Structured interviews were also undertaken with a range of key stakeholders to provide additional inputs.

A number of national workshops were also arranged focussing on all the key modes of transport including active travel, bus, rail, maritime, road and freight transport. There was also a national equalities workshop and a national environmental workshop. A number of breakfast seminars were arranged in different parts of Scotland for organisations representing key business sectors. Engagement activities were also undertaken with a number of schools in different parts of Scotland.

An online survey to capture the views of the wider public, community councils and organisations with an interest in transport ran from 2 December 2019 to 10 January 2020. Similar surveys have also been completed in three earlier Pre-Appraisal studies in the South West, the Scottish Borders and North East Region.

All the information from the various workshop sessions and the online survey was captured and fed into the Case for Change and option generation phases of work.

From March 2020 stakeholder engagement needed to be paused due to the COVID-19 pandemic, with Transport Scotland resources being focussed on supporting Ministers' response to the pandemic. Stakeholder engagement was re-started in October 2020 to feed into the remainder of the STPR2 process.

Following the publication of the Phase 1 Recommendations Report, the regional Case for Change reports, and the Option Sifting Chapter and COVID-19 Addendum of the National Case for Change Report, comment forms were published in February 2021 to capture feedback. In total 276 Individuals and 118 Organisations provided feedback on the National Case for Change Options Chapter and COVID-19 Addendum and the Phase 1 Recommendations Report. The comments received have been considered and have helped to inform the recommendations and options taken forward for more detailed appraisal as part of the remainder of the review.

Figure 10 provides an overview of the key elements of the STPR2 engagement process, and details of the full range of engagement activities are summarised within Appendix D.

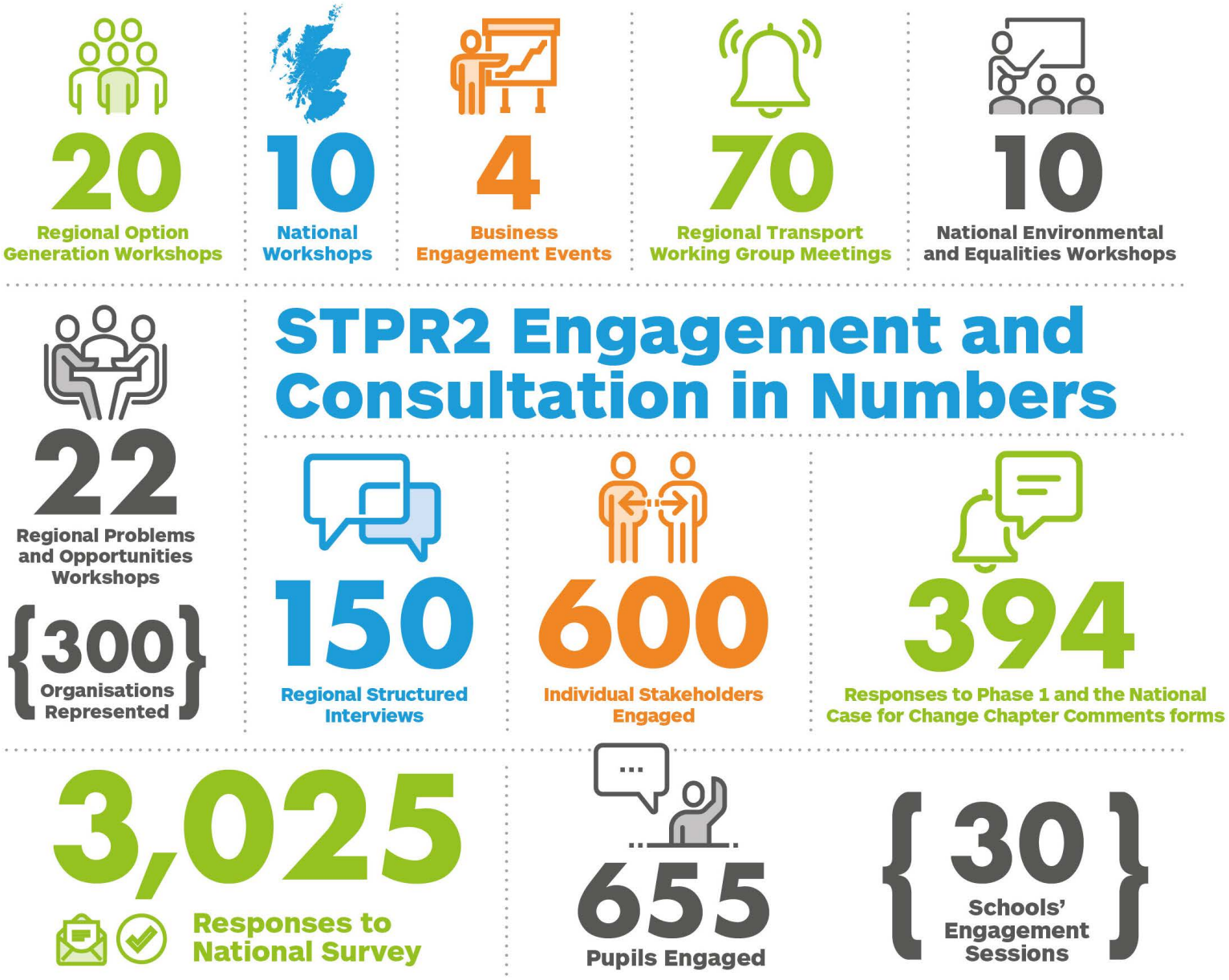


Figure 10 – Overview of STPR2 Engagement Process

4. National Case for Change

4.1. Introduction

Building on the policy review set out within Chapter Two, this Chapter presents a summary of the case for change, with further details contained in the National Case for Change report. It specifically covers key challenges for transport and infrastructure, and the impact of COVID-19 on current and future transport patterns.

4.2. Challenges for Transport and Infrastructure

Building on NTS2 and the extensive data analysis and stakeholder engagement undertaken during the first stages of STPR2, the key challenges that need to be considered when planning for strategic transport and investment have been identified.

Transport's contribution to the climate emergency and net zero targets, means that there is a need to reduce travel and deliver modal shift towards walking, cycling and public transport. If we continue as we are now, forecasts suggest a 40% increase in vehicular travel by 2037. The recent work by the **Committee on Climate Change** set out an assumption of a 10% modal shift by 2030 within its net zero scenario and the Update to the Climate Change Plan commits to reducing car kilometres by 20% by 2030.

To achieve a modal shift of the scale required to address the climate emergency, will require significant changes to the complex travel behaviours of users, operators and the public and private sectors. In accordance with the Sustainable Travel Hierarchy, STPR2 should prioritise interventions that increase the modal share of shorter everyday trips by walking, wheeling and cycling; short- to medium-length trips by public transport and longer trips by rail or coach and low emission vehicles.

Transport is a derived demand and therefore key decisions and investments are required across several other sectors to meet net zero targets and in so doing put 'place' at the heart of the decision making process. Land use planning and digital connectivity are two areas not within the scope of STPR2 that will both have a significant part to play in meeting our net zero targets. The draft NPF4 states that the planning system should ensure that the National Transport Strategy 2 Sustainable Travel and Investment Hierarchies are integrated into the appraisal and assessment of development proposals and decisions in order to make best use of existing infrastructure, and reduce unsustainable travel and transport of goods. This will help develop more sustainable and inclusive communities that encourage walking, wheeling and cycling as well as public transport as the preferred choice of travel. This will increase physical activity and realise health and wellbeing benefits.

It is clear that efforts over the last decade have not had a sustained impact on the increase in walking and cycling, particularly as a means to travel to work or education. In recent years, the Scottish Government, working with a number of key partners, has committed significant investment into active travel to help address this issue. Whilst the outcomes of this investment are still to be realised, it is clear that to make the sort of transformational change required significant ongoing commitment to active travel investment is necessary, to not only deliver improved infrastructure and systems but to encourage the change needed in travel behaviours.

The decades of decline in bus use across most of Scotland are linked to a range of complex factors. Despite this, bus use makes up three-quarters of trips by public transport in Scotland. It therefore has a vital role to play in delivering interim net zero targets by 2030. STPR2 should prioritise interventions that increase the modal share of journeys by bus over the next decade and beyond, noting that the scope of STPR2 is on investment and does not extend to revenue funding.

Whilst bus use in Scotland has been in decline, rail use has increased by over 30% in the last decade. Based on current forecasts for future housing and employment land uses there will continue to be strong demand for rail services particularly within the key corridors to, from and between Edinburgh and Glasgow. This will further heighten the current terminal station capacity issues within Scotland's two largest cities, although this needs to be considered in light of uncertainty over future travel patterns as a result of the COVID-19 pandemic.

The safe, efficient and resilient movement of goods is vital for Scotland's economy and related import/export market. Most freight in Scotland is moved by road. Maintaining efficient and resilient connections will continue to be important to business. However, the movement of goods and the freight industry in general will need to play its part in meeting net zero targets by 2045. Advances in low carbon technology for the movement of goods by maritime, rail and road will play a significant part and STPR2 will explore further opportunities to increase rail freight and reduce the level of goods transported by road.

Scotland has strong trade links with over 100 countries across nearly 100 different industries and sectors. There is a great deal of uncertainty surrounding international trade, given the global impact of the COVID-19 pandemic and the ongoing discussions around future trade agreements following EU exit. Notwithstanding, in coming years, Scotland's economic success will be increasingly realised through its ability to connect with and compete within a global market. Strengthening links with the global economy will mean increased trade, inward investment and creation of an environment for sharing skills, expertise and collaborating with others to support sustainable inclusive growth.

The maintenance of safe and resilient transport networks and systems is also a vital part of the daily lives of all communities, businesses and visitors to Scotland. Recent examples of this include the A83 Rest and be Thankful, Winchburgh Junction and tunnel on the main rail line connecting Edinburgh and Glasgow, and the CalMac ferry network which all require further investment to maintain safe and resilient transport connections to all parts of Scotland. The Sustainable Investment Hierarchy outlined within NTS2 makes clear that interventions should be prioritised firstly by their ability to reduce the need to travel and secondly their ability to help maintain and safely operate existing assets. This Sustainable Investment Hierarchy is embedded within the STPR2 appraisal process.

Fundamental to the delivery of an inclusive net zero economy, and thus improving health and wellbeing, is the requirement to support and accelerate the transition to low emission vehicles. A collaborative public and private sector relationship will be crucial in achieving this transition.

4.3. COVID-19 Pandemic

The **STPR2 COVID-19 Addendum** which formed part of the National Case for Change Report outlines the impact on travel patterns and behaviours over time as the result of the COVID-19 pandemic and helps provide some level of foresight on how COVID-19 will impact on behaviours in the short- to medium-term. Since publication of the Addendum in February 2021, Transport Scotland has undertaken further **monitoring of public attitudes** to transport and travel during the COVID-19 outbreak and published a report highlighting the key trends in transport and travel in Scotland for the first year of the pandemic. Key issues of specific relevance for STPR2 are summarised below.

4.3.1. The Economy and Employment

The COVID-19 pandemic has resulted in a high level of uncertainty with respect to future economic forecasts. The advent of lockdown in late-March 2020 and again in early-2021 all but halted activity in many sectors, due to the closure of non-essential services, shops and entertainment as well as many industries, that were unable to work remotely. The short-term impact was highlighted by a stark drop in GDP, business turnover values below expectation, a proportion of employees on furlough or working from home, and unemployment rising.

4.3.2. Transport Trends

During the Spring 2020 lockdown, travel reduced with significantly fewer vehicles on the roads and many flights grounded. However, cycling levels increased during the spring and summer of 2020 compared to the previous year, and although walking trips reduced overall compared to usual levels, around 10% of people said they were walking and cycling more. Around 60% of walking/wheeling and cycling trips made were to exercise.

When restrictions began to ease at the end of May 2020, traffic levels gradually increased towards pre-COVID-19 levels as people opted for the car over public transport due to COVID-19-related personal safety concerns and convenience. However, this was not across public transport modes consistently and following the initial lockdown patronage recovered quicker on bus than rail. Peak hours on the roads became less pronounced as travel spread more throughout the day, and weekend traffic also increased. Despite this, the propensity to walk and cycle continued to increase with 30% of people saying they were walking and cycling more.

In Autumn 2020 there was a resurgence of the virus and further restrictions put in place, and by early-January 2021 the whole of the UK had entered a further period of lockdown. During this time travel reduced again with fewer vehicles on the roads and a reduction of public transport usage. Since spring 2021 there has been a gradual re-opening of industries, services and facilities and a gradual increase in travel patterns towards pre-COVID-19 levels once again.

4.3.3. Travel by Purpose

The closure of non-essential services, shops and entertainment as well as many industries in the UK-wide lockdown periods significantly reduced non-essential movements. The lockdowns substantially impacted on the way people shop - whilst traditional in-store shopping and leisure movements significantly reduced as a result of Government messaging and closures, online shopping, grocery home deliveries and click and collect services increased substantially. As well as shopping online, people were also shopping for essential items closer to home. There was also increased uptake of using online facilities across a range of purposes, including socialising, entertainment, banking, healthcare, adult education and attending a place of worship.

As restrictions eased into summer 2020 and summer 2021, retail and recreation movements returned close to pre-lockdown levels.

4.3.4. Future Attitudes, Impacts and Opportunities

Research undertaken to understand public attitudes to transport and travel during the COVID-19 pandemic is being undertaken by both Transport Scotland, and the Institute for Transport Studies, University of Leeds (ITS Leeds). The studies have monitored how attitudes to travel have changed since the initial lockdown and give an insight into how behaviour might impact on transport in the future.

Figure 11 provides a snapshot from the **COVID-19 Public Attitudes Survey Data: Wave 20** (covering the period 18 - 24 August 2021)[11], reporting on expected travel patterns one year ahead. It should be noted that at that time restrictions had largely been removed and the survey data reflects a heightened ability to travel. In the intervening period, attitudes will have changed again – most recently due to the emergence of a new variant of the virus and further restrictions being imposed.

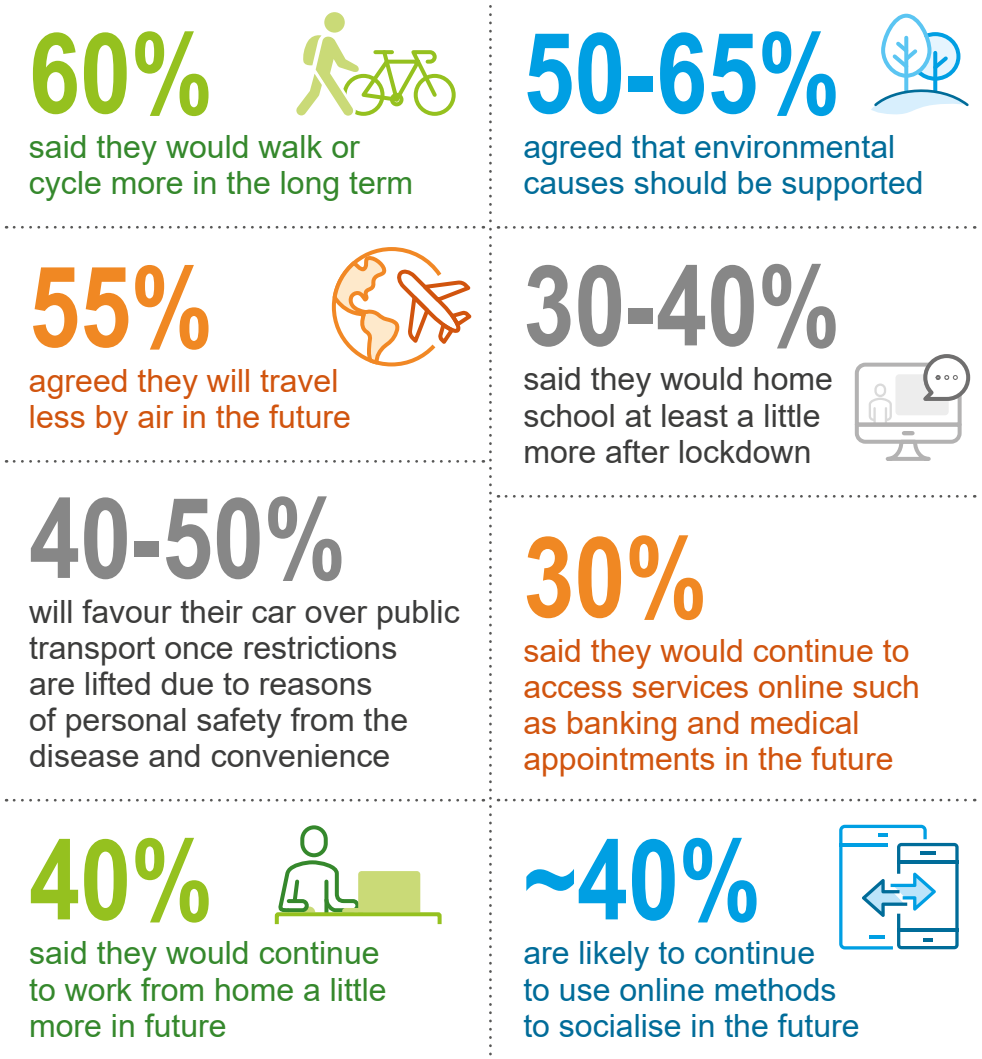


Figure 11 – COVID-19 Future Attitudes Summary

11 Public attitudes survey on the impact of COVID-19 on travel and transport in Scotland, carried out by telephone interviews with 500 people aged 16+ in Scotland.

In terms of travel by mode, the switch from public transport to car, seen during lockdown, is likely to continue at least until the risk of the virus is reduced, with 36% of survey respondents during the Transport Scotland Public Attitude Surveys stating that they will avoid public transport and use car more than they did before lockdown, due to the risk that others are still carrying the disease; convenience; and cleanliness or hygiene on-board public transport.

The increased propensity to walk or cycle more in the long-term offers opportunities to go some way towards mitigating the anticipated traffic impacts, if reluctance to use public transport persists, particularly in urban areas. To what extent the opportunities can be exploited is likely to depend on the implementation of successful policies to promote such change in the long-term both in terms of investing in active modes and restricting motor traffic. Respondents to ITS Leeds surveys[12] highlighted high levels of support for policies to boost environmental causes as part of the recovery whilst support for investment in roads and supporting aviation was at best mixed.

Whilst the long-term changes in terms of the prevalence of remote working are not yet known, it is reasonable to assume that this will be more common in the long-term, particularly as businesses seek to reduce costs in times of uncertainty. Indeed, 48% of respondents to the Transport Scotland Public Attitudes Survey (Wave 20) noted above agreed that they expect to work from home more often in the future. A reduction in work travel movement is likely to result, and this is likely to differ by mode due to differences in business locations and mode use between industry sectors. Related to this, in the longer-term, with a greater proportion of the population working from home on a part- or full-time basis, this could lead to more people relocating from our larger urban centres to rural communities.

There are opportunities for the revival of local shops and services following evidence of an increased likelihood to shop closer to home during lockdown. Transport Scotland's Transport Transition Plan (launched on 26 May 2020 and continually evolving) had policies to encourage local service access and make them more attractive. For example, the Spaces for People fund and travel demand messaging has been consistent around essential journeys and staying local where possible.

The decline in in-store retailing may have longer-term impacts on development locations, travel to retail jobs and consumer trip volumes and distribution. Increased uptake of using online facilities across a range of purposes, including socialising, entertainment, banking, healthcare, adult education and attending a place of worship could lead to a reduction in discretionary travel in the future.

12 COVID-19 Transport, Travel and Social Adaptation Emergency Data Collection, University of Leeds, Wave 1 Panel Surveys, Interim Findings v1.0, August 2020

In addition to changes in the future level of demand, travel post-COVID-19 may also see changes in the peak profile of demand i.e. when people travel throughout the day. Catering for tidal peaks, formerly a key consideration in planning transport infrastructure and services, may become less pressing as levels of commuting are reduced particularly to urban locations where the density of professional occupations is high. Weekly lows in indexed retail and recreation movements at weekends indicate that travel for these purposes has also spread more evenly through the week, although it is uncertain to what extent these trends will continue in the future and when the impetus to avoid busy periods disappears.

Likewise, the impact of the pandemic on tourism remains uncertain. Whilst a higher proportion of people have chosen to holiday within the UK rather than go abroad during 2020 and 2021, overall tourist numbers are reduced. It is unclear if or when overseas tourism will recover. However, with the rollout of the vaccine and around 46% of survey respondents suggesting they will travel less by air in the future, there may be opportunity to capitalise on the domestic tourist trade.

4.3.5. Summary in Context for STPR2

A key question for any forward-looking programme, such as STPR2, is what the longer-term impacts of COVID-19 might be given the evidence and opinions outlined above. However, the problem at present is the significant level of uncertainty and lack of robust data, so providing any degree of certainty around these is highly challenging. There are a number of potential trends that can be identified, including:

- overall increase in the proportion of people working from home;
- reduction in office space and more split working from home/office;
- a move away from traditional “9 to 5” to more flexible working patterns;
- reduction in travel resulting from job losses from economic slowdown;
- more localisation of supply chains (which the UK exit from the European Union may further accelerate);
- increased digitisation – digital by default;
- increased automation.

Within the context of STPR2 these issues are being addressed through the consideration of scenarios. For the purpose of the Phase 1 Assessment these focused very much on the present and short-term changes in behaviour, whereas Phase 2 adopted more comprehensive scenario planning utilising the Transport Model for Scotland (TMfS) and the Transport and Economic Land-use Model of Scotland (TELMoS).

The scenarios developed for Phase 2 in STPR2 are for the medium- and longer-term, spanning several decades, and do not need to consider the short-term impacts of the COVID-19 crisis. It is assumed that some effective means of managing coronavirus in the longer-term will be found, whether through the ongoing vaccination programme or otherwise. Lasting responses to the crisis do, however, need to be taken into account, a most obvious example being that a major part of the economy has carried out a very large scale experiment into the feasibility of working at home.

4.4. Dealing with Uncertainty

Accounting for risk and uncertainty is an integral part of good practice in appraisal, as outlined in STAG. It is recognised that most transport models and tools assume continuing trends and static behaviours in forecasting, however these assumptions are becoming less tenable in a world of increasing environmental, political, socio-demographic, and technological change. There is therefore a need to understand how sensitive potential interventions are to a range of possible futures. Scenario planning techniques have been adopted within the STPR2 appraisal to represent a range of possible futures and form the backdrop for the policies and proposals examined. This is discussed further in Chapter Eight.

As noted earlier, the COVID-19 pandemic has resulted in an unprecedented level of uncertainty regarding transport trends in the medium- to long-term. Whilst the pandemic has had an unprecedented impact on travel since March 2020, forecasting the future medium- and long-term impacts with certainty is challenging until the duration of the pandemic and the trajectory of recovery is known. Periods of lockdown have radically changed the way people go about their daily activities, changing demand for travel, trip distribution patterns, peak profiles and choices with respect to mode of travel.

To what extent these changes carry on into the future depends on a range of factors including the time taken to fully roll out the vaccination programme, vaccine efficacy, potential future variants of the virus and policies employed by Government to take advantage of the opportunities and mitigate the adverse impacts and uncertainties resulting from the pandemic.

Research undertaken by ITS Leeds notes that exactly what the return to work patterns for those people currently working from home will be remains uncertain. It is estimated that if those working at home in October 2020 continue to do so for half of their working weeks, this could reduce miles travelled on the commute by between 15% (for walking) and 27% (for train journeys) in the areas studied compared to pre-pandemic. The reduction in car miles travelled on the commute would be 17% and cycling and bus use would both see reductions of around 21%. This would have a significant impact on congestion levels, crowding, fare income and the demand for parking. These reductions would potentially improve the quality of the journeys that are made and reductions in traffic could also reduce noise, air quality impacts and climate change emissions.

STPR2 has taken cognisance of the potential impacts on travel and the economy and capitalised on the opportunities identified, as noted within Figure 12, below.

The STPR2 has taken cognisance of the following factors:

Economy

- Monitoring and responding to economic trends and future projections;
- Monitoring and responding to equality impacts of the pandemic e.g. supporting economically disadvantaged society groups;
- Monitoring and responding to funding availability;
- Supporting economic recovery, particularly in the hardest hit industries (e.g. tourism, food and drink etc.), and the creation of new jobs;
- Supporting future economic resilience to similar pandemics.

Overall Demand for Travel

- Monitoring and responding to travel demand trends e.g. longer-term reduced travel demand, different times of travel, changes in travel patterns and mode etc;
- Supporting local travel, access to local shops and services, and creating more attractive local centres.

Active Travel

- Capitalising on the propensity to walk and cycle through investing in these modes and maintaining momentum;
- Supporting active travel for work trips, access to services (particularly locally), and for leisure.

Road Travel

- Monitoring and responding to road travel demand trends.

Ferries and Aviation

- Monitoring and responding to travel demand trends and service levels.

Public Transport

- Monitoring and responding to public transport demand trends and service levels;
- Supporting public confidence in public transport in the short-term and planning for longer-term demand.

Figure 12 – Factors Considered Within STPR2 Approach

The following Chapter will provide an overview of the process undertaken to establish TPOs for STPR2.

5. Establishing Transport Planning Objectives

5.1. Overview

The evidence outlined in the previous Chapters highlights that, without intervention, current issues around higher private vehicle usage, more unreliable journey times, increasing congestion, poor air quality and climate change will continue to increase or deteriorate. Traditionally, infrastructure planning has sought to predict this increase and then plan infrastructure provision to provide for it (known as 'Predict and Provide'). However, in order to realise the vision and priorities set out within the NTS2 - particularly around climate change and net zero - a different approach to planning infrastructure provision is required. As such, a more outcome-led approach was taken that linked infrastructure planning to the vision, priorities and outcomes set out within NTS2. This approach was more aligned with a 'Decide and Provide' process that more closely supports the vision sought by NTS2, and in so doing provides the infrastructure and assets best placed to achieve the vision, priorities and outcomes. The strategic transport options needed to support the NTS2 vision have been determined by applying a framework of objectives that clearly set out how this future will be achieved.

5.2. Setting Objectives

STAG is an objective-led appraisal process, requiring TPOs[13] to be developed that take full account of evidence pertaining to the particular problems and opportunities identified by the study, within the context of the relevant policies and strategies and evidenced by stakeholders and data. TPOs should:

- provide a clear indication of what STPR2 is trying to accomplish;
- introduce clarity where there may exist strong vested interests and entrenched views on priorities;
- allow the proper appraisal of candidate options to allow the decision makers to make informed choices on investment priorities.

At the national level, the NTS2 sets out the Case for Change for Scotland and is at the heart of the objective-setting process for STPR2. A consistent set of TPOs have been developed for use across the country during the appraisal process. These objectives are directly linked to each of the NTS2 priorities and outcomes. Sitting below the five TPOs are a set of national sub-objectives.

Within this approach there is a need to reflect the regional focus from the analysis and stakeholder engagement undertaken to inform the STPR2 process. Therefore, each region has developed a set of specific sub-objectives to reflect the issues within their specific area.

13 TPOs are used to express the desired transport related outcomes in a study area

5.3. National and Regional TPOs

As stated, the TPOs are based on the NTS2 priorities and associated outcomes presented in Section 2.2.2. Using these as building blocks, a framework of TPOs was created that also takes account of the problems and opportunities identified across the country. A total of five TPOs have been derived, the first four of which align directly to each of the NTS2 priorities, and a final objective that aligns with the reliability, resilience and safety of the transport network: a theme that has come out strongly through the problems and opportunities analysis.

An extensive stakeholder engagement exercise was undertaken during the development of the TPOs. The draft TPOs were then presented in the suite of Case for Change reports published in February 2021.

Sitting under each TPO is a series of sub-objectives to better define the overarching objectives and aid their application in appraisal. The STPR2 TPOs and associated sub-objectives are as follows:

A sustainable strategic transport system that contributes significantly to the Scottish Government's net zero emissions target

- Reduce the consumption of fossil fuels through a shift to more sustainable modes of transport.
- Increase the mode share of active travel for shorter everyday journeys.
- Increase the mode share of public transport by providing viable alternatives to single occupancy private car use.
- Reduce emissions generated by the strategic transport system.

An inclusive strategic transport system that improves the affordability and accessibility of public transport

- Increase public transport mode share by connecting sustainable modes of transport to facilitate integrated journeys.
- Improve mobility and inclusion, recognising the specific needs of disadvantaged and vulnerable users.
- Reduce transport poverty by increasing travel choice.
- Reduce the reliance on private car for access to key centres for healthcare, employment and education.

A cohesive strategic transport system that enhances communities as places, supporting health and wellbeing

- Reduce demand for unsustainable travel by embedding the place principle in the changes to the strategic transport system.
- Increase the mode share of active travel for shorter everyday journeys.
- Reduce demand for unsustainable travel arising from nationally significant growth areas, taking cognisance of the emerging NPF4.

An integrated strategic transport system that contributes towards sustainable inclusive growth in Scotland

- Increase sustainable access to labour markets and key centres for employment, education and training.
- Increase competitiveness of key domestic and international markets, by reducing costs and improving journey time reliability for commercial transport.
- Increase resilience of accesses to key domestic and international markets to encourage people to live, study, visit and invest in Scotland.
- Increase the mode share of freight by sustainable modes.

A reliable and resilient strategic transport system that is safe and secure for users

- Improve resilience from disruption through adaption of Scotland's trunk road, rail and strategic ferry infrastructure.
- Reduce transport related casualties in line with reduction targets.
- Improve resilience through climate change adaptation within the management and maintenance of trunk road, rail and ferry infrastructure.
- Improve perceived and actual security of the strategic transport system.

Key objectives	STPR2 aligns with and supports Scottish Government policies	STPR2 meets the second National Transport Strategy (NTS2) priorities	STPR2 reflects NTS2's Sustainable Investment and Travel Hierarchies	STPR2 meets Transport Planning Objectives to deliver:	STPR2 recommendations meet its stated purpose to:
Takes climate action	**Climate Change Plan Update (2020) & Route Map** target net zero Carbon by 2045 and a world leading 20% reduction in car km by 2030	Takes climate action	Reducing the need to travel unsustainably	A sustainable transport system that contributes to Zero Emissions	Create better connectivity with sustainable, smart, cleaner transport options
Addresses inequalities & accessibility	Delivering a **Just Transition** to net zero in a way that delivers fairness and tackles inequality **Addressing Child Poverty**	Reduces inequalities	Enhances choice and access to active travel and public transport	An inclusive transport system that improves affordability/ accessibility of public transport	Improve accessibility for residents, visitors and business
Improves health & wellbeing	**Cleaner Air For Scotland 2 (2021) & Delivery Plan** – STPR2 recommendations will deliver further air quality improvements	Improves our health & wellbeing	Priority given to walking and wheeling, then cycling	A cohesive transport system that enhances communities as places – supporting health/ wellbeing	Create better connectivity with sustainable, smart, cleaner transport options

Key objectives ▼	STPR2 aligns with and supports Scottish Government policies	STPR2 meets the second National Transport Strategy (NTS2) priorities	STPR2 reflects NTS2's Sustainable Investment and Travel Hierarchies	STPR2 meets Transport Planning Objectives to deliver:	STPR2 recommendations meet its stated purpose to:
Supports sustainable economic growth	**Infrastructure Investment Plan (2021-2026)** – sets the context for future investment in transport to deliver an effective response to the COVID-19 pandemic and climate change. The draft **Fourth National Planning Framework (NPF4)** – presents the opportunity to embed the importance of "place" across land-use planning and transport.	Helps deliver inclusive economic growth	Making better use of existing capacity	An integrated transport system that contributes to sustainable inclusive growth	Enable and sustain economic growth Improve accessibility for residents, visitors and business
Increases safety & resilience	**National Transport Strategy 2** and **Scotland's Road Safety Framework to 2030**	Increase the safety of the transport system and meet casualty reduction targets	Maintain and safely operate existing assets	A reliable and resilient transport system – safe and secure for users	Improve accessibility for residents, visitors and business

Figure 13 – Linkage Between STPR2 TPOs and Scottish Government Policy and Associated Strategies

A top down/bottom up approach was adopted to inform the creation of regional sub-objectives that not only align directly to the outcomes sought by the NTS2 for Scotland as a whole, but that also reflect the transport and other relevant problems and opportunities within each of the 11 STPR2 regions.

Each regional Case for Change report outlines the transport and other relevant problems and opportunities, the TPOs and the associated regional sub-objectives. In general terms the regional TPOs were derived by refining the national ones to reflect the specific key regional problem and opportunity themes.

The following Chapter sets out the approach taken to option generation and sifting.

6. Option Generation and Sifting

6.1. Introduction

This Chapter provides a summary of the option generation and sifting process undertaken to inform STPR2. Further details are contained in the suite of Case for Change reports published in February 2021. An overview of the process undertaken to develop and assess the recommended interventions is provided, together with a summary of the output from the sifting process.

6.2. Defining Strategic Interventions

In the context of STPR2, a strategic transport project is defined as any transport project that materially contributes to Scottish Government/Transport Scotland policies and strategies. Specifically, this includes:

- any transport project that plays a significant part in supporting the four NTS2 priorities and related outcomes;
- projects or groups of projects related to transport networks owned, operated and funded directly by Transport Scotland;
- passenger and freight access to ports and airports of national significance;
- the inter-urban bus and active travel networks and principal corridors within urban areas.

Within the overall definition above, options considered within the STPR2 also included:

- appropriate transport policy and financial instruments (that are within the responsibility of Scottish Government);
- demand management measures, including use of technology, innovation and behavioural change;
- strategic maintenance and safety measures;
- measures to increase travel by active travel modes;
- public transport improvements, including interchanges, road space allocation, technology and ticketing;
- transport links to/from areas of economic activity of national significance;
- targeted infrastructure improvements on the transport networks owned, operated and funded directly by Transport Scotland;
- changes to the operation of ferry terminals and services that are part of the Clyde and Hebrides Ferry Service (CHFS) and Northern Isles Ferry Services (NIFS) network;
- infrastructure measures at major ports and harbours;
- improved access to major airports.

6.3. Approach to Sifting

In keeping with the principles of STAG, a robust method to generate, clean and sift options has been developed for STPR2; ensuring a broad range of options across all modes was considered.

An overview of the option generation, cleaning and sifting approach is summarised overleaf in Figure 14, with further details provided in the remainder of this Section.

Option Generation and Sifting

	At National Level	At Regional Level
Generate Long List of Options	▪ Review of Policy and Previous Study Reports ▪ National Thematic Workshops ▪ National Business Breakfasts ▪ National Online Survey ▪ Input by Consultant Team, Transport Scotland and National Advisory Groups	▪ Review of Options form Regional Plans, Studies and City/Growth Deals ▪ Regional Option Workshops ▪ Structured 1-2-1 Interviews ▪ Online Survey (Regional feedback) ▪ 'Mini STPR2' Schools Engagement ▪ Input by Consultant Team, Transport Scotland and Regional Transport Working Groups
Clean and Consolidate Options Long List	▪ Options categorised by mode/type ▪ Options categorised according to the Sustainable Investment Hierarchy ▪ Remove duplicates	▪ Options categorised by mode, type and Sustainable Investment Hierarchy ▪ Remove options out with study area ▪ Remove duplicates and consolidate similar options ▪ Sift 'local non-strategic' options
Options sifted using STPR2 Appraisal Framework and groupings identified	**Options assessed using Appraisal Framework, based on the following criteria:** ▪ **STPR2 Objectives:** Does the intervention broadly align with the STPR2 objectives? ▪ **Problems and Opportunities:** Does the intervention address regional problems and opportunities? ▪ **Deliverability:** Is the intervention likely to be feasible and deliverable within the intended timescale? ▪ **Strategic or in Scope Option:** Is the intervention strategic (i.e. materially contributes to national policies and strategies) or in scope? ▪ **Sustainable Investment Hierarchy:** Can the intervention be sifted on the basis that there are other options which would address the same problem / opportunity, and better align with the Sustainable Investment Hierarchy? **Options sifted in were subsequently assigned a grouping**	

Figure 14 – Option Generation and Sifting Overview

6.3.1. Generate Long List of Options

A long list of initial transport options was generated based on a range of sources, including: a review of options identified from recent local and regional studies and via extensive stakeholder engagement and public survey activities. This included Stakeholder Workshops, Structured Telephone Interviews, Elected Members Briefings and an Online Survey. Options were also generated through discussions with RTWGs and supplemented by the Consultant team. Some of these options were well developed and had a clearly defined output, others were suggestions and ideas. All of these ideas/suggestions/options were collated and considered.

Approximately 14,000 individual ideas/suggestions/options were identified at this stage in the process.

6.3.2. Option Cleaning

Although approximately 14,000 individual ideas/suggestions/options were identified, this included a number that required further definition, duplicated options and options which were broadly similar. As such, an exercise was undertaken to clean this 'long list'. Options were reviewed at a regional level or a national level depending on the initial source of the information. Options that required further definition were developed, and similar options were consolidated.

Following the option cleaning exercise, approximately **2,800** options were retained in the long list of interventions to be sifted.

6.3.3. Option Sifting

Each of the 2,800 options has been reviewed using a methodology developed to drive consistency in the sifting of options across all of the STPR2 regions. Following this process options were either:

- recommended at a national level for further consideration through the STPR2 process;
- recommended as part of a route-/corridor-level intervention for further consideration through the STPR2 process; or
- sifted from the process and passed to the appropriate local/ regional transport authorities and partnerships for consideration out with STPR2.

Options were sifted out at this stage for one of the following reasons:

- option out of scope; and/or
- option does not address the problems/opportunities in the region; and/or
- poor performance against TPOs/sifting criteria; and/or
- deliverability concerns; and/or
- the problems/opportunities are better addressed through another option; and/or
- the option is being progressed out with STPR2.

The option sifting approach is shown in Figure 15, on the following page.

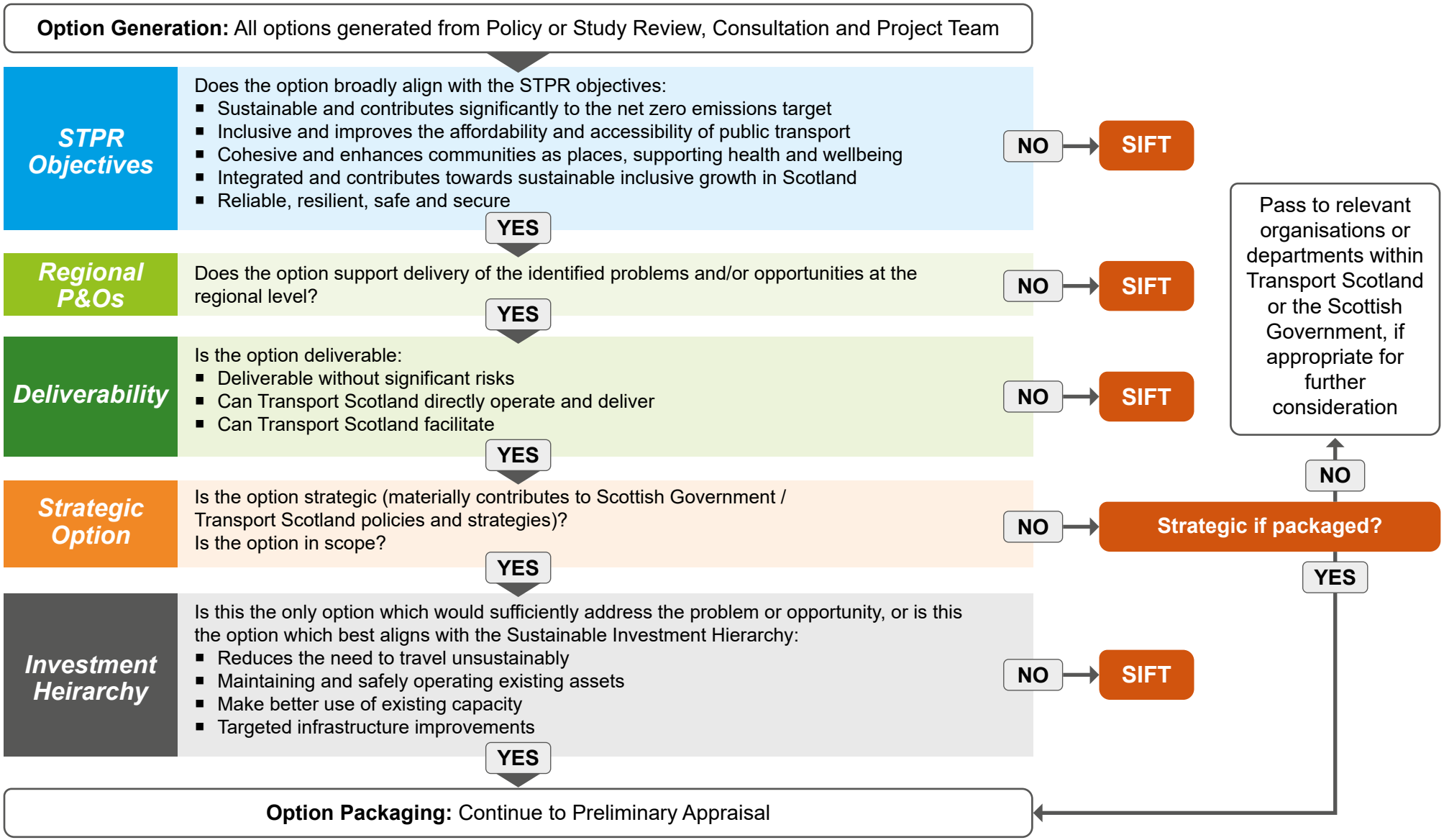


Figure 15 – Approach to Option Generation and Sifting

A full list of the options that were sifted out across all regions and at a national level is provided in the Appendix section of the National Case for Change Report.

Subsequent Chapters of this report provide further information on the interventions that have been taken forward within STPR2, considering both those that will be delivered in the short-term (Phase 1) and those that will be delivered in the medium- to long-term.

6.4. Output from Sifting Process

Following the sifting exercise, approximately 1,400 options remained in the process. There were many options that shared common traits across the regions and many options which in isolation would not deliver the strategic improvements STPR2 is seeking to deliver. Recognising the strategic and national dimension, options that were sifted in for further appraisal were allocated to Groupings. Groupings were established to:

- allow similar options to be collated together to provide a more manageable list for further appraisal;
- collate similar options across regions, thus aiding consistency in definition and appraisal; and, where appropriate
- allow options that may, on their own merit, not be considered strategic, however when grouped address the identified national and regional TPOs, problems and opportunities.

A total of 80 Groupings (similar types of interventions) were identified to be taken forward within the appraisal process. Table 1, below, summarises the Groupings by mode.

Grouping Options	Number of Options
Active Travel	299
Behaviour Change	49
Bus	40
Rail	197
Public Transport	168
Ferries / Island Connectivity	95
Road	188
Freight	91
Technology	59
Multimodal	43
Mass Transit	27
Multiple Groupings	172
Total Number of Options	**1,428**

Table 1 – Groupings by Mode

The Groupings represent the range of interventions considered within the STPR2 appraisal stages. It should be noted that options from the three advanced regions: Borders, North East and South West, have been reviewed through the STPR2 sifting methodology and reported through Update Notes that sit alongside these Case for Change reports. Options from the three advanced regions have been incorporated into the list of Groupings and appraised within STPR2.

The Groupings were reviewed from both a regional and modal/ technical perspective to determine those that would meet the criteria for projects to be recommended in Phase 1 (i.e. short-term recommendations) and those to be considered in detail as part of the final recommendations. The options taken forward from the option sifting process are listed within the Appendix section of the National Case for Change Report.

7. Phase 1 Report

7.1. Summary of Approach

As discussed within Chapter Six, an extensive process of generating and sifting options has been undertaken, involving a collaborative approach with stakeholder groups across the country. Initially, approximately 14,000 options and ideas were collated. These were subsequently reviewed and cleaned to remove duplicates etc, to create a long list of approximately 2,800 options.

In order to assess and finalise options for assessment as potential Phase 1 measures, a proportionate approach was developed, considering options that could potentially meet the short-term requirements, whilst being guided by the overall STPR2 options list. The assessment approach was based on STAG, adopting a multi-criteria assessment based on each option's:

- contribution to STPR2 Objectives (including Environmental and Equality objectives);
- performance against the COVID-19 priorities for short-term measures;
- performance of Deliverability criteria (feasibility, affordability and public acceptability).

Following this approach, the Phase 1 process resulted in 20 interventions being recommended, against eight themes.

The final list of Phase 1 themes and recommendations is set out below.

7.2. Themes/Recommendations

A summary of the eight themes and associated interventions recommended from the Phase 1 process is set out in Figure 16, below.

Further details can be found within the STPR2 Update and Phase 1 Recommendations Report.

Supporting smart and sustainable travel across Scotland	National measures that will support active and sustainable travel choices and placemaking principles	1. Development and delivery of Active Freeways 2. Expansion of 20mph zones 3. Influencing travel choices
Creating smart and sustainable towns and villages	Packages of sustainable transport improvements to enhance attractiveness and sustainability of our towns and villages	4. Transport's contribution to placemaking principles in neighbourhoods 5. Guidance and framework for delivering mobility hubs
Improving accessibility in rural and peripheral areas and for vulnerable groups	Improved public transport offering where fixed timetable services do not satisfactorily cover the needs of individuals, including consideration of demand responsive travel	6. Investment in Demand Responsive Transport and Mobility as a Service
Transforming Cities	Measures that will support active and sustainable travel alongside placemaking principles in Scotland's seven cities to help transform cities and neighbourhood centres	7. Reallocation of roadspace for active travel 8. Enhancing facilities at major rail stations (Rail Station Redevelopment) 9. Development of Glasgow Metro & Edinburgh Mass Transit strategies

Enhancing public transport provision	A range of measures to improve the accessibility and reliability of public transport and stimulate a sustainable recovery post COVID-19	1. Reallocation of roadspace for buses 2. Supporting integrated journeys at ferry terminals 3. Infrastructure to provide access for all at rail stations
Supporting transition to low-carbon transport	Measures that will increase the development and further transition of Scotland's transport fleet to low carbon	4. Investment in low carbon and alternative fuel transport systems 5. Delivery of Rail Decarbonisation Programme (Phase 1)
Supporting a viable freight industry	Measures to improve conditions for the freight and haulage industry to deliver a modal shift	6. Strategy for improving rest and welfare facilities for hauliers 7. Infrastructure to encourage rail freight
Enhancing safety and resilience on the strategic transport network	Package of measures on the strategic transport network focusing on improving safety and resilience	8. Investment in the trunk road network asset 9. Access to Argyll and Bute (A83) 10. Investment in ferries and ports 11. Speed Management Plan

Figure 16 – STPR2 Phase 1 Themes and Recommendations

It should be noted that whilst the interventions have all been allocated to an individual theme, there are many that are complementary and indeed would deliver beneficial outcomes identified in some of the other themes. Therefore, the individual theme that each intervention is assigned to should not be interpreted too rigidly.

Since the publication of the Phase 1 Report, further work has been carried out to provide additional detail against some of the recommendations list above, and this is discussed within Chapter Eight.

8. Appraisal

8.1. Approach

The STPR2 appraisal process has been undertaken in accordance with STAG, which sets out best practice guidance for transport appraisals. STAG is a multi-criterion framework that appraises options against the TPOs, STAG criteria and deliverability. This includes feasibility, affordability and public acceptability. The appraisal stage has been underpinned by the use of modelling and data analysis tools appropriate for the overall national review and the diverse regions.

The STPR2 appraisal process has been undertaken in two parts: a qualitative Preliminary Appraisal, followed by a more quantitative Detailed Appraisal. An overview of the approach to each is set out below.

As discussed within Chapter Two, there is an overarching and urgent imperative to address climate change and to achieve net zero carbon by 2045. Recognising this, a number of approaches have been adopted to strengthen the STAG-based appraisal undertaken for STPR2, with a particular focus on ensuring the identification of sustainable transport interventions that support the priorities of NTS2, including the priority “Takes Climate Action”.

8.2. Preliminary Appraisal

The Preliminary Appraisal has involved a qualitative appraisal of all Groupings generated during the option sifting process against the following criteria:

- Transport Planning Objectives;
- STAG Criteria;
- Established Policy Directives;
- Deliverability Criteria.

Parallel to the STAG process, an SEA and Impact Assessments have been undertaken (see Section 3.3), also informing the Preliminary Appraisal.

In qualitatively appraising Groupings, specific consideration has been given to assessment scoring as set out in Appendix E.

It is to be noted that the scoring approach used for the Preliminary Appraisal departs from STAG guidance which adopts a seven-point assessment scale ranging from major positive (+3) to major negative (-3) impacts. The scoring scale adopted for the Preliminary Appraisal considers each Grouping against the following assessment scoring: significant positive effect; minor positive effect; neutral effect; minor negative effect; significant negative effect; uncertain effect; no or negligible relationship.

The approach reflects the proportionate assessment undertaken at Preliminary Appraisal stage ahead of the more Detailed Appraisal stage at which point more is known on the Grouping in terms of its technical design and operational aspects, potential benefits for users and impacts on the wider transport network, and costs. The proposed approach is also consistent with the assessment scale applied as part of the Statutory and Duty Impact Assessments.

The main purpose of the Preliminary Appraisal is to capture the likely impacts of options/Groupings, and key dependencies, with more detailed assessment undertaken at the Detailed Appraisal phase.

8.2.1. Future Appraisal Scenarios

In undertaking the preparation for NTS2, Transport Scotland recognised that STPR2 "[will] have to deal with a future which is expected to be subject to considerably more change and uncertainty than probably ever seen before". It is recognised that issues that are out of the direct control or influence of Transport Scotland (the "contextual environment") have a large influence on future demand for travel. Transport Scotland therefore took the decision to adopt a scenarios approach, which looks at a range of possible futures, and how the possible interventions behave in them.

As part of that process, a number of future planning scenarios were developed, with an objective to: Create a number of coherent, credible and challenging futures that explore the level of trip making resulting from changes in the contextual environment with a focus on creating significant spatial variation.

It was recognised that the number of scenarios required to be practical, whilst at the same time able to explore the need for and impact of interventions. This work commenced with a review of 91 drivers of change, identified through previous projects, literature review, and consultation conducted during the preparation of NTS2. These were reviewed and condensed into a recommendation of six planning scenarios:

- three variants of spatial economic growth; and, for each
- two variants of travel behaviour.

The scenarios were developed using the Transport Model for Scotland (TMfS18) and the Transport and Economic/Land Use Model of Scotland (TELMoS18). Further details of these scenarios are set out in Transport Scotland's 'Scenario Definitions and Purpose' Information Note contained in Appendix F.

The three Economic Growth Variants and the two Travel Behaviour Variants were run through TMfS18 and TELMoS18. The emerging outputs from the six scenarios were analysed and compared for the 2030 forecast year. The findings of the analysis showed that:

- the impact/effect of the three spatial Economic Growth Variants was negligible in terms of resultant travel demand (as measured by veh-kms per mode);
- the impact/effect of the two Transport Behaviour Variants was much more significant and, as such, completely outstripped any effects arising from the Economic Growth Variants.

As a result, and following detailed discussions with Transport Scotland and the TELMoS consultants, it was agreed that STPR2 would progress with the appraisal using just the two Transport Behaviour Variants. The two scenarios are broadly capturing 'without policy ambition' (high) and 'with policy ambition' (low) levels of motorised traffic demand. The high traffic demand scenario is similar to a traditional 'Do Minimum' forecast. The low traffic demand scenario reflects the same current policy ambitions of the Scottish Government. This provides a much broader context with which to appraise STPR2 interventions.

8.2.2. STPR2 Objectives

Each Grouping has been assessed against the five STPR2 TPOs (see Chapter Five) and, where appropriate, due cognisance has been taken of the relevant national or regional sub-objectives that support these objectives. At Preliminary Appraisal stage, the Groupings have been appraised in a qualitative assessment against each of the STPR2 TPOs using the Preliminary Appraisal scoring scale (see Appendix E), that considers the relative size and scale of impacts.

8.2.3. STAG Criteria

At Preliminary Appraisal stage, each Grouping has been assessed qualitatively against the STAG criterion relevant at the commencement of STPR2[14]. The five key STAG criterion are as follows:

- Environment
  - Supporting net zero emissions targets.
  - Maximising the quality of the built and natural environment for the enjoyment of all.
- Safety
  - Reducing the risk and incidence of accidents and improving the security of the transport network for all users.
- Economy
  - Improves connectivity, journey times and reliability to facilitate inclusive economic growth.
- Integration
  - Fitting the transport network together and ensuring a rational relationship between transport and land-use and wider policy.
- Accessibility and Social Inclusion
  - Increasing the accessibility of the transport network and opportunities to travel to opportunities of all kinds to all users, particularly socially excluded groups.

14 The version of STAG dated 2008, incorporating periodic updates to the STAG Technical Database, the last of which was dated January 2018. See **STAG Technical Database**, Transport Scotland, January 2018

8.2.4. Established Policy Directives

STAG states that the established policy directives identified during Objective Setting in the Initial Appraisal: Case for Change should also be considered during Preliminary Appraisal. A clear conflict between a Grouping and, for example, established land-use planning policy or transport targets in the area is likely to jeopardise its potential for funding, support, approval and implementation. A positive contribution towards the achievement of other relevant objectives will be to a Grouping's credit.

As part of the integration STAG criterion assessment, the policy integration of each Grouping has been considered. Groupings have been reviewed against the local and regional policies which were considered as part of the Initial Appraisal: Case for Change. In particular, this review has considered whether a Grouping actively supports policies, or whether conflict with policies may jeopardise the feasibility of a Grouping. Accordingly, the appraisal against policy objectives has been undertaken as part of the Integration appraisal.

8.2.5. Deliverability

Each Grouping has been assessed qualitatively against the Deliverability criteria summarised in Appendix E, using the Preliminary Appraisal scoring scale.

Feasibility

The Feasibility criterion involves a Preliminary Assessment of the feasibility of construction or implementation and operation (if relevant) of a Grouping and the status of its technology (e.g. proven, prototype, in development, etc.) as well as any cost, timescale or deliverability risks associated with the construction or operation of the Grouping, including consideration of the need for any departure from design standards that may be required. Whether a Grouping can be progressed within current legislation has also been considered. For STPR2, this has included consideration of whether Transport Scotland can directly deliver and operate the interventions within the Grouping, or whether they would require to work with external partners, such as local authorities, regional transport partnerships, or transport operators, to facilitate delivery.

Affordability

The scale of the financing burden on the promoting authority and other possible funding organisations, and the risks associated with these, have been considered together with the level of risk associated with a Grouping's ongoing operating or maintenance costs and its likely operating revenues (if applicable). At Preliminary Stage, a high-level indication of the cost band of the Grouping has been provided. The cost bands developed for use within the appraisal are set out within Appendix E.

Public Acceptability

An assessment of whether there are likely to be any issues around public acceptability of the Grouping has been undertaken at the Preliminary Appraisal stage. To support this, reference has been given to supporting evidence drawing on the findings from public and stakeholder survey undertaken and feedback sought during the development of the Initial Appraisal: Cases for Change, including the stakeholder engagement workshops and national online survey as well as survey undertaken and feedback sought on the published Case for Change documents in February 2021.

8.2.6. Progression to Detailed Appraisal

Decisions on whether or not to take Groupings forward from Preliminary to Detailed Appraisal were made based on overall performance against the TPOs, STAG criteria, and deliverability criteria, with consideration of alignment with established policy directives, impact assessments and performance against future appraisal scenarios. If, during the appraisal process, it was found that some constituent options within a Grouping performed well, but others performed relatively poorly, this was reflected either in the reporting or by reconstituting the contents of the Groupings to amalgamate or disaggregate them. Appendix G summarises whether or not the respective grouping has been taken forward to the final recommendations, and the rationale behind that decision.

8.3. Detailed Appraisal: Packages Appraised

8.3.1. Overview

The Groupings, and the interventions included in the Groupings, that have been identified to be taken forward from the Preliminary Appraisal have been developed into multi-modal 'Packages' for the Detailed Appraisal. The appraisal has involved supplementing the qualitative approach adopted at the Preliminary Appraisal stage, with some quantitative appraisal as appropriate. In doing so, it should be recognised that at this stage of the overall process (i.e. Strategic Business Case) some interventions will still be defined at a high level meaning that detailed quantification will not be appropriate. The Section below summarises the approach taken.

8.3.2. Packaging Approach

The outputs from the process have resulted in the following Packages that have been subject to Detailed Appraisal:

- eleven Regional Packages;
- one Package of National Interventions (representing all of the recommendations).

The approach to Packaging has varied depending on whether the Grouping is applicable only in a specific location(s) and circumstance(s) (e.g. railway stations, fixed links) or whether the Grouping may be broadly applicable to certain types of location (e.g. active freeways, mobility hubs). This approach is displayed within Figure 17.

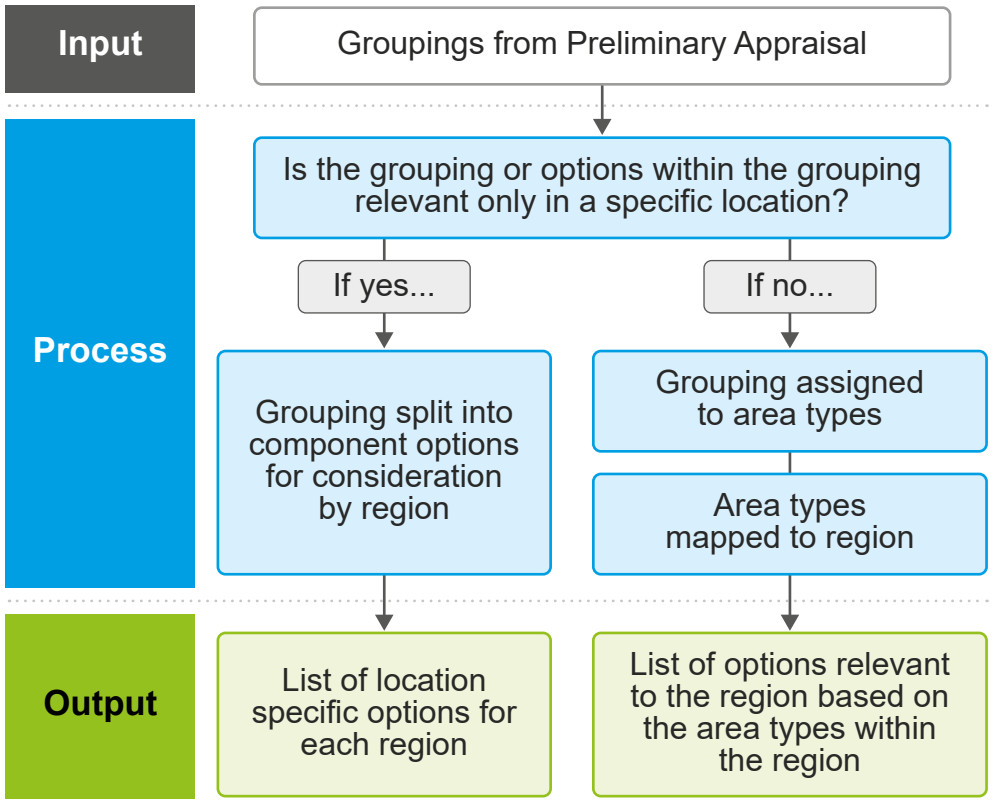


Figure 17 – Approach to Packaging

Groupings made up of location-specific options have been assigned directly to regions based on the location of the component interventions, ensuring that region-specific problems and opportunities are addressed. Groupings whose component interventions are not currently location-specific have been assigned to applicable area-based categories, which have then been mapped to regions, driving consistency in the types of measures that have been considered in regions made up of similar area-based categories. The area-based categories are described as follows:

Island Connectivity

This area-based category is primarily aimed at improving connections between the islands and the mainland, but also includes some improvements to island-island connectivity. Note: remote and accessible rural areas and any relevant towns and surrounding communities on islands are covered in the relevant area-based categories below.

Remote and Accessible Rural Areas

This area-based category is aimed at improving connections and transport provision between remote rural areas and accessible rural areas with key strategic services.

Towns and Surrounding Communities

This area-based category is aimed at improving active travel provision and placemaking within towns, addressing specific road infrastructure constraints, and improving strategic connections between towns.

Cities and City-Regions

This area-based category is focussed on Scotland's seven cities and aligns with the City-Regions areas.

Interurban Corridors

This area-based category is aimed at improving safety, resilience and climate adaptation on the inter-urban corridors, and, where appropriate, targeted infrastructure investment to support sustainable inclusive growth.

Connections to Major Gateways

This area-based category is aimed at improving connections and transport provision to major international gateways and cross-border destinations.

National (for interventions that are Scotland-wide)

This area-based category is applicable across all areas of Scotland and includes behaviour change initiatives and investment in technological solutions to improve the performance of the transport system.

The key process stages of the Packaging approach are shown in Figure 18, below.

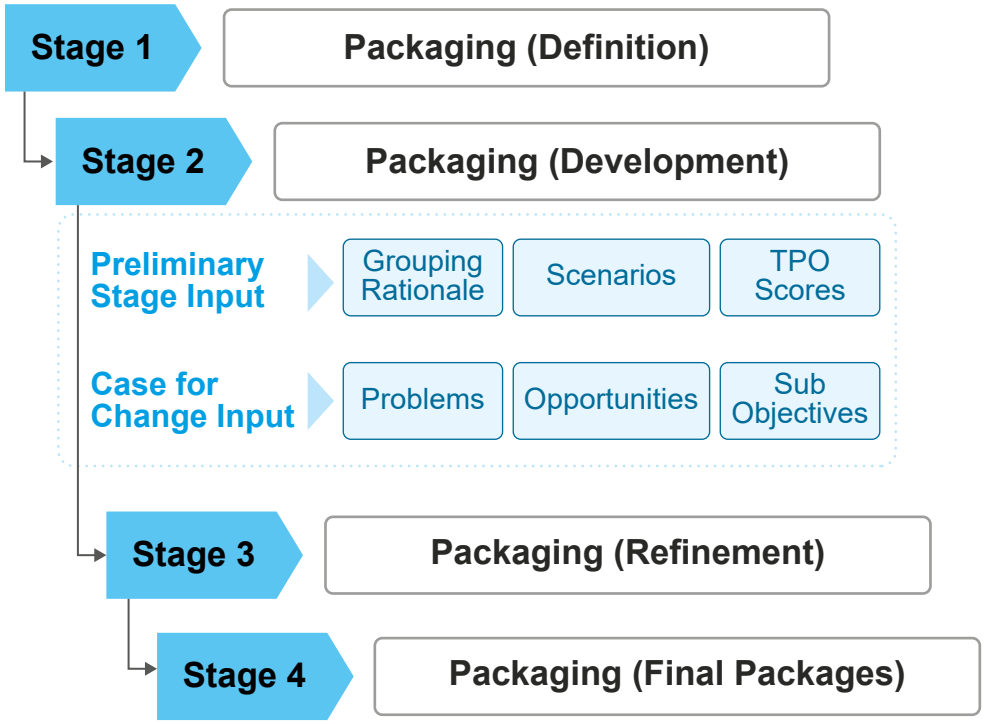


Figure 18 – Packaging: Key Process Stages

8.3.3. Packages Appraised

As discussed above, the Groupings and the interventions included in the Groupings that have been identified to be taken forward from the Preliminary Appraisal have been developed into multi-modal 'Packages' for the Detailed Appraisal. Eleven regional Packages and one Package of national interventions have been developed. The Packages are summarised within the ASTs contained in Appendix H.

8.3.4. Appraisal Approach

The Detailed Appraisal has appraised each Package under the two defined future planning scenarios noted above (i.e. the high and low Transport Behaviour Variants) with specific consideration given to the performance of Packages against the established policy directives, defined STPR2 TPOs, the STAG Criteria including the Impact and Duty Assessments, and Deliverability.

The scoring approach used for the Detailed Appraisal adopts a seven-point assessment scale ranging from major positive (+3) to major negative (-3) impacts, in line with STAG guidance and as shown within Appendix E.

The Detailed Appraisal has taken cognisance of updated guidance, as set out within the Scottish Transport Appraisal Guidance - Managers Guide published in January 2022. Appendix E shows how the updated STAG criteria maps with the previous criteria.

Candidate interventions emerging through the STPR2 development process have been appraised in a consistent and robust way to identify and address the key challenges of STPR2, namely:

- achieving consistency and fairness across regions and nationally;
- fairly assessing across modes and interventions (i.e. both infrastructure and non-infrastructure interventions);
- the treatment of options that are considered viable but out with the remit of STPR2 to deliver;
- providing a robust audit trail of work, effectively tracking interventions through the process;
- dealing with uncertainty and the potential impacts of alternative future scenarios on option appraisal.

As discussed within Section 3.2, the Detailed Appraisal has followed STAG guidance, and, where appropriate, has supplemented the appraisal process by:

- reflecting Transport Scotland's current policy position by embedding the new National Transport Strategy (NTS2) vision, priorities and outcomes;
- taking on board new and emerging areas of appraisal research;
- ensuring the outcomes from the wider suite of statutory impact assessments being undertaken are fully integrated into the STPR2 appraisal process.

One of the key challenges for the Detailed Appraisal has been to capture the overall modal changes that are likely to occur as a result of the multi-modal Packages. The relevant appraisal tools identified for each component mode of transport, and in which the respective interventions for that mode have been assessed, are shown in Figure 19.

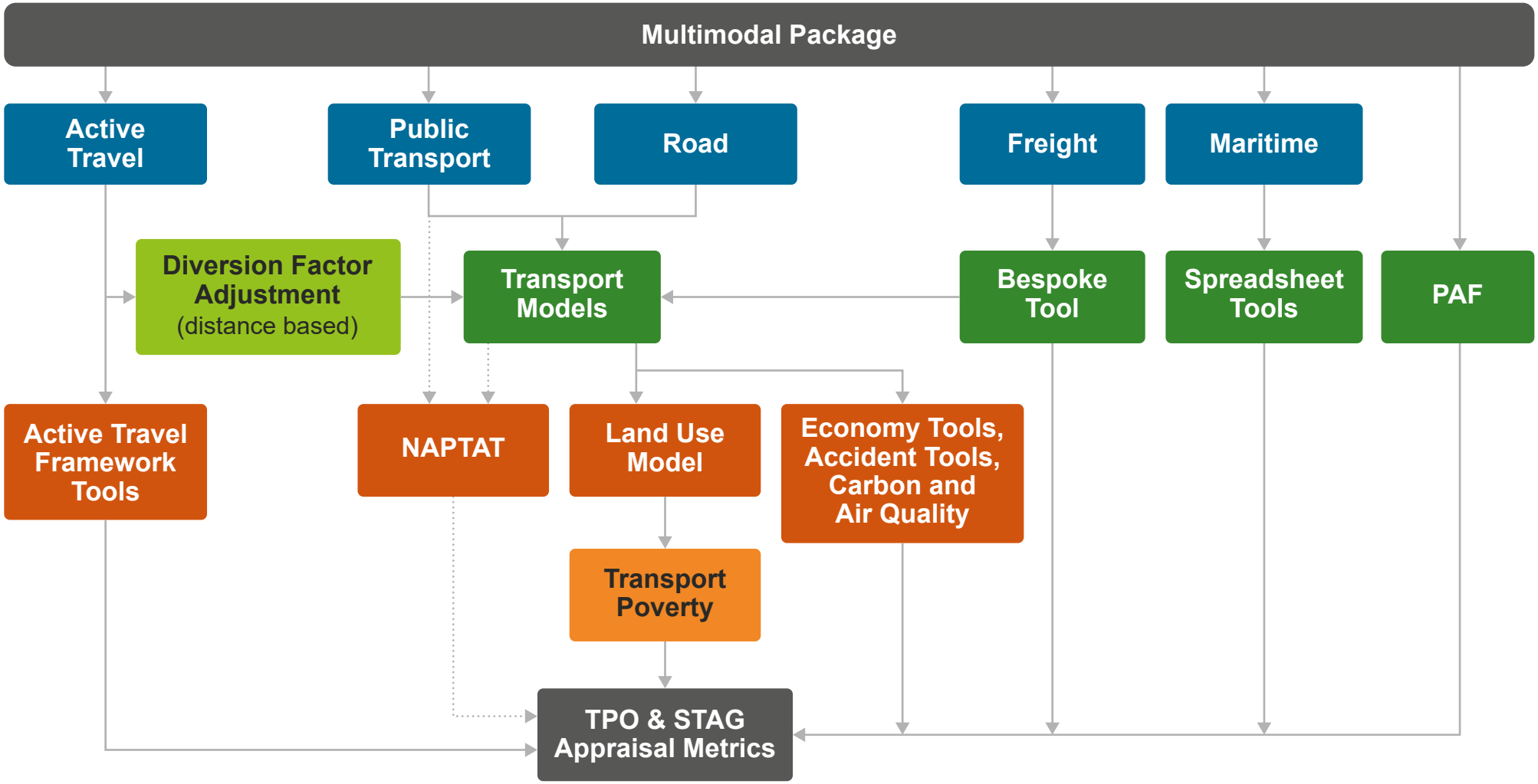


Figure 19 – Use of Modelling Tools

8.3.5. Reporting

Detailed ASTs have been prepared to provide a clear and concise record of the performance of each Package under the Low and High Transport Behaviour Variants against the relevant TPOs and STAG criteria, policy alignment, and the Impacts and Duty assessments, with a summary of the appraisal metrics considered under each. Detailed Packaging ASTs are contained within Appendix H.

Similar to other stages of the project, the **STPR2 Project Pages** have been used as the landing page for content on appraisal.

8.4. Consideration of Climate Change Within STPR2

The policy backdrop, upon which STPR2 has been developed, sets out an overarching and urgent imperative to address climate change and to achieve net zero carbon by 2045. STPR2 has sought to embed these factors into the appraisal process from the very beginning, ensuring that interventions emerging from STPR2 help to deliver the NTS2 outcomes and support wider net zero commitments.

The Detailed Appraisal has taken cognisance of updated STAG guidance, as set out within the Scottish Transport Appraisal Guidance - Managers Guide published in January 2022. This includes the new criterion of 'Climate Change', against which all Packages have been appraised.

Earlier stages of the STPR2 process, undertaken prior to the publication of the new STAG guidance, have adopted a number of approaches to strengthen the STAG-based appraisal, with a particular focus on ensuring the identification of sustainable transport interventions that support the priorities of NTS2, including the priority "Takes Climate Action'. For example, at the Option Generation and Sifting stage (see Chapter Six), the Sustainable Travel Hierarchy and Sustainable Investment Hierarchy have been applied to promote interventions that prioritise walking, wheeling, cycling and public transport-based modes ahead of private car trips, and to ensure that interventions that reduce the need to travel unsustainably are prioritised over targeted infrastructure measures. Groupings (of interventions) assessed through the STPR2 work have been appraised against a set of TPOs (see Chapter Five) which have been directly informed by the NTS2 priorities, including "Takes Climate Action". This includes assessing interventions against the following TPO: A sustainable strategic transport system that contributes significantly to the Scottish Government's net zero emissions target.

Groupings taken through the appraisal process have been assessed using a Scenario approach, as noted within Section 8.2.1 above, with consideration given to a range of possible futures and how interventions behave in them. One scenario describes a future in which the 20% reduction in car kilometres by 2030 and net zero by 2045 are achieved. Performance of the Groupings under these scenarios has informed the Preliminary Appraisal and the Detailed Appraisal.

Details of the Strategic Environmental Assessment are set out within the following Section.

8.4.1. Strategic Environmental Assessment and Climate Change

From the outset of STPR2, an SEA has been undertaken to help avoid or minimise any potential negative environmental effects and maximise any opportunities for environmental enhancement (see Section 3.3 for further discussion). Under the Environmental Assessment (Scotland) Act 2005, SEA of plans that are likely to have significant environmental effects, if implemented, is required. The first stage of the SEA was to produce a Scoping Report for public consultation. This included baseline data and a review of plans, programmes and strategies relevant to a range of environmental topics, including climate change. The baseline data included a regional and national review of relevant climate change data, including trends in greenhouse gas emissions and the projected impacts of climate change in each region of Scotland.

The baseline data and policy review informed the development of a set of SEA objectives to be used to assess the environmental performance of STPR2. These were refined following public consultation and feedback from Transport Scotland and the statutory SEA Consultation Authorities: SEPA, NatureScot and Historic Environment Scotland. The SEA objectives have been used to undertake the environmental assessment of each stage of STPR2. The SEA objectives used in relation to climate change are as follows:

- reduce emissions from Scotland's transport sector by reducing the need to travel and encouraging modal shift and help meet Scotland's wider targets to reduce greenhouse gas emissions;
- adapt the transport network to the predicted effects of climate change.

The whole suite of SEA objectives has been used to assess STPR2 transport themes, recommendations and potential interventions. The assessment has involved a scoring of each of these, a cumulative effects assessment and a narrative to explain the scoring.

The assessment stage of the SEA has been used to inform the development of avoidance, mitigation and enhancement measures in relation to all environmental topics, including climate change. This has included SEA advice on how STPR2 transport themes, recommendations and potential interventions may need to be changed in order to reduce any potential negative environmental effects and maximise any positive effects.

Opportunities for greenhouse gas emission reductions are discussed in the SEA, including opportunities to minimise any construction-related emissions. These opportunities are included in an SEA chapter focused on strategic mitigation and enhancement measures for a range of SEA topics.

The SEA aims to 'future proof' STPR2 in relation to the projected impacts of climate change, including sea level rise, flooding from all sources, rainfall trends, storminess, temperature extremes and changes to seasons. It has emphasised the key risks of these climate impacts to the transport sector and identified opportunities for STPR2 policies and interventions to avoid or minimise these risks. As all the environmental topics considered in the SEA are inter-related, enhancement opportunities for other environmental topics, for example the protection of high-carbon soils and the implementation of biodiversity enhancements, will also have benefits in terms of climate change mitigation and adaptation.

The following Chapter sets out the recommendations from the STPR2 process.

9. Final Draft Recommendations

9.1. Introduction

The role of STPR2 is to provide the evidence base to recommend the transport investment priorities for Scottish Ministers for the next 20 years, in the face of great uncertainty and challenges. As we emerge from the short-term impacts associated with the COVID-19 pandemic, it is vitally important to consider transport investments around the overall vision set out in the NTS2 to ensure that we continue, at pace, towards the delivery of a sustainable, inclusive, safe and accessible transport system, helping deliver a healthier, fairer and more prosperous Scotland for communities, businesses and visitors.

Given the above, a number of overarching recommendations have been developed, which in combination constitute the fundamental components of the proposed transport investment plan, alongside an evidence base and robust rationale which 'makes the case' for the interventions. It is a key part of the first NTS2 Delivery Plan, as Government demonstrates the steps it is taking to achieve its outcomes. It also creates a foundation for business case development of the interventions, with STPR2 forming the strategic case for the investments.

A total of 45 recommendations are presented in Section 9.2. These consist of some interventions that are specific to a particular location, others apply to certain regions in the country, and finally some of the recommendations are applicable across the whole country. In line with the regional approach underpinning STPR2, a number of regional packages have been developed and appraised as set out in Section 8.3. Further details on the performance of the regional packages are contained in a number of ASTs which set out how the regional package performs against the TPOs and other criteria including the impact assessments (see Appendix H).

Within the list of recommendations, there are no specific priorities, as each component is important in addressing the complex needs of our nation. Neither are these interventions the sole responsibility of Transport Scotland to deliver, indeed many will rely on working together or for others to take forward. However, by including these in STPR2, Transport Scotland has confirmed its commitment to supporting and working in partnership with others to develop. In many cases the interventions build on the individual investment and policy decisions taken in recent years, but the overall balance of the recommendations will help deliver NTS2 and meet the commitments contained within the associated Delivery Plan.

The following Sections provide further details on the recommendations. For presentational purposes the recommendations have been grouped into six themes, as follows:

- Improving Active Travel Infrastructure;
- Influencing Travel Choices and Behaviour;
- Enhancing Access to Affordable Public Transport;
- Decarbonising Transport;
- Increasing Safety and Resilience on the Strategic Transport Network;
- Strengthening Strategic Connections.

It should be noted that, whilst the interventions have all been allocated to an individual theme, there are many that are complementary and indeed would deliver beneficial outcomes identified in some of the other themes. Therefore, the individual theme that each intervention is assigned should not be interpreted too rigidly.

The following Sections introduce the 45 recommendations, grouped as outlined above. This covers the overall context for the particular category, then an explanation and rationale for each of the relevant recommendations. To demonstrate alignment to the NTS2 and the associated Delivery Plan, the text highlights particular TPOs that recommendation addresses. The text also highlights alignment to other recommendations, relevant policies, strategies and relevant documents.

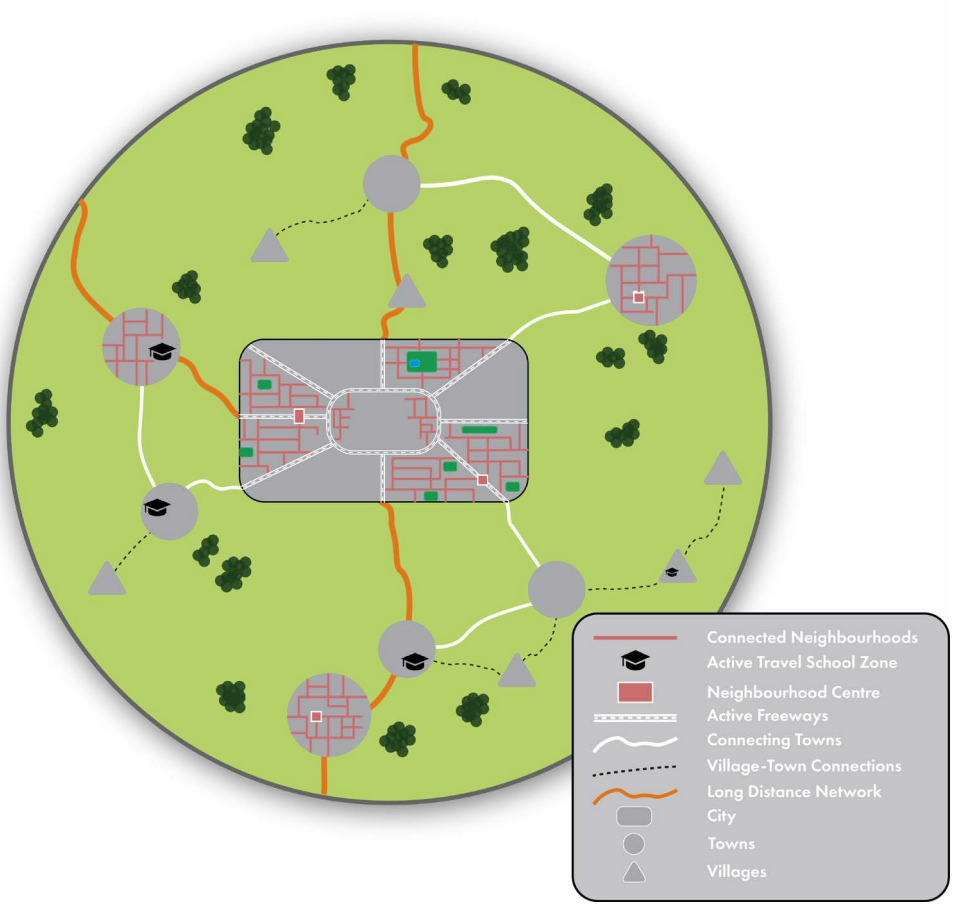
9.2. Improving Active Travel Infrastructure

Encouraging more people to walk, wheel and cycle (active travel) more often:

- cuts carbon emissions;
- reduces inequalities by improving access to jobs, services and leisure;
- delivers more pleasant communities;
- improves health;
- supports sustainable economic growth.

Better active travel routes create particular opportunities for people vulnerable to social exclusion such as disabled, young and older people, and those without access to a car.

The STPR2 recommendations would work together and with existing networks and links to provide high-quality connections for people walking, wheeling and cycling within and between Scotland's communities, aiming to be accessible and inclusive to as many people as possible. Three STPR2 recommendations; village-town active travel connections (3), connecting towns by active travel (4) and long distance active travel network (5), would combine to provide a high quality, safe nationwide active travel network connecting Scotland's communities. These would integrate with existing networks including the National Cycle Network and provide links into urban areas via connected neighbourhoods and active freeways (STPR2 recommendations 1 & 2).



To be effective, implementation of STPR2 recommendations would require a partnership approach, principally with the local authorities and Regional Transport Partnerships.

9.2.1. Connected neighbourhoods (1)

Connected neighbourhoods are the transport components of 20 minute neighbourhoods which are a method of achieving connected and more accessible communities designed in such a way that as many people as possible can meet the majority of their daily needs within a reasonable walk, wheel or cycle of their home. The principle can be adjusted to include varying geographical scales, and is also a key feature of the draft NPF4 in delivering Liveable Places. Connected neighbourhoods would encourage walking, wheeling and cycling for short everyday journeys, by delivering comprehensive, cohesive networks of high-quality active travel routes radiating (for approx. 800m) from key locations in town or neighbourhood centres, better connecting them with nearby residential areas and public transport nodes. There would be particular benefits for people that are often excluded from transport, including disabled, young and older people and those without access to a car.

STPR2 recommends delivering the transport components of 20 minute neighbourhoods within towns and cities. This would consist of packages of improvements to active travel infrastructure in and around town and neighbourhood centres, for example to footways, road crossings and the urban realm, aiming to create more accessible and inclusive environments for people walking, wheeling, cycling and spending time in their local areas. In large urban areas, different connected neighbourhoods could be linked by active freeways (recommendation 2).

This recommendation aligns with:

- Recommendations 2, 3, 4, 8, 10 and 37;
- 2020 Programme for Government and draft NPF4 Liveable Places – this promotes the value of 20 minute neighbourhoods, which include retail, education and health opportunities alongside transport improvements;
- Transport Scotland's Active Travel Framework which sets out a vision that "Scotland's communities are shaped around people, with walking or cycling the most popular choice for shorter everyday journeys."

9.2.2. Active freeways and cycle parking hubs (2)

Active freeways would encourage more people to walk, wheel and cycle more often by providing high-quality direct active travel routes, segregated from traffic, on busy corridors in large urban areas. By improving safety, active freeways would help to address fear of road danger, the biggest single barrier to increasing active travel. Secure cycle parking hubs would be created in settlements that have active freeway networks in order to cater for increased cycle usage.

STPR2 recommends development of active freeways on radial routes and other high-demand corridors in Scotland's large urban areas, with priority given initially to the larger cities. Comprehensive networks of active freeways would connect outlying neighbourhoods, including those with poor existing links, to city centres and other important destinations.

Supporting connections (including those delivered by recommendation 1 connected neighbourhoods) would allow people to readily access active freeways from their homes, schools and workplaces, and other busy locations. Active freeways would also connect to other routes to provide links to neighbouring settlements.

To cater for the increased demand for bike parking that the freeways would create, high quality, secure cycle parking hubs would be developed in urban centres and other busy locations that would be served by active freeway networks.

This recommendation aligns with:

- Recommendations 1, 3, 4, 5 and 9;
- Experience in urban areas worldwide - high-quality, segregated routes for people walking, wheeling and cycling on major travel demand corridors has been key in promoting healthy, sustainable and inclusive travel;
- Transport Scotland's Active Travel Framework which sets out a vision that "Scotland's communities are shaped around people, with walking or cycling the most popular choice for shorter everyday journeys.";
- Draft NPF4 National Development 2. National Walking, Cycling and Wheeling Network.

Interurban Active Travel Routes (3,4,5)

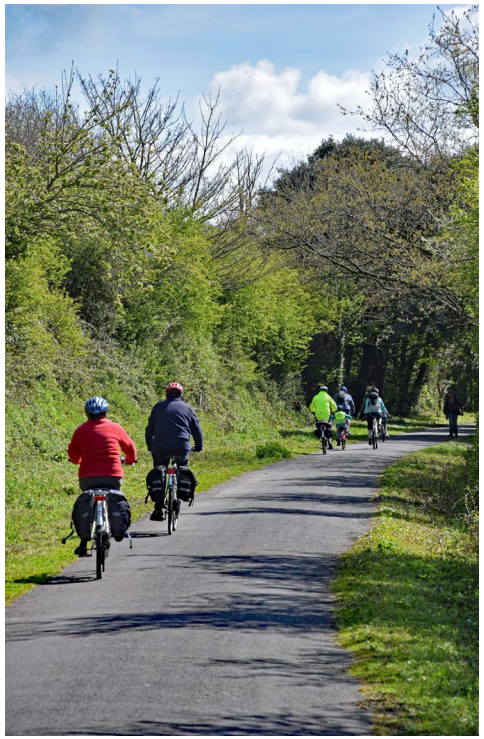
The following three recommendations combine to provide a nationwide network connecting Scotland's communities for people walking, wheeling and cycling. They would complement existing networks and link with other active travel recommendations, including connected neighbourhoods (1) and active freeways (2), to provide good connections into towns and cities. These recommendations would contribute to a national active travel network, which is a draft NPF4 national development.

Providing high quality, safer and more convenient routes will encourage more walking, wheeling and cycling. A key factor is addressing safety fears through effective segregation from traffic, only making use of on-road routes if they are quiet and have low traffic speed limits.

These routes would deliver environmental improvements and provide health benefits to people walking, wheeling and cycling. They would also help address social exclusion faced by people often excluded from transport, such as disabled, young and older people, and those without access to a car.

9.2.3. Village-town active travel connections (3)

STPR2 recommends the creation of new and improved active travel routes to connect smaller rural communities with nearby towns, using high-quality active travel infrastructure that segregates users from busy roads but makes use of quiet roads where appropriate, to ensure that active travel becomes a highly attractive option for local travel. Village-town active travel connections would be developed to support journeys by active modes, encourage a switch from short rural car trips and allow people to benefit from improved access to local goods and services.



This recommendation aligns with:

- Recommendations 1, 2, 4, 5 and 9;
- Transport Scotland's Active Travel Framework which sets out a vision that "Scotland's communities are shaped around people, with walking or cycling the most popular choice for shorter everyday journeys.";
- Draft NPF4 National Development 2. National Walking, Cycling and Wheeling Network;
- The National Cycle Network – any new routes would be integrated with existing networks, building on the good work that has been done to date on the National Cycle Network and other active travel routes.

9.2.4. Connecting towns by active travel (4)

STPR2 recommends creating new and improved active travel routes to connect Scotland's towns using high-quality active travel infrastructure, segregated from traffic. Connecting towns would ensure that towns not served by the long-distance active travel network (5) are connected to nearby cities and towns. Priority would be given to connecting settlements that are relatively close, and where opportunities for modal shift from car to active travel are greatest.

This recommendation aligns with:

- Recommendations 1, 2, 3, 5 and 9;
- Transport Scotland's Active Travel Framework which sets out a vision that "Scotland's communities are shaped around people, with walking or cycling the most popular choice for shorter everyday journeys.";
- Draft NPF4 National Development 2. National Walking, Cycling and Wheeling Network;
- The National Cycle Network – any new routes would be integrated with existing networks, building on the good work that has been done to date on the National Cycle Network and other active travel routes.

9.2.5. Long-distance active travel network (5)

STPR2 recommends creating new and improving existing active travel routes to connect Scotland's cities, regions and major gateways, using high-quality active travel infrastructure that segregates users from busy roads, but makes use of quiet roads where appropriate. Although available for long-distance active journeys, it is anticipated that most benefit is likely to arise from use of the routes for relatively short journeys between or within the communities that the network would pass through. The long-distance active travel network would enhance the existing National Cycle Network to create a strategic national network of active travel routes mirroring in part the Trunk Road and rail networks.

This recommendation aligns with:

- Recommendations 1, 2, 3, 4 and 9;
- Transport Scotland's Active Travel Framework which sets out a vision that "Scotland's communities are shaped around people, with walking or cycling the most popular choice for shorter everyday journeys.";
- Draft NPF4 National Development 2. National Walking, Cycling and Wheeling Network;
- The National Cycle Network – any new routes would be integrated with existing networks, building on the good work that has been done to date on the National Cycle Network and other active travel routes.

9.3. Influencing Travel Choices and Behaviour

The recommendations in this theme focus on influencing people to make healthier, more sustainable and safer travel choices. Some - behaviour change initiatives (6), increasing active travel to school (8), and increasing access to bikes (9) - seek to encourage and enable more people to make use of active modes and public transport. As well as delivering benefits in their own right, these interventions will also improve the value provided by other STPR2 recommendations by enabling more people to make use of the infrastructure that they provide.

Other recommendations in this theme - changing road user behaviour (7), and expansion of 20mph limits and zones (10) - seek to improve road safety by reducing traffic speeds and promoting more responsible road use. These will not only generate benefits of fewer accidents, but also help overcome perceptions of road danger, which can be a key barrier to use of active modes.

To be effective, implementation of these STPR2 recommendations would require a partnership approach between the many public, private and community organisations involved in delivering changes in travel choices and behaviours.

9.3.1. Behavioural change Initiatives (6)

Encouraging more people to make active and sustainable transport choices (walk, wheel, cycle and take public transport) more often, would have significant health, inclusion and environmental benefits. There is growing evidence of the effectiveness of behaviour change initiatives to increase awareness and use of active and sustainable modes.

STPR2 recommends building on existing programmes to deliver local, regional and national initiatives that provide encouragement, enablement and incentivisation for more people to make use of active and sustainable choices more often. Activities would raise awareness of sustainable transport options and encourage individuals to make the most appropriate transport choice for their journeys, such as active travel, public transport or shared mobility services, or to encourage use of systems such as Mobility as a Service (MaaS). Activity would build upon successful experience in Scotland, much of which is delivered by the Transport Scotland-funded Smarter Choices, Smarter Places (SCSP) programme.

Initiatives would include providing information, campaigns and promotional activities, financial incentives and community events. These initiatives are likely to be most effective if they raise awareness of new infrastructure and services, including those delivered by many other STPR2 recommendations; if they influence people experiencing life events (such as starting a family, changing job or change in health circumstances) and if the options being promoted are of high quality and relevant to that individual.

This recommendation aligns with:

- Many other STPR2 recommendations across a range of transport modes and types of activity;
- Transport Scotland's Active Travel Framework which sets out a vision that "Scotland's communities are shaped around people, with walking or cycling the most popular choice for shorter everyday journeys.";
- Transport Scotland-funded Smarter Choices, Smarter Places (SCSP) programme – this STPR2 recommendation would build on this and similar successful programmes;
- The Scottish Government's Individual, Social, Material (ISM) Tool which identifies that changing people's behaviours relies on amending individual, social and material factors that influence their choices.

9.3.2. Changing road user behaviour (7)

Scotland's Road Safety Framework has a vision for Scotland to have the best road safety performance in the world by 2030. The framework is based on the Safe System of which this recommendation seeks to address three of the five pillars: Safe Speeds, Safer Road Use and Safe Roads and Roadsides. Ensuring all road users understand their road safety responsibilities can increase respect between them and improve attitudes and behaviours for the safety of themselves and others. This results in more responsible behaviour which, combined with speed enforcement, leads to fewer road casualties. This recommendation complements a broad range of other STPR2 investments seeking to promote inclusive accessibility by healthy and sustainable modes.

STPR2 recommends implementation of speed enforcement technology and national road safety behaviour change campaigns, education and training initiatives (for example, Give Cycle Space and Road Safety Week) to enable all users to understand their road safety responsibilities, allowing them to improve their attitudes and behaviours for the safety of themselves and others. These interventions would help to deliver the outcomes of Scotland's Road Safety Framework. They would contribute to reducing traffic speeds and increasing understanding and respect between all road users. This would reduce road casualties and create safer environments which promote inclusivity and encourage people to make more active travel choices.

Improving safety is particularly important given other STPR2 recommendations which also seek to encourage more walking, wheeling and cycling. This would mean that the need for safer travel for everyone becomes more important as the interactions between all types of road users increase.

This recommendation aligns with:

- Many other STPR2 recommendations, in particular those that seek to promote inclusive accessibility by healthy and sustainable modes;
- Scotland's Road Safety Framework – this is based on a vision for Scotland to have the best road safety performance in the world by 2030. The framework is based on the Safe System; this grouping seeks to address three of the five pillars of the Safe System: Safe Speeds, Safer Road Use and Safe Roads and Roadsides;
- Changes to the Highway Code being introduced in early 2022; this includes the 'Hierarchy of Road Users' that places road users most at risk in the event of a collision (including pedestrians and cyclists) at the top of the hierarchy. The rules also highlight "… the responsibility of ALL road users, including pedestrians, cyclists and horse riders, to have regard for their own and other road users' safety".

9.3.3. Increasing active travel to school (8)

Increasing walking, wheeling and cycling to school leads to health and wellbeing benefits for young people, their family groups and carers. This can help create healthy active travel habits for life.

The school run is a significant contributor to traffic levels and rates of walking to school in Scotland have been steadily declining over the past decade, only partly offset by increased cycling and scooting. Concern about road safety is one of the barriers to active travel most reported by parents and carers; this recommendation would seek to improve active travel routes, reduce traffic volumes and speeds, tackle congestion and thereby increase the uptake of active travel to schools.

STPR2 recommends improved and safer walking, wheeling and cycling routes to primary and secondary schools, created through a comprehensive package of local infrastructure schemes such as reallocation of road space, improved crossing points, improved surfacing and lighting, and supported by traffic speed reduction measures and School Streets schemes where appropriate. This recommendation would also include behaviour change measures to promote better driver behaviour around schools (such as safe parking and no engine idling initiatives) and to provide encouragement for pupils and their families to travel safely and actively.

Where schools are in or close to neighbourhood centres, improvements would be planned jointly with connected neighbourhoods (16).

Interventions would build upon the work that local and regional partners have been leading to plan and implement measures at and around schools across Scotland. Evidence from where school active travel schemes have been implemented has shown that considerable benefits can be realised; for social inclusion, safety, and health and wellbeing for young people and their family groups, as well as modal shift and environmental improvements.

This recommendation aligns with:

- Recommendations 1, 6, 7, 10, 16 and 37;
- Transport Scotland's Active Travel Framework which sets out a vision that "Scotland's communities are shaped around people, with walking or cycling the most popular choice for shorter everyday journeys.";
- The Scottish Government and Scottish Green Party draft shared policy programme – committed to working in partnership with local authorities to "deliver more Safe to School initiatives, with the aim of ensuring every child who lives within two miles of school is able to walk or wheel safely";
- Local and regional partners' active travel schemes around schools across Scotland;
- Draft NPF4 20 minute neighbourhoods supporting Liveable Places.

9.3.4. Improving access to bikes (9)

The benefits of any investment in new or existing cycle route infrastructure can only be realised by people that have access to a bike. The cost of a bike and associated accessories – such as lights, locks and helmets – can be significant for many people, especially families or people who need more specialist cycles. Research shows that people experiencing social and economic hardship are less likely to use active modes of travel. Only one-third of Scottish households have access to one or more cycles; this falls to under one-fifth of households with a net annual income of below £15,000. Furthermore, many households will not have bikes that suit every individual, nor have all appropriate accessories to safely use and store cycles.

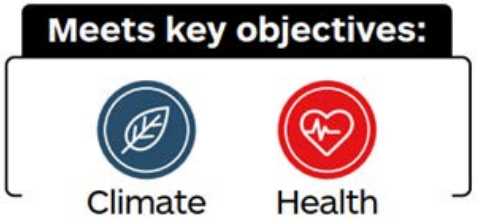
There is also often a lack of access to training or support that would give people the necessary confidence and skills to cycle.

As such, providing access to bikes, training and support would play a key role in enabling more people to cycle. In addition to health, environmental and accessibility benefits, this would also realise the benefits of investment in cycle routes.

STPR2 recommends improving access to bikes through a multi-faceted programme of interventions to enable people to cycle (and also to support walking and wheeling as appropriate) and to give them confidence and skills to do so, such that they can make use of new or existing active travel infrastructure.

Interventions would build on existing successful programmes and the work of established support groups. Initiatives would include those currently being developed by Transport Scotland; including the current free cycles for schoolchildren pilot project which would be rolled out as a national scheme, to provide cycles and accessories to children in lower-income households who cannot afford a bike. Other interventions could include community bike libraries, active travel hubs, cycle hire schemes, bike storage for flats and tenements, and a national cycle subsidy scheme for organisations and lower-income households.

Measures would be designed to meet local community needs and address inequality by targeting the specific socio-demographic groups who would most benefit from cycling (and walking and wheeling as appropriate), including young people, women, older people, disabled people, individuals with health problems and people from more deprived communities.



This recommendation aligns with:

- Recommendations 2, 3, 4, 5, 6 and 8;
- Transport Scotland's Active Travel Framework which sets out a vision that "Scotland's communities are shaped around people, with walking or cycling the most popular choice for shorter everyday journeys.";
- Existing programmes including those being developed by Transport Scotland - these include the current free cycles for schoolchildren pilot project which would be rolled out as a national scheme, to provide cycles and accessories to children in lower-income households who cannot afford a bike.

9.3.5. Expansion of 20mph limits and zones (10)

Introducing more 20mph speed limits and zones at appropriate locations in cities, towns and villages can reduce speeding traffic, making streets safer.

Evidence indicates that road casualty rates fall with the introduction of 20mph zones, and accident survival rates are up to five times higher when a pedestrian is hit by a car driving at 20mph compared to 30mph. Safer environments can encourage more people to walk, wheel and cycle more often.

In addition to benefitting pedestrians and cyclists, lower speeds also increase the safety of people travelling in vehicles.

STPR2 recommends supporting the Scottish Government's 20mph Task Group by scaling up current local programmes and initiatives to provide new or expanded 20mph limits and zones on appropriate roads in cities, towns and villages across Scotland. These would typically be residential streets, as well as those in neighbourhood centres and near other key trip generators where there are high levels of pedestrian activity. Most 20mph measures would be on local (non-trunk) roads controlled by local authorities; a partnership working approach is therefore essential. Accompanying road safety campaigns would encourage better driver behaviour in 20mph zones.

These measures complement a broad range of other STPR2 recommendations seeking to create safer environments that would addressing one of the main barriers to people walking wheeling and cycling.

This recommendation aligns with:

- Recommendations 1, 38;
- The Scottish Government and Scottish Green Party draft shared policy programme – states that "all appropriate roads in built up areas will have a safer speed limit of 20mph by 2025…";
- Scotland's Road Safety Framework to 2030 – highlights that almost half of serious injuries, and 82% of serious pedestrian casualties, occur on roads with 30mph speed limits (typically urban or suburban roads), meaning measures focussing on these areas can potentially make a significant contribution to overall casualty reduction;
- The Scottish Government 20mph Task Group – established by Transport Scotland, this will plan the most effective implementation for these measures;
- Scottish Local Authorities, many of which have already started to introduce widespread 20mph limits on their roads.

9.4. Enhancing Access to Affordable Public Transport

For many people, having access to affordable and reliable public transport is necessary, as it allows access to jobs and key services. This applies to those living in rural areas as well as our towns and cities. Investment in necessary infrastructure will encourage greater use of public transport, which in turn, will result in a reduction of car based trips and associated emissions.

Addressing the differing needs of the population requires a suite of packages that recognise the particular challenges and barriers to those travelling by public transport. This includes improvements to transport stations and interchanges (18,19,21,22), and developing suitable smart integrated ticketing and payment schemes (23) to enhance the overall accessibility and affordability of the services.

Complementing these are a range of measures that deal with more heavily populated city regions. These include recommendations where mass transit can provide a transformational change in the service provision (11,12,13) and focusing on strategic routes or corridors where bus and rail provide the most effective service (14,15,16,17). In addition, bespoke options can reflect the particular needs of the less heavily populated communities through an expansion of Demand Responsive Transport and Mobility as a Service (20).

9.4.1. Clyde Metro (11)

A metro transport system that improves connectivity in the Glasgow City Region up to around 15km from the city centre would target areas where connections are currently poor, including places where there is deprivation.

This would be a new level of public transport provision for Glasgow City Region addressing a gap where heavy rail is being used in a way that is not entirely efficient. Metro transport systems include one of or a combination of bus rapid transit, tram, light rail and metro rail. These options would complement the service provided by traditional railways and may include the conversion from existing railways to tram or heavy metro.

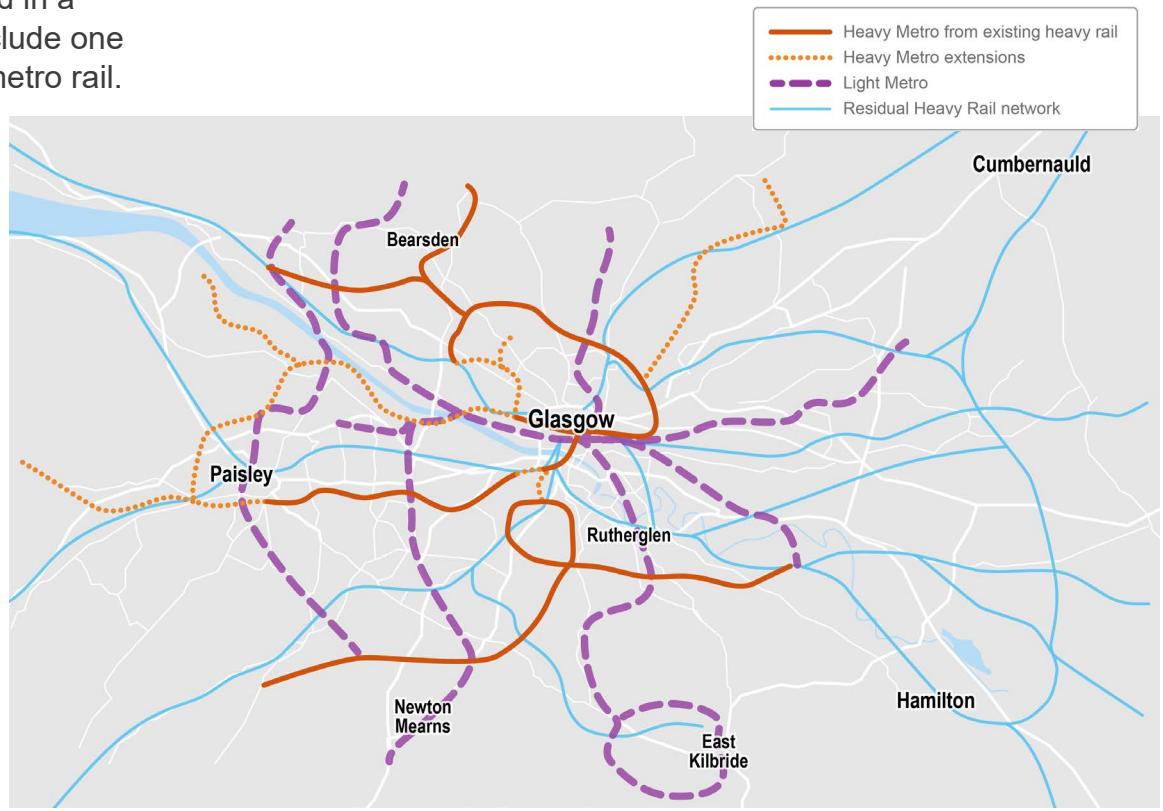
This would Improve access to and from the city centre and busy locations – including hospitals, major education facilities, key employment centres, retail hubs and major leisure/sports facilities - supports Scottish Government policies aimed at tackling deprivation and health issues.

Integrating Clyde Metro with active travel and existing transport networks would remove shorter distance trips from the heavy rail network and free up additional capacity for longer journeys.

There is potential for particular gains at Glasgow Central. This would facilitate improvements to wider rail services and assist in any developments in High Speed Rail.

It would integrate with major transport hubs and create new interchange opportunities with heavy rail, bus, walking, wheeling and cycling.

The system would help to deliver environmental benefits and improve public transport journey times and journey time reliability making sustainable travel options more attractive.



STPR2 recommends that Transport Scotland continues to work with Glasgow City Council, Strathclyde Partnership for Transport and other regional partners in the development of Clyde Metro including the design, business case and governance. This would address the gap in public transport provision in the region allowing more effective rail operations, creating capacity for high speed rail connections and providing connectivity to areas of deprivation with education, employment and leisure opportunities. Priority would be given to those solutions that can connect unserved and underserved areas. By integrating with the region's current bus, and heavy rail networks as well as good links with active travel, it would provide much improved connectivity between the City and the surrounding communities, and between the communities themselves. This would tackle deprivation issues in the region and encourage a switch from private car use to public transport and other more sustainable travel options.

This recommendation aligns with:

- Recommendations 1, 6, 14, 21, 45;
- Draft NPF4 National Development 3. Urban Mass/Rapid Transit Networks, 13. High Speed Rail and 14. Clyde Mission. This sits within the Draft NPF4 Central action area and proposes that priorities for the area include reinventing our largest cities and the wider central belt to pioneer a new era of low carbon urban living across Scotland. This recommendation contributes to these priorities and supporting actions;
- The Bus Partnership Fund – as a source of funding to reduce the negative impacts of congestion on bus services and address the decline in bus patronage;
- The Regional Transport Strategy: Strathclyde Partnership for Transport is developing an updated Regional Transport Strategy due for publication in 2022. Their Case for Change presents objectives to reduce transport emissions, improve equality of access, improve connections between regional centres and domestic / international markets, and to make public transport a desirable travel choice;
- The Strategic Development Plan: Clydeplan, the Glasgow and Clyde Valley Strategic Development Planning Authority set out in the Strategic Development Plan (2017) plans around the City Region as a successful, sustainable place, a low carbon place, a natural and resilient place and a connected place.

9.4.2. Edinburgh & South East Scotland Mass Transit (12)

Edinburgh and South East Scotland is a geographically diverse region that includes a major city, urban areas and accessible and remote rural communities, with corresponding variable access to public transport throughout the region. Within the region, there are more limited public transport choices for cross-boundary trips and an increased need for interchange leading to longer journey times. The impact of congestion on the strategic road network and local corridors that buses use also impacts on the attractiveness of public transport. These challenges translate into a dominance of journeys by car across the region.

A mass transit system for the region would provide more public transport options for cross-boundary travel, reducing the need to change between services, leading to lower journey times. This would improve region wide connectivity and encourage a switch from car to public transport and other more sustainable travel options. The system would include cross-boundary routes along key corridors within and around the City of Edinburgh, as the main population and economic area of the region. The primary purpose is to facilitate end to end sustainable transport journeys. Mobility hubs could complement the mass transit system.

The system would focus on key corridors of demand as well as where congestion impacts on bus services and where the public transport offer is more limited, including targeting more disadvantaged areas where there can be greater dependence on public transport. This would increase travel choices to access employment, education, healthcare and other services and help to address inequalities. This would also reduce the need to travel unsustainably and contribute to targets for lower emissions and the reduction in car vehicle kilometres travelled, as well as placemaking.

STPR2 recommends that Transport Scotland works with regional partners to develop and enhance the cross-boundary public transport system for the region, potentially comprising tram and bus-based transit modes including Bus Rapid Transit (BRT). This would complement and integrate with the region's current bus, tram and heavy rail networks, to provide improved connectivity between the City of Edinburgh and the surrounding communities in the region, as well as more direct connections between communities outside Edinburgh.

This recommendation aligns with:

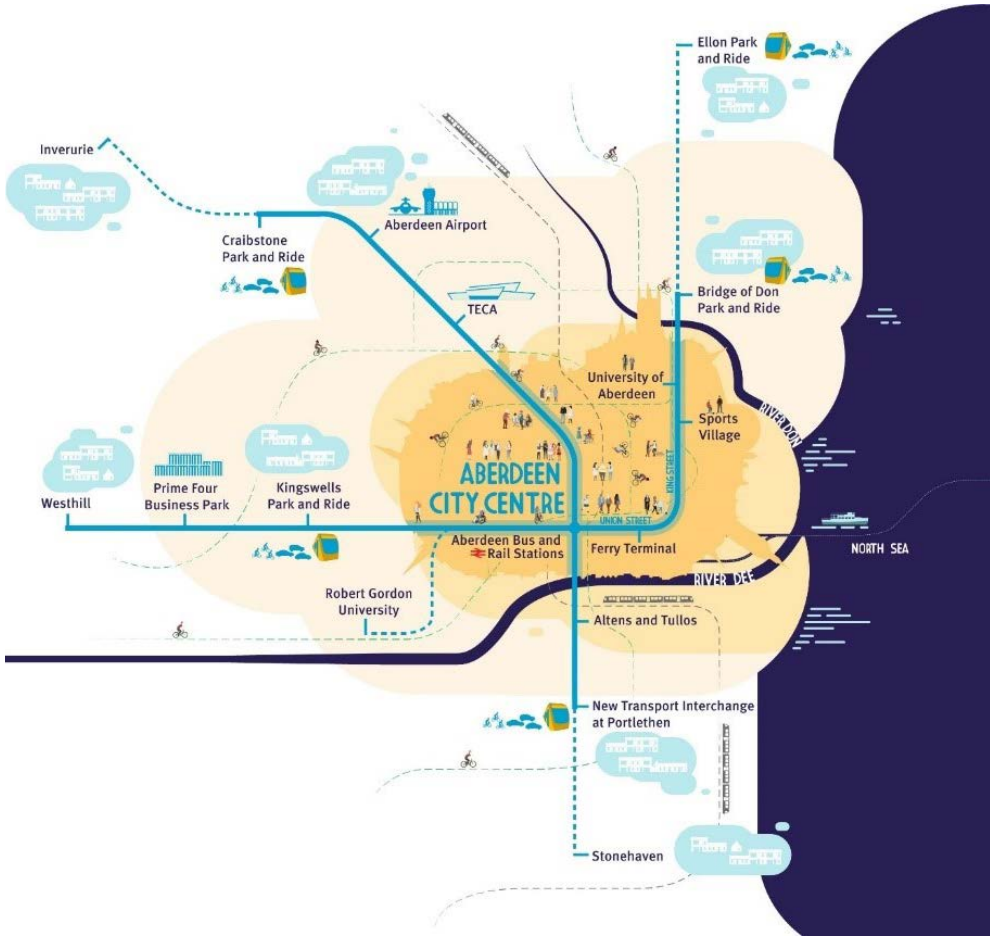
- Recommendations 1, 6, 14, 21 and 22;
- Draft NPF4 National Development 3. Urban Mass/Rapid Transit Networks and 17. Edinburgh Waterfront. This sits within the Draft NPF4 Central action area and proposes that priorities for the area include reinventing our largest cities and the wider central belt to pioneer a new era of low carbon urban living across Scotland. This recommendation contributes to these priorities and supporting actions;
- Regional Development plans – enabling integrated sustainable travel within the city-region and access to existing as well as new development sites;
- Edinburgh and South East Scotland City Region Deal - complementing projects being taken forward, such as the West Edinburgh Transport Improvement Programme, elements of which may form part of the mass transit system. This recommendation would also be complemented by the commitment of Partners within the Deal to put in place a Regional Developer Contributions framework for Cross Boundary interventions;
- The Bus Partnership Fund – appraisal work to explore opportunities for bus priority and how these would align with other key transport projects in the City of Edinburgh is being funding through BPF. Funding of further stages is subject to fund criteria and evaluation processes;
- The Regional Transport Strategy – the draft RTS was published by SEStran for consultation in November 2021. This recommendation would contribute to the objectives set out in the draft strategy.

9.4.3. Aberdeen Rapid Transit (13)

A bus based rapid transit system for the region would provide a more competitive and efficient public transport into and around the Aberdeen City region. This would improve region wide connectivity and encourage a switch from car to public transport and other more sustainable travel options. The system would focus on key corridors of demand as well as where congestion impacts on bus services. A switch from car to public transport for many would reduce the congestion impacts on bus services as a result of high car usage and offer opportunities for placemaking improvements to support healthy and active lifestyles.

The system would help to deliver air quality benefits and improve public transport journey times and journey time reliability, making sustainable travel options more attractive.

STPR2 recommends that Transport Scotland continues to work with Nestrans, Aberdeen City Council and Aberdeenshire Council in developing plans for Aberdeen Rapid Transit. This could be progressed using the Bus Partnership Fund. The rapid transit system would prioritise buses and connect key destinations on the outskirts of Aberdeen to the city centre via the A956/A92(South), A956/ A90(North), A96 and A944 corridors.



Network Vision from 'Aberdeen Rapid Transit – Our Vision' document (Source: Nestrans)

This recommendation aligns with:

- Recommendations 1, 6, 14, 21;
- Draft NPF4 National Development 3. Urban Mass/Rapid Transit Networks and 15. Aberdeen Harbour. This sits within the Draft NPF4 North East action area and proposes that priorities for the area include actively planning the transition from oil and gas to a net zero future. This recommendation contributes to these priorities and supporting actions;
- Nestrans Regional Transport Strategy 2040, which has as one of the desired outcomes “Providing mass transit which can support the economic aspirations, social requirements and environmental improvements necessary for a successful city region”;
- The Bus Partnership Fund – as a source of funding to reduce the negative impacts of congestion on bus services and address the decline in bus patronage;
- Continued growth in land-use across the region, particularly around the outskirts of Aberdeen – this provides an opportunity to expand the existing public transport network.

9.4.4. Provision of strategic bus priority measures (14)

Bus priority measures, including reallocation of road space, can deliver greater punctuality and faster journey times. Research shows that such benefits would increase the attractiveness of travel by bus and help reverse the continued decline in use. Switching from car to this greener, cleaner option is essential if Scotland is to meet its net zero carbon emission target and the need for action is urgent, as confidence in the safety of travel by bus has reduced as a result of the COVID-19 pandemic.

STPR2 recommends bus priority options are implemented within Scotland's cities and towns where congestion is highest and that bus priority measures continue to be identified and implemented on the motorway trunk road and motorway network. Within the local networks these could be taken forward using the Bus Partnership Fund process.

Source: Strathclyde Passenger for Transport

In the case of the trunk road and motorway network, Transport Scotland would build on the current work progressing plans for the M8, M77 and M80, as well as the CAVForth project between Fife and Edinburgh. Additional locations that are recommended for further appraisal include the M90 southbound between junctions 1C and 1B, and A90 Forfar Road southbound at the Kingsway in Dundee."

This recommendation aligns with:

- Recommendations 11,12,13, 35;
- The Scottish Government's Programme for Government (2019) - aims to 'bring forward a step change in investment to make bus services greener and more punctual and reliable, so that more people make the choice to take the bus';
- COVID-19 pandemic economic recovery plans - bus priority measures would increase the attractiveness of bus as a mode of transport, assisting with the recovery in bus patronage;
- The Bus Partnership Fund – as a source of funding to reduce the negative impacts of congestion on bus services and address the decline in bus patronage;
- Draft NPF4 National Development 3. Urban Mass/Rapid Transit Networks, 14. Clyde Mission, 16. Dundee Waterfront and others. It also contributes to a number of priorities and actions for the NPF4 Action areas across Scotland.

Strategic Rail Enhancements

The COVID-19 pandemic has highlighted significant challenges for rail with respect to maintaining financial viability. The sector must meet changing passenger and freight customer requirements, and achieve the traffic growth required to meet Scottish net zero, rail freight, and car travel reduction targets.

For passengers, rail is typically best suited to the higher volume 'trunk' element of city-to-city journeys, complementing door-to-door connectivity by bus, active travel, and where appropriate, adequate parking facilities. For freight, rail is often suited for longer distance bulk / intermodal freight. Future passenger rail investment should therefore be targeted on the strongest city-to-city markets as these are the routes where the greatest value from improvements will be realised, and freight investment on corridors from the Central Belt towards Aberdeen, Inverness and cross-border routes.

The next three recommendations provide detail on the specific corridor enhancements.

9.4.5. Highland Mainline Rail Corridor Enhancements (15)

STPR2 recommends a programme of enhancements, including new and longer passing loops with more flexibility, and permissible speed increases. This would achieve improvements to journey times and increases in capacity and reliability for passenger and freight services. Precise interventions would be developed following more detailed work in the business case process.

These recommendations align with:

- Recommendations 16,17,25,44 and 45;
- This sits mainly within the within the Draft NPF4 Northern revitalisation action area and proposes that priorities for the area include growing low carbon rural communities, capitalising on digital innovation and making the most of the exceptional natural and cultural heritage. This recommendation contributes to these priorities and supporting actions;
- Decarbonising Scotland's Transport Sector – this report cited that 23 per cent of freight goods moved by road must be shifted to rail and sea by 2030 (the same as all freight movements over 240 miles). Investment on the key routes of the Scottish Strategic Freight Network is critical to enable the necessary shift towards rail freight and provide a platform for more sustainable movement of goods to and from Scotland;
- COVID-19 economic recovery plans – the pandemic has brought uncertainty for future rail travel patterns, creating significant challenges both passenger and freight services. These include maintaining financial viability, meeting changing passenger and freight customer requirements and achieving the passenger and freight growth required to meet Scotland's net zero carbon emission and car travel reduction targets.

9.4.6. Perth-Dundee-Aberdeen Rail Corridor Enhancements (16)

STPR2 recommends a programme of improvements, such as junction upgrades and permissible speed increases to achieve journey time improvements and line capacity increases for passenger and freight services.

Subject to more detailed work in the business case process, potential areas for improvement could include Perth Station approaches, Tay Viaduct, Arbroath area local enhancements, and additional double-tracking in the Montrose area. In addition, opportunities will be taken to increase gauge clearance (to permit taller and wider trains) to facilitate growth in the full range of intermodal freight traffic.

These recommendations align with:

- Recommendations 15,17, 25, 44 and 45;
- This sits within the Draft NPF4 Central and North East action areas and proposes that priorities include low carbon urban living and transition away from oil and gas towards a net zero future. This recommendation contributes to these priorities and supporting actions;
- Decarbonising Scotland's Transport Sector – this report cited that 23 per cent of freight goods moved by road must be shifted to rail and sea by 2030 (the same as all freight movements over 240 miles). Investment on the key routes of the Scottish Strategic Freight Network is critical to enable the necessary shift towards rail freight and provide a platform for more sustainable movement of goods to and from Scotland;
- COVID-19 economic recovery plans – the pandemic has brought uncertainty for future rail travel patterns, creating significant challenges both passenger and freight services. These include maintaining financial viability, meeting changing passenger and freight customer requirements and achieving the passenger and freight growth required to meet Scotland's net zero carbon emission and car travel reduction targets.

9.4.7. Edinburgh/Glasgow-Perth/Dundee Rail Corridor Enhancements (17)

STPR2 recommends a programme of improvements, such as junction upgrades and permissible speed increases to achieve journey time improvements and line capacity increases for passenger and freight services.

Source: Network Rail

Subject to more detailed work in the business case process, potential areas for improvement could include: Greenhill Junction, Dunblane Station area, Hilton Junction & Moncrieff Tunnel, Perth Station approaches, Edinburgh western station approaches. In addition, opportunities will be taken to undertake gauge clearance (to permit taller and wider trains) to facilitate growth in the full range of intermodal freight traffic.

These recommendations align with:

- Recommendations 15,16, 25, 44 and 45;
- This sits within the Draft NPF4 Central action area and proposes that priorities for the area include reinventing our largest cities and the wider central belt to pioneer a new era of low carbon urban living across Scotland. This recommendation contributes to these priorities and supporting actions;
- Decarbonising Scotland's Transport Sector – this report cited that 23 per cent of freight goods moved by road must be shifted to rail and sea by 2030 (the same as all freight movements over 240 miles). Investment on the key routes of the Scottish Strategic Freight Network is critical to enable the necessary shift towards rail freight and provide a platform for more sustainable movement of goods to and from Scotland;
- COVID-19 economic recovery plans – the pandemic has brought uncertainty for future rail travel patterns, creating significant challenges both passenger and freight services. These include maintaining financial viability, meeting changing passenger and freight customer requirements and achieving the passenger and freight growth required to meet Scotland's net zero carbon emission and car travel reduction targets.

9.4.8. Supporting integrated Journeys at ferry terminals (18)

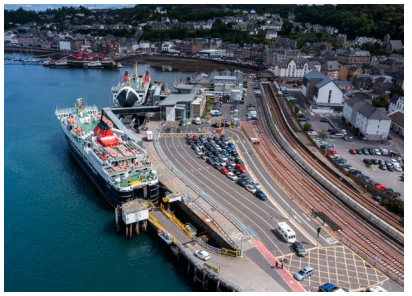
One of the major barriers to public transport uptake historically has been connectivity and lack of convenient end-to-end travel options. Improving access and creating a better traveller experience at ferry terminals and interchange facilities will benefit rural and island communities as well as visitors and assist in encouraging mode shift.

This would enhance the interchange facilities for all trips, but especially longer distance trips, providing more seamless travel choices, improving services for those not travelling with a car. Reducing car usage also helps make better use of existing ferry capacity, in line with the sustainable investment hierarchy.

STPR2 recommends a detailed review of key ferry terminals to consider physical integration and accessibility improvements in timetable information, signing, ticketing and other facilities required to deliver a seamless and integrated journey between different travel modes. The review will make recommendations on a programme of integration improvements to enhance the traveller experience and accessibility at ferry terminals.

These recommendations align with:

- Recommendations 1, 5, 19, 20, 21, 22, 23, 28, 42;
- This sits within the Draft NPF4 North and West coastal innovation action area and proposes that priorities include making sustainable use of our coasts and islands to sustain communities and pioneer investment in the blue economy. This recommendation contributes to these priorities and supporting actions;
- Transport Scotland's, Scotland's Accessible Travel Framework, Annual Delivery Plan 2021-22 – which has a strong focus on serving the needs of the island and rural communities;
- Scottish Government, The National Islands Plan, 2019 which sets out a strategic objective to improve transport services – this will ensure that existing and future transport-related policies, strategies and services are fully island proofed so that they truly meet the needs of island communities;
- The Islands Connectivity Plan (ICP), which will replace the current Ferries Plan from January 2023, will support the delivery of NTS2 priorities and the National Islands Plan. It will include a long-term investment programme for new ferries and development at ports that will aim to improve resilience, reliability, capacity and accessibility, while increasing standardisation, cutting emissions and meeting the needs of island communities whilst providing value for money.



Source: MBP

9.4.9. Infrastructure to provide access for all at railway stations (19)

Implementing measures to improve the accessibility of Scotland's railway stations can help ensure that everyone can use the transport system with as few barriers as possible. This will encourage greater use of rail and switching from car travel to support Scotland's net zero carbon emission targets. Examples include step-free routes and platform access to passenger trains.

STPR2 recommends a review of station accessibility across Scotland to identify barriers and improve access for all to the rail network, prioritising those stations that have particular problems. This would include investigating the opportunities for new technology to improve safety and access at stations for people with reduced mobility. Opportunities for improving the accessibility of onward journeys from railway stations, particularly by bus and taxi, would also be considered.

This will review should build on the current study that is considering parking and connectivity strategies for Scotland's railway stations The initial work would focus on reviewing those stations that have particular accessibility problems, it is anticipated that some projects could be accelerated for delivery up to 2024.

This recommendation aligns with:

- Recommendations 15,16,17,21, 25;
- The current study 'Scotland's Railway - Parking and Station Connectivity' – this considers investment in parking within the railway estate and transport connectivity to and from stations;
- Transport Scotland's, Scotland's Accessible Travel Framework, Annual Delivery Plan 2021-22 – building on improvements to and within bus and railway stations and extending beyond legal obligations to cover the enhanced levels of accessibility envisaged by the Framework;
- The Equality Act 2010 – this paved the way for a number of inclusive access strategies.

9.4.10. Investment in Demand Responsive Transport and Mobility as a Service (20)

Targeted investment to make it easier for people to travel, particularly those without access to a car, can help promote equality through fairer access to jobs and services. In locations with low bus network connectivity or where conventional fixed route services may not be suitable or viable, flexible options, such as Demand Responsive Transport (DRT), perhaps supported by Mobility as a Service (MaaS) and smart technology where appropriate, can be used to provide improved public transport connectivity.

This would be important in addressing the marked differences between and within regions.

STPR2 recommends that the MaaS Investment Fund pilot schemes involving DRT and MaaS drawing on innovative solutions, international best practice and smart technologies are further developed.

These schemes will help to establish whether scarce existing resources could be better utilised across the public network, home to school transport, special educational needs travel and non-emergency patient travel, either on the basis of fixed route services or through flexible routeing. The potential to better inform people on journey options through the use of MaaS would also be considered.

This recommendation aligns with:

- Recommendations 18, 22, 23;
- The Scottish Government's Programme for Government 2019 – this raised the issue of regional differences in service provision and the need to enhance Scotland's connectivity;
- A Connected Scotland – a strategy for tackling social isolation and loneliness and building stronger social connections which highlights the role transport can play;
- COVID-19 pandemic recovery - providing more cost-effective connectivity would assist with the recovery in bus usage resulting from COVID-19 which has impacted on the financial viability of many services;
- MaaS Investment Fund pilot projects.

9.4.11. Improved public transport passenger interchange facilities (21)

Improving the quality of passenger facilities at bus stations, railway stations and other transport interchanges encourages uptake of public transport and a switch from car use. This would include improving accessibility at bus stations and transport interchanges for people with reduced mobility.

Improvements can also be made to infrastructure design and security (to and within stations), and by enhancing the quality of the infrastructure, information, signage and wayfinding for all users of the facilities.

Source: Network Rail

During stakeholder engagement for STPR2, most regions raised the need to improve the quality and accessibility of passenger facilities for those with reduced mobility. Improvements will be particularly important in attracting passengers back to public transport following COVID-19.

STPR2 recommends building on recommendation 19 (Infrastructure to provide access for all at rail stations) and Transport Scotland's 2021/22 Annual Delivery Plan for an Accessible Travel Framework, to roll out a programme of interchange upgrades.

This would focus on improved infrastructure design to and within bus and railway stations, and improved information, signage and wayfinding by upgrading the accessibility and quality of passenger facilities at existing bus stations and other transport interchanges, or where needed, construction of new ones. Opportunities to enhance interaction with active travel modes should also be considered to improve overall access to public transport services.

This recommendation aligns with:

- Recommendations 18, 19, 23;
- Transport Scotland's 2021/22 Annual Delivery Plan for an Accessible Travel Framework – building on improvements to and within bus and railway stations and extending beyond legal obligations to cover the enhanced levels of accessibility envisaged by the Framework;
- A Connected Scotland – a strategy for tackling social isolation and loneliness and building stronger social connections which highlights the role transport can play.

9.4.12. Framework for Mobility Hubs (22)

Improving links between public transport services, active travel (walking, wheeling and cycling) and shared transport makes it easier for people, particularly those without a car, to get to and from their destination. This addresses one of the main barriers to uptake of public transport services.

Mobility hubs are facilities where various types of transport, and potentially other services inter-connect. They support changing travel patterns which result in a greater reliance on local facilities, such as increased home-working and promotion of liveable places – including 20 minute neighbourhoods as highlighted in the draft NPF4. Mobility hubs can be developed in various contexts, including rural and island communities, and services can be tailored to support specific locational characteristics and needs.

The delivery of Mobility Hubs requires close and complex long-term multi-stakeholder partnerships from inception through to creation and ongoing maintenance, including the communities they serve, local and national government, all bodies involved in transport planning, placemaking and regeneration, and a wide variety of public, private, and third sector transport service providers.

STPR2 recommends that a delivery framework for mobility hubs is developed in collaboration with stakeholders to facilitate the creation of high quality mobility hubs across Scotland. To ensure the effectiveness of mobility hubs, the delivery framework will include guidance, building on best practice and work undertaken elsewhere, to allow robust assessment and coordination of future funding decisions on mobility hubs, and determination of the most appropriate locations, facilities and methods of community engagement.

Source: CoMoUK

The creation of a recognisable network of high-quality multi-modal mobility hubs across Scotland will support the priorities of the NTS2 by increasing the attractiveness and visibility of public and shared transport, through bettering connectivity, improving links between public, active and shared transport options, and providing seamless travel opportunities, particularly for those without access to a private car. A nationally-led framework for the delivery of Mobility Hubs will provide all stakeholders and delivery partners with a clear template and pathway for action, and allow national government a guiding hand in planning and providing a network of hubs which is coherent, integrated, and delivers against its many social, economic, and environmental targets and policy objectives.

This recommendation aligns with:

- Recommendations 18, 19, 20, 23;
- Transport Scotland's, Scotland's Accessible Travel Framework, Annual Delivery Plan 2021-22 – building on improvements to and within bus and railway stations and extending beyond legal obligations to cover the enhanced levels of accessibility envisaged by the Framework;
- CoMoUK Mobility Hubs Guidance, which identifies a mobility hub as being "A recognisable place with an offer of different and connected transport modes supplemented with enhanced facilities and information features to both attract and benefit the traveller";
- Draft NPF4 20 minute neighbourhoods supporting Liveable Places.

9.4.13. Smart, integrated public transport ticketing (23)

Making it easier for people to reach their end destination by simplifying how they book and pay for tickets with different providers makes public transport a more convenient, flexible and attractive travel option. This encourages people to switch from car use and supports more active travel (walking, wheeling and cycling).

Improving integration involves introducing new services, technologies and systems which support easier payment and the simplification of schemes or fares, including price capping. To fully integrate this across all operators, this can include electronic payment, smartcard and mobile technologies coupled with improved back end administration systems.

STPR2 recommends building on the interventions and new services delivered under the '2018 Smart and Integrated Ticketing & Payments Delivery Strategy' to continue with the support and ongoing delivery of fully integrated smart ticketing and payment services across all public transport modes, to support modal shift and encourage active travel. This recommendation supports the delivery of the objectives, and subsequent workstreams, within the 2019 Transport (Scotland) Act, which aims to establish a National Smart Ticketing Advisory Board and set a technological standard for smart ticketing.

The Act also seeks to enhance integrated schemes to now include connecting modes and further empowers Scottish Local Authorities to introduce smart ticketing schemes where there is consumer demand, enabling access to and use of more sustainable public transport.

This recommendation aligns with:

- Recommendations 6,11,12,13,18,20,22;
- The '2018 Smart and Integrated Ticketing & Payments Delivery Strategy' – building on the interventions and new services delivered;
- The 2019 Transport (Scotland) Act - which aims to establish a National Smart Ticketing Advisory Board and set a technological standard for smart ticketing;
- The Act and Strategy combine to provide the basis for enhancing the technology, data platforms and open data rules. This will help reach the commercial agreements required to support the establishment of local smart schemes. Scottish Local Authorities that have been further empowered to introduce smart ticketing schemes where there is consumer demand.

9.5. Decarbonising Transport

To meet its legal commitments on addressing climate change, the Scottish Government has set a target to achieve net zero carbon emissions by 2045.

Transport is now the largest single largest source of carbon emissions with car traffic on major roads having tripled during the last four decades. Cars now account for 39 per cent of transport emissions while goods vehicles account for a further 25 per cent.

Studies have shown that the only way the net zero target can be achieved is by a combination of:

- rapid decarbonisation of passenger and freight transport;
- reduction in vehicle usage by switching to public transport and active travel;
- reduced demand through shorter trips and, where possible, avoiding trips.

Various STPR2 recommendations described in earlier themes, are directed at support for active travel (walking, wheeling and cycling) and measures to improve the attractiveness of public transport.

STPR2 recommendations aimed at rapid decarbonisation of passenger and freight transport include:

- Ferry vessel renewal and replacement and progressive decarbonisation (24);
- Rail decarbonisation (25);
- Decarbonising the bus network (26);
- Behavioural change and modal shift for freight (27);
- Zero emission vehicles and infrastructure transition (28).

These recommendations align with and support the draft NPF4 where decarbonisation of connectivity is a strong theme.

9.5.1. Ferry vessel renewal and replacement and progressive decarbonisation (24)

Continued investment in ferry renewals would address the needs of rural and island communities by improving the resilience, reliability, capacity and accessibility of ferries. Progressive decarbonisation of the CHFS and NIFS ferry networks will support the 2018 – 2032 Climate Change Plan and the Climate Change (Emissions Reduction Targets) (Scotland) Act 2019.

STPR2 recommends renewal and replacement of the Clyde and Hebrides Ferry Services (CHFS) and Northern Isles Ferry Services (NIFS) vessels including progressive decarbonisation by 2045.

This recommendation aligns with:

- Recommendation 42;
- Draft NPF4 National Development 7 – Islands Hub for Net Zero. This sits mainly within the Draft NPF4 North and West coastal innovation action area and proposes that priorities for the area include making sustainable use of our coasts and islands to sustain communities and pioneer investment in the blue economy. It also spans the North east transition and Central urban transformation areas. This recommendation contributes to these priorities and supporting actions;
- 2018 – 2032 Climate Change Plan and the Climate Change (Emissions Reduction Targets) (Scotland) Act 2019 – are supported by progressive decarbonisation of the CHFS and NIFS ferry networks;
- Scottish Energy Strategy, 2017 – sets out the Scottish Government's vision for the future energy system in Scotland;
- Carbon Neutral Islands project – this has a commitment for at least three of Scotland's islands to become fully carbon neutral by 2040;
- Islands Growth Deal – this is a 10-year programme of investment for the Outer Hebrides, Orkney and Shetland, with a target of creating up to 1,300 jobs and tackling depopulation concerns;
- Scottish Government, The National Islands Plan, 2019 which sets out a strategic objective to improve transport services – this will ensure that existing and future transport-related policies, strategies and services are fully island proofed so that they truly meet the needs of island communities;
- The Islands Connectivity Plan (ICP), which will replace the current Ferries Plan from January 2023, will have regard to aviation, ferries and fixed links, as well as connecting and onward travel. The Plan will include a long-term investment programme for new ferries and development at ports that will aim to improve resilience, reliability, capacity and accessibility, while increasing standardisation, cutting emissions and meeting the needs of both remote rural and island communities whilst providing value for money.

9.5.2. Rail decarbonisation (25)

Replacing diesel trains, the largest source of rail carbon emissions, with cleaner technologies offers multiple benefits in addition to helping meet net zero targets. Electrification would improve journey times and strengthen reliability of both freight and passenger rail services. Capacity could be expanded through the use of longer trains and timetable efficiencies from improved acceleration. These provide indirect benefits because of the new incentives for passengers and freight to switch from road to rail.

Electric rolling stock has lower operational and maintenance costs than diesel. Battery and hydrogen traction solutions will still enable decarbonisation of rail operations on routes where overhead wire electrification is less cost effective.

STPR2 recommends the priorities for decarbonising key rail routes should align with the Rail Services Decarbonisation Action Plan.

These will be subject to full STAG business case assessment but are likely to include:

- East Kilbride, Barrhead, Borders and Fife Circle;
- Fife -> [Perth] -> Dundee -> Aberdeen -> Dyce (including Raith's Farm freight terminal);
- Dunblane -> Perth -> Inverness -> Dalcross (including Morayhill freight terminal).

This recommendation aligns with:

- Recommendations 15,16,17, 44, and 45;
- 2018 – 2032 Climate Change Plan and the Climate Change (Emissions Reduction Targets) (Scotland) Act 2019 – this outlines the plan to decarbonise the majority of the passenger rail network by 2032;
- Rail Services – Decarbonisation Action Plan - This action plan sets out an initial, indicative programme of interventions which will secure benefits towards climate change objectives, local environmental objectives (including air quality) and the rail network and rail users.

9.5.3. Decarbonisation of the bus network (26)

The Scottish Government, in the Programme for Government (2019), has committed to remove the majority of diesel buses from public transport by the end of 2023 with an investment of £120m in support of this announced in 2021.

STPR2 recommends further investment to stimulate the commercial roll out of zero-emission buses with an extension of existing funding criteria to include vehicles used for home to school and community transport. Further policy development may be required to ensure a Just Transition to zero emission buses across all operators of buses. This may involve an evolution of the Scottish Zero Emission Bus Challenge Fund (ScotZEB).

This recommendation aligns with:

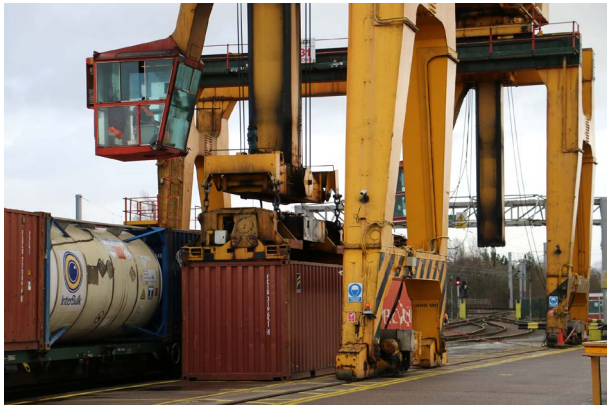
- Recommendation 28;
- 2018-2032 Climate Change Plan, 2020 Update – this sets out the Scottish Government's targets to reduce emissions by 75% by 2030 and to net zero by 2045;
- The Scottish Zero Emission Bus Challenge Fund – this seeks to stimulate rapid commercial investment in the roll out of zero-emission buses and associated infrastructure;
- The Bus Decarbonisation Taskforce – this brings together public and private sector partners to co-design solutions for ending the bus sector's contribution to climate change in Scotland.

9.5.4. Behavioural change and modal shift for freight (27)

A significant amount of freight needs to shift from road to rail or water, and the overall distance travelled be reduced. This is necessary if Scotland is to meet its net zero carbon emission targets as these cannot be achieved by changes in technology alone.

STPR2 recommends the Scottish Government brings together public and private sector organisations to develop a net zero freight and logistics network for Scotland that would encourage the switch to more sustainable and efficient freight transport. This involves considering road fleets, rail freight locomotives and best use of freight capacity.

This may involve a potential evolution of the existing grant (and support schemes. This recommendation would seek to maximise the impact of public expenditure and leverage accelerated commercial investment.



This recommendation aligns with:

- STPR2 Recommendation 28, 44;
- Decarbonising the Scottish transport sector, Transport Scotland (September 2021) - Policy Scenario 3 (Trucks, Rail Freight, and Shipping Freight);
- 2018-2032 Climate Change Plan, 2020 Update – this sets out the Scottish Government's targets to reduce emissions by 75% by 2030 and to net zero by 2045;
- Scotland's Draft Hydrogen Action Plan – This plan provides a route map to the development of a zero carbon hydrogen economy and sets hydrogen production capacity targets of 5GW by 2030 and 25GW by 2045;
- Transport Scotland's Mission Zero for Transport programme – is investing in a net zero transport system, including by providing £2 billion for a Low Carbon Fund to support low emission technologies like hydrogen powered transport
- The National Just Transition Planning Framework – seeks to plan the transition to net zero greenhouse gas emissions in a way that does not exacerbate inequality and injustice.

9.5.5. Zero emission vehicles and infrastructure transition (28)

Alongside greater use of public transport and active travel, and the required reduction in travel demand, switching to zero emission vehicles is a key step in reducing greenhouse gas emissions from transport and the achievement of the Scottish Government's net zero target. Encouraging this shift to zero emission vehicles requires a suite of options to support a just transition, including additional transport infrastructure across Scotland such as new and expanded recharging and refuelling networks as well as technological change.

The convening powers of Scottish Government/ Transport Scotland are required to bring together key industries and sectors to work strategically with the private sector to facilitate the planning, management and delivery of the required alternative refuelling network and expansion/improvements to the charging network. Where market failure exists, Transport Scotland will intervene to support a just transition in ensuring the provision of a multi-modal alternative fuel and charging network for the whole of Scotland, including consideration of rural and island communities.

STPR2 recommends a national framework for zero emission vehicles to support and accelerate the shift to zero emission mobility through targeted funding to enable investment in fleets, facilities and emerging technologies.

In addition, collaboration with the private sector to develop co-ordinated investment in a zero emission transport supply network across Scotland of recharging and refuelling infrastructure, which is in line with Transport Scotland's Mission Zero for Transport programme.

This framework would seek to maximise the impact of public expenditure and leverage commercial investment. The framework would consider freight, coaches and personal modes, and include capacity for longer distance journeys.

This recommendation aligns with:

- Recommendations 18, 22, 26 and 27;
- Climate Change Plan, 2020 Update – this provides an emissions reduction pathway for transport and outlines eight policy outcomes designed to achieve the required level of emissions reduction, including the phase out of petrol and diesel vehicles;
- Scotland's Draft Hydrogen Action Plan – This plan provides a route map to the development of a zero carbon hydrogen economy and sets hydrogen production capacity targets of 5GW by 2030 and 25GW by 2045;
- Transport Scotland's Mission Zero for Transport programme – is investing in a net zero transport system, including by providing £2 billion for a Low Carbon Fund to support low emission technologies like hydrogen powered transport;
- The National Just Transition Planning Framework – seeks to plan the transition to net zero greenhouse gas emissions in a way that does not exacerbate inequality and injustice.

9.6. Increasing Safety and Reliability on the Strategic Transport Network

The maintenance of safe and resilient transport networks and systems is vital to facilitate the daily lives of all communities, businesses and visitors to Scotland. The sustainable investment hierarchy outlined within the second National Transport Strategy (NTS2) makes clear that interventions should be prioritised firstly by their ability to reduce the need to travel and secondly their ability to help maintain and safely operate existing assets.

Transport Scotland is the roads authority for the Scottish trunk road and motorway network and it is it's single biggest asset. In addition, Transport Scotland is committed to measures to improve the resilience of the rail network, as prescribed by the Office for Road and Rail.

The recommendations within STPR2 supplement ongoing maintenance and operational requirements by focusing on particular challenges associated with the need to operate a safe and reliable motorway and trunk road network.

Transport Scotland will continue to assess the network and implement a programme of renewals and measures that will address safety (30), climate change adaptation (31) and resilience (32). STPR2 has considered these requirements and identified a series of routes and locations to prioritise. One specific location that is a current priority of the Scottish Government is measures to address the resilience of the A83 at the Rest and be Thankful (29).

Recommendations considering the management of speed on trunk roads (38) and mitigating the impact of trunk roads on local communities (37) would reduce risk of accidents and enhance the local environment.

The use of technologies will continue to play an important part in operating a safe and reliable system, and STPR2 recommends a suite of interventions aimed at creating the next generation of control centres (33), systems (34) and infrastructure (35).

Recognising the specific needs of the road haulage industry, STPR2 recommends a detailed national audit and review of lorry parks to address barriers hampering their development (36).

9.6.1. Access to Argyll (A83) (29)

Ongoing closures of the A83 due to landslides at the 'Rest & Be Thankful' or on other sections of the road in Argyll & Bute due to accidents, flooding or roadworks have a significant negative impact on the region and its economy. Closures at the 'Rest & Be Thankful can add detours of up to 50 miles for residents, businesses and visitors.

Accidents or incidents occurring on the A83 in Argyll and Bute means that for periods of time there is no continuous strategic road in the region connecting it to the rest of the country.

Closures can have a more severe impact on residents who want to make shorter journeys from one side of the A83 Rest & Be Thankful to the other, such as Inveraray residents wanting to access services in Dumbarton or Helensburgh. New or improved road infrastructure to address these closures would improve the reliability of the route as a vital artery through Argyll, as a connection for both the Kintyre and Cowal peninsulas, and as one of only two trunk roads linking Argyll & Bute to the central belt.

STPR2 recommends work continues on developing a more reliable route. A preliminary assessment of 11 route corridor options has been completed, with the Glen Croe corridor emerging as the preferred option.

Public feedback has stressed the need to move quickly and work on five possible route options within the preferred corridor has been accelerated with speed of delivery a key criteria for assessment.

This recommendation aligns with:

- Recommendations 7, 31, 32 and 38;
- This lies within the NPF4 Northern revitalisation action area and proposes that priorities for the area include growing low carbon rural communities, capitalising on digital innovation and making the most of the exceptional natural and cultural heritage. This recommendation contributes to these priorities and supporting actions, including strengthening resilience;
- Development plans – the road network within the region plays a vital role in supporting the local economy, facilitating the movement of goods and services throughout the area and connecting people with economic opportunities;
- Regional strategies – improvements to address key transport constraints across the region which hamper socio-economic development.

9.6.2. Trunk road and Motorway safety improvements to progress towards 'Vision Zero' (30)

Safety improvements are required across the trunk road and motorway network to help meet Scotland's Road Safety Framework to 2030 vision for Scotland to have the best road safety performance in the world by 2030, with a long-term goal of Vision Zero, where there are zero road fatalities and serious injuries by 2050. An ambitious interim target for 2030 involves halving the number of people being killed or seriously injured on Scotland's roads.

The framework embeds the Safe System approach to road safety delivery, which consists of 5 key pillars focusing efforts not only on road traffic casualty reduction (vulnerability of the casualties) but also on road traffic danger reduction (sources of the danger). Safe Roads and Roadsides is 1 of the 5 pillars, where roads and roadsides in a Safe System are designed to reduce the risk of collision, and to mitigate the severity of injury should a collision occur.

Safety improvements would also improve route reliability and reduce delays associated with accidents. A high quality, well maintained and efficient trunk road network also supports other Scottish Government programmes for active travel, connected and autonomous vehicles and bus priority investment, and thereby contributes to the low carbon economy.

STPR2 recommends road safety improvements are progressed across the trunk road and motorway network with a primary, but not exclusive, focus on rural sections where accident rates and severities are typically higher. The types of improvements would include junction improvements (such as right-turn priority; signalisation; at-grade roundabout and grade-separation) as well as junction rationalisation; realignment/widening of carriageways and provision of overtaking opportunities (Wide Single Carriageway 2+1 schemes or climbing lanes).

Potential examples of locations for road safety improvements on the trunk road and motorway network, include but are not limited to:

- A82 Balloch to Inverness (excluding Tarbet to Inverarnan which is already being progressed by Transport Scotland);
- A83 Tarbet to Campbeltown;
- A835 Tore Roundabout to Ullapool;
- A85 Perth to Oban;
- A87 Invergarry to Uig;
- A9 Kessock Bridge to Scrabster;
- A9 Dunblane to Perth;
- A90 Perth to Aberdeen (excluding the A90 Kingsway through Dundee - see Recommendation 32).

The location and type of improvements on specific routes requires further detailed investigation, potentially through the development of route action plans. This would also be informed by the route risk mapping process Transport Scotland is developing in addition to the more traditional reactive analysis of high accident cluster sites to assess the safety quality of the road network and to target investment.

Where appropriate, these measures may be undertaken in conjunction with, and to support, the STPR2 trunk road and motorway network recommendations related to renewal (32) and climate change adaptation (31).

This recommendation aligns with:

- Recommendations 7, 31, 32, 33, 34, 35, 37, 38 and 40;
- Scotland's Road Safety Framework to 2030 – over the period 2015 to 2019, Killed and Seriously Injured (KSI) and Personal Injury Accident (PIA) accident rates on sections of several routes are over two times greater than the national rates for routes of a similar nature and standard. This recommendation would support the framework and goal of Vision Zero by addressing road safety and operational concerns on areas of the trunk road and motorway network, including circumstances where problems continue despite measures having been previously implemented. Generally, the improvements proposed are of particular relevance to rural sections of the network where accident rates are typically higher;
- Draft NPF4 National Development potentially including 8. Industrial Green Transition Zones, 9. Pumped Hydro Storage and 10. Hunterston Strategic Asset.

9.6.3. Trunk road and Motorway network climate change adaptation and resilience (31)

Climate change is already having far-reaching impacts on Scotland's weather systems, with heatwaves, intense rainfall and floods all increasing in scale and frequency. These events are already directly impacting the trunk road and motorway network as illustrated by embankment failure on the A83 Rest and Be Thankful and the A68 at Fala as well as the recurrence of flooding on areas of the network such as the A8 through Greenock.

Efforts to reduce greenhouse gas emissions is essential to combating future catastrophic climate change, however due to current and historic emissions being locked in, further changes are inevitable and will continue for decades to come. Adapting to the impacts of climate change is therefore essential to ensuring that the trunk road and motorway network is safe, reliable and resilient for the people of Scotland and its visitors.

This includes developing measures to protect the operation of the network from severe weather-related events related to climate change such as flooding, landslides and high winds.

While climate change and its impacts go far beyond the 20 year timeframe of STPR2, adapting to climate change and investing in resilience measures now could address some of the impacts already experienced and assist in the understanding of how to mitigate future risks to the trunk road and motorway network as the weather and impacts becomes less predictable and potentially more extreme.

STPR2 recommends building on existing evidence around vulnerable locations to develop a fuller picture of those areas on the trunk road and motorway network most at risk of disruption due to weather events. This would provide a basis for identifying, prioritising and implementing improvements to strengthen the resilience of the network. It is also recommended to build on Transport Scotland's existing roads asset management plan, disruption management processes and incident response plans to help mitigate the impact of disruption from severe weather related events.

While the location and nature of the improvements on specific routes requires further detailed study, potential locations and measures include but are not limited to:

- A85 Glen Ogle – geotechnical and hydrological study;
- A77, A82, A83 and A87 – sea wall improvements, strengthening or replacement;
- A78 – sea wall improvements, strengthening or replacement, and coastal fence upgrade;
- A9 – slope stability at Scrabster;
- Additional / proactive inspections / assessments such as LiDAR of embankments / hillsides / sea walls.

Where appropriate, these measures may be undertaken in conjunction with and to support the STPR2 trunk road and motorway network recommendations related to renewal (32) and safety improvements (30), with Access to Argyll A83 (29) a specific recommendation.

This recommendation aligns with:

- Recommendations 29, 30, 32, 33, 34, 35, 40;
- Climate Change Committee's third Climate Risk Independent Assessment (CCRA3) – published in June 2021, CCRA3 highlights that net zero commitments will fail unless there is investment in adaptation across the nation and increased climate resilience. It also highlights that the gap between the level of risk faced by climate change and the level of adaptation underway has widened;
- Draft NPF4 National Development 10. Hunterston Strategic Asset and 18. Stranraer Gateway. Elsewhere draft NPF4 makes a number of references to resilience, however the Northern revitalisation, North and west coastal revitalisation and Southern sustainability action areas both have a specific action on strengthening resilience.

9.6.4. Trunk Road and Motorway network renewal for reliability, resilience and safety (32)

The trunk road network has a £21 billion gross asset value and adds £1.38 billion to the economy annually. The network comprises 3,739 route km (2,323 miles) of road, 1,745 bridges and 2,492 other structures. It accounts for 7% of the total road network in Scotland, but carries over 40% of all traffic and over 60% of all Heavy Goods Vehicles. Like any piece of infrastructure, the trunk road and motorway network has a design life that can be extended by regular maintenance but that will also require significant renewal after years of permanent use to keep up the integrity and protect the asset for continued, unrestricted use and to avoid the need for unplanned works.

The maintenance of a safe and resilient trunk road and motorway network plays a vital part in the daily lives of all communities, businesses and visitors to Scotland. Continued and increased investment in carriageways and structures as well as ancillary assets to address the maintenance backlog is required in order to achieve a steady-state condition, and sustain investment to maintain this level of condition and keep the network reliable and resilient for all road users.

This needs to consider changes in both technology and how we use this national asset.

A co-ordinated programme of planned renewal and refurbishment work is also less disruptive and more cost-effective than addressing network failure. This also removes the need for multiple visits to the same location to address issues.

STPR2 recommends continued and increased investment in strengthening of the trunk road and motorway network over and above current maintenance levels. y.

Potential measures would include, carriageway and structure schemes as well as ancillary assets.

Examples include, but are not limited to, the following types of schemes and locations:

- M8 Maintenance Strategy;
- Strengthening of major bridges (including the Forth Road/ Erskine/ Kessock/Kincardine Bridges);
- Removal of accessibility barriers;
- Removal of roadside strike hazards;
- Hardstrip provision;
- Other operational improvements (such as lay-by facilities, lighting and depot maintenance);
- Integrated transport plan for the A90 Kingsway through Dundee to improve reliability on the trunk road and deliver improvements for local active travel and public transport journeys. This could potentially include online improvements to enable sustainable transport provision;
- Integrated transport plan for Fort William to increase resilience and reliability on the trunk road to improve sustainable transport and enhance the sense of place in the local community. This could potentially include improvements online and/or a new link road to enable enhanced sustainable transport provision.

This recommendation aligns with:

- Recommendations 30, 31, 33, 34, 35, 37, 39, 40;
- Other Scottish Government Programmes – the condition of the trunk road and motorway network is integral to wider priorities such as active travel, development of connected and autonomous vehicle infrastructure and bus priority investment. This contributes to the low carbon economy and contributes to adapting to the impacts of climate change;
- Draft NPF4 makes a number of references to resilience, however the Northern revitalisation, North and west coastal revitalisation and Southern sustainability action areas both have a specific action on strengthening resilience.

Operation of the Strategic Transport Network

These next three recommendations support Transport Scotland's management of traffic across the strategic transport network.

9.6.5. Control Centre of the future (33)

New disruptive technologies such as Connected and Autonomous Vehicles (CAV) and Cooperative Intelligent Transport Systems (C-ITS) are expected to significantly change the way in which data from traffic is collected and how information is disseminated to travellers. The current Traffic Scotland National Control Centre (TSNCC) will have to evolve new approaches beyond the current standards to adapt to these challenges and to continue to deliver the Traffic Scotland Services into the future. The enhancement will look to progressively integrate all passenger and freight modes into the Control Centre as opportunities and technological advances arise.

STPR2 recommends require investment to enhance and future proof the capabilities of the current TSNCC, including how to plan for the future renewal and replacement of equipment, systems and services to maximise network operations and resilience.

This recommendation aligns with:

- Recommendations 14, 30, 31, 32, 34, 35, 38;
- Scotland's Road Safety Framework to 2030 – the enhanced functionality of new roadside ITS services align closely with this long-term vision for road safety where there are zero road fatalities and serious injuries by 2050;
- Draft NPF4 makes a number of references to resilience, however the Northern revitalisation, North and west coastal revitalisation and Southern sustainability action areas both have a specific action on strengthening resilience.

9.6.6. Incident Management System upgrade (34)

Traffic Scotland National Control Centre (TSNCC) uses the information it collects about roadworks, accidents, congestion and weather events to reduce disruption and improve the operational efficiency and safety of the network. A business critical part of the delivery of the TSNCC services is the Incident Management System (IMS), a core software system that supports management of and response to incidents, enhancing safety and network resilience.

STPR2 recommends upgrading the current IMS. This would address both current and future requirements in terms of both service delivery and also address the changes required to accommodate new disruptive technologies such as C-ITS and CAV. The new IMS would provide Transport Scotland with the ability to enhance the coverage, level and types of services across the network.

This recommendation aligns with:

- Recommendations 14, 30, 31, 32, 33, 35, 38;
- Scotland's Road Safety Framework to 2030 – the enhanced functionality of new roadside ITS services align closely with this long-term vision for road safety where there are zero road fatalities and injuries by 2050;
- Draft NPF4 makes a number of references to resilience, however the Northern revitalisation, North and west coastal revitalisation and Southern sustainability action areas both have a specific action on strengthening resilience.

9.6.7. Intelligent Transport Systems (35)

ITS can make a significant contribution in the overall safety of travel and support enhanced transport resilience, smoother journeys, quicker reaction to incidents and environmental improvements across the Scottish network.

ITS infrastructure is embedded within the transport network, and includes equipment such as variable message signage, lane control signals, CCTV, traffic monitoring devices and weather monitoring devices. This coverage helps to ensure the availability and quality of the existing transport networks and can be used to manage traffic flow and detect and manage incidents and hazardous weather conditions

STPR2 recommends investing in the expansion and renewal of Intelligent Transport Systems (ITS) Roadside Deployment to provide greater resilience across the networks and deliver a higher level of service to more road users. The enhanced functionality of new roadside ITS services would also contribute to reduced road accidents and the delivery of safer journeys.

This recommendation aligns with:

- Recommendations 14, 30, 31, 32, 33, 34, 38;
- Transport Scotland's Vision Zero – the enhanced functionality of new roadside ITS services align closely with this long-term vision for road safety where there are zero road fatalities and injuries by 2050;
- Draft NPF4 makes a number of references to resilience, however the Northern revitalisation, North and west coastal revitalisation and Southern sustainability action areas both have a specific action on strengthening resilience.

9.6.8. Strategy for improving rest and welfare facilities for hauliers (36)

Providing adequate lorry parks would contribute to improving road safety, reducing crime and would significantly improve working conditions for HGV drivers. It also avoids disruption in locations not designed to accommodate lorry parking. Rest and welfare facilities are a key part of national and international road freight infrastructure, and provision of these to an appropriate standard are therefore fundamental to ensuring safe, efficient and effective supply chains. Improvements to these would therefore also help support the Scottish economy and its growth.

STPR2 recommends a detailed national audit and review of support for lorry parks to address barriers hampering their development, consider their financial stability and develop adequate standards. This would include consultation with the freight industry, representative bodies, local authorities, and other stakeholders to collect views on the provision of lorry parks including where and what type of facilities are required and the potential demand for alternative fuel provision zero emission vehicles.

The audit would indicate which routes have gaps in provision and support Transport Scotland in making future decisions on the need (or otherwise) to address market failure.

This recommendation aligns with:

- Recommendations 28, 29, 39, 40, 41 and 44;
- Department for Transport Circular 02/2013 – the Strategic Road Network and the Delivery of Sustainable developments;
- Design Manual for Roads and Bridges CD169, 2021, The design of lay-bys, maintenance hard standings, rest areas, services areas and observation platforms.

9.6.9. Improving active travel on trunk roads through communities (37)

Where a trunk road passes through a community, measures may be able to be introduced to reduce the problems of severance and provide benefits for people that are currently prevented or discouraged from walking, wheeling or cycling along or across the main road. Such measures can reduce the adverse impacts of traffic, including perceived safety issues, and so improve access to key destinations for local people, creating particular opportunities for people vulnerable to social exclusion such as disabled, young and older people.

STPR2 recommends the delivery of packages of measures to reduce the adverse effects of trunk road traffic on people walking, wheeling and cycling in those communities that have a Trunk Road passing through them (for example, by reducing traffic speed, improving the width and quality of paths and upgrading road crossing facilities). Packages would be tailored to local circumstances and informed by detailed feasibility studies. Transport Scotland would work with local authorities and communities to deliver interventions on those parts of the network that it controls, to enable an increase in inclusive, sustainable travel within local communities.

This recommendation aligns with:

- Recommendations 1, 8, 10, 30 and 38;
- Scotland's Road Safety Framework to 2030, this recommendation would support the framework and goal of Vision Zero, aligning with the Safe Speeds pillar of the Safe System;
- Transport Scotland's Active Travel Framework which sets out a vision that "Scotland's communities are shaped around people, with walking or cycling the most popular choice for shorter everyday journeys.";
- Draft NPF4 20 minute neighbourhoods supporting Liveable Places.

9.6.10. Speed Management Plan (38)

Scotland's Road Safety Framework to 2030 sets out the vision for Scotland to have the best road safety performance in the world by 2030, with a long-term goal of Vision Zero, where there are zero fatalities and serious injuries on Scotland's roads by 2050. An ambitious interim target for 2030 involves halving the number of people being killed or seriously injured on Scotland's roads. The framework embeds the Safe System approach to road safety delivery, which consists of 5 key pillars focusing efforts not only on road traffic casualty reduction (vulnerability of the casualties) but also on road traffic danger reduction (sources of the danger). Safe Speeds is 1 of the 5 pillars, with speed limits in a Safe System based on aiding crash-avoidance and reducing the speed at which impacts occur, aiming to establish the appropriate speed limits according to the features of the road, function it serves and physical tolerance of those who use it.

Changing how speeds are managed also has the potential to help meet net zero emission targets by reducing vehicle fuel consumption. Reducing speed limits in communities can also improve the sense of place and encourage active travel, with a positive impact on emissions as well as health and well-being.

STPR2 recommends a national review to establish appropriate speed limits for different road types within Scotland. The plan would consider a range of measures such as speed management on motorways, speed limits through roadworks and rural settlements on trunk roads, and reducing speed limits in urban environments and residential areas as well as consideration of the national speed limits for Heavy Goods Vehicles over 7.5 tonnes on the trunk road network.

Depending on the extent to which speed limits may be changed, significant changes could be required to the engineering, enforcement and education framework and the resources necessary to support these. Enforcement and education forms part of the Changing Road User Behaviour (7) recommendation.

This recommendation aligns with:

- Recommendations 7, 10, 30, 33, 34 and 35, 37 and 40;
- Scotland's Road Safety Framework to 2030 - this recommendation would support the framework and goal of Vision Zero, aligning with the Safe Speeds pillar of the Safe System;
- The Climate Change (Emissions Reduction Targets) (Scotland) Act 2019 - sets targets to reduce Scotland's emission of all greenhouse gases to net zero by 2045 at the latest, with interim targets of 75% by 2030 and 90% by 2040.A change to how speeds are managed could help to meet these targets, with evidence suggesting that driving at 55mph instead of 65mph can reduce fuel consumption by 10% – 15%. Similarly, an increase in HGV speeds to a more fuel-efficient speed could result in emissions benefits.

9.7. Strengthening Strategic Connections

It is important that long distance strategic connections are maintained to facilitate travel within Scotland and across its border. Much of the strategic network is managed by Transport Scotland on behalf of Scottish Ministers and it is therefore appropriate for STPR2 to make a number of recommendations in this area. It also relevant and important that STPR2 addresses the role that connectivity plays in supporting the proposed national developments presented in the Fourth National Planning Framework (NPF4) and in facilitating passenger and freight movements through our major gateways.

Recommendations (39) and (40) address opportunities associated with access to two of the most significant gateways, and recognised in the NPF4 national developments, Grangemouth and Stranraer.

Addressing the needs of island communities to have reliable links to the mainland, STPR2 recommends investment in port infrastructure (42) and the investigation of some potential fixed link connections (bridges or tunnels) at Sounds of Harris and Barra, and between Mull and the Scottish mainland (41).

Recognising the important part that rail plays in facilitating longer distance journeys, STPR2 makes three core recommendations. These involve continued investment in the major rail stations in Edinburgh, Glasgow, Perth and Inverness (43), similar investment in future rail freight terminals (44), and Transport Scotland continuing to work with UK Government to take forward cross-border high speed rail connections (45).

9.7.1. Sustainable access to Grangemouth Investment Zone (39)

Grangemouth Investment Zone contains important strategic infrastructure, high value employment and manufacturing of materials that are currently vital for everyday life. It forms part of the draft NPF4 Industrial Green Transition Zones national development. As this role will continue in the long term, the zone must seek to decarbonise to contribute to the significant reduction of industrial carbon emissions required to meet Scotland's net zero targets. A sustainable transport access strategy would contribute towards this aim.

STPR2 recommends improvements are made to transport that will enhance sustainable access to Grangemouth Investment Zone for both people and freight. Improvements are likely to include but not be limited to:

- Improved active travel connections, in line with the principles of the Connected Neighbourhoods and Connecting Towns recommendations. These would be to Grangemouth from key areas, including neighbouring towns and stations.
- Enhanced bus connections to Grangemouth from key areas, including neighbouring towns and rail stations.
- Supporting further transition to rail freight, in line with the principles of Rail Corridor Enhancements, Mode Shift for freight, Rail Freight terminals and facilities, and Cross-border Rail enhancements to enable more rail freight capacity.
- M9 Junction 5 improvements for freight, including potential introduction of priority for HGVs where they provide specific freight benefits.

This recommendation aligns with:

- Recommendations that support connecting towns by active travel (39), support for rail freight (15,16,17, 27, 44, 45) and bus priority measures (39);
- Draft NPF4 National Development 8. Industrial Green Transition Zones. Draft NPF4 20 minute neighbourhoods supporting Liveable Places;
- The Falkirk Growth Deal – which includes funding for a number of projects in the Falkirk and Grangemouth area to aid the transition to net zero. This will partly be delivered through the Falkirk Central Sustainable Transport Hub and Green Travel Corridor project;
- Grangemouth Future Industry Board, that is working to align public sector initiatives focusing on this critical hub of industrial and economic activity that is vital to Scotland's economy, designed to ensure that the region maintains and develops its competitiveness now and in our net zero future.

9.7.2. Access to Stranraer and the ports at Cairnryan (40)

Stranraer and the ports at Cairnryan act as an important gateway to Scotland for ferry passengers and freight. Improving the transport assets in this location will support regeneration of the South West of Scotland to benefit the economy and local communities.

STPR2 recommends that safety, resilience and reliability improvements are made on the A75 and A77 strategic road corridors, in turn supporting placemaking opportunities. This will include, but is not limited to improving junctions, enhancing overtaking opportunities with WS2+1 or climbing lanes at appropriate locations where slow moving traffic leads to risky overtaking manoeuvres, and widening or realigning carriageways to alleviate 'pinch points' such as narrow structures or at stretches of older standard single carriageway.

These would provide more resilient connections to the draft NPF4 national developments at Stranraer Gateway, Chapelcross Power Station Redevelopment and the ports at Cairnryan.

Examples of locations of improvements schemes include:

- A75 Realignment around Springholm and Crocketford;
- A75 Cuckoo Bridge Roundabout;
- A77 Turnberry to Girvan;
- A77 Ballantrae to Smyrton;
- A77 Bellfield Interchange Improvements;
- A77 Dutch House Roundabout Improvements;
- A77 Whitletts Roundabout Improvements;
- A77 Holmston Roundabout Improvements.

To encourage greater use of public transport and support wider town regeneration proposals, consideration should also be given to upgrading or relocating Stranraer rail station.

This recommendation aligns with:

- Recommendations 30, 31, 32, 36 and 38;
- Draft NPF4 National Developments 11 Chapelcross Power Station Redevelopment and 18 Stranraer Gateway. This sits within the Draft NPF4 Southern sustainability action area and proposes that priorities for the area include creating liveable and connected places which benefit from investment and innovation. This recommendation contributes to these priorities and supporting actions, specifically that related to supporting sustainable development and strengthening resilience;
- The Borderlands Inclusive Growth Deal and Ayrshire Growth Deals;
- Dumfries and Galloway Local Development Plan 2 also outlines plans for the regeneration masterplan for Stranraer Waterfront.

9.7.3. Potential Sound of Harris, Sound of Barra fixed link and fixed link between Mull and Scottish mainland (41)

The current ferry routes on the Sound of Harris, Sound of Barra and between Craignure and Oban face a number of issues and challenges. Replacing ferry services with fixed links (bridges or tunnels) can improve reliability, connectivity, capacity and travel times.

A Sound of Harris fixed link would improve connectivity between the Uists and Lewis/Harris while a Sound of Barra fixed link would improve connectivity between Barra and the Uists. The provision of these fixed links would allow for the reconfiguration of transport provision within the Outer Hebrides and to the mainland.

The Craignure to Oban ferry route is one of the most popular and most capacity constrained routes for vehicles on the Clyde and Hebrides Ferry Services (CHFS) network and the service is forecast to continue to have challenges with vehicle deck capacity. The provision of a fixed link between Mull and the Scottish mainland would allow for the reconfiguration of transport provision between the island and the mainland.

STPR2 recommends that further work is undertaken on business cases to better understand the benefits, costs and challenges associated with these options. These studies would consider the feasibility of replacing existing ferry services currently delivered by CalMac as part of the Clyde and Hebrides Ferry Services (CHFS) contract. These studies would also ascertain the potential savings associated with the public sector subsidies required to operate the ferry services and involve input from communities that may potentially be affected.

This recommendation aligns with:

- This sits within the Draft NPF4 North and West coastal innovation action area and proposes that priorities include making sustainable use of our coasts and islands to sustain communities and pioneer investment in the blue economy. This recommendation contributes to these priorities and supporting actions.
- Islands Growth Deal – this is a 10-year programme of investment for the Outer Hebrides, Orkney and Shetland, with a target of creating up to 1,300 jobs and tackling depopulation concerns.
- Scottish Government, The National Islands Plan, 2019 which sets out a strategic objective to improve transport services – this will ensure that existing and future transport-related policies, strategies and services are fully island proofed so that they truly meet the needs of island communities.
- The Islands Connectivity Plan (ICP), which will replace the current Ferries Plan from January 2023, will have regard to aviation, ferries and fixed links, as well as connecting and onward travel. The Plan will include a long-term investment programme for new ferries and development at ports that will aim to improve resilience, reliability, capacity and accessibility, while increasing standardisation, cutting emissions and meeting the needs of both remote rural and island communities whilst providing value for money.

9.7.4. Investment in port infrastructure to support vessel renewal and replacement and progressive decarbonisation (42)

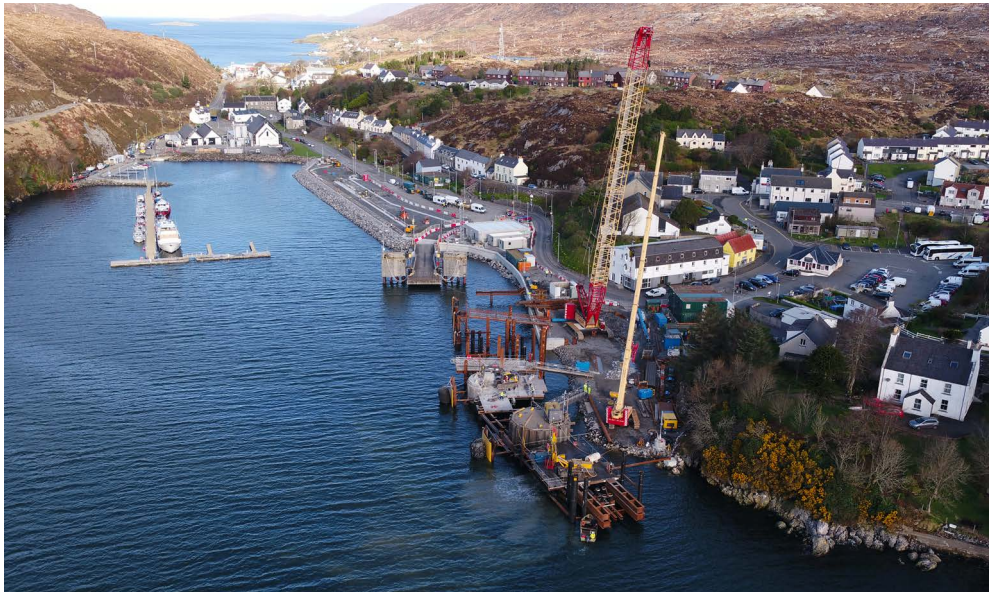
Investment in port infrastructure, including power supplies, would support the introduction of new and upgraded ferry vessels. This would help meet the needs of rural and island communities by improving the capacity, resilience, reliability and accessibility of ferry services.

Investment in port infrastructure means that there can be progression to standardisation of new vessels. This investment would also contribute to reducing emissions across the ferry network and support Scotland's net zero carbon emission targets.

STPR2 recommends an investment programme in port infrastructure, including power supplies, to support STPR2 recommendation (24) renewal and replacement of the Clyde and Hebrides Ferry Services (CHFS) and Northern Isles Ferry Services (NIFS) vessels including progressive decarbonisation by 2045.

This recommendation aligns with:

- Recommendation 18 and 24.
- Draft NPF4 National Development 7 – Islands Hub for Net Zero. This sits mainly within the Draft NPF4 North and West coastal innovation action area and proposes that priorities for the area include making sustainable use of our coasts and islands to sustain communities and pioneer investment in the blue economy. It also spans the North east transition and Central urban transformation areas. This recommendation contributes to these priorities and supporting actions.



Source: John Quinn

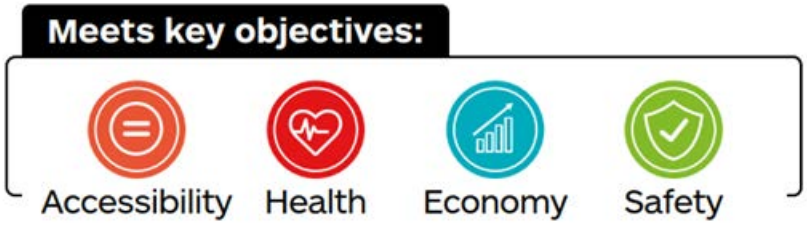
- 2018 – 2032 Climate Change Plan and the Climate Change (Emissions Reduction Targets) (Scotland) Act 2019 – are supported by progressive decarbonisation of the CHFS and NIFS ferry networks.
- Scottish Energy Strategy, 2017 – sets out the Scottish Government's vision for the future energy system in Scotland.
- Carbon Neutral Islands project – this has a commitment for at least three of Scotland's islands to become fully carbon neutral by 2040.
- Islands Growth Deal – this is a 10-year programme of investment for the Outer Hebrides, Orkney and Shetland, with a target of creating up to 1,300 jobs and tackling depopulation concerns.
- Scottish Government, The National Islands Plan, 2019 which sets out a strategic objective to improve transport services – this will ensure that existing and future transport-related policies, strategies and services are fully island proofed so that they truly meet the needs of island communities.
- The Islands Connectivity Plan (ICP), which will replace the current Ferries Plan from January 2023, will have regard to aviation, ferries and fixed links, as well as connecting and onward travel. The Plan will include a long-term investment programme for new ferries and development at ports that will aim to improve resilience, reliability, capacity and accessibility, while increasing standardisation, cutting emissions and meeting the needs of both remote rural and island communities whilst providing value for money.

9.7.5. Major station masterplans (43)

Network Rail, the UK agency responsible for developing and maintaining railway infrastructure, has identified capacity constraints at four major stations. Studies are continuing to progress plans to consider how remodelling these stations can deliver specific benefits:

- Edinburgh Waverley – improving its functionality, capacity and ambience as well as enhancing connectivity with other transport modes and its integration within the city centre.
- Glasgow Central – taking forward short-term infrastructure improvements to improve capacity, and considering longer term enhancements as part of Clyde.
- Perth – enhancing the station, to complement improvements to track and signalling on approaches to improve reliability, connectivity and enhance freight provision.
- Inverness – achieving better integration with the city centre to deliver benefits for passenger and freight service, both in the city and surrounding areas.

STPR2 recommends that station plans and masterplans are progressed to align with and support the investment priorities of Transport Scotland and Network Rail. The masterplan proposals would set the framework for future phases of work at the respective stations accommodate passenger demand in line with sustainable travel supporting net zero targets, and coordinate with regional activity by other strategic partners.



This recommendation aligns with:

- Recommendations 11,12,15,16,17, 25;
- Network Rail's Scotland Route Study – identified capacity constraints at Glasgow Central, Edinburgh Waverley, Inverness and Perth, and Scotland Route Study proposed remodeling of all four of the stations;
- Rail Corridor Period 6 – Network Rail's investment plan over the five years of CP6 (2019-2024);
- Economic growth plans of the four cities.

9.7.6. Rail freight terminals and facilities (44)

A sufficient provision of rail freight terminals is critical to achieving a significant shift of freight from road to rail. This would improve the competitiveness of Scotland's supply chain and help support the movement of freight from road to rail.

Rail freight works on a commercial basis and is carried out by private sector freight operating companies and logistical providers. The role of Government is to put policies and strategies in place that facilitate growth (with Network Rail managing the core rail infrastructure and the regulator regulating compliance, safety and issuing licences).

STPR2 recommends that Transport Scotland supports industry partners in carrying out an updated market study for rail freight growth in Scotland (linked to the 2019 industry growth plan) including a review of rail freight terminals/hubs to confirm how to meet long-term mode shift requirements.

In recognition of the environmental and social benefits of rail freight the Scottish Government supports a range of grants to help with the transfer of freight from road to rail. Freight Facilities Grants can help companies with the capital cost of providing freight handling facilities with revenue support grants available also, subject to a successful application and budget availability.

This approach to promoting and supporting the rail freight sector has previously been successful in facilitating projects such as the Highland Spring freight facility at Blackford, where Government, the rail industry and third party investors worked together to achieve significant modal shift to rail and could be a key model to follow for future projects.

The express/light logistics market (lighter freight carried on converted passenger trains) is a growing market and also has potential for capital grant support for freight handling infrastructure in selected locations including passenger stations.

This recommendation aligns with:

- Recommendations 15,16,17, 25;
- The Element Energy Report 'Decarbonising the Scottish Transport Sector' – this cited that 23 per cent of freight goods moved by road must be shifted to rail and ships by 2030 (the same as all freight movements over 240 miles);
- 2018 – 2032 Climate Change Plan and the Climate Change (Emissions Reduction Targets) (Scotland) Act 2019 – this outlines the plan to invest in measures that will encourage ethe growth in rail freight;
- Transport Scotland Rail Freight Strategy (2016) – this out the vision for a competitive, sustainable rail freight sector that will play an increasing role in Scotland's economic growth by providing a safer, greener and more efficient way of transporting products and materials.

9.7.7. High speed and cross-border rail enhancements (45)

Infrastructure upgrades to permit higher speeds on cross-border routes would enable faster journey times to London and other key destinations. This would encourage a shift from air to rail on longer-distance travel and support Scotland's net zero emission commitments. These improvements would also release capacity for enhanced regional passenger and freight services.

STPR2 recommends that Transport Scotland continues to work closely with the UK Government to take forward a programme of infrastructure on-line and off-line upgrades targeted at longer-distance cross-border routes. These will provide higher speed passenger services and increased capacity and reliability for freight.

This is likely to include the following routes:

- East Coast Main Line (ECML);
- West Coast Main Line (WCML);
- Glasgow & South Western line (Glasgow to Carlisle via Dumfries).

The Glasgow & South Western route would require significant upgrades to provide equivalent capability to the other two routes. Cost effectiveness of new alignments should be judged against providing quadruple track on existing corridors, especially in respect of land acquisition. This will require further assessment at future stages.

This recommendation aligns with:

- Recommendations 15,16,17, 25, 27, 43;
- Draft NPF4 National Development 13. High Speed Rail;
- The Decarbonising Scotland's Transport Sector report – this cited that 23 per cent of freight goods moved by road must be shifted to rail and sea by 2030 (the same as all freight movements over 240 miles);
- Strategic Case for HSR Phase 2a and 2b by the Department for Transport (2017);
- Integrated Rail Plan for North and Midlands.

9.8. Achieving the Desired Outcomes

The overall aim of STPR2 has been to develop a programme of recommendations that will guide the Scottish Government's transport investment programme in Scotland for the next 20 years to help to deliver the vision, priorities and outcomes that are set out in NTS2.

This has been achieved by conducting a Scotland-wide, evidence-based review of the performance of the strategic transport system. Building on evidence and groupings set out in the Case for Change Reports published in February 2021, an appraisal has been carried out on a regional and national basis against the TPOs and other criteria. The STPR2 TPOs are closely aligned to the NTS2 outcomes and other criteria as set out in STAG. The performance of the recommendations has been summarised in Figure 20, below. This highlights a snapshot of the benefits related to the recommendations. Under the TPOs are indicators of outcomes/benefits that the package of interventions is seeking to deliver. These benefits reflect aspects of the TPO sub-objectives (section 5.3). The Appraisal Summary Tables presented in Appendix H present the performance of the recommendations against the TPO and all the sub-objectives.

STPR2 objectives ▶	Protecting our Climate and Improving Lives									
	Net-Zero Emissions		Affordable and Accessible Public Transport		Places, Health and Wellbeing		Sustainable Inclusive Growth		Safe and Resilient	
Key themes and recommendations ▼	Benefits to Individuals, Communities and Organisations									
	More green transport options	Less pollution	More choice	Easier access	Better community environments	More healthier options	Access to key services and jobs	Connections to key markets	Safer travel	More reliable journeys
Improving active travel infrastructure	✓	✓	✓	✓	✓	✓	✓		✓	✓
(1) Connected neighbourhoods	✓	✓	✓	✓	✓	✓	✓		✓	✓
(2) Active freeways	✓	✓	✓		✓	✓	✓		✓	✓
(3) Village-town active travel connections	✓	✓	✓	✓	✓	✓	✓		✓	✓
(4) Connecting towns by active travel	✓	✓	✓	✓	✓	✓	✓		✓	✓
(5) Long distance active travel network	✓	✓			✓	✓	✓		✓	
Influencing travel choices and behaviours	✓	✓	✓	✓	✓	✓	✓		✓	✓
(6) Behaviour change initiatives	✓	✓	✓		✓	✓				✓
(7) Changing road user behaviour		✓			✓				✓	✓
(8) Increasing active travel to school	✓	✓		✓	✓	✓	✓		✓	✓
(9) Improving access to bikes	✓	✓			✓	✓				
(10) Expansion of 20mph limits and zones		✓		✓	✓	✓			✓	

STPR2 objectives ▶	Protecting our Climate and Improving Lives									
	Net-Zero Emissions		Affordable and Accessible Public Transport		Places, Health and Wellbeing		Sustainable Inclusive Growth		Safe and Resilient	
Key themes and recommendations ▼	Benefits to Individuals, Communities and Organisations									
	More green transport options	Less pollution	More choice	Easier access	Better community environments	More healthier options	Access to key services and jobs	Connections to key markets	Safer travel	More reliable journeys
Enhancing access to affordable public transport	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
(11) Clyde Metro	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
(12) Edinburgh & South East Scotland Mass Transit	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
(13) Aberdeen Rapid Transit	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
(14) Provision of strategic bus priority measures	✓	✓		✓	✓	✓	✓	✓		✓
(15) Highland Mainline rail corridor enhancements	✓	✓	✓			✓	✓	✓	✓	✓
(16) Perth-Dundee-Aberdeen rail corridor enhancements	✓	✓	✓			✓	✓	✓	✓	✓
(17) Edinburgh/Glasgow–Perth/Dundee rail corridor enhancements	✓	✓	✓			✓	✓	✓	✓	✓
(18) Supporting integrated journeys at ferry terminals	✓	✓	✓	✓	✓	✓	✓	✓		✓
(19) Infrastructure to provide access for all at railway stations	✓		✓	✓	✓		✓		✓	

STPR2 objectives ▶	Protecting our Climate and Improving Lives									
	Net-Zero Emissions		Affordable and Accessible Public Transport		Places, Health and Wellbeing		Sustainable Inclusive Growth		Safe and Resilient	
Key themes and recommendations ▼	Benefits to Individuals, Communities and Organisations									
	More green transport options	Less pollution	More choice	Easier access	Better community environments	More healthier options	Access to key services and jobs	Connections to key markets	Safer travel	More reliable journeys
(20) Investment in DRT and MaaS	✓	✓	✓		✓	✓	✓			
(21) Improved public transport passenger interchange facilities	✓	✓	✓	✓	✓	✓	✓	✓	✓	
(22) Framework for delivery of mobility hubs	✓	✓	✓	✓	✓	✓	✓		✓	
(23) Smart, integrated public transport ticketing	✓		✓	✓		✓	✓			
Decarbonising transport	✓	✓		✓	✓	✓		✓		
(24) Ferry vessel renewal and replacement and progressive decarbonisation	✓	✓		✓	✓	✓	✓	✓		✓
(25) Rail decarbonisation	✓	✓		✓	✓	✓				
(26) Decarbonisation of bus network	✓	✓		✓	✓	✓				
(27) Behaviour change and modal shift for freight	✓	✓			✓	✓		✓		✓
(28) Zero emissions vehicles and infrastructure transition	✓	✓			✓	✓				

STPR2 objectives ▶	Protecting our Climate and Improving Lives									
	Net-Zero Emissions		Affordable and Accessible Public Transport		Places, Health and Wellbeing		Sustainable Inclusive Growth		Safe and Resilient	
Key themes and recommendations ▼	Benefits to Individuals, Communities and Organisations									
	More green transport options	Less pollution	More choice	Easier access	Better community environments	More healthier options	Access to key services and jobs	Connections to key markets	Safer travel	More reliable journeys
Increasing safety and resilience on the strategic transport network	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
(29) Access to Argyll A83		✓					✓	✓	✓	✓
(30) Trunk road and motorway safety Improvements					✓		✓	✓	✓	✓
(31) Trunk road and motorway climate change adaptation and resilience							✓	✓	✓	✓
(32) Trunk road and motorway renewal for reliability, resilience and safety					✓		✓	✓	✓	✓
(33, 34, 35) Enhancing Intelligent Transport Systems		✓	✓		✓		✓	✓	✓	✓
(36) Strategy for improving rest and welfare facilities for hauliers					✓		✓	✓	✓	

STPR2 objectives ▶	Protecting our Climate and Improving Lives									
	Net-Zero Emissions		Affordable and Accessible Public Transport		Places, Health and Wellbeing		Sustainable Inclusive Growth		Safe and Resilient	
Key themes and recommendations ▼	Benefits to Individuals, Communities and Organisations									
	More green transport options	Less pollution	More choice	Easier access	Better community environments	More healthier options	Access to key services and jobs	Connections to key markets	Safer travel	More reliable journeys
(37) Improving active travel on trunk roads through communities	✓	✓		✓	✓	✓			✓	
(38) Speed management plan		✓			✓		✓		✓	✓
Strengthen strategic connections	✓	✓	✓		✓	✓	✓	✓	✓	✓
(39) Sustainable access to Grangemouth Investment Zone	✓	✓	✓	✓	✓	✓	✓	✓		✓
(40) Access to Stranraer and ports at Cairnryan	✓			✓	✓		✓	✓	✓	✓
(41) Potential fixed links in Outer Hebrides and Mull				✓			✓	✓		✓
(42) Investment in port infrastructure	✓	✓		✓	✓		✓	✓		
(43) Major station masterplans				✓	✓	✓	✓	✓	✓	
(44) Rail freight terminals and facilities	✓	✓					✓	✓	✓	✓
(45) High speed and cross border rail enhancements	✓	✓	✓			✓	✓	✓	✓	✓

Figure 20 – STPR2 Contribution of Recommendations to Benefits

These recommendations, as well as performing well in their own right, combine to create a holistic package, that addresses the wide ranging strategic transport challenges and opportunities across the country. The paragraphs below summarise the impact of the combined suite of recommendations against the five TPOs.

9.8.1. Contributing to the Government's Net Zero Target

To achieve the Scottish Government's commitments towards net zero emissions, there will need to be a noticeable reduction in overall travel, and a switch to more sustainable modes. Some of the levers required to address the first point are outside of the scope of STPR2 (for example land use planning, and financial demand management measures). Nonetheless, the majority of the 45 draft recommendations contribute directly towards this objective. The particular focus of these recommendations is on:

- decarbonising the transport system (24)(25)(26)(27)(28);
- providing greater opportunities for people to walk, cycle or wheel (1)(2)(3)(4) (5)(8)(9);
- delivering transformational change in Aberdeen, Edinburgh and South East Scotland and Glasgow city regions through investment in mass/rapid transit (11)(12)(13); and
- delivering a competitive public transport alternative to the private car, to generate mode shift (14)(15)(16)(17)(18)(19)(20)(21)(22)(23)(43).

At the heart of the recommendations are those that are associated with decarbonising the transport system covering all motorised forms of transport encompassed by the review. STPR2 is crucial to achieving the government's goals around net zero and is a key (but not the sole) enabler of the policy ambition to achieve a 20 per cent reduction in car kilometres by 2030. A route map to achieve this level of reduction in car kilometres by 2030 was published on 13 January 2022.

Expanding on this, the recommendations of STPR2 are crucial to the achievement of the systemic change that is required to achieve a 20% reduction in car kilometres. Whilst the STPR2 recommendations do not deliver the reduction in car kilometres needed, the recommendations of STPR2 facilitate the wider systemic changes, particularly away from private car use to sustainable travel that are required.

It is acknowledged that some of the recommendations of STPR2 relate to the achievement of existing commitments and targets. For example, rail decarbonisation was announced in the Rail Decarbonisation Action Plan in July 2020. Similarly, decarbonisation of the bus fleet has already been announced with a commitment to replace half of diesel buses by 2023 and move towards a zero-emissions bus fleet. There will be further carbon savings from the decarbonisation of the ferry fleet.

The recommendations for significant investment in active travel across the country are directly targeted at the shorter distance trips that could be made by non-motorised modes. The impacts of these will vary between urban and rural areas, but these would deliver a step-change in the number people walking, cycling and wheeling. Output from the appraisal process indicates that the comprehensive introduction of all the active travel measures could result in an overall increase in cycling from less than 2% currently to almost 20% of all trips, and walking from approximately 20% currently to 25% of all trips.

To complement the active travel measures, a number of recommendations aim to encourage greater use of public transport in both urban and rural communities. Recognising the need to deliver a transformational change where demand for travel is at its highest, the mass/rapid transit recommendations for Aberdeen, Edinburgh and South East Scotland, and Glasgow city regions would result in a step change in provision of public transport services delivering a modal transfer from private car and reducing levels of congestion, and consequently emissions.

In summary the overall contribution of the recommendations relating to this TPO include:

- the combination of the STPR2 recommendations, existing commitments and wider policy ambition (as illustrated in the route map published on 13th Jan) will enable the achievement of a 20% reduction in emissions by 2030 and a 90% reduction by 2045 compared with taking no action;
- increase in cycling from less than 2% currently to almost 20% of all trips;
- reduction in distance travelled of 750million (2%) car kilometres;
- a comprehensive alternative to the private car, particularly in our larger urban areas.

STPR2 is a crucial component of Scotland's journey to Net Zero emissions and will, in conjunction with existing commitments and other policy ambitions, enable a reduction in 90% (from 2019 level) of the CO_2 equivalent emissions associated with Transport. It will not do so on its own but provides the crucial infrastructure required to deliver this change.

9.8.2. Affordable and Accessible Public Transport

In 2020, 28% of households had no access to a private car. This proportion was even higher within areas experiencing social deprivation (48% in the areas ranked in the top 20% most deprived SIMD data zones in Scotland). Recognising this, the recommendations from STPR2 will make public transport more affordable and accessible by:

- expanding the availability of Demand Responsive Transport and Mobility as a Service in rural areas (22);
- creation of a national integrated ticketing system (23);
- delivering transformation change in Aberdeen, Edinburgh and Glasgow through investment in mass/rapid transit; (12)(13)(14);
- providing strategic bus priority measures (15) and
- providing a more accessible and seamless interchange between modes (18)(19)(21)(22)(43).

The expansion of Demand Responsive Transport and Mobility as a Service would achieve more equitable access to the public transport network, and can also enhance access to employment, education, healthcare and leisure activities, and integrate with other services and other modes.

Taking forward the integrated ticketing scheme and the infrastructure improvements at stations will deliver a more seamless experience for public transport users, from the point of purchasing tickets through to the completion of the journey. This will result in more affordable and better connected journeys in comparison to those available today. Output from the appraisal process indicates that the introduction of these measures would greatly enhance the accessibility to key services by public transport. For example, approximately 100,000 more people (2 percentage point increase) would be able to access a major hospital in under 30 minutes by public transport, and approximately 55,000 more people would be able to access a higher education site in the same time.

Although the STPR2 recommendations don't cover the direct costs of travel (eg fares, fuel price), the package of recommendations would see a small reduction in transport poverty[15], due to the overall improvements to access and connectivity between modes.

As outlined in the previous section, the expansion of mass transit in Aberdeen, Edinburgh and South East Scotland and Glasgow city regions would deliver transformational change, with a subsequent significant increase in public transport trips across the city regions.

15 Transport poverty defined as the spend on transport as proportion of income.

In summary the overall contribution of the recommendations relating to this TPO include:

- improved access to key services;
- a more competitive and accessible public transport system for all;
- fewer people experiencing transport poverty; and
- provision of effective and tailored public transport services to meet the needs or rural communities.

We live in a society where a significant proportion of the population rely on public transport. By working in collaboration with local authorities and transport providers, Transport Scotland can deliver a step change in public transport provision. Across the country there will be a noticeable improvement in terms of accessing key services by public transport. This will be most pronounced in the large urban areas.

9.8.3. Enhancing Places, and Supporting Health and Wellbeing

STPR2 has been undertaken in parallel with the fourth National Planning Framework (NPF4), a Draft of which was laid in the Scottish Parliament on 10 November 2021. NPF4 and STPR2 are aligned in seeking to develop and create:

- sustainable places – where we reduce emissions and restore and better connect biodiversity;
- liveable places – where we can live better, healthier lives;
- productive places – where we have a greener, fairer and more inclusive wellbeing economy; and
- distinctive places – where we recognise and work with our assets.

Although specific interventions associated with land-use and place planning are outside the scope of STPR2, the review has focused on the transport interventions required to create successful places. The following measures support the six qualities of successful places (designed for lifelong health and wellbeing; safe and pleasant; well-connected and easy to move around; distinctive; sustainable and adaptable) as outlined in the draft NPF4:

- expansion of 20 mph zones across communities (10);
- providing high quality active travel routes connecting neighbourhoods to each other and to key services, including schools (8);
- implementation of active travel measures to reduce the impact on communities with a trunk road passing through (37); and
- behavioural change campaigns to influence travel choice (6)(7)(8).

Around a third of trips under one kilometre (Source: Transport and Travel in Scotland, 2019, Table TD2a) are currently made by motorised transport, with many of these being to local services within communities. For trips between one and two kilometres, the proportion rises to 55%. The combination of recommendations associated with connected neighbourhoods, expansion of 20 mph zones and behaviour change would create an environment where walking, cycling or wheeling becomes the preferred, safest and most effective mode of travel for short trips.

The expansion of the current initiatives to provide active/safe routes to school would, in many areas, complement the measures associated with connected neighbourhoods. Likewise, incorporating behaviour campaigns alongside the infrastructure measures to create attractive routes, would result in a longer-term embedded behaviour towards favouring non-motorised travel in the next generation.

In some communities, the trunk road has a negative impact on the local environment. The measures recommended will address this in locations where this issue is particularly significant. Whilst the specific nature of the recommendations will be developed post-STPR2, it is anticipated that these will reduce severance, and encourage a greater use of active modes within communities.

If the active travel and behaviour change recommendations of STPR2 were implemented comprehensively throughout Scotland, estimated mode share of all journeys that are undertaken by walking would increase from around 20% at present to 25%, and those by cycling from less than 2% to almost 20%.

In summary the overall contribution of the recommendations relating to this TPO are:

- a substantial increase in active travel, especially for short journeys, with cycling trips accounting for up to 20% of all trips;
- communities less impacted by the trunk road;
- more attractive and higher-quality places, accessible to more people; and
- an estimated 260 premature deaths would be saved per annum as a result of increased physical activity, resulting in a £10-15bn benefit over 60 years.

NPF4 and STPR2 are aligned in seeking to develop and create sustainable, liveable, productive and distinctive places. A core thread of the STPR2 recommendations is the transport components to deliver these places; primarily through the step change in active travel, which is forecast to result in these modes accounting for a significant proportion of all trips by 2045.

9.8.4. Contribution Towards Sustainable Inclusive Growth

The strategic transport network plays a vital role in achieving continued inclusive growth, recognising the contrasting needs of the population. Much of the strategic network is managed by Transport Scotland and it is therefore appropriate for STPR2 to make a number of recommendations in this area. It is also relevant and important that STPR2 addresses the role that connectivity plays in supporting the National Developments as presented in Draft NPF4, and in facilitating movement of people and freight movements through our major gateways. This has been achieved by recommending:

- programme of enhancements to core longer-distance rail corridors (15)(16)(17)(45);
- enhanced connectivity to island communities (18)(41)(42);
- package of measures to enhance freight facilities (27)(36)(44); and
- improved access to National Developments and gateways, at Stranraer Gateway and Grangemouth (18)(39)(40).

Enhancing the rail network, focusing on the longer-distance corridors connecting the cities, would result in an increase in public transport mode share and consequential reduction in overall transport emissions. The improved reliability associated with the electrification and targeted infrastructure improvements would also reduce the level of delays experienced by users.

The package of rail interventions would see enhancements to encourage the transfer of freight from road to rail, which would help to support a **forecast 40% increase** in railway freight tonne km by 2043/44 from 2015. The most significant increase would be experienced on the cross-border route as a result of the improvements to the West Coast Main Line, Glasgow and South Western line and East Coast Main Line.

Many of the recommendations would result in improved access to employment opportunities, particularly by public transport. With the STPR2 recommendations in place, 60% of the population will be able to access employment opportunities within 60 minutes by public transport, an increase of approximately 5 percentage points.

The Island Connectivity Plan will consider detailed operation and provision of Clyde, Hebrides and Northern Isles Ferry services between the islands and the Scottish mainland. In advance of this, STPR2 has identified three potential areas where the introduction of a fixed link could transform connectivity and economic activity: Sounds of Harris and Barra, and a connection from Mull to the mainland. Output from this review suggests that these connections could provide a positive economic impact, when considered against the alternative of ongoing subsidies to existing ferry services.

STPR2 recommendations support the draft NPF4 national spatial strategy for Scotland including its associated action areas. The Scottish Government has identified a number of national developments within the draft NPF4, some of which are STPR2 recommendations. Transport connectivity will play a key role in realising the benefits of these and the national spatial strategy. A number of draft National Developments are already supported by transport investment, while others will be supported by the range of transport interventions that STPR2 recommends. In addition to these, two draft NPF4 developments have been highlighted within STPR2 as requiring intervention at a strategic level (Stranraer and Grangemouth), with both also acting as major gateways. The recommendations would enhance reliability and resilience, and encourage travel by sustainable modes.

In summary the overall contribution of the recommendations relating to this TPO are:

- £15-20bn benefits to the Scottish economy[16]
- improved access to employment opportunities by public transport
- improved transport access to draft national developments
- significantly enhanced opportunities for facilitating freight movements by rail, with benefits to the economy of up to £100m.

The strategic transport network plays a vital role in achieving continued inclusive growth. By targeting investment to improve access to employment opportunities and key services, the package of measures is forecast to generate approximately £15-20bn benefits to the Scottish economy.

16 These relate to economic, health benefits and accident savings from the appraisal tools

9.8.5. A Reliable and Resilient Strategic Transport System that is Safe and Secure for Users

Transport Scotland is the roads authority for the Scottish Trunk Road and Motorway network. It is Scottish Ministers' single biggest asset, with a gross asset value of over £20 billion. Transport Scotland is also committed to measures to improve the resilience of the rail network, although much of this investment lies out with the scope of STPR2. However, the review has identified a range of specific measures that would supplement those carried out as part of Transport Scotland's core responsibilities:

- programme of measures on the trunk roads to improve safety, resilience, and address climate change, with immediate focus on the A83 (29)(30)(31)(32)(38);
- enhancements on the rail network to improve resilience (15)(16)(17);
- expansion of Intelligent Transport System across all modes (33)(34)(35); and
- addressing active travel impacts of trunk roads on local communities (37).

Plans for enhancing the rail network should be integrated, including measures to improve the reliability and resilience at key locations which are known to cause delays. As a result of this investment, whilst there may not be any significant reduction in journey times, it would be expected that the frequency and length of delays caused by engineering and operational incidents would be reduced.

On the trunk road network, the primary focus of the improvements programme is aimed at reducing the number and severity of accidents. Therefore, whilst the specific nature of the recommendations will be developed post-STPR2, it is anticipated that these would reduce the overall number of incidents, and the proportion that result in those Killed and Seriously Injured (KSI).

ITS has an increasingly important role to play in contributing to road safety and towards the efficient management and operation of the Scottish national transport networks. The upgrading of the existing Traffic Scotland Control Centre to cover all modes, and the expansion of the overall Intelligent Transport Systems, will make a significant contribution in the overall safety of travel and support enhanced transport resilience, smoother journeys, quicker reaction to incidents and environmental improvements across the Scottish network.

The specific intervention proposed for the A83 is forecast to deliver between £40-50m of benefits through improved resilience through the avoidance of closures impacting the route and the business and communities that rely upon it for access.

In summary, the overall contribution of the recommendations relating to this TPO are:

- at the national level the recommendations would result in a reduction in total accident numbers of approximately 90,000[17] (or approximately 3%);
- the strategic transport network will be more resilient, resulting in fewer closures and impacts on those using the network; and
- the expansion of the current ITS services will provide greater resilience across the networks and delivery a higher level of service to more road users.

STPR2 recommendations recognise the need for continued investment in the strategic transport network to achieve the vision for Scotland to have the best road safety performance in the world. Over the next 60 years it is forecast that there would approximately 90,000 fewer accidents on the road network. The investment will also deliver a more reliable and resilient multi-modal network, with a particular focus on meeting the needs of the rural and island communities.

9.9. Regional Packages

The principal benefit of developing a series of recommendations across the whole country is that it maintains an element of consistency (i.e. the same general recommendation is developed for the same problem/opportunity in multiple locations). However, these overall recommendations then need to be tailored to respond to the regional problems and opportunities identified when identifying specific locations for interventions in particular parts of the country. This has been achieved by developing a series of regional packages that incorporate those recommendations above that are relevant to that particular region. Moving forward, additional detail will be developed for these regional packages to ensure that the overall benefits are maximised, whilst still aligning to the overall objectives of STPR2.

Full details of the regional packages and the output from the appraisal are reported in the ASTs contained in Appendix H.

17 This refers to the area covered by the Transport Model for Scotland

9.10. Additional Considerations

9.10.1. Island Connectivity Plan

Over the course of STPR2, significant work has been undertaken to reflect on the key problems and opportunities facing Scotland's islands and remote communities with regards transport connectivity. As a result of this work, and from stakeholder input and engagement, there is an evidence base to assist in shaping the future development of the Clyde and Hebrides Ferry Services (CHFS) serving the Outer Hebrides, Mull, Islay, Arran and Kintyre as well as the Northern Isles Ferry Services (NIFS) routes to Shetland and Orkney.

Transport Scotland will use this evidence base along with the development of STPR2 recommendations 18, 24, 41 and 42 to inform the development of the Islands Connectivity Plan.

The Islands Connectivity Plan (ICP), which will replace the current Ferries Plan from January 2023, will support the delivery of NTS2 priorities and the National Islands Plan. It will include a long-term investment programme for new ferries and development at ports that will aim to improve resilience, reliability, capacity and accessibility, while increasing standardisation, cutting emissions and meeting the needs of island communities whilst providing value for money.

The Plan will undertake a ferry fares policy review alongside our wider Fair Fares review. It will explore and consult on pathways to zero/low emission ferry transport. We will work with communities, businesses and ferry operators to explore ways of making better use of available ferry capacity for people, vehicles and freight, and to enable more sustainable travel opportunities. Following engagement and consultation in 2022, the aim is to publish a draft Plan for consultation by the end of the year.

9.10.2. Aviation Strategy

Aviation, globally and in Scotland, is facing two significant challenges: recovering from COVID-19 and reducing its environmental impact.

In developing Transport Scotland's aviation strategy consideration is being given to how we can work with others to address these two challenges, paving the way for restoring and growing Scotland's connectivity in a way that reduces the environmental impacts of aviation.

Aviation is also essential to many of our island communities, enabling access to services and helping to deliver our National Islands Plan. Although in many cases flying is already the lowest emission option, or no different to the next alternative, our aviation strategy will also consider how we can best achieve our aim of having low/zero emission air services within Scotland that meet the needs of communities and help deliver sustainable economic growth.

9.10.3. Extension of Borders Railway

The Borderlands Inclusive Growth Deal includes up to £10m of funding, £5m from the Scottish Government and £5m from the UK Government, to develop a shared understanding of the benefits and challenges of options to extend the Edinburgh – Tweedbank Borders Railway to Carlisle. This will include the undertaking of feasibility work to further develop the business case for the reinstatement of the railway. The Scottish Government will continue to work with Borderlands Partners on this commitment.

9.10.4. A96 between Aberdeen and Inverness

At the commencement of STPR2, the dualling of the A96 between Aberdeen and Inverness was classed as a committed project, therefore was out of scope of STPR2.

In August 2021 the Scottish Government and Scottish Green Party Parliamentary Group published their Cooperation Agreement and shared policy programme, titled the Bute House Agreement. In the shared policy programme, various agreed principles regarding investment in the transport network were set out.

In relation to the A96, the following was noted:

- "The Scottish National Party and Scottish Green Party have and will maintain distinct positions of the dualling of the A96. However, as part of this agreement, the Scottish Government will take forward a transport enhancements programme on the A96 corridor that improves connectivity between surrounding towns, tackles congestion and addresses safety and environmental issues. This will include
  - dualling from Inverness to Nairn
  - bypassing of Nairn, Keith, Elgin and Inverurie accompanied by measures to remove through traffic from the by-passed town centres
  - targeted road safety improvements where needed, for example between Fochabers and Huntly and Inverurie to Aberdeen
  - the development of an A96 "Electric Highway"

The Agreement goes on to state "The current plan is to fully dual the A96 route between Inverness and Aberdeen. We agree to conduct a transparent, evidence-based review to include a climate compatibility assessment to assess direct and indirect impacts on the climate and the environment. This will report by the end of 2022."

Given the above, STPR2 recommends that the A96 Corridor review is undertaken in accordance with STAG. The review should consider the transport problems and opportunities on the A96 corridor, changing policy context and other relevant considerations such as development aspirations for the corridor and surrounding area. The review should also include a Climate Compatibility Assessment, Strategic Environmental Assessment and Design Manual for Roads and Bridges Stage 1 Assessment.

Since the publication of the A96 Strategic Business Case in 2014, there have been updates to the policy context, including publication of NTS2 and Delivery Plan, Climate Change Plan Update 2018 -2032, draft NPF4 and 20% Car Kilometre Reduction Route Map. A policy context refresh will therefore be required. Given the strategic importance of the A96 Dualling Programme, it is particularly important that national policies are taken into consideration alongside regional and local policies.

It is expected that the review will take account of the work undertaken as part of STPR2, particularly in relation to the policy review and establishment of the Transport Planning Objectives, which align with the NTS2 priorities and outcomes. It is also expected that the review will develop interventions taking cognisance of the Sustainable Travel Hierarchy and Sustainable Investment Hierarchy set out in NTS2.

Appendix I presents an initial review of the above policies and strategies within the context of the A96.

The review, which is underway, will report by the end of 2022.

9.10.5. Fair Fares Review

Transport Scotland's Fair Fares Review is part of a broader package of work being taken forward to ensure that there is a viable and sustainable transport system for the future. Immediate priorities for this work include ensuring that our transport system is aligned with the prevailing COVID-19 conditions, and the forthcoming updated Covid-19 Strategic Framework, providing up to date guidance and communications support to passengers and operators, and securing a safe and confident return to public transport at the right time as we recover from the pandemic.

The Fair Fares Review, which is currently in its planning stages, is being undertaken to ensure a sustainable and integrated approach to public transport fares in the future. The review will look at the range of discounts and concessionary schemes which are available on all modes including bus, rail and ferry. It will take cognisance of the cost and availability of services, and will consider options against a background where the costs of car travel are declining and public transport costs are increasing.

Given the present state of the pandemic, Transport is currently considering how stakeholders can most effectively engage with the review and further details on this and on the timescale for the review will be provided to Parliament in due course.

9.10.6. Governance Review

The National Transport Strategy review of transport governance identified that this work is complex and further detailed consideration is needed to determine the exact form of a regional model(s), allowing for spatial variation, and to develop proposals capable of implementation. Transport Scotland has convened a Transport Governance and Collaboration Review Group with representation from regional transport partnerships to take forward the further work required.

Governance arrangements must support delivery of statutory Climate Change targets. We are working collaboratively with COSLA, SOLACE and Regional Transport Partnerships on transport governance, looking to develop implementable models. This is within the context of the Local Governance Review.

9.10.7. Funding Considerations

STPR2 presents the Strategic Business Case for the recommendations presented. After this consultation stage, the next stage will be further development of the recommendations, providing more detailed Business Cases to inform the investment decision making process. These will inform the Scottish Government's future spending as part of the overall investment programme in transport. As development and business case work progresses, projects may become commitments with funding and a delivery programme. Or it may be determined that a recommendation is not a priority for investment or that it is of high priority.

Given the updated financial position following the UK Spending Review, the new Shared Policy Programme commitments, and the ongoing pressure facing the construction sector relating to market conditions, a targeted review of the Scottish Government's Resource Spending will be undertaken in early 2022 and alongside this the Capital Spending Review undertaken in 2021 will be revisited in the light of the changes from UKG. In conducting such a review, the Scottish Government remains committed to the principles set out in the IIP and the recommendations of the Infrastructure Commission for Scotland i.e. maintaining the vision for future infrastructure to support and enable an inclusive net zero emissions economy.

The Resource Spending Review Framework was published on 09 December 2021, and the Resource Spending Review findings will be published later in 2022 to give greater financial certainty and focus on long-term priorities The idea of aligning strategy, project and programme funding is to increase confidence that the announced plans are affordable and fully funded going forward.

While the upcoming targeted reviews of Capital and Resource spending will provide greater certainty about near-term spending plans, Scottish Government cannot be certain at this point about the capital budget and the affordability of infrastructure investment proposals beyond 2025/26. Ongoing work will therefore be required to consider the final recommendations of the STPR2 and whether there is sufficient budget available to cover the Scottish Government's contribution to the delivery of the recommendations beyond 2025/26.

10. Next Steps

10.1. Providing Feedback – Public and Stakeholder Consultations

Following publication of this Draft Technical Report, a consultation process will be undertaken to gather feedback from stakeholders and the public on the recommendations to encourage a genuine change in transport provision. The public consultation process is expected to commence on 20 January 2022 for a minimum of a 12 week period.

The consultation process will involve seeking the views of statutory consultees, wider stakeholders and the public on the processes, findings and recommendations set out within the Summary Report and also this Draft Technical Report, the accompanying statutory SEA document and the corresponding impact assessments. It will also seek views on the prioritisation of the recommendations.

A key element of this consultation process will be the public consultation, in this case hosted through the Scottish Government's Citizen Space consultation portal.

10.2. Post-Consultation

It should be noted that at this stage the findings and recommendations set out within this report are not committed to by the Scottish Government. Subject to the statutory consultation period, the recommendations will be finalised and commitment will be subject to prioritisation and decisions taken through spending review and budget processes.

Neither are the interventions contained within the findings and recommendations the sole responsibility of Transport Scotland to deliver, indeed many will rely on working together with local authorities, regional transport partnerships and other stakeholders to take forward, subject to suitable funding being available.

Following the statutory consultation process, all feedback received will be collated and reviewed and used to inform a Delivery Plan which is expected to consider issues including the prioritisation and programming of the STPR2 recommendations; the approach to partnership working; proposals for delivery; proposals for funding; and future review process and timescales.

In addition, the feedback received will be used to inform and finalise the SEA and Impact Assessments and this will be discussed in more detail in the Environmental Report.

It should be noted that transport interventions not recommended by STPR2 may still be appropriate to be taken forward at regional and local levels, however any request for funding from the Scottish Government, will require demonstration of the benefits and impacts of the transport proposal through the usual business case and transport appraisal process required by Transport Scotland.

A further consideration relates to the timetable for the Fourth National Planning Framework (NPF4). Given the need to align STPR2 and NPF4, should changes be made to NPF4 that have implications for STPR2 these will need to be considered prior to finalising STPR2.

10.3. Monitoring and Evaluation Framework

10.3.1. Overview

Following implementation of a project (or intervention), monitoring and evaluation are carried out to assess the performance against the original appraisal.

The monitoring stage sets out to gather and interpret information on the performance of a committed and implemented project. The Monitoring Plan should form an integral part of the development and implementation of a project, selecting measurable indicators of progress towards meeting the TPOs, performance against the STAG Criteria and evaluating the impacts of the project on established policy directives.

Evaluation is a specific post-implementation event designed to identify whether or not a project is performing as originally intended, whether, and to what extent, it is contributing to established policy directives and whether the implemented project continues to represent value for money. An evaluation will use information gathered for monitoring purposes but will also involve data gathering, analysis and detailed interpretation that is particular to the evaluation itself.

Evaluation should consider the following:

- **Process Evaluation** – conducted at an early stage in the existence of a project and concerned with how well the project has been implemented.
- **Outcome Evaluation** – conducted once the project has been in existence for a sufficient period to enable an examination to be undertaken of actual performance against identified targets, looking for clear and measurable outcomes from the project.

The Post-Appraisal stage is important as it determines whether a project has been successfully implemented or not. Monitoring allows ongoing assessment of a project's success, identifying any areas of under-performance, and factors causing under-performance, thus allowing practitioners to implement appropriate changes at an early stage. Evaluation considers whether a project represents a good use of resources, whether a programme or project has achieved its intended outcomes, and whether value for money could be improved, and, if so, how best to achieve this. Through evaluation, lessons can be learnt to aid the planning and implementation of future projects.

10.3.2. STPR2 Post-Appraisal Approach

The approach to monitoring and evaluation of STPR2 post implementation will focus on four key aspects:

1. Overall impact on objectives/outcomes
2. Individual project and programme level evaluation
3. Process evaluation and contribution analysis
4. Continuous review

1. Overall impact on objectives/outcomes – the objectives of STPR2 align closely with the priority areas of NTS2. A bespoke monitoring and evaluation framework for NTS2 has already been published outlining high level indicators that inform progress of the strategy. The indicators developed for NTS2 will be used to track performance of STPR2 projects and programmes, providing annual updates where appropriate and reflecting changes in trends over time.

2. Individual project and programme level evaluation – as individual projects and programmes under STPR2 progress, each one, where appropriate, will be subject to its own evaluation, as outlined in STAG Appraisal Guidance. For example, large road schemes will be subject to Scottish Trunk Road Infrastructure Project Evaluation (STRIPE) framework. Similarly, large rail projects will be evaluated using the Guidance for the Evaluation of Rail Projects. These evaluations will report on individual project/programme objectives but also should demonstrate impact against the STPR2 objectives and NTS2 Priorities.

3. Process evaluation and contribution analysis – to understand the impact of STPR2 overall. It is recommended that a process evaluation is undertaken once STPR2 recommendations are established. This will look specifically at how STPR2 works in practice, and what works well; for example, the collaborative practice involved in how programmes and projects were recommended for implementation. A contribution analysis is an approach to assessing the performance of policies and programmes towards an outcome or outcomes. This analysis will draw on the evidence generated from individual level evaluations to understand the extent to which STPR2 projects and programmes have contributed to STPR2 objectives and NTS2 priorities.

4. Continuous Review – it is recommended that a review process is established to ensure projects recommended for implementation remain on track and are delivering against milestones and deadlines. Much of this information will be captured by individual project monitoring but recommended that this is brought together to inform the overall progress of STPR2.

10.3.3. SEA Post Adoption Statement

A statutory requirement of the SEA is the requirement to publish a Post Adoption Statement.

There is no specific timescale for publishing the Post Adoption Statement and the Act simply states that it should be published 'as soon as reasonably practicable' after the adoption of a qualifying plan. This Statement will:

- Describe how the Environmental Report and the opinions of those consulted are taken into account in finalising and adopting the STPR2 recommendations and how the SEA has responded to consultation comments;
- Describe the reasons for choosing the STPR2 recommendations, in the light of other reasonable alternatives considered; and
- Include the final environmental monitoring programme for STPR2 implementation.

10.4. Consultation Details

Comments can be provided via the following methods:

Website: **transport.gov.scot/stpr2/**

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Appendices