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## Forth Replacement Crossing Study Report 2 : Gaps and Shortfalls



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## EXECUTIVE SUMMARY

### INTRODUCTION

The Scottish Executive and Transport Scotland are investing more than £3 billion on transport infrastructure projects to 2012, across all modes of transport. This includes providing funding for local authorities and their partners to improve transport.

Scottish Ministers are committed to a Strategic Transport Projects Review (STPR) and Jacobs supported by Faber Maunsell were commissioned by Transport Scotland to provide technical advice to the study. In conjunction with the main study there is a Forth Replacement Crossing Study (FRCS) which due to concerns over cable corrosion on the existing Forth Road Bridge is being undertaken in a shorter timescale to the STPR.

This report focuses specifically on establishing the high level expectations for transport network performance on and in the vicinity of, the Forth Road and Rail Bridges, over the ten year period from 2012 taking cognisance of the emerging Government policies and action plans and associated consultation. These high level expectations have been used to determine strategic transport network objectives and consequently identify disparity between desired and forecast performance levels, such that potential interventions can be identified and prioritised.

### CURRENT AND EMERGING POLICIES

A comprehensive review of current and emerging policies and action plans at national, regional and local levels was undertaken. At a national level, Scotland's Transport Future (Scottish Executive, June 2004) outlines an overall aim "to promote economic growth, social inclusion, health and protection of our environment through a safe, integrated, effective and efficient transport system".

The **National Transport Strategy (NTS)** (Scottish Executive, December 2006) considers Scotland's transport needs and the needs of travellers over the medium to long-term and sets the framework for the STPR and will determine the Scottish Executive's future infrastructure investment. Three key strategic outcomes are identified within the NTS:

- **improve journey times and connections**, to tackle congestion and the lack of integration and connections in transport which impact on our high level objectives for economic growth, social inclusion, integration and safety;
- **reduce emissions**, to tackle the issues of climate change, air quality and health improvement which impact on our high-level objective for protecting the environment and improving health; and
- **improve quality and accessibility and tackle affordability**, to give people a choice of public transport where availability means better quality public transport services and value for money or an alternative to the car.



Published at the same time as the NTS are the following associated documents, which provide additional focus on certain aspects of the Scotland's transport network, these have been produced in the form of a series of Action Plans:

**Moving Into The Future: An Action Plan For Buses in Scotland** (Scottish Executive, December 2006) sets out the Scottish Executive's aims and objectives in relation to bus services in Scotland and specifies measures required to support and improve bus services throughout Scotland. The Action Plan acts as an associated document to the NTS and sets out the high-level expectations for Buses in Scotland are as follows:

- to improve bus services through effective transport planning;
- to support the development of the bus industry in Scotland; and
- to support effective implementation of the Regulatory Regime.

**Scotland's Railways** (Scottish Executive, December 2006) sets out the Scottish Executive's aims and objectives for the rail industry in Scotland and acts as an associated document to the NTS.

It is recognised that rail has a central role within the NTS and, as such, the vision for the railway in Scotland is that it should provide *"a safe, reliable customer-focused service that supports our economy and delivers wider social inclusion and environmental aspirations."*

Potential developments or enhancements to the rail network will contribute to the delivery of the strategic outcomes identified in the NTS as follows:

- improving journey times and connections;
- reducing emissions; and
- improving quality, accessibility and affordability.

It is recognised that by investing in the rail network, a contribution can also be made to reducing road congestion and harmful emissions and also reducing the impact of transport on the environment.

**Preparing for Tomorrow, Delivering Today: Freight Action Plan For Scotland** (Scottish Executive, November 2006) sets out the Scottish Executive's aims and objectives for the freight industry in Scotland and acts as an associated document to the NTS. The Action Plan supports the NTS and, in turn, the Framework for Economic Development in Scotland, Scotland's Sustainable Development Strategy, Scotland's Climate Change Programme and the Air Quality Strategy.

The Freight Action Plan for Scotland highlights the importance of freight, stating that *"the efficient and competitive movement of goods through the entire supply chain is therefore a key element in meeting consumer demand and supporting and enabling economic growth."*

The Freight Action Plan identifies the following high level expectations:

- to enhance Scotland's competitiveness;
- to support the development of the freight industry in Scotland;
- to maintain and improve the accessibility of rural and remote areas;
- to minimise the adverse impact of freight movements on the Environment in particular through the reduction in emission and noise; and
- to ensure freight transport policy integration.

The NTS and associated documents were published in December 2006 and are therefore considered to be particularly relevant to this study, together with the regional and local policies.

Broadly similar high level objectives were concurrent through all policy levels: to promote economic growth, social inclusion, health and protection of the environment through a safe, integrated, effective and efficient transport system. Key priorities were identified to promote modal shift and raise awareness of the need to change; promote new technologies and cleaner fuels; manage demand; reduce the need to travel; deliver reliable journey times for all road users; improve services for all transport users; and enhance movements of freight by non-road modes.

In the Regional Transport Strategy developed by the South East Scotland Transport Partnership (SEStran) there were specific requirements for a new crossing to include: provision for future tram or heavy rail use; a maximum of two lanes in either direction for single occupancy vehicles (i.e. matching the existing capacity); new lanes dedicated to buses, high occupancy vehicles (HOVs) and heavy goods vehicles (HGVs); flexibility to enable full vehicle carrying capacity during maintenance periods; and demand management measures to ensure traffic levels in Edinburgh remain below those forecast without an additional crossing.

## CONSULTATION

The Forth Estuary Transport Authority (FETA) Local Transport Strategy (LTS) and SEStran Regional Transport Strategy (RTS) were the subject of a detailed consultation process. This informed major stakeholders and members of the public about the draft documents and proposals and it provided the opportunity to comment in a variety of ways.

The results of the consultation identified a perception that many transport problems in the area originate from a lack of integration between land use and transport planning and between health and transport policies. A number of barriers to cross-Forth public transport use, attributable primarily to lack of direct services and reliability, speed and cost were identified and top priority measures included public transport investment; implementation of multi-modal crossing; increased public transport integration and a requirement for queue management / tolling regime.



## DEVELOPMENT OF OBJECTIVES

Identification of the high level expectations from emerging and current policies and action plans, together with the key issues arising from relevant consultations, enabled the development of a number of specific transport planning objectives for the FRCS, as follows:

- maintain cross-Forth transport links for all modes to at least the level of service offered in 2006;
- connect to the strategic transport network to aid optimisation of the network as a whole;
- improve the reliability of journey times for all modes;
- increase travel choices and improve integration across modes to encourage modal shift of people and goods;
- improve accessibility and social inclusion;
- minimise the impacts of maintenance on the effective operation of the transport network;
- support sustainable development and economic growth; and
- minimise the impact on people, the natural and cultural heritage of the Forth area.

These objectives were initially developed at a one-day Inception Workshop held on 27 September 2006 with representatives of Transport Scotland, Jacobs and Faber Maunsell and were presented and agreed at a Project Board meeting held on 11 October 2006.

## GAPS AND SHORTFALLS

Performance Indicators identified in Report 1 were examined and linked to the appropriate transport planning objective.

The Transport Model for Scotland was then used to measure how the base and forecast conditions in 2005, 2012, 2017 and 2022 performed against each transport planning objective. The scenarios included only those infrastructure projects that are likely to be in place by those dates. It should be noted that these predicted conditions do not take account of many of the proposals put forward by the SEStran Regional Transport Strategy as these are not committed. However, these proposals will be assessed in later reports.

It must be emphasised that this report does not deal with solutions to perceived problems. These are dealt with in later reports.

The Performance Indicators selected in Report 1 of this study were reviewed and the most appropriate selected as quantitative measures for each objective. The use of these indicators identified any gaps and shortfalls between the future performance and expectations of the transport network in the vicinity of the Forth bridges in 2012, 2017 and 2022. The results are presented in chapter five and summarised in the table below.

### Summary of Assessment

Objective	Measurement	Assessment
Maintain cross-Forth transport links for all modes to at least the level of service offered in 2006	Road journey times	Not met
	Bus journey times	Not met
	Rail crowding cross-Forth	Not met
Connect to the strategic transport network to aid optimisation of the network as a whole	Average road speeds	Not met
Improve the reliability of journey times for all modes	Number of vehicle hours between J4 of the M90 and Echline Roundabout below free-flow speed	Not met
Increase travel choices and improve integration across modes to encourage modal shift of people and goods	Public transport mode share across the Forth	Not met
Improve accessibility and social inclusion	Road journey times between areas of deprivation and major employment centres	Not met
	Public transport journey times between areas of deprivation and major employment centres	Not met

Table continued:

Objective	Measurement	Assessment
Minimise the impacts of maintenance on the effective operation of the transport network	Total annual average weekday flow on the Forth Road Bridge	Not met
	Annual average weekday HGV flow across the Forth Road Bridge	Not met
Minimise the impact on people, the natural and cultural heritage of the Forth area	Pollutant emissions from transport in the SEStran area.	Not met (CO <sub>2</sub> )
Support sustainable development and economic growth	Pollutant emissions from transport in the SEStran area.	Not met (CO <sub>2</sub> )
	Annual average weekday HGV flow across the Forth Road Bridge	Not met
	Public transport mode share across the Forth	Not met
	Total annual average weekday flow on the Forth Road Bridge	Not met
	Number of vehicle hours between J4 of the M90 and Echline Roundabout below free-flow speed	Not met

It can be concluded based on the appraisal within this report that without intervention in the transport network over and above that currently planned, the objectives of the Forth Replacement Crossing Study will not be met.

## PRIORITY FRAMEWORK

A framework for prioritisation is being developed for the main STPR study, which will have to prioritise projects over a wide variety of types of interventions in geographically diverse areas. Where relevant this will be applied to the Forth Replacement Crossing study. However, at this stage the existing STAG based methodology is considered an appropriate priority framework for this element of the commission.

## OVERALL CONCLUSION

This report has considered in detail the current and emerging policies that are relevant to STPR and in particular the FRCS. The recently published NTS and associated documents have been particularly important in guiding the development of the study objectives which have also drawn extensively on previous work undertaken by both SEStran and FETA. The report also considers the consultation that has already taken place in the development of current policy and that undertaken directly as part of this study.

Following careful consideration of these two aspects (current/emerging policy and consultation) a number of study specific “SMART” objectives have been developed and tested within the relevant reference groups. This has led to the setting of a final set of study objectives which will guide future work in the latter phases of this project.

The report concludes by presenting specific performance indicators used to identify any gaps and shortfalls between the future performance and the expectations of the transport network in the vicinity of the Forth bridges. The concept of a prioritised framework for the SMART objectives identified in the report is also discussed.

## THE WAY FORWARD

This work package has largely been an information gathering exercise, which has helped in setting the study’s objectives, it has gone on to identify the existing gaps and shortfalls in relation to the available performance indicators. The future reports of the Forth Replacement Crossing Study will be:

- Report 3: Option Generation and Sifting;
- Report 4: Appraisal; and
- Report 5: Final Report.

Option Generation and Sifting for the Forth Replacement Crossing Study will be identified in Report 3. The sifting of potential options will be linked to the Objectives in this report, in order to give an initial assessment of how the current and forecast situations compare with the aims of the Study.

## 1 INTRODUCTION

### 1.1 BACKGROUND

Jacobs supported by Faber Maunsell were commissioned by Transport Scotland to undertake the Strategic Transport Projects Review (STPR). The STPR commission involves identifying the strengths and weaknesses of the Scottish strategic transport network, identifying gaps between the future demand and capacity of the network and producing a prioritised list of interventions for the period 2012-2022. The commission also covers a study of the Forth Replacement Crossing Study (FRCS) and this element of the work will be reported as follows:

- Report 1: Network Performance;
- Report 2: Gaps and Shortfalls;
- Report 3: Option Generation and Sifting;
- Report 4: Appraisal Report; and
- Report 5: Final Report.

This is the second of these reports: Report on Gaps and Shortfalls.

The objective of this report is to establish the high level expectations for transport network performance on and in the vicinity of, the Forth Road Bridge and Forth (rail) Bridge, over the ten year period from 2012 taking cognisance of the emerging Government policies and action plans. These high level expectations will be used to determine strategic transport network objectives and consequently identify disparity between desired and forecast performance levels, such that potential interventions can be identified and prioritised.

The FRCS methodology involves the following:

- review of relevant publications to establish the high level expectations for the performance of the transport network in the medium to long-term;
- review of all consultation undertaken to date by the Forth Estuary Transport Authority (FETA) and South East of Scotland Transport Partnership (SEStran) and others in relation to high level expectations;
- translation of these high level expectations into Specific, Measurable, Achievable, Realistic and Timely (SMART) transport objectives;
- identify any gaps and shortfalls between the future performance and expectations of the transport network in the vicinity of the Forth bridges in 2012, 2017 and 2022; and
- set these SMART transport objectives within a framework which allows gaps and shortfalls to be prioritised.

## 1.2 STRUCTURE OF REPORT

Following this introductory chapter, the remainder of this report is set out as follows:

- Chapter two – Overview of current and developing policies and action plans;
- Chapter three – Review of consultation;
- Chapter four – Development of SMART transport objectives;
- Chapter five – Identification of gaps and shortfalls; and
- Chapter six – Recommendations and conclusions.

In addition, Appendix A provides a detailed review of current and developing policies and action plans.



## 2 OVERVIEW OF CURRENT AND DEVELOPING POLICIES AND ACTION PLANS

### 2.1 INTRODUCTION

The aim of this chapter is to provide a summary of the high level expectations for the study area, from a review of current and developing policies and action plans. This includes a review of the following documents:

#### 2.1.1 National Plans and Policies

- Scotland's Transport Future (Scottish Executive, June 2004);
- National Transport Strategy (Scottish Executive, December 2006);
- Moving Into The Future: An Action Plan For Buses in Scotland (Scottish Executive, December 2006);
- Scotland's Railways (Scottish Executive, December 2006);
- Preparing for Tomorrow, Delivering Today: Freight Action Plan For Scotland (Scottish Executive, December 2006);
- Framework for Economic Development in Scotland (Scottish Executive, September 2004);
- National Planning Framework for Scotland (Scottish Executive, April 2004); and
- West Edinburgh Planning Framework (Consultative Draft, Scottish Executive, November 2006).

### 2.2 REGIONAL PLANS AND POLICIES

- SEStran Draft Regional Transport Strategy (SEStran, November 2006);
- TACTRAN Draft Regional Transport Strategy (TACTRAN, January 2007);
- FETA Local Transport Strategy (FETA, June 2005);
- SITCoS report (SEStran, September 2005);
- Edinburgh and Lothians Structure Plan 2015 (City of Edinburgh Council, East Lothian Council, Midlothian Council and West Lothian Council, June 2004); and
- Fife Structure Plan (Fife Council, April 2006).

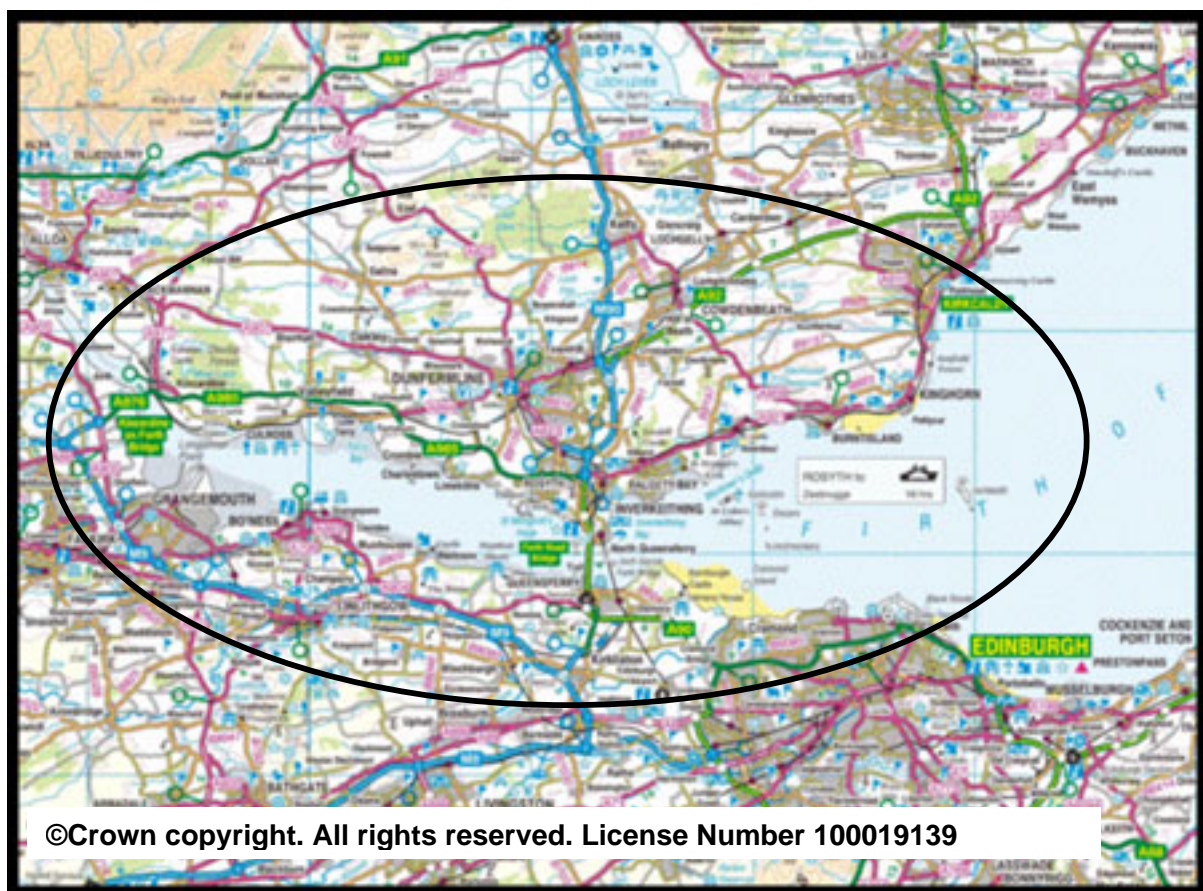
A more detailed review of the high level expectations identified within these documents can be found within Appendix A.

It should be noted that the Bus Action Plan, Freight Action Plan and Scotland's Railways are associated documents of the National Transport Strategy (NTS). These documents have all been published very recently and therefore provide extremely relevant information for this study.

## 2.3 THE STUDY AREA

The study area has previously been reported within Report 1 entitled 'Assess Existing and Forecast Future, conditions of the Transport Network within the Vicinity of the Forth Road and Rail Bridge' dated November 2006 and is illustrated on Figure 2.1, below.

**Figure 2.1 Study Area**



## 2.4 EMERGING AND DEVELOPING POLICIES AND ACTION PLANS

The sections below provide a brief summary of the high level expectations from emerging and developing policies and action plans. Further details relating to these documents can be found within Appendix A.

### 2.4.1 Scotland's Transport Future

Scotland's Transport Future is a transport White Paper which was published by the Scottish Executive in June 2004. It sets out the Scottish Executive's ambitions for improving the planning and delivery of transport in Scotland. The White Paper outlines the high level objectives for Scotland's transport system and provides a framework for the development of the transport network at the national, regional and local level.

The overall aim of the strategy is “*to promote economic growth, social inclusion, health and protection of our environment through a safe, integrated, effective and efficient transport system*”.

The high level expectations are to:

- “promote **economic growth** by building, enhancing, managing and maintaining transport services, infrastructure and networks to maximise their efficiency;
- promote **social inclusion** by connecting remote and disadvantaged communities and increasing the accessibility of the transport network;
- protect our **environment** and improve health by building and investing in public transport and other types of efficient and sustainable transport which minimise emissions and consumption of resources and energy;
- improve **safety** of journeys by reducing accidents and enhancing the personal safety of pedestrians, drivers, passengers and staff; and
- improve **integration** by making journey planning and ticketing easier and working to ensure smooth connection between different forms of transport.”

### 2.4.2 Scotland's National Transport Strategy

The Scottish Executive and Transport Scotland published a NTS for Scotland in December 2006. The NTS sets out the context for the activities of regional transport partnerships (RTPs) and local authorities and further develops the Scottish Executive's aims and objectives for transport, as set out within the White Paper. The NTS thus considers Scotland's transport needs and the needs of travellers, over the medium to long-term.

The NTS sets the framework for STPR and will determine the Scottish Executive's future infrastructure investment.

The NTS identifies three key strategic outcomes in order to achieve the high level expectations set out within Scotland's Transport Future:

- **improve journey times and connections**, to tackle congestion and the lack of integration and connections in transport which impact on our high level objectives for economic growth, social inclusion, integration and safety;
- **reduce emissions**, to tackle the issues of climate change, air quality and health improvement which impact on our high-level objective for protecting the environment and improving health; and
- **improve quality and accessibility and tackle affordability**, to give people a choice of public transport where availability means better quality public transport services and value for money or an alternative to the car.

The NTS identifies a requirement to tackle the issues arising from the trends of increasing road and air travel. The NTS envisages a combination of new technology and infrastructure investment alongside measures to change travel patterns and influence travel choices.

Importantly, the NTS recognises *“there is a real tension between wanting our strategic networks both to contribute to economic growth and social cohesion in Scotland, through providing better connections and faster journey times and at the same time, minimising the impact on the environment of the emissions associated with increased travel. In particular we do not believe that it is realistic to expect reduced emissions from the trunk road network without compromising our economic growth and accessibility objectives...For trunk roads we want to focus on provision of reliable journey times in the face of anticipated traffic growth, tackling congestion where it affects journey time reliability, through maintaining safe and reliable networks, targeted capacity enhancement and managing demand for the network”*.

### 2.4.3 Moving Into The Future: An Action Plan For Buses in Scotland

Moving Into The Future: An Action Plan For Buses in Scotland (Scottish Executive, December 2006) sets out the Scottish Executive's aims and objectives in relation to bus services in Scotland and specifies measures required to support and improve bus services throughout Scotland. The Action Plan is an associated document to the NTS.

The high-level expectations set out in the Action Plan for Buses in Scotland are as follows:

- to improve bus services through effective transport planning;
- to support the development of the bus industry in Scotland; and
- to support effective implementation of the Regulatory Regime.

### 2.4.4 Scotland's Railways

Scotland's Railways (Scottish Executive, December 2006) sets out the Scottish Executive's aims and objectives for the rail industry in Scotland and is an associated document to the NTS.



It is recognised that rail has a central role within the NTS and, as such, the vision for the railway in Scotland is that it should provide *“a safe, reliable customer-focused service that supports our economy and delivers wider social inclusion and environmental aspirations.”*

Potential developments or enhancements to the rail network will contribute to the delivery of the strategic outcomes identified in the NTS as follows:

#### improving journey times and connections

- timetabling and frequency enhancements to reduce inter-urban journey times;
- infrastructure enhancements to reduce inter-urban journey times; and
- maintain current improvements to reliability of services.

#### reducing emissions

- electrification to minimise emissions and reduce fossil fuel reliance (in some cases may also reduce journey times); and
- capacity improvements to enable increased passenger numbers and freight volumes.

#### improving quality, accessibility and affordability

- enhancing integration with other modes;
- enhancements to stations, to improve capacity, passenger experience and to encourage modal shift; and
- timetable and service enhancements.

It is recognised that by investing in the rail network, a contribution can also be made to reducing road congestion and harmful emissions and also reducing the impact of transport on the environment.

The document recognises the contribution that rail can make in achieving the high level expectations of the Scottish Executive and sets out an implementation plan to assist in the delivery of the identified priorities. Scotland's Railways also outlines the Scottish Executive's aspirations for specific sections of the railway network and details the short, medium and long-term priorities for these sections. Further details can be found within Appendix A.

#### 2.4.5 Preparing For Tomorrow, Delivering Today: Freight Action Plan For Scotland

Preparing for Tomorrow, Delivering Today: Freight Action Plan For Scotland (Scottish Executive, December 2006) sets out the Scottish Executive's aims and objectives for the freight industry in Scotland and acts as an associated document to the NTS. The Action Plan supports the NTS and, in turn, the Framework for

Economic Development in Scotland, Scotland's Sustainable Development Strategy, Scotland's Climate Change Programme and the Air Quality Strategy.

The Freight Action Plan for Scotland highlights the importance of freight, stating that *“the efficient and competitive movement of goods through the entire supply chain is therefore a key element in meeting consumer demand and supporting and enabling economic growth.”*

The Freight Action Plan identifies the following high level expectations:

**to enhance Scotland's competitiveness**

- balancing freight and non-freight requirements in transport investment;
- minimising the negative impact of rising transport costs; and
- continued business developments in the freight and logistics sector.

**to support the development of the freight industry in Scotland**

- enhancing the skills and professional image in freight and logistics; and
- enabling the Scottish freight industry to compete effectively in the European market.

**to maintain and improve the accessibility of rural and remote areas**

- targeting improvements to road and rail infrastructure;
- integrating freight considerations into the provision of lifeline ferry and air services; and
- addressing the transport needs of rural business and industry.

**to minimise the adverse impact of freight movements on the Environment in particular through the reduction in emission and noise**

- promoting modal shift to rail and shipping; and
- improving efficiency and sustainability of road transport.

**to ensure freight transport policy integration**

- co-ordinating with other policy areas – such as energy policy, land use, waste disposal and regional transport strategies – and between public agencies; and
- co-ordinating freight policy with other UK regions.

**2.4.6 Framework for Economic Development in Scotland**

The Framework for Economic Development in Scotland (Scottish Executive, 2004) has a clear vision: *“to raise the quality of life of the Scottish people through*



*increasing the economic opportunities for all on a socially and environmentally sustainable basis”.*

The Scottish Executive’s high-level transport objective focuses on promoting economic growth by enhancing the effectiveness of the transport network and reducing congestion, with an overarching target to strive to stabilise road traffic at 2001 levels by 2021<sup>1</sup>. The Framework outlines that this will be achieved through investing in an integrated package of measures which include modernising and improving public transport, promoting alternative modes of transport to the private car and targeted motorway and trunk road improvements. The Scottish Executive’s strategy aims to stabilise road traffic levels, while at the same time supporting economic development.

The Framework indicates that the Scottish Executive has identified a key role for public policy in securing a highly efficient transport system that can best promote economic development in its widest sense. It is recognised that four principal elements will address these priorities:

- **improving transport planning and structural landscape.** Improvements in the strategic planning and delivery of major transport projects, through the establishment of Transport Scotland, will ensure that the transport network continues to support future economic activities;
- **investing in transport infrastructure.** Future investment in transport infrastructure is central to supporting future economic development by reducing congestion, improving journey time reliability and increasing the travel options available to both individuals and businesses;
- **tackling road traffic congestion in order to help to deliver reliable journey times for all road users.** The Scottish Executive will support local authorities who wish to pursue road user charging in order to reduce congestion in their area. Improvements in sustainable transport can help to stimulate modal shift away from the private car towards public transport. In addition, targeted improvements on the motorway and trunk road network will deal with some of the critical congestion spots. The national awareness campaign is also raising awareness of travel issues, promoting public transport and can influence individual travel choice; and
- **improving services for all transport users.** Supporting good services at affordable cost, through subsidised ferry and air services, will remain a priority because it is vital to maintaining and improving economic conditions in many rural and island areas of Scotland. The development of concessionary travel schemes for older people initially is increasing accessibility for large sections of society and further extensions to these schemes are planned.

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<sup>1</sup> This target will remain aspirational following consultation on the Scotland’s National Transport Strategy, however comments received felt that the importance of a national road traffic reduction target was not now as appropriate for rural areas. For more details – see Page 36 of Scotland’s National Transport Strategy (2006).

## 2.4.7 National Planning Framework for Scotland

The National Planning Framework for Scotland (NPFS) (Scottish Executive, April 2004) is a Framework to guide the spatial development of Scotland to 2025. The NPFS sets out a vision of Scotland in which other plans and programmes can share and to which they can contribute.

The NPFS complements the Scottish Executive's *Framework for Economic Development in Scotland* (2004), highlighting the importance of place and identifying priorities for investment in strategic infrastructure to enable each part of the country to play to its strengths in "building a Scotland which is competitive, fair and sustainable".

The NPFS identifies specific economic development zones and highlights the importance of ensuring that they are well connected and readily accessible. It makes specific mention of the West Edinburgh Planning Framework which highlights the potential of West Edinburgh as an international business location. The NPFS includes several mode-specific policies, focusing on completing the gaps in the road network and using the network more efficiently. There is also a desire to strengthen road and rail links between Aberdeen and the Newcastle area to tap into knowledge economy clusters there while improving public transport and interchange facilities across the Central Belt.

The NPFS outlines the following aims for Scotland's spatial development to 2025:

- increase economic growth and competitiveness;
- promote social and environmental justice; and
- promote sustainable development and protect and enhance the quality of natural and built environments.

In order to fulfil the above aims, the key elements of the NPFS to 2025 are as follows:

- support the development of Scotland's cities as the main drivers of the economy;
- spread the benefits of economic activity by promoting environmental quality and connectivity;
- enable the most disadvantaged communities to benefit from growth and opportunity;
- strengthen external links;
- promote economic diversification and environmental stewardship;
- highlight long-term transport options and promote more sustainable patterns of transport and land use; and
- extend broadband coverage in every area of Scotland.

#### 2.4.8 West Edinburgh Planning Framework

The West Edinburgh Planning Framework (WEPF) (Consultative Draft, Scottish Executive, November 2006) sets out proposals for future land-use and transport proposals for the area around Sighthill, Gogar, the Highland Showground and the Airport. The WEPF outlines the importance of West Edinburgh as a gateway to Scotland and one of the most important economic development areas in Scotland. The WEPF highlights issues relating to development pressure and transport constraints in the area and sets out a number of requirements necessary for West Edinburgh to realise its full potential as a driver of the Scottish economy.

The high level expectations include:

- improved public transport accessibility and management of road congestion likely to be caused by development already committed in West Edinburgh and beyond;
- sustainable airport expansion subject to improved surface access and robust parking controls;
- a redefinition of the boundaries of Edinburgh's Green Belt in the A8/Airport corridor;
- environmental enhancements throughout the area; and
- development of selected sites for high quality international business development served by a high quality transport system.

#### 2.4.9 SEStran RTS

The SEStran RTS (Draft For Consultation, SEStran, November 2006) provides a framework which will guide the future management of and investment in, transport for the SEStran area over the next 10-15 years.

The SEStran RTS sets out its own vision for transport in South East Scotland and outlines a number of objectives required to achieve this. SEStran's overarching objectives are consistent with those of the Government (environment, economy, safety, integration and accessibility / social inclusion) and a number of sub-objectives and targets have been set to ensure these objectives are achieved. The draft RTS specifically examines issues relating to the Forth Road Bridge, highlighting existing problems and opportunities.

The RTS recommends specific options for the Forth Road Bridge and details specific criteria for a replacement crossing, thus: "any new crossing should be constructed to allow for future tram (and if possible heavy rail) use."

In the situation that an additional crossing is provided, SEStran outline:

- "the combination of old and new crossings should provide no more than two lanes in each direction available to single-occupant cars;

- all new traffic lanes across the Forth need to be dedicated to buses and high occupancy vehicles (HOVs). Consideration will be given to the possibility of allowing HGVs to access these lanes;
- separate running lanes for the mixed use of buses, HOVs and possibly HGVs should be considered, but as far as possible flexibility should be maintained to enable full vehicle carrying capacity for traffic during periods of Bridge maintenance; and
- the promoter should be required to put in place a demand management and investment package that will seek to ensure that traffic in Edinburgh will remain at or below the levels that would have been forecast without an additional crossing.”

The high level expectations set out in SEStran’s RTS are summarised below.

- outbound bus priority on the A90, with queue relocation similar to that operating city bound, allowing buses to avoid queues en route to the tolls;
- Ferrytoll access A90 measures;
- any new Forth crossing should allow for specific bus lanes, with priority also in bridgehead areas;
- some Fife to Edinburgh train fares have been identified as high compared with other fares. This will be reviewed and SEStran will seek to bring these into line with other comparable fares;
- the proposed cross-Forth Ferry could help this corridor, depending on ‘landside’ connections;
- Network Rail’s Rail Utilisation Strategy proposes to re-structure the Fife line and Aberdeen services – this is supported;
- traffic flows on the Forth Road Bridge are often near capacity. Controlling access to the Bridge and its approaches could increase the efficiency of flow by stopping flow levels reaching ‘unstable’ levels. The case for ‘ramp metering’ will be considered; and
- high occupancy vehicle lanes can help to reduce the number of ‘car driver’ trips, in line with the mode share targets. The case for HOV lanes in the Fife – Edinburgh corridor will be considered.

#### 2.4.10 TACTRAN RTS

The Tayside and Central Scotland Regional Transport Partnership (TACTRAN) covers the Angus, Dundee, Perth and Kinross and Stirling Council areas. TACTRAN intends to complete and submit its finalised RTS to the Transport Minister for approval by 31 March 2007.

The TACTRAN RTS sets out a vision for the future development of the transport system in the TACTRAN area. To achieve this vision, the RTS outlines six key objectives, consistent with those of the Scottish Executive but with an added regional dimension. Within each broad objective, TACTRAN's RTS outlines a number of specific aims which will combine to achieve the overall vision. The high level expectations outlined in TACTRAN's RTS are summarised below.

- to ensure transport helps to deliver **regional prosperity**;
- to improve **accessibility** for all, particularly for those suffering from **social exclusion**;
- to ensure that the transport system contributes to safeguarding the **environment** and promotes opportunities for improvement;
- to promote the **health** and **well-being** of communities;
- to improve the real and perceived **safety** and **security** of the transport network; and
- to improve **integration**, both within transport and between transport and other policy areas.

The RTS also highlights several specific transport opportunities which affect the Forth Road Bridge including additional cross-Forth rail paths and the proposed Edinburgh Airport Rail Link. These aspirations are summarised below:

- increased Cross-Forth rail paths which will facilitate the provision of increased rail frequency to the south and to the north of the TACTRAN area.

#### 2.4.11 FETA Local Transport Strategy

FETA published its Local Transport Strategy (LTS) in June 2005. FETA is a partnership organisation comprising representatives of Fife, Edinburgh, West Lothian and Perth and Kinross Councils. FETA is responsible for the management, maintenance and operation of the Forth Road Bridge. It is also within FETA's remit to develop measures which reduce traffic congestion on the Bridge or encourage use of public transport. FETA's LTS covers the period from 2005 to 2020/21.

FETA's LTS identifies the problems currently affecting the Forth Road Bridge and sets out a vision aimed at reducing congestion and increasing public transport use on the Forth Road Bridge. In order to achieve this vision FETA's LTS establishes two strategic aspirations and a number of objectives aimed at achieving these. The LTS considers change in the tolling regime to be a necessity if FETA's vision and objectives are to be achieved. The high-level objectives outlined in the LTS are summarised below.

- increase accessibility across the Forth;
- support a vibrant Scottish economy;

- promote strategic investment;
- encourage sustainable movements across the Forth, for example multiple occupancy vehicles and public transport use;
- improve journey times and reliability for sustainable transport modes;
- maintain and operate the Forth Road Bridge and minimise inconvenience for users;
- reduce congestion and minimise environmental, safety and social impacts of traffic on local communities; and
- improve integration between public transport modes for cross-Forth journeys.

#### 2.4.12 SITCoS Report

The SEStran Integrated Transport Corridor Studies (SITCoS) report (SEStran, 2005) provides details of the Queensferry cross-Forth integrated transport corridor study. The report highlights a number of existing and future problems affecting the Queensferry corridor and outlines several objectives aimed at relieving these problems. The SITCoS report recognises the need to provide increased cross-Forth capacity and details the disbenefits of a failure to do so. The report concludes with a number of short, medium and long-term recommendations. The high-level expectations outlined in the SITCoS report are summarised below.

- to stabilise and improve accessibility to cross Forth movement for people and goods;
- ensure land use planning is integrated with transport plans;
- revised rail patterns to maximise use of cross-Forth rail capacity;
- support for Park and Choose at key locations;
- completion of the bus “right of way” network between Fife and Edinburgh;
- potential for toll-related demand management strategies; and
- a long-term strategy of demand management measures and the provision of a multi-modal crossing.

#### 2.4.13 Edinburgh and Lothians Structure Plan 2015

The Edinburgh and the Lothians Structure Plan 2015 was prepared by the City of Edinburgh Council, East Lothian Council, Midlothian Council and West Lothian Council and was approved by Scottish Ministers on the 17 June 2004.



The Structure Plan sets out the long-term vision for the development of land in Edinburgh and the Lothians. It provides the broad framework for local plans, which contain more detailed and site specific policies. The overarching aim of the Structure Plan is to *“provide in full for the development needs of Edinburgh and the Lothians in accordance with the principle of sustainable development, whilst maintaining and enhancing the environmental heritage that underpins the areas quality of life.”*

The Structure Plan sets out a number of strategic objectives in order to encourage a more sustainable pattern of development in Edinburgh and the Lothians:

- maintaining and enhancing economic competitiveness;
- promoting a more inclusive society;
- protecting and enhancing the natural and built environment; and
- integrating land use and transport.

#### 2.4.14 Fife Structure Plan

The Finalised Fife Structure Plan (Fife Council, April 2006) sets out strategic land use challenges for Fife communities and is the key land use planning document for directing and managing growth and change throughout the area. The Structure Plan outlines a vision for Fife in 2026:

*“A location of first choice in east central Scotland to live, work, play, learn and invest. An attractive place, with thriving and sustainable communities and a diverse environment. An area with a growing population which has reached at least 375,000 and is still expanding. A place where people can achieve their full potential through education, skills and career development”.*

The high level expectations outlined within the Structure Plan can be summarised as follows:

- Growing Fife’s Economy and Increasing its Population;
- Improving Accessibility;
- Raising Aspirations;
- Improving the Range and Quality of Housing Development;
- Develop and Maintain Sustainable Communities; and
- Safeguarding and Improving Fife’s Environment.

Of particular relevance to this commission, the Fife Structure Plan recognises *“the principle of a further multi-modal Forth crossing is considered vitally important in the context of growing the national economy and those of Edinburgh and Fife. It is important for Fife’s economic and social inclusion agendas to achieve a further crossing”*.

Furthermore, the Structure Plan outlines several aims and aspirations which will be aided by a Forth Replacement Crossing, for example the potential to connect a light rail transit network to Edinburgh City and West Edinburgh; and a segregated public transport corridor through the Forth Bridgehead Area, including the existing Dunfermline Eastern Expansion area, with potential to link to a further Forth crossing.

## 2.5 SUMMARY

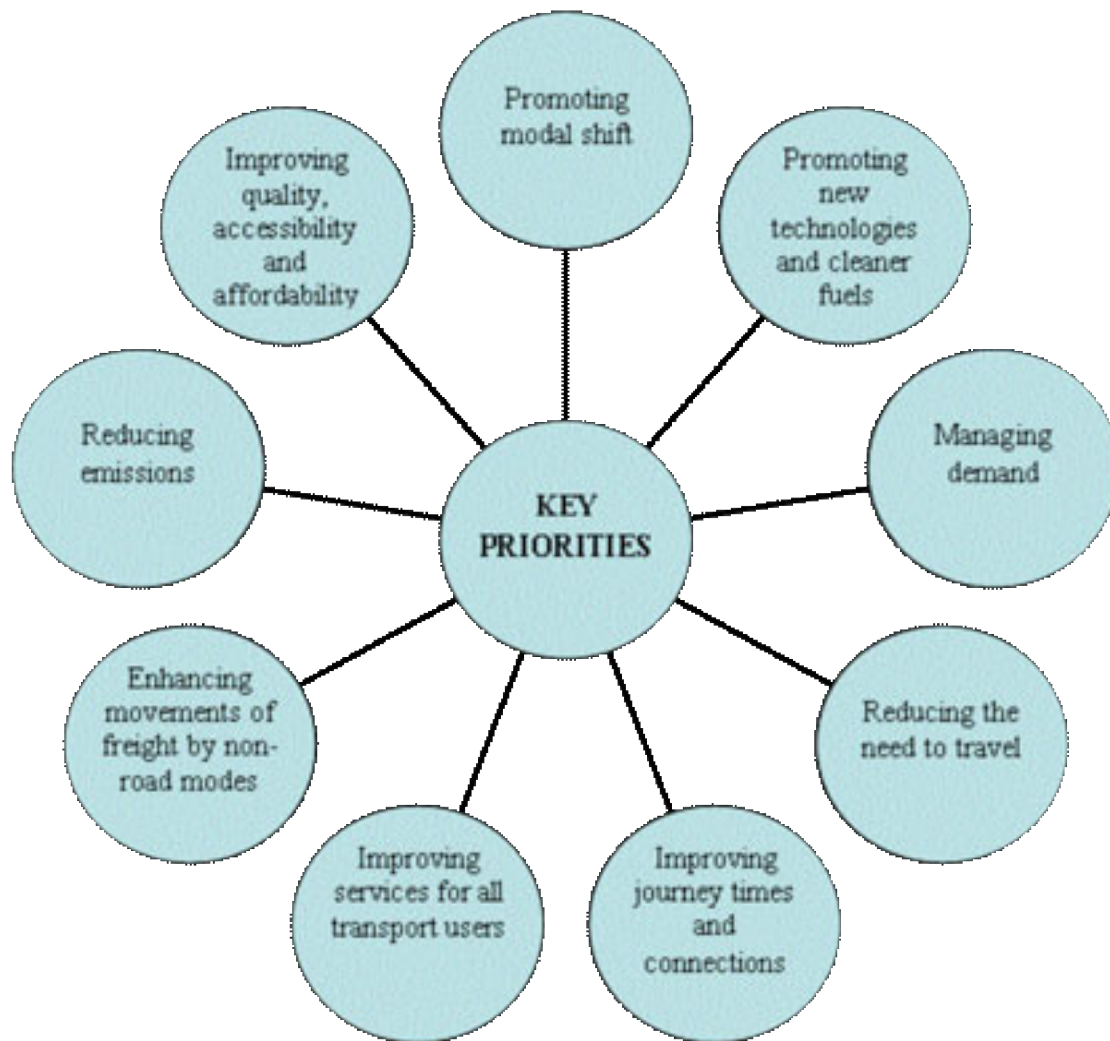
This chapter has provided an overview of current and emerging Government policies and action plans and has identified the high level expectations for the performance of the transport network in the vicinity of the Forth Road and Rail Bridges. A review of the Scottish Executive’s NTS and associated action plans and documents for rail, bus and freight has been undertaken, together with a review of relevant regional and local policies. The NTS and associated documents were published in December 2006 and are therefore considered to be very relevant to this study.

Overall, the policy review has identified that the high level expectations centre on the Government’s five key objectives of:

- Economy;
- Integration;
- Safety;
- Environment; and
- Accessibility and Social Inclusion.

The policy review has identified a number of key priorities emerging from the documents, which are collated and summarised within Figure 2.2 below. It should be noted that the priorities listed below are not necessarily common themes within each of the policy documents, but represent the collective priorities from the review.

**Figure 2.2: Key Priorities**



This chapter has also highlighted SEStran and FETA’s conditions for a replacement of the Forth crossing. FETA has established two strategic aspirations for the next 10-20 years:

- greater accessibility across the Forth for strategic movements to support a vibrant Scottish economy and promote strategic investment; and
- more sustainable and reliable patterns of local movements across the Forth which can continue to support local and regional economies.

In addition, SEStran has identified that “any new crossing should be constructed to allow for future tram (and if possible heavy rail) use.”

In the situation that an additional crossing is provided, SEStran outline:

- “the combination of old and new crossings should provide no more than two lanes in each direction available to single-occupant cars;

- all new traffic lanes across the Forth need to be dedicated to buses and high occupancy vehicles (HOVs). Consideration will be given to the possibility of allowing HGVs to access these lanes;
- separate running lanes for the mixed use of buses, HOVs and possibly HGVs should be considered, but as far as possible flexibility should be maintained to enable full vehicle carrying capacity for traffic during periods of Bridge maintenance; and
- the promoter should be required to put in place a demand management and investment package that will seek to ensure that traffic in Edinburgh will remain at or below the levels that would have been forecast without an additional crossing.”

The high-level expectations outlined within this chapter have taken careful consideration of SEStran and FETA’s conditions for a replacement crossing.

In addition, it is important that the recommendations of the Forth Replacement Crossing Study also recognise the tensions identified by the Scottish Executive between wanting strategic networks to both contribute to economic growth through providing better connections and at the same time, minimising the impact on the environment of the emissions associated with increased travel.

The following chapter will provide an overview of the consultation which has been undertaken in relation to the study area.

## 3 REVIEW OF CONSULTATION

### 3.1 INTRODUCTION

This chapter will provide an overview of consultation which has been undertaken in relation to the study area. This includes a review of the consultation undertaken during the development of FETA's LTS and SEStran's RTS. In addition, this chapter will provide a summary of the detailed discussions undertaken through the Reference Groups established for the wider STPR.

The following sections discuss the consultation approaches in more detail and present a summary of results.

### 3.2 FETA LTS

In order to inform the FETA LTS, consultation was undertaken with the public and key stakeholders. The aim of this was to establish the extent of agreement or disagreement with FETA's objectives and proposals. It was considered important to determine what the public and stakeholders perceived as the key issues facing FETA. It was also considered useful to obtain further views on barriers to cross-Forth public transport trips and seek views on the relative priority of the measures proposed in the draft LTS. The consultation also sought to gather opinions on the Bridge toll regime including discounting and toll levels.

The consultation was undertaken between 12 July 2004 and 30 September 2004 and was undertaken via several methods. The sections below outline the consultation with the public and key stakeholders and provide a summary of the key findings.

#### 3.2.1 Public Consultation Process

##### Methodology

A number of methods were used to raise awareness of the consultation and to involve the wider public in the process and these are summarised below:

- information leaflets; and
- cross-Forth travellers were specifically targeted as part of a large-scale information leaflet distribution exercise:
  - 21,000 information leaflets were handed to vehicle users at toll booths over one day;
  - 6,000 were handed to cross-Forth public transport users over one day;
  - distribution at rail stations over one day;
  - distribution at bus stations over one day;
  - distribution to community councils within 10 kilometres;

- distribution to Council offices;
- distribution to local libraries; and
- distribution to others on request.

The leaflets provided details of the LTS and the consultation process, directing respondents to the FETA website or key locations where facilities were available to enable responses to be made (for example main libraries and Council offices).

- Consultation draft LTS and questionnaires.

The consultation draft LTS and questionnaires were available on the FETA web site and at main libraries and Council offices across the member authority areas. Ballot boxes were provided for questionnaire returns. Alternatively returns could be made directly via the web site. The opportunity for alternative formats was given on all advertising literature.

- Website

The consultation draft LTS was available on the FETA website from 12 July 2004 and on-line questionnaires were available from 24 August 2004.

- Letter

FETA's top 100 voucher user companies were sent information about the consultation by post and invited to provide comment.

- E-mail

2,000 e-mail registered voucher users were sent information about the consultation and invited to provide comment.

The consultation sought views on six broad areas:

- extent to which respondents agreed or disagreed with a number of objectives set out by FETA;
- to rank, in order of significance, the top three issues, from a pre-defined list, relating to the Forth Road Bridge which the respondents thought required greater attention from FETA;
- to rank, in order of significance, the top three issues, from a pre-defined list, which the respondents believed presented barriers to making trips across the Forth on public transport;
- to suggest what level of priority should be given to various transport measures under consideration by FETA;
- proposed options to alter tolls on the Forth Road Bridge for certain user groups; and



- the preferred option for levels of changes in Bridge tolls and what the extra funding would pay for.

### 3.2.2 Stakeholder Consultation Process

Forty-two stakeholders were identified and invited to participate in the consultation process, as follows:

- |  |   |
|--|---|
| • Fife Council                               | • Edinburgh Airport                         |
| • City of Edinburgh Council                  | • SEStran                                   |
| • West Lothian Council                       | • Citylink                                  |
| • Perth and Kinross Council                  | • CBI Scotland                              |
| • Scottish Enterprise Edinburgh and Lothians | • Forth Ports                               |
| • Scottish Enterprise Fife                   | • Scottish Association for Public Transport |
| • Strategic Rail Authority                   | • Scottish Chambers of Commerce             |
| • Stagecoach                                 | • Scottish Environmental Protection Agency  |
| • Freight Transport Association              | • SPOKES (the Lothian Cycle Campaign)       |
| • Road Haulage Association                   | • TRANSform Scotland                        |
| • AA/RAC                                     | • Transport 2000                            |
| • Mobility and Access Committee Scotland     | • Confederation of Passenger Transport      |
| • Rail Users Committee                       | • British Motorcycle Federation             |

- Tourist Boards
- North East Scotland Transport Partnership (NESTRAN)
- Scottish Executive
- Emergency Services

The stakeholders listed above all received, by post, a self-complete questionnaire which sought views on the six broad areas outlined in Section 3.2.1.

### 3.2.3 Main Findings

693 public responses were received (approximately 3 per cent) during the consultation period, together with 30 stakeholder responses (71 per cent). In addition, a further 26 organisations provided a response.

From an analysis of trip origins, destinations, age group, gender type, car ownership and travel modes it was considered that the responses received provided a fair sample of the FETA population.

The LTS indicated that there was “strong support” from the public and stakeholders for the objectives set out by FETA in the consultation draft LTS:

- to maintain and operate the Forth Road Bridge and to do so in the most effective manner and to minimise inconvenience to others (approximately 96 per cent);
- to optimise the potential number of public transport person trips across the Forth (approximately 75 per cent);
- to increase car occupancy across the Forth Road Bridge (approximately 48 per cent);
- to reduce congestion levels on the Forth Road Bridge and minimise environmental, safety and social impacts of traffic on local communities (approximately 87 per cent);
- to improve journey times and reliability for sustainable transport modes (approximately 82 per cent);
- to increase the range of cross-Forth journeys for which public transport can be an attractive option (approximately 75 per cent); and
- to improve integration between transport modes for cross-Forth travel to provide seamless journey opportunities (approximately 84 per cent).

The objectives of FETA as set out within the draft LTS were, overall, endorsed by the public and stakeholders and subsequently adopted within the final LTS.

The biggest issues facing FETA were considered to be maintenance and operation of the Bridge and improving public transport alternatives. The greatest barrier to public transport use was considered to be the lack of direct services followed by reliability, speed and cost.

The LTS outlines that there was “significant support” from the public and stakeholders for improved public transport measures. A new multi-modal crossing also received public and stakeholder support, as did queue management and changes to the tolling regime.

Issues requiring attention by FETA, in order of importance as viewed by stakeholders / organisations were:

- improving public transport alternatives / maintenance of the Forth Road Bridge;
- improved system of tolls;
- response time to breakdowns;
- improving local air quality;
- warning of incidents on the Forth Road Bridge; and
- improving traffic information.

Barriers to public transport use as perceived by stakeholders / organisations were (ranked greatest concern – least concern):

- lack of direct service;
- speed of journey;
- reliability of journey;
- distance from rail station;
- cost of the journey;
- lack of comfort and cleanliness during journeys;
- lack of information about journeys;
- lack of flexible working hours to accommodate public transport times; and
- distance from bus stops.

Stakeholder / organisations' views on tolls can be summarised as follows:

- **frequent car user tolls abolished<sup>2</sup>**
  - *General consensus with opposition from Chambers of Commerce and motoring organisations.*
- **sustainable modes should receive a discount**
  - *No disagreement.*
- **lorries should pay a higher toll, reflecting the greater wear and tear they make on the Bridge.**
  - *Most supported but Enterprise Companies, the Confederation for British Industry (CBI) and Fire services "slightly disagreed" and the Freight Transport Association (FTA) strongly disagreed.*

502 written comments were received from the general public and included:

- there should be no tolls (9 per cent);
- A8000 is the priority project (16 per cent);
- a modern system of toll collection should be implemented to ease congestion (9 per cent);
- lane discipline and marking on the Bridge would ease congestion (4 per cent);
- any policy which penalises single occupants is unfair (4 per cent);
- equal number of comments supporting (9 per cent) and objecting (10 per cent) to a Multi Modal Crossing; and
- improvements to integration of public transport needed, in particular train services (11 per cent).

Stakeholders provided written responses that welcomed the consultation draft LTS and offered suggestions to clarify the document. Written responses from stakeholders included:

### Fife Council

- any provision of a multi-modal crossing must not increase the total number of lanes available for single occupancy commuter vehicles crossing the Forth;
- further analysis, justification and a clearer explanation of form of multi-modal crossing required;
- importance of short wins should be emphasised;

<sup>2</sup> Relates to discount for frequent car user tolls

- FETA needs to include and take ownership of targets for reduced traffic growth;
- need for a policy to reduce / eliminate tolls/charges for public transport;
- need a freight policy in light of adverse impact of HGVs;
- package needs to include ferry proposals; and
- other issues include the role of the Forth Road Bridge within the Trans European Network and the relationship to the Central Scotland Strategic Road Network, South Fife/West Edinburgh Economic Development Zone.

### City of Edinburgh Council

- support FETA's view that a new road only Bridge is not the answer;
- note the important strategic role of the Bridge;
- important to manage impact on west and central Edinburgh of any additional capacity created; and
- note that further work is required to clarify / quantify the issues that will allow an objective view to be made of the need for a second bridge.

### West Lothian Council

- acknowledges benefits of public transport improvements to West Lothian; and
- recognises reasons for considering a new multi-modal crossing.

### Perth and Kinross Council

- HGV toll review supported;
- a new objective to “emphasise to Government that, whilst supporting an increased range of cross-Forth journeys, it is essential that road infrastructure relating to new bridge crossings should be examined with the aim of minimising traffic that passes through villages, especially HGVs”; and
- support for a multi-modal solution.

### Strategic Rail Authority

- integration of services is the biggest barrier and significant investment in a range of initiatives to tackle this are required.

### Road Haulage Association

- modern design has made HGVs more “road friendly”;

- A8000<sup>3</sup>;
- automated tolling required;
- supports multi-modal crossing; and
- impact of closure due to winds an issue for members.

### **Mobility and Access Committee Scotland**

- welcome policies regarding equality of access; and
- support continued exemption from tolls and recommend FETA investigate ways of improving the procedure to reduce delay.

### **Scottish Association for Public Transport (SAPT)**

- does not support a multi-modal crossing;
- proposes an alternative strategy including rail; and
- requests a meeting of interested parties to agree a five year programme.

### **TRANSform Scotland**

- support measures to significantly develop public transport infrastructure through intensive investment in public transport; and
- does not support a multi-modal crossing.

### **ForthRight Alliance Campaign**

The ForthRight Alliance is a campaign against the construction of a second Forth Road Bridge. 273 e-mails were received as part of the campaign and the comments related primarily to support for sustainable transport options and opposition to the proposal to construct a second Forth Road Bridge.

Overall results of the consultation indicate that the FETA objectives were supported by the public and stakeholders. The core role of FETA to maintain the Forth Road Bridge was validated with the additional role of promoting public transport strongly supported. There was a consensus that barriers to public transport are lack of direct services and reliability, speed and cost. Top priority measures included public transport investment, implementation of a multi-modal crossing and a queue management / tolling regime.

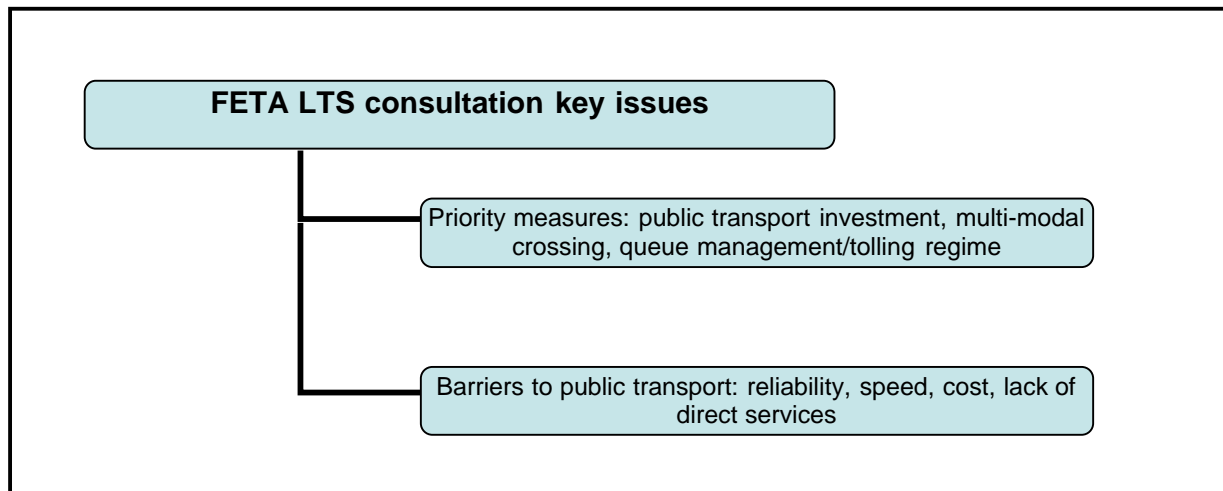
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<sup>3</sup> Proposals to extend the M9 spur dual carriageway to replace the A8000.



The key issues arising from the FETA LTS consultation can be summarised as follows:

**Figure 3.1: FETA LTS Consultation Key Issues**



### 3.3 SEStran RTS

An extensive consultation process with the public and key stakeholders has been undertaken to inform the development of the SEStran RTS. This has included a number of phases intended to raise awareness of the emerging RTS and to feed into the development of the strategy in terms of identifying the key regional transport issues, appropriate objectives, option identification and the form of the final strategy. A range of approaches were used to ensure as wide a coverage and inclusive an approach as practical, these included:

- awareness-raising leaflets;
- telephone and face to face interviews;
- workshops; and
- questionnaires.

The key issues identified during the consultation process and as stated within the RTS Draft For Consultation (SEStran November 2006), are outlined below:

#### Health Issues

Discussions with health authorities and partners in health care highlighted that difficulties with transport impacted directly on the ability to provide on-the-ground health care. Comments received can be summarised as follows:

- bed blocking due to lack of transport home after a hospital stay;
- inability to attend outpatients' appointments punctually on account of the grouped nature of patient transport services;

- difficulties and cost of out of hours transport for patients, samples and urgent goods;
- poor partnership working between hospital transport teams and local authorities;
- limited car parking for staff results in those who require to drive having no option but to park and walk from residential areas;
- public transport timetabling frequently does not match staff shift times or their origin – destination locations; and
- health and transport policies are not integrated and that this could be improved for the mutual benefit of health and transport providers as well as users of health services.

### Education Issues

Many consultees stated the school run was a major concern not just in terms of traffic congestion and road safety but also for developing good life-long travel habits. It was considered that good practice in early years, such as walking or cycling to school, is more likely to lead to habitual walking and cycling and, in turn, better health.

- the school run poses particular problems on account of the congestion around the schools at peak times. It was recognised that many pupils travel long distances to reach private education and there may be limited transport options available to them; and
- more information on sustainable travel options would be welcomed across the region for all trip makers.

### Public Transport Issues

Many of the consultees recognised the progress made in public transport provision in much of the region in recent years; most notably Edinburgh Cross Rail and park and ride schemes. However various concerns were raised:

- poor infrastructure, both provision and maintenance, exists in many areas – particularly rural locations;
- lack of evening and weekend public transport travel options;
- need for improved reliability, quality and frequency on commuter corridors (bus and rail);
- many consultees were keen to see integrated ticketing in the region, yet were not aware of the One-Ticket scheme, which suggests the need for better marketing;
- a number of consultees stated they felt there was piecemeal development of the public transport network, rather than an overall strategy; and

- a number of public transport opportunities were also mentioned by stakeholders including:
  - provision of safe night time public transport;
  - development of a seamless public transport network;
  - making public transport journey times more competitive with the car;
  - making public transport more affordable;
  - providing feeder bus services to connect with rail services;
  - provision of co-ordinated public transport information; and
  - the requirement for increased parking at rail stations.

### Social Inclusion Issues

A wide range of stakeholders had similar views on the manner in which transport addresses social inclusion needs and the key theme emerging from this was transport equality (fair access for all), including affordability. This included:

- a lack of rural public transport provision;
- limited access to transport networks for people with mobility difficulties;
- transport for young people;
- flexible space on buses for wheelchairs, pushchairs etc;
- lack of data on latent demand;
- many consultees feel that public transport is market led rather than needs based;
- lack of transport provision and planning for the projected 20 per cent of the population who will have a disability;
- measures taken to tackle social inclusion did not always involve consultation and therefore in some cases large sums of money have been wasted on inappropriate measures; and
- there must be a recognition that different disabilities require different transport needs.

### Process and Procedure Issues

A recurring theme throughout the consultation related to a perceived lack of integration between land use planning and transport planning, at all levels. Similarly there was considered to be a lack of policy integration between transport and other areas such as health, local authority and education sectors. Other concerns raised include:

- the level of dependency on private transport for new developments, including business, housing and hospital developments;
- the appraisal process and decision making methods gave priority to larger schemes rather than small cost effective schemes and this often presents a disparity between overall objectives and available funding;
- poor communication between regulatory bodies; and
- the time taken to deliver transport schemes in the region was considered to be too long.

## Economy Issues

Stakeholders throughout the region with an interest in the economy wanted to see access to growth areas improved and this included reducing congestion, bottlenecks and network constraints and tackling unreliable and unpredictable car and public transport journey times. A key theme emerging through consultation with local authorities was connectivity and the need to offer different modal options for travel to key destinations and trip attractors. Other concerns included:

- ensuring the labour market can access employment areas was a significant concern and consultees stated the need to:
  - improve business-to-business connectivity;
  - improve regional, national and international freight links;
  - consider changing oil prices; and
  - consider the impact of freight on road network in terms of journey times, regulation and parking.
- stakeholders would like to see some focus given to new technology and its use in transport, particularly with respect to freight; and
- poor road and rail links to ports<sup>4</sup> were highlighted as a concern.

## Sustainable Modes Issues

A workshop with representatives of walking and cycling organisations highlighted the importance of integrating land use planning with transport planning and provision for all development. Other concerns raised include:

- the need to link cycling and walking with the existing and developing public transport network was raised as a concern;
- significant gaps in both the cycling and walking network between key trip attractors which hinders modal shift on to sustainable modes for commuters;

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<sup>4</sup> The most important within the region where identified as being Grangemouth, Leith, Rosyth and Methil.

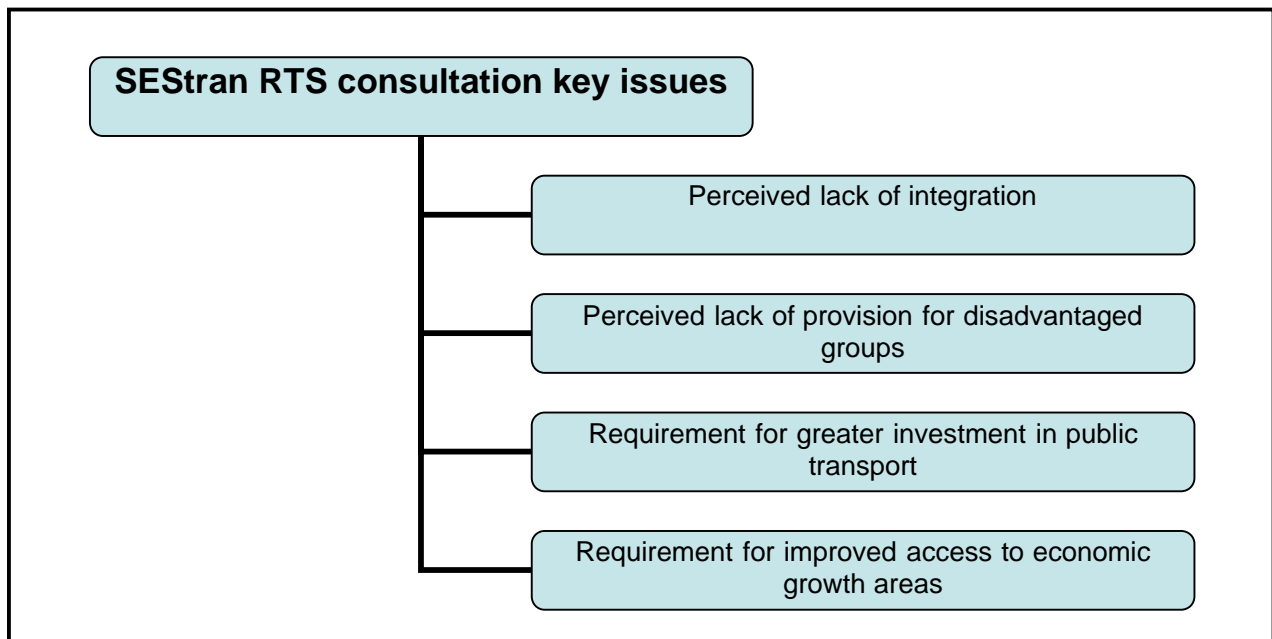
- “many consultees felt it was of paramount importance that cycling and walking are considered as an integral part of transport provision and development planning and therefore any strategy must incorporate cycling and walking measures as part of the other elements of the programme, rather than feature as a stand alone section”;
- improvements to leisure walking and cycling routes was highlighted;
- stakeholders felt that there was a clear synergy between the health promotion agenda and the sustainable transport message which was not being exploited and more could be done to tie the two together;
- active travel and school travel planning was deemed to be a positive step forward, but that more could be done to encourage travel by sustainable modes for commuting and other trips, rather than the current focus on leisure routes;
- other concerns were aired such as difficulties in partnership working on boundary routes, limited routes on the rural network and streetscapes which are unattractive to pedestrians and cyclists;
- some stakeholders commented that paths need to be accessible for disabled users (dropped kerbs etc.); and
- there is considerable scope for buses to provide storage space for bicycles although a willingness to carry them is required first.

### Other Key Issues from Consultation

- emergency services felt that their response times were significantly slower at present than in previous years due to increasing congestion and traffic calming schemes; and
- a number of other organisations stated that the variation in design in traffic calming measures results in the incompatibility of vehicles (particularly those with disabled lifts).

The key issues arising from the SEStran RTS consultation can be summarised as follows:

**Figure 3.2: SEStran RTS Consultation Key Issues**



### 3.4 STPR REFERENCE GROUP CONSULTATIONS

Project Reference Groups have been developed for the STPR study. These groups comprise external stakeholders who represent the interests of a broader range of stakeholders and are as follows:

- Regional Transport Partnership reference group;
- planning reference group;
- environmental reference group;
- enterprise business and freight reference group; and
- public transport and mobility reference group.

The Project Reference Groups comprise representatives from external organisations whose business activity or area of interest is represented by one of the Groups. The primary purpose of the Reference Groups is to ensure that the interests of a broader range of stakeholders are considered as part of the Review.



The membership of the Reference Groups and their areas of interest are as follows:

**A. Regional Transport Partnership Reference Group**

NESTRANS
HITRANS
SEStran
SPT
SW of Scotland
Shetland Transport Partnership
TACTRAN
COSLA

**B. Planning Reference Group**

Glasgow and Clyde Valley Structure Plan Committee
City of Aberdeen Council
Highland Council
Dumfries and Galloway Council
City of Dundee Council
Fife Council
CoSLA

### C. Enterprise Business and Freight Reference Group

Scottish Enterprise
Freight Transport Association
Scottish Chambers of Commerce
CBI
Visit Scotland
Highlands and Islands Enterprise

### D. Environmental Interests Reference Group

Scottish Natural Heritage
Historic Scotland
SEPA
Environment Link

### E. Public Transport and Mobility Reference Group

Confederation of Passenger Transport
Passenger Focus
Bus Users UK
Mobility and Access Committee for Scotland
Network Rail

The key responsibilities of the Reference Groups are:

- to consider and offer objective and constructive comment on the emerging information, analysis and reports produced by the commission's consultants;
- to provide advice to the Project team on issues which affect their specific area of interest or as requested by the consultant; and
- to assess and advise how well the emerging findings address the NTS expectations.

The Reference Groups are an opportunity for the exchange of information and ideas to help shape the transport network.

Communication with Reference Groups is two-way: reference groups are informed of progress on the Review and their comments / input sought on products from the Review. The Reference Group sessions are interactive in nature and vary depending on the group in question but in each case the issues covered remain the same.

Reference Group meetings were held on 3 November, 6 November and 13 December 2006. The key recommendations from this group were that the FRCS be consistent with the Final NTS and Action Plans and the emerging RTS documents.

### 3.5 SUMMARY

This chapter has provided an overview of the detailed consultation undertaken to inform the FETA LTS and SEStran RTS. The FETA LTS consultation identified a consensus that:

- key barriers to cross-Forth public transport are: a lack of direct services, reliability, speed and cost; and
- top priority measures included public transport investment; implementation of a multi-modal crossing; and queue management / tolling regime.

The SEStran consultation identified a range of transport issues relating to:

- a perceived lack of integration and a perceived lack of provision for disadvantaged groups; and
- a requirement for greater investment in public transport and improved access to economic growth areas.

Consultation with STPR Reference Groups identified a particular requirement to:

- ensure the recommendations from the Forth Replacement Crossing Study are consistent with emerging RTSs; and
- Ensure the recommendations from the wider STPR study are consistent with the policies outlined within the NTS.

## 4 DEVELOPMENT OF SMART TRANSPORT OBJECTIVES

### 4.1 INTRODUCTION

This chapter will draw together the findings of the previous chapters to summarise the expectations for network performance on and in the vicinity of, the Forth Road Bridge and the Forth Bridge. It will then set out the criteria for developing SMART objectives and outline the specific objectives identified for this study.

### 4.2 SUMMARY OF HIGH LEVEL EXPECTATIONS

Ministers have set out their overall aim for transport to promote economic growth, social inclusion, health and protection of the environment through a safe, integrated, effective and efficient transport system.

In order to fulfil this aim, the key priorities identified from current and developing policies broadly relate to:

- improving journey times and connections;
- reducing emissions;
- improving quality, accessibility and affordability;
- promoting modal shift;
- promoting new technologies and cleaner fuels;
- managing demand;
- reducing the need to travel;
- improving services for all transport users; and
- enhancing movement of freight by non-road modes.

A review of relevant consultation has been undertaken, specifically that for the FETA LTS and SEStran RTS. This review identified a number of barriers to cross-Forth public transport, attributable primarily to a lack of direct services and their reliability, speed and cost. Top priority measures suggested included greater public transport investment, implementation of a multi-modal crossing and a requirement for implementing a queue management / tolling regime.

Transport problems in the SEStran region are perceived to originate from a lack of integration between land use and transport planning and between health and transport policies. The “school run” is considered to be a particular problem, together with a perceived lack of transport provision for disadvantaged groups. A requirement for greater investment in public transport infrastructure and increased public transport integration was identified, alongside a requirement to improve access to economic growth areas.

A review of the recommendations made within SEStran's RTS identified the following specific conditions for the replacement of the Forth Road Bridge:

*“any new crossing should be constructed to allow for future tram (and if possible heavy rail) use.”*

In the situation that an additional crossing is provided:

- “the combination of old and new crossings should provide no more than two lanes in each direction available to single-occupant cars;
- all new traffic lanes across the Forth need to be dedicated to buses and high occupancy vehicles (HOVs). Consideration will be given to the possibility of allowing HGVs to access these lanes;
- separate running lanes for the mixed use of buses, HOVs and possibly HGVs should be considered, but as far as possible flexibility should be maintained to enable full vehicle carrying capacity for traffic during periods of Bridge maintenance; and
- the promoter should be required to put in place a demand management and investment package that will seek to ensure that traffic in Edinburgh will remain at or below the levels that would have been forecast without an additional crossing.”

Following consultations with the STPR stakeholder reference group the key recommendations from the group were that the FRCS be consistent with the Final NTS and Action Plans and the emerging RTS documents. In addition, the importance of providing a range of public transport options south of the crossing(s) was highlighted.

Following a review of current and developing policies and the outputs from the consultation undertaken in relation to the study area, objectives have therefore been set for the Forth Replacement Crossing Study. The criteria adopted for the development of objectives is summarised in the Sections below.

### 4.3 DEVELOPMENT OF SMART OBJECTIVES

Based on the Scottish Transport Appraisal Guidance (STAG), the goal should be to define a number of “SMART” objectives for the study. These should therefore be:

- **specific** – the geographic area to which the target should apply should be readily understood and be clearly defined. A plan is required to define the area of application. Also, the wording of the target should be clear as to what the subject of the target is, the base against which any change is being compared and the units of change;
- **measurable** – it is likely that changes in travel patterns will be the most readily available data source to use as a basis for any targets. A coherent monitoring strategy must be in place in order to measure progress with confidence in the results;



- **attainable** – through wide stakeholder consultation, it is essential that an informed general consensus is reached on the desirability of meeting the stated targets and on their achievability and affordability;
- **relevant** – the presentation of the target as a measure resulting from an analysis of school travel problems and local, regional and national transport objectives will assist in the development of relevant targets; and
- **time related** – it is sensible to produce targets at regular intervals: 2012, 2017 and 2022. This provides a profile over this period, with an end date linking to the Scottish Executive's aspirational national traffic stabilisation target.

#### 4.4 PROJECT SPECIFIC TRANSPORT PLANNING OBJECTIVES

Within the context of the NTS and the NPFS, which set the policies, key transport goals and policies for the STPR, a number of specific transport planning objectives have been established for the Forth Replacement Crossing Study. The objectives complement the high-level expectations set out within regional and local planning and policy frameworks and those established through the consultation undertaken as part of the SEStran RTS and FETA LTS development. In addition, the objectives have been developed following consultation with the STPR key stakeholder / reference groups.

It should be noted that the key priorities identified from current and developing policies, as outlined within Section 4.2, are generic to the Scottish transport network as a whole. The following objectives have been identified for the Forth Replacement Crossing Study and are exclusive to the specific project brief for this commission:

- maintain cross-Forth transport links for all modes to at least the level of service offered in 2006;
- connect to the strategic transport network to aid optimisation of the network as a whole;
- improve the reliability of journey times for all modes;
- increase travel choices and improve integration across modes to encourage modal shift of people and goods;
- improve accessibility and social inclusion;
- minimise the impacts of maintenance on the effective operation of the transport network;
- minimise the impact on people, the natural and cultural heritage of the Forth area; and
- support sustainable development and economic growth.

It is considered that the above objectives are in line with the high level strategic outcomes identified within the NTS: to improve journey times and connections, to reduce emissions and to improve quality and accessibility and tackle affordability, as summarised within Table 4.1 below.

**Table 4.1: Project Specific Transport Planning Objectives and Linkage to NTS Strategic Outcomes**

Project Specific Transport Planning Objective	NTS Strategic Outcome		
	Improve journey times & connections	Reduce emissions	Improve quality and accessibility and tackle affordability
Maintain cross-Forth transport links for all modes to at least the level of service offered in 2006	Π		
Connect to the strategic transport network to aid optimisation of the network as a whole	Π		Π
Improve the reliability of journey times for all modes	Π		
Increase travel choices and improve integration across modes to encourage modal shift of people and goods	Π	Π	Π
Improve accessibility and social inclusion			Π
Minimise the impacts of maintenance on the effective operation of the transport network	Π		Π

Project Specific Transport Planning Objective	NTS Strategic Outcome		
	Improve journey times & connections	Reduce emissions	Improve quality and accessibility and tackle affordability
Minimise the impact on people, the natural and cultural heritage of the Forth area		II	
Support sustainable development and economic growth	II		

It is considered that affordability is allowed for in a standard STAG appraisal and is therefore not considered as a specific objective for the Forth Replacement Crossing Study.

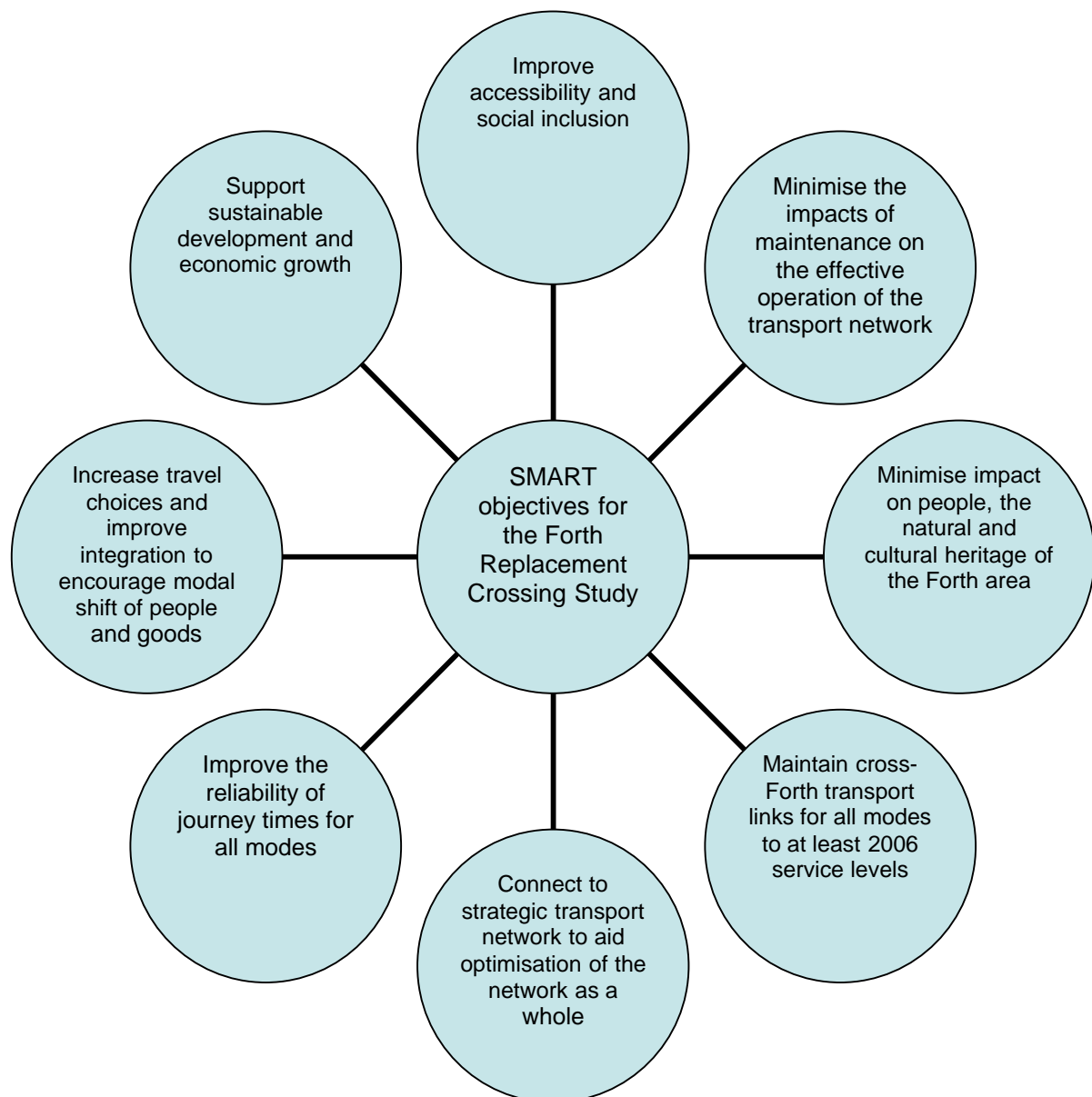
A one-day Inception Workshop for the Forth Replacement Crossing Study was held on 27 September 2006 with representatives of Transport Scotland, Jacobs and Faber Maunsell. Capital Value and Risk Limited (CVRL) were commissioned to act as an independent facilitator to manage the workshop. The high level expectations emerging from current and developing policies and action plans was discussed, together with the results of the consultation undertaken to inform the FETA LTS and SEStran RTS. Subsequently, the above objectives were generated at the workshop and presented and agreed at the Project Board Meeting held on 11 October 2006.

#### 4.5 SUMMARY

This chapter has summarised the expectations for network performance on and in the vicinity of, the Forth Road Bridge and Forth Bridge. It has also outlined the criteria for developing SMART objectives and outlined the specific objectives identified for this study, which link back to the strategic outcomes of the NTS.

The SMART objectives can be summarised as follows.

**Figure 4.1: SMART Objectives**



## 5 IDENTIFICATION OF GAPS AND SHORTFALLS

### 5.1 INTRODUCTION

This chapter presents specific performance indicators to identify any gaps and shortfalls between the future performance and expectations of the transport network in the vicinity of the Forth bridges in 2012, 2017 and 2022 as specified in the Study brief. The concept of a prioritisation framework for the SMART objectives identified within the previous chapter is also discussed.

Forecasts provided in this report are, unless stated otherwise, taken from the Transport Model for Scotland (TMfS). TMfS is the official model of Transport Scotland, maintained and updated periodically by consultants. It models all responses to possible transport interventions, such as changing mode, destination, time of travel etc and has recently been updated to a 2005 base, including the latest land use forecasts, as provided by each local authority.

The model includes representations of three time periods: AM peak (08:00-09:00), Inter peak (average hour of 10:00-16:00) and PM peak (17:00-18:00).

Three future year scenarios (2012, 2017 and 2022), along with the 2005 base were analysed.

Future anticipated/committed transport schemes added to the base 2005 situation for each forecast are listed below:

2012:

- M74 Completion;
- M9 Spur Extension;
- Finnieston Bridge (Glasgow);
- A68 Northern Dalkeith Bypass;
- Ferrytoll Link Road, (Rosyth);
- Second Upper Forth Crossing (at Kincardine);
- Alloa – Stirling – Glasgow Rail Service;
- M8 Upgrade (Ballieston to Newhouse);
- Airdrie – Bathgate Rail Reopening;
- Edinburgh Airport Rail Link;
- Edinburgh Tram Lines;
- Glasgow Airport Rail Link;



- Glasgow Cross Rail;
- Borders Rail Service;
- M80 Upgrade (Stepps to Haggs);
- A801 Upgrade (West Lothian); and
- Aberdeen Western Peripheral Road.

2017:

- Sherriffhall Grade Separation Junction;
- Glasgow East End Regeneration Route; and
- South East Wedge / Shawfair, (Edinburgh).

2022:

- Rosyth Bypass.

It should be noted that these schemes are those that are expected to be in place by the forecast year. However, some of the schemes are not fully committed, and their inclusion should not be taken as any form of commitment by Transport Scotland or any other national, regional or local government body.

## 5.2 SPECIFIC PERFORMANCE INDICATORS

This section discusses the objectives for the Forth Replacement Crossing Study and how they can be measured using the forecasting and assessment tools currently available to the Study.

### **Maintain cross-Forth transport links for all modes to at least the level of service offered in 2006**

The 'level of service' is a concept in transport planning that is most usually linked to the delay experienced by travellers through the network. In this case, selected journey times for car and bus provide a measure of change between the current and forecast situations.

The journeys selected for analysis in the highway model are seen as representative of the various journeys being made across the Forth:

- Dunfermline to Edinburgh City Centre;
- Kirkcaldy to Leith; and
- Perth to Livingston.

Single bus services from TMfS were selected for analysis from the AM and PM peak periods. The bus services selected for analysis in the AM peak are:

- Kirkcaldy to Edinburgh;
- Inverkeithing to Riccarton Campus; and
- Perth to Edinburgh.

In the PM peak the following were selected:

- Edinburgh to Kirkcaldy;
- Riccarton Campus to Dunfermline; and
- Edinburgh to Perth.

These selected bus routes provide a representative measure of journey times on a variety of approaches to, and from, the Forth Road Bridge, thus allowing an overall picture to be developed.

A similar analysis of rail is not required, as the journey times are dependent on timetable, which has not changed in the forecast scenarios. However, an analysis of the level of crowding on the cross Forth services in the AM peak will also be undertaken, as this is a key factor in people's perception of the 'level of service' they are receiving from a rail trip.

### **Connect to the strategic transport network to aid optimisation of the network as a whole**

How well the transport network is operating can be measured by the average speed of vehicles on the network. This can also be produced for subsets of both geographical area (Local Authority) and type of road.

### **Improve the reliability of journey times for all modes**

The reliability of journey times cannot be directly measured with the forecasting tools available. However, reliability is closely related to the levels of congestion. It is proposed to use a measure of congestion as a proxy measurement for this objective.

An appropriate measure of congestion is the number of hours lost due to travel being slower than speed achieved on each road when traffic is flowing freely. This analysis will be produced for the AM peak from Junction 4 on the M90 to Echline Roundabout, as this is considered to be representative of the main corridor.

In the absence of the introduction of any bus priority measures, the reliability of bus journeys is a function of the journey time of private road vehicles. This report is concerned with analysing how the network will perform in the absence of any specific measures and proposals that may be developed during this study: the agreed measures in the forecast scenarios do not include bus priority to the north of the Forth Road Bridge. In this report, therefore, the measurement of road congestion can serve as a proxy for both car and bus journey time reliability.

### **Increase travel choices and improve integration across modes to encourage modal shift of people and goods**

The measurable outcome for this objective is the mode split between car and public transport for trips across the Forth.

### **Improve accessibility and social inclusion**

Social inclusion can be measured through an assessment of how the socially deprived can access centres of major employment, such as:

- Edinburgh city centre;
- Gyle;
- Edinburgh Airport;
- Livingston;
- Glenrothes; and
- Leith Waterfront and Victoria Quay.

The Scottish Index of Multiple Deprivation (2006) was used to choose a selection of areas in the most deprived 20 per cent, ranked by income, both north and south of the Forth:

- S01002721: Cowdenbeath;
- S01002785: Kelty;
- S01002656: Dunfermline;
- S01002759: Methil;
- S01001926: Sighthill, Edinburgh;
- S01002279: Pilton, Edinburgh; and
- S01006402: Craigshill, Livingston.

The duration of Cross Forth movements to access employment by both the road network and public transport can then be assessed, showing the change in accessibility brought about by each scenario.

Additionally, 'isochrone' maps can be produced for road journey times to each employment centre for a visual representation.

### **Minimise the impacts of maintenance on the effective operation of the transport network**

The total vehicle flow over the Forth Road Bridge and particularly the total flow of heavy goods vehicles is closely linked to the requirement for maintenance and resurfacing work on the bridge carriageways. The Forth Replacement Crossing Study Report 1: Network Performance concludes in its section on Surfacing (section 2.4.4) that “If the number of HGVs is reduced...it would be reasonable to predict that the life of the bridge surfacing would be increased” and hence the amount of maintenance required be reduced. Conversely, it would also seem reasonable to assume that increased volumes of traffic, and HGVs in particular, would increase the amount of surface maintenance and the disruption associated with it.

Annual ‘total vehicle’ and ‘heavy goods vehicle’ flows will be prepared for each time period.

### **Minimise the impact on people, the natural and cultural heritage of the Forth area**

Qualitative assessments of the impact of any scheme on the natural and cultural heritage of the Forth Area of any proposed scheme will form part of the assessment.

An assessment of regional emissions (in tonnes) due to transport can be undertaken using TMfS. This can give the following outputs:

- Carbon Monoxide;
- Hydrocarbon Pollutants;
- Oxides of Nitrogen Pollutants;
- Particulate Pollutants; and
- Carbon Dioxide.

### **Support sustainable development and economic growth**

The 2002 report *Scotland’s Transport Delivering Improvements: Transport Indicators for Scotland*, published by the Scottish Executive outlines performance targets for their objectives to support sustainable development and promote economic growth.

For sustainable development, the report identifies Transport Emissions, “Freight Lifted” and Modal Shifts on short journeys and journeys to work/school as key performance indicators. These factors are already reported upon for the following objectives:

- Transport Emissions are reported in “Minimise the impact on people, the natural and cultural heritage of the Forth area”;
- “Freight Lifted” is reported in “Minimise the impacts of maintenance on the effective operation of the transport network”; and

- Modal Shift is reported in “Increase travel choices and improve integration across modes to encourage modal shift of people and goods”.

For economic development, road traffic volumes, road traffic congestion and condition of the road network are listed as performance indicators. These factors are already reported for the following objectives:

- Road Traffic Volumes are reported in “Minimise the impacts of maintenance on the effective operation of the transport network”; and
- Road Traffic Congestion is reported in “Minimise the impacts of maintenance on the effective operation of the transport network”.

The condition of the road network is not explicitly reported upon, as this is not a quantifiable output of the modelling. However, the volume of HGVs and the level of traffic generally can be taken as a proxy measure for this.

### 5.3 GAP ANALYSIS

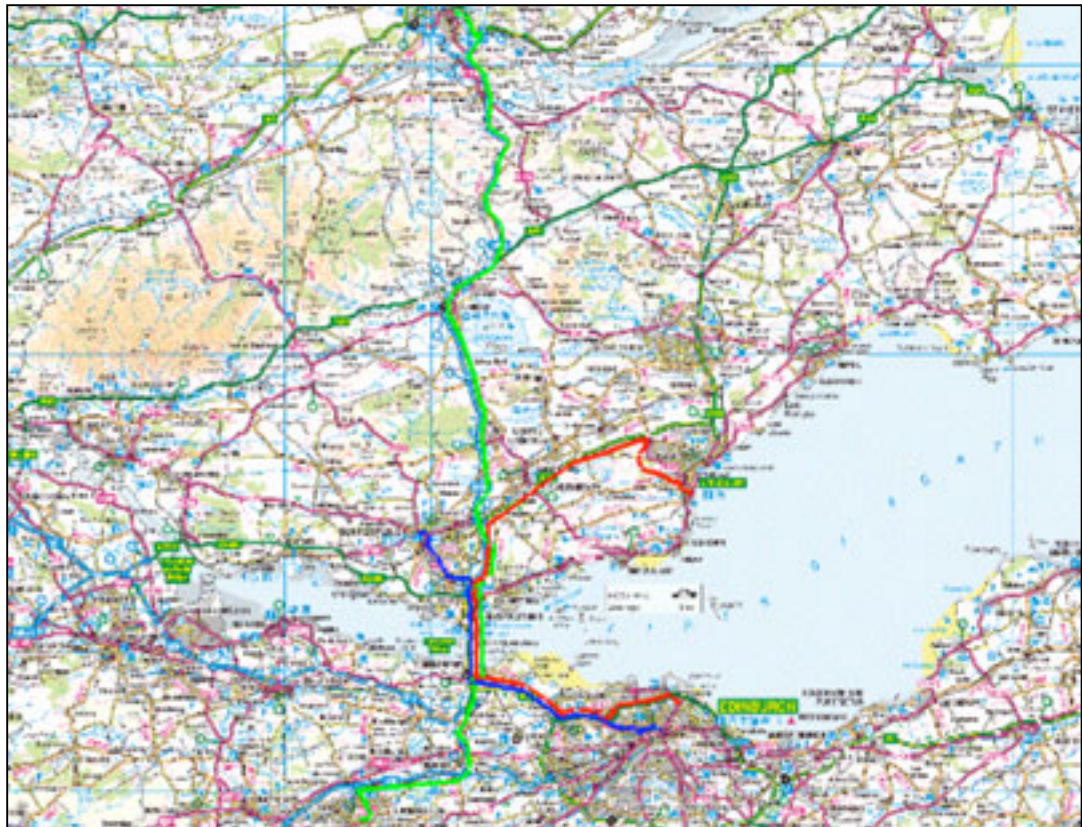
This section presents the quantitative analysis of the performance levels of the forecast scenarios against each objective.

#### **Maintain cross-Forth transport links for all modes to at least the level of service offered in 2006**

Using TMfS, select routes were chosen to analyse journey times and average speed during the AM and PM peak periods. As discussed in section 5.2, the three routes selected for this analysis are Dunfermline to Edinburgh City Centre, Kirkcaldy to Leith and Perth to Livingston. These are outlined below in Figure 5.1.



**Figure 5.1 Journey Time Routes**



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The time taken is measured after each kilometre of the journey. As only the time after each discrete section can be measured, interpolation is used to calculate the times where appropriate. Note that the total distance of a route can change slightly between forecast years as other infrastructure is added.

Figure 5.2 shows the journey time against the journey distance for each forecast year. In the southbound direction in the AM peak, it can be seen that there is no noticeable increase between forecast years until the Forth Road Bridge is reached. There is a small increase between the years until Edinburgh is reached, where larger increases in journey time between forecast years is experienced. Lower predicted junction delay at Barnton due to a slight drop in flow due to the introduction of the M9 Spur Extension accounts for the drop in total journey time between 2005 and 2012.

In Figures 5.2 - 7.11, the following abbreviations are used:

km = kilometres

km/hr = kilometres per hour

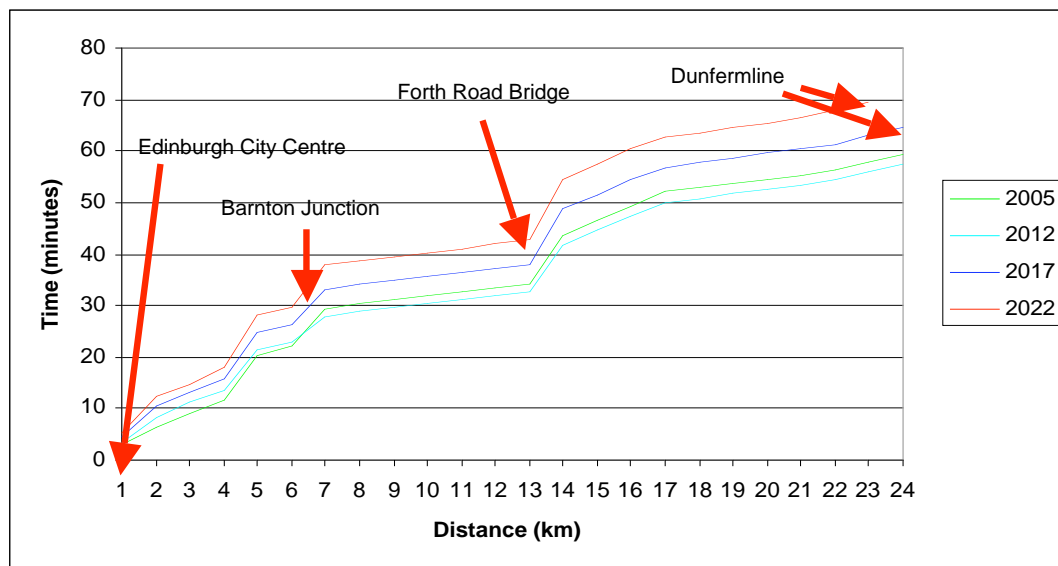


**Figure 5.2 Dunfermline - Edinburgh City Centre AM Peak Journey Times**



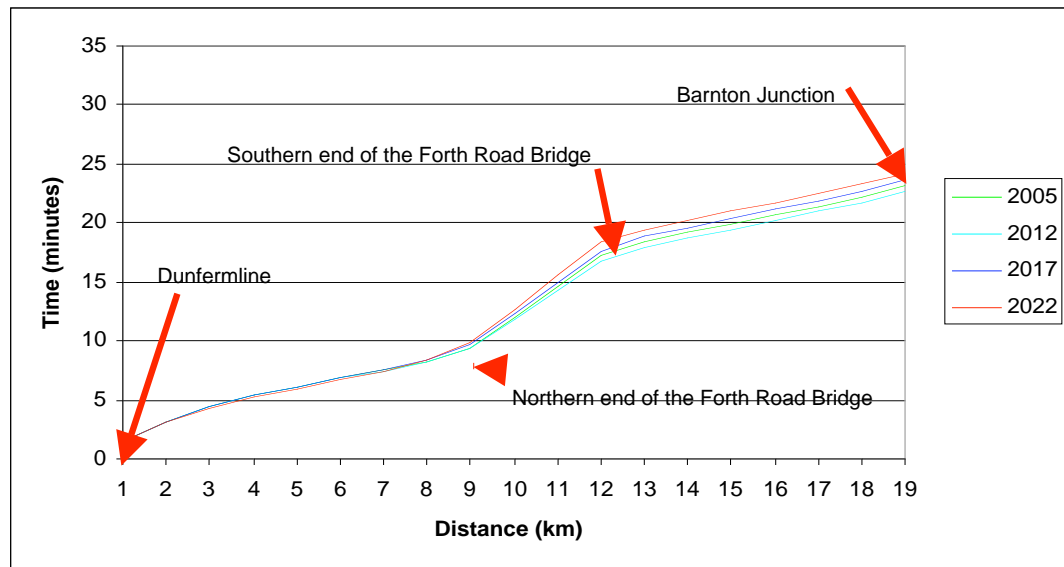
Figure 5.3 shows the same information for the PM peak northbound direction. A pattern similar to that of the AM peak is exhibited, in that there is no increase between years to the north of the bridge: the majority of the increase in journey time is due to increasing congestion in Edinburgh.

**Figure 5.3 Edinburgh City Centre – Dunfermline PM Peak Journey Times**

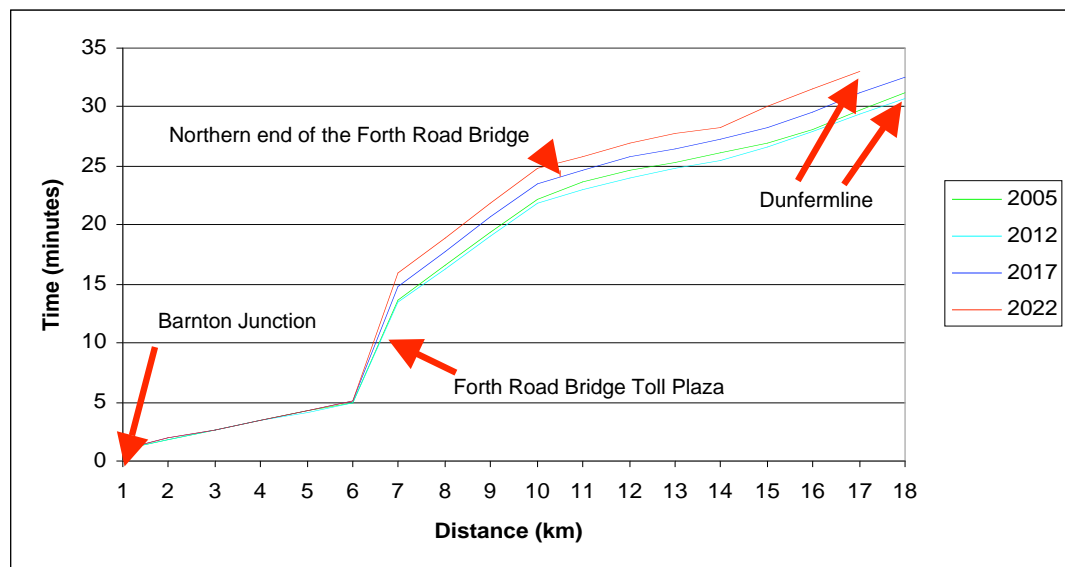


In order to remove the effects of Edinburgh congestion on the journey time route, a subset of the above route was taken. The route from Dunfermline to Barnton junction was analysed. Figures 5.4 and 5.5 show information for this route southbound in the AM peak and northbound in the PM peak.

**Figure 5.4 Dunfermline - Barnton AM Peak Journey Times**



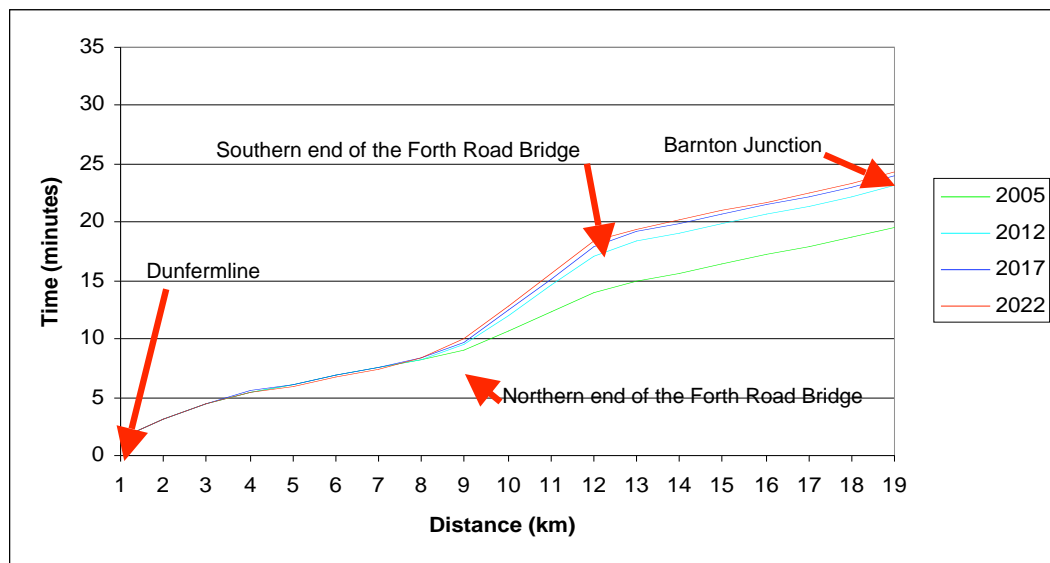
**Figure 5.5 Barnton – Dunfermline PM Peak Journey Times**



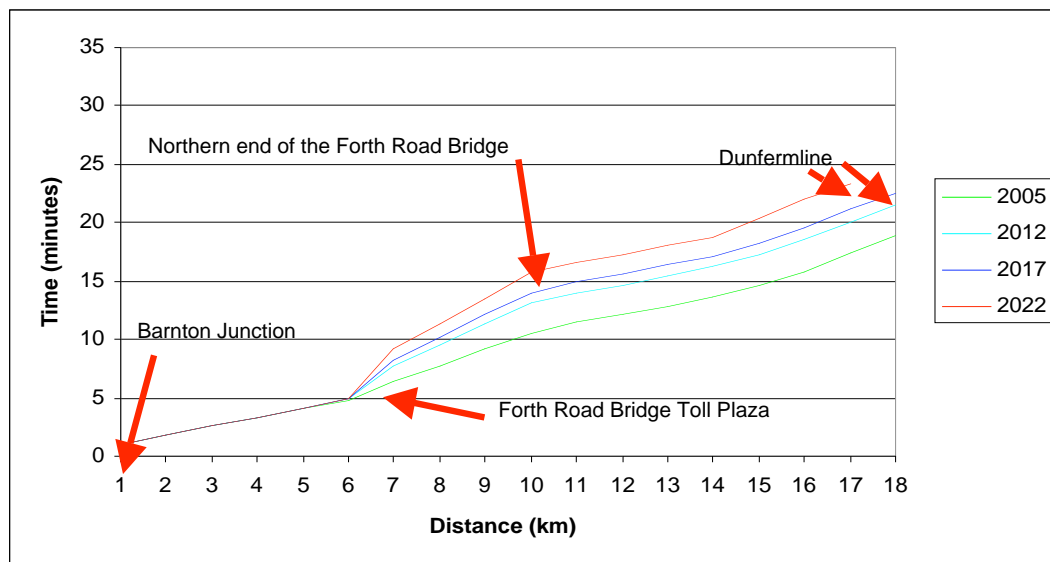
There is very little increase in the time taken to complete the southbound journey in the AM peak. This is due to the AM peak hour being very close to capacity, with little scope for further deterioration in the time taken to cross the Forth Road Bridge.

There is an approximately two minute increase in the journey time across the Forth Road Bridge in the PM peak northbound direction between 2005 and 2022. Again, this small increase is a function of how close the existing situation is to capacity in the peak hour. Figures 5.6 and 5.7 present the equivalent information for the AM peak northbound and PM peak southbound directions, respectively.

**Figure 5.6 Dunfermline - Barnton PM Peak Journey Times**



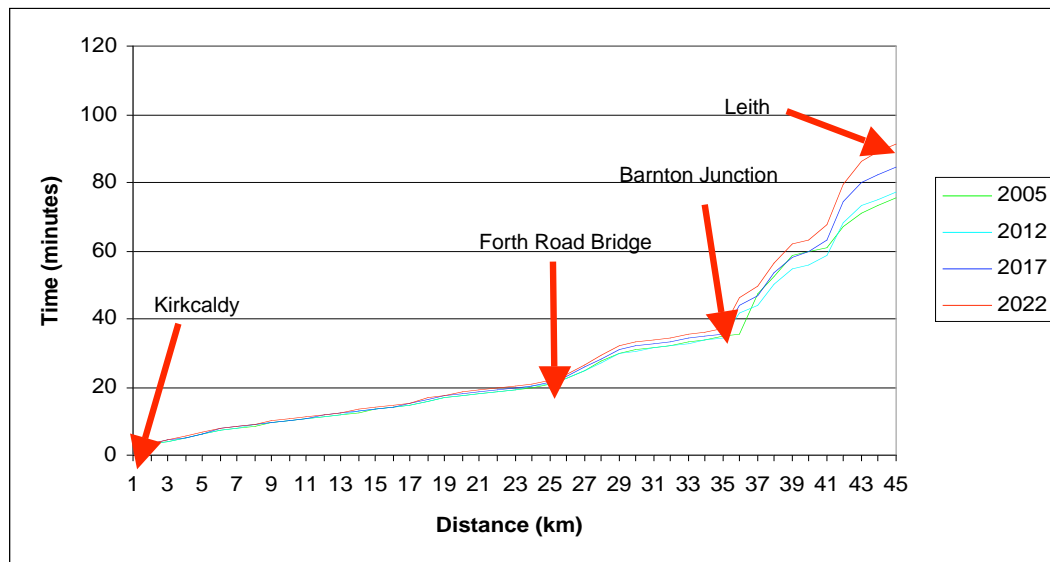
**Figure 5.7 Barnton - Dunfermline AM Peak Journey Times**



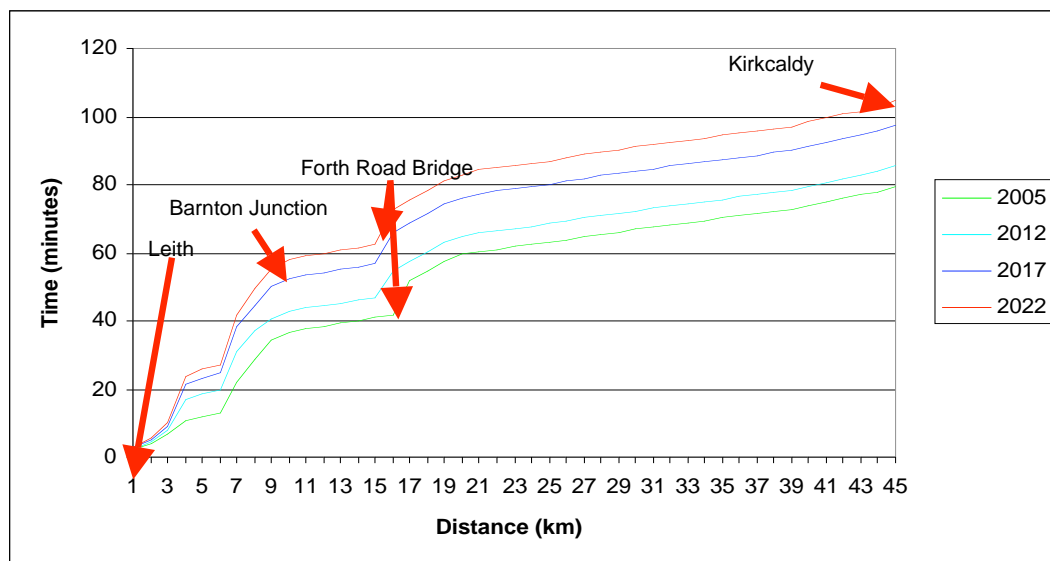
These figures clearly show that there is a greater increase in journey times in the 'non peak' directions in the AM and PM peak hours i.e. northbound in the morning and southbound in the evening. This supports the view that the peak hour is so close the capacity that there is little scope for further deterioration.

Figures 5.8 and 5.9 show equivalent information for the Kirkcaldy to Leith route in the AM peak and the return journey in the PM peak. Again, a similar pattern to the previous route is exhibited: increases in journey time duration in future are largely a function of increases in congestion in Edinburgh.

**Figure 5.8 Kirkcaldy – Leith AM Peak Journey Times**

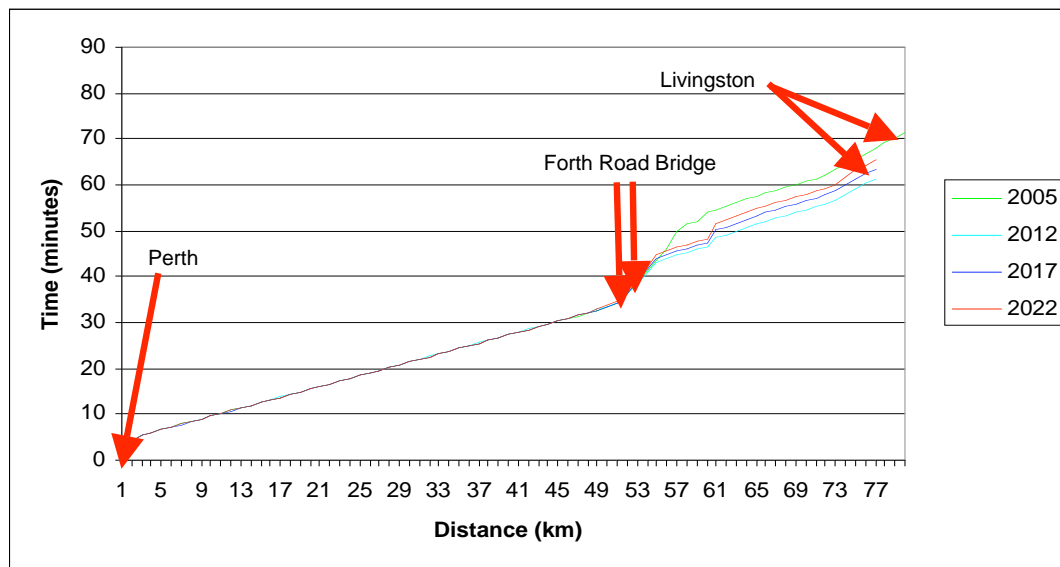


**Figure 5.9 Leith - Kirkcaldy PM Peak Journey Time**



Figures 5.10 and 5.11 show equivalent information for the Perth to Livingston journey time route in the AM peak and the return journey in the PM peak. The introduction of the M9 Spur Extension by 2012 reduces the journey time and the total trip length. The northbound journey time does not increase back to its 2005 level by 2022.

**Figure 5.10 Perth - Livingston AM Peak Journey Times**



**Figure 5.11 Livingston – Perth PM Peak Journey Times**

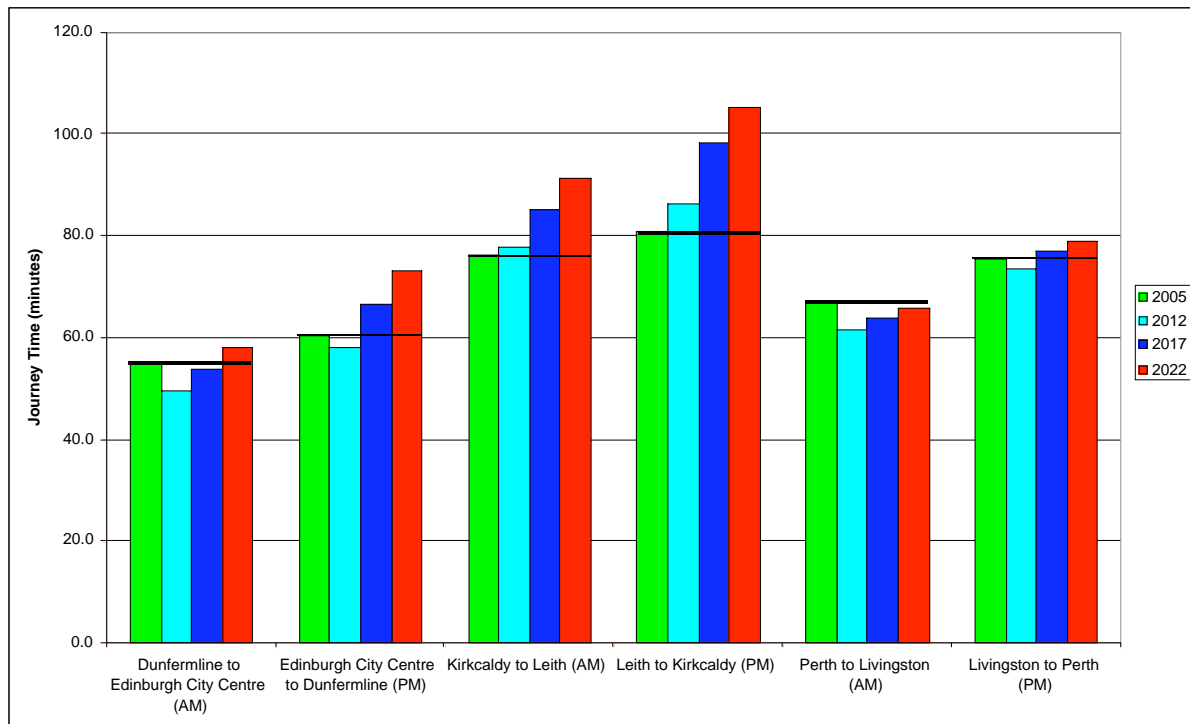


Table 5.1 and Figure 5.12 below summarise the total journey times for each route in peak directions (i.e. AM peak for southbound movements and PM peak for northbound movements). Note that as mentioned earlier, for the numbers contained in the above graphs, interpolation was used to calculate the times at each kilometre point of the journey. This leads to slightly different total journey times from those actually recorded. The actual journey times are listed in Table 5.1.

**Table 5.1: Total Road Journey Times in the Peak Direction (minutes)**

Description	2005	2012	% Change over 2005	2017	% Change over 2005	2022	% Change over 2005
Dunfermline to Edinburgh City Centre	55.0	49.6	-10	54.0	-2	58.3	6
Edinburgh City Centre to Dunfermline	60.7	58.1	-4	66.6	10	73.4	21
Kirkcaldy to Leith	76.3	77.8	2	85.1	12	91.6	20
Leith to Kirkcaldy	80.9	86.4	7	98.2	21	105.5	30
Perth to Livingston	67.0	61.8	-8	63.8	-5	65.8	-2
Livingston to Perth	75.7	73.6	-3	77.2	2	78.9	4

**Figure 5.12: Total Road Journey Times in the Peak Direction (minutes)**



The table and figure show that by 2017 most of the journey times have increased duration, with the exception of Perth to Livingston and Dunfermline to Edinburgh City Centre in the morning peak. This trend continues to 2022. The objective of maintaining cross-Forth transport links for all modes to at least the level of service offered in 2006 is, therefore, not met for road-based trips.

The modelled results for journey times show very little change between years over the Forth Road Bridge. As discussed earlier, this is due to the crossing being at, or near, its capacity in the peak direction in the peak hour. However, the modelling package is not capable of including the effects of queuing on other vehicles, or the 'dynamic' nature of those queues. In reality, the peak is likely to increase in duration and queues increase in length and duration, which will have a negative impact on journey times. This growth and decay of the queues is not represented in the modelling.

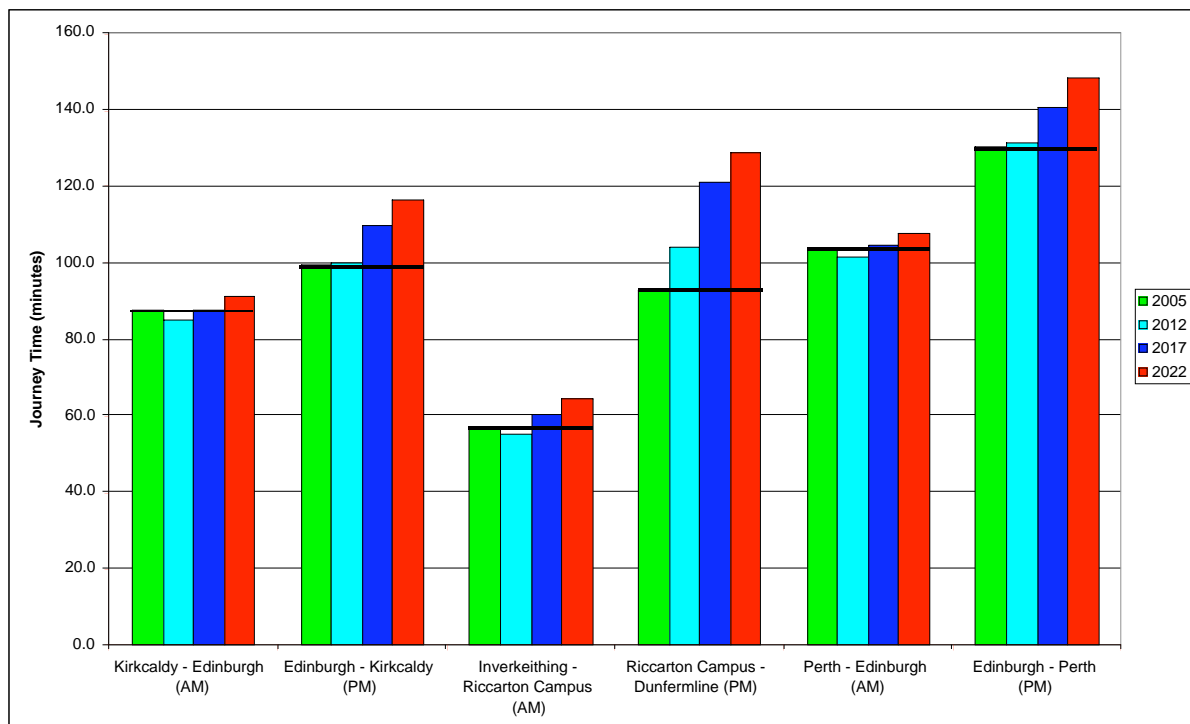
Table 5.2 below summarises the bus journey times and the percentage change between the 2005 and forecast years. Figure 5.13 presents the values graphically.



**Table 5.2: Total Bus Journey Times in the Peak Direction (minutes)**

Description	2005	2012	% Change over 2005	2017	% Change over 2005	2022	% Change over 2005
Kirkcaldy - Edinburgh	87.8	85.1	-3	88.0	0	91.2	4
Edinburgh - Kirkcaldy	99.9	100.3	0	109.8	10	116.9	17
Inverkeithing - Riccanton Campus	57.1	55.5	-3	60.6	6	64.4	13
Riccanton Campus - Dunfermline	93.0	104.0	12	121.3	30	128.9	39
Perth - Edinburgh	103.9	101.7	-2	104.8	1	108.0	4
Edinburgh - Perth	130.4	131.4	1	141.0	8	148.6	14

**Figure 5.13: Total Bus Journey Times in the Peak Direction (minutes)**



In a similar fashion to the car journey times, there is a slight decrease in 2012, compared with the 2005 situation, as the M9 Spur Extension is included. However, by 2017 and 2022, the journey times are in excess of the base situation. The objective of maintaining cross-Forth transport links for all modes to at least the level of service offered in 2006, therefore, is not met for bus trips.

Table 5.3 below shows the percentage change in rail crowding on southbound services crossing the forth during the am peak between 2005 and the forecast years of 2012, 2017 and 2022.

**Table 5.3: Percentage Change in Rail Crowding**

	2005	2012	% Change from 2005	2017	% Change from 2005	2022	% Change from 2005
<b>Load</b>	1474	1509	2.4	1670	13.3	1789	21.4
<b>% Crowd Factor</b>	1.108	1.113	0.4	1.125	1.5	1.131	2.0

As shown in the above table, the number of passengers increases on the southbound cross-Forth services over the period from 2005 to 2022. Over the same time period, rail crowding increases as well. The objective of maintaining cross-Forth transport links for all modes to at least the level of service offered in 2006 is, therefore, not met for rail trips.

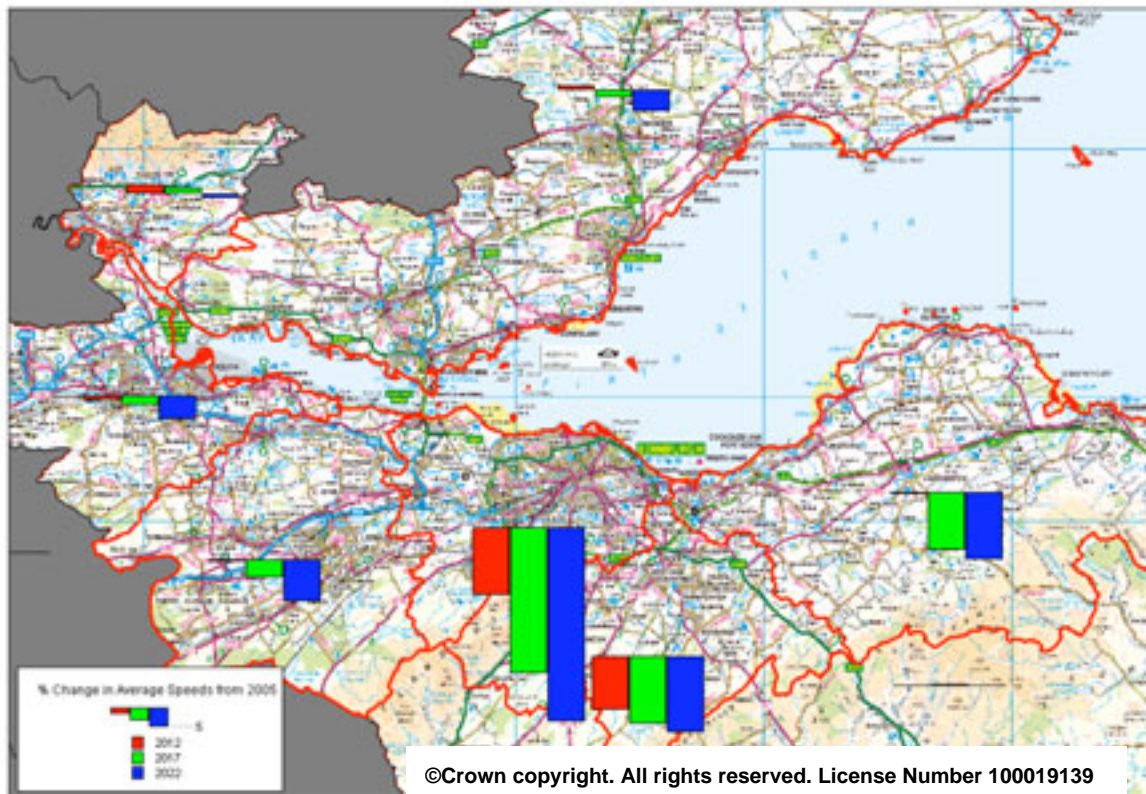
### Connect to the strategic transport network to aid optimisation of the network as a whole

Table 5.4 and Figure 5.14 show the percentage change in average speeds on roads modelled in the TMfS between 2005 and the forecast years of 2012, 2017 and 2022 for each Local Authority in the SEStran area.

**Table 5.4: Percentage Change in Average Speed by SEStran Local Authority**

Local Authority	2012	2017	2022
City of Edinburgh	-8.9	-19.3	-25.6
Clackmannanshire	1.2	0.7	-0.4
East Lothian	-0.3	-7.7	-9.0
Falkirk	-0.5	-1.2	-3.2
Fife	0.5	-1.1	-2.9
Midlothian	-7.1	-9.0	-9.9
Scottish Borders	0.1	0.3	0.0
West Lothian	-0.3	-2.3	-5.4

**Figure 5.14: Percentage Change in Average Speed by SEStran Local Authority**



Average speeds change slightly between 2005 and 2012 for all SEStran Local Authorities except for the City of Edinburgh and Midlothian. Speeds then reduce in the period to 2017 and to 2022 in all areas with the exception of Clackmannanshire and the Scottish Borders. Edinburgh experiences a 26 per cent decline in average speeds between 2005 and 2022. East Lothian and Midlothian both experience a 9-10 per cent decline. The network as a whole is not functioning as well in 2022 as in 2005: the objective of aiding optimisation of the network as a whole is therefore not met.

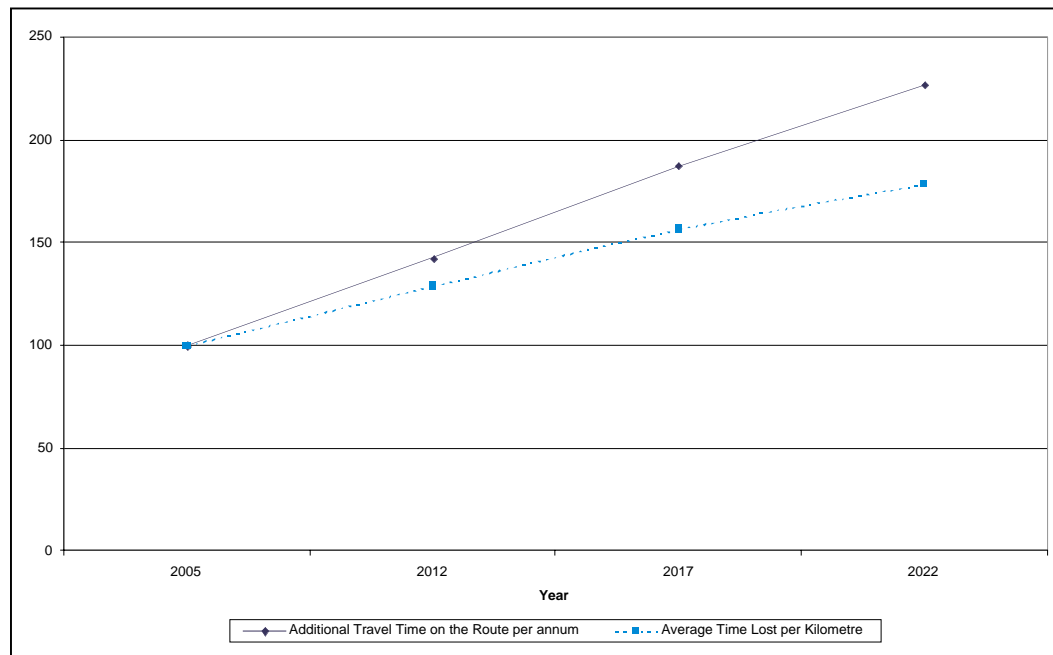
### **Improve the reliability of journey times for all modes**

Figure 5.15 presents an analysis of the selected congestion indicators on the corridor from Junction 4 of the M90 to Echline Roundabout south of the Forth Road Bridge:

- additional annual vehicle hours; and
- average time lost per vehicle kilometre.

Both indicators are for two way combined flows.

**Figure 5.15: Indexed Congestion Indicators (2005=100)**

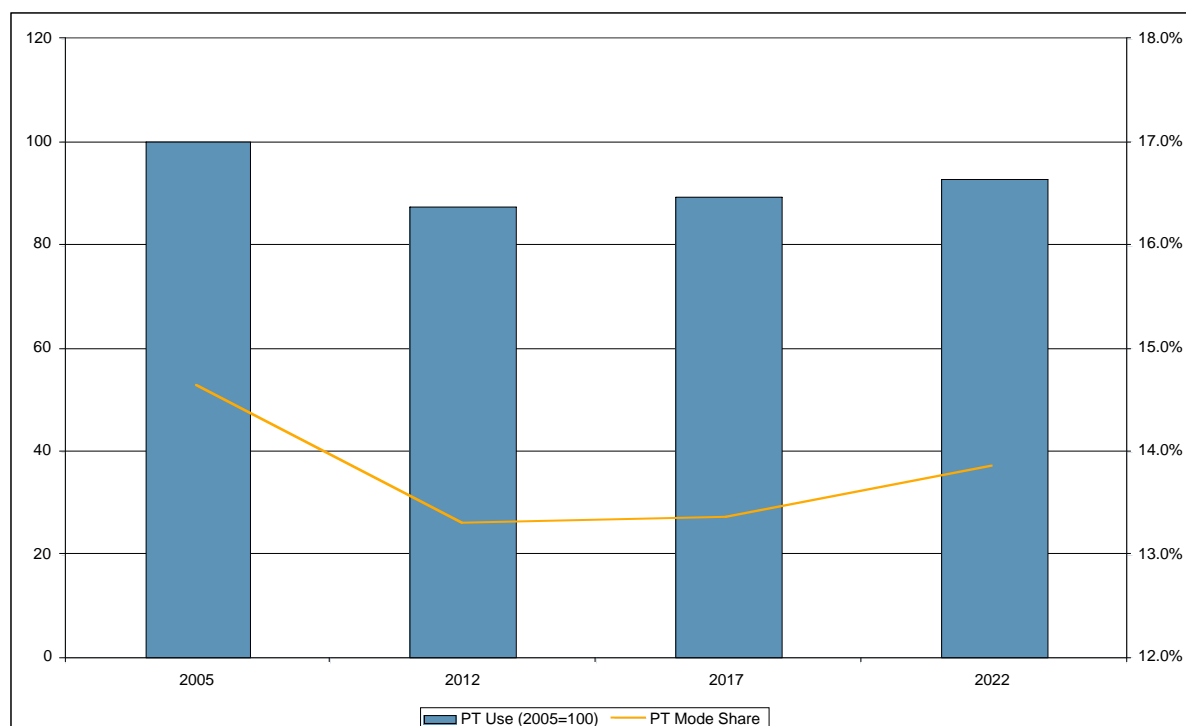


Both congestion indicators increase over time, indicating that traffic conditions will become less stable and that journeys will, therefore, become less reliable. The objective of improving the reliability of journey times for all modes is therefore not met.

**Increase travel choices and improve integration across modes to encourage modal shift of people and goods.**

Figure 5.16 presents an analysis of the total public transport use in the AM peak travelling across the Forth between SEStran Local Authorities and the mode share of public transport.

**Figure 5.16: Indexed Cross Forth Public Transport Movements (2005=100) and Public Transport Mode Share Southbound in the AM Peak Period (07:00-10:00)**



The diagram shows public transport use declining in both absolute terms and in the proportion of total travel southbound across the Forth in the AM Peak. The decline is slight in absolute terms, being less than 8 per cent between 2005 and 2022. In the same period the proportion of total trip making between the SEStran Local Authorities to the north of the Forth and those to the south declines from 14.6 per cent to 13.8 per cent, though this is a recovery from the mode share of 13.3 per cent in 2012. This initial decline in PT mode share could be due to the introduction of the M9 Spur Extension making car travel more attractive.

Without intervention above that included in the forecast scenarios, the public transport mode share is predicted to decline. The objective of increasing travel choices and improve integration across modes to encourage modal shift of people and goods is therefore not met.

Further work is required to ensure that the timeline of expansion in capacity on the Fife – Edinburgh rail corridor is correctly represented in the modelling.

### Improve accessibility and social inclusion

Social inclusion can be measured through an assessment of how the socially deprived can access centres of major employment, such as:

- Edinburgh city centre;
- Gyle;
- Edinburgh Airport;

- Livingston;
- Glenrothes; and
- Leith Waterfront and Victoria Quay.

The Scottish Index of Multiple Deprivation (SIMD) (2006) was used to choose a selection of areas in the most deprived 20 per cent, ranked by income, both north and south of the Forth:

- S01002721: Cowdenbeath;
- S01002785: Kelty;
- S01002656: Dunfermline;
- S01002759: Methil;
- S01001926: Sighthill, Edinburgh;
- S01002279: Pilton, Edinburgh; and
- S01006402: Craigshill, Livingston

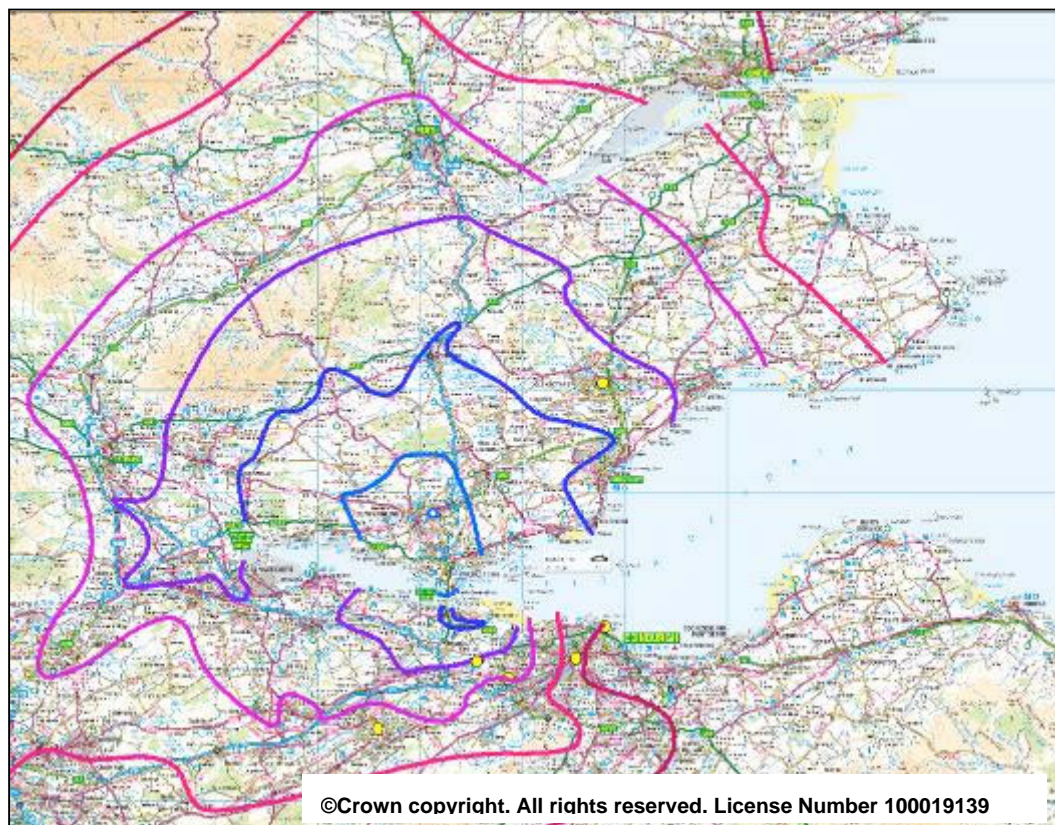
Figures 5.17, 5.18, illustrate journey time isochrones<sup>5</sup> in ten minute intervals from Dunfermline between 2005 and 2022.

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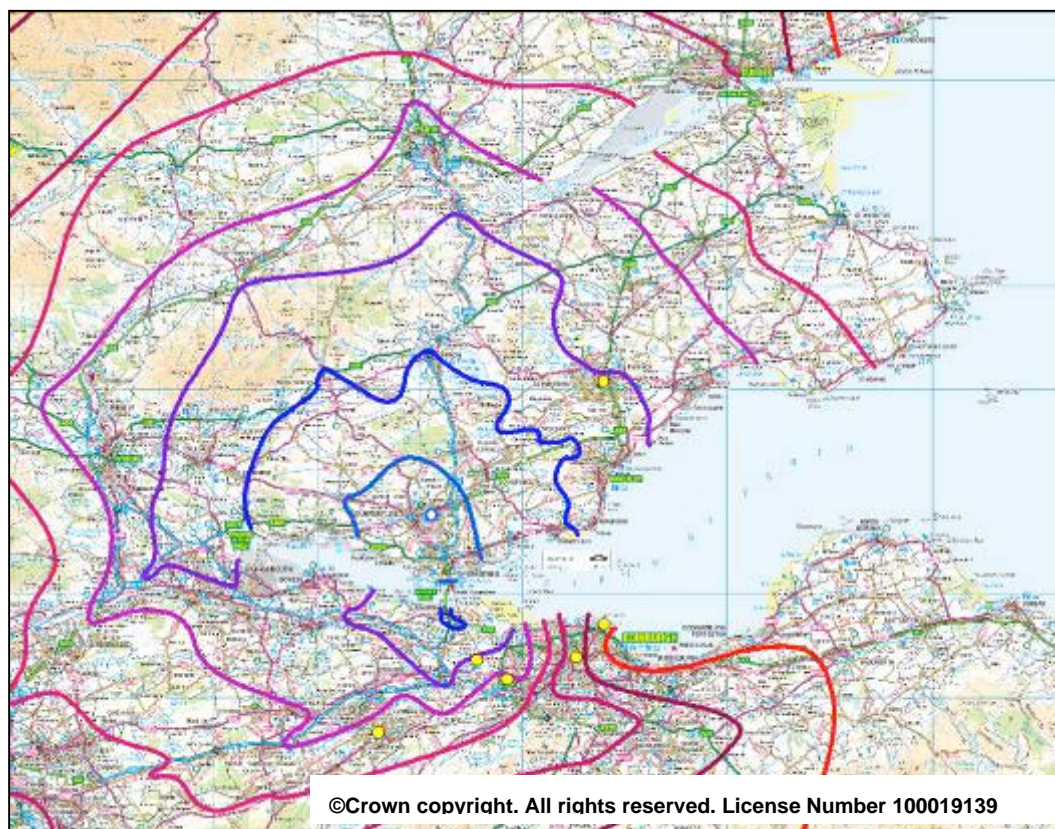
<sup>5</sup> An isochrone is a line, as on a map, connecting all points taking the same time to be reached by available transportation from a given location.



**Figure 5.17: Ten Minute Journey Time Isochrones from Dunfermline, 2005**



**Figure 5.18: Ten Minute Journey Time Isochrones from Dunfermline, 2022**

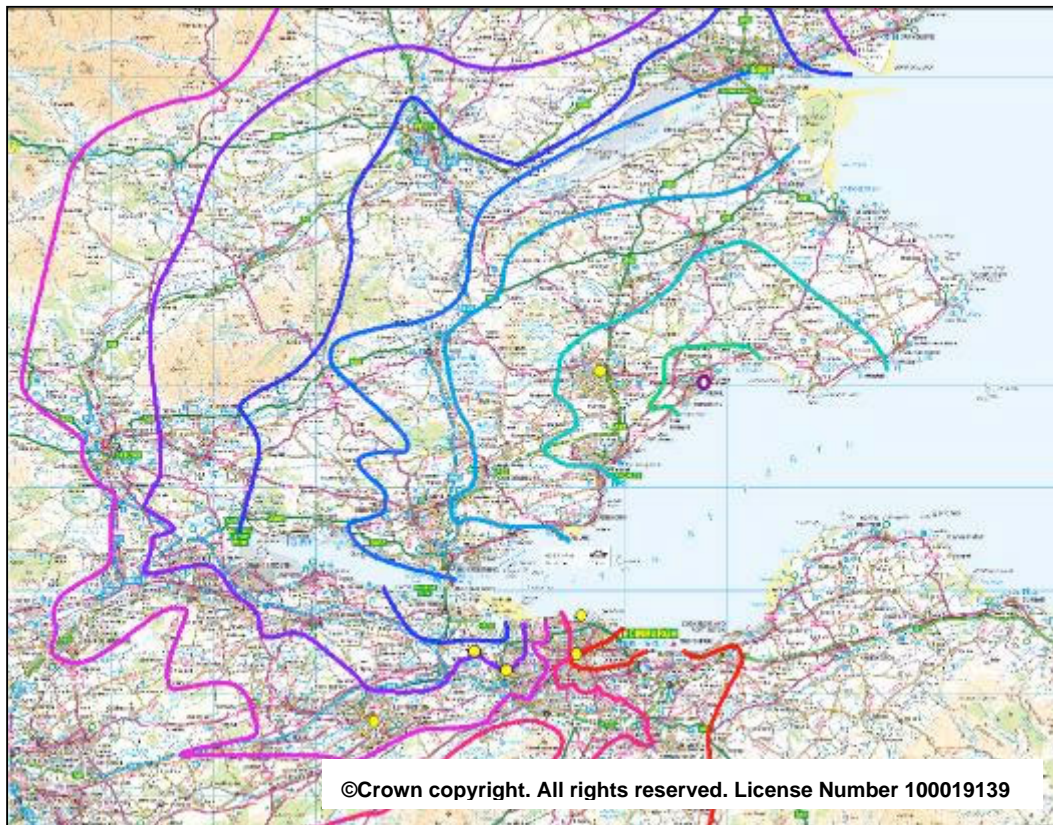




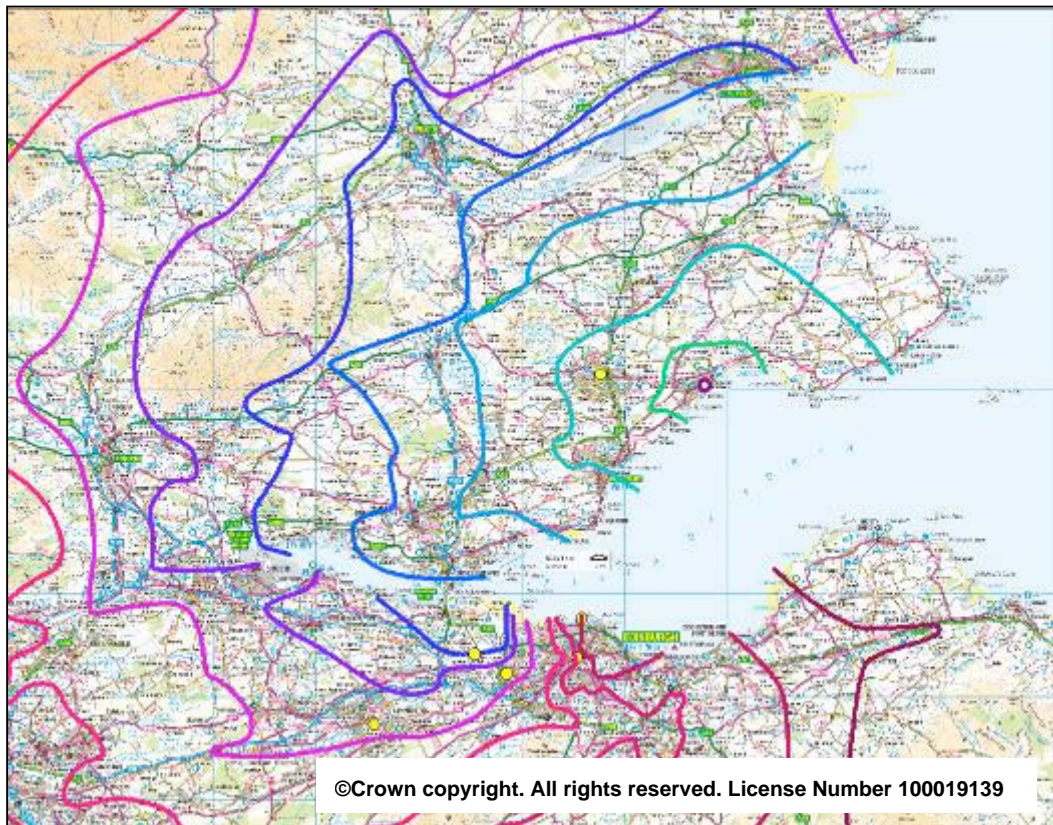
As shown in the above figures, journey times to the south from Dunfermline will increase in 2022.

Figures 5.19, 5.20, illustrate journey time isochrones in ten minute intervals from Methil between 2005 and 2022

**Figure 5.19: Ten Minute Journey Time Isochrones from Methil, 2005**



**Figure 5.20: Ten Minute Journey Time Isochrones from Methil, 2022**



As shown in the above figures, journey times from Methil to centres south of the Forth will take longer in 2022. In 2022, journeys from Methil to Edinburgh City Centre will take over eighty minutes while trips to Leith waterfront will take over one hundred minutes.

Tables 5.5 and 5.6 below show journey times in the AM peak for cross Forth highway and public transport respectively. The journey times shown are in minutes and are from areas selected from the SIMD 2006 list to high employment areas. It should be noted that the highway journey times is the average time in-car and public transport journey times include walk, waiting and boarding/transfer time.

**Table 5.5: Road Accessibility Journey Times**

Description	2005	2012	% Change from 2005	2017	% Change from 2005	2022	% Change from 2005
Dunfermline to Leith Waterfront	63.1	70.7	12	78.7	25	85.6	36
Cowdenbeath to Edinburgh Park	42.6	36.1	-15	41.3	-3	46.8	10
Kelty to Edinburgh City Centre	57.03	51.75	-9	56.5	-1	60.23	6
Methil to Livingston	65.26	59.97	-8	62.65	-4	65.01	0

The above table shows a decrease in cross Forth journey times in 2012. In 2017 the journey times decrease slightly compared to 2005 with the exception of journeys through the City of Edinburgh to Leith Waterfront. In 2022, the journey times to all locations in the City of Edinburgh have increased since 2005. Also, the initial improvement in journey times between Methil and Livingston due to the M9 Spur Extension has been eroded. The highway network as a whole is not functioning as well in 2022 as in 2005: the objective of increasing accessibility to socially excluded areas through improved journey times is therefore not met.

**Table 5.6: Public Transport Accessibility Journey Times**

Description	2005	2012	% Change from 2005	2017	% Change from 2005	2022	% Change from 2005
Dunfermline to Leith Waterfront	101.78	98.79	-3	98.79	-3	98.79	-3
Cowdenbeath to Edinburgh Park	75.17	78.17	4	78.17	4	78.17	4
Kelty to Edinburgh City Centre	105.29	102.79	-2	105.58	0	108.78	3
Methil to Livingston	192.72	186.86	-3	196.95	2	198.33	3

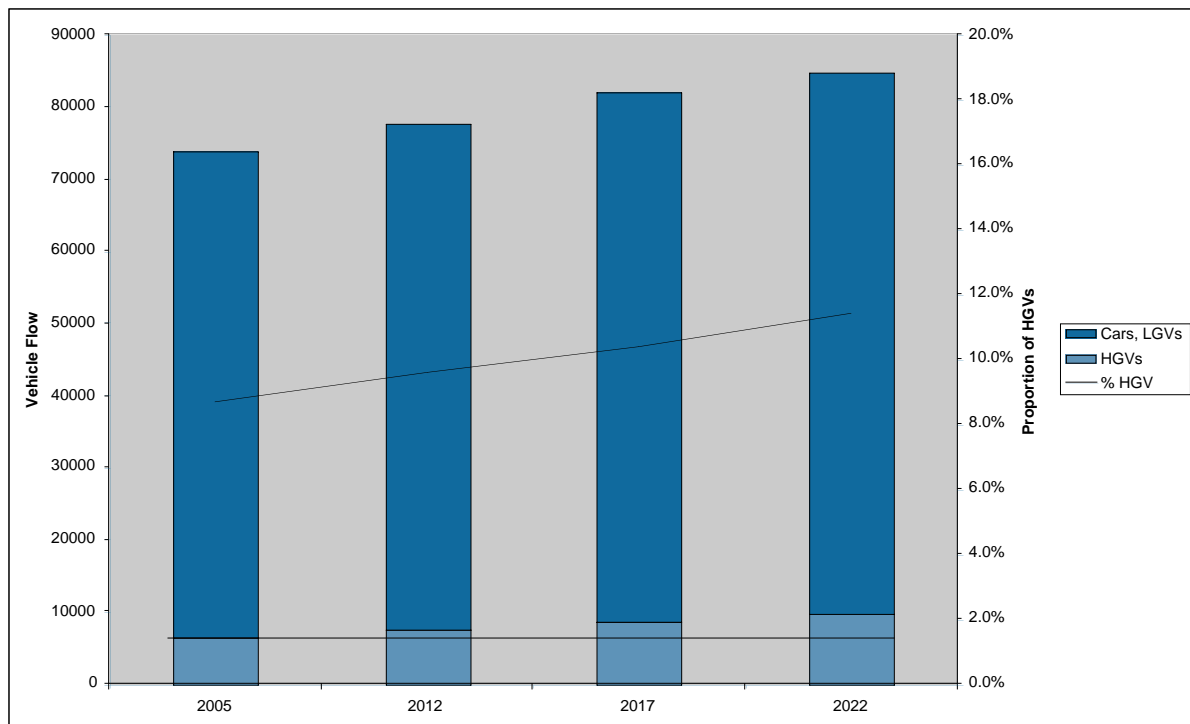
The above table shows that in 2012, cross Forth public transport journeys decrease slightly. In 2017 and 2022, public transport journey times increase slightly compared to 2005. The objective of increasing accessibility to socially excluded areas through improved public transport journey times is therefore not met.

### **Minimise the impacts of maintenance on the effective operation of the transport network**

Figure 5.21 presents the total annual average weekday flow in both directions, split into HGVs and cars and light goods vehicles (LGVs). It also, on a separate axis, presents the proportion that HGVs make up of total traffic.



**Figure 5.21: Combined Direction Annual Average Weekday Traffic and HGV Proportions**



The figure illustrates that the total number of HGVs using the Forth Road Bridge increases in future, and that they make up an increased proportion of the total flow. The increase in flow will lead to an increased requirement for maintenance and, therefore, to the associated disruption. The objective of minimising the impacts of maintenance on the effective operation of the transport network is therefore not met.

### Minimise the impact on people, the natural and cultural heritage of the Forth area

Table 5.7 presents the emissions from transport in the SEStran Local Authorities, in 1000s of tonnes.

**Table 5.7: Pollutant Emissions from Transport in the SEStran Area (000s tonnes)**

Description	2005	2012	% Change from 2005	2017	% Change from 2005	2022	% Change from 2005
Carbon Monoxide Pollutants [CO]	10.6	8.0	-24	8.6	-19	9.3	-12
Hydrocarbon Pollutants [HC]	1.6	1.2	-26	1.3	-21	1.4	-14
Oxides of Nitrogen Pollutants [NOx]	10.5	6.6	-37	5.7	-46	6.0	-43
Particulate Pollutants [PM10]	0.3	0.2	-46	0.2	-54	0.2	-52
Carbon Dioxide [CO <sub>2</sub> ]	1950.1	2044	5	2219	14	2451	26

Improvements in engine technology will tend to decrease most emissions over time. However, this is counterbalanced by the increases in road traffic. It can be seen that for CO, HC, NOx and PM10s the level of emissions decreases from the base situation. However, the level of CO<sub>2</sub> emissions from transport increase. Under this measure, therefore, the objective of minimising the impact on people, the natural and cultural heritage of the Forth area is not met.

### Support sustainable development and economic growth

As discussed in section 5.3, the quantifiable measurements for this objective have already been reported upon in this section.

Sustainable development measurements are:

- Table 5.7 shows that transport related emissions of CO<sub>2</sub> increase, while other emissions decrease due to improvements in engine technology;
- Figure 5.21 indicates that the flows of HGVs are expected to increase in both absolute and proportion terms on the Forth Road Bridge; and



- Figure 5.16 shows public transport use declining in both absolute terms and in the proportion of total travel southbound across the Forth in the AM peak.

Economic growth measurements are:

- Figure 5.21 indicates that total vehicle flows will continue to increase on the Forth Road Bridge; and
- Figure 5.15 the congestion indicators increase over time.

All three measures of sustainability move in an undesirable direction, as CO<sub>2</sub> emissions increase, total and HGV flows both increase and public transport mode share decreases. The objective of promoting sustainable development is therefore not met.

Both indicators related to economic growth move in an undesirable direction, as road traffic levels and congestion indicators both increase. The objective of promoting economic development is therefore not met.

## 5.4 SUMMARY

Table 5.8 summarises the assessment of the forecast scenarios against the objectives of the Forth Replacement Crossing Study.

**Table 5.8: Summary of Assessment**

Objective	Measurement	Assessment
Maintain cross-Forth transport links for all modes to at least the level of service offered in 2006	Road journey times	Not met
	Bus journey times	Not met
	Rail crowding cross-Forth	Not met
Connect to the strategic transport network to aid optimisation of the network as a whole	Average road speeds	Not met
Improve the reliability of journey times for all modes	Number of vehicle hours between J4 of the M90 and Echline Roundabout below free-flow speed	Not met
Increase travel choices and improve integration across modes to encourage modal shift of people and goods	Public transport mode share across the Forth	Not met
Improve accessibility and social inclusion	Road journey times between areas of deprivation and major employment centres	Not met
	Public transport journey times between areas of deprivation and major employment centres	Not met
Minimise the impacts of maintenance on the effective operation of the transport network	Total annual average weekday flow on the Forth Road Bridge	Not met
	Annual average weekday HGV flow across the Forth Road Bridge	Not met

Objective	Measurement	Assessment
Minimise the impact on people, the natural and cultural heritage of the Forth area	Pollutant emissions from transport in the SEStran area.	Not met (CO <sub>2</sub> )
Support sustainable development and economic growth	Pollutant emissions from transport in the SEStran area.	Not met (CO <sub>2</sub> )
	Annual average weekday HGV flow across the Forth Road Bridge	Not met
	Public transport mode share across the Forth	Not met
	Total annual average weekday flow on the Forth Road Bridge	Not met
	Number of vehicle hours between J4 of the M90 and Echline Roundabout below free-flow speed	Not met

## 5.5 PRIORITISATION FRAMEWORK

A prioritisation framework for assessing objectives and schemes is being developed for the main STPR study, as this will have to compare a wide variety of interventions in a geographically spread area. The Forth Replacement Crossing Study however, has a defined area and a relatively small set of possible interventions in which to achieve its end. Therefore the existing STAG based methodology is considered an appropriate priority framework for this element of the Study.

Based on the above findings, the first objective appears to be the key to achieving the other outcomes. If the level of service is not maintained, it will be difficult, if not impossible, to achieve the other objectives.

## 6 RECOMMENDATIONS AND CONCLUSIONS

### 6.1 INTRODUCTION

This chapter will draw together the findings of the previous chapters and will conclude with a summary of the objectives identified Forth Replacement Crossing Study, together with the associated gaps and shortfalls.

### 6.2 RECOMMENDATIONS AND CONCLUSIONS

A review of current and emerging policy documents and action plans at national, regional and local level has enabled high level expectations to be identified for the performance of the Scottish transport network. In particular the recent publication of the NTS and associated Action Plans has provided significant direction. Overall, the policy review has identified that the high level expectations centre on the Government's five key objectives of Economy; Integration; Safety; Environment; and Accessibility and Social Inclusion.

This policy review has identified a number of key priorities emerging from the documents, which apply to the wider Scotland area:

- improving journey times and connections;
- reducing emissions;
- improving quality, accessibility and affordability;
- promoting modal shift;
- promoting new technologies and cleaner fuels;
- managing demand;
- reducing the need to travel;
- improving services for all transport users; and
- enhancing movement of freight by non-road modes.

SEStran and FETA's aspirations for a replacement of the Forth crossing have also been considered. FETA has established two strategic aspirations for the next 10-20 years:

- greater accessibility across the Forth for strategic movements to support a vibrant Scottish economy and promote strategic investment; and
- more sustainable and reliable patterns of local movements across the Forth which can continue to support local and regional economies.

In addition, SEStran has identified that "any new crossing should be constructed to allow for future tram (and if possible heavy rail) use."

In the situation that an additional crossing is provided, SEStran outline:

- “the combination of old and new crossings should provide no more than two lanes in each direction available to single-occupant cars;
- all new traffic lanes across the Forth need to be dedicated to buses and high occupancy vehicles (HOVs). Consideration will be given to the possibility of allowing HGVs to access these lanes;
- separate running lanes for the mixed use of buses, HOVs and possibly HGVs should be considered, but as far as possible flexibility should be maintained to enable full vehicle carrying capacity for traffic during periods of Bridge maintenance; and
- the promoter should be required to put in place a demand management and investment package that will seek to ensure that traffic in Edinburgh will remain at or below the levels that would have been forecast without an additional crossing.”

The high-level expectations outlined within this report have taken careful consideration of SEStran and FETA’s conditions for a replacement crossing.

In addition, it is important that the recommendations of the FRCS also recognise the tensions identified by the Scottish Executive between wanting strategic networks to both contribute to economic growth through providing better connections and at the same time, minimising the impact on the environment of the emissions associated with increased travel.

A review of relevant consultation has identified the key issues and opportunities arising in relation to the Forth Road Bridge and the Forth Bridge. This information, together with the high level expectations, has enabled the following objectives to be set specifically for the FRCS:

- maintain cross-Forth transport links for all modes to at least the level of service offered in 2006;
- connect to the strategic transport network to aid optimisation of the network as a whole;
- improve the reliability of journey times for all modes;
- increase travel choices and improve integration across modes to encourage modal shift of people and goods;
- improve accessibility and social inclusion;
- minimise the impacts of maintenance on the effective operation of the transport network;
- support sustainable development and economic growth; and
- minimise the impact on people, the natural and cultural heritage of the Forth area.

These objectives have been agreed by the STPR project board.

### 6.3 IDENTIFICATION OF GAPS AND SHORTFALLS

The Transport Model for Scotland has been used to compare the network conditions in 2005 with forecast conditions in 2012, 2017 and 2022 for scenarios with only those infrastructure projects that are likely to be in place by those dates. It should be noted that these schemes are those that are expected to be in place by the forecast year. Where the schemes are not fully committed, this should not be taken as any form of commitment to those schemes by Scottish Ministers or Transport Scotland.

The Performance Indicators selected in Report 1 of this study were reviewed and the most appropriate selected as quantitative measures for each objective. The use of these indicators identified any gaps and shortfalls between the future performance and expectations of the transport network in the vicinity of the Forth bridges in 2012, 2017 and 2022. The results are presented in Table 6.1 below.

**Table 6.1: Summary of Assessment**

Objective	Measurement	Assessment
Maintain cross-Forth transport links for all modes to at least the level of service offered in 2006	Road journey times	Not met
	Bus journey times	Not met
	Rail crowding cross-Forth	Not met
Connect to the strategic transport network to aid optimisation of the network as a whole	Average road speeds	Not met
Improve the reliability of journey times for all modes	Number of vehicle hours between J4 of the M90 and Echline Roundabout below free-flow speed	Not met
Increase travel choices and improve integration across modes to encourage modal shift of people and goods	Public transport mode share across the Forth	Not met

Objective	Measurement	Assessment
Improve accessibility and social inclusion	Road journey times between areas of deprivation and major employment centres	Not met
	Public transport journey times between areas of deprivation and major employment centres	Not met
Minimise the impacts of maintenance on the effective operation of the transport network	Total annual average weekday flow on the Forth Road Bridge	Not met
	Annual average weekday HGV flow across the Forth Road Bridge	Not met
Minimise the impact on people, the natural and cultural heritage of the Forth area	Pollutant emissions from transport in the SEStran area.	Not met (CO <sub>2</sub> )
Support sustainable development and economic growth	Pollutant emissions from transport in the SEStran area.	Not met (CO <sub>2</sub> )
	Annual average weekday HGV flow across the Forth Road Bridge	Not met
	Public transport mode share across the Forth	Not met
	Total annual average weekday flow on the Forth Road Bridge	Not met
	Number of vehicle hours between J4 of the M90 and Echline Roundabout below free-flow speed	Not met



It can be concluded that without intervention in the transport network over and above that currently planned, the objectives of the Forth Replacement Crossing Study will not be met. This conclusion is irrespective of the problems relating to the condition of the cables of the Forth Road Bridge identified in Report 1 and possible associated maintenance issues.

A framework for prioritisation is being developed for the main STPR study, which will have to prioritise projects over a wide variety of types of interventions in geographically diverse areas. Where relevant this will be applied to the FRCS. However, the first objective above appears to be the key to achieving the high level expectations of this study. If the level of service is not maintained, it will be difficult, if not impossible, to achieve the other objectives.

## Appendix A - Review of Current and Developing Policies and Action Plans

### Scotland's Transport Future

Scotland's Transport Future is a transport White Paper which was published by the Scottish Executive in June 2004. The policy document outlines a vision for Scotland's transport future as follows:

*“An accessible Scotland with safe, integrated and reliable transport that supports economic growth, provides opportunities for all and is easy to use; a transport system that meets everyone's needs, respects our environment and contributes to health; services recognised internationally for quality, technology and innovation and for effective and well-maintained networks; a culture where fewer short journeys are made by car, where we favour public transport, walking and cycling because they are safe and sustainable, where transport providers and planners respond to the changing needs of businesses, communities and users and where one ticket will get you anywhere”*

The overall aim of the strategy is “to promote economic growth, social inclusion, health and protection of our environment through a safe, integrated, effective and efficient transport system”.

The objectives are to:

- “promote **economic growth** by building, enhancing, managing and maintaining transport services, infrastructure and networks to maximise their efficiency;
- promote **social inclusion** by connecting remote and disadvantaged communities and increasing the accessibility of the transport network;
- protect our **environment** and improve health by building and investing in public transport and other types of efficient and sustainable transport which minimise emissions and consumption of resources and energy;
- improve **safety** of journeys by reducing accidents and enhancing the personal safety of pedestrians, drivers, passengers and staff; and
- improve **integration** by making journey planning and ticketing easier and working to ensure smooth connection between different forms of transport.”

Scotland's Transport Future sets out the Scottish Executive's ambitions for improving the planning and delivery of transport in Scotland. The White Paper sets out the high level objectives for Scotland's transport system and provides a framework for the development of the transport network at the national, regional and local level.

**Summary of High Level Expectations from Scotland's Transport Future (Scottish Executive, June 2004):**

- promote economic growth through efficient transport networks;
- promote social inclusion by providing an accessible transport network;
- protect the environment and improve health through efficient and sustainable transport;
- improve safety of journeys; and
- improve integration of journey planning and ticketing.

**Scotland's National Transport Strategy**

The Scottish Executive and Transport Scotland published an NTS for Scotland in December 2006. The NTS sets out the context for the activities of RTPs and local authorities and further develops the Scottish Executive's aims and objectives for transport, as set out within the White Paper. The NTS thus considers Scotland's transport needs and the needs of travellers, over the medium to long-term.

The NTS sets the framework for STPR and will determine the Scottish Executive's future infrastructure investment.

The NTS identifies the following key trends and projections in transport:

- **overall growth in travel** - In Scotland, the estimated average distance travelled per person per year has increased by 59 per cent between 1985/86 and 2004/05.
- **increasing dominance of the car** – The private car is recognised as being by far the dominant mode of transport for people in Scotland. In 2004/2005 23 per cent of journeys under one mile and 57 per cent of journeys between one and two miles were undertaken by car. Latest forecasts suggest road traffic in Scotland will grow by 12 per cent between 2005 and 2010 and by 22 per cent between 2005 and 2015. However, it is noted that in 2005 traffic volume was more or less the same as the 2004 level;
- **increase in aviation** - There has been a dramatic growth in air transport in Scotland, with an eight-fold increase in passenger numbers between 1970 and 2005. This reflects the availability of cheaper fares and greater choice in flights. Air travel is predicted to rise by 150 per cent between 2004 and 2030; and
- **a recovery in bus and rail passenger numbers** – there have been recoveries in passenger numbers using public transport. Buses are the dominant form of public transport in terms of journey numbers. Bus passenger numbers have risen in six of the last seven years. Rail passenger numbers have been rising and are now comparable with 1960s levels.

The NTS goes on to outline the key factors influencing the trends above as follows:

- **economic growth** – The natural growth in trade which accompanies increased globalisation and economic growth has itself created more demands for transport services and this inevitably has occurred in the context of limited infrastructure capacity;
- **rising disposable income** - The rise in real incomes associated with economic growth are responsible for increasing demand for personal travel and increasing levels of car ownership;
- **changes in land use patterns** – Changes in land use patterns and lifecycles have made a significant contribution to the trends summarised above – for example with the rise in long-distance commuting and out-of-town shopping centres; and
- **transport users do not pay full costs of journeys** – transport users do not pay the full costs they impose on society (for example, in terms of emissions, noise and air quality). If transport users paid a price that was a truer reflection of the full costs of transport, this would reduce the demand for transport and/or help create more sustainable transport decisions.

Based on the trends and drivers outlined above, the NTS identifies the key challenges affecting transport in Scotland as follows:

- **congestion and journey time reliability** – In 2005, 11 per cent of car journeys were reported as delayed by congestion, with this figure rising to nearly 25 per cent of journeys undertaken in the weekday rush hours. Reliability and punctuality of public transport are important for both existing users and to encourage new users. Longer, unpredictable journey times for cars, freight and public transport users have significant economic impacts, (both from higher direct costs of transport and the cost to business of a loss of competitiveness) and cause higher levels of emissions, impairing both local and global air quality;
- **emissions** – The transport sector is the second biggest contributor of greenhouse gas emissions in Scotland, behind energy supply, contributing 22 per cent of emissions. Between 1990 and 2004 the emissions from the transport sector increased by 7 per cent, while during the same period, emissions from aviation increased by 50 per cent;
- **social inclusion issues** – Access to high quality affordable public transport is particularly important for certain groups. For those seeking education, training or employment, access is particularly vital for becoming and remaining economically active. Accessibility problems can be more significant for those whose mobility is restricted, such as older or disabled people or those with young children. Access to transport can be a particular challenge for those living in disadvantaged communities. Improving public transport for all is a key requirement.

The NTS adopts the vision and objectives of Scotland's Transport Future. The NTS identifies three key strategic outcomes in order to achieve the vision and objectives set out within Scotland's Transport Future:

- **improve journey times and connections**, to tackle congestion and the lack of integration and connections in transport which impact on our high level objectives for economic growth, social inclusion, integration and safety;
- **reduce emissions**, to tackle the issues of climate change, air quality and health improvement which impact on our high-level objective for protecting the environment and improving health; and
- **improve quality and accessibility and tackle affordability**, to give people a choice of public transport where availability means better quality public transport services and value for money or an alternative to the car.

The NTS identifies a requirement to tackle the issues arising from the trends of increasing road and air travel. The NTS envisages a combination of new technology and infrastructure investment alongside measures to change travel patterns and influence travel choices.

In response to this, the NTS suggests the following, which, if delivered, will achieve the desired outcomes:

### Improve journey times and connections

The NTS identifies that *“to enhance Scotland’s global competitiveness and to enable Scotland’s economy to maximise its productivity, Scotland needs to ensure that it has a well-connected, sustainable transport network, which offers fast and reliable journey times for both passengers and for businesses needing to transport freight.”* Commitments include:

- taking forward the Strategic Transport Projects Review based on the key strategic outcomes for the NTS to enhance Scotland’s strategic transport network;
- working with the UK Government to investigate the potential value of high speed rail links to London and on to Europe to enhance connections with our global networks;
- continuing to work with the UK Government on proposals for a UK based road pricing scheme to manage demand on the network;
- investing £10 million in the next two years to tackle congestion from the school run; and
- delivering the current capital investment programme of improvement to both trunk road and rail networks to improve connections.

### Reduce emissions

The NTS identifies a number of commitments to deliver a *“transport system that respects Scotland’s environment and contributes to health improvement. Delivering carbon savings is not the only environmental and health issue for Scotland’s National*

*Transport Strategy to consider, but we do believe it is the most important one to get right.”* Commitments include:

- working with the UK Government to deliver the bio fuels target by 2010 and beyond;
- promoting SMART measures on all journeys, focusing especially on the commute to work through developing travel awareness and marketing campaigns;
- exploring with key partners sustainable travel demonstration towns across Scotland to reduce car use and promote cycling and walking;
- undertaking a Scottish specific appraisal of the potential carbon savings of stricter adherence to national speed limits on trunk roads and motorways;
- promoting and encouraging new vehicle technologies; and
- supporting sustainable distribution strategies through the Scottish Road Haulage Modernisation Fund.

The key challenge for transport is to break the link between economic growth, increased traffic and increased emissions. This challenge has been met in other sectors and now needs to be addressed in the transport sector.

### **Improve quality, accessibility and affordability**

The NTS outlines that “*Scotland aspires to be a society which is socially inclusive, just and where everyone has the opportunity to contribute and participate in that society. That means ensuring that people have the opportunity to access education, training and employment as well as key services such as health, cultural, sporting and leisure activities*”. Commitments which are made in the NTS include:

- introducing a national concessionary travel scheme for young people.
- undertaking a review of ferry services with a view to developing a long-term strategy for lifeline services to 2025;
- reviewing the affordability of public transport in relation to ferry, rail and bus services;
- amending the legislation on Bus Services Operators grant (BSOG) to allow claims to be made in respect of fully flexible services;
- publishing Bus Action Plan to help achieve a step change in the quality of bus service provision; and
- introducing integrated ticketing pilots to enhance the passenger journey.

The NTS is set within the overall policy context of Scotland's Transport Future. The Strategy goes on to outline the trends, drivers and key challenges facing the transport network in Scotland. Based on a review of these factors the NTS outlines three key outcomes required to deliver the objectives of the White Paper. In the



context of each strategic outcome, the NTS details a number of specific priorities to be addressed to achieve these outcomes. The key high-level expectations detailed in the NTS are summarised below.

**Summary of High Level Expectations from the National Transport Strategy (Scottish Executive, December 2006):**

- delivery of the White Paper objectives;
- improve journey times and connections;
- reduce emissions; and
- improve quality and accessibility and tackle affordability.

**Moving Into The Future: An Action Plan For Buses in Scotland**

Moving Into The Future: An Action Plan For Buses in Scotland (Scottish Executive, December 2006) sets out the Scottish Executive's aims and objectives in relation to bus services in Scotland and acts as an associated document to the NTS. The NTS promotes sustainable economic growth and sets the context for the development of sustainable transport solutions for Scotland over the next 20 to 25 years. The key aims of the NTS are to contribute to economic growth through the following strategic outcomes:

- improving journey times and connections;
- reducing emissions; and
- improving quality, accessibility and affordability.

The aims, objectives and actions of the Action Plan are as follows:

**to improve bus services through effective transport planning:**

- a clear vision of how local bus services will meet local needs;
- greater use of bus plans with explicit actions to deliver vision;
- close partnership working between transport authorities and bus operators; and
- improved communication with all stakeholders.

To achieve these aims and objectives, the following Actions are proposed:

1. Work with Regional Transport Partnerships to ensure the forthcoming Regional Transport Strategies have a strong bus component.
2. Work with transport authorities to improve bus services, including by establishing Bus Forums in each authority area.



3. Integrate bus planning (including Demand Responsive Transport) with the general, land use, health service and education planning frameworks.

### to support the development of the bus industry in Scotland

- targeted financial support that meets transport aims (for example encouraging investment in cleaner and more innovative buses);
- legislation that supports transport aims;
- consideration of national standards where required;
- use of Quality Partnerships and Quality Contracts where appropriate;
- involvement of all stakeholders; and
- promotion of accessibility and social inclusion.

To achieve these aims and objectives, the following Actions are proposed:

1. Review Scottish government funding, with operators and transport authorities, to ensure that it is directed at improving the quality and reliability of services and at enhancing bus infrastructure (for example bus passenger priority measures and Bus Rapid Transit).
2. Review Grant Aided Expenditure (GAE) for supported services for its impact on rural areas.
3. Examine performance-related funding for payment of Bus Service Operators Grant (BSOG), drawing lessons from the Service Quality Incentive Regime (SQUIRE), a rail performance regime; and amend BSOG to allow claims to be made for fully flexible registered services.
4. Expand the Rural Transport Fund.
5. Expand Demand Responsive Transport.
6. In order to support franchising where there is market failure, review the legislation on Quality Contracts (QCs) to simplify the process to be followed by transport authorities.
7. Review the legislation on Quality Partnerships (QPs) to simplify the process and increase the benefits to the passenger.
8. Issue Scotland-specific guidance on Punctuality Improvement Partnerships (PIPs).
9. Liaise with the Department for Transport on enhancements to and the development of, quality measures.

10. Encourage investment in cleaner and more innovative buses.
11. Working with transport authorities, conduct a nation-wide review of bus stop information.

**to support effective implementation of the Regulatory Regime:**

- public bodies effectively implementing the regulatory regime;
- legislation that supports the regulatory regime; and
- an adequately resourced regime.

To achieve these aims and objectives, the following Actions are proposed:

1. Establish a protocol with the Traffic Commissioner and the Vehicle and Operator Services Agency (VOSA) to improve the effectiveness of the regulatory regime, including setting time limits for decisions by the Commissioner following a public inquiry, better targeting of inspection by VOSA and ensuring greater joint working by transport authorities in identifying issues for inspection.
2. Consider legislative changes to the service registration rules to increase the effectiveness of the registration regime.
3. Work with police and local authorities to improve enforcement of bus passenger priorities and no parking at bus stops.

The Action Plan for Buses in Scotland outlines the Scottish Executives aims and objectives for bus services in Scotland and specifies measures required to support and improve bus services throughout Scotland. The high-level expectations set out in the Action Plan for Buses in Scotland are summarised below.

**Summary of High Level Expectations from Moving Into The Future: An Action Plan For Buses in Scotland (Scottish Executive, December 2006)**

- encourage effective transport planning;
- support the development of the bus industry; and
- support effective implementation of the Regulatory Regime.

## Scotland's Railways

- Scotland's Railways (Scottish Executive, December 2006) sets out the Scottish Executive's aims and objectives for the rail industry in Scotland and acts as an associated document to the NTS. As outlined above, the NTS promotes sustainable economic growth and sets the context for the development of sustainable transport solutions for Scotland over the next 20 to 25 years. The key aims of the NTS are to contribute to economic growth through the following strategic outcomes:
- improving journey times and connections;
- reducing emissions; and
- improving quality, accessibility and affordability.

It is recognised that rail has a central role within the NTS and, as such, the vision for the railway in Scotland is that it should provide *“a safe, reliable customer-focused service that supports our economy and delivers wider social inclusion and environmental aspirations.”*

The aims for the rail network, as set out within Scotland's Railways, are as follows:

*“Support our high level objective to promote economic growth by focussing on our rail network moving large volumes of people quickly and reliably within and between our city regions as a priority; and*

*Support our high level objective to protect the environment and improve health by recognising the role of rail as an integral part of Scotland's National Transport Strategy and the contribution rail makes to a sustainable, efficient and effective transport system which minimises the impact of travel on the environment. We will do so with full regard to Scotland's Sustainable Development Strategy Choosing Our Future and to Scotland's Climate Change Programme Changing Our Ways.”*

In order to meet the above, the following aspirations are set out for the rail network:

- “offer world class train services which connect our city regions and major towns, providing journey times and quality of service that are competitive with car and air;
- provide access to inter-urban services through high quality interchange stations that link with feeder rail services from intermediate stations and offer easy transfer from car, bus, tram, subway, ferry, cycle and walking;
- make commuter train services attractive to passengers by ensuring that the journey to work is a high quality, reliable travel option and by ensuring that our rolling stock choices take account of environmental considerations, including air quality and noise emissions;
- support heavily loaded freight trains carrying an increasingly wide range of products with effective interchange to road and sea; and

- achieve a rail industry that delivers efficiently and effectively to support our aims and vision.”

Scotland's Railways makes specific reference to the Scottish Planning Assessment (SPA) (Arup Consultancy on behalf of Strategic Rail Authority, April 2005) which examined options for the long-term development of the railway to 2026. The SPA highlights the importance of *“improving access to stations by increasing car parking capacity and improving interchange to other modes. At certain key stations, facilities should be improved to encourage travellers to interchange between services.”*

The SPA also identifies that City Regions are expected to drive growth in Scotland which in turn is expected to continue to undergo important economic and demographic change. It is considered that these changes will have important implications for transport in terms of commuting and inter-urban journeys, as well as the movement of freight required to support the City Regions.

Demand for rail has been growing in recent years and demand for both passenger and rail freight services is forecast to increase by at least one-third over the next twenty years. As such, the Scottish Executive outlines that:

“A modern, efficient rail network is essential in meeting these increasing demands. There is a need to move forward, addressing currently known problems whilst recognising the need to plan and invest for the future in a cost effective, sustainable way. We expect the industry to:

- develop and deliver innovative rail solutions for the 21<sup>st</sup> Century;
- deliver a service that minimises the impact on the environment and ensures that rail is the environmentally preferred mode of travel and a real alternative to the car and air travel both within Scotland and cross-border;
- reduce the time it takes to progress projects from feasibility to delivery;
- deliver on time, on budget and with a world class product;
- continue to improve the performance of the network; and
- work in partnership with government, RTPs, local authorities and private companies to achieve the above.”

Potential developments or enhancements to the rail network will contribute to the delivery of the strategic outcomes identified in the NTS as follows:

### improving journey times and connections

- timetabling and frequency enhancements to reduce inter-urban journey times;
- infrastructure enhancements to reduce inter-urban journey times; and
- maintain current improvements to reliability of services.

### reducing emissions

- electrification to minimise emissions and reduce fossil fuel reliance (in some cases may also reduce journey times); and
- capacity improvements to enable increased passenger numbers and freight volumes.

### improving quality, accessibility and affordability

- enhancing integration with other modes;
- enhancements to stations, to improve capacity, passenger experience and to encourage modal shift; and
- timetable and service enhancements.

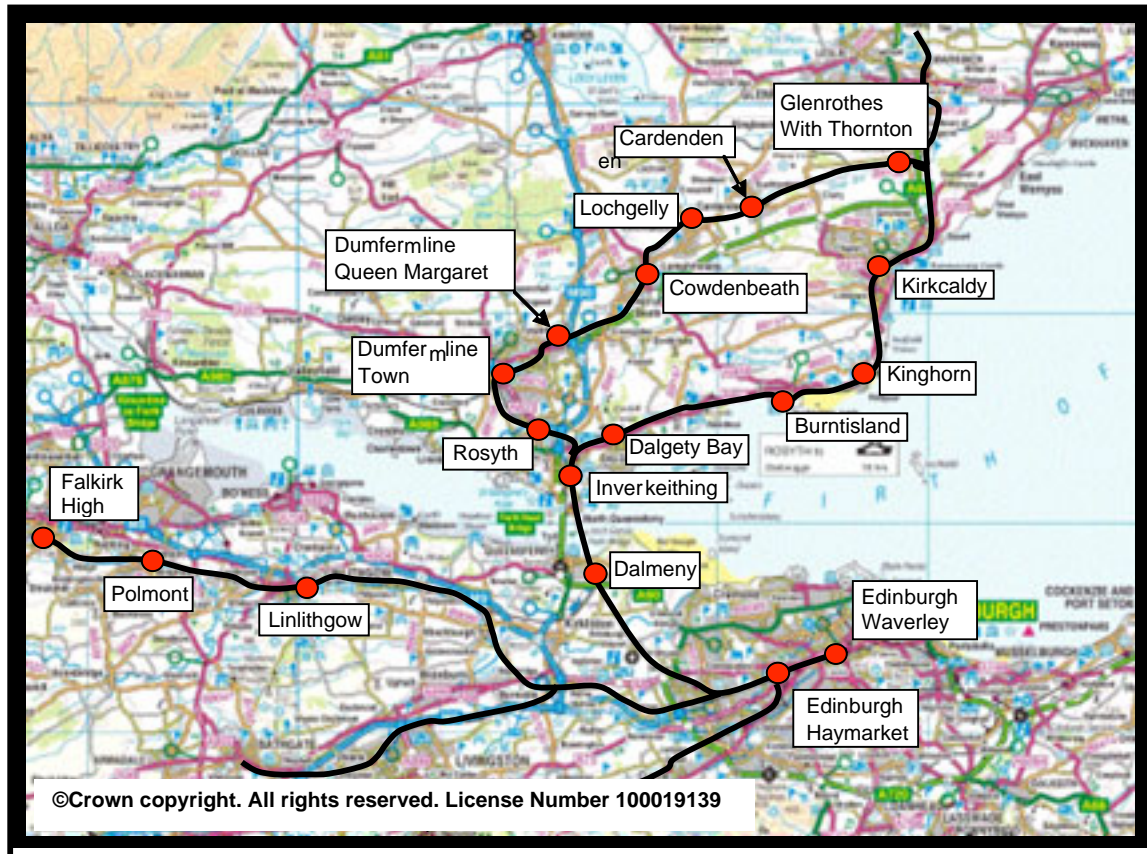
It is recognised that by investing in the rail network, a contribution can also be made to reducing road congestion and harmful emissions and also reducing the impact of transport on the environment. As such, an implementation plan has been identified to assist in the delivery of the above and increase demand for rail services. This includes the following improvements:

- optimising the use of the network through effective timetabling of passenger and freight services;
- improving the existing rail infrastructure;
- delivering the programme of major projects;
- ensuring that the ongoing replacement of rolling stock reflects customer, environmental and network needs;
- adding new stations and freight terminals to the network;
- ensuring that services are accessible to everyone;
- development of multi-modal ticketing;
- improving access to stations for all modes and expanded car parking at stations where appropriate;
- implementing the new quality system SQUIRE;
- installation of Customer Information Systems; and
- ensuring safety and security measures are included when planning and developing improvements.



Scotland's Railways outlines aspirations for various sections of the Scottish rail network. To provide context, the local rail network is illustrated within Figure 1, below.

**Figure 1 Local Rail Network**



- deliver the Edinburgh Airport Rail Link;
  - deliver new Airdrie to Bathgate line;
  - deliver Borders Railway to Tweedbank;
  - ensure infrastructure is suitable for future freight traffic compatible with freight growth; and
  - build on electrification of the Edinburgh – Glasgow route to provide electric services between Edinburgh and Stirling / Dunblane.
- **Long Term**

- continue to target capacity issues.

Scotland's Railways is an associated document to the NTS and outlines the Scottish Executive's aims and objectives for rail services in Scotland. The document / strategy identifies the key challenges facing the rail sector at present and in the future and acknowledges issues arising which have compromised rail's ability to fulfil the objectives of the Scottish Executive. In the context of the three strategic outcomes detailed in the NTS, Scotland's Railways sets out specific priorities required to achieve these outcomes.

The document recognises the contribution that rail can make in achieving the high level expectations of the Scottish Executive and sets out an implementation plan to assist in the delivery of the identified priorities. Scotland's Railways also outlines the Scottish Executive's aspirations for specific sections of the railway network and details the short, medium and long-term priorities for these sections. The high-level expectations set out in Scotland's Railways are summarised below.



### Summary of High Level Expectations from Scotland's Railways (Scottish Executive, December 2006):

- improving journey times and connections
  - timetabling and frequency enhancements to reduce inter-urban journey times;
  - infrastructure enhancements to reduce inter-urban journey times; and
  - maintain current improvements to reliability of services.
- reducing emissions
  - electrification to minimise emissions and reduce fossil fuel reliance (in some cases may also reduce journey times); and
  - capacity improvements to enable increased passenger numbers and freight volumes.
- improving quality, accessibility and affordability
  - enhancing integration with other modes;
  - enhancements to stations to improve capacity, passenger experience and to encourage modal shift; and
  - timetable and service enhancements.

### Preparing For Tomorrow, Delivering Today: Freight Action Plan For Scotland

Preparing For Tomorrow, Delivering Today: Freight Action Plan For Scotland (Scottish Executive, December 2006) sets out the Scottish Executive's aims and objectives for the freight industry in Scotland and acts as an associated document to the NTS. The Action Plan supports the NTS and, in turn, the Framework for Economic Development in Scotland, Scotland's Sustainable Development Strategy, Scotland's Climate Change Programme and the Air Quality Strategy. As such, the objectives and actions contribute to achieving the key strategic outcomes identified within the NTS:

- improving journey times and connections;
- reducing emissions; and
- improving quality, accessibility and affordability.

The Freight Action Plan for Scotland highlights the importance of freight, stating that *"the efficient and competitive movement of goods through the entire supply chain is therefore a key element in meeting consumer demand and supporting and enabling economic growth."*

The Action Plan recognises the following trends which impact upon freight movements:

- **globalisation** – good internal and external transport links are vital for continued competitiveness and growth;
- **changes within the Scottish economy** – freight and logistics connections can play a key role in stimulating Gross Domestic Product growth;
- **changing customer demands** – Scottish freight and logistics must be sufficiently resilient and flexible to accommodate changing demand; and
- **restructuring and changes to distribution networks** – businesses must continue to innovate to gain competitive advantage.

The Scottish Freight Strategy Scoping Study (SFSSS) (Scottish Executive, 2006), which contributes to the Action Plan, suggested the following:

- growth in freight traffic over the next 25 years is likely to be much lower than over the past 25 years and take a different form;
- the volume of timber products is expected to rise - forecast to double in 20 years as forests mature for harvesting;
- current imbalance of freight tonnes could increase under strong export growth;
- deliveries such as parcels to business services and online retail goods to households will rise significantly, leading to continued growth in vans under 3.5 tonnes in main residential areas; and
- there will be a continuing base-load such as building materials for construction and waste for recycling and disposal.

In order to address the above trends and issues, the Action Plan sets out the following vision:

*“Working in partnership with business and industry, our vision is for Scotland to be a place where the movement of freight through the entire supply chain is efficient and sustainable, on a transport infrastructure that is integrated and flexible - thus allowing Scotland's businesses to compete and grow in a global economy.”*

To achieve this vision and taking into account the key trends and issues identified in the SFSSS, the Freight Action Plan focuses on the following aims and objectives:

### To enhance Scotland's competitiveness

- Balancing freight and non-freight requirements in transport investment;
- Minimising the negative impact of rising transport costs; and
- Continued business developments in the freight and logistics sector.

### To support the development of the freight industry in Scotland

- Enhancing the skills and professional image in freight and logistics; and
- Enabling the Scottish freight industry to compete effectively in the European market.

### To maintain and improve the accessibility of rural and remote areas

- Targeting improvements to road and rail infrastructure;
- Integrating freight considerations into the provision of lifeline ferry and air services; and
- Addressing the transport needs of rural business and industry.

### To minimise the adverse impact of freight movements on the Environment in particular through the reduction in emission and noise

- Promoting modal shift to rail and shipping; and
- Improving efficiency and sustainability of road transport.

### To ensure freight transport policy integration

- Co-ordinating with other policy areas – such as energy policy, land use, waste disposal and regional transport strategies – and between public agencies; and
- Co-ordinating freight policy with other UK regions.

#### Summary of High Level Expectations from Preparing For Tomorrow, Delivering Today: Freight Action Plan For Scotland (Scottish Executive, November 2006):

- enhance Scotland's **competitiveness**;
- support the development of the freight **industry** in Scotland;
- minimise the adverse impacts on the **environment**;
- maintain and improve **accessibility** of rural and remote areas; and
- ensure freight transport policy **integration**.

## Framework for Economic Development in Scotland

The Framework for Economic Development in Scotland (Scottish Executive, 2004) has a clear vision: *“to raise the quality of life of the Scottish people through increasing the economic opportunities for all on a socially and environmentally sustainable basis”*.

The framework sets principal outcome objectives that are fundamental to achieving this vision. These are:

- **economic growth** - with growth accelerated and sustained through greater competitiveness in the global economy;
- **regional development** - with economic growth a pre-requisite for all regions to enjoy the same economic opportunities and with regional development itself contributing to national economic prosperity;
- **closing the opportunity gap** – with economic growth a pre-requisite for all in society to enjoy enhanced economic opportunities and with social development in turn contributing to national economic prosperity; and
- **sustainable development** - in economic, social and environmental terms.

Within this Framework, the Scottish Executive has identified five key drivers of economic development that are especially important and to which it will give priority. These are key elements in promoting both private sector and public sector productivity:

- **basic education and skills:** crucial to any strategy for economic growth and the bedrock for the foundation of a competitive economy;
- **research and development and innovation:** the foundations for improvements in productivity and for sustainable global competitiveness;
- **entrepreneurial dynamism:** the creation of new enterprise and a positive, risk taking attitude to enterprise are central to the establishment of a dynamic economy;
- **the electronic and physical infrastructure:** joining business to business, consumer to business and ensuring the efficient movement of goods, people and ideas to the right places at the right times; and
- **managing public sector resources more effectively:** improving the efficiency and effectiveness with which resources are deployed in the provision of public services.

The Scottish Executive's high-level transport objective focuses on promoting economic growth by enhancing the effectiveness of the transport network and reducing congestion, with an overarching target to strive to stabilise road traffic at 2001 levels by 2021. The Framework outlines that this will be achieved through investing in an integrated package of measures which include modernising and improving public transport, promoting alternative modes of transport to the private car and targeted motorway and trunk road improvements. The Scottish Executive's strategy aims to stabilise road traffic levels, while at the same time supporting economic development.

The Framework indicates that the Scottish Executive has identified a key role for public policy in securing a highly efficient transport system that can best promote economic development in its widest sense. It is recognised that four principal elements will address these priorities:

- **improving transport planning and structural landscape.** Improvements in the strategic planning and delivery of major transport projects, through the establishment of Transport Scotland, will ensure that the transport network continues to support future economic activities;
- **Investing in transport infrastructure.** Future investment in transport infrastructure is central to supporting future economic development by reducing congestion, improving journey time reliability and increasing the travel options available to both individuals and businesses;
- **tackling road traffic congestion in order to help to deliver reliable journey times for all road users.** The Scottish Executive will support local authorities who wish to pursue road user charging in order to reduce congestion in their area. Improvements in sustainable transport can help to stimulate modal shift away from the private car towards public transport. In addition, targeted improvements on the motorway and trunk road network will deal with some of the critical congestion spots. The national awareness campaign is also raising awareness of travel issues, promoting public transport and can influence individual travel choice; and
- **improving services for all transport users.** Supporting good services at affordable cost, through subsidised ferry and air services, will remain a priority because it is vital to maintaining and improving economic conditions in many rural and island areas of Scotland. The development of concessionary travel schemes for older people initially is increasing accessibility for large sections of society and further extensions to these schemes are planned.

The Framework for Economic Development in Scotland sets out a vision *“to raise the quality of life of the Scottish people through increasing the economic opportunities for all on a socially and environmentally sustainable basis”*. The Framework acknowledges the importance of transport in delivering economic development within Scotland plc by improving, investing and delivering a transport network for all. The high-level expectations detailed in the Framework for Economic Development in Scotland are summarised below.

**Summary of High Level from Expectations from Framework for Economic Development in Scotland (Scottish Executive, September 2004):**

- improve transport planning and structural landscape;
- invest in transport infrastructure;
- tackle road traffic congestion in order to help to deliver reliable journey times for all road users; and
- improve services for all transport users.

**National Planning Framework for Scotland**

The National Planning Framework for Scotland (NPFS) (Scottish Executive, April 2004) is a Framework to guide the spatial development of Scotland to 2025. The NPFS sets out a vision of Scotland in which other plans and programmes can share and to which they can contribute.

The NPFS complements the Scottish Executive's *Framework for Economic Development in Scotland* (2004), highlighting the importance of place and identifying priorities for investment in strategic infrastructure to enable each part of the country to play to its strengths in "building a Scotland which is competitive, fair and sustainable".

The NPFS outlines the following aims for Scotland's spatial development to 2025:

- increase economic growth and competitiveness;
- promote social and environmental justice; and
- promote sustainable development and protect and enhance the quality of natural and built environments.

In order to fulfil the above aims, the key elements of the NPFS to 2025 are as follows:

- support the development of Scotland's cities as the main drivers of the economy;
- spread the benefits of economic activity by promoting environmental quality and connectivity;
- enable the most disadvantaged communities to benefit from growth and opportunity;
- strengthen external links;
- promote economic diversification and environmental stewardship;

- highlight long-term transport options and promote more sustainable patterns of transport and land use;
- invest in water and drainage infrastructure to support development;
- realise the potential of Scotland's renewable energy resources;
- provide the facilities to meet waste recycling targets; and
- extend broadband coverage in every area of Scotland.

The NPFS recognises cities as the hubs of wider regional economies and that their surrounding towns and rural areas can offer attractive locations for a wide range of economic activities. As a basis for prioritising investment, Scottish Enterprise has identified business locations which have the potential to become the focus for key industries and clusters. These locations can be grouped into the following broad economic development zones:

- Clyde Corridor;
- Lanarkshire;
- Central Ayrshire;
- Central Scotland;
- West Edinburgh/South Fife;
- Lothian;
- Dundee;
- Aberdeen.

The NPFS outlines that to be successful, economic development zones will require to have good links to the rest of Scotland and the wider world. The strategic business locations which they contain will need to be well connected with each other and readily accessible from residential areas. It will be important to ensure that people in areas undergoing community regeneration enjoy good access to the opportunities being created in strategic business locations. It is recognised that if Scotland is to be attractive as a business location and tourism destination, high quality environments and good transport interchange facilities at air, rail and sea gateways will require to be promoted.

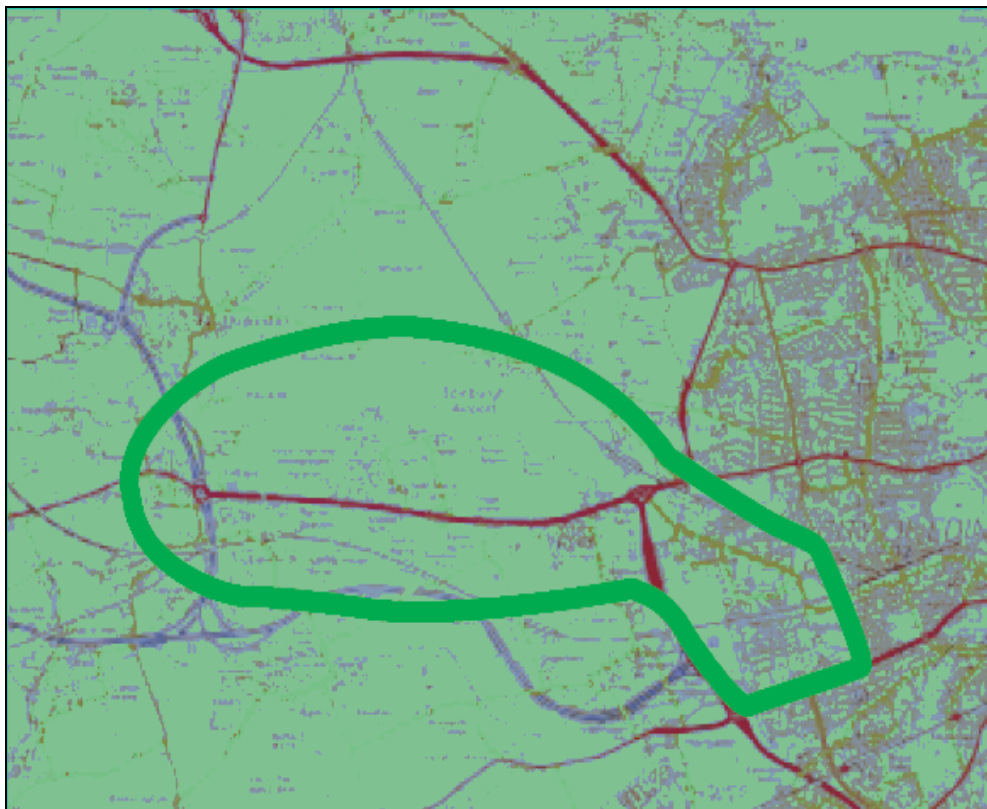
It is further recognised that to compete successfully in the world economy, Scotland requires a modern, flexible and well-integrated transport system with high quality links to the rest of the UK, Europe and the world. There is a need to make good past deficiencies in the provision of transport infrastructure.



In terms of the road network, the NPFS outlines that the focus over the next ten years will be on completing the remaining gaps and using the existing network more efficiently. West Edinburgh is outlined as being the main gateway to Scotland's capital and the West Edinburgh/South Fife area has been identified as a key economic development zone. Mitigating the adverse impacts of committed developments and realising the opportunities for airport expansion are key challenges.

The NPFS makes reference to a number of parallel studies and reports, including the West Edinburgh Planning Framework (WEPF) which addresses issues of congestion, the integration of land use and transport and the provision of modern transport infrastructure at a strategic location of national importance.

**Figure 2 - Main focus of Planning Framework (source: West Edinburgh Planning Framework, 2003)**



The WEPF highlights the unique opportunity which West Edinburgh offers as an international business location. Objectives include:

- realising the potential of the area for high quality economic development;
- providing a rail link to the airport;
- creating a high quality transport interchange at the airport;
- introducing a rapid transit tram service; and
- Maintaining the strategic role of Edinburgh's Green Belt.

In the Edinburgh city region priority is being given to developing the relationship of the locations which make up the Lothian Science Zone and improving the connectivity of the gateway facilities at Edinburgh Airport, Grangemouth and Rosyth. The M9 Spur is currently being extended to provide a direct connection between the Forth Road Bridge and the M8/M9.

The NPFS outlines that strengthening rail and road links north of the Forth will ease congestion on routes farther south, support the developing gateway role of Rosyth and help to create a more attractive freight route between Ireland and the Continent. Stirling, Falkirk and Grangemouth are key centres in the Central Scotland economic development zone. Across the Central Belt there is a need to improve public transport and interchange facilities. The towns of the Central Belt need good public transport links to Glasgow and Edinburgh to provide access to jobs and city facilities and to make them attractive locations for new business investment.

The publication of the NPFS marks the start of a process of engagement and debate on Scotland's long-term spatial development. It is intended that the NPFS will be updated every four years. The NPFS will be taken forward through a number of mechanisms including:

- investing in transport, water and drainage and telecommunications infrastructure;
- strengthening the grid, setting targets and preparing action plans to support renewable energy development;
- progressing the *West Edinburgh Planning Framework* and the regeneration of the Clyde Waterfront and Clyde Gateway; and
- the review of strategic transport projects and the use of modelling and other appraisal tools to assess policy and project options.

The NPFS sets out a framework to guide the spatial development of Scotland to 2025 which will inform a number of national, regional and local policies. The NPFS identifies specific economic development zones and highlights the importance of ensuring that they are well connected and readily accessible. The NPFS makes specific mention of the West Edinburgh Planning Framework which highlights the potential of West Edinburgh as an international business location. The NPFS includes several mode-specific policies, focusing on completing the gaps in the road network and using the network more efficiently, strengthening road and rail links north of the Forth and improving public transport and interchange facilities across the Central Belt. The high-level expectations outlined within the NPFS are summarised below.

**Summary of High Level Expectations from National Planning Framework for Scotland (Scottish Executive, April 2004):**

- To support the development of Scotland's cities as the main drivers of the economy;
- To spread the benefits of economic activity by promoting environmental quality and connectivity;
- To enable the most disadvantaged communities to benefit from growth and opportunity;
- To strengthen external links;
- To highlight long-term transport options and promote more sustainable patterns of transport and land use; and
- To extend broadband coverage in every area of Scotland.

**SEStran RTS**

The SEStran RTS (Draft For Consultation, SEStran, October 2006) provides a framework which will guide the future management of and investment in, transport for the SEStran area over the next 10-15 years. The SEStran area comprises eight constituent local authorities: City of Edinburgh, Clackmannanshire, East Lothian, Falkirk, Fife, Midlothian, Scottish Borders and West Lothian and is illustrated within Figure 3 on the following page.

**Figure 3 - SEStran area map (source: SEStran RTS, Draft For Consultation, October 2006)**



SEStran's draft RTS sets out a long-term vision for the region, thus *"South East Scotland is a dynamic and growing area which aspires to become one of northern Europe's leading economic regions. Essential to this is the development of a transport system which enables businesses to function effectively, allows all groups in society to share in the region's success through high quality access to services and opportunities, respects the environment, and contributes to better health."*

To achieve the long-term vision, the RTS has identified several objectives. These have been developed in the context of the issues which emerged from consultation with stakeholders. Four main themes of objectives and sub-objectives have been developed and these are consistent with the Government's objectives of Environment, Safety, Economy, Integration and Accessibility / Social Inclusion. To

ensure that these are achieved, SEStran have also defined targets relating to each specific objective. Objectives, sub-objectives and targets are outlined below:

**Economy - To ensure transport facilitates economic growth, regional prosperity and vitality in a sustainable manner:**

- to maintain and improve labour market accessibility to key business/ employment locations.

Over the period of the RTS a 10 per cent increase in labour market catchment (within 30 minutes and within 60 minutes) for selected locations within the following key employment locations: Edinburgh city centre; Gyle; Edinburgh Park; Edinburgh Airport; Livingston; Glenrothes; Leith Waterfront - Victoria Quay; and Edinburgh Royal Infirmary / Mediparc.

- to maintain and improve connectivity to the rest of Scotland, the UK and beyond.

Over the period of the RTS, stabilise and reduce time lost due to congestion across the SEStran trunk road network.

- to support other strategies, particularly land use planning and economic development.

Demonstrate progress in collaborative working between SEStran, planning authorities and economic development agencies.

- to reduce the negative impacts of congestion, in particular to improve journey time reliability for passengers and freight.

Reduce 'car driver' mode share for travel to work from 61.5 per cent to 55.5 per cent over the period of the RTS.

**Accessibility - To improve accessibility for those with limited transport choice or no access to a car, particularly those who live in rural areas:**

- to improve access to employment.

For deprived communities and those with low levels of car ownership, improve access (by public transport) to employment by an average of at least 10 per cent.

- to improve access to health facilities.

Reduce the proportion of no-car households with poor access (i.e. greater than 60 minutes) to defined key hospitals by 50 per cent over the period of the RTS.

- to improve access to other services, such as retailing, leisure and education.

Reduce the proportion of no-car households with poor access (i.e. greater than 45 minutes) to defined further education colleges, job centres and regional shopping centres and key hospitals by 20 per cent over the period of the RTS.

- to make public transport more affordable and socially inclusive.

By, or before the end of, the RTS ensure that all DDA requirements regarding accessible buses and associated measures are met.

Reduce fare 'anomalies' in the SEStran area and achieve a real terms reductions in fares by the end of the RTS period.

**Environment - To ensure that development is achieved in an environmentally sustainable manner:**

- to contribute to the achievement of the UK's national targets and obligations on greenhouse gas emissions.

Progress should be made at the SEStran level towards the Scottish Executive's aspirational target of a return to 2001 traffic levels by 2021

- to minimise the negative impacts of transport on natural and cultural resources.

No target possible

- to promote more sustainable travel.

Reduce 'car driver' share for travel to work from 61.5 per cent to 55.5 per cent over the period of the RTS.

- to reduce the need to travel.

To stabilise and reduce the number of trips per person per year made using 'motorised' modes, by 5 per cent over the period of the RTS.

- to reduce the dependency on the private car.

Reduce 'car driver' share for travel to work from 61.5 per cent to 55.5 per cent over the period of the RTS.

**Safety and Health - To promote a healthier and more active SEStran area population:**

- to improve safety (accidents) and personal security.

By 2010, to reduce killed and seriously injured (KSI) casualties by 40 per cent and child KSIs by 50 per cent on a 1994-98 base.

Over the period of the strategy, a 20 per cent reduction in pedestrian and cyclist KSIs per trip made.

Over the period of the strategy, a 2 per cent improvement in the perception of the safety of travel by bus in SEStran.

- to increase the proportion of trips by walk / cycle.

Reduce 'car driver' share for travel to work from 61.5 per cent to 55.5 per cent over the period of the RTS.



Over the period of the NTS, a 5 per cent point increase in walking and cycling mode share for all trips, SEStran-wide (1.5 per cent after five years).

- to meet or better all statutory air quality requirements.

To meet these requirements by 2010 or before.

- to reduce the impacts of transport noise.

Pending the outcome of Scottish Executive's 'noise mapping'<sup>6</sup>.

Specifically on the Forth Road Bridge, SEStran's draft RTS notes increasing problems relating to traffic levels and the deterioration of Forth Road Bridge:

*"The Forth Road Bridge is widely recognised to be carrying traffic loads well in excess for which it was designed (in fact around double), currently around 65,000 vehicles per day. This, coupled with the age of the Bridge and the identification of corrosion in key structural elements places the long term future capacity of the Bridge in some doubt."*

The southbound approaches to the Bridge (M90 Junction 4, A92 Cowdenbeath to Forth Road Bridge) are identified as being amongst the most congested sections of the transport network in the SEStran area.

The draft RTS highlights opportunities relating to cross-Forth travel, including:

- the new rail link between Stirling and Alloa which will provide new passenger services and also free up capacity on the Forth Bridge, as coal trains to Longannet power station divert to the new line;
- the Ferrytoll park and ride site has proved enormously successful and car parking provision is being increased; and
- the possibilities for the use of smart card technology as a means of payment on the Forth Road Bridge and also for car parking at stations.

The SEStran draft RTS also recommends specific options for the Forth Road Bridge which include:

- outbound bus priority on the A90, with queue relocation similar to that operating city bound, allowing buses to avoid queues en route to the tolls;
- Ferrytoll access A90 measures;
- any new Forth crossing should allow for specific bus lanes, with priority also in bridgehead areas;
- some Fife to Edinburgh train fares have been identified as high compared with other fares. This will be reviewed and SEStran will seek to bring these into line with other comparable fares;

<sup>6</sup> Noise mapping refers to the graphical presentation of noise levels - contours join points which have the same noise level.



- the proposed cross-Forth Ferry could help this corridor, depending on ‘landside’ connections;
- Network Rail’s Rail Utilisation Strategy proposes to re-structure the Fife line and Aberdeen services – this is supported;
- traffic flows on the Forth Road Bridge are often near capacity. Controlling access to the Bridge and its approaches could increase the efficiency of flow by stopping flow levels reaching ‘unstable’ levels. The case for ‘ramp metering’ will be considered; and
- high occupancy vehicle lanes can help to reduce the number of ‘car driver’ trips, in line with the mode share targets. The case for HOV lanes in the Fife – Edinburgh corridor will be considered.

The draft RTS highlights the requirement for a solution to the deterioration of the Forth Road Bridge: *“Any significant restriction placed on the use of the current Bridge (e.g. HGV ban) would have a severe and detrimental impact on the SEStran economy. It would also have a major impact on the diversionary routes.”*

SEStran supports a sustainable solution to the problem of the deteriorating condition of the present Bridge and states that:

“Any new crossing should be constructed to allow for future tram (and if possible heavy rail) use.”

In the situation that an additional (rather than replacement) crossing, is provided, SEStran recommends that:

- the combination of old and new crossings should provide no more than two lanes in each direction available to single-occupant cars;
- all new traffic lanes across the Forth need to be dedicated to buses and high occupancy vehicles (HOVs). Consideration will be given to the possibility of allowing HGVs to access these lanes;
- separate running lanes for the mixed use of buses, HOVs and possibly HGVs should be considered, but as far as possible flexibility should be maintained to enable full vehicle carrying capacity for traffic during periods of Bridge maintenance; and
- the promoter should be required to put in place a demand management and investment package that will seek to ensure that traffic in Edinburgh will remain at or below the levels that would have been forecast without an additional crossing.”

The draft RTS also identifies measures which are classed as “region wide”, thus they are not necessarily geographically specific in the way that infrastructure or transport services are. Of particular relevance to this report are region-wide initiatives for demand management, particularly in relation to tolls. It is recognised within the RTS that variable Bridge charges would attempt to smooth demand for travel across the Forth Road Bridge by charging more at peak times and less off-peak and

differentiating between single and multi-occupant vehicles. However, such charging is not considered a priority within the draft RTS document.

In terms of public transport, the draft RTS states: *“An additional crossing at Queensferry creates significant opportunities for the development of public transport in the area, both cross-Forth and in the bridgehead areas. SEStran will seek to use these opportunities to maximise public transport use in the corridor, in terms of bus, guided bus and light rail networks.”*

The draft SEStran RTS provides a framework to guide the management of and investment in, transport in the SEStran region over the next 10-15 years. The SEStran RTS sets out its own vision for transport in South East Scotland and outlines a number of objectives required to achieve this. SEStran’s overarching objectives are consistent with those of the Government (environment, economy, safety, integration and accessibility / social inclusion) and a number of sub-objectives and targets have been set to ensure these objectives are achieved. The draft RTS specifically examines issues relating to the Forth Road Bridge, highlighting existing problems and opportunities. The RTS recommends specific options for the Forth Road Bridge and details specific criteria for a replacement crossing. The high level expectations set out in SEStran’s RTS are summarised below.

### Summary of High Level Expectations from SEStran RTS (Draft For Consultation, SEStran, October 2006):

The draft RTS outlines various overarching and sub-objectives that are applicable to this study. Specific Forth Road Bridge Options are:

- Edinburgh bus priority on the A90, with queue relocation similar to that operating city bound, allowing buses to avoid queues en route to the tolls;
- Ferrytoll access A90 measures;
- any new Forth crossing should allow for specific bus lanes, with priority also in bridgehead areas;
- some Fife – Edinburgh train fares have been identified as high compared with other fares. This will be reviewed and SEStran will seek to bring these into line with other comparable fares;
- the proposed cross-Forth Ferry could help this corridor, depending on 'landside' connections;
- Network Rail's Rail Utilisation Strategy proposes to re-structure the Fife line and Aberdeen services – this is supported;
- traffic flows on the Forth Road Bridge are often near capacity. Controlling access to the Bridge and its approaches could increase the efficiency of flow by stopping flow levels reaching 'unstable' levels. The case for 'ramp metering' will be considered.
- high occupancy vehicle lanes can help to reduce the number of 'car driver' trips, in line with the mode share targets. The case for HOV lanes in the Fife – Edinburgh corridor will be considered.

### TACTRAN RTS

The TACTRAN area covers the Angus, Dundee, Perth and Kinross and Stirling Council areas. TACTRAN intends to complete and submit its finalised RTS to the Transport Minister for approval by 31 March 2007.

Within the TACTRAN RTS Issues and Objectives Report (TACTRAN, September 2006), TACTRAN have agreed upon an overall vision for the RTP: *"a transport system, shaped by engagement with its citizens, which helps deliver prosperity and connects communities across the region and beyond, which is socially inclusive and environmentally sustainable and which promotes the health and well-being of all"*.

In order to achieve this vision, TACTRAN have identified the following over-arching objectives:

- to ensure transport helps to deliver **regional prosperity**;
- to improve **accessibility** for all, particularly for those suffering from **social exclusion**;
- to ensure that the transport system contributes to safeguarding the **environment** and promotes opportunities for improvement;
- to promote the **health** and **well-being** of communities;
- to improve the real and perceived **safety** and **security** of the transport network; and
- to improve **integration**, both within transport and between transport and other policy areas.

To achieve these high level over-arching objectives, TACTRAN have developed the following specific aims to meet the overall vision.

#### **Economy:**

- to ensure that transport infrastructure and services in the region help deliver economic growth, particularly in key business and employment sectors; and
- to improve the efficiency, reliability and integration of the movement of goods and people.

#### **Accessibility, Equity and Social Inclusion:**

- to improve access to employment;
- to improve access to public services, including health and education;
- to improve access to retail, recreation and leisure facilities;
- to reduce severance and social and economic isolation caused by transport, or by a lack of it; and
- to improve the accessibility and inclusiveness of the transport system.

#### **Environment:**

- to contribute to the achievement of the Scottish national targets and obligations on greenhouse gas emissions;
- to promote a transport system that respects both the natural and the built environment;
- to promote a shift towards more sustainable modes; and
- to help meet or better all statutory air quality requirements in the TACTRAN area.

### Health and Well-Being:

- to promote a culture of active and healthy travel; and
- to improve transport-related safety.

### Safety and Security:

- to improve real or perceived levels of personal security on the transport network.

### Integration:

- to improve integration of the transport modes;
- to ensure integration with land use planning; and
- to ensure a fit with other relevant national, regional and local strategies and policies.

The TACTRAN RTS Issues and Objectives Report highlights several opportunities in relation to the transport network which may impact upon this study:

- additional cross-Forth rail paths (following the transfer of freight to the Stirling Alloa Kincardine rail-line and likely signalling enhancements on the Forth Bridge) which will facilitate the provision of increased rail frequency to the south and also to the north (by extension of some or all of the relevant additional services from the south); and
- the Edinburgh Airport Rail Link (EARL) which will provide improved rail links from the region to Edinburgh Airport, overcoming many of the problems associated with traffic congestion between the TACTRAN region and Edinburgh Airport.

The TACTRAN RTS sets out a vision for the future development of the transport system in the TACTRAN area. To achieve this vision, the RTS outlines six key objectives, consistent with those of the Scottish Executive but with an added regional dimension. Within each broad objective, TACTRAN's RTS outlines a number of specific aims which will combine to achieve the overall vision. The RTS also highlights several specific transport opportunities which affect the Forth Road Bridge including additional cross-Forth rail paths and the proposed Edinburgh Airport Rail Link. The high level expectations outlined in TACTRAN's RTS are summarised below.

**Summary of High Level Expectations from RTS Issues and Objectives Report (TACTRAN, September 2006):**

- deliver regional prosperity;
- improve accessibility for all and reduce social exclusion;
- safeguard and improve the environment;
- promote health and well-being of communities;
- improve safety and security of the transport network;
- improve integration, within transport and between transport and other policy areas; and
- increased Cross-Forth rail paths which will facilitate the provision of increased rail frequency to the south and to the north of the TACTRANS area;

**FETA Local Transport Strategy**

FETA published its LTS in June 2005. FETA is a partnership organisation comprising representatives of Fife, Edinburgh, West Lothian and Perth and Kinross Councils. FETA is responsible for the management, maintenance and operation of the Forth Road Bridge. It is also within FETA's remit to develop measures which reduce traffic congestion on the Bridge or encourage use of public transport. FETA's LTS covers the period from 2005 to 2020/21.

The LTS examines the issues and opportunities associated with the Forth Road Bridge and identifies the following:

- **Traffic Growth.** In the last three years traffic has increased by 2.0 per cent, 3.4 per cent and 2.7 per cent respectively, resulting in the current level of 24 million vehicle trips per year. It is considered that the practical capacity of the Bridge is 22 million vehicles a year. The Bridge is therefore currently operating beyond its practical capacity and traffic growth is continuing unabated<sup>7</sup>;
- **Peak Spreading.** In the two years from 2002, based on hourly traffic data counts, there has been an increase of 12 per cent in the volume of traffic travelling in the south bound direction between 06:00 hours and 07:00 hours. This is above the background general traffic growth of just over 5 per cent in the two years. In the northbound direction there has been an increase of 8 per cent between 07:00 hours and 08:00 hours;

<sup>7</sup> Note Report 1 shows a forecast increase of 0.8 per cent increase in traffic growth per annum between 2005 and 2020.

- **Congestion and Queuing.** In the AM peak there is congestion on the southbound direction over the Forth Road Bridge created by the volume of traffic using the signals at Echline Roundabout towards the A8000. The queues begin forming from 06:30 hours, peaking around 07:30-08:00 hours whereby queues back past Masterton are regularly experienced. Queuing south of the Bridge during the evening peak hour is also a key problem for commuters. The major queues occur on the A8000 and to a lesser extent on the A90 and the A904 approaches to the toll plaza;
- **Safety.** The operation of the toll plaza both to and particularly from, the tolls creates the potential for traffic incidents as traffic crosses from lane to lane. The operation of the northbound approach to the toll plaza is considered to create a high incidence of merging and weaving as traffic seeks to join the shortest queue. On departure from the tolls there is a merging of vehicles from the seven toll booths into two lanes over the Bridge;
- **Vehicle Occupancy.** SEStran's Integrated Corridor Study (SITCoS) has identified that over 70 per cent of cars have a single occupant at peak times. Measures to increase levels of car occupancy (for example Park and Ride; Park and Choose; commuter travel plans, or differential tolling) are considered to increase the efficiency of the Bridge to carry a greater number of person trips; and
- **Heavy Goods Vehicles (HGVs).** From 01 February 2001 the weight limit for HGVs was increased to 44 tonnes. This increase aimed to reduce lorry miles, therefore reducing congestion and emissions. However, this increase in load has resulted in a detrimental impact on the Bridge wearing surface, resulting in a requirement for re-surfacing on a more regular basis than was undertaken previously.

In order to address the above issues, FETA's LTS sets out a vision of *“reliable, integrated, safe and sustainable travel choices across the Forth for both strategic and local journeys, making optimum use of the Forth Crossings and other associated transport infrastructure”*.

The aim of the LTS is to “reduce traffic congestion, increase the use of public transport and provide funding to ensure that the M9/A8000 project is delivered.”

In working towards this vision and aim FETA has established two strategic aspirations for the next 10-20 years:

- greater accessibility across the Forth for strategic movements to support a vibrant Scottish economy and promote strategic investment; and
- more sustainable and reliable patterns of local movements across the Forth which can continue to support local and regional economies.

The objectives of the LTS will assist in meeting these strategic aspirations and are as follows:



- to maintain and operate the Forth Road Bridge and to do so in the most effective manner and to minimise inconvenience to users;
- to optimise the potential number of public transport person trips across the Forth;
- to increase car occupancy across the Forth Road Bridge;
- to reduce congestion levels on the Forth Road Bridge and minimise environmental, safety and social impacts of traffic on local communities;
- to improve journey times and reliability for sustainable transport modes;
- to increase the range of cross-Forth journeys for which public transport can be an attractive option; and
- to improve integration between transport modes for cross-Forth travel to provide seamless journey opportunities.

It is considered that significant investment in public transport and measures to promote car sharing will result in increased car occupancy, improved journey times and effectively integrated public transport. To achieve these aspirations FETA recognise a requirement to implement an appropriate charging regime.

FETA's LTS identifies the problems currently affecting the Forth Road Bridge and sets out a vision aimed at reducing congestion and increasing public transport use on the Forth Road Bridge. In order to achieve this vision FETA's LTS establishes two strategic aspirations and a number of objectives aimed at achieving these. The LTS considers change in the tolling regime to be a necessity if FETA's vision and objectives are to be achieved. The high-level expectations outlined in the LTS are summarised below.

### Summary of High Level Expectations from FETA LTS (FETA, June 2005):

- increase accessibility across the Forth;
- support a vibrant Scottish economy;
- promote strategic investment;
- encourage sustainable movements across the Forth, for example multiple occupancy vehicles and public transport use;
- improve journey times and reliability for sustainable transport modes;
- maintain and operate the Forth Road Bridge and minimise inconvenience for users;
- reduce congestion and minimise environmental, safety and social impacts of traffic on local communities; and
- improve integration between public transport modes for cross-Forth journeys.

### SITCoS Report

The SITCoS report (SEStran, 2005) provides details of integrated transport corridor studies undertaken on five corridors around Edinburgh and the Forth valley. The corridors are:

- Linlithgow;
- Queensferry Cross Forth;
- East Lothian (Rail);
- A702 Pentlands; and
- Kincardine.

The study defines a number of over-arching planning objectives for the corridors, against which proposals can be evaluated. The objectives set out in the SITCoS report are:

- reduce the number of people commuting in single occupancy vehicles in South East Scotland – especially for journeys to and from Edinburgh; but also for journeys outwith the SEStran area;
- minimise the overall need for travel, particularly by car;

- maximise public transport provision and achieve public transport integration and inter-modality;
- improve safety for all road and transport users;
- enhance community life and social inclusion;
- maintain existing infrastructure properly in order that it can be fully utilised;
- enhance movements of freight specially by rail and other non-road modes; and
- sustain the economic health of the SEStran region.

The SITCoS report was published in 2005 and predates SEStran's RTS. The above objectives were intended to mirror those in SEStran's RTS. Subsequent publication of SEStran's RTS shows that the objectives are broadly similar to those above.

For the purposes of this report, the Queensferry Cross Forth corridor is considered to be the most relevant. The Queensferry Cross Forth corridor comprises south Fife, the Forth Bridges, West Lothian and west and central Edinburgh. This encompasses the north-western quadrant of Edinburgh's journey-to-work zone including West Edinburgh, South Queensferry, Inverkeithing, Rosyth and Dunfermline.

The Queensferry Cross Forth Corridor Study highlights several existing and future transport problems in the corridor which are outlined below:

- increasing demand for Cross Forth movement of people and goods;
- increasing economic activity in the Edinburgh area, particularly around West Edinburgh;
- continuing development of housing in south Fife without adequate sustainable transport infrastructure;
- increasing scarcity of road space;
- over-crowded peak-hour trains;
- inadequate interchange opportunities and capacities in Fife;
- restricted rail capacity (frequency and train length); and
- congested roads, resulting in delays, particularly for buses.

In addition to the generic objectives set out within the SITCoS report, the following objectives have been derived specifically with regards to the Queensferry Cross Forth corridor:

- to stabilise (in the short term) and improve (in the long term) accessibility to cross Forth movement for people and goods; and
- ensure land use planning is integrated with transport plans.

The SITCoS report outlines the disbenefits associated with failing to provide long-term enhanced Cross Forth capacity, as follows:

- high peak tolls to discourage peak hour use of the Forth Road Bridge<sup>8</sup>;
- restrictions on any bridgehead economic development that places additional stress on Cross Forth travel;
- increasing peak period delays for travellers and deteriorating reliability;
- further peak spreading;
- difficulty in conducting even routine maintenance on the Forth Road Bridge;
- considerable traveller disbenefits; and
- possible adverse impacts on the SEStran economy.

In order to address the identified problems, the study appraised four broad packages of measures in line with the Scottish Executive's Scottish Transport Appraisal Guidance (STAG). The four packages can be summarised as follows:

- bus priority and HOV lanes;
- improved heavy rail services;
- extension of Edinburgh Trams across the Forth; and
- construction of a new Forth Road Bridge.

Following the appraisal process, the following short, medium and long-term recommendations were identified:

### Short-Term Recommendations

- implement new measures to make public transport more attractive;
- provide new bus-based park and choose site at Halbeath and extend Rosyth into Park and Choose location;
- provide a newly constructed southbound HOV lane between Halbeath and the Northern Bridgehead;
- introduce "quick win" bus priority measures in Fife on A907, A823 and around Rosyth;
- procure additional bus services on cross-Forth routes;
- improve the integration of bus and rail in Fife including enhanced local bus feeders to key rail stations including Halbeath, Rosyth and Dalgety Bay; and

<sup>8</sup> It should be noted that this has been rejected by the Scottish Executive.

- make those land reservations required to support future plans (for example Dunfermline South Station).

### Medium-Term Recommendations

- revised rail patterns to maximise use of cross-Forth rail capacity including “splitting the circle” to provide enhanced services throughout Fife and providing two additional trains per hour, both operating via Edinburgh Airport;
- support for Park and Choose at key locations: Inverkeithing (extension of car park including access road), Ferrytoll (including the new overspill site) and Dalgety Bay, in addition to the site at Halbeath featured in the short term recommendations;
- completion of the bus “right of way” network between Fife and Edinburgh, predominantly bus priority work on the A90 south of the Forth; and
- should demand continue to rise then toll-related demand management strategies would be considered as part of a medium-term strategy.

### Long-Term Strategy

The long-term strategy recommended by the study is to supplement the short and medium-term strategies with demand management measures and the provision of a multi-modal crossing with two new road lanes in each direction giving a total of four lanes each way (including the existing Forth Road Bridge). For each direction, two of these lanes would be dedicated to HOVs leaving two lanes to general traffic as present.

The SITCoS report provides details of the Queensferry cross-Forth integrated transport corridor study. The report highlights a number of existing and future problems affecting the Queensferry corridor and outlines several objectives aimed at relieving them. The SITCoS report recognises the need to provide increased cross-Forth capacity and details the disbenefits of a failure to do so. The report concludes with a number of short, medium and long-term recommendations. The high-level expectations outlined in the SITCoS report are summarised below.

### Summary of High Level Expectations from SITCoS Report (SEStran, September 2005):

- to stabilise and improve accessibility to cross Forth movement for people and goods;
- ensure land use planning is integrated with transport plans.
- revised rail patterns to maximise use of cross-Forth rail capacity;
- support for Park and Choose at key locations;
- completion of the bus “right of way” network between Fife and Edinburgh;
- potential for toll-related demand management strategies and
- a long-term strategy of demand management measures and the provision of a multi-modal crossing.

### West Edinburgh Planning Framework

The WEPF document (Consultative Draft, Scottish Executive, November 2006) sets out proposals for future land-use and transport proposals for the area around Sighthill, Gogar, the Highland Showground and the Airport.

The WEPF outlines the importance of West Edinburgh as a gateway to Scotland and one of the most important economic development areas in Scotland. The 2006 strategic objectives for a vision for West Edinburgh include:

- implementation of structure plan for development areas;
- sustainable growth of Edinburgh Airport in accordance with Air Transport White Paper;
- relocation of Royal Highland Centre to a site south of the A8;
- allocation, preparation and promotion of sites for high quality, high value international business development;
- allocation, preparation and promotion of sites on Eastfield Road for high quality airport related hotel development;
- introduction of tram and rail links, a high quality transport interchange at Edinburgh airport and two new local access roads to Edinburgh Airport; and
- management of public transport, road traffic, parking and planned new road links in an integrated system with no net detriment to the road network and free flow of trunk road traffic.

The WEPF highlights issues relating to development pressure and transport constraints in the area and sets out a number of requirements necessary for West Edinburgh to realise its full potential as a driver of the Scottish economy and a high quality gateway to the world.

**Summary of High Level Expectations from West Edinburgh Planning Framework (Consultative Draft, Scottish Executive, November 2006):**

- improved public transport accessibility and management of road congestion likely to be caused by development already committed in West Edinburgh and beyond;
- sustainable airport expansion subject to improved surface access;
- a redefinition of the boundaries of Edinburgh's Green Belt in the A8/Airport corridor;
- environmental enhancements throughout the area; and
- development of selected sites for high quality international business development served by a high quality transport system.

**Edinburgh and the Lothians Structure Plan 2015**

The Edinburgh and the Lothians Structure Plan 2015 was prepared by the City of Edinburgh Council, East Lothian Council, Midlothian Council and West Lothian Council. It was approved by Scottish Ministers on the 17 June 2004.

The Structure Plan sets out the long-term vision for the development of land in Edinburgh and the Lothians. It provides the broad framework for local plans, which contain more detailed and site specific policies. The overarching aim of the Structure Plan is to *“provide in full for the development needs of Edinburgh and the Lothians in accordance with the principle of sustainable development, whilst maintaining and enhancing the environmental heritage that underpins the areas quality of life.”*

The following strategic objectives are set out in order to encourage a more sustainable pattern of development:

- **maintaining and enhancing economic competitiveness**
  - identify the main economic growth sectors that will require land for their future development;
  - identify strategic employment locations which are, or can be made, highly accessible by foot, cycle and public transport;
  - identify new transport infrastructure required to support the local economy;



- provide an adequate supply of housing to meet the growing number of households; and
- maintain and enhance the area's quality of life as defined by the built and natural environment.

#### **promoting a more inclusive society**

- provide a strategic context for investment in the regeneration of disadvantaged urban areas;
- increase access to employment opportunities through a more balanced distribution of employment land, giving preference to locations for new development with easy access by foot, cycle and public transport;
- increase access to housing by enabling local plans, where appropriate, to require the provision of affordable housing; and
- increase access to shopping and leisure facilities by giving preference to locations for new development with easy access by foot, cycle and public transport.

#### **protecting and enhancing the natural and built environment**

- maintain a continuous Green Belt around the City;
- ensure that, where possible, brownfield land is developed in preference to greenfield land;
- protect and enhance important landscape settings of settlements and areas of urban green space;
- protect the natural environment from inappropriate or damaging development;
- protect the built and historic environment from over-development “town cramming”) and promote high standards of design in new development; and
- safeguard mineral resources and facilitate their extraction with minimal environmental impact.

#### **integrating land use and transport**

- locate new development so as to reduce the need to travel, particularly by private car;
- reduce commuting to Edinburgh from the landward Council areas;
- maximise accessibility for all in the community by foot, cycle and public transport; and
- identify new transport infrastructure required to support the development strategy.

The high-level expectations outlined in the Edinburgh and the Lothians Structure Plan 2015 are summarised below.

**Summary of High Level Expectations from Edinburgh and the Lothians Structure Plan 2015 (City of Edinburgh Council, East Lothian Council, Midlothian Council and West Lothian Council, June 2004):**

- maintaining and enhancing economic competitiveness;
- promoting a more inclusive society;
- protecting and enhancing the natural and built environment; and
- integrating land use and transport.

### **Fife Structure Plan**

The Finalised Fife Structure Plan (Fife Council, April 2006) sets out strategic land use challenges for Fife communities and is the key land use planning document for directing and managing growth and change throughout the area.

The Fife Structure Plan outlines a vision for Fife in 2026:

*“A location of first choice in east central Scotland to live, work, play, learn and invest. An attractive place, with thriving and sustainable communities and a diverse environment. An area with a growing population which has reached at least 375,000 and is still expanding. A place where people can achieve their full potential through education, skills and career development”.*

To achieve the above vision, the Fife Structure Plan sets out a number of strategic objectives:

- **Growing Fife’s Economy and Increasing its Population**
  - to support the development of a new multimodal Forth crossing at Queensferry to enhance the national and Edinburgh City Region economies;
  - to grow the housing market in Mid Fife;
  - to assist the transition to a broader economic base with significant growth in service sector employment;
  - to develop a Coastal Development Zone along the North Forth coastline from Rosyth to Leven, linking significant brownfield regeneration opportunities at Inverkeithing Bay and Methil with new proposed Strategic Development Areas at Levenmouth and Kirkcaldy East and West;
  - to support and strengthen the rural economy by encouraging its diversification;

- to support commercialisation of the higher education sector, in particular to capitalise on the knowledge economy and promote opportunities;
  - to attract a new higher education campus to substantially enhance the number of residents holding a degree;
  - to guide inward migration to Mid Fife in particular, to halt and reverse net out migration and to assist in regenerating Mid Fife in accordance with the National Planning Framework;
  - to focus major development on public transport interchanges and town centres well served by public transport and to increase development densities in these areas;
  - to attract inward investment through skilled labour, a range of high quality land and premises, good accessibility and a very attractive environment;
  - to continue to develop Rosyth Waterfront as an international port, transport hub and economic growth area;
  - to focus retail growth in Dunfermline and Kirkcaldy as sub-regional centres and Glenrothes and Cupar as district town centres in particular and consolidate growth in other town centres;
  - to further develop St Andrews as a high quality tourist destination and to build on the tourism industry throughout Fife;
  - to provide a choice of quality housing as well as providing for a choice of different locations, prices and tenures, from affordable housing to the high end of the market;
  - to provide an attractive range of employment sites throughout Fife, including major land releases; and
  - to grow the energy sector with a focus on the Renewable Energy Park at Methil and the Green Energy Park at Westfield.
- **Improving Accessibility**
    - to maximise the efficient use of existing Forth and Tay crossings through supporting increased modal shift to public transport and car share;
    - to support the development of a new multimodal Forth crossing at Queensferry to enhance the national and Edinburgh City Region economies;
    - to promote mixed use developments to achieve improved accessibility;
    - to support the provision of a Cross-Forth Ferry Service and associated infrastructure;
    - to promote routes for public transport rapid transit corridors and interchanges with other networks;

- to support the provision of strategic transport improvements outwith Fife which support and improve Fife's economy and accessibility, including the proposed Edinburgh Airport link;
  - to support the provision of strategic transport improvements within Fife including Cupar relief road, St Andrews link road, upgrading of the A92 and the Rosyth bypass; and
  - further consideration of transport link options for St Andrews to the rail network will be addressed through the review of the Local Transport Strategy.
- **Raising Aspirations**
    - to identify and protect the land required for new educational facilities;
    - to work in partnership with St Andrews University to develop the Campus Plan through the Local Plan;
    - to work in partnership to support the development of Fife's further and higher education sector;
    - to work with partners to support the development of vocational training and apprenticeships;
    - to encourage developers to use local labour and provide training and skills development/programmes to expand the skilled workforce in Fife;
    - to work with the private sector to grow the construction sector; and
    - to develop the case with partners for expansion in Higher Education and research capacity in Fife, particularly in Mid Fife.
  - **Improving the Range and Quality of Housing Development**
    - to raise the standard of quality and design in new development. To this end an Urban Design Guide for Fife has been published, which will be used to influence change;
    - to align the range of new housing, including single storey houses, to meet the needs of the population taking account of demographic changes;
    - to encourage imaginative solutions to increase density through good design and enhance the sense of community;
    - to deliver quality new affordable housing and investment to improve the standard of housing; and
    - to integrate higher density housing, where appropriate, with public transport hubs and town centres and to support new and improved public transport services to serve these developments.

- **Develop and Maintain Sustainable Communities**

- to deliver affordable housing as part of new development and to raise the overall quality of the housing stock;
- to prioritise the development of brownfield sites where possible;
- to focus strategic land allocations within Mid Fife, Dunfermline, Cupar and St Andrews which will provide community facilities, employment land and a choice of different house types and tenure;
- to sustain jobs and improve accessibility in the rural areas and small communities; and
- to implement the development of the Strategic Development Areas to deliver regeneration priorities in partnership with other public service providers and the private sector.

- **Safeguarding and Improving Fife's Environment**

- to accelerate the use of appropriate brownfield, vacant and derelict land within settlements and to encourage the re-use of buildings;
- to protect the landscape setting of the historic cores of Dunfermline and St Andrews through the introduction of Green Belt as part of a long-term land use planning strategy to direct planned growth to the most appropriate locations;
- to protect and enhance the character and distinctiveness of Fife's towns and villages;
- to maintain, protect and enhance, where possible, Fife's natural heritage, built and historic environment, water resources and air quality; and
- to meet global challenges and opportunities, such as climate change, by encouraging the development and use of renewable energy technologies in both commercial and residential settings.

The Fife Structure Plan includes several references which are considered to be particularly relevant in terms of the Forth Replacement Crossing Study. These can be summarised as follows:

- the potential to connect a light rail transit network to Edinburgh City and West Edinburgh will be accommodated should a new multi-modal crossing of the Forth be built;
- the strategic development strategy will support the case for a new multi-modal crossing;
- the principle of a further multi-modal Forth crossing is considered vitally important in the context of growing the national economy and those of Edinburgh and Fife. It is important for Fife's economic and social inclusion agendas to achieve a further crossing; and

- aspirations for a segregated public transport corridor through the Forth Bridgehead Area, including the existing Dunfermline Eastern Expansion area, with potential to link to a further Forth crossing.

The high-level expectations outlined in the Fife Structure Plan are summarised below.

**Summary of High Level Expectations from Fife Structure Plan (Fife Council, April 2006):**

- Growing Fife's Economy and Increasing its Population;
- Improving Accessibility;
- Raising Aspirations;
- Improving the Range and Quality of Housing Development;
- Develop and Maintain Sustainable Communities; and
- Safeguarding and Improving Fife's Environment.